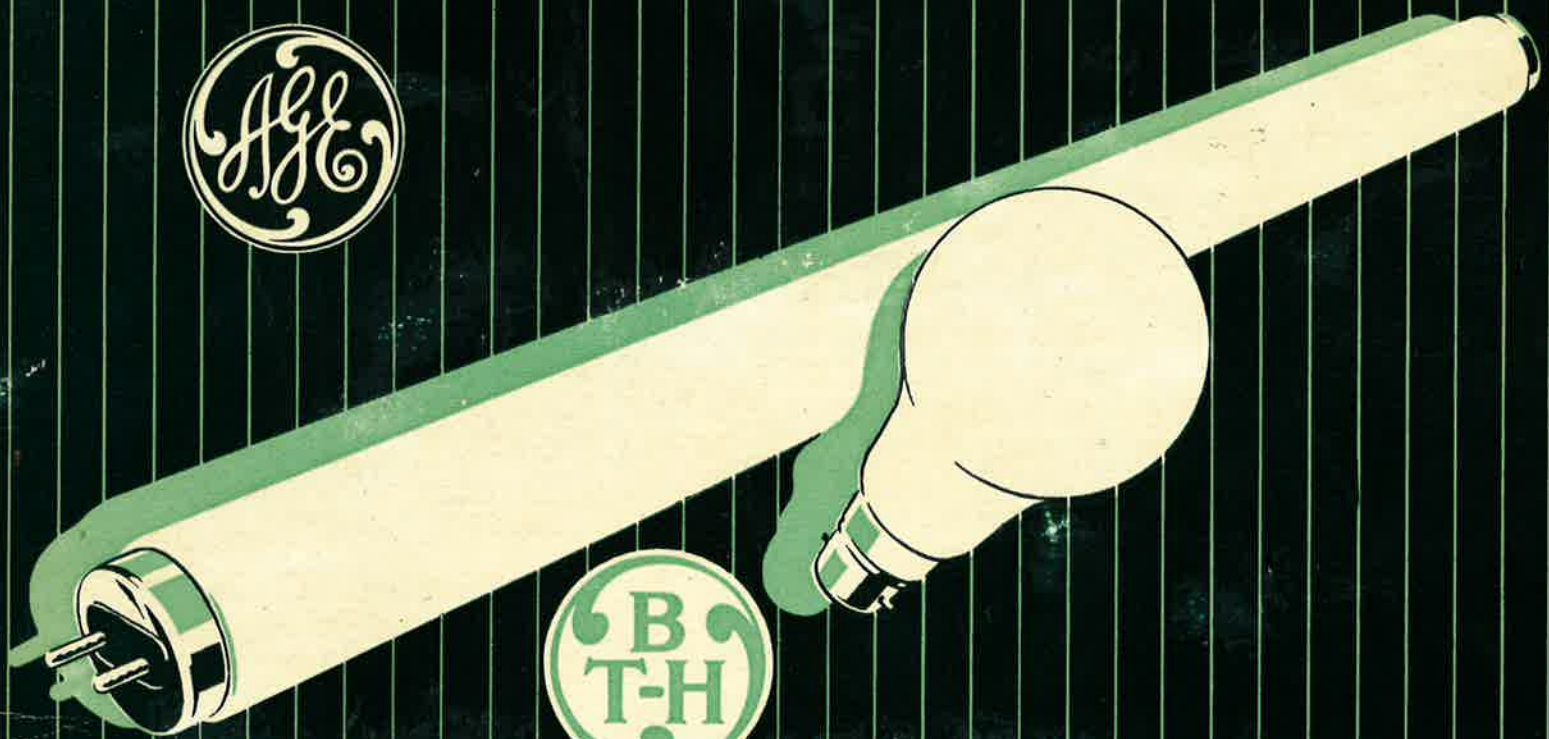


MAZDA lamps

Stay brighter longer . . .

AUSTRALIAN GENERAL ELECTRIC

PROPRIETARY LIMITED

Distributors for

The British Thomson-Houston Company Limited

Manufacturers of

MAZDA LAMPS

AUSTRALIAN GENERAL ELECTRIC PROPRIETARY LIMITED

Sales Offices :

Adelaide	Launceston	Rockhampton
Brisbane	Lismore	Sydney
Broken Hill	Melbourne	Townsville
Hobart	Newcastle	Wollongong

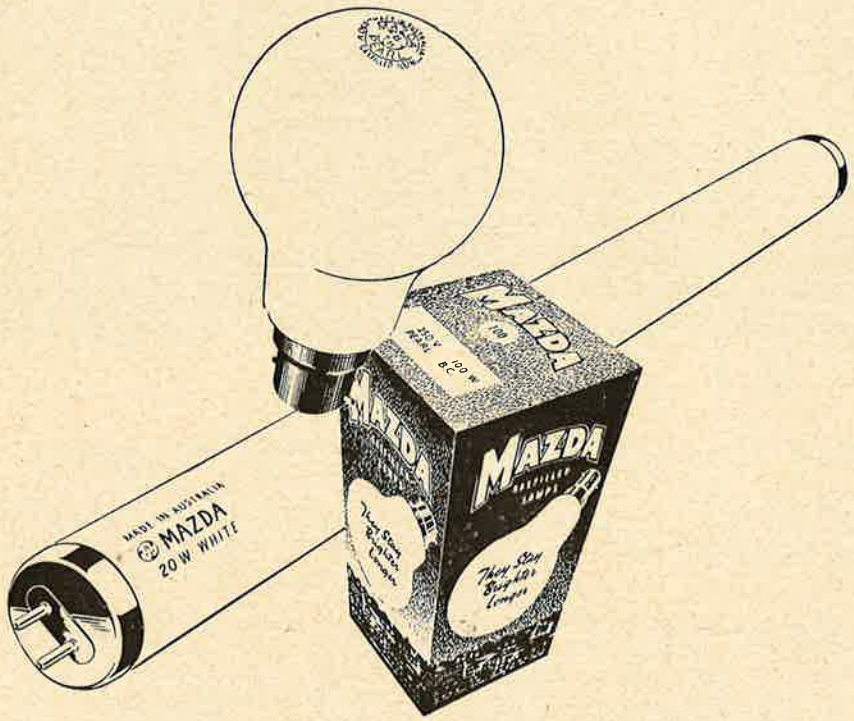
Mazda Lamp Agents :

Atkins (W.A.) Ltd., Perth.	G & A
Buckland, Wm. Pty. Ltd., Melbourne, Hobart, Launceston.	A
Chandlers Pty. Ltd., Brisbane, Bundaberg, Cairns, Mackay, Sydney, Toowoomba, Townsville, Warwick.	G
General Motors-Holdens Ltd., Melbourne, Brisbane, Perth, Port Adelaide, Sydney (Maroubra).	A
Hawkes Bros. Pty. Ltd., Melbourne, Geelong.	G
Hoffnung, S. & Co. Pty. Ltd., Sydney, Adelaide, Brisbane.	G
Machin, E. A. & Co. Pty. Ltd., Melbourne, Bendigo, Launceston, Warrnambool.	A
Motor Supplies Pty. Ltd., Brisbane, Cairns, Rockhampton, Townsville	A
Motor Traders Pty. Ltd., Sydney, Newcastle.	A
Motor Traders Pty. Ltd., Brisbane.	A
Motor Traders (S.A.) Ltd., Adelaide, Broken Hill, Mt. Gambier, Port Lincoln.	A
Motor Traders (Victoria) Pty. Ltd., Melbourne.	A
Smith, Sons and Rees Ltd., Sydney, Lismore, Newcastle, Parramatta.	A
Westcott Hazell & Co. Ltd., Sydney.	A

G indicates Agent for General Lighting Service Lamps

A indicates Agent for Automobile Lamps

MAZDA LAMPS



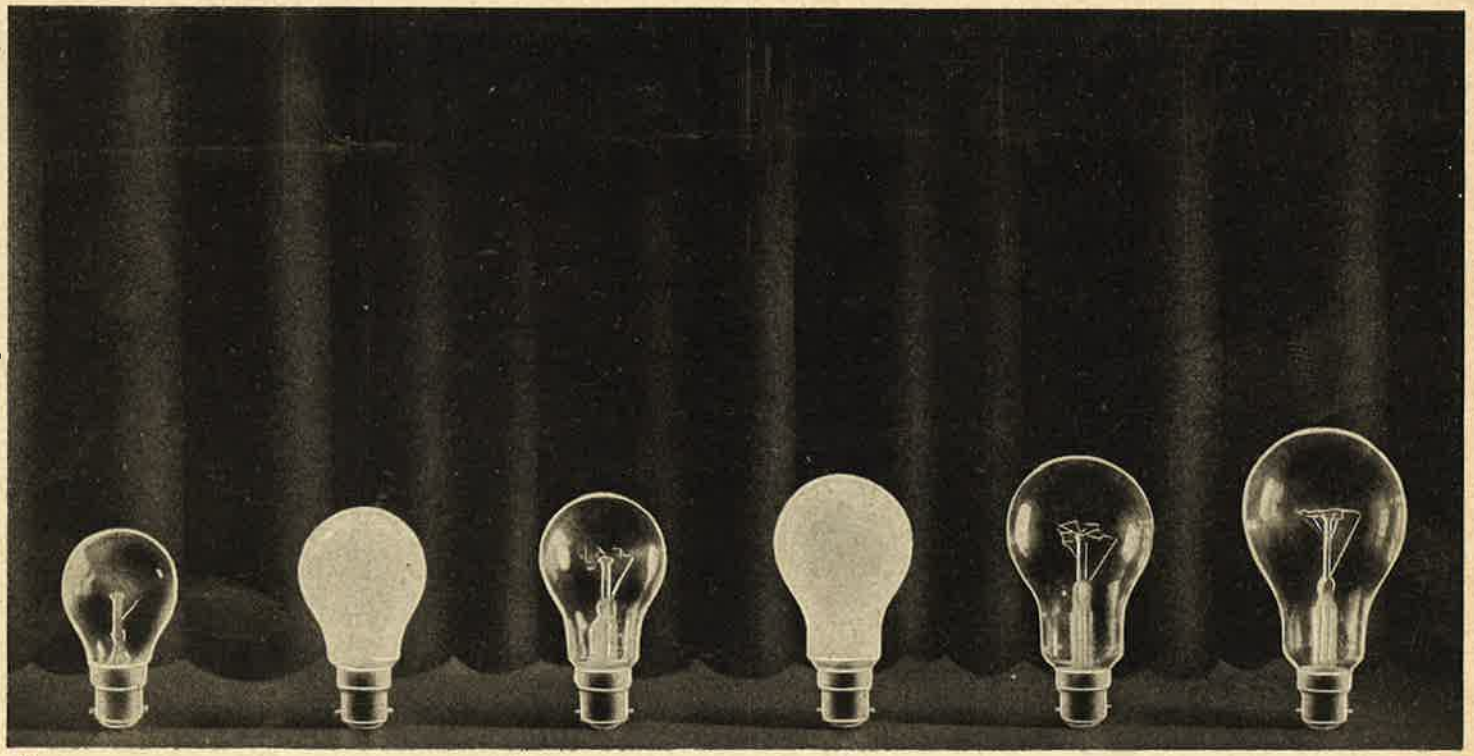
MAZDA LAMPS STAY BRIGHTER LONGER

Certain ratings of lamps listed in this Mazda Catalogue are only obtainable from U.S.A. In these instances the lamps would not be branded Mazda.

MAZDA LAMP CATALOGUE

INDEX

GENERAL LIGHTING SERVICE



15 W. 25 W. 40 W. 60 W. 75 W. 100 W.

CLEAR, PEARL, SILVERLIGHT, DAYLIGHT AND COLOURED

GENERAL LIGHTING SERVICE lamps fulfil 90 per cent. of Australia's lamp requirements for ordinary use in homes, stores, offices, schools, factories and the like. They burn in any position, but the light maintenance—particularly in lamps of higher wattage sizes—is best when burned vertically, base up.

OUTDOOR SERVICE GASFILLED lamps should be protected from falling rain.

CLEAR FINISH. Clear bulb lamps are satisfactory for use in adequately shielded reflectors or diffusers which protect the eyes from the irritating effects and inefficiency which glare produces ; also in floodlighting and miscellaneous applications requiring reasonably accurate control of light. Sizes : 15 to 1500 Watt Gasfilled ; 15 to 25 watt Vacuum.

PEARL OR INSIDE FROSTED. The light absorbed by inside frosting is so negligible (the lumen output is rated the same as for clear lamps), that these lamps are recommended for most general lighting purposes to give added diffusion and in the case of indirect lighting equipment to eliminate striations and harsh shadow effects. Sizes : 15 to 1000 watt Gasfilled ; 15 to 25 watt Vacuum.

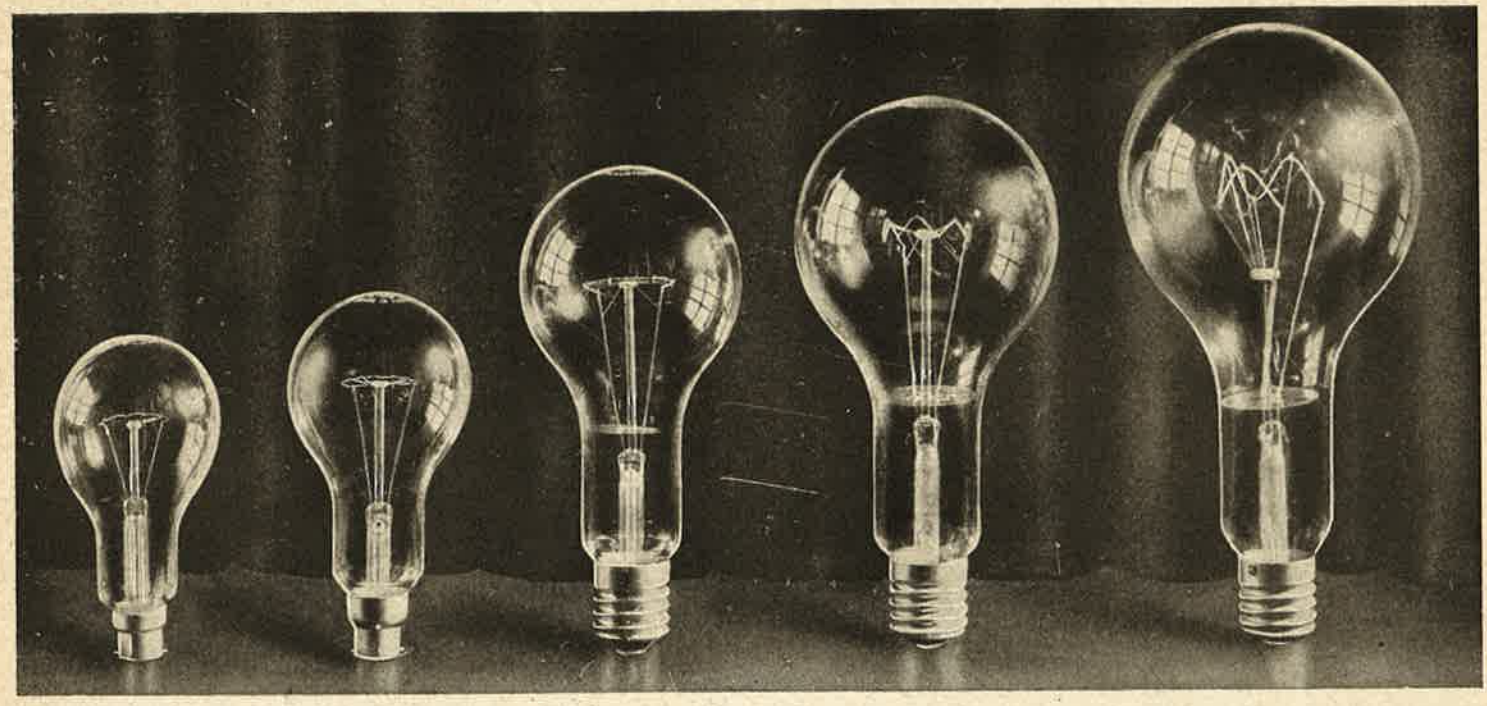
SILVERLIGHT. Coated inside with finely divided silica these lamps spread their light from the entire surface, reducing glare and giving clean white beauty. They are recommended for use in floor standards, table lamps and in all fittings in which the lamp is not completely hidden from view. For all close and continuous work Silverlight lamps are an aid to "better seeing."

