



MR16 Start

50mm ø Dichroic Mirror Halogen Lamps  
20W, 35W, 50W

DESCRIPTION

MR16 Start lamps are low voltage tungsten halogen reflector-mounted lamps popular for downlighting and accent lighting applications because of their small size, precise beam control, high efficacy, excellent white light and cool beam characteristics.

The Cover Glass (closed) versions incorporate an integral clear lens to ensure that both bulb and reflector are protected from dust and dirt during installation and operation. The cover glass effectively eliminates UV-C radiation and greatly reduces UV-B radiation. The closed versions use the same reflectors as the open versions – and hence have the same dimensions, allowing users to interchange lamps at will.

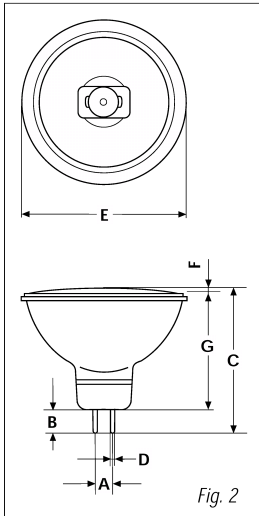
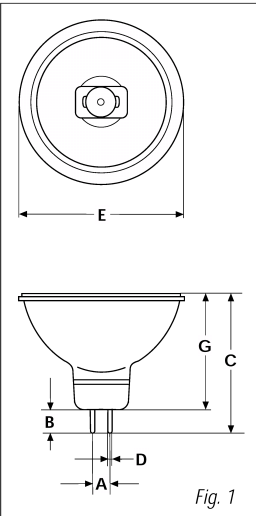
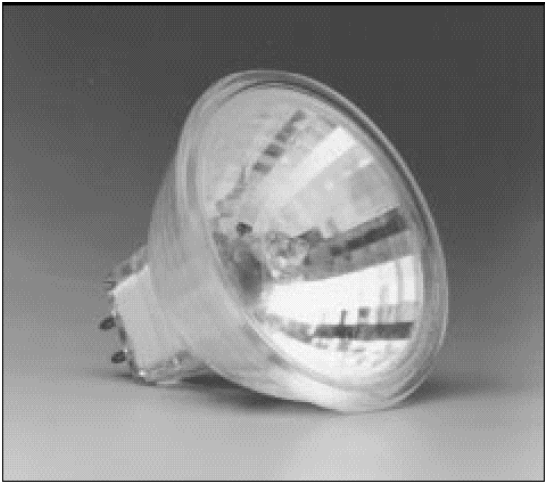
IEC STANDARDS

GE tungsten halogen lamps comply with the following international where applicable:  
IEC 60357 Tungsten Halogen Lamps,  
IEC 60061 Lamp Caps & Holders.

TECHNICAL DATA

Life : 2000 hours  
Burning Position: any

Order Code	Watts	Peak Intensity (cd)	Beam Spread (°)	Colour Temp. (K)
Bulb: clear, open, Cap: GU5.3				
Q20MR16/SP (ESX)	20	3500	12	2900
Q20MR16/FL (BAB)	20	500	36	2900
Q35MR16/SP (FRB)	35	7500	12	3000
Q35MR16/FL (FMW)	35	925	36	3000
Q50MR16/SP (EXT)	50	9500	12	3000
Q50MR16/M (EXZ)	50	3000	24	3000
Q50MR16/FL (EXN)	50	1500	36	3000
Q50MR16/WF (FNV)	50	700	55	3000
Bulb: clear, closed, Cap: GU5.3				
Q20MR16/SP (ESX)	20	3150	12	2900
Q20MR16/FL (BAB)	20	450	36	2900
Q35MR16/SP (FRB)	35	6750	12	3000
Q35MR16/FL (FMW)	35	840	36	3000
Q50MR16/SP (EXT)	50	9000	12	3000
Q50MR16/M (EXZ)	50	2700	24	3000
Q50MR16/FL (EXN)	50	1500	36	3000
Q50MR16/WF (FNV)	50	630	55	3000



DIMENSIONS (mm)

	A	B	C	D	E	F	G
Open bulb							
MIN.	–	5.2	–	1.45	49.4	–	36.8
AVE.	5.3	–	–	–	–	–	–
MAX.	–	7.6	47.6	1.60	50.8	–	38.2
Closed bulb							
MIN.	–	5.2	–	1.45	49.4	–	36.8
AVE.	5.3	–	–	–	–	–	–
MAX.	–	7.6	47.6	1.60	50.8	1.3	38.2

