LightTech
LightSources

Creating True Value
and True Partnership

Worldwide Suppliers of Quality UV Lamps

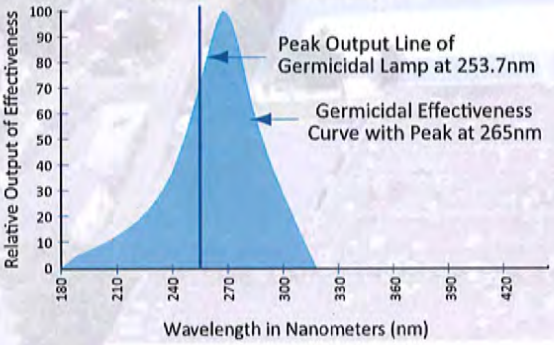
Company Profile:

Founded in 1983, LightSources Inc. has been offering superior products and processes to our OEM customers and is the world's leading manufacturer of quartz germicidal lamps. In 1993, LightTech Lamp Technology Ltd. was started in Hungary in order to serve the growing demand for germicidal lamps and sleeves for both the European and Asian markets. The combination of our state-of-the-art manufacturing facilities, technologies, capabilities allow us to bring quality products to the market with reduced lead times and high performance. Both companies design and manufacture lamps for a wide variety of specialty lighting applications spanning multiple market segments throughout many industries. While both companies core focus remains on germicidal, low pressure, medium HID pressure, photochemical, and skin tanning applications, we also manufacture specialty lamps for LCD backlighting and compact fluorescent applications. Both companies are recognized within their respective markets for excellence in product design and manufacture. We strive to meet our customers' unique requirements for performance, quality, and reliability.

UV Action:

- LightSources & LightTech low-pressure mercury germicidal lamps are specially designed to produce UV radiation with maximum efficiency. The principal emission wavelength at 254 nm is close to the peak of the germicidal effectiveness curve at 265 nm (see spectral plot below).

Lamp Output vs. Effectiveness



- Our germicidal lamps are used in many critical applications such as:

  - Air purification (in-room and in-duct HVAC)
  - Food & beverage processing, packaging, and storage
  - Surface disinfection
  - Medical (hospital rooms, clinics etc.)
  - TOC reduction for ultrapure water
  - Wastewater treatment
  - Drinking water disinfection
  - Groundwater remediation

Ozone Action:

- "VH" (or Very High ozone producing lamps) emit energy at 185 nm in addition to the 254 nm wavelength.
- The UV emission at 185nm is absorbed by oxygen in the air, producing ozone. Ozone is an extremely effective oxidizer, destroying microorganisms as well as reducing Total Organic Carbon (TOC).
- A primary advantage of the ozone generated by our UV lamps is that it can be carried through the air into places not easily reached by direct UV exposure.

Advantages of UV Radiation:

- Environmentally friendly, no dangerous or toxic chemicals that require specialized storage or chemicals added to air and water.
- Cost effective - low initial capital costs and reduced operating costs.
- Rapid - UV radiation offers immediate treatment with no requirements for holding tanks or long retention/exposure times.
- Compatibility - UV treatment is highly compatible with other water and air treatment processes while causing no changes in taste, odor, pH values, conductivity or chemical properties of the air/water in which it is used.

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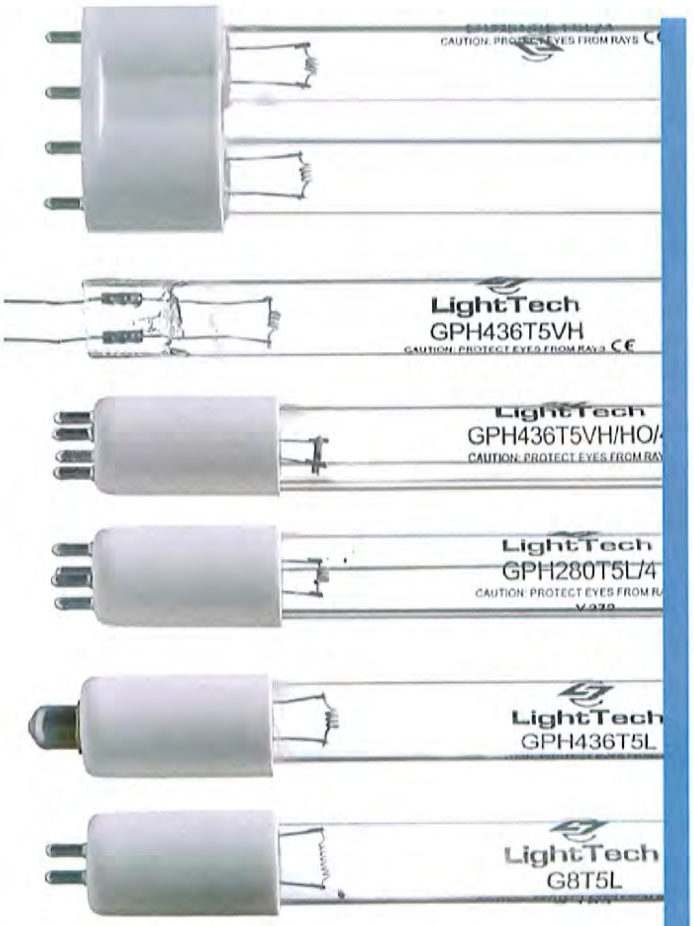

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Where Partnerships are Valued

Low Pressure Amalgam Germicidal Lamps

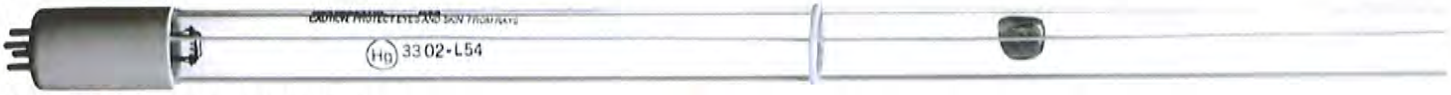
Our companies provide the widest range of high-quality spot and pellet amalgam lamps in the industry today; both standard and custom designs. Our low pressure amalgam lamps function with equal efficiency in both horizontal and vertical operation. Amalgam lamps yield up to three times the UVC output over standard lamps of the same length. We have applied our proprietary LongLife+™ process to the amalgam line. Our special proprietary coating reduces the rate of output depreciation so often associated with higher intensity lamps. Our lamps have a useful life of up to 16,000 hours, maintaining an end-of-life UVC output up to 90% of initial output.

Advantages:

- Amalgam lamps offer the best consistency of UV output over a broad air and water temperature range (4 – 40°C). Custom designs for higher temperature applications are available.
- Higher wattage lamps allow treatment systems to use fewer lamps compared to standard-output lamps, which reduces capital and maintenance costs of the system.

Our Proprietary Patented Pellet Amalgam Technology

Pellet amalgam technology has major benefits over spot amalgam technology in high power applications and hot ambient environments. Pellet amalgam lamps are designed to produce higher UVC at full power, as well as providing higher UV output under dimming conditions. Pellet amalgam technology benefits include greater efficiency in any mounting orientation (horizontal or vertical) and stable operation in more extreme environments.



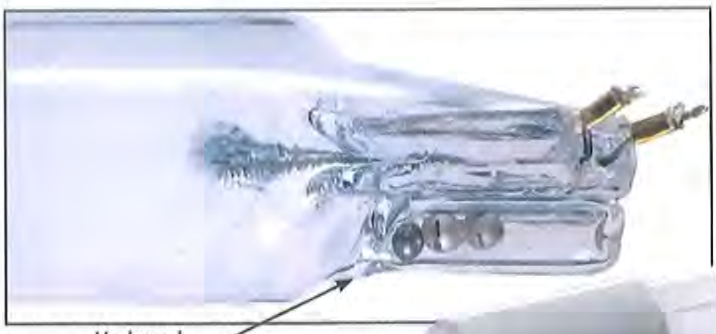
Pellet Amalgam Lamp Features

- Outside diameters: up to 38mm
- Stable performance in extreme air and water temperatures
- Length: up to 2.5 meters
- Electrical power: up to 1,200 W
- Nominal UVC efficiency at 254 nm: 35%
- Power per unit length: up to 5 W/cm
- UVC power per unit length: up to 1.75 W/cm
- Ambient application temperature range: 4 - 40°C
- Operating hours: up to 16,000 hrs [1]
- UV Lamp maintenance: 90% [1]

Spot Amalgam Lamp Features

- Outside diameters: 15mm – 28mm
- Stable UVC output performance over a broad air and water temperature range
- Length: up to 2.5 meters
- Electrical power: up to 400 W
- Nominal UVC efficiency at 254 nm: 35%
- Power per unit length: up to 5 W/cm
- UVC power per unit length: up to 1.75 W/cm
- Ambient application temperature range: 4 - 40°C
- Operating hours: up to 16,000 hrs [1]
- UV Lamp maintenance: 90% [1]

Note 1: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values.*



Un-based pellet amalgam lamp with view of the pellets

Other amalgam lamp sizes, shapes, and power levels are available upon request!