DAYLIGHT LAMPS. The blue bulbs of these lamps emit a whiter light which is a partial step towards natural daylight and is about the same colour as the daylight which one gets indoors. Sizes : 40 to 500 watt Gasfilled.

NATURAL COLOURED LAMPS. For outside exposed lamp signs and for coloured festoons and similar decorative lighting where the lamps themselves are visible and form the pattern of the display. Colours : Ruby, Amber, Green, and Blue. Sizes : 25 to 150 watt Gasfilled ; 15 and 25 watt Vacuum.

OUTSIDE SPRAYED COLOURED LAMPS. These lamps are adapted to many decorative and ornamental fixtures used in homes, clubs, lobbies, foyers and public buildings where the bulb shape is related to the artistic design of the luminaire. For outdoor use, the natural coloured lamps are recommended. Colours : Red, Blue, Green, Orange and Flame. Sizes : 15 to 150 watt Gasfilled ; 15 and 25 watt Vacuum.

GENERAL LIGHTING SERVICE



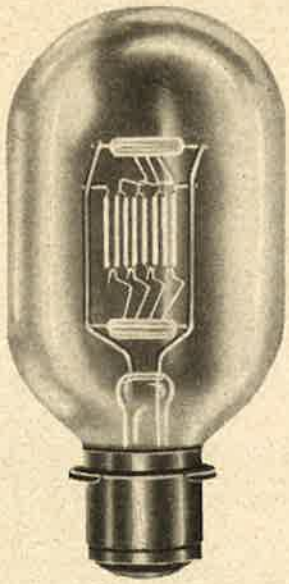
150 W. 200 W. 300 W. 500 W. 1000 W.

RATINGS AND DIMENSIONS OF SINGLE-COIL AND COILED-COIL MAZDA LAMPS

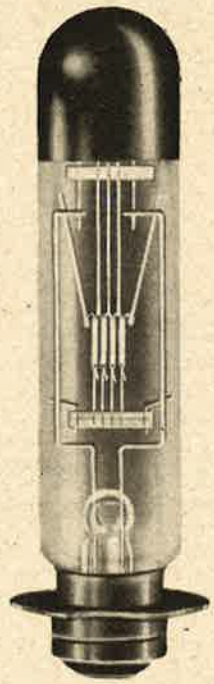
Watts	Nominal lumens at 240 volt				Dimensions in inches						Standard Packages
					Overall length			Light centre length			
	Single Coil	Coiled Coil	Base	Diam.	B.C.	E.S.	G.E.S.	B.C.	E.S.	G.E.S.	
					GAS-FILLED						
15	129	—	B.C./E.S.	2 3/16	4 1/10	4 1/4	—	2 15/16	3 1/8	—	144
25	241	—	,,	2 3/16	4 1/16	4 1/4	—	2 15/16	3 1/8	—	144
40	358	430	,,	2 3/8	4 3/8	4 1/2	—	3 1/8	3 6/16	—	144
60	624	720	,,	2 3/8	4 3/8	4 1/2	—	3 1/8	3 6/16	—	144
75	860	950	,,	2 3/4	4 7/8	5 1/8	—	3 9/16	3 3/4	—	75
100	1275	1395	,,	2 15/16	5 7/16	5 5/8	—	3 15/16	4 1/8	—	75
150	2145	—	,,	3 1/8	6 1/4	6 7/16	—	4 5/8	4 7/8	—	75
200	2940	—	B.C./E.S.	3 9/16	6 15/16	7 1/16	7 5/16	5 3/16	5 5/16	5 1/2	32
300	4740	—	G.E.S.	4 5/16	8 7/8	9 1/2	9 5/16	6 3/4	7 5/16	7	18
500	8350	—	,,	5 1/8	—	—	10 1/2	—	—	7 7/8	9
750	13125	—	,,	5 15/16	—	—	11 13/16	—	—	8 7/8	9
1000	18600	—	,,	5 15/16	—	—	11 13/16	—	—	8 7/8	9
1500	29700	—	,,	6 11/16	—	—	13 3/16	—	—	9 13/16	6
					VACUUM						
15	121	—	B.C./E.S.	2 3/16	3 5/8	—	—	2 9/16	—	—	144
25	220	—	,,	2 3/8	3 15/16	—	—	2 3/4	—	—	144

COILED-COIL LAMPS. The coiled-coil filament of this popular lamp ensures a minimum heat loss, thus making for greater efficiency ; so much so, that for the same amount of current, the 40 watt Mazda Coiled-coil lamp gives 20% more light than the ordinary gas-filled lamps of similar rating.

PROJECTOR LAMPS CLASS A1



500 W., 250 V.
Prefocus P28/25



500 W.,
115 V.
B & H
S26/25

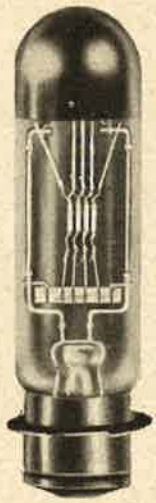
For Use In :

Toy Projectors.

8 M M Silent Motion Picture Projectors.

16 M M Silent and Sound Motion Picture Projectors.

35 M M Sound Motion Picture Projectors.



250 W., 250 V.
Prefocus P28/25

300 W., 115 V.
Prefocus S.C.C. P15S

BURNING POSITION—CAP DOWN (Except where indicated, see note "e")

Watts	Voltages	Cap	Dimensions m/m			Equiv. U.S.A. Bulb	Objective Life Hours
			Length	Diameter	L.C.L.		
50	100/115	S.C.C. (B15s), S.B.C. (B15d)	76 ± 3	25 ± 1	34·5 ± 2	T8	50s
100	12	E.S. (E27/25)	128 ± 7	25 ± 1	75 ± 5	T8	50s
100	12	Prefocus (P28/25)	133 ± 7	25 ± 1	55·5 ± 0·5	T8	50s
100a	30	Prefocus (P28/25)	133 ± 7	25 ± 1	55·5 ± 0·5	T8	50s
100	100/115	S.C.C. (B15s), S.B.C. (B15d)	76 ± 5	25 ± 1	34·5 ± 2	T8	50s
100	100/115, 200/250	Prefocus (P28/25)	133 ± 7	25 ± 1	55·5 ± 0·5	T8	50s
100	100/115, 200/250	E.S. (E27/25)	128 ± 7	25 ± 1	75 ± 5	T8	50s
200c	50	E.S. (E27/25)	128 ± 7	32 ± 2	75 ± 5	T10	50s
200c	50	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	50s
200 $	100, 115	S.C.C. (B15s), S.B.C. (B15d)	87 ± 5	25 ± 1	34·5 ± 2	T8	25s
200	100, 115	S.C.C. (B15s), S.B.C. (B15d)	87 ± 5	32 ± 2	34·5 ± 2	T10	50s
200	110	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	50s
250b	50	Prefocus B & H	128 ± 7	32 ± 2	59 ± 0·5	T10	50s
250c	50	E.S. (E27/25)	128 ± 7	32 ± 2	75 ± 5	T10	50s
250c	50	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	50s
250b	55	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	50s
250b	100/115, 200/250	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	50s
250b	100/115, 200/250	E.S. (E27/25)	128 ± 7	32 ± 2	75 ± 5	T10	50s
300 $	100, 115	Prefocus S.C.C. (P15s), S.B.C. (P15d)	100 ± 5	25 ± 1	31·5 ± 0·5	T8	25s
300 $	100, 115	S.C.C. (B15s/21), S.B.C. (B15d/21)	100 ± 5	25 ± 1	34·5 ± 2	T8	25s
300 $	100/115	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	25s
300 $d	110	S. 26s/25 large, B & H Ring	128 ± 7	32 ± 2	59 ± 0·5	T10	25s
400 $d	110, 115	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	25s
400 $d	110	Prefocus B & H	128 ± 7	32 ± 2	59 ± 0·5	T10	25s
500	100/115, 200/250	E.S. (E27/25)	128 ± 7	64 ± 2	75 ± 5	T20	50
500	100/115, 200/250	Prefocus (P28/25)	133 ± 7	64 ± 2	55·5 ± 0·5	T20	50
500 $e	110	3-pin B.C. (B22/25x26)	142 max.	38 max.	95	T12	25
500 $d	110	Prefocus B & H (S26/25)	128 ± 7	32 ± 2	59 ± 0·5	T10	25s
500 $d	110, 115	Prefocus (P28/25)	133 ± 7	32 ± 2	55·5 ± 0·5	T10	25s
750 $e	110	3-fin Ring	145 ± 8	38 max.	81	T12	25
750 $d	110	Prefocus B & H	128 ± 7	38 ± 2	59 ± 0·5	T12	25s
750 $d	110, 115	Prefocus (P28/25)	133 ± 7	38 ± 2	55·5 ± 0·5	T12	25s
900	24, 30	G.E.S. (E40/45)	230 ± 10	64 ± 2	120 ± 5	T20	50
900	24, 30	Mogul Prefocus (P40/41)	235 ± 10	64 ± 2	84 ± 0·5	T20	50
1000 $d	100	Prefocus B & H	175	38 ± 2	78	T12	25s
1000	100/115, 200/250	G.E.S. (E40/45)	230 ± 10	64 ± 2	120 ± 5	T20	50
1000	100/115, 200/250	Mogul Prefocus (P40/41)	235 ± 10	64 ± 2	84 ± 0·5	T20	50
1000 $d	110, 115	Prefocus (P28/25)	133 ± 7	38 ± 2	55·5 ± 0·5	T12	25s
1000 $d	115	Prefocus B & H	128 ± 7	38 ± 2	59 ± 0·5	T12	25s

$ Forced cooling is necessary for these lamps so that no part of the wall of the bulb exceeds a temperature of 500°C.

s These lamps are tip black sprayed. Where bulbs are tip black sprayed, the 25 m/m diameter bulb is sprayed to 22·5 ± 2·5 m/m from the centre of the filament to the edge of the black spray ; in the case of the 32 and 38 m/m dia. bulbs to 27·5 ± 2·5 m/m.

a Offset Filament. b Central Filament. c Central or Offset Filament. d Bi-plane Filament. e Bi-plane Offset Filament Cap-up Burning.

PROJECTOR LAMPS CLASS B1, E, F, & G

Class B1
500 W., 250 V.
G.E.S. E40/45

Class F
24 W., 12 V.
S.B.C.

Class F
48 W., 6 V.
S.E.S.

Class G
10 V., 7.5 Amp
S.C.C.

Lamps designed for picture projection and sound reproduction are characterised by the most advanced and exacting techniques of lamp manufacture. In every type the dimensions and form of the light source are chosen to fit the particular requirements of some specific optical system or group of systems. For every type of projector, lamps of highest possible light output from a small source in a bulb of minimum size are required. To this end lamps are designed up to the safe limits of the materials involved. It is only by the closest attention to materials and fabrication that the superior performance at maximum efficiency is achieved.

The superlative quality of Mazda Projection and Sound lamps is confirmed not only in laboratory tests but also by projector manufacturers' preference.

Watts	Voltages	Cap	Dimensions m/m			Objective Life Hours
			Length	Diameter	L.C.L.	
CLASS B1. Burning Position—Any, except within 45° of Cap-up position						
250	115, 200/250	E.S. (E27/25)	125 ± 10	95 ± 2	75 ± 5	800
500	115, 200/250	G.E.S. (E40/45)	180 ± 10	130 ± 5	115 ± 5	800
1000	115, 200/250	Mog. Pref. (P40/41)	180 ± 10	130 ± 5	115 ± 5	800
CLASS E, Epidiascope. Burning Position—Cap down up to 45° from Vertical						
500	115, 200/250	Pref. (P28/25)	135 ± 10	100 ± 2	60 ± 0·5	100
500	115, 200/250	E.S. (E27/30)	135 ± 10	100 ± 2	85 ± 5	100
CLASS F, Micro-projection						
24	6	S.E.S. (E14/23 × 15)	60 ± 5	38 ± 2	50 ± 5	100
24	6	E.S. (E27/25)	57 ± 5	38 ± 2	47 ± 5	100
24	12	S.E.S. (E14/23 × 15)	60 ± 5	38 ± 2	50 ± 5	100
24	12	S.E.S. (E14/23 × 15)	60 ± 5	38 ± 2	41 ± 3	100
24	12	S.B.C. (B15d/24 × 18)	60 ± 5	38 ± 2	44 ± 5	100
30	6	E.S. (E27/35 × 30)	63 ± 5	35 ± 2	53 ± 5	25 or 200
30	6	S.E.S. (E14/23 × 15)	57 ± 5	35 ± 2	47 ± 5	25
48	6	S.B.C. (B15d/24 × 18) / S.E.S. (E14/23 × 15)	60 ± 5	35 ± 2	40 ± 3	100
48	12	S.B.C. (B15d/24 × 18) / S.E.S. (E14/23 × 15) / E.S. (E27/25)	70 ± 5	50 ± 2	40 ± 3	100
100	12	E.S. (E27/25) / Pref. (P28/25)	85 ± 5	60 ± 2	55 ± 5	100
CLASS G, Exciter—Must not be burned cap-up						
Amps						
0·2	7 (EL No. 1)	Prefocus (P15s/19)	57 ± 3	16 ± 1	28·5 ± 0·5	100
*0·75	4	Prefocus (P15s/19)	48 ± 3	25 ± 1	28·5 ± 0·5	50
0·75	4	B15s and liner	48 ± 3	15·5 ± 1	31·75 ± 0·75	50
1·0	6	S.C.C. (B15s/17)	40 ± 2	18 ± 1	21.5 ± 0·5	100
1·0	6	Prefocus (P15s/19)	57 ± 3	16 ± 1	28·5 ± 0·5	100
1·0	27	S.C.C. (B15s/21)	75 ± 3	25 ± 1	41 ± 1	100
4·0	8 (EL No. 2)	S.C.C. (B15s/21)	75 ± 3	25 ± 1	44 ± 1	100
4·0	8	Prefocus (P15s/19)	75 ± 3	25 ± 1	37·3 ± 0·5	100
5·0	10 (EL No. 5)	S.C.C. (B15s/21)	75 ± 3	25 ± 1	41 ± 1	100
5·0	10	Prefocus (P15s/19)	75 ± 3	25 ± 1	37·3 ± 0·5	100
5·0	10 (EL No. 6)	S.C.C. (B15s/21)	75 ± 3	25 ± 1	44 ± 1	100
6·0	4	S.C.C. (B15s/21)	49 ± 2·5	25 ± 1	31·5 ± 1	100
6·5	5	Prefocus (P15s/19)	75 ± 3	25 ± 1	41 ± 0·5	50
7·5	10 (EL No. 7)	S.C.C. (B15s/21)	75 ± 3	25 ± 1	41 ± 1	100
7·5	10	Prefocus (P15s/19)	75 ± 3	25 ± 1	37·3 ± 0·5	100
7 5	10 (EL No. 8)	S.C.C. (B15s/21)	75 ± 3	25 ± 1	44 ± 1	100

*Transverse or Vertical Filament.

