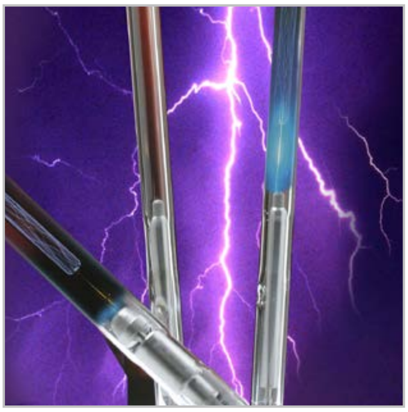
Laser Lamp Catalog

History and Capacity



Amglo's current management team has been in place since 1978 but its foundation has been „Making Light Behave" since 1935. Amglo's success is attributed to its continued investment in lamp technologies for specific industries that require custom engineered product. Amglo's entrance into the laser lamp market was delayed, and it was not until the industry consolidation of the mid 1990's that Amglo decided to further advance its technology in this product area. Amglo's long history of demonstrating high volume production has made it the VIABLE alternative to the traditional industry suppliers. Furthermore, Amglo's various technologies covering flashlamps, halogen, quartz halogen and metal halide (H.I.D.) lamps demonstrate a business diversification allowing for continued investment in manufacturing capacity, research and development programs.

Amglo is the largest North American manufacturer of flashlamps with Xenon lamp production facilities located in Bensenville, IL (U.S.A.) and Juarez (Mexico) totaling 65,000 factory square feet. Currently these facilities employ over 250 people manufacturing more than 1.75 million lamps a year, including 200,000 lamps of quartz construction. Amglo's production facilities are supported by its own equipment Fabrication Facility (Largo, FL) allowing additional production lines to be assembled quickly and economically.

Product

As most lamp types are custom to specific requirements it is difficult to present all possible variations in a catalogue. Historically, solid state laser systems have utilized xenon flashlamps that convert stored electrical energy into pulses of radiant energy producing a full spectrum of UV, visible and IR transmissions. Alternate systems using Krypton Arc lamps produce continuous radiation and operate in constant DC mode offering high Nd:YAG pumping efficiency.

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In recent years, Intense Pulsed Light (IPL™) Systems have become very popular using xenon flashlamps for their full and flat (UV-visible-IR) spectrum in aesthetic/medical treatments. Typical treatments involve removal of unwanted hair, acne, psoriasis and lesions while offering solutions to common ophthalmologic problems. Typically these lamps operate in burst modes that comprise multiple pulses ranging from 3 – 10 ms while lamp energies can exceed 90 J/cm.

Construction

Most of the lamps represented in this overview are constructed by shrinking a portion of the glass envelope onto the electrode assembly to promote heat transfer from the anode and cathode under operation. This transfer can be further enhanced by the selection of thin walled glass tubing inside the arc area. The quality of tubing used is vigorously inspected for defects as these lamps operate at multiple atmospheres and are susceptible to rupture.

Technology

Amglo is unique to other flashlamp suppliers in that it manufactures its own proprietary cathodes internally using state-of-the art pressing in sintering processes. During Amglo's history, high load air-cooled/convection applications became routine providing Amglo with its strong foundation in cathode design. Enhanced cathode designs with modified tungsten matrixes, densities and varied backfill methods are continually studied. This "in house" capability promotes cathode customization specific for each application challenging historical benchmarks that have defined lamp lifetimes. Amglo's flashlamp facilities are supported by its Engineering Development Center in Largo, FL (USA) fully equipped with laboratory equipment and staff for all photometric, vibration, environmental and finite element and X-ray analysis of materials and structure.

