

ConstantColor™ CMH

StreetWise™

Tubular Ceramic Metal Halide Lamps
50W, 70W, 100W, 150W
Product Information

LAMP TECHNOLOGY

Ceramic metal halide (CMH) lighting means an end to compromise.

Until now, public authorities and other organisations have had to choose between high cost, high quality outdoor illumination or low cost alternatives which, even at peak efficiency, make streets and other areas look dingy.

CMH outdoor lighting offers the best of both worlds. Bright, white, 'natural' light and low costs for both running and maintenance.

With CMH lighting, streets and other public spaces can feel safer for pedestrians. More than that, they can actually perform more safely. Their "daylight" colour rendering improves the ability of drivers to recognise shapes and colours, especially in peripheral vision. It promotes quicker driver response times, too.

FEATURES

- High energy efficiency
- Excellent lumen maintenance
- Dimmable
- Easy retrofit for High Pressure Sodium lamps
- Consistent colour over life
- Colour uniformity lamp to lamp
- Good colour rendering (CRI: 70+)
- Up to 24% higher efficacy than Quartz Metal Halide
- Up to 16,000 Hr life
- UV control
- No ballast thermal protection required
- System flexibility, operating on both electronic and electromagnetic ballasts
- Horizontal burning position

TUBULAR FORMATS

Conventional lamp shape with a screw-type E27/E40 base enables existing luminaire designs to use ConstantColor™ CMH lamps with little or no modification to the optical system.

APPLICATION AREAS

- Street lighting
- City Beautification
- Indoor lighting
- Residential lighting
- Area lighting
- Architectural floodlighting



PRELIMINARY DATA SHEET



GE imagination at work

SPECIFICATION SUMMARY*

Electrical Characteristics		50W	70W	100W	150W
Operating position		Horizontal	Horizontal	Horizontal	Horizontal
Lamp Power (rated)	W	52	72	97	150
Lamp Voltage	V	85	95	100	100
Lamp Volts Max	V	95	105	110	110
Lamp Current	A	0.76	0.95	1.16	1.8
Max. Ignition Voltage	kV	4.5	4.5	5	5
Conventional ballast required		HPS ballast and HPS ignitor	HPS ballast and HPS ignitor	HPS ballast and HPS ignitor	HPS ballast and HPS ignitor
Ballast Impedance at 230V	V/A	257	197	155	106
Power Factor Correction Capacitor	µF	8	10	12	20
Mercury content (max. miligrams)		2.5	2.5	3.2	4.5
Luminaire characteristics		Enclosed	Enclosed	Enclosed	Enclosed

The specification contains data about typical performance (50Hz sine wave at nominal line voltage). Actual values may depend on ballast and application. Note that the lamp voltage inside the luminaire should not deviate by more than 5V from the bare lamp voltage in free air. Thermal protection recommended.

SPECIFICATION SUMMARY*

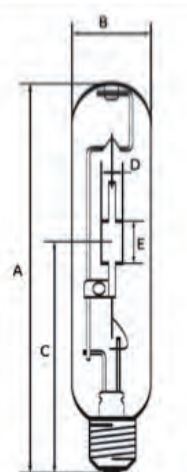
General	Units	50W Tubular	70W Tubular	100W Tubular	150W Tubular
Product Code		77400	77401	77399	77402
100 hrs Initial Lumens Electronic Gear	lm	4800*	7800*	10900*	16300*
100 hrs Initial Lumens Magnetic Gear	lm	4750*	7400*	10100*	16200*
Colour Temperature	K	3000	3000	3000	3000
Colour Rendering Index	Ra	70+	70+	70+	70+
Colour Rendering Index at 70% power	Ra	65+	65+	65+	65+
Starting Characteristics¹					
Time to start (at 25°C)	s	<10	<10	<10	<10
Hot restart time (Maximum)	min.	15	15	15	15
Through Life performance Lumen maintenance at 12,000 hours (% of initial lumens)					
Rated life (horizontal) B10	h	12,000	12,000	12,000	12,000
Average rated life (horizontal) B50	h	16,000	16,000	16,000	16,000
Safety requirements					
Maximum allowed bulb temperature under abnormal conditions ²	°C	320	320	400	400
Maximum base temperature	°C	210	210	250	250

¹Typical values (actual values will be ballast dependent)

²For a bare lamp running at 1.25x normal operating power to simulate the most unfavourable conditions of high line voltage and low ballast impedance in a fixture environment.