SOUND RECORDER LAMPS

These lamps are specially designed for sound recording on motion picture film and are specially manufactured to close limits to ensure stable operation and efficiency.

Amps.	Volts	Bulb	Finish	Base	Type
7.8	10.5	T8	Clear	ASCC	Curved Filament
1	6	T5	,,	Spec. Pref.	Berndt-Bach
2.15	9	T5	,,	,, ,,	,, ,,
0.2	7	T5	,,	,, ,,	,, ,,

Below : Photo-Studio.
At right : Reflector Photographic.

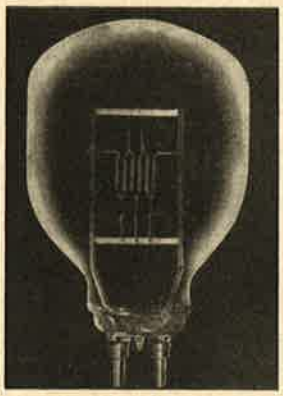
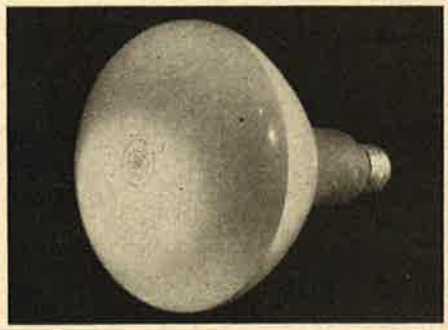


PHOTO-STUDIO LAMPS

Photo-Studio lamps are designed to produce the high levels of illumination necessary for film production, and the high actinic value of the light, is ideally suited for that purpose. The burning position should be stated when ordering photo-studio lamps.



Watts	Volts	Bulb	Base	Finish	Diameter	Overall Length	Service
150	115/250	PH212	ES	White	2.5/8″	4.15/16″	(100 hours) Enlarger
250	240/260	PS65	BC/ES	Pearl	2.5/8″	4.5/8″	(2 hours) Flood
500	240/260	R80	BC/ES	Pearl	3.1/8″	6.1/4″	(6 hours) Flood
500	240/260	R100	ES	Pearl	4″	7″	(100 hours) Flood
500	115	RFL2	ES	Reflector	5″	6.1/2″	(6 hours) Flood
500	115	RSP2	ES	Reflector	5″	6.1/2″	(6 hours) Spot
400	115/250	PS35	ES	Clear with frosted spot	4.3/4″	8.3/16″	(100 hours) Enlarger
1000	250	PS52	GES	Photo Blue	6.3/4″	13.1/16″	(100 hours) Colour Film
2000	240	R-150	GES	Clear	5.15/16″	8.13/16″	(100 hours) Spot
5000	110	R-200	Bipost	Clear	7.7/8″	11.5/8″	(100 hours) Flood

PHOTO-FLOOD LAMPS

Photo-flood lamps for use on standard lighting circuits give a large amount of light of high photographic efficiency. The colour quality is constant in value and is perfectly suited to the newer panchromatic films and plates.

Volts	Life (in hours)	Watts	Cap
240/260	2	250	B.C., E.S.
240/260	6	500	B.C., E.S.
240/260	100	500	E.S.

FLOODLIGHT AND LOCO. HEADLIGHT LAMPS

Mazda Class " B " floodlight lamps are robust in construction and are employed in projectors for floodlighting of buildings, hoardings, etc. They may also be used effectively for theatre and awning spotlighting where length of life and reliability are of chief importance. They can be used in any position except with cap uppermost at an angle of 45 deg. or less from the vertical. Average life is 800 hours.

Watts	Base	Description	Filament	Diam.	Light Centre Length	Overall Length	Volts
100	Medium	Loco. Headlight	C-5	3 1/8″	3″	4 3/4″	16
250	Medium	,, ,,	C-5A	3 1/8″	3″	4 3/4″	32
250	G.E.S.	Floodlight	—	3 1/2″	3″	4 3/4″	100/260
500	G.E.S.	,, ...	—	4 3/4″	4 1/4″	6 5/8″	100/260
1000	G.E.S.	,, ...	—	5″	4 1/4″	7 1/8″	100/260

PHOTOGRAPHIC LAMPS

XENON Flash Discharge Tubes—Type F.

Mazda Flash Discharge Tubes are intended to produce a flash of light of high intensity and short duration for either photographic or stroboscopic applications. The intensity of the flash and its duration may be controlled by varying the values of the components in the electrical circuit. The tubes may be flashed repeatedly for many thousands of times to give single flashes with relatively long intervening intervals for photographic purposes.

Type FA.1

A high-power flash tube for studio use. Provision is made to Incorporate a modelling lamp within the arc tube jacket.

Type FA.2

A flash tube of high output, used and specially suitable for studio and professional units.

Type FA.2S

Designed specifically for stroboscopic applications giving very stable operation with a high efficiency over a wide range of frequency.

Type FA.3

This has been a popular flash tube for those portable flash units whose operating voltage is high. It is likely to be replaced in popularity by the new FA.7, which has a higher maximum rating and a wider range of application.

Type FA.4

A circular type flash tube suitable for mounting round the camera lens or objective. For specialised photography such as in photographing deep cavities, etc.

Type FA.5

A compact source flash tube which may also be operated to give a steady source of light to enable an optical system to be adjusted. The tube will operate from a condenser discharge or alternatively it may be pulsed direct from the supply mains. It has many scientific applications.

Type FA.6

One of the most popular flash tubes ; it is widely used in many of the portable flash units today.

Type FA.7

This tube gives efficient light output over the range of 100-200 watt-seconds. It has a wide range of application and has been designed to replace the FA.3.

Type FA.8

A miniature flash tube designed for low-voltage operation. It weighs less than 0.7 oz.

Type FA.9

A tube suitable for the larger portable flash units. It has a high efficiency when operated at 100-200 watt-seconds.

Type FA.10

A U-shaped tube with pin terminals. A miniature flash tube designed for low-voltage operation.

PHOTOFLASH BULBS—Types SM, No. 5, No. 22.

Both the " SM " and " No. 5 " are designed to give adequate light for general indoor photography. Their bulbs are lacquered both internally and externally, but it is recommended that they should be used in conjunction with a simple transparent protective screen.

" Speed Midget "

Can be used with a simple pair of contacts which are closed immediately the blade or compur type shutter is released thus synchronizing with the peak intensity which occurs after 7 milliseconds. Cap is S.C.C. (B15s/21).

" No. 5 "

This lamp is designed to operate with conventional synchronisms adjusted so that the camera shutter is fully opened in 21 milliseconds which is the time taken for the lamp to reach peak intensity. Cap is S.C.C. (B15s/21).

" No. 22 "

It is larger than the others and is designed primarily for outdoor work or for use in very spacious halls. The " No. 22 " is convenient and reliable when used with a camera fitted with a synchronizer. Cap is E.S. (E27/25).

MAZDA XENON FLASH DISCHARGE TUBES

	FA.1	FA.2	FA.2S	FA.3	FA.4	FA.5	FA.6	FA.7	FA.8	FA.9	FA.10
Max. Rating (watt sec.)	1000	500	—	100	300	150	100	100–200	75	200	75–50
Operating Voltage (Max.)	2700	2700	2700	2700	2700	2000	1100	2700	500	1100	500
(Min.)	2000	2000	2000	2000	2000	1000	500	2000	250	500	250
Anode cathode breakdown voltage	3200	3200	3200	3200	3200	2500 Initial	1500	3200	1000	1500	1000
Rate of flash at maximum dissipation	1 in 10 sec.	1 in 10 sec.	300 per sec.	1 in 10 sec.	1 in 10 sec.	1 in 10 sec.	1 in 10 sec.	1 in 10 sec.	1 in 10 sec.	1 in 10 sec.	1 in 10 sec.
Approx. minimum Trigger voltage (kV)	8	8	8	3	3	10	3	3	4.5	3.5	4.5
Average tube life (flashes)	10,000	10,000	100 hrs.	10,000	10,000	5,000	10,000	10,000	10,000	10,000	10,000
Cap	3-pin special	3-pin 5 amp	3-pin 5 amp	UX 4-pin	flexible leads	0.359″ diam. ferrules	UX 4-pin	UX 4-pin	International Octal	UX 4-pin	2-pin 2 amp
Overall length	150 ± 7	90 ± 5	90 ± 5	80 ± 2	Circular. Internal diam. of circle 70 ± 2	148 ± 4	70 ± 2	80 ± 2	55 ± 2	80 ± 2	46 Max.
Diam. of glass envelope (frosted) (mm.)	64 ± 4	46 ± 2	46 ± 2	31 ± 2	—	30 ± 2 arc tube clear	31 ± 2	31 ± 2	25 ± 1	31 ± 1	19 Max.
Approx. light centre length from base of cap (mm.)	89 ± 5	55 ± 5	55 ± 5	48 ± 5	—	Arc gap length 4.5–5.5	42 ± 3	48 ± 5	34 ± 3	48 ± 3	34 ± 3
Mean power when used for stroboscopic purposes (watts)	80	40	40	—	—	100	—	—	—	—	—
Capacity (mfd)	320	160	—	32	96	—	200	64	600	400	600
At normal voltage of	2500	2500	—	2500	2500	—	1000	2500	500	1000	500

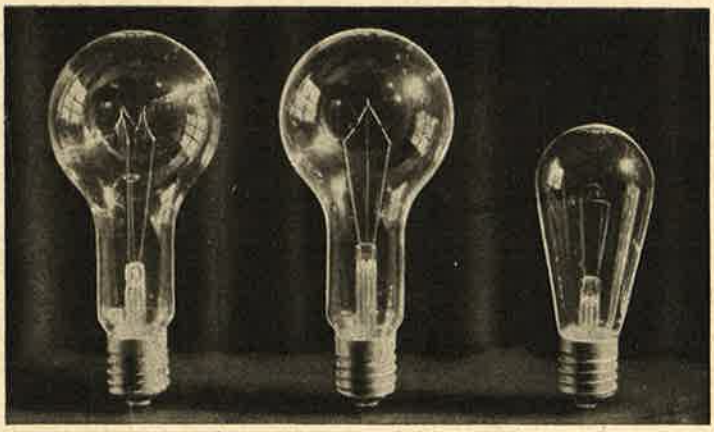
MAZDA PHOTOFLASH BULBS

Type SM, No. 5, No. 22

TIME-LIGHT INTENSITY

Objective	SM	No. 5	No. 22
Peak Lumens	850,000	1,500,000	5,000,000
Time to peak	8 m. sec.	21 m. sec.	25 m. sec.
Duration at ½ peak	4.5 m. sec.	12 m. sec.	14 m. sec.
Total Lumen Sec.	4500	18,000	75,000
Colour Temperature	3300°K	3800°K	3800°K

STREET SERIES — Gasfilled G.E.S.



Mazda street series lamps are designed to meet the special requirements of street lighting service. Filaments are formed to produce a favourable light distribution. The Goliath E.S. base is applied in the interest of strength to the smaller as well as the larger lamps. With operation at constant current, bulb blackening is compensated for by a slow increase in wattage and filament temperature, hence the light is maintained throughout life at a high percentage of initial value.

Nominal Candle Power	Lumens	Amps.	Average Volts	Standard Packages
50	500	6·6	5·7	32
60	600	,,	6·7	32
80	800	,,	8·5	32
100	1000	,,	10·5	32
250	2500	,,	22·3	18
400	4000	,,	34·0	18
600	6000	,,	50·5	18
1000	10000	,,	84·2	9
1000	10000	20	25·9	9
1500	15000	,,	37·5	9
2500	25000	,,	60·6	4

Fig. 1.

Fig. 2.

ROUGH SERVICE & CARBON LAMPS

Fig. 1 : Rough service lamps have a filament designed for service where vibration and mechanical shock is excessive, as in hand lamps, or machine shops.

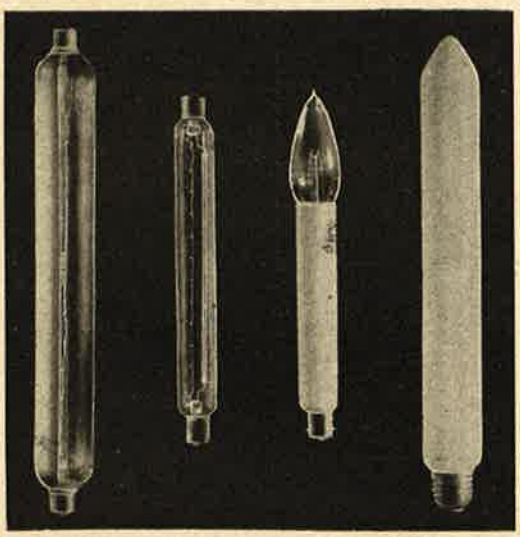
Their use is not recommended for general lighting service, as their efficiency is not as high as that of the corresponding vacuum or gasfilled lamp.

Vacuum BC or ES cap in 25, 40 and 60 Watt, 20/260 Volts.

Fig. 2 : The B.T.H. carbon lamp occupies a premier position among carbon lamps and is a recognised standard of quality. They may be used where a robust lamp is required and where efficiency is of secondary importance.

CARBON FILAMENT—Vacuum, BC or ES. 8, 16, 32, and 50C.P. 100/260 volts.

TUBULAR LAMPS



TUBULAR, SINGLE-ENDED Vacuum B.C./E.S./S.B.C.

25 watt	7/8 in. dia.	2.1/2 in. length	....	240/260V.
25 watt	1.1/8 in. dia.	3.3/4 in. length	....	25/260V.
40 watt	1 in. dia.	5.7/8 in. length	....	25/260V.

TUBULAR, DOUBLE-ENDED
Vacuum S.C.C. or clip contact

30 watt	1 in dia.	8 in. length	....	100/260V.
30 watt	1 in. dia.	11.3/16 in. length	....	100/260V.
60 watt	1 in. dia.	11.3/16 in. length	....	100/260V.
60 watt	*1.1/2 in. dia.	12 in. length	....	200/260V.

*Half Silvered or Clear.

HUNTALITE, Vacuum

25 watt	100/250 volts	....	B.C.-S.B.C.
40 watt	100/250 volts	....	B.C.-S.B.C.

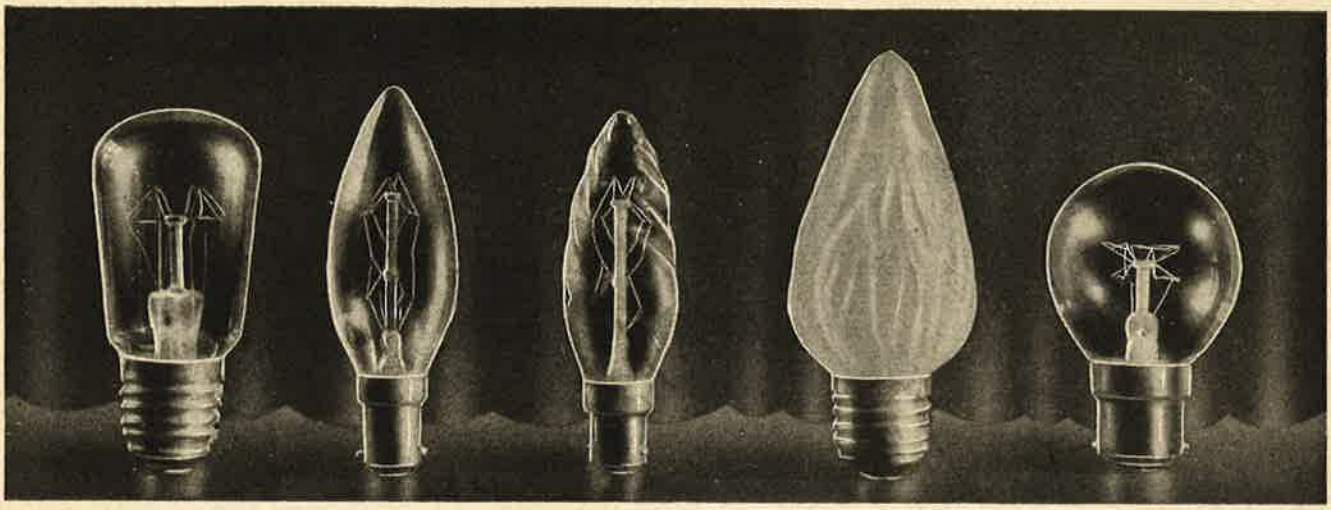
LONGLITE, Gasfilled, Opal

40 and 60 watts	B.C./E.S.	....	100/250V.

