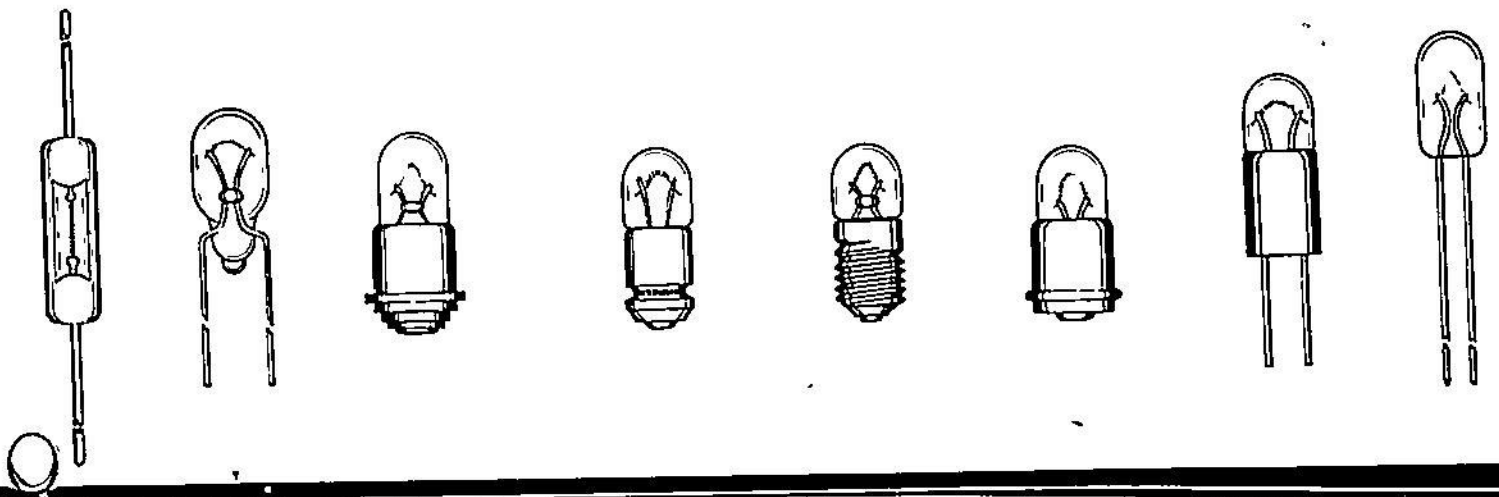


# SUBSTITUTION LA SPECIFICATIONS GUIDE



SL74



LAKE ENGINEERING CO. LIMITED

123 MANVILLE RD. SCARBOROUGH ONTARIO



# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAKE subminiature lamps are designed to meet requirements for extremely small size, extra long life and low costs. Lamps are grouped in this Guide by bulb sizes and are listed according to design volts in ascending order within the size group. For easy reference the NUMERICAL INDEX at rear of this Guide lists the lamps in numerical sequence.

## AGED AND SELECTED LAMPS

Where precise light output is of primary importance, Lake lamps are Aged and Selected. All T-3/4 and T-1 lamps are aged a minimum of 10 hours then individually measured for candlepower. T-1-1/4, T-1-1/2 and T-1-3/4 lamps are Aged and Selected to specific customer requirements.

## BASE

The base provides electrical contact and support for the lamp. Unbased lamp leads are durometer wire. T-3/4 and T-1 lamp leads are tin-plated for solderability.

## BULB

The bulb is the glass envelope which houses the lamp filament assembly and contains the vacuum or gas. A letter and number identifies bulb shape and approximate bulb diameter in eighths of an inch.

## CANDLEPOWER

Mean Spherical Candlepower (MSCP) is the value of a lamp's total integrated brightness as measured in a photometric sphere. This level depends on the lamps electrical parameters and the envelope size. All standard lamps are tested by photometers using lamp standards traceable to the National Bureau of Standards. (For conversion of MSCP to lumens, multiply the MSCP x 12.57.)

## COLORED LAMPS

Signal and Specification colors are coated directly onto the glass bulb and are available on all based and unbased lamps listed in this catalog. Signal colors include amber, red, green and blue. Specification colors for instrument lighting include red (MIL-L-25467) and blue-white (MIL-L-27160) for white light color correction. Color matching to customer requirement is also available.

## DESIGN AMPERAGE

This is the actual current flowing through the filament at rated voltage.

## DESIGN VOLTAGE

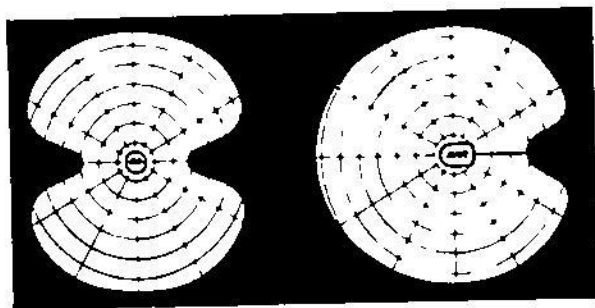
This is the operating voltage for which a lamp is designed. In certain cases, the industry has modified the original design voltage. For example, Type 328 was originally designed for 5.0 volts. Industry now rates it at 6.0 volts, but still calculates brightness at 5.0 volts. Obviously, this change in voltage rating also affects amperage and MSCP specifications at 6.0 volts. Over-rating and under-rating should be considered when special requirements are needed.

## FILAMENT

The filament is the light emitting portion of the lamp. A prefix letter indicates whether the wire is straight (S), coiled (C) or coiled-coil (CC) and a number designates the geometric configuration of the filament support wires.

## FILAMENT DISTRIBUTION

Consideration of filament orientation should not be overlooked to gain maximum efficiency from a lamp. The drawings below illustrate the output from an unsupported coil filament. Note that a reduction of light output occurs when one filament strand is hidden by the other. A reduction may also be noted in the area of the lead-in wires. Adding a base to a lamp will reduce the MSCP by approximately 10%.



## FLASHING AND PULSATING

There is no noticeable sacrifice in the life of sub-miniature lamps used in flashing and pulsating lamp circuits as long as the inrush current is considered and light output does not exceed that of the steady burning position.

## HEAT

Above 300°F, the solder on based lamps may soften and deform, the basing cement may loosen, evolved gas may attack the filament or the glass envelope may soften.

## INRUSH CURRENT

The initial current through a cold filament which can be as much as 10 to 12 times greater than normal operating current. As resistance causes the filament temperature to rise, inrush current decreases. Inrush current can be reduced by using a low value of pre-heat voltage, and is an important consideration when lamps are to be used in a flashing or pulsating display.

## LAMP IDENTIFICATION

Lamps are normally identified by an Industry Standard number issued and controlled by the United States American National Standards Institute (A.N.S.I.) Where a lamp has been designed for a special application it will use the original manufacturer's number until an A.N.S.I. has been assigned.

## LAMP LIFE

Rated average life is that obtained in closely controlled laboratory testing of lamps on 60 Hertz alternating current at their design voltage. Very long life lamps are generally rated on the basis of extrapolated laboratory test data. Service conditions such as shock, vibration, voltage fluctuations, temperature, etc. may contribute to a shorter average life.

Ordinarily for still-rack operation, normal tungsten filament evaporation is the basic force or mechanism controlling incandescent lamp life. Where normal filament evaporation is the dominant failure mechanism, lamps should reach their design-predicted lifetimes.

In recent years another life-influencing lamp filament mechanism has become more prominent. This is commonly referred to as "filament notching", its prominence is due to at least three factors, primarily associated with sub-miniature type lamps.

1. Low temperature filament operation, less than that for significant normal tungsten evaporation. (Long life lamp designs, such as 10,000, 25,000, 50,000 and 100,000 hour designs. This does not apply to filament temperatures below 1600°C.)
2. Small filament wire sizes, less than one mil (.001") diameter in many cases.
3. Increased use of D.C. voltage operation (generally resulting from advances in solid state technology.)

Notching is the appearance of step-like or sawtooth irregularities, appearing on all or part of the tungsten filament surface, after some burning. These notches reduce the filament wire diameter at various points. In some cases, especially in fine wire diameter lamps, the notching is so severe as to almost penetrate the entire wire diameter. Thus accelerated spot evaporation due to this notching (as well as reduced filament strength), now becomes the dominant mechanism for influencing lamp life. Because of its abnormal evaporation and/or reduced strength effects, lamp lifetimes due to notching may be one-half or less of so called ordinary or normal, predicted lamp lifetimes.

## LAMP RERATING

Electrically, subminiature lamps are dynamic devices. Candlepower, current and life may be varied for all subminiature lamps by operating the lamps at other than design voltage. Rerating may be accomplished by the following formulas

$$\begin{aligned} \text{RERATED M.S.C.P.} &= \left(\frac{V}{V_1}\right)^{3.5} \times \text{M.S.C.P. AT DESIGN VOLTS} \\ \text{RERATED LIFE} &= \left(\frac{V_1}{V}\right)^{12} \times \text{LIFE AT DESIGN VOLTS} \\ \text{RERATED CURRENT} &= \left(\frac{V}{V_1}\right)^{.55} \times \text{CURRENT AT DESIGN VOLTS} \\ V &= \text{APPLICATION VOLTAGE} \\ V_1 &= \text{DESIGN VOLTAGE} \end{aligned}$$

## LAMP SPECIFICATIONS

At present there are Military Specifications covering a wide range of lamps. Although these specifications perform a valuable service to the industry, they are not rigid enough to guarantee a high quality lamp. Therefore, LAKE specifications may greatly exceed the Military Specification drawings.

At this time there is no QPL (Qualified Product List) for MIL Spec lamps, although one is currently being developed by the government. Therefore LAKE markets lamps to the applicable MIL Spec stating that they properly conform to design and manufacture.

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

## LIGHT CENTER LENGTH

Light center length is the average measurement for which the lamp is designed and is subject to nominal manufacturing tolerances. It is measured from the geometric center of the light source to a particular point of the base. This point is shown below for the base types used in sub-miniature lamps

- |               |                              |
|---------------|------------------------------|
| Bi-Pin        | - Bottom of Base             |
| Flanged       | - Top of Flange              |
| Grooved       | - Center of groove           |
| Screw         | - End of bottom base contact |
| Wire Terminal | - Not specified              |

## MAXIMUM OVERALL LENGTH (MOL)

Maximum overall length is the largest total length which the lamp or the lamp and base will not exceed.

## OPERATING TEMPERATURE

The glass used in making standard bulbs for miniature lamps will outgas when the surface temperature exceeds 300°F. Caution should be exercised to provide adequate heat removal through radiation, conduction and/or convection. The leads of a lamp provide a path for conducting heat. The mass of the terminal points where the lamp is connected should be adequate to provide a heat sink and the wiring leading from the connection points should be large enough to carry away this heat.

## RISE TIME

By varying filament wire diameter, coil size and spacing as well as voltage and current, the rise time of a miniature lamp may be varied from 10 to 200 milliseconds from cold to operating brightness.

Modulation of a lamp filament is possible within certain design limits. The rise time may be accelerated by use of a wave form with a high voltage front phased in time to reduce to design level when the filament reaches design temperature

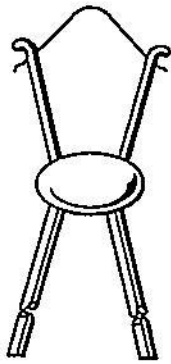
## SHOCK AND VIBRATION

Miniature lamps vary greatly in their ability to operate under conditions of shock and vibration. The tensile strength of tungsten is 10 times greater when cold than when heated to operating temperature. This is to confirm that a lamp will withstand much higher shock and vibration non-operating than when operating.

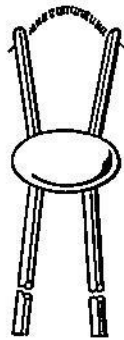
High current/low voltage filaments represent short length and large wire size as compared to low current/high voltage filaments and therefore will stand higher shock and vibration due to higher mechanical strength.

Lamps are tested to MIL Standard 202C-Method 202A for vibration and Method 202B for shock.