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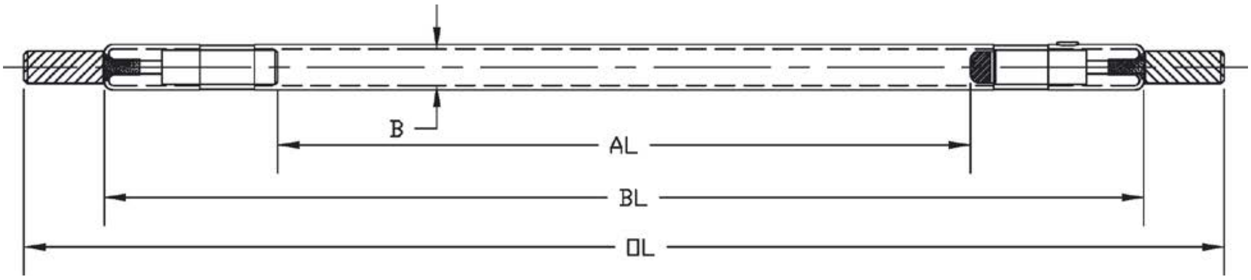
DC Pulsed Lamps



Item	Bore (B) Diameter (mm)	ARC (AL) Length (mm)	Body (BL) Length (mm)	Overall Length (OL) (mm)	Recommended Trigger Pulse (kV)	Operating Volts (Min)	Operating Volts (Max)	Average Max Power (Watts)	Impedance (KO) (Ohms–Amps)
A	5	75	137	175	16	500	2000	2300	19
B	5	150	212	250	18	80	3000	4500	38
C	6	75	137	175	16	500	2000	2700	16
D	6	150	212	250	18	800	3000	4900	32
E	7	125	187	225	18	700	2700	5200	22
F	7	205	300	350	18	1100	4500	10000	45
G	8	150	212	250	20	1000	3000	7500	24
H	8	300	350	400	20	1600	5000	15000	48
I	10	200	255	305	20	1200	4000	12500	25
J	10	300	355	405	20	1500	5000	18000	38

Notes:

1. Liquid cooling required in pulsed Nd:YAG lasers and DC pumped Nd:YAG lasers.
2. Failure to adequately cool lamps results in shortened lifetimes and inconsistent operation.
3. Xenon gas is preferred due to its higher conversion efficiency, however, at extremely low power densities krypton gas is utilized due to overlap of absorption bands of Nd:YAG.
4. Higher fill pressures are found to be more efficient for laser pumping but lamps can become extremely difficult to trigger, therefore, designs over 1 atmosphere are limited in use.

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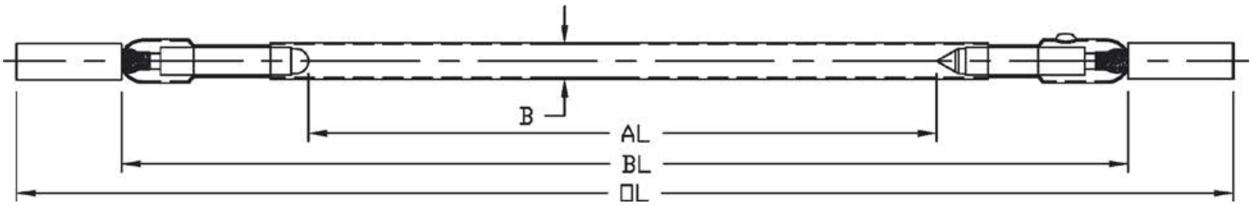
Krypton CW Arc Lamps



Item	Bore (B) Diameter (mm)	ARC (AL) Length (mm)	Body (BL) Length (mm)	Overall Length (OL) (mm)	Design Current (AMPS)	Corresponding Design Voltage (Max)	Power (Watts)	Static Impedance (Ohms)
A	4	51	191	191	20	110	2200	5.5
B	4	76	140	160	20	190	3800	9.5
C	4	99	167	167	20	200	4000	10
D	4	148	223	223	20	290	5800	14.5
E	5	50	154	154	30	86	2600	2.87
F	5	84	145	175	30	155	4650	5.17
G	5	102	160	194	30	180	5400	6.00
H	5	121	223	223	30	240	7200	8.00
I	6	101	165	200	35	175	6125	5.00
J	6	170	255	377	40	255	10200	6.38
K	4	110	177	321	20	A.C.	4500	N/A
L	5	160	225	400	30	A.C.	6500	N/A
M	6	280	347	502	45	A.C.	1000	N/A