Single-ended (Tubular) and double-ended (Striplite) lamps are used when it is desirable to conceal the light source in small spaces, such as in show cases, illumination of pictures, etc.

The Mazda Longlite lamp has wide application for modern decorative brackets and luminaires. The lamp itself can be made the feature in whatever type of fitting it is used.

MISCELLANEOUS



SIGN, Vacuum

5 Watt, 11 volts.
10 Watt, 100/165 volts.
15 Watt, 100/260 volts.
25 Watt, 100/260 volts.

Clear, daylight or colour sprayed. BC/ES.

PLAIN CANDLE
Vacuum

25 Watt. Clear, pearl or colour sprayed. SBC or Cand. ES. 25/260 volts.

TWISTED CANDLE
Vacuum

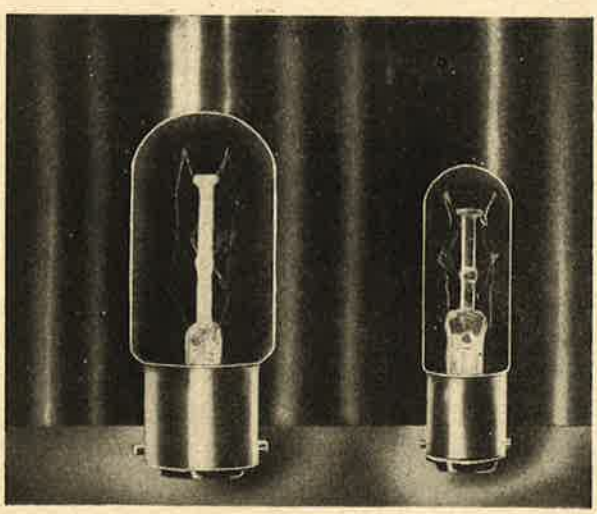
25 Watt. Clear, pearl or colour sprayed. SBC or Cand. ES. 25/260 volts.

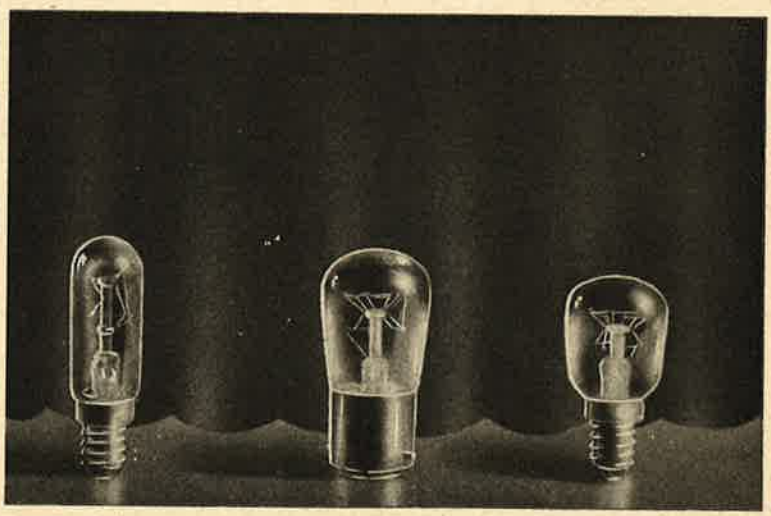
TORCH CANDLE
Vacuum

25 Watt and 40 Watt. Pearl or colour sprayed. BC/ES. 25/260 volts.

FANCY ROUND
Vacuum

25 Watt and 40 Watt. Clear or pearl. BC or E.S. 100/260 volts.





BC TUBULAR DECORATIVE

25 Watt. BC/ES/CES/SES/SBC. 25/260 volts.

SEWING MACHINE

25 Watt. SBC 100/130, 200/250 volts. Clear or Pearl.

SWITCHBOARD
Vacuum

15 Watt. Clear. Cand. ES. 25/60, 100/260 volts.

NORMAL PILOT

15 Watt. Clear or sprayed. BC/ES/SBC or Cand. ES. 20/260 volts.

FLUSH PILOT
Vacuum

15 Watt. Clear. Cand. ES/SBC/SES/BC/ES. 20/260 volts.

FLASHLIGHT LAMPS

Mazda Torch lamps owe their extreme popularity for spotlights to their extreme accuracy of filament mounting and positioning—this is always microscopically correct. Light output is approximately 11·95 lumens per watt for the non-focussing type and 10·63 lumens for the focussing type, which means that the efficiency is very close to that of an ordinary 60-watt gasfilled lamp.

Amps	Volts	No.	Cap	Type
·22	1·1	112	Min. E.S.	TL-3 Lens top
·3	1·2	123	,,	G-3½ Non-focussing
·25	2·2	222	,,	TL-3 Lens top
·5	2·4	PR-2	Prefocus	B-3½ Focussing
·3	2·4	PR-5	,,	B-3½ Focussing
·3	2·5	14	Min E.S.	G-3½ Focussing
·3	2·5	PR-6	Prefocus	B-3½ Focussing
·3	3·8	PR-7	Prefocus	B-3½ Focussing
·3	3·8	13	Min. E.S.	G-3½ Focussing
·5	3·6	PR-3	Prefocus	B-3½ Focussing
·3	4·5	—	Min. E.S.	15M/M Focussing
·15	5·1	502	,,	G-4½ Focussing
·3	6·2	31	,,	G-4½ Focussing

RADIO PANEL LAMPS

Small lamps of exceptionally low current consumption designed for the dial illumination of radio sets.

Amps	Volts	No.	Cap	Type
·06	2	48	Min. ES	T3¼ Radio Panel
·06	2	49	M.C.C.	,, ,, ,,
·25	2	—	Min. ES	,, ,, ,,
·06	2·5	—	,,	,, ,, ,,
·15	2·5	—	,,	,, ,, ,,
·15	2·5	—	M.C.C.	,, ,, ,,
·5	2·5	41	Min. ES	,, ,, ,,
·35	3·2	42	,,	,, ,, ,,
·15	6·3	40	,,	,, ,, ,,
·25	6·3	46	,,	,, ,, ,,
·25	6·3	44	M.C.C.	,, ,, ,,
·3	6·5	—	M.E.S.	,, ,, ,,

TELEPHONE BATTERY LAMPS

Amps.	Volts	No.	Cap	Type
·035/·045	6	T-2	902	Telephone Indicator
·09/·11	12	T-2	902	,,
	12	T-4	No. 4	,,
	24	T-4	No. 4	,,
·032/·038	24	T-2	902	,,
·035/·045	24	T-2	902	,,
·035/·045	36	T-2	902	,,
·035/·045	50	T-2	902	,,

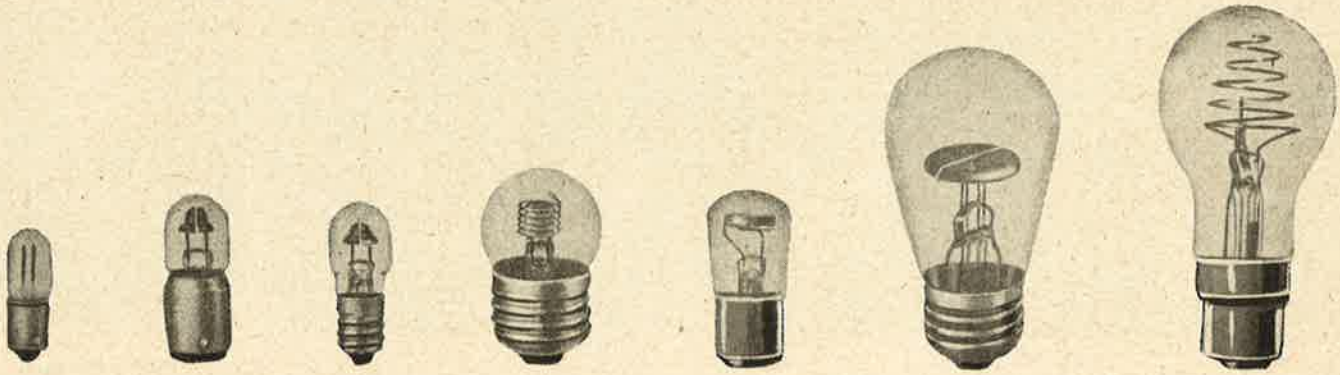
INDICATOR LAMPS

Watts	Amps	Volts	No.	Base	Type
—	·2	6/8	50	Min. ES.	Advt. Sign
6	—	6/8	28M/M	Cand. ES.	Spherical
—	·091	12	15M/M	Min. ES.	Indicator
2·2	—	12	15M/M	,, ,,	,,
—	·1	12	12M/M	,, ,,	,,
3	—	16/20	15M/M	,, ,,	,,
3	—	16/18	15M/M Flat	,, ,,	,,
2	—	18	—	Cand. ES	,,
—	·15	14	No. 1481 T. 3¼	Min. ES	Pin Game
—	·17	16	No. 1475 T. 3¼	,, ,,	Lift Indicator
6	—	115	6S6	C.E.S.	Indicator
10	—	130	ST-19	C.E.S.	,,

LAMP DIP

This special lamp dip is used for colouring lamps for signwork and decorative purposes. In Ruby, Blue, Amber or Green. 1 pint bottles.

NEON AND ARGON GLOW LAMPS



NE51 NE48 NE45 NE30 Australian Neon BC AR-1 U.K. Neon Night Light

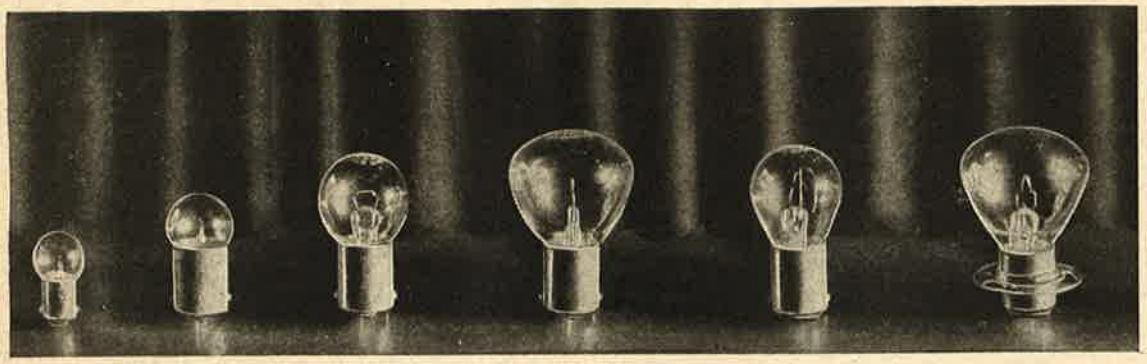
Glow lamps emit light through the agency of electrically excited rare gases. Having no filament they produce little heat, and are not seriously affected by vibration. They are extensively used for pilots, signals, etc., about the home and their use as stroboscopic illumination in laboratories is well-known. Their use in radio as volume level indicators, oscillators, voltage regulators, etc., is gaining a wide reputation for efficiency and economy.
Argon glow lamps are useful where small quantities of Ultra-violet are required.

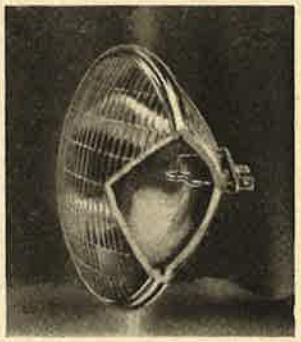
Watts	Volts	Bulb	Base	Approx. Start Volts	Series Resistance, ohms	Lamp No.
1/25	105-125	T-2	Unbased	65AC 90DC	200,000 EX.	NE-2
1/25	105-125	T-3¼	Min Bay	65AC 90DC	200,000 EX.	NE-51
1/4	105-125	T-4½	S.B.C.	65AC 90DC	30,000 EX.	NE-48
1/4	105-125	T-4½	Cand. Screw	65AC 90DC	30,000 IN.	NE-45
1/4	—	T-4½	DC Bay	JAN-1-A	—	NE-16
1/2	210-250	T-4½	Cand. Screw	65AC 90DC	100,000 IN.	NE-58
1	105-125	G-10	E-S	60AC 85DC	4,800 IN.	NE-30
2	105-125	S-14	E-S	60AC 85DC	3,500 IN.	NE-34
1/2	240-250	S-29	BC/ES	—	—	AUST.
5	240-250	PS-55	BC	—	—	U.K.
2½	105-125	S-14	ES	65AC 90DC	2,650 IN.	AR-1

If required, glow lamps may be used on higher voltages, if external resistors are used. Such resistors should be able to dissipate several times the nominal lamp watts, and be suitable for the voltage used. Resistance values in ohms are as below.

Lamp Number	150/300 V	300/375 V	375/450 V	450/600 V
NE-2	750,000	1,000,000	1,200,000	1,600,000
NE-51	750,000	1,000,000	1,200,000	1,600,000
NE-45	82,000	120,000	150,000	200,000
NE-30	13,000	18,000	24,000	33,000
NE-34	9,100	13,000	16,000	22,000
AR-1	6,000	—	—	—

MAZDA AUTOMOBILE LAMPS — Gasfilled





Auto Indicator | 3 c.p. | 15 c.p. | 32 c.p. | 21/3 c.p. | 32/33 c.p. Prefocus. | 4032 Sealed beam.

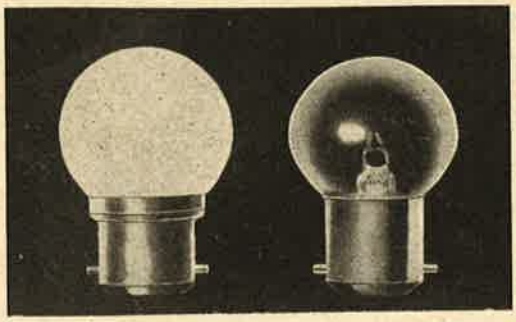
FOR BRITISH AUTOMOBILES

Volts	Watts	Cap	Type
6	24 or 36	SBC	HEADLIGHTS Single Filament
6	24 or 36	SCC	
12	24 or 36	SBC	
12	24 or 36	SCC	
12	48	SBC	
12	48	SCC	
12	60	SBC	
12	60	SCC	
24	48	SBC	
24	48	SCC	
24	60	SBC	
24	60	SCC	
6	24/24	SBC	HEADLIGHTS Double Filament
12	36/36	SBC	
6	36/36	Lucas Pref	
12	42/36	Lucas Pref	
6	24/24	Bosch DC	
12	36/36	Bosch DC	
12	44/38	Lucas Pref	
12	48/48	Lucas Pref	
24	38/38	Lucas Pref	
24	44/38	Lucas Pref	
12	36/36	3 pin BC	
6	3 or 6	SBC	SIDE and TAIL
6	3 or 6	SCC	
12	4 or 6	SBC	
12	4 or 6	SCC	
12	6	MCC	
6	12 or 18	SBC	STOPLIGHTS Single Filament
6	12 or 18	SCC	
12	12 or 18	SBC	
12	12 or 18	SCC	
6	18/3	SBC	STOPLIGHTS Double Filament
6	18/3	SBC Index	
12	18/6	SBC Index	
12	24/6	SBC	
12	24/6	SBC Index	
6	1·8	MCC	INDICATORS
6	1·8	MES	
6	3	MCC	
6	3	MES	
12	2·2	MCC	
12	2·2	MES	
6	3	MCC	
16	3	MES	
6	3	Festoon (35·5)	TRAFFICATORS
12	3	Festoon ,,	
6	6	Festoon (38)	
12	6	Festoon ,,	
6	6	Festoon (44)	
12	6	Festoon ,,	

The full description of the caps for which abbreviations are shown are as follows :—
MCC—Miniature Centre Contact.
MES—Miniature Edison Screw.
SBC—Small Bayonet Cap.
ASBC—American Small Bayonet Cap.
SCC—Small Centre Contact.
ASCC—American Small Centre Contact.
SBC Index—Small Bayonet Cap with staggered pins.
ASBC Index—American Small Bayonet Cap with staggered pins.
DC Bosch—Double Contact Bosch.
Lucas Pref.—Lucas Prefocus.
SC Pref.—Single Contact Prefocus.
DC Pref.—Double Contact Prefocus.

