QUALITY CONTROL

The lamp features highly reliable design for life-, vibration-, shock-, drop-, vacuum-, and atmospheric resistance- testing to ensure durability.

Life test

Life time of lamps is generally determined by the following equation.

IEC Specification (International Electrical Commission) "Tungsten Filament Lamps for General Use"
The equivalent life for rated voltage shall be determined in accordance with the following equation.

$$Lo = L \left(\frac{V}{Vo} \right)^{n}$$

Lo . . . . . .Life at rated voltage
L . . . . . .Life at test voltage
Vo . . . . . .Rated voltage
V . . . . . .Average voltage during life test
n = 13 vacuum lamps; 14 gas filled lamps

IES Specification (Illumination Engineering Society)
"Lighting Hand Book"

$$Lo = L \left(\frac{V}{Vo} \right)^{n}$$

n = 13.5 vacuum lamps; 13.1 gas filled lamps

Vibration test

All specification requirements must be met before and after vibration for 30 minutes. The test condition:
1) Frequency cycled : 2,000 rpm.
2) Amplitude : 2mm.
3) Vibration shall be up and down, forward and backward, right and left with the lamps mounted on a horizontal plane.

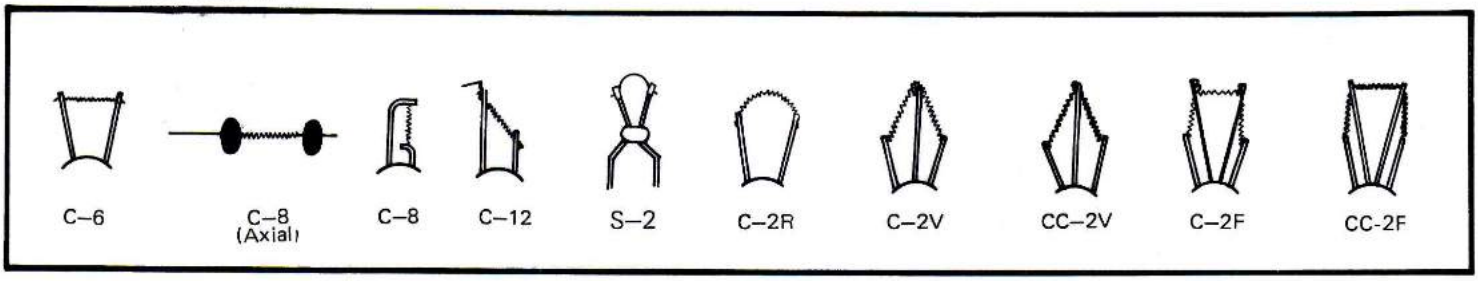
Shock test

All specification requirements must be met before and after shock test for 3 times. The test condition let the lamp mounted on a board and force the lamp drop from 20cm high onto the bottom board.

Aging

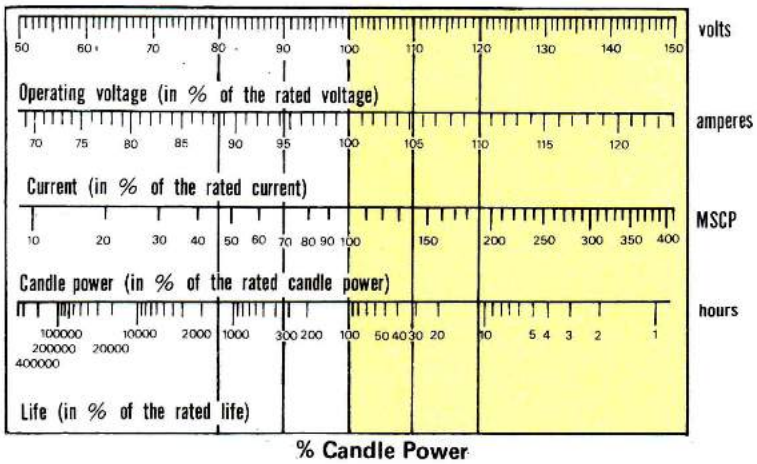
"Aging" is one of the most important and indispensable procedures for stabilizing the quality of the lamps after production.
Each lamp, after being moved away from production line, is continuously lighted for 2-10 hours in design voltage according to its average life and application. This is called "aging". During the first few lighting hours the characteristics of the filament of an incandescent lamp change unstably. All specification requirements must be met by selection after aging of a lamp. Furthermore, aging is an important method to find out short circuit and vacuum leakage, which can not be found within short time of lighting. Only after aging will the filament of a vacuum-deficient lamp evaporate and cause the blackening of the inside bulb glass which can be discerned with naked eyes.