Notes:

1. Traditionally krypton arc lamps have operated from a constant current or fixed power supply. More recently cw lamps have expanded their use in applications incorporating modulated cw between a "simmer" current and a peak current typically at the duration of a few milliseconds. In quasi cw the drive current is sinusoidal whereby the line (main) frequency is utilized.
2. Lamp voltage is dependant on a variety of influences such as operating current, envelope bore, arc length, gas pressure and dead volume area.
3. Krypton arc lamps are positive pressure devices generally ranging from 4 to 8 atmospheres dictated by a desired operating voltage.
4. High purity fused quartz envelopes are used, however some Cerium doped designs are utilized.
5. Lamps operated as AC lamps are non-polarized and often specified with Xenon rather than Krypton gas.

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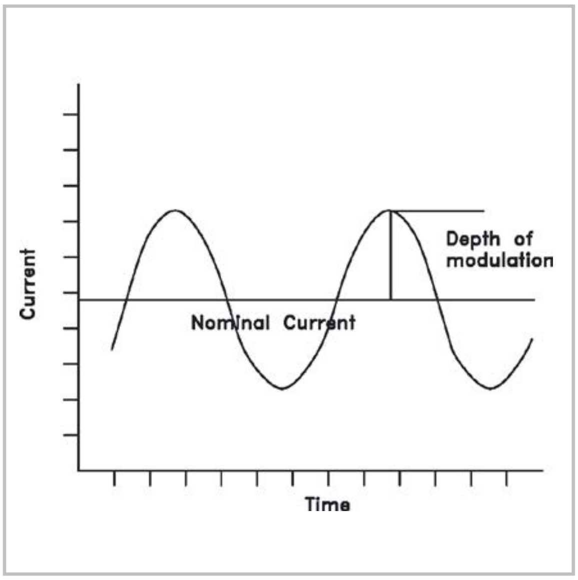
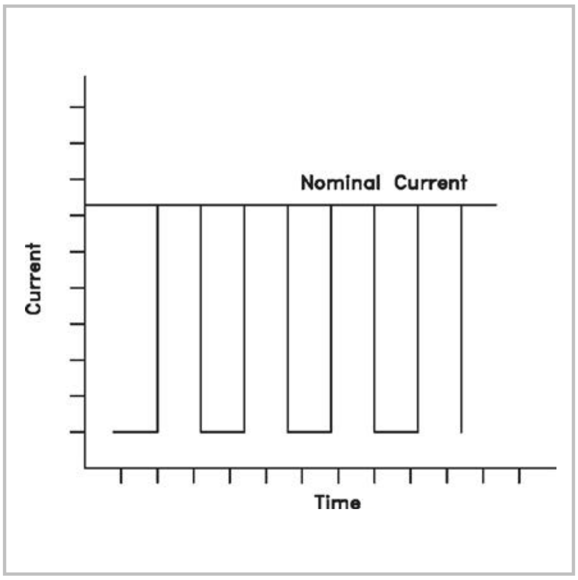
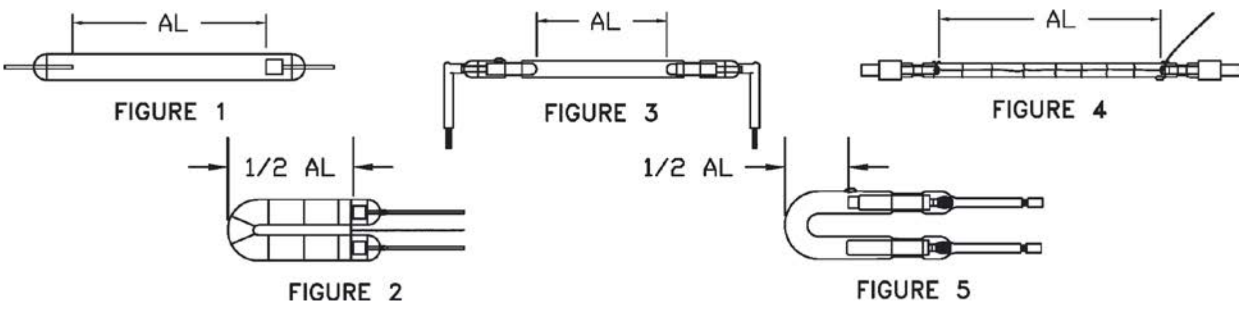
Quasi-CW Operation