Spot Amalgam Lamp

UVC Amalgam Germicidal Lamps

Diameter	Tube Length mm	Overall Length mm	Arc Power[1] mm	Current[1,2] W	Voltage[1] A	UVC output[1] (254 nm) V	Life µW/cm²	Rated[1,2] W	hrs.
Spot Amalgam Lamps - *Available as low ozone or ozone producing: L, VH, or Synthetic quartz glass									
GPHA357T5(*)	15	357	278	42	1.2	36	110	11	16000
GPHA843T5(*)	15	843	764	110	1.2	88	320	35	16000
GPHA1000T5(*)	15	1000	921	127	1.2	107	370	42	16000
GPHA1554T5(*)	15	1554	1475	190	1.2	164	500	68	16000
GPHA357T6(*)	19	357	278	57	1.8	32	130	13	16000
GPHA843T6(*)	19	843	764	127	1.8	71	400	43	16000
GPHA1000T6(*)	19	1000	921	150	1.8	84	460	52	16000
GPHA1554T6(*)	19	1554	1475	240	1.8	134	630	87	16000
GPHHA357T6(*)	19	357	278	65	2.1	31	140	14	16000
GPHHA840T6(*)	19	840	740	140	2.1	68	445	48	16000
GPHHA843T6(*)	19	843	764	172	2.1	82	490	54	16000
GPHHA1000T6(*)	19	1000	921	207	2.1	99	570	65	16000
GPHHA1145T6(*)	19	1145	1045	200	2.1	95	570	66	16000
GPHHA1554T6(*)	19	1554	1475	320	2.1	154	820	107	16000
GPHHA1570T6(*)	19	1570	1470	315	2.1	150	805	105	16000
GPHHA1578T6(*)	19	1578	1478	325	2.0	162	840	110	16000
GPHA843D28(*)	28	843	750	230	3.8	60	670	72	16000
GPHA1000D28(*)	28	1000	900	270	3.8	70	770	86	16000
GPHA1200D28(*)	28	1200	1100	320	3.8	85	880	103	16000
GPHA1554D28(*)	28	1554	1450	420	3.8	110	1050	137	16000
GPHHA1570D28(*)	28	1570	1470	420	3.8	110	1000	135	16000
Pellet Amalgam Lamps - *Available as low ozone or ozone producing: L, VH, or Synthetic quartz glass									
GPHVA1200D28(*)	28	1200	1100	320	3.8	85	880	103	16000
GPHVA1554D28(*)	28	1554	1450	420	3.8	110	1050	137	16000
GPHVA843T10(*)	32	843	750	250	5.5	45	710	77	16000
GPHVA1000T10(*)	32	1000	900	300	5.5	55	840	94	16000
GPHVA1200T10(*)	32	1200	1100	380	5.5	70	1020	120	16000
GPHVA1554T10(*)	32	1554	1450	500	5.5	90	1230	160	16000
GPHMVA843T10(*)	32	843	750	330	6.0	55	950	102	16000
GPHMVA1000T10(*)	32	1000	900	400	6.0	66	1120	125	16000
GPHMVA1200T10(*)	32	1200	1100	480	6.0	80	1310	154	16000
GPHMVA1554T10(*)	32	1554	1450	620	6.0	105	1540	200	16000
GPHSVA843T10(*)	32	843	750	380	7.0	55	1060	114	16000
GPHSVA1000T10(*)	32	1000	900	500	7.0	70	1400	155	16000
GPHSVA1200T10(*)	32	1200	1100	620	7.0	88	1650	195	16000
GPHSVA1554T10(*)	32	1554	1450	800	7.0	115	2000	260	16000

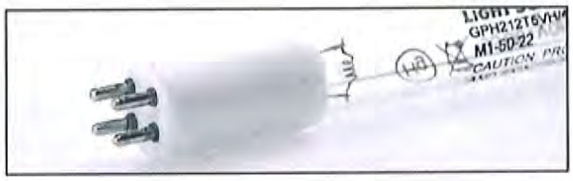
Note[1]: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*
Note[2]: *LSI/LT Amalgam lamps are designed for operation on a preheat (a.k.a. program start) ballast only, unless otherwise noted.*

Quartz Germicidal Lamps

The type of fused quartz used to make the body of the germicidal lamp determines the UV wavelengths emitted. "L" or "Low ozone" type quartz glass transmits up to 90% at the 254 nm wavelength and is typically doped with titanium oxide, which blocks the transmission of 185 nm energy. "VH" or "Very high ozone" clear fused quartz transmits both 185 nm and 254 nm wavelengths.

The 185 nm photons react with oxygen in the air to produce ozone. In applications where moderate amounts of ozone may be required, we can splice the two types of quartz glass together to form a custom "L" to "VH" ratio according to the customer's specific requirements. When required, ozone producing lamps can also be made with synthetic quartz for an even higher output at 185 nm.

Other lamp sizes, shapes and power levels are available upon request!

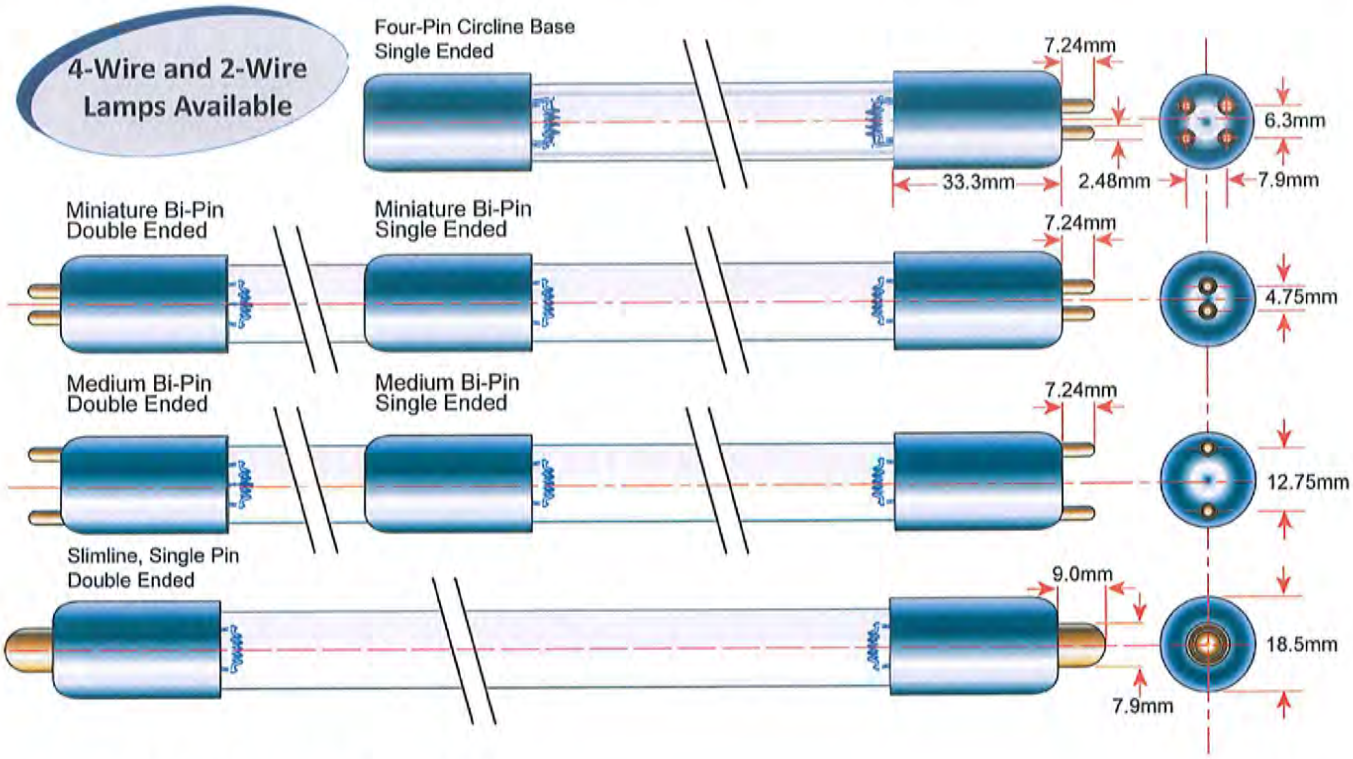


Standard Output Quartz Germicidal Lamps[2]

	Tube Diameter mm	Overall Length mm	Arc Length mm	Power[1] W	Current[1] mA	Voltage[1] V	UV output[1] @ 254nm µW/cm²	UV output[1] @ 254nm W	Rated[1,2] Life hrs.
Preheat start lamps - low ozone									
GPH212T5L	15	212	132	10	425	25	27	2.7	16000
GPH287T5L	15	287	207	14	425	34	40	4	16000
GPH295T5L	15	295	215	14	425	34	42	4.2	16000
GPH303T5L	15	303	223	15	425	35	43	4.3	16000
GPH357T5L	15	357	277	17	425	42	57	5.7	16000
GPH436T5L	15	436	356	21	425	51	72	7.3	16000
GPH793T5L	15	793	713	38	425	92	125	13.5	16000
GPH843T5L	15	843	762	41	425	98	150	16	16000
GPH1148T5L	15	1148	1067	55	425	135	180	22	16000
GPH1554T5L	15	1554	1474	75	425	179	240	33	16000
GPH1630T5L	15	1630	1550	79	425	189	252	34.5	16000
Preheat start lamps - ozone generating									
GPH212T5VH	15	212	132	10	425	25	27	2.7	16000
GPH287T5VH	15	287	207	14	425	34	40	4	16000
GPH303T5VH	15	303	223	15	425	35	43	4.3	16000
GPH357T5VH	15	357	277	17	425	42	57	5.7	16000
GPH436T5VH	15	436	356	21	425	51	72	7.3	16000
GPH793T5VH	15	793	713	38	425	92	125	13.5	16000
GPH843T5VH	15	843	762	41	425	98	150	16	16000
GPH1148T5VH	15	1148	1067	55	425	135	180	22	16000
GPH1554T5VH	15	1554	1474	75	425	179	240	33	16000
GPH1630T5VH	15	1630	1550	79	425	189	252	34.5	16000

Note[1]: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*
Note[2]: *LSI/LT Amalgam lamps are designed for operation on a preheat (a.k.a. program start) ballast only, unless otherwise noted.*

