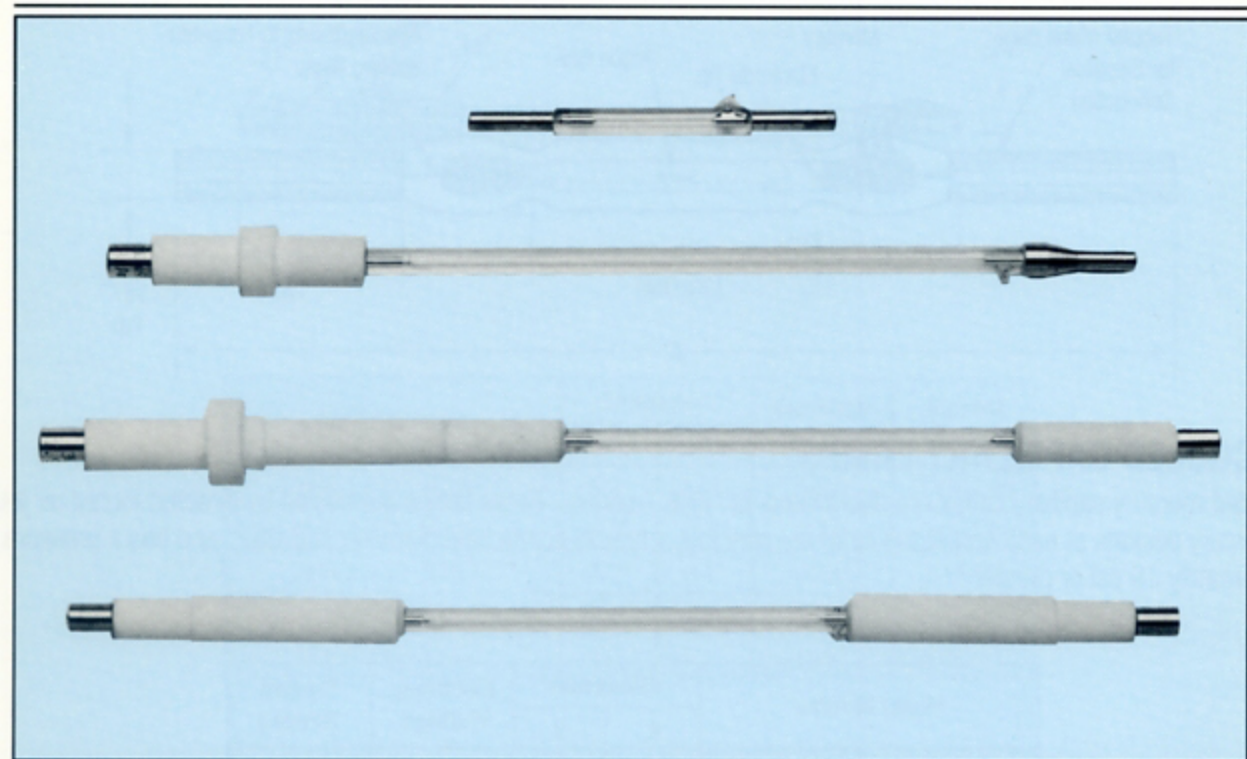


HIGH PRESSURE MERCURY CAPILLARY LAMPS

CAP SERIES
EXPANDED

A Catalog of Ultraviolet Light Sources



The high pressure mercury capillary arc lamp was developed more than 50 years ago and found only limited application. As time passed, the versatility of this high intensity source of both visible and ultraviolet radiation found new and more demanding applications. Although the efficiency of electrical energy conversion in the short ultraviolet is not as great as that of the low pressure mercury discharge, the quantitative amount of emission is many times higher; this is due to the extremely high power density of approximately 25 watts/mm^3 . The richness of spectral emission from the short UV through the visible and into the near infrared makes the mercury capillary lamp ideal for many laboratory applications. The simplicity of design and construction makes this class of lamps the lowest price, cost-per-watt, high intensity source available. During the fifty-year period since the capillary lamp was first introduced its practical life has increased from less than 50 hours to many hundreds and even thousands of hours for some applications today.