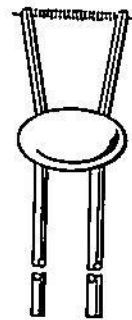
## FILAMENT STYLES



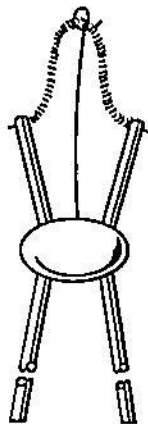
S-2



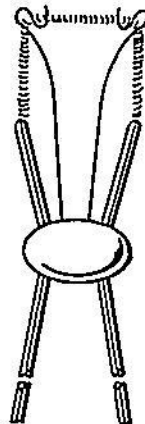
C-2R



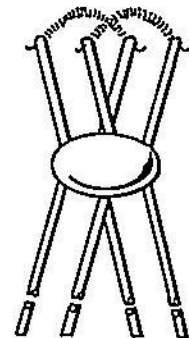
C-6



C-2V

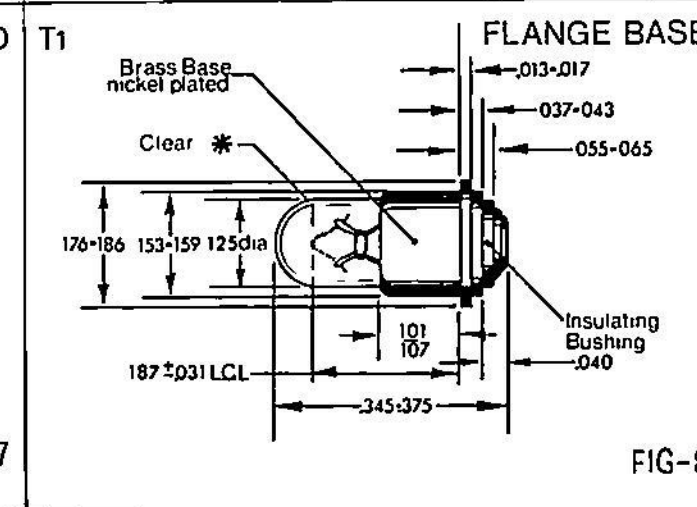
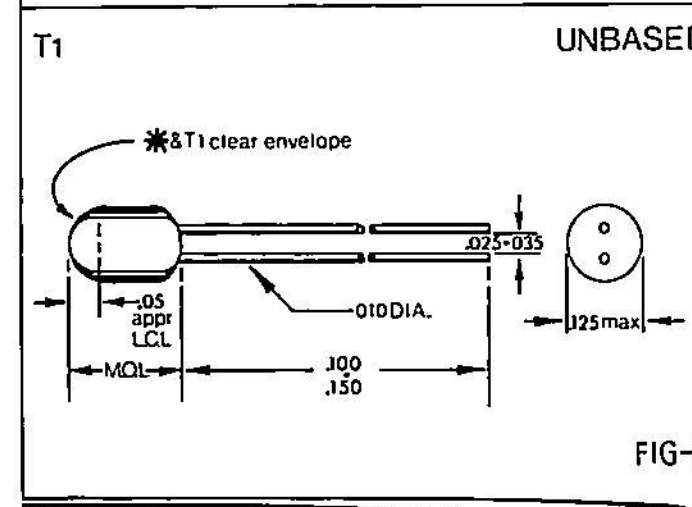
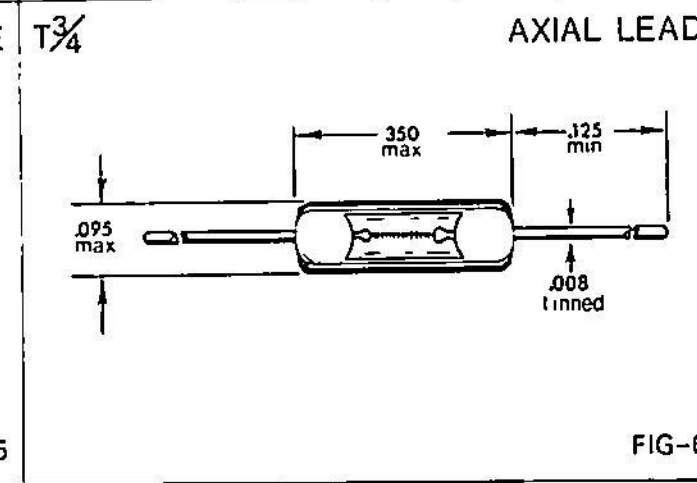
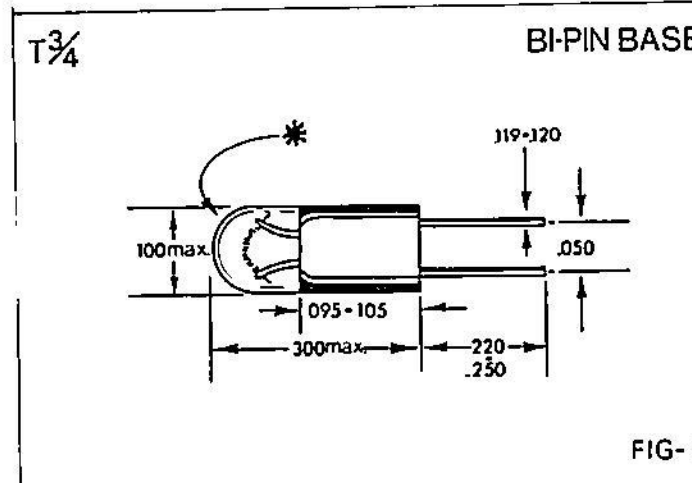
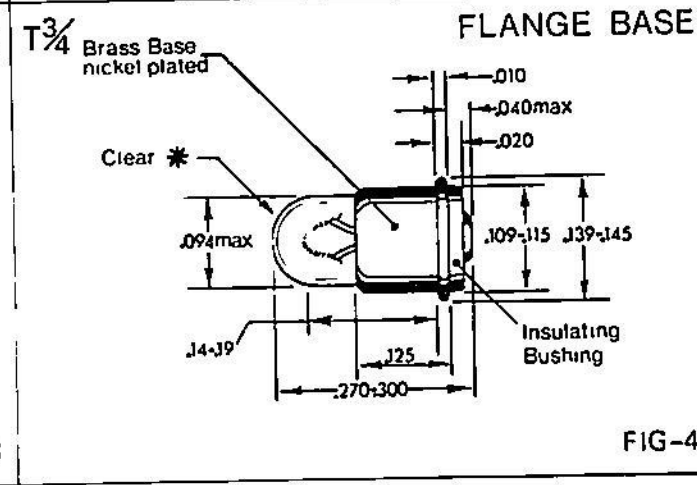
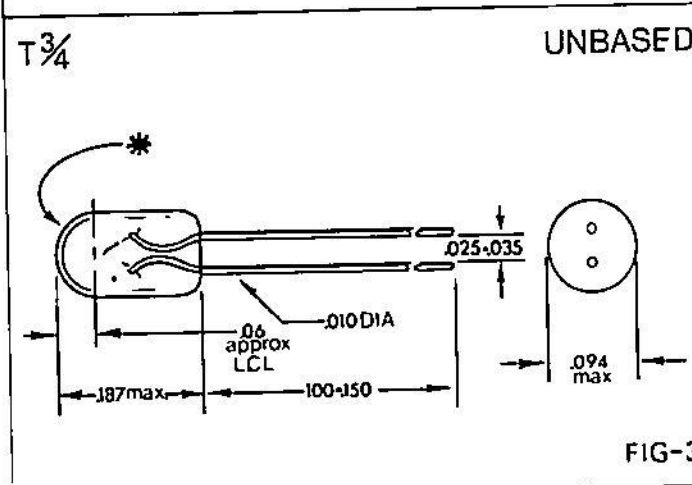
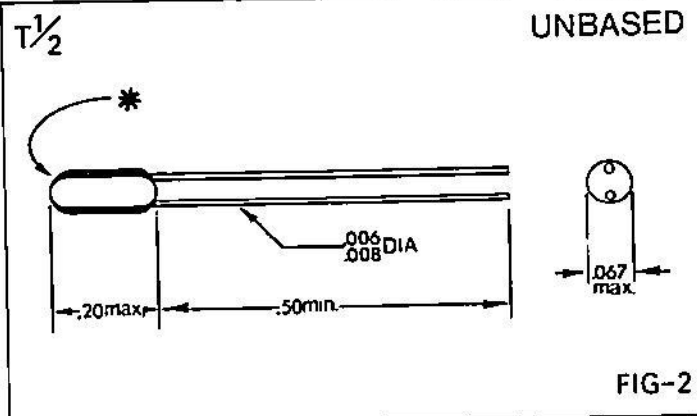
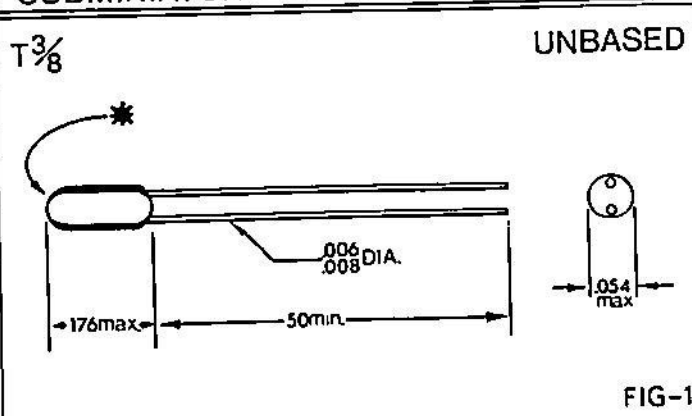


C-2F



2/C-2R

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE



\* TIPLESS CONSTRUCTION FOR UNDISTORTED END VIEWING

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

FIG 9

T1

BI-PIN

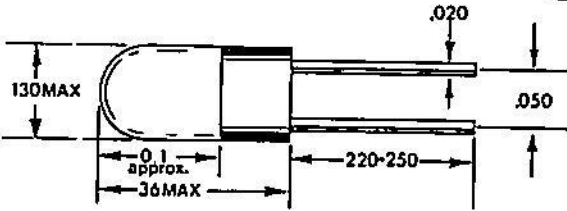


FIG 10

T1

AXIAL-LEAD

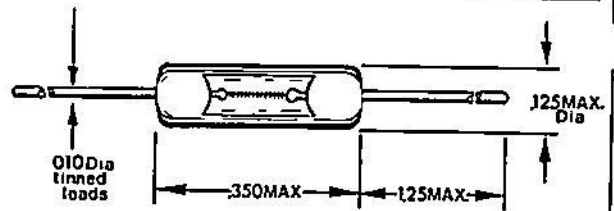


FIG.11

T1 1/4

UNBASED

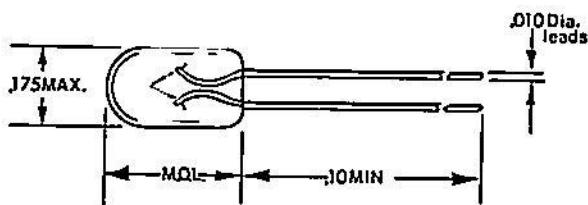


FIG.12

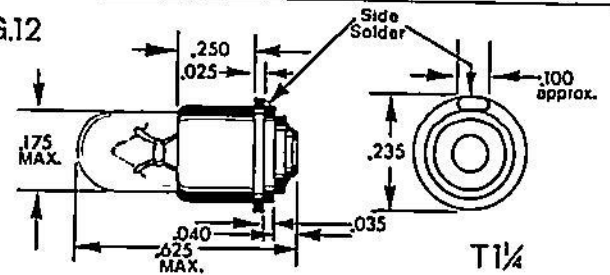


FIG.13

T1 1/4

BI-PIN

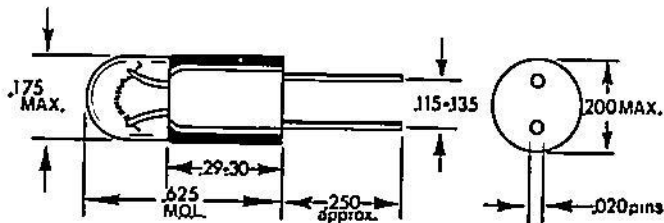


FIG.14

T1 1/4

SPECIAL BASE

LAMP TO DROP THROUGH 191 DIA CYLINDER x 1/4 LONG

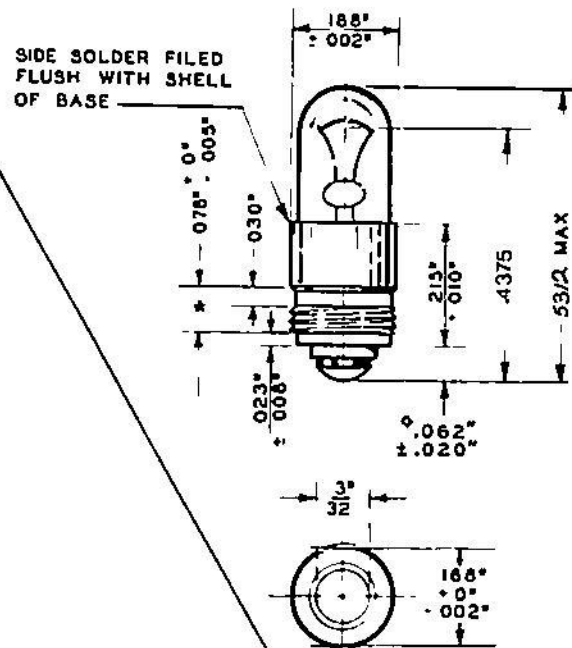
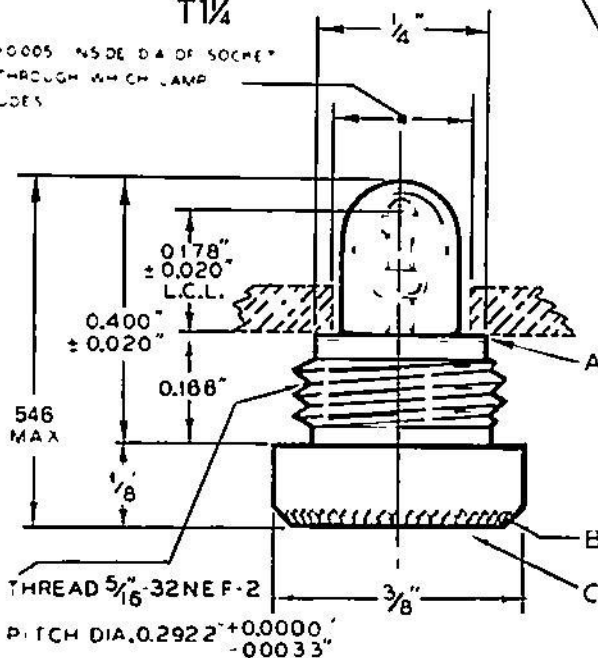