Typical Germicidal Lamp Configurations



Standard Output Quartz Germicidal Lamps

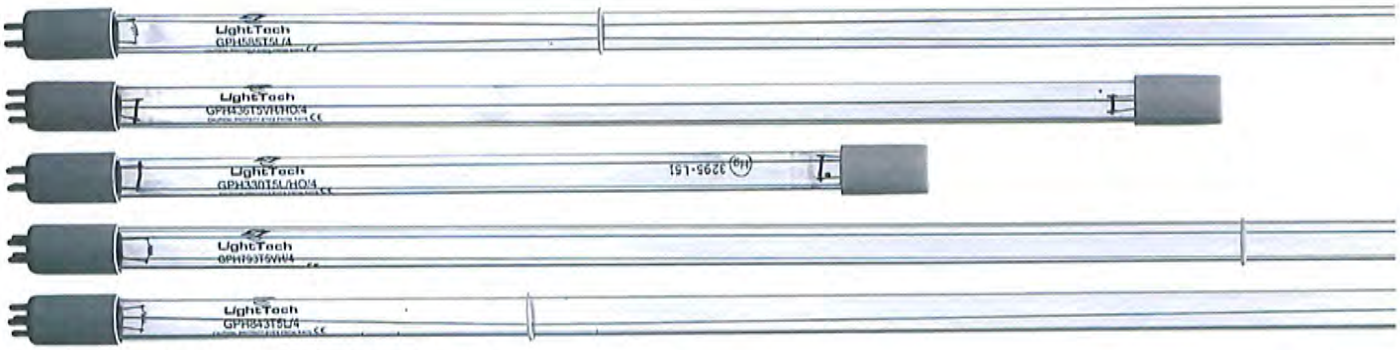
	Tube Diameter mm	Overall Length mm	Arc Length mm	Power[1] W	Current[1] mA	Voltage[1] V	UV output[1] @ 254nm µW/cm²	UV output[1] @ 254nm W	Rated[1] Life hrs.
Instant start lamps - low ozone									
G10T5L	15	357	277	17	425	42	57	5.7	16000
G24T5L	15	537	457	25	425	75	73	9.0	16000
G36T5L	15	843	762	41	425	98	150	16	16000
G48T5L	15	1148	1067	55	425	135	180	22	16000
G64T5L	15	1554	1474	75	425	179	240	33	16000
G67T5L	15	1630	1550	79	425	189	252	34.5	16000
Instant start lamps - ozone generating									
G10T5VH	15	357	277	17	425	42	57	5.7	16000
G24T5VH	15	537	457	25	425	75	73	9.0	16000
G36T5VH	15	843	762	41	425	98	150	16	16000
G48T5VH	15	1148	1067	55	425	135	180	22	16000
G64T5VH	15	1554	1474	75	425	179	240	33	16000
G67T5VH	15	1630	1550	79	425	189	252	34.5	16000

Note[1]: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*

High Output (HO) Quartz Lamps

High Output (HO) lamps yield up to 66% more UV output when compared to standard lamps of the same length. HO lamps offer system designers unique opportunities to decrease the number of lamps required without compromising functionality of the system. This has the added benefits of reduced system footprint, increased efficiency and/or increased system capacity. HO lamps are available in the same configurations as standard lamps. Custom lengths and configurations may also be produced to the customer's specific requirements. The table below shows a sampling of the more common lamp sizes. We can custom design the ideal HO lamp for your unique application.

Preheat & instant start configurations available



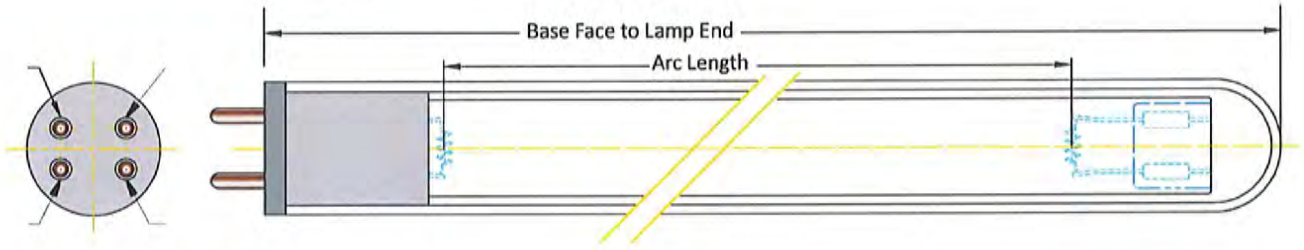
High Output (HO) Quartz Germicidal Lamps

	Tube Diameter mm	Overall Length mm	Arc Length mm	Power[1] W	Current[1] mA	Voltage[1] V	UV output[1] @ 254nm µW/cm²	UV output[1] @ 254nm W	Rated[1] Life hrs.
Available in Low ozone (L) or Ozone generating									
GHO436T5L	15	436	360	36	800	45	99	10	16000
GXO436T5L	15	436	360	48	800	60	120	13	16000
GHO36T5L	15	842	755	75	800	95	230	24	16000
GXO36T5L	15	842	755	87	800	110	260	28	16000
GHO846T5L	15	846	767	75	800	95	235	25	16000
GXO846T5L	15	846	767	87	800	113	265	29	16000
GHO893T5L	15	893	815	85	800	106	250	27	16000
GXO893T5L	15	893	815	95	800	120	270	30	16000
GHO64T5L	15	1554	1421	145	800	182	410	53	16000
GXO64T5L	15	1554	1421	155	800	195	420	54	16000

Note[1]: Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.

Germipak UV Cell Germicidal Lamps

LightSources and LightTech offer a series of integrated assemblies consisting of germicidal lamps encapsulated into a quartz sleeve. This cellular concept offers a wide range of custom design possibilities for OEM applications. Germipak UV Cell lamps are very economical components in point-of-use water treatment systems and other applications. The standard units listed below have 15mm (T5) diameter lamps and 20.5 mm outer diameter sleeves.



Germipak Quartz Germicidal Cell Lamps

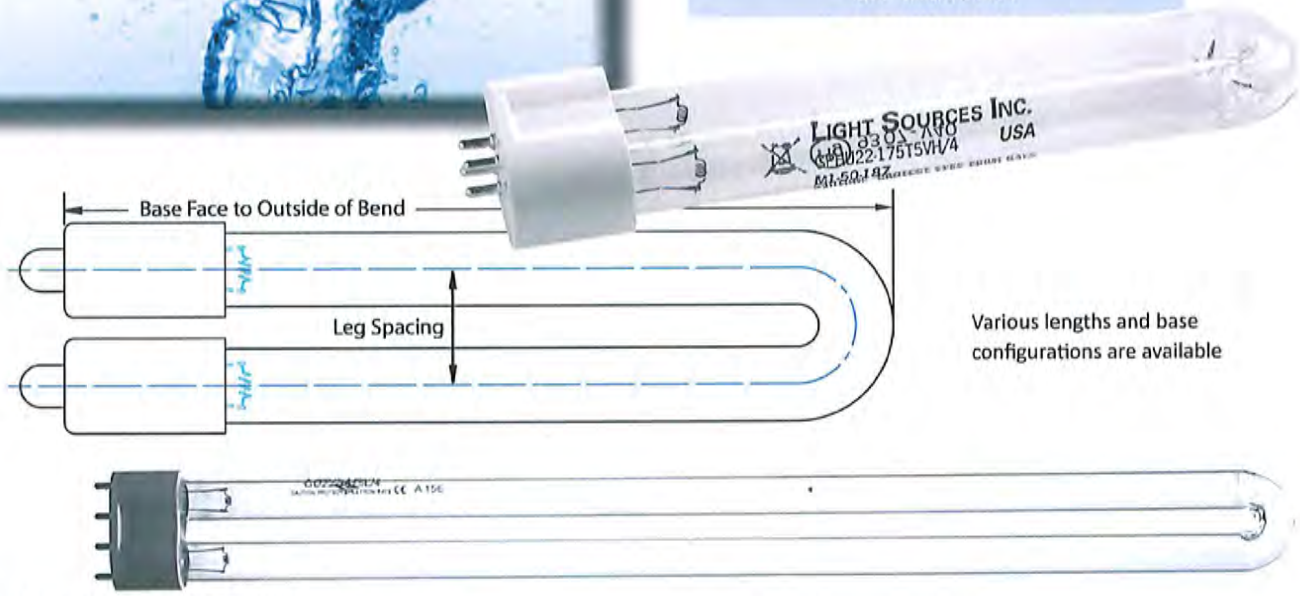
	Lamp Diam mm	Sleeve Diam mm	Overall Length mm	Arc Length mm	Power W	Current[1] mA	Voltage[1] V	UV output[1] @ 254nm µW/cm²	W	Rated[1] Life hrs.
Low Ozone										
GCL436T5L/Cell	15	20.5	436	356	21	425	51	65	6.5	16000
GCL793T5L/Cell	15	20.5	793	713	38	425	92	111	12.1	16000
GCL36T5L/Cell	15	20.5	842	762	41	425	98	130	14.0	16000
Ozone generating										
GCL436T5VH/Cell	15	20.5	436	356	21	425	51	65	6.5	16000
GCL793T5VH/Cell	15	20.5	793	713	38	425	92	111	12.1	16000
GCL36T5VH/Cell	15	20.5	842	762	41	425	98	130	14.0	16000

Note[1]: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*

Quartz U-Shaped Germicidal Lamps

Our quartz U-shaped germicidal and ozone lamps can produce more intense UV radiation in a limited space, allowing designers more flexibility. These lamps are available with center-to-center leg spacing of 22 or 76 mm, and offer the perfect solution by effectively doubling the arc length and UVC output.

Ask about custom configurations - custom lengths, and bases are available!



