

Mazda LAMP DATA SHEET

General Description

Mercury vapour discharge lamps with glass arc tubes loaded below 10 watts/cm of arc length and operating with a mercury vapour pressure of approximately .01 mm.

The interior wall of the arc tube is coated with fluorescent material which converts the principal ultra-violet radiation at 2537\AA of low pressure mercury discharge into visible light. The colour of this light varies according to the composition of the fluorescent coating.

These lamps are of double capped tubular design and are suitable for operation in any position, from either a.c. or d.c. supply. They must be operated in connection with correctly designed control gear, which varies with the type of circuit and the nature of the supply.

General Applications

The higher wattage lamps have widespread domestic, commercial, industrial and streetlighting applications.

The 50 watt-5 ft. lamp with its smaller diameter arc tube has been designed specifically for showcase lighting.

The 4 watt-6", 6 watt-9" and 8 watt-12" lamps are useful for providing good illumination from unobtrusive mountings in constricted spaces.

Standard Ratings and Types

Rating	Type
4 watt-6"	MCF/U
6 watt-9"	MCF/U
8 watt-12"	MCF/U
15 watt-18"	MCF/U, MCFA/U, MCFE/U
20 watt-2 ft.	MCF/U*, MCFA/U, MCFE/U, Resonant Start †
30 watt-3 ft.	MCF/U*, MCFA/U, MCFE/U
40 watt-2 ft.	MCF/U*, MCFA/U, MCFE/U
40 watt-4 ft.	MCF/U*, MCFA/U, MCFE/U
50 watt-5 ft.	MCF/U, MCFA/U, MCFE/U
80 watt-5 ft.	MCF/U*, MCFA/U, MCFE/U, with bayonet caps (B22/25 x 26)
80 watt-5 ft.	MCF/U, MCFA/U, MCFE/U, with medium bi-pin caps (G13/35)
125 watt-8 ft.	MCFC/U

NOTE: * These MCF/U lamps conform to BS. 1853.

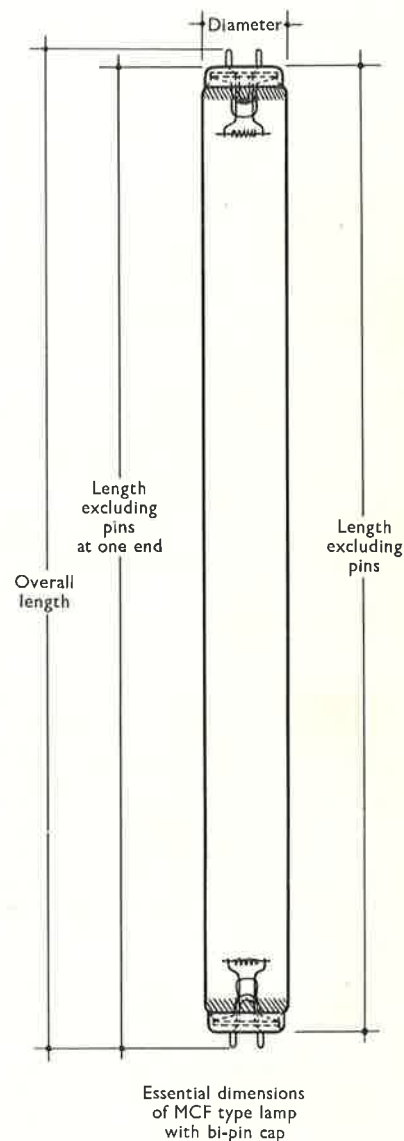
- MCF/U - Lamps solely for operation in switch-start circuits. These are the most reliable for operation under adverse conditions of temperature and humidity.
- MCFA/U - Lamps having an external earthing strip along the length of the lamp connected to both caps, for use in instant-start circuits. This type is recommended for operation in low temperatures, dirty atmospheres, and may be used remote from earthed metal.
- MCFC/U - Lamps having an external earthing strip along the length of the lamp not connected to either cap, for use in instant-start circuits. We normally manufacture this type in the 125 watt-8 ft. range only.
- MCFE/U - Lamps having an external water repellent coating, e.g. Silicone, for use in instant-start circuits. These lamps must be used in close proximity to earthed metal and are recommended for operation under conditions of high temperature and high humidity.