FIG 15

T1 1/4

0.200 ± 0.005 INSIDE DIA OF SOCKET HOLE THROUGH WHICH LAMP PROTRUDES



**FINISH NOTES**

- A- SHOULDER CONTACT-SILVER PLATE FINISH
- B- FINE KNURL
- C- DULL BLACK FINISH

NOTES: BULB TO DROP TO CONTACT  
COLLAR OF LAMP IS HOLE  
188 DIA x 1/4 LONG

\* AN ALUMINUM COATING MAY SCRATCH OR PEEL. TANNED RED IS PERMANENT FINISH

SPECIAL BASE

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

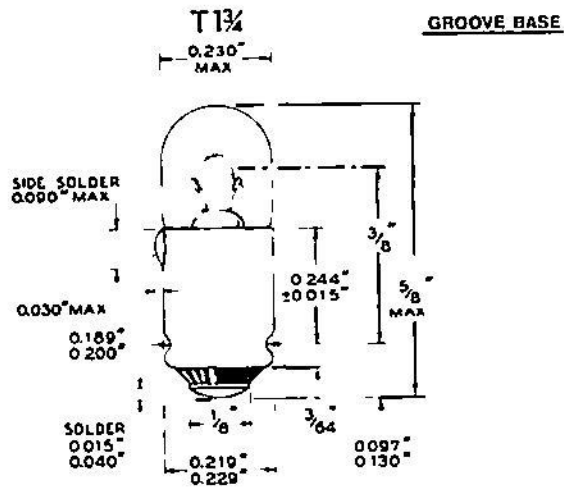


FIG 16

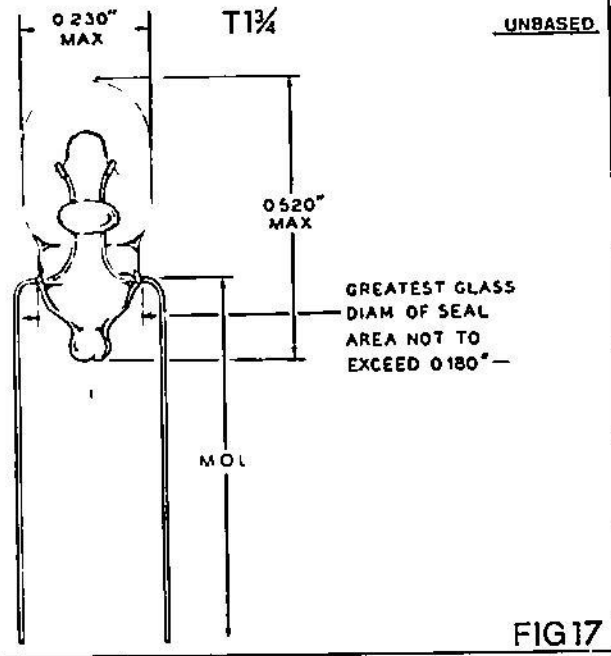


FIG 17

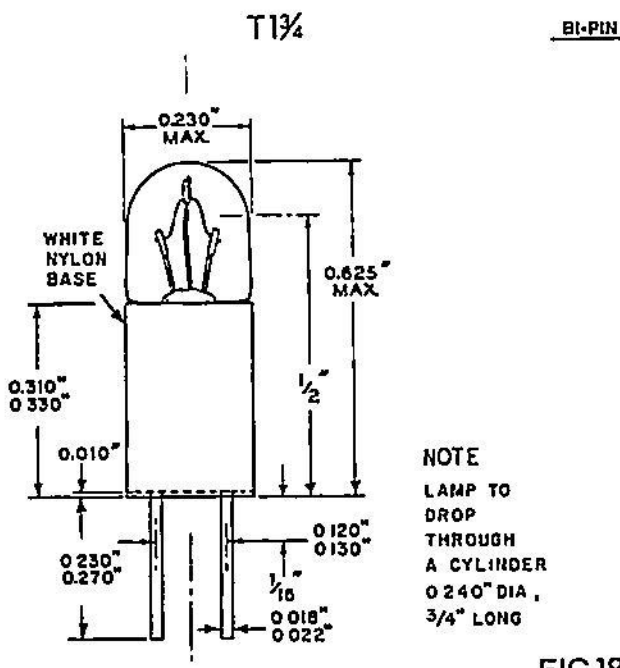


FIG 18

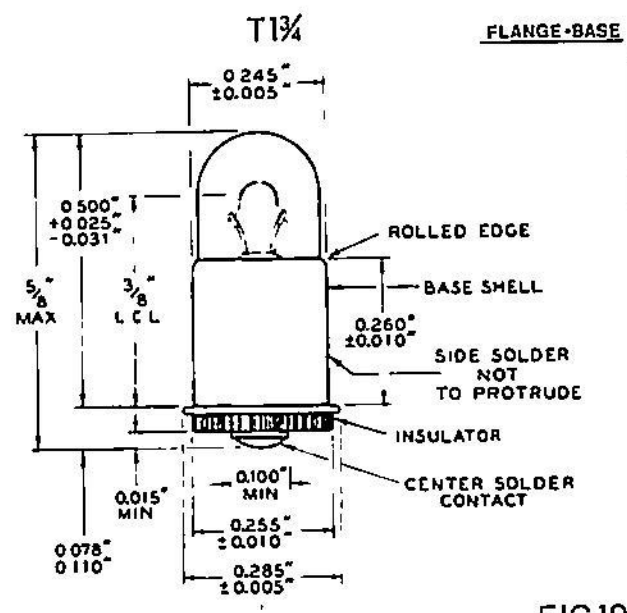


FIG 19

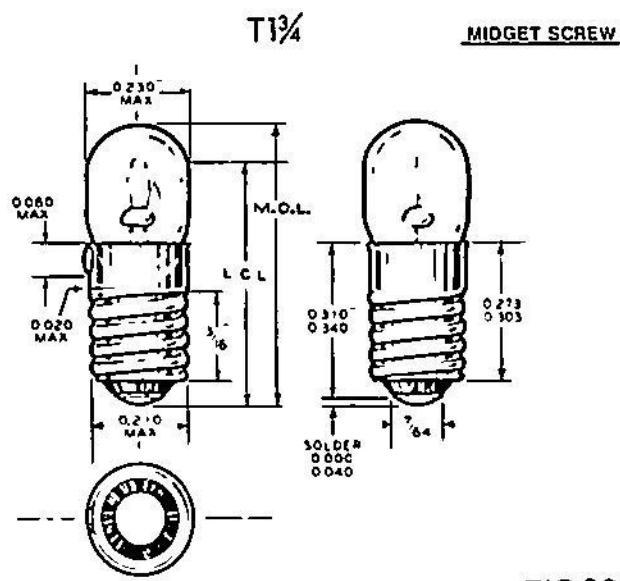


FIG 20

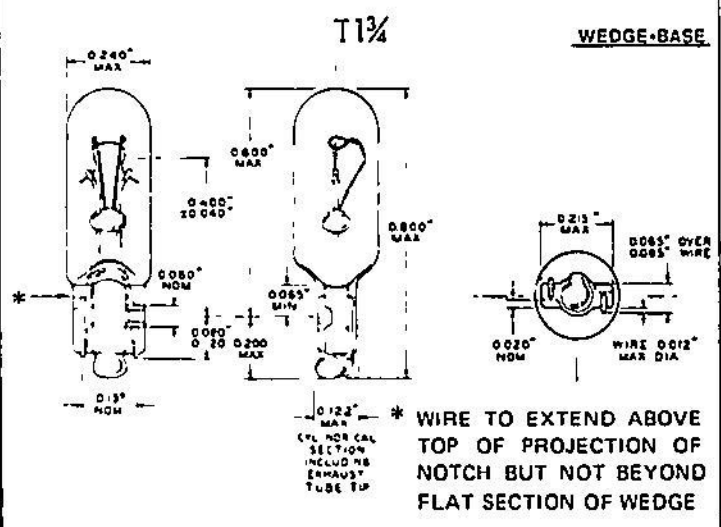


FIG 21

TL-1½

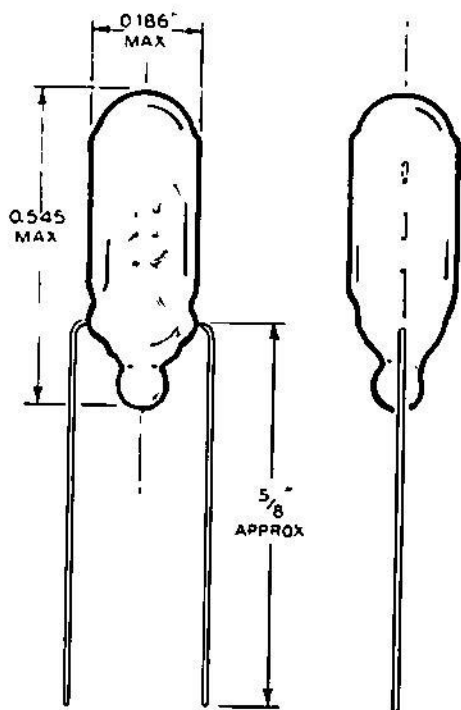


FIG 22

GTL-1¼ UNBASED

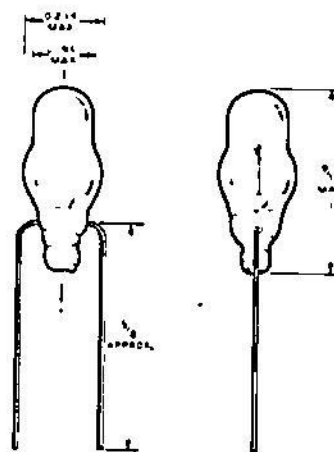


FIG.23

GTL-1¼ GROOVED BASE

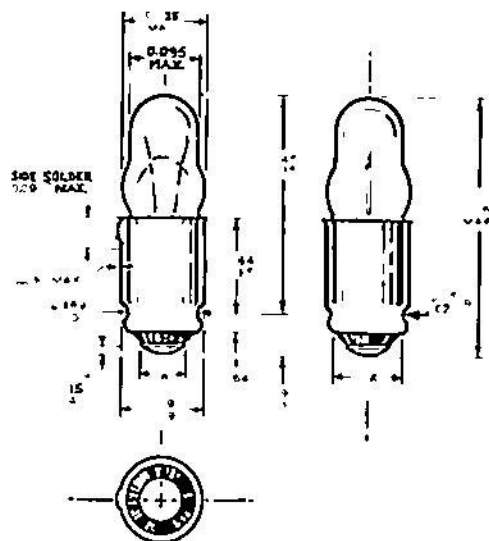


FIG.24

GTL-1¼ FLANGED BASE

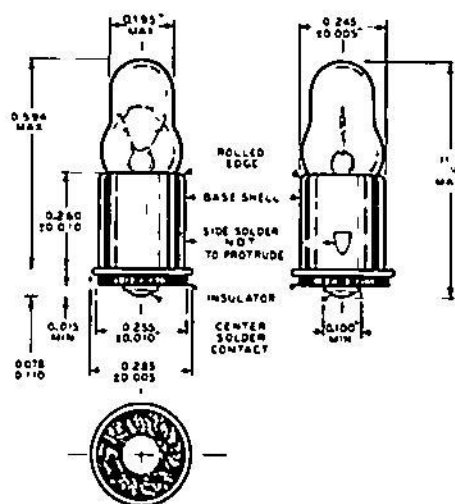


FIG.25



# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L. (ins)
7090	T-3/8	Unbased	1.5	.002	.015		10,000		
7093	T-3/8	Unbased	3.0	.030	.029		5,000		
7094	T-1/2	Unbased	1.5	.002	.015		10,000		
7096	T-1/2	Unbased	3.0	.030	.029		5,000		
7097	T-1/2	Unbased	5.0	.034	.020		5,000		
72	T-3/4	Unbased	1.15	.003	.090	C-2R	5,000		
103-99	T-3/4	Flange Base	1.15	.003	.090	C-2R	5,000		
3810	T-3/4	Flange Base	1.5	.002	.015 ± 20%	C-2R	10,000		
3811	T-3/4	Flange Base	1.5	.01	.015 ± 20%	C-2R	5,000		
7100	T-3/4	Unbased	1.5	.002	.015 ± 20%	C-2R	10,000		
7101	T-3/4	Unbased	1.5	.01	.015 ± 20%	C-2R	5,000		
7810	T-3/4	Bi Pin	1.5	.002	.010		10,000		
7811	T-3/4	Bi Pin	1.5	.010	.015		10,000		
7121	T-3/4	Flange Base	2.5	.001	.110	C-2R	10,000		
8534	T-3/4	Unbased	2.5	.001	.110	C-2R	10,000		
30	T-3/4	Unbased	4.5	.017	.021	C-2R	5,000		
3102	T-3/4	Unbased	4.5	.018	.022	C-2R	5,000		
2	T-3/4	Unbased	5.0	.034	.021	C-2R	10,000		
6153	T-3/4	Unbased	5.0	.15	.060	C-2R	3,000		
6183	T-3/4	Flange Base	5.0	.15	.060	C-2R	3,000		
6803	T-3/4	Unbased	5.0	.03	.06	C-2R	60,000		.187
6803AS15	T-3/4	Unbased	5.0	.03 ± 15%	.06	C-2R	60,000		.187
6803R	T-3/4	Unbased	5.0	.03	.06	C-2R	60,000		.187
6805	T-3/4	Axial Lead	5.0	.03	.06	C-6	60,000		.350
6805AS15	T-3/4	Axial Lead	5.0	.03 ± 15%	.06	C-6	60,000		.350
6833	T-3/4	Unbased	5.0	.05	.060	C-2R	100,000		
6835	T-3/4	Axial Lead	5.0	.05	.06	C-6	25,000		.350
6835AS15	T-3/4	Axial Lead	5.0	.05 ± 15%	.06	C-6	25,000		.350
7102	T-3/4	Unbased	5.0	.20	.115	C-2R	5,000		
7112	T-3/4	Bi Pin	5.0	.034	.020		10,000		
7112AS15	T-3/4	Bi Pin	5.0	.034 ± 15%	.021	C-2R	10,000	.250	.324
7113	T-3/4	Bi Pin	5.0	.030	.060		100,000		
7113AS15	T-3/4	Bi Pin	5.0	.03 ± 15%	.06	C-2R	60,000	.250	.325
7114	T-3/4	Bi Pin	5.0	.050	.060		100,000		
7114AS15	T-3/4	Bi Pin	5.0	.05 ± 15%	.06	C-2R	25,000	.250	.325
7115AS15	T-3/4	Bi Pin	5.0	.15 ± 15%	.06	C-2R	3,000	.250	.325
7116	T-3/4	Bi Pin	5.0	.090	.075		25,000		
7115AS15	T-3/4	Bi Pin	5.0	.09 ± 15%	.075	C-2R	25,000	.250	.325
7117	T-3/4	Bi Pin	5.0	.150	.080		6,000		
7118	T-3/4	Bi Pin	5.0	.150	.115		40,000		
7118AS15	T-3/4	Bi Pin	5.0	.15 ± 15	.115	C-2R	40,000	.250	.325
7119	T-3/4	Bi Pin	5.0	.200	.115		5,000		
7122	T-3/4	Flange Base	5.0	.034	.021	C-2R	10,000		
7123	T-3/4	Flange Base	5.0	.20	.115	C-2R	5,000		
7133	T-3/4	Unbased	5.0	.09	.075	C-2R	25,000		
7133R	T-3/4	Unbased	5.0		.075	C-2R	25,000		
7135	T-3/4	Axial Lead	5.0	.09 ± 25%	.075	C-6	25,000		
7135AS15	T-3/4	Axial Lead	5.0	.09 ± 15%	.075	C-6	25,000		.350
7153	T-3/4	Unbased	5.0	.15	.115	C-2R	40,000		
7153AS15	T-3/4	Unbased	5.0	.15 ± 15%	.115	C-2R	40,000		.187
7153R	T-3/4	Unbased	5.0	.15	.115	C-2R	40,000		.187
7155	T-3/4	Axial Lead	5.0	.15 ± 25%	.115	C-6	40,000		
7155AS15	T-3/4	Axial Lead	5.0	.15 ± 15%	.115	C-6	40,000		.350
8270	T-3/4	Flange Base	5.0	.15	.115	C-2R	40,000		
8383	T-3/4	Flange Base	5.0	.15	.080	C-2R	15,000		
8537	T-3/4	Unbased	5.0	.02	.015 ± 20%	C-2R	1,000		
8538	T-3/4	Flange Base	5.0	.02	.015 ± 15%	C-2R	1,000		
8587	T-3/4	Flange Base	5.0	.03	.060	C-2R	100,000		