Various lengths and base configurations are available

Quartz Germicidal U-Lamps

	Tube Diameter mm	Length/ Leg Sp. mm	Arc Length mm	Power[1] W	Current[1] mA	Voltage[1] V	UV output[1] @ 254nm µW/cm²	UV output[1] @ 254nm W	Rated[1] Life hrs.
Low Ozone									
GU76-10T5L	15	169/76	277	17	425	42	57	5.7	16000
GU22-10T5L	15	186/22	277	17	425	42	57	5.7	16000
GU22-390T5L	15	390/22	699	36	425	85	105	12	16000
GU76-390T5L	15	390/76	711	37	425	88	110	12.8	16000
GU76-36T5L	15	412/76	762	41	425	98	135	14.3	16000
GU22-36T5L	15	429/22	762	41	425	98	135	14.3	16000
Ozone Generating									
GU76-10T5VH	15	169/76	277	17	425	42	57	5.7	16000
GU22-10T5VH	15	186/22	277	17	425	42	57	5.7	16000
GU22-390T5VH	15	390/22	699	36	425	85	105	12	16000
GU76-390T5VH	15	390/76	711	37	425	88	110	12.8	16000
GU76-36T5VH	15	412/76	762	41	425	98	135	14.3	16000
GU22-36T5VH	15	429/22	762	41	425	98	135	14.3	16000

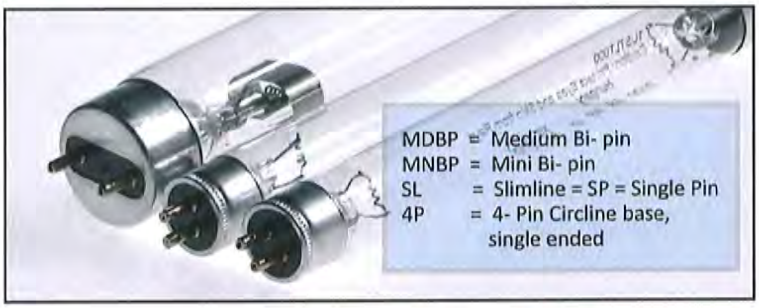
Note[1]: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*

Soft Glass Germicidal Lamps

Soft glass lamps are an economical option for producing 254 nm UVC and also offer a much wider variety of shapes and sizes than what is available with quartz glass. Soft glass lamps have a wide range of operating currents (180 to 1700 mA). We offer custom configurations to meet OEM requirements. Standard soft glass lamps are available in T4, T5, T6, T8 and T12 bodies. At our glass plant in Hungary, we engineer our germicidal soft glass to the highest standards and from the best materials. Our optimized processing and superior materials provide higher UVC output over the life of the lamp.

Advantages:

- Economical option versus quartz lamps
- Custom shapes and sizes including complex bends



UV Soft Glass Germicidal Lamps

	Tube Diam. mm	Base Config.	BF - BF mm	Arc Length mm	Power[1] W	Current mA	Voltage[1] Hi Freq[1] V	UV output[1] @ 254nm µW/cm²	W	Rated[1] Life hrs.
Standard Lamps										
LTC4T5	15.7	MNBP	134	77	4	180	23	9	0.9	9000
LTC6T5	15.7	MNBP	210	154	6	180	34	16	1.6	9000
LTC8T5	15.7	MNBP	287	231	8	180	45	21	2.1	9000
LTC11T5	15.7	MNBP	210	154	11	430	26	26	2.6	9000
LTC11T5SE	15.7	4P	244	179	12	430	26	26	2.6	9000
LTC16T5	15.7	MNBP	287	231	16	370	44	40	4	9000
LTC16T5SE	15.7	4P	317	245	17	370	46	42	4.2	9000
LTC40T5	15.7	SL	842	767	41	425	98	141	15.6	9000
LTC64T5	15.7	SL	1554	1481	76	425	180	225	31	9000
LTC40T5SE	15.7	4P	842	767	41	425	98	141	15.6	9000
LTC64T5SE	15.7	4P	1554	1481	76	425	180	225	31	9000
LTC10T8	25.7	MDBP	330	247	10	280	36	23	2.3	9000
LTC15T8	25.7	MDBP	436	353	15	350	44	47	4.8	9000
LTC17T8	25.7	MDBP	588	505	17	280	61	44	4.5	9000
LTC30T8	25.7	MDBP	893	810	30	380	80	100	11.3	9000
LTC20T10	32	MDBP	588	495	20	370	55	65	6.7	9000
High Output Lamps										
LTC80T5SE	15.7	4P	842	767	83	800	103	245	27	9000
LTC125T5SE	15.7	4P	1554	1481	155	800	195	360	50	9000
LTC25T8	25.7	MDBP	436	353	25	620	41	71	7.2	9000
LTC55T8	25.7	MDBP	893	810	55	800	70	170	19	9000
LTC75T8	25.7	MDBP	1198	1115	75	900	85	215	26.5	9000
LTC115T12	37.7	MDBP	1198	1118	115	1700	69	280	34	9000

***Note[1]:** Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*

UVC Compact Germicidal Lamps

Our companies offer a superb line of UVC emitting compact germicidal lamps for applications in small spaces. These lamps are consistently a favorite product among our clients. Compact lamps are made of an engineered twin-tube innovative design, which allows a very uniform output. We provide all standard lamp sizes as well as custom configurations. The high efficiency of a compact lamp is enabled by leaving a small dead space at the end of the two parallel tubes. Because this area is not part of the path followed by the discharge (farther away from the center of the discharge column) the wall temperature is lower than anywhere else creating a dedicated mercury cold spot. These compact designs are available in soft glass (254nm only) and quartz glass (254nm and 185nm emission). LightSources and LightTech also offer compact lamp designs using our patented pellet amalgam technology. Providing outstanding UVC efficiency, it is one of the highest value solutions available on the market.

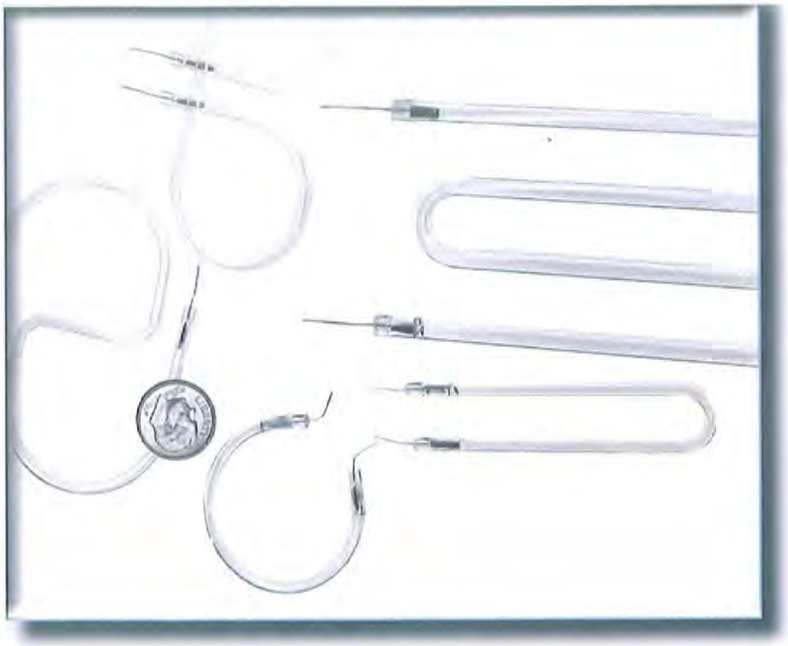
2G7 G23 2G11

Other lamp sizes, shapes, and power levels are available upon request!

UVC Compact Germicidal Lamps

	Tube Diameter mm	Base Config.	Overall Length mm	Power[1] W	Current mA	Voltage[1] † 50/60 hz V	UV output[1] @ 254nm µW/cm²	W	Rated[1] Life hrs.
Soft Glass Low Pressure									
LTC5W/G23	12.5	G23	83	5	180	34	9	1	8000
LTC7W/G23	12.5	G23	115	7	175	47	16	1.8	8000
LTC9W/G23/2G7	12.5	G23 / 2G7	145	9	170	60	22	2.4	8000
LTC11W/G23	12.5	G23	214	11	160	89	33	3.6	8000
LTC13W/G23	12.5	GX23	155	13	290	59	31	3.4	8000
Soft Glass High Power									
LTC18W2G11	17.5	2G11	225	18	370	60	51	5.5	8000
LTC24W/2G11	17.5	2G11	320	24	350	87	65	7	8000
LTC35WHO/2G11	17.5	2G11	225	35	850	40†	105	11	8000
LTC36W/2G11	17.5	2G11	415	36	440	105	110	12	8000
LTC55W/2G11	17.5	2G11	535	55	540	103†	156	17	8000
LTC60WHO/2G11	17.5	2G11	415	60	670	120	169	18	8000
LTC95WHO/2G11	17.5	2G11	535	95	950	100†	304	32	8000
Quartz Glass High Power									
LTCQ35WHO/2G11	15	2G11	225	36	800	45†	110	11	9000
LTCQ36W/2G11	15	2G11	415	36	440	105	119	13	9000
LTCQ55W/2G11	15	2G11	535	55	540	103†	168	18	9000
LTCQ60WHO/2G11	15	2G11	415	60	670	118	179	19	9000
LTCQ95WHO/2G11	15	2G11	535	95	950	100†	328	34	9000

**Custom quartz high wattage (> 150W) pellet amalgam compact lamps available.*
Note[1]: Measurements were performed on a 50/60 Hz magnetic ballast and represents average values at 100 cm.
†Measurements were performed on a high-frequency, current limited electronic ballast and represent average values at 100 cm

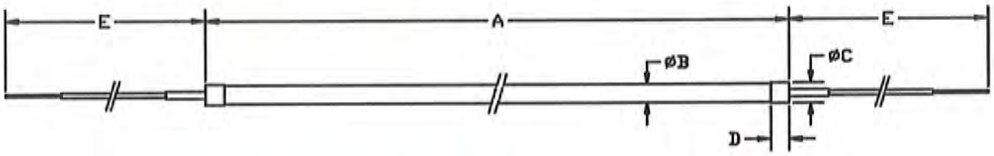


UVC Subminiature Germicidal Lamps

LightSources makes it possible to realize all the benefits of germicidal UVC light in limited space applications with our subminiature UVC technology. These lamps are customized to each OEM's innovative design.

Call and talk to us about your design ideas!

Typical Layout for a Straight Subminiature Germicidal UVC lamp



Let us know your unique ideas and lamp shapes!