FOR AMERICAN AUTOMOBILES

Volts	C.P.	Cap	Lamp No.	Type
6/8	32	ASCC	1133	HEADLIGHTS Single Filament
6/8	32	ASBC	1134	
12/16	32	ASCC	1143	
12/16	32	ASBC	1144	
6/8	32	Pref SC	1323	
12/16	32	Pref SC	1327	
6/8	50	ASCC	1183	
6/8	50	ASBC	1184	
12/16	50	ASCC	1195	
12/16	50	ASBC	1196	
6/8	50	Pref SC	1503	
6/8	21/21	ASBC	1110	HEADLIGHTS Double Filament
12/16	21/21	ASBC	1120	
6/8	32/6	ASBC	1172	
6/8	32/21	ASBC	1116	
6/8	32/21	Pref DC	2320	
6/8	32/32	Pref DC	2330	
6/8	32/32	Pref DC	2331	
12/16	32/32	Pref DC	2336	
6/8	32/32	ASBC	1000	
12/16	32/32	ASBC	1124	
6/8	50/21	Pref DC	2520	
12/16	50/21	Pref DC	2526	
6/8	50/32	Pref DC	2530	
12/16	50/32	Pref DC	2536	
6/8	50/50	Pref DC	2550	
6/8	50/50	ASBC	1288	
12/16	50/50	Pref DC	2556	
6/8	45/35	3	4030	HEADLIGHTS Sealed Beam
6/8	45/35	cont.	4032	
12/16	50/40	lugs	4430	
6/8	3	ASCC	63	SIDE and TAIL
6/8	3	ASBC	64	
12/16	3	ASCC	67	
12/16	3	ASBC	68	
6/8	6	ASCC	81	
6/8	6	ASBC	82	
12/16	6	ASCC	89	
12/16	6	ASBC	90	
6/8	15	ASCC	87	STOPLIGHTS Single Filament
6/8	15	ASBC	88	
12/16	15	ASCC	93	
12/16	15	ASBC	94	
6/8	21	ASCC	1129	
6/8	21	ASBC	1130	
12/16	21	ASCC	1141	
12/16	21	ASBC	1142	
6/8	21/3	Index	1154	STOPLIGHTS Double Filament
6/8	21/3	ASBC	1158	
12/16	21/6	ASBC	1176	
6/8	1	MCC	51	INDICATORS
6/8	2	MCC	55	
12/16	1	MCC	53	
12/16	2·4W	MCC	1447	
12/16	2·4W	MES	1446	
6/8	25	With screw terms	4510	SPOT-FOG Sealed Beam
6/8	30		4516	
6/8	30		4535	
6/8	35		4013	
6/8	35		4015A	
6/8	35		4012	
6/8	35		4012A	
12/16	35		4412	
12/16	35		4412A	
12/16	30		4435	



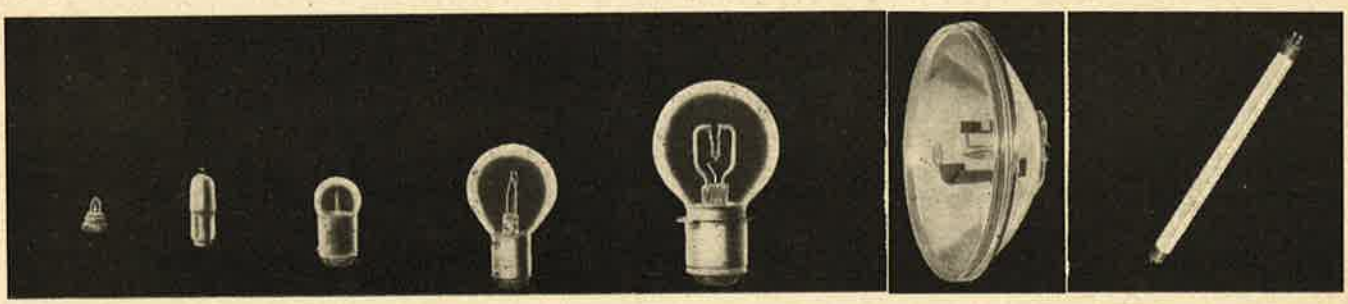
MAZDA BUS LAMPS — GASFILLED

Mazda Bus Lamps are sturdily constructed to give reliable service, under any road conditions. Their high light output is maintained throughout their life.

Watts	Volts	Cap	Bulb	Finish	Service
6	12	DE Festoon	*11 x 44 M/M	Clear	Trafficator
12	12	B.C.	R-38	Pearl	Interior
24	13.5	B.C.	R-38	Clear	Headlight
36	13.5	B.C.	R-38	Clear	Headlight
6	24	DE Festoon	*11 x 44 M/M	Clear	Trafficator
6	24	S.B.C.	R-19	Clear	Tail-light
12	24	B.C.	R-38	Pearl	Interior
36	24	B.C.	R-38	Clear	Headlight
6	32	S.B.C.	R-19	Clear	Generator Indicator

* Can also be supplied in 11 x 38 M/M.

AIRCRAFT LAMPS



Dependable performance, so essential to air safety, is assured by exacting manufacturing processes and frequent tests. Filaments are accurately positioned, and the quality of these aircraft lamps is acknowledged by all aircraft control bodies.

Watts, amps or c.p.	Volts	Cap	Bulb	Finish	Cat. No.	Service
·19 amp	3	953	T1.1/4	Clear	323	Instrument
·33 amp	13	Min. Bay	T3.1/4	Clear	1816	Instrument
3·0 watt	12/16	DC Index	RP-12	Ultra-Violet	F3RP12/360BL	Cockpit U.V.
·15 amp	14	Min. ES	T3.1/4	Clear	1418	Instrument
240 watt	12	Med. Pref.	A-19	Clear	240A 19	Landing
420 watt	12	Mog. Pref.	G-25	Clear	420G-25P	Landing
6 c.p.	28	ASCC or ASBC	G-6	Clear	303-304	Cabin
15 c.p.	28	ASCC or ASBC	S-8	Clear	305-306	Cabin
21 c.p.	28	ASCC or ASBC	S-8	Clear	307-308	Cabin
21 c.p.	28	ASCC or ASBC	S-8	Red	307R-308R	Indicator
32 c.p.	28	ASCC or ASBC	S-11	Clear	309-310	Indicator
32 c.p.	28	ASCC or ASBC	S-11	Red	309R-310R	Indicator
32 c.p.	28	ASCC or ASBC	S-11	Silvered	309SB-310SB	Indicator
·17 amp	24/28	Min. Bay	T-3.1/4	Clear	1818	Instrument
·17 amp	24/28	Min. Bay	T-3.1/4	Clear	313	Instrument
240 watt	24	Med. Pref.	A-19	Clear	240A 19	Landing
420 watt	24	Mog. Pref.	G-25	Clear	420G 25	Landing
600 watt	24/28	Screw Term.	PAR-64	Clear	4560	Landing Sealed Beam
6 watt	—	Min. Bipin	T-5	360BL	6T5/360BL	Instrument U.V.
4.0 watt	24/28	DC Index	RP 12	Ultra-Violet	F 5000	Instrument U.V.
·4 amp	6·5	MCC	T-3.1/4	Clear	1811	—
·55 amp	22·0	MCC	G-5.1/2	Half Frosted	480	Gunsight
5·3 amp	26·0	Screw Term.	PAR-46	Clear	4521	Signal Flash
2·7 amp	26·0	ASCC	RP 11	Clear	1047	Recognition
·035 amp	28·0	MCC	T-3.1/4	Clear	1819	Telltale
3 c.p.	28·0	ASCC	G-5	Clear	301	Instrument
3 c.p.	28·0	ASBC	G-5	Clear	302	Instrument
24 c.p.	24/28	S.C. Index	GG-10	Clear	1524	Position
20 watt	28	S.C. Bay	R-12	Clear	1385	—
250 watt	28	Screw Term.	PAR-46	Clear	4523	Landing
5·3 amp	26	Screw Term.	PAR-36	Clear	4501	Signal

MAZDA MERCURY ELECTRIC DISCHARGE LAMPS

(A.C. ONLY)

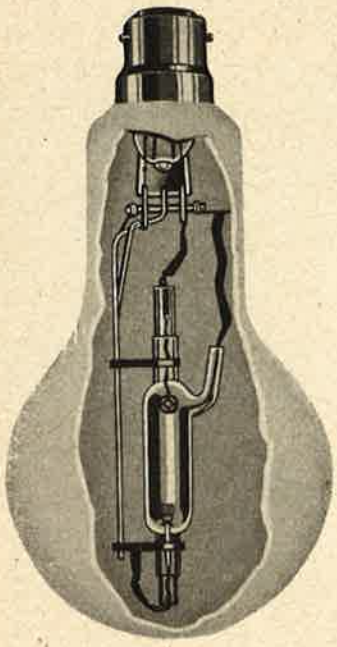


Fig. 1. 80 watt type M.B. Lamp with frosted bulb broken away to show the internal construction.

125 and 80 Watt Sizes — type MB

These 80 watt and 125 watt mercury vapour lamps have been designed to secure high efficiency, combined with compact size, and resemble in general shape and size, the incandescent filament lamps of normal practice.

The lamp consists of two envelopes, the inner one of which is made of a special grade of transparent quartz. This material withstands adequately the high temperature of the arc light source, which is highly concentrated. The arc passes between two special activated electrodes, one of which is associated with an auxiliary electrode, in order to ensure reliable starting on all ordinary mains voltages. Whilst the characteristics of the lamps are, in general, similar to those of the higher wattage mercury vapour lamps, both the running-up time and the cooling time are less.

These lamps can be used at any angle, and may be burned horizontally if required.

It is necessary to operate these lamps on alternating current with correctly designed chokes, and if desired, capacitors can be used to improve the power factor.

The lamps are capped with a special three-pin bayonet cap, similar to the normal bayonet cap, except that a third pin prevents the lamp being accidentally fitted into sockets which are wired up without a series choke such as the standard two-pin bayonet socket.

The smaller bulbs of these lamps make it possible for them to be used in lighting fittings designed for 150/200 watt standard gasfilled lamps, provided of course that the lamp holders are changed to three-pin type and chokes are used.

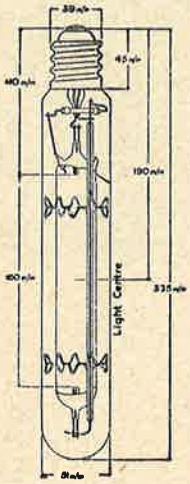


Fig. 2. Dimensions of type M.A. 400 watt lamp.

400 and 250 Watt Sizes — type MA

These mercury vapour electric discharge lamps have many applications and are particularly suitable for street lighting, floodlighting, and industrial lighting.

The lamp has two glass envelopes, the space between these being for heat retention purposes. The electrodes, which require no separate heating transformers, are mounted one at each end of the inner tube and each contains a pellet core which gives a high electronic emission when incandescent. A third electrode situated close to one of the main electrodes and connected to the other through a series resistance, initiates conduction at starting.

When the lamp is switched on, conduction takes place through argon at low pressure which is present in the arc tube for starting purposes. Initially the potential drop across the lamp is very low and that across the series-connected choke approaches full mains voltage. Immediately vaporization of the mercury increases, and with the rise of vapour pressure the lamp voltage rises, and the voltage across the choke falls pro rata. When the mercury is completely vaporized the lamp voltage becomes constant and varies only with transient fluctuations of supply voltage. The current passed through the lamp is dependent on the choke and thus the lamp current consumption is dependent on both lamp and choke characteristics. In order to ensure that the lamps operate at their rated wattages it is only necessary to see that the voltage marked on the lamp and the choke tappings in use, correspond to the particular supply voltage.

These lamps should be operated in a vertical position. If specially ordered they may be supplied for horizontal operation.

Watts	Type	Cap	Approximate Dimensions				A.C. Voltages	Initial Light Output Lumens.
			Diameter m/m.	Length m/m.	Light Centre Length m/m.	Arc Length m/m.		
80	MB	3-Pin B.C.	80	160	113		200/210 220/230	2880
125	MB	B22/31 x 30	90	178	128		240/250	5125
250	MA	G.E.S. (E. 40/45)	51	290	170	120	200/210, 220/230 240/250	8750
400	MA	G.E.S. (E. 40/45)	51	330	190	160	200/210, 220/230 240/250	16800

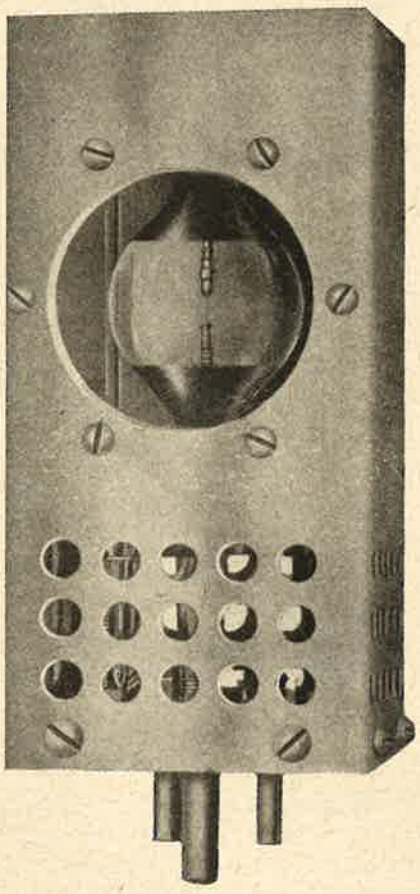
IMPORTANT NOTE: Mazda Electric Discharge Lamps are made to operate only with approved auxiliary gear.

MAZDA ELECTRIC DISCHARGE LAMP

BOX TYPE ME 250 w./50/5

with variants in clear glass outer envelopes

THE Type ME high-pressure mercury vapour lamp consists of a quartz bulb containing two tungsten electrodes, between which an arc of high brightness burns steadily. The quartz bulb is mounted in a rectangular metal box having a glass window in the front, through which the light emerges. The contact pins on the bottom of the box fit a standard 5 amp., 3-pin socket.



VARIANTS WITH CLEAR GLASS OUTER ENVELOPES.

Where this lamp can be operated in a separate protective housing to screen off ultra-violet radiation, two variants, in clear-glass outer envelopes, are also available. One lamp is fitted with a 3-pin base, similar to that fitted to the Box type lamp and the other is fitted with a Mogul Prefocus base. The light centre length of the lamp with glass envelope and 3-pin base is the same as that of the Box type lamp namely 80 mm., and the light centre length of the lamp with glass envelope and Mogul Prefocus base is 65 mm. Dimensioned outlines of the three variants of this lamp appear on page 80. Since the arc tube is identical in each type, the electrical characteristics are also the same.

