

Precise™ Alutech™ MR16

Precise™ Alutech™ MR16
50mm ø Aluminised Mirror Halogen Lamps
20W, 35W, 50W

Description

Aluminised Precise™ Alutech™ MR16 lamps are extra low voltage tungsten halogen reflector-mounted lamps popular for downlighting and accent lighting applications because of their small size, precise beam control, high efficacy and excellent white light. Their aluminised mirror directs both visible and infra-red components of emitted light forward preventing the overheating of lampholders and transformers behind them. An Aluminised Precise™ Alutech™ MR16 lamp comprises a small halogen low voltage filament capsule produced with UV control quartz permanently cemented into a one-piece, aluminium coated all glass reflector. The reflector design produces a precise beam pattern with excellent uniformity and sharp beam cut-off. The reflector is ellipsoidal in shape. The filament is precisely aligned along the optical axis of the reflector during the manufacturing process to achieve the required beam pattern.

These lamps incorporate an integral clear cover glass 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 use of the Cover Glass together with specially developed UV control quartz material for the capsule results in almost no UV-B or UV-C radiation.

IEC Standards

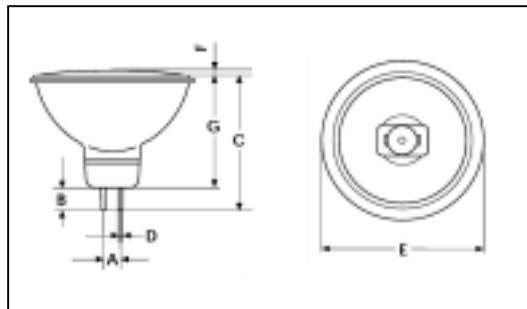
GE tungsten halogen lamps comply with the following international and British Standards where applicable:

EN 60357:2002 / IEC 60357: 2002
 Tungsten halogen lamps (non-vehicle) performance specifications

EN 60432-3:2002 / IEC 60432-3:2002
 Incandescent lamps- Safety Specification - Part 3: Tungsten halogen lamps (non-vehicle)

EN 60061-1:2000 / IEC 60061-1:2000
 Lamp caps & holders together with gauges for the control of interchangeability and safety Part 1. Lamp caps

EN ISO 9001:2000
 Quality Management Systems Requirements



Dimensions (mm)

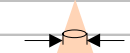




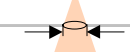
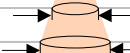



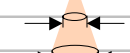






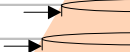


	A	B	C	D	E	F	G
MIN.	-	6.1	-	1.45	49.4	-	36.8
AVE.	5.3	-	-	-	-	-	-
MAX.	-	7.6	46.0	1.60	50.7	5.5	37.7

Technical Data

Burning Position: any

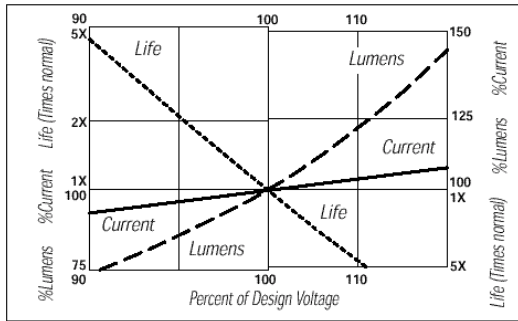
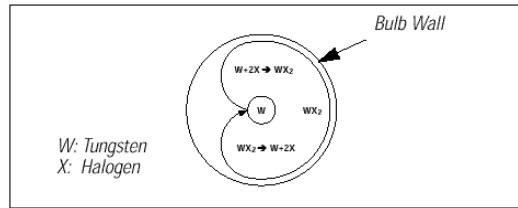
Order Code	Watt (W)	Voltage (V)	Max. Length (mm)	Max. Diameter (mm)	Peak Intensity (CD)	Beam Spread (°)	Colour Temp. (K)	Rated Avg. Life (h)
Bulb: aluminized, closed, Cap: GU5.3								
M269/BAB/CG/AL	20	12	50.5	50.7	450	36	3000	3000
M281/FMW/CG/AL	35	12	50.5	50.7	1300	36	3000	3000
M258/EXN/CG/AL	50	12	50.5	50.7	1800	36	3000	3000
M280/FNV/CG/AL	50	12	50.5	50.7	700	60	3000	3000

MR16 Precise Alutech Performance Cones - Typical Nominal Values

M269 20W 36°	m	lux			
	1	450	∅ 0.65 m		
	2	113	∅ 1.30 m		
	3	50	∅ 1.95 m		
	4	28	∅ 2.60 m		
	5	18	∅ 3.25 m		
M281 35W 36°	m	lux			
	1	1300	∅ 0.65 m		
	2	325	∅ 1.30 m		
	3	144	∅ 1.95 m		
	4	81	∅ 2.60 m		
	5	52	∅ 3.25 m		
M258 50W 36°	m	lux			
	1	1800	∅ 0.65 m		
	2	450	∅ 1.30 m		
	3	200	∅ 1.95 m		
	4	113	∅ 2.60 m		
	5	72	∅ 3.25 m		
M280 50W 60°	m	lux			
	1	700	∅ 1.15 m		
	2	175	∅ 2.31 m		
	3	78	∅ 3.46 m		
	4	44	∅ 4.62 m		
	5	28	∅ 5.77 m		

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 vaporizes 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.

Tungsten Halogen Lamps & UV Radiation

Potentially harmful high energy UV-C and UV-B radiation emitted by the filament are absorbed by the wall of the capsule which is produced with specially developed "UVControl" quartz. The use of UV control quartz together with an optically neutral front cover glass allows the lamp to fully comply with the latest stringent requirements of IEC 60432-3.

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.

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

- 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.

Cool Pinch

Innovative design of all GE dichroic mirror lamps has created a range with probably the lowest pinch temperature of any comparable lamp. A cool pinch temperature enables sealed lamps to be used in luminaires designed for open lamps. Excessive pinch seal temperature causes premature lamp failure: the maximum permissible pinch temperature is 350°C.

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October 2003