A - Overall Length
B - Diameter
C - Electrode Diameter
D - Electrode Width
E - Wire Length
Base - None

Subminiature Germicidal Lamps

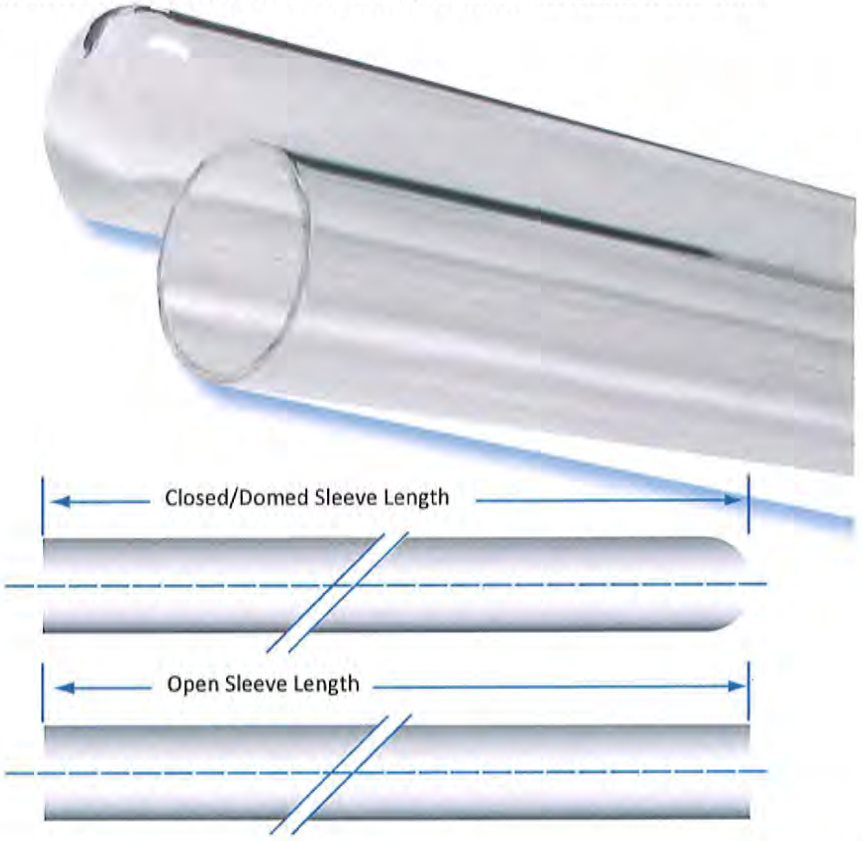
	Tube Diameter mm	Overall Length mm	Wire Length mm	Power W	Current mA	Voltage V
Low ozone						
GSM-3-51	3.0	51 ± 1.5	10.0	1.3	6	210
GSM-3-106	3.0	106 ± 1.5	10.0	1.7	6	280
GSM-3-175	3.0	175 ± 1.5	10.0	2.2	6	360
GSM-4-75	4.0	75 ± 1.5	10.0	1.3	6	220
GSM-4-125	4.0	125 ± 1.5	10.0	1.6	6	270
GSM-4-200	4.0	200 ± 1.5	10.0	2.1	6	350

Quartz Sleeves for Germicidal Lamps

Quartz sleeves offer protection against air and water flow, breakage, leakage, temperature fluctuations, and environmental hazards. LightSources and LightTech offer a variety of standard and custom quartz sleeves and jackets that can be applied to a range of germicidal UVC lamp types, including standard, high output (HO), and amalgam lamps. We offer OEM's multiple options such as open, closed (domed), flared or beaded ends and fire polish finishing. Our quartz sleeves are available in a wide range of diameters and lengths for use in air purification units, water disinfection units, photochemical reactors, and other specialized equipment.

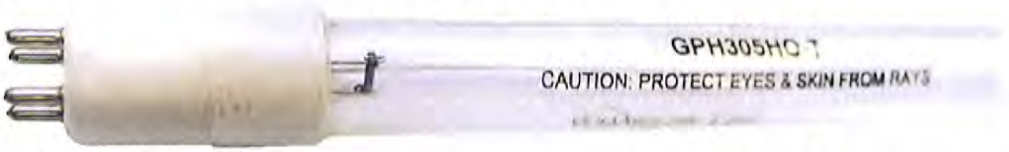
Common Sleeve Sizes

I.D. mm	O.D. mm	Wall Thickness mm
17.0	19.0	1.00
18.0	20.5	1.25
19.6	22.0	1.20
20.0	22.0	1.00
20.0	22.5	1.25
20.0	23.0	1.50
20.0	24.0	2.00
22.0	24.5	1.25
22.0	25.0	1.50
25.0	28.0	1.50
26.0	30.0	2.00
26.4	30.0	1.80
27.0	30.0	1.50
28.0	32.0	2.00
30.0	33.0	1.50
32.0	36.0	2.00
34.0	38.0	2.00
35.0	38.0	1.50
35.0	40.0	2.50
38.0	42.0	2.00
42.0	45.0	1.50
44.0	48.0	2.00
45.0	48.0	1.50
50.0	54.0	2.00



The Shatter Protech Technology

Lamp envelope that protects against glass fragments in the event of lamp breakage



The new **Shatter ProTech Technology** from Light Sources adds "peace-of-mind" to a wide variety of applications. The new **Shatter ProTech** shield is a cost-effective solution for glass and mercury containment, while sacrificing minimal UVC output.

Shatter ProTech lamps are jacketed in fluoropolymer film to provide maximum consumer safety with a minimal output loss. The UVC transmission loss through the ProTech sleeve is only 5% more than that of a quartz sleeve.

No lamp is too big or small for the **Shatter ProTech Technology**.

Note: *Shatter ProTech does not guarantee water tightness.*

The Shatter Protech Technology

- Reduced risk for mercury contamination if breakage occurs
- Heat and acid resistant
- Excellent for applications that involve food or drinking water
- High performance at a low cost
- Environmentally friendly and safe

Custom Bases for the OEM

Not only does LightSources and LightTech produce custom lamp designs, but we also work with OEM's and system designers to produce unique end fittings and matching sockets. By offering different/unique solutions we help you protect your aftermarket replacement lamp business. If you don't see what you are looking for, simply sketch out your design and send it to us. We will work with you to make your vision come to life.

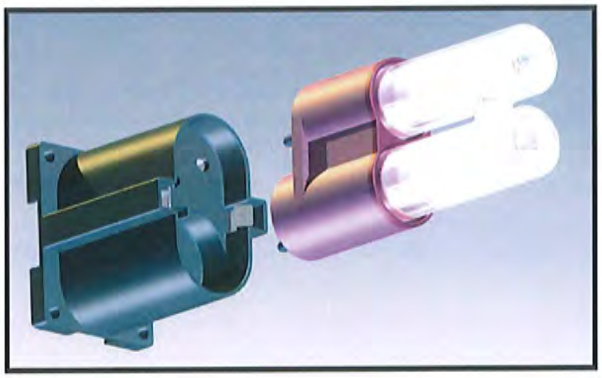
If you have a special connector or wire requirement, please ask.

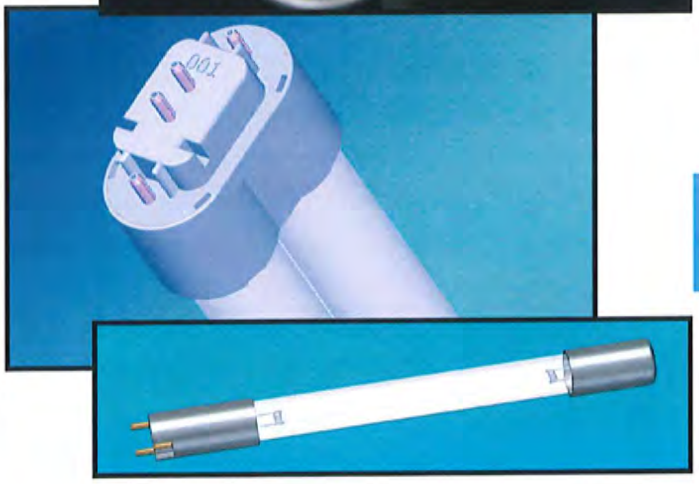
What's Your Competitive Advantage?

Our custom designed lamp bases are just one of the many reasons why our customers come back to us.

We work with OEM's to ensure that custom lamps only fit into their custom systems. Benefit from greater flexibility in your system design and distinguish your product with identifiable and unique bases/sockets, end caps or pin configurations. Add value to the components and parts of your systems by creating a business identity.

Bases and sockets can be manufactured in various colors and can even be labeled with your own corporate logo to enhance brand recognition.

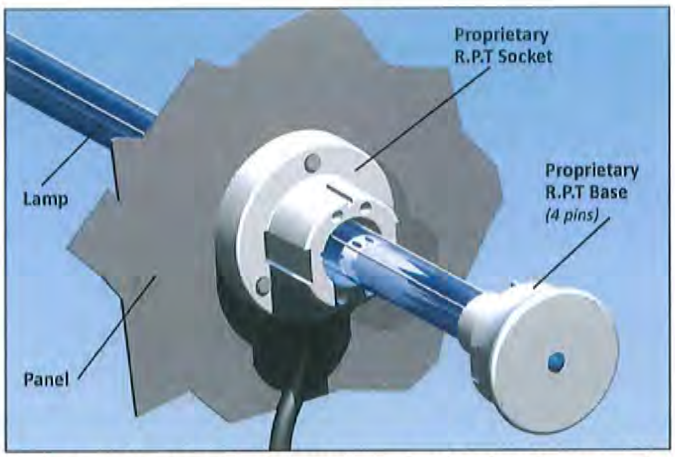




Examples of Custom Proprietary Non-Standard Bases

R.P.T. UVC Germicidal Fixtures

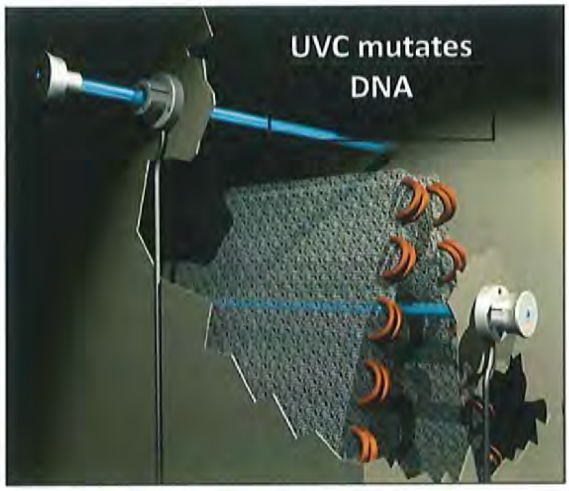
Retrofit system to fight bacteria & mold in HVAC systems



Respiratory diseases and allergies are becoming more common all over the world, whether at home or in the workplace. Evaporator coils, due to their high moisture levels, can easily harbor and distribute molds and disease-causing bacteria within cooling and ventilation systems.