CHARACTERISTICS AND APPLICATIONS.

The leading characteristics of this lamp are as follows : The small concentrated source burns steadily with a high brightness. The radiation has a high actinic value and the lamp operates with little deterioration of light output throughout its long life. It may be possible to dispense with the lamphouse when the lamp is used in optical instruments, thus enabling a more compact arrangement to be obtained.

The lamp is suitable for a number of applications, among which may be mentioned the following :—

1. *In optical instruments such as projection microscopes for visual examination, gear profile projectors, and similar instruments.*
2. *In projection microscopes for micro-photography.*
3. *In film printers.*
4. *In lantern slide or film projectors for monochrome film. It is not recommended for use with colour films.*
5. *As a light source for examining polished metal or glass surfaces. Small flaws or defects in the surface may be observed by reflection of the light from this lamp from the surface to be tested, or by observation of the shadow of the transparent object cast upon a screen.*

OPERATING DATA.

The chief electrical and optical characteristics of the lamp are shown in the table on page 15. No mention has been made of lumen output since the brightness of the source is the most important characteristic when the lamp is used for projection.

The lamp is intended for operating from A.C. mains of 200 to 250 volts. In this case an A.G.E. Type MRA 246 choke should be connected in series with it. If desired, power factor correction may be obtained by a suitable condenser connected across the supply.

The lamp may also be operated on D.C. mains, but a special device to strike the arc may be necessary. A suitable ballast resistance must be used in series with the lamp, and the lamp must be connected with the polarity shown on the diagram of the base.

SPECIAL MERCURY DISCHARGE LAMPS

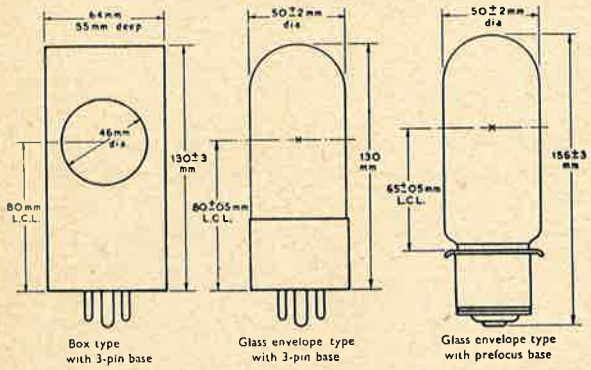
The tables given below show comparative brightness values of various types of lamps, including high pressure mercury vapour lamps which have been used for projection purposes. From these tables it is clear that the 250 watt type ME box lamp may be employed in place of the low intensity carbon arc.

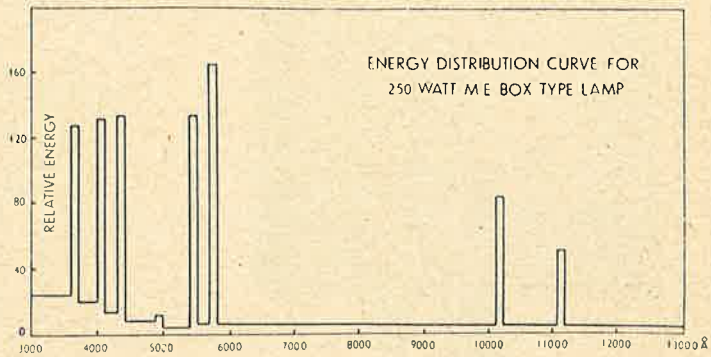
BRIGHTNESS DATA OF VARIOUS LIGHT SOURCES FOR PROJECTION.

Type of Lamp				Approximate Brightness Candles per sq. cm.
General Service Tungsten Filament Lamp				500—1000
Tungsten Filament Projector Lamp				1000—3000
Pointolite				1000—3000
Low Intensity Carbon Arc				10,000—25,000
High Intensity Carbon Arc				30,000—100,000
ELECTRIC DISCHARGE LAMPS.*				
			Size of source	
Type MA	400	watts	1360 mm. × 7 mm.	150
,, MB	125	,,	0 mm. × 2 mm.	800
,, **ME/D Box 250**	**,,**		**3.75 mm. × 1.5 mm.**	**18,000**
,, ME	500	,,	5 mm. × 2 mm.	20,000
,, MD/H	1000	,,	25 mm. × 0.9 mm.	30,000

*From "Characteristics of Electric Discharge Lamps for Projection," B.K.S. Journal, January, 1941.

APPROXIMATE DIMENSIONS.





When ordering always specify the supply voltage.

LAMP CHARACTERISTICS.

Lamp Wattage	Supply Voltage	Source Size		Maximum brightness	Average life	Lamp voltage	Lamp Current		Approx. Total Power Consumption watts.
		Effective width mm.	Arc length mm.	Candles per sq. cm.	hours		Starting amps.	Running amps.	
250	200–250	1·5	3·75	18,000	500	60–75	4–5	3·7–4·6	285

MAZDA MERCURY ELECTRIC DISCHARGE FLUORESCENT LAMPS — (A.C. ONLY)

The light from the ordinary Mercury Discharge Lamp, because of the small emission of red light, has a distorting effect upon the colour of some objects. It is impossible, for instance, to distinguish between reds and various shades of brown. The Mazda Electric Discharge Fluorescent Lamp has been developed to meet requirements where some degree of colour rendering is of importance.

The mercury vapour discharge tube is mounted in an enlarged outer jacket, the inner surface of which is coated with a powder which fluoresces strongly under the ultra-violet radiation from the inner lamp. This fluorescent radiation provides colour correction, building up the spectrum by adding red light. Some blue light is obtained from suitable additions to the discharge.

While the degree of colour correction does not render the light emitted from the lamp equivalent to daylight, it is nevertheless much more pleasing than uncorrected mercury light. The appearance of the face and hands, and the colours of dresses, are improved ; moreover it is possible to distinguish practically all colours, although not with sufficient accuracy to render the lamp suitable for colour matching. These lamps are particularly suitable for street and industrial lighting and in these spheres should find many applications.

The degree of colour correction, as compared with the corresponding standard lamps, which is achieved by the lamps covered by this List, is obtained by utilizing the otherwise wasted ultra-violet rays emitted by the inner discharge tube. These rays excite a special highly fluorescent powder coating sprayed internally on the outer bulb, and are transformed by this powder to rays of visible light of the frequencies, or colours, especially red and middle blue, otherwise deficient in the mercury spectrum.

Since fluorescent powder shows a decrease in efficiency during life if operated at too high a temperature, the outer envelope is, as in the case of the 400 watt range, made rather larger than in the case of the non-colour modified lamp, in order to keep the powder coating at a sufficiently low temperature.

125 *watt "M.E.D." Fluorescent lamp.*

The inner discharge tube being the same, the electrical characteristics of these lamps are identical to those of the non-colour modified lamps, in that they require to be operated on alternating current with a standard choke which limits the current taken from the mains. In addition, a condenser for power factor correction is usually desirable. The electrodes, which require no separate heating transformers, are mounted one at each end of the inner tube and are heavily coated to give a high electronic emission when incandescent. A third electrode situated close to one of the main electrodes and connected to the other through a series resistance serves to stimulate conduction at starting.

80w. and 125w. lamps can be used at any angle, and may be burned horizontally if required. 400w. lamps should be operated in a vertical position with the cap at the top.

These lamps require chokes and capacitors similar to those used for standard Electric Discharge Lamps of corresponding ratings. They may be used at any angle.

Watts	Type	Cap	Approximate Dimensions			A. C. Voltage	Initial Light Output
			Overall Diameter m/m	Overall Length m/m	Light Centre Length† m/m		Lumens
80	MBF	3-pin B.C. (B.22/31×30)	110	178	123	200/250	3040
125	MBF	G.E.S. (E.40/45)	130	233	167	200/250	5250
400 (Iso-Thermal Bulb)	MAF	G.E.S. (E.40/45)	165	330	195	200/250	15200

†From contact plate of cap to centre of bulb.

IMPORTANT NOTE : Mazda Electric Discharge Lamps are made to operate only with approved auxiliary gear.

MAZDA ELECTRIC DISCHARGE ULTRA-VIOLET (BLACK LIGHT) LAMPS (A.C. ONLY)

TYPE MBW/U

GENERAL.

This special lamp of the well-known Mazda range, has been developed as a highly efficient source of near ultra-violet radiation with a minimum of visible light. The near ultra-violet radiation, lying only just beyond the violet end of the visible spectrum, does not cause sunburning, but has many interesting properties.

The most important of these is its power to excite fluorescence and phosphorescence in many substances.

Where identification is almost impossible in visible light, many substances can be easily identified by means of such fluorescence. Stains on fabrics often become strikingly evident under this radiation and it is also possible to distinguish between apparently similar materials such as natural and artificial gems.

LAMP CHARACTERISTICS.

The lamp is a mercury vapour electric discharge lamp and with the exception of the outer envelope, is similar to the ordinary Mazda electric discharge lamp.

The lamp consists of two envelopes, the outer one being made of Ultra-Violet filter glass, which cuts off the visible light emission almost completely. The inner one is of a special grade of transparent quartz. This material withstands adequately the high temperature of the arc light source, which is highly concentrated. The arc passes between two special activated electrodes, one of which is associated with an auxiliary electrode, in order to ensure reliable starting on mains voltages of 200/250 volts.

The lamp can be used at any angle.

As with other Mazda electric discharge lamps it is necessary to operate this lamp on alternating current with a correctly designed choke, and, if desired, a condenser can be used to improve the power factor.

The lamp is capped with a special three-pin Bayonet Cap, similar to the normal Bayonet Cap, except that a third pin prevents the lamp being accidentally fitted into sockets which are wired without a Series Choke, such as the standard two-pin Bayonet Socket.

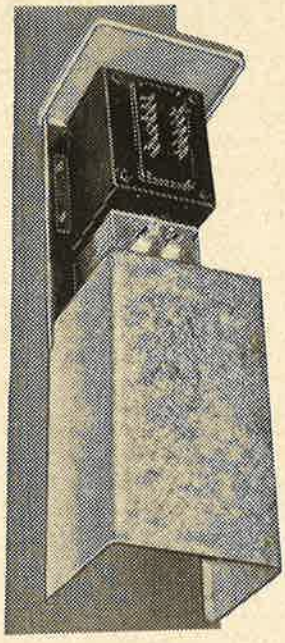
Watts	Cap	Approximate Dimensions		A.C. Voltages
		Diameter m/m	Length m/m	
80	3-Pin B.C. (B·22/31 × 30)	90	178	200/250
125				200/250

125 watt Mazda Electric Discharge Lamp with ultra-violet filter bulb broken away to show internal construction.

IMPORTANT NOTE : Mazda Electric Discharge Lamps are made to operate only with approved auxiliary gear.

AUXILIARY EQUIPMENT FOR DISCHARGE LAMPS

Cat. No. L3010. Galvanised Cast Iron Control Box with hinged door.



Condenser for power factor improvement.

Cat. No. L3255. Weatherproof Sheet Metal Control Box (at left).

Standard Type compound filled choke coil.

AUXILIARIES FOR SERIES CIRCUIT.

In the operation of "M.E.D." Lamps from 6·6 ampere A.C. Series mains, the lamp is connected across the secondary of a special series transformer, one being required for each lamp.

Cat. No. D2683 Special Series multiple 6·6 amp. 240 volts Transformer is used with the 400 watt "M.E.D." Lamp and D2818 for 250 watt lamp.

Details of 80 watt and 125 watt sizes on application.

AUXILIARIES FOR MULTIPLE CIRCUIT.

Each lamp in the installation requires a choke, and a condenser where power factor improvement is necessary. In order to ensure that the lamp operates at its rated wattage, it is necessary to see that the lamp and choke tappings are correctly suited to the particular supply. Chokes for "M.E.D." Lamps are provided with tappings at 10-volt intervals.

AVERAGE OPERATING CHARACTERISTICS.

Choke Cat. No.	Lamp Watts	Total Average Watts with Lamp, Choke and Condenser	Mains Volts	Cycles	Condenser Rating	Starting Amps with condenser	Running Amps with condenser	P.F. with condenser
MRA136	400	432	230/250	50	20 mfd.	3·8	2·0	·9
MRA143	250	272	230/250	50	15 mfd.	3·4	1·26	·9
MRA182	125	139	230/250	50	10 mfd.	·85	·65	·89
MRA170	80	91	230/250	50	8 mfd.	·50	·42	·9

N.B. : All the above chokes have taps at 10-volt intervals. Please note that the 400 watt and 250 watt chokes are made in only one voltage range.

AUXILIARY CONTROL BOXES.

Cat. No.	Type	Description	Lamp Wattage	Dimensions L.	W.	D.
L3010	Outdoor Weatherproof	Constructed in Galv. C.I. with hinged lid. Hinges of brass with brass bolts and wing nuts. Lid fitted with gasket and clamped into position with four wing nuts. Auxiliaries mounted on detachable plate.	125W. to 400W.	13″	10″	8″
L3255	Outdoor Weatherproof	Galv. C.I. end plates with sliding galv. sheet metal cover and fitted with detachable plate.	250W. to 400W.	13½″	8″	7″
L3254	Outdoor Weatherproof	As L3255	80W. and 125W.	11″	7½″	6½″
L3259	Indoor	Cast iron end plates with sliding sheet metal over and with detachable plate.	250W. and 400W.	13″	7⅝″	7″
L3258	Indoor	As L3259.	80W. and 125W.	11″	7¾″	6½″

MAZDA SODIUM ELECTRIC DISCHARGE LAMPS

(A.C. ONLY)

TYPE SO/H

Mazda Sodium Vapour Electric Discharge Lamps are primarily designed for street lighting or floodlighting and they have found application in the industrial field for the illumination of yards and other open spaces.

The sodium vapour lamp consists of two separate components, an inner arc tube bent into a U shape and fitted with a Bayonet Ceramic cap, and an outer envelope which is a double walled vacuum flask.

When it is necessary therefore to make a lamp replacement, as a rule only the arc tube need be replaced.

The electrodes, which require no separate heating transformers, are mounted one at each end of the inner U tube and are treated to give a high electronic emission when incandescent.

A special 2-ply glass is used for the arc tube. A thin sheet of sodium resistant glass, which withstands attack from sodium vapour at high temperatures, is fused to the inner surface of a glass tube which possesses the mechanical properties required by the arc tube as a whole.

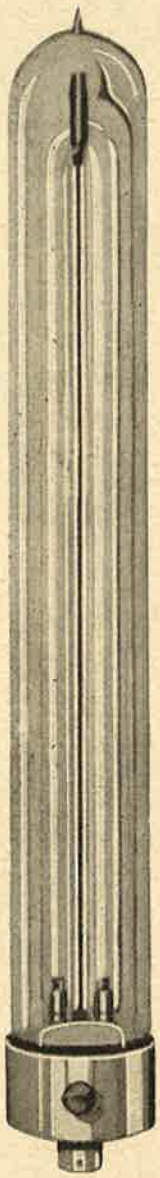
As with all discharge lamps, some form of auxiliary gear is necessary to limit and stabilize the current when the lamp is operated. This takes the form of a high reactance transformer. Full details will be furnished on request.

Since the primary of the transformer, which must always be used with sodium electric discharge lamps, is tapped to suit various mains voltages, and the secondary voltage output therefore is independent of the applied mains voltage if the transformer is correctly connected, it is unnecessary to specify voltage when ordering these lamps. All Mazda sodium electric discharge lamps are made to operate on the current supplied at a suitable voltage from transformers which are available with tappings for any primary voltage from 190 to 250 volts, A.C.