TUNGSTEN HALOGEN PRINCIPLE

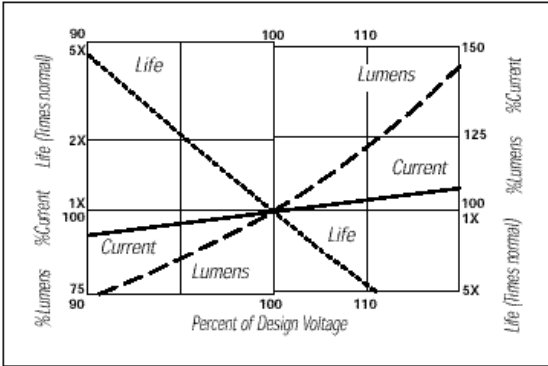
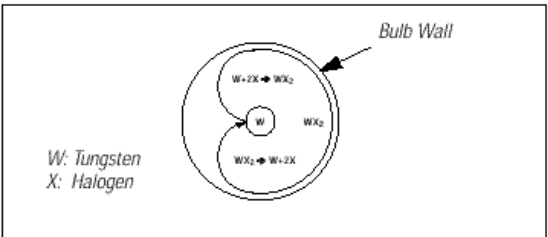
The tungsten filament is enclosed in a gas filled quartz bulb, together with a controlled quantity of halogen. At the operating temperature some tungsten vapourizes and migrates to the cooler areas of the bulb wall where before it can be deposited, it combines with the halogen to form a tungsten halide. This circulates until it comes near the filament where the halide dissociates and deposits the tungsten back on the filament. This cycle continues throughout the operating life of the lamp. As the bulb wall remains clean the bulb size can be reduced considerably by the use of quartz which can withstand the high wall temperatures. The small bulb and strong materials withstand much higher working pressures, this reduces filament evaporation, thus offering increased performance either as more light or longer life.

LIGHT, LIFE & VOLTAGE

For any particular lamp, the light output and life depend upon the voltage at which a lamp is operated. For instance, as approximations, the light output varies as the 3.6th power of the voltage and the life varies inversely as the 12th power of the voltage. The Chart and Tables below illustrate the effects of overvoltage or undervoltage applied to lamp on its current, life and light output. The values given (except for long life lamps) are reasonably valid between 95% and 110% rated volts. Beyond this range the indicated characteristics may not be realised because of the increasing influence of factors which cannot be incorporated into the chart. The chart applies only to D.C. or sine-wave A.C. current. The data may differ particularly for lamp operation on half-wave rectified voltage, semiconductor dimming devices of constant operation.

OPERATION AND MAINTENANCE

- Low voltage tungsten-halogen lamps are sensitive to voltage variations. Even a small change in voltage can have a considerable impact on lamp life (see "Light, Life & Voltage"). Designers should match fitting transformer ratings to actual mains line voltages to ensure that the lamps operate at as close to 12V as possible.
- Rapid cycling can also shorten lamp life, and designers should take advice from their GE Lighting representative before using these lamps in flashing or blinking applications.
- The lamps may be dimmed by reducing voltage. However, this may cause the bulbs to blacken. If this occurs the lamp should be run at full voltage (12V) for fifteen minutes, thereby clearing the problem. Note that the nature of low voltage lighting systems requires the use of fluorescent-type dimmers.
- Switch off mains supply before installing/removing lamp.
- Fuse is essential in circuit.
- Observe temperature tolerances: pinch seal, max. 350°C, bulb wall min. 250°C.
- Lamps should be free from contamination, including finger marks, before lamp is operated. Lamps can be cleaned with a soft cloth moistened with alcohol.
- Good condition of the lampholder contacts is essential.
- Bulb wall temperatures are high and therefore lamps should not be operated in flammable atmospheres unless enclosed in suitably rated luminaires.
- Ensure lamp is cool before removing.
- Open lamps should only be used within a luminaire with a protective shield.



Underrated Bulb Voltages (<100%)			
VOLTS %	AMPS %	LUMENS %	LIFE %
99	99.4	96.5	112.8
98	98.9	93.2	127.4
97	98.3	89.9	144.1
96	97.8	86.7	163.2
95	97.2	83.6	185.1
90	94.4	69.2	354.1

Overrated Bulb Voltages (>100%)			
VOLTS %	AMPS %	LUMENS %	LIFE %
101	100.5	103.5	88.7
102	101.1	107.2	79.8
103	101.6	110.9	70.1
104	102.2	114.7	62.5
105	102.7	118.6	55.7
110	105.4	139.6	31.9

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