The RPT UVC lamps can be quickly and efficiently installed in any new or existing HVAC (heating ventilation and air conditioning) system, helping to end major health concerns.

UVC light inactivates DNA-based airborne pollutants and mold spores by disabling its DNA molecular bonds, rendering them unable to reproduce.



Benefits of UVC in a HVAC System

- Reduces, or eliminates, harmful airborne contaminants from air stream
- Improves air quality
- Diminishes respiratory diseases and allergies
- Eliminates odor and slimy build up associated with mold
- RPT lamps are placed inside the ducts or the evaporator chamber of the HVAC system and can be safely replaced without exposure to UV.

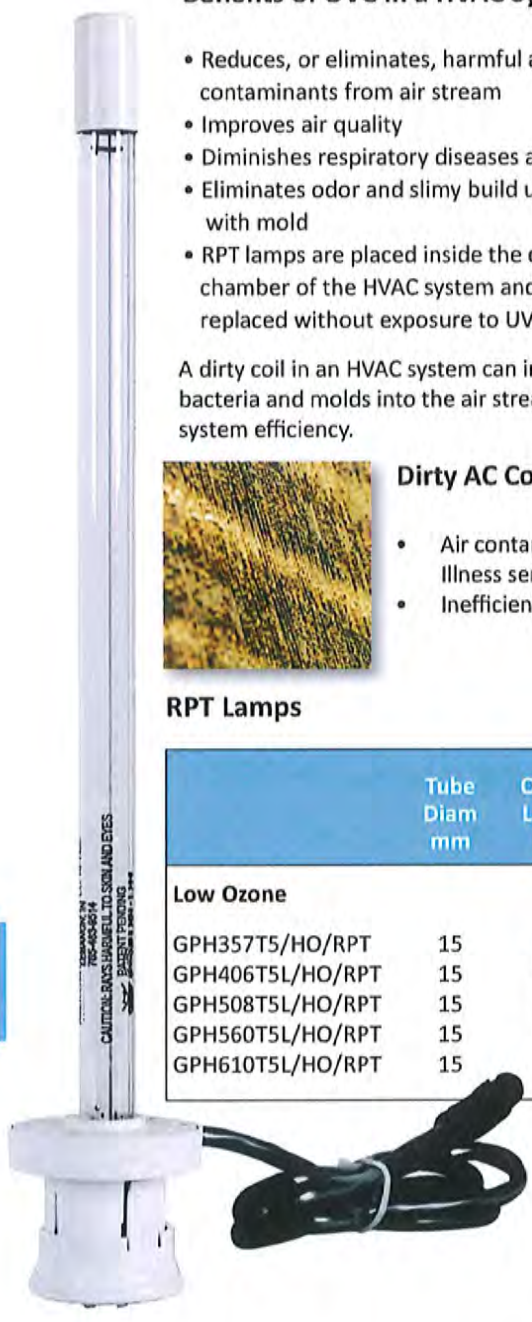
A dirty coil in an HVAC system can introduce pathogenic bacteria and molds into the air stream and also reduces system efficiency.

Dirty AC Coil

- Air contaminated - Illness sensitivity increased
- Inefficient heat exchange

Clean AC Coil

- Stops bacteria & molds from developing and reproducing - leaving fresh, clean air
- Clean coils also improve HVAC efficiency



RPT Lamps

	Tube Diam mm	Overall Length mm	Arc Length mm	Power W	Current mA	Voltage V	UV output[1] @ 254nm µW/cm²	UV output[1] @ 254nm W	Rated Life hrs.
Low Ozone									
GPH357T5/HO/RPT	15	357	272	35	510	70	75	6.9	16000
GPH406T5L/HO/RPT	15	406	322	40	800	58	100	10.0	16000
GPH508T5L/HO/RPT	15	508	424	50	800	80	130	15.0	16000
GPH560T5L/HO/RPT	15	560	476	57	800	86	150	17.0	16000
GPH610T5L/HO/RPT	15	610	526	65	800	93	175	19.0	16000

Note[1]: *Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature using a high-frequency, constant-current electronic ballast and represents average values. Irradiance measured at 100 centimeters.*

All-in-One Submersible Lamp

The All-In-One Submersible lamp is a germicidal lamp encapsulated in a water-tight quartz sleeve. This innovative design allows the lamp to be completely submerged in liquid.

Lamps come pre-wired with a cable that can be cut to custom lengths. The most common application for these lamps is disinfecting the inside of liquid storage tanks. Tank head space and surface disinfection can be achieved as well as the disinfection of the liquid contents of a holding tank. In-house laboratory tests have shown the seal remains water-tight in continuous shallow water immersion for at least 12 months.

Need Help with Your Lamp Ideas

Contact our Light Sources & LightTech Sales Staff!

We work with OEMs and system designers to produce unique solutions that bring your ideas to life.

LightTech LightSources

Medium Pressure UV Lamps for Curing and Disinfection

At Light Sources and LightTech we understand medium pressure and high pressure ultraviolet lamp technology. With over 40 years of experience in the manufacture of UV lamps, our expertise will make it easy and convenient for you to select the best lamp design for your curing or disinfection application. Ultraviolet curing lamps are used in applications involving UV-cured inks, coatings, adhesives, and finishes (lacquers, glazes, and varnishes).

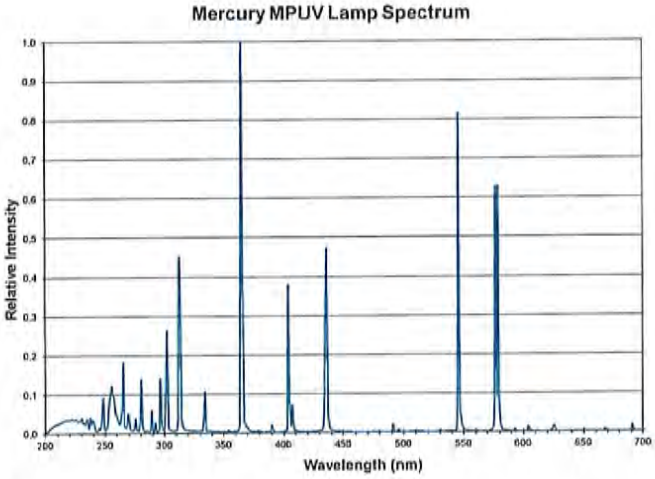
Medium Pressure UV Lamps

Medium pressure (MPUV) lamps operate at much higher power levels and temperatures than low pressure lamps. MPUV lamps emit polychromatic energy from 200 nm through the visible and infrared spectral ranges and operate at a 600 to 900°C. They are available in power densities ranging from 100 watts per inch to 800 watts per inch (39 to 315 W/cm), with arc lengths ranging from 1 to 90 inches (25 to 2286 mm). We offer you the ability to customize your MPUV lamps to your own specifications and application needs through our custom design form. For special OEM designs, we provide technical consulting with our engineering staff and private labelling when requested.

Chemical Additives/Doped Lamps

Standard mercury MPUV lamps have the highest output in the UVC range, while other applications may benefit from longer wavelengths in the UVB, UVA, and visible ranges.

To attain these additional wavelengths lamps can be dosed with metal halide compounds that add their own spectral emissions. The most common metal halide additives are gallium (400-450 nm), lead (350-380 nm) , and iron (350-400 nm). When adding a metal halide to a lamp, all the characteristic wavelengths of that metal will be produced and the mercury spectrum will have its lines changed in intensity somewhat because all of the materials in the arc are interactive.



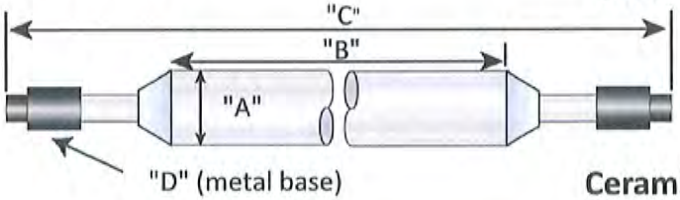
Metal halide lamps require specific ballasts designed to operate additive lamps. The starting voltage for an additive lamp is higher than for a standard mercury lamp by several hundred volts and can vary with lamp age and the number of times the lamp has been ignited.

(The predicted intensity for specific lines in a metal halide lamp can only be stated relatively based on the lines listed in spectroscopy manuals as "strong" and "persistent".)