The orange-yellow light given by the sodium vapour lamp is monochromatic. The lamp gives a single line spectrum, as distinct from the continuous spectrum of the tungsten lamp and the multi-line spectrum of mercury vapour discharge lamps.

Watts	Cap	Approximate Dimensions				A.C. Voltages	Initial Light Output
		Diameter m/m	Length m/m	L.C.L. m/m	Length of Light Source m/m		
45	B.C. Ceramic (B22/S)	50	238	140	120	See text above	Lumens 2700
60	B.C. Ceramic (B22/S)	50	300	170	180	See text above	4200
85	B.C. Ceramic (B22/S)	50	415	230	295	See text above	6460
140	B.C. Ceramic (B22/M)	65	518	280	395	See text above	10640

NOTE.—Sodium Electric Discharge Lamps should normally be used in a HORIZONTAL position, but the 45 and 60 watt sizes will operate in any position between vertical (cap up) and horizontal.



Mazda 140 watt Sodium Electric Discharge Lamp.

IMPORTANT : Mazda Sodium Electric Discharge Lamps are made to operate only with approved auxiliary gear.

Illustration approximately one-fourth full size.

MAZDA FLUORESCENT LAMPS

WHAT IS MAZDA FLUORESCENT LIGHTING ?

Mazda Fluorescent Lighting employs a remarkable new light source entirely different in almost every way to the familiar filament lamps. The lamps, tubular in form, are of the electrical discharge type and use mercury vapour for maintaining the arc. This electric arc generates very little direct light but has a very high output of invisible ultra-violet rays. These invisible ultra-violet rays are converted into visible light through the medium of fluorescent powders, technically known as phosphors, coated on the inside of the glass tubes which form the lamps. Because they are essentially arc lamps they are used with specially designed " Ballasts " (or chokes) to stabilise voltage and current values.

WHAT PARTICULAR ADVANTAGES DOES IT OFFER ?

HIGH LIGHT OUTPUT. Mazda "White " Fluorescent Lamps are approximately 2½ times as efficient in the production of light as filament lamps. This makes it economically possible to obtain the higher illumination levels desirable for increased production and better employee welfare.

LOW BRIGHTNESS. The lamp itself is a light source of relatively large area and low brightness. Its use in a scientifically designed Mazdalux reflector minimises glare, shadows, and specular reflections from bright steel parts. This gives lower contrasts, better visibility and reduced liability to accidents.

COOL LIGHT. The distinctive white light of Mazda Fluorescent Lamps has a cool psychological effect, and, in addition, the radiant heat level for the same light output is only one-fifth that of filament lamps. This is particularly advantageous under full summer conditions, and it minimises costs where air-conditioning is installed.

LOW INSTALLATION COSTS. Installation costs will be low because existing wiring will frequently prove adequate, and continuous lines of lighting can follow the workshop layout of machines with practically no alteration to existing wiring. The complete unit is assembled readily and easily suspended.

LOW OPERATING COSTS. The operating costs of Fluorescent systems are relatively low because the lamps have long life and operate about 2½ times as efficiently as the filament lamps.

WHEN AND HOW SHOULD FLUORESCENT LIGHTING BE USED?

Use Mazda Fluorescent Lighting (1) to increase the intensity and improve the quality of your lighting EXCEPT where high mounting heights, D.C. service, poor voltage, or extremely low or high temperatures have an unfavourable influence on its operation. (2) For high intensity local lighting to supplement natural daylight or other general room lighting. (3) To obtain more light from existing wiring.

Use Mazda **DAYLIGHT** fluorescent lamps to obtain close reproduction of daylight. Where maximum efficiency of light is required and accurate colour discrimination is not essential, use white lamps.

Use only approved " Mazdalux " Fluorescent Reflectors and A.G.E. approved auxiliaries to ensure efficient operation.

Use Mazdalux Reflectors in continuous rows across the line of vision where practicable. Such installations provide a minimum of shadows and best shielding of lamps by reflector cut-off.

Don't use Fluorescent lighting to project light for long distances, and don't expect to concentrate light with the usually wide spread units. If you wish to control the light on a relatively small task use concentrating units.

Don't use Fluorescent lighting where only intermittent operation is required, and don't switch fluorescent lights on and off more than is absolutely necessary.

Don't forget that adequate wiring is just as necessary for Fluorescent Lighting as for incandescent, and don't use low voltage circuits.

WHAT ARE ITS OPERATIONAL CHARACTERISTICS ?

NORMAL LIFE. Fluorescent Lamps have a long average life but, as with filament lamps, some variation must be expected. Because normal wearing out is greater during starting, longer lamp life will be obtained if lamps are operated continuously for 3 or 4 hour periods instead of being turned " on " and " off " at frequent intervals. The light output at 100 hours is used for rating purposes. Average light output during life is approximately 90% of the 100 hours rating value.

During life, lamps blacken rather uniformly throughout the length of the tube, though this is barely noticeable, and brownish rings may develop at one end or both—normally there should be little indication of blackening or rings during the first 500 hours. A dense black spot may appear about 1" from the base towards the end of life. Symptoms of normal end of life are (a) lamp will not operate ; (b) lamp flashes momentarily, then goes out ; (c) ends probably blackened ; (d) lamp blinks on and off, perhaps with shimmering effect.

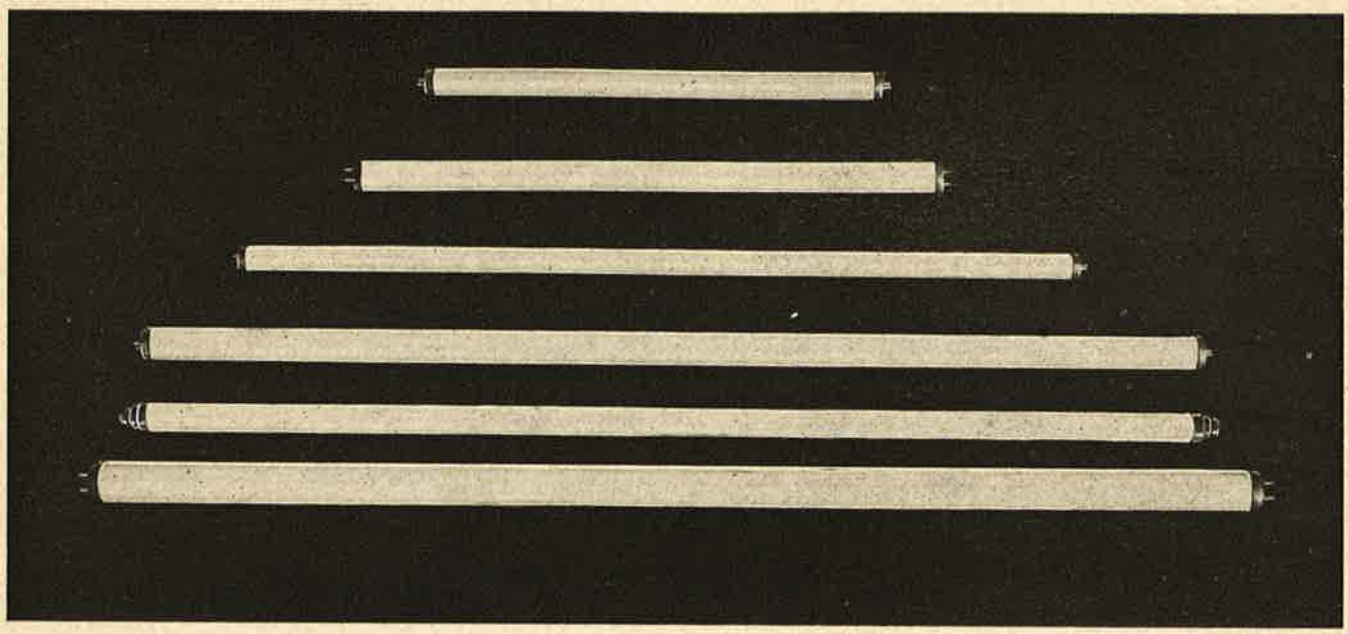
EARLY END BLACKENING. Heavy end blackening early in life indicates that the active material in the electrodes is being sputtered off too quickly, and consequently the length of life of the lamp may be shortened. Probable causes are (a) Voltage too high or too low ; (b) Loose contacts—most likely at lampholder ; (c) Improperly designed ballasts or ballasts outside specification limits ; (d) Defective starter causing lamp to blink on and off (if this occurs, correct trouble at once). A dense black spot about 1" from base appearing early in life indicates excessive starting or operating currents. Blackening within one inch of ends, particularly on 1" diameter lamps, is usually due to mercury deposits and should evaporate by itself as lamp is operated.

STARTING DIFFICULTIES—Failure to Start. (a) See that lamp is properly seated in socket ; (b) check starter ; (c) test lamp in another circuit and, if necessary, check voltage at the sockets—if no power is found, circuit connections are incorrect or the ballast is defective. **Slow Starting** is usually caused by sluggish starter which should be replaced ; can also be caused by low line voltage or low ballast rating. **Ends of Lamp remain Lighted :** This indicates a short circuit in the starter which should be replaced ; in a new installation it may be due to incorrect wiring. **Lamp Blinks " on " and " off " :** This usually indicates normal end of life ; with relatively new installations it may be due to (a) defective starter ; (b) low ballast rating or low circuit voltage ; (c) low temperature or cold draughts ; (d) improper circuit connections. If end of lamp remains lighted or lamp blinks " on " and " off " the trouble should immediately be corrected or the lamp and starter removed from the socket.

WHAT SPECIAL EQUIPMENT IS REQUIRED?

In common with all electrical discharge lamps, the Mazda Fluorescent Lamp requires specially designed auxiliary equipment for stable operation. This equipment comprises two principal elements : (1) an iron core choke coil, called a " *Ballast*", the function of which is to deliver the proper voltage and lamp current for starting and for normal operation, and to limit the current to the value normally required by the lamp ; and (2) a *starting switch*, the function of which is to accurately time the preheating of the lamp electrodes until proper starting conditions are reached. A *condenser* is also essential to correct power factor values and the correct sizes and types of ballasts, condensers, starters, holders and sockets must be used with each size of lamp. For efficient operation it is important that *Mazda Fluorescent Lamps should only be used with approved auxiliary equipment of the correct ratings, properly connected.* The circuit voltage should be within the ballast rating. Satisfactory results may sometimes be obtained with slightly lower or higher line voltages but excessive under or over-voltage is injurious to the lamp.

MAZDA FLUORESCENT LAMPS



Top to Bottom : 15, 20, 30, 40, 80, 100 watt.

GENERAL INFORMATION

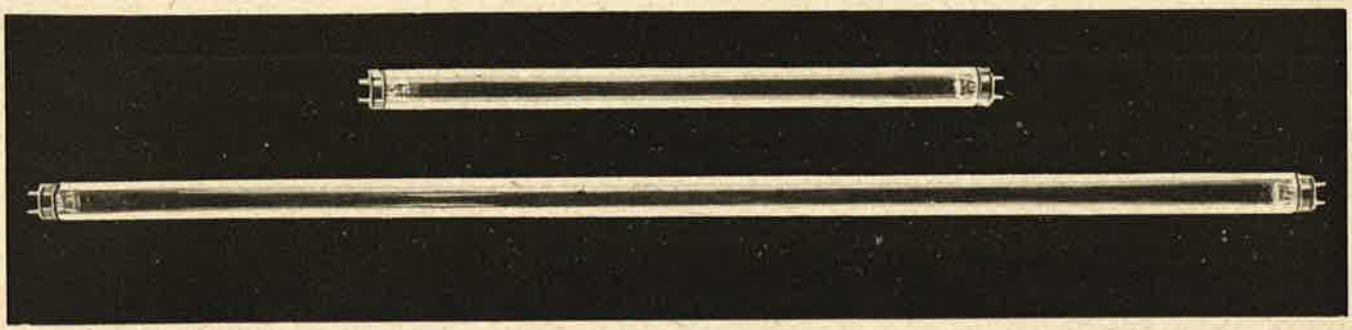
" Mazda " Fluorescent tubes are the most versatile of all lighting sources. They consist of a slim glass tube containing electrodes sealed at each end, a phosphor powder on the inner wall of the bulb, and are filled with a mercury vapour. In use they are highly efficient light producers with few of the limitations of tungsten filament lamps. A comparison of light output and efficiency of 40W Natural fluorescent " Mazda " and 40W filament lamp is interesting.

Type	Watts	Lumens per watt	Total Lumens	Colour Temperature	Visible Light in % of input
Incandescent S/C	40	8-9	358	2780°K	7·4
Fluorescent	40	53	2120	4200°K	20·5

FLUORESCENT TUBE CHARACTERISTICS

	15 Watt	20 Watt	30 Watt	40 Watt	80 Watt	100 Watts
Nominal Lamp Volts	63	65	115	108	130	72
Nominal Lamp Amps	.27	.35	.30	.42	.75	1.45
Main Voltage	230/250	230/250	230/250	230/250	230/250	230/250
Lumens per watt at 100 hours :						
Warm Tint		40.0		53.0		36.5
Natural		42.5		52.5		44.0
Daylight		33.0		43.0		44.0
White	35.00		48.33		35.00	
Overall Length	17-25/32 in.	23-25/32 in.	35-25/32 in.	47-25/32 in.	60 in.	59-17/32 in.
Nominal Length	18 in.	24 in.	36 in.	48 in.	60 in.	60 in.
Diameter	1 in.	1-1/2 in.	1 in.	1-1/2 in.	1-1/2 in.	2-1/8 in.
Cap	Bi-Pin	Bi-Pin	Bi-Pin	Bi-Pin	D.E. B.C.	Mog. Bi-Pin.

GERMICIDAL LAMPS



The protection and disinfection of liquids and surfaces of solids with germicidal ultraviolet and the irradiation of the air in school-rooms, offices, hospitals, etc., has a powerful ally in the modern germicidal lamp.

Like fluorescent lamps, from which they have developed, germicidal lamps are designed to operate normally under the average conditions of room temperature and ventilation, provided for fixtures for fluorescent illumination or for upper air irradiation. Unusual enclosure or the extremes of air temperature in refrigerators and bakeries should be taken care of in the design of specific lighting fittings for these tubes. Some of the services for which the tubes have been found ideally suited are as follows :

Dental and Surgical Sterilisers;

Sterilisation of Drinking Glasses, Plates, Cups, etc.;

To inhibit the growth of bacteria in meat storage rooms;

Prevention of mould formation in the packaging of ointments, creams and foodstuffs;

Prevention of contamination of foodstuffs and dough during the process of bread baking, etc., over bread slicing and cutting machines;

Processing and packaging of cheese, wine and beer;

Sterilisation of syrup and wine tanks, bottle caps;

Sterilisation of containers for milk, serum and foodstuffs.

In conjunction with correctly designed fittings, a marked reduction in the concentration of micro-organisms will result, providing an improved sanitary condition—much to be desired.

The operation of these tubes is identical with that of the normal 15W. and 30W. fluorescent tube, and the same auxiliaries and starter switches are used, **no high voltage transformer being required.** Specially designed fittings can be supplied for use in all situations. The advice of our Lighting Department should be sought to ensure correct lamp placement.

Ultraviolet radiation is the one unique means of killing bacteria in the air and on accessible surfaces and other objects.

The germs responsible for such infections as boils, carbuncles, sore throats, and other air-borne diseases are all of the type that are not killed by dryness or moisture, although the latter may be essential to their growth and multiplication, and germicidal lamps are of definite use in combating air infection.