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L. (ins)
8666	T-3/4	Unbased	5.0	.15	.080	C-2R	15,000		
8828	T-3/4	Flange Base	5.0	.09	.075	C-2R	25,000		
8913	T-3/4	Flange Base	5.0	.05	.060	C-2R	Ind. Long		.300
7244	T-1	Flange Base	1.25	.004	.012	C-2R	1,000	.1875	.375
7252	T-1	Bi Pin	1.25	.004	.012	C-2R	1,000	.2812	.380
8798	T-1	Unbased	1.25	.003	.012	C-6	1,000		.250
7245	T-1	Flange Base	1.35	.02	.222	C-2R	25,000	.1875	.375
7253	T-1	Bi Pin	1.35	.02	.222	C-2R	25,000	.2812	.380
8910	T-1	Unbased	1.35	.02	.222	C-2R	25,000		.250
3225	T-1	Bi Pin	1.5	.002	.01	C-2R	5,000	.2812	.380
7200	T-1	Unbased	1.5	.002	.010	C-2R	10,000		.250
7201	T-1	Unbased	1.5	.01	.015	C-2R	5,000		.250
7202	T-1	Unbased	1.5	.015	.060		100,000		.250
7203	T-1	Unbased	1.5	.030	.075	C-2R	16,000		.250
7225	T-1	Flange Base	1.5	.002	.010	C-2R	10,000	.1875	.375
7226	T-1	Flange Base	1.5	.01	.015	C-2R	5,000	.1875	.375
7227	T-1	Flange Base	1.5	.010	.015		10,000		.375
7254	T-1	Bi Pin	1.5	.01	.015	C-2R	5,000	.2812	.380
7255	T-1	Bi Pin	1.5	.03	.075	C-2R	16,000	.2812	.380
8102	T-1	Flange Base	1.5	.03	.075	C-2R	16,000	.1875	.375
7017	T-1	Unbased	2.5	.05	.125	C-2R	10,000		.250
7246	T-1	Flange Base	2.5	.001	.015	C-2R	10,000	.1875	.375
7247	T-1	Flange Base	2.5	.10	.10	C-2R	10,000	.1875	.375
7248	T-1	Flange Base	2.5	.21	.320	C-2R	5,000		.375
7256	T-1	Bi Pin	2.5	.001	.015	C-2R	10,000	.2812	.380
7257	T-1	Bi Pin	2.5	.210	.320		10,000		.380
7732	T-1	Bi Pin	2.5	.10	.10	C-2R	10,000	.2812	.380
8601	T-1	Unbased	2.5	.001	.015	C-2R	10,000		.250
8711	T-1	Unbased	2.5	.21	.320	C-2R	5,000		.250
8732	T-1	Unbased	2.5	.10	.10	C-2R	10,000		.250
679	T-1	Flange Base	3.0	.001	.0125 + 25%	C-2R	16,000		.375
2128	T-1	Unbased	3.0		.010 - .015	C-2R	60,000		.250
3229	T-1	Bi Pin	3.0	.02	.015	C-2R	5,000	.2812	.380
7204	T-1	Unbased	3.0	.010	.008		10,000		.250
7205	T-1	Unbased	3.0	.02	.015	C-2R	5,000		.250
7206	T-1	Unbased	3.0	.015	.0225		10,000		.250
7207	T-1	Unbased	3.0	.03	.060	C-2R	100,000		.250
7208	T-1	Unbased	3.0	.15	.12	C-2R	16,000		.250
7228	T-1	Flange Base	3.0	.010	.008		10,000		.375
7229	T-1	Flange Base	3.0	.02	.015 ± 20%	C-2R	5,000		.375
7230	T-1	Flange Base	3.0	.015	.0225		10,000		.375
7231	T-1	Flange Base	3.0	.03	.060	C-2R	100,000	.1875	.375
7232	T-1	Flange Base	3.0	.15	.12	C-2R	16,000	.1875	.375
7249	T-1	Flange Base	3.0	.001	.008 ± 20%	C-2R	16,000		.375
7259	T-1	Bi Pin	3.0	.005	.0125		10,000		.380
7260	T-1	Bi Pin	3.0	.03	.060	C-2R	100,000	.2812	.380
7261	T-1	Bi Pin	3.0	.15	.120	C-2R	16,000	.2812	.380
8846	T-1	Unbased	3.0	.001	.008 ± 20%	C-2R	16,000		.250
680	T-1	Unbased	5.0	.03 ± 25%	.06	C-2R	60,000		.250
680AS15	T-1	Unbased	5.0	.03 ± 15%	.06	C-2R	60,000		.250
680R	T-1	Unbased	5.0		.06	C-2R	100,000		.250
682	T-1	Flange Base	5.0	.03 ± 25%	.06	C-2R	60,000	.1875	.375
682AS15	T-1	Flange Base	5.0	.03 ± 15%	.06	C-2R	60,000	.1875	.375
682R	T-1	Flange Base	5.0		.06	C-2R	100,000+		.375
683	T-1	Unbased	5.0	.05 + 25%	.06	C-2R	25,000		.250
683AS15	T-1	Unbased	5.0	.05 + 15%	.06	C-2R	25,000		.250
683R	T-1	Unbased	5.0		.06	C-2R	25,000		.250
685	T-1	Flange Base	5.0	.05 + 25%	.06	C-2R	25,000	.1875	.375
685AS15	T-1	Flange Base	5.0	.05 + 15%	.06	C-2R	25,000	.1875	.375
685R	T-1	Flange Base	5.0		.06	C-2R	100,000		.375

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LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L (ins)
713	T-1	Unbased	5.0	.09 ± 25%	.075	C-2R	25,000		.250
713AS15	T-1	Unbased	5.0	.09 ± 15%	.075	C-2R	25,000		.250
713R	T-1	Unbased	5.0		.075	C-2R	25,000		.250
714	T-1	Flange Base	5.0	.09	.075	C-2R	25,000	.1875	.375
714AS15	T-1	Flange Base	5.0	.09 ± 15%	.075	C-2R	25,000	.1875	.375
714R	T-1	Flange Base	5.0		.075	C-2R	25,000		.375
715	T-1	Unbased	5.0	.15 ± 25%	.115	C-2R	40,000		.250
715AS15	T-1	Unbased	5.0	.15 ± 15%	.115	C-2R	40,000		.250
715R	T-1	Unbased	5.0		.115	C-2R	40,000		.250
718	T-1	Flange Base	5.0	.15 ± 25%	.115	C-2R	40,000	.1875	.375
718AS15	T-1	Flange Base	5.0	.15 ± 15%	.115	C-2R	40,000	.1875	.375
718R	T-1	Flange Base	5.0		.115	C-2R	40,000		.375
930	T-1	Flange Base	5.0	.030	.060		60,000		.360
931	T-1	Flange Base	5.0	.050	.060		40,000		.360
932	T-1	Flange Base	5.0	.150	.115		16,000		.360
933	T-1	Flange Base	5.0	.090	.075		16,000		.360
2022	T-1	Unbased	5.0	.034	.021	C-2R	10,000		.145
3022	T-1	Unbased	5.0	.034	.021	C-2R	10,000		.187
3211	T-1	Unbased	5.0	.20	.115	C-2R	5,000		.187
6022	T-1	Unbased	5.0	.034	.021	C-2R	10,000		.250
6022AS15	T-1	Unbased	5.0	.034 ± 15%	.021	C-2R	10,000		.250
6150	T-1	Unbased	5.0	.15	.06	C-2R	5,000		.250
6151	T-1	Unbased	5.0	.15	.06	C-2R	5,000		.187
6152	T-1	Unbased	5.0	.15	.060	C-2R	5,000		.145
6180	T-1	Flange Base	5.0	.15	.06	C-2R	5,000	.1875	.375
6211	T-1	Unbased	5.0	.15	.06	C-2R	5,000		.187
6212	T-1	Unbased	5.0	.16	.08	C-2R	5,000		.145
6801	T-1	Unbased	5.0	.03	.06	C-2R	60,000		.187
6801AS15	T-1	Unbased	5.0	.03 ± 15%	.06	C-2R	100,000+		.187
6801R	T-1	Unbased	5.0		.06	C-2R	100,000+		.187
6802	T-1	Unbased	5.0	.03	.06	C-2R	60,000		.145
6802AS15	T-1	Unbased	5.0	.03 ± 15%	.06	C-2R	100,000+		.145
6802R	T-1	Unbased	5.0		.06	C-2R	100,000+		.145
6804	T-1	Axial Lead	5.0	.03	.06	C-6	60,000		.350
6804AS15	T-1	Axial Lead	5.0	.03 ± 15%	.06	C-6	60,000		.350
6804R	T-1	Axial Lead	5.0		.06	C-6	60,000		.350
6806	T-1	Unbased	5.0	.030	.060		60,000		.235
6807	T-1	Unbased	5.0	.050	.060		40,000		.235
6808	T-1	Unbased	5.0	.090	.075		16,000		.235
6809	T-1	Unbased	5.0	.150	.115		16,000		.235
6831	T-1	Unbased	5.0	.05	.060	C-2R	100,000		.187
6831AS15	T-1	Unbased	5.0	.05 ± 15%	.06	C-2R	100,000		.187
6831R	T-1	Unbased	5.0		.06	C-2R	100,000		.187
6832	T-1	Unbased	5.0	.05 ± 25%	.06	C-2R	25,000		.145
6832AS15	T-1	Unbased	5.0	.05 ± 15%	.06	C-2R	25,000		.145
6832R	T-1	Unbased	5.0	.05	.06	C-2R	25,000		.145
6833	T-1	Unbased	5.0	.05 ± 25%	.06	C-2R	60,000		.187
6833AS15	T-1	Unbased	5.0	.05 ± 15%	.06	C-2R	60,000		.187
6833R	T-1	Unbased	5.0		.06	C-2R	60,000		.187
6834	T-1	Axial Lead	5.0	.05	.06	C-6	25,000		.350
6834AS15	T-1	Axial Lead	5.0	.05 ± 15%	.06	C-6	25,000		.350
7022	T-1	Bi Pin	5.0	.034	.020		10,000		.380
7022AS15	T-1	Bi Pin	5.0	.034 ± 15%	.021	C-2R	10,000	.2812	.380
7131	T-1	Unbased	5.0	.09 ± 25%	.075	C-2R	25,000		.187
7131AS15	T-1	Unbased	5.0	.09 ± 15%	.075	C-2R	25,000		.187
7131R	T-1	Unbased	5.0		.075	C-2R	25,000		.187
7132	T-1	Unbased	5.0	.09	.075	C-2R	25,000		.145
7132AS15	T-1	Unbased	5.0	.09 ± 15%	.075	C-2R	25,000		.145
7132R	T-1	Unbased	5.0		.075	C-2R	25,000		.145
7134	T-1	Axial Lead	5.0	.09 ± 25%	.075	C-6	25,000		.350
7151	T-1	Unbased	5.0	.15	.115	C-2R	40,000		.187

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LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L (ins)
7151AS15	T-1	Unbased	5.0	.15 ± 15%	.115	C-2R	40,000		.187
7151R	T-1	Unbased	5.0		.115	C-2R	40,000		.187
7152	T-1	Unbased	5.0		.115	C-2R	40,000		.145
7152AS15	T-1	Unbased	5.0	.15 ± 15%	.115	C-2R	40,000		.145
7152AS15R	T-1	Unbased	5.0	.150	.115	C-2R	Ind. Long		.145
7152R	T-1	Unbased	5.0		.115	C-2R	40,000		.145
7154	T-1	Axial Lead	5.0	.15 ± 25%	.115	C-6	40,000		.350
7154AS15	T-1	Axial Lead	5.0	.15 ± 15%	.115	C-6	40,000		.350
7209	T-1	Unbased	5.0	.015	.015		10,000		.250
7210	T-1	Unbased	5.0	.03	.030 + 20% - 10%	C-2R	75,000		.250
7211	T-1	Unbased	5.0	.16	.080	C-2R	3,000		.250
7212	T-1	Unbased	5.0	.20	.115	C-2R	5,000		.145
7213	T-1	Unbased	5.0	.20	.115	C-2R	5,000		.250
7214	T-1	Unbased	5.0	.220	.115		5,000		.250
7215	T-1	Unbased	5.0	.190	.115		10,000		.250
7216	T-1	Unbased	5.0	.22	.125	C-2R	5,000		.250
7233	T-1	Flange Base	5.0	.015	.015		10,000		.375
7234	T-1	Flange Base	5.0	.03	.030 + 20% - 10%	C-2R	75,000		.375
7235	T-1	Flange Base	5.0	.16	.080	C-2R	1,000	.1875	.375
7236	T-1	Flange Base	5.0	.20	.115	C-2R	5,000		.375
7237	T-1	Flange Base	5.0	.200	.115		5,000		.375
7238	T-1	Flange Base	5.0	.190	.115		100,000		.375
7239	T-1	Flange Base	5.0	.220	.125	C-2R	5,000	.1875	.375
7250	T-1	Flange Base	5.0	.04	.045	C-2R	10,000		.375
7251	T-1	Flange Base	5.0	.16	.145	C-2R	10,000		.375
7262	T-1	Bi Pin	5.0	.005	.017	C-2R	10,000	.2812	.380
7263	T-1	Bi Pin	5.0	.030	.030		16,000		.380
7265	T-1	Bi Pin	5.0	.15	.060	C-2R	5,000	.2812	.380
7266	T-1	Bi Pin	5.0	.16	.080	C-2R	1,000	.2812	.380
7267	T-1	Bi Pin	5.0	.200	.115		5,000		.380
7268	T-1	Bi Pin	5.0	.220	.125	C-2R	5,000	.2812	.380
7270	T-1	Bi Pin	5.0	.030	.060		60,000		.380
7271	T-1	Bi Pin	5.0	.050	.060		40,000		.380
7272	T-1	Bi Pin	5.0	.090	.075		16,000		.380
7274	T-1	Bi Pin	5.0	.150	.115		16,000		.380
7680	T-1	Bi Pin	5.0	.030	.060		100,000		.380
7680AS15	T-1	Bi Pin	5.0	.03	.06	C-2R	60,000	.2812	.380
7683	T-1	Bi Pin	5.0	.050	.060		100,000		.380
7683AS15	T-1	Bi Pin	5.0	.05	.06	C-2R	20,000	.2812	.380
7714	T-1	Bi Pin	5.0	.09	.075	C-2R	25,000	.2812	.380
7715	T-1	Bi Pin	5.0	.150	.115	C-2R	40,000	.2812	.380
8022	T-1	Flange Base	5.0	.034	.021	C-2R	10,000	.1875	.375
8096	T-1	Unbased	5.0	.16	.145	C-2R	10,000		.250
8175	T-1	Unbased	5.0	.22	.125	C-2R	5,000		.145
8179	T-1	Unbased	5.0	.22	.125	C-2R	5,000		.187
8602	T-1	Unbased	5.0	.005	.017	C-2R	10,000		.250
8605	T-1	Flange Base	5.0	.005	.017	C-2R	10,000	.1875	.375
8729	T-1	Unbased	5.0	.04	.045	C-2R	10,000		.250
7218	T-1	Unbased	10.0	.100	.027	C-2F	10,000		.250
7240	T-1	Flange Base	10.0	.100	.027	C-2F	10,000	.1875	.375
8095	T-1	Bi Pin	10.0	.10	.027	C-2F	10,000	.2812	.380
32	T-1	Flange Base	12.0	.15	.060	C-2F	16,000		.375
7219	T-1	Unbased	12.0	.15	.060	C-2F	10,000		.250
8097	T-1	Bi Pin	12.0	.15	.060	C-2F	10,000	.2812	.380
8098	T-1	Bi Pin	14.0	.15	.065	C-2F	16,000		.380
8111	T-1	Unbased	14.0	.15	.065	C-2F	16,000		.250
8112	T-1	Flange Base	14.0	.15	.065	C-2F	16,000		.375
7220	T-1	Unbased	18.0	.15	.026	C-2F	16,000		.250
7241	T-1	Flange Base	18.0	.15	.026	C-2F	16,000	.1875	.375