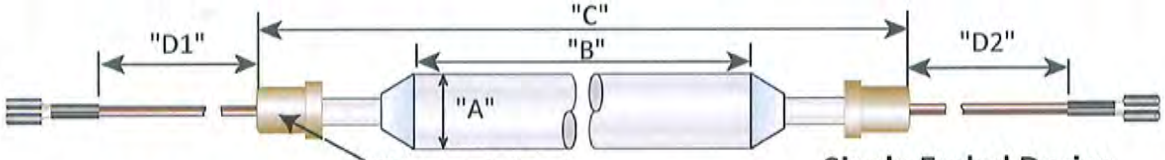
Custom Lamp Design Requirements

Physical Design Requirements

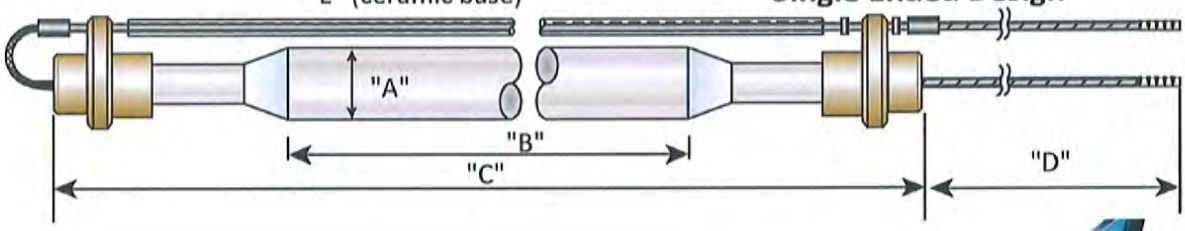
Metal Base Design



Ceramic Base Design



Single Ended Design



Design Requirements

Electrical:

Lamp Voltage = _____ V ± 5% (Standard) = ____ V
Lamp Current = _____A (nominal)
Total Wattage = _____ kW
Max Starting Voltage = _____V

Physical Characteristics:

Outside Diameter (A) = _____ mm
Arc Length (between electrodes) (B) =_____mm
Overall Length (C) = _____mm
Bases:
If Metal Base (D) = _____
If Ceramic Base (E) = _____

Wire:

Wire Lengths (D1) = _____mm
Wire Lengths (D2) = _____mm

Did you know?.....

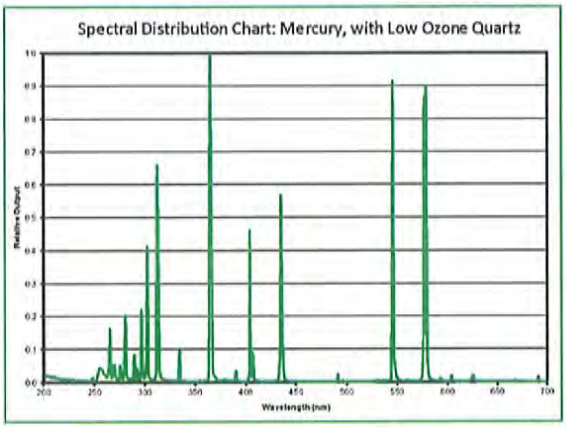
Metal halide lamps require specific ballasts designed to run them. The starting voltage for an additive lamp is higher than for a standard mercury lamp by several hundred volts and can vary with lamp age and number of times the lamp has been ignited.

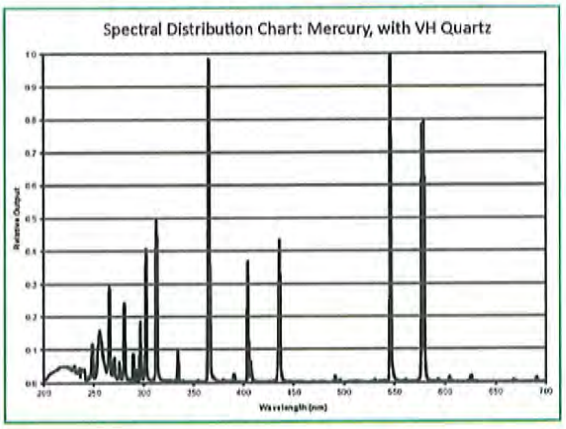
Terminations (T1 and T2):

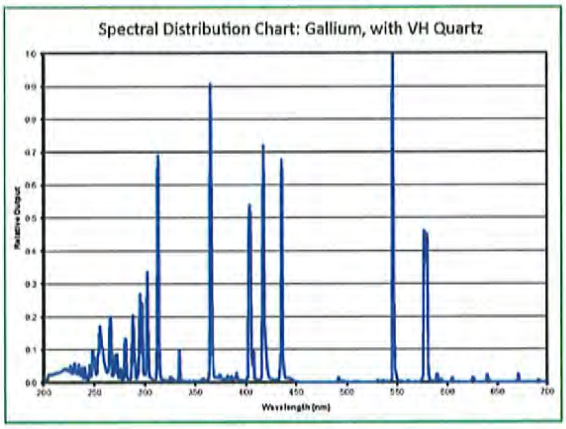
- ☐ None- Bare wire
- ☐ Lugs (F) :
- ☐ Ring Lug, #8 screw
- ☐ Ring Lug, #10 screw
- ☐ Ring Lug, 1/4" screw
- ☐ Ring Lug, Metric M5 screw
- ☐ Spade Lug, #8 screw
- ☐ Spade Lug, #10 screw
- ☐ 1/4 Female Quick Disconnect c Wire Pin
- ☐ Other-Specify_____

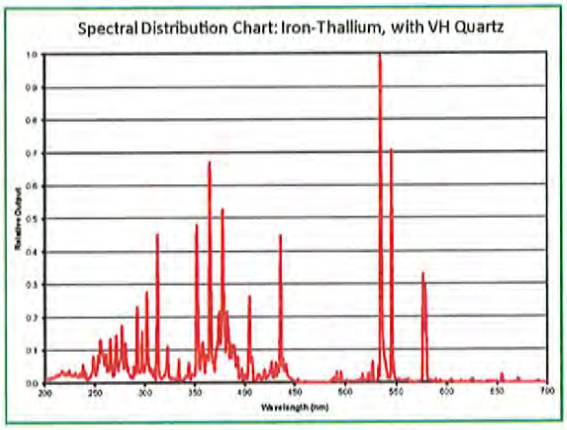
Not only does Light Sources produce custom lamp designs, but we also work with OEM's and system designers to produce unique products. By offering different/unique solutions we help keep your systems competitive in global markets and protect your aftermarket replacement lamp business.

Medium Pressure/Metal Halide Lamp Spectra









Common Lamp Body Diameters:

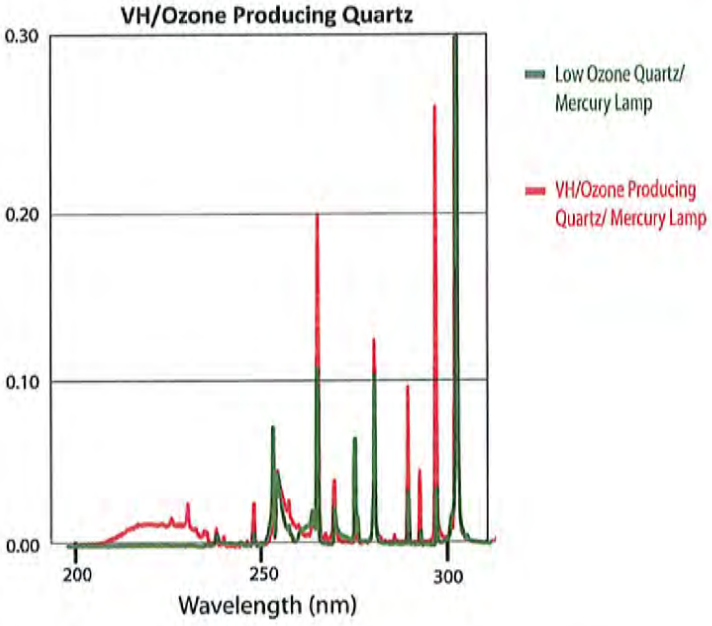
Most sizes are available in both low ozone and ozone-generating quartz glass. (ID x OD)

- 11 x 13 mm
- 13 x 15 mm
- 16 x 18 mm
- 16 x 19 mm
- 17 x 20 mm
- 18 x 20.5 mm
- 20 x 22.5 mm
- 22 x 25 mm
- 22 x 26 mm
- 24 x 28 mm
- 25 x 28 mm

Did you know?.....
Mercury (Hg) content of the lamp varies by lamp type but is typically between 10 and 300 mg on average.

Ink, coating, and adhesive formulations are made with photoinitiators that require the correct UV spectrum to polymerize and harden/cure properly.