*Initial data, tests are ongoing

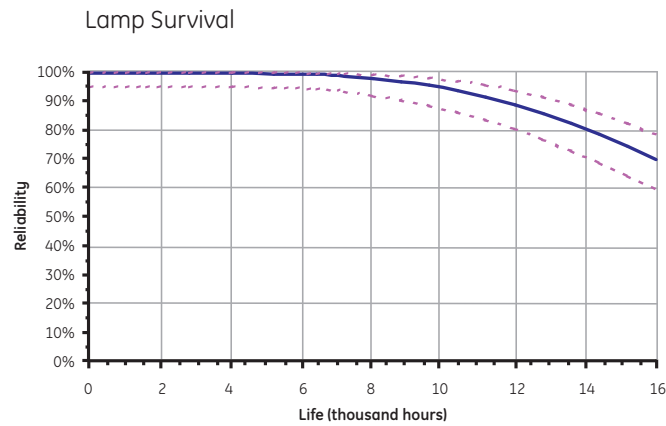
DIMENSIONS



		50W Tubular	70W Tubular	100W Tubular	150W Tubular
Product Code		77400	77401	77399	77402
A – lamp MOL	mm	154±2 (max. 156)	154±2 (max. 156)	209±2 (max. 211)	209±2 (max. 211)
B – bulb diameter	mm	max. 39	max. 39	max. 48	max. 48
C – lamp LCL	mm	102 nominal	102 nominal	132 nominal	132 nominal
D – burner width	mm	5.8	6.7	8.1	9.6
E – burner height	mm	13.4	17.5	17.7	23.3
Arc tube eccentricity	°	3	3	3	3
Base type		E27	E27	E40	E40

LAMP LIFE

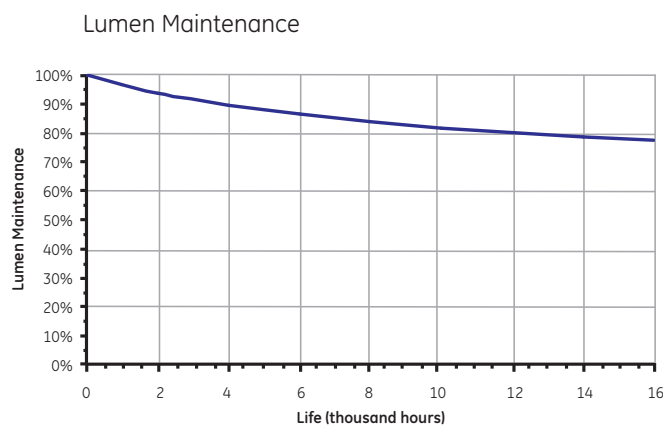
The graphs show the mortality curve and service life curve of statistically representative batches of lamps operated under controlled conditions of 11 hours per start. The declared lamp life is the median life, which is when 50% of the lamps from a large sample batch would have failed. Lamp life in service will be affected by a number of parameters, such as supply voltage variation, switching cycle, operating position, mechanical vibration, luminaire design and control gear. The information is intended to be a practical guide for comparison with other lamp types. The determination of lamp replacement schedules will depend upon the acceptable reduction in illuminance and the relative costs of spot and group replacement.



LUMEN MAINTENANCE

The lumen maintenance graph shows how the luminous output decreases throughout life. All metal halide lamps experience a reduction in light output and a very slight increase in power consumption through life. Consequently there is an economic life when the efficacy of the lamp falls to a level at which is better to replace the lamp and restore the illumination. Where a number of lamps are used within the same area it may be well worth considering a group lamp replacement programme to ensure uniform output from all the lamps. Curves are representing 11 hours per start cycle, less frequent starting will improve lumen maintenance.

Note: Representative curves are for Horizontal orientation.