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8099	T-1	Bi Pin	18.0	.15	.026	C-2F	16,000	.2812	.380
6838	T-1	Unbased	28.0	.15	.024	CC-2F	16,000		.250
6838AS25	T-1	Unbased	28.0	.15 ± 25%	.024	CC-2F	16,000		.250
6839	T-1	Flange Base	28.0	.15	.024	CC-2F	16,000		.375
6839AS25	T-1	Flange Base	28.0	.15 ± 25%	.024	CC-2F	16,000	.1875	.375
7221	T-1	Unbased	28.0	.050	.010		16,000		.250
7222	T-1	Unbased	28.0	.150	.024		16,000		.250
7242	T-1	Flange Base	28.0	.050	.010		16,000		.375
7243	T-1	Flange Base	28.0	.150	.024		16,000		.375
7839	T-1	Bi Pin	28.0	.15	.024	CC-2F	16,000	.2812	.380
2135	T-1 $\frac{1}{2}$	Unbased	1.3	.006	.03	S-2	100		.460
2235D	T-1 $\frac{1}{2}$	Unbased	1.3	.006	.03	S-2	50		.478
7301	T-1 $\frac{1}{2}$	Fig. 15	1.3	.006	.03	S-2	100		.546
7302	T-1 $\frac{1}{2}$	Flange Base	1.3	.006	.03	S-2	100		.625
7303	T-1 $\frac{1}{2}$	Fig. 14	1.3	.006	.03	S-2	100		.550
8631	T-1 $\frac{1}{2}$	Unbased	1.35	.006	.06	C-2R	500		.460
8636	T-1 $\frac{1}{2}$	Flange Base	1.35	.006	.06	C-2R	500		.625
8641	T-1 $\frac{1}{2}$	Fig. 14	1.35	.006	.06	C-2R	500		.550
8647	T-1 $\frac{1}{2}$	Fig. 15	1.35	.006	.06	C-2R	500		.546
326	T-1 $\frac{1}{2}$	Fig. 15	2.5	.55	.40	C-2R	30		.546
329	T-1 $\frac{1}{2}$	Fig. 14	2.5	.55	.40	C-2R	30		.550
8655	T-1 $\frac{1}{2}$	Unbased	2.5	.55	.40	C-2R	30		.460
8656	T-1 $\frac{1}{2}$	Flange Base	2.5	.55	.40	C-2R	30		.625
323	T-1 $\frac{1}{2}$	Fig. 15	3.0	.25	.19	C-2R	350	.172	.546
323R	T-1 $\frac{1}{2}$	Fig. 15	3.0		.19	C-2R	350	.172	.546
324	T-1 $\frac{1}{2}$	Unbased	3.0	.25	.19	C-2R	350		.460
325	T-1 $\frac{1}{2}$	Fig. 14	3.0	.25	.19	C-2R	350	.437	.550
637	T-1 $\frac{1}{2}$	Flange Base	3.0	.250	.190		350		.625
2139D	T-1 $\frac{1}{2}$	Unbased	3.0	.24	.19	C-2R	350		.438
7637	T-1 $\frac{1}{2}$	Bi Pin	3.0	.250	.190		350		.625
8637	T-1 $\frac{1}{2}$	Flange Base	3.0	.25	.19	C-2R	350		.625
673	T-1 $\frac{1}{2}$	Fig. 14	4.5	1.05	.29	C-2R	100	.437	.550
7304	T-1 $\frac{1}{2}$	Fig. 15	4.5	1.05	.285	C-2R	100		.546
7305	T-1 $\frac{1}{2}$	Flange Base	4.5	1.05	.285	C-2R	100		.625
8816	T-1 $\frac{1}{2}$	Unbased	4.5	1.05	.285	C-2R	100		.460
515/D	T-1 $\frac{1}{2}$	Unbased	5.0	.15	.115	C-2R	40,000		.460
580/D	T-1 $\frac{1}{2}$	Unbased	5.0	.03 + 25%	.06	C-2R	30,000		.460
582	T-1 $\frac{1}{2}$	Flange Base	5.0	.030	.060				.625
583/D	T-1 $\frac{1}{2}$	Unbased	5.0	.05	.06	C-2R	(+) 25,000		.460
538DX	T-1 $\frac{1}{2}$	Unbased	5.0	.05 + 15%	.06	C-2R	25,000		.438
585	T-1 $\frac{1}{2}$	Flange Base	5.0	.050	.060		100,000		.625
1189	T-1 $\frac{1}{2}$	Unbased	5.0	.050	.060		40,000		.265
1190	T-1 $\frac{1}{2}$	Unbased	5.0	.050	.060		40,000		.265
1191	T-1 $\frac{1}{2}$	Unbased	5.0	.090	.075		16,000		.265
3515	T-1 $\frac{1}{2}$	Fig. 14	5.0	.15	.116	C-2R	40,000		.550
3516	T-1 $\frac{1}{2}$	Fig. 15	5.0	.15	.115	C-2R	40,000		.546
3518	T-1 $\frac{1}{2}$	Flange Base	5.0	.15	.115	C-2R	40,000		.625
3580	T-1 $\frac{1}{2}$	Fig. 14	5.0	.03	.06	C-2R	100,000		.550
3581	T-1 $\frac{1}{2}$	Fig. 15	5.0	.03	.06	C-2R	100,000		.546
3582	T-1 $\frac{1}{2}$	Flange Base	5.0	.03	.06	C-2R	100,000		.625
3583	T-1 $\frac{1}{2}$	Fig. 14	5.0	.05	.06	C-2R	100,000		.550
3584	T-1 $\frac{1}{2}$	Fig. 15	5.0	.05	.06	C-2R	100,000		.546
3585	T-1 $\frac{1}{2}$	Flange Base	5.0	.05	.06	C-2R	100,000		.625
7515	T-1 $\frac{1}{2}$	Bi Pin	5.0	.15 ± 25%	.115	C-2R	20,000		.625
7580	T-1 $\frac{1}{2}$	Bi Pin	5.0	.03 ± 25%	.060	C-2R	30,000		.625
7583	T-1 $\frac{1}{2}$	Bi Pin	5.0	.05 ± 25%	.060	C-2R	25,000		.625
8515	T-1 $\frac{1}{2}$	Unbased	5.0	.090	.115		16,000		.265
371	T-1 $\frac{1}{2}$	Fig. 14	6.0	.13	.06	C-2R	3,000		.550
541	T-1 $\frac{1}{2}$	Flange Base	6.0	.120	.060		3,000		.625
628	T-1 $\frac{1}{2}$	Flange Base	6.0	.630	.200		1,000		.625

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L (ins)
634/D	T-1 $\frac{1}{4}$	Unbased	6.0	.63	.20	C-2R	1,000		.460
2114/D	T-1 $\frac{1}{4}$	Unbased	6.0	.13	.06	C-2R	3,000		.460
7309	T-1 $\frac{1}{4}$	Bi Pin	6.0	.120	.060		3,000		.625
7628	T-1 $\frac{1}{4}$	Bi Pin	6.0	.630	.200		1,000		.625
8541	T-1 $\frac{1}{4}$	Flange Base	6.0	.13	.06	C-2R	3m000		.625
8543	T-1 $\frac{1}{4}$	Fig. 15	6.0	.13	.06	C-2R	3,000		.546
8628	T-1 $\frac{1}{4}$	Flange Base	6.0	.63	.20	C-2R	1,000		.625
8639	T-1 $\frac{1}{4}$	Fig. 15	6.0	.63	.20	C-2R	1,000		.546
8645	T-1 $\frac{1}{4}$	Fig. 14	6.0	.63	.20	C-2R	1,000		.550
8657	T-1 $\frac{1}{4}$	Fig. 15	6.0	.03	.04	C-2V	1,000		.546
8660	T-1 $\frac{1}{4}$	Flange Base	6.0	.03	.04	C-2V	1,000		.625
8661	T-1 $\frac{1}{4}$	Unbased	6.0	.03	.04	C-2V	1,000		.460
8662	T-1 $\frac{1}{4}$	Fig. 14	6.0	.03	.04	C-2V	1,000		.550
8551	T-1 $\frac{1}{4}$	Flange Base	6.3	.55	.20	C-2R	5,000		.625
8552	T-1 $\frac{1}{4}$	Fig. 14	6.3	.55	.20	C-2R	5,000		.550
8553	T-1 $\frac{1}{4}$	Fig. 15	6.3	.55	.20	C-2R	5,000		.546
8610	T-1 $\frac{1}{4}$	Unbased	6.3	.55	.20	C-2R	5,000		.460
7652	T-1 $\frac{1}{4}$	Bi Pin	10.0	.006	.015	C-2F	50,000		.600
8606	T-1 $\frac{1}{4}$	Fig. 14	10.0	.004	.014	C-2F	10,000		.550
8607	T-1 $\frac{1}{4}$	Fig. 15	10.0	.004	.014	C-2F	10,000		.546
8608	T-1 $\frac{1}{4}$	Unbased	10.0	.004	.014	C-2F	10,000		.460
8609	T-1 $\frac{1}{4}$	Flange Base	10.0	.004	.014	C-2F	10,000		.625
8652/D	T-1 $\frac{1}{4}$	Unbased	10.0	.006	.015	C-2F	50,000		.46
7651	T-1 $\frac{1}{4}$	Bi Pin	12.0	.10	.04	C-2F	10,000		.60
8651D	T-1 $\frac{1}{4}$	Unbased	12.0	.10	.04	C-2F	10,000		.46
640	T-1 $\frac{1}{4}$	Unbased	14.0	.430	.080		1,000		.46
646	T-1 $\frac{1}{4}$	Flange Base	14.0	.430	.080		1,000		.625
7646	T-1 $\frac{1}{4}$	Bi Pin	14.0	.430	.080		1,000		.625
7650	T-1 $\frac{1}{4}$	Bi Pin	14.0	.30	.08	C-2F	15,000		.60
8640	T-1 $\frac{1}{4}$	Unbased	14.0	.50	.08	C-2F	1,000		.460
8644	T-1 $\frac{1}{4}$	Fig. 14	14.0	.50	.08	C-2F	1,000		.550
8646	T-1 $\frac{1}{4}$	Flange Base	14.0	.50	.08	C-2F	1,000		.625
8654	T-1 $\frac{1}{4}$	Fig. 15	14.0	.50	.08	C-2F	1,000		.546
8650/D	T-1 $\frac{1}{4}$	Unbased	14.0	.30	.08	C-2F	15,000		.46
627	T-1 $\frac{1}{4}$	Unbased	28.0	.340	.040		1,000		.46
632	T-1 $\frac{1}{4}$	Flange Base	28.0	.340	.040		1,000		.625
7632	T-1 $\frac{1}{4}$	Bi Pin	28.0	.340	.040		1,000		.625
8623	T-1 $\frac{1}{4}$	Fig. 15	28.0	.32	.04	C-2F	1,000		.546
8627	T-1 $\frac{1}{4}$	Unbased	28.0	.32	.04	C-2F	1,000		.460
8632	T-1 $\frac{1}{4}$	Flange Base	28.0	.32	.04	C-2F	1,000		.625
8635	T-1 $\frac{1}{4}$	Fig. 14	28.0	.32	.04	C-2F	1,000		.550
2184/D	T-1-3/4	Unbased	1.3	.02	.05	S-2	10		.520
331	T-1-3/4	Flange Base	1.35	.01	.06	C-6	3,000	.375	.625
698	T-1-3/4	Mid. Grooved	1.35	.01	.06	C-2R	500		.625
1728/D	T-1-3/4	Unbased	1.35	.01	.06	C-6	3,000		.520
2301	T-1-3/4	Bi Pin	1.35	.006	.06	C-2R	3,000	.500	.625
2301PS	T-1-3/4	Bi Pin	1.35	.01	.06	C-2R	3,000	.500	.625
2301BL	T-1-3/4	Bi Pin	1.35	.01	.06	C-2R	3,000	.500	.625
2301BLPS	T-1-3/4	Bi Pin	1.35	.01	.06	C-2R	3,000	.500	.625
7931(2301)	T-1-3/4	Bi Pin	1.35	.01	.06	C-2R	3,000	.500	.625
8669	T-1-3/4	Mid. Screw	1.35	.01	.06	C-6	3,000	.516	.688
2119/D	T-1-3/4	Unbased	2.0	.02	.06	C-2R	5,000		.520
2129	T-1-3/4	Unbased	2.0	.02	.06	C-2R	5,000		.520
251	T-1-3/4	Flange Base	2.47		.30	C-2R	30	.375	.625
266	T-1-3/4	Mid. Grooved	2.5	.21	.35	C-2R	10,000		.625
268	T-1-3/4	Flange Base	2.5		.35	C-2R	10,000	.437	.625
343	T-1-3/4	Flange Base	2.5	.55	.40	C-2R	30		.625
368	T-1-3/4	Flange Base	2.5	.20	.20	C-2R	500	.375	.625
1767	T-1-3/4	Mid. Screw	2.5	.20	.20	C-2R	500	.516	.594