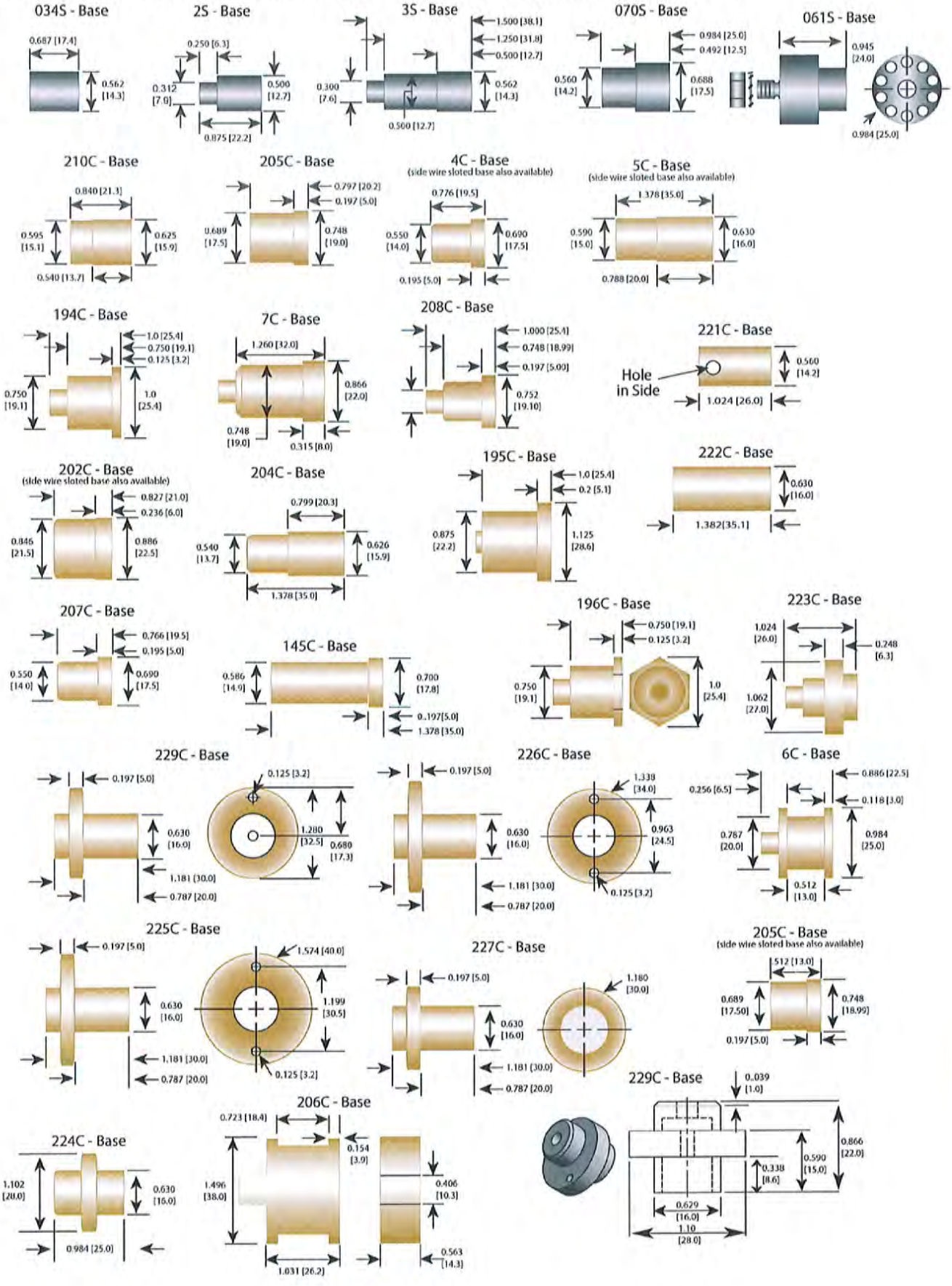
Low Ozone Quartz
vs.
VH/Ozone Producing Quartz



Low Ozone Quartz:
Allows transmission of the UV-A, B, & C wavelengths while blocking the wavelengths below 230 nm that create ozone in the air.

Commonly used bases for MPUV Lamps

We distinguish ourselves not only by our ability to produce customized lamps, but also by working with OEM's and designers to produce unique base solutions that keep your systems competitive in global markets.

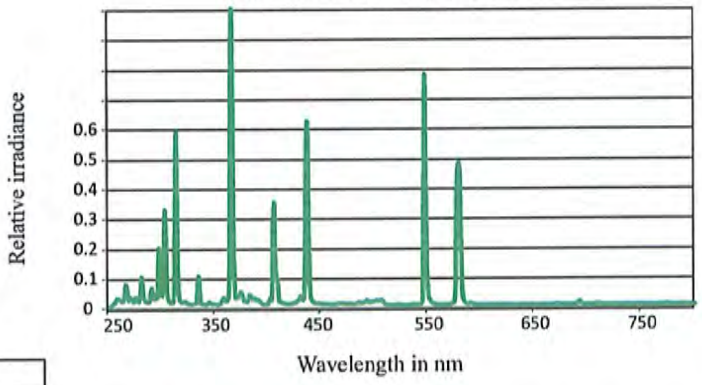


Metal Halide Lamps

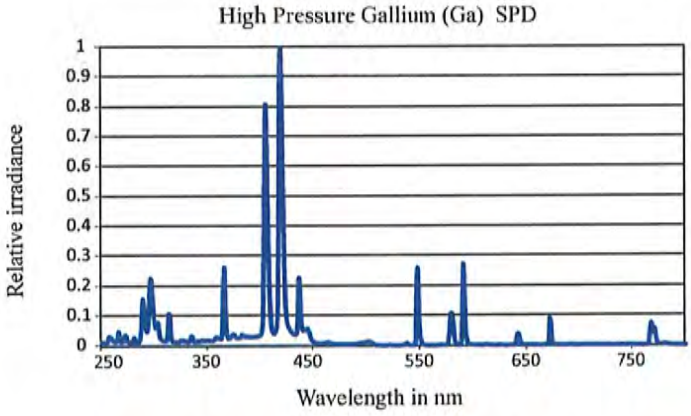
for the Printing /Curing Industry

Metal Halide lamps are high pressure mercury UV lamps for which the spectra are matched with the activation spectrum of photoinitiators by adding metal-halides such as iron or gallium iodide or combinations of such additives. Your ink supplier should be able to provide you with the correct spectrum required to cure the ink you are using. Once you provide us with the correct output spectrum, we can begin to work together to design the correct lamp for your specific application. Since we are a custom lamp manufacturer, we can change the metal halide content and lamp operating parameters to meet your specifications and processes.

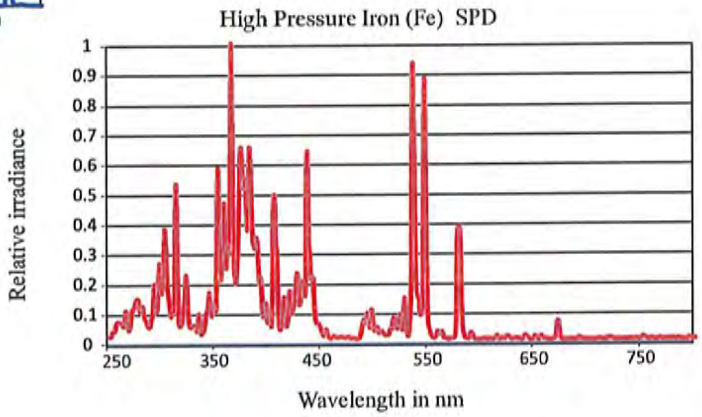
High Pressure Mercury (Hg) SPD



High Pressure Gallium (Ga) SPD



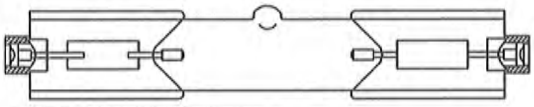
High Pressure Iron (Fe) SPD



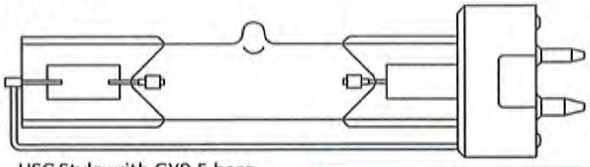
High Pressure Metal Halide Lamps with Double- and Single-Ended Connection

Typical lamp configurations - custom designs available

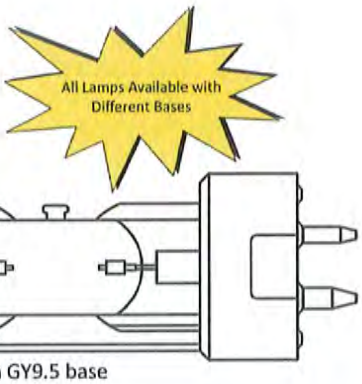
The product range for high pressure MH lamps extends from 200 watts to 2000 watts in various designs.



HTC Style with R7s base



HSC Style with GY9.5 base



HSC Style with GY9.5 base

Available with Hg, Fe, & Ga additives

Industrial Applications-

- Automotive
- Pharmaceutical
- Reprography
- Photochemistry
- Photo Polymerization
- Curing of paints /lacquers
- Curing of adhesives
- Sewer rehabilitation
- Curing coatings on medical equipment
- Ballast water sterilization
- Cosmetic
- Food & beverage

	Supply Power [W]	Operating Voltage [V]	Voltage [V]	Current [A]	Arc Length [mm]	Tube Diameter [mm]
Mercury (Hg)						
	200	230	130	2.0	22	12
	250	230	130	2.2	15	14
	400	230	130	3.5	33	14
	500	230	115	4.5	32	16
	600	230	130	5	45	14
	800	230	130	7	29	24.5
	1000	230/400	130/195	9/5,5	48/52	28
	2000	400	250	9	72	28
Iron (Fe)						
	200	230	130	2.0	22	12
	250	230	130	2.2	15	14
	400	230	130	3.5	33	14
	500	230	115	4.5	32	16
	600	230	130	5	45	14
	800	230	130	7	29	24.5
	1000	230/400	130/195	9/5,5	48/52	28
	2000	400	250	9	72	28
Gallium (Ga)						
	200	230	130	2.0	22	12
	250	230	130	2.2	15	14
	400	230	130	3.5	33	14
	500	230	115	4.5	32	16
	600	230	130	5	45	14
	800	230	130	7	29	24.5
	1000	230/400	130/195	9/5,5	48/52	28
	2000	400	250	9	72	28

Note: lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature

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In 1990 the EPA developed the TCLP test (Toxicity Characteristic Leaching Procedure) to simulate the effect of disposing waste in conventional landfills under complex environmental conditions. The method is designed to determine the mobility of toxic material in liquid, solid and multiphasic waste. The EPA developed the Toxic Characteristic Leaching Procedure to determine the toxicity of waste. The TCLP test does NOT measure the total mercury content but rather the potential of mercury to leach into groundwater if a waste is disposed of in a landfill. TCLP is designed to simulate the leaching a waste will undergo if disposed in a sanitary landfill. This test includes mercury, lead, cadmium, and other hazardous materials. Passing this test for mercury, for instance, requires a yield of less than 0.2 milligrams per liter upon completion of the test. Lamps that PASS the TCLP are considered as non-hazardous waste by the EPA. We are proud to be among the first to offer the majority of our germicidal lamps as TCLP compliant.

While lamps that pass TCLP may be classified as non-hazardous waste by the EPA, LightSources and LightTech strongly encourage the recycling of spent germicidal lamps. Please contact your local environmental agency for assistance with lamp recycling or visit www.lamprecycle.org.

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