With the exceptions noted above MCFA/U and MCFE/U type lamps are interchangeable for use in instant-start circuits under most operating conditions.

- † Resonant Start - The 20 watt-2 ft. resonant start design has a special cathode assembly and has been developed for use in resonance circuits with the high frequency supply (850 cycles a.c.) found in certain train systems.

Mercury Discharge Low Pressure Hot-Cathode Fluorescent Type MCF

GENERAL DESCRIPTION
GENERAL APPLICATIONS
STANDARD RATINGS AND TYPES
COLOURS
PHYSICAL CHARACTERISTICS
ELECTRICAL CHARACTERISTICS
OPERATING CONDITIONS
CIRCUITS



Mercury Discharge Low Pressure Hot-Cathode Fluorescent Type MCF

Colours

In the following table, the letter 'A' shows the availability of the various ratings in the different colours. A dash (-) signifies that a lamp is not ordinarily produced in the colour specified.

	Deluxe Warm White	Warm White *	White 3500°K *	Nat- ural *	Day- light *	Colour Match- ing *	Red	Blue	Green	Yel- low
4 watt-6"	A	A	-	A	A	A	A	-	-	-
6 watt-9"	A	A	-	A	A	A	-	-	-	-
8 watt-12"	A	A	-	A	A	A	-	-	-	-
15 watt-18"	A	A	A	A	A	A	-	A	-	-
20 watt-2 ft.	A	A	A	A	A	A	A	A	A	A
" " Resonant- start	-	A	-	-	-	-	-	-	-	-
30 watt-3 ft.	A	A	A	A	A	A	-	-	-	-
40 watt-2 ft.	A	A	A	A	A	A	-	A	-	-
40 watt-4 ft.	A	A	A	A	A	A	-	A	-	-
50 watt-5 ft.	-	-	-	A	-	-	-	-	-	-
80 watt-5 ft. B.C. cap	A	A	A	A	A	A	A	A	A	A
" " " Bi-pin	A	A	A	A	A	A	-	-	-	-
125 watt-8 ft.	A	A	A	A	A	A	-	-	-	-

NOTE: The colours marked with an asterisk (*) are those specified in BS. 1853 and the lamps produced in these colours conform with this specification so far as colour is concerned.

The white and near-white colours in which MCF type lamps are available correspond approximately to the colour appearance of an incandescent 'black body', so called, at various temperatures between 2800°K and 6500°K:

Colour	Approximate colour temperature
Deluxe Warm White	Slightly more red than the incandescent body at 2800°K.
Warm White	Slightly more red than the incandescent body at 3000°K.
White	Similar to the incandescent body at 3500°K.
Natural	More violet than the incandescent body at 4200°K.
Daylight	Similar to the incandescent body at 4200°K.
Colour Matching	Similar to the incandescent body at 6500°K.

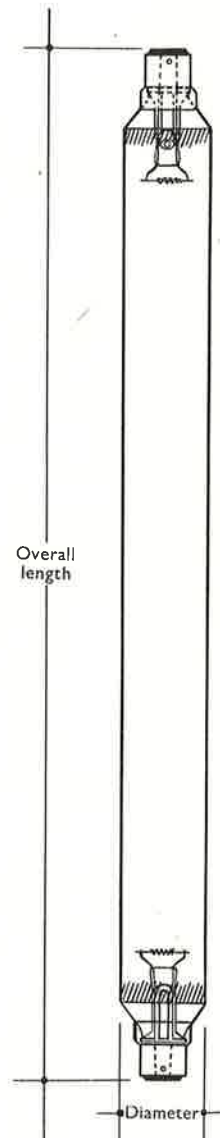
Deluxe Warm White lamps have a similar colour appearance to Warm White lamps. Natural lamps have a similar colour appearance to Daylight lamps. But while Warm White and Daylight lamps are more efficient, Deluxe Warm White and Natural lamps give improved colour rendering.

Nominal values relating to most of the higher wattage lamps for:-

- (1) Colour co-ordinates, and
- (2) Percentage luminance in spectral bands are given on 1/DIS/MC/1, Part 2.

The names of the colours given above do not in all cases have international usage. In overseas territories a similar colour may go under a different name and vice versa.