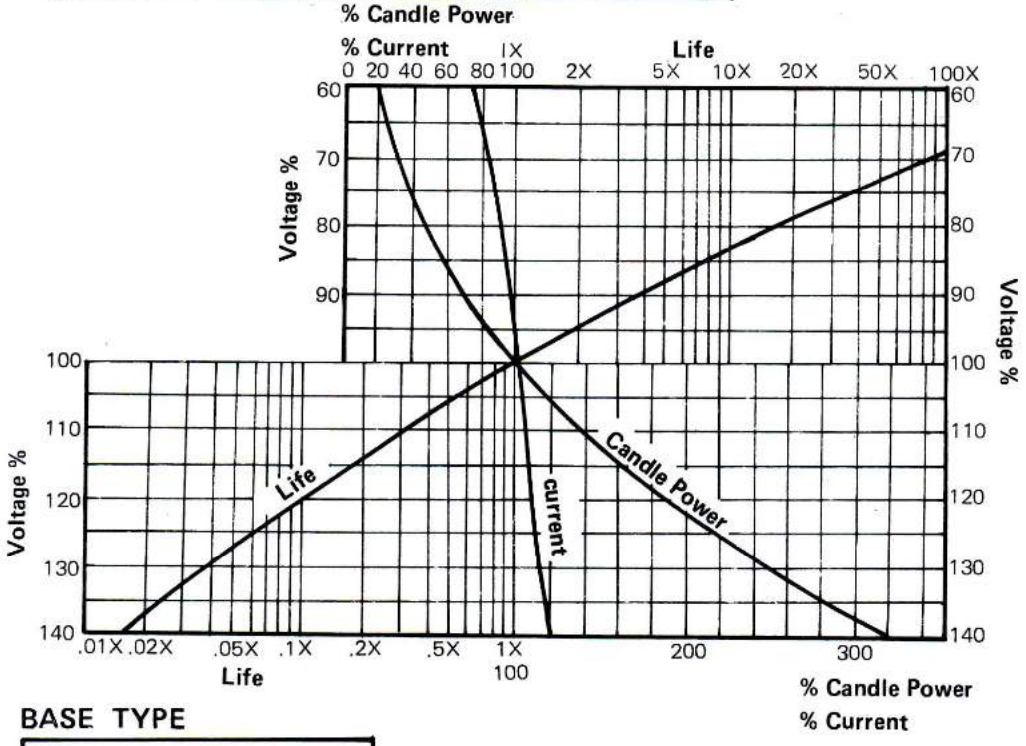
FILAMENT SHAPE



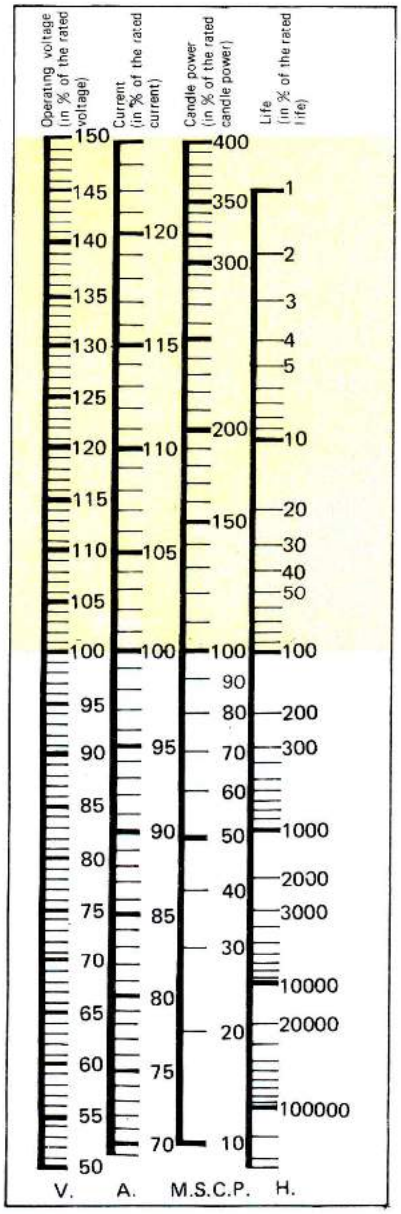
C = coil, CC = coiled-coil (double coil), S = straight