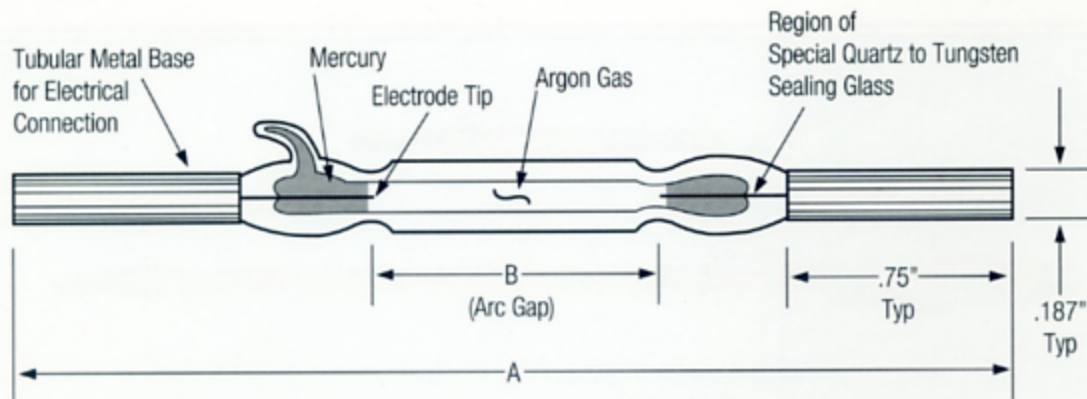
The mercury capillary arc lamp is available in "air cooled" and "water cooled" configurations and with metal pin or ceramic bases.



Advanced Radiation Corporation

2210 Walsh Ave., Santa Clara, CA 95050 • Tel 408/727-9200 Fax 408/727-9255

The simplest configuration of the mercury capillary arc lamp consists of a quartz tube of approximately 2mm bore diameter by 6mm outside diameter with tungsten pins sealed into each end via a special thermal expansion sealing glass. Tubular metal bases are attached to the outside ends of the tungsten pins to make electrical connections. During processing the lamp is loaded with liquid mercury metal so that only the very ends of the pins inside the bore of the quartz tubing extend beyond the pools of mercury at each end of the lamp. To aid starting a low pressure of argon gas is also introduced into the bore of the lamp.



AIR COOLED CAPILLARY LAMPS

Air cooled mercury capillary lamps are designated as "BH6-" series. These lamps are cooled by directed forced air jets at the mercury pockets at each end of the lamp arc spacing; a typical nozzle hole diameter is 0.082" and has a pressure of approximately 19 psi or greater.

Model Number	Dimension		Electrical Wattage	Current (Amps.)
	A	B		
BH6-1B-30098	3.2"	1.0"	1000	1.25-1.75
BH6-1C-30312	3.2"	1.12	1000	1.25-1.75
BH6-1.125-30100	3.2"	1.12	1000	1.25-1.75

WATER COOLED CAPILLARY ARC LAMPS

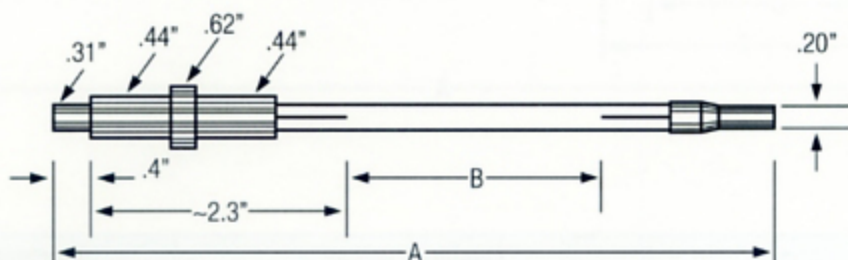
Capillary arc lamps cooled by water over the envelope are designated as "AH6-" series. These lamps are operated in glass or quartz water jacket constructed to provide either a single pass or double pass of water; the latter provides for coolant input and output on one side of the jacket assembly.