The red, blue, green and yellow lamps are mainly used for decorative effects. The blue lamps, however, which have a peak emission at 4100Å within the visible region, also radiate useful quantities of long-wave ultra-violet light. Thus they can be put to photochemical as well as decorative uses-see 1/DIS/MC/2.



Essential dimensions of MCF type lamp with bayonet cap

Mercury Discharge

Low Pressure

Hot-Cathode Fluorescent

Type MCF

Physical Characteristics

Rating	Caps	Diameter	Length overall	Length excl. pins at one end	Length excl. pins
4 watt-6"	G5/13	14mm ± 0.5	5 29/32" max.	5 5/8" + 0 - 3/32"	5 11/32" max.
6 watt-9"	G5/13	14mm ± 0.5	8 29/32" max.	8 5/8" + 0 - 3/32"	8 11/32" max.
8 watt-12"	G5/13	14mm ± 0.5	11 29/32" max.	11 5/8" + 0 - 3/32"	11 11/32" max.
15 watt-18"	G13/23	26mm ± 1.0	17 25/32" max.	17 1/2" + 0 - 3/32"	17 7/32" max.
20 watt-2 ft.	G13/35	38mm ± 1.5	23 25/32" max.	23 1/2" + 0 - 3/32"	23 7/32" max.
30 watt-3 ft.	G13/23	26mm ± 1.0	35 25/32" max.	35 1/2" + 0 - 3/32"	35 7/32" max.
40 watt-2 ft.	G13/35	38mm ± 1.5	23 25/32" max.	23 1/2" + 0 - 3/32"	23 7/32" max.
40 watt-4 ft.	G13/35	38mm ± 1.5	47 25/32" max.	47 1/2" + 0 - 3/32"	47 7/32" max.
50 watt-5 ft.	G13/23	26mm ± 1.0	59.615" max.	59.335" max. 59.240" min.	59.055" max.
80 watt-5 ft.	B22/25x26	38mm ± 1.5	60" ± 1/4"	-	-
" " "	G13/35	38mm ± 1.5	59.615" max.	59.335" max. 59.240" min.	59.055" max.
125 watt-8 ft.	B22/25x26	38mm ± 1.5	96" ± 1/4"	-	-

Caps: G5/13 Miniature bi-pin
 G13/23, G13/35 Medium bi-pin, conforming to BS. 1875
 B22/25x26 Bayonet cap (BC), conforming to BS. 52

Electrical Characteristics

Rating	Average lamp volts at 100 hr.	Lamp operating current	Starting current	Apparent lamp power factor
4 watt-6"	31V ± 4	-	-	-
6 watt-9"	48V ± 4	0.145A nom.	0.18A nom.	0.86 nom.
8 watt-12"	58V ± 4	-	-	-
15 watt-18"	57V ± 4	0.3A nom.	0.4A to 0.65A	0.89 nom.
20 watt-2 ft.	60V ± 4	0.35A nom.	0.4A to 0.7A	0.92 nom.
30 watt-3 ft.	104V ± 5	0.34A nom.	0.4A to 0.65A	0.86 nom.
40 watt-2 ft.	48V ± 4	0.88A nom.	1.0A to 1.6A	0.91 nom.
40 watt-4 ft.	108V ± 5	0.41A nom.	0.5A to 0.75A	0.90 nom.
50 watt-5 ft.	*160V ± 8	0.41A nom.	0.4A to 0.65A	-
80 watt-5 ft.	106V ± 5	0.85A nom.	1.0A to 1.6A	0.89 nom.
125 watt-8 ft.	*160V ± 10	0.91A (inductive)	1.0A to 1.6A	0.86 nom.

* signifies with applied voltage of 320V
 125 watt-8 ft. Starting voltage - 370V nom.

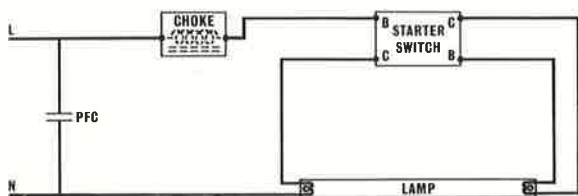
Light Source Characteristics and Performance

Details of efficiencies etc., nominal values for colour co-ordinates and percentage luminance in spectral bands, are to be found on 1/DIS/MC/1 Part 2.

Operating Conditions

These lamps will operate satisfactorily in any position.