Modulated CW Operation



Lamps for IPL™ Aesthetic / Medical Applications



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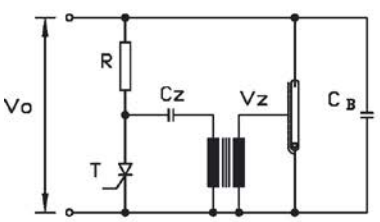
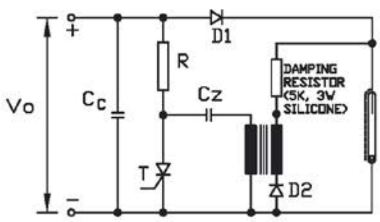
Item	Figure	ARC (AL) Length (mm)	I.D./O.D. (mm)	Pulse Energy Flash	Lifetime	Primary Trigger Voltage	Recommended Trigger Coil	Cooling	Envelope Material
A	1	25	3/4	25	5k	200	VE11	CONV.	HARD
B	1	30	4/5	14	200k	200	VE11	CONV.	CDQ
C	1	58	4/6	80	10k	225	VE11	AIR	HARD
D	2	90	8/10	1000	10k	225	VE11	AIR	CDQ
E	3	50	4/5	400	100k	250	VE20	WATER	CDQ
F	3	50	5/7	500	100k	250	VE20	WATER	CDQ
G	3	84	8/9	750	100k	225	VE20	WATER	CDQ
H	3	96	5/6	1000	100k	300	VE20	WATER	CDQ
I	4	100	6/8	1250	150k	300	VE20	WATER	SYN. QUARTZ
J	5	25	5/7	175	250k	220	VE20	WATER	CDQ
K	5	56	6/8	230	250k	225	VE20	WATER	CDQ

Considerations:

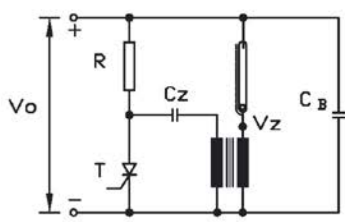
1. All dimensions are in millimeters (mm).
2. Typical pulse widths (3-10ms) are utilized in variable burst operation.
3. Specify if lamp will be simmered and advise simmer voltage/current.
4. Lamps with extremely low simmer ignition are also available.



1–EXTERNAL



2–PSEUDO–SERIES



3–SERIES

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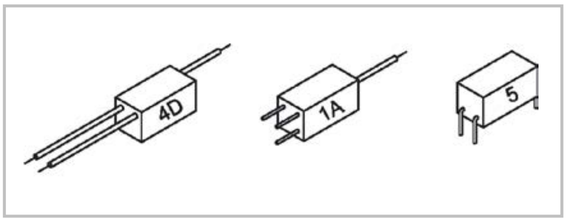
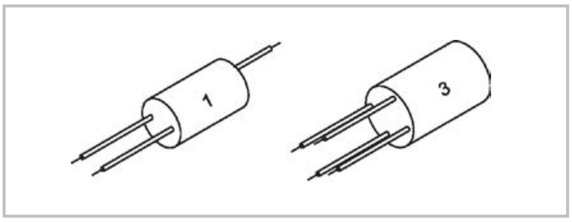
Recommended Trigger Transformers





VE11–

Max. input voltage	300 V
Max. input energy	10 MJ
Output voltage	11 kV
Turns ratio	47:1
Dimensions	.625" X .305" X .305"

VE20–

Max. input voltage	400 V
Max. input energy	20 MJ
Output voltage	20 kV
Turns ratio	50:1
Dimensions	.860" X .50" Dia. VE20-1 1.00" X .62" Dia. VE20-3

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