SUPPLY VOLTAGE SENSITIVITY

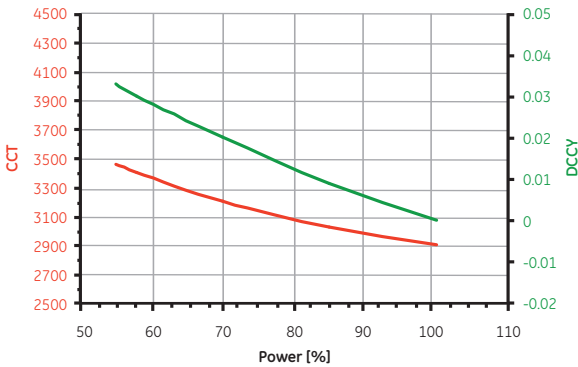
The line supply voltage applied to the control gear should be as close to rated nominal as possible. Lamps will start and operate at 10% below rated supply voltage but this should not be considered as a normal operating condition. In order to maximise lamp survival, lumen maintenance and colour uniformity, supply voltage and rated ballast voltage should be within $\pm 3\%$. Supply variations of $\pm 5\%$ are permissible for short periods only. Where supply voltage variation is likely to occur the use of electronic control gear should be considered as this type of equipment is normally designed to function correctly for a voltage range of 200-240V.

DIMMING

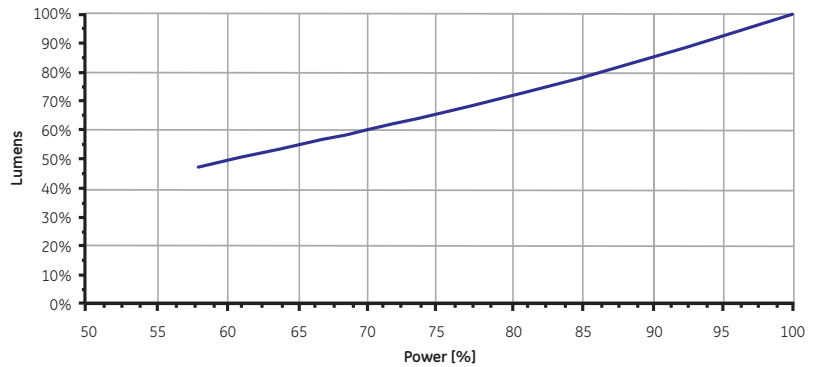
There is an increasing demand to maximize energy savings of light sources. While HID lamps are inherently very efficient, many users would like to further increase the energy savings of HID lamps through dimming.

Dimming systems that maintain the open circuit voltage to the lamp (such as magnetic systems with variable impedance, or electronic square wave ballasts with dimming function) can be approved for standard life warranty with up to 65% power dimming. The lumen maintenance and colour appearance may be substantially affected when dimming down to 50% of rated power.

Impact of dimming
on colour temperature and DCCY



Impact of dimming on lumen output



CONTROL GEARS AND ACCESSORIES

Electronic Ballasts

Tridonic and Harvard ballasts have been approved and there are ongoing tests with ballasts from other TOP ballast manufacturers.

Advantages are:

- Good regulation against supply voltage variation
- Improved lamp colour consistency
- Elimination of lamp flicker
- Reduced weight of control gear
- Reduced electrical power losses
- Ballast noise reduced/eliminated
- Single piece compact unit
- Reduced wiring complexity in the luminaire

Suitable Igniters

Igniters must be capable of generating a pulse voltage and pulse width greater than the minimum specified in IEC60662 for High Pressure Sodium lamps.

SAFETY WARNINGS

The use of these products requires awareness of the following safety issues:

WARNING:

- Risk of electric shock - isolate from power before changing lamp
- Strong magnetic fields may impair lamp performance, and in the worst case could lead to lamp rupture

Use in enclosed fixtures to avoid the following:

- Risk of fire
- A damaged lamp emits UV radiation which may cause eye/skin injury
- Unexpected lamp rupture may cause injury, fire, or property damage

CAUTION:

- Risk of burn when handling hot lamp
- Lamp may shatter and cause injury if broken
- Arc tube fill gas contain Kr-85

Always follow the supplied lamp operation and handling instructions.