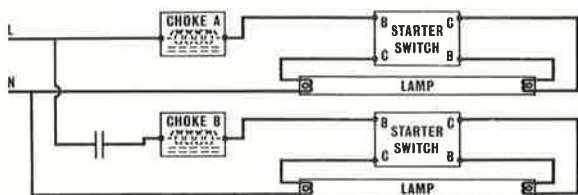
FLUORESCENT SWITCH START CIRCUITS



1

80W, 5 ft.
40W, 4 ft.
30W, 3 ft.
20W, 2 ft.

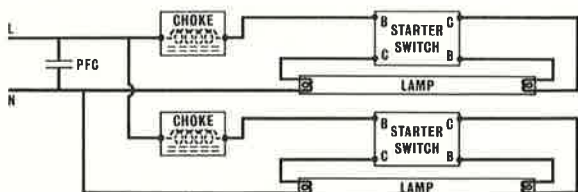
Switch Start single-lamp choke-controlled circuit shunt power factor correction to 0.85 lagging.



2

80W, 5 ft.

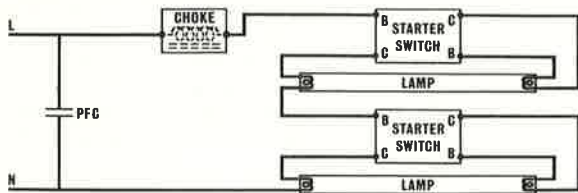
Switch Start phase displaced twin-lamp lead-lag circuit, with near unity power factor.



3

40W, 4 ft.

Switch Start two single-lamp choke-controlled circuits wired in parallel shunt power factor correction to 0.85 lagging.

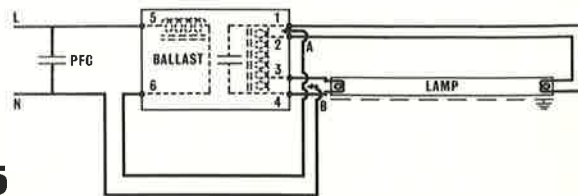


4

40W, 2 ft.

Switch Start circuit for two lamps in series controlled by one choke with shunt power factor correction to 0.85 lagging.

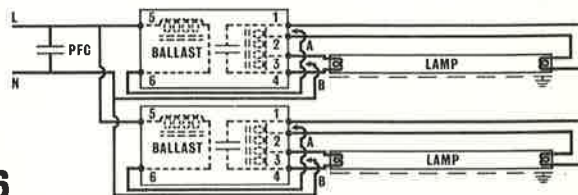
FLUORESCENT INSTANT START CIRCUITS



5

80W, 5 ft.
40W, 4 ft.

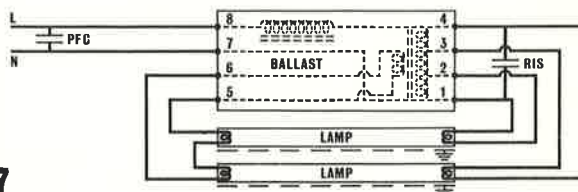
Instant Start single-lamp circuit employing combined choke/transformer ballast unit. Shunt power factor correction.



6

40W, 4 ft.

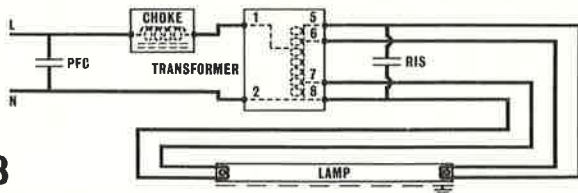
Instant Start two single-lamp circuits wired in parallel each employing a combined choke/transformer ballast unit. Shunt power factor correction to 0.85 lagging.



7

40W, 2 ft.

Instant Start circuit for two lamps in series controlled by one combined choke/transformer ballast unit. Shunt power factor correction to 0.85 lagging.



8

125W, 8 ft.

Instant Start single-lamp circuit employing separate choke and starting transformer. Shunt power factor correction to 0.85 lagging. This lamp need not be earthed.

The instant start circuits listed above are for use with lamps having integral metal strip or silicone coated lamps in an earthed fitting. In low temperatures, dusty atmospheres, and where lamps are used remote from earthed metal, metal-stripped lamps are necessary.