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LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.T. (ins)	M.O.C (ins)
1769	T-1-3/4	Mid. Screw	2.5	.20	.20	C-2R	500	.516	.688
1783	T-1-3/4	Unbased	2.5	.20	.20	C-2R	500		.520
2169/D	T-1-3/4	Unbased	2.5	.21	.35	C-2R	10,000		.520
2236D	T-1-3/4	Unbased	2.5		.35	C-2R	10,000		.562
2302	T-1-3/4	Bi Pin	2.5	.20	.20	C-2R	500	.500	.625
2302P5	T-1-3/4	Bi Pin	2.5	.20	.20	C-2R	500	.500	.625
2302BL	T-1-3/4	Bi Pin	2.5	.20	.20	C-2R	500	.500	.625
2302BLPS	T-1-3/4	Bi Pin	2.5	.20	.20	C-2R	500	.500	.625
7312	T-1-3/4	Mid. Screw	2.5	.21	.35	C-2R	10,000	.516	.688
7357	T-1-3/4	Bi Pin	2.5	.55	.40	C-2R	30	.500	.625
7868	T-1-3/4	Bi Pin	2.5	.14	.35	C-2R	1,000	.500	.625
7968(2302)	T-1-3/4	Bi Pin	2.5	.20	.20	C-2R	500	.500	.625
8663	T-1-3/4	Unbased	2.5	.55	.40	C-2R	30		.520
8671	T-1-3/4	Mid. Screw	2.5	.55	.40	C-2R	30	.516	.688
8699	T-1-3/4	Mid. Groove	2.5	.20	.20	C-2R	500	.375	.625
8703	T-1-3/4	Mid. Groove	2.5	.55	.40	C-2R	30	.375	.625
338	T-1-3/4	Flange Base	2.7	.04	.06	C-2R	6,000		.520
1738/D	T-1-3/4	Unbased	2.7	.04	.06	C-2R	6,000		.520
1738AFD	T-1-3/4	Unbased	2.7		.06	C-2R	6,000		.520
2303	T-1-3/4	Bi Pin	2.7	.04	.06	C-2R	6,000	.500	.625
2303PS	T-1-3/4	Bi Pin	2.7	.04	.06	C-2R	6,000	.500	.625
2303BL	T-1-3/4	Bi Pin	2.7	.04	.06	C-2R	6,000	.500	.625
2303BLPS	T-1-3/4	Bi Pin	2.7	.04	.06	C-2R	6,000	.500	.625
7838(2303)	T-1-3/4	Bi Pin	2.7	.04	.06	C-2R	60,000	.500	.625
8693	T-1-3/4	Mid. Screw	2.7	.04	.06	C-2R	6,000		.688
8704	T-1-3/4	Mid. Groove	2.7	.04	.06	C-2R	6,000	.375	.625
375	T-1-3/4	Flange Base	3.0	.003	.015	C-6	10,000	.375	.625
390	T-1-3/4	Mid. Groove	3.0	.003	.015	C-6	20,000	.375	.625
2156	T-1-3/4	Unbased	3.0	.02	.03	C-6	1,800		.520
2158/D	T-1-3/4	Unbased	3.0	.002-.004	.013-.017	C-6	10,000		.520
2304	T-1-3/4	Bi Pin	3.0	.34	.30	C-2R	1,500	.500	.625
2304PS	T-1-3/4	Bi Pin	3.0	.34	.30	C-2R	1,500	.500	.625
2304BL	T-1-3/4	Bi Pin	3.0	.34	.30	C-2R	1,500	.500	.625
2304BLPS	T-1-3/4	Bi Pin	3.0	.34	.30	C-2R	1,500	.500	.625
7313	T-1-3/4	Mid. Screw	3.0	.015 ± 20%	.003-.006	C-6	10,000	.516	.688
7314	T-1-3/4	Mid. Screw	3.0	.02	.03	C-6	10,000	.516	.688
7329	T-1-3/4	Flange Base	3.0	.02	.03	C-6	1,800		.625
7343	T-1-3/4	Mid. Groove	3.0	.02	.03	C-6	1,800		.625
7375	T-1-3/4	Bi Pin	3.0	.015 ± 20%	.003 - .006	C-6	20,000	.500	.625
2171/D	T-1-3/4	Unbased	4.5	.04 ± 30%	.110-.125	C-2F	25,000		.520
7315	T-1-3/4	Mid. Screw	4.5	.05	.110-.125	C-2F	25,000	.516	.688
7331	T-1-3/4	Flange Base	4.5	.05	.110-.125	C-2F	25,000	.375	.625
7345	T-1-3/4	Mid. Groove	4.5	.05	.120	C-2F	25,000	.500	.625
7359	T-1-3/4	Bi Pin	4.5	.05	.120	C-2F	25,000	.500	.625
339	T-1-3/4	Flange Base	5.0	.034 ± 20%	0.200	C-2R	15,000		.625
341	T-1-3/4	Mid. Groove	5.0	0.370	0.200	C-2R	15,000		.625
518	T-1-3/4	Flange Base	5.0	.150	.115		40,000		
1428	T-1-3/4	Unbased	5.0	.370	.200	C-2R	15,000		.520
2200/D	T-1-3/4	Unbased	5.0	.05	.06	C-2R	25,000		.520
2203/D	T-1-3/4	Unbased	5.0	.15	.115	C-2R	20,000		.520
2208/D	T-1-3/4	Unbased	5.0	.002	.015	C-2V	50,000		.520
3149	T-1-3/4	Bi Pin	5.0	.15	.06	C-2R	5,000	.500	.625
3150	T-1-3/4	Flange Base	5.0	.15	.06	C-2R	5,000	.375	.625
3151	T-1-3/4	Unbased	5.0	.15	.06	C-2R	5,000		.520
3152	T-1-3/4	Mid. Groove	5.0	.15	.06	C-2R	5,000	.375	.625
3153	T-1-3/4	Mid. Screw	5.0	.15	.06	C-2R	5,000	.516	.688
7316	T-1-3/4	Mid. Screw	5.0	.03	.06	C-2R	60,000	.516	.688
7317	T-1-3/4	Mid. Screw	5.0	.45	.19	C-2R	1,000		.688
7318	T-1-3/4	Mid. Screw	5.0	.05	.06	C-2R	25,000	.516	.688
7319	T-1-3/4	Mid. Screw	5.0	.15	.115	C-2R	40,000	.516	.688
7332	T-1-3/4	Flange Base	5.0	.03	.06	C-2R	60,000	.375	.625

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LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L. (ins)
7333	T-1-3/4	Flange Base	5.0	.05	.06	C-2R	25,000	.375	.625
7334	T-1-3/4	Flange Base	5.0	.45	.19	C-2R	1,000		.625
7335	T-1-3/4	Flange Base	5.0	.15	.115	C-2R	40,000	.375	.625
7346	T-1-3/4	Mid. Groove	5.0	.03	.060	C-2R	60,000	.500	.625
7347	T-1-3/4	Mid. Groove	5.0	.05	.060	C-2R	25,000	.500	.625
7348	T-1-3/4	Mid. Groove	5.0	.15	.115	C-2R	40,000	.500	.625
7350	T-1-3/4	Mid. Groove	5.0	.45	.19	C-2R	1,000	.500	.625
7360	T-1-3/4	Bi Pin	5.0	.03	.060	C-2R	60,000	.500	.625
7361	T-1-3/4	Bi Pin	5.0	.05	.060	C-2R	25,000	.500	.625
7362	T-1-3/4	Bi Pin	5.0	.15	.115	C-2R	40,000	.500	.625
7363	T-1-3/4	Bi Pin	5.0	.45	.19	C-2R	1,000		.625
7366	T-1-3/4	Bi Pin	5.0	.370	.200	C-2R	15,000		.625
8784	T-1-3/4	Unbased	5.0	.45	.19	C-2R	1,000		.520
8805	T-1-3/4	Unbased	5.0	.03	.06	C-2R	60,000		.520
328	T-1-3/4	Flange Base	6.0	.34	.20	C-2R	1,000	.375	.625
328AS10	T-1-3/4	Flange Base	6.0	.34 ± 10%	.29	C-2R	1,000	.375	.625
328AS15	T-1-3/4	Flange Base	6.0	.34 ± 15%	.20	C-2R	1,000	.375	.625
328R	T-1-3/4	Flange Base	6.0		.20	C-2R	1,000		.625
328X	T-1-3/4	Flange Base	6.0	.60	.200-.220	C-2R	2,000	.375	.625
337	T-1-3/4	Mid. Groove	6.0	.60	.20	C-2R	1,000	.375	.625
342	T-1-3/4	Mid. Screw	6.0	.03	.04	C-2V	20,000	.516	.688
345	T-1-3/4	Flange Base	6.0	.04	.04	C-2V	20,000	.375	.625
1730/D	T-1-3/4	Unbased	6.0	.04	.04	C-2V	20,000		.520
1768	T-1-3/4	Mid. Screw	6.0	.60	.20	C-2R	1,000	.516	.688
1768L	T-1-3/4	Mid. Screw	6.0	.63	.22	C-2R	3,000		.688
1784/D	T-1-3/4	Unbased	6.0	.60	.20	C-2R	1,000		.520
1784L	T-1-3/4	Unbased	6.0	.63	.22	C-2R	3,000		.520
1784AS10	T-1-3/4	Unbased	6.0	.60 ± 10%	.20	C-2R	1,000		.520
2191/D	T-1-3/4	Unbased	6.0	.014-.036	.036-.044	C-2V	25,000		.520
2305	T-1-3/4	Bi Pin	6.0	.03	.04	C-2V	20,000	.500	.625
2305PS	T-1-3/4	Bi Pin	6.0	.03	.04	C-2V	20,000	.500	.625
2305BL	T-1-3/4	Bi Pin	6.0	.03	.04	C-2V	20,000	.500	.625
2305BLPS	T-1-3/4	Bi Pin	6.0	.03	.04	C-2V	20,000	.500	.625
2306	T-1-3/4	Bi Pin	6.0	.60	.02	C-2R	1,000	.500	.625
2306PS	T-1-3/4	Bi Pin	6.0	.60	.20	C-2R	1,000	.500	.625
2306BL	T-1-3/4	Bi Pin	6.0	.60	.20	C-2R	1,000	.500	.625
2306BLPS	T-1-3/4	Bi Pin	6.0	.60	.20	C-2R	1,000	.500	.625
2315	T-1-3/4	Bi Pin	6.0	.03	.04	C-2V	20,000	.500	.625
2323	T-1-3/4	Bi Pin	6.0	.60	.20	C-2R	1,000	.437	.625
7328(2306)	T-1-3/4	Bi Pin	6.0	.60	.20	C-2R	1,000	.500	.625
7336	T-1-3/4	Flange Base	6.0	.10	.20	C-2F	50,000		.625
7337	T-1-3/4	Flange Base	6.0	.63	.22	C-2R	3,000		.625
7945(2305)	T-1-3/4	Bi Pin	6.0	.03	.04	C-2V	20,000	.500	.625
8664	T-1-3/4	Unbased	6.0	.10	.20	C-2F	50,000		.520
8687	T-1-3/4	Mid. Screw	6.0	.10	.20	C-2F	50,000		.688
8705	T-1-3/4	Mid Groove	6.0	.03	.04	C-2V	20,000	.375	.625
8706	T-1-3/4	Mid Groove	6.0	.10	.20	C-2F	50,000		.625
349	T-1-3/4	Flange Base	6.3	.55	.20	C-2R	5,000	.375	.625
350	T-1-3/4	Flange Base	6.3	.45	.15	C-2R	3,000	.375	.625
377	T-1-3/4	Flange Base	6.3	.23	.075	C-2R	1,000	.375	.625
378	T-1-3/4	Mid. Screw	6.3	.40	.20	C-2F	20,000	.516	.688
379	T-1-3/4	Mid. Groove	6.3	.40	.20	C-2F	20,000	.375	.625
380	T-1-3/4	Flange Base	6.3	.03	.04	C-2F	20,000	.375	.625
381	T-1-3/4	Flange Base	6.3	.40	.20	C-2F	20,000	.375	.625
398	T-1-3/4	Mid. Groove	6.3	.55	.20	C-2R	5,000	.375	.625
1739/D	T-1-3/4	Unbased	6.3	.23	.075	C-2R	1,000		.520
1775	T-1-3/4	Mid. Screw	6.3	.23	.075	C-2R	1,000	.516	.688
2037	T-1-3/4	Unbased	6.3	.40	.20	C-2R	20,000		.520
2039/D	T-1-3/4	Unbased	6.3	.23	.075	C-2R	1,000		.520
2112/D	T-1-3/4	Unbased	6.3	.55	.20	C-2R	5,000		.520