RELATION BETWEEN VOLTAGE, CURRENT, CANDLE POWER AND LIFE





Current, candle power and life in relation to the operating voltage



BASE TYPE

Wire Terminal			
Bi-Pin T 1/1.27 T1 1/4 T 1/2.54 T1 3/4	Midget Grooved MG 5.7S/g	Midget Screw E5/8	Axial Lead
Micro-Midget Flanged MM3S/6	Midget Bayonet BA 5S BA 7S	Miniature Screw E10/13	SF Type
Sub Midget Flanged SM 4S/4 SM 4S/7	Miniature Bayonet BA9S	Candelabra Screw E12/15	Snap Type
SM5S/8	S. C. Bayonet BA15S	Mignon Screw E14	Telephone Slide
S.C. Midget Flanged MF6S/8	D. C. Bayonet BA15D	Intermediate Screw E17/20	Wedge
S.C. Miniature Flanged	D. C. Indexing BAY15D	Special	Midget Screw E5 with lead wire
Lead Wires without Base		Nylon Resin Base	
Bond-Coated Neck		Metal Base	
Heat Shrinkable Tube		Silicon Rubber Base	

TELEPHONE LAMP
T4.5, T4.6, T5.5 T5.5K, T6.8

Voltage (V)	Current (A)	Candle Power (cp)	Life (h)	Filament Shape	A T4.5	B T4.6	C T5.5	D T5.5K	E T6.8
6.0	.020	.013	10,000	C-2V	KT45-060-020A	KT46-060-020B	KT55-060-020C	KT55K-060-020D	KT68-060-020E
6.0	.040	.047	10,000	C-2V	KT45-060-040A	KT46-060-040B	KT55-060-040C	KT55K-060-040D	KT68-060-040E
6.0	.200	.47	7,000	C-2V	KT45-060-200A	KT46-060-200B	KT55-060-200C	KT55K-060-200D	KT68-060-200E
12.0	.020	.032	10,000	C-2V	KT45-120-020A	KT46-120-020B	KT55-120-020C	KT55K-120-020D	KT68-120-020E
12.0	.040	.095	10,000	C-2V	KT45-120-040A	KT46-120-040B	KT55-120-040C	KT55K-120-040D	KT68-120-040E
12.0	.050	.11	10,000	C-2F	KT45-120-050A	KT46-120-050B	KT55-120-050C	KT55K-120-050D	KT68-120-050E
12.0	.100	.30	10,000	C-2F	KT45-120-100A	KT46-120-100B	KT55-120-100C	KT55K-120-100D	KT68-120-100E
24.0	.020	.055	10,000	C-2F	KT45-240-020A	KT46-240-020B	KT55-240-020C	KT55K-240-020D	KT68-240-020E
24.0	.030	.11	10,000	C-2F	KT45-240-030A	KT46-240-030B	KT55-240-030C	KT55K-240-030D	KT68-240-030E
24.0	.040	.20	10,000	C-2F	KT45-240-040A	KT46-240-040B	KT55-240-040C	KT55K-240-040D	KT68-240-040E
24.0	.050	.27	10,000	C-2F	KT45-240-050A	KT46-240-050B	KT55-240-050C	KT55K-240-050D	KT68-240-050E
28.0	.040	.27	10,000	C-2F	KT45-280-040A	KT46-280-040B	KT55-280-040C	KT55K-280-040D	KT68-280-040E
28.0	.050	.32	10,000	C-2F	KT45-280-050A	KT46-280-050B	KT55-280-050C	KT55K-280-050D	KT68-280-050E
30.0	.020	.08	10,000	C-2F	KT45-300-020A	KT46-300-020B	KT55-300-020C	KT55K-300-020D	KT68-300-020E
30.0	.040	.28	10,000	C-2F	KT45-300-040A	KT46-300-040B	KT55-300-040C	KT55K-300-040D	KT68-300-040E
32.0	.033	.33	10,000	C-2F	KT45-320-033A	KT46-320-033B	KT55-320-033C	KT55K-320-033D	KT68-320-033E
36.0	.020	.12	10,000	C-2F	KT45-360-020A	KT46-360-020B	KT55-360-020C	KT55K-360-020D	KT68-360-020E
48.0	.020	.14	5,000	CC-2F	KT45-480-020A	KT46-480-020B	KT55-480-020C	KT55K-480-020D	KT68-480-020E
48.0	.025	.20	5,000	CC-2F	KT45-480-025A	KT46-480-025B	KT55-480-025C	KT55K-480-025D	KT68-480-025E
48.0	.030	.24	5,000	CC-2F	KT45-480-030A	KT46-480-030B	KT55-480-030C	KT55K-480-030D	KT68-480-030E
48.0	.040	.34	5,000	CC-2F	KT45-480-040A	KT46-480-040B	KT55-480-040C	KT55K-480-040D	KT68-480-040E
60.0	.020	.16	5,000	CC-2F	KT45-600-020A	KT46-600-020B	KT55-600-020C	KT55K-600-020D	KT68-600-020E
60.0	.030	.19	5,000	CC-2F	KT45-600-030A	KT46-600-030B	KT55-600-030C	KT55K-600-030D	KT68-600-030E
60.0	.040	.50	5,000	CC-2F	KT45-600-040A	KT46-600-040B	KT55-600-040C	KT55K-600-040D	KT68-600-040E
70.0	.020	.19	5,000	CC-2F	KT45-700-020A	KT46-700-020B	KT55-700-020C	KT55K-700-020D	KT68-700-020E

*Telephone lamps with other types of slide bases or with neon bulbs are available.

TELEPHONE (Continued)
T2, BA7S, BPO NO. 2 T6.5 (FRANCE) ... ETC.

Voltage (V)	Current (A)	Candle Power (cp)	Life (h)	Filament Shape	F T2	G BA7S	H BPO NO.2	I T6.5 (FRANCE)	J
4.0	.040	.03	10,000	C-6	KT2-040-040F	KT7S-040-040G	KHB2-040-040H	KT65-040-040I	
5.0	.040	.035	8,000	C-6	KT2-050-040F	KT7S-050-040G	KHB2-050-040H	KT65-050-040I	
6.0	.041	.06	1,000	C-6	KT2-060-041F-1	KT7S-060-041G-1	KHB2-060-041H-1	KT65-060-041I-1	
6.0	.041	.035	10,000	C-2V	KT2-060-041F-2	KT7S-060-041G-2	KHB2-060-041H-2	KT65-060-041I-2	
10.0	.040	.07	10,000	C-2V	KT2-100-040F	KT7S-100-040G	KHB2-100-040H	KT65-100-040I	
12.0	.020	.05	1,000	C-2V	KT2-120-020F	KT7S-120-020G	KHB2-120-020H	KT65-120-020I	
12.0	.040	.09	10,000	C-2V	KT2-120-040F	KT7S-120-040G	KHB2-120-040H	KT65-120-040I	
12.0	.100	.35	1,000	C-2F	KT2-120-100F-1	KT7S-120-100G-1	KHB2-120-100H-1	KT65-120-100I-1	
12.0	.100	.20	40,000	C-2F	KT2-120-100F-2	KT7S-120-100G-2	KHB2-120-100H-2	KT65-120-100I-2	
16.0	.040	.12	7,500	C-2F	KT2-160-040F	KT7S-160-040G	KHB2-160-040H	KT65-160-040I	
18.0	.040	.13	5,000	C-2F	KT2-180-040F	KT7S-180-040G	KHB2-180-040H	KT65-180-040I	
24.0	.040	.18	8,000	C-2F	KT2-240-040F	KT7S-240-040G	KHB2-240-040H	KT65-240-040I	
24.0	.055	.28	1,000	C-2F	KT2-240-055F	KT7S-240-055G	KHB2-240-055H	KT65-240-055I	
28.0	.040	.34	6,000	C-2F	KT2-280-040F	KT7S-280-040G	KHB2-280-040H	KT65-280-040I	
48.0	.040	.45	5,000	CC-2F	KT2-480-040F	KT7S-480-040G	KHB2-480-040H	KT65-480-040I	
60.0	.050	.50	7,500	CC-2F	KT-600-050F	KT7S-600-050G	KHB2-600-050H	KT65-600-050I	