The technical data on the 15W. and 30W. germicidal lamps, suitable for industrial uses, is given below :

	30W. T-8	15W. T-8
Rated Watts	30	15
Overall length	36″	18″
Diameter	1″	1″
Circuit Voltage	Normal Mains Voltage	
Glass temperature-approximate	130°F	120°F
Life (hrs.) rated (1 hr. or longer operating periods)	2500	2500
Bulb designation	T-8	T-8
Effective length of ultraviolet source	32″	14″
Ultraviolet output watts (2537°A)	7·2	2·9
Maximum intensity perpendicular to bare lamp (multiply by 10,000 for microwatts per cm^2 at one meter)		
Watts per square foot at 10 ft.	·008	·0032
Watts per square foot at 36 ins.	·090	·036
Watts per square foot at 12 ins.	·37	·27
Watts per square foot at 4 ins.	1·10	·90
Cap	Medium Bipin	Medium Bipin

It is to be noted that the above tabulated intensities vary with the distance from bare lamps about inversely as the distance rather than the usual "inversely as the square of the distance" for the short distances common in industrial uses.

MAZDA INFRA-RED LAMPS

Lamp Details : Mazda internal reflector infra-red drying lamp, rated 115/125 volts, 250W. or 375W. or 250 volts, 250 watts. Connection of two 115/125 volts lamps in series enables 230/250 volts to be applied. The bulb is 5 ins. diameter—overall length 7¼ ins.—medium edison screw base mechanically attached—internal reflector of untarnishable vaporised aluminium. Infra-red energy is concentrated into a beam of 120° spread.

FLUORESCENT BALLASTS

The A.G.E. Ballast comprises a coil of wire wound around an iron core, scientifically designed to provide steady rated volts and amps, with minimum loss in watts. Without it, the lamp current would continue to rise until the lamp was destroyed. Some watts are consumed in the ballast and must be allowed for in estimating the load of a fluorescent lighting installation. A.G.E. ballasts are available for each size of single lamp ; for lamps in pairs use is made of the split-phase principle in the A.G.E. Tulamp Ballast, reducing stroboscopic effect by operating two lamps out of phase alternatively; " leading " and " lagging " ballasts are available for this purpose. It is essential to use ballasts specifically designed for the particular lamp size, frequency and mains voltage in order to ensure correct operation, light output life, minimum watt loss, and reasonable power-factor.

SPECIAL BALLAST FEATURES

Noise reduction in all ratings by a patented method of assembly.

Improved operating efficiencies and reduced losses.

Simplified voltage ratings for all States.

Standard case and mounting dimensions for all single lamp sizes up to 40 watts.

RATINGS AND OPERATING DATA.

Nominal Lamp Watts	No. of Lamps	Line Voltage	Cycles	Catalogue No. of Ballast	Without Shunt Capacitor			With Shunt Capacitor				Use with		
					Line Amps	Av. Watts Loss	Power Factor	Capacitance mfd.	Line Amps	Av. Watts Loss	Power Factor	Starter Switches	Starter Sockets	Lamp Holders
UNCORRECTED POWER FACTOR BALLASTS (Without built-in shunt capacitors)														
15	1	230/240	50	58B571	·31	6·5	·30	4·0	·10	6·9	·93	P4	78A769	78A354
20	1	230/240	50	58B639	·36	6·6	·32	4·0	·13	7·0	·88	P4	78 769	78A354
20	1	110	40	58B642	·36	3·6	·60	6·0	·26	4·0	·86	P2	78A769	78A354
30	1	230/240	50	58C573	·35	7·1	·45	4·0	·18	7·5	·91	P4	78A769	78A354
40	1	230/240	50	58C576	·41	7·1	·49	4·0	·22	7·5	·91	P4	78A769	78A354
40	1	250	40 OR 50	58C580	·41	9·3	·48	4·0	·24	9·7	·83	P4	78A769	78A354
					·41	8·6	·47	4·0	·22	9·0	·89	P4	78A769	78A354
HIGH POWER FACTOR BALLASTS (With built-in shunt capacitor)														
100	1	230/240	50	58A633	—	—	—	Built in	·60	28	·90	FS64, FS850	95A180	98A102
TULAMP BALLASTS (With built-in capacitor)														
40	2	230/240	50	58B975	—	—	—	Built in	·415	15·0	·97	P4	78A769	78A354
100	2	230/240	50	58A588	—	—	—	Built in	1·04	41·0	·98	FS64, FS850	95A180	95A102
LEADING BALLASTS (Not suitable for use with shunt capacitor)														
40	1	250	40/50	58A980 or 58B980	·41	10·2	Leading	—	—	—	—	P4	78A769	78A354
					·41	7·0	Leading	—	—	—	—			
40	1	230/240	50	58A982	·41	8·0	Leading	—	—	—	—	P4	78A769	78A354

Please note that the above ballasts draw leading current. Cat. 58A980 or Cat. 58B980 ballasts should be used in conjunction with Cat. 58C580, 40 watt, 40/50 cycle lagging ballasts. Overall power factor of the combination is better than 0·95.
Cat. 58A982 Leading Ballast should be used in conjunction with Cat. 58C576, 40 watt Lagging Ballast. Overall power factor is better than 0.95.
When operating two 15 watt lamps in series with a 30 watt ballast or two 20 watt lamps in ones with a 40 watt ballast use P2 starter switches.

The combination of Cat. No. 58B980 leading ballast with Cat. No. 58C580 lagging ballast gives the following performance :—

	Line amps.	Watts Loss	Power factor
40 cycles	·42	21	·96 lagging.
50 cycles	·41	18	·96 lagging.

No condenser for power factor correction is necessary.

40/50 cycle ballasts : The Cat. No. 58C580 40-watt, and the Cat. No. 58B980 40-watt 40/50 cycle leading ballast are produced for use in areas which will be converting from 40 to 50 cycles. These ballasts are so designed that, by simply changing over one lead, they are converted from 40 to 50 cycles, as required.

BALLAST WEIGHTS AND DIMENSIONS

Catalogue No.	Watts	Nett Weight in lbs.	Overall Length	Overall Width	Overall Depth	Mounting Centres 4 holes 7/32" diam. at centres
58B571	15	3.1/4	5.3/4"	2.7/8"	1.27/32"	5.1/4" x 1.5/8"
58B639	20	3.1/4	5.3/4"	2.7/8"	1.27/32"	5.1/4" x 1.5/8"
58B642	20	3.1/4	5.3/4"	2.7/8"	1.27/32"	5.1/4" x 1.5/8"
58C573	30	3.1/8	5.3/4"	2.7/8"	1.27/32"	5.1/4" x 1.5/8"
58C576	40	3.1/8	5.3/4"	2.7/8"	1.27/32"	5.1/4" x 1.5/8"
58C580	40	3.1/2	5.3/4"	2.7/8"	1.27/32"	5.1/4" x 1.5/8"
58B975	40	6.3/4	13"	2.15/16"	2.7/32"	12.7/16" x 1.1/2"
58B980	40	5	13"	2.15/16"	2.7/32"	12.7/16" x 1.1/2"
58A982	40	4.3/4	13"	2.15/16"	2.7/32"	12.7/16" x 1.1/2"
58A633	100	14	15.1/4"	3.3/32"	2.27/32"	14.11/16" x 2"
58A588	100	19.3/4	19.11/16"	3.3/32"	2.27/32"	19.1/8" x 2"

STARTER SWITCHES

The A.G.E. Fluorescent Lamp Starter is, in effect, a replaceable automatic switch, which times the pre-heating of the lamp electrodes, then opens automatically, thus employing the inductive "kick" from the ballast to strike the lamp arc, across which the starter is connected.

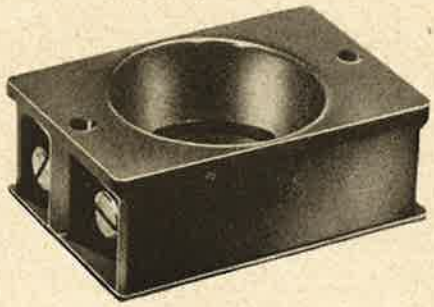
P2—Two Terminal Glow type starter for operating two 20W. Lamps in series on a 40 watt ballast or single 20W. Lamps with 1946 pattern ballasts.

PEMSOC P2 and P4
2 Terminal glow type.

FS64
4 Terminals, Thermal type
for 100W. Lamps.

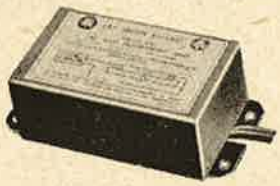
STARTER SWITCH SOCKETS

Pemsoc Starter Sockets have been designed to take up a minimum of space, and may easily be mounted in a convenient position for inspection or replacement of the Starter.



Cat. No. 95A180
for 4 Terminal Switches.

Cat. No. 78A769
for 2 Terminal Switches.

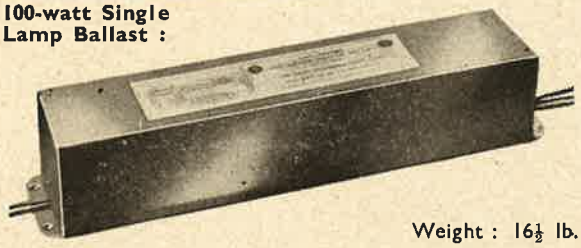


15, 20, 30 and 40 watt Single Lamp Lagging Ballasts :

Weight : 3¼ lb.
Overall length : 5¾″
Overall width : 2⅞″
Overall depth : 1 27/32″

Mounting Centres : 4 holes, 7/32″ diam. at centres of 5¼″ x 1⅝″.

100-watt Single Lamp Ballast :



Weight : 16½ lb.
Overall length : 15¼″.
Overall width : 3 3/32″.
Overall depth : 2 27/32″.

Mounting Centres : 4 holes, 7/32″ diam. at centres of 14 11/16″ x 2″.

40-watt Tulamp Ballast and 40-watt 40 and 50 cycle Leading Ballast.

Weight : 6 lb.
Overall length : 13″.
Overall width : 2 15/16″.
Overall depth : 2 7/32″

Mounting Centres : 4 holes, 7/32″ diam. at centres of 12 7/16″ x 1½″.

LAMPHOLDERS

Cat. No. 78A354
for 15W., 20W., 30W., 40W., Lamps.

The Rotating Lock Lamp Holder uses the simplest method of lamp insertion and removal with a positive lamp-locking action. A quarter turn in either direction holds the lamp securely and firmly in the lighting position, and another quarter turn in either direction releases it easily and smoothly. The ingenious design permits one hand lamp insertion or removal, thus simplifying maintenance.

Cat. No. 95A102
for 100W. Lamps.

DIMENSIONS OF LAMP CAPS

The full description of the caps for which abbreviations are shown is as follows :—

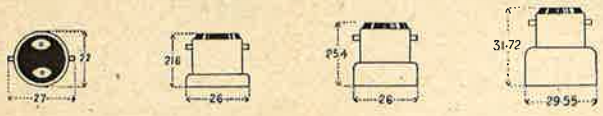
S.B.C. Small Bayonet Cap
S.C.C. Small Centre Contact
} Used on lamps for English cars.

A.S.B.C. American Small Bayonet Cap
A.S.C.C. American Small Centre Contact.
} Used on lamps for American cars.

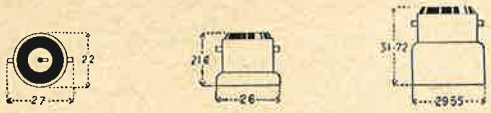
A.S.B.C. and A.S.C.C. are similar to S.B.C. and S.C.C. caps, but are slightly longer in the base and have shorter pins.

Dimensions are in millimetres.

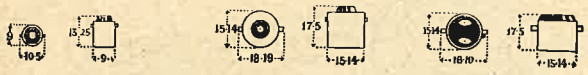
BAYONET-DOUBLE CONTACT (B.C.)



CENTRE CONTACT (C.C.)



SMALL BAYONET CAPS



Centre Contact.

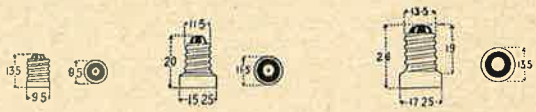
Miniature C.C. for radio panel lamps, condensed dash panel.

S.C.C. for English Auto Lamps or A.S.C.C. for American Auto Lamps.

Double Contact.

S.B.C. for English Auto Lamps or A.S.B.C. for American Auto lamps.

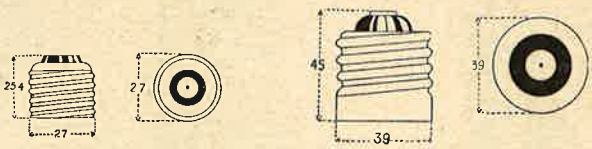
EDISON SCREW CAPS



Miniature E.S. (M.E.S.)

Candelabra E.S. (Cand. E.S.)

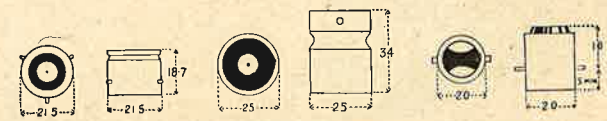
Small E.S. (S.E.S.)



Medium E.S. (E.S.)

Goliath E.S. (G.E.S.)

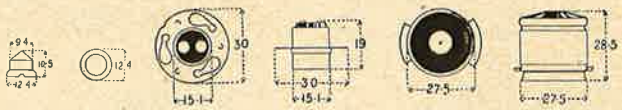
SPECIAL CAPS



3-Pin B.C.

Hollow Tubular.

Bosch.



Festoon.

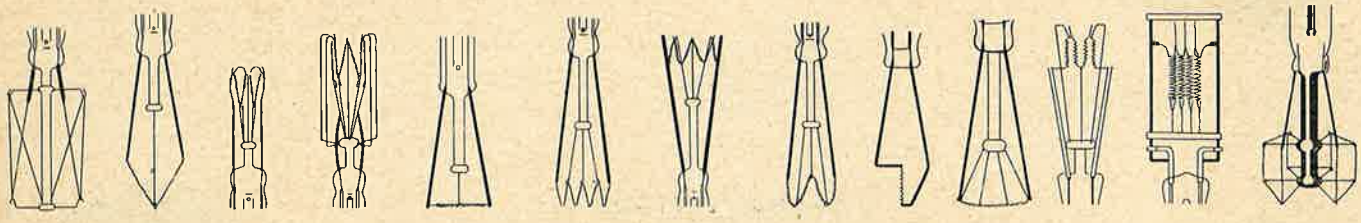
Auto Prefocus.

Medium Prefocus.

FILAMENT SHAPES

Filament material is almost universally tungsten and may be either straight, coiled coil, indicated by the letters S.C. or C.C.

The illustrations show some of the commonly used filament forms.



No. 1 No. 2 No. 5 No. 5 No. 6 No. 7 No. 7 No. 7A No. 8 No. 9 No. 13 No. 13D No. 17

LUMENS AND CANDLEPOWER — Definitions

The **candle** is the unit of **luminous intensity.** The **candlepower** is the luminous intensity expressed in candles.

The **lumen** is the unit of **luminous flux** and is the total amount of light falling upon a surface of 1 sq. ft. every point of which is at the distance of 1 ft. from a point light source of 1 candle. The area of a sphere of 1 ft. radius is 12·57 sq. ft., so that the total flux emitted from a uniform light source of 1 candle is 12·57 lumens.

Efficiency to-day is expressed in **lumens per watt.**

The **mean spherical candlepower** is the average value of the candlepower in all directions.

The mean spherical candlepower of an ordinary lamp is about 79% of its mean horizontal candlepower (the old candlepower rating), and therefore the lumens = 12·57 by 79%, i.e., approximately 10 times the mean horizontal candlepower.

The light centre length is usually the distance from the horizontal and vertical centre of the filament to the contact plate of the cap, but in certain projector lamps this distance is measured from the pre-focussing plate or ring or the pins of bayonet caps.

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