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LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L. (ins)
2179/D	T-1-3/4	Unbased	6.3	.03	.04	C-2V	20,000		.520
2180/D	T-1-3/4	Unbased	6.3	.03	.04	C-2V	20,000		.520
2181/D	T-1-3/4	Unbased	6.3	.40	.20	C-2F	20,000		.520
2190/D	T-1-3/4	Unbased	6.3	.03	.04	C-2V	20,000		.520
2307	T-1-3/4	Bi Pin	6.3	.34	.20	C-2R	5,000	.500	.625
2307PS	T-1-3/4	Bi Pin	6.3	.34	.20	C-2R	5,000	.500	.625
2307BL	T-1-3/4	Bi Pin	6.3	.34	.20	C-2R	5,000	.500	.625
2307BLPS	T-1-3/4	Bi Pin	6.3	.34	.20	C-2R	25,000	.500	.625
2319	T-1-3/4	Bi Pin	6.3	.40	.20	C-2F	20,000	.500	.625
2319PS	T-1-3/4	Bi Pin	6.3	.40	.20	C-2F	20,000	.500	.625
2319BL	T-1-3/4	Bi Pin	6.3	.40	.20	C-2F	20,000	.500	.625
2319BLPS	T-1-3/4	Bi Pin	6.3	.40	.20	C-2F	20,000	.500	.625
2337	T-1-3/4	Bi Pin	6.3	.40	.20	C-2R	20,000	.562	.650
2340	T-1-3/4	Bi Pin	6.3	.03	.04	C-2F	20,000	.500	.625
2340PS	T-1-3/4	Bi Pin	6.3	.03	.04	C-2F	20,000	.500	.625
2340BL	T-1-3/4	Bi Pin	6.3	.03	.04	C-2F	20,000	.500	.625
2340BLPS	T-1-3/4	Bi Pin	6.3	.03	.04	C-2F	20,000	.500	.625
7320	T-1-3/4	Mid. Screw	6.3	.03	.04	C-2F	20,000	.516	.688
7321	T-1-3/4	Mid. Screw	6.3	.45	.15	C-2R	3,000	.516	.688
7323	T-1-3/4	Mid. Screw	6.3	.55	.20	C-2R	5,000	.516	.688
7349(2307)	T-1-3/4	Bi Pin	6.3	.55	.20	C-2R	5,000	.500	.625
7349AS15	T-1-3/4	Bi Pin	6.3	.55 + 15%	.20	C-2R	5,000	.500	.625
7351	T-1-3/4	Mid. Groove	6.3	.03	.04	C-2V	20,000	.500	.625
7352	T-1-3/4	Mid Groove	6.3	.45	.15	C-2R	3,000	.500	.625
7364	T-1-3/4	Bi Pin	6.3	.10	.20	C-2F	50,000		.625
7368	T-1-3/4	Bi Pin	6.3	.45	.15	C-2R	3,000	.500	.625
7377	T-1-3/4	Bi Pin	6.3	.23	.075	C-2R	1,000	.500	.625
7380(2340)	T-1-3/4	Bi Pin	6.3	.03	.04	C-2F	20,000	.500	.625
7381(2319)	T-1-3/4	Bi Pin	6.3	.40	.20	C-2F	20,000	.500	.625
8350	T-1-3/4	Unbased	6.3	.45	.15	C-2R	3,000		.520
8708	T-1-3/4	Mid. Groove	6.3	.23	.075	C-2R	1,000	.375	.625
2178	T-1-3/4	Unbased	8.0	.15	.085	C-2F	25,000		.520
344	T-1-3/4	Flange Base	10.0	.004	.0126-.0154	C-2F	50,000+	.375	.625
367	T-1-3/4	Flange Base	10.0	.08	.04	C-2F	5,000	.375	.625
367X	T-1-3/4	Flange Base	10.0	.08	.04	C-2F	5,000	.375	.625
389	T-1-3/4	Mid. Screw	10.0	.08	.04	C-2F	5,000		.688
397	T-1-3/4	Mid. Groove	10.0	.08	.04	C-2F	5,000		.625
709	T-1-3/4	Mid. Groove	10.0	.004	.0126-.0154	C-2F	50,000+	.375	.625
1569/D	T-1-3/4	Unbased	10.0	.006	.0126-.0154	C-2F	50,000+		.520
1869/D	T-1-3/4	Unbased	10.0	.006	.0126-.0154	C-2F	50,000+		.520
2107/D	T-1-3/4	Unbased	10.0	.08	.04	C-2F	5,000		.520
2149/D	T-1-3/4	Unbased	10.0	.006	.0126-.0154	C-2F	50,000+		.520
2204/D	T-1-3/4	Unbased	10.0	.08	.04	C-2F	5,000		.520
2308	T-1-3/4	Bi Pin	10.0	.004	.014	C-2F	50,000+	.500	.625
2308PS	T-1-3/4	Bi Pin	10.0	.004	.014	C-2F	50,000+	.500	.625
2308BL	T-1-3/4	Bi Pin	10.0	.004	.014	C-2F	50,000+	.500	.625
2308BLPS	T-1-3/4	Bi Pin	10.0	.004	.014	C-2F	50,000+	.500	.625
2309	T-1-3/4	Bi Pin	10.0	.08	.04	C-2F	5,000	.500	.625
2309PS	T-1-3/4	Bi Pin	10.0	.08	.04	C-2F	5,000	.500	.625
2309BL	T-1-3/4	Bi Pin	10.0	.08	.04	C-2F	5,000	.500	.625
2309BLPS	T-1-3/4	Bi Pin	10.0	.08	.04	C-2F	5,000	.500	.625
7344	T-1-3/4	Bi Pin	10.0	.006	.0126-.0154	C-2F	50,000+	.500	.625
7367(2309)	T-1-3/4	Bi Pin	10.0	.08	.04	C-2F	5,000	.500	.625
8691	T-1-3/4	Mid. Screw	10.0	.002	.014	C-2F	10,000		.688
8692	T-1-3/4	Mid. Screw	10.0	.004	.014	C-2F	50,000+	.516	.688
7325	T-1-3/4	Mid. Screw	11.0	.03	.022	C-2F	10,000	.516	.688
7338	T-1-3/4	Flange Base	11.0	.03	.022	C-2F	10,000	.375	.625
7353	T-1-3/4	Mid. Groove	11.0	.03	.022	C-2F	10,000	.500	.625
7369	T-1-3/4	Bi Pin	11.0	.03	.022	C-2F	1,000	.500	.625
8946	T-1-3/4	Unbased	11.0	.03	.022	C-2F	10,000		.520
394	T-1-3/4	Flange Base	12.0	.12	.04	C-2F	5,000	.375	.625

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG LIFE HRS	L.C.L. (ins)	M.O.L (ins)
2174/D	T-1-3/4	Unbased	12.0	.18	.04	C-2F	10,000	.500	.520
7326	T-1-3/4	Mid. Screw	12.0	.10	.04	C-2F	10,000	.516	.688
7354	T-1-3/4	Mid. Groove	12.0	.12	.04	C-2F	10,000	.500	.625
7371	T-1-3/4	Bi Pin	12.0	.12	.04	C-2F	10,000	.500	.625
37	T-1-3/4	Wedge Base	14.0	.50	.09	C-2F	1,500	.40	.80
73	T-1-3/4	Wedge Base	14.0	.30	.08	C-2F	15,000	.30	.80
74	T-1-3/4	Wedge Base	14.0	.70	.1	C-2F	500	.40	.80
330	T-1-3/4	Flange Base	14.0	.50	.08	C-2F	1,500	.375	.625
330R	T-1-3/4	Flange Base	14.0		.08	C-2F	1,500		.625
336	T-1-3/4	Mid. Groove	14.0	.50	.08	C-2F	1,500	.375	.625
348	T-1-3/4	Mid. Screw	14.0	.50	.08	C-2F	1,500		.719
373	T-1-3/4	Mid. Screw	14.0	.50	.08	C-2F	1,500	.516	.688
382	T-1-3/4	Flange Base	14.0	.30	.08	C-2F	15,000	.375	.625
383	T-1-3/4	Mid. Screw	14.0	.50	.08	C-2F	1,500	.516	.625
386	T-1-3/4	Mid. Groove	14.0	.30	.08	C-2F	15,000	.375	.625
393	T-1-3/4	Mid. Groove	14.0	.50	.100	C-2F	10,000		.625
1705/D	T-1-3/4	Unbased	14.0	.50	.08	C-2F	1,500		.520
2160/D	T-1-3/4	Unbased	14.0	.50	.08	C-2F	1,500		.520
2162/D	T-1-3/4	Unbased	14.0	.50	.10	C-2F	10,000		.520
2182/D	T-1-3/4	Unbased	14.0	.30	.08	C-2F	15,000		.520
2192/D	T-1-3/4	Unbased	14.0	.30	.08	C-2F	15,000		.520
2310	T-1-3/4	Bi Pin	14.0	.5	.08	C-2F	1,500	.500	.625
2310PS	T-1-3/4	Bi Pin	14.0	.5	.08	C-2F	1,500	.500	.625
2310BL	T-1-3/4	Bi Pin	14.0	.5	.08	C-2F	1,500	.500	.625
2310BLPS	T-1-3/4	Bi Pin	14.0	.5	.08	C-2F	1,500	.500	.625
2317	T-1-3/4	Bi Pin	14.0	.50	.08	C-2F	1,500	.500	.625
2332	T-1-3/4	Bi Pin	14.0	.30	.08	C-2F	15,000	.500	.625
2332PS	T-1-3/4	Bi Pin	14.0	.30	.08	C-2F	15,000	.500	.625
2332BL	T-1-3/4	Bi Pin	14.0	.30	.08	C-2F	15,000	.500	.625
2332BLPS	T-1-3/4	Bi Pin	14.0	.30	.08	C-2F	15,000	.500	.625
2335	T-1-3/4	Bi Pin	14.0	.30	.08	C-2F	15,000	.500	.580
2382	T-1-3/4	Unbased	14.0	.30	.08	C-2F	15,000		.520
7330(2310)	T-1-3/4	Bi Pin	14.0	.50	.08	C-2F	1,500	.500	.625
7373	T-1-3/4	Bi Pin	14.0	.50	.10	C-2F	10,000	.500	.625
7382(2332)	T-1-3/4	Bi Pin	14.0	.30	.08	C-2F	15,000	.500	.625
8162	T-1-3/4	Mid. Screw	14.0	.50	.100	C-2F	10,000		.688
8362	T-1-3/4	Mid. Screw	14.0	.30	.08	C-2F	15,000	.516	.688
8918	T-1-3/4	Flange Base	14.0	.50	.10	C-2F	10,000	.375	.625
2339	T-1-3/4	Bi Pin	15.0	.075	.04	C-2F	15,000	.500	.580
7003	T-1-3/4	Bi Pin	15.0	.075	.04	C-2F	15,000	.500	.580
346	T-1-3/4	Mid. Groove	18.0	.15	.04	C-2F	10,000	.375	.625
370	T-1-3/4	Flange Base	18.0	.15	.04	C-2F	10,000	.375	.625
2002/D	T-1-3/4	Unbased	18.0	.15	.04	C-2F	1,000		.520
2102/D	T-1-3/4	Unbased	18.0	.15	.04	C-2F	10,000		.520
2311	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	2,000	.500	.580
2311PS	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	2,000	.500	.580
2311BL	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	2,000	.500	.580
2311BLPS	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	2,000	.500	.580
2316	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	10,000	.500	.580
2321	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	10,000	.500	.580
7370(2311)	T-1-3/4	Bi Pin	18.0	.15	.04	C-2F	10,000	.500	.625
8536	T-1-3/4	Mid. Screw	18.0	.15	.04 + 10% - 20%	C-2F	10,000		.688
457	T-1-3/4	Mid. Groove	22.0	.30	.038-.042	C-2F	2,000	.375	.625
459	T-1-3/4	Flange Base	22.0	.30	.038-.042	C-2F	2,000	.375	.625
7459	T-1-3/4	Bi Pin	22.0	.30	.04	C-2F	2,000	.500	.625
8425	T-1-3/4	Unbased	22.0	.30	.04	C-2F	2,000		.520
8437	T-1-3/4	Mid. Screw	22.0	.30	.04	C-2F	2,000		.688
2041	T-1-3/4	Unbased	24.0	.50	.06	C-2F	5,000		.520
2176 D	T-1-3/4	Unbased	24.0	.50	.05	C-2F	2,000		.520
2313	T-1-3/4	Bi Pin	24.0	.50	.05	C-2F	10,000	.500	.580

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	L.C.L. (ins)	M.O.L (ins)
2313PS	T-1-3/4	Bi Pin	24.0	.50	.05	C-2F	10,000	.500	.580
2313BL	T-1-3/4	Bi Pin	24.0	.50	.05	C-2F	10,000	.500	.580
2313BLPS	T-1-3/4	Bi Pin	24.0	.50	.05	C-2F	10,000	.500	.580
2341	T-1-3/4	Bi Pin	24.0	.70	.05	C-2F	1,000	.500	.580
7001	T-1-3/4	Bi Pin	24.0	.50	.05	C-2F	2,000	.500	.625
85	T-1-3/4	Wedge Base	28.0	.04	.30	C-2F	7,000	.40	.800
320G	T-1-3/4	Special	28.0		.04	C-2F	4,000		.750
327	T-1-3/4	Flange Base	28.0	.34	.04	C-2F	4,000	.375	.625
327-15/AS15	T-1-3/4	Flange Base	28.0	.34 ± 15%	.04	C-2F	4,000	.375	.625
327AF	T-1-3/4	Flange Base	28.0		.04	C-2F	4,000	.375	.625
327F	T-1-3/4	Flange Base	28.0	.34	.04	C-2F	4,000	.375	.625
327R	T-1-3/4	Flange Base	28.0		.04	C-2F	4,000	.375	.625
334	T-1-3/4	Mid. Groove	28.0	.34	.04	C-2F	4,000	.375	.625
334LSV	T-1-3/4	Mid. Groove	28.0	.34	.06	C-2F	25,000	.375	.625
335	T-1-3/4	Midget Screw	28.0	.34	.04	C-2F	4,000	.516	.688
335LSV	T-1-3/4	Mid. Screw	28.0	.34	.06	C-2F	25,000	.516	.688
369	T-1-3/4	Mid. Screw	28.0	.34	.04	C-2F	4,000	.516	.625
376	T-1-3/4	Flange Base	28.0	.34	.060	C-2F	25,000	.375	.625
385	T-1-3/4	Flange Base	28.0	.20	.04	C-2F	50,000	.4375	.625
387	T-1-3/4	Flange Base	28.0	.30	.04	C-2F	7,000	.375	.625
388	T-1-3/4	Mid. Groove	28.0	.30	.04	C-2F	7,000	.375	.625
399	T-1-3/4	Mid. Screw	28.0	.30	.04	C-2F	25,000		.688
1729/D	T-1-3/4	Unbased	28.0	.34	.04	C-2F	4,000		.520
1749	T-1-3/4	Unbased	28.0	.34	.06	C-2F	25,000		.520
1762/D/U	T-1-3/4	Unbased	28.0	.34	.04	C-2F	4,000		.520
1764/D/U	T-1-3/4	Unbased	28.0	.34	.04	C-2F	4,000		.520
1764LSV	T-1-3/4	Unbased	28.0	.34	.06	C-2F	25,000		.520
2148/D	T-1-3/4	Unbased	28.0	.34	.04	C-2F	4,000		.520
2185/D/U	T-1-3/4	Unbased	28.0	.15	.04	C-2F	20,000		.520
2187/D/U	T-1-3/4	Unbased	28.0	.30	.04	C-2F	25,000		.520
2312	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
2312PS	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
2312BL	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
2312BLPS	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
2314	T-1-3/4	Bi Pin	28.0	.70	.05	C-2F	1,000	.500	.580
2314PS	T-1-3/4	Bi Pin	28.0	.70	.05	C-2F	1,000	.500	.580
2314BL	T-1-3/4	Bi Pin	28.0	.70	.05	C-2F	1,000	.500	.580
2314BLPS	T-1-3/4	Bi Pin	28.0	.70	.05	C-2F	1,000	.500	.580
2322	T-1-3/4	Bi Pin	28.0	.30	.04	C-2F	7,000	.500	.625
2322PS	T-1-3/4	Bi Pin	28.0	.30	.04	C-2F	7,000	.500	.625
2322BL	T-1-3/4	Bi Pin	28.0	.30	.04	C-2F	7,000	.500	.625
2322BLPS	T-1-3/4	Bi Pin	28.0	.30	.04	C-2F	7,000	.500	.625
2324	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
2325	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
2327	T-1-3/4	Bi Pin	28.0	.70	.05	C-2F	1,000	.500	.625
2328	T-1-3/4	Bi Pin	28.0	.70	.05	C-2F	1,000	.4375	.625
2342	T-1-3/4	Bi Pin	28.0	.30	.04	C-2F	25,000		.625
7327(2312)	T-1-3/4	Bi Pin	28.0	.34	.04	C-2F	4,000	.500	.625
7341	T-1-3/4	Flange Base	28.0	.65	.065	C-2F	5,000	.375	.625
7355	T-1-3/4	Mid. Groove	28.0	.20	.04	C-2F	50,000		.625
7356	T-1-3/4	Mid. Groove	28.0	.65	.065	C-2F	5,000	.500	.625
7374	T-1-3/4	Bi Pin	28.0	.20	.04	C-2F	50,000		.625
7387(2322)	T-1-3/4	Bi Pin	28.0	.30	.04	C-2F	7,000	.500	.625
7876	T-1-3/4	Bi Pin	28.0	.340	.060		25,000		.625
8361	T-1-3/4	Unbased	28.0	.65	.065	C-2F	5,000		.520
8369	T-1-3/4	Mid Screw	28.0	.65	.065	C-2F	5,000	.516	.688
8384	T-1-3/4	Mid. Screw	28.0	.20	.04	C-2F	50,000		.688
7376	T-1-3/4	Bi Pin	28.0	.65	.065	C-2F	5,000		.625
1918	T-1-3/4	Unbased	32.0	.30	.04	C-2F	20,000		.520

# SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	SPOT	M.O.L. (ins)
252	GTL-1-3/4	Flanged Base	2.5		.350	C-2R	10,000	A	.687
253	GTL-1-3/4	Grooved Base	2.5		.350	C-2R	10,000	A	.687
253X	GTL-1-3/4	Grooved Base	2.5		.350	C-2R	10,000	B	.687
261	GTL-1-3/4	Grooved Base	2.5		.350	C-2R	10,000	C	.687
2124/D	GTL-1-3/4	Unbased	2.5		.350	C-2R	10,000	E	.5625
2136/D/U	GTL-1-3/4	Unbased	2.5		.350	C-2R	10,000	D	.5625
2140/D	GTL-1-3/4	Unbased	2.5		.350	C-2R	10,000	F	.5625
1212	TL-3/4	Unbased	5.0		.060	C-2R	100,000		.250
1425	TL-3/4	Unbased	5.0		.115	C-2R	40,000		.250
3909	TL-3/4	Flanged Base	5.0		.115	C-2R	40,000		.363
3910	TL-3/4	Flanged Base	5.0		.060	C-2R	100,000		.363
7-7909	TL-3/4	Bi Pin	5.0		.115	C-2R	40,000		.380
7-7910	TL-3/4	Bi Pin	5.0		.060	C-2R	100,000		.380
1284	TL-1	Unbased	1.5		.075	C-2R	16,000		.300
8-1285	TL-1	Flanged Base	1.5		.075	C-2R	16,000		.425
7-7908	TL-1	Bi Pin	1.5		.075	C-2R	16,000		.460
1283	TL-1	Unbased	5.0		.060	C-2R	100,000		.300
1413	TL-1	Unbased	5.0		.075	C-2R	16,000		.300
1415	TL-1	Unbased	5.0		.115	C-2R	40,000		.300
8-1418	TL-1	Flanged Base	5.0		.115	C-2R	40,000		.425
3905	TL-1	Flanged Base	5.0		.060	C-2R	100,000		.425
3906	TL-1	Flanged Base	5.0		.075	C-2R	16,000		.425
7-7905	TL-1	Bi Pin	5.0		.060	C-2R	100,000		.460
7-7906	TL-1	Bi Pin	5.0		.075	C-2R	16,000		.460
7-7907	TL-1	Bi Pin	5.0		.115	C-2R	40,000		.460
8-358	TL-1 <sup>1/2</sup>	Midget Screw	2.5		.200	C-2R	500		.610
8-454	TL-1 <sup>1/2</sup>	Unbased	2.5		.200	C-2R	500		.469
8-455	TL-1 <sup>1/2</sup>	Flanged Base	2.5		.200	C-2R	500		.610
7-3920	TL-1 <sup>1/2</sup>	Bi Pin	2.5		.200	C-2R	500		.574
8-3920	TL-1 <sup>1/2</sup>	Groove Base	2.5		.200	C-2R	500		.574
8-359	TL-1 <sup>1/2</sup>	Midget Screw	6.0		.200	C-2R	500		.610
8-468	TL-1 <sup>1/2</sup>	Unbased	6.0		.200	C-2R	500		.469
8-469	TL-1 <sup>1/2</sup>	Flanged Base	6.0		.200	C-2R	500		.610
7-3921	TL-1 <sup>1/2</sup>	Bi Pin	6.0		.200	C-2R	500		.574
8-3921	TL-1 <sup>1/2</sup>	Groove Base	6.0		.200	C-2R	500		.574
8-363	TL-1 <sup>1/2</sup>	Unbased	28.0		.040	C-2F	1,000		.469
8-364	TL-1 <sup>1/2</sup>	Midget Screw	28.0		.040	C-2F	1,000		.610
8-904	TL-1 <sup>1/2</sup>	Flanged Base	28.0		.040	C-2F	1,000		.610
7-3919	TL-1 <sup>1/2</sup>	Bi Pin	28.0		.040	C-2F	1,000		.574
8-3919	TL-1 <sup>1/2</sup>	Groove Base	28.0		.040	C-2F	1,000		.574
177/D	TL-1-3/4	Unbased	2.5		.37	C-2R	15		.545
1861/D	TL-1-3/4	Unbased	2.5		.30	C-2R	15		.545
2101/D	TL-1-3/4	Unbased	2.5		.300	C-2R	15		.545
8229	TL-1-3/4	Midget Screw	2.5		.350	C-2R	10,000	C	.688
7-374	TL-1-3/4	Bi Pin	2.5		.350	C-2R	10,000	C	.625
8-373	TL-1-3/4	Grooved Base	2.5		.350	C-2R	10,000	C	.625
8-374	TL-1-3/4	Unbased	2.5		.350	C-2R	10,000	C	.500
8-3374	TL-1-3/4	Flanged Base	2.5		.350	C-2R	10,000	C	.625
3901	TL-1-3/4	Grooved Base	5.0		.220	C-2R	10,000		.625
8426	TL-1-3/4	Unbased	5.0		.220	C-2R	10,000		.500
8-443	TL-1-3/4	Flanged Base	5.0		.220	C-2R	10,000		.625
8-3426	TL-1-3/4	Midget Screw	5.0		.220	C-2R	10,000		.688
7-7426	TL-1-3/4	Bi Pin	5.0		.220	C-2R	10,000		.625
3902	TL-1-3/4	Midget Screw	14.0		.080	C-2F	1,000		.688
3903	TL-1-3/4	Flanged Base	14.0		.080	C-2F	1,000		.625

## SUBMINIATURE LAMP SPECIFICATIONS GUIDE

LAMP NO.	BULB	BASE	VOLTS	MSCP	AVG. AMPS	FILA-MENT	AVG. LIFE HRS	SPOT	M.O.L. (ins)
3904	TL-1-3/4	Grooved Base	14.0		.080	C-2F	1,000		.625
8281	TL-1-3/4	Unbased	14.0		.080	C-2F	1,000		.500
7-7903	TL-1-3/4	Bi Pin	14.0		.080	C-2F	1,000		.625
8-306	TL-2-3/4	Unbased	6.3		.350	C-2R	250		.812
8-503	TL-2-3/4	Bayonet	6.3		.350	C-2R	250		1.000

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32	9	346	15	673	10	1739/D	13
37	15	348	15	679	7	1749	16
72	6	349	13	680	7	1762/D/U	16
73	15	350	13	680AS15	7	1764/D/U	16
74	15	367	14	680R	7	1764LSV	16
85	16	367X	14	682	7	1767	11
103-99	6	368	11	682AS15	7	1768	13
177/D	17	369	16	682R	7	1768L	13
251	11	370	15	683	7	1769	12
252	17	371	10	683AS15	7	1775	13
253	17	373	15	683R	7	1783	12
253X	17	375	12	685	7	1784/D	13
261	17	376	16	685AS15	7	1784L	13
266	11	377	13	685R	7	1784AS10	13
268	11	378	13	698	11	1861/D	17
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323	10	380	13	713	8	1918	16
323R	10	381	13	713AS15	8	2002/D	15
324	10	382	15	713R	8	2022	8
325	10	383	15	714	8	2037	13
326	10	385	16	714AS15	8	2039D	13
327	16	386	15	714R	8	2041	15
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327F	16	389	14	715R	8	2107/D	14
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328	13	393	15	718AS15	8	2114/D	11
328AS10	13	394	14	718R	8	2119/D	11
328AS15	13	397	14	930	8	2124/D	18
328R	13	398	13	931	8	2128	7
328X	13	399	16	932	8	2129	11
329	10	457	15	933	8	2135	10
330	15	459	15	1189	10	2136/D/U	17
330R	15	515/D	10	1190	10	2139D	10
331	11	518	12	1191	10	2140/D	18
334	16	541	10	1212	17	2148/D	16
334LSV	16	580/D	10	1283	17	2149/D	14
335	16	582	10	1284	17	2156	12
335LSV	16	583/D	10	1413	17	2158/D	12
336	15	583DX	10	1415	17	2160/D	15
337	13	585	10	1425	17	2162/D	15
338	12	627	11	1569/D	14	2169/D	12
339	12	628	10	1705/D	15	2171/D	12
341	12	632	11	1728/D	11	2174/D	15
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2182/D	15	2312BLPS	16	3811	6	7093	6
2184/D	11	2313	16	3901	17	7094	6
2185/D/U	16	2313PS	16	3902	17	7096	6
2187/D/U	16	2313BL	16	3903	17	7097	6
2190/D	14	2313BLPS	16	3904	17	7100	6
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2192/D	15	2314PS	16	3906	17	7102	6
2200/D	12	2314BL	16	3909	17	7112	6
2203/D	12	2315BLPS	16	3910	17	7112AS15	6
2204/D	14	2315	13	6022	8	7113	6
2208/D	12	2316	15	6022AS15	8	7113AS15	6
2235D	10	2317	15	6150	8	7114	6
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2301PS	11	2319BL	14	6153	6	7116	6
2301BL	11	2319BLPS	14	6180	8	7116AS15	6
2301BLPS	11	2321	15	6183	6	7117	6
2302	12	2322	16	6211	8	7118	6
2302PS	12	2322PS	16	6212	8	7118AS15	6
2302BL	12	2322BL	16	6801	8	7119	6
2302BLPS	12	2322BLPS	16	6801AS15	8	7121	6
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2303PS	12	2324	16	6802	8	7123	6
2303BL	12	2325	16	6802AS15	8	7131	8
2303BLPS	12	2327	16	6802R	8	7131AS15	8
2304	12	2328	16	6803	6	7131R	8
2304PS	12	2332	15	6803AS15	6	7132	8
2304BL	12	2332PS	15	6803R	6	7132AS15	8
2304BLPS	12	2332BL	15	6804	8	7132R	8
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2305PS	13	2335	15	6804R	8	7133R	6
2305BL	13	2337	14	6805	6	7134	8
2405BLPS	13	2339	15	6805AS15	6	7135	6
2306	13	2340	14	6806	8	7135AS15	6
2306PS	13	2340PS	14	6807	8	7151	8
2306BL	13	2340BL	14	6808	8	7151AS15	9
2306BLPS	13	2340BLPS	14	6809	8	7151R	9
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2307PS	14	2342	16	6831AS15	8	7152AS15R	9
2307BL	14	2382	15	6831R	8	7152AS15	9
2307BLPS	14	3022	8	6832	8	7152R	9
2308	14	3102	6	6832AS15	8	7153	6
2308PS	14	3149	12	6832R	8	7153AS15	6
2308BL	14	3150	12	6833	8	7153R	6
2308BLPS	14	3151	12	6833AS15	8	7154	9
2309	14	3152	12	6833R	8	7154AS15	9
2309PS	14	3153	12	6834	8	7155	6
2309BL	14	3211	8	6834AS15	8	7155AS15	6
2309BLPS	14	3225	7	6835	6	7200	7
2310	15	3229	7	6835AS15	6	7201	7
2310PS	15	3515	10	6838	10	7202	7
2310BL	15	3516	10	6838AS25	10	7203	7
2310BLPS	15	3518	10	6839	10	7204	7
2311	15	3580	10	6839AS25	10	7205	7
2311PS	15	3581	10	7001	16	7206	7
2311BL	15	3582	10	7003	15	7207	7
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7216	9	7315	12	7515	10	8601	7
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7220	9	7318	12	7628	11	8606	11
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7228	7	7326	15	7652	11	8627	11
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7235	9	7333	13	7732	7	8639	11
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7250	9	7350	13	8099	10	8661	11
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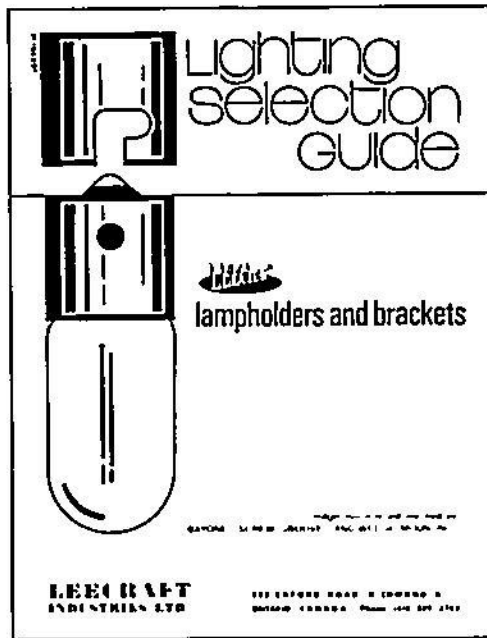
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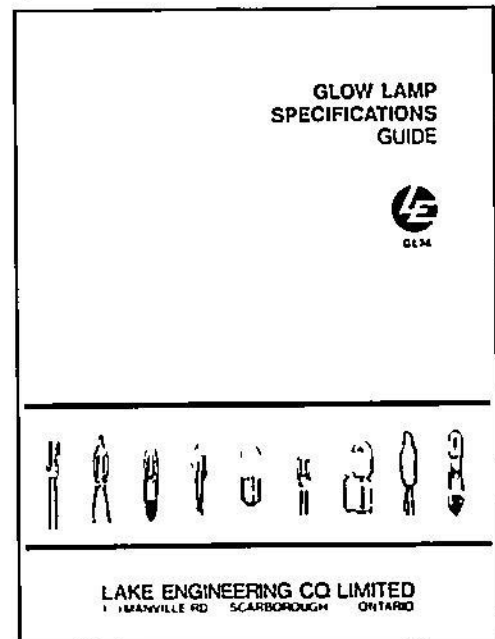


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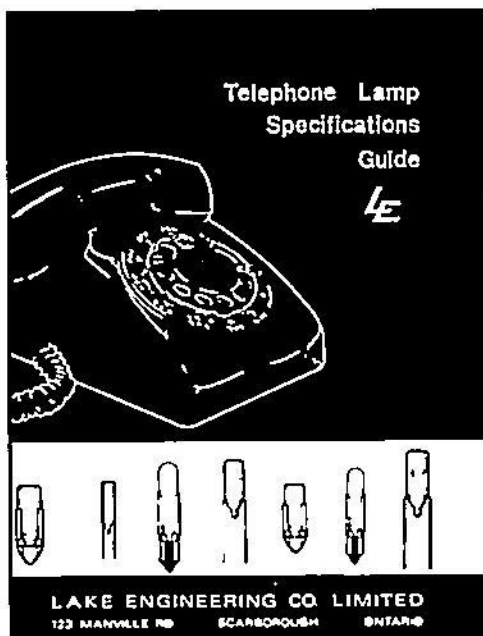
**LG970**



**GL74**



**TL72**



**ML71**