Model Number	Dimension		Electrical Wattage	Current (Amps.)
	A	B		
AH6-1B-30097	3.2	1.0	1000	1.25-1.75
AH6-1C-30222	3.2	1.0	1000	1.25-1.75
AH6-2B-30099	4.2	2.0	2000	1.45-2.1
AH6-3B-30159	5.2	3.0	3000	1.45-2.1

CERAMIC BASE MERCURY CAPILLARY LAMPS

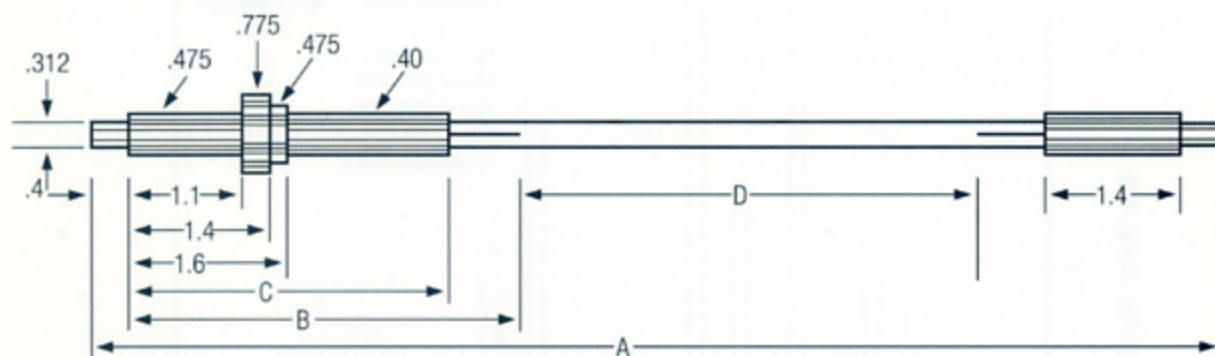
Since its first practical application, the mercury capillary arc lamp has been improved to increase life expectancy and to provide versatility in mounting and water cooling jacket design. Configurations with either single or double ceramic sleeves have been applied in many applications where lamp changing and replacement ease is desired.

Single Ceramic Sleeve



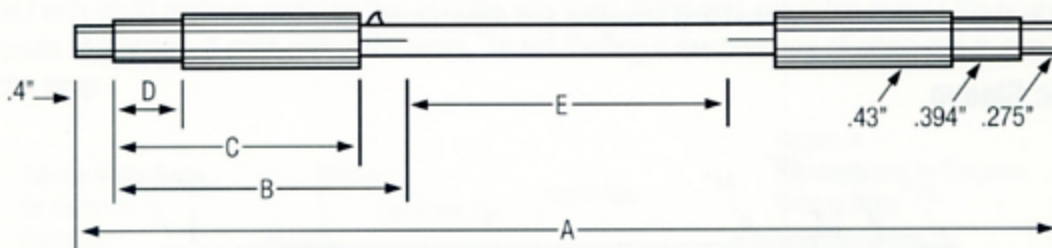
Model Number	Dimension		Electrical Wattage	Current (Amps.)
	A	B		
AH6-1.0 SC-30385	5.2"	1.1"	1000	1.40-1.90
AH6-2.0 SC-30386	6.2"	2.7"	2000	1.40-1.90
AH6-3.0 SC-30387	7.2"	3.1"	3000	1.45-2.1
AH6-4.0 SC-30389	8.2"	4.1"	4000	1.45-2.1
AH6-5.0 SC-30390	9.2"	5.1"	5000	1.45-2.1

Double Ceramic Sleeves



Model Number	Lengths - Inches				Electrical	
	A	B	C	D	Wattage	Amps.
AH6-3.0 DC-30393	10.5	4.5	4.22	3.55	3,000	1.7 - 2.1
AH6-3.5 DC-30396	10.6	3.5	3.22	4.75	3,500	1.7 - 2.1
AH6-5.0 DC-30394	11.5	3.5	3.22	5.55	5,000	1.7 - 2.1

Double Ceramic Sleeves – Cont'd



Model Number	Lengths – Inches					Electrical	
	A	B	C	D	E	Wattage	Amps.
AH6-5HT-30443	10.0	2.57	2.82	0.70	3.50	5000	1.7 - 2.1
AH6-8HT-30471	11.4	2.18	2.57	0.76	5.75	8000	1.7 - 2.1

SPECTRAL DATA

A linear mercury capillary arc lamp operating at a power level of 1000 watts per linear inch has an internal pressure of between 35 and 75 atmospheres (varies with lamp type and arc length) for a 2mm bore lamp. Wall stabilization limits the actual arc diameter to approximately 1.4 to 1.6mm. The power density of 25 watts/mm³ produces a brightness of 300 candela per square millimeter and results in a luminous efficacy of approximately 65 lumens per watt.

The total electrical conversion efficiency of the capillary discharge is about 51% and is partitioned as follows for each linear inch:

