

NORMAN LAMPS, INC.

1-800-992-8020

SINCE 1985

www.NORMANLAMPS.com



Quality • Service • Delivery • Value • Support

Welcome to the Wonderful World of Light Bulb Products and Services from **Norman Lamps Incorporated.**

We are pleased to present you with our 2007 Catalog.

The Year 2007 marks our 23rd year in the business of light bulb manufacturing and distribution. In 1985 we began as a small distributor of miniature lamps in West Chicago, Illinois. Throughout the following 23 years in business we have experienced tremendous growth through expansion of our product line and value added services. This expanded product line, backed by our huge inventory and new, large distribution facility, enables us to effectively service all areas of lighting requirement.

Whatever your light bulb requirements are, we have the manufacturing, inventory, pricing and distribution system to consistently fill your orders on time and accurately, saving you time and money.

Call us for pricing on any lamp products you are currently using. We can offer you savings, brands and delivery that will enable you to greatly simplify your purchasing process. By utilizing us as your primary source for light bulbs and related products, you can consolidate much of your lamp purchasing to a single, reliable vendor.

As you look through our new lamp catalog, please note the diversity of lamp products we now offer. Allow us the opportunity to service all of your lamp requirements. In return we promise to continually bring to you quality products, personal service, reliable delivery, real value and ongoing support for many years to come.

Please visit our new website at www.NormanLamps.com.

Take advantage of our vast and growing lamp database including cross references. It contains lamp specifications, photos, and part numbers of over 12,000 lamps from manufacturers around the world. All specifications along with photos can be printed out with a "click" of a button.

NORMAN LAMPS INCORPORATED

"Distributing Light To The World"®



VALUE ADDED SERVICES

Tuff-Coat® Shatter Containment Coating Process, Color Coating, 100% Inspection Service, Aging and Selection, Blister Packing, Bar Coding, Custom Design and Manufacturing, U.L. Approval and Maintenance, Special Packaging Requirements, Inventory Management, Facilities Lamp Mapping and Identification **4-5**

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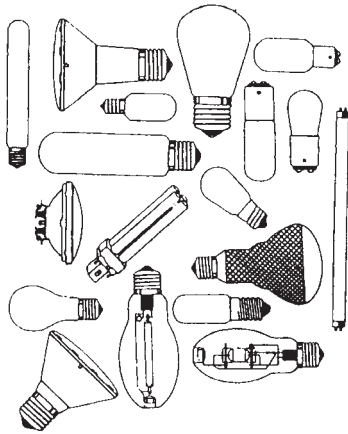
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Value Added Services

TUFF-COAT® PET, PFA, Silicone

LAMP COATING PROCESS, SHATTER CONTAINMENT COATINGS,
HIGH TEMPERATURE APPLICATIONS



- OSHA
- EPA
- FDA
- USDA
- COAST GUARD
- NSF

HIGH GRADE LAMP COATINGS

Norman Lamps, Inc. offers a wide variety of coated lamps for use in a wide range of industrial and commercial applications. Norman's exclusive coating processes produce the most durable lamp coating available on the market today.

Norman can also coat lamps you provide. Contact a sales representative for special pricing, samples and delivery time. We look forward to working with you on your coated lamp requirements.

ADVANTAGES

- Prevents glass shatter caused by impact, unusual stress, handling, shipping, thermal shock and power surges.
- Protects people and surroundings from flying glass fragments.
- Extends lamp life by preventing cracks and breakage.
- Weather resistant for outdoor use applications.
- Resists oil, humidity, heat, sunlight, condensation, grease and ice buildup.
- Protects exposed food.
- Reduces fire hazards.

COMMON LAMP TYPES FOR WHICH COATING IS AVAILABLE

TYPE	SIZE
"A"	A-15, A-19, A-21, A-23
"C"	C-7, C-9, C-15
"F"	F-10, F15, F20
"G"	G-8, G-12, G-16½, G-20, G-25, G-30, G-40
"PS"	PS-25, PS-30, PS-35, PS-40, PS-52
"PAR"	PAR-20, PAR-30, PAR-36, PAR-38 PAR-46, PAR-56, PAR-64
"R"	R-12, R-14, R-16, R-20, R-30, R-40, R-52
"BR"	BR-30, BR-38, BR-40
"S"	S-6, S-8, S-11, S-14
"T"	T-6, T-6½, T-7, T-8, T-10
"MR"	MR-8, MR-11, MR-16 Display Lamps
"CHANDELIER"	All Types
"HID" Lamps	Medium Base (E-27), Mogul Base (E-40) All Sizes
"FLUORESCENT" Tube Lamps	T-5, T-6, T-8, T-10, T-12 6", 9", 12", 15", 18", 21", 24", 36", 48", 96"
"COMPACT" Fluorescent Lamps	PL, PLC, PLT (8" M.O.L. or Less) COIL LIGHTS, CL, EL (Medium Base)

APPLICATIONS FOR COATED LAMPS

- Industrial lighting
- Food service
- Hotels and Motels
- Amusement parks
- Gaming machines
- Sign and marquee
- Passenger elevators
- Hospitals
- Schools
- Shopping Malls
- Harsh Environments
- Marine/Cruise Industry



Value Added Services

COLOR FILTERING (Lamp Painting)

Incandescent lamps can be filtered to almost any color because of their wide spectral distribution. Color filtering can be obtained by coating, booting or by using external filters. Norman uses only the highest quality paint and stains which produce colors that resist fading and cracking over time. Custom color matching is also available. Call for details.

NOTE: Coating is not recommended for high intensity lamps due to excessive heat buildup.

BOOTING

Silicone lamp boots are available in a variety of sizes and colors. Booting produces even color distribution and eliminates fading and cracking caused by heat and age. Custom color matching is available.

FROSTING

Lamps can be supplied with a frosted finish. A frosted lamp provides a diffused light source which creates a softer light effect. Frosting can be applied to either the inside or the outside surface of the lamp.

TUFF COATING (Shatter Containment)

Lamp applications that require a shatter proof glass bulb can be tuff coated. Tuff coating is an external layer of high temperature material applied over the glass portion of the lamp. This coating prevents fragments of glass from causing injuries to people and surroundings.

VACUUM PLATING

A reflective "mirror" finish can be applied to any part of the lamp glass in order to increase or direct light output as required. This process known as vacuum, aluminized plating produces a highly reflective mirror finish that will not dull or peel over the entire life of the lamp.

100% INSPECTION SERVICE

Defect rate on Norman manufactured lamps is below 0.5%. For applications that require a ZERO PERCENT defect rate, Norman offers 100% Re-Inspection service. This service guarantees that 100% of lamps have been re-inspected at our warehouse and are free of any manufacturing defects. Lamps are 100% inspected for compliance to all physical and electrical tolerances.

AGED AND SELECTED LAMPS

Lamps that require extremely tight MSCd tolerances can be ordered "aged and selected." These lamps will be aged for a maximum of 100 hours in our lab and then placed in an optical sphere for M.S.C.P. selection. We can age and select for tolerances as tight as $\pm 5\%$, $\pm 10\%$, $\pm 15\%$ or $\pm 25\%$.

BLISTER PACKING

Most lamps listed in this catalog can be supplied blister packed. Generic or custom printed backers are available. Minimum quantity is 1,000 blister packs per lamp type.

BAR CODING

Master cartons, intermediate cartons and individual packs can be custom bar coded per your required specifications. Call for details and pricing.

CUSTOM MANUFACTURED LAMPS

Custom lamp manufacturing is one of our specialties. We can manufacture lamps to your required specifications. A sample or specification drawing would be needed. Minimum production quantities will apply. Custom orders are based on sample approval and are non-cancelable, non-returnable.

CUSTOM LAMP ASSEMBLIES

Lamps can be custom assembled with special lead wires, attached resistors, terminal connectors or heat shrink tubing. A sample or specification drawing would be needed. Call for more details.

INVENTORY MANAGEMENT/ SCHEDULED ORDERS

Based on your scheduled release purchase orders, Norman Lamps can stock in advance the lamps you require. Norman will stock a minimum of 6 months advance supply in order to make certain that production remains uninterrupted. Scheduled orders must be completed within 12 months.

U.L. APPROVALS

On specialized and custom lamp assemblies, U.L. Approval can be obtained by Norman. Contact your sales rep for information regarding U.L. Approval on the lamp assembly you require.

WARRANTY

Norman Lamps, Inc. warranties lamps to be free from manufacturing defects. Lamp life, however, will vary due to conditions beyond our control. Warranty valid for 30 days from invoice date.



Basic Lamp Construction and Electrical Characteristics

An incandescent lamp changes electrical energy to radiant energy. The light generated results from the filament being resistance heated to a temperature high enough to produce visible light.

Filaments cannot be operated in an oxygen atmosphere, so they must be vacuum sealed (or gas filled) in a glass bulb. The vacuum acts like an insulator and holds the heat at the filament.

The basic materials used in manufacturing Sub-Miniature Lamps are soft lime glass, tungsten, molybdenum, and dumet. The soft glass is easy to work with and will tolerate temperatures up to 370 degrees Celsius. Dumet, a copper clad nickel iron core, is used for the lead wires and supports (electrodes) because it has the closest expansion and contraction rate to glass and offers an excellent hermetic seal. This seal is important in maintaining a high vacuum level which is critical in the overall reliability of lamps and to guarantee long life and MSCP stability.

Tungsten is used for the filaments because of its low rate of evaporation at temperatures of incandescence and its high melting point (3655K). There are grades of tungsten purity and different grain structures. Norman will use only the highest grade of an elongated grain structure to guarantee maximum life and reliability during shock and vibration.

Heat treatment of the tungsten filaments is one of the most critical factors of lamp manufacturing. Proper heat treatment prevents filament sag, abnormal coil shorting or premature breakage.

Norman utilizes the bead seal type of lamp construction which is superior to the other methods offered, such as hand sealed or butt sealed. One advantage of the bead seal construction is the thick bead used for the seal to prevent the possibility of air leaks during lamp manufacturing and in final applications. There is also more volume inside the glass envelope, which makes it easier to mount a more reliable high voltage filament.

It is recommended that wire terminal lamps that are to be soldered have their leads tin plated. All Norman wire terminal lamps are tin plated and solder ready.

Design Volts – This is the voltage at which the lamp is designed for rated amperes, candlepower, and laboratory-life characteristics.

Design Watts or Amps – The power consumption (watts) or current rating (amps) at the design voltage. In the case of dual-filament lamps, the values for each filament are given. All values $\pm 10\%$. $VOLTS \times AMPS = WATTS$

Mean Spherical Candlepower (M.S.C.P.) – This value is the initial mean spherical candlepower at the design voltage. It is subject to manufacturing tolerances. Mean spherical candlepower is the generally accepted method of rating the total light output of miniature lamps. To convert this rating to lumens, multiply it by 12.57. $LUMENS = M.S.C.P. \times 12.57$

Rated Average Life – Rated average life is that obtained in closely controlled laboratory testing of lamps at their design voltage. It is not necessarily the same as service life: shocks, vibration, voltage fluctuations, temperature, and other environmental influences may result in a shorter service life.

Light, Life, and Voltage – For any particular lamp, the light output and life depend upon the voltage at which a lamp is operated. Chart 1 illustrates the effect of overvoltage or undervoltage applied to a lamp on its current, life, and light (candlepower) output. Indicated values (except for long-life lamps) are reasonably valid, between 95% and 110% rated volts. Beyond that, indicated characteristics may not be realized because of the increasing influence of factors which cannot be incorporated into the chart.

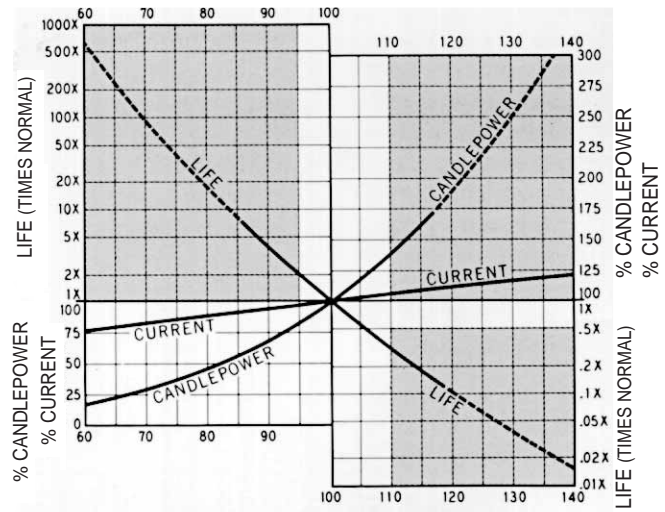


CHART 1
PERCENT OF DESIGN VOLTS
THESE CURVES ARE APPROXIMATIONS ONLY

NOTE: Calculations of characteristics shown in Chart 1 are approximate only between 95% and 110% of rated voltage for lamp types with 5,000 hours life or less. Certain lamp types will vary widely from calculated values. This chart will not apply to lamps with lives in excess of 5,000 hours or to halogen-cycle lamps.



Application and Design Factors

SERIES OPERATION

Life of a lamp can be severely reduced by using a series application because of the different resistances of the lamps used in the series. The applied voltage is not distributed evenly over all of the lamps in the series, so each lamp is operating at a slightly different voltage. This means embrittlement and the evaporation rate will not be equal, so some lamps could fail prematurely. It is recommended that lamps be selected for amperage and operated at a derated voltage for maximum reliability in series operations.

SHOCK AND VIBRATION

The best filament design for use in a shock and vibration environment is a low voltage, high amperage filament. This represents a short, thick filament. The higher you go in voltage, the longer the filament, which then necessitates the use of hangers. The hangers will increase the higher voltage filament reliability, but the effects of notching due to the soret effect are increased.

Orientation of the filament in relationship to the axis of vibration will also affect the lamp performance in a shock and vibration environment.

The most critical consideration in protecting a lamp against the effects of shock and vibration is the packaging by the user. Filament damage, due to shock and vibration, can be reduced or amplified by the way the lamp has been assembled into the user's product.

DC VOLTAGE LAMP OPERATION

DC voltage can reduce life by approximately 50% - 70% due to the "sawtooth" or notching effect. Notching, also known as electromigration, is a change in the molecular structure of tungsten due to the DC voltage. The results are hot spots that accelerate the thermal conditions, the evaporation rate and embrittlement. DC voltage operation is not recommended for filament lamps.

130 VOLT FILAMENTS

Most line voltage lamps offered in this catalog are manufactured with a 130 volt filament. Since most line voltage power is applied at 120 volts, the result is a slight undervolting of the filament. The effect of this is substantially enhanced lifetimes, protection from voltage spikes and energy cost savings.

APPLICATION RECOMMENDATIONS

- Consult us in the early stages of design for technical assistance and recommendations as to the best lamp to use for a specific application. We can offer a variety of customized lamps which include lamps that have longer or shorter leads, bent or formed leads, and/or electrical characteristics that are tailored to your individual requirements.
- Use low voltage, high amperage lamps for shock and vibration environments.
- Provide good heat sinking and airflow to keep the ambient temperature below 100 degrees Celsius.
- Derate the lamps, whenever possible, to reduce tungsten evaporation and increase life.
- Use AC voltage over DC voltage, when possible.
- Use the lowest efficacy lamps for the longest life. Consider reflective coatings, contrast filters, or lenses for increased luminance or enhancement.
- Design your system to insulate the lamps as much as possible from the effects of shock and vibration.
- Take care in handling – avoid excessive shock and vibration during packaging, shipping and production. Avoid lead bending or stress at the seal area to prevent vacuum leaks.
- Avoid excessive torque during lamp insertion.

AMBIENT TEMPERATURE

It is important to consider the lamp housing from the standpoints of radiation, absorption, and ventilation. Normal variations in ambient temperature do not affect the performance of lamps. Above 175°C (350°F), the solder on conventional lamps may soften, deform, or melt, and the basing cement may loosen. All-glass wedge base lamps can be operated in lamp ambient temperatures of up to 230°C (450°F).

SOLDER READY LEADS

All wire terminal lamps offered in this catalog are supplied in solder ready condition. After the manufacturing process, wire terminals are washed clean and tin plated in order to provide for reliable soldering.

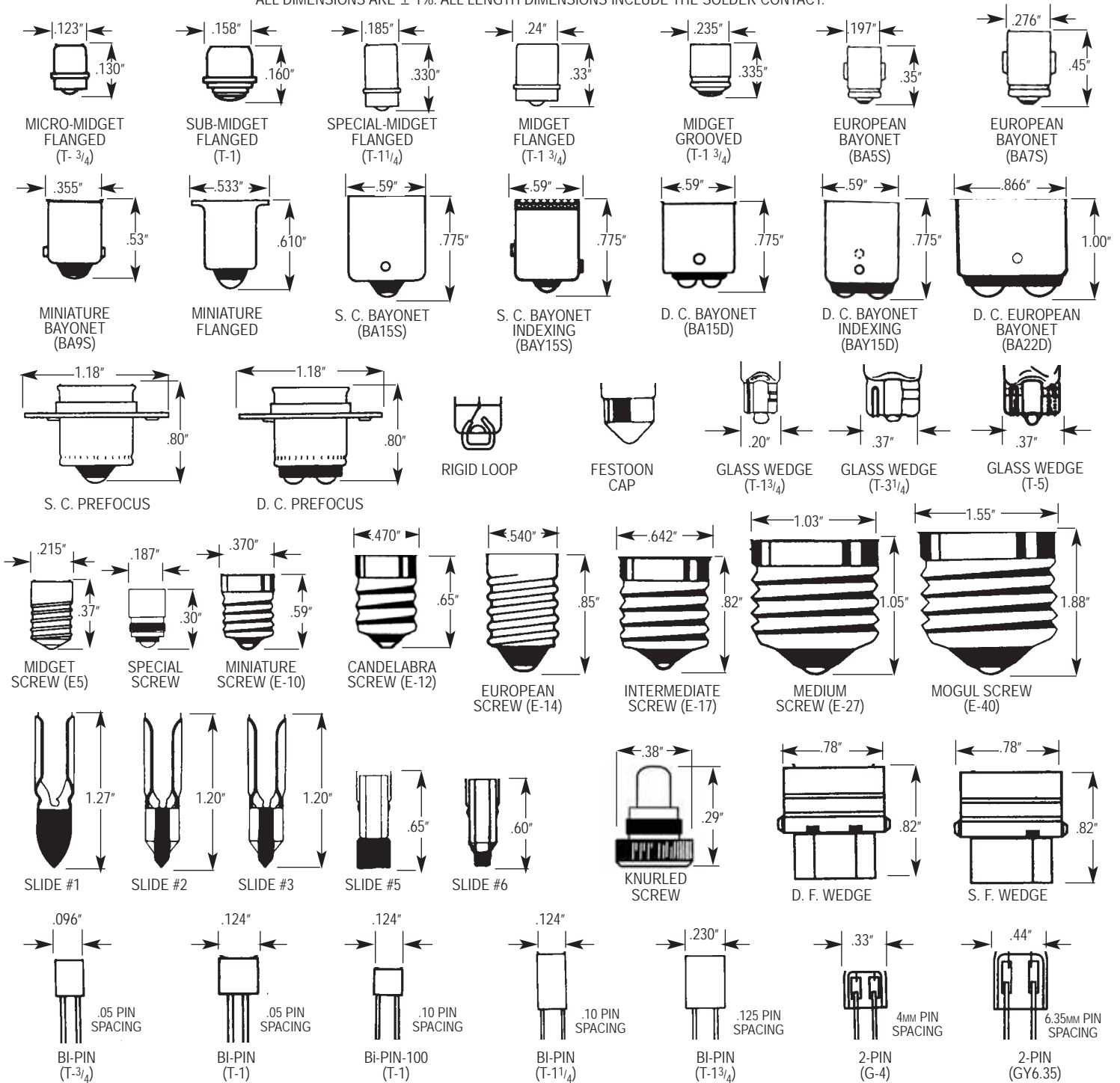


Common Lamp Bases with Dimensions

Bases provide electrical contact to the lamp and, in most cases, also support the lamp in the fixture. For miniature and subminiature lamps, bayonet or wedge base types are generally preferred over

screw types when vibration is present. In addition, wedge bases reduce socket size and complexity. Flanged or collared types are usually associated with requirements for filament location.

ALL DIMENSIONS ARE ± 1%. ALL LENGTH DIMENSIONS INCLUDE THE SOLDER CONTACT.

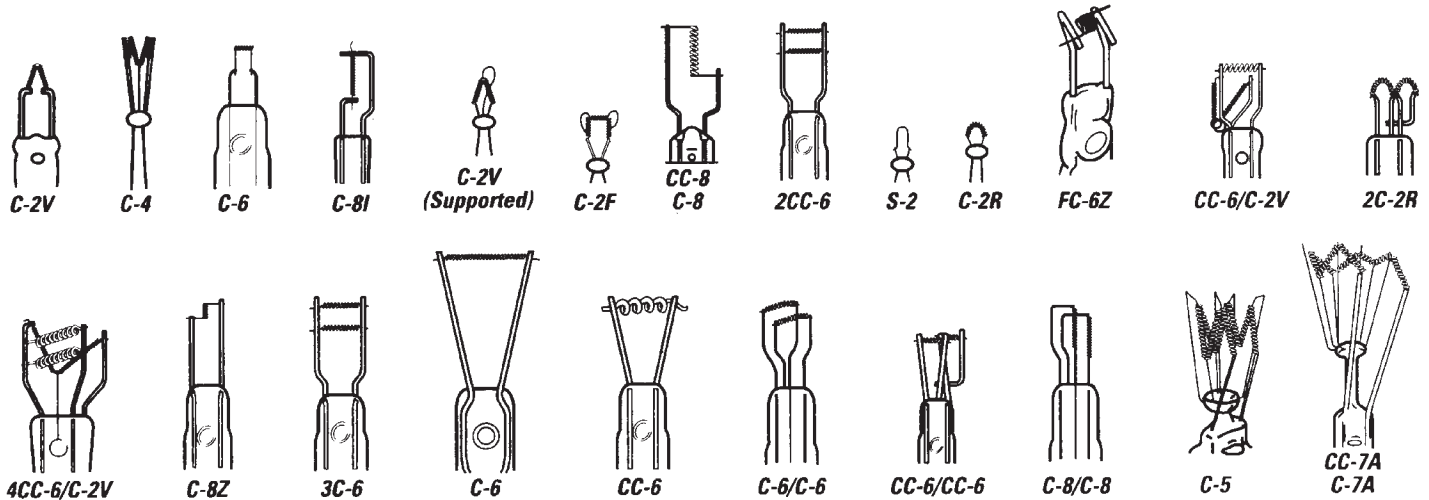




Common Filament Arrangements

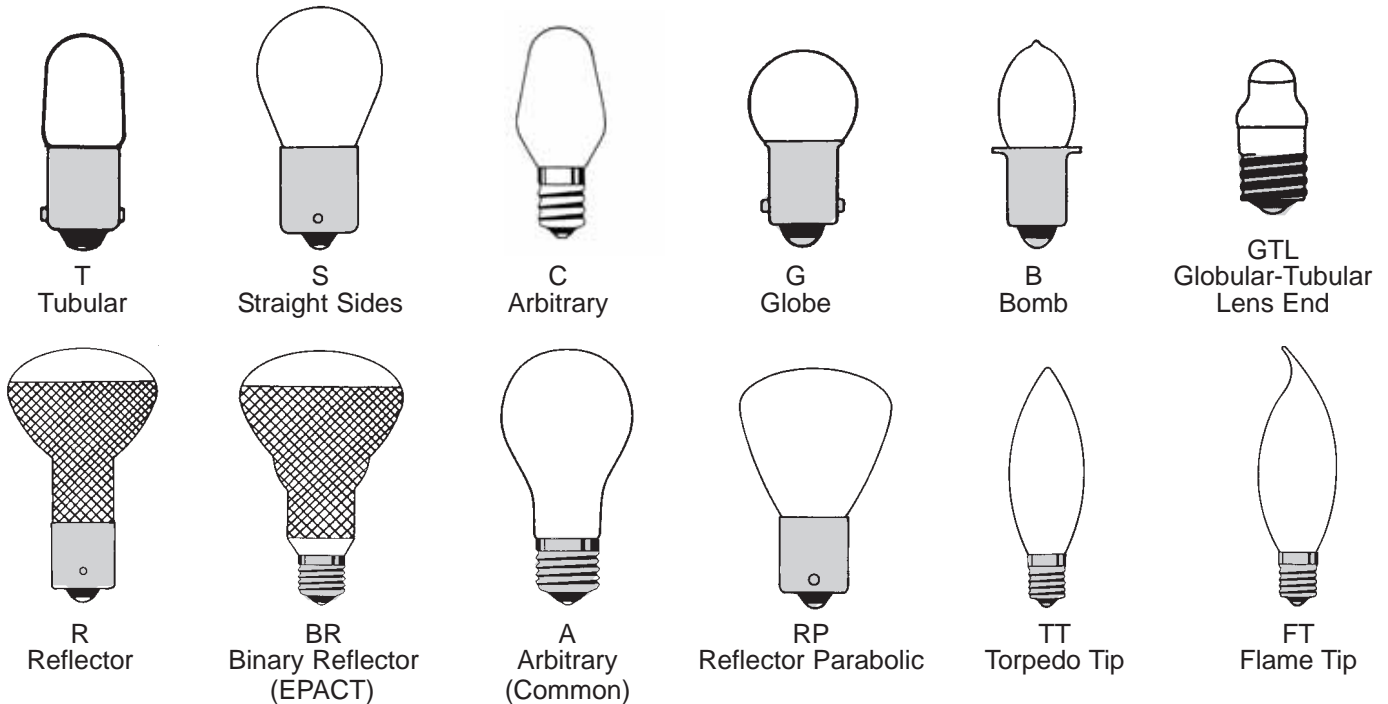
Filaments for miniature and subminiature lamps may be a straight wire, a coil, or a coiled coil (indicated by the letters "S", "C", and "CC" respectively). Coiling the filament wire effectively shortens the filament length so that smaller bulbs can be used. In addition, in gas-filled lamps, coiling the wire reduced thermal losses and

increases efficiency. Tungsten is almost universally used as lamp filament material because of its high melting point at incandescence. The number following the coil identification letter(s) denoted the arrangement of the filaments on the supports.



Basic Lamp Shapes (Glass Only)

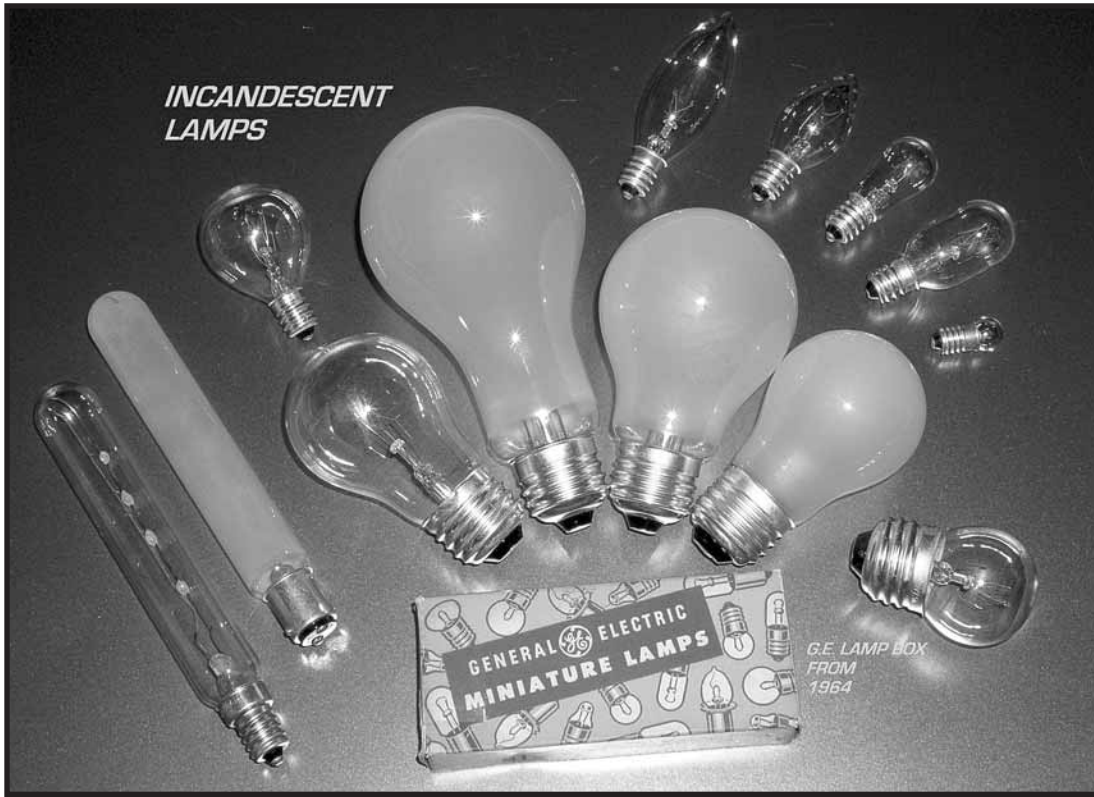
There are twelve basic glass shapes that most lamps made today are classified by. They are denoted by the letters listed below.



INCANDESCENT
1



NORMAN LAMPS, INC.
Distributing Light To The World



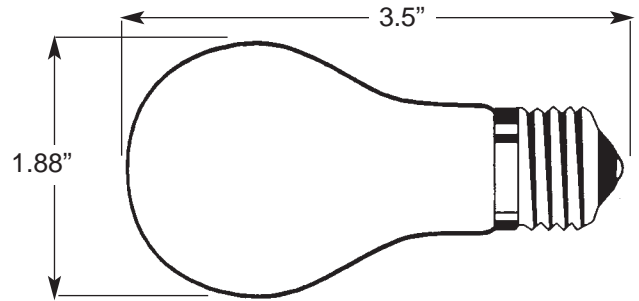


A-15

APPLIANCE LAMPS

15W, 25W, 30W, 40W, 60W

BRASS BASE, 130 VOLT FILAMENT



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	MEDIUM SCREW BASE
1	130.0	.115	15	3,500	C5A	CLEAR	15A15/CL
2	130.0	.115	15	3,500	C5A	FROSTED	15A15/FR
3	130.0	.115	15	3,500	C5A	TUFF-COATED	15A15/TF
4							
5	130.0	.192	25	3,500	C5A	CLEAR	25A15/CL
6	130.0	.192	25	3,500	C5A	FROSTED	25A15/FR
7	130.0	.192	25	3,500	C5A	TUFF-COATED	25A15/TF
8							
9	130.0	.230	30	3,000	C-2V	CLEAR	30A15/CL
10	130.0	.230	30	3,000	C-2V	FROSTED	30A15/FR
11	130.0	.230	30	3,000	C-2V	TUFF-COATED	30A15/TF
12							
13	130.0	.301	40	3,000	C-2V	CLEAR	40A15/CL
14	130.0	.301	40	3,000	C-2V	FROSTED	40A15/FR
15	130.0	.301	40	3,000	C-2V	TUFF-COATED	40A15/TF
16							
17	130.0	.461	60	3,000	C-2V	CLEAR	60A15/CL
18	130.0	.461	60	3,000	C-2V	FROSTED	60A15/FR
19	130.0	.461	60	3,000	C-2V	TUFF-COATED	60A15/TF

Norman A-15 lamps are all made with solid brass bases, high quality filament wire and strong filament supports. They are designed to provide long service life in all applications.

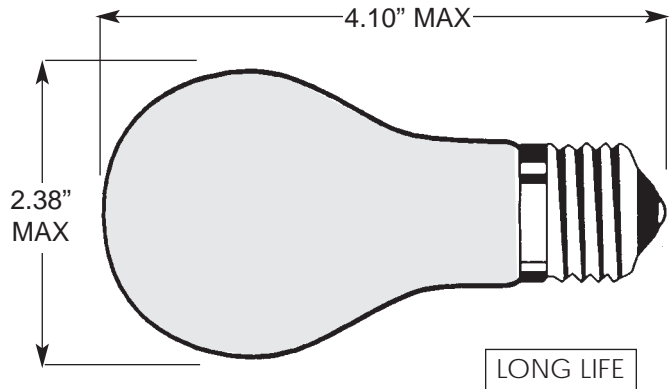
Note: A-15 lamps are also available in "Ceramic Red".

Note: A-15 lamps are also available in 12V and 230V.



A-19 10,000 HOURS ROUGH SERVICE LAMPS

INSIDE FROSTED, CLEAR, TUFF-COATED
THICKER GLASS, BRASS BASE
130 VOLT, LONG LIFE FILAMENT
HEAVY DUTY FILAMENT AND SUPPORTS
SHOCK AND VIBRATION RESISTANT



LINE NO.	VOLTS	AMPS	WATTS	@ 120 VOLTS LIFE	FILAMENT	BULB	MEDIUM SCREW BASE
1	130.0	.19	25	10,000	C-9 H.D.	FROSTED	25 ARS
2	130.0	.19	25	10,000	C-9 H.D.	CLEAR	25 ARS/CL
3	130.0	.19	25	10,000	C-9 H.D.	TUFF-COATED	25 ARS/TF
4							
5	130.0	.39	50	10,000	C-9 H.D.	FROSTED	50 ARS
6	130.0	.39	50	10,000	C-9 H.D.	CLEAR	50 ARS/CL
7	130.0	.39	50	10,000	C-9 H.D.	TUFF-COATED	50 ARS/TF
8							
9	130.0	.46	60	10,000	C-9 H.D.	FROSTED	60 ARS
10	130.0	.46	60	10,000	C-9 H.D.	CLEAR	60 ARS/CL
11	130.0	.46	60	10,000	C-9 H.D.	TUFF-COATED	60 ARS/TF
12							
13	130.0	.58	75	10,000	C-9 H.D.	FROSTED	75 ARS
14	130.0	.58	75	10,000	C-9 H.D.	CLEAR	75 ARS/CL
15	130.0	.58	75	10,000	C-9 H.D.	TUFF-COATED	75 ARS/TF
16							
17	130.0	.77	100	10,000	C-9 H.D.	FROSTED	100 ARS
18	130.0	.77	100	10,000	C-9 H.D.	CLEAR	100 ARS/CL
19	130.0	.77	100	10,000	C-9 H.D.	TUFF-COATED	100 ARS/TF

A-21 ROUGH SERVICE LAMPS (2.75" DIA. X 5.40" LENGTH)

20	130.0	1.15	150	6,000	C-9 H.D.	FROSTED	150 ARS
21	130.0	1.15	150	6,000	C-9 H.D.	CLEAR	150 ARS/CL
22	130.0	1.15	150	6,000	C-9 H.D.	TUFF-COATED	150 ARS/TF
23							

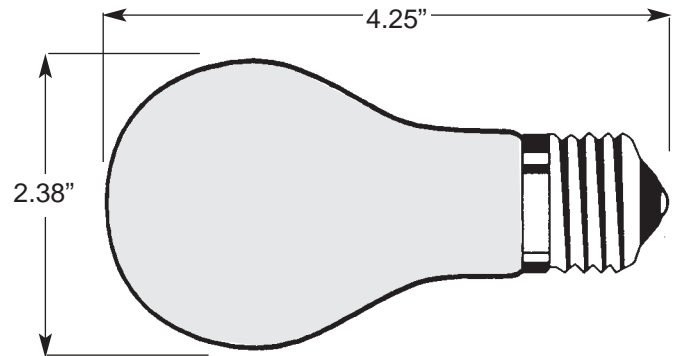
A-23 ROUGH SERVICE LAMPS (2.95" DIA. X 5.63" LENGTH)

24	130.0	1.54	200	5,000	C-9 H.D.	FROSTED	200 ARS
25	130.0	1.54	200	5,000	C-9 H.D.	CLEAR	200 ARS/CL
26	130.0	1.54	200	5,000	C-9 H.D.	TUFF-COATED	200 ARS/TF



A-19 230 VOLT HIGH VOLTAGE LAMPS

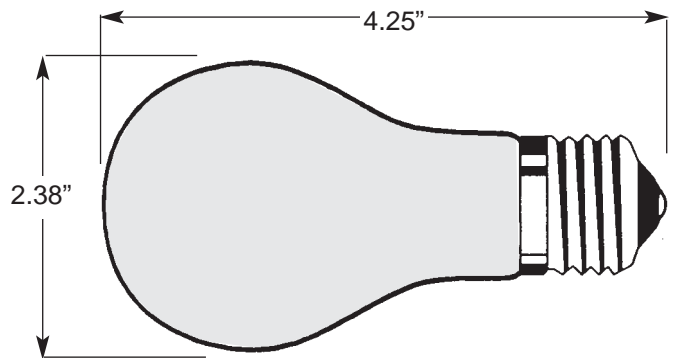
220-250 VOLT OPERATION
INSIDE FROSTED
ROUGH SERVICE RATED



LINE NO.	VOLTAGE RANGE	AMPS	WATTS	LIFE	FILAMENT	MEDIUM SCREW BASE
1	220-250V	.113	25	3,000	C-9	25A19/230V
2	220-250V	.181	40	3,000	C-9	40A19/230V
3	220-250V	.227	50	3,000	C-9	50A19/230V
4	220-250V	.272	60	3,000	C-9	60A19/230V
5	220-250V	.340	75	3,000	C-9	75A19/230V
6	220-250V	.454	100	3,000	C-9	100A19/230V

A-19 277 VOLT HIGH VOLTAGE LAMPS

250-277 VOLT OPERATION
INSIDE FROSTED
ROUGH SERVICE RATED



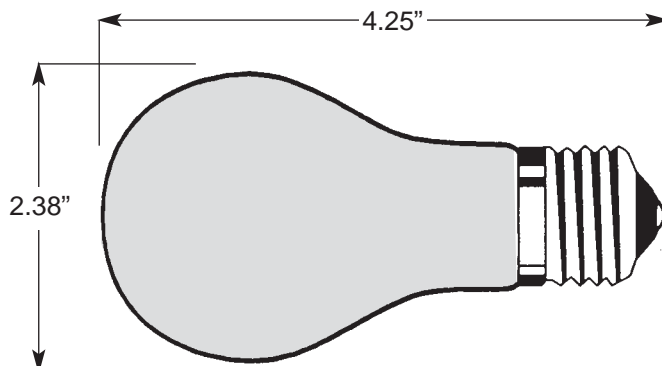
LINE NO.	VOLTAGE RANGE	AMPS	WATTS	LIFE	FILAMENT	MEDIUM SCREW BASE
7	250-277V	.09	25	3,000	C-9	25A19/277V
8	250-277V	.15	40	3,000	C-9	40A19/277V
9	250-277V	.18	50	3,000	C-9	50A19/277V
10	250-277V	.22	60	3,000	C-9	60A19/277V
11	250-277V	.27	75	3,000	C-9	75A19/277V
12	250-277V	.37	100	3,000	C-9	100A19/277V



A-19

COLOR LAMPS

CERAMIC AND TRANSPARENT COLORS
25W, 40W, 60W, 100W



LINE NO.	VOLTS	AMPS	WATTS	LIFE	FINISH	MEDIUM SCREW BASE
1	120.0	.208	25	3,500	CERAMIC RED	25A19/CR
2	120.0	.208	25	3,500	CERAMIC GREEN	25A19/CG
3	120.0	.208	25	3,500	CERAMIC BLUE	25A19/CB
4	120.0	.208	25	3,500	CERAMIC YELLOW	25A19/CY
5	120.0	.208	25	3,500	CERAMIC ORANGE	25A19/CO
6	120.0	.208	25	3,500	CERAMIC PINK	25A19/CP
7						
8	120.0	.208	25	3,500	TRANSPARENT RED	25A19/TR
9	120.0	.208	25	3,500	TRANSPARENT GREEN	25A19/TG
10	120.0	.208	25	3,500	TRANSPARENT BLUE	25A19/TB
11	120.0	.208	25	3,500	TRANSPARENT YELLOW	25A19/TY
12	120.0	.208	25	3,500	TRANSPARENT ORANGE	25A19/TO
13	120.0	.208	25	3,500	TRANSPARENT PINK	25A19/TP
14						
15	120.0	.334	40	3,500	CERAMIC RED	40A19/CR
16	120.0	.334	40	3,500	CERAMIC GREEN	40A19/CG
17	120.0	.334	40	3,500	CERAMIC BLUE	40A19/CB
18	120.0	.334	40	3,500	CERAMIC YELLOW	40A19/CY
19	120.0	.334	40	3,500	CERAMIC ORANGE	40A19/CO
20	120.0	.334	40	3,500	CERAMIC PINK	40A19/CP
21						
22	120.0	.600	60	3,500	CERAMIC RED	60A19/CR
23	120.0	.600	60	3,500	CERAMIC GREEN	60A19/CG
24	120.0	.600	60	3,500	CERAMIC BLUE	60A19/CB
25	120.0	.600	60	3,500	CERAMIC YELLOW	60A19/CY
26	120.0	.600	60	3,500	CERAMIC ORANGE	60A19/CO
27	120.0	.600	60	3,500	CERAMIC PINK	60A19/CP
28						
29	120.0	.833	100	3,500	CERAMIC RED	100A19/CR
30	120.0	.833	100	3,500	CERAMIC GREEN	100A19/CG
31	120.0	.833	100	3,500	CERAMIC BLUE	100A19/CB
32	120.0	.833	100	3,500	CERAMIC YELLOW	100A19/CY
33	120.0	.833	100	3,500	CERAMIC ORANGE	100A19/CO
34	120.0	.833	100	3,500	CERAMIC PINK	100A19/CP

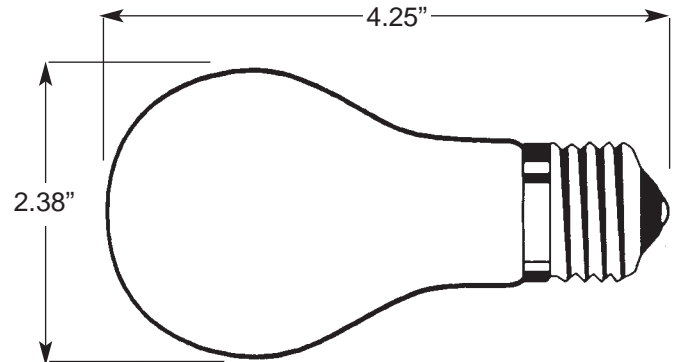


A-19

LOW VOLTAGE LAMPS

6V, 12V, 24V, 32V, 34V, 47V, 75V
 PLATED BRASS BASE
 R.V., MARINE, TRAINS, AND SPECIAL APPLICATIONS

CLEAR OR FROSTED



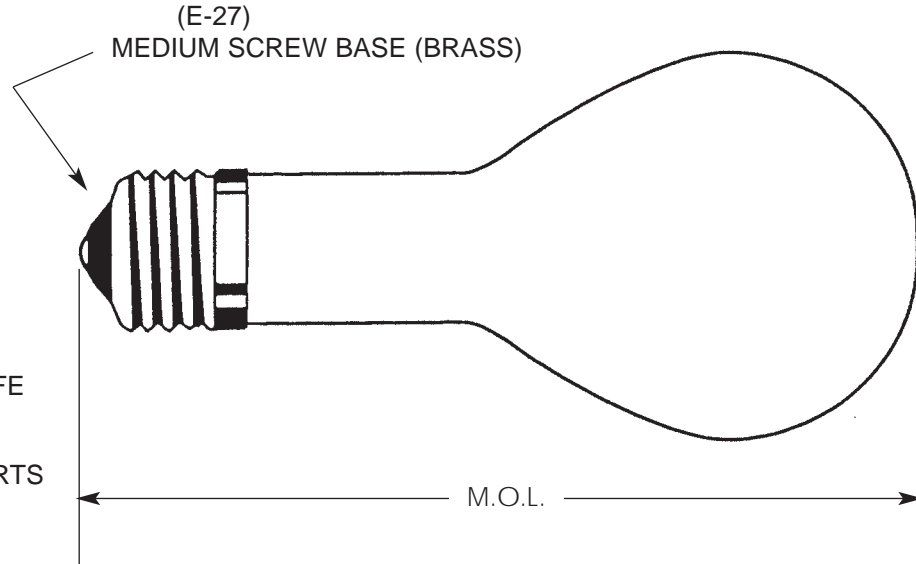
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	MEDIUM SCREW BASE
1	6V	8.34	50	2,500	CC-6	50A19/6V
2	6V	10.00	60	2,500	CC-6	60A19/6V
3	6V	16.67	100	2,500	CC-6	100A19/6V
4						
5	12V	4.17	50	2,500	CC-6	50A19/12V
6	12V	5.00	60	2,500	CC-6	60A19/12V
7	12V	8.34	100	2,500	CC-6	100A19/12V
8						
9	24V	2.08	50	2,500	CC-6	50A19/24V
10	24V	2.50	60	2,500	CC-6	60A19/24V
11	24V	4.17	100	2,500	CC-6	100A19/24V
12						
13	32V	1.57	50	2,500	CC-6	50A19/32V
14	32V	1.88	60	2,500	CC-6	60A19/32V
15	32V	3.13	100	2,500	CC-6	100A19/32V
16						
17	34V	1.47	50	2,500	CC-6	50A19/34V
18	34V	1.76	60	2,500	CC-6	60A19/34V
19	34V	2.94	100	2,500	CC-6	100A19/34V
20						
21	47V	1.04	50	2,500	CC-6	50A19/47V
22	47V	1.25	60	2,500	CC-6	60A19/47V
23	47V	2.08	100	2,500	CC-6	100A19/47V
24						
25	75V	.67	50	2,500	CC-6	50A19/75V
26	75V	.80	60	2,500	CC-6	60A19/75V
27	75V	1.34	100	2,500	CC-6	100A19/75V



PS-25, PS-30 ROUGH SERVICE LIGHT BULBS

- CLEAR (CL)
- FROSTED (FR)
- SILVER BOWL (SB)
- 277 VOLT
- 250 VOLT

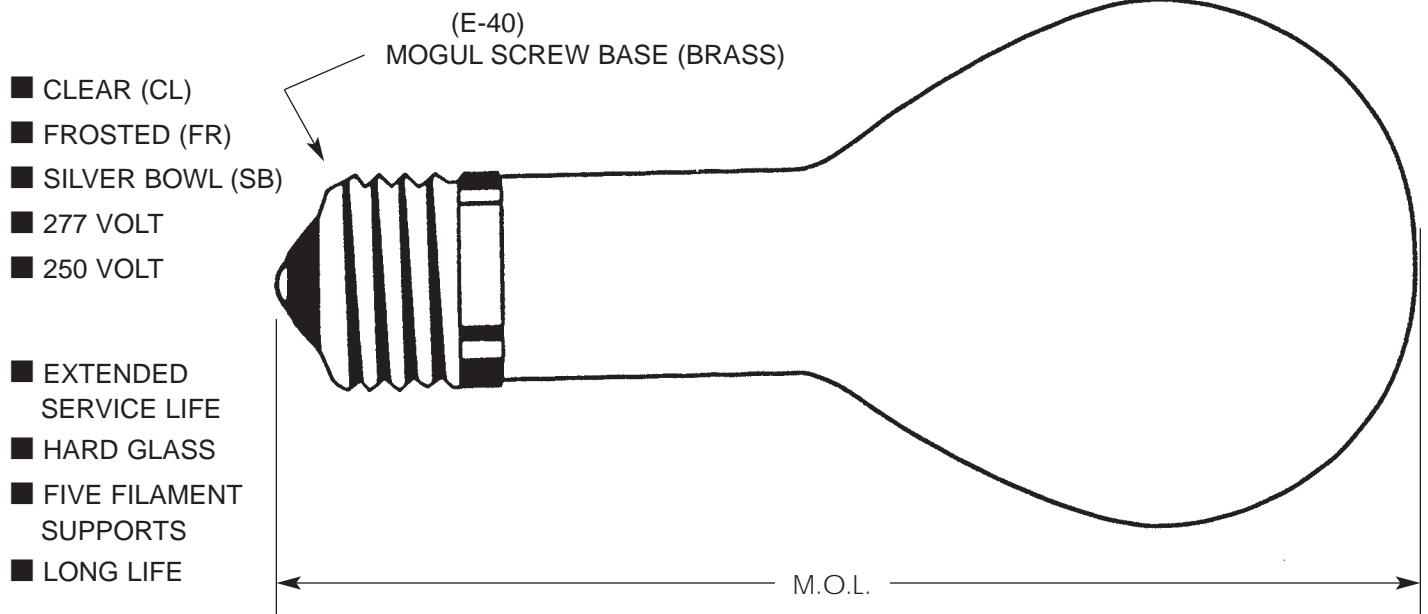
- EXTENDED SERVICE LIFE
- HARD GLASS
- FIVE FILAMENT SUPPORTS
- LONG LIFE



LINE NO.	VOLTS	WATTS	LIFE	FINISH	TYPE	DIAMETER	M.O.L.	PART NUMBER
1	130.0	150	2,000	CLEAR	PS-25	3.13"	7.0"	150PS25/CL
2	130.0	200	2,000	CLEAR	PS-25	3.13"	7.0"	200PS25/CL
3	130.0	300	2,000	CLEAR	PS-25	3.13"	7.0"	300PS25/CL
4								
5	130.0	200	2,000	CLEAR	PS-30	3.75"	8.1"	200PS30/CL
6	130.0	300	2,000	CLEAR	PS-30	3.75"	8.1"	300PS30/CL



PS-35, PS-40, PS-52 ROUGH SERVICE LIGHT BULBS

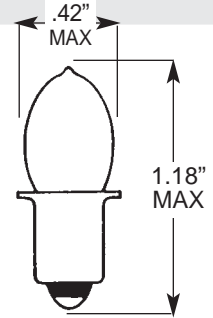


LINE NO.	VOLTS	WATTS	LIFE	FINISH	TYPE	DIAMETER	M.O.L.	PART NUMBER
1	130.0	300	2,000	CLEAR	PS-35	4.38"	9.4"	300PS35/CL
2	130.0	500	2,000	CLEAR	PS-35	4.38"	9.4"	500PS35/CL
3								
4	130.0	300	2,000	CLEAR	PS-40	5.0"	9.8"	300PS40/CL
5	130.0	500	2,000	CLEAR	PS-40	5.0"	9.8"	500PS40/CL
6								
7	130.0	500	1,500	CLEAR	PS-52	6.5"	13.0"	500PS52/CL
8	130.0	750	1,500	CLEAR	PS-52	6.5"	13.0"	750PS52/CL
9	130.0	1,000	1,500	CLEAR	PS-52	6.5"	13.0"	1000PS52/CL
10	130.0	1,500	1,500	CLEAR	PS-52	6.5"	13.0"	1500PS52/CL



B-3¹/₂
FLASHLIGHT LAMPS

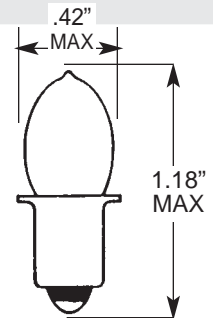
HIGH QUALITY STANDARD FLASHLIGHT LAMPS



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	MINIATURE FLANGED BASE
1						
2	2.33	0.27	0.40	10	C-2R	PR 4
3	2.35	0.35	0.45	35	C-2R	PR 5
4	2.38	0.50	0.80	15	C-2R	PR 2
5	2.47	0.30	0.45	30	C-2R	PR 6
6	2.70	0.15	0.25	45	C-2R	PR 9
7	3.57	0.50	1.50	15	C-2R	PR 3
8	3.70	0.30	0.90	30	C-2R	PR 7
9	3.75	0.86	2.25	40	C-2R	PR 30
10	4.75	0.50	2.20	15	C-2R	PR 13
11						
12	4.82	0.50	1.90	30	C-2R	PR 15
13	5.95	0.50	3.10	15	C-2R	PR 12
14	7.20	0.55	5.50	5	C-2R	PR 18
15	8.63	0.50	4.50	15	C-2R	PR 20
16	12.50	0.25	2.70	50	C-2R	PR 16

B-3¹/₂
KRYPTON FLASHLIGHT LAMPS

KRYPTON GAS FILLED / HIGH INTENSITY / LONGER LIFE
FLASHLIGHTS AND RECHARGABLE POWER TOOLS

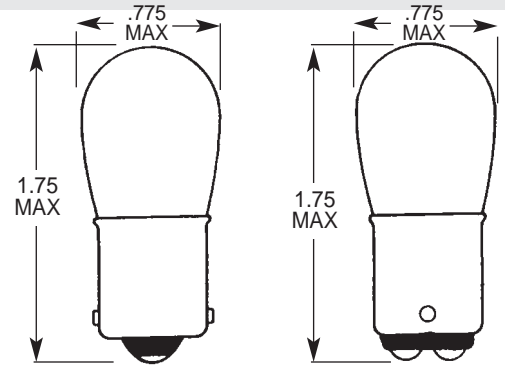


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	CROSS REFERENCE	MINIATURE FLANGED BASE
17	2.38	0.70	3.9	50	C-2R	KPR102	KPR 2
18	2.38	0.70	4.2	50	C-2R	KPR104	KPR 4
19	2.40	0.80	8.8	50	C-2R	KPR131	KPR 31
20	3.57	0.70	3.9	50	C-2R	KPR103	KPR 3
21	3.70	0.70	4.8	50	C-2R	KPR107	KPR 7
22	4.75	0.70	8.0	50	C-2R	KPR113	KPR 13
23	6.00	0.70	8.2	50	C-2R	KPR112	KPR 12
24	7.20	0.55	8.2	50	C-2R	KPR118	KPR 18
25							
26	12.00	0.70	15.0	20	C-2R		KPR120
27	14.40	0.70	20.0	20	C-2R		KPR144
28	15.60	0.70	24.0	20	C-2R		KPR156
29	18.00	0.70	31.0	20	C-2V SUPPORTED		KPR180
30	19.2	0.70	40.0	20	C-2V SUPPORTED		KPR192
31	24.00	0.70	44.0	20	C-2V SUPPORTED		KPR240



B-6
MINIATURE LAMPS

*Specifications for Second Filament
1309 LAMP IS AVAILABLE INSIDE FROSTED (1309-IF)

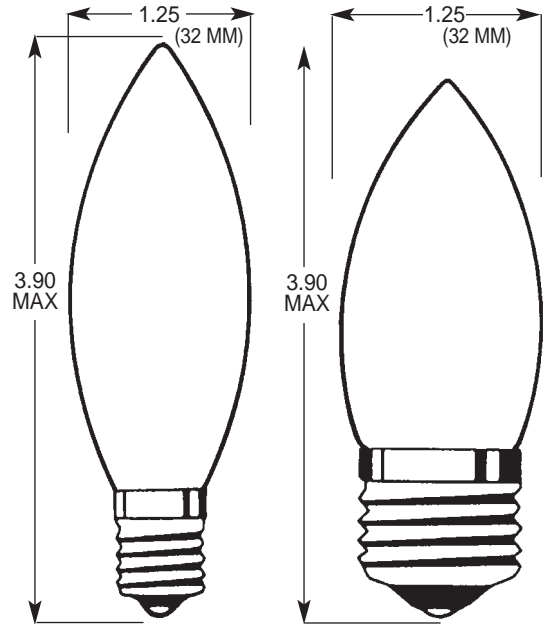


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE	DOUBLE CONTACT BAYONET BASE
1	6.00	0.51	3.40	100	C-6	1317	
2	6.50	1.78	15.00	100	C-6	209	210
3	12.80	0.94	15.00	200	C-6	1003	1004
4	12.80	1.00	12.00	500	C-6	105	104
5	28.00	0.52	15.00	300	C-2R	1309	
6	28.00	0.52	15.00	300	C-2R	*	
7	28.00	0.56	16.00	2,000	CC-6	1308	



**STANDARD,
TORPEDO TIP
B-10 (32 MM)
CHANDELIER LAMPS**

130 VOLT / LONG LIFE FILAMENT
CLEAR OR FROSTED
LONG-LIFE • PREMIUM QUALITY
BRASS BASE



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	CANDELABRA SCREW BASE	MEDIUM SCREW BASE
1	130.0	.115	15	4,000	CC-2V	CLEAR	15CTC	15ETC
2	130.0	.192	25	4,000	CC-2V	CLEAR	25CTC	25ETC
3	130.0	.307	40	4,000	CC-2V	CLEAR	40CTC	40ETC
4	130.0	.461	60	4,000	CC-2V	CLEAR	60CTC	60ETC
5								
6	130.0	.115	15	4,000	CC-2V	FROSTED	15CTF	15ETF
7	130.0	.192	25	4,000	CC-2V	FROSTED	25CTF	25ETF
8	130.0	.307	40	4,000	CC-2V	FROSTED	40CTF	40ETF
9	130.0	.461	60	4,000	CC-2V	FROSTED	60CTF	60ETF

KEY TO CHANDELIER LAMP PART NUMBERS

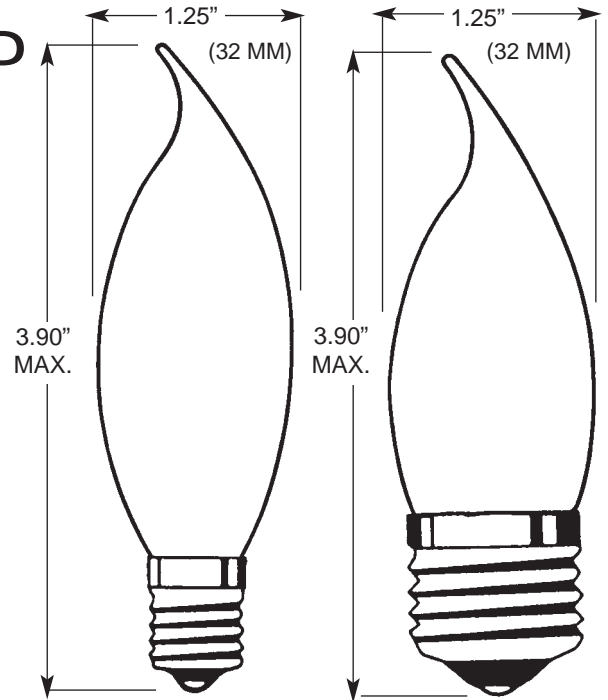
<u>BASE</u>	<u>SHAPE</u>	<u>FINISH</u>
E = EDISON (MEDIUM)	F = FLAME TIP	F = FROST
C = CANDELABRA	T = TORPEDO TIP	C = CLEAR
<i>EXAMPLE: 40CTC = 40 WATT, CANDELABRA BASE, TORPEDO TIP, CLEAR</i>		



STANDARD, FLAME TIP B-10 (32 MM) CHANDELIER LAMPS

130 VOLT / LONG LIFE FILAMENT
CLEAR OR FROSTED
LONG-LIFE • PREMIUM QUALITY
BRASS BASE
SINGLE PACK BOX

LOW VOLTAGE TYPES ALSO LISTED: 12V AND 24V

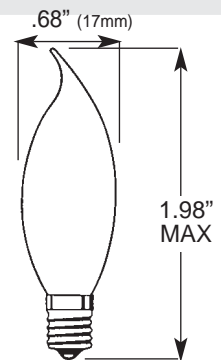


LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	CANDELABRA SCREW BASE	MEDIUM SCREW BASE
1	12.0	1.50	18	3,000	CC-6	CLEAR	18BT6-12V-CS	—
2	24.0	.75	18	3,000	CC-6	CLEAR	18BT6-24V-CS	—
3								
4	130.0	.115	15	4,000	CC-2V	CLEAR	15CFC	15EFC
5	130.0	.192	25	4,000	CC-2V	CLEAR	25CFC	25EFC
6	130.0	.307	40	4,000	CC-2V	CLEAR	40CFC	40EFC
7	130.0	.461	60	4,000	CC-2V	CLEAR	60CFC	60EFC
8								
9	130.0	.115	15	4,000	CC-2V	FROSTED	15CFF	15EFF
10	130.0	.192	25	4,000	CC-2V	FROSTED	25CFF	25EFF
11	130.0	.307	40	4,000	CC-2V	FROSTED	40CFF	40EFF
12	130.0	.461	60	4,000	CC-2V	FROSTED	60CFF	60EFF

MINIATURE FLAME TIP

(17 MM DIAMETER)

LOW VOLTAGE (2.5 VOLT)
DECORATIVE, HOBBY LIGHT
DESIGNED FOR BATTERY-POWERED DEVICES.
LONG SERVICE LIFE • SMALL SIZE



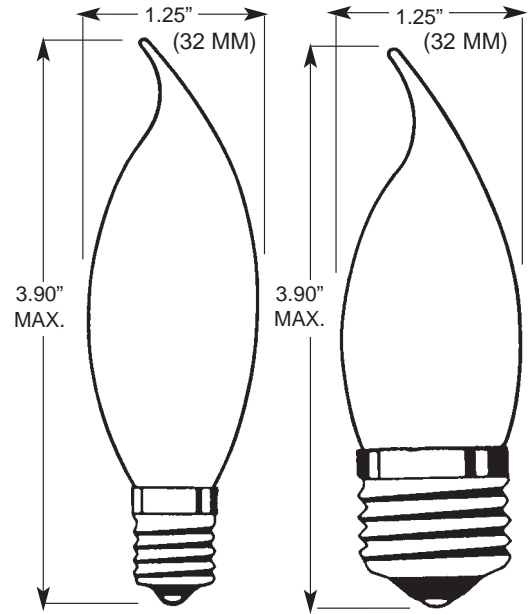
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	FINISH	MINIATURE SCREW BASE
13	2.5	.300	3/4	3,000	C-2R	CLEAR	FT2.5V-300MA-MS



KRYPTON, FLAME TIP B-10 (32 MM) CHANDELIER LAMPS

120 VOLT / LONG LIFE FILAMENT
CLEAR, BRIGHT WHITE LIGHT
LONG-LIFE • PREMIUM QUALITY

KRYPTON
Gas Filled Lamps

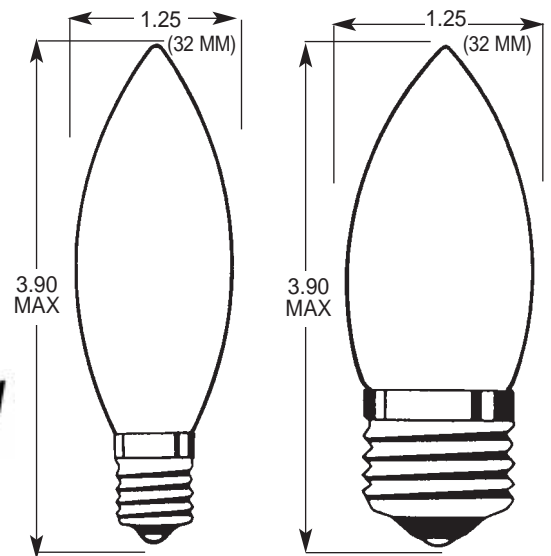


LINE NO.	VOLTS	WATTS	LIFE @ 120 VOLTS	LUMENS	FILAMENT	FINISH	CANDELABRA SCREW BASE	MEDIUM SCREW BASE
1	120.0	15	5,000	180	CC-2V	CLEAR	K15CFC	K15EFC
2	120.0	25	5,000	300	CC-2V	CLEAR	K25CFC	K25EFC
3	120.0	40	5,000	480	CC-2V	CLEAR	K40CFC	K40EFC
4	120.0	60	5,000	760	CC-2V	CLEAR	K60CFC	K60EFC

KRYPTON, TORPEDO TIP B-10 (32 MM) CHANDELIER LAMPS

120 VOLT / LONG LIFE FILAMENT
CLEAR, BRIGHT WHITE LIGHT
LONG-LIFE • PREMIUM QUALITY

KRYPTON
Gas Filled Lamps

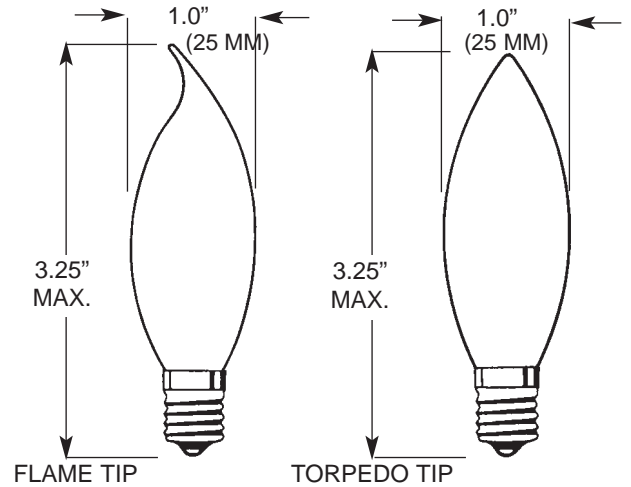


LINE NO.	VOLTS	WATTS	LIFE @ 120 VOLTS	LUMENS	FILAMENT	FINISH	CANDELABRA SCREW BASE	MEDIUM SCREW BASE
5	120.0	15	5,000	180	CC-2V	CLEAR	K15CTC	K15ETC
6	120.0	25	5,000	300	CC-2V	CLEAR	K25CTC	K25ETC
7	120.0	40	5,000	480	CC-2V	CLEAR	K40CTC	K40ETC
8	120.0	60	5,000	760	CC-2V	CLEAR	K60CTC	K60ETC



B-8 (25 MM) "PETITE" PETITE SIZE (-P) CHANDELIER LAMPS

130 VOLT / LONG LIFE FILAMENT
CLEAR OR FROSTED

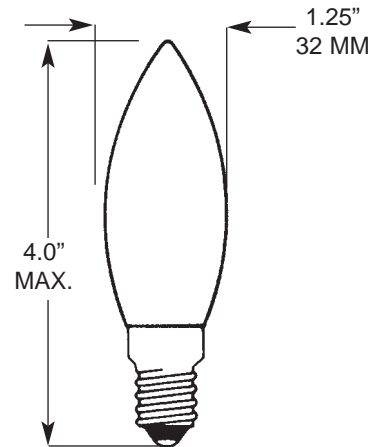


LINE NO.	VOLTS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	CANDELABRA SCREW BASE	CANDELABRA SCREW BASE
1	130.0	15	3,000	CC-2V	CLEAR	15CFC-P	15CTC-P
2	130.0	15	3,000	CC-2V	FROSTED	15CFF-P	15CTF-P
3							
4	130.0	25	3,000	CC-2V	CLEAR	25CFC-P	25CTC-P
5	130.0	25	3,000	CC-2V	FROSTED	25CFF-P	25CTF-P
6							
7	130.0	40	3,000	CC-2V	CLEAR	40CFC-P	40CTC-P
8	130.0	40	3,000	CC-2V	FROSTED	40CFF-P	40CTF-P

EUROPEAN (32 MM) CHANDELIER LAMPS E-14 SCREW BASE TORPEDO TIP

130 VOLT and 220 VOLT OPERATION

AVAILABLE IN CLEAR (C) OR FROSTED (F)



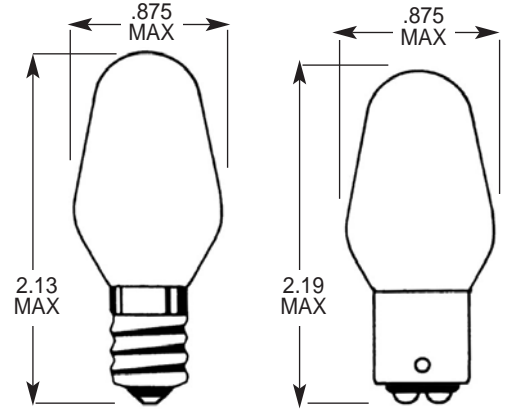
LINE NO.	VOLTS	WATTS	LIFE	FILAMENT	FINISH	E-14 SCREW BASE
9	120.0	25	2,500	CC-2V	CLEAR	25E14TC-120V
10	220.0	25	2,500	CC-2V	CLEAR	25E14TC-220V
11						
12	120.0	40	2,500	CC-2V	CLEAR	40E14TC-120V
13	220.0	40	2,500	CC-2V	CLEAR	40E14TC-220V
14						
15	120.0	60	2,500	CC-2V	CLEAR	60E14TC-120V
16	220.0	60	2,500	CC-2V	CLEAR	60E14TC-220V



C-7 MINIATURE LAMPS

CERAMIC OR TRANSPARENT COLORS
CUSTOM COLORS AVAILABLE ON SPECIAL ORDER
DOUBLE COATED COLORS, WEATHER RESISTANT
7C7 CLEAR AND TRANSPARENT COLORS ARE
AVAILABLE IN BLINKING.

CHRISTMAS LIGHTS / NIGHT LIGHTS / SIGN LIGHTS / INDICATOR LIGHTS

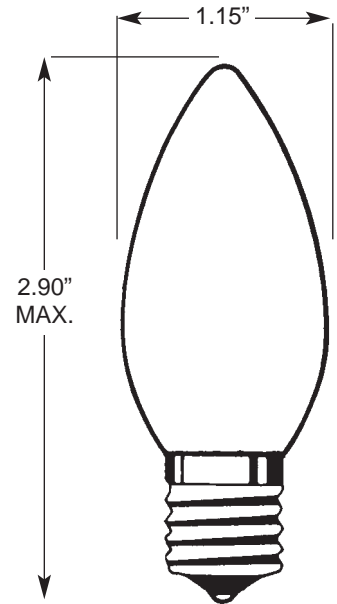


LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	CANDELABRA SCREW BASE	DOUBLE CONTACT BAYONET BASE
1	120.0	.033	4	4,000	C-3A	CLEAR	4C7-120V-CS	
2	120.0	.033	4	4,000	C-3A	WHITE	4C7-120V-CS-W	
3								
4	120.0	.058	7	3,500	C-3A	CLEAR	7C7-120V-CS	7C7-120V-DC
5	120.0	.058	7	3,500	C-3A	FROSTED	7C7-120V-CS-F	
6	130.0	.058	7	3,500	C-3A	WHITE	7C7-120V-CS-W	
7								
8	120.0	.058	7	3,500	C-3A	CERAMIC-RED	7C7-120V-CS-CR	
9	120.0	.058	7	3,500	C-3A	CERAMIC-GREEN	7C7-120V-CS-CG	
10	120.0	.058	7	3,500	C-3A	CERAMIC-YELLOW	7C7-120V-CS-CY	
11	120.0	.058	7	3,500	C-3A	CERAMIC-ORANGE	7C7-120V-CS-CO	
12	120.0	.058	7	3,500	C-3A	CERAMIC-BLUE	7C7-120V-CS-CB	
13	120.0	.058	7	3,500	C-3A	CERAMIC-PINK	7C7-120V-CS-CP	
14								
15	130.0	.054	7	4,500	C-3A	CLEAR	7C7-130V-CS	7C7-130V-DC
16	130.0	.054	7	4,500	C-3A	FROSTED	7C7-130V-CS-F	
17	130.0	.054	7	4,500	C-3A	WHITE	7C7-130V-CS-W	
18								
19	130.0	.054	7	4,500	C-3A	TRANSPARENT-RED	7C7-130V-CS-TR	
20	130.0	.054	7	4,500	C-3A	TRANSPARENT-GREEN	7C7-130V-CS-TG	
21	130.0	.054	7	4,500	C-3A	TRANSPARENT-YELLOW	7C7-130V-CS-TY	
22	130.0	.054	7	4,500	C-3A	TRANSPARENT-PINK	7C7-130V-CS-TP	
23	130.0	.054	7	4,500	C-3A	TRANSPARENT-BLUE	7C7-130V-CS-TB	
24	130.0	.054	7	4,500	C-3A	TRANSPARENT-AMBER	7C7-130V-CS-TA	
25	130.0	.054	7	4,500	C-3A	TRANSPARENT-VIOLET	7C7-130V-CS-TV	
26								
27	130.0	.054	7	4,500	C-3A	PASTEL - PINK	7C7-130V-CS-PP	SPECIAL EASTER COLORS
28	130.0	.054	7	4,500	C-3A	PASTEL - GREEN	7C7-130V-CS-PG	
29	130.0	.054	7	4,500	C-3A	PASTEL - BLUE	7C7-130V-CS-PB	
30	130.0	.054	7	4,500	C-3A	PASTEL - YELLOW	7C7-130V-CS-PY	
31								
32	120.0	.077	10	3,000	C-3A	CLEAR	10C7-120V-CS	10C7-120V-DC
33	130.0	.077	10	4,000	C-3A	CLEAR	10C7-130V-CS	10C7-130V-DC
34	130.0	.120	15	3,500	C-5A	CLEAR	15C7-130V-CS	
35	230.0	.077	10	3,000	C-3A	CLEAR	10C7-230V-CS	10C7-230V-DC



C-9 MINIATURE LAMPS

CERAMIC OR TRANSPARENT COLORS
DOUBLE COATED COLORS, WEATHER RESISTANT
CHRISTMAS / HOLIDAY LIGHTING



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	INTERMEDIATE SCREW BASE
1	120.0	.058	7	3,500	C-5A	CLEAR	7C9-120V-INT
2	120.0	.058	7	3,500	C-5A	FROSTED	7C9-120V-FR
3	120.0	.058	7	3,500	C-5A	WHITE	7C9-120V-W
4							
5	130.0	.053	7	5,000	C-5A	TRANSPARENT-RED	7C9-130V-TR
6	130.0	.053	7	5,000	C-5A	TRANSPARENT-GREEN	7C9-130V-TG
7	130.0	.053	7	5,000	C-5A	TRANSPARENT-YELLOW	7C9-130V-TY
8	130.0	.053	7	5,000	C-5A	TRANSPARENT-PINK	7C9-130V-TP
9	130.0	.053	7	5,000	C-5A	TRANSPARENT-BLUE	7C9-130V-TB
10	130.0	.053	7	5,000	C-5A	TRANSPARENT-AMBER	7C9-130V-TA
11							
12	120.0	.058	7	3,500	C-5A	CERAMIC-RED	7C9-120V-CR
13	120.0	.058	7	3,500	C-5A	CERAMIC-GREEN	7C9-120V-CG
14	120.0	.058	7	3,500	C-5A	CERAMIC-YELLOW	7C9-120V-CY
15	120.0	.058	7	3,500	C-5A	CERAMIC-ORANGE	7C9-120V-CO
16	120.0	.058	7	3,500	C-5A	CERAMIC-BLUE	7C9-120V-CB
17	120.0	.058	7	3,500	C-5A	CERAMIC-PINK	7C9-120V-CP
18							
19	120.0	.058	7	3,000	C-5A-F (FLASHER)	CLEAR	7C9-120V-INT-T (TWINKLE LIGHT)



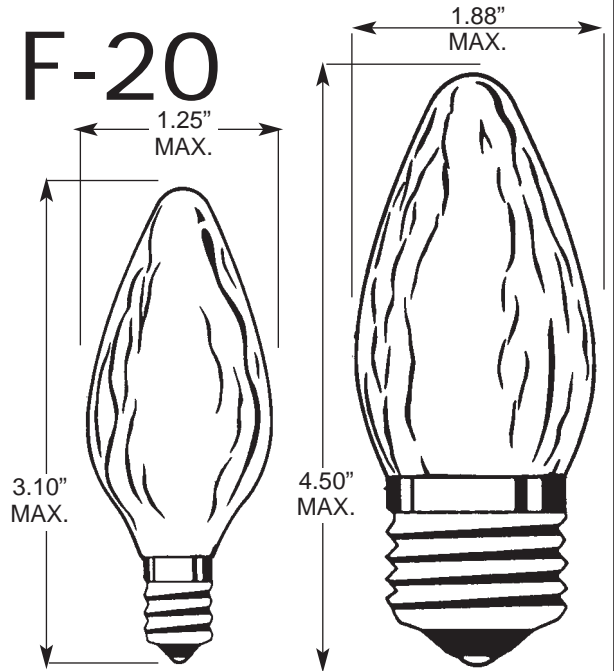
F-10, F-15, C-15, F-20

DECORATIVE "FIESTA" LAMPS SPECIAL SERVICE LAMPS

130 VOLT / LONG LIFE FILAMENT (C-5A)
CLEAR / DEEP AMBER / TUFF-COATED

ALSO AVAILABLE: #100F20/CL (POST LAMP)
#60C15/CL, #60C15/CL/240V (HATCO LAMP)

ALL AVAILABLE IN TUFF-COAT® (TF)



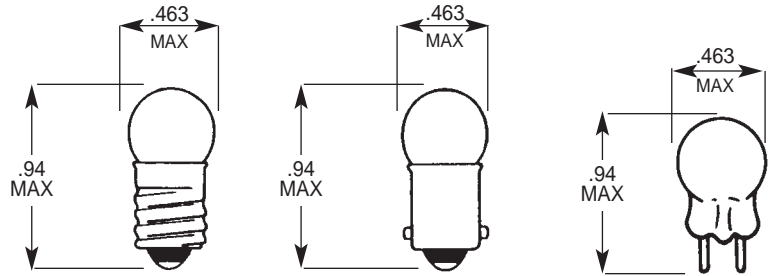
LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FINISH	CANDELABRA SCREW BASE	MEDIUM SCREW BASE
1	130.0	.115	15	3,000	CLEAR	15F10-130V-CS	—
2	130.0	.115	15	3,000	TUFF-COATED	15F10-130V-TF	—
3	130.0	.115	15	3,000	DEEP AMBER	15F10-130V-A	—
4							
5	130.0	.192	25	3,000	CLEAR	25F10-130V-CS	25F15-130V-MED
6	130.0	.192	25	3,000	TUFF-COATED	25F10-130V-TF	25F15-130V-TF
7	130.0	.192	25	3,000	DEEP AMBER	25F10-130V-A	25F15-130V-A
8							
9	130.0	.307	40	3,000	CLEAR	40F10-130V-CS	40F15-130V-MED
10	130.0	.307	40	3,000	TUFF-COATED	40F10-130V-TF	40F15-130V-TF
11	130.0	.307	40	3,000	DEEP AMBER	40F10-130V-A	40F15-130V-A
12							
13	130.0	.461	60	3,000	CLEAR	—	60F15-130V-MED
14	130.0	.461	60	3,000	TUFF-COATED	—	60F15-130V-TF
15	130.0	.461	60	3,000	DEEP AMBER	—	60F15-130V-A

"SPUNGLO" DECORATIVE LAMPS

LINE NO.	VOLTS	BULB TYPE	WATTS	AVERAGE HOURS	FINISH	CANDELABRA BASE	MEDIUM BASE	MOL
16	130	C11	25	5000	SATIN	25C11S	-	4"
17	130	C11	25	5000	AMBER	25C11A	-	4 1/2"
18	130	C15	25	5000	SATIN	-	25C15S	4"
19	130	C11	40	5000	SATIN	40C11S	-	4 1/2"
20	130	C15	40	5000	SATIN	-	40C15S	4 1/2"
21	130	C15	40	5000	AMBER	-	40C15A	4"
22	130	C11	60	5000	SATIN	60C11S	-	4"
23	130	C15	60	5000	SATIN	-	60C15S	4 1/2"



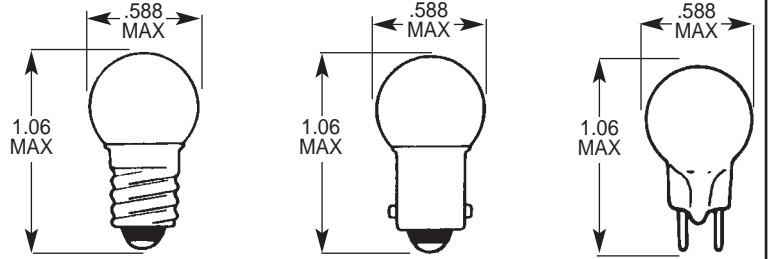
G-3¹/₂ MINIATURE LAMPS



NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	MINIATURE SCREW BASE	MINIATURE BAYONET BASE	GLASS 2-PIN BASE
1	1.25	0.30	0.10	10	S-2	123		
2	1.30	0.10	0.03	50	S-2	131		
3	1.35	0.06	0.02	50	S-2	359		
4	1.40	0.10	0.12	200	S-2	132		
5	1.50	0.20	0.12	30	S-2	458		
6	2.00	0.50	0.70	15	C-2R	138		
7	2.10	0.50	0.70	15	C-2R	100		
8	2.33	0.27	0.42	10	C-2R	233		
9	2.47	0.30	0.50	15	C-2R	14	354	
10	2.50	0.50	0.50	3,000	C-6	245		10
11	3.00	0.07	0.15	50	S-2	352X		
12	3.69	0.50	1.60	15	C-2R	365		
13	3.70	0.30	0.98	15	C-2R	13		
14	3.80	0.43	1.60	1	C-2R	1438		
15	6.30	0.25	0.50	5,000	C-6			25
16	6.30	0.15	0.35	5,000	C-6		130	12
17	6.30	0.25	0.65	5,000	C-6			612
18								
19	6.30	0.25	0.50	5,000	C-2V		219	
20	6.30	0.25	0.55	2,000	C-2R	134		
21	6.30	0.15	0.32	2,000	C-2R	133		
22	7.50	0.22	1.00	1,000	C-2R	50	51	
23	12.00	0.20	1.70	250	C-2V	1446		
24	14.00	0.20	2.00	250	C-2V	1449	363	
25	14.40	0.10	0.90	1,000	C-6			19
26	14.40	0.12	1.00	3,000	C-2V		53X (LONG LIFE)	
27	14.40	0.12	0.50	2,500	C-2F		250	
28								
29	14.40	0.12	1.00	1,000	C-2V		53	
30	14.40	0.135	0.70	2,000	C-2V		1445	
31	14.40	0.10	0.75	1,000	C-2V	52		
32	18.00	0.15	1.50	250	C-2V	1447		
33	24.00	0.035	0.23	3,000	C-2F	1448	1450	
34	28.00	0.17	3.50	500	C-2F		356	
35	28.00	0.80	(2.24w)	5,000	C-2F		265	



G-4¹/₂
MINIATURE LAMPS

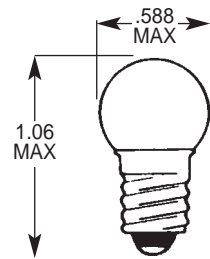


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	MINIATURE SCREW BASE	MINIATURE BAYONET BASE	GLASS 2-PIN BASE
1	1.25	0.60	0.20	75	S-2		423	
2	1.25	0.60	0.20	200	S-2	136		
3	4.90	0.30	1.40	30	C-2R	27		
4	5.00	0.50	2.30	15	C-2R	425		
5	5.00	0.50	2.30	15	C-2R		427	
6	5.10	0.15	0.60	200	C-2R	502	503	
7	6.00	0.04	0.10	500	C-6	1483	1406	
8	6.00	0.50	3.70	3	C-2R		607	
9	6.00	0.45	2.20	100	C-2R	1482		
10								
11	6.15	0.30	2.00	15	C-2R	31		
12	6.15	0.50	3.40	15	C-2R	605		
13								
14	6.50	0.50	1.90	500	C-2R		455	
15	7.00	0.40	2.00	500	C-6			15
16	7.00	0.41	2.00	500	C-2R		55	
17	8.00	0.25	1.60	250	C-2R	426		
18	12.50	0.25	3.5	1,000	C-2V	428 (KRYPTON)		
19	14.00	0.23	2.00	500	C-2R		57	20
20	14.00	0.25	2.70	150	C-2V	430	431	
21	14.00	0.27	2.00	1,500	C-2F		1895	
22	18.00	0.25	3.50	250	C-2V	432	433	
23	28.00	0.17	2.00	5,000	C-2F		456	

G-4¹/₂
FIBER OPTIC LAMPS (KRYPTON)

FOR USE IN FIBER-OPTIC DISPLAY PRODUCTS

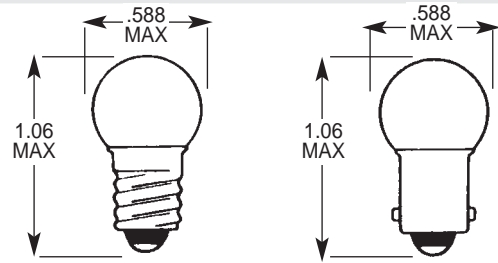
KRYPTON
Gas Filled Lamps



LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	MINIATURE SCREW BASE
24	12.5	.25	8	200	C-2R	N12V8WMS



G-4^{1/2} MINIATURE FLASHER LAMPS

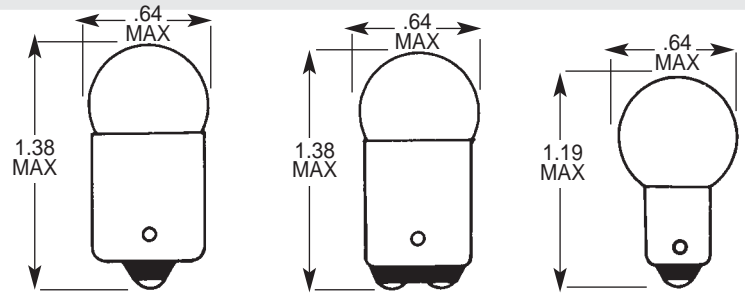


LINE NO.	VOLTS	AMPS	MSCP	LIFE	MINIATURE SCREW BASE	MINIATURE BAYONET BASE
1	1.25	0.25	0.09	15	401-FLASHER	
2	2.60	0.30	0.43	50	406-FLASHER	
3	4.90	0.30	1.20	50	407-FLASHER	408-FLASHER
4	6.50	0.50	1.90	500	405-FLASHER	455-FLASHER
5	14.00	0.27	1.60	500	258-FLASHER	257-FLASHER

Norman Flasher lamps are constructed using a bi-metal strip attached to one of the electrodes, inside the envelope, to provide the flashing. Heat radiated by the filament causes the bi-metal to bend away from the

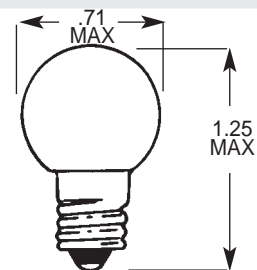
lead wire, breaking the circuit. On cooling, the bi-metal recovers to its original position and makes contact to light the lamp again. Flash rate is approximately 40-160 flashes per minute.

G-5 MINIATURE LAMPS



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	Single Contact Bayonet Base	Double Contact Bayonet Base	Miniature Bayonet Base
6	2.50	1.00	1.75	20	C-6	1315		
7	13.00	0.37	3.00	1,000	C-2V		78	
8	20.00	0.25	4.20	250	C-2V			1458
9	22.00	0.25	3.80	250	C-2F			1464
10	28.00	0.17	3.00	500	C-2F	301	302	

G-5^{1/2} MINIATURE LAMPS



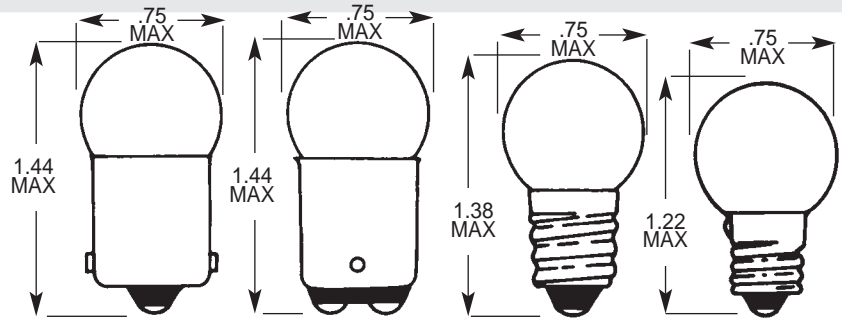
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	MINIATURE SCREW BASE
11	2.50	0.80	1.30	150	C-2R	35
12	2.50	1.00	2.00	75	C-2R	248



G-6

MINIATURE LAMPS

* Specifications for Second Filament

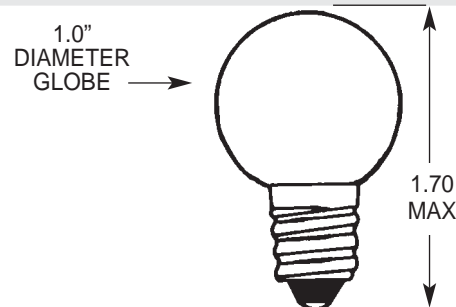


LINE NO.	VOLTS	AMPS	MSCP (W)	LIFE	FILAMENT	Single Contact Bayonet	Double Contact Bayonet	Candelabra Screw	Miniature Screw
1	3.45	0.84	2.0	250	C-2R	61			
2	4.00	1.75	(7.0)	100	C-2R		80 (11-170)		
3	5.80	1.10	8.1	50	C-2R				157
4	5.80	1.10	7.9	50	C-2R				153
5	6.50	1.02	6.0	500	C-2R	81	82	81K	
6	7.00	0.63	3.0	1,000	C-2R	63	64	63K	
7	12.00	0.26	2.3	250	C-2V			1471	
8	13.00	0.53	6.0	750	C-2R			89K	
9	13.00	0.58	6.0	750	C-2R	89	90		
10	13.50	0.59	4.0	5,000	C-2R		68		
11									
12	13.50	0.59	4.0	5,000	C-2R	1155			
	13.50	0.59	4.0	5,000	C-2R	*			
13	13.50	0.41	4.0	1,500	C-2R			67K	
14	13.50	0.59	4.0	5,000	C-2R	67			
15	13.50	0.69	4.0	5,000	C-2V	97	1178 (96)		
16	13.50	0.74	(10)	750	C-2R	R10W			
17	14.00	0.63	6.0	1,000	C-2R	631	632		
	14.00	0.63	6.0	1,000	C-2R	*	*		
18									
19	22.00	0.18	3.0	200	C-2V	71	72	71K	
20	24.00	0.18	2.8	1,000	C-2F	509		509K	
21	28.00	0.23	3.0	2,000	C-2V	1251	1252		
	28.00	0.23	3.0	2,000	C-2V	*	*		
22	28.00	0.30	6.0	500	C-2F	303	304		
23	28.00	0.37	6.0	1,000	C-2V	623	624		
	28.00	0.37	6.0	1,000	C-2V	*	*		
24	32.00	0.16	4.0	200	C-2F			1224K	
25	34.00	0.16	3.8	275	C-2F	1223	1224		
26	45.00	0.20	5.2	1,500	C-2F		536		
27	120.00	0.042	(5.0)	2,500	C-5A			5G6-120V-CS	

G-8

MINIATURE GLOBE LAMPS

*Available in transparent colors:
RED, GREEN, YELLOW, AMBER, BLUE, WHITE, PINK



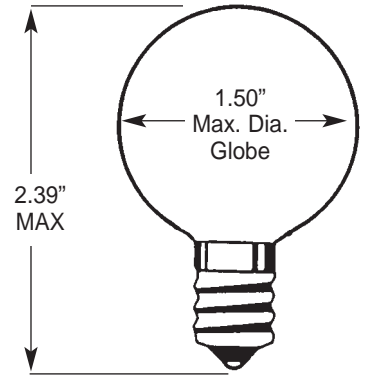
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	*FINISH	CANDELABRA SCREW BASE
28	120.0	0.058	7.0	5,000	C-5A	CLEAR	7G8-120V-CS (CLEAR)



G-12

MINIATURE GLOBE LAMPS

DECORATIVE DISPLAY AND SIGN USE
LONG-LIFE

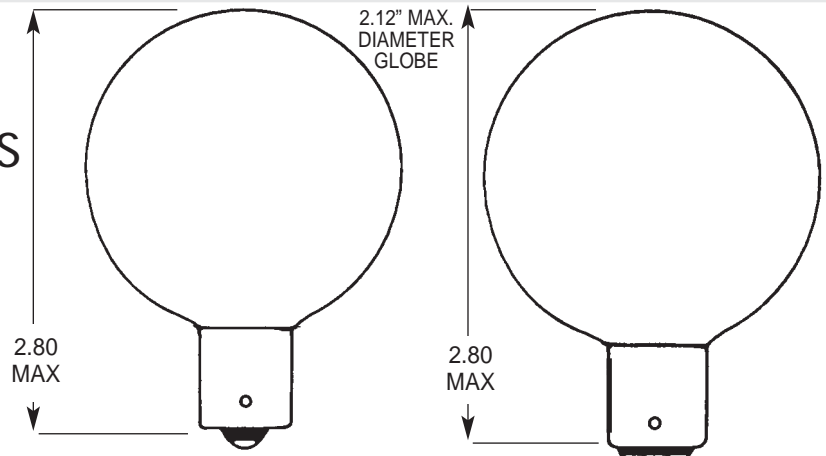


LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	CANDELABRA SCREW BASE
1	24.0	.025	6	(3,500@ 24V)	C-6	CLEAR	6G12-24V-CS
2	24.0	.025	6	(3,500@ 24V)	C-6	TRANSPARENT RED	6G12-24V-R
3	130.0	.076	10	5,000	C-5A	CLEAR	10G12-130V-CS
4	130.0	.076	10	5,000	C-5A	WHITE	10G12-130V-W
5	130.0	.076	10	5,000	C-5A	FROSTED	10G12-130V-FR
6	130.0	.076	10	5,000	C-5A	TRANSPARENT RED	10G12-130V-R
7	130.0	.076	10	5,000	C-5A	TRANSPARENT GREEN	10G12-130V-G
8	130.0	.076	10	5,000	C-5A	TRANSPARENT YELLOW	10G12-130V-Y
9	130.0	.076	10	5,000	C-5A	TRANSPARENT AMBER	10G12-130V-A
10	130.0	.076	10	5,000	C-5A	FROSTED	10G12-130V-F
11	130.0	.076	10	5,000	C-5A	TRANSPARENT BLUE	10G12-130V-B
12	130.0	.076	10	5,000	C-5A	TRANSPARENT PINK	10G12-130V-P
13							
14	130.0	.115	15	3,500	C-5A	CLEAR	15G12-130V-CL
15	130.0	.115	15	3,500	C-5A	WHITE	15G12-130V-W
16							
17	130.0	.192	25	3,500	C-5A	CLEAR	25G12-130V-CL
18	130.0	.192	25	3,500	C-5A	WHITE	25G12-130V-W
19							
20	130.0	.307	40	3,500	C-5A	CLEAR	40G12-130V-CL
21	130.0	.307	40	3,500	C-5A	WHITE	40G12-130V-W

G-16^{1/2}

MINIATURE GLOBE LAMPS

SPECIAL SERVICE



LINE NO.	VOLTS	AMPS	WATTS	FILAMENT	LIFE	S.C. BAYONET BASE	D.C. BAYONET BASE
22	12.8	5.0	64	C-2V	100	1019	1020
23	32.0	3.6	115.2	CC-6	35		1240 (Prefocus Base)



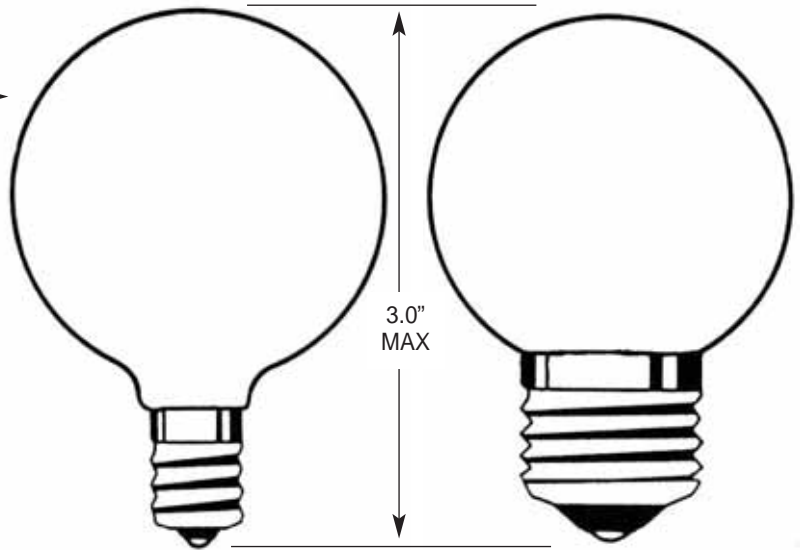
G-16¹/₂
DECORATIVE GLOBE LAMPS

CLEAR, INSIDE FROSTED, INSIDE WHITE

LONG-LIFE

PREMIUM QUALITY

2.0"
DIAMETER
GLOBE →



LINE NO.	VOLTS	AMPS	WATTS	LIFE @120 VOLTS	FINISH	CANDELABRA SCREW BASE	MEDIUM SCREW BASE
1	24.0	.025	6	(3,500 @ 24V)	CLEAR	6G16.5-24V-CS	
2	24.0	.025	6	(3,500 @ 24V)	TSP. RED	6G16.5-24V-CS-R	
3	130.0	.115	15	4,500	CLEAR	15G16.5-130V-CS	15G16.5-130V-MED
4	130.0	.115	15	4,500	FROSTED	15G16.5-130V-CS-F	—
5	130.0	.115	15	4,500	WHITE	15G16.5-130V-CS-W	15G16.5-130V-W
6							
7	130.0	.192	25	3,500	CLEAR	25G16.5-130V-CS	25G16.5-130V-MED
8	130.0	.192	25	3,500	FROSTED	25G16.5-130V-CS-F	—
9	130.0	.192	25	3,500	WHITE	25G16.5-130V-CS-W	25G16.5-130V-W
10							
11	130.0	.307	40	3,500	CLEAR	40G16.5-130V-CS	40G16.5-130V-MED
12	130.0	.307	40	3,500	FROSTED	40G16.5-130V-CS-F	—
13	130.0	.307	40	3,500	WHITE	40G16.5-130V-CS-W	40G16.5-130V-W
14							
15	130.0	.461	60	3,500	CLEAR	60G16.5-130V-CS	60G16.5-130V-MED
16	130.0	.461	60	3,500	FROSTED	60G16.5-130V-CS-F	—
17	130.0	.461	60	3,500	WHITE	60G16.5-130V-CS-W	60G16.5-130V-W

All decorative Globe Lamps are individually boxed in neutral packaging. All are manufactured with high quality, 130 volt filaments which are mounted on heavy duty supports. Bases are made of brass and are corrosion resistant.

NOTE: Lamps listed on this page are available in Long Life, Energy Saving version. (40,000 life hours, 5 watts power consumption.)



G-25

DECORATIVE GLOBE LAMPS

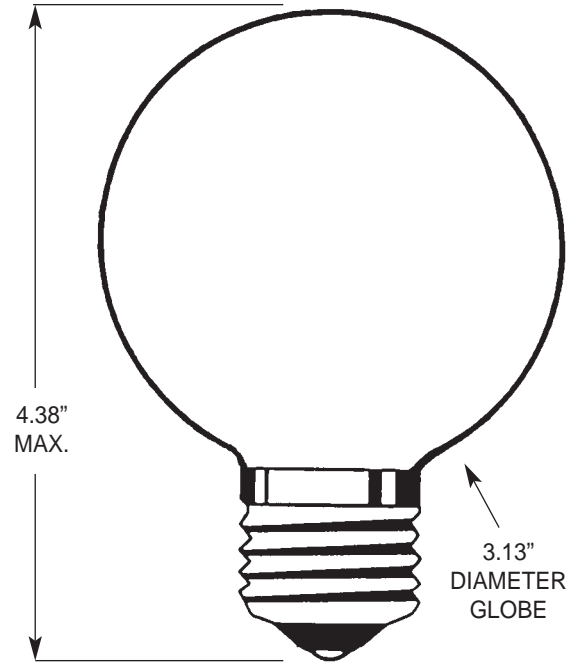
130VOLT / LONG LIFE FILAMENT (C-9A)

CLEAR OR INSIDE WHITE

LONG-LIFE

NOTE: WHITE BULB CAN BE IMPRINTED WITH CUSTOM LOGO. CONTACT SALES REP. FOR DETAILS.

PREMIUM QUALITY



LINE NO.	VOLTS	AMPS	WATTS	LIFE @120 VOLTS	FINISH	MEDIUM SCREW BASE
1	130.0	.192	25	4,500	CLEAR	25G25-130V-MED
2	130.0	.192	25	4,500	WHITE	25G25-130V-W
3						
4	130.0	.307	40	4,500	CLEAR	40G25-130V-MED
5	130.0	.307	40	4,500	WHITE	40G25-130V-W
6						
7	130.0	.461	60	4,500	CLEAR	60G25-130V-MED
8	130.0	.461	60	4,500	WHITE	60G25-130V-W
9						
10	130.0	.769	100	4,000	CLEAR	100G25-130V-MED
11	130.0	.769	100	4,000	WHITE	100G25-130V-W

All decorative Globe Lamps are individually boxed in neutral packaging. All are manufactured with high quality, 130 volt filaments which are mounted on heavy duty supports. Bases are made of brass and are corrosion resistant.



G-40

DECORATIVE GLOBE LAMPS

130VOLT / LONG LIFE FILAMENT (C-9A)

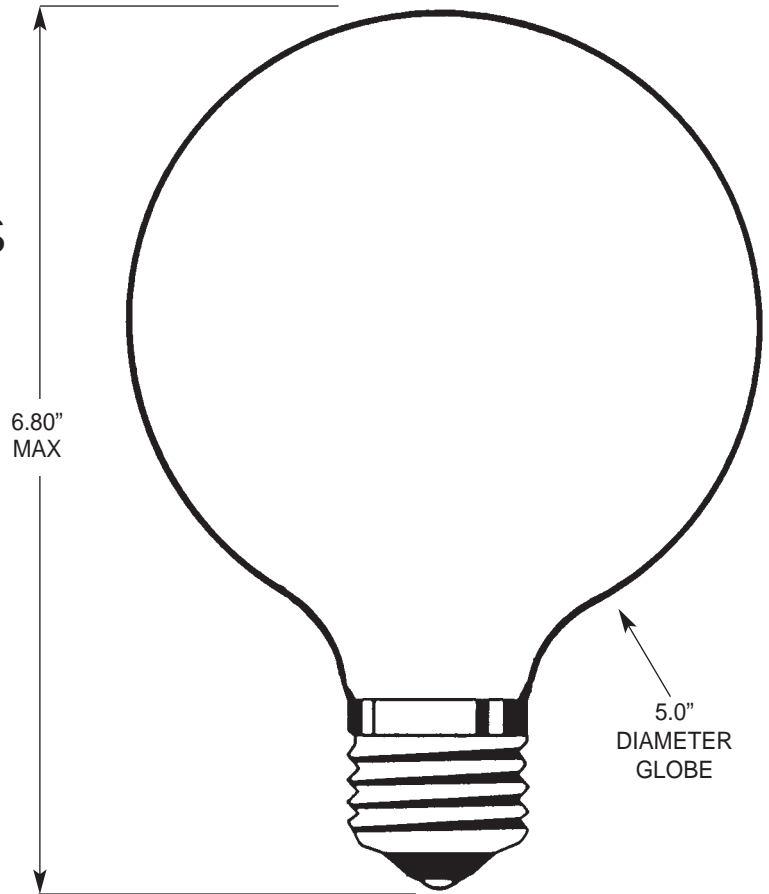
CLEAR OR INSIDE WHITE

ENERGY SAVING

LONG-LIFE

NOTE: WHITE BULB CAN BE IMPRINTED WITH CUSTOM LOGO. CONTACT SALES REP. FOR DETAILS.

PREMIUM QUALITY



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FINISH	MEDIUM SCREW BASE
1	130.0	.192	25	5,000	CLEAR	25G40-130V-MED
2	130.0	.192	25	5,000	WHITE	25G40-130V-W
3						
4	130.0	.307	40	5,000	CLEAR	40G40-130V-MED
5	130.0	.307	40	5,000	WHITE	40G40-130V-W
6						
7	130.0	.461	60	5,000	CLEAR	60G40-130V-MED
8	130.0	.461	60	5,000	WHITE	60G40-130V-W
9						
10	130.0	.576	75	5,000	CLEAR	75G40-130V-MED
11	130.0	.576	75	5,000	WHITE	75G40-130V-W
12						
13	130.0	.769	100	5,000	CLEAR	100G40-130V-MED
14	130.0	.769	100	5,000	WHITE	100G40-130V-W
15						
16	130.0	1.15	150	5,000	CLEAR	150G40-130V-MED
17	130.0	1.15	150	5,000	WHITE	150G40-130V-W

All decorative Globe Lamps are individually boxed in neutral packaging. All are manufactured with high quality, 130 volt filaments which are mounted on heavy duty supports. Bases are made of brass and are corrosion resistant.





Reflector Lamps

Reflector Lamps are designed to project light in a controlled direction. This is accomplished by both the shape and reflective mirror coating of the lamp.

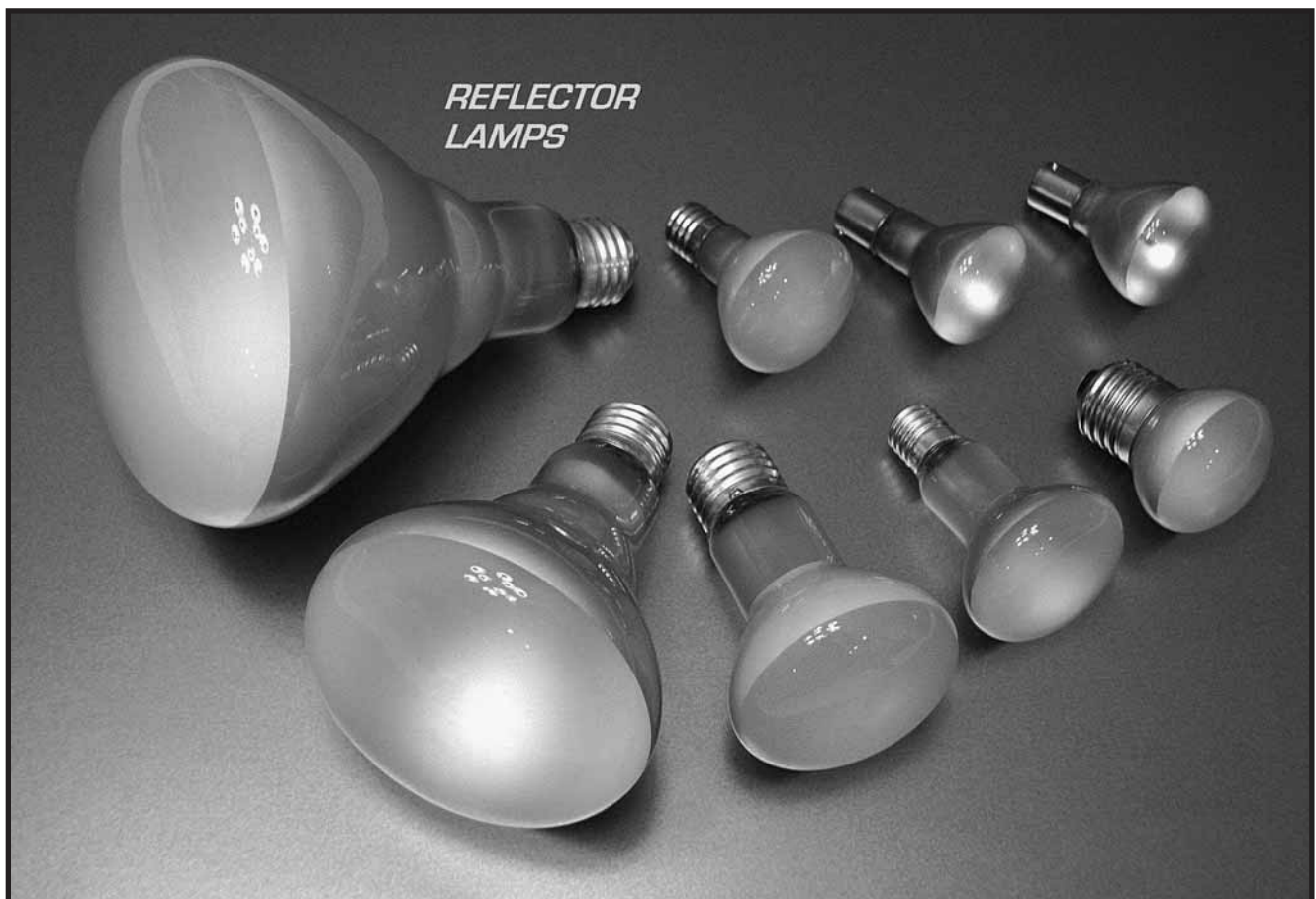
Norman Lamps, Inc. stocks a wide variety of these reflector lamps in a wide variety of sizes and wattages.

Also in stock are color coated lamps for use in holiday and accent lighting displays.

Reflector lamps can be "Tuffcoated" for shatterproof applications. This silicone-rubber coating protects people and surroundings from flying glass fragments in the event of glass breakage.

All Norman Reflector Lamps are premium quality, and incorporate high quality filaments and solid brass bases.

- | | |
|---------|-----------------|
| ■ R-12 | ■ TUFF-COATED |
| ■ R-14 | ■ COLOR COATED |
| ■ R-16 | ■ LONG LIFE |
| ■ R-20 | ■ ENERGY SAVING |
| ■ BR-30 | ■ BRASS BASES |
| ■ BR-38 | ■ FLOOD OR SPOT |
| ■ BR-40 | ■ CUSTOM |
| ■ R-52 | ■ QUALITY |

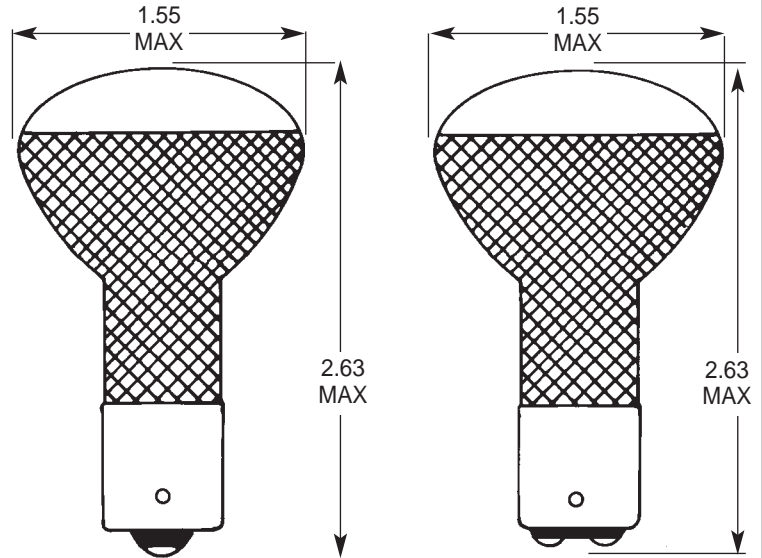




R-12 MINIATURE REFLECTOR LAMPS

* SPECIFICATIONS FOR SECOND FILAMENT

** 1383/TF LAMP IS TUFF-COATED®
FOR SHATTER-PROOF APPLICATIONS.

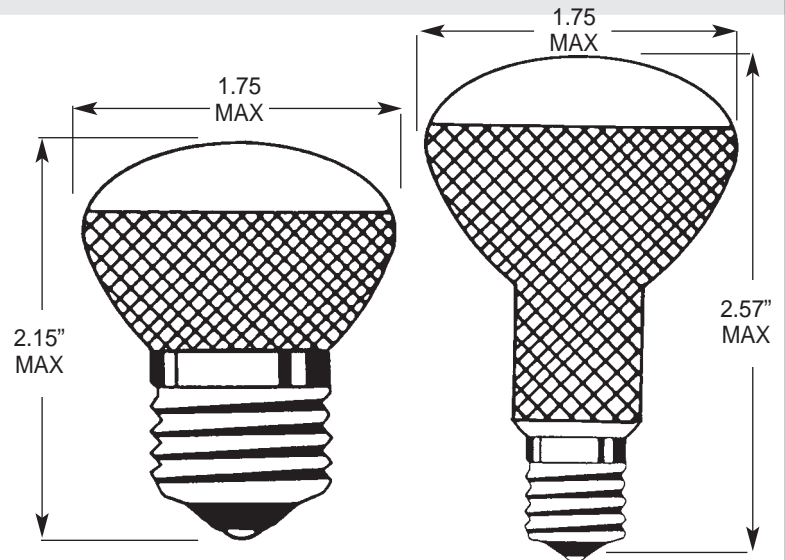


LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE	DOUBLE CONTACT BAYONET BASE
1	6.0	3.33	21.0	300	C-8	1384	
2	13.0	1.54	20.0	300	CC-8	1383	
3	13.0	1.54	20.0	300	CC-8	1383/TF**	
4	24.0	0.83	20.0	500	CC-8		1388
5	28.0	1.35	38.0	100	CC-2V		1380
6	28.0	1.35	38.0	100	CC-2V		*
7	28.0	0.71	20.0	300	CC-8	1385	
8	120.0	0.21	25.0	1,000	CC-2V	25R12-120V-SCB	

R-14 MINIATURE REFLECTOR LAMPS

LONG-LIFE
BRASS BASE

AVAILABLE TUFF-COATED® FOR
SHATTER-PROOF APPLICATIONS



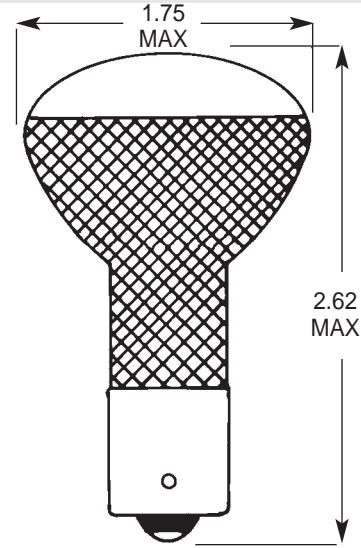
LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	MEDIUM SCREW BASE	INTERMEDIATE SCREW BASE
9	130.0	.198	25	4,000	CC-8	25R14-130V-MED	25R14N-130V-INT
10	130.0	.307	40	4,000	CC-8	40R14-130V-MED	40R14N-130V-INT



R-14 SPECIAL MINIATURE REFLECTOR LAMPS

LONG-LIFE
BRASS BASE

AVAILABLE TUFF-COATED® FOR
SHATTER-PROOF APPLICATIONS



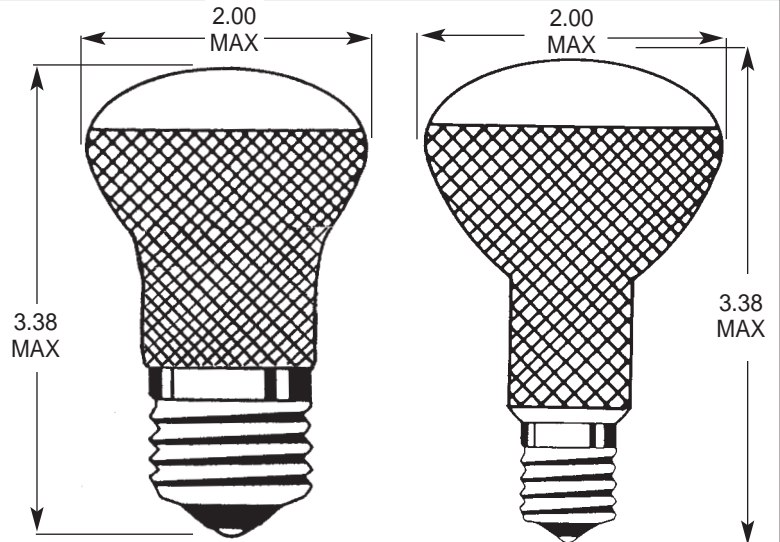
LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	S. C. BAYONET BASE
1	12.0	2.09	25	2,000	CC-6	25R14-12V-SCB

R-16 MINIATURE REFLECTOR LAMPS

LONG-LIFE
BRASS BASE

AVAILABLE TUFF-COATED® FOR
SHATTER-PROOF APPLICATIONS

NOTE: 40R16 ALSO AVAILABLE IN E-14 BASE



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	MEDIUM SCREW BASE	INTERMEDIATE SCREW BASE
2	130.0	.307	40	4,000	CC-2V	40R16-130V-MED	40R16-130V-INT
3	130.0	.461	60	3,000	CC-2V	60R16-130V-MED	60R16-130V-INT



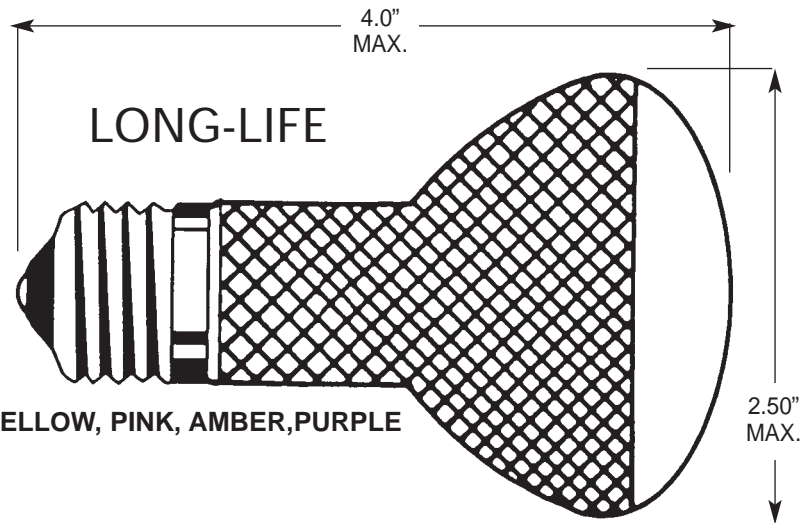
R-20 REFLECTOR LAMPS

130VOLT / LONG LIFE FILAMENT
FLOOD OR SPOT

AVAILABLE IN COLORS: RED, GREEN, BLUE, YELLOW, PINK, AMBER, PURPLE
AVAILABLE IN 12 VOLT

PREMIUM QUALITY • BRASS BASE

AVAILABLE TUFF-COATED® FOR SHATTER-PROOF APPLICATIONS



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	BEAM	FINISH	MEDIUM SCREW BASE
1	130.0	.230	30W	5,000	FLOOD	FROSTED	30R20/FL
2	130.0	.230	30W	5,000	SPOT	FROSTED	30R20/SP
3	130.0	.230	30W	5,000	FLOOD	TUFF-COAT	30BR20/TF
4							
5	130.0	.384	50W	5,000	FLOOD	FROSTED	50R20/FL
6	130.0	.384	50W	5,000	SPOT	FROSTED	50R20/SP
7	130.0	.384	50W	5,000	FLOOD	TUFF-COAT	50R20/TF
8	130.0	.384	50W	5,000	FLOOD	RED	50R20/R
9	130.0	.384	50W	5,000	FLOOD	GREEN	50R20/G
10	130.0	.384	50W	5,000	FLOOD	BLUE	50R20/B
11	130.0	.384	50W	5,000	FLOOD	YELLOW	50R20/Y
12	130.0	.384	50W	5,000	FLOOD	AMBER	50R20/A
13	130.0	.384	50W	5,000	FLOOD	PINK	50R20/P
14	130.0	.384	50W	5,000	FLOOD	PURPLE	50R20/PURP
15							
16	130.0	.576	75W	5,000	FLOOD	FROSTED	75R20/FL
17	130.0	.576	75W	5,000	SPOT	FROSTED	75R20/SP
18	130.0	.576	75W	5,000	FLOOD	TUFF-COAT	75R20/TF
19							
20	130.0	.769	100W	5,000	FLOOD	FROSTED	100R20/FL
21	130.0	.769	100W	5,000	SPOT	FROSTED	100R20/SP
22	130.0	.769	100W	5,000	FLOOD	TUFF-COAT	100R20/TF

ALL REFLECTOR LAMPS ARE INDIVIDUALLY BOXED IN COLORFUL PACKAGING. ALL ARE MANUFACTURED WITH HIGH QUALITY, 130 VOLT FILAMENTS WHICH ARE MOUNTED ON HEAVY DUTY SUPPORTS. BASES ARE MADE OF BRASS AND ARE CORROSION RESISTANT.



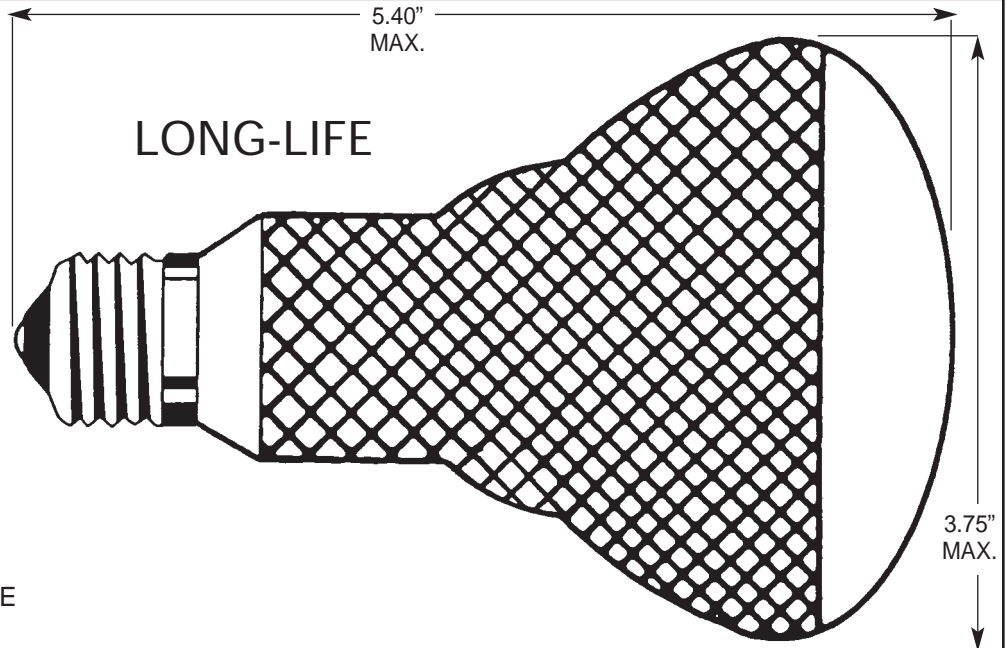
BR-30
REFLECTOR LAMPS

130VOLT / LONG LIFE FILAMENT
FLOOD OR SPOT
AVAILABLE IN COLORS

ENERGY SAVING
CONFORMS TO **EPACT**

PREMIUM QUALITY • BRASS BASE

AVAILABLE TUFF-COATED® FOR SHATTER-PROOF APPLICATIONS



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	BEAM	FINISH	MEDIUM SCREW BASE
1	130.0	.384	50W	5,000	FLOOD	FROSTED	50BR30/FL
2	130.0	.384	50W	5,000	SPOT	FROSTED	50BR30/SP
3	130.0	.384	50W	5,000	FLOOD	TUFF-COAT	50BR30/TF
4	130.0	.500	65W	5,000	FLOOD	FROSTED	65BR30/FL
5	130.0	.500	65W	5,000	SPOT	FROSTED	65BR30/SP
6	130.0	.500	65W	5,000	FLOOD	TUFF-COAT	65BR30/TF
7	130.0	.576	75W	5,000	FLOOD	FROSTED	75BR30/FL
8	130.0	.576	75W	5,000	SPOT	FROSTED	75BR30/SP
9	130.0	.576	75W	5,000	FLOOD	TUFF-COAT	75BR30/TF
10	130.0	.576	75W	5,000	FLOOD	RED	75BR30/R
11	130.0	.576	75W	5,000	FLOOD	GREEN	75BR30/G
12	130.0	.576	75W	5,000	FLOOD	BLUE	75BR30/B
13	130.0	.576	75W	5,000	FLOOD	YELLOW	75BR30/Y
14	130.0	.576	75W	5,000	FLOOD	AMBER	75BR30/A
15	130.0	.576	75W	5,000	FLOOD	PINK	75BR30/P
16	130.0	.653	85W	5,000	FLOOD	FROSTED	85BR30/FL
17	130.0	.653	85W	5,000	SPOT	FROSTED	85BR30/SP
18	130.0	.653	85W	5,000	FLOOD	TUFF-COAT	85BR30/TF
19	130.0	.769	100W	5,000	FLOOD	FROSTED	100BR30/FL
20	130.0	.769	100W	5,000	SPOT	FROSTED	100BR30/SP
21	130.0	.769	100W	5,000	FLOOD	TUFF-COAT	100BR30/TF
22	130.0	.850	110W	5,000	FLOOD	FROSTED	110BR30/FL
23	130.0	.850	110W	5,000	SPOT	FROSTED	110BR30/SP
24	130.0	.850	110W	5,000	FLOOD	TUFF-COAT	110BR30/TF

ALL REFLECTOR LAMPS ARE INDIVIDUALLY BOXED IN NEUTRAL PACKAGING. ALL ARE MANUFACTURED WITH HIGH QUALITY, 130 VOLT FILAMENTS WHICH ARE MOUNTED ON HEAVY DUTY SUPPORTS. BASES ARE MADE OF BRASS AND ARE CORROSION RESISTANT.



BR-38 (Replaces PAR 38)

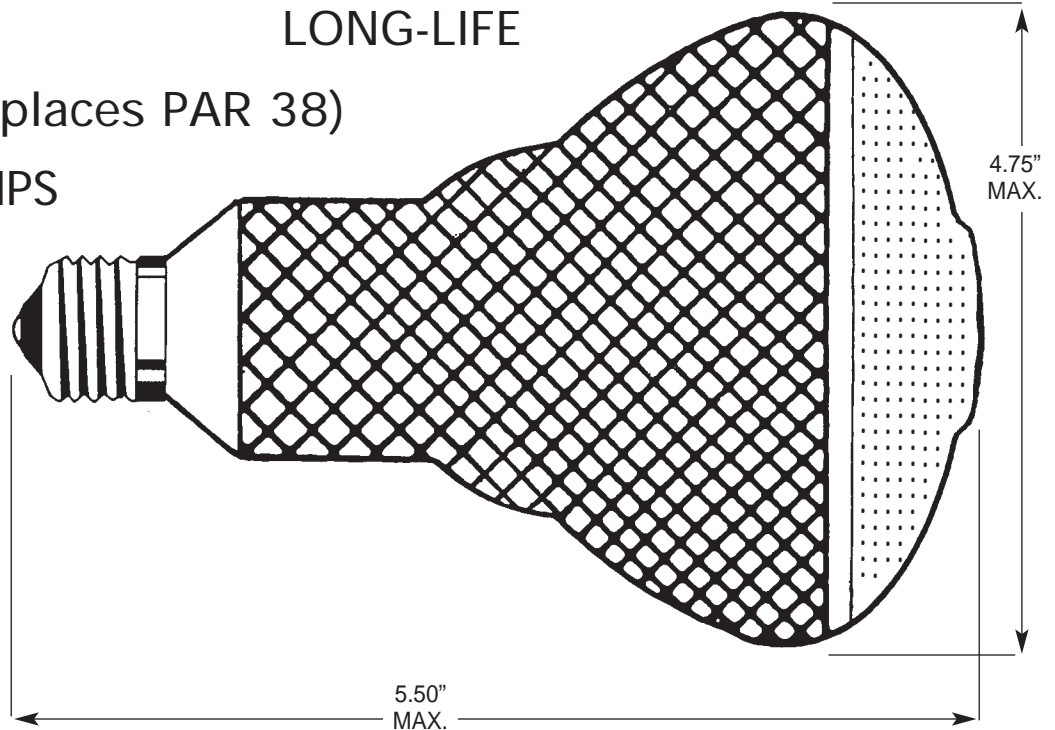
REFLECTOR LAMPS

LONG-LIFE

INDOOR/OUTDOOR USE
PREMIUM QUALITY

ONE PIECE CONSTRUCTION
130 VOLT
LONG LIFE FILAMENT
FLOOD OR SPOT
AVAILABLE IN COLORS

EPACT



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	BEAM	FINISH	MEDIUM SCREW BASE
1	130.0	.576	75	5,600	FLOOD	CLEAR	75BR38/FL
2	130.0	.576	75	5,600	SPOT	CLEAR	75BR38/SP
3	130.0	.576	75	5,600	FLOOD	TUFF-COAT	75BR38/TF
4	130.0	.770	100	5,600	FLOOD	CLEAR	100BR38/FL
5	130.0	.770	100	5,600	SPOT	CLEAR	100BR38/SP
6	130.0	.770	100	5,600	FLOOD	TUFF-COAT	100BR38/TF
7	130.0	.770	100	5,600	FLOOD	RED	100BR38/R
8	130.0	.770	100	5,600	FLOOD	GREEN	100BR38/G
9	130.0	.770	100	5,600	FLOOD	YELLOW	100BR38/Y
10	130.0	.770	100	5,600	FLOOD	BLUE	100BR38/B
11	130.0	.770	100	5,600	FLOOD	AMBER	100BR38/A
12	130.0	.770	100	5,600	FLOOD	PINK	100BR38/P
13							
14	130.0	1.15	150	5,600	FLOOD	CLEAR	150BR38/FL
15	130.0	1.15	150	5,600	SPOT	CLEAR	150BR38/SP
16	130.0	1.15	150	5,600	FLOOD	TUFF-COAT	150BR38/TF

ALL REFLECTOR LAMPS ARE INDIVIDUALLY BOXED IN NEUTRAL PACKAGING. ALL ARE MANUFACTURED WITH HIGH QUALITY, 130 VOLT FILAMENTS WHICH ARE MOUNTED ON HEAVY DUTY SUPPORTS. BASES ARE MADE OF BRASS AND ARE CORROSION RESISTANT.

INCANDESCENT
1



NORMAN LAMPS, INC.
Distributing Light To The World

BR-40 MEDIUM AND MOGUL BASE
REFLECTOR LAMPS

PREMIUM QUALITY

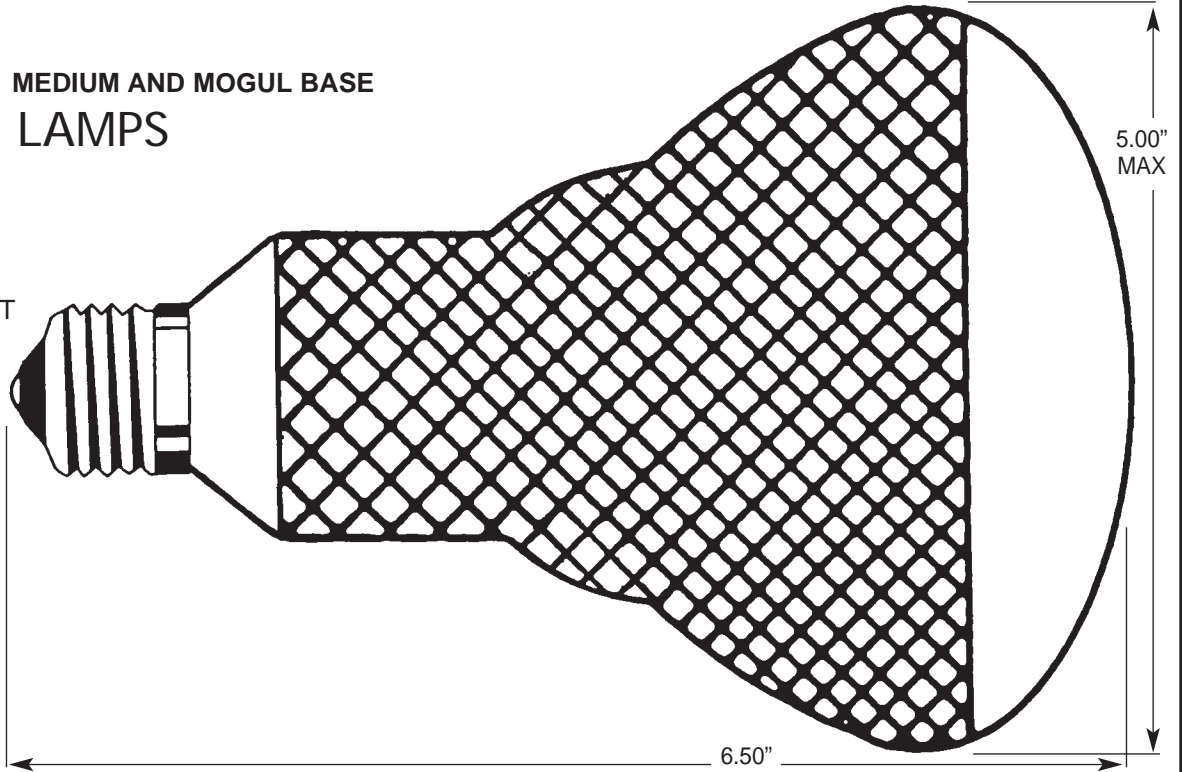
130 VOLT
LONG LIFE FILAMENT

FLOOD OR SPOT

AVAILABLE
IN COLORS

ENERGY-SAVING
BRASS BASE
12V AND 250V
AVAILABLE

EPACT



AVAILABLE WITH MOGUL (E-40) BASE IN 300W AND 500W (120V and 250V)
AVAILABLE TUFF-COATED® FOR SHATTER-PROOF APPLICATIONS (TF)

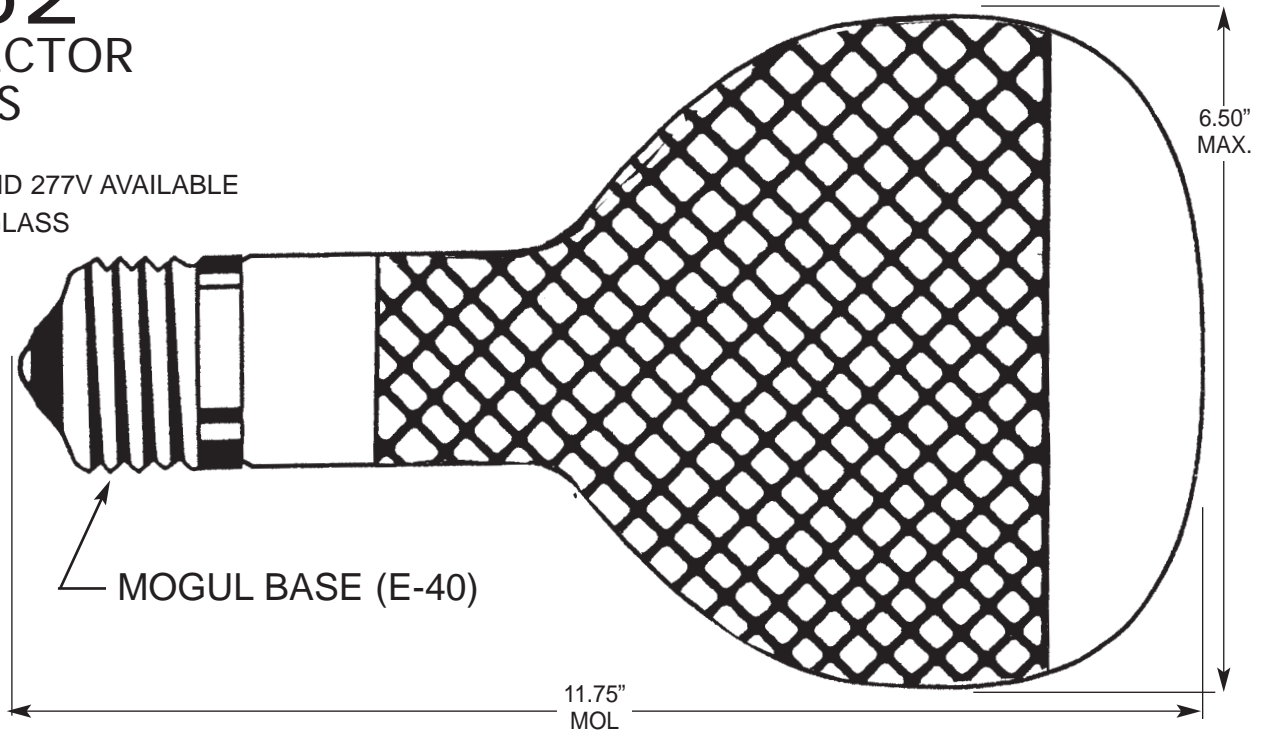
LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	BEAM	FINISH	MEDIUM SCREW BASE
1	130.0	.576	75W	5,000	FLOOD	FROSTED	75BR40/FL
2	130.0	.576	75W	5,000	SPOT	FROSTED	75BR40/SP
3	130.0	.576	75W	5,000	FLOOD	TUFF-COAT	75BR40/TF
4	130.0	.769	100W	5,000	FLOOD	FROSTED	100BR40/FL
5	130.0	.769	100W	5,000	SPOT	FROSTED	100BR40/SP
6	130.0	.769	100W	5,000	FLOOD	TUFF-COAT	100BR40/TF
7	130.0	.930	120W	5,000	FLOOD	FROSTED	120BR40/FL
8	130.0	.930	120W	5,000	SPOT	FROSTED	120BR40/SP
9	130.0	.930	120W	5,000	FLOOD	FROSTED	120BR40/TF
10	130.0	.930	120W	5,000	FLOOD	FROSTED	120BR40/FL
11	130.0	.930	120W	5,000	SPOT	FROSTED	120BR40/SP
12	130.0	.930	120W	5,000	FLOOD	TUFF-COAT	120BR40/TF
13	130.0	.930	120W	5,000	FLOOD	RED	120BR40/R
14	130.0	.930	120W	5,000	FLOOD	GREEN	120BR40/G
15	130.0	.930	120W	5,000	FLOOD	BLUE	120BR40/B
16	130.0	.930	120W	5,000	FLOOD	YELLOW	120BR40/Y
17	130.0	.930	120W	5,000	FLOOD	AMBER	120BR40/A
18	130.0	.930	120W	5,000	FLOOD	PINK	120BR40/P
19							
20	120-130	1.60	200W	2,000	FLOOD	FROSTED	200BR40/FL
21	120-130	2.50	300W	2,000	FLOOD	FROSTED	300BR40/FL
22	12.0	21.00	300W	2,000	FLOOD	FROSTED	300BR40/FL-12V

ALL REFLECTOR LAMPS ARE INDIVIDUALLY BOXED IN NEUTRAL PACKAGING.

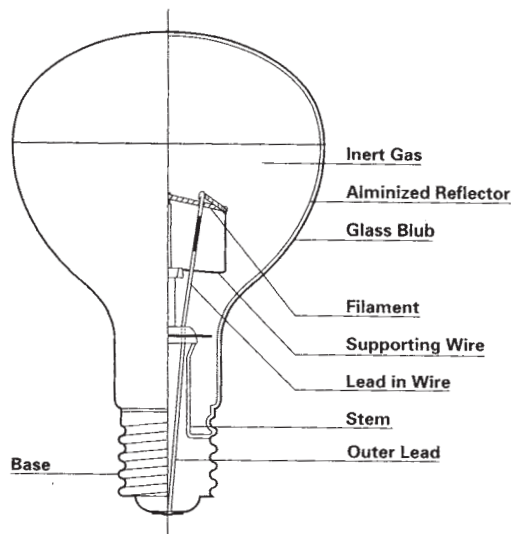


R-52 REFLECTOR LAMPS

- 130V AND 277V AVAILABLE
- HARD GLASS



LINE NO.	VOLTS	WATTS	LIFE HOURS	BEAMSPREAD	PART NUMBER
1	130.0	500	2,000	WIDE FLOOD	500R52/FL-130V
2	130.0	750	2,000	WIDE FLOOD	750R52/FL-130V
3	130.0	1,000	2,000	WIDE FLOOD	1000R52/FL-130V
4	277.0	750	2,000	WIDE FLOOD	750R52/FL-277V

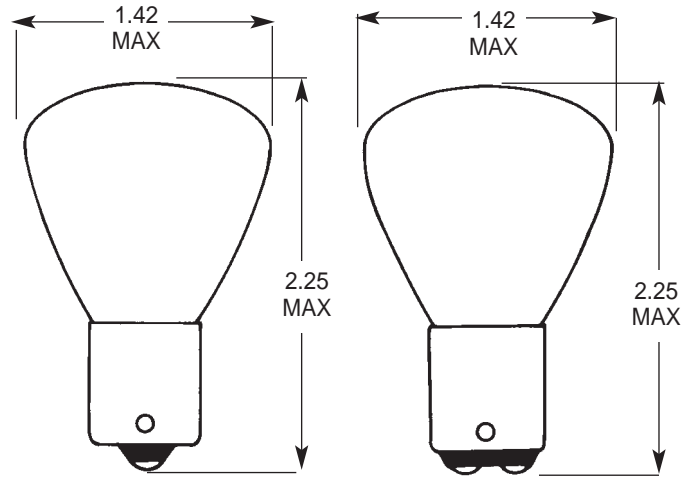




RP-11 MINIATURE LAMPS

HIGH INTENSITY

* Specifications for Second Filament



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE	DOUBLE CONTACT BAYONET BASE
1							
2	5.50	6.25	50	100	C-2V	1183	1184
3	6.20	3.87	32	125	C-2V		1000
4	6.20	3.87	32	125	C-2V		*
5	6.20	3.91	32	200	C-2R	1133	1134
6	6.20	3.91	32	200	C-2V	1621	
7	12.50	1.98	32	400	C-2R	1143	1144
8	12.50	3.00	50	300	C-2V	1195	1196
9	12.50	3.00	50	300	C-2R	1293	
10	32.00	0.74	32	100	C-2V		1054
11	32.00	1.15	50	100	C-5		1056
12	40.00	0.92	50	100	C-5		1062
13	44.00	0.47	21	150	C-13		1150

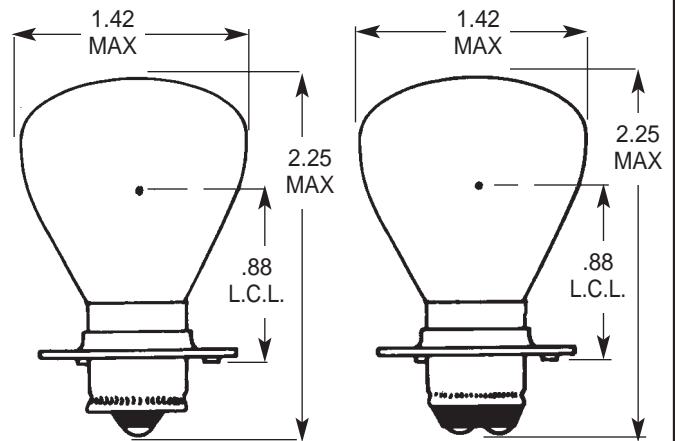


RP-11

MINIATURE PREFOCUS LAMPS

HIGH INTENSITY

* Specifications for Second Filament



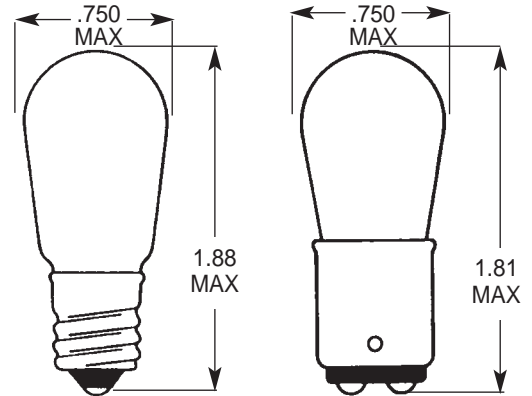
LINE NO.	VOLTS	AMPS	MSCP (WATTS)	LIFE	FILAMENT	SINGLE CONTACT PREFOCUS BASE	DOUBLE CONTACT PREFOCUS BASE
1							
2	4.50	1.25	5.70	75	C-6	1021	
3	5.90	4.66	32.00	400	C-6		2331
4	6.20	4.49	32.00	400	C-6		*
5	5.90	4.66	32.00	400	C-6		2338
6	6.20	4.49	32.00	400	C-6		*
7	5.90	6.53	50.00	200	C-2V		2530
8	6.20	4.23	32.00	200	C-2V		*
9	5.90	6.36	50.00	200	C-6	1501	
10	5.90	6.53	50.00	200	C-2V	1503	
11							
12	6.00	2.35	19.00	75	C-6	1025	
13	6.10	4.10	32.00	125	C-6	1209	
14	6.20	4.23	32.00	200	C-2V		2330
15	6.20	4.23	32.00	200	C-2V		*
16	6.20	4.10	32.00	200	C-6	1321	
17	6.20	4.13	32.00	200	C-2V	1323	
18	6.20	4.13	32.00	200	C-2V	1325	
19	12.50	3.00	50.00	300	C-2V	1507	
20							
21	12.50	2.23	32.00	300	C-2V		2336
22	12.50	2.10	32.00	300	C-2R		*
23	12.80	2.08	32.00	300	C-2V	1327	
24							
25	28.00	1.07	(30WATT)	200	CC-2V	30RP11/SCP	



S-6 MINIATURE LAMPS

HIGH GRADE FILAMENT WIRE

ALL LAMP BASES ARE PLATED BRASS
AND CORROSION RESISTANT



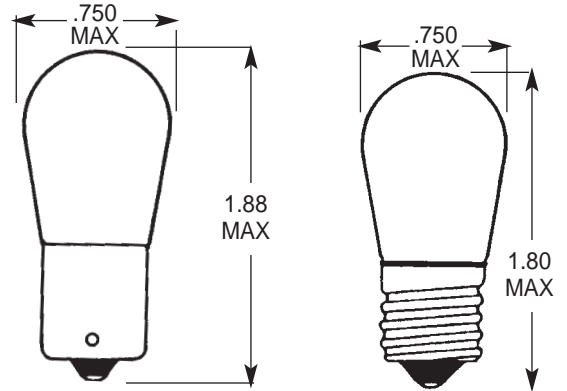
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	FINISH	CANDELABRA SCREW BASE	DOUBLE CONTACT BAYONET BASE
1								
2	6.0	1.000	6	3,500	C-6	CLEAR	6S6-6V-CS	6S6-6V-DC
3	12.0	0.500	6	3,500	C-2V	CLEAR	6S6-12V-CS	6S6-12V-DC
4	18.0	0.330	6	3,500	C-2V	CLEAR	6S6-18V-CS	6S6-18V-DC
5	24.0	0.250	6	3,500	C-2V	CLEAR	6S6-24V-CS	6S6-24V-DC
6	30.0	0.200	6	3,500	C-2V	CLEAR	6S6-30V-CS	6S6-30V-DC
7	32.0	0.190	6	3,500	C-3A	CLEAR	6S6-32V-CS	6S6-32V-DC
8	48.0	0.125	6	3,500	C-3A	CLEAR	6S6-48V-CS	6S6-48V-DC
9	60.0	0.100	6	3,500	C-3A	CLEAR	6S6-60V-CS	6S6-60V-DC
10	75.0	0.080	6	3,500	C-3A	CLEAR	6S6-75V-CS	6S6-75V-DC
11	80.0	0.075	6	3,500	C-3A	CLEAR	6S6-80V-CS	6S6-80V-DC
12								
13	120.0	0.050	3	3,500	C-3A	CLEAR	3S6-120V-CS	3S6-120V-DC
14	120.0	0.030	6	3,500	C-3A	CLEAR	6S6-120V-CS	6S6-120V-DC
15	120.0	0.080	10	3,500	C-3A	CLEAR	10S6-120V-CS	10S6-120V-DC
16								
17	130.0	0.020	3	4,000	C-5A	CLEAR	3S6-130V-CS	3S6-130V-DC
18	130.0	0.050	6	4,000	C-3A	CLEAR	6S6-130V-CS	6S6-130V-DC
19								
20	130.0	0.050	6	4,000	C-3A	WHITE	6S6-130V-CS-W	6S6-130V-DC-W
21	130.0	0.050	6	4,000	C-3A	TRANSPARENT RED	6S6-130V-CS-TR	6S6-130V-DC-TR
22	130.0	0.050	6	4,000	C-3A	CERAMIC RED	6S6-130V-CS-CR	6S6-130V-DC-CR
23	130.0	0.050	6	4,000	C-3A	TRANSPARENT BLUE	6S6-130V-CS-TB	6S6-130V-DC-TB
24	130.0	0.050	6	4,000	C-3A	CERAMIC BLUE	6S6-130V-CS-CB	6S6-130V-DC-CB
25								
26	130.0	0.220	25	3,000	C-5A	CLEAR	25S6-130V-CS	—
27								
28	135.0	0.044	6	4,000	C-5A	CLEAR	6S6-135V-CS	6S6-135V-DC
29	145.0	0.040	6	5,000	C-5A	CLEAR	6S6-145V-CS	6S6-145V-DC
30	155.0	0.040	6	6,000	C-5A	CLEAR	6S6-155V-CS	6S6-155V-DC
31								
32	230.0	0.026	6	3,500	C-7A	CLEAR	6S6-230V-CS	
33								
34	230.0	0.040	10	3,000	C-7A	CLEAR	10S6-230V-CS	10S6-230V-DC
35	250.0	0.040	10	3,000	C-7A	CLEAR	10S6-250V-CS	10S6-250V-DC

S-6 LAMP TYPES LISTED ABOVE ARE USED IN A WIDE VARIETY OF INDUSTRIAL APPLICATIONS. NORMAN MANUFACTURED S-6 LAMPS OFFER THE HIGHEST QUALITY CONSTRUCTION AND DEPENDABILITY OF ANY S-6 ON THE MARKET TODAY.



S-6 MINIATURE LAMPS

LONG-LIFE

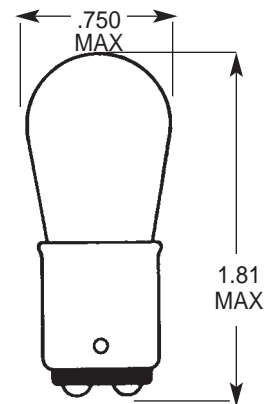


LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE	INTERMEDIATE SCREW BASE
1	120.0	0.025	3	4,000	C-7A	3S6-120V-SCB	
2	120.0	0.050	6	4,000	C-7A	6S6-120V-SCB	6S6-120V-INT
3	120.0	0.083	10	3,500	C-7A	10S6-120V-SCB	10S6-120V-INT
4	145.0	0.050	6	3,500	C-7A	6S6-145V-SCB	6S6-145V-INT
5	155.0	0.038	6	4,000	C-7A	6S6-155V-SCB	—
6	250.0	0.040	10	3,000	C-7A	—	10S6-250V-INT
7	130.0	0.190	25	2,000	C-7A	25S6-130V-SCB	25S6-130V-INT

S-6 MINIATURE LAMPS

SPECIAL AIRCRAFT USE LAMP

* Specifications for Second Filament

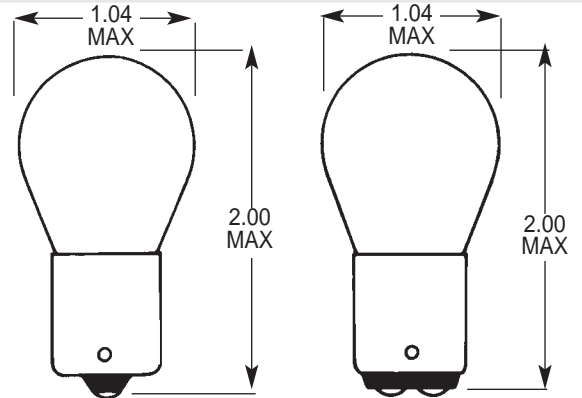


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	DOUBLE CONTACT INDEXING BAYONET BASE
8	5.0	0.55	2.75	1,000	C-6	1534
9	28.0	0.34	9.52	1,000	C-6	*



S-8
MINIATURE LAMPS

*Specifications for second filament



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE	DOUBLE CONTACT BAYONET BASE
1							
2	2.50	1.50	3.20	15	S-2		1492
3	4.00	2.00	8.80	100	C-2R		1584
4	4.00	0.80	2.50	300	C-2R	1459	
5	5.00	0.60	3.00	20	C-2R	1651	
6	5.40	1.90	10.00	1,000	C-6		1612
7	6.00	5.00	36.00	250	C-6		1594
8	6.00	1.50	13.00	50	C-6	1613	
9	6.00	4.10	32.00	400	C-6	1680 X	
10	6.00	4.10	32.00	300	C-6	1680	
11							
12	6.40	2.63	21.00	200	C-6	1129	1130
13	6.40	2.63	21.00	200	C-6	1605	1158
	7.00	0.75	3.00	1,000	C-6		*
14	6.40	2.69	21.00	200	C-2V		1608
15	6.40	2.80	21.00	200	C-2V		1618
16	6.40	3.00	23.00	500	C-2R		6
17	6.50	2.75	23.00	100	C-6		1497
18	6.50	2.75	23.00	200	C-6		1493
19	6.70	1.90	15.00	500	C-6	1619	
20	8.00	2.00	21.00	500	C-6		1648
21	6.80	1.91	15.00	300	C-6	87	88
22	12.50	3.00	50.00	300	C-2R	1295	
23	12.80	1.04	15.00	700	C-6	93	94
24	12.80	1.35	22.00	500	CC-6	1161	
25	12.80	1.44	21.00	1,000	C-6	1141	1142
26	12.80	1.52	26.00	400	C-2R	1777	
27	12.80	1.80	32.00	200	C-6	1073	1076
28	12.80	2.10	32.00	1,200	C-6	1156	
29	12.80	2.25	32.00	1,200	C-6	199	
30							
31	12.80	1.26	21.00	300	C-2R		1005
	12.80	1.26	21.00	300	C-6		*
32	12.80	1.34	21.00	300	C-6		1176
	14.00	0.59	6.00	1,500	C-6		*
33	12.80	1.34	21.00	500	C-2R		1152
34	14.00	0.51	4.00	5,000	C-6	1095	

S-8 CONTINUED ON NEXT PAGE



S-8 continued

28 Volts & Higher

LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE	DOUBLE CONTACT BAYONET BASE
1							
2	28.00	0.42	10.00	500	C-2V		1696
3	28.00	0.51	15.00	300	C-2V	305	306
4	28.00	0.51	15.00	300	C-2V	305-FROSTED	
5	28.00	0.51	15.00	300	C-2V	305-RED	
6	28.00	0.51	15.00	300	C-2V	305-TF	
7							
8	28.00	0.61	15.00	1,000	C-2R	1691	1692
9	28.00	0.61	15.00	1,000	C-2R	*	*
10	28.00	0.61	15.00	1,000	C-2R	1691-FROSTED	1692-FROSTED
11	28.00	0.61	15.00	1,000	C-2R	*	*
12	28.00	0.61	15.00	1,000	C-2R	1591	
13							
14	28.00	0.64	17.00	2,000	CC-8I	2232	
15	28.00	0.64	17.00	2,000	CC-8I	2232-FROSTED	
16	28.00	0.64	17.00	2,000	CC-8I	2232-TF	
17							
18	28.00	0.67	21.00	300	C-2V	307	308
19	28.00	0.67	21.00	300	C-2V	307-FROSTED	308-FROSTED
20	28.00	0.67	21.00	300	C-2V	307-RED	308-RED
21	28.00	0.67	21.00	300	C-2V	307-TF	308-TF
22							
23	28.00	0.71	21.00	400	C-2V	1203	1204
24	28.00	0.76	21.00	1,000	CC-6	1563	
25							
26	28.00	0.77	21.00	2,000	CC-8I	2233	
27	28.00	0.77	21.00	2,000	CC-8I	2233-FROSTED	
28	28.00	0.77	21.00	2,000	CC-8I	2233-TF	
29							
30	28.00	0.80	21.00	1,000	C-2V	1665	
31	28.00	0.80	21.00	1,000	C-2V	1665-FROSTED	
32							
33	28.00	0.90	32.00	300	C-2V	315	
34	28.00	0.90	32.00	300	C-2V	315-FROSTED	
35							
36	28.00	1.02	32.00	500	C-6	1683	1638
37	28.00	1.02	32.00	500	C-6	*	*
38	28.00	0.68	21.00	300	CC-6		1666
39	28.00	0.68	21.00	300	CC-6		*
40	30.00	0.90	19.00	5,000	CC-2V		1080
41	34.00	0.45	15.00	275	CC-2V		1228
42	36.00	0.72	32.00	300	CC-6	SP-7	
43	38.00	0.29	8.00	300	CC-6	SP-14	
44	40.00	0.38	15.00	400	C-2V		1229
45	40.00	0.53	14.00	3,800	CC-2V (SUPPORTED)		895
46	44.00	0.17	6.00	200	C-7A	109	110
47	45.50	0.22	7.60	1,000	CC-2V (SUPPORTED)		1676

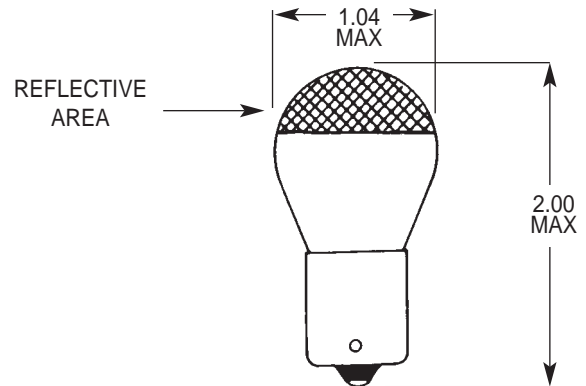
- **FROSTED:** INSIDE FROSTED TO PROVIDE DIFFUSED LIGHT SOURCE.
- **RED:** EXTERNAL RED COLOR COATING MEETING FAA "AVIATION RED" SPECIFICATIONS.
- **TF:** EXTERNAL RUBBERIZED "TUFF-COATING"® FOR SHATTER-PROOF APPLICATIONS.



S-8 "Silver Bowl"

MINIATURE LAMPS

REFLECTIVE TOP MIRROR PLATED
AIRCRAFT USE, FIXTURE LAMP
PLATED BY VACUUM PROCESS



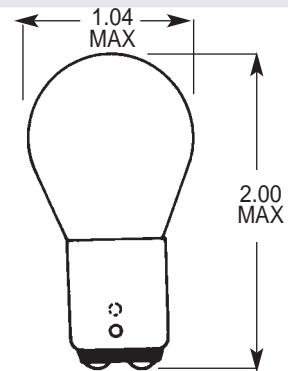
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SINGLE CONTACT BAYONET BASE
1	28.0	0.64	17	2,000	C-8S (SPIRAL)	2232SB
2	28.0	0.77	21	2,000	C-8S (SPIRAL)	2233SB
3	28.0	0.67	21	300	C-2V	307SB
4	28.0	0.90	32	1,500	CC-8I	674SB

S-8

MINIATURE LAMPS (D. C. Indexing Base)

THESE LAMPS ARE AVAILABLE IN NATURAL AMBER "NA".
SPECIFY "NA" AFTER THE LAMP NUMBER WHEN ORDERING.

*Specifications for second filament



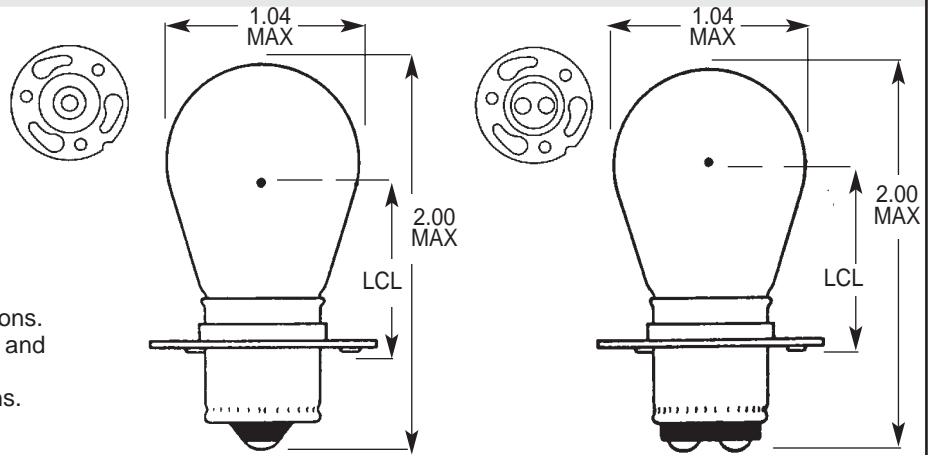
LINE NO.	VOLTS	AMPS	MSCP	LIFE	*FILAMENT	DOUBLE CONTACT INDEX BASE
5						
6	6.4	2.63	21.0	200	C-6	1154
7	7.0	0.75	3.0	1,000	C-6	*
8	12.8	1.34	21.0	300	C-6	1016
9	14.0	0.59	6.0	1,500	C-6	*
10	12.8	1.44	21.0	1,000	C-6	1035
11	14.0	0.59	3.0	5,000	C-6	*
12	12.8	1.80	32.0	200	C-6	1034
13	14.0	0.59	3.0	5,000	C-6	*
14	12.8	2.10	32.0	1,200	C-6	1157
15	14.0	0.59	3.0	5,000	C-6	*
16	12.8	2.25	32.0	1,200	C-6	198
17	14.0	0.59	3.0	5,000	C-6	*
18	12.8	2.10	32.0	1,200	C-6	2057
19	14.0	0.48	2.0	5,000	C-6	*
20	28.0	0.93	32.0	400	CC-6	1662
21	28.0	0.34	6.0	1,000	C-2V (SUPPORTED)	*



S-8 MINIATURE PREFOCUS LAMPS

"X" after part number denotes the following:

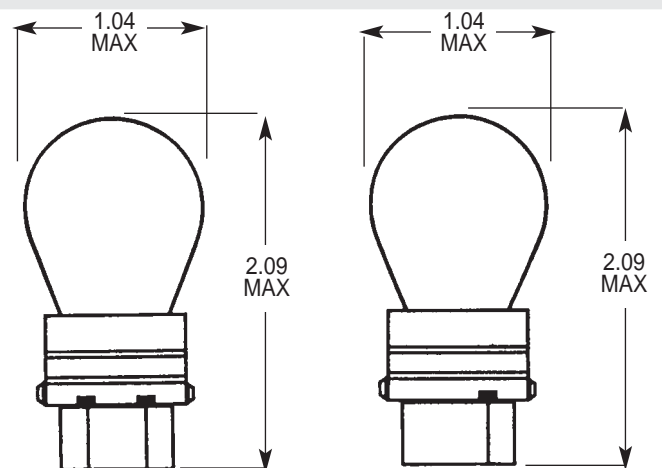
1. Entire lamp selected for minimum imperfections.
2. Lamp selected for exact filament positioning and brightness.
3. Lamp top selected for minimum imperfections.
4. Silver Contacts.



LINE NO.	VOLTS	AMPS	MSCP	LIFE	*FILAMENT	Single Contact Prefocus Base		Double Contact Prefocus Base	
						.88 ← LCL → 1.00	1565	1.00 ← LCL → 1.25	
1	5.1	1.75	4.8	1,000	C-2V		1565		
2	6.0	5.00	36.0	250	C-6	1615			
3	6.0	4.50	30.0	500	C-2R				1468
4	6.0	4.50	30.0	500	C-2R			1096	
5	6.5	2.75	23.0	100	FC-6Z				1649
6	6.5	2.75	23.0	100	C-6			1630	
7	6.5	2.75	23.0	100	C-6				1460X
8	6.5	2.75	23.0	100	C-6				1460
9	6.5	2.75	23.0	100	C-6			1631X	
10	20.0	1.00	24.0	200	CC-6				1634

S-8 SPECIAL AUTOMOTIVE WEDGE LAMPS

NA = NATURAL AMBER COLOR
ALSO AVAILABLE IN RED



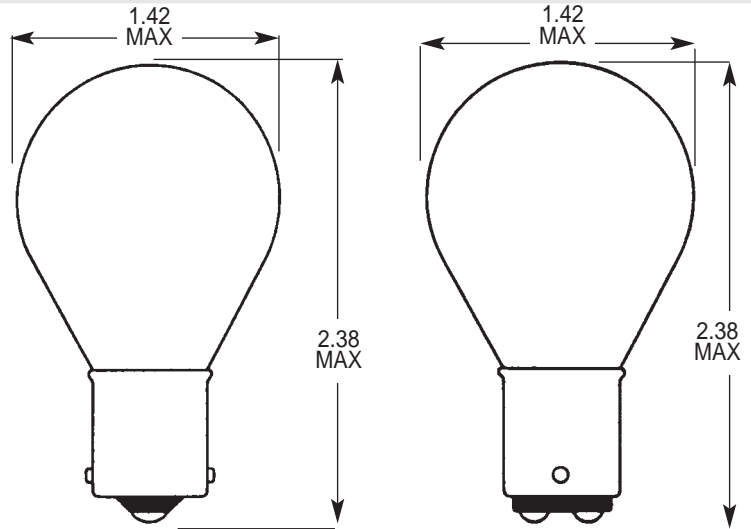
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	D. F. WEDGE	S. F. WEDGE
11	12.0	2.00	21	1,500	C-6		3155
12	12.0	2.10	32	1,500	C-6		3156
13	12.0	2.10	32	1,500	C-6		3156NA
14	12.0	2.10/.48	32/2	1,500	C-6	3057	
15	12.0	2.10/.48	32/2	1,500	C-6	3057NA	
16	12.0	2.10/.48	32/3	1,500	C-6	3157	
17	12.0	2.10/.48	32/3	1,500	C-6	3157NA	



S-11

MINIATURE LAMPS

HIGH INTENSITY, SPECIAL APPLICATIONS

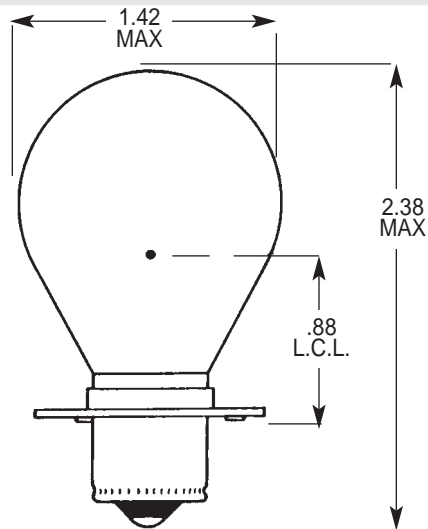


LINE NO.	VOLTS	AMPS	(WATTS) MSCP	LIFE HOURS	FILAMENT	SINGLE CONTACT BAYONET BASE	DOUBLE CONTACT BAYONET BASE
1	6.20	4.50	32.0	400	C-6	1723	1724
2	10.0	1.80	(18W)	1,000	CC-6	18S11-10V-SCB (18S11/1SC)	
3	10.0	2.50	(25W)	1,000	CC-6	25S11-10V-SCB (25S11/4SC)	
4	13.5	1.26	(17W)	1,000	CC-6	17S11-13.5V-SCB (17S11SC)	
5	28.00	0.90	32.0	300	CC-6	309	310
6	28.00	1.29	50.0	300	CC-6	311	312
7	28.00	1.29	50.0	300	CC-6	311-RED	312-RED
8	28.00	1.29	44.0	1,000	CC-6	3011	—
9	32.00	0.98	(30W)	1,000	CC-2V		30S11-32V-DC
10	64.00	0.48	(30W)	1,000	CC-2V		30S11-64V-DC
11	75.00	0.20	(15W)	1,000	CC-2V		15S11-75V-DC
12	75.00	0.40	(30W)	1,000	CC-2V		30S11-75V-DC
13	120.00	0.08	(10W)	2,500	CC-5A	10S11-120V-SCB	

S-11

MINIATURE PREFOCUS LAMPS

HIGH INTENSITY



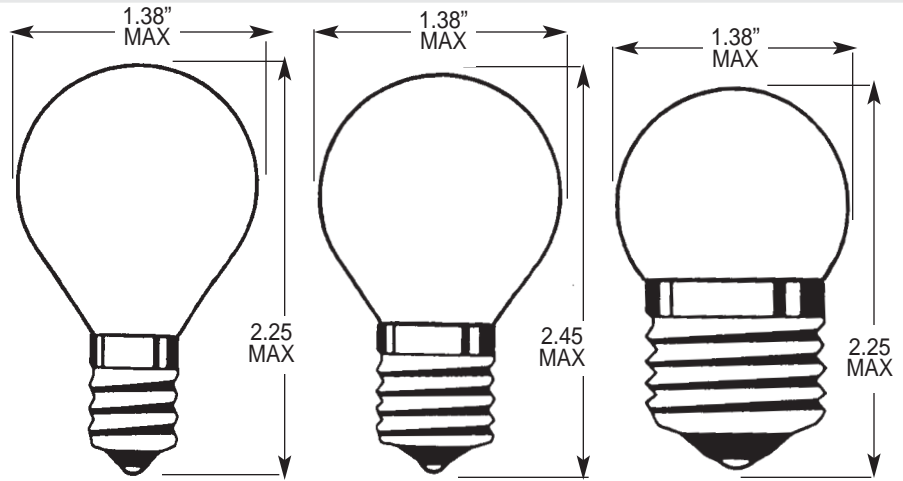
LINE NO.	VOLTS	AMPS	MSCP	LIFE HOURS	FILAMENT	SINGLE CONTACT PREFOCUS BASE
14	6.10	4.10	32.0	100	CC-6	1763
15	6.30	6.60	47.0	60	CC-6	1731



S-11 MINIATURE LAMPS

IF= Inside Frosted

CR = Ceramic Red TR = Transparent Red
 CG = Ceramic Green TG = Transparent Green
 CY = Ceramic Yellow TY = Transparent Yellow
 CB = Ceramic Blue TB = Transparent Blue
 CO = Ceramic Orange TA = Transparent Amber
 CW = Ceramic White



LINE NO.	VOLTS	WATTS	LIFE @ 120 VOLTS	FILAMENT	CANDELABRA E-12 SCREW BASE	INTERMEDIATE E-17 SCREW BASE	MEDIUM E-27 SCREW BASE
1	28.0	25	3,500	CC-6	25S11-28V-CS		
2	130.0	10	4,500	C-5A	10S11-130V-CS	10S11N-130V-INT	
3	130.0	10	4,500	C-5A	10S11-130V-CS-IF	10S11N-130V-INT-IF	
4							
5	130.0	10	4,500	C-5A	10S11-130V-CR	10S11N-130V-INT-CR	
6	130.0	10	4,500	C-5A	10S11-130V-CG	10S11N-130V-INT-CG	
7	130.0	10	4,500	C-5A	10S11-130V-CY	10S11N-130V-INT-CY	
8	130.0	10	4,500	C-5A	10S11-130V-CB	10S11N-130V-INT-CB	
9	130.0	10	4,500	C-5A	10S11-130V-CO	10S11N-130V-INT-CO	
10	130.0	10	4,500	C-5A	10S11-130V-CW	10S11N-130V-INT-CW	
11							
12	130.0	10	4,500	C-5A	10S11-130V-TR	10S11N-130V-INT-TR	
13	130.0	10	4,500	C-5A	10S11-130V-TG	10S11N-130V-INT-TG	
14	130.0	10	4,500	C-5A	10S11-130V-TY	10S11N-130V-INT-TY	
15	130.0	10	4,500	C-5A	10S11-130V-TB	10S11N-130V-INT-TB	
16	130.0	10	4,500	C-5A	10S11-130V-TA	10S11N-130V-INT-TA	
17							
18	130.0	15	4,500	C-5A	15S11-130V-CS	15S11N-130V-INT	15S11-130V-MED
19	130.0	20	3,500	C-5A	15S11-130V-CS-IF	15S11N-130V-INT	20S11-130V-MED
20	130.0	25	3,500	C-5A		25S11N-130V-INT	25S11-130V-MED
21	130.0	25	3,500	C-5A		25S11N-130V-INT-IF	
22	120.0	25	3,500	C-5A	25S11-120V-CS		
23	120.0	25	3,500	C-5A	25S11-120V-CS-IF		
24	120.0	30	3,500	C-5A	30S11-130V-CS	30S11N-130V-INT	30S11-130V-MED
25	130.0	40	3,500	C-2F	40S11-130V-CS	40S11N-130V-INT	40S11-130V-MED
26	130.0	40	3,500	C-2F	40S11-135V-CS	40S11N-130V-INT-IF	
27	130.0	60	2,500	C-2F	60S11-130V-CS	60S11N-130V-INT	60S11-130V-MED
28	130.0	7.5	4,500	C-3A	7.5S11-130V-CS		7.5S11-130V-MED
29	130.0	7.5	4,500	C-3A			7.5S11-130V-CR
30	130.0	7.5	4,500	C-3A			7.5S11-130V-CG
31	130.0	7.5	4,500	C-3A			7.5S11-130V-CY
32	130.0	7.5	4,500	C-3A			7.5S11-130V-CB
33	130.0	7.5	4,500	C-3A			7.5S11-130V-CO
34	130.0	7.5	4,500	C-3A			7.5S11-130V-CW
35							
36	130.0	7.5	4,500	C-3A			7.5S11-130V-TR
37	130.0	7.5	4,500	C-3A			7.5S11-130V-TG
38	130.0	7.5	4,500	C-3A			7.5S11-130V-TY
39	130.0	7.5	4,500	C-3A			7.5S11-130V-TB
40	130.0	7.5	4,500	C-3A			7.5S11-130V-TA



S-14

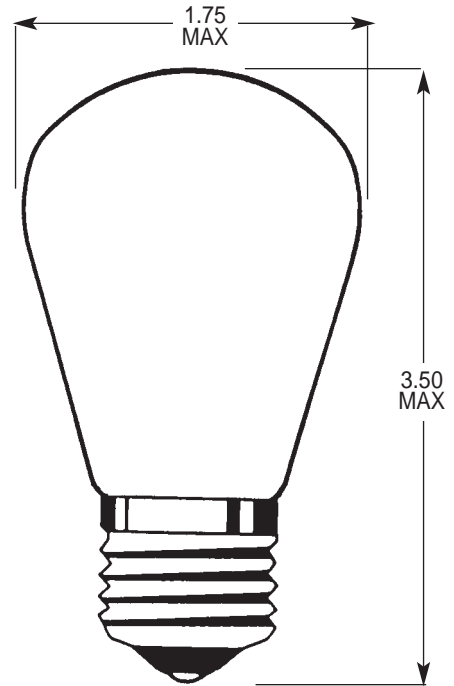
SIGN AND MARQUEE LAMPS

11 WATTS
130 VOLT – LONG LIFE FILAMENTS
5 FILAMENT SUPPORTS / ROUGH SERVICE DESIGN
BRASS BASES, CORROSION RESISTANT
NON-CRACKING / NON-FADING COLORS

TRUE S-14 SIZE & SHAPE LAMP

CUSTOM VOLTAGES AVAILABLE: 34V AND 230V

LONG LIFE: 8,000 ~ 10,000 HOURS



LINE NO.	VOLTS	WATTS	LIFE HOURS @ 120 VOLTS	FILAMENT	FINISH	MEDIUM E-27 SCREW BASE
1	130.0	11	8,000-10,000	C-9/RS	CLEAR	11S14-130V-MED
2	130.0	11	8,000-10,000	C-9/RS	FROSTED	11S14-130V-IF
3	130.0	11	8,000-10,000	C-9/RS	WHITE	11S14-130V-WHT
4						
5	130.0	11	8,000-10,000	C-9/RS	CERAMIC-RED	11S14-130V-CR
6	130.0	11	8,000-10,000	C-9/RS	CERAMIC-GREEN	11S14-130V-CG
7	130.0	11	8,000-10,000	C-9/RS	CERAMIC-YELLOW	11S14-130V-CY
8	130.0	11	8,000-10,000	C-9/RS	CERAMIC-BLUE	11S14-130V-CB
9	130.0	11	8,000-10,000	C-9/RS	CERAMIC-PINK	11S14-130V-CP
10	130.0	11	8,000-10,000	C-9/RS	CERAMIC-ORANGE	11S14-130V-CO
11						
12	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-RED	11S14-130V-TR
13	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-GREEN	11S14-130V-TG
14	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-YELLOW	11S14-130V-TY
15	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-BLUE	11S14-130V-TB
16	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-PINK	11S14-130V-TP
17	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-AMBER	11S14-130V-TA
18	130.0	11	8,000-10,000	C-9/RS	TRANSPARENT-PURPLE	11S14-130V-PURP
19						
20	230.0	11	3,500	CC-9	CLEAR	11S14-230V-MED
21	34.0	11	3,500	C-9	CLEAR	11S14-34V-MED

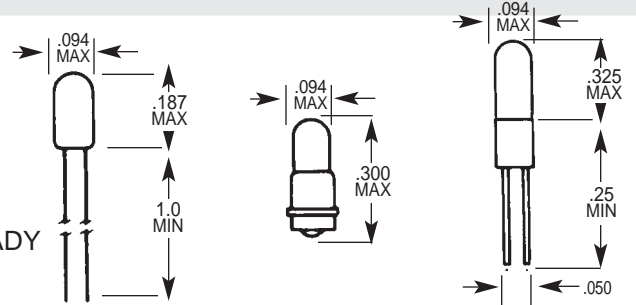
S-14 LAMPS LISTED ABOVE ARE MANUFACTURED TO EXACTING A.N.S.I. SPECIFICATIONS AS CALLED OUT FOR SIZE, SHAPE, COLOR, FILAMENT AND LIFE HOURS. NORMAN MANUFACTURES THE S-14 SERIES TO PROVIDE QUALITY AND DURABILITY WHICH FAR EXCEEDS THAT OF BRANDS PRODUCED IN CHINA AND SOUTH AMERICA. SAMPLES AVAILABLE ON REQUEST.

NOTE: S-14 LAMP LISTED ABOVE IS AVAILABLE IN A LONG LIFE, ENERGY SAVING VERSION.
(40,000 LIFE HOURS, 5 WATTS POWER CONSUMPTION.)



T-3/4 MICRO-MINIATURE LAMPS

ALL WIRE TERMINAL LAMPS ARE TINNED AND SOLDER READY

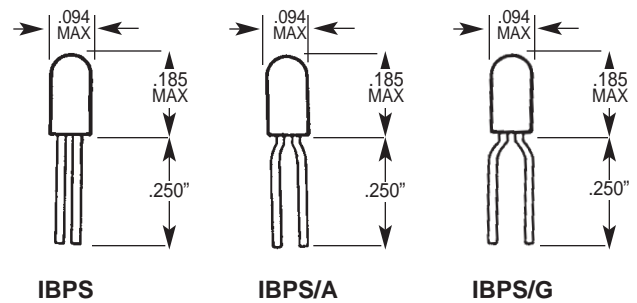


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	WIRE TERMINAL	MICRO-MIDGET FLANGED BASE	BI-PIN BASE
1								
2	1.15	.090	.003	5,000	C-2R	8712	7120	7110
3	1.5	.015	.002	10,000	C-2R	7100	3810	7810
4	1.5	.015	.010	5,000	C-2R	7101	3811	7811
5	2.5	.110	.001	10,000	C-2R	8534	7121	7111
6	4.5	.022	.018	5,000	C-2R	3102		
7	4.5	.021	.017	5,000	C-2R	30		
8	5.0	.020	.020	10,000	C-2R	3411	3412	3413
9	5.0	.015	.020	1,000	C-2R	8537	8538	7538
10	5.0	.021	.034	10,000	C-2R	2	7122	7112
11								
12	5.0	.060	.030	100,000	C-2R	6803	8587	7113
13	5.0	.060	.050	100,000	C-2R	6833	8913	7114
14	5.0	.060	.150	3,000	C-2R	6153	6183	7115
15	5.0	.075	.090	25,000	C-2R	7133	8828	7116
16	5.0	.080	.150	15,000	C-2R	8666	8383	7117
17	5.0	.115	.150	40,000	C-2R	7153	8270	7118
18	5.0	.115	.200	5,000	C-2R	7102	7123	7119

T-3/4 MICRO-MINIATURE LAMPS RIGID BI-PIN TYPES

(.018" PIN DIAMETER)

GLASS M.O.L., 4.70MM (.185")



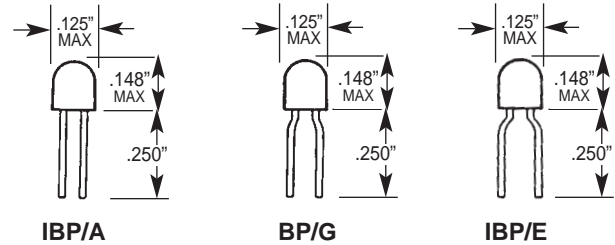
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	0.8MM (.03") PIN SPACING	1.27MM (.05") PIN SPACING	2MM (.08") PIN SPACING
19	5.0	.02	.02	20,000	CC-6	2404IBPS	2404IBPS/A	2404IBPS/G
20	5.0	.021	.034	10,000	CC-6	2400IBPS	2400IBPS/A	2400IBPS/G
21	5.0	.06	.05	100,000	C-2R	6833IBPS	6833IBPS/A	6833IBPS/G
22	5.0	.075	.09	40,000	C-2R	7133IBPS	7133IBPS/A	7133IBPS/G
23	5.0	.115	.15	40,000	C-2R	7153IBPS	7153IBPS/A	7153IBPS/G



**T-1 (SHORT) ALL GLASS
MICRO-MINIATURE LAMPS
RIGID BI-PIN TYPES**

(.018" PIN DIAMETER)

GLASS M.O.L., 3.76MM (.148")

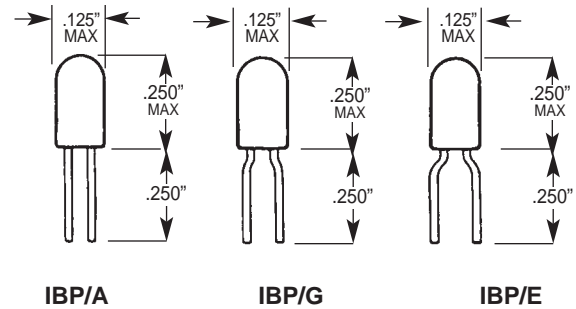


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	1.27MM (.05") PIN SPACING	2.0MM (.08") PIN SPACING	2.54MM (.10") PIN SPACING
1	5.0	.02	.02	20,000	CC-6	30432IBP/A	30432IBP/G	30432IBP/E
2	5.0	.021	.034	10,000	CC-6	30192IBP/A	30192IBP/G	30192IBP/E
3	5.0	.06	.15	5,000	C-2R	30702IBP/A	30702IBP/G	30702IBP/E
4	5.0	.06	.05	100,000	C-2R	6832IBP/A	6832IBP/G	6832IBP/E
5	5.0	.075	.09	40,000	C-2R	7132IBP/A	7132IBP/G	7132IBP/E
6	5.0	.115	.15	40,000	C-2R	7152IBP/A	7152IBP/G	7152IBP/E
7	28.0	.02	.09	1,500	CC-2F	8552IBP/A	8552IBP/G	8552IBP/E

**T-1 (STANDARD) ALL GLASS
MICRO-MINIATURE LAMPS
RIGID BI-PIN TYPES**

(.018" PIN DIAMETER)

GLASS M.O.L., 6.35MM (.25")



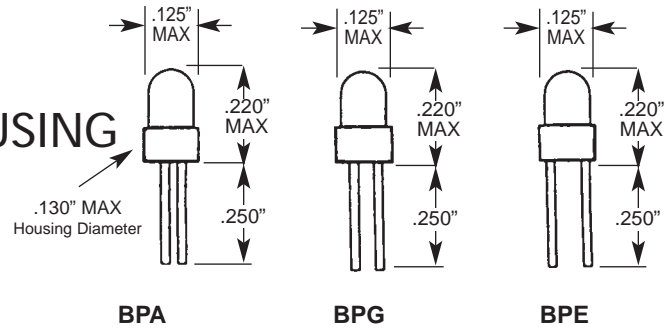
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	1.27MM (.05") PIN SPACING	2.0MM (.08") PIN SPACING	2.54MM (.10") PIN SPACING
8	5.0	.02	.02	20,000	C-2R	3043IBP/A	3043IBP/G	3043IBP/E
9	5.0	.021	.034	10,000	C-2R	3019IBP/A	3019IBP/G	3019IBP/E
10	5.0	.06	.15	5,000	C-2R	3070IBP/A	3070IBP/G	3070IBP/E
11	5.0	.06	.05	100,000	C-2R	683IBP/A	683IBP/G	683IBP/E
12	5.0	.075	.09	40,000	C-2R	713IBP/A	713IBP/G	713IBP/E
13	5.0	.115	.15	40,000	C-2R	715IBP/A	715IBP/G	715IBP/E
14	28.0	.024	.09	5,000	CC-2F	6838IBP/A	6838IBP/G	6838IBP/E



T-1 (SHORT) ALL GLASS MICRO-MINIATURE LAMPS RIGID BI-PIN WITH PLASTIC HOUSING

(.018" PIN DIAMETER)

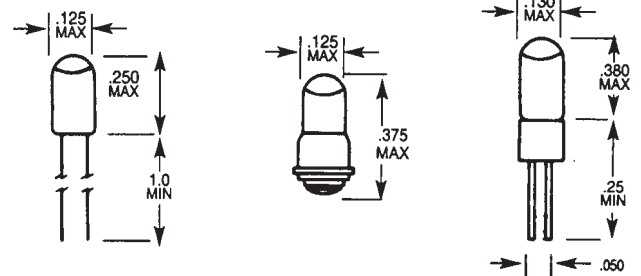
GLASS AND HOUSING M.O.L. 5.6MM (.220")



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	1.27MM (.05") PIN SPACING	2.0MM (.08") PIN SPACING	2.54MM (.10") PIN SPACING
1	5.0	.02	.02	20,000	CC-6	30442BPA	30442BPG	30442BPE
2	5.0	.021	.034	10,000	CC-6	30202BPA	30202BPG	30202BPE
3	5.0	.06	.15	5,000	C-2R	30712BPA	30712BPG	30712BPE
4	5.0	.06	.05	100,000	C-2R	6852BPA	6852BPG	6852BPE
5	5.0	.075	.09	40,000	C-2R	7142BPA	7142BPG	7142BPE
6	5.0	.115	.15	40,000	C-2R	7182BPA	7182BPG	7182BPE
7	28.0	.02	.15	1,500	CC-2F	8562BPA	8562BPG	8562BPE

T-1* (LENS END) MICRO-MINIATURE LAMPS

*LIMITED AVAILABILITY



LINE NO.	VOLTS	AMPS	LIFE	FILAMENT	WIRE TERMINAL	SUB-MIDGET FLANGED BASE	BI-PIN BASE
8	1.5	.08	16,000	C-2R	1284	1285	7908
9	5.0	.12	40,000	C-2R	1415	1418	7907
10	5.0	.06	25,000	C-2R	1283	3905	7905
11	5.0	.08	25,000	C-2R	1413	3906	7906
12	14.0	.06	20,000	C-2F	1299	3599	7599
13	28.0	.03	25,000	C-2F	1499	3999	7999

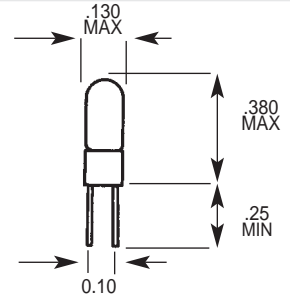


T-1

SUB-MINIATURE LAMPS

SPECIAL BI-PIN BASE

* Pin Spacing: (.10") 2.54mm



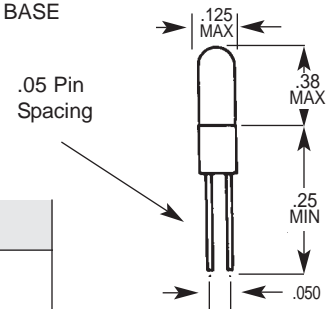
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SPECIAL* BI-PIN BASE
1	5.0	.060	.050	100,000	C-2R	7683-100
2	5.0	.060	.150	5,000	C-2R	7265-100
3	5.0	.075	.090	25,000	C-2R	7714-100
4	5.0	.115	.150	40,000	C-2R	7715-100
5	12.0	.060	.150	16,000	C-2F	8097-100
6	18.0	.026	.150	16,000	C-2F	8099-100
7	28.00	.024	.150	16,000	CC-2F	7839-100

T-1

MINI-MAGLITE® BRAND, FLASHLIGHT LAMPS

REPLACEMENT LAMP FOR 1 "AAA" CELL FLASHLIGHTS
REPLACEMENT LAMP FOR 2 "AA" CELL FLASHLIGHTS

Bi-PIN BASE

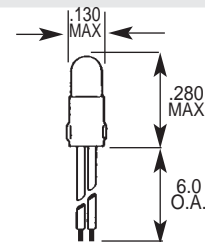


LINE NO.	VOLTS	AMPS	WATTS	LIFE	CELL	BI-PIN BASE
8	1.5	.240	.36	25	1 "AAA"	S-LM3A001
9	3.0	.340	1.02	25	2 "AA"	S-LM2A001

T-1

"FLYING LEAD" WIRE LAMPS

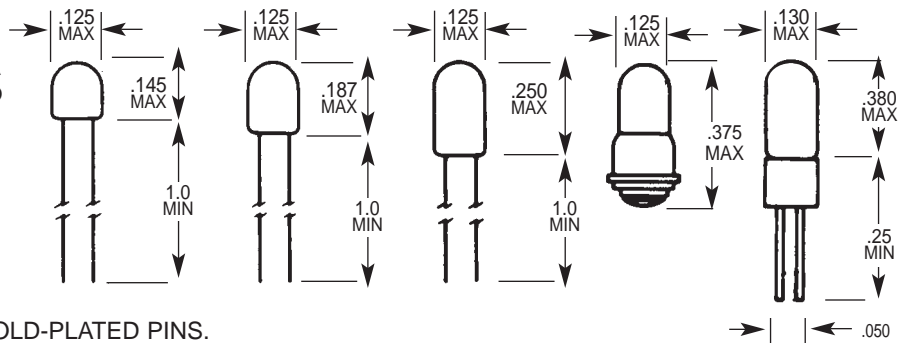
6" INSULATED WIRE LEADS, STRIPPED AND TINNED.



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	WIRE TERMINAL
10	6.0	.080	.160	25,000	C-2R	7211-6
11	12.0	.060	.150	25,000	C-2R	7219-6
12	28.0	.024	.150	25,000	C-2F	6838-6



T-1 SUB-MINIATURE LAMPS



*BI-PIN LAMPS ARE MANUFACTURED WITH GOLD-PLATED PINS.

LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	Wire Terminal			Sub-Midget Flanged Base	Bi-Pin* Base
						Short .145	Intermediate .187	Standard .250		
1	1.25	.012	.004	1,000	C-6			8798	7244	7252
2	1.35	.220	.020	25,000	C-2R			8910	7245	7253
3	1.50	.010	.002	10,000	C-6			7200	7225	3225
4	1.50	.015	.010	5,000	C-2R			7201	7226	7254
5	1.50	.075	.030	16,000	C-2R			7203	8102	7255
6	2.50	.015	.001	10,000	C-2R			8601	7246	7256
7	2.50	.100	.100	10,000	C-2R			8732	7247	7732
8	2.50	.320	.210	5,000	C-2R			8711	7248	7257
9	3.00	.008	.001	16,000	C-2R			8846	7249	7258
10	3.00	.008	.010	16,000	C-2R			7204	7228	7204P
11	3.00	.0125	.001	16,000	C-2R			2128	679	7259
12	3.00	.015	.020	5,000	C-2R			7205	7229	3229
13	3.00	.060	.030	100,000	C-2R			7207	7231	7260
14	3.00	.120	.150	16,000	C-2R			7208	7232	7261
15	5.00	.015	.020	10,000	C-2V			7209	7233	7209P
16	5.00	.017	.005	10,000	C-2R			8602	8605	7262
17	5.00	.021	.034	10,000	C-2R	2022	3022	6022	8022	7022
18	5.00	.030	.030	75,000	C-2R			7210	7234	7263
19	5.00	.045	.040	10,000	C-2R			8729	7250	7264
20	5.00	.060	.030	100,000	C-2R	6802	6801	680	682	7680
21	5.00	.060	.050	100,000	C-2R	6832	6831	683	685	7683
22	5.00	.060	.150	5,000	C-2R	6152	6151	6150	6180	7265
23	5.00	.075	.090	25,000	C-2R	7132	7131	713	714	7714
24	5.00	.080	.160	3,000	C-2R	6212	6211	7211	7235	7266
25	5.00	.115	.150	40,000	C-2R	7152	7151	715	718	7715
26	5.00	.115	.200	5,000	C-2R	7212	3211	7213	7236	7267
27	5.00	.125	.220	5,000	C-2R	8175	8179	7216	7239	7268
28	5.00	.145	.160	10,000	C-2R			8096	7251	7269
29	10.00	.027	.100	10,000	C-2F			7218	7240	8095
30	12.00	.060	.150	16,000	C-2F			7219	32	8097
31	14.00	.065	.150	16,000	C-2F			8111	8112	8098
32	18.00	.026	.150	16,000	C-2F			7220	7241	8099
33	24.00	.025	.130	25,000	C-2F			124F	124P	
34	28.00	.024	.150	16,000	CC-2F	7009		6838	6839	7839
35	28.00	.016	.072	2,500	CC-2F				3335	

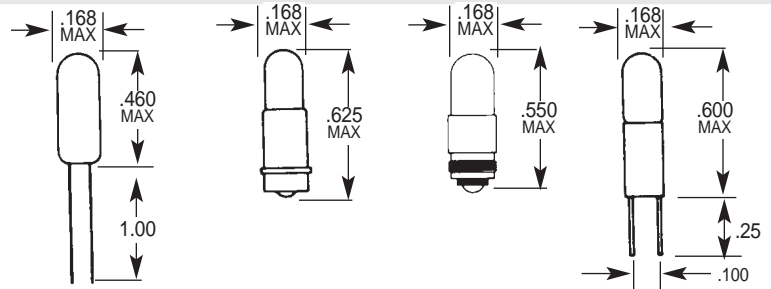
NOTE: ALL WIRE TERMINAL LAMPS LISTED ABOVE ARE SUPPLIED IN SOLDER-READY CONDITION.



T-1 1/4

SUB-MINIATURE LAMPS

WIRE TERMINAL LAMPS ARE TINNED
AND SOLDER READY

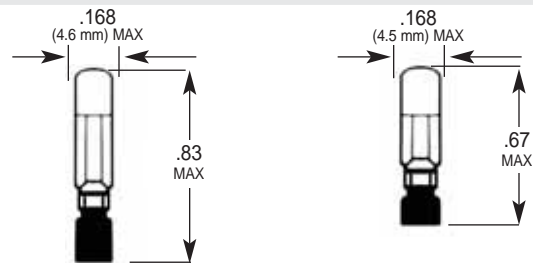


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	Wire Terminal	Special Midget Flanged Base	Special Midget Screw Base	Special Bi-Pin Base
1	1.30	.030	0.006	3,000	S-2	2135	7302	7303	7306
2	1.35	.060	0.006	500	C-2R	8631	8636	8641	7636
3	2.50	.400	0.550	30	C-2R	8655	8656	329	7307
4	3.00	.190	0.250	350	C-2R	324	8637	325	7637
5	4.50	.285	1.050	100	C-2R	8816	7305	673	7308
6	5.00	.060	0.030	100,000	C-2R	580	3582	3580	7580
7	5.00	.060	0.050	100,000	C-2R	583	3585	3583	7583
8	5.00	.115	0.150	40,000	C-2R	515	3518	3515	7515
9	6.00	.040	0.030	1,000	C-2V	8661	8660	8662	7660
10	6.00	.060	0.130	3,000	C-2R	2114	8541	371	7309
11	6.00	.200	0.630	1,000	C-2R	634	8628	8645	7628
12	6.30	.200	0.550	5,000	C-2R	8610	8551	8552	7310
13	10.00	.014	0.004	10,000	C-2F	8608	8609	8606	7311
14	14.00	.080	0.500	1,000	C-2F	8640	8646	8644	7646
15	28.00	.040	0.320	1,000	C-2F	8627	8632 =737	8635	7632

T-1 1/4

MINIATURE LAMPS

EUROPEAN "LILIPUT" LAMPS

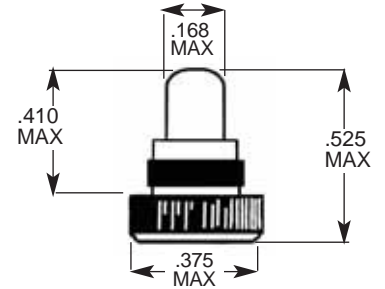


LINE NO.	VOLTS	AMPS	LUMENS	LIFE	FILAMENT	SLIDE BASE T4.6 LILIPUT	SLIDE BASE T4.5 LILIPUT
16	6.0	.02	0.30	5,000	C-2V	T4.6-6V-20MA	T4.5-6V-20MA
17	6.0	.04	0.60	5,000	C-2V	T4.6-6V-40MA	T4.5-6V-40MA
18	6.0	.05	1.10	5,000	C-2V	T4.6-6V-50MA	T4.5-6V-50MA
19	12.0	.02	0.40	5,000	C-2V	T4.6-12V-20MA	T4.5-12V-20MA
20	12.0	.04	1.20	5,000	C-2V	T4.6-12V-40MA	T4.5-12V-40MA
21	12.0	.05	2.00	5,000	C-2V	T4.6-12V-50MA	T4.5-12V-50MA
22	24.0	.02	0.80	5,000	C-2F	T4.6-24V-20MA	T4.5-24V-20MA
23	24.0	.04	3.00	5,000	C-2F	T4.6-24V-40MA	T4.5-24V-40MA
24	24.0	.05	4.10	5,000	C-2F	T4.6-24V-50MA	T4.5-24V-50MA
25							
26	28.0	.02	2.00	5,000	C-2F	T4.6-28V-20MA	T4.5-28V-20MA
27	28.0	.04	4.10	5,000	C-2F	T4.6-28V-40MA	T4.5-28V-40MA
28	28.0	.05	4.90	5,000	C-2F	T4.6-28V-50MA	T4.5-28V-50MA
29	48.0	.02	1.60	5,000	CC-2F	T4.6-48V-20MA	T4.5-48V-20MA
30	48.0	.04	4.50	5,000	CC-2F	T4.6-48V-40MA	T4.5-48V-40MA
31	48.0	.05	5.20	5,000	CC-2F	T4.6-48V-50MA	T4.5-48V-50MA
32	60.0	.02	2.00	5,000	CC-2F	T4.6-60V-20MA	T4.5-60V-20MA
33	60.0	.04	4.00	5,000	CC-2F	T4.6-60V-40MA	T4.5-60V-40MA
34	60.0	.05	7.00	5,000	CC-2F	T4.6-60V-50MA	T4.5-60V-50MA



T-1^{1/4} SPECIAL "KNURLED" SCREW

MANUFACTURED TO MILITARY SPECIFICATIONS
SOLID BRASS BASE



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	KNURLED SCREW BASE
1	1.30	.030	.006	100	S-2	7301
2	1.35	.060	.006	500	C-2R	8647
3	2.5	.400	.550	30	C-2R	326
4	3.0	.190	.250	350	C-2R	323
5						
6	5.0	.115	.150	40,000	C-2R	3516
7	5.0	.060	.030	60,000	C-2R	3581
8	5.0	.060	.050	25,000	C-2R	3584
9						
10	6.0	.060	.130	3,000	C-2R	8543
11	6.0	.200	.630	1,000	C-2R	8639
12	6.3	.200	.550	5,000	C-2R	8553
13						
14	14.0	.080	.500	5,000	C-2F	8654
15						
16	28.0	.040	.320	1,000	C-2F	8623
17	28.0	.040	.320	1,000	C-2F	8623 RED *

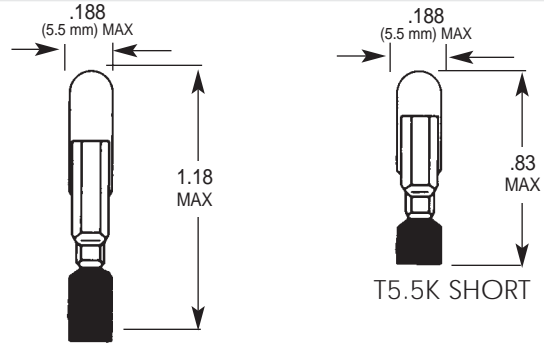
* MANUFACTURED IN COATED RED CONFORMING TO LATEST MIL.-SPEC. STANDARD FOR "AVIATION RED" LAMPS.



T-1¹/₂

MINIATURE LAMPS

EUROPEAN "LILIPUT" LAMPS

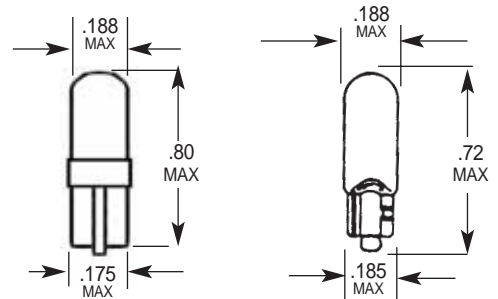


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	SLIDE BASE T5.5 LILIPUT	SLIDE BASE T5.5K SHORT LILIPUT
1							
2	6.0	.02	0.30	5,000	C-2V	T5.5-6V-20MA	T5.5K-6V-20MA
3	6.0	.04	0.60	5,000	C-2V	T5.5-6V-40MA	T5.5K-6V-40MA
4	6.0	.05	1.10	5,000	C-2V	T5.5-6V-50MA	T5.5K-6V-50MA
5	12.0	.02	0.40	5,000	C-2V	T5.5-12V-20MA	T5.5K-12V-20MA
6	12.0	.04	1.20	5,000	C-2V	T5.5-12V-40MA	T5.5K-12V-40MA
7	12.0	.05	2.00	5,000	C-2V	T5.5-12V-50MA	T5.5K-12V-50MA
8	12.0	.10	3.10	5,000	C-2V	T5.5-12V-100MA	—
9	24.0	.02	0.80	5,000	C-2F	T5.5-24V-20MA	T5.5K-24V-20MA
10	24.0	.04	3.00	5,000	C-2F	T5.5-24V-40MA	T5.5K-24V-40MA
11	24.0	.05	4.10	5,000	C-2F	T5.5-24V-50MA	T5.5K-24V-50MA
12							
13	28.0	.02	2.00	5,000	C-2F	T5.5-28V-20MA	T5.5K-28V-20MA
14	28.0	.04	4.10	5,000	C-2F	T5.5-28V-40MA	T5.5K-28V-40MA
15	28.0	.05	4.90	5,000	C-2F	T5.5-28V-50MA	T5.5K-28V-50MA
16	48.0	.02	1.60	5,000	CC-2F	T5.5-48V-20MA	T5.5K-48V-20MA
17	48.0	.04	4.50	5,000	CC-2F	T5.5-48V-40MA	T5.5K-48V-40MA
18	48.0	.05	5.20	5,000	CC-2F	T5.5-48V-50MA	T5.5K-48V-50MA
19	60.0	.02	2.00	5,000	CC-2F	T5.5-60V-20MA	T5.5K-60V-20MA
20	60.0	.04	4.00	5,000	CC-2F	T5.5-60V-40MA	T5.5K-60V-40MA
21	60.0	.05	7.00	5,000	CC-2F	T5.5-60V-50MA	T5.5K-60V-50MA

T-1¹/₂

MINIATURE LAMPS

EUROPEAN DIAMETER WEDGE BASE LAMPS (E) EUROPEAN
MOLDED PLASTIC WEDGE BASE LAMPS (P) PLASTIC



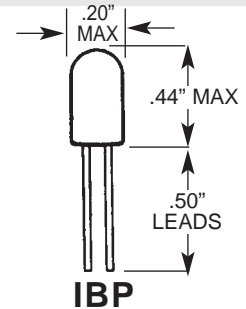
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	PLASTIC WEDGE BASE	EUROPEAN WEDGE BASE
22	6.3	.200	.400	30,000	C-2R	86P	86E
23	14.0	.080	.300	20,000	C-2V	73P	73E
24	28.0	.040	.300	25,000	C-2F	85P	85E



T-1^{3/4} RIGID BI-PIN TYPES

(.018" PIN DIAMETER)

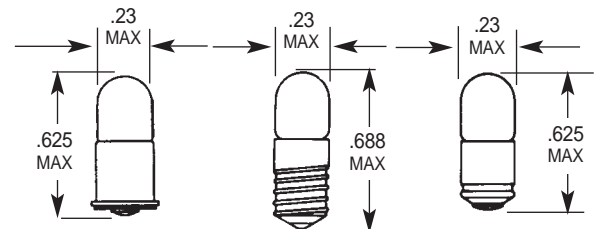
GLASS M.O.L. 11.0MM (.44")



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	1.27MM (.05") PIN SPACING (EQUAL)
1	5.0	.06	.05	100,000	C-2R	806-IBP
2	5.0	.06	.15	5,000	C-2R	6083-IBP
3	5.0	.075	.09	40,000	C-2R	6232-IBP
4	5.0	.115	.15	40,000	C-2R	807-IBP
5	6.0	.06	.13	3,000	C-2R	6225-IBP
6	6.0	.20	.60	500	C-2R	1784-IBP (9784)
7	6.3	.15	.45	3,000	C-2R	6048-IBP
8	6.3	.20	.40	50,000	C-2F	2181-IBP
9	6.3	.20	.55	5,000	C-2R	2112-IBP
10	10.0	.04	.08	5,000	C-2F	2107-IBP
11	12.0	.06	.15	16,000	C-2F	6037-IBP
12	14.0	.08	.30	50,000	C-2F	2182-IBP (9182)
13	14.0	.08	.50	1,500	C-2F	1705-IBP
14	14.0	.10	.50	10,000	C-2F	2162-IBP
15	18.0	.04	.15	10,000	C-2F	2102-IBP
16	24.0	.05	.50	1,000	C-2F	6004-IBP
17	28.0	.04	.20	25,000	C-2F	2185-IBP
18	28.0	.04	.30	7,000	C-2F	2187-IBP (9187)
19	28.0	.04	.34	4,000	C-2F	1764-IBP
20	28.0	.06	.34	25,000	C-2F	1764LSV-IBP
21	28.0	.06	.60	5,000	C-2F	361-IBP

*TL-1^{3/4} (LENS END) SUB-MINIATURE LAMPS

*LIMITED AVAILABILITY



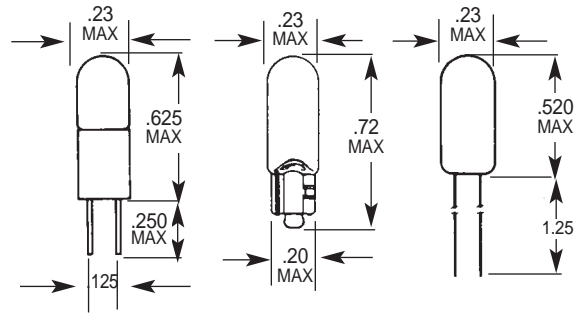
LINE NO.	VOLTS	AMPS	LIFE	FILAMENT	MIDGET FLANGED BASE	MIDGET SCREW BASE	MIDGET GROOVED BASE
22	2.5	.35	10,000	C-2R	3374	8299	253X
23	5.0	.18	10,000	C-2R	8443	8393	3901
24	14.0	.08	10,000	C-2F	3903	3902	3904
25	28.0	.06	10,000	C-2F	4908	4909	4910



T-1^{3/4}

SUB-MINIATURE LAMPS

Wire Terminal Lamps are tin plated for solder-ready applications.
Bi-Pin Lamps are manufactured with gold plated pins.

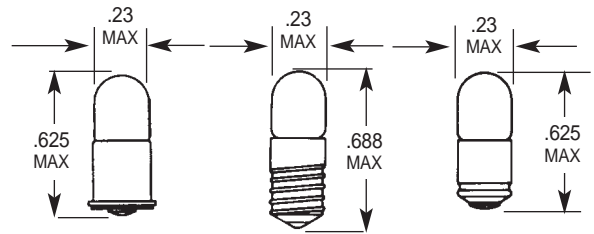


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	BI-PIN BASE	WEDGE BASE	WIRE TERMINAL
1	1.30	.050	.020	50	S-2			2184
2	1.35	.060	.010N	500	C-2R	7931		1728
3	2.00	.060	.020	5,000	C-2R			2119
4	2.50	.200	.220	500	C-2R	7968		1783
5	2.50	.350	.210	10,000	C-2R	7868		2169
6	2.70	.060	.040	6,000	C-2R	7838		1738
7	4.50	.120	.050	25,000	C-2V	7359		2171
8	5.00	.017	.018N	8,000	C-2R	7950		3950
9	5.00	.060	.050	100,000	C-2R	7361		2200
10	5.00	.060	.030	100,000	C-2R	7360		8805
11	5.00	.115	.150	40,000	C-2R	7362	56	2203
12	5.00	.190	.450	1,000	C-2R	7363		8784
13	6.00	.036	.014	40,000	C-2V			2191
14	6.00	.040	.030	10,000	C-2V	7945		1730
15	6.00	.200	.600	1,000	C-2R	7328	79	1784
16	6.00	.200	.100	50,000	C-2F	7364		8664
17	6.00	.220	.630	3,000	C-2R	7365		
18	6.30	.040	.020N	50,000	C-2V	7380		2180
19	6.30	.040	.030	20,000	C-2V		84	2179
20	6.30	.075	.220	500	C-2R	7377		1739
21	6.30	.150	.450	3,000	C-2R	7368		8350
22	6.30	.200	.400	50,000	C-2F	7381	86	2181
23	6.30	.200	.550	3,000	C-2R	7349		2112
24	10.00	.010	.006	50,000	C-2F			2149
25	10.00	.014	.002N	10,000	C-2F	7344		1869
26	10.00	.040	.080	5,000	C-2F	7367		2107
27	11.00	.022	.030	10,000	C-2F	7369		8946
28	14.00	.040	.130	5,000	C-2F		18	
29	12.00	.040	.120	10,000	C-2F	7371		2174
30	14.00	.080	.300	40,000	C-2F		73	2382X
31	14.00	.080	.300	50,000	C-2F	7382		2182
32	14.00	.080	.500	1,500	C-2F	7330	37	1705
33	14.00	.100	.500	10,000	C-2F	7373		2162
34								
35	14.00	.100	.500	10,000	C-2F		70	
36	18.00	.040	.150	10,000	C-2F	7370		2102
37	14.00	0.16	.700	1,500	C-2F		74	
38	22.00	.040	.300	2,000	C-2F	7459		8425
39	24.00	.050	.500	2,000	C-2F	7001		2176
40	28.00	.040	.340	7,000	C-2F	7327		1764
41	28.00	.040	.300	25,000	C-2F	7387	85	2187
42	28.00	.040	.340	4,000	C-2F			1762
43	28.00	.040	.340	4,000	C-2F			2148
44	28.00	.040	.200	50,000	C-2F	7374		2185
45	28.00	.060	.340	25,000	C-2F	7876		1764LSV
46	28.00	.065	.650	5,000	C-2F	7376	17	8361
47	48.00	.025	.200	5,000	CC-2F			6748



T-1^{3/4} SUB-MINIATURE LAMPS

*QPL - 6363 CERTIFIED BY THE DEPARTMENT OF DEFENSE.



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	* Midget Flanged Base	Midget Screw Base	Midget Grooved Base
1								
2	1.35	.060	.010N	500	C-2R	331	8669	698
3	2.47	.300	.450	30	C-2R	251		
4	2.50	.200	.220	500	C-2R	368	1769	8699
5	2.50	.350	.210	10,000	C-2R	268	7312	266
6	2.50	.400	.550	30	C-2R	343	8671	8703
7	2.70	.060	.040	6,000	C-2R	338	8693	8704
8	3.00	.015	.003N	10,000	C-6	375	7313	390
9	3.00	.030	.020N	1,800	C-6	7329	7314	7343
10	4.50	.120	.050	25,000	C-2V	7331	7315	7345
11								
12	5.00	.017	.018N	8,000	C-2R	8950	2950	6950
13	5.00	.060	.050	100,000	C-2R	7333	7318	7347
14	5.00	.060	.150	5,000	C-2R	3150 (M6363/8-1)	3153	3152
15	5.00	.060	.030	100,000	C-2R	7332	7316	7346
16	5.00	.115	.150	40,000	C-2R	7335	7319	7348
17	5.00	.190	.450	1,000	C-2R	7334	7317	7350
18	6.00	.040	.030	10,000	C-2V	345	342	8705
19	6.00	.200	.600	1,000	C-2R	328 (M6363/8-2)	1768	337
20	6.00	.200	.100	50,000	C-2F	7336	8687	8706
21								
22								
23	6.30	.040	.020N	50,000	C-2V	380	7320	7351
24	6.30	.075	.220	500	C-2R	377	1775	8708
25	6.30	.150	.450	3,000	C-2R	350	7321	7352
26	6.30	.200	.400	50,000	C-2F	381 (M6363/8-3)	378	379
27	6.30	.200	.550	3,000	C-2R	349	7323	398
28	10.00	.014	.002N	10,000	C-2F	344	8691	709
29	10.00	.040	.080	3,000	C-2F	367	389	397
30	10.00	.040	.080	5,000	C-2F	367X		
31								
32	11.00	.022	.030	10,000	C-2F	7338	7325	7353
33	12.00	.040	.120	10,000	C-2F	394	7326	7354
34	14.00	.080	.300	50,000	C-2F	382	8362	
35	14.00	.080	.500	1,500	C-2F	330	373	336
36	14.00	.080	.300	40,000	C-2F			386
37	14.00	.100	.500	10,000	C-2F		8162	
38	14.00	.100	.500	10,000	C-2F	8918 (M6363/8-4)		393
39	18.00	.040	.150	10,000	C-2F	370	8536	346
40	22.00	.040	.300	2,000	C-2F	459	8437	457
41								
42	24.00	.050	.500	2,000	C-2F	8176	8178	8177
43	28.00	.024	.150	16,000	C-2F	6034		
44	28.00	.040	.340	7,000	C-2F	327 (M6363/8-5)	335	334
45	28.00	.040	.300	25,000	C-2F	387 (M6363/8-7)	399	388
46	28.00	.040	.200	50,000	C-2F	385 (M6363/8-6)	8384	7355
47	28.00	.060	.340	25,000	C-2F	376	335LSV	334LSV
48	28.00	.065	.650	5,000	C-2F	7341	8369	7356
49	48.00	.025	.200	5,000	CC-2F	6848	—	—
50	60.00	.020	.250	5,000	CC-2F	—	—	6201

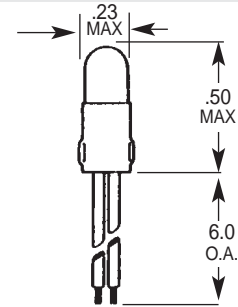


T-1^{3/4}

"FLYING LEAD" WIRE LAMPS

6" INSULATED WIRE LEADS, STRIPPED AND TINNED.
LONG LIFE

Color lens caps available (See below)

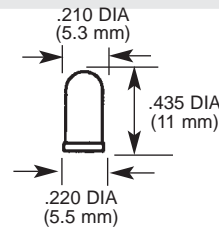


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	WIRE TERMINAL
1	6.0	0.20	0.40	50,000	C-2R	2181-6
2	12.0	0.08	0.30	50,000	C-2F	2182-6
3	28.0	0.04	0.30	50,000	C-2F	2187-6

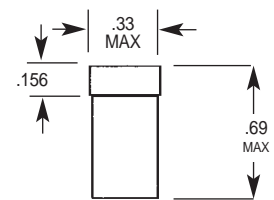
LENS CAPS AND BOOTS

FOR T1-3/4 "FLYING LEAD" WIRE LAMPS (See above)

Lens caps can be ordered permanently installed on lamp assembly.
Silicone boots can be ordered installed.



(T-1-3/4 Standard)



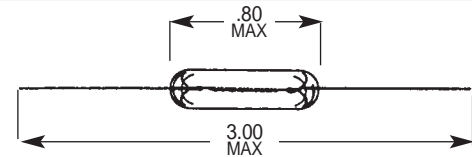
(.30" Mounting Hole)

LINE NO.	COLOR	SILICONE BOOTS	LENS CAP NUMBER
4	RED	85-06-1	L115A-RED
5	GREEN	85-06-5	L115A-GREEN
6	AMBER	85-06-3	L115A-AMBER
7	BLUE	85-06-6	L115A-BLUE
8	WHITE	85-06-4	L115A-WHITE
9	CLEAR	85-06-2	L115A-CLEAR
10	YELLOW	85-06-7	N/A

T-1^{3/4}

MINIATURE "AXIAL LEAD" LAMPS

BEAD SEALED AT BOTH ENDS, 360° LIGHT VIEWING

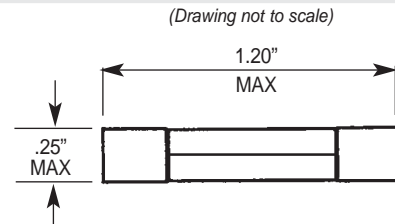


LINE NO.	VOLTS	AMPS	WATTS	LIFE	CROSS REFERENCE	AXIAL WIRE TERMINAL
11	6.0	.200	1.20	10,000	AL506	AL522-63200
12	8.0	.200	1.60	10,000	AL508	AL522-80200
13	12.0	.150	1.80	10,000	AL512	AL522-120150
14	24.0	.045	1.20	5,000	AL552	AL522-24045



T-1^{3/4} MINIATURE "FUZE" LAMPS

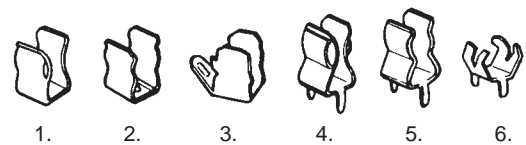
DOUBLE GLASS ENVELOPE (3AG SIZE)



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FUSE TYPE END CAPS
1	6.0	.100	.10	10,000	GF540
2	6.0	.200	.40	5,000	GF550
3	6.3	.250	.64	10,000	GF570
4	6.3	.300	.64	10,000	GF560
5					
6	8.0	.150	.40	10,000	GF660
7	8.0	.200	.56	10,000	GF650
8	8.0	.250	.64	10,000	GF670
9	8.0	.300	.90	10,000	GF680
10					
11	12.0	.100	.23	10,000	GF710
12	12.0	.150	.40	5,000	GF780
13	12.6	.300	.64	5,000	GF740
14					
15	24.0	.045	.14	1,000	GF692

MOUNTING CLIPS

FOR USE WITH FUZE LAMPS LISTED ABOVE.
P.C. BOARD, RIVET, EYELET MOUNTS
ALL CLIPS ARE TIN PLATED SPRING BRASS
(3AG SIZE)



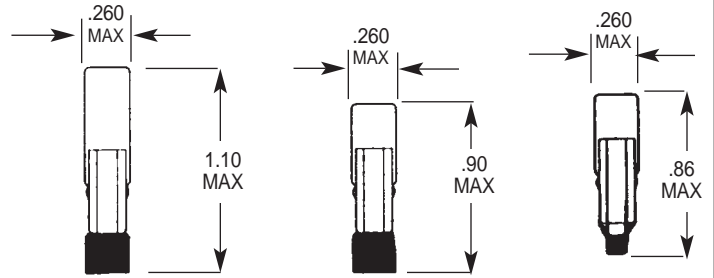
LINE NO.	FIGURE #	DESCRIPTION	PART NUMBER
16	1	RIVET/EYELET	FC101
17	2	RIVET/EYELET	FC102
18	3	RIVET/EYELET	FC103
19	4	P.C. BOARD	FC104
20	5	P.C. BOARD, BOWED TAB	FC105
21	6	P.C. BOARD, LOW PROFILE	FC106

NORMAN MANUFACTURED "FUZE" LAMPS ARE DESIGNED AND PRODUCED WITH A DOUBLE GLASS ENVELOPE. WITHIN THE OUTER GLASS TUBE IS CONTAINED A LINEAR, AXIAL LEAD LAMP. THIS INTERNAL LAMP IS BEAD SEALED AT BOTH ENDS AND CONNECTED WITHIN TO THE END CAP CONTACTS. THIS FUZE LAMP DESIGN ELIMINATES FAILURES DUE TO STRESS CRACKS CAUSED BY THE LAMP INSERTION PROCESS. EXCLUSIVELY FROM NORMAN.



T-2 MINIATURE LAMPS

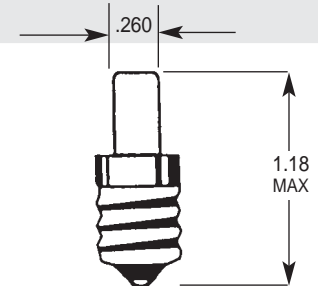
TELEPHONE SLIDE BASE
(QPL LISTED)



LINE NO.	VOLTS	AMPS	END FOOT CANDLES	LIFE	FILAMENT	ANSI #5 SLIDE BASE	ANSI #5 SLIDE BASE	ANSI #6 SLIDE BASE
1	4.0	.040	200	10,000	C-6		4ESB	
2	4.5	.200	850	10,000	C-6		2391121(I.B.M.)	
3	6.0	.040	250	5,000	C-2F		6ESB	
4	6.0	.140	500	5,000	C-2F	6PSB		
5	10.0	.017	60	5,000	C-2F		10CSB	
6	10.0	.040	450	10,000	C-2V		10ESB	
7	10.0	.036	300	10,000	C-6			51A
8	12.0	.040	650	5,000	C-2V		12ESB	
9	12.0	.170	2,000	5,000	C-2F	12PSB		
10	16.0	.017	80	5,000	C-2F		16CSB	
11	16.0	.040	800	5,000	C-2F		16ESB	
12	18.0	.040	850	5,000	C-2F		18ESB	
13	24.0	.017	100	15,000	C-2F		24CSB	
14	24.0	.040	850	8,000	C-2F		24ESB	
15	24.0	.073	3,000	10,000	C-2F	24PSB		
16	24.0	.003	500	8,000	C-2F			52A
17	28.0	.040	1,500	6,000	C-2F		28ESB	
18	28.0	.040	1,600	5,000	C-2F	28PSB		
19	35.0	.050	1,800	8,000	C-2F	35PSB		
20	48.0	.040		5,000	CC-2F		48ESB	
21	48.0	.050	1,800	10,000	C-7A	48PSB		
22	60.0	.050	2,600	5,000	C-7A	60PSB		
23	90.0	.035	1,200	10,000	CC-7A	90PSB		
24	120.0	.025	1,200	10,000	CC-7A	120PSB		
25	155.0	.025	1,200	10,000	CC-7A	155PSB		

T-2 MINIATURE LAMPS

EXCLUSIVE DESIGN

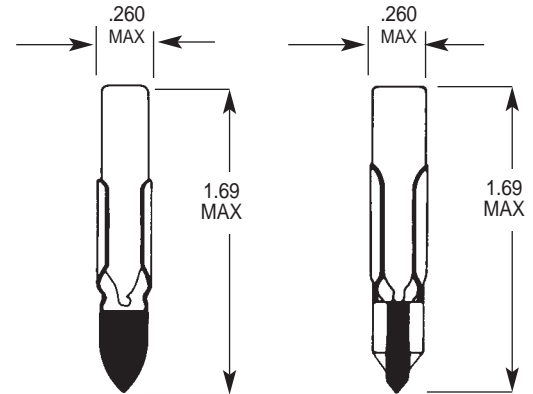


LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	CANDELABRA SCREW BASE
26	120.0	.025	3	7,500	CC-7A	120C



T-2 MINIATURE LAMPS

TELEPHONE SLIDE BASE

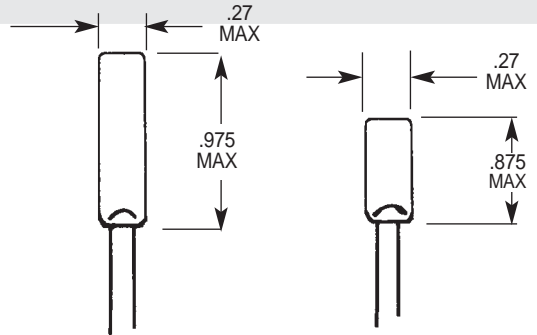


LINE NO.	VOLTS	AMPS	END FOOT CANDLES	LIFE	FILAMENT	ANSI #1 SLIDE BASE	ANSI #2 (Sylvania #3 Slide Base) SLIDE BASE
1	4.0	.190	450	5,000	C-2V	4A-1	4A-2
2	6.0	.040	180	4,000	C-2V	6C-1	6C-2
3	6.0	.140	510	15,000	C-2V	6A-1	6A-2
4	6.0	.290	270	15,000	C-2F	6B-1	6B-2
5	8.0	.090	600	1,000	C-2F	8A-1	8A-2
6	10.0	.110	600	10,000	C-2V	10A-1	10A-2
7	12.0	.100	1,200	8,000	C-2F	12A-1	12A-2
8	12.0	.170	1,500	5,000	C-2V	12C-1	12C-2
9	16.0	.100	720	5,000	C-2F	16A-1	16A-2
10	16.0	.290	840	5,000	C-7A	16B-1	16B-2
11	18.0	.040	800	1,000	C-2F	18A-1	18A-2
12	18.0	.100	600	5,000	C-2F	18B-1	18B-2
13	20.0	.034	600	1,000	C-2V	20C-1	20C-2
14	24.0	.030	600	1,000	C-2F	24A-1	24A-2
15	24.0	.035	600	8,000	C-2F	24E-1	24E-2
16	24.0	.035	600	5,000	C-2F		24X
17	24.0	.040	1,000	4,000	C-2F	24B-1	24B-2
18	24.0	.072	1,400	6,000	C-2F	24C-1	24C-2
19	24.0	.090	1,120	7,000	C-2F	24F-1	24F-2
20	24.0	.100	1,500	5,000	C-7A	24D-1	24D-2
21	24.0	.032	350	5,000	C-2F	24EX	
22	30.0	.038	1,500	3,000	C-2F		30X
23	30.0	.072	2,000	3,000	C-7A	30A-1	30A-2
24	30.0	.100	3,000	4,000	C-7A	30B-1	30B-2
25	35.0	.040	1,000	7,500	C-2F	35A-1	35A-2
26	35.0	.072	700	5,000	C-7A	35B-1	35B-2
27	35.0	.100	750	5,000	C-7A	35C-1	35C-2
28	44.0	.070	1,250	1,000	C-7A	44A-1	44A-2
29	48.0	.021	100	20,000	C-7A	48D-1	48D-2
30	48.0	.035	425	10,000	C-7A	48C-1	48C-2
31	48.0	.072	2,000	5,000	C-7A	48A-1	48A-2
32	48.0	.100	2,200	5,000	C-7A	48B-1	48B-2
33	55.0	.050	1,400	5,000	C-7A	55C-1	55C-2
34	55.0	.100	1,800	5,000	C-7A	55B-1	55B-2
35	60.0	.050	1,600	5,000	C-7A	60A-1	60A-2



T-2 MINIATURE LAMPS

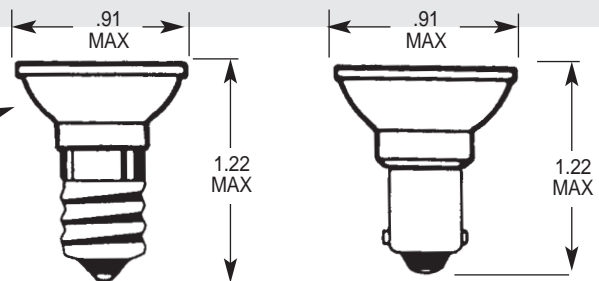
SOLDER-READY TERMINALS



LINE NO.	VOLTS	AMPS	END FOOT CANDLES	LIFE	FILAMENT	WIRE TERMINAL (LONG)	WIRE TERMINAL (SHORT)
1	4.0	.040	200	10,000	C-6		4ES
2	6.0	.140	500	5,000	C-2F	6PS	
3	6.0	.040	250	10,000	C-2V		6ES
4	10.0	.017	60	5,000	C-2V		10CS
5	10.0	.040	450	5,000	C-2V		10ES
6	12.0	.040	650	10,000	C-2V		12ES
7	12.0	.170	2,000	10,000	C-2F	12PS	
8	16.0	.017	80	5,000	C-2V		16CS
9	16.0	.040	800	5,000	C-2F		16ES
10							
11	18.0	.040	850	10,000	C-2F		18ES
12	24.0	.017	100	8,000	C-2F		24CS
13	24.0	.040	850	8,000	C-2F		24ES
14	24.0	.073	3,000	10,000	C-2F	24PS	
15	28.0	.040	1,500	8,000	C-2F		28ES
16	28.0	.040	1,600	10,000	C-2F	28PS	
17	48.0	.040	2,000	10,000	CC-2F		48ES
18	48.0	.053	1,800	5,000	C-7A	48PS	
19	60.0	.050	2,600	5,000	C-7A	60PS	
20							
21	120.0	.025	1,200	8,000	CC-7A	120PS	

T-2 ANNUNCIATOR LAMPS

ALUMINIZED REFLECTOR



LINE NO.	VOLTS	AMPS	WATTS	LIFE	CANDELABRA SCREW BASE	MINIATURE BAYONET BASE
22	6.0	.140	0.8	20,000	6RC	6RB
23	12.0	.170	2.0	12,000	12RC	12RB
24	24.0	.073	1.7	10,000	24RC	24RB
25	28.0	.040	1.1	5,000	28RC	28RB
26	48.0	.050	2.4	10,000	48RC	48RB
27	60.0	.050	3.0	7,500	60RC	60RB
28	120.0	.025	3.0	7,500	120RC (NE-120RC=NEON)	120RB

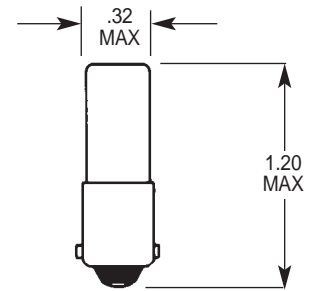
Norman Annunciator lamps are designed for use in elevator panels, pushbutton stations, indirect decorative lighting and general signalling applications where a relatively high candlepower miniature light source is necessary. A high degree of light control is made possible by a self-contained aluminized reflector.



T-2^{1/2}

MINIATURE LAMPS

(QPL LISTED)

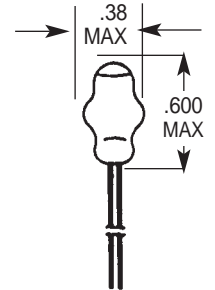
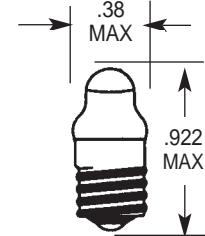
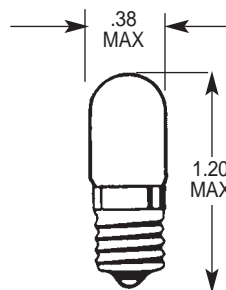


LINE NO.	VOLTS	AMPS	LUMENS	LIFE	FILAMENT	MINIATURE BAYONET BASE
1						
2	6.0	.140	0.12	20,000	C-2F	6MB
3	12.0	.170	0.35	12,000	C-2F	12MB
4	24.0	.070	0.50	10,000	C-2F	24MB
5	28.0	.040	0.29	5,000	C-2F	28MB
6	48.0	.053	0.70	5,000	C-7A	48MB
7	60.0	.050	0.73	7,500	C-7A	60MB
8	90.0	.045	0.75	10,000	CC-7A	90MB
9	120.0	.025	0.36	10,000	CC-7A	120MB
10	130.0	.030	0.70	10,000	CC-7A	130MB
11	155.0	.025	0.35	10,000	CC-7A	155MB
12	240.0	.010	0.60	10,000	CC-7A	240MB

T-3

MINIATURE LAMPS

"X" DENOTES KRYPTON GAS FILLED LAMP



GTL-3
LENS END

GTL-3
LENS END

LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	MINIATURE SCREW BASE	MINIATURE SCREW BASE	* WIRE TERMINAL
13	1.20	0.22	—	5	S-2		112	112WT
14	2.25	0.25	—	5	C-2R		222	222WT
15	2.25	0.25	—	25	C-2R		222X	222XWT
16	2.33	0.27	—	10	C-6		243	243WT
17	3.80	0.22	—	20	C-6		246	246WT
18								
19	14.0	0.17	1.7	250	C-2V	1474		
20	18.0	0.17	2.2	250	C-2V	1476		
21	24.0	0.17	3.3	250	C-2F	1477		

*WIRE TERMINAL LENS END TYPE AVAILABLE ON SPECIAL ORDER ONLY.

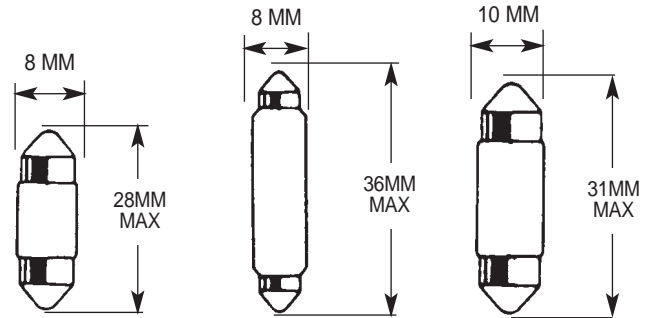


T-3

FESTOON LAMPS

(-) DENOTES NON -STOCK LAMP TYPE.
2,000 PC. MINIMUM PRODUCTION RUN ON ALL NON-STOCK
FESTOON LAMPS.

360° LIGHT VIEWING



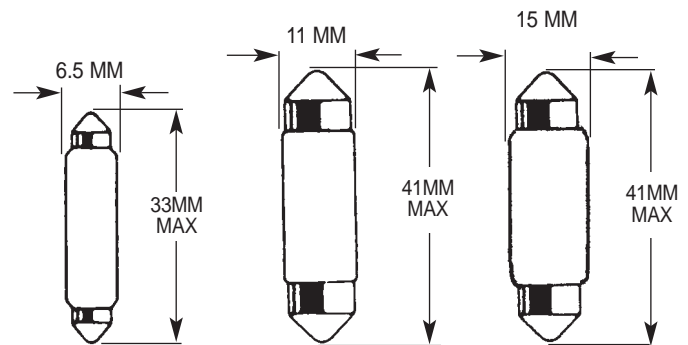
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FESTOON CAP SV7-8	FESTOON CAP SV7-8	FESTOON CAP SV8.5-8
1	6.0	.500	3.0	3,500	6427	6432	—
2	6.0	.833	5.0	3,500	6425	6392	—
3							
4	12.0	.250	3.0	3,500	6428, DE3021	6434	—
5	12.0	.420	5.0	3,500	DE3022, 6429	6394	—
6	12.0	.670	8.0	3,500	—	—	210-2
7	12.0	.833	10.0	3,500	—	—	DE3175
8							
9	24.0	.125	3.0	3,000	6430, 17104	—	—
10	24.0	.208	5.0	3,000	6433	FL81, 6397	—
11	24.0	.417	10.0	3,000	—	—	—

T-3

FESTOON LAMPS

(-) DENOTES NON -STOCK LAMP TYPE.
2,000 PC. MINIMUM PRODUCTION RUN ON ALL NON-STOCK
FESTOON LAMPS.

360° LIGHT VIEWING



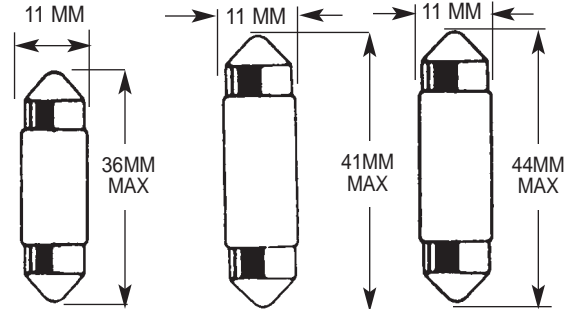
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FESTOON CAP SV6-6	FESTOON CAP SV8.5-8	FESTOON CAP SV8.5-8
12	6.0	—	(As Shown)	2,000	6435 (3W)	6416 (5W)	—
13							
14	12.0	—	(As Shown)	2,000	6439 (3W)	6418 (5W)	—
15							
16	24.0	—	(As Shown)	2,000	6444 (3W)	6423 (5W)	6453 (15W)



T-3 FESTOON LAMPS

(-) DENOTES NON -STOCK LAMP TYPE.
2,000 PC. MINIMUM PRODUCTION RUN ON ALL NON-STOCK
FESTOON LAMPS.

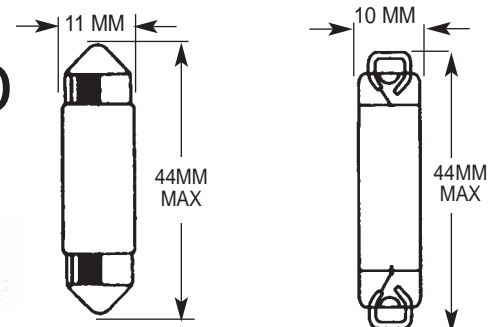
360° LIGHT VIEWING FR = FROSTED GLASS



LINE NO.	VOLTS	AMPS	WATTS	LIFE	FESTOON CAP SV8.5-8	FESTOON CAP SV8.5-8	FESTOON CAP SV8.5-8
1	6.0	.833	5.0	3,500	6416	6410	—
2	6.0	1.670	10.0	3,500	—	6450	—
3							
4	12.0	.420	5.0	3,500	12844	6418, 12864	6413, 212-2
5	12.0	.670	10.0	3,500	12854	6411, 12866	211-2
6	12.0	.670	10.0	3,500	—	6411, FR	—
7	13.5	.520	7.0	3,500	—	—	214-2
8							
9	24.0	.125	3.0	3,500	—	—	6465, 213-2
10	24.0	.208	5.0	3,500	13844, 209-2,		6424, 215-2
11	24.0	.208	5.0	3,500	—		215-2FR
12	24.0	.417	10.0	3,500	—		6429, 216-2
13	24.0	.417	10.0	3,500	13854		216-2FR

T-3 XENON GAS FILLED FESTOON LAMPS RIGID LOOP CONTACTS

XENON
Gas Filled Lamps

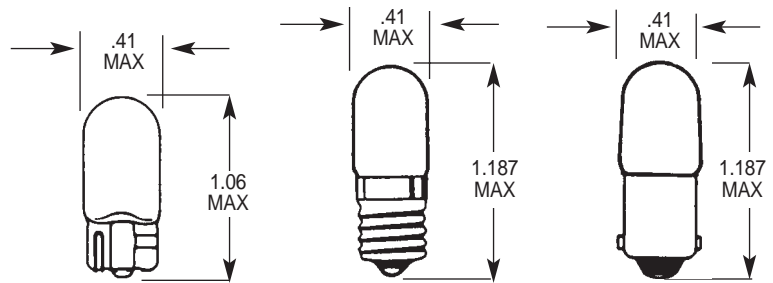


360° VIEWING. FR = FROSTED GLASS X = XENON GAS FILLED

LINE NO.	VOLTS	AMPS	WATTS	LIFE	FESTOON CAP SV8.5-8	RIGID LOOP
14	12.0	.420	5.0	10,000	212-2X/CL	XRL-1205
15	12.0	.420	5.0	10,000	212-2X/FR	XRL-1205FR
16	12.0	.830	10.0	10,000	211-2X/CL	XRL-1210
17	12.0	.830	10.0	10,000	211-2X/FR	XRL-1210FR
18						
19	12.8	.970	12.0	3,000	—	561
20	13.5	.740	10.0	3,000	—	562
21	13.5	.520	7.0	3,000	—	563
22						
23	24.0	.208	5.0	10,000	215-2X	XRL-2405
24	24.0	.208	5.0	10,000	215-2X FR	XRL-2405FR
25	24.0	.420	10.0	10,000	216-2X	XRL-2410
26	24.0	.420	10.0	10,000	216-2X FR	XRL-2410FR



T-3¹/₄
MINIATURE LAMPS

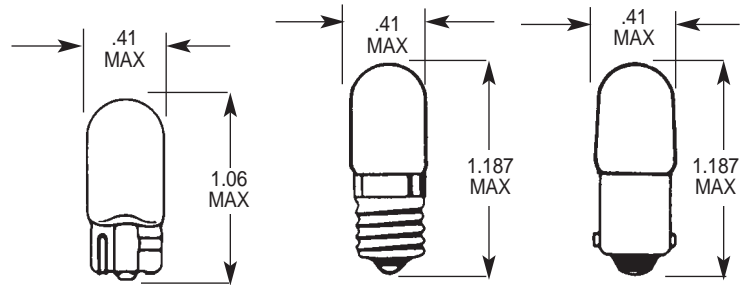


LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	WEDGE BASE	MINIATURE SCREW BASE	MINIATURE BAYONET
1	2.0	0.06	0.04	1,000	S-2		48	49
2	2.0	0.06	0.02	1,000	C-6			1809
3	2.5	0.30	0.30	1,000	C-2R			1436
4	2.5	0.50	0.50	3,000	C-2R		41	43
5	3.2	0.16	0.20	3,000	C-2R			1490
6	3.2	0.35	0.50	3,000	C-2R		42	45
7	4.0	0.06	0.07	1,000	S-2			1804
8	4.0	0.06	0.06	2,000	C-6			1867
9	5.0	0.07	0.19	1,000	C-6			1906
10								
11	5.0	0.09	0.25	1,500	C-2R			1850
12	5.0	0.09	0.25	1,500	C-2R			1850W
13	6.0	0.125	0.43	1,500	C-2R			1949
14	6.0	0.200	0.65	5,000	C-2R			W1212
15	6.0	0.70	3.40	500	C-2R			316
16	6.3	0.015	0.50	5,000	C-2R		40	
17	6.3	0.04	0.08	500	C-6			1302
18	6.3	0.15	0.52	3,000	C-2R	447		47
19	6.3	0.15	0.38	200,000	C-2R	159		1847
20	6.3	0.25	0.90	5,000	C-2R	555		267- FLASHER
21	6.3	0.15	0.33	50,000	C-2R			755
22	6.3	0.15	0.45	3,000	C-2R			1830
23	6.3	0.25	0.65	200,000	C-2R	259		1866
24	6.3	0.25	0.90	3,000	C-2R		46	44
25	6.3	0.36	0.67	5,000	C-2R			239
26	6.3	0.36	0.67	5,000	C-2R			240
27								
28	6.3	0.40	1.50	3,000	C-2R			1810
29	6.3	0.50	2.00	2,000	C-2R			238
30	6.5	0.40	1.70	1,000	C-2R			1811
31	7.0	0.43	2.00	1,500	C-2R	147		
32	7.0	0.50	2.00	3,000	C-2R			1888
33	9.84	0.50	4.00	500	C-2R			947
34	10.0	0.13	0.85	250	C-2V	280		1408
35	12.0	0.41	5 (WATTS)	7,500	C-2V	1X (XENON)	MS-1205	MB-1205
36	13.0	0.33	3.00	1,000	C-2V	192		1816
37	14.0	0.08	0.31	50,000	C-2F	658		756
38								
39	14.0	0.15	1.50	200	C-2V			1488
40	14.0	0.20	1.40	3,000	C-2F		1487	1815
41	14.0	0.24	2.00	500	C-2F	158		1891
42	14.0	0.27	1.60	500	C-2R			256
43	14.0	0.27	2.00	1,500	C-2F	194		1889
44	14.0	0.33	3.00	7,500	C-2F	193		1898
45	14.0	0.19	1.00	4,000	C-2F	161		
46	14.0	0.33	2.00	3,000	C-2F			1893
47	14.0	0.35	3.00	1,500	C-2F	168		

T-3¹/₄ CONTINUED ON NEXT PAGE



T-3¹/₄ - Continued MINIATURE LAMPS



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	WEDGE BASE	MINIATURE SCREW BASE	MINIATURE BAYONET
1	14.4	0.10	0.86	1,000	C-2V			1813
2	14.4	0.12	0.75	1,000	C-2F			1892
3	14.4	0.24	1.00	3,000	C-2F			216
4	15.5	0.24	2.20	500	C-2F			1881
5	18.0	0.15	1.80	250	C-2V		18V-MS	1826
6	24.0	0.06	0.90	20	C-2F			1437
7	24.0	0.17	3.30	250	C-2F			1818
8	24.0	0.208	5 (WATTS)	7,500	C-2F	2X (xenon)		
9	28.0	0.022	0.20	3,000	C-2F			1843
10	28.0	0.04	0.34	2,500	C-2F	585		1819
11								
12	28.0	0.06	0.62	2,500	C-2F	656		
13	28.0	0.07	1.00	1,000	C-2F			1862
14	28.0	0.07	1.00	1,000	C-2F	152 (3829)		1829
15	28.0	0.08	0.62	7,500	C-2F	657		757
16	28.0	0.10	1.60	1,000	C-2F	400		1820
17	28.0	0.17	3.50	7,000	C-2F	655	1821	313
18	28.0	0.17	3.00	1,500	C-2F	464		1864
19	28.0	0.20	3.00	7,000	C-2F			1873
20	30.0	0.15	2.80	5,000	C-2F		30V-MS	30V-MB
21	36.0	0.10	2.10	1,000	C-2F			1822
22	37.5	0.05	0.65	3,000	C-2F		1832	1828
23								
24	48.0	0.10	3.30	1,000	C-2F		1823	N3482
25	55.0	0.05	1.10	5,000	C-2F			1835
26	60.0	0.05	1.20	5,000	C-2F		60MS (750)	
27	120.0	0.025	1.50	7,000	CC-7A		120MS (977)	
28								
29	130.0	0.020	2.4 (WATTS)	7,000	CC-7A			967*
30	130.0	0.020	2.4 (WATTS)	10,000	2X-C2F			967X

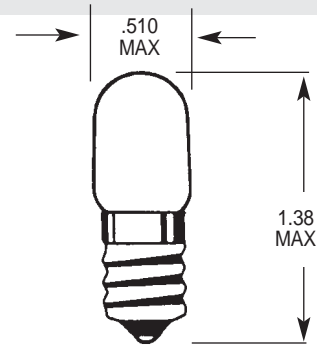
*NORMAN #967 LAMP IS EQUIVALENT TO THE FOLLOWING:
967X = VIBRATION RESISTANT.

949	(ALBA)
CM8-3995	(CHICAGO MINIATURE)
B-3013	(ORBITEC)
130V2.4W	(J. ROCHET)
SP105	(SPECTRO)
N967	(NORMAN)
DLICE-130V	(TELEMECHINIQUE)



T-4

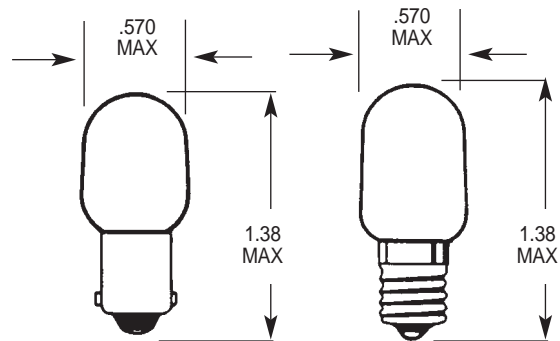
MINIATURE LAMPS



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	CANDELABRA SCREW BASE	EQUIVALENT
1							
2	14.0	0.17	1.7	250	C-2V	1479	—
3	18.0	0.17	2.2	250	C-2V	1480	11AT4C
4	24.0	0.17	3.3	250	C-2F	1841	—
5	30.0	0.11	3.3	250	C-2F	30V-CS	IZUMI

T-4^{1/2}

MINIATURE LAMPS



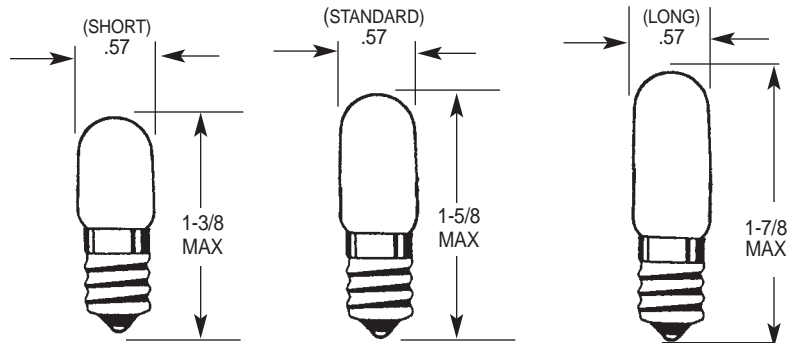
LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	MINIATURE BAYONET BASE	MINIATURE SCREW BASE
6	6.00	1.03	6.0	1,000	C-2R	1467	
7	6.30	0.80	3.6	3,000	C-2R	1855	
8	6.30	0.90	4.2	3,000	C-2R	1886	
9	8.00	0.92	9.0	50	C-6	872	
10	9.84	0.50	4.6	200	C-2R	957	500
11	9.84	0.50	6.0	15	C-2R		965
12	12.80	0.80	8.0	1,000	C-2R	1416	
13	14.00	0.46	6.0	500	C-2R	1414	
14	28.00	0.30	6.0	500	C-2F	1495	
15							
16	28.0	0.30	8.0	300	C-2F	1495X	



T-4¹/₂

MINIATURE LAMPS

ELECTRICAL SERVICE
E12, CANDELABRA SCREW BASE



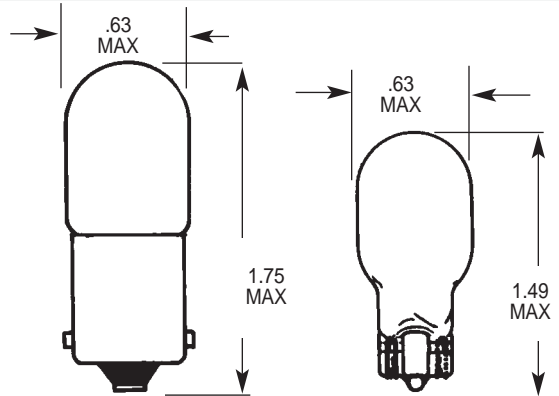
LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	E12 SCREW BASE	E12 SCREW BASE	E12 SCREW BASE
1	125.0	0.03	4.0	1,500	C-7A	4T4.5-125V-CS-S	—	—
2	125.0	0.05	6.0	1,500	C-7A	6T4.5-125V-CS-S	—	—
3								
4	130.0	0.115	15.0	1,500	C-7A	—	15T4.5-130V-CS	
5								
6	130.0	0.115	15.0	1,500	C7-A	—	—	15T4.5L-130V-CS
7								
8	130.0	0.115	15.0	1,500	C7-A		15T4.5/FR (FROSTED)	
9	130.0	0.115	15.0	1,500	C7-A		15T4.5/TB (BLUE)	
10	130.0	0.115	15.0	1,500	C7-A		15T4.5/TG (GREEN)	
11	130.0	0.115	15.0	1,500	C7-A		15T4.5/TR (RED)	
12	130.0	0.115	15.0	1,500	C7-A		15T4.5/TY (YELLOW)	



T-5 MINIATURE LAMPS

LANDSCAPE LIGHTING
EXIT SIGN LIGHTING
SPECIAL APPLICATIONS

*UNITED STATES POSTAL DEPT. APPROVED



LINE NO.	VOLTS	AMPS	MSCP	LIFE	FILAMENT	*SINGLE CONTACT BAYONET BASE	GLASS WEDGE BASE
1							
2	3.5	2.50	6.5	2,000	C-6	1876	
3	3.5	2.50	7.5	2,000	C-6	1876X	
4	3.7	2.75	11.0	100	C-6	1434	
5	3.7	2.75	15.0	100	C-6	1874	
6	4.0	0.90	3.5	50	C-6		914
7	4.0	1.80	7.5	50	C-2R		926
8	6.0	0.90	5.0	200	C-6		939
9	6.0	1.00	6.0	200	C-2R		903
10	6.0	1.20	8.0	50	C-2R		927
11	6.0	1.50	12.0	50	C-2R		908
12	6.0	0.62	3.8	30	C-2R		909
13							
14	6.5	2.75	25.0	125	C-6	1489	
15	6.5	2.75	30.0	125	C-6	1489X	
16	6.5	2.75	25.0	100	C-6	1462	
17	12.0	0.75	11.0	50	C-2R		915
18	12.0	0.33	2.9	500	C-2R		901
19	12.8	0.55	6.5	500	C-2R		918
20	12.8	0.98	15.0	200	C-2R		922
21	12.8	1.00	12.0	1,000	C-2R		912
22	12.8	1.20	10.0	1,200	C-2F		917
23	12.8	1.40	21.0	1,000	C-2R		921
24	13.0	0.69	6.0	1,000	C-2F		906
25	13.5	0.69	4.0	5,000	C-2F		904 (LV-516)
26							
27	13.5	0.54	2.0	10,000	C-2F		916
28	28.0	0.30	6.0	500	C-2F		928

T-5 XENON, WEDGE BASE LAMPS

29	12.0	0.59	(7 watts)	10,000	C-2R		
30	12.0	0.84	(10 watts)	10,000	C-2R		
31	12.0	1.50	(18 watts)	10,000	C-2R		
32	24.0	0.29	(7 watts)	10,000	C-2F		
33	24.0	0.42	(10 watts)	10,000	C-2F		
34	24.0	0.71	(17 watts)	10,000	C-2F		

XENON
Gas Filled Lamps

XENON

1207X
1210X
1218X
2407X
2410X
2417X

XENON GAS FILLED LAMP, HIGH LUMEN OUTPUT AND LONG LIFE. 10,000 LIFE HOURS

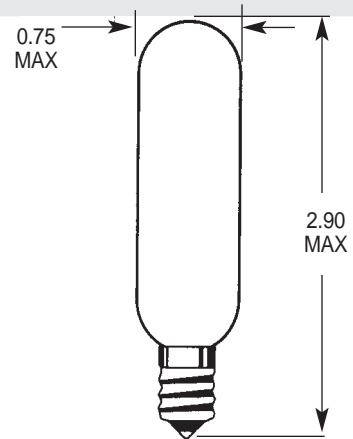


T-6 SPECIAL SERVICE LAMPS

LONG LIFE

EMERGENCY EXIT SIGN USE

EXIT



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	CANDELABRA SCREW BASE
1	130.0	0.06	7	10,000	C-5A	7T6-130V-CS
2	130.0	0.12	15	5,000	C-7A	15T6-130V-CS
3	130.0	0.19	25	3,500	C-7A	25T6-130V-CS
4	145.0	0.10	15	10,000	C-7A	15T6-145V-CS

T-6^{1/2} SPECIAL SERVICE LAMPS

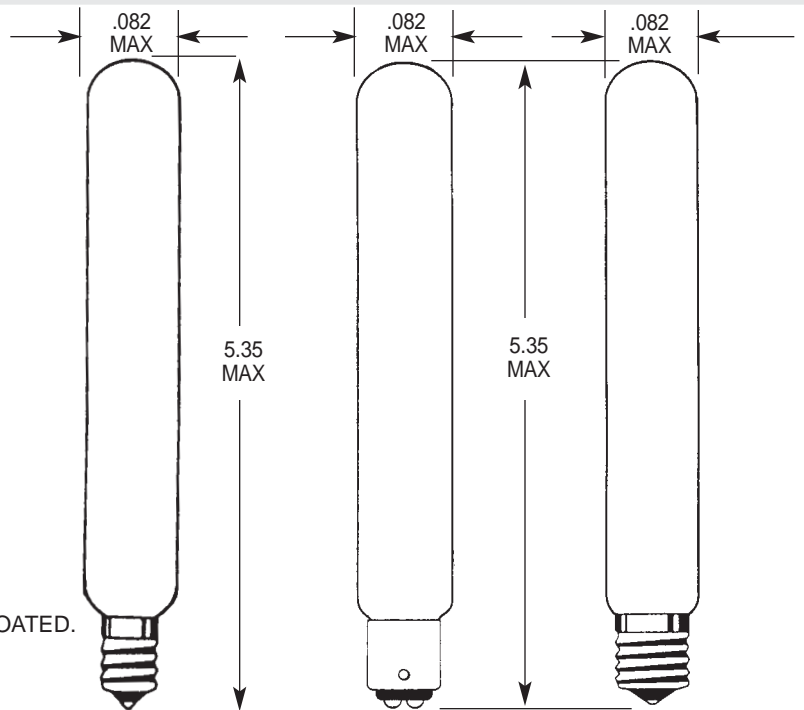
EMERGENCY EXIT SIGN USE

LONG LIFE

EXIT

THIS SECTION IS AVAILABLE IN 30,000 HOUR LONG LIFE VERSION.

C-8 LINEAR FILAMENT ON ALL T-6-1/2 LAMPS
AVAILABLE IN CLEAR OR FROSTED (F) OR (TF) TUFF-COATED.



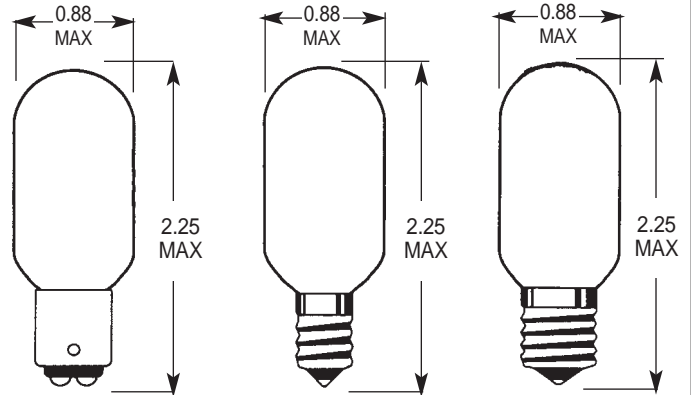
LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	CANDELABRA SCREW BASE	DOUBLE CONTACT BAYONET BASE	INTERMEDIATE SCREW BASE
5	130.0	0.16	20	4,000	C-8	—	20T6.5-130V-DC	20T6.5N-130V-INT
6	130.0	0.16	20	4,000	C-8	—	20T6.5-130V-DCF	20T6.5N-130V-IF
7								
8	130.0	0.20	25	4,000	C-8	25T6.5-130V-CS	25T6.5-130V-DC	25T6.5N-130V-INT
9	130.0	0.20	25	4,000	C-8	—	25T6.5-130V-DCF	25T6.5N-130V-IF
10								
11	130.0	0.307	40	3,500	C-8	—	40T6.5-130V-DC	40T6.5N-130V-INT
12	220.0	0.114	25	3,500	C-8	—	—	25T6.5N-220V-INT



T-7 SPECIAL SERVICE LAMPS

LONG LIFE

AVAILABLE IN FROSTED (FR)

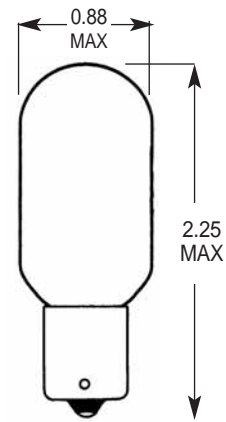


LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	DOUBLE CONTACT BAYONET BASE	CANDELABRA SCREW BASE	INTERMEDIATE SCREW BASE
1	130.0	0.12	15	3,000	C-7A	15T7-130V-DC	15T7-130V-CS	15T7N-130V-INT
2	130.0	0.15	20	3,000	C-7A	20T7-130V-DC	20T7-130V-CS	20T7N-130V-INT
3	130.0	0.19	25	3,000	C-7A	25T7-130V-DC	25T7-130V-CS	25T7N-130V-INT
4	130.0	0.24	30	3,000	C-7A	30T7-130V-DC	30T7-130V-CS	30T7N-130V-INT
5	130.0	0.31	40	2,500	C-7A	40T7-130V-DC	40T7-130V-CS	40T7N-130V-INT

T-7 SPECIAL SERVICE LAMPS

KRYPTON GAS FILLED

KRYPTON
Gas Filled Lamps



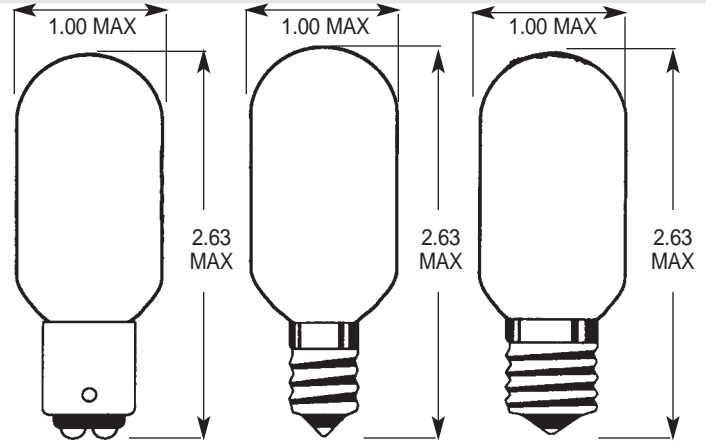
LINE NO.	VOLTS	AMPS	WATTS	FILAMENT	LIFE	USE	SINGLE CONTACT BAYONET BASE
6	14.0	3.57	50	C-2V	300	AIRCRAFT MARKER	1940
7	14.0	3.57	50	C-2V	300	AIRCRAFT MARKER	1944
8	14.0	3.57	50	C-2V	300	AIRCRAFT MARKER	1944X (SILVER CONTACT) (CENTERED FIL.)
9	28.0	1.79	50	C-2V	300	AIRCRAFT MARKER	1939X
10							
11	34.0	0.45	15	C-2V	1,500	TRAIN MARKER	15T7-34V-SCB
12	38.0	0.39	15	C-2V	1,500	TRAIN MARKER	15T7-38V-SCB
13							
14	30.0	0.83	25	C-2v	1,500	TRAIN MARKER	25T7-30V-SCB
15	120.0	0.21	25	C-3A	1,000	SPECIAL EQUIP.	25T7-120V-SCB



T-8 SPECIAL SERVICE LAMPS

AVAILABLE IN CLEAR, FROSTED, RED

LONG LIFE



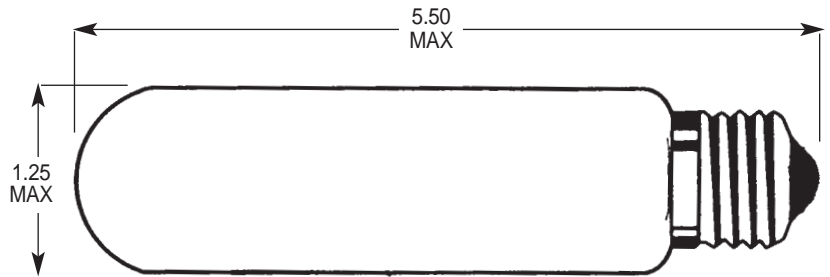
LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	DOUBLE CONTACT BAYONET	CANDELABRA SCREW BASE	INTERMEDIATE SCREW BASE
1	130.0	0.12	15	2,000	C-7A	15T8-130V-DC	15T8-130V-CS	15T8N-130V-INT
2	130.0	0.19	25	2,000	C-7A	25T8-130V-DC	25T8-130V-CS	25T8N-130V-INT
3	130.0	0.19	25	2,000	C-7A	25T8-130V-DCF(FROST)		25T8N-130V-INF(FROST)
4	130.0	0.19	25	2,000	C-7A	25T8-130V-DC-RED		
5	130.0	0.31	40	2,000	CC-2V	40T8-130V-DC	40T8-130V-CS	40T8N-130V-INT
6	130.0	0.47	60	2,000	CC-2V	60T8-130V-DC	60T8-130V-CS	60T8N-130V-INT
7								
8	230.0	0.11	25	2,000	C-7A	25T8-230V-DC		

T-10 SPECIAL SERVICE LAMPS

15W, 25W, 40W, 60W
CLEAR OR FROSTED, TUFF-COATED(TF)

LONG LIFE

130 VOLT • LONG LIFE FILAMENT • BRASS BASE
PREMIUM QUALITY. AVAILABLE IN 277 VOLT



LINE NO.	VOLTS	AMPS	WATTS	LIFE @ 120 VOLTS	FILAMENT	FINISH	MEDIUM SCREW BASE
9	130.0	.120	15	3,000	C-8	CLEAR	15T10-130V-MED
10	130.0	.120	15	3,000	C-8	FROSTED	15T10-130V-FR
11	130.0	.192	25	3,000	C-8	CLEAR	25T10-130V-MED
12	130.0	.192	25	3,000	C-8	FROSTED	25T10-130V-FR
13	130.0	.308	40	3,000	C-8	CLEAR	40T10-130V-MED
14	130.0	.308	40	3,000	C-8	FROSTED	40T10-130V-FR
15	130.0	.460	60	1,500	C-8	CLEAR	60T10-130V-MED
16	130.0	.460	60	1,500	C-8	FROSTED	60T10-130V-FR
17	250.0	.100	25	1,500	C-8R	CLEAR	25T10-250V-MED



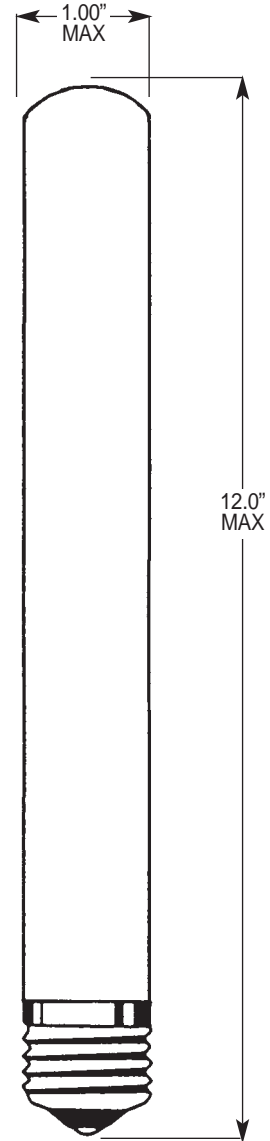
T-8

SHOWCASE LENGTH LAMPS

FOR USE IN SHOWCASE DISPLAYS AND
UNIQUE LIGHTING REQUIREMENT AREAS.

CAN BE TUFFCOATED® FOR SHATTER-PROOF APPLICATIONS.

REPLACES G.E. T-10 SHOWCASE LAMPS



AVAILABLE FROM STOCK IN CLEAR.

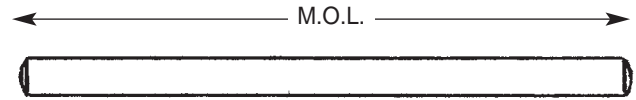
FROSTED AVAILABLE ON SPECIAL ORDER ONLY.

130 VOLT • LONG LIFE FILAMENT

LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	MEDIUM SCREW BASE
1	130.0	0.31	40	2,000	C-8 (LINEAR)	40T8-130V-MED
2	130.0	0.46	60	2,000	C-8 (LINEAR)	60T8-130V-MED
3	130.0	0.58	75	2,000	C-8 (LINEAR)	75T8-130V-MED



"LUMILINE" LINEAR INCANDESCENT TUBES
T-8



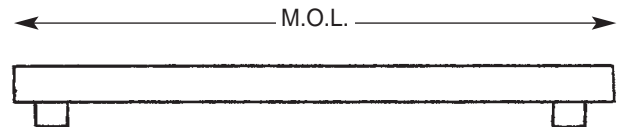
1500 AVG. LIFE HOURS

RECESSED "DISC" CONTACTS

LINE NO.	VOLTS	WATTS	M.O.L.	FINISH	PART NUMBER
1	120.0	30	17.75"	CLEAR	L30/CL
2	120.0	30	17.75"	WHITE	L30/W
3					
4	120.0	40	11.75"	CLEAR	L40/CL
5	120.0	40	11.75"	WHITE	L40/W
6					
7	120.0	60	17.75"	CLEAR	L60/CL
8	120.0	60	17.75"	WHITE	L60/W

"LINESTRA" LINEAR INCANDESCENT TUBES
(A.K.A. PHILINEA)

T-10



- 220V AVAILABLE ON SPECIAL ORDER.
- SINGLE SLOT BASE. SPECIAL ORDER.

2,000 AVG. LIFE HOURS

2 "SLOT" BASE

LINE NO.	VOLTS	WATTS	M.O.L.	FINISH	PART NUMBER
9	120/130V	35	11.8"	WHITE	LI35/W
10	125/130V	60	19.7"	WHITE	LI60/W
11	125/130V	150	39.4"	WHITE	LI150W

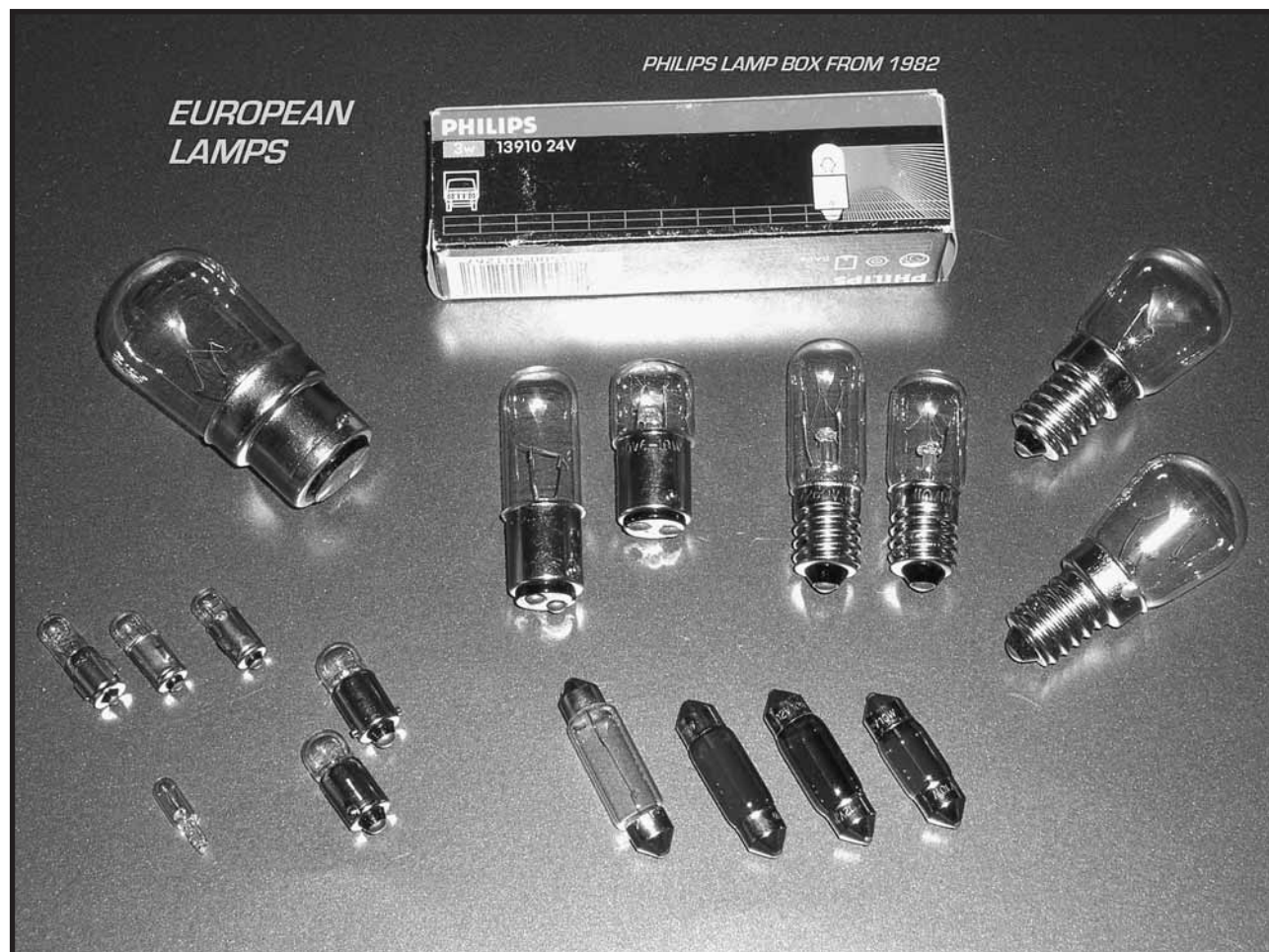


European Lamps

Norman Lamps, Inc. offers a large variety of Specialized European Miniature Lamps. These lamp types are commonly found in European industrial equipment, European medical equipment, amusement parks and gaming devices. Contact us for any European Lamp you require.

In addition to the European Lamps shown in this section, we are able to supply custom, as well as delisted equivalent lamp types. Minimum production may apply.

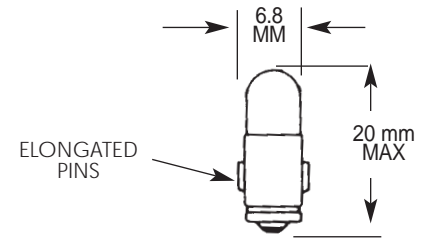
- BA20D BASE
- BA22D BASE
- T 1-1/2 WEDGE
- TELEPHONE SLIDE
- A-19, 230V OPERATION
- FLAT TOP, T-5 TYPE
- BA5S BAYONET
- BA7S BAYONET
- BA9S BAYONET
- PYGMY SHAPE
- LILIPUT SLIDE BASE
- FESTOON
- EURO-AUTOMOTIVE
- E-14 SCREW BASE
- EUROPEAN FLUORESCENT TUBES
- J. ROCHET
- OSRAM
- SOL-REX
- IZUMI
- HELLA
- NARVA
- SIEMENS
- ALBA
- MAZDA
- PHILIPS
- TAUNUSLICHT
- TELEMACHINIQUE
- ORBITEC
- TUNGSRAM





T-2 (6.8MM)

MINIATURE LAMPS EUROPEAN BAYONET BASE (BA7S)

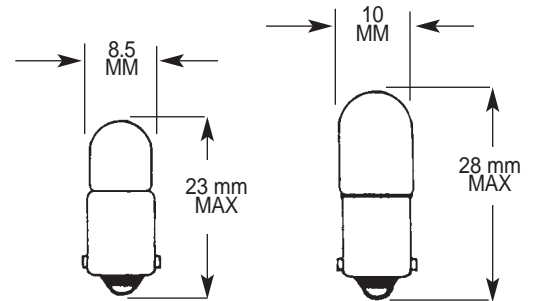


BA7S BASE

LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	CROSS REFERENCE	PART NUMBER
1	6.0	.100	0.6	200	C-2R	A-316-77	3798
2	6.0	.200	1.2	200	C-2R	A-301-77	3799
3	12.0	.167	2.0	200	C-2V	A-302-77, SE-1274	3898
4	24.0	.125	3.0	200	C-2V	A-311-77	3899
5	36.0	.050	1.8	200	C-2F	A-93-77	3800

T-2^{3/4} (8.5MM) T-3^{1/4} (10MM)

MINIATURE LAMPS EUROPEAN BAYONET BASE (BA9S)



SHORT GLASS

STANDARD GLASS

LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	CROSS REFERENCE	BA9S MINIATURE BAYONET	BA9S MINIATURE BAYONET
6	6.0	.500	3.0	200	C-2R	A-900-99	3896	
7	6.0	.330	2.0	200	C-2R	—	3895	
8	12.0	.167	2.0	200	C-2V	A-904-99	3796	
9								
10	12.0	.250	3.0	200	C-2V	—	3894	
11	24.0	.083	2.0	200	C-2V	A-931-99	3797	
12								
13	6.0	.667	4.0	5,000	C-2V	A-925-99, 238		3470
14	12.0	.333	4.0	10,000	C-2V	A-924-99, 1893		3473
15	24.0	.167	4.0	10,000	C-2V	A-946-99, 1818		3476
16	36.0	.050	2.0	5,000	C-2V	A-927-99, 1822		3459
17	48.0	.050	3.0	5,000	C-2V	A-932-99, N3482		3085
18	60.0	.050	3.0	5,000	C-2F	A-934-99, 1835		3075
19	130.0	.020	3.0	5,000	CC-7A	A-948-99, 967		3013 (967)
20	240.0	.013	3.0	5,000	CC-7A	—		3080

EUROPEAN
2



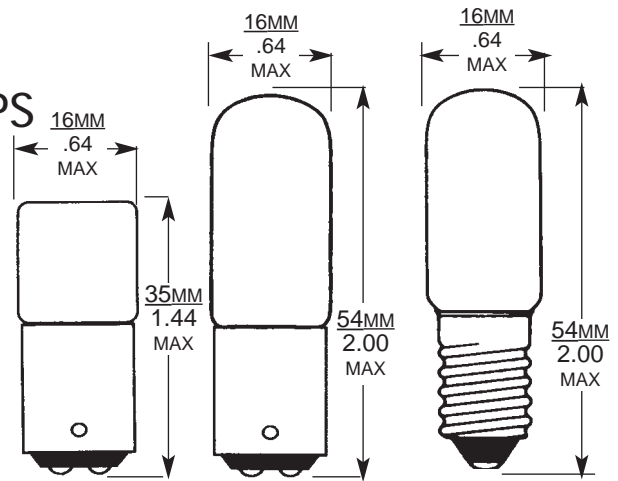
NORMAN LAMPS, INC.
Distributing Light To The World

T-5

SPECIAL SERVICE EUROPEAN LAMPS

EQUAL TO:
SOL-REX
J-ROCHET
OSRAM
DR. FISCHER
IZUMI
TELEMECHNIQUE
ROCKWELL
ALLEN-BRADLEY

*AVAILABLE IN TUFF-COATED®



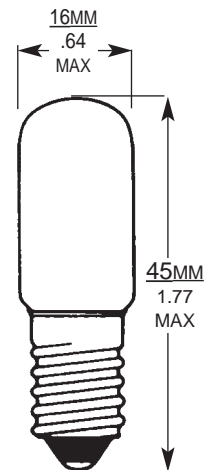
LINE NO.	Voltage Range VOLTS	AMPS	Watts Range WATTS	LIFE	FILAMENT	Double Contact Bayonet	Double Contact Bayonet	E-14 European Screw Base
1	24.0	.210	5	2,000	C-6	T1635B15E	T1654B15E	T1654E14E
2	48.0-60.0	.125-.167	6-10	2,000	C-3A	T1635B15Q	T1654B15Q	T1654E14Q
3	60.0	.081	5	3,000	C-3A	T1635B15K	T1654B15K	T1654E14K
4	110.0-140.0	.055-.071	6-10	3,000	C-5A	T1635B15U	T1654B15U	T1654E14U
5	130.0	.040	5	3,000	C-5A	T1635B15M	T1654B15M	T1654E14M
6	220.0-260.0	.027-.038	6-10	3,500	C-5A	T1635B15S	T1654B15Y	T1654E14Y

T-5

SPECIAL SERVICE EUROPEAN LAMPS

EQUAL TO:
SOL-REX
J-ROCHET
OSRAM
DR. FISCHER
IZUMI
TELEMECHNIQUE
ROCKWELL
ALLEN-BRADLEY

*AVAILABLE IN TUFF-COATED®

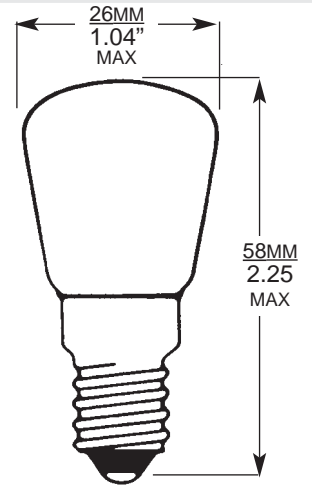


LINE NO.	Voltage Range VOLTS	AMPS	Watts Range WATTS	LIFE	FILAMENT	E-14 European Screw Base
7	130.0	.040	5	3,000	C-5A	T1645E14M
8	220.0-260.0V	.027-.038	6-10	3,500	C-5A	T1645E14Y



T-8P (PYGMY TYPE)

SPECIAL SERVICE EUROPEAN LAMPS



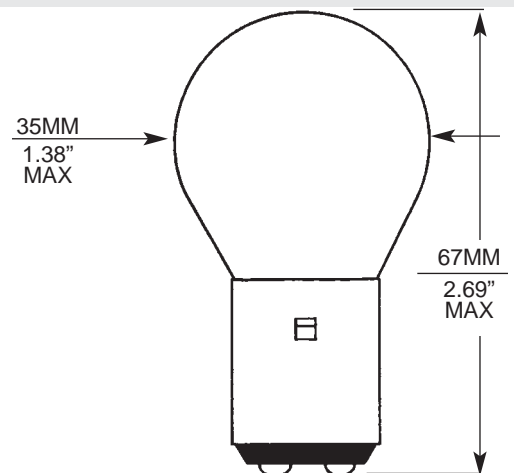
AVAILABLE IN TUFF-COATED®
FROSTED GLASS AVAILABLE ON SPECIAL ORDER ONLY.

LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	E-14 EUROPEAN SCREW BASE
1	24.0	.625	15	2,000	C-6	15T8-24V-E14
2						
3	120.0	.125	15	3,000	C-3A	15T8-120V-E14
4	120.0	.208	25	2,000	C-3A	25T8-120V-E14
5						
6	220-240	.066	15	3,000	C-5A	15T8-220V-E14
7	220-240	.109	25	2,000	C-5A	25T8-220V-E14
8						
9	220-240	.190	40	2,000	C-7A	40T8-220V-E14

S-11

EUROPEAN MINIATURE LAMPS HIGH INTENSITY

BA20D BAYONET BASE
(30 mm L.C.L.)



LINE NO.	VOLTS	AMPS	WATTS	LIFE	FILAMENT	EUROPEAN BA20D BAYONET BASE
10	12.0	3.34	40	500	CC-6	8024
11	12.0	4.17	50	50	CC-6	8022
12	15.0	4.00	60	75	CC-6	8029



Neon Application and Design Factors

Neon Lamp Construction and Operation

Basic Neon Lamp construction is shown below in Figure #1. It consists of the glass tube sealed at the top, thus forming the "Pip." Gas is inserted into the bulb as the seal is formed. This gas surrounds the electrodes. When proper voltage is applied to the lamp, the electrodes ionize the surrounding gas creating a plasma field. This plasma field glows, emitting visible orange light.

Based Neon Lamp Construction

Neon lamps are available in a wide variety of based configurations. As shown in Figure #2, these wire terminal neon lamps are incorporated into the base of your choice and enclosed (in some cases) by a plastic, fluted lens cap. A resistor can be attached internally in order to operate directly on line voltage (120V). Brightness level can also be increased by using a lower value resistor.

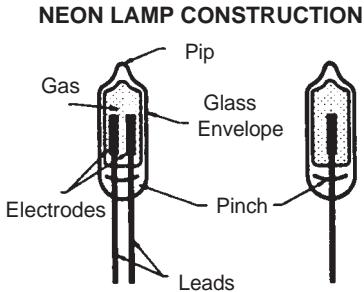


FIGURE 1

BASED NEON LAMP CONSTRUCTION

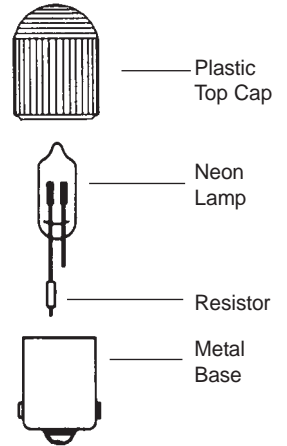


FIGURE 2





Neon Application and Design Factors

Life Expectancy of Neon Lamps

Life expectancy for neons depends on a variety of electrical and operational factors. These factors include supply voltage, resistance value and current. In general, the lower the resistance used, the lower the life hours expected and brightness increases. Conversely, increasing resistance will increase life but reduce brightness. Figure #3 shows the relationship between resistance, brightness level and life expectancy at 120.0V A.C.

Brightness Level	Resistance Value	Life Expectancy
HIGH	10K-20K	10,000 HOURS
STANDARD	35K - 47K	25,000 HOURS
LOW	100K	30,000 HOURS

FIGURE 3

Above life hours are an approximation only. Actual life hours may vary depending upon operating current and brightness maintenance required. See "Lamp Darkening" in the following column for explanation of useful life expectancy for neon lamps.

Custom Neon Lamp Assemblies

Norman can supply custom neon lamp assemblies per your specifications. Attached resistors, special lead lengths, insulated wire leads with terminals and neon arrays are just a few of the options we can supply. Contact us for great pricing.

Neon Lamp Darkening

Neon lamps do not fail abruptly at the end of their life. Instead, their light output gradually decreases due to deposits building up on the interior lamp walls. Light output decreases to an unacceptable level thus ending the neon lamp's useful life. Life expectancies listed in Figure #3 are given at 50% reduction of initial light output.

Neon Lamp Terms and Definitions

Striking Voltage

The voltage at which the neon lamp ignites is usually between 45 and 65V A.C. for standard brightness types and between 70 and 95V A.C. for high brightness types. This is sometimes call the breakdown or ignition voltage.

Maintaining Voltage

The voltage across the lamp after it has ignited. This voltage is a function of the lamp current and is usually quoted at the design current. Nominal values are 60V for standard brightness and 75V for high brightness lamps.

Extinction Voltage

The voltage at which the lamp extinguishes if the supply voltage is reduced. It is normally a few volts below the maintaining voltage.

Design Current

The current at which the lamp has been designed to operate. It will be determined by the supply voltage and the value of series resistance. Operation at lower currents can result in the glow discharge becoming unstable (i.e., flickering) and operation at higher currents can severely reduce the useful life of the lamp. It is therefore important to use only the recommended value of series resistance.

Green and Blue Emitting Neon Lamps

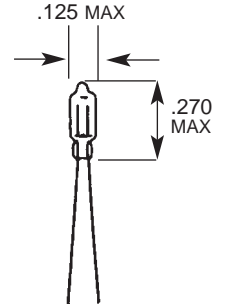
Any neon lamp shown in this catalog can be made to emit a green or blue color glow. In some configurations they are in stock. Call for information regarding these "fluorescent" neon lamps.

Note: Decreasing resistance to neon lamp will result in a shorter service life. See "Life Expectancy of Neons" on the following page. All neon lamps can be supplied with or without a resistor. Call for more information.



T-1

MINIATURE NEON LAMPS



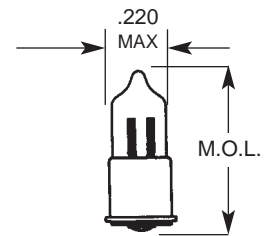
*Recommended Resistance

SOLDER-READY TERMINALS

LINE NO.	IGNITION VOLTAGE		CURRENT MA	*SERIES RESISTOR		AVERAGE USEFUL LIFE	BRIGHTNESS LEVEL	COLOR GLOW	M.O.L.	WIRE TERMINAL
	AC	DC		100-125V OHMS	220-250V W					
1	65	90	0.3	100K	1/4	12,000	STANDARD	ORANGE	.270	NE-1H-S
2	95	135	1.2	47K	1/4	12,000	HIGH	ORANGE	.270	NE-1H
3	95	135	1.2	35K	1/4	15,000	HIGH	GREEN	.270	NE-1HG

T-1^{3/4}

MINIATURE NEON LAMPS



*Resistor Included in Base

LINE NO.	IGNITION VOLTAGE		CURRENT MA	*SERIES RESISTOR		AVERAGE USEFUL LIFE	BRIGHTNESS LEVEL	COLOR GLOW	M.O.L.	MIL. NO.	MIDGET FLANGED BASE
	AC	DC		100-125V OHMS	W						
4	65	90	0.3	220K	1/4	15,000	STANDARD	ORANGE	.625		NE-A1G-R
5	95	135	1.2	47K	1/4	25,000	HIGH	ORANGE	.625		NE-A1H-R
6	95	135	1.2	18K	1/4	15,000	VERY HIGH	ORANGE	.625		NE-A1H-R18
7	95	135	1.2	35K	1/4	15,000	HIGH	GREEN	.625		NE-A1H-R-G
8	95	135	1.2	35K	1/4	15,000	HIGH	BLUE	.625		NE-A1H-R-B
9											
10	65	90	0.7	100K	1/4	25,000	STANDARD	ORANGE	.940	MI5098/11-001	C7A (NE-2D)
11	95	135	1.9	30K	1.4	25,000	HIGH	ORANGE	.940		C9A (NE-2J)

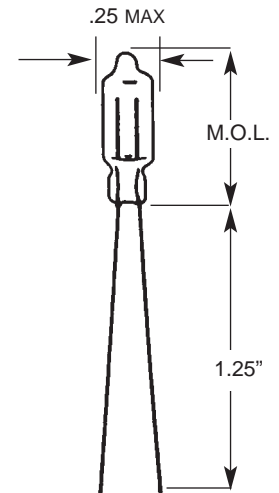


T-2

MINIATURE NEON LAMPS

*Recommended Resistance

CUSTOM LEAD LENGTHS ARE AVAILABE ON SPECIAL ORDER.
SOLDER-READY TERMINALS

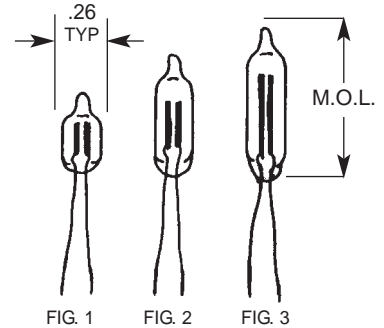


LINE NO.	IGNITION VOLTAGE		DESIGN CURRENT MA	*SERIES RESISTOR 100-125V		220-250V		AVERAGE USEFUL LIFE	BRIGHTNESS LEVEL	COLOR GLOW	M.O.L.	WIRE TERMINAL
	AC	DC		OHMS	W	OHMS	W					
1	65	90	0.6	150K	1/4	540K	1/3	25,000	STANDARD	ORANGE	1.00"	A1A (NE-2)
2	65	90	0.3	220K	1/4	540K	1/3	25,000	STANDARD	ORANGE	.50"	A1B
3	95	135	1.2	47K	1/4	150K	1/3	25,000	HIGH	ORANGE	.50"	A1C
4												
5	65	90	0.7	100K	1/4	220K	1/3	25,000	STANDARD	ORANGE	.84"	A2A (NE-2A)
6	65	90	0.7	100K	1/4	220K	1/3	25,000	STANDARD	ORANGE	.75"	A2B (NE-2V)
7	95	135	1.9	30K	1/4	100K	1/3	25,000	HIGH	ORANGE	.75"	A3C (NE-2U)
8	95	135	1.4	100K	1/4	220K	1/3	25,000	HIGH	ORANGE	.84"	A5A
9												
10	95	135	1.2	68K	1/4	220K	1/3	25,000	STANDARD	ORANGE	1.00"	A6A
11	95	135	1.2	100K	1/4	220K	1/3	25,000	STANDARD	ORANGE	.75"	A7A
12	65	90	0.7	100K	1/4	220K	1/3	25,000	STANDARD	ORANGE	.75"	A9A (NE-2E)
13												
14	95	135	1.9	30K	1/4	100K	1/3	25,000	HIGH	ORANGE	.75"	C2A (NE-2H)
15	95	135	1.5	30K	1/4	100K	1/3	25,000	HIGH	ORANGE	.75"	C3A
16	95	135	1.5	30K	1/4	100K	1/3	25,000	HIGH	ORANGE	.84"	C4A
17	95	135	1.5	30K	1/4	100K	1/3	25,000	HIGH	ORANGE	.84"	C5A
18	95	135	1.5	22K	1/4	100K	1/3	25,000	HIGH	ORANGE	1.00"	C6A
19												
20	95	135	1.2	47K	1/4	150K	1/3	15,000	HIGH	GREEN	.50"	G2B
21	95	135	1.4	35K	1/4	150K	1/3	15,000	HIGH	BLUE	.50"	B2B



T-2

MINIATURE NEON LAMPS CIRCUIT COMPONENT GLOW LAMPS



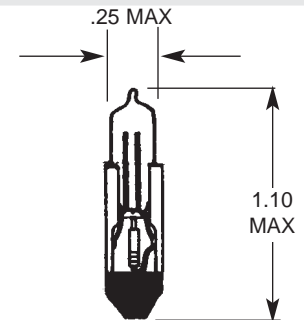
Line No.	Initial D-C Breakdown Voltage in 5-50 Ft. C. Light	Initial D-C Maintaining Voltage at Design Current	Design Current (D-C Milli-amps)	Avg. Life for Indicated Change in Max. Breakdown or Maintaining Volts				Base	Max Overall Length (Inches)	Figure No.	Norman Part No.	
				Breakdown Change	Volts Hours	Maintaining Change	Volts Hours					
1												
2	60-80	52-62	0.3	—	—	6V	7,500	1"	W.T.	1/2	1	2AA (NE-99)
3	125 max.	—	1.5	—	25,000	—	—	1"	W.T.	1/2	1	2AC
4	65-80	AVG.>50	0.3	5V	6,000	5V	6,000	2"	W.T.	3/4	2	3AD(NE-98)
5	65-80	AVG.>50	0.3	5V	6,000	5V	6,000	2"	W.T.	3/4	2	3AD-C
6	60-90	AVG.>58	0.4	5V	2,000	5V	2,000	2"	W.T.	3/4	2	3AG
7	65-93	52-62	0.4	5V	2,000	5V	2,000	2"-1 ³ / ₄ "	W.T.	3/4	2	3AG-B
8	68-76	52-62	0.4	5V	2,000	5V	2,000	2"-1 ³ / ₄ "	W.T.	3/4	2	3AG-C
9	65-73	64 max.	0.4	5V	2,000	5V	2,000	1"	W.T.	3/4	2	3AG-F
10	75-135	Avg. 70	2.0	10V	2,000	10V	2,000	2"	W.T.	3/4	2	3AH
11												
12	60-100	AVG.>59	5.0	5V	500	5V	500	1"	W.T.	3/4	2	3AJ
13	60-100	AVG. 59	5.0	5V	500	5V	500	2"	W.T.	3/4	2	3AJ-C
14	105-135	60-80	0.5	10V	3,000	10V	3,000	1"	W.T.	27/32	3	4AD
15	120-150	60-80	0.5	10V	3,000	10V	3,000	1"	W.T.	27/32	3	4AE
16	60-90	AVG. 59	0.3	5V	6,000	5V	6,000	1"	W.T.	1	3	5AB(NE-23)
17	60-80	50-65	0.3	5V	6,000	5V	6,000	1"-7/8"	W.T.	1	3	5AB-A
18	62-72	50-60	0.3	5V	6,000	5V	6,000	1"-7/8"	W.T.	1	3	5AB-B
19	62-72	50-60	0.3	5V	6,000	5V	6,000	1"-7/8"	W.T.	1	3	5AB-BT
20	60-90	AVG.59	0.3	5V	6,000	5V	6,000	1"	W.T.	1	3	5AB-T
21												
22	60-90	52-65	0.3	—	—	5V	2,000	1"	W.T.	1	3	5AC (NE-68)
23	64-80	50-58	0.1	5V	2,000	5V	2,000	1"	W.T.	1	3	5AG (NE-81)
24	64-80	50-60	0.3	5V	2,000	5V	2,000					
25	68-76	50-60	0.4	—	1,000	5V	2,000	1"-1 ¹ / ₂ "	W.T.	1	3	5AG-A (NE-76)
26	60-100	AVG.>59	5.0	5V	5,000	5V	5,000	1"	W.T.	15/16	3	5AH (NE-83)
27	60-100	AVG.>61	10.0	5V	500	5V	500					
28	60-85	50-65	5.0	5V	5,000	5V	5,000	1"	W.T.	15/16	3	5AH-A
29	60-85	52-67	10.0	5V	500	5V	500					
30	75-85	55-66	5.0	5V	5,000	5V	5,000	1"	W.T.	15/16	3	5AH-B
31												
32	75-85	57-68	10.0	5V	500	5V	500					
33	60-85	50-70	3.0	5V	5,000	5V	5,000	1"-1 ³ / ₁₆ "	W.T.	15/16	3	5AH-D
34	55-90	AVG.>57	1.5	5V	2,000	5V	2,000	1"	W.T.	15/16	3	5AJ (NE-86)
35	55-75	45-65	1.5	5V	2,000	5V	2,000	1"	W.T.	15/16	3	5AJ-A
36	70-90	55-75	1.5	5V	2,000	5V	2,000	1"	W.T.	15/16	3	5AJ-B



T-2

MINIATURE NEON LAMPS

*RESISTOR INCLUDED IN BASE

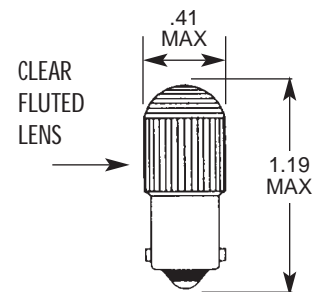


LINE NO.	VOLTS	mA	*RESISTOR	LIFE	BRIGHTNESS LEVEL	GLOW	*TELEPHONE SLIDE #5
1	120.0	1.9	10K 1/4W	10,000	VERY HIGH	RED	NE-120PSB/RED
2	120.0	1.9	10K 1/4W	10,000	VERY HIGH	ORANGE	NE-120PSB/10K
3	120.0	1.9	35K 1/4W	50,000	STANDARD	ORANGE	NE-120PSB/35K
4	120.0	1.5	35K 1/4W	25,000	HIGH	GREEN	NE-120PSB-G
5	120.0	1.5	35K 1/4W	25,000	HIGH	BLUE	NE-120PSB-B

T-3¹/₄

MINIATURE NEON LAMPS

*RESISTOR INCLUDED IN BASE
AVAILABLE IN FLUTED AND NON-FLUTED, CLEAR LENS.



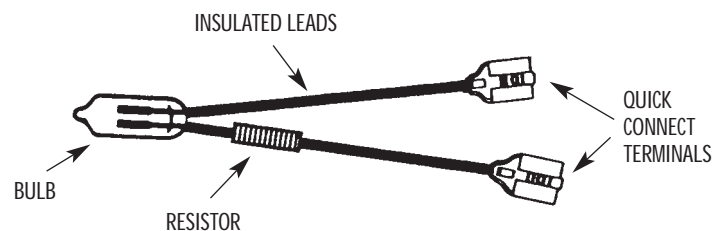
LINE NO.	VOLTS	mA	*RESISTOR	LIFE	BRIGHTNESS LEVEL	GLOW	*MINIATURE BAYONET BASE
6	120.0	0.3	220K 1/4W	25,000	STANDARD	ORANGE	NE-51/B1A
7	120.0	1.2	47K 1/4W	25,000	HIGH	ORANGE	NE-51H/B2A
8	120.0	1.2	10K 1/4W	15,000	VERY HIGH	ORANGE	NE-51H/B2A-HR
9	120.0	1.2	30K 1/4W	25,000	HIGH	GREEN	NE-51H/B2A-HG
10	120.0	1.2	30K 1/4W	25,000	HIGH	BLUE	NE-51H/B2A-HB
11	240.0	2.1	220K 1/4W	25,000	STANDARD	ORANGE	B2A-240V

NEON LAMP ASSEMBLIES

VALUE ADDED SERVICES

- ATTACHED RESISTORS
 - ATTACHED TERMINALS
 - SPECIAL LEAD LENGTHS
 - ATTACHED INSULATORS
- CALL OR SEND SPEC. SHEET FOR PRICING

(MINIMUM PRODUCTION RUN MAY APPLY)



EXAMPLE ONLY

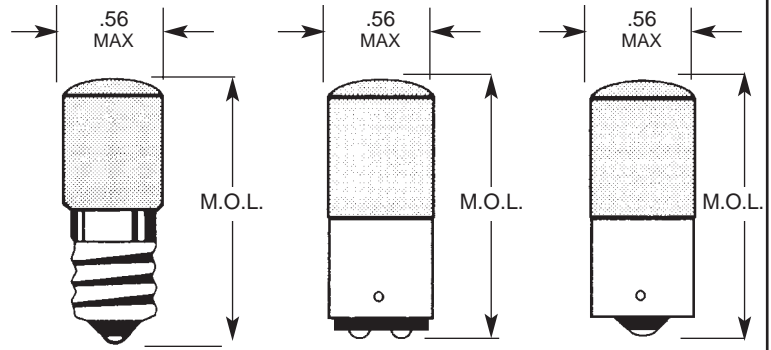


T-4¹/₂

MINIATURE NEON LAMPS

HIGH BRIGHTNESS
*Resistor Included in Base

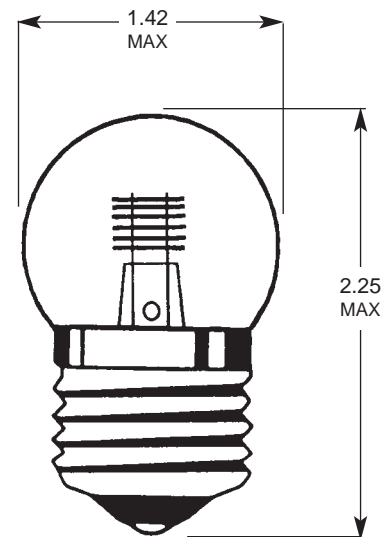
Fluted, plastic caps w/top lens



LINE NO.	VOLTS	mA	*RESISTOR	LIFE	M.O.L.	CANDELABRA SCREW BASE	DOUBLE CONTACT BAYONET BASE	SINGLE CONTACT BAYONET BASE
1	105-125	2.0	30K 1/4W	1,000	1.50		7AA (NE-16)	B6A (NE-21)
2	105-125	2.0	30K 1/4W	7,500	1.50		B5A (NE-17)	B8A (NE-47)
3	105-125	2.0	30K 1/4W	7,500	1.50	B7A (NE-45)	B9A (NE-48)	
4	105-125	2.0	47K 1/4W	10,000	1.53	F3A (NE-57)		
5	105-125	2.0	100K 1/4W	15,000	1.53	F4A (NE-58)		

S-11*

MINIATURE NEON LAMPS



*LIMITED AVAILAILITY REMAINING

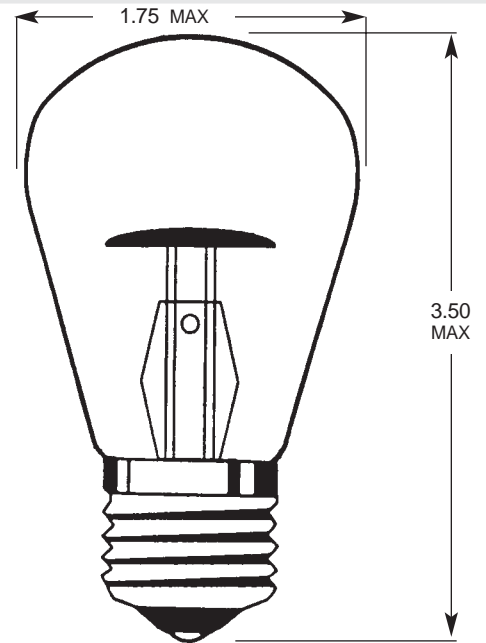
LINE NO.	VOLTS	mA	IN BASE	LIFE	M.O.L.	MEDIUM SCREW BASE
6						
7	105-125	8.0	48K 1/4W	10,000	2.25	J5A (NE-30)
8	210-250	5.0	220K 1/4W	10,000	2.25	J9A (NE-56)



S-14*

NEON LAMPS

INDUSTRIAL INDICATOR



*LIMITED AVAILABILITY REMAINING

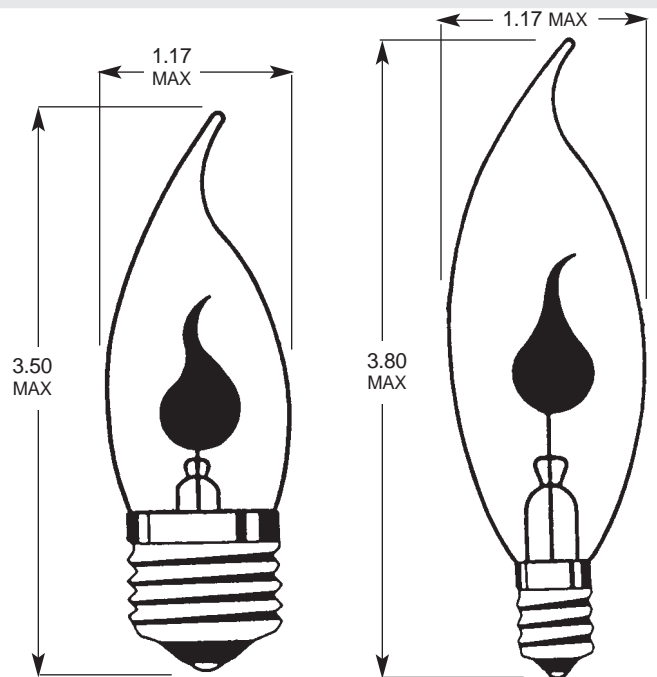
LINE NO.	VOLTS	mA	IN BASE RESISTOR	LIFE	GLOW	MEDIUM SCREW BASE
1	120.0	18	3.5K 1/4W	10,000	ORANGE	NE-34/R2A
2	120.0	18	3.5K 1/4W	1,000	PURPLE (ARGON GAS)	AR-1/WIA
3	120.0	30	2.2K 1/4W	10,000	ORANGE	NE-40/R6A

FLICKER FLAME NEON LAMPS

(FLAME TIP)

FLAME SHAPE ELECTRODES
FLICKERING MOTION
DECORATIVE LIGHTING USE
LONG LIFE (25,000 HOURS)
ORANGE GLOW

*Resistor Included in Base



LINE NO.	VOLTS	mA	*RESISTOR	MEDIUM SCREW BASE	CANDELABRA SCREW BASE
4	120.0	8	120K 1/4W	FF7706	FF6406

NOTES



NORMAN LAMPS, INC.
Distributing Light To The World



Based L.E.D. Lamps

Norman Lamps, Inc. offers a wide variety of based L.E.D. lamps available from stock. Based L.E.D. lamps are designed for direct replacement of incandescent lamps and offer many advantages. For example, very long service life, low power consumption, shock and vibration proof, many vivid colors, no heat build-up, low maintenance costs, high light output, and more.

Norman Lamps, Inc. offers several based L.E.D. lamp configurations in order to meet your specific requirements.

Refer to the Based L.E.D. Comparison Chart shown below to determine which configuration suits your application and budget most effectively.

Looking for white light, based L.E.D. Lamps?

Look no further! We stock high quality, pure white light L.E.D. lamps in all base types and voltages listed. We also custom design and manufacture based L.E.D. lamps to your required specifications.

CONTACT US
for further information and pricing. As always we look forward to working with you.

BASED L.E.D. COMPARISON CHART

SPECIFICATION	SUPER CHIP	MULTI-CHIP	SINGLE CHIP	"X" CHIP	4-CLUSTER	7 CLUSTER
BRIGHTNESS LEVEL	VERY HIGH	VERY HIGH	HIGH	VERY HIGH	VERY HIGH	VERY HIGH
EFFECTIVE VIEWING ANGLE	180°	180°	60°~90°	360°	120°	120°
POWER CONSUMPTION	VERY LOW	LOW	VERY LOW	VERY LOW	LOW	LOW
LIFE HOURS	100,000	100,000	100,000	100,000	100,000	100,000
RELATIVE COST	LOW	MODERATE	LOW	MODERATE	MODERATE	HIGH

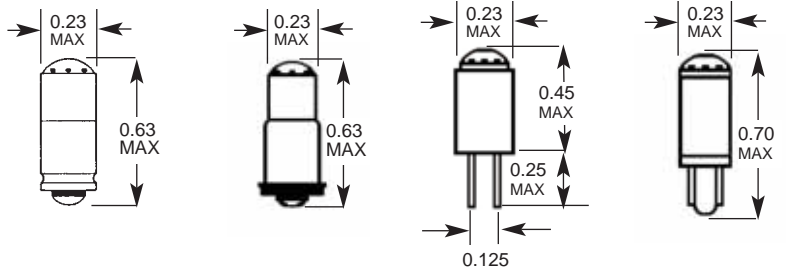




T-1 3/4 TYPE BASED L.E.D. LAMPS

**MULTI-CHIP
DIODE**

100,000+ Life Hours
6 Chip Construction
Ultra Bright Red, Green, Yellow
180° Viewing angle

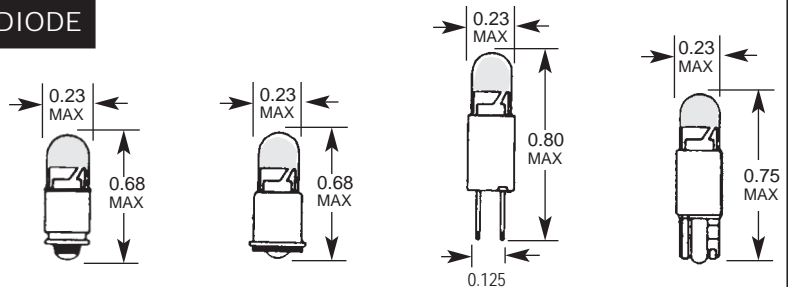


LINE NO.	VOLTAGE RANGE	mA	EMITTED COLOR	WAVELENGTH NM	MCD	MIDGET-GROOVED BASE	MIDGET-FLANGED BASE	BI-PIN BASE	MINIATURE WEDGE BASE
1	6.0	80	ULTRA-RED	660	500	G206CR6-6V	F206CR6-6V	B206CR6-6V	W206CR6-6V
2	6.0	80	ULTRA-GREEN	562	500	G206CG6-6V	F206CG6-6V	B206CG6-6V	W206CG6-6V
3	6.0	80	ULTRA-YELLOW	585	500	G206CY6-6V	F206CY6-6V	B206CY6-6V	W206CY6-6V
4									
5	12-14	60	ULTRA-RED	660	500	G206CR6-12V	F206CR6-12V	B206CR6-12V	W206CR6-12V
6	12-14	60	ULTRA-GREEN	562	500	G206CG6-12V	F206CG6-12V	B206CG6-12V	W206CG6-12V
7	12-14	60	ULTRA-YELLOW	585	500	G206CY6-12V	F206CY6-12V	B206CY6-12V	W206CY6-12V
8									
9	24-28	20	ULTRA-RED	660	500	G206CR6-28V	F206CR6-28V	B206CR6-28V	W206CR6-28V
10	24-28	20	ULTRA-GREEN	562	500	G206CG6-28V	F206CG6-28V	B206CG6-28V	W206CG6-28V
11	24-28	20	ULTRA-YELLOW	585	500	G206CY6-28V	F206CY6-28V	B206CY6-28V	W206CY6-28V

T-1 3/4 TYPE WHITE LIGHT L.E.D. LAMPS

SINGLE-CHIP DIODE

Ultra Bright, White Light
Single Chip Construction
100,000+ Life Hours • 60° Viewing angle

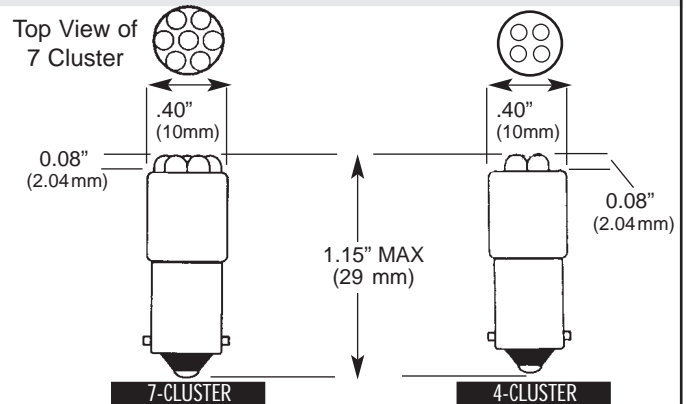


LINE NO.	VOLTAGE RANGE	mA	EMITTED COLOR	WAVELENGTH NM	MCD	MIDGET-GROOVED BASE	MIDGET-FLANGED BASE	BI-PIN BASE	MINIATURE WEDGE BASE
12	5-6	30	WHITE	475	800	G99UW-6V	F99UW-6V	B99UW-6V	W99UW-6V
13	12-14	20	WHITE	475	800	G99UW-12V	F99UW-12V	B99UW-12V	W99UW-12V
14	24-28	9	WHITE	475	800	G99UW-28V	F99UW-28V	B99UW-28V	W99UW-28V



T-3¹/₄ TYPE **L.E.D. CLUSTER** BASED L.E.D. LAMPS, MINIATURE BAYONET

120° viewing angle
 7 AND 4 L.E.D. CLUSTERS, SUPER-BRIGHT, 3mm
 100,000+ Life Hours

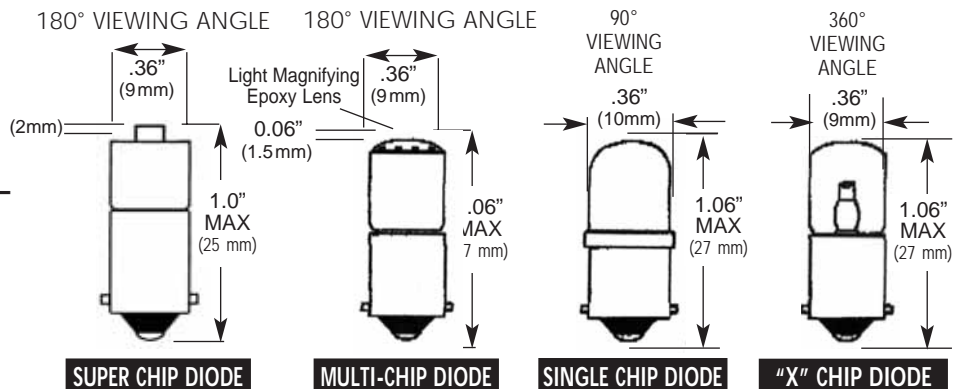


LINE NO.	VOLTAGE RANGE	mA	EMITTED COLOR	WAVELENGTH NM	MIN. MCD	MINIATURE BAYONET BASE	MINIATURE BAYONET BASE
1	6.0V	80	ULTRA-RED	660	2,200	BA97-6R	BA94-6R
2	6.0V	80	ULTRA-GREEN	562	2,000	BA97-6G	BA94-6G
3	6.0V	80	ULTRA-YELLOW	585	2,000	BA97-6Y	BA94-6Y
4	6.0V	80	ULTRA-AMBER	610	2,000	BA97-6A	BA94-6A
5	6.0V	80	ULTRA-BLUE	450	2,000	BA97-6B	BA94-6B
6	6.0V	80	ULTRA-WHITE	475	2,500	BA97-6W	BA94-6W
7							
8	12-15V	60	ULTRA-RED	660	2,000	BA97-12R	BA94-12R
9	12-15V	60	ULTRA-GREEN	562	2,000	BA97-12G	BA94-12G
10	12-15V	60	ULTRA-YELLOW	585	2,000	BA97-12Y	BA94-12Y
11	12-15V	60	ULTRA-AMBER	610	2,000	BA97-12A	BA94-12A
12	12-15V	60	ULTRA-BLUE	450	2,000	BA97-12B	BA94-12B
13	12-15V	60	ULTRA-WHITE	475	2,500	BA97-12W	BA94-12W
14							
15	24-28V	20	ULTRA-RED	660	2,000	BA97-24R	BA94-24R
16	24-28V	20	ULTRA-GREEN	562	2,000	BA97-24G	BA94-24G
17	24-28V	20	ULTRA-YELLOW	585	2,000	BA97-24Y	BA94-24Y
18	24-28V	20	ULTRA-AMBER	610	2,000	BA97-24A	BA94-24A
19	24-28V	20	ULTRA-BLUE	450	2,000	BA97-24B	BA94-24B
20	24-28V	20	ULTRA-WHITE	475	2,500	BA97-24W	BA94-24W
21							
22	48.0V	15	ULTRA-RED	660	2,000	BA97-48R	BA94-48R
23	48.0V	15	ULTRA-GREEN	562	2,000	BA97-48G	BA94-48G
24	48.0V	15	ULTRA-YELLOW	585	2,000	BA97-48Y	BA94-48Y
25	48.0V	15	ULTRA-AMBER	610	2,000	BA97-48A	BA94-48A
26	48.0V	15	ULTRA-BLUE	450	2,000	BA97-48B	BA94-48B
27	48.0V	15	ULTRA-WHITE	475	2,500	BA97-48W	BA94-48W
28							
29	55-60V	10	ULTRA-RED	660	2,000	BA97-60R	BA94-60R
30	55-60V	10	ULTRA-GREEN	562	2,000	BA97-60G	BA94-60G
31	55-60V	10	ULTRA-YELLOW	585	2,000	BA97-60Y	BA94-60Y
32	55-60V	10	ULTRA-AMBER	610	2,000	BA97-60A	BA94-60A
33	55-60V	10	ULTRA-BLUE	450	2,000	BA97-60B	BA94-60B
34	55-60V	10	ULTRA-WHITE	475	2,500	BA97-60W	BA94-60W
35							
36	120.0V	6	ULTRA-RED	660	2,000	BA97-120R	BA94-120R
37	120.0V	6	ULTRA-GREEN	562	2,000	BA97-120G	BA94-120G
38	120.0V	6	ULTRA-YELLOW	585	2,000	BA97-120Y	BA94-120Y
39	120.0V	6	ULTRA-AMBER	610	2,000	BA97-120A	BA94-120A
40	120.0V	6	ULTRA-BLUE	450	2,000	BA97-120B	BA94-120B
41	120.0V	6	ULTRA-WHITE	475	2,500	BA97-120W	BA94-120W



**T-3 1/4 TYPE
BASED L.E.D. LAMPS,
MINIATURE BAYONET**

100,000+ Life Hours



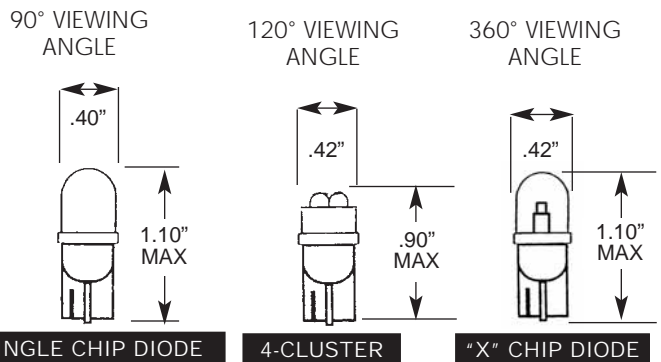
LINE NO.	VOLT RANGE	mA	EMITTED COLOR	WAV. NM	MIN. MCD	MINIATURE BAYONET BASE	MINIATURE BAYONET BASE	MINIATURE BAYONET BASE	MINIATURE BAYONET BASE
1	6.0V	50	ULTRA-RED	660	1000	LED6MBR-ACDC	BA96-6R	BA91-6R	BA9X-6R
2	6.0V	50	ULTRA-GREEN	562	1000	LED6MBG-ACDC	BA96-6G	BA91-6G	BA9X-6G
3	6.0V	50	ULTRA-YELLOW	585	1000	LED6MBY-ACDC	BA96-6G	BA91-6Y	BA9X-6Y
4	6.0V	50	ULTRA-BLUE	450	1000	LED6MBB-ACDC	BA96-6B	BA91-6B	BA9X-6B
5	6.0V	50	ULTRA-WHITE	475	1000	LED6MBW-ACDC	BA96-6W	BA91-6W	BA9X-6W
6	12-15V	36	ULTRA-RED	660	1000	LED12MBR-ACDC	BA96-12R	BA91-12R	BA9X-12R
7	12-15V	36	ULTRA-GREEN	562	1000	LED12MBG-ACDC	BA96-12G	BA91-12G	BA9X-12G
8	12-15V	36	ULTRA-YELLOW	585	1000	LED12MBY-ACDC	BA96-12Y	BA91-12Y	BA9X-12Y
9	12-15V	36	ULTRA-BLUE	450	1000	LED12MBB-ACDC	BA96-12B	BA91-12B	BA9X-12B
10	12-15V	36	ULTRA-WHITE	475	1000	LED12MBW-ACDC	BA96-12W	BA91-12W	BA9X-12W
11	24-28V	20	ULTRA-RED	660	1000	LED24MBR-ACDC	BA96-24R	BA91-24R	BA9X-24R
12	24-28V	20	ULTRA-GREEN	562	1000	LED24MBG-ACDC	BA96-24G	BA91-24G	BA9X-24G
13	24-28V	20	ULTRA-YELLOW	585	1000	LED24MBY-ACDC	BA96-24Y	BA91-24Y	BA9X-24Y
14	24-28V	20	ULTRA-BLUE	450	1000	LED24MBB-ACDC	BA96-24Y	BA91-24B	BA9X-24B
15	24-28V	20	ULTRA-WHITE	475	1000	LED24MBW-ACDC	BA96-24Y	BA91-24W	BA9X-24W
16	48.0V	15	ULTRA-RED	660	1000	LED48MBR-ACDC	BA96-48R	BA91-48R	BA9X-48R
17	48.0V	15	ULTRA-GREEN	562	1000	LED48MBG-ACDC	BA96-48G	BA91-48G	BA9X-48G
18	48.0V	15	ULTRA-YELLOW	585	1000	LED48MBY-ACDC	BA96-48Y	BA91-48Y	BA9X-48Y
19	48.0V	15	ULTRA-BLUE	450	1000	LED48MBB-ACDC	BA96-48B	BA91-48B	BA9X-48B
20	48.0V	15	ULTRA-WHITE	475	1000	LED48MBW-ACDC	BA96-48W	BA91-48W	BA9X-48W
21	55-60V	10	ULTRA-RED	660	1000	LED60MBR-ACDC	BA96-60R	BA91-60R	BA9X-60R
22	55-60V	10	ULTRA-GREEN	562	1000	LED60MBG-ACDC	BA96-60G	BA91-60G	BA9X-60G
23	55-60V	10	ULTRA-YELLOW	585	1000	LED60MBY-ACDC	BA96-60Y	BA91-60Y	BA9X-60Y
24	55-60V	10	ULTRA-BLUE	450	1000	LED60MBB-ACDC	BA96-60B	BA91-60B	BA9X-60B
25	55-60V	10	ULTRA-WHITE	475	1000	LED60MBW-ACDC	BA96-60W	BA91-60W	BA9X-60W
26	120.0V	6	ULTRA-RED	660	1000	LED120MBR-ACDC	BA96-120R	BA91-120R	BA9X-120R
27	120.0V	6	ULTRA-GREEN	562	1000	LED120MBG-ACDC	BA96-120G	BA91-120G	BA9X-120G
28	120.0V	6	ULTRA-YELLOW	585	1000	LED120MBY-ACDC	BA96-120G	BA91-120Y	BA9X-120Y
29	120.0V	6	ULTRA-BLUE	450	1000	LED120MBB-ACDC	BA96-120B	BA91-120B	BA9X-120B
30	120.0V	6	ULTRA-WHITE	475	1000	LED120MBW-ACDC	BA96-120W	BA91-120W	BA9X-120W



T-3 1/4 TYPE BASED L.E.D. LAMPS, WEDGE BASE

SINGLE CHIP AND
4 CLUSTER

100,000+ Life Hours



LINE NO.	VOLTAGE RANGE	mA	EMITTED COLOR	WAVELENGTH NM	MINIMUM MCD	WEDGE BASE	WEDGE BASE	WEDGE BASE	
1	6.0V	80	ULTRA-RED	660	300	1,200	W901-6R	W904-6R	W90X-6R
2	6.0V	80	ULTRA-GREEN	562	250	1,000	W901-6G	W904-6G	W90X-6G
3	6.0V	80	ULTRA-YELLOW	585	250	1,000	W901-6Y	W904-6Y	W90X-6Y
4	6.0V	80	ULTRA-AMBER	610	225	1,000	W901-6A	W904-6A	—
5	6.0V	80	ULTRA-BLUE	450	300	1,000	W901-6B	W904-6B	W90X-6B
6	6.0V	80	ULTRA-WHITE	475	500	1,500	W901-6W	W904-6W	W90X-6W
7									
8	12-15V	60	ULTRA-RED	660	300	1,000	W901-12R	W904-12R	W90X-12R
9	12-15V	60	ULTRA-GREEN	562	250	1,000	W901-12G	W904-12G	W90X-12G
10	12-15V	60	ULTRA-YELLOW	585	250	1,000	W901-12Y	W904-12Y	W90X-12Y
11	12-15V	60	ULTRA-AMBER	610	225	1,000	W901-12A	W904-12A	—
12	12-15V	60	ULTRA-BLUE	450	300	1,000	W901-12B	W904-12B	W90X-12B
13	12-15V	60	ULTRA-WHITE	475	500	1,500	W901-12W	W904-12W	W90X-12W
14									
15	24-28V	20	ULTRA-RED	660	300	1,000	W901-24R	W904-24R	W90X-24R
16	24-28V	20	ULTRA-GREEN	562	250	1,000	W901-24G	W904-24G	W90X-24G
17	24-28V	20	ULTRA-YELLOW	585	250	1,000	W901-24Y	W904-24Y	W90X-24Y
18	24-28V	20	ULTRA-AMBER	610	225	1,000	W901-24A	W904-24A	—
19	24-28V	20	ULTRA-BLUE	450	300	1,000	W901-24B	W904-24B	W90X-24B
20	24-28V	20	ULTRA-WHITE	475	500	1,500	W901-24W	W904-24W	W90X-24W
21									
22	48.0V	15	ULTRA-RED	660	300	1,000	W901-48R	W904-48R	U N D E R
23	48.0V	15	ULTRA-GREEN	562	250	1,000	W901-48G	W904-48G	
24	48.0V	15	ULTRA-YELLOW	585	250	1,000	W901-48Y	W904-48Y	
25	48.0V	15	ULTRA-AMBER	610	225	1,000	W901-48A	W904-48A	
26	48.0V	15	ULTRA-BLUE	450	300	1,000	W901-48B	W904-48B	
27	48.0V	15	ULTRA-WHITE	475	500	1,500	W901-48W	W904-48W	
28									
29	55-60V	10	ULTRA-RED	660	300	1,000	W901-60R	W904-60R	D E V E L O P M E N T
30	55-60V	10	ULTRA-GREEN	562	250	1,000	W901-60G	W904-60G	
31	55-60V	10	ULTRA-YELLOW	585	250	1,000	W901-60Y	W904-60Y	
32	55-60V	10	ULTRA-AMBER	610	225	1,000	W901-60A	W904-60A	
33	55-60V	10	ULTRA-BLUE	450	300	1,000	W901-60B	W904-60B	
34	55-60V	10	ULTRA-WHITE	475	500	1,500	W901-60W	W904-60W	
35									
36	120.0V	6	ULTRA-RED	660	300	1,000	W901-120R	W904-120R	
37	120.0V	6	ULTRA-GREEN	562	250	1,000	W901-120G	W904-120G	
38	120.0V	6	ULTRA-YELLOW	585	250	1,000	W901-120Y	W904-120Y	
39	120.0V	6	ULTRA-AMBER	610	225	1,000	W901-120A	W904-120A	
40	120.0V	6	ULTRA-BLUE	450	300	1,000	W901-120B	W904-120B	
41	120.0V	6	ULTRA-WHITE	475	500	1,500	W901-120W	W904-120W	

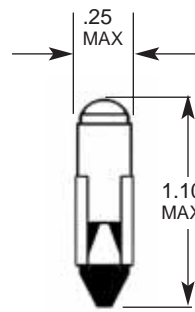


T-2 TYPE MULTI AND SUPER CHIP

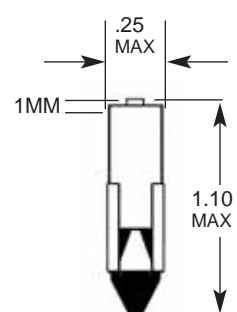
BASED L.E.D. LAMPS, TELEPHONE SLIDE BASE #5

100,000+ Life Hours
Built-in Resistor and Rectifier Diode
AC-DC Operation

180° VIEWING ANGLE 180° VIEWING ANGLE



MULTI-CHIP DIODE



SUPER CHIP DIODE

LINE NO.	VOLTAGE RANGE	mA	EMITTED COLOR	WAVELENGTH NM	MCD	TELEPHONE SLIDE BASE #5	TELEPHONE SLIDE BASE #5
1	6.0V	80	ULTRA-RED	660	1,000	SB5-6R	LED6PSBR-ACDC
2	6.0V	80	ULTRA-GREEN	562	1,000	SB5-6G	LED6PSBG-ACDC
3	6.0V	80	ULTRA-YELLOW	585	1,000	SB5-6Y	LED6PSBY-ACDC
4	6.0V	80	ULTRA-AMBER	610	1,000	SB5-6A	LED6PSBA-ACDC
5	6.0V	80	ULTRA-BLUE	450	1,000	SB5-6B	LED6PSBB-ACDC
6	6.0V	80	ULTRA-WHITE	475	1,000	SB5-6W	LED6PSBW-ACDC
7	12-14V	60	ULTRA-RED	660	1,000	SB5-12R	LED12PSBR-ACDC
8	12-14V	60	ULTRA-GREEN	562	1,000	SB5-12G	LED12PSBG-ACDC
9	12-14V	60	ULTRA-YELLOW	585	1,000	SB5-12Y	LED12PSBY-ACDC
10	12-14V	60	ULTRA-AMBER	610	1,000	SB5-12A	LED12PSBA-ACDC
11	12-14V	60	ULTRA-BLUE	450	1,000	SB5-12B	LED12PSBB-ACDC
12	12-14V	60	ULTRA-WHITE	475	1,000	SB5-12W	LED12PSBW-ACDC
13	24-28V	20	ULTRA-RED	660	1,000	SB5-28R	LED28PSBR-ACDC
14	24-28V	20	ULTRA-GREEN	562	1,000	SB5-28G	LED28PSBG-ACDC
15	24-28V	20	ULTRA-YELLOW	585	1,000	SB5-28Y	LED28PSBY-ACDC
16	24-28V	20	ULTRA-AMBER	610	1,000	SB5-28A	LED28PSBA-ACDC
17	24-28V	20	ULTRA-BLUE	450	1,000	SB5-28B	LED28PSBB-ACDC
18	24-28V	20	ULTRA-WHITE	475	1,000	SB5-28W	LED28PSBW-ACDC
19	48V	15	ULTRA-RED	660	1,000	SB5-48R	LED48PSBR-ACDC
20	48V	15	ULTRA-GREEN	562	1,000	SB5-48G	LED48PSBG-ACDC
21	48V	15	ULTRA-YELLOW	585	1,000	SB5-48Y	LED48PSBY-ACDC
22	48V	15	ULTRA-AMBER	610	1,000	SB5-48A	LED48PSBA-ACDC
23	48V	15	ULTRA-BLUE	450	1,000	SB5-48B	LED48PSBB-ACDC
24	48V	15	ULTRA-WHITE	475	1,000	SB5-48W	LED48PSBW-ACDC
25	60V	10	ULTRA-RED	660	1,000	SB5-60R	LED60PSBR-ACDC
26	60V	10	ULTRA-GREEN	562	1,000	SB5-60G	LED60PSBG-ACDC
27	60V	10	ULTRA-YELLOW	585	1,000	SB5-60Y	LED60PSBY-ACDC
28	60V	10	ULTRA-AMBER	610	1,000	SB5-60A	LED60PSBA-ACDC
29	60V	10	ULTRA-BLUE	450	1,000	SB5-60B	LED60PSBB-ACDC
30	60V	10	ULTRA-WHITE	475	1,000	SB5-60W	LED60PSBW-ACDC
31	120V	6	ULTRA-RED	660	1,000	SB5-120R	LED120PSBR-ACDC
32	120V	6	ULTRA-GREEN	562	1,000	SB5-120G	LED120PSBG-ACDC
33	120V	6	ULTRA-YELLOW	585	1,000	SB5-120Y	LED120PSBY-ACDC
34	120V	6	ULTRA-AMBER	610	1,000	SB5-120A	LED120PSBA-ACDC
35	120V	6	ULTRA-BLUE	450	1,000	SB5-120B	LED120PSBB-ACDC
36	120V	6	ULTRA-WHITE	475	1,000	SB5-120W	LED120PSBW-ACDC

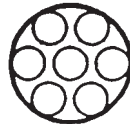


S-6 TYPE BASED L.E.D. LAMPS

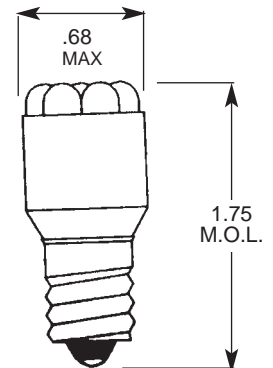
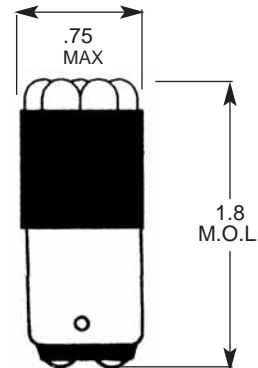
L.E.D. CLUSTER

100,000+ Life Hours
7 Chip Cluster of Ultra-Bright L.E.D.s

Available in 24V, 120V and 220V.



Top View of
7-Cluster



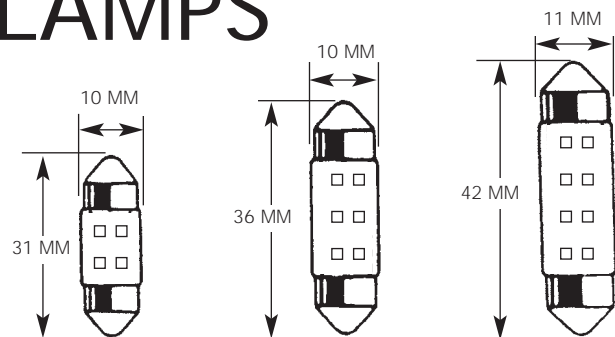
LINE NO.	MAXIMUM VOLTS	mA	EMITTED COLOR	WAVELENGTH NM	MCD	CANDELABRA SCREW BASE	
1	120.0	12	ULTRA-RED	660	6,000	LED-6S6DC-120V-R	LED-6S6-120V-R
2	120.0	12	ULTRA-GREEN	562	6,000	LED-6S6DC-120V-G	LED-6S6-120V-G
3	120.0	12	ULTRA-YELLOW	585	6,800	LED-6S6DC-120V-Y	LED-6S6-120V-Y
4	120.0	12	ULTRA-AMBER	610	6,500	LED-6S6DC-120V-A	LED-6S6-120V-A
5							
6	120.0	20	ULTRA-BLUE	450	6,000	LED-6S6DC-120V-B	LED-6S6-120V-B
7	120.0	20	ULTRA-WHITE	474	8,000	LED-6S6DC-120V-W	LED-6S6-120V-W

FESTOON L.E.D. LAMPS

SUPER-BRIGHT, WHITE LIGHT

90° VIEWING ANGLE

100,000+ Life Hours



LINE NO.	VOLTS	mA	EMITTED COLOR	WAVELENGTH NM	MCD	FESTOON CAP	FESTOON CAP	FESTOON CAP
8	6.0V	20	ULTRA-WHITE	475	650	FC1031-6V	FC1036-6V	FC1142-6V
9	12.0V	20	ULTRA-WHITE	475	650	FC1031-12V	FC1036-12V	FC1142-12V
10	24.0V	20	ULTRA-WHITE	475	650	FC1031-24V	FC1036-24V	FC1142-24V

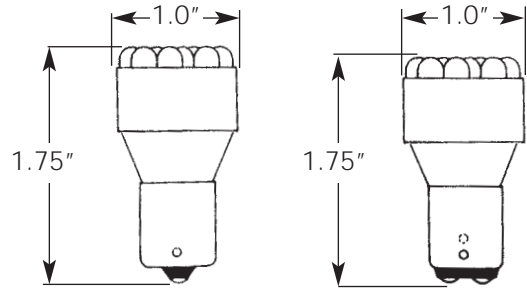


AUTOMOTIVE SIGNAL LAMPS

L.E.D. L.E.D. CLUSTER

12 DIODES

100,000+ LIFE HOURS



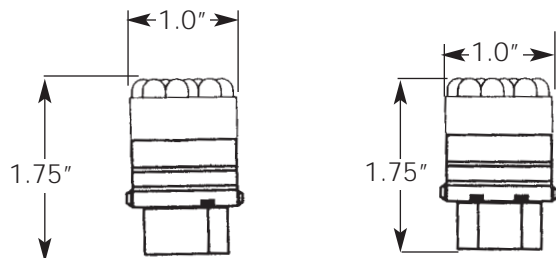
LINE NO.	VOLTS	mA	EMITTED COLOR	WAVELENGTH NM	MINIMUM MCD	S.C. BAYONET BASE	INDEXING BAYONET BASE
1	12.0	60	ULTRA -RED	660	10,000	LED-1156-R	LED-1157-R
2	12.0	60	ULTRA -GREEN	562	6,000	LED-1156-G	LED-1157-G
3	12.0	60	ULTRA -YELLOW	585	6,000	LED-1156-Y	LED-1157-Y
4	12.0	60	ULTRA -BLUE	450	8,000	LED-1156-B	LED-1157-B
5	12.0	60	ULTRA -WHITE	475	10,000	LED-1156-W	LED-1157-W
6							
7	28.0	60	ULTRA -RED	660	10,000	LED-2233-R	
8	28.0	60	ULTRA -GREEN	562	6,000	LED-2233-G	
9	28.0	60	ULTRA -YELLOW	585	6,000	LED-2233-Y	
10	28.0	60	ULTRA -BLUE	450	8,000	LED-2233-B	
11	28.0	60	ULTRA -WHITE	475	10,000	LED-2233-W	

AUTOMOTIVE SIGNAL LAMPS

L.E.D. L.E.D. CLUSTER

12 DIODES, ULTRA-BRIGHT

100,000+ LIFE HOURS



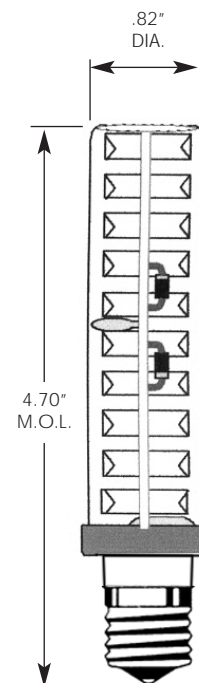
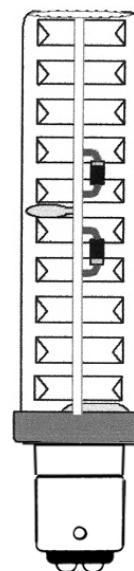
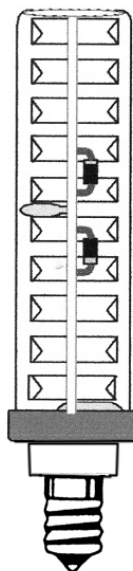
LINE NO.	VOLTS	mA	EMITTED COLOR	WAVELENGTH NM	MINIMUM MCD	S.F. WEDGE BASE	D.F. WEDGE BASE
12	12.0	60	ULTRA -RED	660	10,000	LED-3156-R	LED-3157-R
13	12.0	60	ULTRA -GREEN	562	6,000	LED-3156-G	LED-3157-G
14	12.0	60	ULTRA -YELLOW	585	6,000	LED-3156-Y	LED-3157-Y
15	12.0	60	ULTRA -BLUE	450	8,000	LED-3156-B	LED-3157-B
16	12.0	60	ULTRA -WHITE	475	10,000	LED-3156-W	LED-3157-W



T-6¹/₂ TYPE EXIT 100,000 HOURS

EMERGENCY EXIT SIGN L.E.D. REPLACEMENT LAMPS

LONG LIFE; 10+ YEARS
ENERGY SAVING: 1 WATT OF POWER
20 ULTRA-BRIGHT DIODES PER LAMP
COMPACT DESIGN
360° LIGHT VIEWING



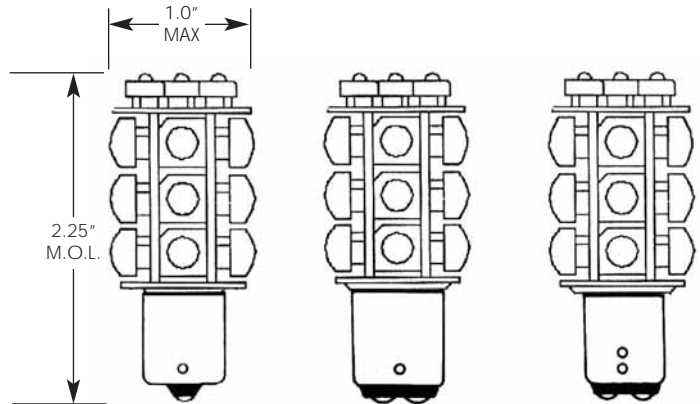
LINE NO.	VOLTAGE RANGE	EMITTED COLOR	LIFE HOURS	CANDELADRA SCREW BASE	D.C. BAYONET BASE	INTERMEDIATE SCREW BASE
1	120.0	ULTRA-RED	100,000+	EX18-120R-CS	EX18-120R-DC	EX18-120R-INT





T-8 PIRANAH DIODES BASED L.E.D. LAMPS

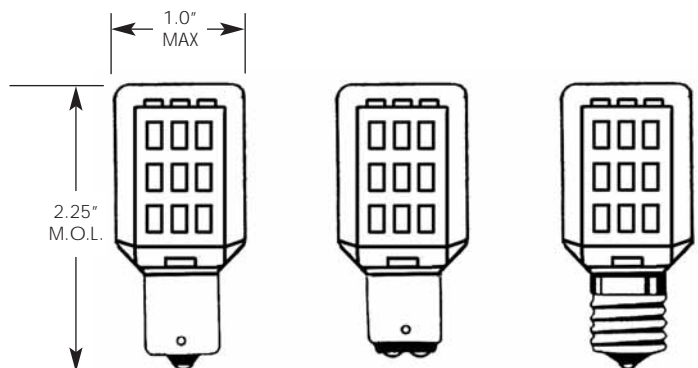
12V AND 28V
360° VIEWING
18 DIODES
CUSTOM LENGTHS UP TO 5" MOL
100,000 LIFE HOURS • HIGH OUTPUT



LINE NO.	VOLTS	EMITTED COLOR	WAVELENGTH NM	MINIMUM MCD	S.C. BAYONET BASE	D.C. BAYONET BASE	D.C. INDEXING BAYONET BASE
1	12	WHITE	475	10,000	LED-P1156W	LED-P94W	LED-P1157W
2	12	RED	660	10,000	LED-P1156R	LED-P94R	LED-P1157R
3	12	GREEN	562	10,000	LED-P1156G	LED-P94G	LED-P1157G
4	12	AMBER	585	10,000	LED-P1156A	LED-P94A	LED-P1157A
5	12	BLUE	450	10,000	LED-P1156B	LED-P94B	LED-P1157B
6							
7	28	WHITE	475	10,000	LED-P307W	LED-P308W	LED-P1662W
8	28	RED	660	10,000	LED-P307R	LED-P308R	LED-P1662R
9	28	GREEN	562	10,000	LED-P307G	LED-P308G	LED-P1662G
10	28	AMBER	585	10,000	LED-P307A	LED-P308A	LED-P1662A
11	28	BLUE	450	10,000	LED-P307B	LED-P308B	LED-P1662B

T-8 SURFACE MOUNT DIODES BASED L.E.D. LAMPS

24V, 130V, 240V
360° VIEWING
21 DIODES, DPI SUPER WHITE
COLORS AVAILABLE ON SPECIAL ORDER
100,000 LIFE HOURS • HIGH OUTPUT



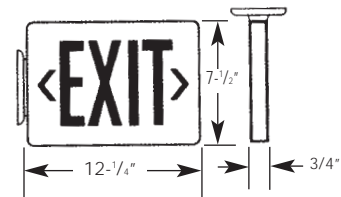
LINE NO.	VOLTS	EMITTED COLOR	WAVELENGTH NM	MINIMUM MCD	S.C. BAYONET BASE	D.C. BAYONET BASE	INTERMEDIATE SCREW BASE
12	24	PURE WHITE	450	12,000	SMW21SC-24V	SMW21DC-24V	SMW21INT-24V
13	130	PURE WHITE	450	12,000	SMW21SC-130V	SMW21DC-130V	SMW21INT-130V
14	240	PURE WHITE	450	12,000	SMW21SC-240V	SMW21DC-240V	SMW21INT-240V



EXIT LIGHTING UNIT (L.E.D.)

MODEL: CXT-01-120

CONTRACTOR - FRIENDLY DESIGN • PROVIDES FAST & "E-Z" INSTALLATION



FEATURES

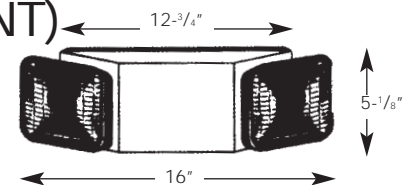
- Completely self-contained.
- Fully automatic operation
- Compact, low profile design in neutral finish
- Push to Momentary Test Switch.
- Automatic, low voltage disconnect (LVD).
- Universal transformer for 120Vac or 277 Vac.
- Injection-molded, V-O flame retardant, high impact, thermoplastic housing.
- Universal Mounting Plate provides Quick and "E-Z" Installation
- Charge rate/power on LED indicator light.
- Energy consumption of less than 4 watts for red letters and less than 2 watts for green letters.
- LED lamp life of 25 years plus.
- Listed for damp location.
- Universal mounting canopy for side or top installation.
- Standard AC and emergency units available.
- Ni-cad battery on emergency (EM) units.

LINE NO.	Battery Voltage	Input Voltage	Part Number	Color
1	6.0	120V~277V	CXT-01-120R	RED
2	6.0	120V~277V	CXT-01-120G	GREEN

EMERGENCY LIGHTING UNIT (INCANDESCENT)

MODEL: CEM-01-120

CONTRACTOR - FRIENDLY DESIGN • PROVIDES FAST & "E-Z" INSTALLATION



FEATURES

- Completely self-contained.
- Fully automatic operation
- Compact, low profile design in neutral finish
- Universal Mounting Plate provides Fast and "E-Z" Installation
- Push to Momentary Test Switch.
- 6 Volt, pure lead, maintenance-free battery.
- Environmentally-coated solid state charger.
- Automatic, low voltage disconnect (LVD).
- Universal transformer for 120Vac or 277 Vac.
- Listed for damp location.
- Injection-molded, V-O flame retardant, high impact, thermoplastic housing.
- Charge rate/power on LED indicator light.

LINE NO.	Battery Voltage	Input Voltage	Part Number	Emergency Operation
3	6.0	120V~277V	CEM-01-120	90 MIN.



L. E. D. Application and Design Factors

Terms and Definitions

Package Type: Descriptive terms such as diffused, non-diffused, water clear and pale tint are typically used. Diffused lenses have an opaque appearance to them and are typically found on wider viewing angled LEDs. Diffused lenses are typically used when direct viewing is required. Non-diffused have a clear, unobstructed appearance to them and are typically tinted the color of the emitted light. Non-diffused lenses are best suited to indirect viewing or back lighting because they exhibit limited viewing angles and high unidirectional light output. Water clear is a term used to describe a non-diffused lens with no color tint. In the OFF state the LED appears clear like glass, yet in the ON state it emits its source color of red, green or yellow. Pale tint describes a water clear, non-diffused lens that has a very slight tint added to it to distinguish it from other color LEDs in the same type.

Lens Color: This is the color of the LED lens in the OFF state.

Emitted Color: This is the color of the light emitted from the LED when it is energized.

Luminous Intensity: This term describes the light output of the LED and is typically expressed in millicandela at a defined current level. All LEDs have a minimum and typical luminous intensity rating. The minimum rating is the guaranteed minimum light output of each LED within a lot. The typical rating is the average light output of the LEDs within the production lot.

Forward Voltage: Forward voltage is the operating voltage

of the LED. All LEDs have a typical and a maximum rating at a specified current. The typical rating is the voltage at which the LED will typically light. The maximum rating is the voltage that should never be exceeded in application. If this rating is exceeded, damage may occur to the LED. Many applications may require a resistor in series with the LED to assure that this voltage is not exceeded.

Viewing Angle: This is a representation of the typical light output pattern for the LED. It is measured by determining the angle between half intensity points on either side of the lamp axis. Typically the wider the viewing angle the lower the luminous intensity.

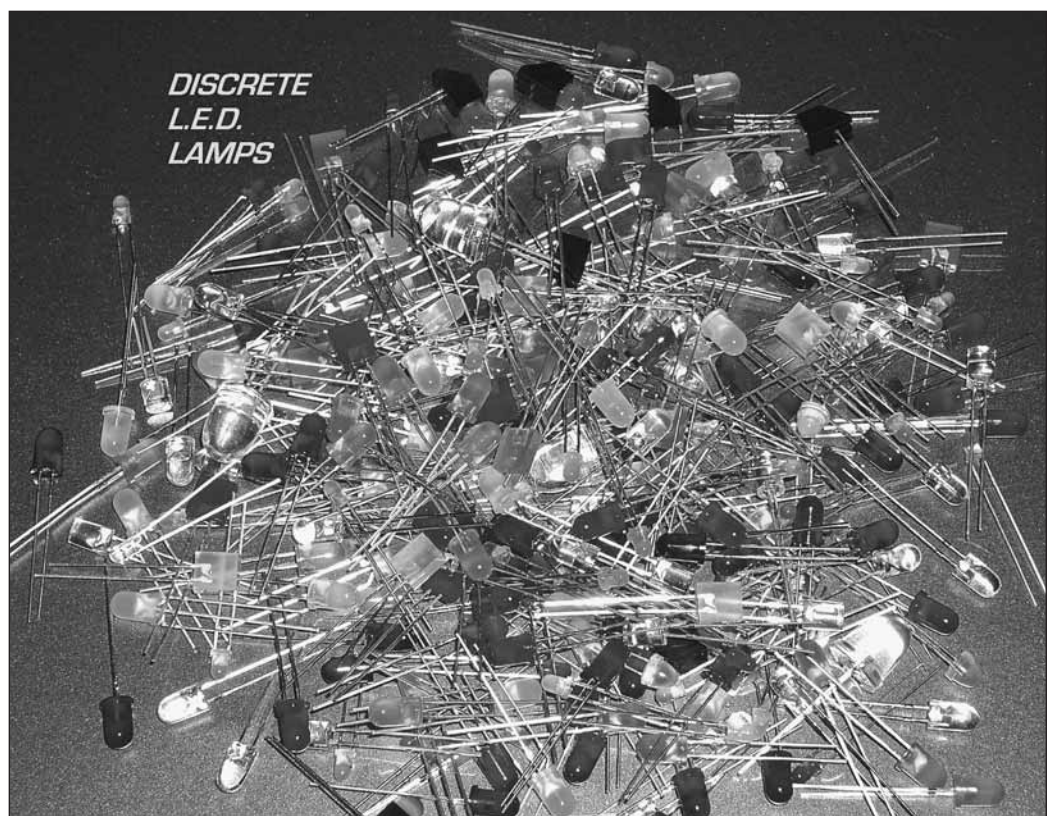
Peak Wavelength: This is the wavelength at which the majority of the energy (light) is emitted by the LED. This measurement is typically

expressed in nanometers. Peak wavelength tells you the exact color of the light you can expect from the LED when it is energized.

Continuous Forward Current: This is the maximum continuous operating current the LED can withstand without incurring life limiting damage.

Peak Forward Current: This is the maximum operating current the LED will withstand if operated under pulse conditions.

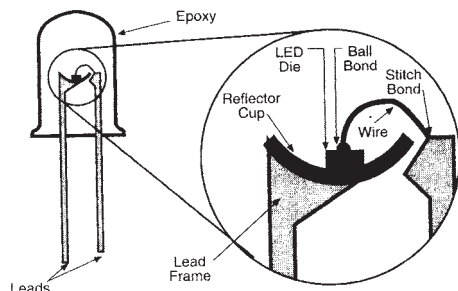
Reverse Voltage: Because an LED is a "diode," it is a polarized device having an anode and cathode connection. To energize the LED the voltage must flow in the correct direction. If the voltage is reversed, damage to the LED may result. In applications where this potential exists, a rectifier diode should be placed in series with the LED.





L. E. D. Application and Design Factors

Light Emitting Diodes



Ultra Bright L.E.D.s

Where very high brightness is required see our "Ultra-Bright" L.E.D. Section. These T-1-3/4 (5mm) L.E.D.s offer light output from 500 MCD up to 8,000 MCD at a reasonable cost. T-1 (3mm) Ultra-Brights are also available.

Bi-Color L.E.D.s

Bi-Color L.E.D.s produce light in two colors. Red/green, red/yellow or yellow/green. Which color appears depends on how the L.E.D. is powered. Stocked in 3mm, 5mm, 10mm, and 2mm x 5mm rectangular. (2 and 3 leaded types.)

Integrated Resistor L.E.D.s

These L.E.D.s incorporate a built-in resistor chip inside the L.E.D. package. This eliminates the need for an external resistor, thus conserving space and time. Available in 5 and 12 volt series.

Low Current L.E.D.s

Where extremely low current draw is required, we offer a 2mA diode in both 3mm and 5mm discrete package.

White Light L.E.D.s

Norman Lamps offers a series of ultra brightness "white" light L.E.D.s. Available in the 3mm and 5mm and 10mm discrete package with a range of 40 mcd thru 7,000 mcd. Also available in our based L.E.D. Series.

L.E.D. Advantages

L.E.D.s are rugged, versatile, long lasting light sources. Their solid-state design will withstand most shocks, vibrations and conditions that they are exposed to. Norman L.E.D.s last an average of 100,000 hours (10 years) and require no maintenance during their life. L.E.D.s are 10 to 50 times more energy-efficient than incandescent lamps and can reduce energy costs by up to 90%.

L.E.D.s emit light at one specific wave length only. Each wavelength produces a certain color. (See Figure #4). L.E.D.s are available in red, green, orange (amber), yellow, blue and white emitting light. Call today to find out how a Norman L.E.D. can fit your lighting requirements.

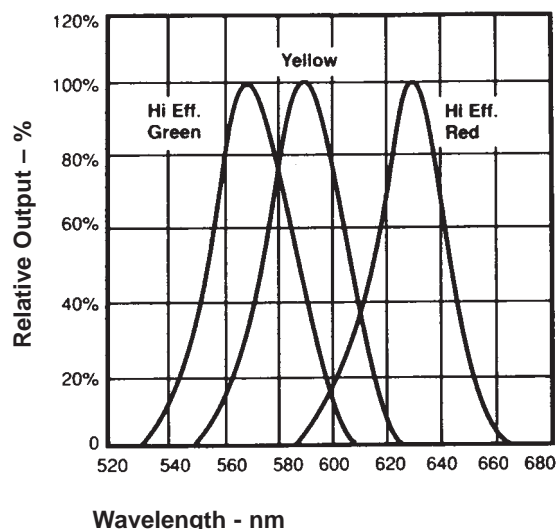


FIGURE #4

L.E.D. Mounting Hardware

Mounting hardware for discrete L.E.D.s is available from stock. T-1 and T-1-3/4 ring and clip for panel mounting as well as a complete selection of spacers is available. Call for more information on mounting hardware.

Based L.E.D. Lamps

Norman Lamps offers a complete line of based L.E.D. lamps for all applications.

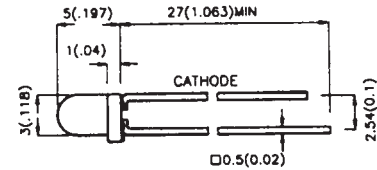


T-1 (3 MM)

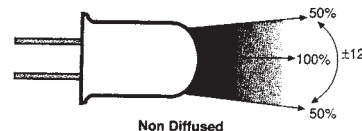
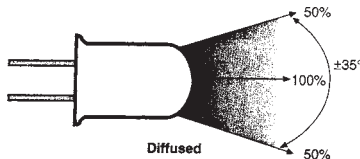
MINIATURE L.E.D. LAMPS

RED, GREEN, YELLOW, AMBER, BLUE, WHITE
STANDARD BRIGHT, HIGH BRIGHT, ULTRA BRIGHT

100,000+ LIFE HOURS



LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	1.8	20	3	RED	DIFFUSED RED	660	90°	NLED-1302
2	2.0	20	15	RED	DIFFUSED RED	660	90°	NLED-1385
3	2.0	20	100	RED	TRANSPARENT RED	660	80°	NLED-1321
4	2.0	20	250	RED	WATER CLEAR	660	50°	NLED-934-1
5	2.0	20	500	RED	WATER CLEAR	660	50°	NLED-934-2
6	2.0	20	1,000	RED	WATER CLEAR	660	50°	NLED-934-3
7	2.0	20	1,500	RED	WATER CLEAR	660	50°	NLED-934-4
8								
9	2.1	20	3	GREEN	DIFFUSED GREEN	565	90°	NLED-1523
10	2.1	20	10	GREEN	DIFFUSED GREEN	565	90°	NLED-1585
11	2.0	20	100	GREEN	TRANSPARENT GREEN	565	80°	NLED-1521
12	2.0	20	250	GREEN	WATER CLEAR	565	50°	NLED-950-1
13	2.0	20	500	GREEN	WATER CLEAR	565	50°	NLED-950-2
14	2.0	20	1,000	GREEN	WATER CLEAR	565	50°	NLED-950-3
15								
16	2.1	20	3	YELLOW	DIFFUSED YELLOW	585	90°	NLED-1402
17	2.1	20	10	YELLOW	DIFFUSED YELLOW	585	90°	NLED-1485
18	2.1	20	100	YELLOW	TRANSPARENT YELLOW	585	80°	NLED-1421
19	2.1	20	250	YELLOW	WATER CLEAR	585	50°	NLED-960-1
20								
21	2.0	20	3	AMBER	DIFFUSED AMBER	610	90°	NLED-K402
22	2.0	20	10	AMBER	DIFFUSED AMBER	610	90°	NLED-K403
23	2.0	20	100	AMBER	TRANSPARENT AMBER	610	80°	NLED-K409
24	2.0	20	250	AMBER	WATER CLEAR	610	50°	NLED-970-1
25								
26	3.6	20	250	BLUE	TRANSPARENT BLUE	450	80°	NLED-8120
27								
28	4.0	20	50	WHITE	DIFFUSED WHITE	475	80°	NLED-8110
29	4.0	20	500	WHITE	DIFFUSED WHITE	475	60°	NLED-8111
30	4.0	20	1,000	WHITE	WATER CLEAR	475	50°	NLED-8113

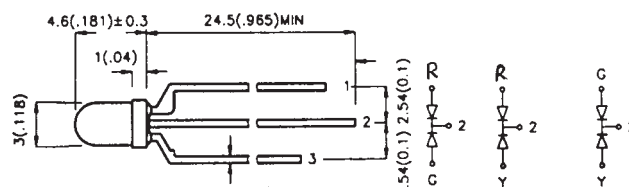




T-1 (3 MM) BI-COLOR L.E.D.

3 LEADED

100,000+ LIFE HOURS



COMMON CATHODE (2)

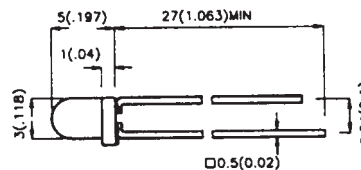
LINE NO.	MAXIMUM VOLTS	mA	MCD	LENS COLOR	EMITTED COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.2	20	30/20	RED/GREEN	DIFFUSED WHITE	625/565	60°	NLED-30RGW
2	2.2	20	30/20	RED/YELLOW	DIFFUSED WHITE	625/590	60°	NLED-30RYW
3	2.2	20	30/20	YELLOW/GREEN	DIFFUSED WHITE	590/565	60°	NLED-30YGW
4								
5	2.3	20	200/100	RED/GREEN	WATER CLEAR	625/565	32°	NLED-30RGXC

T-1 (3 MM) BI-COLOR L.E.D.

2 LEADED

(BI-POLAR)

100,000+ LIFE HOURS



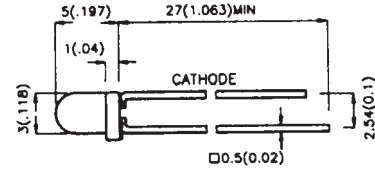
LINE NO.	MAXIMUM VOLTS	mA	MCD	LENS COLOR	EMITTED COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
6	2.2	20	30/20	RED/GREEN	DIFFUSED WHITE	625/565	60°	NLED-30RGW-2
7	2.2	20	30/20	RED/YELLOW	DIFFUSED WHITE	625/590	60°	NLED-30RYW-2
8	2.2	20	30/20	YELLOW/GREEN	DIFFUSED WHITE	590/565	60°	NLED-30YGW2
9								
10	2.3	20	200/100	RED/GREEN	WATER CLEAR	625/565	32°	NLED-30RGXC-2
11								
12	2.2	20	30/30	RED/RED	DIFFUSED RED	625/625	50°	NLED-30RR-2



T-1 (3 MM)

LOW CURRENT L.E.D. LAMPS

2mA CURRENT
100,000+ LIFE HOURS • DIFFUSED COLORS

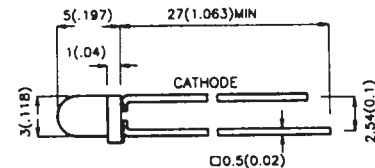


LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.0	2	1.8	RED	626	50°	NLED-1700
2	1.8	2	1.6	GREEN	569	50°	NLED-1790
3	1.8	2	1.6	YELLOW	585	50°	NLED-1719

T-1 (3 MM)

INTEGRATED RESISTOR L.E.D. LAMPS

5 VOLT AND 12 VOLT
100,000+ LIFE HOURS • DIFFUSED COLORS



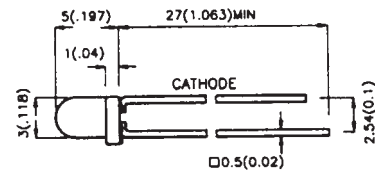
LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
4	5.0	20	8.0	H.E. RED	635	60°	NLED-1600
5	5.0	20	8.0	GREEN	565	60°	NLED-1640
6	5.0	20	8.0	YELLOW	583	60°	NLED-1620
7							
8	12.0	20	8.0	H.E. RED	635	60°	NLED-1601
9	12.0	20	8.0	GREEN	565	60°	NLED-1641
10	12.0	20	8.0	YELLOW	583	60°	NLED-1621

T-1 (3 MM)

FLASHING L.E.D. LAMPS

(80-100 FLASHES PER MINUTE)

100,000+ LIFE HOURS • DIFFUSED COLORS

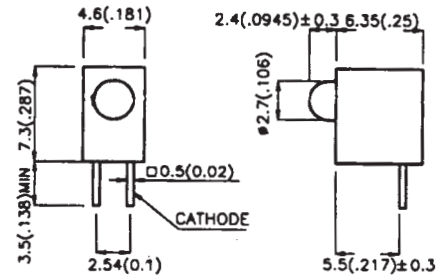


LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
11	2.0	20	20	RED	635	60°	NLED-1201F
12	2.0	20	15	GREEN	565	60°	NLED-1205F
13	2.0	20	15	YELLOW	583	60°	NLED-1207F



T-1 (3 MM) RIGHT ANGLE L.E.D. ASSEMBLY

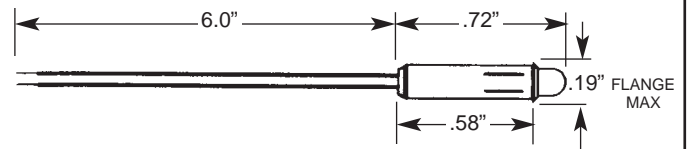
W/STAND-OFF
CUSTOM LEAD LENGTH AVAILABLE



ALSO AVAILABLE IN: ULTRA-BRIGHTS, BLINKING, BI-COLORS, 12 VOLT, LOW CURRENT AND MORE.
CAN BE CUSTOM ASSEMBLED WITH BLUE OR WHITE LIGHT L.E.D.

LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.2	20	10	RED	DIFFUSED RED	660	80°	NLED-5650F1
2	2.2	20	10	YELLOW	DIFFUSED YELLOW	585	80°	NLED-5650F7
3	2.2	20	10	GREEN	DIFFUSED GREEN	562	80°	NLED-5650F5
4								
5	2.0	2	6	RED	DIFFUSED RED	660	80°	NLED-5650F1-LC
6	2.0	2	5	YELLOW	DIFFUSED YELLOW	585	80°	NLED-5650F7-LC
7	2.0	2	6	GREEN	DIFFUSED GREEN	562	80°	NLED-5650F5-LC
8								
9	5.0	20	8	RED	DIFFUSED RED	660	80°	NLED-5652F1-5V
10	5.0	20	8	YELLOW	DIFFUSED YELLOW	585	80°	NLED-5652F7-5V
11	5.0	20	8	GREEN	DIFFUSED GREEN	562	80°	NLED-5652F5-5V

T-1 (3 MM) 16 SERIES PANEL MOUNT L.E.D. INDICATOR ASSEMBLY



.16" MOUNTING HOLE • SNAP-IN INSTALLATION
9" INSULATED LEADS (RED=ANODE, BLACK=CATHODE) 26 AWG, STRIPPED AND TINNED
* DIFFUSED COLORS AS SHOWN • ALSO AVAILABLE IN: ULTRA-BRIGHT, BLINKING, BI-COLORS, LOW CURRENT AND MORE

LINE NO.	VOLTAGE RANGE	mA	MCD*	AVAILABLE L.E.D. COLORS	VIEWING ANGLE	PART NUMBER
12	2.0	20	50	RED, GREEN, YELLOW, BLUE, WHITE	80°	NLED-4100H-2V
13	5.0 - 6.0	20	50	RED, GREEN, YELLOW, BLUE, WHITE	80°	NLED-4100H-6V
14	12.0 - 14.0	15	50	RED, GREEN, YELLOW, BLUE, WHITE	80°	NLED-4100H-12V
15	24.0 - 28.0	9	50	RED, GREEN, YELLOW, BLUE, WHITE	80°	NLED-4100H-24V

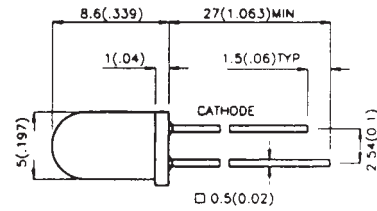
* BLUE AND WHITE LIGHT L.E.D.s ARE 350 MCD TYPICAL.



T-1^{3/4} (5MM)

MINIATURE L.E.D. LAMPS (STANDARD)

RED, GREEN, YELLOW, AMBER, BLUE, AND WHITE L.E.D.S
 STANDARD BRIGHT, HIGH BRIGHT, ULTRA BRIGHT
 100,000+ LIFE HOURS



LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.2	20	8	RED	DIFFUSED RED	660	90°	NLED-3300
2	2.2	20	20	RED	DIFFUSED RED	660	80°	NLED-3762
3	2.2	20	100	RED	TRANSPARENT RED	660	60°	NLED-3316
4	2.0	20	250	RED	WATER CLEAR	660	40°	NLED-3750
5	2.0	20	500	RED	WATER CLEAR	660	24°	NLED-8543R
6	2.0	20	1,000	RED	WATER CLEAR	660	22°	NLED-5231R
7	2.0	20	2,000	RED	WATER CLEAR	660	21°	NLED-5543R
8	2.0	20	3,000	RED	WATER CLEAR	660	20°	NLED-2543R
9								
10	2.2	20	20	GREEN	DIFFUSED GREEN	562	75°	NLED-3502
11	2.2	20	50	GREEN	DIFFUSED GREEN	562	60°	NLED-3962
12	2.2	20	100	GREEN	TRANSPARENT GREEN	562	50°	NLED-3519
13	2.2	20	250	GREEN	WATER CLEAR	562	40°	NLED-3950
14	2.2	20	500	GREEN	WATER CLEAR	562	24°	NLED-8543G
15	2.2	20	1,000	GREEN	WATER CLEAR	562	22°	NLED-4543G
16								
17	2.1	20	15	YELLOW	DIFFUSED YELLOW	585	65°	NLED-3400
18	2.1	20	25	YELLOW	DIFFUSED YELLOW	585	30°	NLED-3862
19	2.1	20	100	YELLOW	TRANSPARENT YELLOW	585	50°	NLED-3416
20	2.1	20	500	YELLOW	WATER CLEAR	585	24°	NLED-8543Y
21	2.1	20	1,000	YELLOW	WATER CLEAR	585	22°	NLED-5231Y
22								
23	2.0	20	10	AMBER	DIFFUSED AMBER	610	90°	NLED-D401
24	2.0	20	100	AMBER	TRANSPARENT AMBER	610	50°	NLED-3520
25	2.0	20	1,000	AMBER	WATER CLEAR	610	22°	NLED-5231A
26								
27	3.6	20	500	BLUE	TRANSPARENT BLUE	450	30°	NLED-8220
28								
29	4.0	20	50	WHITE	DIFFUSED WHITE	475	50°	NLED-9201
30	4.0	20	1,000	WHITE	DIFFUSED WHITE	475	38°	NLED-9209
31	4.0	20	2,000	WHITE	WATER CLEAR	475	27°	NLED-9205
32	4.0	20	7,000	WHITE	WATER CLEAR	475	21°	NLED-9210

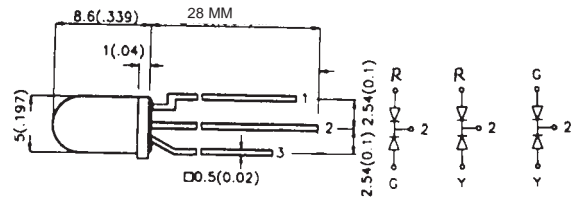
NORMAN LAMPS, INC. NOW OFFERS WHITE LIGHT L.E.D.S IN 3MM, 5MM AND 10 MM DISCRETE, AS WELL AS IN A VARIETY OF BASED STYLES. INTENSITY LEVELS FROM 50 MCD UP TO 7,000 MCD SUPERBRITES ARE AVAILABLE.



T-1^{3/4} (5MM)

3 LEADED

BI-COLOR L.E.D.



COMMON CATHODE (2)

100,000+ LIFE HOURS

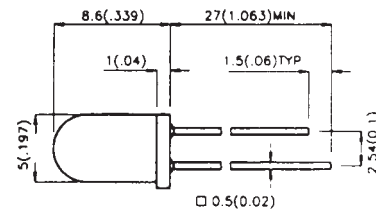
LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLORS	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.2	20	20/15	RED/GREEN	DIFFUSED WHITE	625/565	60°	NLED-50RGW
2	2.2	20	50/40	RED/YELLOW	DIFFUSED WHITE	625/590	60°	NLED-50RYW
3	2.2	20	50/40	YELLOW/GREEN	DIFFUSED WHITE	590/565	60°	NLED-50YGW
4								
5	2.3	20	300/200	H. E. RED/GREEN	WATER CLEAR	625/565	24°	NLED-50RGXC

T-1^{3/4} (5MM)

2 LEADED

BI-COLOR L.E.D.

(BI-POLAR)



100,000+ LIFE HOURS

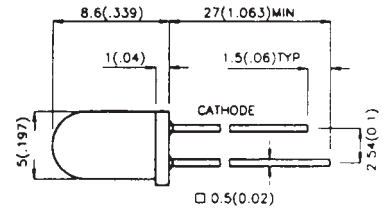
LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLORS	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
6	2.2	20	20/15	RED/GREEN	DIFFUSED WHITE	625/565	60°	NLED-50RGW-2
7	2.2	20	50/40	RED/YELLOW	DIFFUSED WHITE	625/590	60°	NLED-50RYW-2
8	2.2	20	50/40	YELLOW/GREEN	DIFFUSED WHITE	590/565	60°	NLED-50YGW-2
9								
10	2.3	20	300/200	H. E. RED/GREEN	WATER CLEAR	625/565	24°	NLED-50RGXC-2
11	2.2	20	50/50	RED/RED	DIFFUSED RED	625/625	50°	NLED-50RR-2



T-1^{3/4} (5MM)

LOW CURRENT L.E.D. LAMPS

2mA CURRENT
100,000+ LIFE HOURS
Diffused Colors

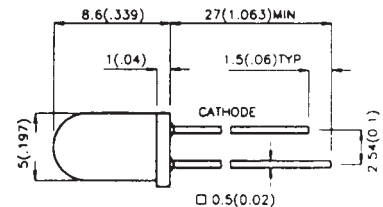


LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.0	2	2.0	RED	DIFFUSED RED	626	50°	NLED-4700
2	2.0	2	1.8	GREEN	DIFFUSED GREEN	569	50°	NLED-4740
3	2.0	2	1.8	YELLOW	DIFFUSED YELLOW	585	50°	NLED-4719

T-1^{3/4} (5MM)

INTEGRATED RESISTOR L.E.D. LAMPS

5 VOLT AND 12 VOLT
100,000+ LIFE HOURS
Diffused Colors



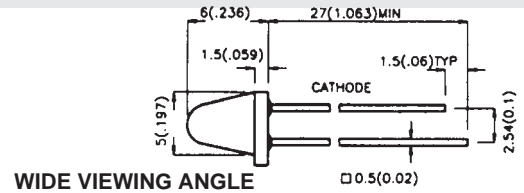
LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLORS	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
4	5.0	20	8.0	H. E. RED	DIFFUSED RED	635	60°	NLED-3600
5	5.0	20	8.0	GREEN	DIFFUSED GREEN	565	60°	NLED-3680
6	5.0	20	8.0	YELLOW	DIFFUSED YELLOW	583	60°	NLED-3650
7								
8	12.0	20	8.0	H.E. RED	DIFFUSED RED	635	60°	NLED-3601
9	12.0	20	8.0	GREEN	DIFFUSED GREEN	565	60°	NLED-3681
10	12.0	20	8.0	YELLOW	DIFFUSED YELLOW	583	60°	NLED-3651



T-1^{3/4} (5MM)

LOW PROFILE L.E.D. LAMPS

100,000+ LIFE HOURS

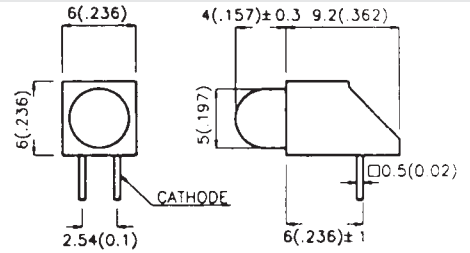


LINE NO.	VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.2	20	10.0	RED	DIFFUSED RED	640	80°	NLED-3351
2	2.2	20	10.0	GREEN	DIFFUSED GREEN	569	80°	NLED-3554
3	2.2	20	8.0	YELLOW	DIFFUSED YELLOW	585	80°	NLED-3451
4								
5	2.2	20	100	RED	WATER CLEAR	640	60°	NLED-3366
6	2.2	20	100	GREEN	WATER CLEAR	569	50°	NLED-3568
7	2.2	20	100	YELLOW	WATER CLEAR	585	50°	NLED-3466

T-1^{3/4} (5MM)

RIGHT ANGLE L.E.D. LAMPS

WITH STAND-OFF
CAN BE SUPPLIED IN VARIOUS LEAD LENGTHS
(BI-COLOR, LOW CURRENT, WHITE L.E.D.)



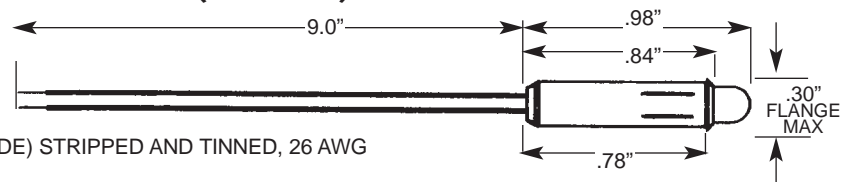
LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	PART NUMBER
8	2.0	20	20	RED	DIFFUSED RED	635	NLED-PCB50-RS
9	2.0	20	20	GREEN	DIFFUSED GREEN	562	NLED-PCB50-GS
10	2.0	20	20	YELLOW	DIFFUSED YELLOW	585	NLED-PCB50-YS

T-1^{3/4} (5MM)

SOLID STATE INDICATOR LIGHTS (L.E.D.)

25 series

.249" MOUNTING HOLE • "SNAP-IN" INSTALLATION
BLACK NYLON HOUSING MATERIAL
9" INSULATED WIRE LEADS (RED=ANODE, BLACK=CATHODE) STRIPPED AND TINNED, 26 AWG
100,000+ LIFE HOURS • 2V - 28V



SPECIAL L.E.D.'s AVAILABLE; ULTRA-BRIGHTS, BLINKING, BI-COLOR, LOW CURRENT, LOW PROFILE PACKAGE AND MORE.
(RED = 1, GREEN =5, YELLOW=7, BLUE = 6, WHITE = 4) SPECIFY COLOR AFTER PART NUMBER.

LINE NO.	VOLTAGE RANGE	mA	MCD	EMITTED COLOR	LENS COLOR	PART NUMBER
11	2.0	25	20	RED/GREEN/YELLOW/BLUE/WHITE	DIFFUSED	5100H-2V
12	6.0	20	30	RED/GREEN/YELLOW/BLUE/WHITE	DIFFUSED	5100H-6V
13	12.0 - 14.0V	15	25	RED/GREEN/YELLOW/BLUE/WHITE	DIFFUSED	5100H-12V
14	24.0 - 28.0V	9	25	RED/GREEN/YELLOW/BLUE/WHITE	DIFFUSED	5100H-24V



Rectangular L.E.D.s

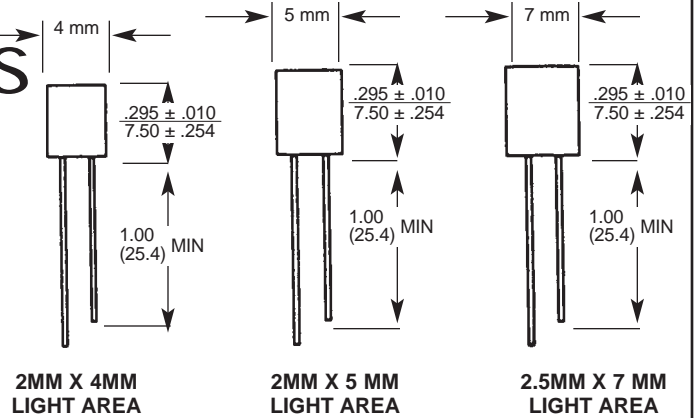
MINIATURE L.E.D. LAMPS

Light area is viewed from top of the L.E.D.

Diffused Colors

No Flange • 100,000+ LIFE HOURS

ALSO AVAILABLE IN BLUE AND WHITE



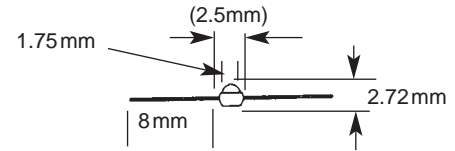
LINE NO.	VOLTS	mA	MCD	EMITTED COLOR	WAVELENGTH NM	PART NUMBER	PART NUMBER	PART NUMBER
1	2.0	20	10.0	H. E. RED	635	RL24RS	RL25RS	RL27RS
2	2.2	20	5.0	GREEN	562	RL24GS	RL25GS	RL27GS
3	2.1	20	5.0	YELLOW	585	RL24YS	RL25YS	RL27YS
4	2.1	20	5.0	AMBER	610	RL24AS	RL25AS	RL27AS

1.75 MM AXIAL LEAD

MICRO-MINIATURE L.E.D. LAMPS

CATHODE MARKED

100,000+ LIFE HOURS



AXIAL LEADS

LINE NO.	MAXIMUM VOLTS	mA	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	MCD	PART NUMBER
5	2.2	10	RED	DIFFUSED RED	660	45	NLED-6300
6	2.2	20	ULTRA-RED	WATER CLEAR	660	200	NLED-6310
7							
8	2.2	10	GREEN	DIFFUSED GREEN	535	20	NLED-6500
9	2.2	10	ULTRA-GREEN	WATER CLEAR	535	150	NLED-6510
10							
11	2.2	10	YELLOW	DIFFUSED YELLOW	585	20	NLED-6400
12	2.2	10	ULTRA-YELLOW	WATER CLEAR	585	150	NLED-6410
13							
14	2.2	10	AMBER	DIFFUSED AMBER	610	30	NLED-6200
15	2.2	10	ULTRA-AMBER	WATER CLEAR	610	120	NLED-6210
16							
17	3.6	15	ULTRA-BLUE	TINTED BLUE	450	200	NLED-8200
18	4.0	15	ULTRA-WHITE	WATER CLEAR	475	250	NLED-9310

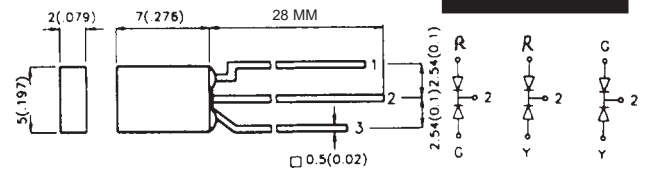


Rectangular L.E.D.'s (2MM x 5MM)

BI-COLOR L.E.D.s

RED/GREEN
RED/GREEN HIGH-BRIGHT
RED/GREEN ULTRA-BRIGHT

100,000+ LIFE HOURS



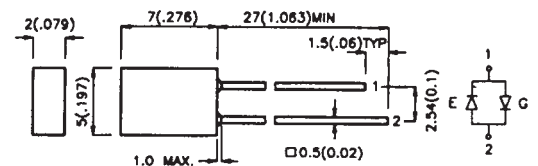
COMMON CATHODE (2)

LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.1	20	20/15	RED/GREEN	DIFFUSED WHITE	625/565	110°	NLED-70RGW
2	2.2	20	70/20	RED/GREEN	DIFFUSED WHITE	660/565	110°	NLED-70RGXW
3	2.2	20	200/150	RED/GREEN	WATER CLEAR	625/565	110°	NLED-70RGXC

Rectangular L.E.D.'s (2MM x 5MM)

BI-POLAR

100,000+ LIFE HOURS



LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
4	2.2	20	20/15	RED/GREEN	DIFFUSED WHITE	625/565	110°	NLED-70RGW-2
5	2.2	20	70/20	RED/GREEN	DIFFUSED WHITE	660/565	110°	NLED-70RGXW-2
6								
7	2.2	20	50/50	RED/RED	DIFFUSED RED	625/625	110°	NLED-70RR-2

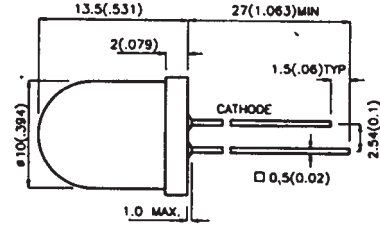
NORMAN LAMPS, INC. CAN SUPPLY RECTANGULAR BI-COLOR L.E.D.'S IN COLORS OTHER THAN THE ONES LISTED ABOVE. CONTACT US FOR PRICING AND DELIVERY. MINIMUM PRODUCTION RUN MAY APPLY.



T-3¹/₄ (10MM)

MINIATURE L.E.D. LAMPS

RED, GREEN, YELLOW, AMBER, BLUE AND WHITE
STANDARD BRIGHT, HIGH BRIGHT, ULTRA-BRIGHT
100,000+ LIFE HOURS



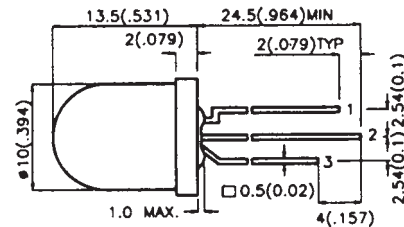
LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
1	2.2	20	80	RED	DIFFUSED RED	660	90°	NLED-4208
2	2.2	20	2000	RED	WATER CLEAR	660	40°	NLED-4220
3								
4	2.2	20	70	GREEN	DIFFUSED GREEN	562	90°	NLED-5307
5	2.2	20	1,000	GREEN	WATER CLEAR	562	38°	NLED-5310
6								
7	2.2	20	80	YELLOW	DIFFUSED YELLOW	585	90°	NLED-6208
8	2.2	20	1,000	YELLOW	WATER CLEAR	585	40°	NLED-6210
9								
10	2.2	20	70	AMBER	DIFFUSED AMBER	610	90°	NLED-7707
11	2.2	20	1,000	AMBER	WATER CLEAR	610	38°	NLED-7710
12								
13	3.6	20	100	BLUE	DIFFUSED BLUE	450	70°	NLED-8250
14	3.6	20	1,000	BLUE	TRANSPARENT BLUE	450	35°	NLED-8270
15								
16	4.0	20	150	WHITE	DIFFUSED WHITE	475	72°	NLED-9260
17	4.0	20	1,000	WHITE	WATER CLEAR	475	50°	NLED-9270
18	4.0	20	4,000	WHITE	WATER CLEAR	475	39°	NLED-9280

T-3¹/₄ (10MM)

3 LEADED

BI-COLOR L.E.D.'S

100,000+ LIFE HOURS



LINE NO.	MAXIMUM VOLTS	mA	MCD	EMITTED COLOR	LENS COLOR	WAVELENGTH NM	VIEWING ANGLE	PART NUMBER
19	2.2	20	50/40	RED/GREEN	DIFFUSED WHITE	625/565	60°	NLED-100RGW
20	2.2	20	50/38	RED/YELLOW	DIFFUSED WHITE	625/590	60°	NLED-100RYW
21	2.2	20	50/40	YELLOW/GREEN	DIFFUSED WHITE	590/565	60°	NLED-100YGW
22								
23	2.2	20	500/400	RED/GREEN	WATER CLEAR	625/565	42°	NLED-100RGXC

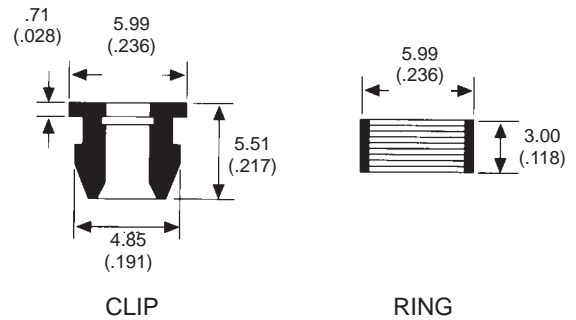


Mounting Hardware

FOR T-1 ROUND L.E.D.s (3 MM)

.180" Mounting Hole
Composition: Black Nylon
Panel Thickness: 1-2 MM

Snap-In Panel Mount
Ring & Clip



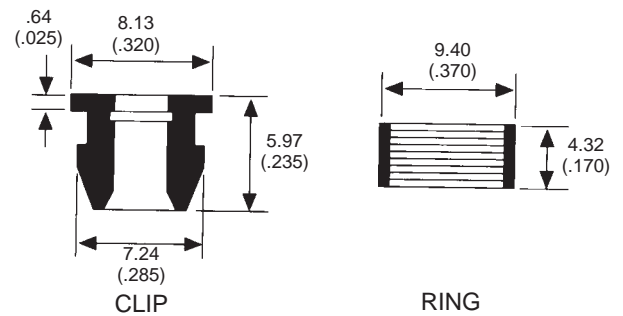
PART # 5100-Z-MR10

Mounting Hardware

FOR T-1^{3/4} ROUND L.E.D.s (5 MM)

.260" Mounting Hole
Composition: Black Nylon
Panel Thickness: 1-3 MM

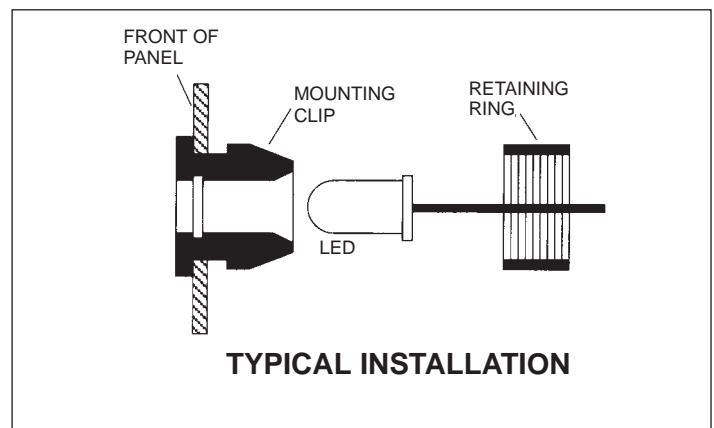
Snap-In Panel Mount
Ring & Clip



PART # 5100-Z-MR20

Mounting Instructions

1. Drill proper size mounting hole in the panel. Deburr but do not chamfer the edges of the hole.
2. Press the panel clip into the hole from the front of the panel.
3. Press the LED into the clip from the back. Use blunt long nose pliers to push on the LED. Do not use force on the LED leads. A tool such as a nut driver may be used to press on the clip.
4. Slip a plastic retaining ring onto the back of the clip and press tight using tools such as two nut drivers.





Halogen Application and Design Factors

Tungsten-Halogen Lamps

Halogen lamps provide a small, highly efficient white light source. Unlike standard incandescent lamps, halogen lamps use a halogen gas which allows the bulbs to burn more intensely without sacrificing life. Compared to standard incandescent lamps, halogen lamps provide energy savings, longer life, crisp, white light, and a compact light source.

Norman Lamps offers a wide variety of halogen lamps in many different base types and configurations. Bi-Pin, Bayonet, Double End and Screw-In are just a few.

We welcome your custom design halogen lamp requirements. Our factories can accommodate most low and high volume custom runs.

Quartz Bulb

The Halogen Lamps listed in this section are made of fused quartz. This increases the durability of the lamp especially at very high wattages.

Operating Temperatures & Pressure

Halogen Lamps operate at extremely high temperatures (400°C - 1,000°C). Use caution when replacing and make sure power is off first. High pressure inside bulb could cause it to shatter unexpectedly. Protect people and equipment with the use of proper shielding.

Handling Considerations

Never touch halogen lamps with bare hands. Oils from skin break down quartz lamp wall causing premature failure. If touched, wipe with clean cloth and alcohol before using.

HALOLUX® Brand by NORMAN

In addition to major brands, Norman also offers a lower cost house brand of halogens called "HALOLUX." Made in Japan, these equals offer great cost savings while maintaining the highest quality level for halogen lamps.



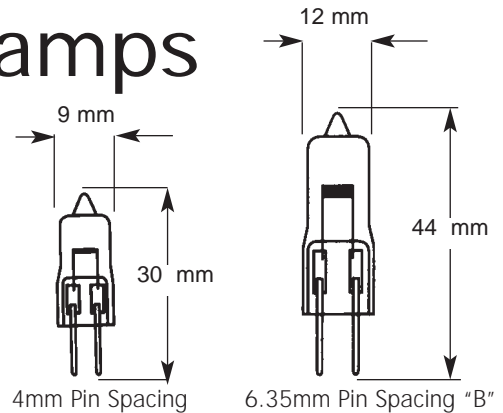


Low Voltage Halogen Lamps

"JC" SERIES (BI-PIN)
6V, 12V, 24V, 36V

2,800°K Color Temp.

2,000 HOUR LIFE



LINE NO.	VOLTS	WATTS	ANSI CODE	† CROSS REFERENCE	2-PIN G4 BASE	2-PIN GY6.35 BASE (1.25mm Pin Diameter)
1	6.0	10		64410	JC-0610	
2	6.0	20	ESB	64250	JC-0620	
3	6.0	30			JC-0630	
4						
5	12.0	5		64405	JC-1205	(JC-1205B)
6	12.0	10		64415	JC-1210	(JC-1210B)
7	12.0	20		12345, 64425	JC-1220	(JC-1220B)
8	12.0	35		64432		JC-1235B
9	12.0	50	BRL	64611, 64440, 64610	(JC-1250/G4)	JC-1250B
10	12.0	75		64450		JC-1275B
11	12.0	100	EVA, FCR	64458, 64625, 64623		JC-12100B
12						
13	24.0	5		64429	JC-2405	
14	24.0	10		64431	JC-2410	
15	24.0	20		64435	JC-2420	(JC-2420B)
16	24.0	50		64445		JC-2450B
17	24.0	75		64455		JC-2475B
18	24.0	100		64460		JC-24100B
19	24.0	150	FDV, FCS	64642, 64640*		JC-24150B
20	24.0	250	EVC, EHJ	64657, 64655*		JC-24250B
21	24.0	275	FNT	64656		JC-24275B
22	36.0	400	EVD	64663+		JC-36400B

* 15MM X 54MM BULB DIMENSIONS. 100 HOURS RATED LIFE.

+ 20MM X 60MM BULB DIMENSIONS. 100 HOURS RATED LIFE.

† CROSS REFERENCE NUMBERS ARE LISTED FOR GENERAL IDENTIFICATION ONLY.
LUMENS AND LIFE MAY VARY.

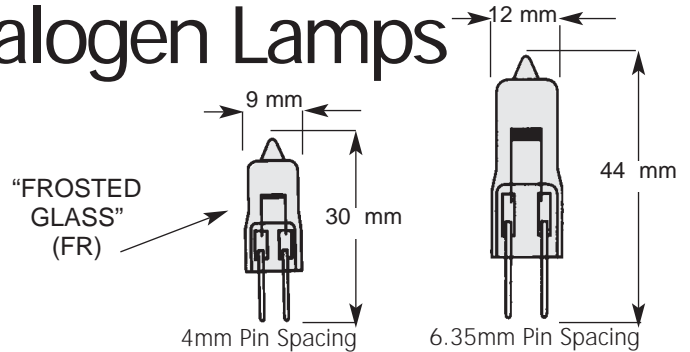


Frosted, Low Voltage Halogen Lamps

"JC" SERIES (Frosted)

6V, 12V, 24V

2,000 Hour Life
2,800°K Color Temp

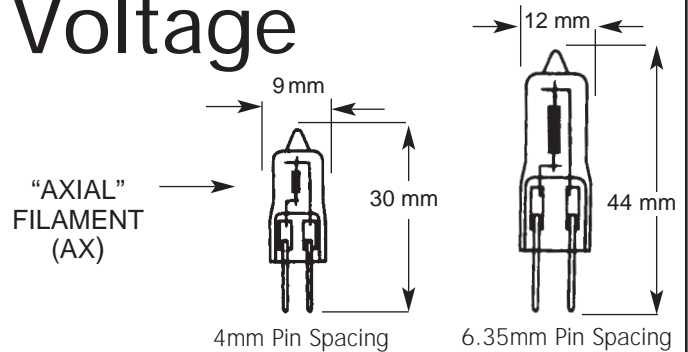


LINE NO.	VOLTS	WATTS	CODE	CROSS REFERENCE	2-PIN G4 BASE	2-PIN GY6.35 BASE
1	6.0	10		64410-FR	JC-0610FR	
2	6.0	20	(ESB)	64250-FR	JC-0620FR	
3						
4	12.0	5		64405-FR	JC-1205FR	
5	12.0	10		64415-FR	JC-1210FR	
6	12.0	20		64425-FR	JC-1220FR	
7	12.0	35		64432-FR		JC-1235FR
8	12.0	50	(BRL)	64440-FR, 64610-FR		JC-1250FR
9	12.0	100	(FCR)	64458 FR, 64625-FR		JC-12100FR
10						
11	24.0	5		64429-FR	JC-2405FR	
12	24.0	10		64431-FR	JC-2410FR	
13	24.0	20		64435-FR	JC-2420FR	

Axial Filament, Low Voltage Halogen Lamps

"JC" SERIES 6V, 12V

2,000 Hour Life
2,800°K Color Temp



LINE NO.	VOLTS	WATTS	CODE	CROSS REFERENCE	2-PIN G4 BASE	2-PIN GY6.35 BASE
14	6.0	10		64410AX	JC-0610AX	
15	6.0	20	ESB	64250AX	JC-0620AX	
16						
17	12.0	5		64405AX	JC-1205AX	
18	12.0	10		64415AX	JC-1210AX	
19	12.0	20		64425AX	JC-1220AX	
20	12.0	35		64432AX		JC-1235AX
21	12.0	50	BRL	64440AX, 64610AX		JC-1250AX
22	12.0	100	FCR	64458AX, 64625AX		JC-12100AX
23						

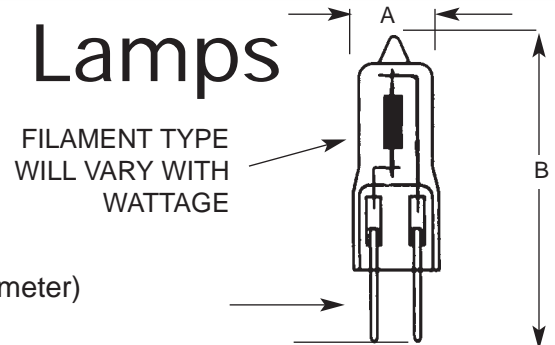


Line Voltage Halogen Lamps

"JCD" SERIES (BI-PIN)
LONG LIFE
120V AND 130V

6.35mm PIN SPACING

(1.25mm Pin Diameter)



LINE NO.	VOLTAGE RANGE	WATTS	A. X B. DIMENSIONS	APPROX. LUMENS	LIFE HOURS	BI-PIN GY 6.35 BASE	EQUIVALENT
1	120.0	20	12.5 X 48mm	300	2,000	JCD20-120V	—
2	120.0	35	12.5 X 48mm	420	2,000	JCD35-120V	—
3	120.0	50	12.5 X 48mm	600	2,000	JCD50-120V	—
4	120.0	75	14.5 X 58mm	900	2,000	JCD75-120V	—
5	130.0	100	14.5 X 60mm	1,200	2,000	JCD100-130V	—
6	130.0	150	14.5 X 60mm	2,100	1,000	JCD150-130V	—
7	130.0	200	14.5 X 60mm	3,000	300	JCD200-130V	64645
8	130.0	250	14.5 X 60mm	4,500	300	JCD250-130V	—
9	120.0	300	18 X 58mm	5,100	300	JCD300-120V	64514-(Longlife)
10	120.0	500	22 X 58mm	8,500	300	JCD500-120V	—
11	120.0	650	22 X 58mm	11,050	300	JCD650-120V	64535
12	120.0	1,000	22 X 68mm	17,000	50	JCD1000-120V	64573

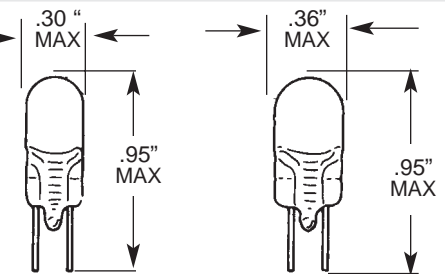
Miniature Halogen Lamps

T-2¹/₄ and T-2³/₄ (BI-PIN)
Low Voltage

Specialty Halogen
Bottom Sealed
4mm pin spacing



BRAND LAMPS



LINE NO.	VOLTS	WATTS	LIFE HOURS	BI-PIN G4 BASE	BI-PIN G4 BASE
13	4.0	4.8	275	777	
14	6.0	20	100	788	
15	6.0	6	50	784	
16	6.0	6	50	785	
17	6.0	10	100	787	
18	6.0	12	50	786	
19	6.0	20	100		778
20	10.0	15.7	5,000		794
21	12.0	8	1,000	774	773
22	12.0	12	50	783	
23	12.0	14	200		789
24	12.0	20	2,000		782
25	14.0	25	200		790
26	14.0	35	200		791



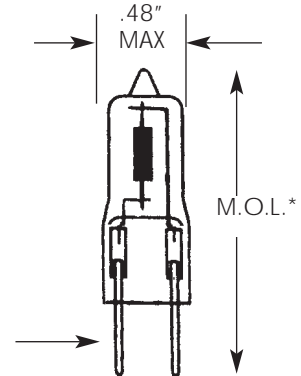
GY-8 Base • T-4

8MM BI-PIN
120 VOLT



CLEAR OR FROSTED (FR)
2,000 LIFE HOURS
FILAMENT VARIES BY WATTAGE

8 MM PIN SPACING



LINE NO.	VOLTS	WATTS	FINISH	*M.O.L.	PART NUMBER
1	120	20	CLEAR	17/8"	Q20GY8-120V
2	120	20	CLEAR	13/8" (short version)	Q20GY8S-120V (short)
3	120	25	CLEAR	17/8"	Q25GY8-120V
4	120	35	CLEAR	17/8"	Q35GY8-120V
5	120	50	CLEAR	17/8"	Q50GY8-120V
6	120	75	CLEAR	17/8"	Q75GY8-120V
7	120	100	CLEAR	17/8"	Q100GY8-120V

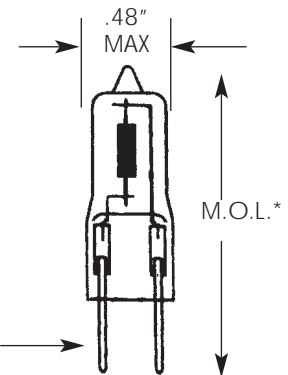
GY-8.6 Base • T-4

8.6MM BI-PIN
120 VOLT



CLEAR OR FROSTED (FR)
2,000 LIFE HOURS
FILAMENT VARIES BY WATTAGE

8.6MM PIN SPACING



LINE NO.	VOLTS	WATTS	FINISH	*M.O.L.	PART NUMBER
8	120	35	CLEAR	2.0"	Q35GY8.6-120V
9	120	50	CLEAR	2.25"	Q50GY8.6-120V
10	120	75	CLEAR	2.25"	Q75GY8.6-120V
11	120	100	CLEAR	2.25"	Q100GY8.6-120V

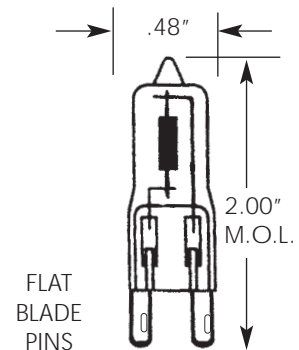


G-9 Pin Blade Base • T-4

9MM BI-PIN, FLAT "BLADE" TYPE
120 VOLT



CLEAR OR FROSTED (FR)
2,000 LIFE HOURS
9 MM PIN SPACING



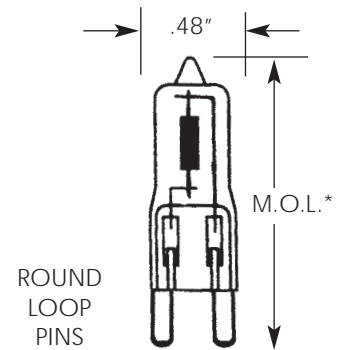
LINE NO.	VOLTS	WATTS	FINISH	PART NUMBER
1	120	25	CLEAR	Q25G9B/CL
2	120	25	FROST	Q25G9B/FR
3				
4	120	40	CLEAR	Q40G9B/CL
5	120	40	FROST	Q40G9B/FR
6				
7	120	60	CLEAR	Q60G9B/CL
8	120	60	FROST	Q60G9B/FR
9				
10	120	100	CLEAR	Q100G9B/CL
11	120	100	FROST	Q100G9B/FR

G-9 Base • T-4

9MM BI-PIN, "LOOP" TYPE
120 VOLT



CLEAR OR FROSTED (FR)
2,000 LIFE HOURS
9 MM PIN SPACING

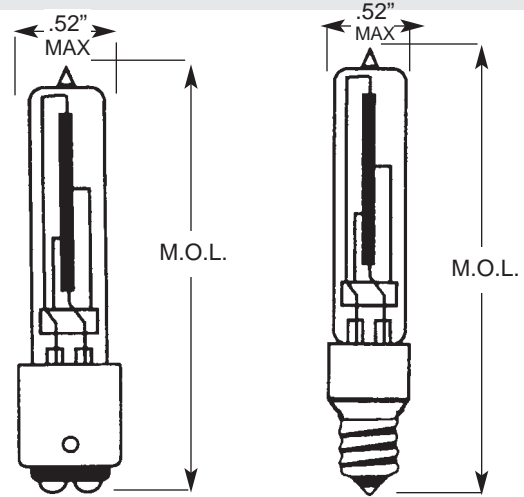


LINE NO.	VOLTS	WATTS	FINISH	*M.O.L.	PART NUMBER
12	120	20	CLEAR	1 ³ / ₄ "	Q20G9-120V
13	120	35	CLEAR	1 ³ / ₄ "	Q35G9-120V
14	120	50	CLEAR	1 ³ / ₄ "	Q50G9-120V
15	120	75	CLEAR	2.0	Q75G9-120V
16	120	100	CLEAR	2.0	Q100G9-120V



Single End Halogen Lamps "JD" SERIES T-4

MULTIPLE FILAMENT SUPPORTS
LONG LIFE 130 VOLT FILAMENT
AVAILABLE IN CLEAR OR FROSTED (F)
220v AVAILABLE

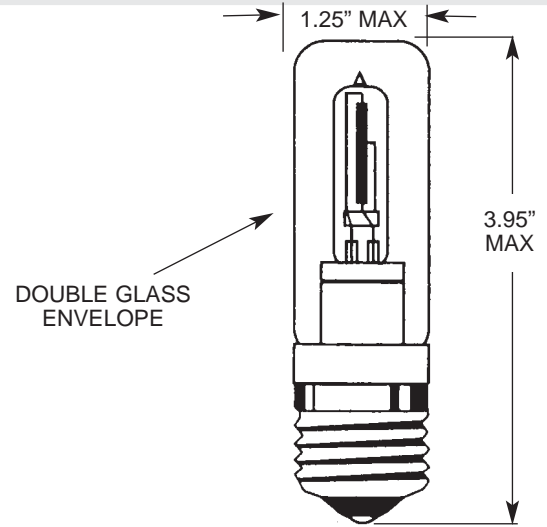


LINE NO.	VOLTS	WATTS	LIFE	FINISH	M.O.L.	D.C. BAYONET BASE (ANSI)	MINI-CAN (E11) SCREW BASE (ANSI)
1	130	20	2,000	CLEAR	2.30"	Q20DC	Q20MC
2	130		2,000	FROSTED	2.30"	Q20DC-F	Q20MC-F
3							
4	130	35	2,000	CLEAR	2.30"	Q35DC	Q35MC
5	130		2,000	FROSTED	2.30"	Q35DC-F	Q35MC-F
6							
7	130	40	2,000	CLEAR	2.30"	Q40DC	Q40MC
8	130		2,000	FROSTED	2.30"	Q40DC-F	Q40MC-F
9							
10	130	50	2,000	CLEAR	2.48"	Q50DC	Q50MC
11	130		2,000	FROSTED	2.48"	Q50DC-F	Q50MC-F
12							
13	130	75	2,000	CLEAR	2.48"	Q75DC	Q75MC
14	130		2,000	FROSTED	2.48"	Q75DC-F	Q75MC-F
15							
16	130	100	2,000	CLEAR	2.48"	Q100DC (ESR)	Q100MC (ESN)
17	130		2,000	FROSTED	2.48"	Q100DC-F (ETD)	Q100MC-F (ETE)
18							
19	130	150	2,000	CLEAR	2.75"	Q150DC (ETC)	Q150MC (ETG)
20	130		2,000	FROSTED	2.75"	Q150DC-F	Q150MC-F (ETH)
21							
22	130	200	2,000	CLEAR	3.00"	Q200DC	Q200MC
23	130		2,000	FROSTED	3.00"	Q200DC-F	Q200MC-F
24							
25	130	250	2,000	CLEAR	3.00"	Q250DC (ESS)	Q250MC (EHT)
26	130		2,000	FROSTED	3.00"	Q250DC-F (ETB)	Q250MC-F (ESM)
27							
28	130	400	2,000	CLEAR	3.00"	Q400DC	Q400MC
29	130		2,000	FROSTED	3.00"	Q400DC-F	Q400MC-F
30							
31	130	500	2,000	CLEAR	3.20"	Q500DC	Q500MC (EYW)
32	130		2,000	FROSTED	3.20"	Q500DC-F	Q500MC-F (EYX)



Double Envelope Halogen Lamps "JDD" SERIES T-10

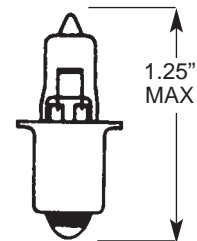
FILTERS U.V. RAYS
2000 LIFE HOURS
AVAILABLE IN 120V AND 220V



LINE NO.	VOLTS	WATTS	FINISH	CROSS REFERENCE	MEDIUM SCREW BASE
1	120.0	75	CLEAR	64484CL	Q75CL/MDE
2	120.0		FROST	64484FR	Q75FR/MDE
3					
4	120.0	100	CLEAR	64486CL	Q100CL/MDE
5	120.0		FROST	64486FR	Q100FR/MDE
6					
7	120.0	150	CLEAR	64488CL	Q150CL/MDE
8	120.0		FROST	64488FR	Q150FR/MDE
9					
10	120.0	250	CLEAR	64490CL	Q250CL/MDE
11	120.0		FROST	64490FR	Q250FR/MDE

Halogen Flashlight Lamps "HPR" SERIES

HIGH INTENSITY • REPLACES STANDARD "PR" LAMPS



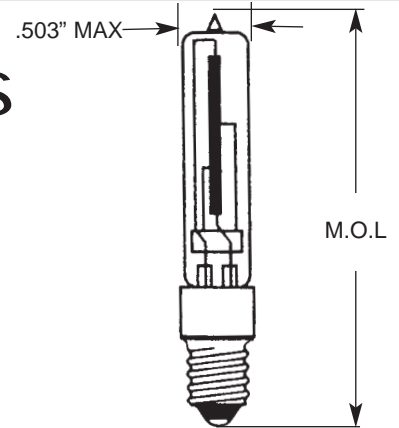
LINE NO.	VOLTS	AMPS	WATTS	LIFE	S. C. MINIATURE FLANGED BASE
12	2.8	.85	2.38	25	HPR52
13	4.0	.85	3.40	25	HPR53
14	5.2	.85	4.42	25	HPR50
15	6.5	.70	4.55	25	HPR51



Single End Halogen Lamps

EUROPEAN SCREW BASE (E-14) T-4

2000 LIFE HOURS
AVAILABLE IN 120V AND 220V

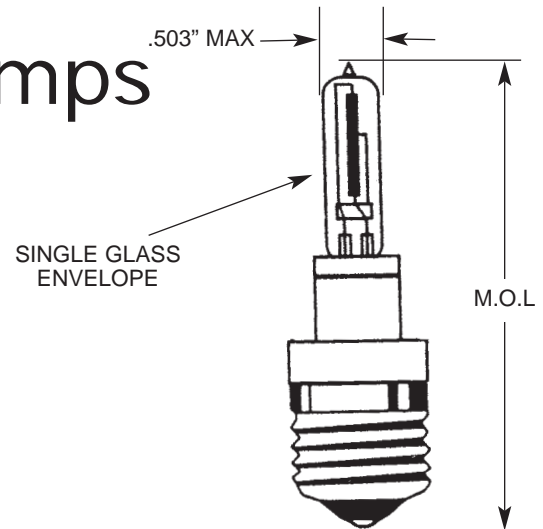


LINE NO.	VOLTS	WATTS	FINISH	M.O.L.	EUROPEAN E-14 SCREW BASE
1	120	75	CLEAR	2.25"	Q75CL/E14
2	120	100	CLEAR	2.45"	Q100CL/E14
3	120	150	CLEAR	2.75"	Q150CL/E14
4	120	250	CLEAR	3.25"	Q250CL/E14
5	120	500	CLEAR	3.75"	Q500CL/E14

Single End Halogen Lamps

MEDIUM SCREW BASE (E-26) T-4

130 VOLT
2000 LIFE HOURS

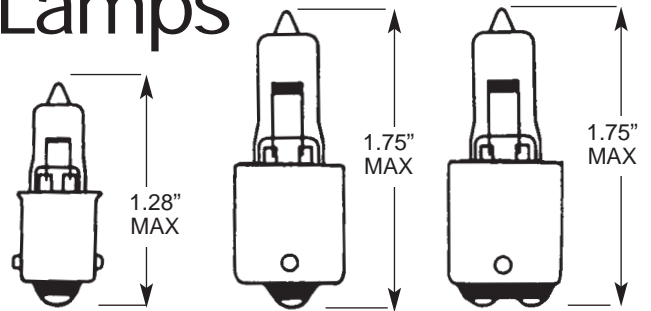


LINE NO.	VOLTS	WATTS	FINISH	M.O.L.	MEDIUM SCREW BASE
6	130.0	75	CLEAR	3.35"	Q75MED
7	130.0	100	CLEAR	3.35"	Q100MED
8	130.0	150	CLEAR	3.35"	Q150MED
9	130.0	250	CLEAR	3.55"	Q250MED
10	130.0	500	CLEAR	3.55"	Q500MED



Low Voltage Halogen Lamps

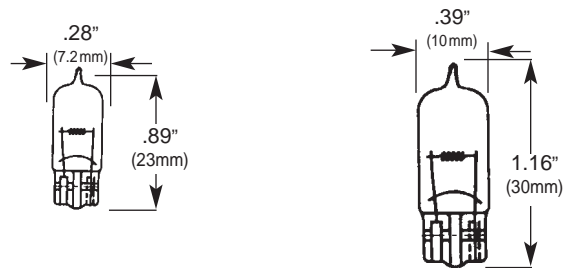
BAYONET BASES, COMPACT SIZE
6v, 12v, 24v



LINE NO.	VOLTS	WATTS	LIFE	CROSS REF.	MINIATURE BAYONET	S.C. BAYONET	D.C. BAYONET
1	6.0	12	50	767	QBA9S0612		
2							
3	12.0	5	250	64111	QBA9S1205		
4	12.0	10	250	64113	QBA9S1210		
5	12.0	20	250	64115	QBA9S1220		
6	12.0	20	200	—			QBA15D1220
7	12.0	35	200	796		QBA15S1235	QBA15D1235
8	12.0	50	200	795		QBA15S1250	QBA15D1250
9							
10							
11	24.0	10	200	—	QBA9S2410		
12	24.0	20	200	—	QBA9S2420	QBA15S2420	QBA15D2420
13	24.0	50	200	—		QBA15S2450	QBA15D2450

T-2¼ and T-3¼

WEDGE BASE HALOGEN LAMPS



LINE NO.	VOLTS	WATTS	LIFE	FILAMENT	7.2MM WEDGE BASE (ANSI)	9.3MM WEDGE BASE (ANSI)
14	6	7	80	CC-6	1996 (ERM)	—
15	6	10	80	CC-6	1997 (ERN)	—
16	6	12	50	CC-6	1995 (ERK)	—
17	12	12	50	CC-6	1990 (ERB)	—
18	14	25	200	CC-6	—	1991 (ERC)
19	14	35	200	CC-6	—	1992 (ERD)
20	14	50	150	CC-6	—	1994 (ERF)
21	28	25	200	CC-6	—	1999 (ESG)



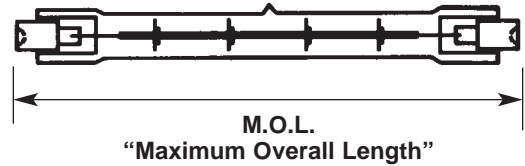
Double End Halogen Lamps (R7S Base)

LISTED BY LENGTH:

INCHES (Millimeters)

2³/₈ 2⁵/₈ 3¹/₈ 3³/₈ 3³/₄ 4¹/₈ 4¹¹/₁₆ 5⁵/₈ 6⁹/₁₆ 7¹/₂ 10¹/₁₆
(60) (67) (80) (85) (95) (105) (119) (143) (167) (190) (256)

“J” SERIES



LINE NO.	VOLTS	WATTS	LIFE	ORDER CODE A.N.S.I.	INCHES	M.O.L. (MILLIMETERS)	DESCRIPTION	
1	20.0	170	100	FCK	2 ³ / ₈	(60)	Q170T3/CL-20V	
2	20.0	200	100	DDN	2 ³ / ₈	(60)	Q200T3/CL-20V	
3								
4	25.0	150	2,000	—	2 ⁵ / ₈	(67)	Q150T4/CL-25V	
5	120.0	420	75	FAL	2 ⁵ / ₈	(67)	Q420T4/CL-120V-67MM	
6	120.0	600	75	FFJ	2 ⁵ / ₈	(67)	Q600T4/CL-120V-67MM	
7	120.0	50	2,000	—	3 ¹ / ₈	(80)	Q50T3/CL-80MM	S H O R T
8	120.0	75	2,000	—	3 ¹ / ₈	(80)	Q75T3/CL-80MM	
9	120.0	100	2,000	64689	3 ¹ / ₈	(80)	Q100T3/CL-80MM	
10	120.0	150	2,000	64694	3 ¹ / ₈	(80)	Q150T3/CL-80MM	
11	120.0	200	2,000	—	3 ¹ / ₈	(80)	Q200T3/CL-80MM	
12	120.0	250	2,000	—	3 ¹ / ₈	(80)	Q250T3/CL-80MM	
13	120.0	300	2,000	EHP	3 ¹ / ₈	(80)	Q300T3/CL-80MM	
14	30.0	375	1,000	DWZ	3 ¹ / ₈	(80)	Q375T4/CL-30V	
15	120.0	400	2,000	EHR	3 ¹ / ₈	(80)	Q400T3/CL-80MM	
16	120.0	400	250	FDA	3 ¹ / ₈	(80)	Q400T4/CL-80MM	
17	120.0	420	75	FFM	3 ¹ / ₈	(80)	Q420T4/CL-80MM	
18	120.0	650	25	DWY	3 ¹ / ₈	(80)	Q650T4/CL-80MM	
19	120.0	650	25	FBX	3 ¹ / ₈	(80)	Q650T5/FR-80MM	
20	120.0	650	25	DXL	3 ¹ / ₈	(80)	Q650T4/RS	
21	120.0	650	100	FAD	3 ¹ / ₈	(80)	Q650T4/4CL	
22	240.0	800	75	DXX	3 ¹ / ₈	(80)	Q800T4/CL-240V	
23								
24	120.0	100	2,000	64689	3 ³ / ₈	(85)	Q100T3/CL-85MM	
25	120.0	150	2,000	64694	3 ³ / ₈	(85)	Q150T3/CL-85MM	
26								
27	120.0	600	75	FCB	3 ³ / ₄	(95)	Q600T4/CL-95MM	
28	120.0	650	75	FCA	3 ³ / ₄	(95)	Q650T4/CL-95MM	
29	120.0	1,000	70	BRH	3 ³ / ₄	(95)	Q1000T5/CL-A	
30	120.0	1,000	50	DXN	3 ³ / ₄	(95)	Q1000T5/CL-B	
31	120.0	1,000	75	ETT	3 ³ / ₄	(95)	QPH1000H	
32	120.0	1,000	150	FBY	3 ³ / ₄	(95)	Q1000T5/FR-95MM	
33	120.0	1,000	150	DXW	3 ³ / ₄	(95)	Q1000T5/4CL-95MM	

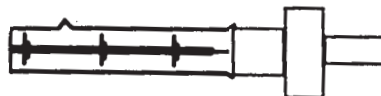
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Double End Halogen Lamps (R7S Base) – CONTINUED

LINE NO.	VOLTS	WATTS	LIFE	A.N.S.I.	INCHES	M.O.L. (MILLIMETERS)	DESCRIPTION	STANDARD
1	120.0	1,000	400		4 ¹ / ₈	(105)	Q1000T3/CL-105mm	
2	120.0	1,000	300	FHM	4 ¹ / ₈	(105)	Q1000T3/FR-105mm	
3	185.0	1,000	100	EJD	4 ¹ / ₈	(105)	Q1000T3/CL-185V	
4								
5	130.0	75	2,000	—	4 ¹¹ / ₁₆	(119)	Q75T3/CL	STANDARD
6	130.0	100	2,000	—	4 ¹¹ / ₁₆	(119)	Q100T3/CL	
7	130.0	150	2,000	—	4 ¹¹ / ₁₆	(119)	Q150T3/CL	
8	130.0	200	2,000	64697	4 ¹¹ / ₁₆	(119)	Q200T3/CL	
9	130.0	250	2,000	—	4 ¹¹ / ₁₆	(119)	Q250T3/CL	
10	120.0	300	2,000	EHZ	4 ¹¹ / ₁₆	(119)	Q300T2-1/2/FR	
11	130.0	300	2,000	64703-EHM	4 ¹¹ / ₁₆	(119)	Q300T3/CL	
12	130.0	500	2,000	64700-FCL	4 ¹¹ / ₁₆	(119)	Q500T3/CL	
13	120.0	500	400	FDL	4 ¹¹ / ₁₆	(119)	Q500T3/4CL	
14	120.0	500	400	FDN, FCZ	4 ¹¹ / ₁₆	(119)	Q500T3/4FR	
15	120.0	750	400	EJG	4 ¹¹ / ₁₆	(119)	Q750T3/CL	
16	120.0	750	400	EMD	4 ¹¹ / ₁₆	(119)	Q750T3/FR	
17	120.0	1000	400	FCM	4 ¹¹ / ₁₆	(119)	Q1000T3/4CL	
18	220.0	300	1,000	—	4 ¹¹ / ₁₆	(119)	Q300T3/CL-220V	
19	220.0	500	1,000	—	4 ¹¹ / ₁₆	(119)	Q500T3/CL-220V	
20	240.0	800	250	EME	4 ¹¹ / ₁₆	(119)	Q800T3/P2/11	
21	277.0	500	2,000	—	4 ¹¹ / ₁₆	(119)	Q500T3/CL-277V	
22								
23	120.0	300	2,000	—	5 ⁵ / ₈	(143) *	Q300T3/PB (PIN BLADE)	
24	120.0	500	2,000	—	5 ⁵ / ₈	(143) *	Q500T3/PB (PIN BLADE)	
25	120.0	1,000	2,000	DWT	5 ⁵ / ₈	(143)	Q1000T6/CL	
26	120.0	1,000	500	FER	5 ⁵ / ₈	(143)	Q1000T6/4CL	
27	120.0	2,000	400	FEY	5 ⁵ / ₈	(143)	Q2000T8/4CL-120V	
28	220.0	2,000	300	FEX	5 ⁵ / ₈	(143)	Q2000T8/4CL-220V	
29								
30	120.0	1,000	400	FFT	6 ⁹ / ₁₆	(167)	Q1000T3/1CL	
31	120.0	1,500	400	FDB	6 ⁹ / ₁₆	(167)	Q1500T4/4CL	
32	120.0	1,500	400	FGT	6 ⁹ / ₁₆	(167)	Q1500T4/4FR	
33								
34	130.0	500	2,000	—	7 ¹ / ₂	(190)	Q500T3/CL-190MM	
35	130.0	750	2,000	—	7 ¹ / ₂	(190)	Q750T3/CL-190MM	
36	130.0	1,000	2,000	BLV	7 ¹ / ₂	(190)	Q1000T3/CL-190MM	
37	240.0	500	2,000	—	7 ¹ / ₂	(190)	Q500T3/CL-240V-190MM	
38	240.0	750	2,000	—	7 ¹ / ₂	(190)	Q750T3/CL-240V-190MM	
39	240.0	1,000	2,000	66801	7 ¹ / ₂	(190)	Q1000T3/CL-240V-190MM	
40								
41	120.0	1,000	2,000	—	10 ¹ / ₁₆	(256)	Q1000T3/CL-120V-256MM	
42	240.0	1,000	2,000	—	10 ¹ / ₁₆	(256)	Q1000T3/CL-240V-256MM	
43	277.0	1,000	2,000	—	10 ¹ / ₁₆	(256)	Q1000T3/CL-277V-256MM	
44	120.0	1,500	2,000	—	10 ¹ / ₁₆	(256)	Q1500T3/CL-120V-256MM	
45	240.0	1,500	2,000	64760	10 ¹ / ₁₆	(256)	Q1500T3/CL-240V-256MM	
46	277.0	1,500	2,000	—	10 ¹ / ₁₆	(256)	Q1500T3/CL-277V-256MM	

* "PIN-BLADE" BASE. See Diagram.





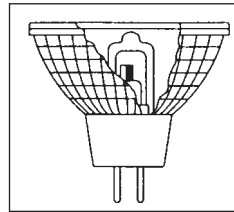
MR-16

HALOGEN DISPLAY LAMPS

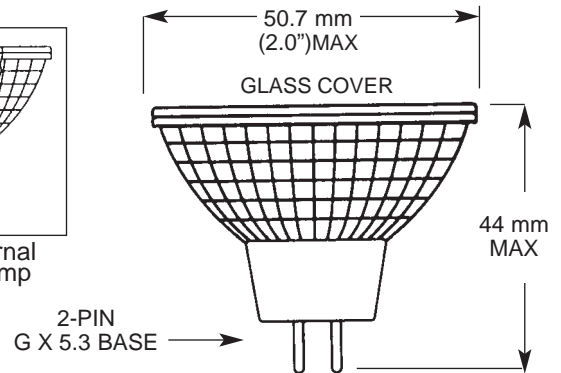
12 VOLTS • GX5.3 BASE

3,000K COLOR TEMPERATURE

5,000 LIFE HOURS • GLASS COVER



View of Internal Halogen Lamp



LINE NO.	VOLTS	WATTS	BEAMSPREAD	LAMP A.N.S.I. CODE
1	12.0		10° SPOT	ESX
2	12.0	20W	24° MEDIUM FLOOD	BBF
3	12.0		36° FLOOD	BAB
4	12.0		60° WIDE FLOOD	BAB/60
5				
6	12.0	35W	12° SPOT	FMT
7	12.0		24° MEDIUM FLOOD	FMV
8	12.0		36° FLOOD	FMW
9	12.0		60° WIDE FLOOD	FMW/60
10				
11	12.0	42W	12° SPOT	EYR
12	12.0		24° MEDIUM FLOOD	EYS
13	12.0		36° FLOOD	EYP
14				
15	12.0	50W	10° SPOT	EXT
16	12.0		24° MEDIUM FLOOD	EXZ
17	12.0		30° FLOOD	ENL
18	12.0		38° FLOOD	EXN
19	12.0		60° WIDE FLOOD	FNV
20				
21	12.0	65W	13° SPOT	FPA
22	12.0		28° FLOOD	FPB
23				
24	12.0	75W	10° SPOT	EYF
25	12.0		24° MEDIUM FLOOD	EYJ
26	12.0		39° FLOOD	EYC
27	12.0		60° WIDE FLOOD	EYC/60
28				
29	12.0	100W	14° SPOT	GXS
30	12.0		38° FLOOD	GXF

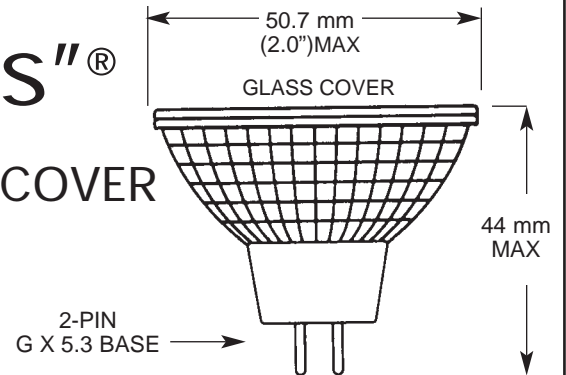
NORMAN BRAND MR-16 DISPLAY LAMPS ARE MANUFACTURED TO THE HIGHEST QUALITY STANDARDS FOR COLOR TEMPERATURE, LUMENS AND LIFE. NORMAN MR-16 LAMPS INCORPORATE A GLASS COVER TO PROTECT THE BULB FROM DUST, DIRT AND OILS. IN ADDITION, EACH MR-16 LAMP IS COLOR STABILIZED FOR 90% OF THE RATED LIFE HOURS. THE REFLECTIVE FINISH IS COMPOSED OF 2 SOLID LAYERS OF PURE ALUMINUM APPLIED BY VACUUM PROCESS. THIS PROCESS ELIMINATES LIGHT SPILL FROM THE BACK OF THE LAMP WHILE FOCUSING MORE LUMENS INTO THE BEAM PATTERN.



MR-16 "Fiber-Optics"®
FIBER-OPTIC LAMPS*
6 & 12 VOLTS • GX5.3 BASE • GLASS COVER

3,000K COLOR TEMPERATURE

5,000 LIFE HOURS

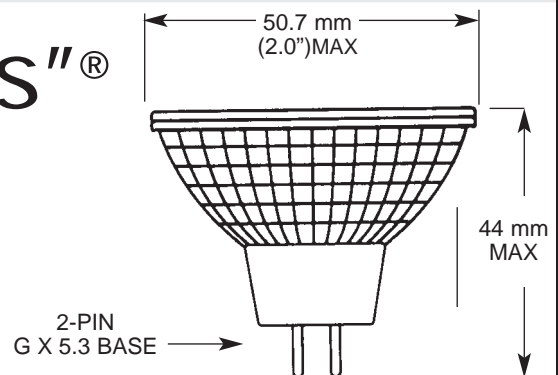


LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
1	6.0	5W	30° MEDIUM FLOOD	MR16-0605
2	6.0	10W	30° MEDIUM FLOOD	MR16-0610
3	6.0	15W	30° MEDIUM FLOOD	MR16-0615
4	6.0	20W	30° MEDIUM FLOOD	MR16-0620
5				
6	12.0	5W	30° MEDIUM FLOOD	MR16-1205
7	12.0	10W	30° MEDIUM FLOOD	MR16-1210
8	12.0	12W	30° MEDIUM FLOOD	MR16-1212
9	12.0	15W	30° MEDIUM FLOOD	MR16-1215

* DESIGNED FOR USE IN DECORATIVE DISPLAYS AND FIBER-OPTIC CHRISTMAS TREES.
ALSO FOR USE IN LOW VOLTAGE LANDSCAPE LIGHTING, CAMERAS, AND TOYS.

MR-16 "Fiber-Optics"®
FIBER-OPTIC LAMPS
19.7 VOLTS • GX5.3 BASE

3,200K COLOR TEMPERATURE
SPECIAL APPLICATION LAMPS



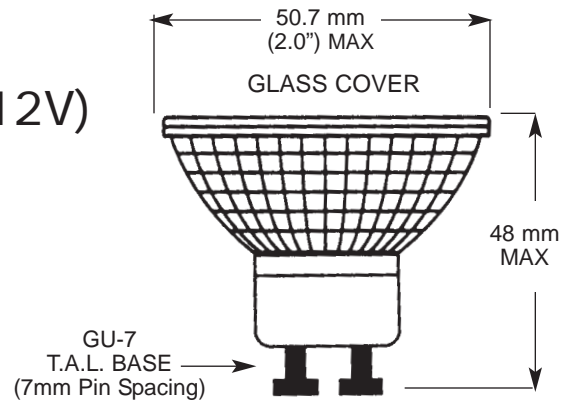
LINE NO.	VOLTS	WATTS	LIFE HOURS	APPLICATION	PART NUMBER
10	19.7	183	250	SWIMMING POOLS	HI-110
11	19.7	200	250	SWIMMING POOLS	HI-111



MR-16 GU-7 BASE (12V)

HALOGEN DISPLAY LAMPS
TURN-AND-LOCK PINS (T.A.L.)

5,000 LIFE HOURS • GLASS COVER

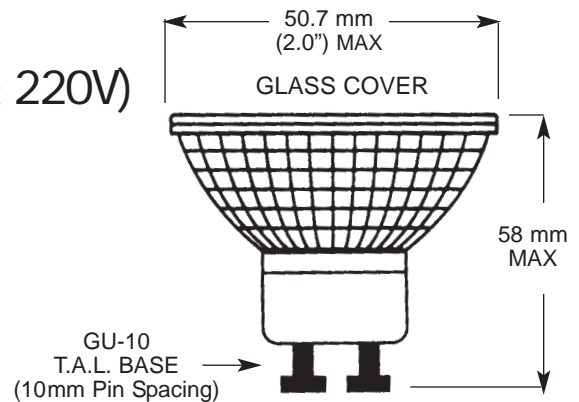


LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
1	12.0	20W	38° FLOOD	BAB-GU7
2	12.0	35W	38° FLOOD	FMW-GU7
3	12.0	50W	38° FLOOD	EXN-GU7
4	12.0	50W	10° NARROWSPOT	EXT-GU7
5	12.0	75W	38° FLOOD	EYC-GU7

MR-16 GU-10 BASE (120V & 220V)

HALOGEN DISPLAY LAMPS
TURN-AND-LOCK PINS (T.A.L.)

5,000 LIFE HOURS

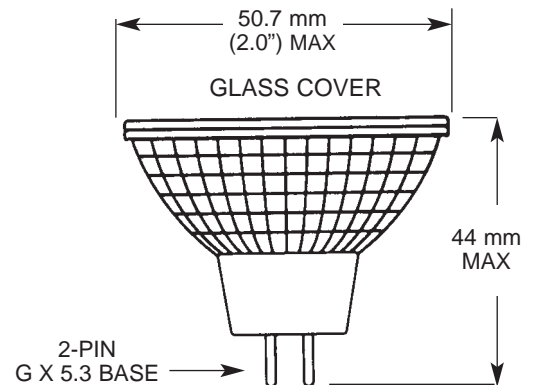


LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
6	120.0	20W	38° FLOOD	BAB-GU10
7	120.0	35W	38° FLOOD	FMW-GU10
8	120.0	50W	38° FLOOD	EXN-GU10
9	120.0	50W	10° NARROWSPOT	EXT-GU10
10	120.0	75W	38° FLOOD	EYC-GU10
11				
12	220.0	50W	38° FLOOD	EXN-GU10/220V



MR-16 24 VOLTS
HALOGEN DISPLAY LAMPS

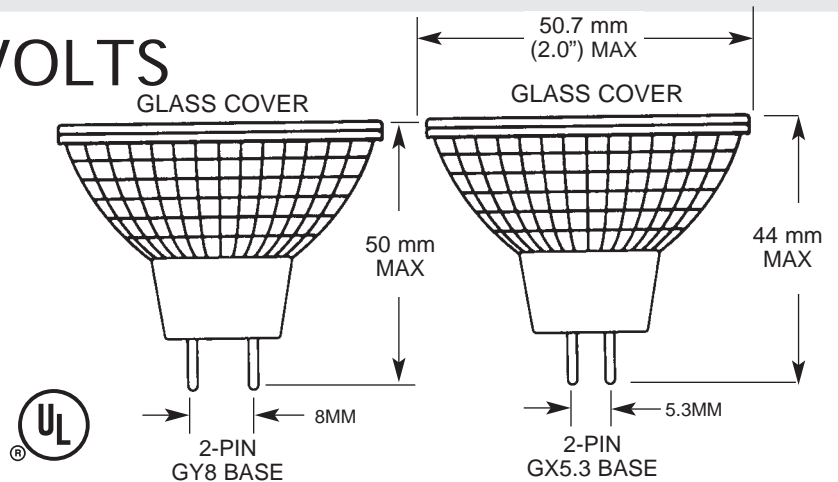
3,000 LIFE HOURS • GLASS COVER



LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
1	24.0	20W	38° FLOOD	BAB-24V
2	24.0	35W	38° FLOOD	FMW-24V
3	24.0	50W	38° FLOOD	EXN-24V
4	24.0	50W	10° NARROW SPOT	EXT-24V
5	24.0	75W	38° FLOOD	EYC-24V

MR-16 120 VOLTS
HALOGEN DISPLAY LAMPS
8MM PIN SPACING
AND
5.3MM PIN SPACING

3,000 LIFE HOURS • GLASS COVER



LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER	PART NUMBER
6	120.0	20W	38° FLOOD	BAB/GY8-120V	BAB-120V
7	120.0	35W	38° FLOOD	FMW/GY8-120V	FMW-120V
8	120.0	50W	38° FLOOD	EXN/GY8-120V	EXN-120V
9	120.0	50W	10° NARROW SPOT	EXT/GY8-120V	EXT-120V
10	120.0	75W	38° FLOOD	EYC/GY8-120V	EYC-120V

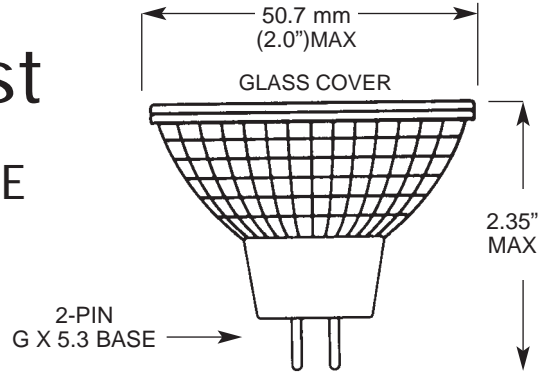


MR-16 Colors and Frost

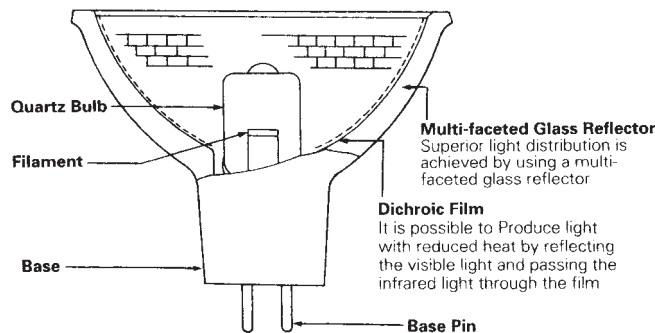
HALOGEN DISPLAY LAMPS

12 VOLTS • GLASS COVER • LONG LIFE

5,000 LIFE HOURS



LINE NO.	VOLTS	WATTS	BEAMSPREAD	EMITTED COLOR	PART NUMBER
1	12.0	20W	12° SPOT	YELLOW	ESX-Y
2					
3	12.0	50W	38° FLOOD	RED	EXN-R
4	12.0	50W	38° FLOOD	GREEN	EXN-G
5	12.0	50W	38° FLOOD	YELLOW	EXN-Y
6	12.0	50W	38° FLOOD	BLUE	EXN-B
7					
8	12.0	20W	38° FLOOD	FROSTED (LENS)	BAB-FR
9	12.0	35W	38° FLOOD	FROSTED (LENS)	FMW-FR
10	12.0	50W	38° FLOOD	FROSTED (LENS)	EXN-FR
11	12.0	75W	38° FLOOD	FROSTED (LENS)	EYC-FR
12					
13	12.0	20W	38° FLOOD	FROSTED (LENS & REFLECTOR)	BAB-FR2
14	12.0	35W	38° FLOOD	FROSTED (LENS & REFLECTOR)	FMW-FR2
15	12.0	50W	38° FLOOD	FROSTED (LENS & REFLECTOR)	EXN-FR2
16	12.0	75W	38° FLOOD	FROSTED (LENS & REFLECTOR)	EYC-FR2

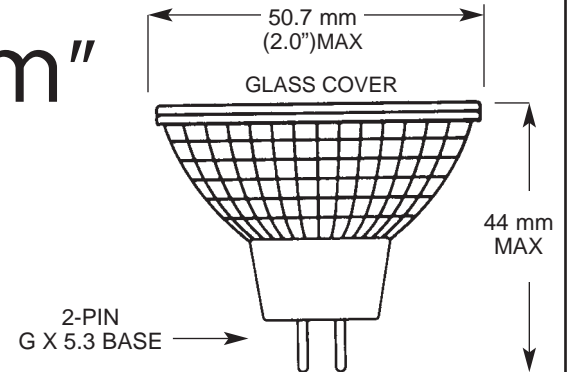




MR-16 "White-Beam"

HALOGEN DISPLAY LAMPS

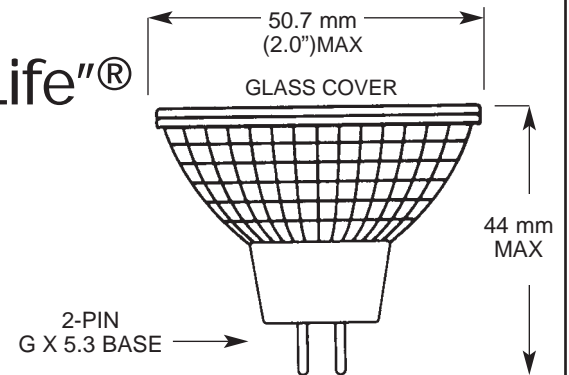
4800K COLOR TEMPERATURE



LINE NO.	VOLTS	WATTS	BEAMSPREAD	LIFE HOURS @ 12.0 VOLTS	PART NUMBER
1	12.0	35W	12°	3,000	FMT/4800
2	12.0	35W	24°	3,000	FMV/4800
3	12.0	35W	36°	3,000	FMW/4800
4					
5	12.0	50W	10°	3,000	EXT/4800
6	12.0	50W	24°	3,000	EXZ/4800
7	12.0	50W	38°	3,000	EXN/4800

MR-16 10,000 Hour "Ultra Life"®

HALOGEN DISPLAY LAMPS

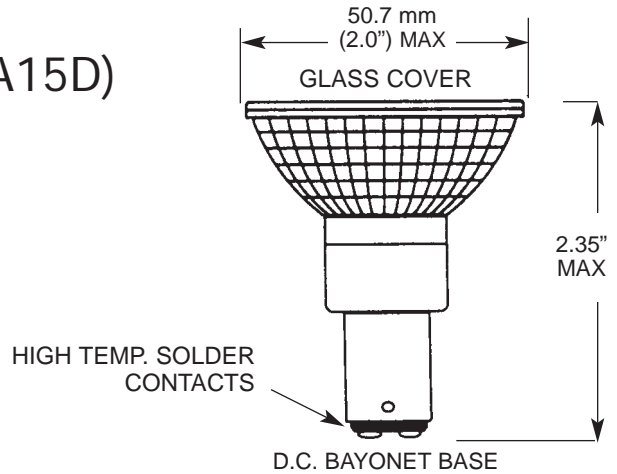


LINE NO.	VOLTS	WATTS	BEAMSPREAD	LIFE HOURS @ 12.0 VOLTS	PART NUMBER
8	12.0	20W	38°	10,000	BAB/10K
9					
10	12.0	35W	24°	10,000	FMV/10K
11	12.0	35W	36°	10,000	FMW/10K
12					
13	12.0	50W	12°	10,000	EXT/10K
14	12.0	50W	24°	10,000	EXZ/10K
15	12.0	50W	36°	10,000	EXN/10K



MR-16 D.C. BAYONET (BA15D)
HALOGEN DISPLAY LAMPS
12 VOLTS • GLASS COVER

3,000K COLOR TEMPERATURE
5,000 LIFE HOURS

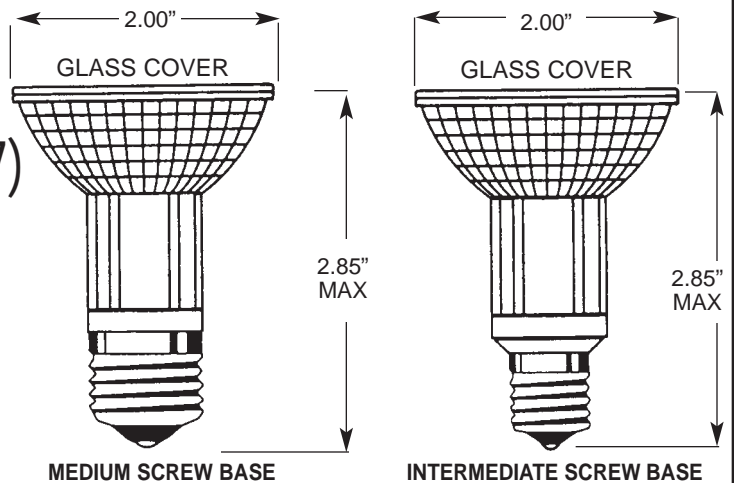


LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
1	12.0	20	10° SPOT	ESX-DC-C
2	12.0	20	38° FLOOD	BAB-DC-C
3				
4	12.0	50	10° SPOT	EXT-DC-C
5	12.0	50	20° MED. FLOOD	EXZ-DC-C
6	12.0	50	38° FLOOD	EXN-DC-C
7				
8	12.0	75	10° SPOT	EYF-DC-C
9	12.0	75	38° MED. FLOOD	EYC-DC-C

MR-16
MEDIUM SCREW BASE (E-27)
INTERMEDIATE SCREW BASE (E-17)

HALOGEN DISPLAY LAMPS
120 VOLTS • GLASS COVER

3,000K COLOR TEMPERATURE
3,000 LIFE HOURS



LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER	PART NUMBER	ANSI
10	120.0	35	40°	JDR35-MED	JDR35-INT	
11	120.0	50	40°	JDR50-MED	JDR50-INT	
12	120.0	75	40°	JDR75-MED	JDR75-INT	FSA, FSB, FSD
13	120.0	100	40°	JDR100-MED	JDR100-INT	FSC, FSE, FSF
14	120.0	150	40°	JDR150-MED	JDR150-INT	

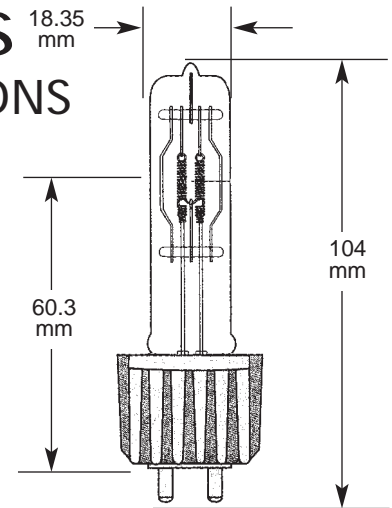


HPL Series, Halogen Lamps

STAGE AND STUDIO SPOT LIGHT APPLICATIONS

- Only for Use in Approved Enclosed Halogen Fixtures
- More Fixture Light Output Using Less Electrical Energy
- Integral Heat Sink Base
- Low Seal Temperature

"X" = LONG LIFE



LINE NO	Volts	Watts	Dimensions			Filament Type	Approx Lumens lm	Color Temp K	Avg. Life .h	PART NUMBER
			Dia (A)	OAL (B)	LCL (C)					
1	77	550	18.35	104	60.3	4-C8	16170	3250	300	HPL-550/77V
2	77	550	18.35	104	60.3	4-C8	12160	3050	2000	HPL-550/77X
3	77	750	18.35	104	60.3	4-C8	22950	3250	300	HPL-750/77V
4										
5	115	375	18.35	104	60.3	4-C8	10540	3250	300	HPL-375/115V
6	115	375	18.35	104	60.3	4-C8	8000	3250	2000	HPL-375/115X
7	115	575	18.35	104	60.3	4-C8	16520	3250	300	HPL-575/115V
8	115	575	18.35	104	60.3	4-C8	12360	3250	2000	HPL-575/115X
9	115	750	18.35	104	60.3	4-C8	21900	3250	300	HPL-750/115V
10	115	750	18.35	104	60.3	4-C8	16400	3250	1000	HPL-750/115X
11										
12	120	575	18.35	104	60.3	4-C8	16520	3250	300	HPL-575/120V
13	120	575	18.35	104	60.3	4-C8	12360	3050	2000	HPL-575/120X
14	120	750	18.35	104	60.3	4-C8	21900	3250	300	HPL-750/120V
15	120	750	18.35	104	60.3	4-C8	16400	3050	2000	HPL-750/120X
16										
17	230	375	18.35	104	60.3	6-C8	7250	3000	1000	HPL-375/230X
18	230	575	18.35	104	60.3	6-C8	14900	3050	2000	HPL-575/230V
19	230	575	18.35	104	60.3	6-C8	11780	3050	1500	HPL-575/230X
20	230	750	18.35	104	60.3	6-C8	19750	3200	300	HPL-750/230V
21	230	750	18.35	104	60.3	6-C8	15600	3050	1500	HPL-750/230X
22										
23	240	375	18.35	104	60.3	6-C8	7250	3000	3000	HPL-375/240X
24	240	575	18.35	104	60.3	6-C8	14900	3050	3050	HPL-575/240V
25	240	575	18.35	104	60.3	6-C8	11780	3050	3050	HPL-575/240X
26	240	750	18.35	104	60.3	6-C8	19750	3200	3200	HPL-750/240V
27	240	750	18.35	104	60.3	6-C8	15600	3050	3050	HPL-750/240X



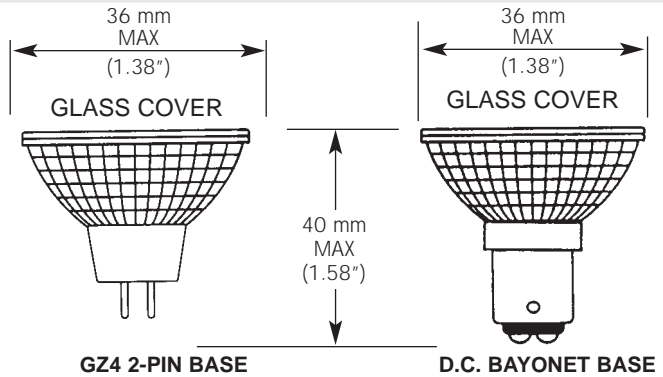
MR-11

HALOGEN DISPLAY LAMPS

12 VOLTS

3,000K COLOR TEMPERATURE

5,000 LIFE HOURS • GLASS COVER

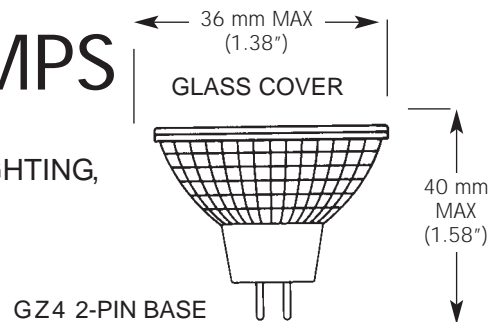


LINE NO.	VOLTS	WATTS	BEAMSPREAD	LAMP CODE	LAMP CODE
1	12.0	20	10° SPOT	FTB	FSS
2	12.0	20	20° MED. FLOOD	FTC	FST
3	12.0	20	30° FLOOD	FTD	FSV
4	12.0	20	30° FLOOD	FTD-RED	—
5	12.0	20	30° FLOOD	FTD-GREEN	—
6	12.0	20	30° FLOOD	FTD-AMBER	—
7	12.0	20	30° FLOOD	FTD-BLUE	—
8					
9	12.0	35	10° SPOT	FTE-C	GDX-C
10	12.0	35	20° MED. FLOOD	FTF-C	GDY-C
11	12.0	35	30° FLOOD	FTH-C	GDZ-C

MR-11 FIBER-OPTIC LAMPS

DESIGNED FOR USE IN DECORATIVE DISPLAYS, LANDSCAPE LIGHTING, AND FIBER-OPTIC CHRISTMAS TREES.

5,000 LIFE HOURS • GLASS COVER

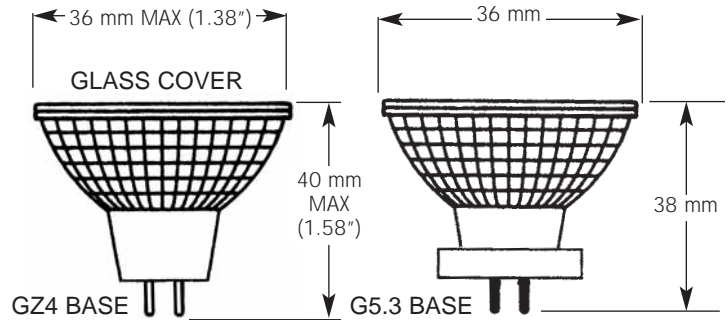


LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
12	6.0	5	20° MEDIUM FLOOD	MR11-0605
13	6.0	8	20° MEDIUM FLOOD	MR11-0608
14	6.0	10	20° MEDIUM FLOOD	MR11-0610
13	6.0	15	20° MEDIUM FLOOD	MR11-0615
14	6.0	20	20° MEDIUM FLOOD	MR11-0620
15	6.0	30	20° MEDIUM FLOOD	MR11-0630
17	12.0	5	20° MEDIUM FLOOD	MR11-1205
18	12.0	8	20° MEDIUM FLOOD	MR11-1208
17	12.0	10	20° MEDIUM FLOOD	MR11-1210
18	12.0	12	20° MEDIUM FLOOD	MR11-1212
19	12.0	15	20° MEDIUM FLOOD	MR11-1215
21	24.0	5	20° MEDIUM FLOOD	MR11-2405
22	24.0	10	20° MEDIUM FLOOD	MR11-2410
23	24.0	20	20° MEDIUM FLOOD	MR11-2420
24	24.0	35	20° MEDIUM FLOOD	MR11-2435



Specialty MR-11 Halogen Lamps

- MEDICAL EQUIPMENT
- SPECIALTY APPLICATIONS
- CURING EQUIPMENT
- FIBER OPTIC
- PROJECTOR

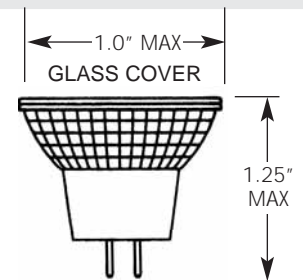


LINE NO.	VOLTS	WATTS	LIFE HOURS	PRIMARY APPLICATION	PART NUMBER	PART NUMBER
1	6.0	10W	50	MEDICAL	JCR/M/6V-10W	—
2	6.0	20W	50	MEDICAL	JCR/M/6V-20W	—
3						—
4	8.0	20W	25	MEDICAL	64255	—
5						—
6	10.0	52W	50	MEDICAL	JCR/M/10V-52W	—
7						—
8	12.0	50W	25	MEDICAL	—	JCR/M/12V-50W
9	12.0	75W	25	MEDICAL	—	64617
10	12.0	75W	25	MEDICAL	—	64614
11	12.0	75W	25	MEDICAL	—	13865
12						—
13	12.0	100W	25	MEDICAL	—	JCR/M/12V-100W
14	13.8	25W	50	MEDICAL	JCR/M/13.8V-25W(FLT)	—
15	14.0	35W	50	MEDICAL	13165	—
16						—
17	15.0	150W	50	MEDICAL	—	64635

MR-8 Fiber Optic Lamps

6 & 12 Volt

5,000 LIFE HOURS • GLASS COVER • G4 2 PIN BASE



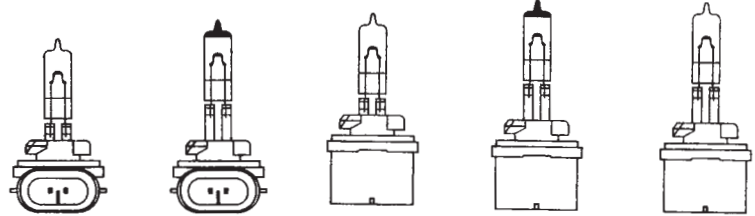
LINE NO.	VOLTS	WATTS	BEAMSPREAD	PART NUMBER
18	6.0	5	20° MEDIUM FLOOD	MR8-0605
19				
20	12.0	5	20° MEDIUM FLOOD	MR8-1205
21	12.0	10	20° MEDIUM FLOOD	MR8-1210
22	12.0	12	20° MEDIUM FLOOD	MR8-1212
23	12.0	20	20° MEDIUM FLOOD	MR8-1220
24	12.0	35	20° MEDIUM FLOOD	MR8-1235



Automotive Halogen Lamps • T-3 1/4

- AUTO - SIGNAL
- AUTO - FOG
- TRACTOR

12.8 VOLT

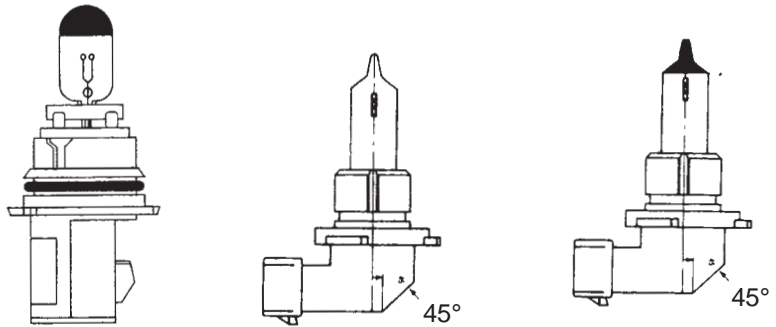


LINE NO.	VOLTS	WATTS	LIFE HOURS	RT. ANGLE BASE	RT. ANGLE BASE	AXIAL BASE	AXIAL BASE	AXIAL BASE
1	12.8	27.0	300	889	881	890	880	884
2	12.8	37.5	200	894	896/894	—	893	—
3	12.8	50.0	200	886	—	—	—	885

Automotive Halogen Lamps • T-5, T-4

HIGH BEAM/ LOW BEAM

12.8 VOLT



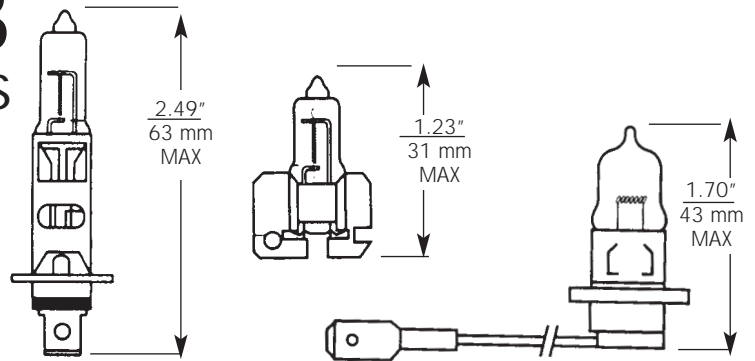
* SPECIFICATIONS FOR SECOND FILAMENT

LINE NO.	VOLTS	WATTS	LIFE HOURS	T-5 AXIAL BASE	T-4 RIGHT ANGLE BASE	T-4 RIGHT ANGLE BASE
4	12.8	65	320	9007 AXIAL FILAMENT	9005	—
5	12.8	55	320	*	—	9006
6	12.8	65	320	9004	—	—
7	12.8	55	320	*	—	—



H-1, H-2, H-3

AUTOMOTIVE HALOGEN LAMPS

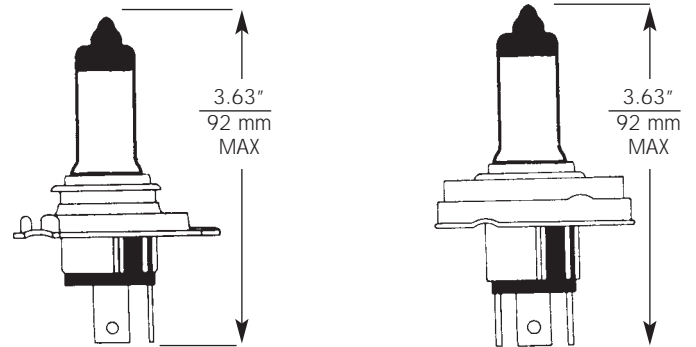


LINE NO.	VOLTS	WATTS	LIFE	H-1		H-2		H-3	
				P14.5S BASE / CROSS		X511 BASE / CROSS		PK22S BASE / CROSS	
1	6.0	55	350	H1-6/55	—	H2-6/55	—	H3-6/55	(6336)
2	12.0	35	400	—	—	—	—	H3-12/35	—
3	12.0	55	350	64150	(12258)	64173	(12311)	64151	(12336)
4	12.0	100	350	64152	(12454)	H2-12/100	(12507)	64153	(12455)
5									
6	24.0	70	300	64155	(13258)	64175	(13311)	64156	(13336)
7	24.0	100	300	H1-24/100	—	H2-24/100	—	H3-24/100	—

H-4, H-5,

AUTOMOTIVE HALOGEN LAMPS

HIGH/LOW BEAM



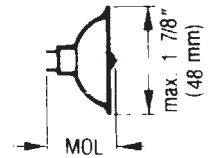
*NOTE: H-5 TYPES ARE AVAILABLE ON "SPECIAL ORDER" ONLY.

LINE NO.	VOLTS	WATTS	LIFE	H-4		* H-5	
				P43T BASE / CROSS		P45T BASE / CROSS	
8	12.0	60/55	300	64193	(12342)	H5-12-60/55	—
9	12.0	100/55	300	H4-12-100/55	(12593)	H5-12-100/55	—
10	12.0	100/90	300	64194	(12569)	H5-12-100/90	—
11							
12	24.0	75/70	300	64196	(13342)	H5-24-75/70	—
13	24.0	100/90	300	H4-24-100/90	—	H5-24-100/90	—



AR-48

SPECIALTY HALOGEN LAMP

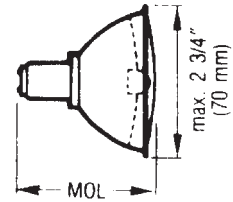


G-4 2-PIN BASE

LINE NO.	VOLTS	WATTS	BEAM	LIFE HOURS	PART NUMBER
1	12.0	20	10°	5,000	41900SP
2	12.0	20	15°	2,000	41900FL
3	24.0	20	10°	4,500	41930SP

AR-70

SPECIALTY HALOGEN LAMP



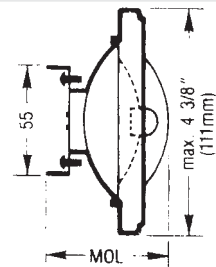
D.C. BAYONET BASE

LINE NO.	VOLTS	WATTS	BEAM	LIFE HOURS	PART NUMBER
4	12.0	20	10°	4,000	41970SP
5	12.0	20	30°	4,000	41970FL
6	12.0	50	10°	5,000	41990SP
7	12.0	50	30°	5,000	41990FL

AR-111 (PAR36 SIZE)

SPECIALTY HALOGEN LAMP

MULTI-TERMINAL BASE. SCREW AND QUICK CONNECT.



LINE NO.	VOLTS	WATTS	BEAM	LIFE HOURS	PART NUMBER
8	6.0	35	3°	2,000	41830SSP
9	12.0	50	5°	2,000	41835NSP
10	12.0	50	10°	2,000	41835SP
11	12.0	50	30°	2,000	41835FL
12	12.0	75	10°	2,000	41840SP
13	12.0	75	30°	2,000	41840FL
14	12.0	75	60°	2,000	41840WFL
15	12.0	100	10°	2,000	41850SP





Norman Lamps, Inc. now stocks a wide variety of PAR LAMPS for all applications. We stock most major brands as well as alternate manufactures for great cost savings to you.

Contact us for pricing, availability or specifications on any PAR LAMP you require. We will be glad to work with you on any special pricing and/or delivery needs which you may have.

At Norman Lamps, Inc. we offer only the highest quality PAR LAMPS for sale at prices that will work for you.

We look forward to your call.

- PAR-14
- PAR-16
- PAR-20
- PAR-30
- PAR-36
- PAR-38
- PAR-38 Side Prong
- PAR-46 Side Prong
- PAR-56 End Prong
- PAR-56 Screw Terminals
- PAR-64 Mogul End Prong

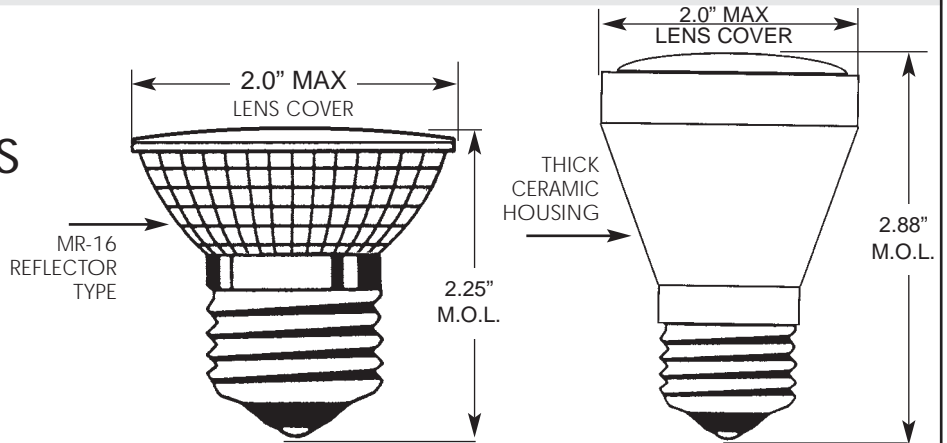




PAR-16

HALOGEN PAR LAMPS

2,000 LIFE HOURS

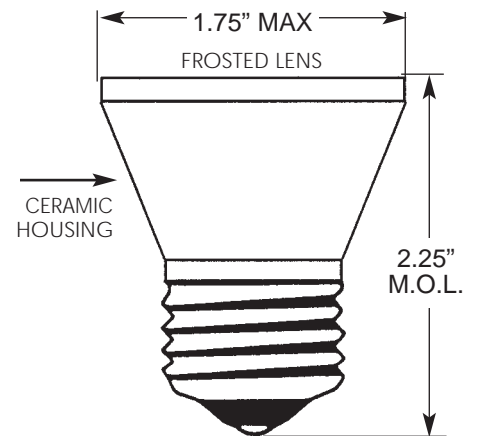


LINE NO.	VOLTS	WATTS	BEAM	MEDIUM SCREW BASE	MEDIUM SCREW BASE
1	120.0	20	38° FLOOD	BAB/E26	—
2	120.0	35	38° FLOOD	FMW/E26	—
3	120.0	50	38° FLOOD	EXN/E26	—
4					
5	120.0	60	30° NARROW FLOOD	—	60PAR16/NFL
6	120.0	60	10° NARROW SPOT	—	60PAR16/NSP
7	120.0	75	30° NARROW FLOOD	—	75PAR16/NFL
8	120.0	75	10° NARROW SPOT	—	75PAR16/NSP

PAR-14

HALOGEN PAR LAMPS

2,000 LIFE HOURS



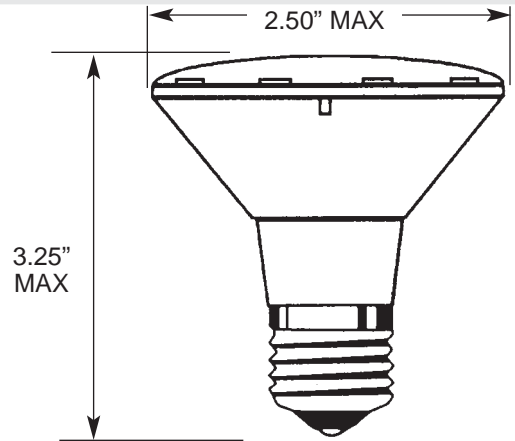
LINE NO.	VOLTS	WATTS	BEAM	MEDIUM SCREW BASE
9	120.0	35	50° FLOOD	35PAR14/FL



PAR-20 HALOGEN PAR LAMPS



AVAILABLE IN "TUFF-COAT"®
AVAILABLE IN COLORS

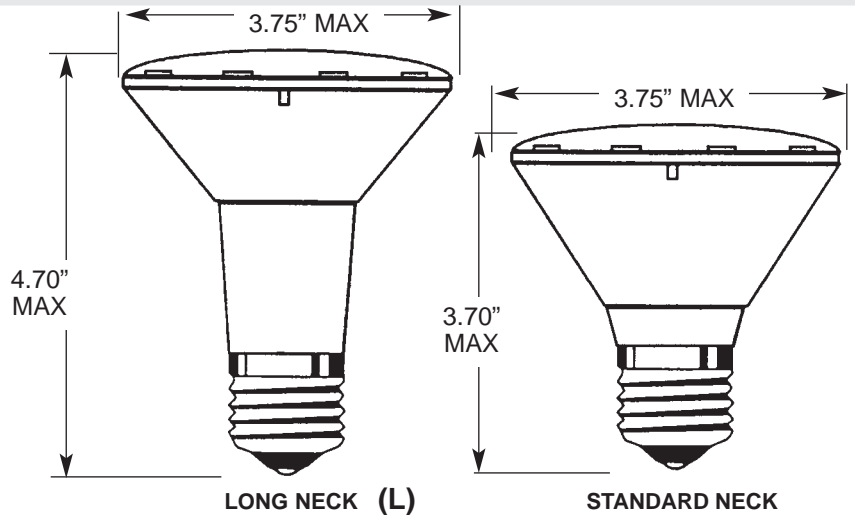


LINE NO.	VOLTS	WATTS	BEAM	LIFE HOURS	MEDIUM SCREW BASE
1	120.0	35	NARROW SPOT	2,500	35PAR20/NSP
2	120.0	35	WIDE FLOOD	2,500	35PAR20/WFL
3	120.0	35	WIDE FLOOD/TUFF-COATED	2,500	35PAR20/TF
4					
5	120.0	50	NARROW SPOT	2,500	50PAR20/NSP
6	120.0	50	FLOOD	2,500	50PAR20/NFL
7	120.0	50	WIDE FLOOD	2,500	50PAR20/WFL
8	120.0	50	WIDE FLOOD/TUFF-COATED	2,500	50PAR20/TF

PAR-30 HALOGEN PAR LAMPS



AVAILABLE IN "TUFF-COAT"®
AVAILABLE IN COLORS



LINE NO.	VOLTS	WATTS	BEAM	LIFE HOURS	MEDIUM SCREW BASE	MEDIUM SCREW BASE
9	120.0	50	NARROW FLOOD	2,500	50PAR30/NFL/L	50PAR30/NFL
10	120.0	50	NARROW SPOT	2,500	50PAR30/NSP/L	50PAR30/NSP
11	120.0	50	FLOOD	2,500	50PAR30/FL/L	50PAR30/FL
12	120.0	50	FLOOD/TUFF-COATED	2,500	50PAR30/TF/L	50PAR30/TF
13						
14	120.0	75	NARROW FLOOD	2,500	75PAR30/NFL/L	75PAR30/NFL
15	120.0	75	NARROW SPOT	2,500	75PAR30/NSP/L	75PAR30/NSP
16	120.0	75	FLOOD	2,500	75PAR30/FL/L	75PAR30/FL
17	120.0	75	FLOOD/TUFF-COATED	2,500	75PAR30/TF/L	75PAR30/TF

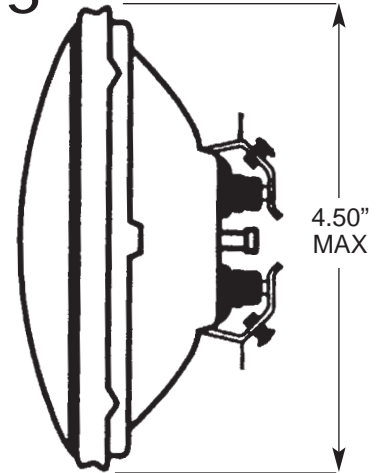


PAR-36 HALOGEN DISPLAY LAMPS

4300K COLOR TEMPERATURE
HIGH COLOR RENDERING HALOGEN LAMPS
U.V. PROTECTED
AVAILABLE IN "TUFF-COAT"® FINISH.

AVAILABLE IN COLORS:
RED, GREEN, BLUE, AMBER, YELLOW, PINK, PURPLE

MULTI-TERMINAL (SCREW AND QUICK CONNECT TERMINALS.)



LINE NO.	VOLTS	AMPS	WATTS	LIFE HOURS	BEAM SPREAD	MULTI-TERMINAL BASE
1	5.5	4.55	25	1,000	10° SPOT	25PAR36-5.5V
2						
3	12.0	2.08	25	2,000	8° VERY NARROW SPOT	25PAR36H/VNSP
4	12.0	2.08	25	2,000	12° NARROW SPOT	25PAR36H/NSP
5	12.0	2.08	25	2,000	38° WIDE FLOOD	25PAR36H/WFL
6	12.0	2.08	25	2,000	60° VERY WIDE FLOOD	25PAR36H/VWFL
7						
8	12.0	2.92	35	2,000	5° SPOT	35PAR36H/SP5
9	12.0	2.92	35	2,000	8° SPOT	35PAR36H/SP8
10	12.0	2.92	35	2,000	30° FLOOD	35PAR36H/FL
11	12.0	2.92	35	2,000	60° VERY WIDE FLOOD	35PAR36H/VWFL
12						
13	12.0	3.00	36	2,000	8° VERY NARROW SPOT	36PAR36H/VNSP
14	12.0	3.00	36	2,000	12° NARROW SPOT	36PAR36H/NSP
15	12.0	3.00	36	2,000	38° WIDE FLOOD	36PAR36H/WFL
16						
17	12.0	4.17	50	2,000	5° SPOT	50PAR36H/SP5
18	12.0	4.17	50	2,000	8° SPOT	50PAR36H/SP8
19	12.0	4.17	50	2,000	38° WIDE FLOOD	50PAR36H/WFL
20	12.0	4.17	50	2,000	60° VERY WIDE FLOOD	50PAR36H/VWFL
21						
22	12.0	6.25	75	2,000	10° VERY NARROW SPOT	75PAR36H/VNSP*
23	12.0	6.25	75	2,000	38° WIDE FLOOD	75PAR36H/WFL*

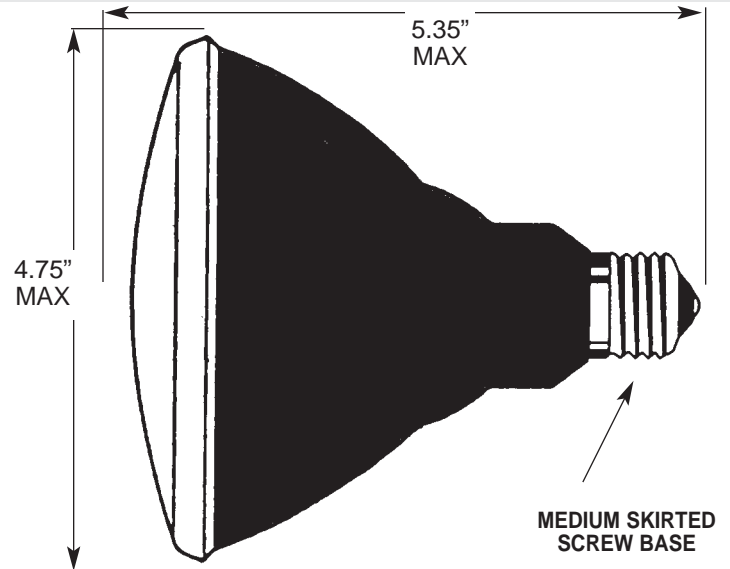
* 75 WATT ON SPECIAL ORDER ONLY.



PAR-38
MEDIUM SCREW BASE
HALOGEN PAR LAMPS
130 VOLT, LONG LIFE



AVAILABLE IN COLORS
AVAILABLE IN "TUFF-COAT"® FINISH

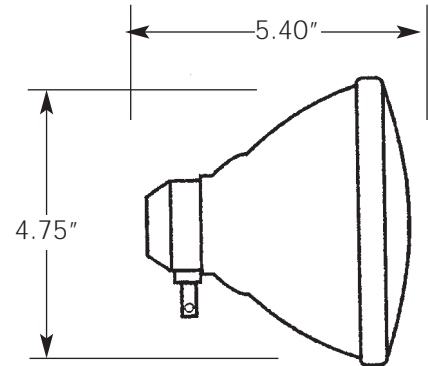


LINE NO.	VOLTS	WATTS	LIFE HOURS	LENS	BEAMSPREAD	PART NUMBER
1	130.0	45	4,000	CLEAR	10° SPOT	45PAR38/H/SP
2	130.0	45	4,000	CLEAR	28° FLOOD	45PAR38/H/FL
3						
4	130.0	60	4,000	CLEAR	10° SPOT	60PAR38/H/SP
5	130.0	60	4,000	CLEAR	28° FLOOD	60PAR38/H/FL
6						
7	130.0	75	5,000	CLEAR	10° SPOT	75PAR38/H/SP
8	130.0	75	5,000	CLEAR	28° FLOOD	75PAR38/H/FL
9						
10	130.0	90	4,000	CLEAR	12° SPOT	90PAR38/H/SP
11	130.0	90	4,000	CLEAR	28° FLOOD	90PAR38/H/FL
12						
13	130.0	90	4,000	RED	32° FLOOD	90PAR38/R RED
14	130.0	90	4,000	GREEN	32° FLOOD	90PAR38/G GREEN
15	130.0	90	4,000	YELLOW	32° FLOOD	90PAR38/Y YELLOW
16	130.0	90	4,000	AMBER	32° FLOOD	90PAR38/A AMBER
17	130.0	90	4,000	BLUE	32° FLOOD	90PAR38/B BLUE
18	130.0	90	4,000	PINK	32° FLOOD	90PAR38/P PINK
19						
20	130.0	120	2,000	CLEAR	38° FLOOD	120PAR38/H/FL
21						
22	120.0	250	4,000	CLEAR	12° SPOT	K250PAR38/SP* (KRYPTON)
23	120.0	250	4,000	CLEAR	30° FLOOD	K250PAR38/FL* (KRYPTON)

* KRYPTON GAS FILLED



PAR-38 SIDE PRONG BASE
MINE LAMPS

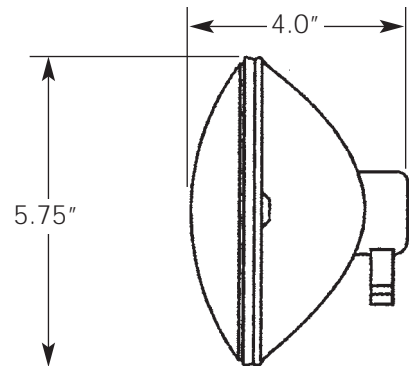


AVAILABLE IN "TUFF-COAT" FINISH.

MEDIUM SIDE PRONG BASE

LINE NO.	VOLTS	WATTS	LIFE HOURS	LENS	BEAMSPREAD	PART NUMBER
1	120.0	75	2,500	CLEAR	28° FLOOD	75PAR38/3FL
2	120.0	75	2,500	CLEAR	10° SPOT	75PAR38/3SP
3	120.0	90	2,500	CLEAR	28° FLOOD	90PAR38/3FL
4	120.0	150	2,000	CLEAR	28° FLOOD	150PAR38/3FL
5	120.0	150	2,000	CLEAR	10° SPOT	150PAR38/3SP
6	120.0	150	2,000	CLEAR	28° FLOOD	150PAR38/4FL
7						
8	130.0	250	1,500	CLEAR	30° FLOOD	250PAR38/3FL

PAR-46 SIDE PRONG BASE
MINE LAMPS



AVAILABLE IN SCREW TERMINAL.
AVAILABLE IN "TUFF-COAT" FINISH.

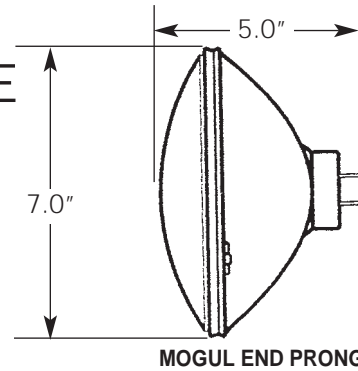
MEDIUM SIDE PRONG BASE

LINE NO.	VOLTS	WATTS	LIFE HOURS	LENS	BEAMSPREAD	PART NUMBER
9	5.5	25	2,500	CLEAR	30° FLOOD	25PAR46/3FL-5.5V
10						
11	120.0	150	2,500	CLEAR	10° NARROW SPOT	150PAR46/3NSP
12	120.0	150	2,500	CLEAR	28° MEDIUM FLOOD	150PAR46/3MFL
13	120.0	150	2,500	CLEAR	38° WIDE FLOOD	150PAR46/3WFL
14						
15	130.0	200	2,500	CLEAR	10° NARROW SPOT	200PAR46/3NSP
16	130.0	200	2,500	CLEAR	28° MEDIUM FLOOD	200PAR46/3MFL



PAR-56 MOGUL END PRONG BASE

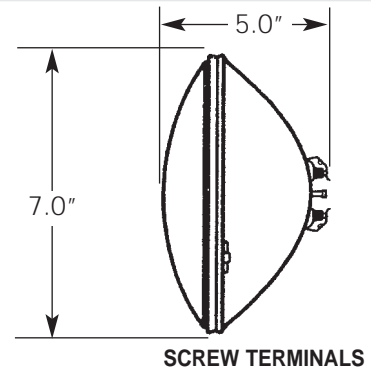
SPECIALTY PAR LAMPS



LINE NO.	VOLTS	WATTS	LIFE HOURS	LENS	BEAMSPREAD	PART NUMBER
1	120.0	200	2,000	CLEAR	28° MED. FLOOD	200PAR56/MFL
2						
3	12.0	300	1,000	CLEAR	38° WIDE FLOOD	300PAR56/WFL-12V
4	120.0	300	2,000	CLEAR	28° MED. FLOOD	300PAR56/MFL
5	120.0	300	2,000	CLEAR	38° WIDE FLOOD	300PAR56/WFL
6	120.0	300	2,000	CLEAR	10° NARROW SPOT	300PAR56/NSP
7						
8	120.0	500	4,000	CLEAR	38° WIDE FLOOD	Q500PAR56/WFL
9	120.0	500	4,000	CLEAR	28° MEDIUM FLOOD	Q500PAR56/MFL
10	120.0	500	4,000	CLEAR	10° NARROW SPOT	Q500PAR56/NSP

PAR-56 SCREW TERMINALS

SPECIALTY PAR LAMPS

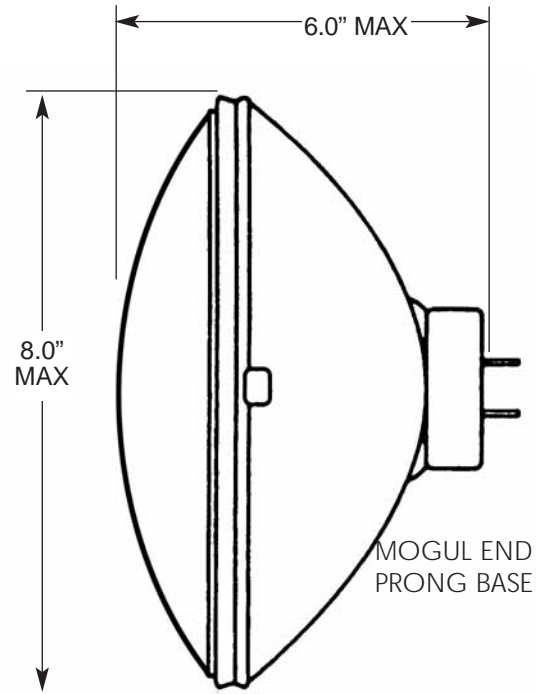


LINE NO.	VOLTS	WATTS	LIFE HOURS	LENS	BEAMSPREAD	PART NUMBER
11	12.0	120	2,000	CLEAR	8° VERY NARROW SPOT	120PAR56/VNSP
12	12.0	120	2,000	CLEAR	28° MED. FLOOD	120PAR56/MFL
13	12.0	120	2,000	CLEAR	38° WIDE FLOOD	120PAR56/WFL
14						
15	30.0	200	500	CLEAR	10° SPOT	200PAR56/SP-30V
16						
17	12.0	240	2,000	CLEAR	8° VERY NARROW SPOT	240PAR56/VNSP
18	12.0	240	2,000	CLEAR	38° MED. FLOOD	240PAR56/MFL
19	12.0	240	2,000	CLEAR	38° WIDE FLOOD	240PAR56/WFL
20	12.0	300	2,000	CLEAR	38° WIDE FLOOD	300PAR56/WFLST-12V
21	75.0	350	500	CLEAR	10° SPOT	350PAR56/SP-75V



PAR-64
MOGUL END PRONG BASE
SPECIALTY PAR LAMPS

QUARTZ-HALOGEN LAMP



LINE NO.	VOLTS	WATTS	BEAM	LIFE HOURS	ANSI CODE	PART NUMBER
1	6.0	120	VERY NARROW SPOT	1,000	—	Q120PAR64/VNSP
2						
3	120.0	500	NARROW SPOT	2,000	—	Q500PAR64/NSP
4	120.0	500	MEDIUM FLOOD	2,000	—	Q500PAR64/MFL
5	120.0	500	WIDE FLOOD	2,000	—	Q500PAR64/WFL
6						
7	120.0	1,000	VERY NARROW SPOT	800	FFN	Q1000PAR64/VNSP
8	120.0	1,000	NARROW SPOT	800	FFP	Q1000PAR64/NSP
9	120.0	1,000	MEDIUM FLOOD	800	FFR	Q1000PAR64/MFL
10	120.0	1,000	WIDE FLOOD	800	FFS	Q1000PAR64/WFL



SUPER-SAVER™ 
Energy Saving Fluorescent Lamps

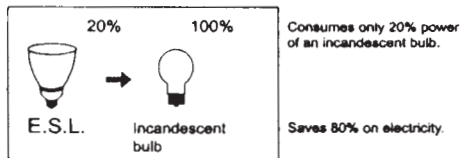


SUPER-ENERGY SAVING LAMPS (E.S.L.)

SUPER SAVER™ BRAND COMPACT FLUORESCENT LAMPS are the highest quality energy saving lamps on the market. The key to this quality level is in the components contained within the lamp ballast. Only the best components and assembly processes are used during manufacturing. The result is a highly reliable, long life, energy-saving lamp. Try **SUPER SAVER™ LAMPS** today and see the difference!

- "Coil-Light"
- A-19
- A-15
- G-20 GLOBE
- G-30 GLOBE
- Available in colors
- Super High Output "COIL-LIGHT." (S.H.O.)
- "JAR-CAPSULE"
- R-20 REFLECTOR
- R-30
- R-40
- PAR-38
- MR-16 CCFL

• **VERY LOW POWER CONSUMPTION:**





• **SAVE MONEY:**

Power consumption	9W	11W	13W	15W	20W	23W
E.S.L.	\$ 12.96	\$ 15.84	\$ 18.72	\$ 21.60	\$ 28.80	\$ 33.12
Incand.	\$ 64.80	\$ 79.20	\$ 93.60	\$ 108.00	\$ 144.00	\$ 172.80
Save \$	\$ 52	\$ 63	\$ 75	\$ 86	\$ 115	\$ 140

Based on 10,000 hrs bulb life at \$ 12c/kwh (U.S.Dollar)

• **SUPER BRIGHTNESS:**

COMPARISON	STANDARD OUTPUT						S.H.O.			
E.S.L. 	7W	9W	11W	13W	15W	20W	23W	65W	85W	105W
Incandescent bulb 	35W	45W	55W	65W	75W	100W	120W	325W	425W	525W

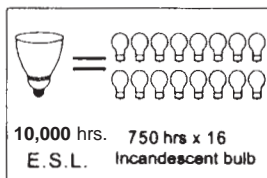
• **LOW HEAT:**

E.S.L. generates only 1/3 heat radiation of an incandescent bulb. E.S.L. heat radiation <50°C. Incandescent bulb >125°C.

• **LIFE HOURS WARRANTEE:**

Based on reasonable usage when used in accordance with package and bulb directions, if this bulb does not last for the time period guaranteed (based on up to 3 to 4 hours average usage per day, 7 days per week).

• **LASTS LONGER:**



Bulb life > **10,000 hrs.**
(Up to 7 yrs.)
Adapter life > **25,000 hrs**
(Up to 5 yrs)

(Based on burning 3-4 hrs. daily)





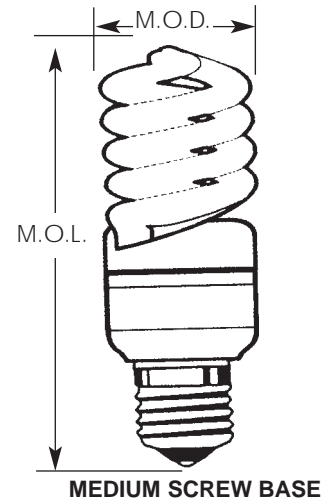
"COIL LIGHT" Super Energy Saving Lamps • (E.S.L.)

COMPACT FLUORESCENT LAMPS

10,000 HOURS AVERAGE LIFE
7+ YEARS

LOW POWER CONSUMPTION
LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS

SUPER-SAVER™



LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
1	120.0	9	650	3000K	4.38"	1.88"	ES051-09W-WW
2	120.0		650	5000K	4.38"	1.88"	ES051-09W-CW
3							
4	120.0	13	780	3000K	5.13"	1.88"	ES051-13W-WW
5	120.0		780	5000K	5.13"	1.88"	ES051-13W-CW
6							
7	120.0	15	900	3000K	5.38"	1.88"	ES051-15W-WW
8	120.0		900	5000K	5.38"	1.88"	ES051-15W-CW
9							
10	120.0	20	1200	3000K	5.60"	2.38"	ES050-20W-WW
11	120.0		1200	5000K	5.60"	2.38"	ES050-20W-CW
12							
13	120.0	23	1380	3000K	5.85"	2.38"	ES050-23W-WW
14	120.0		1380	5000K	5.85"	2.38"	ES050-23W-CW

ABOVE LISTED STAR-LUX® COMPACT COIL-LIGHTS ARE AVAILABLE IN THE FOLLOWING OPTIONS:

- TUFF-COAT® COATING. FOR SHATTER PROOF APPLICATIONS.
- BUG-LIGHT YELLOW COATED FOR OUTDOOR SEASONAL USE.
- 240 VOLT OPERATION.
- SPECIAL, CUSTOM COLOR TEMPS (K).

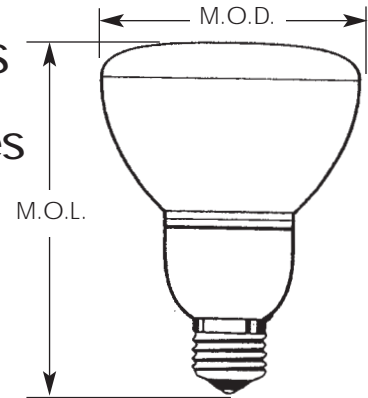


REFLECTOR Super Energy Saving Lamps
(Glass Reflector) R-20, R-30, R-40 Sizes

10,000 HOURS AVERAGE LIFE
7+ YEARS



LOW POWER CONSUMPTION • LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS
INDOOR/OUTDOOR



MEDIUM SCREW BASE

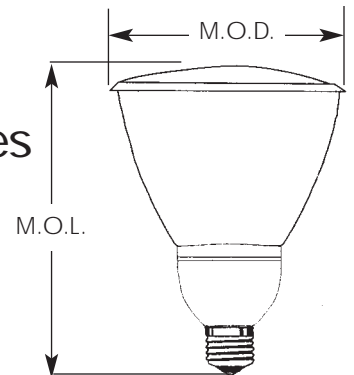
LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
1	120.0	11	630	3000K	5.0"	2.25"	R-20 ES141-11W-WW ES141-11W-CW ES141-13W-WW ES141-13W-CW
2	120.0		630	5000K	5.0"	2.25"	
3	120.0	13	750	3000K	5.0"	2.25"	
4	120.0		750	5000K	5.0"	2.25"	
5							
6	120.0	15	870	3000K	5.5"	3.75"	R-30 ES143-15W-WW ES143-15W-CW
7	120.0		870	5000K	5.5"	3.75"	
8							
9	120.0	20	1200	3000K	6.2"	4.75"	R-40 ES144-20W-WW ES144-20W-CW
10	120.0		1200	5000K	6.2"	4.75"	

REFLECTOR Super Energy Saving Lamps
(Plastic Reflector) R-20, R-30, R-40 Sizes

10,000 HOURS AVERAGE LIFE
7+ YEARS



LOW POWER CONSUMPTION • LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS
INDOOR/OUTDOOR



MEDIUM SCREW BASE

LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
11	120.0	13	750	3000K	5.0"	2.25"	R-20 ES201-13W-WW ES201-13W-CW
12	120.0		750	5000K	5.0"	2.25"	
13							
14	120.0	15	835	3000K	5.38"	3.50"	R-30 ES203-15W-WW ES203-15W-CW
12	120.0		835	5000K	5.38"	3.50"	
16							
17	120.0	20	1020	3000K	8.50"	4.63"	R-40 ES204-20W-WW ES204-20W-CW
12	120.0		1020	5000K	8.50"	4.63"	



PAR-38 Super Energy Saving Lamps

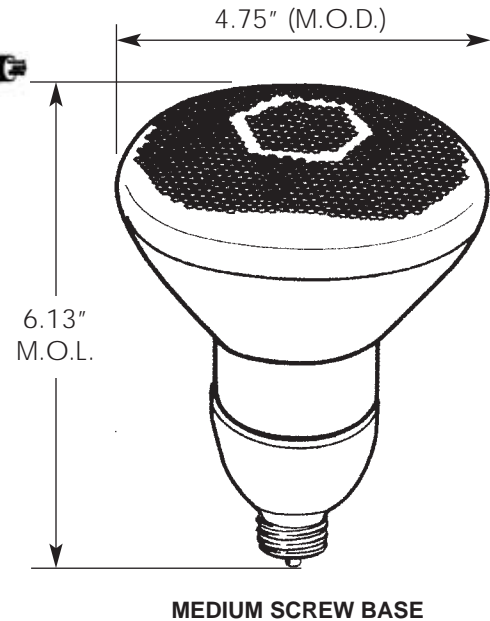
REFLECTOR LAMP

10,000 HOURS AVERAGE LIFE
7+ YEARS

SUPER-SAVER™



LOW POWER CONSUMPTION • LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS
INDOOR/ OUTDOOR



MEDIUM SCREW BASE

LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	PART NUMBER
1	120.0	20	1270	3000K	ES150-20W-WW
2	120.0		1270	5000K	ES150-20W-CW
3		23			
4	120.0		1550	3000K	ES205-23W-WW
5	120.0	1550	5000K	ES205-23W-CW	

AVAILABLE IN COLORS: RED, GREEN, YELLOW, AMBER, BLUE, PINK.



A-19 Super Energy Saving Lamps

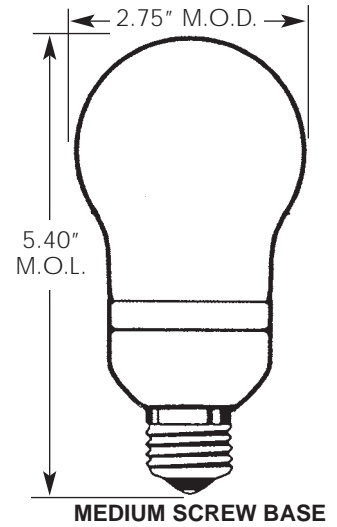
COMPACT FLUORESCENT LAMPS

10,000 HOURS AVERAGE LIFE
7+ YEARS



LOW POWER CONSUMPTION
LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS

OPAQUE
WHITE
ENCLOSURE



LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
1	120.0	15	880	3000K	5.38"	2.75"	ES091-15W-WW
2	120.0		880	5000K	5.38"	2.75"	ES091-15W-CW

A-15 Super Energy Saving Lamps

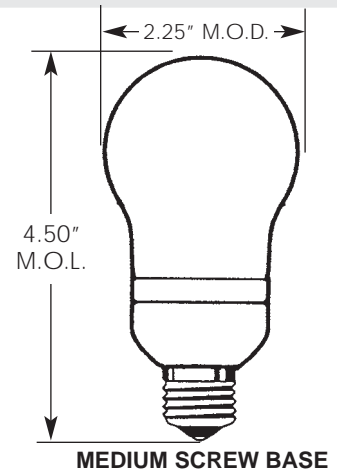
COMPACT FLUORESCENT LAMPS

10,000 HOURS AVERAGE LIFE
7+ YEARS



LOW POWER CONSUMPTION
LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS

OPAQUE
WHITE
ENCLOSURE



LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
3	120.0	13	780	3000K	4.50"	2.25"	ES093-13W-WW
4	120.0		780	5000K	4.50"	2.25"	ES093-13W-CW



GLOBE Super Energy Saving Lamps

COMPACT FLUORESCENT LAMPS

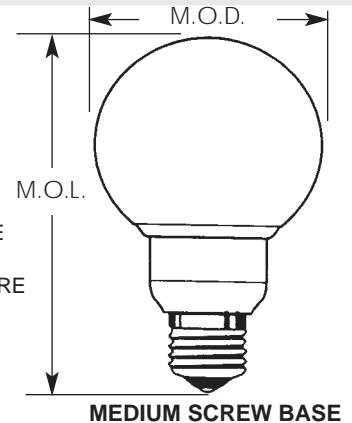
10,000 HOURS AVERAGE LIFE
7+ YEARS

LOW POWER CONSUMPTION
LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS

SUPER-SAVER™



OPAQUE
WHITE
ENCLOSURE



LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
1	120.0	13	600	3000K	5.12"	2.50"	ES121-13W-WW
2	120.0		600	5000K	5.12"	2.50"	ES121-13W-CW
3							
4	120.0	15	700	3000K	5.75"	3.50"	ES123-15W-WW
5	120.0		700	5000K	5.75"	3.50"	ES123-15W-CW

JAR CAPSULE Super Energy Saving Lamps

COMPACT FLUORESCENT LAMPS

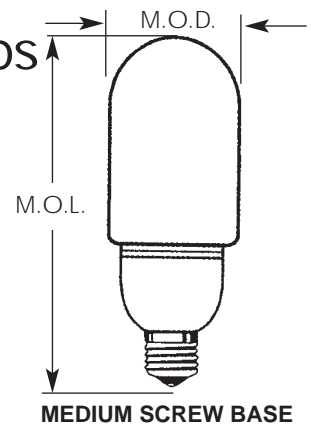
10,000 HOURS AVERAGE LIFE
7+ YEARS

LOW POWER CONSUMPTION
LOW HEAT OUTPUT
VERY LONG SERVICE LIFE (NON-DIMMABLE)
HIGHEST QUALITY INTERNAL COMPONENTS

SUPER-SAVER™



OPAQUE
WHITE
ENCLOSURE



LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	DIAMETER (M.O.D.)	PART NUMBER
6	120.0	13	650	3000K	5.38"	2.25"	ES101-13W-WW
7	120.0		650	5000K	5.38"	2.25"	ES101-13W-CW
8							
9	120.0	15	740	3000K	5.75"	2.38"	ES103-15W-WW
10	120.0		740	5000K	5.75"	2.38"	ES103-15W-CW
11							
12	120.0	20	960	3000K	6.63"	2.88"	ES102-20W-WW
13	120.0		960	5000K	6.63"	2.88"	ES102-20W-CW
14							
15	120.0	24	1100	3000K	6.63"	2.88"	ES102-24W-WW
16	120.0		1100	5000K	6.63"	2.88"	ES102-24W-CW



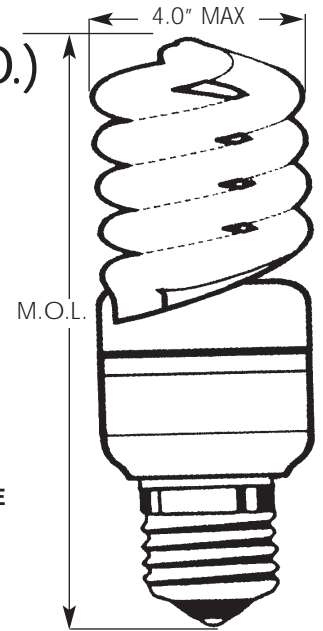
"COIL LIGHT" Super High Output (S.H.O.)
65W, 85W, 105W

COMPACT FLUORESCENT LAMPS
8,000 HOURS AVERAGE LIFE
LOW POWER CONSUMPTION
HIGH LUMENS PER WATT • 60 L.P.W.

2700K, WARM WHITE, (WW)
4100K, COOL WHITE, (CW)
6400K, DAYLIGHT, (D)

65 WATT S.H.O. LAMP = 325 WATT INCANDESCENT
85 WATT S.H.O. LAMP = 425 WATT INCANDESCENT
105 WATT S.H.O. LAMP = 525 WATT INCANDESCENT

MEDIUM SCREW BASE



LINE NO.	VOLTS	WATTS	AVG LUMENS	COLOR TEMP (K)	LENGTH (M.O.L.)	PART NUMBER
1	120.0	65	3900	2700K	220mm (8 ³ / ₄ "	SHO-65W-WW
2	120.0		3900	4100K	220mm (8 ³ / ₄ "	SHO-65W-CW
3	120.0		3900	6400K	220mm (8 ³ / ₄ "	SHO-65W-D
4		85				
5	120.0		5100	2700K	250mm (9 ⁷ / ₈ "	SHO-85W-WW
6	120.0		5100	4100K	250mm (9 ⁷ / ₈ "	SHO-85W-CW
7	120.0	5100	6400K	250mm (9 ⁷ / ₈ "	SHO-85W-D	
8		105				
9	120.0		6300	2700K	280mm (11"	SHO-105W-WW
10	120.0		6300	4100K	280mm (11"	SHO-105W-CW
11	120.0	6300	6400K	280mm (11"	SHO-105W-D	

ABOVE LISTED S.H.O. COIL LIGHTS CAN BE USED WITH HIGH BAY REFLECTOR #HBR96/ALU.
#HBR96/ALU IS AN ALUMINUM FACETED REFLECTOR DESIGNED TO FIT NORMAN'S **65W**, **85W**, AND **105W** SUPER HIGH OUTPUT LAMPS LISTED ABOVE, EXCELLENT FOR DIRECTING AND INCREASING OUTPUT FROM HIGH CEILING POSITIONS SUCH AS WAREHOUSE AREAS, GYMNASIUMS, AND LARGE RETAIL SPACES.

ALSO AVAILABLE IN **150W** AND **200W** SUPER HIGH OUTPUT. CALL FOR DETAILS. MOGUL SCREW BASE AVAILABLE.

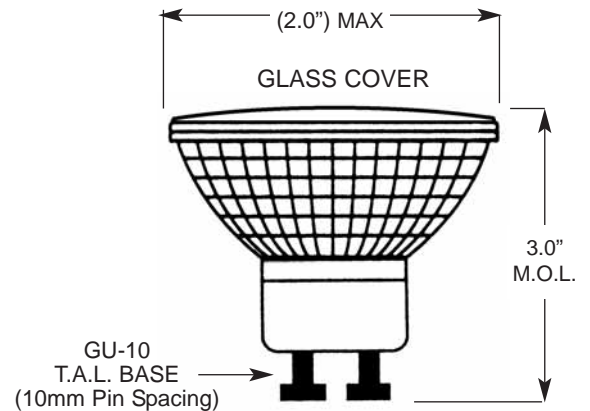
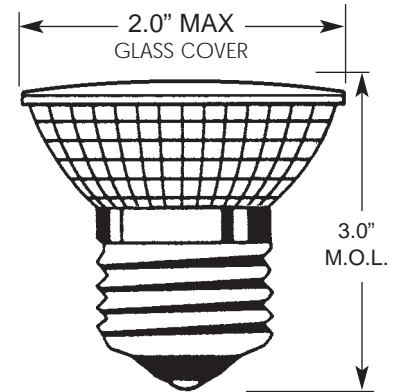




MR-16 "CCFL" Compact Fluorescent Lamps

GLASS COVER INCLUDED
15,000 LIFE HOURS
"Cold Cathode" Technology
75mm M.O.L. (3.0")
28° MEDIUM FLOOD
DAYLIGHT - 6400K

COOL RUNNING LAMP
ENERGY SAVING
LONG LIFE



LINE NO.	VOLTS	*CCFL WATTS	COLOR TEMP	LIFE HOURS	E-26 SCREW BASE	GU-10 T.A.L. BASE
1	120.0	5W	6400K	15,000	CCFL0002	CCFL0005

NOTE: MR-16 CCFL'S ARE ALSO MADE IN 4200K COOL WHITE AND 2700K WARM WHITE. COLORS: RED, BLUE, YELLOW, GREEN, PINK. U.V. BLACK LIGHT BLUE AND OTHER CUSTOM WAVELENGTHS ARE POSSIBLE.

* EQUIVALENT TO 20WATT HALOGEN LUMEN OUTPUT.





Fluorescent Application and Design Factors

Norman Lamps, Inc. offers a large variety of fluorescent lamp products. Brands include Philips, G.E., Sylvania, Ushio and National-Japan.®

Norman also offers high quality low cost straight tube lamps for high volume requirements.

Fluorescent Lamp Products: STRAIGHT TUBES

- T-2 ■ T-8
- T-4 ■ T-9
- T-5 ■ T-10
- T-6 ■ T-12
- T-7 ■ T-17

COMPACT LAMPS

- Twin Tubes
- Double Twin Tubes
- Triple Twin Tubes
- Standard "Coil" Lights
- S.H.O. "Coil" Lights
- MR-16 CCFL's
- "FUL" U-Bent
- A-15
- A-19
- R-20
- R-30
- R-40
- PAR-38
- Globes
- Jars

CIRCULAR LAMPS

STARTERS

"TLD" TUBE LAMPS

"U-BENT" LAMPS

SHATTER PROOF LAMPS

CCFL'S

EEFL'S

CUSTOM DESIGN



Fluorescent Lamps

WATTS	=	WATTS
5	=	25
7	=	30
9	=	40
13	=	50
15	=	75
20	=	100
27	=	120
32	=	150
42	=	175



Incandescent Lamps

(Above wattage equivalents are approximations only)
(Lumens may vary)

Figure #5

USHIO

OSRAM
SYLVANIA

SUPER-SAVER™

Color Temperature/Chromaticity

Color temperature/chromaticity is measured in Kelvins using industry standard measurements.

Color temperature describes the overall warmth or coolness produced by the source.

2700° - 3200° Kelvin (K) are described as "warm" in tone and slightly enhance reds and yellows

3300° - 3800° K is considered moderate in tone, producing a balance between warmth and coolness

3900° - 4700° K are considered "cool" in tone, slightly biased towards blues and greens

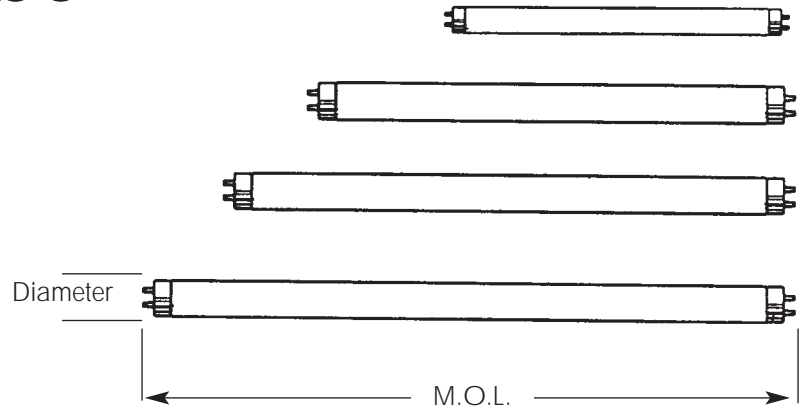
5200° - 6500° K are considered "daylite" producing color tones.



Fluorescent Tube Lamps

(Common Types)

Cool White – CW
Daylight – D
Warm White – WW

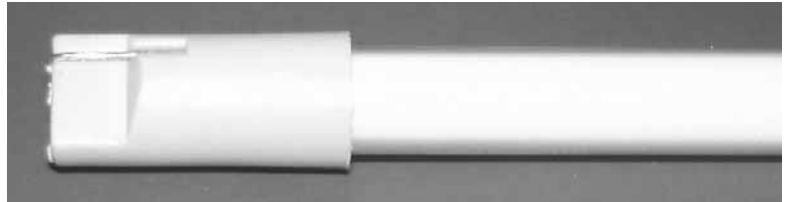


LINE NO.	VOLTS	WATTS	M.O.L.	DIAMETER	2-PIN BASE	LIFE	LUMENS	DESCRIPTION	LAMP NUMBER
1	120.0	4	6"	5/8"	MIN. PIN	6,000	135	COOL WHITE	F4T5CW
2	120.0	4	6"	5/8"	MIN. PIN	6,000	135	DAYLIGHT	F4T5D
3	120.0	4	6"	5/8"	MIN. PIN	6,000	135	WARM WHITE	F4T5WW
4	120.0	6	9"	5/8"	MIN. PIN	6,000	295	COOL WHITE	F6T5CW
5	120.0	6	9"	5/8"	MIN. PIN	6,000	295	DAYLIGHT	F6T5D
6	120.0	6	9"	5/8"	MIN. PIN	6,000	295	WARM WHITE	F6T5WW
7	120.0	8	12"	5/8"	MIN. PIN	7,500	400	COOL WHITE	F8T5CW
8	120.0	8	12"	5/8"	MIN. PIN	7,500	400	DAYLIGHT	F8T5D
9	120.0	8	12"	5/8"	MIN. PIN	7,500	400	WARM WHITE	F8T5WW
10	120.0	10	13.5"	1"	MED. PIN	8,000	550	COOL WHITE	F10T8-CW
11	120.0	13	21"	5/8"	MED. PIN	7,000	638	COOL WHITE	F13T5CW
12	120.0	13.5	12"	1"	MED. PIN	7,000	660	COOL WHITE	F13.5T8CW
13	120.0	14	15"	1"	MED. PIN	7,500	675	COOL WHITE	F14T8CW
14	120.0	14	15"	1.5"	MED. PIN	7,500	675	COOL WHITE	F14T12CW
15	120.0	14	15"	1.5"	MED. PIN	7,500	700	WARM WHITE	F14T12WW
16									
17	120.0	15	18"	1"	MED. PIN	9,000	870	COOL WHITE	F15T8CW
18	120.0	15	18"	1"	MED. PIN	9,000	900	WARM WHITE	F15T8WW
19	120.0	15	18"	1.5"	MED. PIN	9,000	900	COOL WHITE	F15T12CW
20	120.0	15	18"	1.5"	MED. PIN	9,000	950	WARM WHITE	F15T12WW
21									
22	120.0	20	24"	1.5"	MED. PIN	9,000	1,350	COOL WHITE	F20T12-CW
23	120.0	20	24"	1.5"	MED. PIN	9,000	1,350	WARM WHITE	F20T12-WW
24									
25	120.0	30	36"	1.5"	MED. PIN	9,000	2,400	COOL WHITE	F30T8-CW
26	120.0	(25)	36"	1.5"	MED. PIN	9,000	2,400	COOL WHITE	F30T12-CW-RS
27	120.0	(25)	36"	1.5"	MED. PIN	9,000	2,400	DAYLITE	F30T12-D-RS
28	120.0	(25)	36"	1.5"	MED. PIN	9,000	2,400	WARM WHITE	F30T12-WW-RS
29									
30	120.0	40	48"	1.5"	MED. PIN	10,000	3,200	COOL WHITE	F40T12-CW
31	120.0	(36)	48"	1.5"	MED. PIN	10,000	3,200	COOL WHITE	F40T12-CW-RS



T-2 SUB-MINIATURE FLUORESCENT TUBE LAMPS

7mm Diameter
Very Low Profile
Axial Type Wedge Base
6w, 8w, 11w, 13w



COOL WHITE - CW
WARM WHITE - WW
DAYLIGHT - D

LINE NO.	WATTS	M.O.L.		COLOR TEMP.	LUMENS	LIFE HOURS	LAMP NUMBER
		INCHES	MM				
1	6	8.6"	218	4100K	350	10,000	F6T2-CW
2	6	8.6"	218	2700K	350	10,000	F6T2-WW
3	6	8.6"	218	6400K	350	10,000	F6T2-D
4							
5	8	12.6"	320	4100K	560	10,000	F8T2-CW
6	8	12.6"	320	2700K	560	10,000	F8T2-WW
7	6	12.6"	320	6400K	560	10,000	F8T2-D
8							
9	11	16.6"	422	4100K	770	10,000	F11T2-CW
10	11	16.6"	422	2700K	770	10,000	F11T2-WW
11	11	16.6"	422	6400K	770	10,000	F11T2-D
12							
13	13	20.6"	523	4100K	950	10,000	F13T2-CW
14	13	20.6"	523	2700K	950	10,000	F13T2-WW
15	13	20.6"	523	6400K	950	10,000	F13T2-D

SOCKET# NPB AVAILABLE FOR ALL T-2 AXIAL BASE LAMPS LISTED ABOVE.



SOCKET # NPB
SINGLE MOUNTING HOLE
8" INSULATED WIRE LEADS
COMPACT SIZE
COPPER CONTACTS

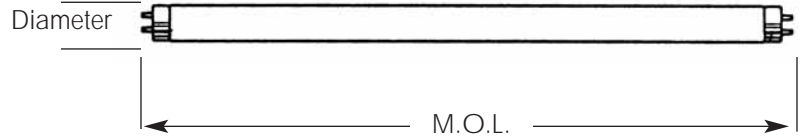


T-4 MINIATURE FLUORESCENT TUBE LAMPS

13mm Diameter • Low Profile
Miniature 2-Pin Base

6w, 8w, 10w, 12w, 14w, 16w,
18w

COOL WHITE - CW
WARM WHITE - WW
DAYLIGHT - D



LINE NO.	WATTS	M.O.L.		COLOR TEMP.	LUMENS	LIFE HOURS	LAMP NUMBER
		INCHES	MM				
1	6	8.6"	218	4100K	450	10,000	F6T4-CW
2	6	9.8"	249	4100K	480	10,000	F6T4-CW/9.8
3	6	9.8"	249	6400K	450	10,000	F6T4-D/9.8
4	6	9.8"	249	2700K	450	10,000	F6T4-WW/9.8
5							
6	8	10.5"	268	4100K	490	10,000	F8T4-CW
7	8	13.2"	335	4100K	490	10,000	F8T4-CW/13.2
8	8	13.2"	335	6400K	490	10,000	F8T4-D/13.2
9	8	13.2"	335	2700K	490	10,000	F8T4-WW/13.2
10							
11	10	13.4"	340	4100K	625	10,000	F10T4-CW/13.4
12	10	13.4"	340	6400K	625	10,000	F10T4-D/13.4
13	10	13.4"	340	2700K	625	10,000	F10T4-WW/13.4
10							
11	12	17.0"	432	4100K	760	10,000	F12T4-CW/17
12	12	17.0"	432	6400K	760	10,000	F12T4-D/17
13	12	17.0"	432	2700K	760	10,000	F12T4-WW/17
10							
11	14	18.83"	478	4100K	905	10,000	F14T4-CW/18.83
12	14	18.83"	478	6400K	905	10,000	F14T4-D/18.83
13	14	18.83"	478	2700K	905	10,000	F14T4-WW/18.83
14							
15	16	18.4"	467	4100K	1050	10,000	F16T4-CW
16	16	18.8"	478	4100K	1050	10,000	F16T4-CW/18.8
17	16	18.8"	478	6400K	1050	10,000	F16T4-D/18.8
18	16	18.8"	478	2700K	1050	10,000	F16T4-WW/18.8
19							
20	18	19.3"	490	4100K	1250	10,000	F18T4-CW
21	18	19.5"	495	4100K	1250	10,000	F18T4-CW/19.5
22	18	19.5"	495	6400K	1250	10,000	F18T4-D/19.5
23	18	19.5"	495	2700K	1250	10,000	F18T4-WW/19.5

NOTE: T-4 MINIATURE FLUORESCENT TUBE LAMPS ARE AVAILABLE IN SEVERAL DIFFERENT OVERALL LENGTHS. PLEASE VERIFY THE LENGTH YOU REQUIRE BEFORE ORDERING.



T-4 MINIATURE FLUORESCENT TUBE LAMPS

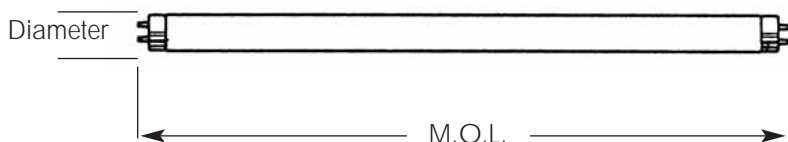
13mm Diameter

Low Profile

Miniature 2-Pin Base

20w, 22w, 24w, 26w, 28w

COOL WHITE - CW
WARM WHITE - WW
DAYLIGHT - D



LINE NO.	WATTS	M.O.L. INCHES	MM	COLOR TEMP.	LUMENS	LIFE HOURS	LAMP NUMBER
1	20	22.0"	559	4100K	1350	10,000	F20T4-CW
2	20	20.5"	521	4100K	1350	10,000	F20T4-CW/20.5
3	20	20.5"	521	6400K	1350	10,000	F20T4-D/20.5
4	20	20.5"	521	2700K	1350	10,000	F20T4-WW/20.5
5							
6	22	20.63"	727	4100K	1950	10,000	F22T4-CW/28.63
7	22	20.63"	727	6400K	1950	10,000	F22T4-D/28.63
8	22	20.63"	727	2700K	1950	10,000	F22T4-WW/28.63
9							
10	24	34"	864	4100K	2050	10,000	F24T4-CW
11	24	34"	864	6400K	2050	10,000	F24T4-D
12	24	34"	864	2700K	2050	10,000	F24T4-WW
13	24	34"	864	RED	2050	10,000	F24T4-RED
14	24	34"	864	GREEN	2050	10,000	F24T4-GREEN
15	24	34"	864	YELLOW	2050	10,000	F24T4-YELLOW
16	24	34"	864	BLUE	2050	10,000	F24T4-BLUE
17							
18	26	40	1016"	4100K	2350	10,000	F26T4-CW/40
19	26	40	1016"	6400K	2350	10,000	F26T4-D/40
20	26	40	1016"	2700K	2350	10,000	F26T4-WW/40
21							
22	28	45.6"	1,158	4100K	2800	10,000	F28T4-CW/45.6
23	28	45.6"	1,158	6400K	2800	10,000	F28T4-D/45.6
24	28	45.6"	1,158	2700K	2800	10,000	F28T4-WW/45.6

NOTE: T-4 MINIATURE FLUORESCENT TUBE LAMPS ARE AVAILABLE IN SEVERAL DIFFERENT OVERALL LENGTHS. PLEASE VERIFY THE LENGTH YOU REQUIRE BEFORE ORDERING.



Compact Fluorescent Lamps

"PL-S" SERIES

SINGLE, TWIN TUBE LAMPS

2-PIN BASE, 5, 7, 9 WATT – G23 BASE

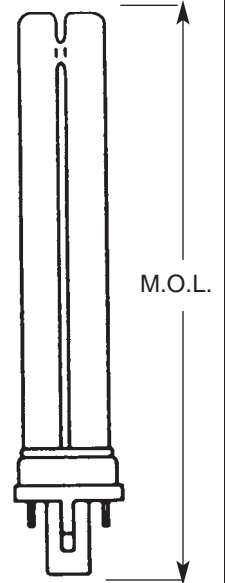
2-PIN BASE, 13 WATT – GX23 BASE



G-23



GX-23



10,000 Life Hours
(120 Volt Operation)



LINE NO.	WATTS	LUMENS	COLOR TEMP (K)	M.O.L.	G. E. CROSS REF.	OSRAM/SYLVANIA CROSS REF.	PHILIPS LAMP NUMBER
1	5	250	2700	4.125"	F5BX/SPX27	CF5DS/827	PL-S5W/27
2	5	250	4100	4.125"	F5BX/SPX41	CF5DS/841	PL-S5W/41
3							
4	7	400	2700	5.25"	F7BX/SPX27	CF7DS/827	PL-S7W/27
5	7	400	3500	5.25"	F7BX/SPX35	CF7DS/835	PL-S7W/35
6	7	400	4100	5.25"	F7BX/SPX41	CF7DS/841	PL-S7W/41
7	7	380	5000	5.25"	F7BX/SPX50	CF7DS/850	PL-S7W/50
8							
9	9	600	2700	6.50"	F9BX/SPX27	CF9DS/827	PL-S9W/27
10	9	600	3500	6.50"	F9BX/SPX35	CF9DS/835	PL-S9W/35
11	9	600	4100	6.50"	F9BX/SPX41	CF9DS/841	PL-S9W/41
12	9	570	5000	6.50"	F9BX/SPX50	CF9DS/850	PL-S9W/50
13							
14	13	825	2700	7.0"	F13BX/SPX27	CF13DS/827	PL-S13W/27
15	13	825	3000	7.0"	F13BX/SPX30	CF13DS/830	PL-S13W/30
16	13	825	3500	7.0"	F13BX/SPX35	CF13DS/835	PL-S13W/35
17	13	825	4100	7.0"	F13BX/SPX41	CF13DS/841	PL-S13W/41
18	13	800	5000	7.0"	F13BX/SPX50	CF13DS/850	PL-S13W/50

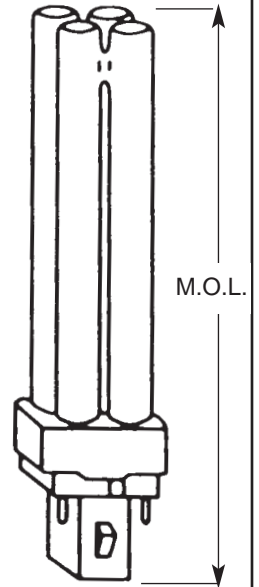
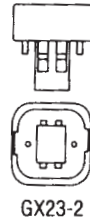


Compact Fluorescent Lamps

"PL-C" SERIES

DOUBLE, TWIN TUBE LAMPS

2-PIN BASE, 13 WATT - GX23-2 BASE
18 WATT - G24d-2 BASE
26 WATT - G24d-3 BASE



10,000 Life Hours
(120 Volt Operation)



LINE NO.	WATTS	LUMENS	COLOR TEMP (K)	M.O.L.	G. E. CROSS REF.	OSRAM/SYLVANIA CROSS REF.	PHILIPS LAMP NUMBER
1	13	860	2700	4.63"	F13DBX23T4/SPX27	CF13DD/827	PL-C13W/27/USA
2	13	860	3000	4.63"	F13DBX23T4/SPX30	CF13DD/830	PL-C13W/30/USA
3	13	860	3500	4.63"	F13DBX23T4/SPX35	CF13DD/835	PL-C13W/35/USA
4	13	860	4100	4.63"	F13DBX23T4/SPX41	CF13DD/841	PL-C13W/41/USA
5							
6	18	1,250	2700	6.0"	F18DBXT4/SPX27	CF18DD/827	PL-C18W/27
7	18	1,250	3000	6.0"	F18DBXT4/SPX30	CF18DD/830	PL-C18W/30
8	18	1,250	3500	6.0"	F18DBXT4/SPX35	CF18DD/835	PL-C18W/35
9	18	1,250	4100	6.0"	F18DBXT4/SPX41	CF18DD/841	PL-C18W/41
10							
11	26	1,800	2700	6.82"	F26DBXT4/SPX27	CF26DD/827	PL-C26W/27
12	26	1,800	3000	6.82"	F26DBXT4/SPX30	CF26DD/830	PL-C26W/30
13	26	1,800	3500	6.82"	F26DBXT4/SPX35	CF26DD/835	PL-C26W/35
14	26	1,800	4100	6.82"	F26DBXT4/SPX41	CF26DD/841	PL-C26W/41



Compact Fluorescent Lamps

"PL-C" SERIES

DOUBLE, TWIN TUBE LAMPS

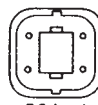
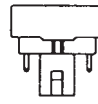
4-PIN BASE, 13 WATT - G24q1 BASE

18 WATT - G24q2 BASE

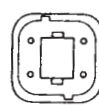
26 WATT - G24q3 BASE

ELECTRONIC OPERATION

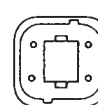
10,000 Life Hours
(120 Volt Operation)



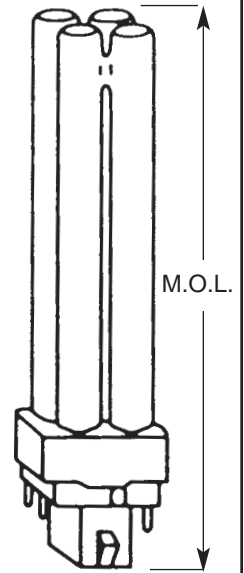
G24q-1



G24q-2



G24q-3



LINE NO.	WATTS	LUMENS	COLOR TEMP (K)	M.O.L.	G. E. CROSS REF.	OSRAM/SYLVANIA CROSS REF.	PHILIPS LAMP NUMBER
1	13	900	2700	5.19"	F13DBX/SPX27/4P	CF13DD/E/827	PL-C13W/27/4P
2	13	900	3500	5.19"	F13DBX/SPX35/4P	CF13DD/E/835	PL-C13W/35/4P
3	13	900	4100	5.19"	F13DBX/SPX41/4P	CF13DD/E/841	PL-C13W/41/4P
4							
5	18	1250	2700	5.69"	F18DBX/SPX27/4P	CF18DD/E/827	PL-C18W/27/4P
6	18	1250	3500	5.69"	F18DBX/SPX35/4P	CF18DD/E/835	PL-C18W/35/4P
7	18	1250	4100	5.69"	F18DBX/SPX41/4P	CF18DD/E/841	PL-C18W/41/4P
8							
9	26	1800	2700	6.5"	F26DBX/SPX27/4P	CF26DD/E/827	PL-C26W/27/4P
10	26	1800	3000	6.5"	F26DBX/SPX30/4P	CF26DD/E/830	PL-C26W/30/4P
11	26	1800	3500	6.5"	F26DBX/SPX35/4P	CF26DD/E/835	PL-C26W/35/4P
12	26	1800	4100	6.5"	F26DBX/SPX41/4P	CF26DD/E/841	PL-C26W/41/4P

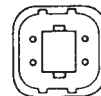
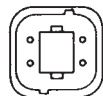
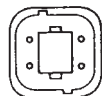
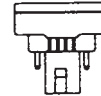
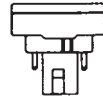


Compact Fluorescent Lamps

"PL-T" SERIES

TRIPLE, TWIN TUBE LAMPS

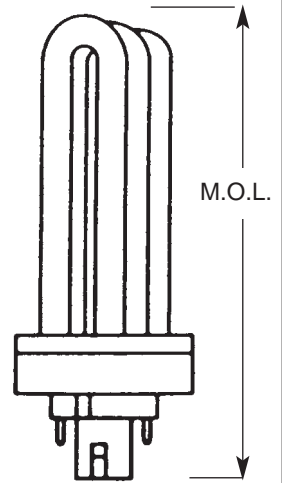
4-PIN BASE, 18 WATT - GX24q-2 BASE
 26 WATT - GX24q-3 BASE
 32 WATT - GX24q-3 BASE
 42 WATT - GX24q-4 BASE



GX24q-2

GX24q-3

GX24q-4



10,000 Life Hours
(120 Volt Operation)

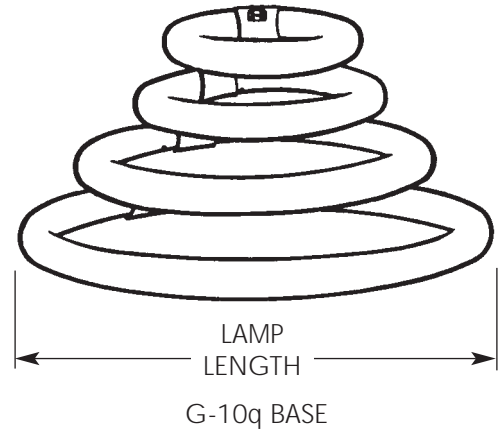


LINE NO.	WATTS	LUMENS	COLOR TEMP (K)	M.O.L.	G. E. CROSS REF.	OSRAM/SYLVANIA CROSS REF.	PHILIPS LAMP NUMBER
1	18	1200	3000	4.63"	F18TBX/SPX30/4P	CF18DT/E/830	PL-T18W/30/4P
2	18	1200	3500	4.63"	F18TBX/SPX35/4P	CF18DT/E/835	PL-T18W/35/4P
3	18	1200	4100	4.63"	F18TBX/SPX41/4P	CF18DT/E/841	PL-T18W/41/4P
4							
5	26	1800	3000	4.88"	F26TBX/SPX30/4P	CF26DT/E/830	PL-T26W/30/4P
6	26	1800	3500	4.88"	F26TBX/SPX35/4P	CF26DT/E/835	PL-T26W/35/4P
7	26	1800	4100	4.88"	F26TBX/SPX41/4P	CF26DT/E/841	PL-T26W/41/4P
8							
9	32	2400	3000	5.5"	F32TBX/SPX30/4P	CF32DT/E/830	PL-T32W/30/4P
10	32	2400	3500	5.5"	F32TBX/SPX35/4P	CF32DT/E/835	PL-T32W/35/4P
11	32	2400	4100	5.5"	F32TBX/SPX41/4P	CF32DT/E/841	PL-T32W/41/4P
12							
13	42	3200	3000	6.38"	—	—	PL-T42W/30/4P
14	42	3200	3500	6.38"	—	—	PL-T42W/35/4P
15	42	3200	4100	6.38"	—	—	PL-T42W/41/4P



Circular Fluorescent Lamps

WARM WHITE-(WW), 2700K
 COOL WHITE-(CW), 4100K
 DAYLIGHT-(D), 6500K
 BLACK LIGHT BLUE-(BLB), 365mm



LINE NO.	WATTS	LUMENS	TUBE DIAMETER	LAMP LENGTH	LIFE HOURS	PART NUMBER
1.	T-9	20	1.13"	6"	10,000	FC6T9-WW
2.		900	1.13"	6"	10,000	FC6T9-CW
3.		900	1.13"	6"	10,000	FC6T9-D
4.						
5.	T-9	22	1.13"	8.25"	10,000	FC8T9-WW
6.		1,115	1.13"	8.25"	10,000	FC8T9-CW
7.		1,115	1.13"	8.25"	10,000	FC8T9-D
8.		—	1.13"	8.25"	5,000	FC8T9-BLB
9.						
10.	T-9	32	1.13"	12"	10,000	FC12T9-WW
11.		1,835	1.13"	12"	10,000	FC12T9-CW
12.		1,835	1.13"	12"	10,000	FC12T9-D
13.		—	1.13"	12"	5,000	FC12T9-BLB
14.						
15.	T-9	40	1.13"	16"	10,000	FC16T9-WW
16.		2,590	1.13"	16"	10,000	FC16T9-CW
17.		2,590	1.13"	16"	10,000	FC16T9-D
18.		—	1.13"	16"	5,000	FC16T9-BLB

T-5 CIRCULAR FLUORESCENT LAMPS ■ SPECIAL ORDER ONLY						WW	CW	D
20.	T-5	22	1,000	0.63"	8,000	2700K	4100K	6500K
21.		28	1,600	0.63"	8,000	2700K	4100K	6500K
22.		32	1,950	0.63"	8,000	2700K	4100K	6500K
23.		40	2,400	0.63"	8,000	2700K	4100K	6500K

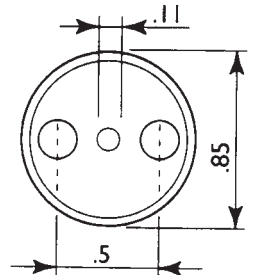
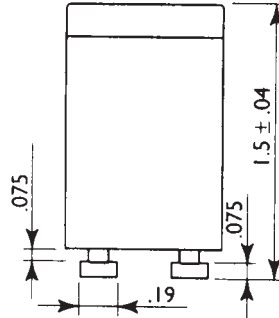
T-4 CIRCULAR FLUORESCENT LAMPS ■ SPECIAL ORDER ONLY						WW	CW	D
24.	T-4	10	550	0.50"	8,000	2700K	4100K	6500K
25.		12	800	0.50"	8,000	2700K	4100K	6500K
26.		16	1,000	0.50"	8,000	2700K	4100K	6500K

CALL FOR PART NUMBERS ON T-4 AND T-5 CIRCULAR LAMPS.
 SPECIAL ORDER ONLY.
 1,000 pcs MINIMUM.



Fluorescent Starters

MYLAR CONDENSER
ALUMINUM CAP
RIGID CONSTRUCTION



LINE NO.	WATTS	APPROVALS	OPERATION VOLTAGE	LIFE	PART NUMBER
1	14, 15, 20	CSA, UL	120		FS2
2	13, 30, 40	CSA, UL	120		FS4
3	4, 6, 8	CSA, UL	120		FS5
4	32	UL	120		FS12 (FS5P)
5	4 thru 30	CSA, UL	120		FSU (Universal)
6					
7	4 thru 80	CSA, UL	220-240V		FSU220V (Universal)

Universal Starters

Norman Brand Universal Starters are designed to replace several starters with the use of only one starter. For example, Starter "FSU", as shown above, will start any 4, 6, 8, 13, 13.5, 14, 15, 20, 22, 25 or 30 watt fluorescent lamp @ 120 volts.

"FSU-220V" will start any 4 thru 80 watt lamp @ 220 volts. (European)

Both Universal Starters are U. L. Listed and designed for long service life.

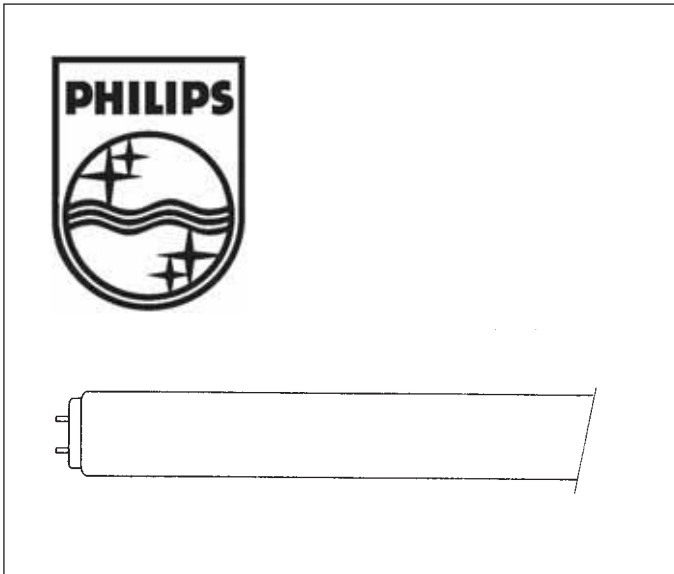
TOSHIBA STARTERS: FG-1E, FG-7E (E-17 SCREW BASE)
PHILIPS STARTERS: S-2, S-12
SYLVANIA STARTERS: FS40-400

STARTER SOCKET: FS2-SOCKET (FITS ALL TWO PIN STARTERS)





TLD Standard Color Fluorescent Tubes



DESCRIPTION

Fluorescent lighting is efficient and economical. The efficacy (lumen/watt) of all fluorescent lamps is high compared to most other light sources. Different luminaires are available for various purposes.

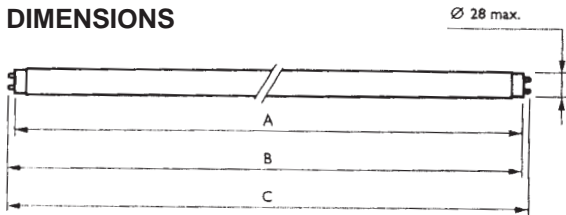
'TL'D lamps are low-pressure mercury discharge lamps with a clear tubular 26 mm envelope. The tube wall is internally covered with a mixture of fluorescent powders.

'TL'D Standards colors have a moderate color rendering index (C.R.I. 50-75). Especially the red part of the spectral power distribution is moderately covered by standard color. 'TL'D Standard colors are mostly used in applications where color rendering is not an important parameter.

The efficacy of 'TL'D Standard color is lower than 'TL'D/80 Color.

The color designation of 'TL'D lamps creates a certain atmosphere. It varies from warm-white to cool daylight. The color designation is determined by the color temperature of the lamp.

DIMENSIONS

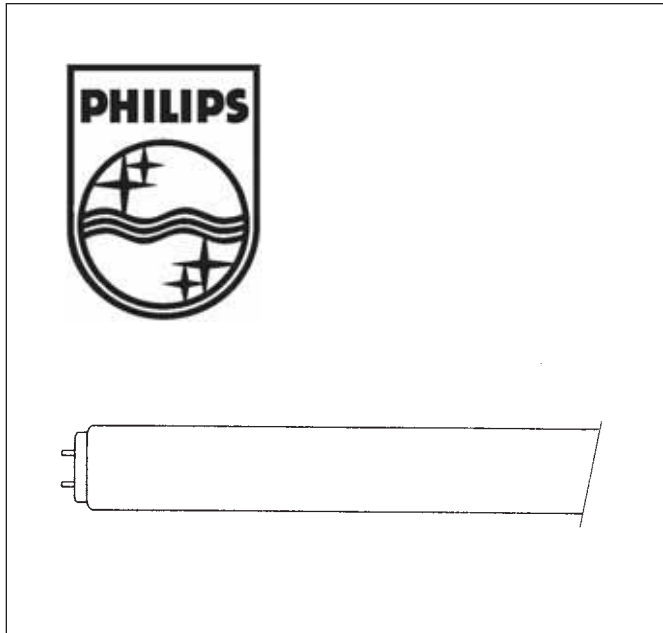


Type	Dimensions in mm			
	A max	B min	C max	D max
'TL'D 15W	437.4	442.1	444.5	451.6
'TL'D 16W	720.0	724.7	727.1	734.2
'TL'D 18W	589.8	594.5	596.9	604.0
'TL'D 36W-1	970.0	974.7	977.1	984.2
'TL'D 30W	894.6	899.3	901.7	908.8
'TL'D 36W	1199.4	1204.1	1206.5	1213.6
'TL'D 58W	1500.0	1504.7	1507.1	1514.2

PART NUMBER	base	Lamp voltage V	Lamp current A	Color designation	Correlated color temp. K	Lumen output lm
'TL'D18W/29	G13	59	0.36	WARM WHITE	2900	1250
'TL'D36W/29	G13	103	0.44	WARM WHITE	2900	2975
'TL'D58W/29	G13	111	0.67	WARM WHITE	2900	4700
'TL'D15W/33	G13	51	0.34	COOL WHITE	4100	960
'TL'D18W/33	G13	59	0.36	COOL WHITE	4100	1200
'TL'D30W/33	G13	98	0.36	COOL WHITE	4100	2100
'TL'D36W/33	G13	103	0.44	COOL WHITE	4100	2850
'TL'D36W1/33	G13	80	0.56	COOL WHITE	4100	2800
'TL'D58W/33	G13	111	0.67	COOL WHITE	4100	4600
'TL'D15W/54	G13	51	0.34	COOL DAYLIGHT	6200	830
'TL'D18W/54	G13	59	0.36	COOL DAYLIGHT	6200	1050
'TL'D30W/54	G13	98	0.36	COOL DAYLIGHT	6200	1825
'TL'D36W/54	G13	103	0.44	COOL DAYLIGHT	6200	2500
'TL'D58W/54	G13	111	0.67	COOL DAYLIGHT	6200	4000



"AQUARELLE" Aquarium Natural Light Tubes



DESCRIPTION

The well-defined light spectrum of this low-pressure mercury vapor fluorescent lamp is optimally tuned to reveal the true beauty of fish and plant life in freshwater aquaria.

The Aquarelle light output closely matches the natural light wavelength which is required for successful photosynthesis and chlorophyll synthesis. An additional benefit of Aquarelle is the particularly high energy in the blue region providing a well-balanced spectrum which stimulates oxygen production, promotes thriving aquarium plant and fish life and gives a good color rendering.

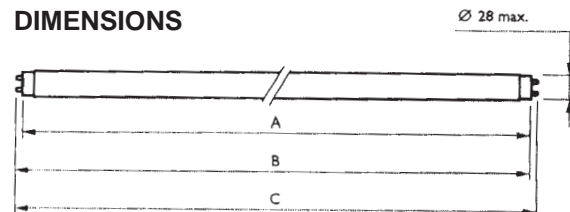
According to personal preference, Aquarelle can be combined with Philips 'TL'D/80 New Generation or 'TL'D/90 de Luxe colors to create different visual impressions without impairing the biological qualities of the Aquarelle light output.

Lamps are to be operated on AC mains on switch-start or HF control gear.

Applications

- Freshwater aquaria.

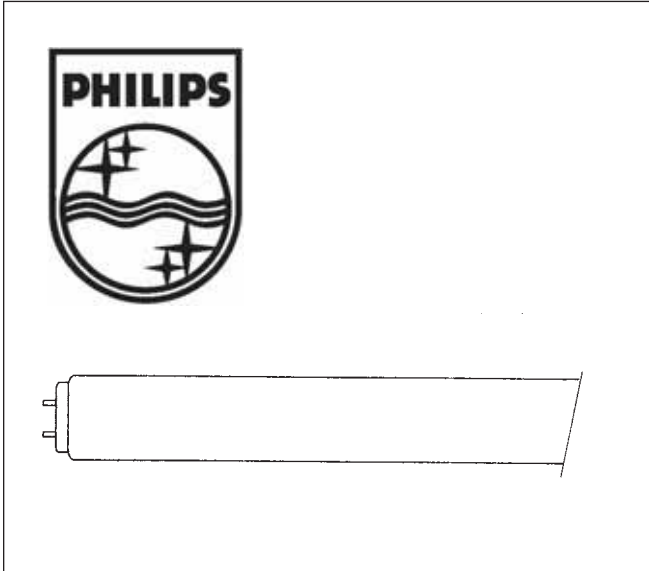
DIMENSIONS



PART NUMBER	base	Lamp voltage V	Lamp current A	Color rendering index	Correlated color temp. K	Lumen output lm	Useful life h	Dimensions in mm				
								A max.	B min.	B max.	C max.	D max.
'TL'D15W/89	G13	51	0.34	70	10000	750	8000	437.4	442.1	444.5	451.6	28.0
'TL'D18W/89	G13	59	0.36	70	10000	1020	8000	589.8	594.5	596.9	604.0	28.0
'TL'D30W/89	G13	98	0.36	70	10000	1820	8000	894.6	899.3	901.7	908.8	28.0
'TL'D36W/89	G13	103	0.44	70	10000	2450	8000	1199.4	1204.1	1206.5	1213.6	28.0
'TL'D58W/89	G13	111	0.67	70	10000	3800	8000	1500.0	1504.7	1507.1	1514.2	28.0



TLD Super 80 Colors, New Generation



DESCRIPTION

Fluorescent lighting is efficient and economical. The efficacy (lumen/watt) of all fluorescent lamps is high compared to most other light sources. Different luminaires are available for various purposes.

'TL'D lamps are low-pressure mercury discharge lamps with a clear tubular 26 mm envelope. The tube wall is internally covered with a mixture of fluorescent powders.

'TL'D Super/80 color lamps are produced with special fluorescent powder (/80 colors) which leads to a good color rendering index (C.R.I.>80) and a high efficacy.

'TL'D Super/80 color lamps are used in 'human applications' like schools, offices, shops, factory halls and so on. The use of /80 color phosphors also results in a high initial lumen output and an excellent lumen maintenance. The initial efficacy and the efficacy during lifetime is relatively high.

'TL'D Super/80 color lamps can be used on conventional gear or HF gear. The efficacy of an HF system is higher than conventional gear.

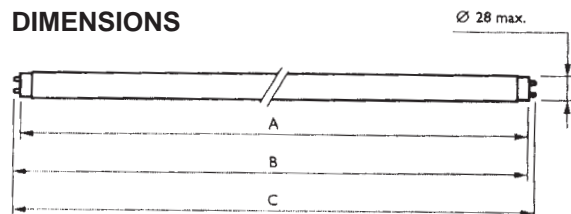
The color designation of 'TL'D lamps creates a certain atmosphere. It varies from warm-white to cool daylight. The color designation is determined by the color temperature of the lamp.

'TL'D Super/80 New Generation is a breakthrough in 'TL' lighting. Advanced coating technology reduces the mercury absorption by the glass wall and the fluorescent powders. As a result, the lumen maintenance has been improved.

'TL'D Super/80 New Generation lamps contain only 3 mg of mercury (except for 'TL'D 70@ type).

PART NUMBER	base	Lamp voltage V	Lamp current A	Correlated color temp. K	Lumen output lm
INCAND. LIGHT/827					
'TL'D15W/827	G13	51	0.34	2700	1000
'TL'D18W/827NG	G13	59	0.36	2700	1350
'TL'D30W/827NG	G13	98	0.36	2700	2400
'TL'D36W/827NG	G13	103	0.44	2700	3350
'TL'D58W/827NG	G13	111	0.67	2700	5200
WARM LIGHT/830					
'TL'D15W/830	G13	51	0.34	3000	1000
'TL'D18W/830NG	G13	59	0.36	3000	1350
'TL'D30W/830NG	G13	98	0.36	3000	2400
'TL'D36W/830NG	G13	103	0.44	3000	3350
'TL'D58W/830NG	G13	111	0.67	3000	5200
COOL LIGHT/840					
'TL'D15W/840	G13	51	0.34	4000	1000
'TL'D18W/840NG	G13	59	0.36	4000	1350
'TL'D30W/840NG	G13	98	0.36	4000	2400
'TL'D36W/840NG	G13	103	0.44	4000	3350
'TL'D58W/840NG	G13	111	0.67	4000	5200
COOL DAYLIGHT/865					
'TL'D18W/865NG	G13	59	0.36	6500	1300
'TL'D30W/865NG	G13	98	0.36	6500	2300
'TL'D36W/865NG	G13	103	0.44	6500	3250
'TL'D58W/865NG	G13	111	0.67	6500	5000

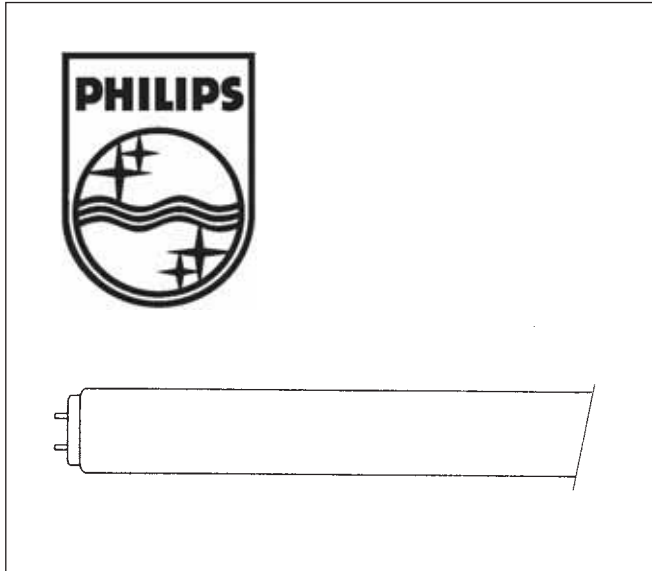
DIMENSIONS



Type	Dimensions in mm			
	A max	B min	C max	D max
'TL'D15W	437.4	442.1	444.5	451.6
'TL'D18W	589.8	594.5	596.9	604.0
'TL'D30W	894.6	899.3	901.7	908.8
'TL'D36W	1199.4	1204.1	1206.5	1213.6
'TL'D38W	1047.0	1051.7	1054.1	1061.2
'TL'D58W	1500.0	1504.7	1507.1	1514.2



TLD Super 90, Dexlue Color Rendering Tubs



DESCRIPTION

Fluorescent lighting is efficient and economical. The efficacy (lumen/watt) of all fluorescent lamps is high compared to most other light sources. Different luminaires are available for various purposes.

'TL'D lamps are low-pressure mercury discharge lamps with a clear tubular 26 mm envelope. The tube wall is internally covered with a mixture of fluorescent powders.

'TL'D /90 de Lux Color lamps are produced with special fluorescent powder (/90 colors) which leads to an excellent color rendering index (C.R.I.>95).

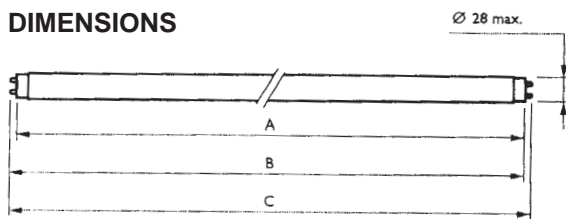
'TL'D/90 de Lux color lamps are used in applications where color rendering is a very important parameter, like museums, flower shops, clothing shops, graphical industry, and so on.

'TL'D/90 de Lux color lamps can be used on conventional gear or HF gear. The efficacy of an HF system is higher.

The color designation of 'TL'D lamps creates a certain atmosphere. It varies from warm-white to cool daylight.

The color designation is determined by the color temperature of the lamp.

DIMENSIONS

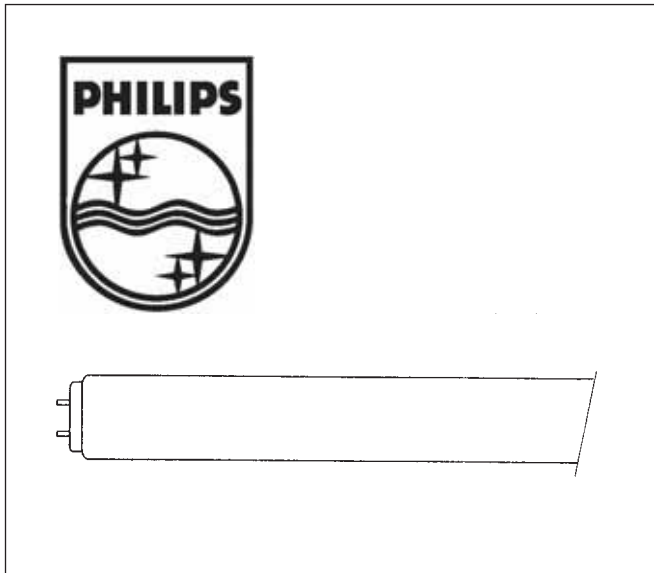


Type	Dimensions in mm			
	A max	B min	C max	D max
'TL'D18W	589.8	594.5	596.9	604.0
'TL'D36W	1199.4	1204.1	1206.5	1213.6
'TL'D58W	1500.0	1504.7	1507.1	1514.2

PART NUMBER	base	Lamp voltage V	Lamp current A	Correlated color temp. K	Lumen output lm
WARM LIGHT/930					
'TL'D18W/930	G13	59	0.36	3000	940
'TL'D36W/930	G13	103	0.44	3000	2250
'TL'D58W/930	G13	111	0.67	3000	3650
COOL LIGHT/940					
'TL'D18W/940	G13	59	0.36	3800	1000
'TL'D36W/940	G13	103	0.44	3800	2400
'TL'D58W/940	G13	111	0.67	3800	3850
NATURAL DL 5300/950					
'TL'D18W/950	G13	59	0.36	5300	960
'TL'D36W/950	G13	103	0.44	5300	2300
'TL'D58W/950	G13	111	0.67	5300	3650
NATURAL DL 6500/965					
'TL'D18W/965	G13	59	0.36	6500	870
'TL'D36W/965	G13	103	0.44	6500	2100
'TL'D58W/965	G13	111	0.67	6500	3350



Super Actinic O3, Special Spectrum Tubes



DESCRIPTION

Tubular low-pressure mercury vapor discharge lamps.

The tube wall is internally coated with a white fluorescent powder. This powder converts the shortwave UV radiation, produced by the mercury gas discharge, into useful actinic radiation.

'TL'/O3 lamps emit radiation between 380 and 480 nm with a maximum at 420 nm.

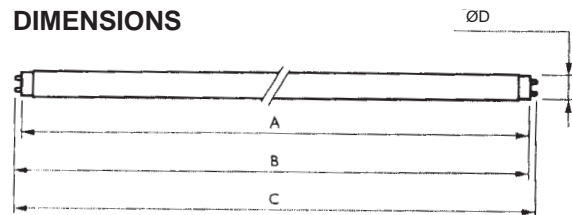
The spectral distribution of the 'TL'/O3 lamps is in accordance with the spectral sensitivity of a number of diazo papers used in diazo copying machines.

To reveal the true beauty of seawater aquaria, 'TL'/O3 'AQUA CORAL' lamps can be used in combination with full-spectrum 'Natural Daylight' fluorescent lamps.

Applications

- Diazo copying machines.
- Seawater aquaria.
- Phototherapy (treatment of jaundice in newborn infants).

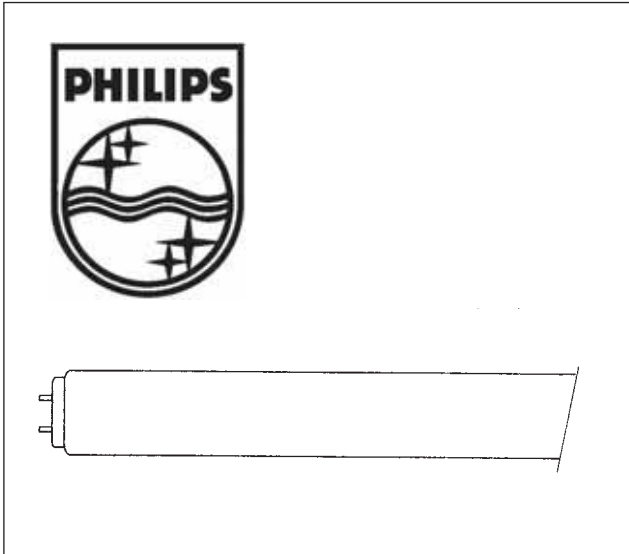
DIMENSIONS



PART NUMBER	base	Lamp voltage V	Lamp current A	Diazo watts W	UV-A radiation W	Useful life h	Dimensions in mm				
							A max.	B min.	B min.	C max.	D max.
'TL'D15W/03	G13	51	0.34	2.80	0.10	3000	437.4	442.1	444.5	451.6	28.0
'TL'D18W/03	G13	59	0.36	3.70	0.14	3000	589.8	594.5	596.9	604.0	28.0
'TL'D20W/03RS	G13	97	0.37	3.60	0.14	3000	589.8	594.5	596.9	604.0	40.5
MCFE20W/03	G13	57	0.37	3.60	0.14	3000	589.8	594.5	596.9	604.0	40.5
'TL'D30W/03	G13	98	0.36	6.90	0.27	3000	894.6	899.3	901.7	908.8	28.0
'TL'D36W/03	G13	103	0.44	9.00	0.35	3000	1199.4	1204.1	1206.5	1213.6	28.0
'TL'D40W/03RS	G13	101	0.43	9.20	0.35	3000	1199.4	1204.1	1206.5	1213.6	40.5
'TL'D40W/03	G13	50	0.86	6.40	0.25	3000	589.8	594.5	596.9	604.0	40.5
'TL'D140W/03	G13	118	1.46	30.40	1.00	3000	1500.0	1504.7	1507.1	1514.2	40.5



Super Actinic 05, Special Spectrum Tubes



DESCRIPTION

Tubular low-pressure mercury vapor discharge lamps.

The tube wall is internally coated with a white fluorescent powder. This powder converts the shortwave UV radiation, produced by the mercury gas discharge, into long-wave UV radiation.

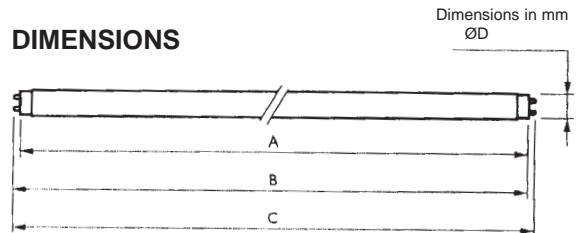
'TL'/05 lamps emit radiation between 300 and 460 nm with a maximum at 365 nm.

'TL'/05 lamps are highly efficient for use in diazo printing machines. The spectral energy distribution of 'TL'/05 lamps attracts insects, making these lamps suitable for use in insect traps as well.

Applications

- Diazo printing machines.
- Insect traps.
- Photochemical processes.

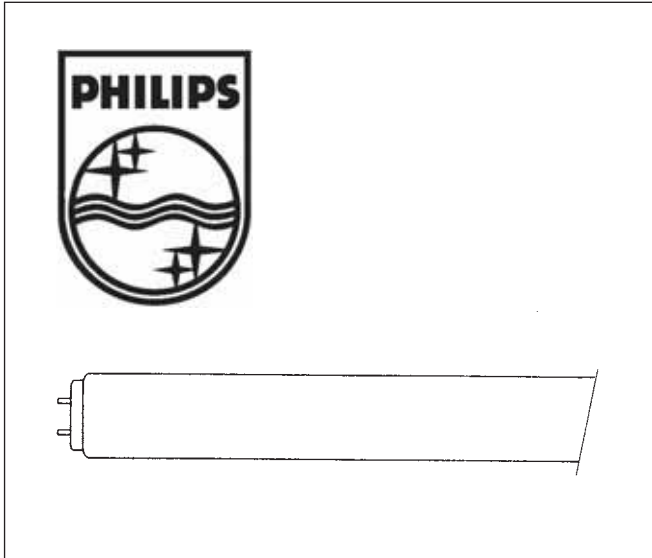
DIMENSIONS



PART NUMBER	base	Lamp voltage V	Lamp current A	Diazo watts W	UV-A radiation W	Useful life h	Dimensions in mm				
							A max.	B min.	B min.	C max.	D max.
'TL'6W/05	G5	42	0.16	0.56	0.70	2000	212.1	216.8	219.2	226.3	16.0
'TL'8W/05	G5	56	0.15	0.82	1.00	2000	288.3	293.0	295.4	302.5	16.0
'TL'D15W/05	G13	51	0.34	1.70	2.10	3000	437.4	442.1	444.5	451.6	28.0
'TL'20W/05	G13	57	0.37	2.20	2.80	3000	589.8	594.5	596.9	604.0	40.5
'TL'DK30W/05	G13	45	0.81	3.00	3.70	2000	437.4	442.1	444.5	451.6	28.0
'TL'40W/05	G13	107	0.43	5.80	7.00	3000	1199.4	1204.1	1206.5	1213.6	40.5
'TL'K40W/05	G13	50	0.86	4.00	5.00	2000	589.8	594.5	596.9	604.0	40.5
'TL'80W/05	G13	111	0.83	10.90	13.90	2000	1500.0	1504.7	1507.1	1514.2	40.5
'TL'140W/05	G13	118	1.46	19.00	20.00	2000	1500.0	1504.7	1507.1	1514.2	40.5



U.V.-A Curing, Special Spectrum Tubes



DESCRIPTION

Tubular, circular or compact single-ended low-pressure mercury vapor fluorescent lamps emitting long-wave UV radiation between 350 and 400 nm.

The UV-B/UV-A ratio is less than 0.1%

(UV-B: 280-315nm).

R (Reflector) lamps have an internal reflector of 200°.

The PL-S /10 lamp consists of two single-ended fluorescent tubes melted together; its lamp base contains a specially adapted starter, providing almost instant starting characteristics.

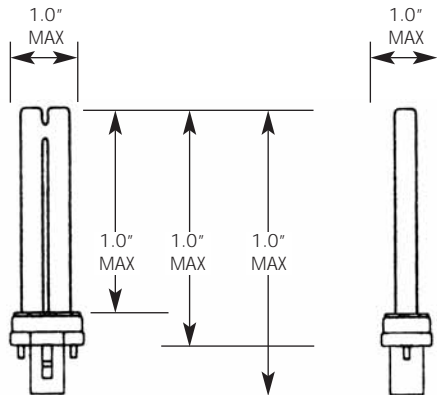
PL-S/ 10 lamps can operate on the same universal ballast as other PL-S lamps.

Note

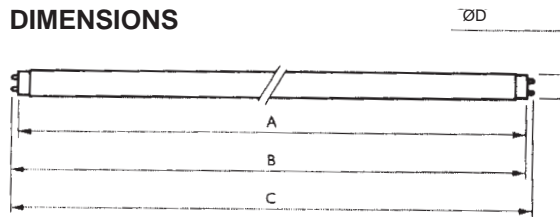
UV can be harmful when used in the wrong way. To ensure safe use, the instructions of the equipment manufacturer should be closely followed.

Applications

- Insect traps (Actinic BL)
- Reprography
- Photopolymerisation processes
- PL-S: nail curing, insect traps.



DIMENSIONS



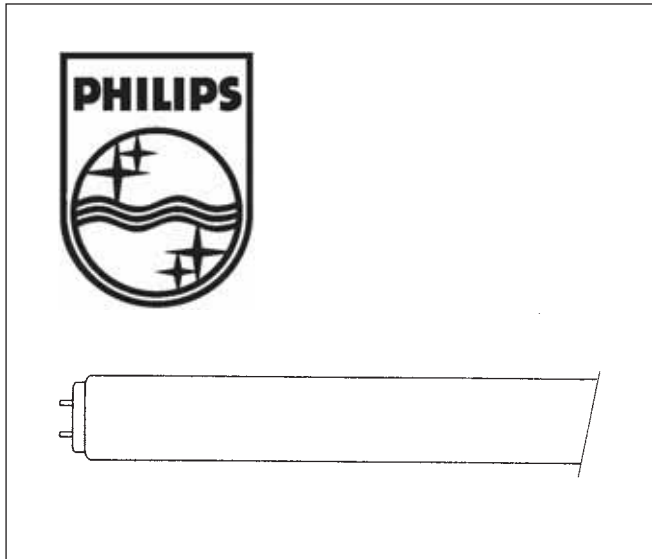
Dimensions in mm

Type	A max	B min	B max	C max	D max
'TL'K40W	598.8	594.5	596.9	604.0	40.5
'TL'60WR	1199.4	1204.1	1206.5	1213.6	40.5
'TL'80WR	1500.0	1504.7	1507.1	1514.2	40.5
'TL'100WR	1763.8	1768.5	1770.9	1778.0	40.5

PART NUMBER	base	Lamp voltage V	Lamp current A	Lamp Wattage W	UV-A radiation W	Useful life h
/10 UV-A						
'TL'K40W/10-R	G13	50	0.86	40	7.4	3000
'TL'60W/10-R	G13	102	0.70	60	15.8	1000
'TL'80W/10-R	G13	110	0.83	80	20.5	1000
'TL'100W/10-R	G13	122	0.97	100	26.6	1000
/10 UV-A						
PL-S9W/10	G33	60	0.17	9	1.9	2000



U.V.-B Therapeutic Fluorescent Tubes



DESCRIPTION

Low-pressure mercury vapour fluorescent lamps emitting radiation for therapeutic and other applications.

The tubular 'TL' 20W/12 RS and 'TL' 40W/12 RS lamps can be operated in normal switch-start as well as pre-heat rapid-start systems.

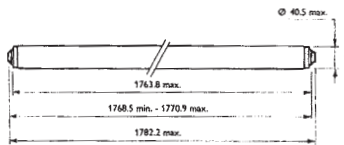
In medical applications, the /01 and /12 lamps are mainly used for the treatment of psoriasis; /52 lamps are mainly used for the treatment of hyperbilirubinaemia.

Note

UV-B radiation is harmful to human skin and eyes. These lamps are therefore only available for medical and industrial applications.

Applications

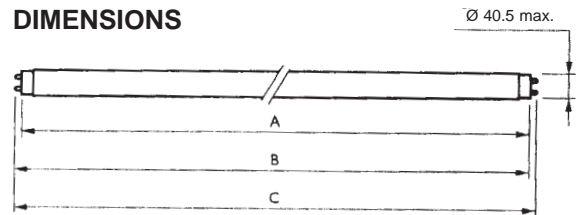
- /01, /12 Phototherapy in dermatology (psoriasis, SUP).
- /12 Meteorological testing equipment.
- /52 Medical treatment of jaundice in new-born babies (hyperbilirubinaemia).



'TL' 100W /01/12

Type	A max	B min	B max	C max
'TL'20W/12RS	589.8	594.5	596.9	604.0
'TL'40W/12RS	1199.4	1204.1	1206.5	1213.6
'TL'20W/52	589.8	594.5	596.9	604.0

DIMENSIONS



PART NUMBER	base	Lamp voltage V	Lamp current A	Lamp Wattage W	Color designation	UV-B radiation W	Useful life h
/01							
'TL'100W/01	R17D	122	0.97	100	UV-B	15	3000
/12							
'TL'20W/12RS	G13	57	0.37	20	UV-B	1.80	3000
'TL'40W/12RS	G13	101	0.43	40	UV-B	4.50	3000
'TL'100W/12	R17D	122	0.97	100	UV-B	11	2000
/52							
'TL'20W/52	G13	57	0.37	20	MEDICAL		2000



Butcher Shop, Color Enhancing Tube Lamps

DESCRIPTION

Tubular low-pressure mercury vapour discharge lamps.

The color designation of these fluorescent lamps is SHOP LIGHTING. In this respect, shop lighting does not refer to general lighting, but to the illumination of food.

The spectral power distribution of these lamps is optimally tuned to provide a good appearance of food in butcher's shops.

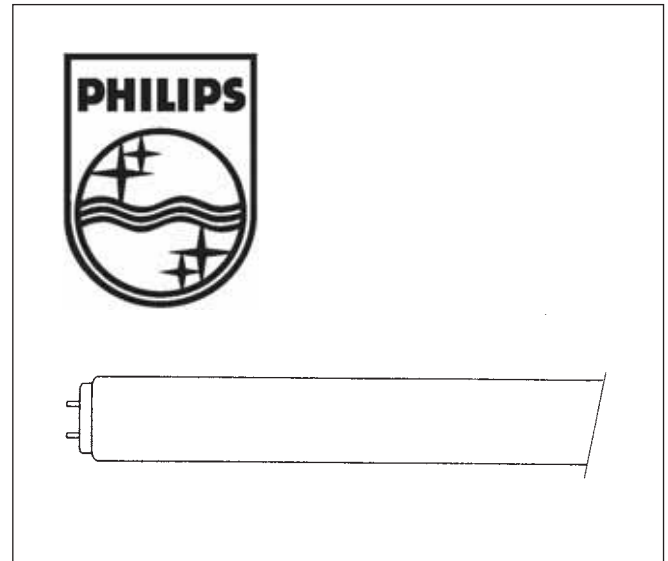
Without having a red appearance themselves, the lamps will emphasise the deep red color.

The 'TL'D shop lighting lamps color /79, have a color temperature of 3800 K.

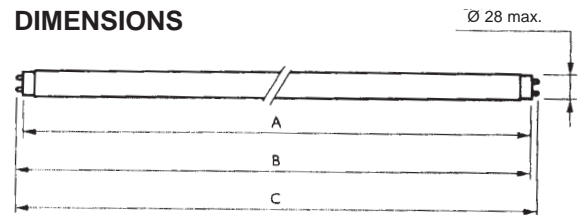
The lamps are to be operated on AC mains supply in series connection with a ballast and a parallel starter.

Applications

- Butcher's shops.
- Deli
- Retail food display



DIMENSIONS



PART NUMBER	base	Lamp voltage V	Lamp current A	Color designation	Lumen output lm	Lumen maint. 5000/hrs %	A max.	B min.	B max.	C max.
/79										
'TL'D30W/79	G13	98	0.36	SHOP LIGHTING	1200	85	894.6	899.3	901.7	908.8
'TL'D36W/79	G13	103	0.44	SHOP LIGHTING	1600	85	1199.4	1204.1	1206.5	1213.6
'TD'D58W/79	G13	111	0.67	SHOP LIGHTING	2500	85	1500.0	1504.7	1507.1	1514.2



Color Fluorescent Tube Lamps (RED, YELLOW, GREEN, BLUE)

DESCRIPTION

Tubular low-pressure mercury vapour discharge lamps. The tube wall is internally coated with a white fluorescent powder. This powder converts the UV radiation produced by the mercury gas discharge into visual radiation. The fluorescent powder of /15 (red) and /16 (yellow) is mixed with a pigment to filter out unwanted wavelengths.

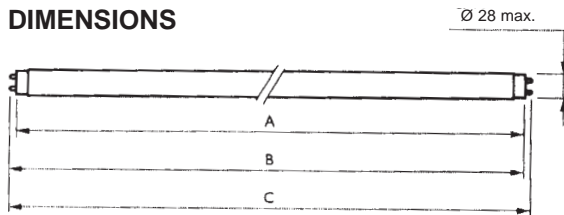
The lamps are to be operated on HF or switch-start circuits. Depending on the control gear, dimming is possible. They are not suitable for use in potentially explosive environments.

Applications

- for color effects in stage lighting, show-window lighting, festive lighting, bars, dance halls, etc.



DIMENSIONS



Note: ALL DIMENSIONS ARE IN MILLIMETERS

Type	A max	B min	B max	C max
'TL'D18W	589.8	594.5	596.9	604.0
'TL'D36W	1199.4	1204.1	1206.5	1213.6

PART NUMBER	base	Lamp voltage V	Lamp current A	Color designation	Lumen output lm	Lumen maint. 5000hrs %
/15						
'TL'D18W/15	G13	59	0.36	RED	25	90
'TL'D36W/15	G13	103	0.44	RED	60	90
/16						
'TL'D18W/16	G13	59	0.36	YELLOW	660	75
'TL'D36W/16	G13	103	0.44	YELLOW	1580	75
/17						
'TL'D18W/17	G13	59	0.36	GREEN	1300	60
'TL'D36W/17	G13	103	0.44	GREEN	1300	60
/18						
'TL'D18W/18	G13	59	0.36	BLUE	400	70
'TL'D36W/18	G13	103	0.44	BLUE	970	70

NOTES



NORMAN LAMPS, INC.
Distributing Light To The World



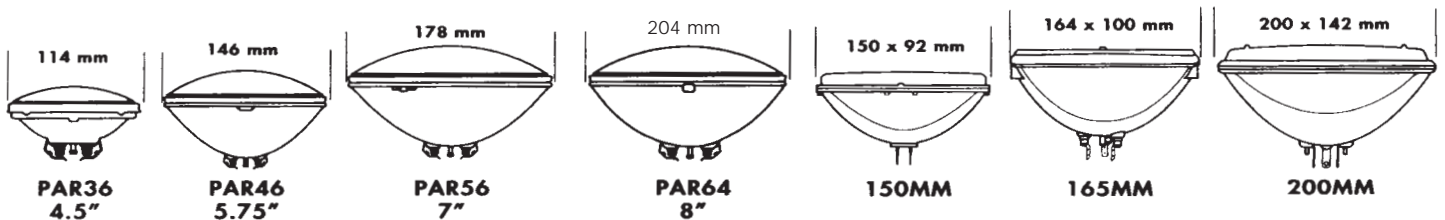
Sealed Beam Lamps Reference

Brands and Availability

Norman Lamps, Inc. offers a full line of standard and halogen Sealed Beam Lamps. Sealed Beam Lamps are listed numerically according to their industry standard part number. These lamps can be custom colored for special applications. In most cases, these sealed beam lamps are single packed in strong cardboard boxes for easy distribution. When ordering sealed beam lamps, use the industry standard part numbers listed in this catalog.

Norman Lamps, Inc. maintains a large inventory of Sealed Beam Lamps. We stock most popular and not so popular part numbers as well as some hard to find type sealed beams. The brands we carry are G.E., Sylvania, Philips, Westinghouse, Wagner and Hella. If you do not see the lamp number you are looking for in this section, give our Sales Department a call. They are glad to assist you in locating the lamp you require. Brands vary depending on lamp number and factory availability. Call for special brand request.

Lamp Shapes & Dimensions

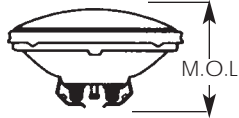




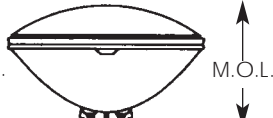
Sealed-Beam Lamps



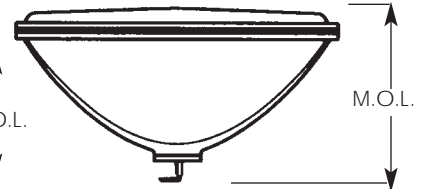
SYLVANIA



PAR 36

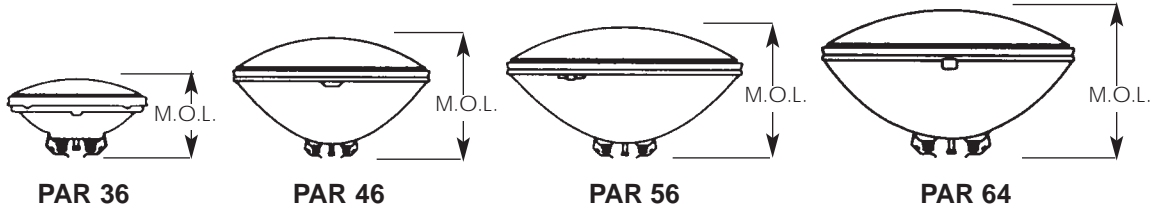


PAR 46

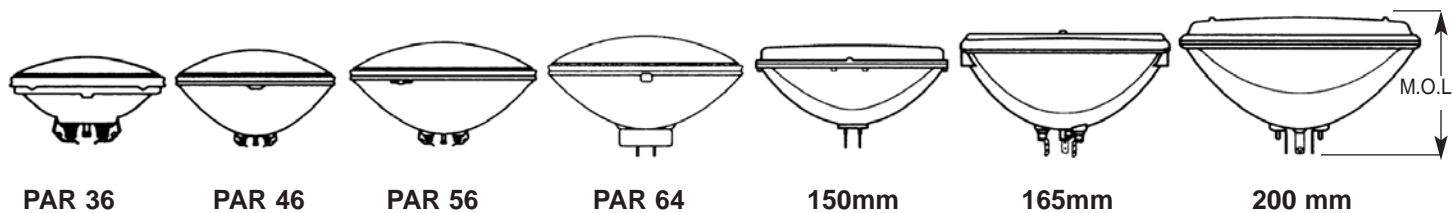


140 mm

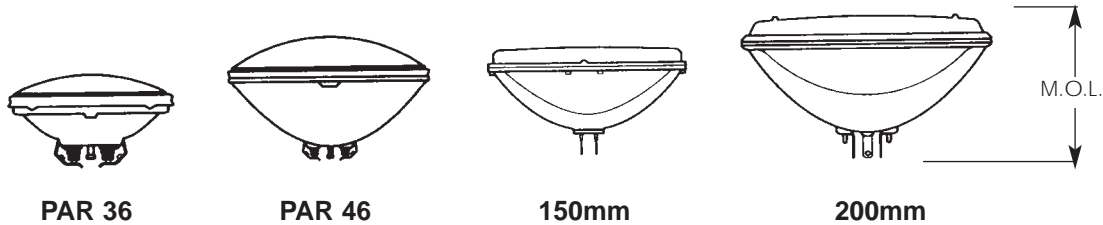
LAMP NO.	BULB	BASE	DESCRIPTION	VOLTS	WATTS	C.P.	LIFE	M.O.L.
4000	PAR46	3 LUGS	Auto Headlamp, Hi/Lo Bm	12.8	37.5	SAE	200	4.00
4001	PAR46	2 LUGS	Auto Headlamp, H Bm	12.8	60.0	SAE	320	4.00
4013	PAR46	Scrw Term	Tractor, Flood	6.4	25.0	800	300	3.75
4014	PAR36	Scrw Term	Emergency Bldg. Lighting	6.4	18.0	1500	200	2.75
4019	PAR46	Scrw Term	Tractor	6.2	30.0	1200	300	3.75
4020	PAR46	3 Lugs	Cycle Headlamp	6.4	30.0	SAE	300	4.00
4040	PAR46	3 Lugs	Truck Headlamp, Hvy Dty, Hi/Lo Bm	12.8	37.5	SAE	300	4.00
				12.8	60.0	SAE	500	
4042	PAR36	Scrw Term	Emergency Bldg. Lighting	6.4	12.0	1100	150	2.75
4044-1	PAR36	Scrw Term	Emergency Bldg. Lighting	12.0	12.0	1100	150	2.75
4313	PAR36	Multi Term	Emergency Bldg. Lighting	12.0	12.0	1100	150	2.75
4340	PAR36	Slip-on Term	Electric Truck Work Light	48.0	80.0	2500	400	2.75
4350	PAR36	Slip-on Term	Electric Truck Work Light	36.0	60.0	2100	400	2.75
4402A	PAR36	Scrw Term	C.I.M. Signal Amber	28.0	50.0	1000	400	2.75
4405	PAR36	Scrw Term	Spotlight	12.8	30.0	50000	100	2.75
4406	PAR36	Scrw Term	Tractor, Flood	12.8	35.0	600	300	2.75
4411	PAR36	Scrw Term	Tractor	12.8	35.0	3000	300	2.75
4411-1	PAR36	Multi Term	Tractor	12.8	35.0	3000	300	2.75
4412	PAR46	Scrw Term	Fog	12.8	35.0	11000	300	3.75
4412A	PAR46	Scrw Term	Fog, Amber	12.8	35.0	8800	300	3.75
4413	PAR46	Scrw Term	Tractor, Flood	12.8	35.0	1100	300	3.75
4414	PAR36	Scrw Term	Warning Signal, Emergency	12.8	18.0	1500	300	2.75
4414A	PAR36	Scrw Term	Turn/Warning Signal, Amber	12.8	18.0	450	300	2.75
4414R	PAR36	Scrw Term	Turn/Warning Signal, Red Lens	12.8	18.0	275	300	2.75
4415	PAR36	Scrw Term	Fog	12.8	35.0	9000	300	2.75
4415A	PAR36	Scrw Term	Fog, Amber	12.8	35.0	7000	300	2.75
4416	PAR36	Scrw Term	Spotlamp, Signal	12.8	30.0	35000	300	2.75
4416A	PAR36	Scrw Term	Signal, Amber	12.8	30.0	26000	300	2.75
4416R	PAR36	Scrw Term	Signal, Red	12.8	30.0	4000	300	2.75
4419	PAR46	Scrw Term	Tractor	12.8	35.0	1600	300	3.75
4420	PAR46	3 Lugs	Cycle Headlamp	12.8	30.0	SAE	300	4.00
4421	PAR46	Slip-on Term	Auto/Truck, Special Svc.	13.0	100.0	23000	300	3.75
4422	PAR36	Scrw Term	Tractor	12.8	35.0	600	300	2.75
4431	PAR46	3 Lugs	Auto Headlamp, Military	12.8	45.0	SAE	320	4.00
				12.8	35.0	SAE	320	
4434A	PAR46	Scrw Term	School Bus Signal, Amber Lens	12.8	40.0	1000	100	3.75
4435	PAR46	Scrw Term	Spotlamp	12.8	30.0	75000	100	3.75
4436	PAR46	Scrw Term	Signal	12.8	35.0	60000	300	3.75
4446	PAR36	Scrw Term	Emergency Bldg. Lighting	12.8	25.0	400	300	2.75
4459	PAR46	3 Slip-on Term	Tractor	12.8	40.0	1400	320	3.32
				12.8	40.0	1300	320	
4461	PAR36	Scrw Term	Tractor	12.8	60.0	6000	300	2.75
4464	PAR36	Scrw Term	Signal, Rotating Beacon	12.8	60.0	60000	300	2.75
4466	PAR36	Scrw Term	Tractor	12.8	60.0	1000	300	2.75
4467	PAR46	3 Lugs	Cycle Headlamp	12.8	35.0	SAE	275	



LAMP NO.	BULB	BASE	DESCRIPTION	VOLTS	WATTS	C.P.	LIFE	M.O.L.
4478	PAR46	3 Lugs	C.I.M. Flood	13.0	60.0	1600	800	4.00
4492	PAR46	3 Contact Lugs	Snowmobile Headlamp	12.80	60.0	21000	300	2.25
4502	PAR36	Scrw Term	Auto Headlamp, Military	28.0	50.0	10000	400	2.75
4505	PAR36	Scrw Term	Aircraft, Navigation	28.0	50.0	45000	400	2.75
4505-R	PAR36	Scrw Term	Aircraft, Navigation, Red Lens	28.0	50.0	45000	100	2.75
Q4509	PAR36	Scrw Term	Aircraft, Landing, Spotlamp	13.0	100.0	110000	100	2.75
4510	PAR36	Scrw Term	Tractor, Flood, Emergency Bldg.	6.4	25.0	800	300	2.75
4511	PAR36	Scrw Term	Tractor	6.2	30.0	2300	300	2.75
H4515	PAR36	Scrw Term	Spotlamp, Shielded Bulb	6.4	30.0	67000	100	2.75
4515	PAR36	Scrw Term	Spotlamp	6.4	30.0	55000	100	2.75
4516	PAR36	Scrw Term	Spotlamp	6.2	30.0	45000	300	2.75
4519	PAR36	Scrw Term	Marine	13.0	100.0	30000	25	2.75
4522	PAR46	Scrw Term	Aircraft, Landing	13.0	250.0	290000	25	3.13
4530	PAR46	Scrw Term	Signal, Flashing	26.0	5.30A	100000	50	3.75
4531	PAR46	Scrw Term	Auto Headlamp, Military	12.5	40.0	30000	400	3.75
4535	PAR46	Scrw Term	Spotlamp	6.4	30.0	95000	100	3.75
4537	PAR46	Scrw Term	Aircraft, Landing	13.0	100.0	200000	25	3.13
4537-2	PAR46	Scrw Term	Spotlamp	13.0	100.0	200000	25	3.13
4541	PAR56	Scrw Term	Aircraft, Landing	28.0	450.0	470000	25	4.50
4543	PAR56	Scrw Term	Marine, Spotlamp	12.5	100.0	250000	50	4.50
4545	PAR56	Scrw Term	Marine, Searchlight	12.0	100.0	225000	100	4.50
4546	PAR36	Scrw Term	Hand Lantern	4.7	0.50A	6300	100	2.75
4546-1	PAR36	Multi Term	Hand Lantern	4.7	0.50A	6300	100	2.75
4551	PAR46	Scrw Term	Aircraft, Taxiing	28.0	250.0	75000	25	2.75
4552	PAR64	Scrw Term	Aircraft, Landing	28.0	250.0	500000	25	3.75
4553	PAR46	Scrw Term	Aircraft, Landing	28.0	250.0	300000	25	3.13
Q4554	PAR46	Scrw Term	Aircraft, Landing	28.0	450.0	300000	100	2.75
4554	PAR46	Scrw Term	Aircraft, Taxiing	28.0	450.0	90000	25	3.13
4555	PAR64	Scrw Term	Aircraft, Landing	115.0	1000.0	600000	25	3.75
4556	PAR64	Scrw Term	Aircraft, Landing	28.0	1000.0	700000	25	3.75
Q4559	PAR64	Scrw Term	Aircraft, Landing, Halogen	28.0	600.0	600000	100	3.75
4559	PAR64	Scrw Term	Aircraft, Landing	28.0	600.0	600000	25	3.75
Q4559X	PAR64	Scrw Term	Aircraft, Landing, Halogen	28.0	600.0	765000	100	3.72
Q4566	PAR46	Scrw Term	Aircraft, Halogen	28.0	450.0	150000	1000	3.31
4570	PAR46	Scrw Term	Aircraft, Taxiing	28.0	150.0	32000	300	3.75
4571	PAR46	Scrw Term	Flood, Special Service	28.0	150.0	7000	300	3.75
4572	PAR46	Scrw Term	Auto, Flood, Military	28.0	150.0	4500	300	3.75
4578	PAR46	2 Lugs	C.I.M. Flood	28.0	60.0	1600	800	4.00
4579	PAR46	3 Lugs	C.I.M. Headlamp	28.0	80.0	24000	400	4.00
				28.0	60.0	11000	400	
4580	PAR46	Scrw Term	Aircraft, Landing	28.0	450.0	400000	10	3.75
4581	PAR46	Scrw Term	Aircraft, Landing	28.0	450.0	400000	10	3.13
4582	PAR46	Scrw Term	Aircraft/Helicopter, Flood	28.0	450.0	20000	10	3.75
4587	PAR36	Scrw Term	Aircraft, Taxiing	28.0	250.0	40000	25	2.75
4589	PAR36	Scrw Term	Aircraft, Cockpit Flood	28.0	50.0	5000	400	2.75
4591	PAR36	Scrw Term	Aircraft, Landing	28.0	100.0	90000	25	2.75
4593	PAR36	Scrw Term	Aircraft, in-Air Refueling	28.0	50.0	1500	400	2.75
4594	PAR36	Scrw Term	Aircraft, Navigation	28.0	100.0	70000	300	2.75
4595	PAR36	Scrw Term	Aircraft, Navigation	13.0	100.0	60000	300	2.75
4596	PAR36	Scrw Term	Aircraft, Landing	28.0	250.0	150000	25	2.75
4614	PAR36	Scrw Term	Aircraft, Navigation	6.0	100.0	85000	300	2.75
4626	PAR36	Scrw Term	Aircraft, Taxiing	28.0	150.0	25000	300	2.75
4627	PAR36	Scrw Term	Aircraft, Flood	28.0	100.0	3000	300	2.75



LAMP NO.	BULB	BASE	DESCRIPTION	VOLTS	WATTS	C.P.	LIFE	M.O.L.
Q4631	PAR36	Scrw Term	Aircraft, Halogen	13.0	250.0	80000	500	2.75
Q4632	PAR36	Scrw Term	Aircraft, Logo, Halogen	13.0	250.0	75000	500	2.75
4635	PAR46	Scrw Term	Aircraft, Landing	16.5	450.0	325000	25	3.75
4636-3	PAR46	Comb	Signal	14.0	80.0	90000	200	3.75
H4651	165mm	2 Lugs	Auto Headlamp, Halogen, Hi-Beam	12.8	50.0	SAE	200	4.80
4651	165mm	2 Lugs	Auto Headlamp, Hi Bm	12.8	50.0	SAE	200	4.80
4652	165mm	3 Lugs	Auto Headlamp, Hi/Lo Bm	12.8	40.0	SAE	200	4.80
				12.8	60.0	SAE	320	
H4656	165mm	3 Lugs	Auto Headlamp, Halogen, Hi/Lo Bm	12.8	35.0	SAE	200	4.80
				12.8	35.0	SAE	320	
H4666	165mm	3 Lugs	Auto Headlamp, Halogen, Hi/Lo Bm	12.8	65.0	SAE	150	4.80
				12.8	55.0	SAE	320	
4675				12.8	4.48	SAE	2000	10.2
4700	PAR36	3 Scrw Term	Spot/Flood	13.0	100.0	100000	25	2.75
				13.0	100.0	50000	25	
H4701	150mm	2 Lugs	Auto Headlamp, Halogen, Hi Beam	12.8	65.0	SAE	150	3.40
H4703	150mm	2 Lugs	Auto Headlamp, Halogen, Lo Beam	12.8	55.0	SAE	320	3.40
4572	PAR36	Scrw Term	C.I.M. Flood	28.0	60.0	2000	800	2.75
4800	PAR56	3 Lugs	Auto Headlamp, Military	28.0	50.0	SAE	400	5.00
				28.0	40.0	SAE	400	
4811	PAR36	3 Lugs	Auto Headlamp, Military	28.0	110.0	SAE	400	3.00
				28.0	55.0	SAE	400	
4860	PAR56	Waterproof Term	Auto Headlamp, Military	28.0	80.0	SAE	400	5.00
H5001	PAR46	2 Lugs	Auto Headlamp, Halogen, Hi Bm	12.8	50.0	SAE	200	4.00
H5006	PAR46	3 Lugs	Auto Headlamp, Halogen, Hi/Lo Bm	12.8	35.0	SAE	200	4.00
				12.8	35.0	SAE	320	
H5024	PAR56	3 Lugs	Truck Headlamp, Halogen, Hi/Lo Bm	12.8	65.0	SAE	400	5.00
				12.8	42.0	SAE	2000	
H5051	165mm	2 Lugs	Truck HdImp, Hi Bm, Type 1A	12.8	50.0	SAE	500	4.80
H5054	200mm	3 Lugs	Truck Headlamp, Halogen, Hi/Lo Bm	12.8	65.0	SAE	400	5.44
				12.8	42.0	SAE	2000	
H5062	165mm	3 Lugs	Truck Headlamp, Halogen, Hi/Lo Bm	12.8	40.0	SAE	400	4.80
				12.8	55.0	SAE	2000	
6006	PAR56	3 Lugs	Auto Headlamp, Hi/Lo Bm (26)*	6.1	50.0	SAE	300	5.00
				6.2	40.0	SAE	500	
6014	PAR56	3 Lugs	Auto Headlamp, Hi/Lo Bm (4, 26)*	12.8	60.0	SAE	200	5.00
				12.8	50.0	SAE	320	
6015	PAR56	3 Lugs	Auto/Truck Headlamp, Hi/Lo Bm	12.8	50.0	SAE	300	5.00
				12.8	50.0	SAE	500	
H6024	PAR56	3 Lugs	Auto Headlamp, Halogen	12.8	65.0	SAE	150	5.00
				12.8	35.0	SAE	320	



LAMP NO.	BULB	BASE	DESCRIPTION	VOLTS	WATTS	C.P.	LIFE	M.O.L.
6052	200mm	3 Lugs	Auto Headlamp, Hi/Lo Bm	12.8	65.0	SAE	150	5.44
				12.8	55.0	SAE	320	
6053	200mm	3 Lugs	Truck Headlamp, Hi/Lo Bm	12.8	65.0	SAE	150	5.44
				12.8	55.0	SAE	640	
H6054	200mm	3 Lugs	Auto Headlamp, Halogen, Hi/Lo Bm	12.8	65.0	SAE	150	5.44
				12.8	35.0	SAE	320	
7400	PAR36	Slip-on Term	Signal, Rotating Beacon	12.8	35.0	33000	300	2.75
7400R	PAR36	Slip-on Term	Signal, Rotating Beacon, Red	12.8	35.0	4900	300	2.75
7414Y	PAR36	Scrw Term	Signal, Light Yellow Lens	12.8	18.0	1000	300	2.75
H7550	PAR36	Scrw Term	Hand Lantern, Halogen	6.0	8.0	25000	50	2.75
H7550-1	PAR36	Multi-Terminal	Hand Lantern, Halogen	6.0	8.0	25000	50	2.75
H7551	PAR36	Scrw Term	Emergency Bldg. Lighting, Halogen	6.0	8.0	550	50	2.75
H7552	PAR36	Scrw Term	Emergency Bldg. Lighting, Halogen	6.0	10.0	650	50	2.75
H7553	PAR36	Scrw Term	Emergency Bldg. Lighting, Halogen	6.0	12.0	850	50	2.75
H7554	PAR36	Scrw Term	Emergency, Building, Halogen	6.0	20.0		50	2.75
H7555	PAR36	Scrw Term	Emergency Bldg, Lighting, Halogen	12.0	8.0	550	50	2.75
H7556	PAR36	Scrw Term	Emergency Building Halogen	6.0	6.0	400	50	2.75
H7557	PAR36	Scrw Term	Emergency Bldg. Lighting, Halogen	12.0	12.0	850	50	2.75
H7600	PAR36	Scrw Term	Signal, Rotating Beacon, Halogen	12.8	37.5	60000	300	2.75
H7604	PAR36	Scrw Term	Spotlamp, Halogen	12.8	50.0	100000	100	2.75
H7606	PAR36	Scrw Term	Tractor, Flood, Halogen	12.8	50.0	1000	400	2.75
H7607	PAR36	Scrw Term	Tractor, Flood	12.8	65.0	1500	600	2.75
H7609	PAR46	Scrw Term	Tractor, Flood, Halogen	12.8	50.0	2200	400	3.75
H7610	PAR36	Scrw Term	Tractor, Halogen	12.8	50.0	5200	400	2.75
H7612	PAR46	Scrw Term	Fog, Halogen	12.8	37.5	15000	450	3.75
7613	PAR36	Scrw Term	Emergency Bldg. Lighting	6.0	8.0	400	50	2.75
7613-1	PAR36	Multi-Term	Emergency Bldg. Lighting	6.0	8.0	400	50	2.75
H7616	PAR36	Scrw Term	Spotlamp, Halogen	12.8	37.5	70000	300	2.75
H7619	PAR46	Scrw Term	Tractor, Halogen	12.8	50.0	6000	400	3.75
H7635	PAR46	Scrw Term	Spotlamp, Halogen	12.8	50.0	160000	100	3.75
7672-1	PAR36	Slip-on Term	Emergency Bldg. Lighting	6.0	7.2	350	50	2.75
H9406	150mm	2 Lugs	Tractor, Flood, Halogen	12.8	50.0	1350	400	3.00
H9411	150mm	2 Lugs	Tractor, Trapezoidal, Halogen	12.8	50.0	5400	400	3.00
H9415	150mm	2 Rt. Angle Lugs	Auto, Fog	12.8	37.5		200	3.00
H9415A	150mm	2 Rt. Angle Lugs	Auto, Fog, Amber	12.8	37.5		200	3.00
H9420	150mm	2 Rt. Angle Lugs	Auto, Driving	12.8	50.0		200	3.00
H9421	150mm	2 Rt. Angle Lugs	Auto, Truck, Special Service	12.8	50.0		200	3.00



Navigational and Signal Lamps

NORMAN LAMPS, INC. offers a full line of high quality Navigational Lamps for use in commercial, private and military aircraft. In addition, we offer a full line of marine signal and airport runway navigational lamps. These include Halogen Runway Lamps, Beacon Lamps, Marine Vessel and Marker Lamps, Wing-Tip Reflector Lamps, Logo Illumination and more.

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- REFLECTOR LAMPS
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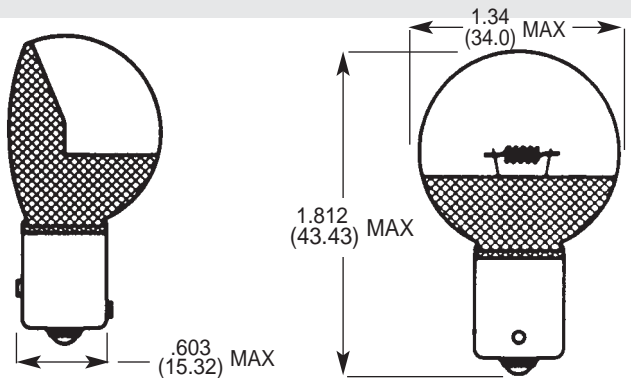
GG-10 AIRCRAFT REFLECTOR LAMPS

300 LIFE HOURS

FAA-PMA CERTIFICATION

REFLECTIVE AREA

S. C. BAYONET INDEXING BASE (BAY15S)



LINE NO.	VOLTS	AMPS	WATTS	MIL. SPEC	NORMAN PART NUMBER
1	14.0	2.0	28	MS25309	NLI-7512-12
2	28.0	1.0	28	MS25309	NLI-7512-24

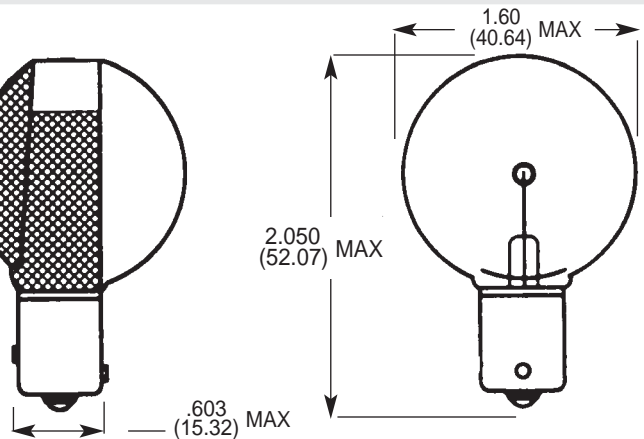
GG-12A1 AIRCRAFT REFLECTOR LAMPS

150 LIFE HOURS

FAA-PMA CERTIFICATION

REFLECTIVE AREA

S. C. BAYONET INDEXING BASE (BAY15S)



LINE NO.	VOLTS	AMPS	WATTS	MIL. SPEC	NORMAN PART NUMBER
3	6.2	6.94	43	MS25338	NLI-16870
4	28.0	1.54	43	MS25338	NLI-7079-24

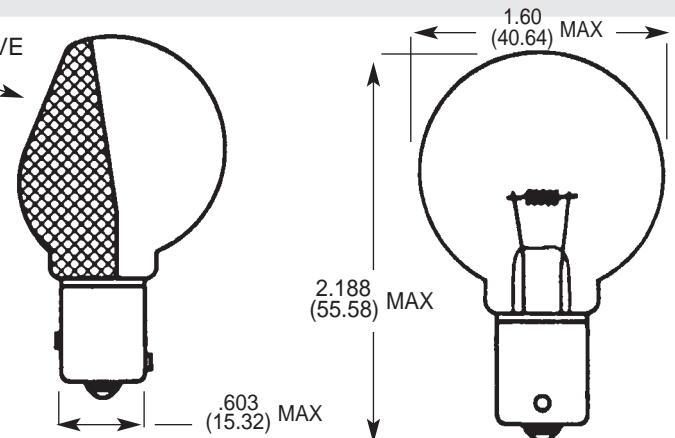
GG-12B1 AIRCRAFT REFLECTOR LAMPS

300 LIFE HOURS

FAA-PMA CERTIFICATION

REFLECTIVE AREA

S. C. BAYONET INDEXING BASE (BAY15S)



LINE NO.	VOLTS	AMPS	WATTS	MIL. SPEC	NORMAN PART NUMBER
5	28.0	1.54	43	MS24513	NLI-4174-24

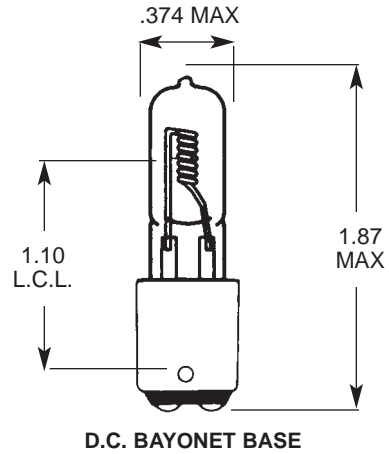


T-3

AIRCRAFT NAVIGATION LAMPS QUARTZ-HALOGEN

FAA-PMA

REPLACES: CESSNA, AEROFLASH, WHELEN

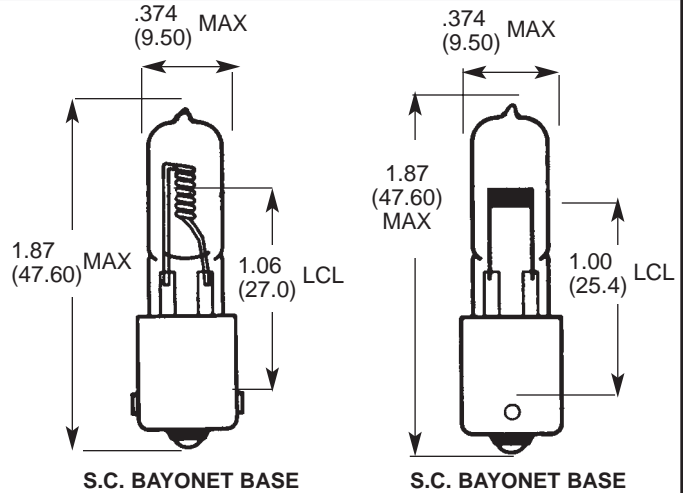


LINE NO.	VOLTS	WATTS	M.S.C.P.	FILAMENT	LIFE HOURS	PART NUMBER	EQUIVALENTS	
							AEROFLASH	CESSNA
1	14.0	125	185	CC-8I	1,000	PSA-14V125W	(40-0028)	(C-17312-3)
2	24.0	150	220	CC-8I	1,000	PSA-24V150W	(40-0003)	(C-17312-1)

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AIRCRAFT NAVIGATION LAMPS QUARTZ-HALOGEN

FAA-PMA



LINE NO.	VOLTS	WATTS	M.S.C.P.	FILAMENT	LIFE HOURS	PART NUMBER	PART NUMBER
3	28.0	75	110	CC-8I	2,000	1982	
4	28.0	75	107	CC-6	2,000		1982SP

GENERAL CAUTION:

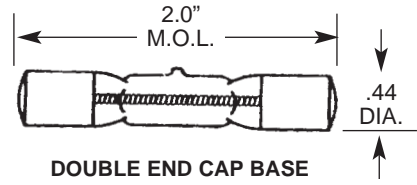
Any Halogen Cycle Lamp may shatter if scratched or damaged. Use only in fixtures designed for high operating temperature. Remove all grease and fingerprints from bulb before operating. Do not exceed rated voltage.



T-3

AIRCRAFT NAVIGATION LAMPS

QUARTZ-HALOGEN



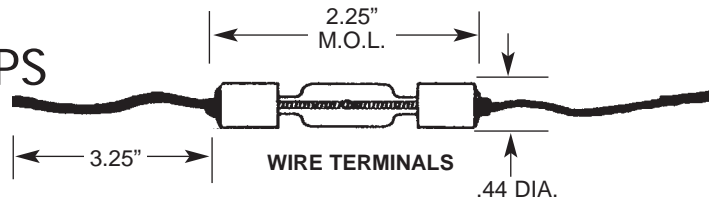
LINE NO.	VOLTS	AMPS	WATTS	M.S.C.P.	LIFE HOURS	PART NUMBER
1	10.0	10	100	130	2,000	1978X

T-3

AIRCRAFT NAVIGATION LAMPS

QUARTZ-HALOGEN

STRANDED 16 WIRE CABLE, SOLDER TIPS



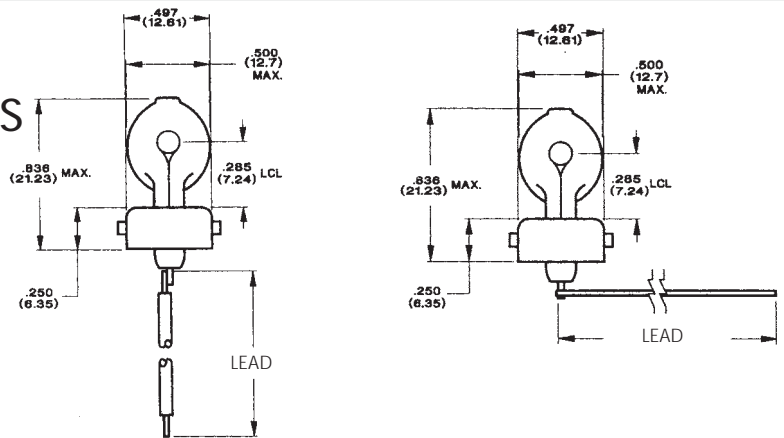
LINE NO.	VOLTS	AMPS	WATTS	M.S.C.P.	LIFE HOURS	PART NUMBER
2	10.0	10	100	130	2,000	1988

T-3

AIRCRAFT NAVIGATION LAMPS

QUARTZ-HALOGEN

Materials:
 Globe: Quartz Glass
 Base: Brass Special Bayonet
 Lead Connections: Brazed
 Lead Wires: 18AWG Bare or Teflon Insulated
 Atmosphere: Gas



LINE NO.	VOLTS	AMPS	WATTS	M.S.C.P.	FIL.	LAB. LIFE HOURS	FIG.	PART NUMBER
3	6.0	3.32	20	10	C-6	10,000	B	1974 3" BARE LEADS
4	6.0	3.32	20	10	C-6	10,000	A	1974D 3" BARE LEADS
5	8.5	7.30	62	110	C-6	50	B	1962 3" BARE LEADS
6	8.5	7.30	62	110	C-6	50	B	1962B 9" TEFLON INS.
7	8.5	7.30	62	80	C-6	150	A	1962DZ 12" TEFLON INS.
8	8.5	7.30	62	80	C-6	150	A	1962DX 4" BARE LEADS
9	8.5	7.30	62	110	C-6	50	B	1962TY 4" TEFLON INS.

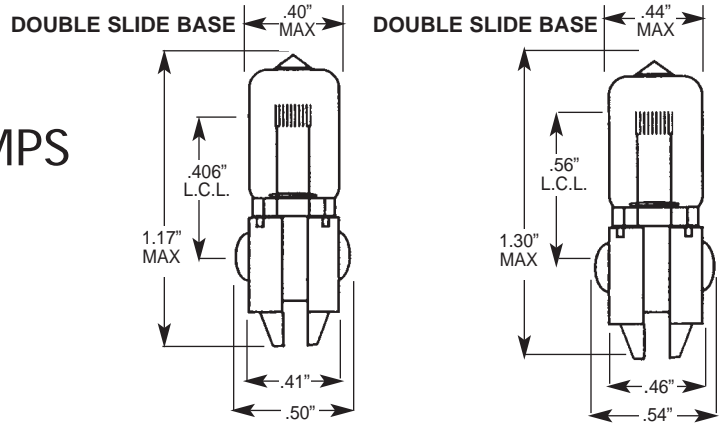


T-3¹/₂

AIRCRAFT NAVIGATION LAMPS

QUARTZ-HALOGEN

GLOBE: QUARTZ GLASS
ATMOSPHERE: HALOGEN GAS
BASE: NICKEL PLATED BRASS

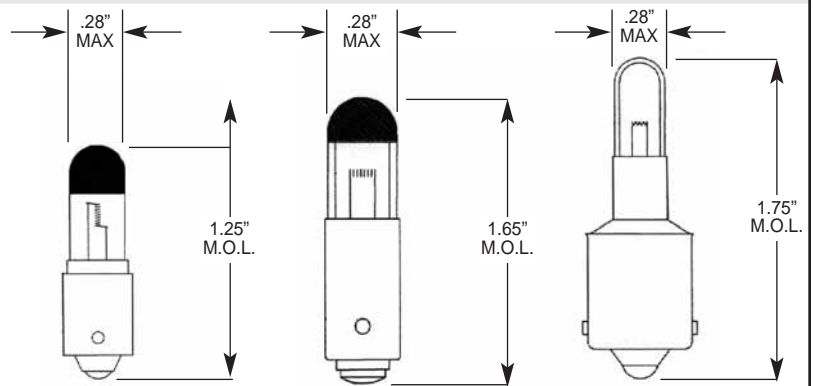


LINE NO.	VOLTS	WATTS	M.S.C.P.	FILAMENT	LIFE	PART NUMBER	PART NUMBER
1	8.5	62	110	C-6	50	1977	—
2	12.8	25	25	C-6	500	1975	—
3	13.0	75	115	C-6	400	—	1976
4	28.0	25	15	C-6	500	1968	—
5	28.0	25	15	CC-6	500	1965	—

AIRCRAFT CABIN LAMPS

HALOGEN/XENON CABIN READING LAMPS

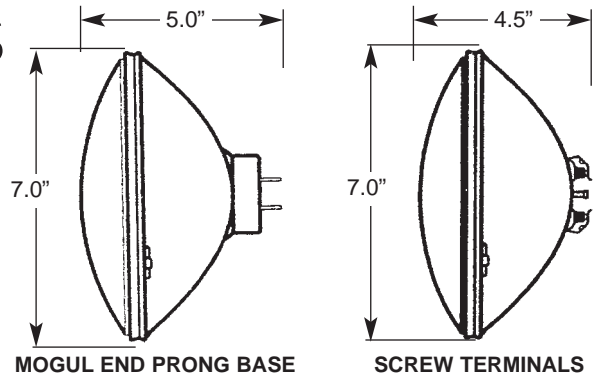
- LONG LIFE
- HIGH LUMEN OUTPUT
- LOWER POWER CONSUMPTION



LINE NO.	VOLTS	AMPS	WATTS	M.S.C.P.	LIFE	BASE	GLASS TOP	PART NUMBER	PART NUMBER	PART NUMBER
6	6.0	2.00	12	11.4	7,000	BA9S	BLACK	8GH003912-06	—	—
7	6.0	1.67	10	11.8	7,000	BA9S	CLEAR	8GH005678-06	—	—
8	12.0	0.833	10	8.6	8,000	BA9S	BLACK	2059X	—	—
9	12.0	0.833	10	10.7	8,000	BA9S	CLEAR	2059	—	—
10	28.0	0.410	11.5	12.3	4,000	BA9S	CLEAR	8GH005448-28	—	—
11	28.0	0.410	11.5	10.0	4,000	BA9S	BLACK	8GH004544-28	—	—
12	28.0	0.410	11.5	8.9	8,000	BA9S	BLACK	8GH007429-28	—	—
13	28.0	0.357	10	6.6	10,000	SPECIAL	BLACK	—	9204	—
14	28.0	0.357	10	8.0	10,000	SPECIAL	CLEAR	—	9204X	—
15	28.0	0.357	10	8.0	10,000	BA15S	CLEAR	—	—	1308UP1*/2232UP1*
16	28.0	0.429	12	10.4	8,000	BA15S	CLEAR	—	—	1308UP2*/2232UP2*
17	28.0	0.550	15.4	15.2	6,500	BA15S	CLEAR	—	—	1308UP3*/2232UP3*



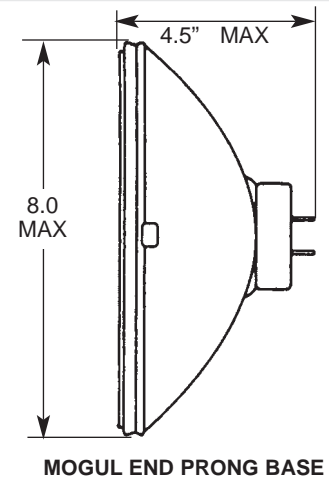
PAR-56 AIRPORT LAMPS
6.6 AMP RUNWAY
CURRENT CONTROLLED LAMPS
QUARTZ-HALOGEN



C = COATED LAMP

LINE NO.	WATTS	AMPS	LIFE HOURS	M.O.L.	PART NUMBER	PART NUMBER
1.	200	6.6A	1,000	4.5"	—	Q6.6A/PAR56/3
2.	200	6.6A	1,000	5.0	Q6.6A/PAR56/2	—
3.	200	6.6A	600	5.0"	Q6.6A/PAR56/4	—
4.	300	20A	500	4.5"	—	Q20A/PAR56/2
5.	300	20A	500	5.0"	Q20A/PAR56/C	—
6.	499	20A	500	4.5"	—	Q20A/PAR56/3
7.	500	20A	500	5.0"	Q20A/PAR56/1/C	—

PAR-64 AIRPORT LAMPS
6.6 AMP RUNWAY
CURRENT CONTROLLED LAMPS
QUARTZ-HALOGEN



LINE NO.	WATTS	AMPS	LIFE HOURS	M.O.L.	PART NUMBER
8.	200	6.6A	2,000	4.5"	Q6.6A/PAR64/2P
9.	300	6.6A	2,000	4.5"	Q6.6A/PAR64/3P

Orders ■ Information ■ Lamps Not Listed

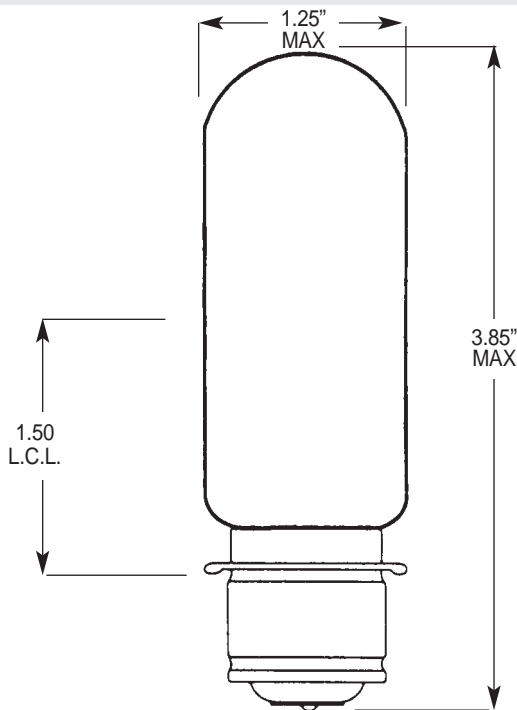


T-10

AIRFIELD RUNWAY LAMPS

6.6 AMP, CURRENT CONTROLLED
AIRPORT RUNWAY LAMPS
1,000 LIFE HOURS

FAA APPROVED



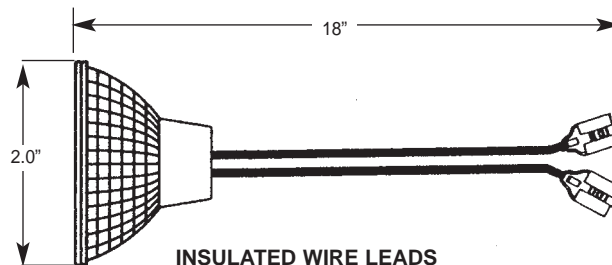
MEDIUM PREFOCUS BASE (P28S)

LINE NO.	AMPS	FILAMENT	WATTS	LIFE HRS.	PART NUMBER
1	6.6	CC-2V	30	1,000	6.6AT10/1P
2	6.6	CC-2V	45	1,000	6.6AT10P
3	120 (VOLTS)	CC-2V	40	1,000	40T10P (120V)

AIRFIELD NAVIGATION LAMPS

QUARTZ-HALOGEN, MR-16

CUSTOM LEAD LENGTHS AVAILABLE.



INSULATED WIRE LEADS
Insulated 1/4" Female Spade Connectors

LINE NO.	VOLTS	AMPS	WATTS	APPROX. LUMENS	LIFE HRS.	PART NUMBER
4	4.55	6.6	30	480	2,500	Q30/6.6A/18C
5	6.82	6.6	45	650	2,500	Q45/6.6A/18C
6	9.39	6.6	62	890	2,000	Q62/6.6A/18C
7	15.15	6.6	100	1,350	1,500	Q100/6.6A/18C
8	18.18	6.6	120	1,800	1,500	Q120/6.6A/18C



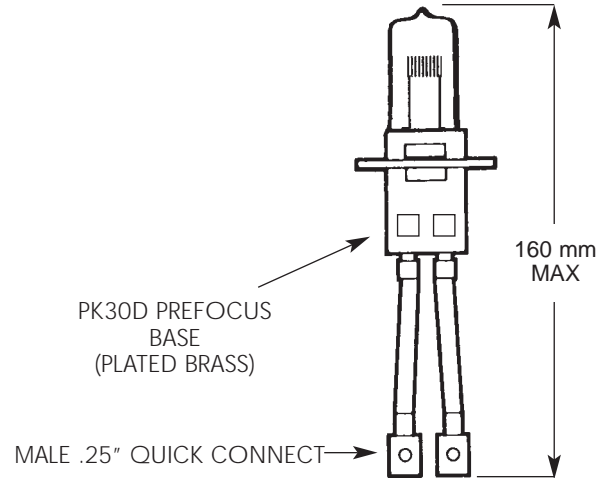
T-4¹/₄

AIRFIELD RUNWAY LAMPS QUARTZ-HALOGEN

CABLE LENGTH: 100 MM
BODY LENGTH: 58 MM

FAA APPROVED

RUGGED CONSTRUCTION
DIMMABLE
6.6 AMP. CURRENT CONTROLLED



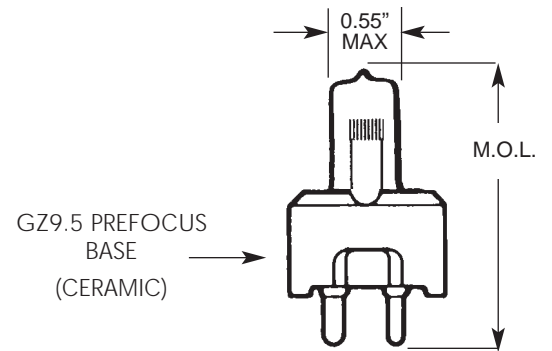
LINE NO.	WATTS	LUMENS	AMPS	LIFE HOURS	PART NUMBER
1	45	800	6.6	1,000	NLI-643-16
2	45	820	6.6	1,000	NLI-643-17
3	65	1,450	6.6	1,000	NLI-643-28
4	100	2,400	6.6	1,000	NLI-643-42
5	115	3,000	6.6	1,000	NLI-643-00
6	185	4,200	6.6	1,000	NLI-643-09
7	200	4,800	6.6	1,000	NLI-643-82

T-4¹/₄

AIRFIELD RUNWAY LAMPS QUARTZ-HALOGEN

FAA APPROVED

RUGGED CONSTRUCTION
DIMMABLE
6.6 AMP. CURRENT CONTROLLED



LINE NO.	WATTS	LUMENS	AMPS	M.O.L.	LIFE HOURS	CROSS REFERENCE	PART NUMBER
8	30	675	6.6	44MM	1,000	EXL	NLI-052300
9	45	800	6.6	44MM	1,000	EXM	NLI-052413
10	115	3,000	6.6	60MM	500	—	NLI-052613
11	120	3,400	6.6	60MM	500	EVV	NLI-052400
12	150	3,700	6.6	60MM	500	EWR	NLI-052542
13	175	3,900	6.6	60MM	500	—	NLI-052925
14	200	4,800	6.6	60MM	500	EZL	NLI-052172



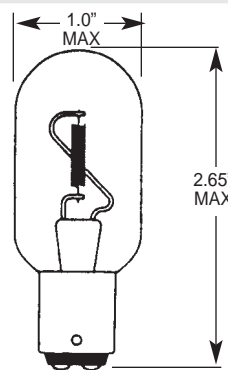
T-8

MARINE NAVIGATION LAMPS

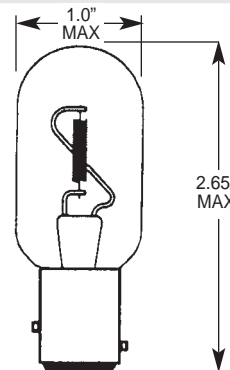
SPECIAL "C-8S" FILAMENT DESIGN ELIMINATES "DARK SPOTS."
MEETS U.S. COAST GUARD, OCEAN ENGINEERING SPECS.

G-EOE-243B

500 LIFE HOURS



D.C. BAYONET BASE



D.C. INDEXING BASE

LINE NO.	VOLTS	AMPS	WATTS	FILAMENT	PART NUMBER	PART NUMBER
1	12.0	0.83	10	C-8S		NLI-8800X
2	12.0	2.08	25	C-8S		NLI-8801X
3	12.0	2.50	30	C-8S	NLI-8796X	
4	24.0	0.42	10	C-8S		NLI-8802X
5	24.0	1.04	25	C-8S		NLI-8803X
6	24.0	1.25	30	C-8S	NLI-8797X	
7	32.0	0.78	25	C-8S	NLI-8804X	
8	32.0	0.94	30	C-8S	NLI-8798X	
9	120.0	0.21	25	C-8S		NLI-8838X
10	120.0	0.25	30	C-8S	NLI-8799X	
11	120.0	0.34	40	C-8S	NLI-8890X	

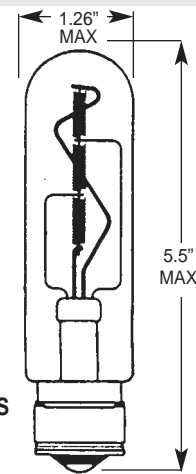
T-10 and T-12

MARINE NAVIGATION LAMPS

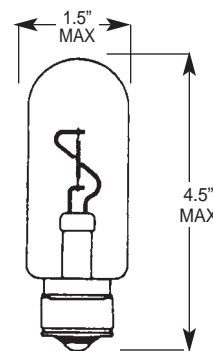
SPECIAL "C-8S" FILAMENT DESIGN ELIMINATES "DARK SPOTS."
MEETS U.S. COAST GUARD, OCEAN ENGINEERING SPECS.

G-EOE-243B

1,000 LIFE HOURS



P28S
MEDIUM
PREFOCUS
BASE



P28S MEDIUM PREFOCUS BASE

LINE NO.	VOLTS	AMPS	WATTS	FILAMENT	PART NUMBER	PART NUMBER
12	24.0	1.67	40	C-8S		NLI-8839X
13	110.0	0.55	60	C-8S		NLI-8840X
14	120.0	0.60	75	C-8S-SUPPORTED	NLI-8790X	
15	120.0	0.13	15	C-8S-SUPPORTED	NLI-8791X	
16	120.0	0.21	25	C-8S-SUPPORTED	NLI-8792X	
17	120.0	0.33	40	C-8S-SUPPORTED	NLI-8793X	
18	120.0	0.50	60	C-8S-SUPPORTED	NLI-8794X	
19	120.0	1.00	120	C-8S-SUPPORTED	NLI-8795X	
20	220.0	0.30	65	C-8S		NLI-8841X

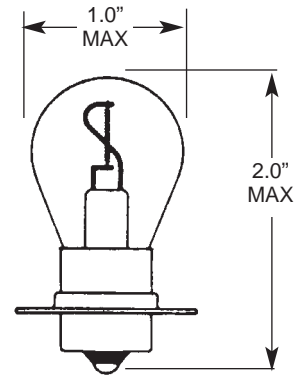


S-8

MARINE NAVIGATION LAMPS

SPECIAL "C-8S" FILAMENT DESIGN ELIMINATES "DARK SPOTS."
 MEETS U.S. COAST GUARD, OCEAN ENGINEERING SPECS. #G-EOE-243B

500 LIFE HOURS



S. C. PREFOCUS BASE

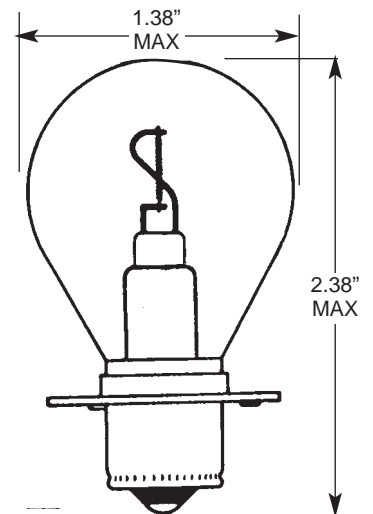
LINE NO.	VOLTS	AMPS	WATTS	MSCP	LUMENS	PART NUMBER
1	6.2	0.25	1.55	0.796	10	NLI-6225X
2	6.2	0.46	2.85	2.39	30	NLI-6246X
3	6.2	0.92	5.70	5.17	65	NLI-6292X
4	12.0	0.25	3.00	2.39	30	NLI-5034X
5	12.0	0.55	6.60	5.57	70	NLI-2374X
6	12.0	0.77	10	9.55	120	NLI-2033X
7	12.0	1.15	15	14.32	180	NLI-2032X
8	12.0	2.03	25	30.23	380	NLI-8845X

S-11

MARINE NAVIGATION LAMPS

SPECIAL "C-8S" FILAMENT DESIGN ELIMINATES "DARK SPOTS."
 MEETS U.S. COAST GUARD, OCEAN ENGINEERING SPECS. #G-EOE-243B

500 LIFE HOURS



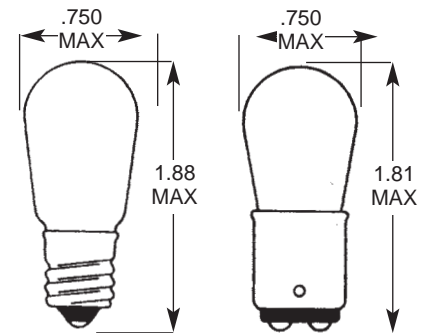
S. C. PREFOCUS BASE

LINE NO.	VOLTS	AMPS	WATTS	MSCP	LUMENS	PART NUMBER
9	12.0	1.00	12.0	15.50	145	NLI-9910X
10	12.0	1.90	22.8	32.00	390	NLI-9920X
11	12.0	3.00	36.0	58.00	600	NLI-9930X
12	12.0	3.05	36.6	58.00	600	NLI-9940X



S-6 TRAIN SIGNAL LAMPS

ROUGH SERVICE FILAMENTS • LONG LIFE



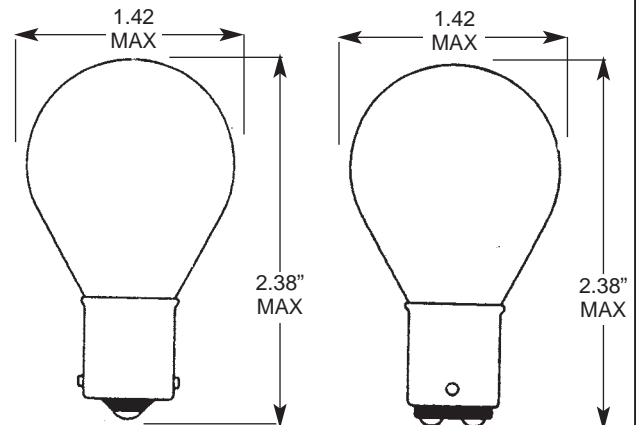
CANDELABRA
SCREW BASE

D.C.
BAYONET BASE

LINE NO.	VOLTS	AMPS	WATTS	LIFE HRS.	PART NUMBER	PART NUMBER
1	30.0	0.20	6	3,500	6S6-30V-CS	6S6-30V-DC
2	32.0	0.19	6	3,500	6S6-32V-CS	6S6-32V-DC
3						
4	75.0	0.08	6	3,500	6S6-75V-CS	6S6-75V-DC
5	80.0	0.08	6	3,500	6S6-80V-CS	6S6-80V-DC

S-11 TRAIN SIGNAL LAMPS

ROUGH SERVICE FILAMENTS • LONG LIFE



S. C. BAYONET BASE

D. C. BAYONET BASE

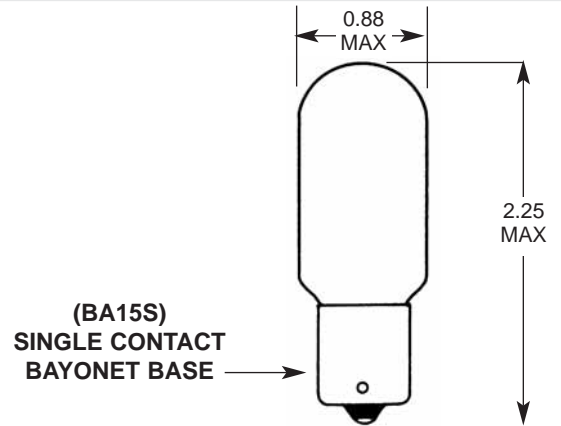
LINE NO.	VOLTS	AMPS	WATTS	LIFE HRS.	PART NUMBER	PART NUMBER
6	10.0	1.80	18	2,000	18S11-10V-SCB	—
7	10.0	2.00	20	3,000	20S11-10V-SCB	—
8	10.0	2.50	25	1,000	25S11-10V-SCB	—
9						
10	13.5	1.26	17	2,000	17S11-13.5V-SCB	—
11						
12	32.0	0.94	30	1,000	—	30S11-32V-DC
13	64.0	0.47	30	1,000	—	30S11-64V-DC
14	75.0	0.20	15	1,000	—	15S11-75V-DC
15	75.0	0.40	30	1,000	—	30S11-75V-DC



T-7

TRAIN SIGNAL LAMPS

ROUGH SERVICE FILAMENTS

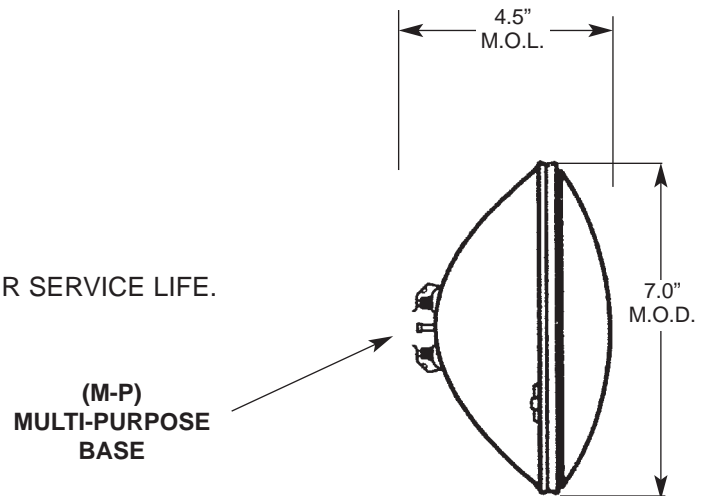


LINE NO.	VOLTAGE RANGE	WATTS	APPROX. LIFE HOURS	PART NUMBER
1	30V-36V	15	2,500	15T7-34V-SCB
2	32V-39V	15	2,500	15T7-38V-SCB
3				
4	28V-30V	25	2,000	25T7-30V-SCB

PAR-56

TRAIN SIGNAL LAMPS

NOTE: AVAILABLE IN QUARTZ-HALOGEN FOR LONGER SERVICE LIFE.
(APPROX. 1,200 HOURS)



LINE NO.	VOLTS	WATTS	LIFE HOURS	BEAM	PART NUMBER
5	30.0	200	500	SPOT	200PAR56/SP-30V
6	36.0	110	1,000	SPOT	110PAR56/SP-36V
7	75.0	350	500	SPOT	350PAR56/SP-75V



Indicator Lights Application and Design Factors

Indicator Lights

Norman Lamps offers a wide variety of indicator lights for use in a multitude of applications. Indicator lights are panel mounted assemblies consisting of an internal lamp, a lamp housing, a lens and terminals. There are two basic types of Indicator Assemblies: **Relampable** and **Non-Relampable**. Relampable Indicator Lights are designed to allow easy replacement of the internal lamp after burnout (See figure 7). Non-Relampable Indicator Lights have a permanently installed lamp with at least a 25,000 hour life rating. (See figure 8).

Mounting

Norman Indicator Lights can be panel mounted in holes from .177" diameter – .850" diameter. They are secured by either a nut w/washer or a tinnerman clip (speed nut). Most non-relampable indicator lights "snap-in."

Lenses

Indicator light lenses are available in a variety of colors as well as clear. When using a neon light source, make sure

internal neon lamp color is compatible with lens color. L.E.D. Indicators should use a clear lens only.

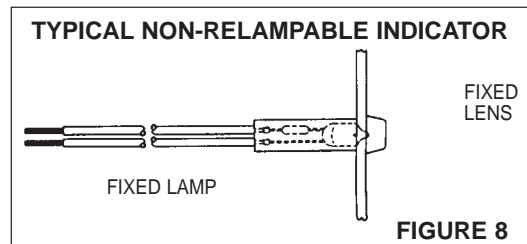
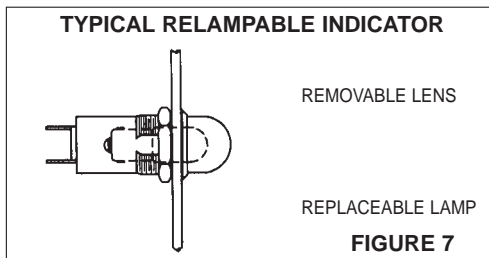
Light Sources

There are three basic light sources available for indicator lights: Incandescent, Neon and L.E.D. Each type has benefits and drawbacks. (See figure 9).

Light Source	*Brightness Level	Rated Life	Energy Consumption	Vibration Tolerance
INCANDESCENT	High	Short	High	Low
NEON	Low	Long	Low	High
L.E.D.	High	Very Long	Low	High

FIGURE 9

*Brightness Level is relative to each other light source. Neon brightness can be increased by lowering resistance value or using a clear lens. L.E.D. brightness can be increased by using high bright or ultra-bright diode.



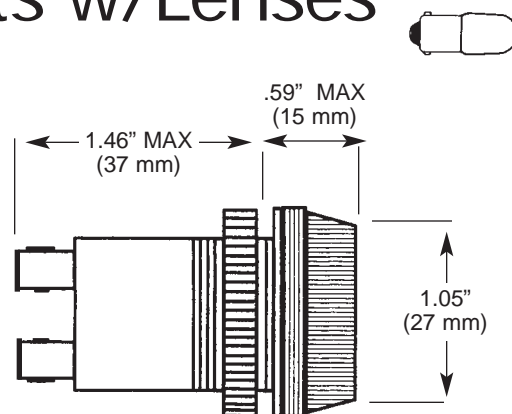


Relampable Indicator Lights w/Lenses

MINIATURE BAYONET HOUSING
6V - 240 V RANGE, 3 WATT MAX.

.850" MOUNTING HOLE

USES LARGE 1.00" DIAMETER LENS
LARGE LIGHTED AREA
SCREW/QUICK CONNECT COMBINATION TERMINALS
FRONT PANEL MOUNT • .50" MAX PANEL THICKNESS
SECURES WITH NUT
CHOICE OF LENS COLORS
USES T-2-1/2 or T-3-1/4 BULB w/MINI-BAYONET BASE
HIGH TEMP. WHITE NYLON HOUSING
(SHOWN WITH LENS ON)

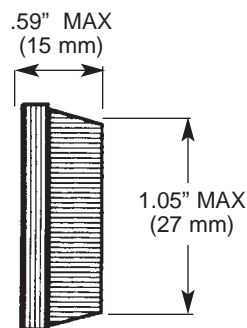


PART NUMBER: 3001

LENS FOR #3001 HOUSING

FLAT-FLUTED TYPE
TRANSPARENT COLORS ONLY
LARGE LIGHTED AREA

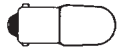
HIGH TEMP PLASTIC LENS



LINE NO.	LENS COLOR	LENS NUMBER
1	RED	L64-RED
2	BLUE	L64-BLUE
3	GREEN	L64-GREEN
4	CLEAR	L64-CLEAR
5	WHITE	L64-WHITE
6	YELLOW	L64-YELLOW
7	AMBER	L64-AMBER



Relampable Indicator Housing **.175" TERMINALS**



MINIATURE BAYONET TYPE

6V - 240 V RANGE, 3 WATTS. MAX.

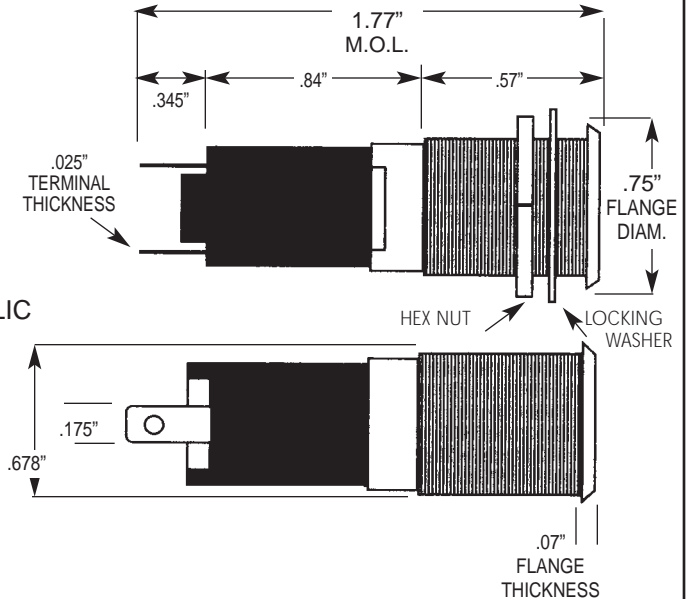
.688" MOUNTING HOLE
FRONT PANEL MOUNT • .406" MAX. PANEL THICKNESS
SECURES WITH NUT AND WASHER (INCLUDED)
CHOICE OF LENS COLORS AND STYLES (See pgs.200 & 201)

USES EITHER T-2-1/2 OR T-3-1/4 BULB w/MINI-BAYONET BASE
HOUSING MATERIAL: CHROME PLATED BRASS AND PHENOLIC

CAN BE SUPPLIED WITH RUBBER GASKET FOR
WATER/OIL TIGHT APPLICATIONS.
GASKET #NG6774 - HOUSING #NG5061-LENS



"AMERICAN ENGINEERED COMPONENT"
MADE IN U.S.A.



PART NUMBER: 31099

Relampable Indicator Housing **.250" TERMINALS**



MINIATURE BAYONET TYPE

6V - 240 V RANGE, 3 WATTS MAX.

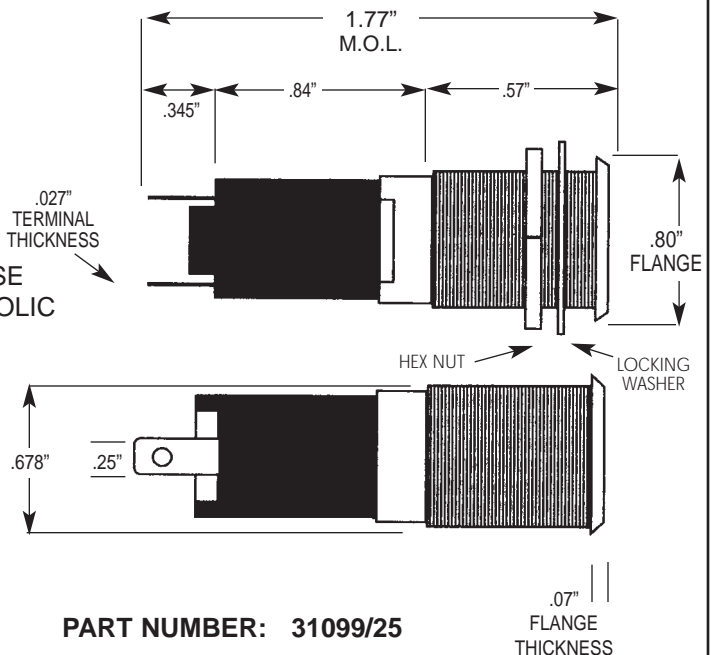
.688" MOUNTING HOLE
FRONT PANEL MOUNT • .406" MAX. PANEL THICKNESS
SECURES WITH NUT AND WASHER (INCLUDED)
CHOICE OF LENS COLORS AND STYLES (See pgs. 200 & 201)

USES EITHER T-2-1/2 OR T-3-1/4 BULB w/MINI-BAYONET BASE
HOUSING MATERIAL: CHROME PLATED BRASS AND PHENOLIC

CAN BE SUPPLIED WITH RUBBER GASKET FOR
WATER/OIL TIGHT APPLICATIONS.
GASKET #NG6774 - HOUSING #NG5061 - LENS



"AMERICAN ENGINEERED COMPONENT"
MADE IN U.S.A.



PART NUMBER: 31099/25



Relampable Indicator Housing

TELEPHONE SLIDE #5 TYPE

6V - 155 V RANGE, 3 WATTS. MAX.

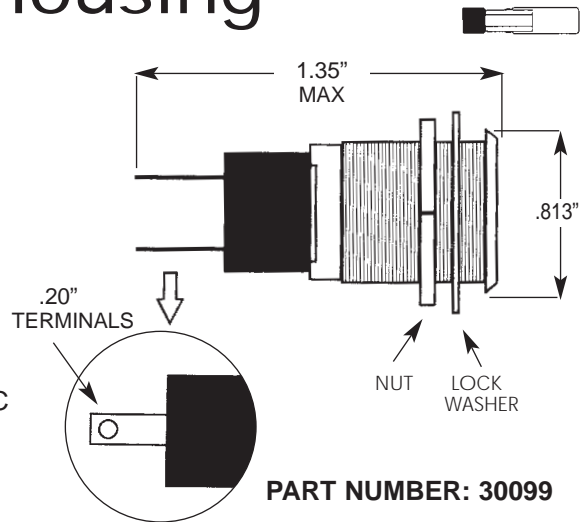
.688" MOUNTING HOLE
FRONT PANEL MOUNT • .406" MAX. PANEL THICKNESS
SECURES WITH NUT AND WASHER (INCLUDED)
CHOICE OF LENS COLORS AND STYLES (See pgs. 200 & 201)

USES T-2 BULB w/SLIDE BASE #5

HOUSING MATERIAL: CHROME PLATED BRASS AND PHENOLIC



"AMERICAN ENGINEERED COMPONENT"
MADE IN U.S.A.



PART NUMBER: 30099

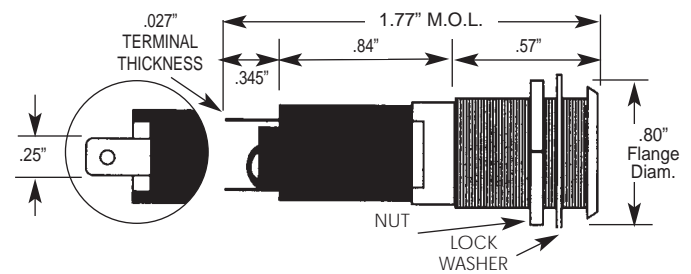
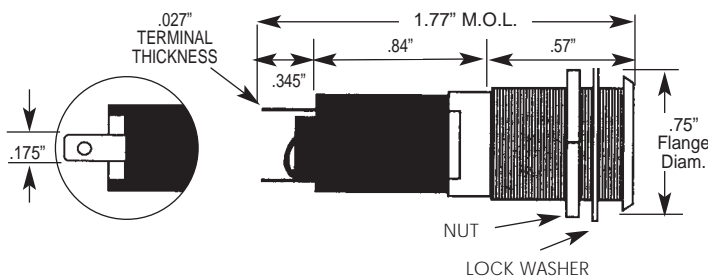
NORMAN LAMPS, INC. IS A LEADING SUPPLIER OF .688" PANEL MOUNT, RELAMPABLE INDICATOR LIGHT ASSEMBLIES. WE MANUFACTURE THE BAYONET TYPE HOLDER IN BOTH .175" AND .25" TERMINALS. WE ALSO OFFER THESE WITH INTEGRATED RESISTORS FOR USE WITH LONG LIFE NEON LAMPS. NORMAN INDICATOR ASSEMBLIES ARE AMONG THE HIGHEST QUALITY INDICATORS ON THE MARKET TODAY. CONTACT US FOR PRICING AND AVAILABILITY ON THE EXACT INDICATOR YOU REQUIRE. (WATER / OIL TIGHT ASSEMBLIES ARE AVAILABLE.)

Relampable Indicator Housing w/Resistor

MINIATURE BAYONET, NEON TYPE

120-240 VOLTAGE RANGE (BUILT-IN-RESISTOR)
.688" MOUNTING HOLE
FRONT PANEL MOUNT • .406" MAX. PANEL THICKNESS
SECURES WITH NUT AND WASHER (INCLUDED)

USE ONLY WITH CLEAR, WHITE, RED OR AMBER LENS COLORS.



RESISTOR VALUE	PART NUMBER	CROSS REF.
25K	31099/R25	(5100-832)
100K	31099/R100	(5100-842)

RESISTOR VALUE	PART NUMBER	CROSS REF.
25K	31099/25/R25	(5100-834)
100K	31099/25/R100	(5100-844)

* Drawings not to scale



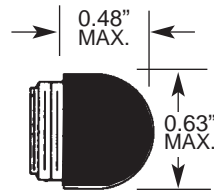
LENS DOME TYPE

FOR USE WITH HOUSINGS ON PAGES 198 & 199

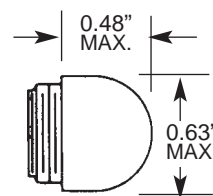
180° VIEWING
100% HIGH-TEMP POLYCARBONATE

FOR WATER/OIL TIGHT APPLICATIONS
ORDER GASKET #NG5061.

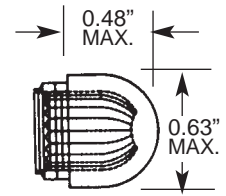
MADE IN U.S.A.



**NON-FLUTED
SOLID COLORS**



**NON-FLUTED
TRANSPARENT COLORS**



**FLUTED
TRANSPARENT COLORS**

LINE NO.	LENS COLOR	LENS NUMBER (CROSS REF.)	LENS NUMBER (CROSS REF.)	LENS NUMBER (CROSS REF.)
1	RED	L25-RED (30130)	L24-RED (30110)	L23-RED (30120)
2	GREEN	L25-GREEN (30132)	L24-GREEN (30112)	L23-GREEN (30122)
3	BLUE	L25-BLUE —	L24-BLUE (30113)	L23-BLUE (30124)
4	AMBER	L25-AMBER —	L24-AMBER (30111)	L23-AMBER (30126)
5	YELLOW	L25-YELLOW (30131)	L24-YELLOW (30114)	L23-YELLOW —
6	WHITE	L25-WHITE (30133)	—	L23-WHITE —
7	CLEAR	—	L24-CLEAR (30116)	L23-CLEAR (30125)

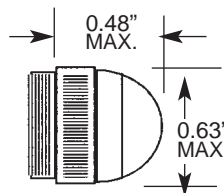
NOTE: LENSES CAN BE SUPPLIED IN CUSTOM SHADES & COLORS. MINIMUM PRODUCTION WILL APPLY.

LENS JEWELLED TYPE

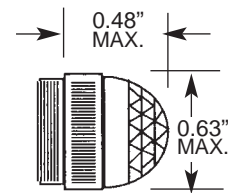
FOR USE WITH HOUSINGS ON PAGES 198 & 199

100% HIGH-TEMP. LEXAN LENS
PLATED BRASS, SOLID ENCLOSURE

MADE IN U.S.A.



***ROUNDED
SMOOTH**



**FACETED
JEWEL**

LINE NO.	LENS COLOR	LENS NUMBER (CROSS REF.)	LENS NUMBER (CROSS REF.)
8	RED	L30-RED —	L32-RED 30100
9	GREEN	L30-GREEN —	L32-GREEN 30102
10	BLUE	L30-BLUE —	L32-BLUE 30103
11	AMBER	L30-AMBER —	L32-AMBER 30106
12	WHITE	L30-WHITE —	L32-WHITE 30107
13	CLEAR	L30-CLEAR —	L32-CLEAR —

* AVAILABLE ON CUSTOM ORDER ONLY.

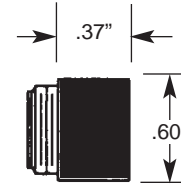


LENS FLAT TYPE

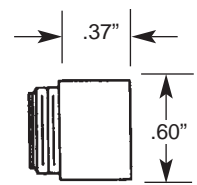
FOR USE WITH HOUSINGS ON PAGES 198 & 199

180° VIEWING
100% HIGH-TEMP. POLYCARBONATE

MADE IN U.S.A.



SOLID COLORS



TRANSPARENT COLORS

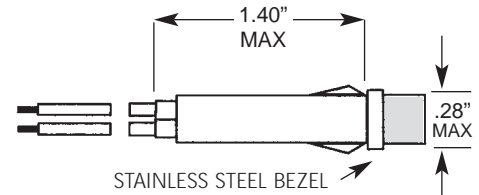
LINE NO.	LENS COLOR	LENS NUMBER	(CROSS REF.)	LENS NUMBER	(CROSS REF.)
1	RED	L27-RED	(30200)	L29-RED	—
2	GREEN	L27-GREEN	(30212)	L29-GREEN	—
3	BLUE	L27-BLUE	(30213)	L29-BLUE	—
4	AMBER	L27-AMBER	—	L29-AMBER	—
5	YELLOW	L27-YELLOW	(30214)	L29-YELLOW	—
6	WHITE	L27-WHITE	(30233)	—	—
7	CLEAR	—	—	L29-CLEAR	—



Non-Relampable Indicator Lights

32 series (Flat Cylindrical Lens)

.32" MOUNTING HOLE
"SNAP-IN" INSTALLATION
WHITE NYLON HOUSING W/STAINLESS BEZEL
5" INSULATED WIRE LEADS STRIPPED AND TINNED, 22 AWG



LINE NO.	VOLTS	mA	INTERNAL LAMP	LIFE HOURS	TYPE	PART NUMBER
1	6.0	200	2181	10,000	INCANDESCENT	2194A-6V
2	12.0	80	2182	10,000	INCANDESCENT	2194A-12V
3	28.0	40	2187	25,000	INCANDESCENT	2194A-28V
4						
5	120.0	2	*C2A/30K	25,000	NEON	2150A, 2152A
6	220.0-240.0	2.9	*C2A/100K	25,000	NEON	2151A, 2153A

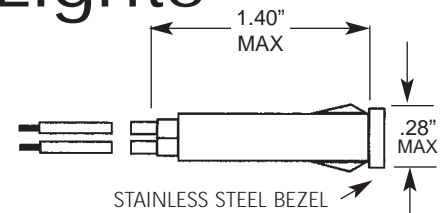
LENS COLORS: RED (R1), CLEAR (C2), AMBER (A3), WHITE (W4), GREEN (G5), BLUE (B6), YELLOW (Y7)
SPECIFY COLOR () AFTER PART NUMBER.
LENS COLORS ARE TRANSPARENT ONLY.

* NEON LENS COLORS GREEN AND BLUE REQUIRE A CORRESPONDING COLOR INTERNAL NEON LAMP (G2B, B2B).

Non-Relampable Indicator Lights

32 series (Flush Lens)

.32" MOUNTING HOLE
"SNAP-IN" INSTALLATION
WHITE NYLON HOUSING W/STAINLESS BEZEL
5" INSULATED WIRE LEADS STRIPPED AND TINNED, 22 AWG



LINE NO.	VOLTS	mA	INTERNAL LAMP	LIFE HOURS	TYPE	PART NUMBER
7	6.0	200	2181	10,000	INCANDESCENT	2195A-6V
8	12.0	80	2182	10,000	INCANDESCENT	2195A-12V
9	28.0	40	2187	25,000	INCANDESCENT	2195A-28V
10						
11	120.0	2	*C2A/30K	25,000	NEON	2110A, 2112A
12	220.0-240.0	2.9	*C2A/100K	25,000	NEON	2111A, 2113A

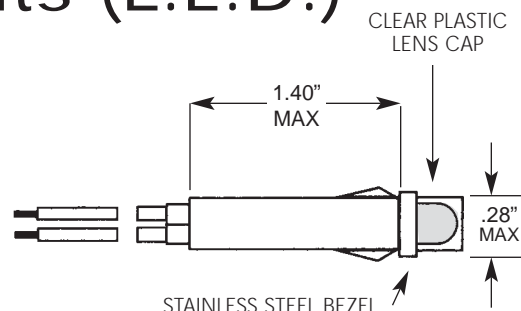
LENS COLORS: RED (R1), CLEAR (C2), AMBER (A3), WHITE (W4), GREEN (G5), BLUE (B6), YELLOW (Y7)
SPECIFY COLOR () AFTER PART NUMBER.
LENS COLORS ARE TRANSPARENT ONLY.

* NEON LENS COLORS GREEN AND BLUE REQUIRE A CORRESPONDING COLOR INTERNAL NEON LAMP (G2B, B2B).



Solid State Indicator Lights (L.E.D.) 32 series (Flat Cylindrical Clear Lens)

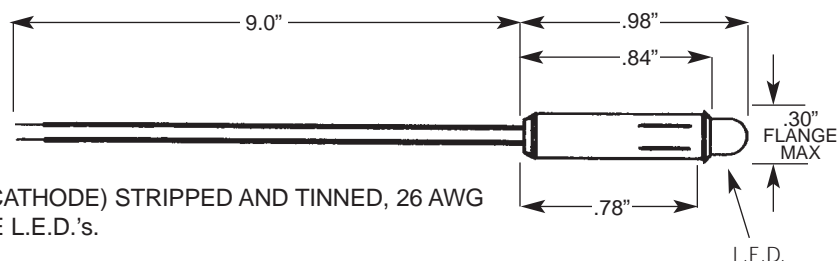
.32" MOUNTING HOLE
"SNAP-IN" INSTALLATION
WHITE NYLON HOUSING W/STAINLESS BEZEL
5" INSULATED WIRE LEADS STRIPPED AND TINNED, 22 AWG



LINE NO.	VOLTS	mA	MCD	L.E.D. COLORS	LIFE HOURS	PART NUMBER
1	6.0	20	10-30	Red/Green/Yellow/Blue/White	100,000+	2191L-6V
2	12.0	20	10-30	Red/Green/Yellow/Blue/White	100,000+	2191L-12V
3	24.0	20	10-20	Red/Green/Yellow/Blue/White	100,000+	2191L-24V

Solid State Indicator Lights (L.E.D.) 25 series (5 mm, Standard Profile)

.249" MOUNTING HOLE
"SNAP-IN" INSTALLATION
BLACK NYLON HOUSING MATERIAL
9" INSULATED WIRE LEADS (RED=ANODE, BLACK=CATHODE) STRIPPED AND TINNED, 26 AWG
DIFFUSED RED, GREEN, YELLOW, BLUE AND WHITE L.E.D.'s.



SPECIAL L.E.D.'s AVAILABLE; ULTRA-BRIGHTS, BLINKING, BI-COLOR, LOW CURRENT, LOW PROFILE PACKAGE.

(NOTE: 3mm SIZE ALSO AVAILABLE. SEE PAGE 109.)

LINE NO.	VOLTS	mA	MCD	L.E.D. COLOR	LIFE HOURS	PART NUMBER
4	2.0	20	30	RED/GREEN/YELLOW/BLUE/WHITE	100,000+	5100H-2V
5	6.0	20	30	RED/GREEN/YELLOW/BLUE/WHITE	100,000+	5100H-6V
6	12.0-14.0V	15	25	RED/GREEN/YELLOW/BLUE/WHITE	100,000+	5100H-12V
7	24.0-28.0V	9	25	RED/GREEN/YELLOW/BLUE/WHITE	100,000+	5100H-24V

* BLUE AND WHITE LIGHT L.E.D.'s ARE 500 MCD, TYPICAL.

SOLID STATE L.E.D. INDICATORS ARE AVAILABLE IN RED (R1), GREEN (G5), YELLOW (Y7), BLUE (B6), WHITE (W4)
SPECIFY COLOR OF L.E.D. () AFTER PART NUMBER.

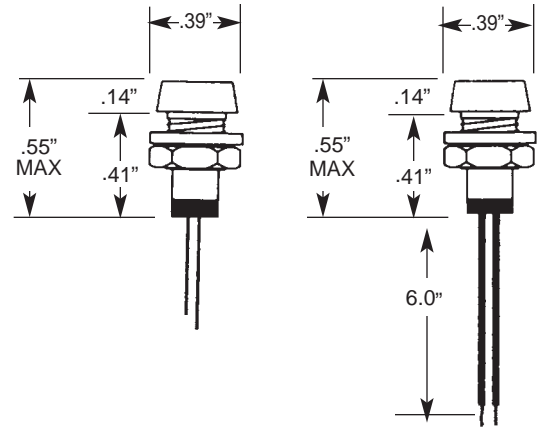


Chrome Reflector Indicator Lights

L.E.D. SERIES

.32" MOUNTING HOLE
.18" MAXIMUM PANEL THICKNESS
SOLID CHROMED-BRASS HOUSING
COMPACT SIZE
SECURES WITH NUT AND LOCK WASHER (INCLUDED)

100,000+ LIFE HOURS
BLACK ANNOXIDIZED HOUSING AVAILABLE. (ADD "BA" BEFORE #)



LINE NO.	VOLTS	mA	MCD	WAVELENGTH	EMITTED COLOR	L.E.D. BI-PIN NUMBER	6" INSULATED WIRE TERMINALS
1	2.0	20	50	660	H.E. RED	5100-201-R2V	5100-206-R2V
2	2.0	20	35	562	GREEN	5100-201-G2V	5100-206-G2V
3	2.0	20	30	585	YELLOW	5100-201-Y2V	5100-206-Y2V
4	2.0	20	30	610	AMBER	5100-201-A2V	5100-206-A2V
5							
6	5.0	50	30	660	RED	5100-201-R5V	5100-206-R5V
7	5.0	50	20	562	GREEN	5100-201-G5V	5100-206-G5V
8	5.0	50	25	585	YELLOW	5100-201-Y5V	5100-206-Y5V
9	5.0	50	20	610	AMBER	5100-201-A5V	5100-206-A5V
10							
11	12.0	38	30	660	RED	5100-201-R12V	5100-206-R12V
12	12.0	38	20	562	GREEN	5100-201-G12V	5100-206-G12V
13	12.0	38	25	585	YELLOW	5100-201-Y12V	5100-206-Y12V
14	12.0	38	20	610	AMBER	5100-201-A12V	5100-206-A12V
15	12.0	38	80	450	BLUE	5100-201-B12V	5100-206-B12V
16	12.0	38	100	475	WHITE	5100-201-W12V	5100-206-W12V
17							
18	24.0	20	60	660	H. E. RED	N/A	5100-206-R24V
19	24.0	20	50	562	GREEN	N/A	5100-206-G24V
20	24.0	20	50	585	YELLOW	N/A	5100-206-Y24V
21	24.0	20	40	610	AMBER	N/A	5100-206-A24V
22	24.0	20	80	450	BLUE	N/A	5100-206-B24V
23	24.0	20	100	475	WHITE	N/A	5100-206-W24V

ABOVE LISTED INDICATOR LIGHTS CAN ALSO BE SUPPLIED IN ULTRA-BRIGHT, BLINKING, LOW CURRENT AND BI-COLOR. CONTACT CUSTOMER SERVICE REPRESENTATIVE FOR DETAILS.

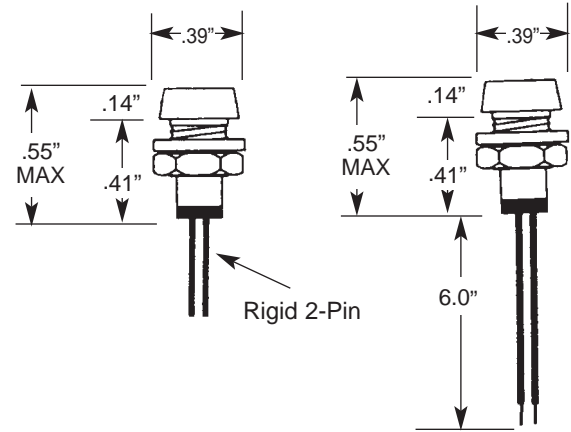


Chrome Reflector Indicator Lights

INCANDESCENT SERIES

- .32" MOUNTING HOLE
- .18" MAXIMUM PANEL THICKNESS
- SOLID CHROMED BRASS HOUSING
- COMPACT SIZE
- SECURES WITH NUT AND LOCK WASHER (INCLUDED)
- HIGH BRIGHTNESS OUTPUT
- AVAILABLE IN COLORS **

BLACK ANNOIDIZED HOUSING AVAILABLE. (ADD "BA" BEFORE #)



LINE NO.	VOLTS	AMPS	LUMENS	LIFE	1/2" RIGID BI-PIN TERMINALS	6" INSULATED WIRE TERMINALS
1	2.5	.060	6.0	10,000	5100-701-2.5V	5100-506-2.5V
2						
3	6.0	.200	6.0	10,000	5100-701-6V	5100-506-6V
4						
5	12.0	.040	7.5	10,000	5100-701-12V	5100-506-12V
6						
7	14.0	.100	7.5	30,000	5100-701-14V	5100-506-14V
8						
9	28.0	.040	8.0	30,000	5100-701-28V	5100-506-28V
10						
11	48.0	.025	7.5	5,000	5100-701-48V	5100-506-48V
12						
13	120.0 (NEON w/RESISTOR)	.002	(NEON) (ORANGE)	25,000	N/A	*5100-506-120V
14						
15	120.0 (NEON w/RESISTOR)	.002	(NEON) (GREEN)	25,000	N/A	*5100-506-120V-G

* NEON LIGHT SOURCE INCORPORATING A 47K, 1/4 WATT RESISTOR IN LINE. AVAILABLE ON SPECIAL ORDER ONLY. ORANGE AND GREEN ONLY.

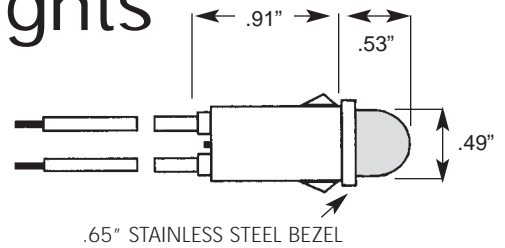
** 2.5V~48.0V ARE AVAILABLE IN A VARIETY OF OUTPUT COLORS: RED, GREEN, YELLOW, BLUE. COLOR IS ACHIEVED BY BOOTING OR COATING INTERNAL LAMP. SPECIFY COLOR AFTER PART NUMBER.



Non-Relampable Indicator Lights

50 series (Dome Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
5" INSULATED WIRE LEADS STRIPPED AND TINNED, 22 AWG
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)

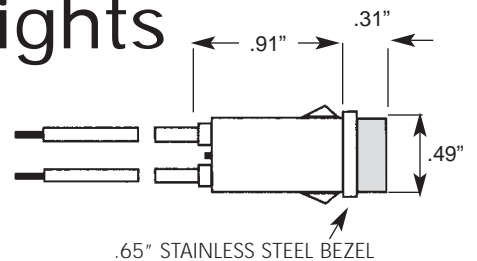


LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
1	6.0	200	2181	10,000	INCANDESCENT	1090A-6V
2	12.0	80	2182	10,000	INCANDESCENT	1090A-12V
3	28.0	40	2187	25,000	INCANDESCENT	1090A-28V
4	120.0	2	C2A/30K	25,000	NEON	1050A, 1052A
5	210-250	2.9	C2A/100K	25,000	NEON	1051A, 1053A

Non-Relampable Indicator Lights

50 series (Flat Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
5" INSULATED WIRE LEADS STRIPPED AND TINNED, 22 AWG
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)

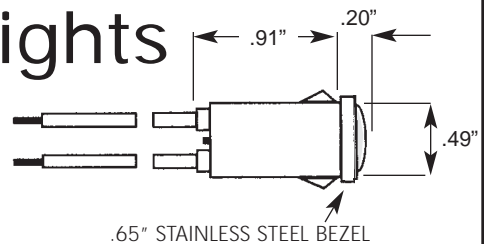


LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
6	6.0	200	2181	10,000	INCANDESCENT	1090C-6V
7	12.0	80	2182	10,000	INCANDESCENT	1090C-12V
8	28.0	40	2187	25,000	INCANDESCENT	1090C-28V
9	120.0	2	C2A/30K	25,000	NEON	1050C, 1052C
10	210-250	2.9	C2A/100K	25,000	NEON	1051C, 1053C

Non-Relampable Indicator Lights

50 series (Rounded Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
5" INSULATED WIRE LEADS STRIPPED AND TINNED, 22 AWG
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)

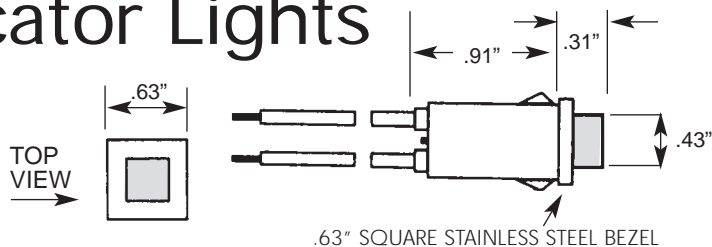


LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
11	6.0	200	2181	10,000	INCANDESCENT	1090D-6V
12	12.0	80	2182	10,000	INCANDESCENT	1090D-12V
13	28.0	40	2187	25,000	INCANDESCENT	1090D-28V
14	120.0	2	C2A/30K	25,000	NEON	1030D, 1032D
15	210-250	2.9	C2A/100K	25,000	NEON	1031D, 1033D



Non-Relampable Indicator Lights 50 series (Square Lens)

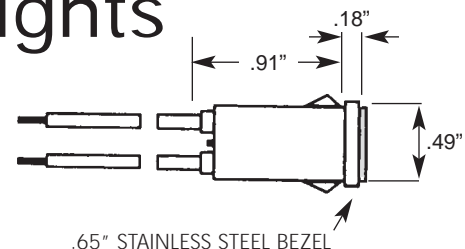
.50" MOUNTING SQUARE
"SNAP-IN" INSTALLATION
5" INSULATED WIRE LEADS STRIPPED AND TINNED
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)



LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
1	6.0	200	2181	10,000	INCANDESCENT	1090N-6V
2	12.0	80	2182	10,000	INCANDESCENT	1090N-12V
3	28.0	40	2187	25,000	INCANDESCENT	1090N-28V
4	120.0	2	C2A/30K	25,000	NEON	1050N, 1052N
5	210-250	2.9	C2A/100K	25,000	NEON	1051N, 1053N

Non-Relampable Indicator Lights 50 series (Flush Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
5" INSULATED WIRE LEADS STRIPPED AND TINNED
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)



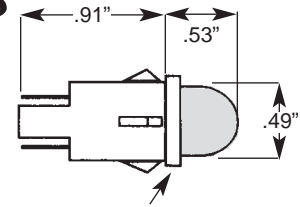
LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
6	6.0	200	2181	10,000	INCANDESCENT	1090F-6V
7	12.0	80	2182	10,000	INCANDESCENT	1090F-12V
8	28.0	40	2187	25,000	INCANDESCENT	1090F-28V
9	120.0	2	C2A/30K	25,000	NEON	1050F, 1052F
10	210-250	2.9	C2A/100K	25,000	NEON	1051F, 1053F



Non-Relampable Indicator Lights

50 series (Dome Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
QUICK CONNECT (TAB) TERMINALS, .187"
LENS COLORS: RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)



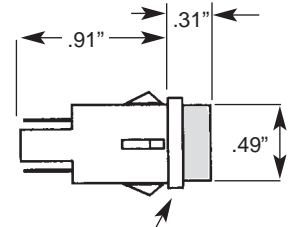
.65" STAINLESS STEEL BEZEL

LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
1	6.0	200	2181	10,000	INCANDESCENT	1090QA-6V
2	12.0	80	2182	10,000	INCANDESCENT	1090QA-12V
3	28.0	40	2187	25,000	INCANDESCENT	1090QA-28V
4	120.0	2	C2A/30K	25,000	NEON	1050QA, 1052QA
5	210-250	2.9	C2A/100K	25,000	NEON	1051QA, 1053QA

Non-Relampable Indicator Lights

50 series (Flat Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
QUICK CONNECT (TAB) TERMINALS, .187"
LENS COLORS: RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)



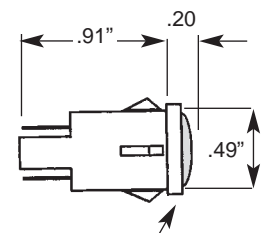
.65" STAINLESS STEEL BEZEL

LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
6	6.0	200	2181	10,000	INCANDESCENT	1090QC-6V
7	12.0	80	2182	10,000	INCANDESCENT	1090QC-12V
8	28.0	40	2187	25,000	INCANDESCENT	1090QC-28V
9	120.0	2	C2A/30K	25,000	NEON	1050QC, 1052QC
10	210-250	2.9	C2A/100K	25,000	NEON	1051QC, 1053QC

Non-Relampable Indicator Lights

50 series (Rounded Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
QUICK CONNECT (TAB) TERMINALS, .187"
LENS COLORS: RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)



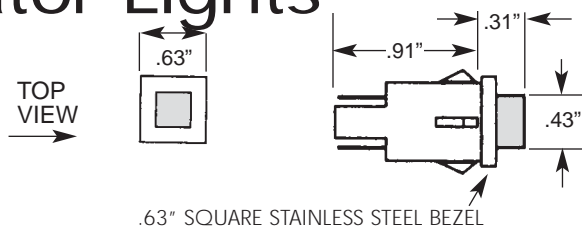
.65" STAINLESS STEEL BEZEL

LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	PART NUMBER
11	6.0	200	2181	10,000	INCANDESCENT	1090QD-6V
12	12.0	80	2182	10,000	INCANDESCENT	1090QD-12V
13	28.0	40	2187	25,000	INCANDESCENT	1090QD-28V
14	120.0	2	C2A/30K	25,000	NEON	1030QD, 1032QD
15	210-250	2.9	C2A/100K	25,000	NEON	1031QD, 1033QD



Non-Relampable Indicator Lights 50 series (Square Lens)

.50" MOUNTING SQUARE
"SNAP-IN" INSTALLATION
QUICK CONNECT (TAB) TERMINALS, .187"
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)

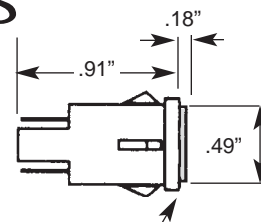


.63" SQUARE STAINLESS STEEL BEZEL

LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	NEW NUMBER
1	6.0	200	2181	10,000	INCANDESCENT	1090QN-6V
2	12.0	80	2182	10,000	INCANDESCENT	1090QN-12V
3	28.0	40	2187	25,000	INCANDESCENT	1090QN-28V
4	120.0	2	C2A/30K	25,000	NEON	1050QN, 1052QN
5	210-250	2.9	C2A/100K	25,000	NEON	1051QN, 1053QN

Non-Relampable Indicator Lights 50 series (Flush Lens)

.50" MOUNTING HOLE
"SNAP-IN" INSTALLATION
QUICK CONNECT (TAB) TERMINALS, .187"
LENS COLORS:
RED, CLEAR, AMBER, WHITE, GREEN, BLUE, YELLOW
(R1) (C2) (A3) (W4) (G5) (B6) (Y7)



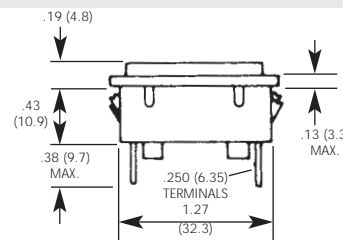
.65" STAINLESS STEEL BEZEL

LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	TYPE	NEW NUMBER
6	6.0	200	2181	10,000	INCANDESCENT	1090QF-6V
7	12.0	80	2182	10,000	INCANDESCENT	1090QF-12V
8	28.0	40	2187	25,000	INCANDESCENT	1090QF-28V
9	120.0	2	C2A/30K	25,000	NEON	1050QF, 1052QF
10	210-250	2.9	C2A/100K	25,000	NEON	1051QF, 1053QF

LIGHT BAR RECTANGULAR

NON-RELAMPABLE INDICATOR LIGHTS

1.28" X .41" MOUNTING DIMENSIONS
QUICK-CONNECT TERMINALS
INCANDESCENT TYPE



LINE NO.	VOLTS	mA	LAMP	LIFE HOURS	COLOR	PART NUMBER
11	28.0	40	2187	25,000	RED	2390QD1-28V
12	28.0	40	2187	25,000	WHITE	2390QD4-28V
13	28.0	40	2187	25,000	GREEN	2390QD5-28V

Orders ■ Information ■ Lamps Not Listed



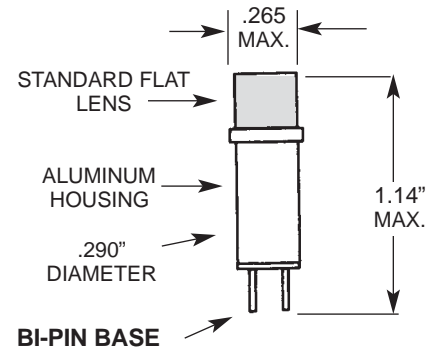
Cartridge Lamps

USE IN INDICATOR LIGHT HOUSING SHOWN BELOW

LENS COLORS: RED (R) AMBER (A) YELLOW (Y)
GREEN (G) WHITE (W)
BLUE (B) CLEAR (C)

SPECIFY COLOR () AFTER PART NUMBER.
LENS COLORS ARE TRANSLUCENT/SOLID (EXCEPT NEON)
NEON LENS COLORS ARE TRANSPARENT/CLEAR DUE TO LOWER LIGHT OUTPUT.

NEON LENS COLORS GREEN AND BLUE REQUIRE A CORRESPONDING
COLOR INTERNAL NEON LAMP. (G2B, B2B)



LINE NO.	VOLTS	mA	INTERNAL LAMP	LIFE HOURS	TYPE	PART NUMBER
1	6.0	200	2181	50,000	INCANDESCENT	CFB-6
2	12.0	40	2174	20,000	INCANDESCENT	CFB-12
3	14.0	80	2182	20,000	INCANDESCENT	CFB-14
4	18.0	40	2102	20,000	INCANDESCENT	CFB-18
5	28.0	40	2185	25,000	INCANDESCENT	CFB-28
6	48.0	25	6748	6,000	INCANDESCENT	CFB-48
7						
8	120.0	2	C2A/30K	25,000	NEON w/RESISTOR	CFB-120
9	240.0	2	C2A/100K	25,000	NEON w/RESISTOR	CFB-240

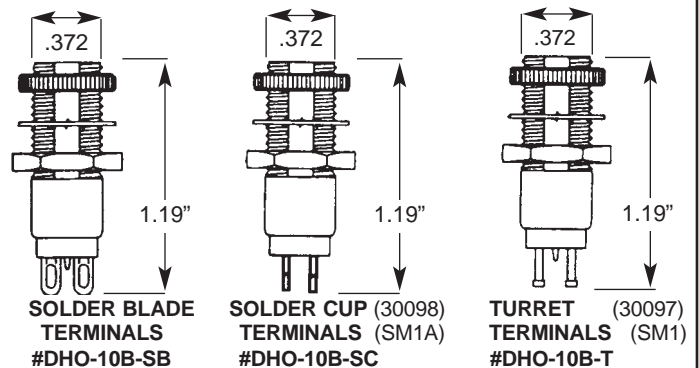
NOTE: CAN BE SUPPLIED IN L.E.D. TYPE ON SPECIAL ORDER ONLY. (100,000+ LIFE HOURS)

Relampable Indicator Lights (HOUSING)

USES REPLACEABLE CARTRIDGE LAMPS

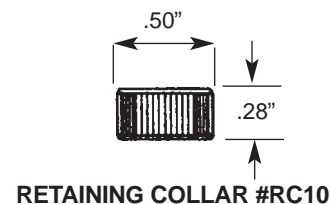
6V - 120V RANGE
.375" MOUNTING HOLE • .400" MAX. PANEL THICKNESS

RETAINING COLLAR AVAILABLE



Retaining Collar

SECURELY RETAINS CARTRIDGE LAMP IN HOUSING.







Medical / Specialty / Optical

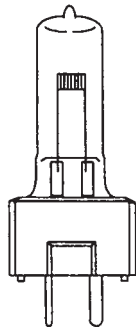
NORMAN LAMPS, INC. offers a full selection of medical equipment replacement lamps for industry. Norman stocks replacement lamps from 36 of the world's largest medical equipment manufacturers. Contact us for the exact medical specialty lamp you require. In many cases we can supply a lower cost, quality equivalent to the name brand lamp you are currently using.

Contact customer service for details and pricing or visit our website for a listing of hundreds of medical equipment replacement lamps.

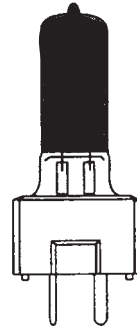
- | | | | |
|--------------------|-------------|-------------|---------------|
| ▪ ALM/CHICK | ▪ HEINE | ▪ SYLVANIA | ▪ UNITRON |
| ▪ AMERICAN OPTICAL | ▪ KEELER | ▪ PHILIPS | ▪ WELCH-ALLYN |
| ▪ AMSCO | ▪ TIMESCO | ▪ SKYTRON | ▪ NORMAN |
| ▪ BAUSCH & LOMB | ▪ MARCO | ▪ PENLON | ▪ USHIO |
| ▪ CARLEY | ▪ NIKON | ▪ GILWAY | ▪ MARCO |
| ▪ DENTSPLY | ▪ OLYMPUS | ▪ TRUPHATEK | ▪ ZEISS |
| ▪ HANALUX | ▪ OSRAM | ▪ STRYKER | ▪ RUSCH |
| ▪ HOSOBUCHI | ▪ OPTI-QUIP | ▪ SWIFT | ▪ REISTER |
| ▪ LEITZ | ▪ G.E. | ▪ TOPCON | ▪ WOTAN |



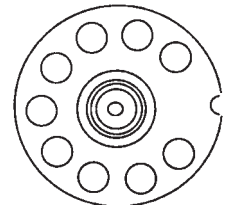
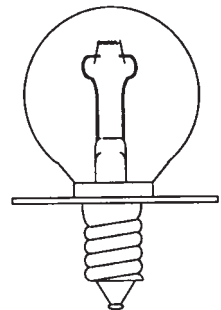
AMSCO
P129249-001 (Q235T4/CL33)
P129359-934 22V 200W
P129362-228 22V 220W
STRYKER/ADEL
JCD 28V 70W G6.35 FR
MARTIN/BERCHTOLD
CZ905-22 (C450) 22.8V 110W
CZ906-24 (C570) 22.8V 110W
CZ907-22 (C950G) 22.8V 150W
CZ908-24 (C571) 24V 150W



P-129362-228



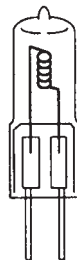
P-129249-001



HS-900-930

OPTICAL/MICROSCOPE LAMPS

AMERICAN OPTICAL
624 (SEE ESA)
1120 (SEE ESB)
2052 (SEE FCR)
9-86-15 (SEE FCR)
BURTON
L2030 (SEE ESB)
P4290 (SEE OP2202)
GE
1460X 6.5V 2.75A
1631X 6.5V 2.75A
1468X 6V 4.5A
HAAG STREIT
900-930 6V 4.5A
940-750 6V 4.5A
HS366 6V 4.5A
HOSOBUCHI
OP-3403 12V 40W G30 SPOT
OP-3609 (78508)
OP-3709 24V 25W
OP-3710 12V 25W
OP-3711 24V 40W
OP-3742 24V 50W
OP-3745 110V 50W



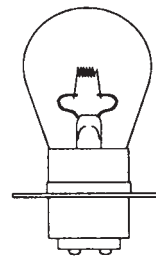
CZ905-22



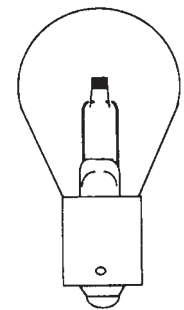
CZ906-24
CZ907-22
CZ908-24



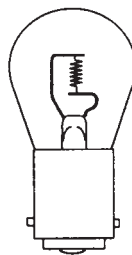
ESA
ESB



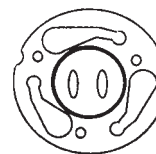
1460X
1631X



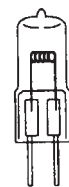
OP2502



OP2202



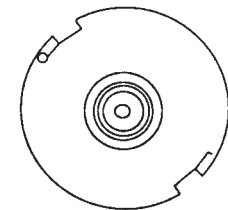
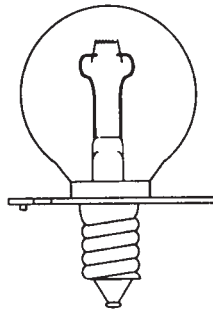
POPULAR MEDICAL LAMP TYPES



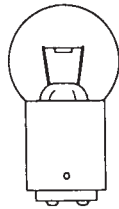
ESA
ESB
BRL
FCR
FCS
EHJ



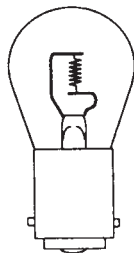
HOSOBUCHI (Con'td)
OP-3750 250V 50W
OP2103 (8G-102)
OP2104 6V 12W
OP2114 6V 18W
OP2118 6V 30W
OP2130 6V 15W (77903)
OP2131 6V 15W (380018-1740)
OP2153 6V 15W (39-01-53)
OP2158 6V 30W (39-01-58)
OP2160 (OQ177L)
OP2202 7V 35W
OP2366 6V 4.5A (HS366)
OP2502 12V 5A
OP2510 6V 4.5A
OP2900 6V 4.5A
LEITZ/LEICA
037-717 (SEE FCS)
037-723 (SEE EHJ)
050-550 (SEE ESA)
098-145 (SEE EFP)
193-049 (SEE FCR)
500-182 (SEE BRL)
500-245 (SEE ESB)
500-974 (SEE FCR)
590-910 (SEE EHJ)
700-065 (SEE ESA)
799-892 (SEE FCS)
907-090 (SEE ESA)
997-053 (SEE EFR)
NIKON
70410 (OP2502)
71826 (SEE FCS)
76513 (SEE FCR)
76516 (SEE BRL)
76907 (OP2114)
77458 120V 30W
77903 6V 15W
77904 (OP2118)
78595 120V 20W
79099 (SEE ESB)
84125 (SEE EVA)
89500 (SEE ESB)



HS940-750



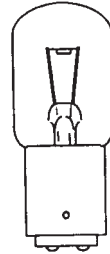
OP2114
NIKON76907



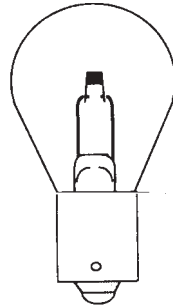
OP2202



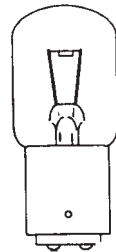
OP2103
OLYMPUS 8G-102



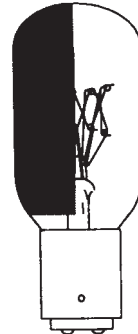
OP2118
NIKON 77904
OLYMPUS 8C101



OP2502



MA738
OP2118
8C101



NIKON 78595



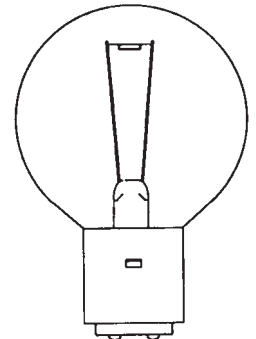
OP2114
NIKON 76907



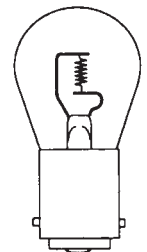
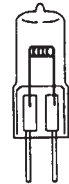
OP2103
OLYMPUS 8G-102



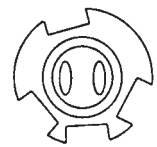
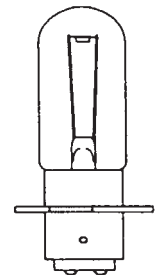
ESB
BRL
EVA
FCR
FCS
EHJ
FNT



OQ 348Z
3800-18-2520



OP2202
42409-30060



OQ 77Z
3800-18-1740

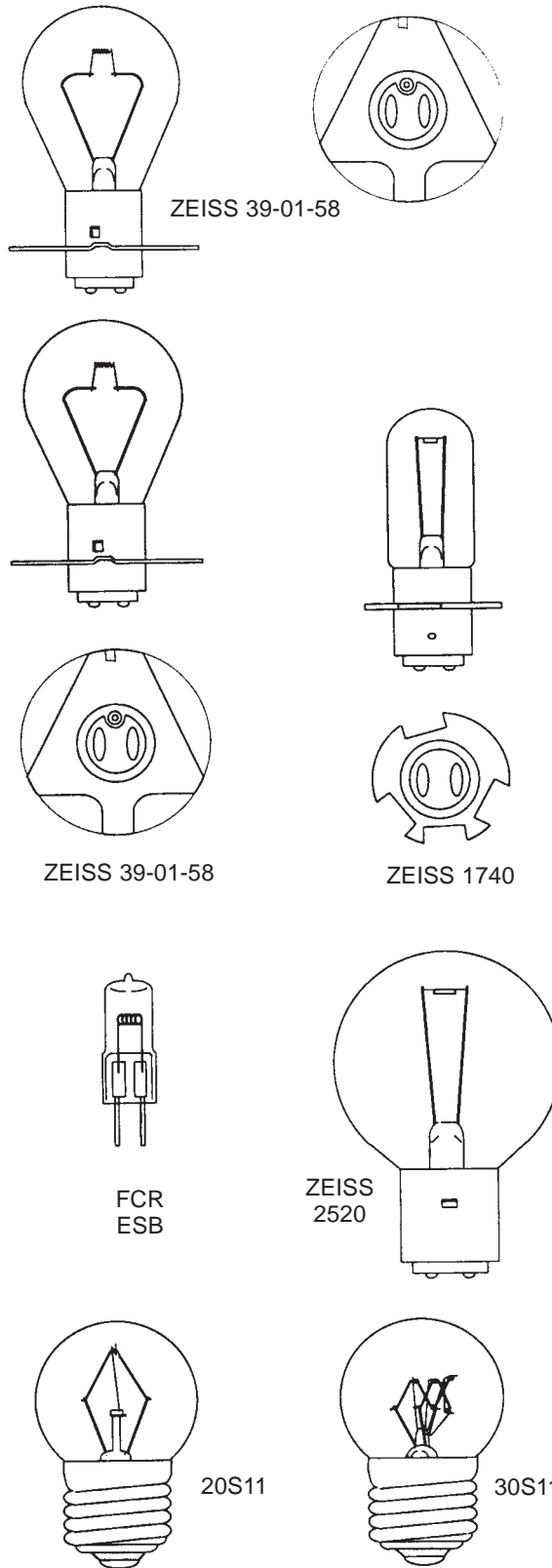
**POPULAR MEDICAL
LAMP TYPES**



SWIFT
70410 (OP2502)
71826 (SEE FCS)
76513 (SEE FCR)
76516 (SEE BRL)
76907 (OP2114)
77458 120V 30W
77903 6V 15W
77904 (OP2118)
78595 120V 20W
79099 (SEE ESB)
84125 (SEE EVA)
89500 (SEE ESB)
SWIFT
MA780 (SEE ESB)
MA782 (SEE FCR)
MA784 (SEE BRL)
MA786 (SEE FCS)
MA738 (OP2118)
OLYMPUS
58101 (SEE FCS)
58102 (SEE EFR)
8C101 (OP2118)
8C102 6V 30W
8C103 6V 15W
8C401 (SEE FCR)
8C403 (SEE ESA)
8C405 (SEE ESB)
8C407 (SEE BRL)
8G102 (OP2103)
8S401 (SEE EFR)
OPTI-QUIP
OQ53Z (39-01-53)
OQ58Z (39-01-58)
OQ77Z (3800-18-1740)
OQ177L (OP2160)
OQ348Z (3800-18-2520)
OQ366HS (HS366)
OSRAM
6422
64225 (ESA)
64250 (ESB)
64425 12V 20W

POPULAR MEDICAL LAMP TYPES

OSRAM (Con'td)
64609 12V 20W
64610 (BRL)
64615 (EFN)
64623 (EVA)
64625 (FCR)
64627 (EFP)
64634 (EFR)
64640 (FCS)
64655 (FNT)
64657 (EVC)
64663 (EVD)
TOPCON
42409-30060 (OP2202)
ZEISS
31-0198 (SEE EFR)
38-00-18/1740 6V 15W
38-00-18/2520 12 60W
3800-59-1660 (SEE FCR)
3800-79-9930 (SEE EFN)
38-01-50 (3800-18-1740)
38-01-77 (3800-18-1740)
38-02-16 (3800-18-2520)
39-01-53 6V 25W
39-01-58 6V 30W
39-01-86 6V 50W
WILD
WILD384-643 12V 50W
193-049 (SEE FCR)
362-658 (SEE ESB)
997-053 (SEE EFR)
OPTICAL
30S11 120V/CL/MED (500 HRS)
20S11 120V/CL/MED (500 HRS)





CARLEY
CL-882 GOLD 2.7V
CL-883 NICKEL 2.7V
CL-889 3.5V
CL-894 FROSTED 2.5V (04700)
CL-904 CLEAR 2.5V
CL-944 2.5V
CL-949 2.5V (04800)
CL-950 3.5V (03000)
CL-951 2.5V (06000)
CL-953 NICKEL 2.5V
CL-954 GOLD 2.5V
CL-956 3.5V
CL-967 3.0V
CL-994 3.5V (03100)
CL-995 3.5V (04900)
CL-996 2.5V (00200)
CL-1019 2.5V
CL-1026 2.5V
CL-1309 14.5V (04100)
CL-1311 15.1V (06100)
CL-1313 2.5V (03400)
CL-1315 2.5V (04400)
CL-1326 3.5V
CL-1327 2.7V
CL-1337 5.0V
CL-1340 6.V (07800)
CL-1341 3.5V
CL-1406 2.5V
CL-1414 5.0V
CL-1419 3.5V
CL-1421 3.5V
CL-1443 2.7V
CL-1464 3.5V (00300)

CL 882 Gold
CL 883 Nickel



8-32 UNC Thread
2.7V .70A 20 Hour Life
Xenon Filled
TL-1 1/2 Lamp

CL 889



8-32 UNC Thread
3.5V .70A 20 Hour Life
Nickel Plated Xenon Filled
TL-1 1/2 Lamp

CL 953 Nickel
CL 954 Gold



3.5 x .35 mm Thread
2.5V .68A 20 Hour Life
Xenon Filled
TL-1 1/4 Lamp

CL 967



3.0V .40A 20 Hour Life
Nickel Plated Xenon Filled
TL-1 1/2 Lamp

CL 1326



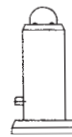
3.5V .76A 20 Hour Life
Gold Plated Xenon Filled
TL-1 1/2 Lamp

CL 1327



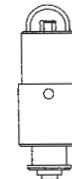
2.7V .50A 25 Hour Life
Gold Plated Xenon Filled
TL-1 1/2 Lamp

CL 1443



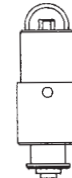
2.7V .50A 30 Hour Life
Gold Plated Xenon Filled
TL-1 1/2 Lamp

CL 944



2.5V .68A 20 Hour Life
Nickel Plated Xenon Filled
T-1 1/2 Lamp

CL 956



3.5V .72A 20 Hour Life
Gold Plated Xenon Filled
T-1 1/2 Lamp

CL 1414



5.0V 1.4A 1500 Hour Life
Nickel Plated Halogen Filled
T-1 1/2 Lamp

CL 1026
Mediflector®



8-32 UNC 2A Thread
2.5V .30A 15 Hour Life
Nickel Plated Vacuum
TL-1 Lamp

CL 1406



3.5 x 35mm Thread
2.5V .30A 15 Hour Life
TL-1 1/4 Vacuum Lamp

CL 1337



5.0V 1.33A 1000 Hour Life
Nickel Plated Halogen Filled
TL-1 1/2 Lamp

CL 1019



8-32 UNC 2A Thread
2.5V .30A 15 Hour Life
Nickel Plated Vacuum
TL-1 1/4 Lamp

CL 1341



3.5V .70A 25 Hour Life
Gold Plated Xenon Filled
TL-1 1/2 Lamp



WELCH ALLYN
00200 2.5V (CL-996)
00200 3.5V (CL-1464)
01300 PENLITES
03000 3.5V (CL-950)
03100 3.5V (CL-994)
03400 2.5V (CO-1313)
03900 OPHTHALMOSCOPES
04100 14.5V (CL-1309)
04200 MR-16 EXAMINATION
04400 2.5V (CL-1315)
04700 2.5V (CL-894)
04800 2.5V (CL-949)
04900 3.5V (CL-995)
06000 2.5V (CL-951)
06100 15.1V (CL-1311)
06200 AUDIOSCOPES
06300 EXAMINATION
06400 MR-16 EXAMINATION
07800 6.0V (CL-1340)
09500 MFI-49522

CL 950



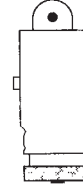
3.5V .72A 15 Hour Life
Nickel Plated Xenon Filled
T-1 1/2 Lamp

CL 951



10-32 UNF 2A Thread
2.5V .68A 20 Hour Life
Nickel Plated Xenon Filled
TL-1 1/2 Lamp

CL 995



3.5V .72A 20 Hour Life
Nickel Plated
Xenon Filled
T-1 1/2 Lamp

CL 994



48 Grooves Per Inch
3.5V .72A 20 Hour Life
Nickel Plated Xenon Filled
TL-1 1/2 Lamp

CL 894 Frosted
CL 904 Clear



1/8 72 NS3 Thread
2.5V .28A 20 Hour Life
Nickel Plated Vacuum
TL-1 Lamp

CL 949



8-32 UNC 2A Thread
2.5V .38A 20 Hour Life
Nickel Plated Vacuum
TL-1 1/2 Lamp

CL 996



8-32 UNC 2A Thread
2.5V .35A 15 Hour Life
Nickel Plated Vacuum
TL-1 1/2 Lamp

CL 1313



2.5V .64A 20 Hour Life
Nickel Plated Xenon Filled
TL-1 1/2 Lamp

CL 1315



2.5V .64A 20 Hour Life
Nickel Plated Xenon Filled
T-1 1/2 Lamp

CL 1464



3.5V .81A 20 Hour Life
Nickel Plated Halogen-Xenon Filled
TL-1 1/2 Lamp

CL 1340



10-32 UNF-2A Thread
6.0V .71A 75 Hour Life
Halogen-Xenon Gas Lamp
TL-1 1/2 Lamp

CL 1309
CL 1311



14.5V 2.3A 100 Hour Life=CL 1309
15.1V 2.2A 100 Hour Life=CL 1311
Nickel Plated Xenon Filled
T-3 Lamp

CL 1419
CL 1421



0.55mm Leads=CL1419
0.80mm Leads=CL 1421
3.5V .74A 40 Hour Life
Nickel Plated Krypton Filled
TL-1 1/2 Lamp



SSTV and Photo-Projection Lamp Reference

Brands and Availability

Norman Lamps, Inc. offers a full line of SSTV and Photo-Projection Lamps. In this catalog, all SSTV Lamps are listed by wattage. All Photo-Projection lamps are listed in alphabetical order according to their A.N.S.I. code. This code is listed as a three letter call out. Several photo-projection lamps have more than one A.N.S.I. code callout. You may order by using any one or all of these codes.

Norman Lamps, Inc. maintains a large inventory of both SSTV and Photo-Projection Lamps. We stock all the most popular brands and types as well as many delisted or hard-to-find lamps. In many situations we have stock on hand when the manufacturers do not. So instead of looking at long delivery times, high minimums, and potential loss of business, give us a call and check our stock. We stock G.E., Osram-Sylvania, Philips, Ushio, EYE, Thorn, Spectro, BLV, and our Norman house brand (Japan).






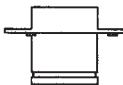


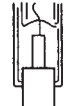







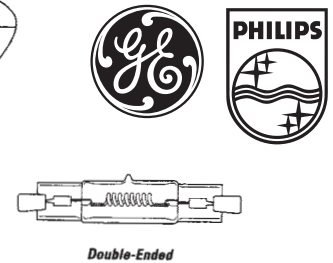
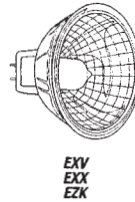
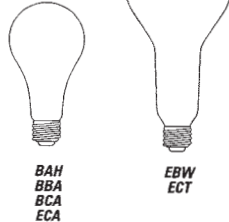
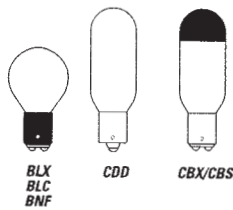
BASE IDENTIFICATION							
							
Candelabra (Cand.) E12/15	Double Contact Bayonet (D.C. Bay.) BA15d	Single Contact Bayonet (S.C. Bay.) BA15s	Candelabra Prefocus (S.C. Pref.) P30s (D.C. Pref.) P30d	Medium E26s	Medium Prefocus P28/25	Mogul E39	4-Pin G17q (Std. Volts) GX17q (Low Volts)
							
Recessed Single Contact R7	Glass 2-Pin G6.35 (.040 diam. Pins) GY6.35 (.050 diam. Pins) GZ6.35	Miniature 2-Pin G5.3	GY5.3 2-Pin (Flat Pins)	GX5.3 2-Pin (Round Pins)	2-Button	2-Pin Prefocus GY & GZ9.5	2-Pin Vented G7.9 (Std. Volts) GX7.9 (Low Volts)



PHOTO-PROJECTION LAMPS (LISTED BY ANSI CODE)



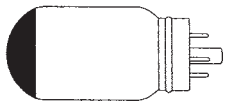
ANSI	BULB	BASE	DESCRIPTION	WATTS	VOLTS	LIFE	M.O.L.	LUMENS	COLOR TEMP.	FILAMENT
BAH	A21	MED	Frosted	300	120	20	4 ¹⁵ / ₁₆	9000	3200	—
BAK	T5	SC Pf	Sound Reproduction	3	4	300	—	30	—	C-6
BBA	A21	Med	Frosted	250	120	3	4 ¹⁵ / ₁₆	8000	3400	—
BCA	A21	Med	Frosted	250	120	3	4 ¹⁵ / ₁₆	5000	4800	—
BCK	T6	4-Pin	Slide Projection	500	120	50	3 ³ / ₄	—	3200	C-13D
BEH	T10	4-Pin	Slide Projection	150	120	15	3 ¹ / ₈	3500	3100	2CC-8
BEP	R30	Med	Medium Beam-I.F.	300	120	4	5 ³ / ₁₆	11000	3400	C-9
BFL/BFK	T20	Med Pf	Bowling Proj.	750	120	200	5 ³ / ₄	13500	3050	C-13
BHB	MR14	2-Pin V	16mm Projection	250	120	25	1 ² / ₃	—	3350	CC-8
BLC	S11	DC Bay	Editor Projection	30	115	50	2 ³ / ₈	400	2775	CC-2V
BLK	S11	Cand.	Photocopy, Inside Frost	30	120	50	2 ¹ / ₄	400	2700	CC-2V
BLR	S11	SC Bay	Toy Projection	50	115	50	2 ³ / ₈	780	2850	CC-2V
BLX	S11	DC Bay	Toy Projection	50	115	50	2 ³ / ₈	780	2850	CC-2V
BMY	S11	SC Bay	Toy Projection	100	115	50	2 ³ / ₈	1860	2950	CC-13
BNF	S11	DC Bay	Toy Projection	75	115	25	2 ³ / ₈	1300	2900	CC-2V
BRH	T5	R S C	Overhead Projector	1000	120	75	3 ³ / ₄	30000	3350	CC-8
BRJ/EVB	T3 1 ¹ / ₂	G6.35	Overhead Projector	150	15	50	1 ³ / ₄	5000	3400	C-6
BRK	T5	SC Pf	Sound Reproduction	0.75A	4	50	2 ³ / ₈	28	—	C-8
BRL	T3 1 ¹ / ₂	2-Pin	Projection, Microfilm, Studio	50	12	50	1 ³ / ₄	1400	3400	C-6
BVE	T6	2-Pin Pf	Projection, Microfilm, Studio	600	120	75	3 ¹ / ₂	—	3200	C-13D
BXB	T8	SC Pf	Sound Reproduction	34	8.5	100	3 ¹ / ₈	690	—	C-8
CAL	T10	4-Pin	Slide, Film Strip	300	120	25	4	—	3200	C-13
CAR	T10	4-Pin	Slide, Film Strip	150	120	15	3 ¹ / ₈	—	3100	2CC-8
CAX-130V	T8	DC Bay	Optical Projection	50	130	50	3 ¹ / ₈	775	2875	CC-13
CAX	T8	DC Bay	Optical Projection	50	115	50	3 ¹ / ₈	775	2875	CC-13
CBA	T6	4-Pin	Slide Projection	500	120	50	3 ⁵ / ₈	—	3200	C-13D
CBX/CBS	T8	DC Bay	Slide Projection	75	115	50	3 ¹ / ₈	1200	2925	CC-13
CDD	T8	SC Bay	Slide Projection	100	120	50	3 ¹ / ₈	2000	2975	CC-2V
CDJ	T8	DC Bay	Slide Projection	100	115	50	3 ¹ / ₈	2000	2975	CC-2V
CEB	T8	DC Bay	Slide Projection	100	115	50	3 ¹ / ₈	1850	2975	CC-13
CEM	T8	SC Bay	Wheel Align Projection	120	115	25	3 ¹ / ₈	1950	3000	2CC-8
CJX	T8	DC Bay	Projection	100	230	50	3 ¹ / ₈	1650	2850	CC-13
CLS/CLG	T8 1 ¹ / ₂	SC Bay	Slide Projection	300	120	25	4 ¹ / ₈	7600	3200	C-13
CXR/CXL	TB6	SC Pf	8mm Projection	50	8	25	3 ²⁵ / ₃₂	—	3200	C-6
CZA/CZB	T10	4-Pin	Slide Projection	500	120	25	4	—	3300	C-13D
CZX/DAB	T10	Med Pf	8mm Projection	500	115	25	5 ³ / ₄	12500	3200	C-13D
DAT/DAK	T10	4-Pin	Slide Projection	400	120	25	4	98900	3200	C-13D
DAY/DAK	T10	4-Pin	Slide Projection	500	120	30	4	12500	3200	C-13D
DCA	T12	4-Pin	8mm Projection	150	21	15	3 ⁹ / ₁₆	—	3250	CC-6
DCH/DJA/DFP	T12	4-Pin	8mm Projection	150	120	15	3 ³ / ₈	—	3150	CC-6
DDB	T12	Med Pf	16mm Projection	750	115	25	5 ³ / ₄	19500	3250	C-13D
DDF	MR16	2-Pin	Enlarger, Projection	55	17	300	1 ³ / ₄	—	3100	CC-6
DDK	MR16	2-Pin	Filmstrip, Projection	80	19	40	1 ³ / ₄	—	3300	CC-6
DDL	MR16	2-Pin	Microfilm	150	20	500	1 ³ / ₄	—	3150	C-6
DDM	MR16	2-Pin	Slide Projection	80	19	50	1 ³ / ₄	—	3150	CC-6
DDN	T3	R S C	Microfilm	200	20	100	2 ³ / ₈	5000	3150	CC-8
DDS	MR16	2-Pin	Microfilm	80	21	1000	1 ³ / ₄	—	3125	CC-6
DED	MR16	2-Pin	Microfilm	85	13.8	1000	1 ³ / ₄	—	3150	C-6
DEF	T12	4-Pin	8mm Projector	150	21	15	3 ⁹ / ₁₆	—	3250	CC-6

Orders ■ Information ■ Lamps Not Listed



PHOTO-PROJECTION LAMPS

(LISTED BY ANSI CODE)



DEK / DFW / DHN



CAR



CZA / CZB



CZX / DAB



DDB



DRB
DRC



DRS

OSRAM
SYLVANIA

USHIO



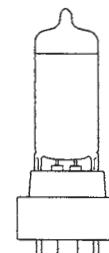
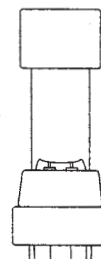
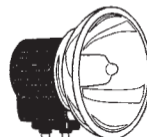
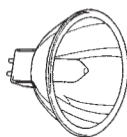
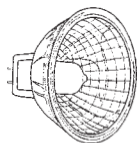
ANSI	BULB	BASE	DESCRIPTION	WATTS	VOLTS	LIFE	M.O.L.	LUMENS	COLOR TEMP.	FILAMENT
DEK/DFW/DHN	T12	4-Pin	Slide Projection	500	120	25	3 ⁵ / ₈	—	3250	C-13D
DFE	T12	4-Pin	8mm Projection	80	30	15	3 ³ / ₁₆	—	3400	CC-8
DFN/DFC	T12	4-Pin	8mm Projection	150	125	15	3 ³ / ₁₆	—	3150	CC-8
DGH	T12	Med pf	Bowling Projection	750	120	500	5 ³ / ₄	14500	33050	C-13D
DHT	T12	Med Pf	16mm Projection	1200	120	10	5 ³ / ₄	36000	3400	C-13D
DJL	T14	4-Pin	8mm Projection	150	120	15	3 ¹ / ₂	—	3150	CC-8
DJT	MR16	2-Pin	Microfilm	50	13.8	1000	1 ³ / ₄	—	3150	CC-6
DLD/DFZ	T14	4-Pin	8mm Projection	80	30	15	3 ¹ / ₂	—	3400	CC-6
DLS/DLG/DHX	T14	4-Pin	8mm Projection	150	22	15	3 ¹ / ₁₆	—	3300	CC-6
DNE	MR16	2-Pin V	8mm Projection	150	120	12	1 ³ / ₄	—	3350	CC-8
DNF	MR16	2-Pin V	8mm Projection	150	21	25	1 ³ / ₄	—	3400	CC-6
DPT	T20	Mog	Opaque Projection	1000	115	50	9 ¹ / ₁₆	28000	3200	C-13
DRA	T4	2-PIN	Projection	300	120	300	2 ³ / ₈	6900	3300	CC-6
DRB	T20	Med Pf	Overhead Projection	1000	115	25	5 ³ / ₄	32000	3350	C-13
DRC	T20	Med Pf	Overhead & Opaque Projection	1000	120	50	5 ³ / ₄	30000	3250	C-13
DRS	T20	Med Pf	Overhead Projection	1000	120	25	5 ³ / ₄	28500	3325	C-13D
DSW	T14	4-Pin	8mm Projection	200	24	25	3 ³ / ₈	—	3300	CC-8
DVY	G6	2-Pin Min	Projection	650	120	25	2 ¹ / ₂	20000	3300	CC-6
DWK	T20	Med Pf	Projection & Studio	1000	230	50	5 ³ / ₄	23500	3100	CC-13
DWZ	T4	R S C	Bowling Score Projection	375	30	1000	3 ¹ / ₈	7500	3000	CC-8
DXB	R40	Med	Spot Beam, I.F.	500	115	6	6 ⁵ / ₈	—	3300	CC-2V
DXC	R40	Med	Flood Beam, I.F.	500	115	6	6 ⁵ / ₈	—	3300	C-9
DYP	G7	2 Buttoon	Projection, Microfilm, Studio	600	120	75	2 ¹ / ₄	17000	3200	CC-6
DYR	G7	2-Pin Pf.	Projection	650	240	50	2 ¹ / ₂	16500	3200	2CC-8
DYR	G7	2-Pin Pf	Projection	650	220	50	2 ¹ / ₂	16500	3200	2CC-8
DYS-5	G7	2-Pin Pf.	Projection, Microfilm, Studio	600	126	150	2 ¹ / ₂	15500	3200	CC-6
DYS/DYV/BHC	G7	2-Pin Pf.	Projection, Microfilm, Studio	600	120	75	2 ¹ / ₂	17000	3200	CC-6
DZA	T3 1/2	2-Pin Min	Projection, Microfilm, Studio	30	10.8	400	2	800	3100	C-6
DZE/FDS	T4	2-Pin Pf	Projection, Microfilm, Studio	150	24	100	2 ¹¹ / ₁₆	4500	3250	C-6
EAJ	T6 1/2	DC Bay	Flashtube Modeling	35	12	300	4	620	—	CC-6
EAL	R40	Med	Medium Beam, I.F.	500	120	15	6 ⁵ / ₈	—	3200	CC-2V
EBV	PS25	Med	Frosted	500	120	6	6 ¹⁵ / ₁₆	17000	3400	—
EBW	PS25	Med	Frosted	500	120	6	6 ¹⁵ / ₁₆	10500	4800	—
ECA	A23	Med	Frosted	250	120	20	6 ¹⁵ / ₁₆	6500	3200	—
ECT	PS25	Med	Frosted	500	120	60	6 ¹⁵ / ₁₆	13650	3200	—
ECV	PS40	Mog	Photoflood, I.F.	1000	120	60	9 ³ / ₄	26500	3200	C-7A
EFM	MR16	2-Pin	8mm Projection	50	8	50	1 ³ / ₄	—	3300	C-6
EFN	MR16	2-Pin	8mm Projection	75	12	50	1 ³ / ₄	—	3350	CC-6
EFP	MR16	2-PIN	8mm Projection	100	12	50	1 ³ / ₄	—	3350	CC-6
EFR	MR16	2-Pin	8mm Projection	150	15	50	1 ³ / ₄	—	3350	CC-6
EHA	T6	2-Pin Pf	Projection, Microfilm, Studio	500	120	50	3	—	3300	C-13D
EJH	T4	2-Pin	Projection, Microfilm, Studio	250	24	50	2 ¹ / ₄	8000	3400	C-6 Oval
EJA	MR16	2-Pin	Fiberoptics	150	21	40	1 ³ / ₄	—	3350	CC-6
EJL	Mr16	2-Pin	16mm, Color Printer	200	24	50	1 ³ / ₄	—	3400	CC-6
EJM	MR16	2-Pin	8mm Projection	150	21	40	1 ³ / ₄	—	3350	CC-6
EJV	MR16	2-Pin	8mm, Printer	150	21	40	1 ³ / ₄	—	3350	CC-6
EJY	MR16	2-Pin	Fiberoptics	80	19	25	1 ³ / ₄	—	3400	CC-6
EKE	MR16	2-Pin	8mm Projection	150	21	200	1 ³ / ₄	—	3250	CC-6
EKN	MR16	2-Pin	Microfilm	120	17.5	130	1 ³ / ₄	—	3200	CC-6



PHOTO-PROJECTION LAMPS

(LISTED BY ANSI CODE)

OSRAM
SYLVANIA



USHIO



DDF ENH
E/L ESJ
ELC ESJ
ELH EVW
EYA

EJV

2-Pin-Vented Base
Reflector

4-Pin Base
CBA

4-Pin Base
BCK

DAT / DAK
DAY / DAK

ANSI	BULB	BASE	DESCRIPTION	WATTS	VOLTS	LIFE	M.O.L.	LUMENS	COLOR TEMP.	FILAMENT
EKP/ENA	MR16	2-Pin	8mm Projection	80	30	25	1 3/4	—	3350	CC-6
EKX	MR16	2-Pin	Microfilm	200	24	25	1 3/4	—	3400	CC-6
EKZ	MR16	2-Pin	16mm Projection	30	10.8	200	1 3/4	—	3100	C-6
ELB	MR16	2-Pin	8mm Projection	80	30	18	1 3/4	—	3400	CC-6
ELC	MR16	2-Pin	16mm, Fiberoptics	250	24	50	1 3/4	—	3400	CC-6
ELD/EJN	MR16	2-Pin	Microfilm	150	21	40	1 3/4	—	3350	CC-6
ELH	MR16	2-Pin O	Slide Projection	300	120	35	1 3/4	—	3350	CC-8
ELS/ELR	MR14	2-Pin V	Microfilm	50	16	650	1 7/16	—	3100	CC-6
EML	T4	2-Pin Min.	Projection, Microfilm, Studio	175	24	125	2 1/8	5000	3200	C-6
EMM/EKS	MR14	2-Pin V	16mm Projection	250	24	50	1 2/3	—	3400	CC-6
ENG	MR16	2-Pin O	Slide Projection	300	120	15	1 3/4	—	3450	CC-8
ENH	MR16	2-Pin O	Slide Projection	250	120	175	1 3/4	—	3250	CC-8
ENH-5	MR16	2-Pin O	Slide Projection	250	124	400	1 3/4	—	3250	CC-8
ENW/ENC	MR16	2-Pin	8mm Projection	80	19	200	1 3/4	—	3200	CC-6
ENX	MR16	2-Pin O	Overhead Projection	360	82	75	1 3/4	—	3300	CC-8
ENX-5	MR16	2-Pin O	Overhead Projection	360	85	125	1 3/4	—	3300	CC-8
ENZ	MR16	2-Pin	8mm Projection	50	30	25	1 3/4	—	3450	CC-6
EPN	MR16	2-Pin	8mm Projection	35	12	50	1 3/4	—	3300	C-6
EPR	T6	G17T	Projection	500	120	50	3 1/4	—	3250	C-13D
EPT	MR16	2-Pin	Fiberoptics	42	10.8	10000	1 3/4	—	2900	C-6
EPV	MR16	2-Pin	Microfilm	90	14.5	500	1 3/4	—	3150	CC-6
EPW	MR16	2-Pin O	Overhead Projection	360	100	75	1 3/4	—	3250	CC-8
EPX	MR16	2-Pin	Microfilm	90	14.5	500	1 3/4	—	3150	CC-6
ERF	T3 1/4	Wedge	Projection, Microfilm, Studio	50	14	200	1/2	—	3200	CC-6
ERV	MR16	2-Pin	Overhead Projection	340	36	75	1 3/4	—	3300	CC-8
ESD	MR16	2-Pin O	Enlarger, Projection	150	120	12	1 3/4	—	3350	CC-8
ESJ	MR16	2-Pin O	Enlarger, Projection	85	82	85	1 3/4	—	3350	CC-8
ETJ	MR16	2-Pin O	Fiberoptics	250	120	175	1 3/4	—	3300	CC-8
ETT	T5	R S C	Special	1000	120	70	3 3/4	—	3350	CC-8
EVC	T4 3/4	2-Pin	Photo	250	24	300	2 1/4	8400	—	C-6F
EVD	T6	2-Pin	Projection, Microfilm, Studio	400	36	50	2 13/32	14,500	3200	C-6
EVV	T4	2-Pin Pf.	Airport	120	6.6A	500	2 1/2	3150	3200	C-6 Oval
EVW	MR16	2-Pin O	Overhead Projection	250	82	50	1 3/4	—	3300	CC-8
EWV	MR16	2-Pin	Overhead Projection	200	24	50	1 3/4	—	3300	CC-8
EWR	T4	2-Pin Pf.	Airport	150	6.6A	500	2 1/2	4100	3200	C-6 Oval
EXL	T3 1/2	2 Pin Pf.	Airport	30	6.6A	1000	1 3/4	375	2900	C-8
EXM	T3 1/2	2-Pin Pf.	Airport	45	6.6A	1000	1 3/4	750	2950	C-8
EXR	MR13	2-Pin	Slide Projection	300	82	35	1 3/4	—	3350	CC-8
EXS	MR16	2-Pin	Camera Light	200	30	50	1 3/4	8800	3300	CC-6
EXV	MR16	2-Pin	Camera Light	100	12	50	1 3/4	3100	3350	CC-6
EXW	MR13	2-Pin	Slide Projection	300	82	15	1 3/4	—	2450	CC-8
EXX	MR16	2-Pin O	Camera Light	250	120	25	1 3/4	6750	3300	CC-8
EXY	MR13	2-Pin	Slide Projection	250	82	200	1 3/4	—	3200	CC-8
EYA	MR16	2-Pin O	Enlarger	200	82	50	1 3/4	—	3300	CC-8
EYB	T3 1/2	2-Pin Min	Projection, Microfilm, Studio	360	82	75	2 1/4	10,000	3300	CC-8
EYB-5	T3 1/2	2-Pin Min	Projection, Microfilm, Studio	360	86	125	2 1/4	9,000	3200	CC-8

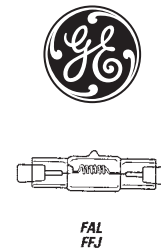
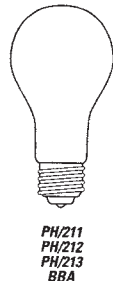
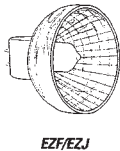
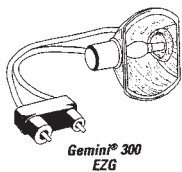


Photo-Projection Lamps

(LISTED BY ANSI CODE)

OSRAM
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ANSI	BULB	BASE	DESCRIPTION	WATTS	VOLTS	LIFE	M.O.L.	LUMENS	COLOR TEMP.	FILAMENT
EYH/FKT	G6	2-Pin Min	Projection, Microfilm, Studio, Etc.	250	120	200	2 1/2	6000	3000	CC-6
EYK	MR16	2-Pin O	16 mm Projection	300	120	60	1 3/4	—	3300	CC-8
EZA	MR16	2-Pin	Airport	30	6.6A	1000	1 3/4	—	2900	C-8
EZC	MR16	2-Pin	Airport	45	6.6A	1000	1 3/4	—	2950	C-8
EZF/EZJ	MR13	2-Pin	Color Printer	225	68	500	1 3/4	—	—	CC-8
EZG	MR16	Spec 2-Pin	High Intensity Arc	300	35	75	—	—	6000	—
EZK	MR16	2-Pin O	Camera Light	150	120	200	1 3/4	—	3200	CC-8
EZL	T4	2-Pin Pf	Airport	200	6.6A	500	2 1/2	5000	3100	C-6 Oval
EZM	3"	Spec 2-Pin	MARC-300/16	300	37.5	25	—	—	5500	—
EZP	MR16	2-Pin	Airport	50	—	2000	1 3/4	—	2950	C-8
EZT	3"	Spec 2-Pin	MARC-350/16T	350	45	50	—	—	5000	—
FAL	T4	R S C	Printer, Overhead	420	120	75	1 3/8	11,000	3200	CC-8
FBG/FBD	G6	2-Pin Min	Projection, Microfilm, Studio, Etc.	500	120	50	3	13,200	3200	CC-6
FCB	T4	R S C	Overhead, Projection	600	120	75	3 3/4	17,000	3250	CC-8
FCR	T3	2-Pin	Projection, Microfilm, Studio, Etc.	100	12	50	1 3/4	2800	3300	C-6 Oval
FCS	T4	2-Pin	Projection, Microfilm, Studio, Etc.	150	24	50	2	4500	3300	C-6 Oval
FDT	T3	2-Pin Pf	Projection, Microfilm, Studio, Etc.	100	12	50	2 1/8	2900	3300	C-6 Oval
FDV	T4	2-Pin	Projection, Microfilm, Studio, Etc.	150	24	100	2	4300	3,050	C-6 Oval
FDX	T4	2-Pin	Projection, Microfilm, Studio, Etc.	100	12	50	1 3/4	2900	3300	C-6
FFJ	T4	R S C	Printer, Overhead	600	120	75	2 5/8	17,000	3250	CC-8
FHS	MR13	2-Pin	Slide Projection	300	82	70	1 3/4	—	3300	CC-8
FHX	MR16	2-Pin	Microfilm	25	13.8	250	1 3/4	—	3200	CC-6
FLS	MR11	2-Pin	Microfilm	28	12	1000	1 3/8	—	3000	CC-6
FLT	MR11	2-Pin	Microfilm	28	13.8	500	1 3/8	—	3050	CC-6
FLW	T4	2-Pin	Projection, Microfilm, Studio, Etc.	300	24	50	2 3/16	10200	3500	C-6 oval
FML	MR16	2-Pin	Microfilm	50	13.8	1000	1 3/4	—	3150	CC-6
FNT	T4	2-Pin	Projection, Microfilm, Studio, Etc.	275	24	50	2 1/4	10,000	3400	C-6
FXL	MR16	2-Pin O	Overhead Projection	410	82	50	1 3/4	—	3300	CC-8
GBC	MR18	D.C.Bay	Projection 14° -6426	15	6	200	2.25	—	2850	C-6
GBD	MR11	D.C.Bay	Display 6° -6433	20	12	3,000	1.50	—	2900	C-8
GBE	MR11	D.C.Bay	Display 20° -6434-FR	20	12	3,000	1.50	—	2900	C-8
GBF	MR11	D.C.Bay	Display 32° -6435-FR	20	12	3,000	1.50	—	2900	C-8
GBK	MR18	D.C.Bay	Projection 25° -6439-FR	50	12	200	2.25	—	3150	C-6
GCA	T4	G5.3	Video	250	120	200	2.50	—	3000	CC-8
GCB	T4	G5.3	Video	200	30	200	2.50	—	2850	CC-8
GDA	T4	RSC	Studio	500	120	100	—	—	3150	CC-8
PH/111A	S11	SC Bay	Enlarger, White	75	125	50	2 3/8	1150	2900	—
PH/140	S14	Med	Enlarger, White	75	120	50	2 3/8	1150	2900	—
PH/1400	S14	Med	Enlarger, White	75	230	50	3 3/8	1100	2900	—
PH/211	A21	Med	Enlarger, White	75	115	100	4 15/16	1000	3000	—
PH/212	A21	Med	Enlarger, White	150	115	100	4 15/16	2300	3050	—
PH/213	A21	Med	Enlarger, White	150	115	3	4 15/16	7000	3400	—



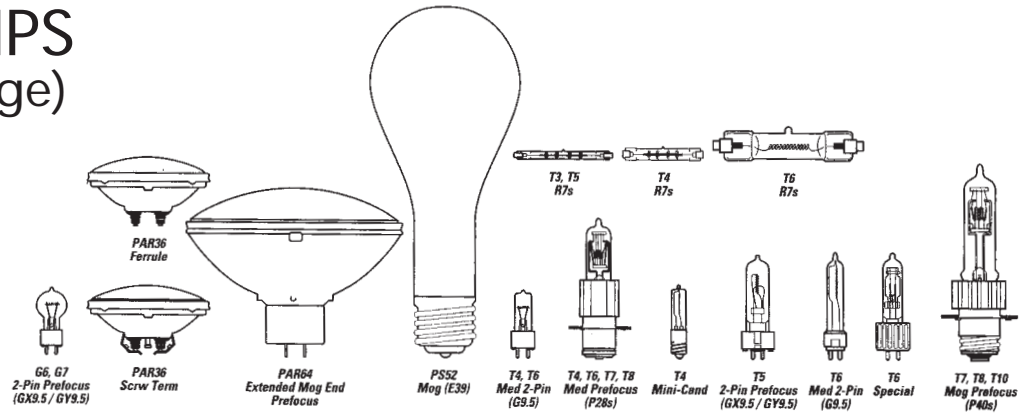
SSTV LAMPS

(Listed by Wattage)

OSRAM
SYLVANIA



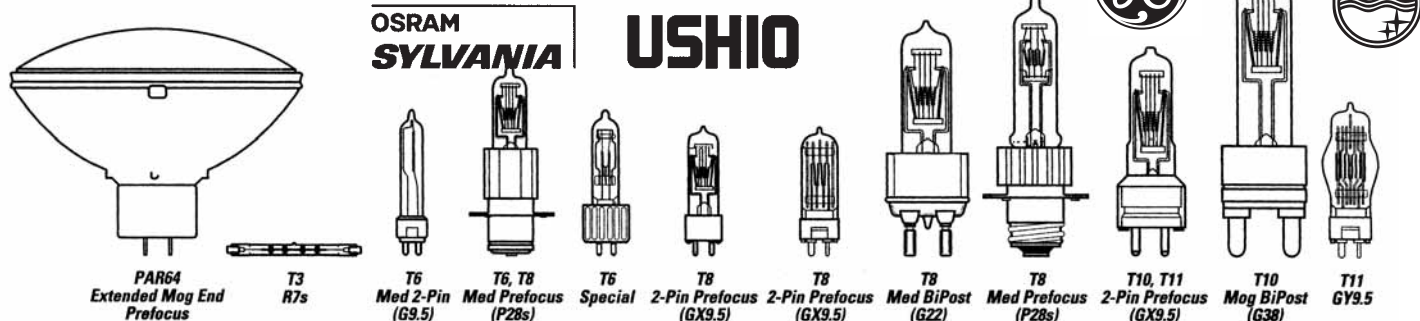
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WATTS	VOLTS	ANSI	DESIGNATION	BULB	BASE	LIFE	M.O.L.	L.C.L.	LUMENS	COLOR TEMP
200	120	FEV	Q200/4CL/DC	T4	DC BAY	50	2 ⁷ / ₁₆	1 ³ / ₈	5500	3200
250	30	DYG	Q250/4CL/2PP	G6	2-PIN PF	15	2 ¹ / ₂	1 ⁷ / ₁₆	8000	3400
420	120	EKB	Q420/4CL/2PP	G7	2-PIN PF	75	2 ¹ / ₂	1 ⁷ / ₁₆	11000	3200
420	120	FFM		T4	R7S	75	3 ³ / ₁₆	1 ¹ / ₂	11000	3200
500	120	FDV	Q500T3/4CL	T3	R7S	400	4 ¹¹ / ₁₆	2 ³ / ₈	13250	3200
500	120	FDN	Q500T3/4	T3	R7S	400	4 ¹¹ / ₁₆	2 ³ / ₈	12800	3200
500	120	EGE	Q500CL/P	T4	MED PF	2000	6	3 ¹ / ₂	10450	2950
500	120	EHC	Q500/5CL	T4	MED 2-PIN	500	4	2 ³ / ₈	12700	3150
500	120	EHD	Q500CL/TP	T4	MED 2-PIN	2000	4	2 ³ / ₈	10450	2950
500	120	EVR	Q500CL/MC	T4	MINI-CAND	2000	3 ⁵ / ₈	2	10450	2950
500	120	BTL	Q500T6/CL/P	T6	MED PF	500	5 ¹ / ₄	2 ³ / ₁₆	11000	3000
500	120	BTM	Q500T64CL/2P	T6	MED PF	150	5 ¹ / ₄	2 ³ / ₁₆	13000	3200
500	120	EGN	Q500T8	T8	MED BI POST	150	5 ¹ / ₂	2 ¹ / ₂	13000	3200
500	120	FRG	Q500T8	T8	2-PIN PF	150	3 ⁷ / ₁₆	1 ¹³ / ₁₆	13000	3200
500	120	EGC	Q500/5CL/P	T12	MED PF	500	6	3 ¹ / ₂	12700	3150
575	115	FLK	Q575T6	T6	G9.5	300	3 ³¹ / ₃₂	2 ³ / ₈	16500	3200
575	115	FLK-LL	Q575T6/4	T6	G9.5	1500	3 ³¹ / ₃₂	2 ³ / ₈	12800	2950
600	120	DYH		G7	2-PIN	75	2 ¹ / ₂	1 ⁷ / ₁₆	17000	3200
600	120	FMR	Q600T5	T5	2-PIN PF	2000	3 ⁷ / ₈	2	12600	3050
650	120	EKD	Q650/3CL/2PP	G6	2-PIN PF	25	2 ¹ / ₂	1 ⁷ / ₁₆	20000	3300
650	120	DWE	Q650PAR36/1	PAR36	SCRW TERM	100	2 ⁹ / ₁₆	—	—	3200
650	120	FAY	Q650PAR36/3D	PAR36	FERRULE	30	2 ⁷ / ₁₆	—	—	5000
650	120	FBE	Q650PAR36/5D	PAR36	SCRW TERM	30	2 ⁷ / ₁₆	—	—	5000
650	120	FBO	Q650PAR36/5	PAR36	SCRW TERM	30	2 ⁷ / ₁₆	—	—	3400
650	120	FCW	Q650PAR36/6	PAR36	FERRULE	100	2 ⁷ / ₁₆	—	—	3200
650	120	FCX	Q650PAR36/7	PAR36	FERRULE	100	2 ⁷ / ₁₆	—	—	3200
650	120	FAD	Q650T4/4CL	T4	R7S	100	3 ³ / ₁₆	5 ⁵ / ₈	16500	3200
650	120	FBX	Q650T4/4	T4	R7S	100	3 ³ / ₁₆	5 ⁵ / ₈	16500	3200
650	220	FKB	Q650T8	T8	MED PF	750	5 ¹ / ₈	2 ³ / ₁₆	13500	3000
650	120	FRK	Q650T8	T8	2-PIN PF	200	3 ⁷ / ₁₆	1 ¹³ / ₁₆	16900	3200
750	120	EJG	Q750T3/4CL	T3	R7S	400	4 ¹¹ / ₁₆	2 ¹ / ₂	20600	3200
750	120	EMD	Q750T3/4	T3	R7S	400	4 ¹¹ / ₁₆	2 ¹ / ₂	19500	3200
750	120	EGF	Q750/4CL/P	T6	MED PF	500	6	3 ¹ / ₂	20400	3200
750	120	EGG	Q750CL/P	T6	MED PF	2000	6	3 ¹ / ₂	15750	3000
750	120	EHF	Q750/4CL	T6	MED 2-PIN	500	4	2 ³ / ₈	20400	3200
750	120	EHG	Q750/CL/TP	T6	MED 2-PIN	2000	4	2 ³ / ₈	15400	3000
750	120	BTP	Q750T7/4CL2P	T7	MED PF	200	4 ³ / ₄	2 ³ / ₁₆	21000	3200



SSTV LAMPS (Listed by Wattage)



WATTS	VOLTS	ANSI	DESIGNATION	BULB	BASE	LIFE	M.O.L.	L.C.L.	LUMENS	TEMP
750	120	EGR	Q750T7/4CL	T7	MED BI-POST	200	5	2 ¹ / ₂	21000	3200
750	120	BWM	Q750T7/4CLTP	T8	MED 2-PIN	200	4 ¹ / ₂	2 ³ / ₈	21000	3200
800	240	EME	Q800T3/P2/11	T3	R7S	250	4 ⁵ / ₈	2 ¹³ / ₁₆	22000	3200
1000	120	FFN	Q1000PAR64/1	PAR64	ExMogEndPr	800	6	—	11000	3200
1000	120	FFP	Q1000PAR64/2	PAR64	ExMogEndPr	800	6	—	12000	3200
1000	120	FFR	Q1000PAR64/5	PAR64	ExMogEndPr	800	6	—	14000	3200
1000	120	FFS	Q1000PAR64/6	PAR64	ExMogEndPr	800	6	—	19000	3200
1000	120	FGN	Q1000PAR64/7D	PAR64	ExMogEndPr	200	6	—	8200	5200
1000	120	DKZ/DSE	Q1000PS5	PS52	Mog	750	13	9 ¹ / ₂	28000	3200
1000	185	EJD	Q1000T3/3CL	T3	R7S	100	4 ¹¹ / ₁₆	2 ³ / ₄	33600	3350
1000	225	EKM	Q1MT3/4CL2P/7	T3	R73	300	7 ¹ / ₁₆	4 ²³ / ₃₂	28000	3200
1000	120	FCM	Q1000T3/4CL	T3	R7S	400	4 ¹¹ / ₁₆	2 ³ / ₈	28000	3200
1000	120	FFT	Q1000TS/1CL	T3	R7S	400	6 ⁹ / ₁₆	2 ⁵ / ₈	26400	3200
1000	120	FHM	Q1000T3/4	T3	R7S	400	4 ¹ / ₄	2 ³ / ₈	27300	3200
1000	120	DXN	Q1000T5/4CL	T5	R7S	50	3 ³ / ₄	3 ⁴ / ₈	33000	3400
1000	120	DXW	Q1000T5/1CL	T5	R7S	150	3 ³ / ₄	7 ¹ / ₈	28000	3200
1000	120	DYA	Q1000T5/4CL	T5	R7S	200	4 ³ / ₈	7 ¹ / ₈	28000	3200
1000	120	FBY	Q1000T5/4	T5	R7S	150	3 ³ / ₄	7 ¹ / ₈	26000	3200
1000	120	DGJ	Q1000/4CL/P	T6	MED PF	300	6	3 ¹ / ₂	27500	3200
1000	120	EGK	Q1000/4/P	T6	MED PF	300	6	3 ¹ / ₂	26500	3200
1000	120	EGM	Q1000CL/P	T6	MED PF	2000	6	3 ¹ / ₂	21500	3200
1000	120	FCV	Q1000/4	T6	MED 2-PIN	375	4	2 ³ / ₈	26500	3200
1000	120	FEL	Q1000/4CL	T6	MED 2-PIN	375	4	2 ³ / ₈	27500	3200
1000	120	FER	Q1000T6/4CL	T8	R7S	500	5 ⁵ / ₈	1 ³ / ₁₆	26500	3200
1000	120	BTR	Q1000T7/4CL2P	T7	MED PF	250	4 ³ / ₄	2 ³ / ₁₆	28500	3200
1000	120	BVT	Q1MT7/CL/MP	T7	MOG PF	500	7 ¹ / ₄	3 ¹⁵ / ₁₆	24500	3050
1000	120	BVV	Q1MT7/4CL/MP	T7	MOG PF	200	7 ¹ / ₄	3 ¹⁵ / ₁₆	28500	3200
1000	120	BWN	Q1000T7/4CL/TP	T7	MED 2-PIN	250	4 ¹ / ₂	2 ³ / ₈	28500	3200
1000	120	CYV	Q1000T7/4CL/BP	T7	MogBiPost	200	8	5	28500	3200
1000	120	EGT	Q1000T7/4CL	T7	MedBiPost	250	5	2 ¹ / ₂	28500	3200
1200	120	GFA	Q1200PAR64/5	PAR64	ExMogEnd	400	6	—	—	3200
1200	120	GFB	Q1200PAR64/2	PAR64	ExMogEnd	400	6	—	—	3200
1200	120	GFC	Q1200PAR64/1	PAR64	ExMogEnd	400	6	—	—	3200
1200	120	GFE	Q1200PAR64/6	PAR64	ExMogEnd	400	6	—	—	3200
1500	120	DKX/DFS	Q1500PS52/4	PS52	MOG	1000	13	—	41000	3200
1500	120	FDB	Q1500T4/4CL	T4	R7S	400	6 ⁹ / ₁₆	2 ⁷ / ₁₆	41200	3200
1500	120	FGT	Q1500T4/4	T4	R7S	400	6 ⁹ / ₁₆	2 ¹³ / ₃₂	40200	3200
1500	120	CXZ	Q1500T10/4CL	T10	MogBiPost	400	8 ¹ / ₂	5	44500	3200
1500	120	CWZ	Q1500T12	T12	Mog PF	300	8 ¹⁵ / ₃₂	3 ¹⁵ / ₁₆	41000	3200
2000	120	FEY	Q2000T8/4CL	T4	R7S	400	5 ⁵ / ₈	1	57000	3200
2000	120	BWA	Q2000/4CL/BP	T8	MogBiPost	500	8 ¹ / ₄	5	54000	3200
2000	120	BWF	Q2000/4CL	T8	MOG	500	7 ¹ / ₂	5 ¹ / ₄	54000	3200
2000	220	FEX	Q2MT8/4CL	T8	R7S	300	5 ⁵ / ₈	1 ⁷ / ₁₆	50000	3200
2000	120	BWG	Q2MT9	T9	MOG	400	7 ¹ / ₂	—	56000	3200
2000	120	BVW	Q2MT10/4CL/MP	T10	MogPf	350	8 ¹⁵ / ₃₂	3 ¹⁵ / ₁₆	59000	3200
2000	120	CYX	Q2000T10/4CL	T10	MogBiPost	350	8	5	59000	3200
5000	120	DPY	Q5000T20/4CL	T20	MogBiPost	500	11	6 ¹ / ₂	143000	3200
10000	120	DTY	Q10M/T24/4CL	T24	MogBiPost	300	15 ³ / ₄	10	29000	3200



H.I.D. Application and Design Factors

H.I.D. LAMPS are highly efficient, long life light sources used in a wide variety of commercial applications.

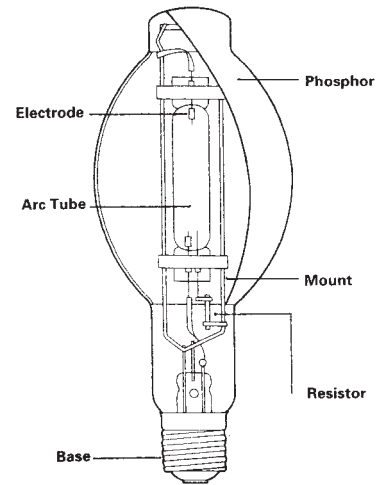
High Intensity Discharge Lamps or "H.I.D." Lamps, are available in four basic types:

- Metal Halide
- High Pressure Sodium
- Low Pressure Sodium
- Mercury Vapor

Each H.I.D. Lamp type has unique characteristics which make them more suitable to each application and/or special requirements. Below is a listing of the common as well as specialized H.I.D. Lamps that we have in stock. Contact us for special pricing and availability.

- Metal Halide
- High Pressure Sodium
- Low Pressure Sodium

- Mercury Vapor
- High Output Multi-Vapor
- High Output Metal Halide
- Protected Multi-Vapor
- Self-Extinguishing
- Pulse Start
- Non-Cycling Sodium
- Self Ballasted
- Sports Lighting
- Retrofit
- Philips White Son®
- Instant Restrike
- Tuff-Coated®*



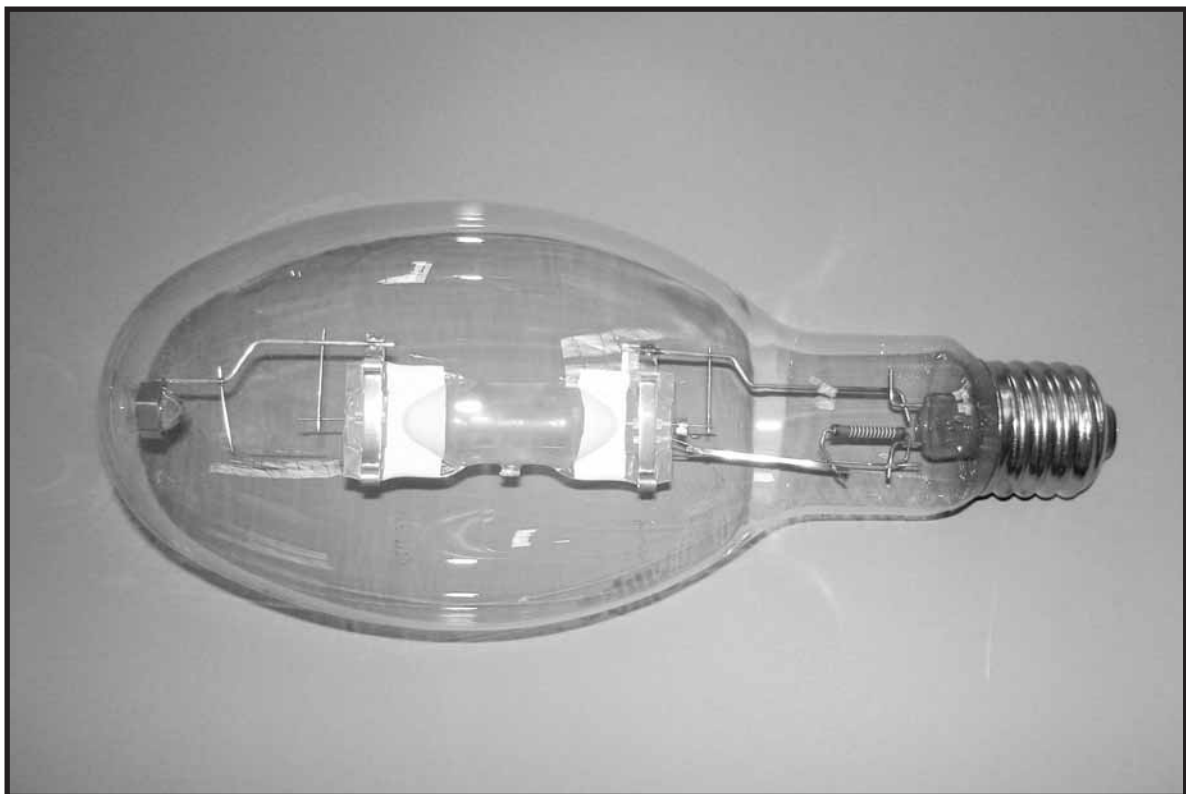
USHIO

**OSRAM
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* TUFF-COATING H.I.D. LAMPS

H.I.D. Lamps can be Tuff-Coated® for shatter-proof applications. Norman Lamps, Inc. has a complete, in house, coating facility allowing for quick turn-around time and a high degree of quality control. We can also coat H.I.D. Lamps which YOU supply. Contact us for pricing and further details on any Tuff-Coated® lamp you require.



H.I.D.
13



NORMAN LAMPS, INC.
Distributing Light To The World

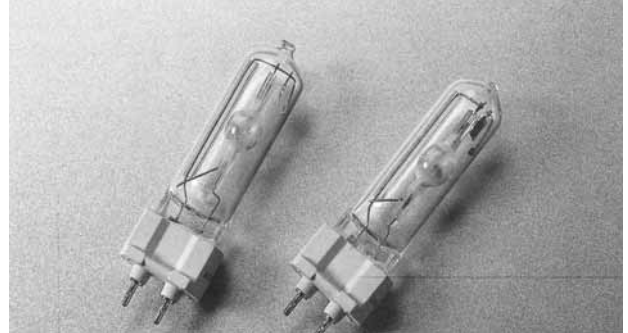
STANDARD METAL HALIDE LAMPS



LINE NO.	BULB	WATT	MOL	INNER/ MASTER	CRI	COLOR TEMP.	LUMENS	HOURS	FINISH	BASE	PART NUMBER
1	ED17	50	5.44"	1/12	70	3500	3400	10,000	CLEAR	MEDIUM	MH50/U/MED
2	ED17	50	5.44"	1/12	70	3500	3200	10,000	COATED	MEDIUM	MH50/C/U/MED
3	ED17	70	5.44"	1/12	70	3200	5500	12,000	CLEAR	MEDIUM	MH70/U/MED
4	ED17	70	5.44"	1/12	70	3200	5300	12,000	COATED	MEDIUM	MH70/C/U/MED
5	ED17	100	5.44"	1/12	70	3200	9000	15,000	CLEAR	MEDIUM	MH100/U/MED
6	ED17	100	5.44"	1/12	70	3200	8500	15,000	COATED	MEDIUM	MH100/C/U/MED
7	ED17	150	5.44"	1/12	70	3500	12500	15,000	CLEAR	MEDIUM	MH150/U/MED
8	ED17	150	5.44"	1/12	70	3500	12000	15,000	COATED	MEDIUM	MH150/C/U/MED
9	ED17	175	5.44"	1/12	65	4000	15000	10,000	CLEAR	MEDIUM	MH175/U/MED
10	ED17	175	5.44"	1/12	70	4000	13300	10,000	COATED	MEDIUM	MH175/C/U/MED
11	ED28	175	7.99"	1/12	65	4000	14000	10,000	CLEAR	MOGUL	MH175/U
12	ED28	175	8.31"	1/12	70	3700	13300	10,000	COATED	MOGUL	MH175/C/U
13	ED28	250	7.99"	1/12	65	4000	20500	10,000	CLEAR	MOGUL	MH250/U
14	ED28	250	8.31"	1/12	70	3700	19500	10,000	COATED	MOGUL	MH250/C/U
15	ET18	250	9.75"	1/10	65	4000	22000	10,000	CLEAR	MOGUL	MH250/U/ET18
16	ED37	360	11.5"	1/12	62	4300	36000	20,000	CLEAR	MOGUL	MH360/BU
17	ED37	400	10.83"	1/6	65	4000	36000	10,000	CLEAR	MOGUL	MH400/U
18	ED37	400	11.5"	1/6	65	4000	36000	10,000	"TUFF-COAT"	MOGUL	MH400/U/TF
19	ED37	400	11.5"	1/6	70	3700	34000	20,000	COATED	MOGUL	MH400/C/U
18	ED28	400	8.31"	1/12	65	4000	36000	20,000	CLEAR	MOGUL	MH400/U/ED28
20	T15	400	10.88"	1/12	65	4000	42000	10,000	CLEAR	MOGUL	MH400/HBU/T15
21	BT37	400	11.31"	1/6	65	4000	11000	20,000	CLEAR	MOGUL	MS400/BU
22	BT37	1000	11.1"	1/12	65	4000	110000	10,000	CLEAR	MOGUL	MH1000/U/BT37
23	BT56	1000	15.37"	1/6	65	4000	110000	3,000	CLEAR	MOGUL	MH1000/U
24	BT56	1500	15.38"	1/6	65	3900	165000	3,000	CLEAR	MOGUL	MH1500/BUH

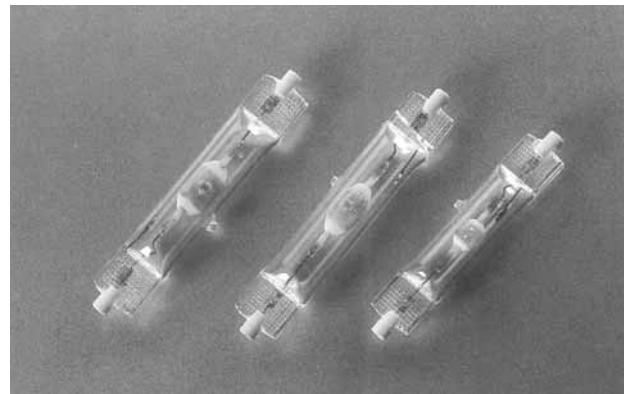


SINGLE ENDED METAL HALIDE LAMPS



LINE NO.	BULB	WATT	MOL	INNER/ MASTER	CRI	COLOR TEMP.	LUMENS	HOURS	FINISH	BASE	PART NUMBER
1	T6	70	4.5"	1/24	70	3200	5500	10,000	CLEAR UV-STOP	G12	MH70SE/UVS/3K
2	T6	70	4.5"	1/24	70	4200	5500	10,000	CLEAR UV-STOP	G12	MH70SE/UVS/4K
3	T7	150	5.47"	1/24	55	3200	11500	10,000	CLEAR UV-STOP	G12	MH150SE/UVS/3K
4	T7	150	5.47"	1/24	60	4200	12500	10,000	CLEAR UV-STOP	G12	MH150SE/UVS/4K

DOUBLE ENDED METAL HALIDE LAMPS



LINE NO.	BULB	WATT	MOL	INNER/ MASTER	CRI	COLOR TEMP.	LUMENS	HOURS	FINISH	BASE	PART NUMBER
5	T6	70	4.7"	1/24	60	3200	5500	10,000	CLEAR	R7S	MH70DE/UVS/3K
6	T6	70	4.7"	1/24	60	4200	5500	10,000	CLEAR	R7S	MH70DE/UVS/4K
7	T7	100	5.43"	1/24	60	3200	6800	10,000	CLEAR	R7S	MH100DE/UVS/3K
8	T7	100	5.43"	1/24	60	4200	6800	10,000	CLEAR	R7S	MH100DE/UVS/4K
9	T7	150	5.43"	1/24	60	3200	11500	10,000	CLEAR	R7S	MH150DE/UVS/3K
10	T7	150	5.43"	1/24	60	4200	12000	10,000	CLEAR	R7S	MH150DE/UVS/4K
11	T8	250	6.42"	1/24	70	4200	20000	8,000	CLEAR	FC2	MH250DE/4K

H.I.D.
13



NORMAN LAMPS, INC.
Distributing Light To The World

HIGH PRESSURE SODIUM LAMP



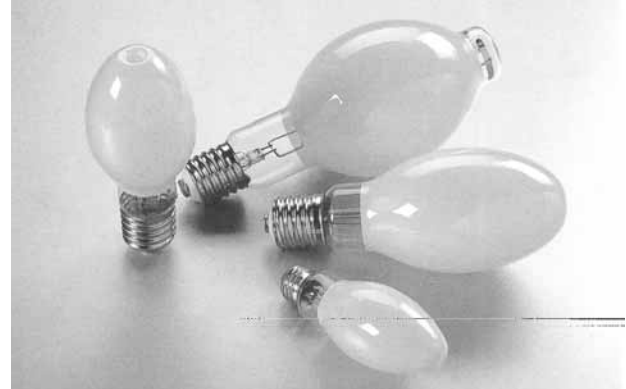
LINE NO.	BULB	WATT	MOL	INNER/ MASTER	CRI	COLOR TEMP.	LUMENS	HOURS	FINISH	BASE	PART NUMBER
1	ED17	35	5.5"	1/12	21	2100	2200	16,000	CLEAR	MEDIUM	LU35/MED
2	ED17	50	5.5"	1/12	21	2100	3800	16,000	CLEAR	MEDIUM	LU50/MED
3	ED23.5	50	7 5/16"	1/12	21	2100	3800	16,000	CLEAR	MOGUL	LU50
4	ED17	70	5.5"	1/12	21	2100	6000	24,000	CLEAR	MEDIUM	LU70/MED
5	ED23.5	70	7 5/16"	1/12	21	2100	6000	24,000	CLEAR	MOGUL	LU70
6	ED17	100	5.5"	1/12	21	2100	9000	24,000	CLEAR	MEDIUM	LU100/MED
7	ED23.5	100	7 5/16"	1/12	21	2100	9000	24,000	CLEAR	MOGUL	LU100
8	ED17	150	5.5"	1/12	21	2100	15000	24,000	CLEAR	MEDIUM	LU150/MED
9	ED23.5	150	7 5/16"	1/12	21	2100	15000	24,000	CLEAR	MOGUL	LU150
10	ED18	200	9.75"	1/12	21	2100	21000	24,000	CLEAR	MOGUL	LU200
11	ED18	250	9.75"	1/12	21	2100	28000	24,000	CLEAR	MOGUL	LU250
12	ED18	400	9.75"	1/12	21	2100	46000	24,000	CLEAR	MOGUL	LU400
13	ED25	1000	15"	1/6	21	2100	130000	24,000	CLEAR	MOGUL	LU1000

LOW PRESSURE SODIUM LAMP

LINE NO.	BULB	WATT	MOL	INNER/ MASTER	CRI	COLOR TEMP.	LUMENS	HOURS	FINISH	BASE	PART NUMBER
14	T16	18	8.5"	1/16	0	1800	1800	18,000	CLEAR	BY22d	SOX18
15	T16	35	12.25"	1/16	0	1800	4600	18,000	CLEAR	BY22d	SOX35
16	T16	55	16.75"	1/16	0	1800	7650	18,000	CLEAR	BY22d	SOX55



HIGH PRESSURE MERCURY VAPOR LAMP



LINE NO.	BULB	WATT	MOL	INNER/MASTER	CRI	COLOR TEMP.	LUMENS	HOURS	FINISH	BASE	PART NUMBER
1	ED17	50	5.25"	1/12	45	4000	1300	6,000	DELUXE WHITE	MEDIUM	MV50DX
2	ED17	75	5.25"	1/12	45	4000	2800	12,000	DELUXE WHITE	MEDIUM	MV75DX
3	A23	100	5.375"	1/12	45	4000	4000	16,000	DELUXE WHITE	MEDIUM	MV100DX/A23
4	ED17	100	5.5"	1/12	45	4000	4600	16,000	DELUXE WHITE	MEDIUM	MV100DX
5	ED23	100	7"	1/12	45	4000	4600	24,000	DELUXE WHITE	MOGUL	MV100DXMOG
6	ED28	175	8.25"	1/12	45	4000	8000	24,000	CLEAR	MOGUL	MV175CL
7	ED28	175	8.25"	1/12	45	4000	8900	24,000	DELUXE WHITE	MOGUL	MV175DX
8	ED28	250	8.25"	1/12	45	4000	13000	24,000	CLEAR	MOGUL	MV250CL
9	ED28	250	8.25"	1/12	45	4000	13500	24,000	DELUXE WHITE	MOGUL	MV250DX
10	ED37	400	10.375"	1/6	45	4000	22000	24,000	CLEAR	MOGUL	MV400CL
11	ED37	400	10.375"	1/6	45	4000	23000	24,000	DELUXE WHITE	MOGUL	MV400DX
12	BT56	1000	15.375"	1/6	45	4000	58000	24,000	DELUXE WHITE	MOGUL	MV1000DX
13	R40	100	6.75"	1/12	45	4000	2450	24,000	DX.WH.REFLECTOR	MEDIUM	MV100DX/R40
14	R40	175	6.75"	1/12	45	4000	6200	16,000	DX.WH.REFLECTOR	MEDIUM	MV175DX/R40
15	ED23	160	6.25"	1/12	45	4000	2800	24,000	DELUXE WHITE	MEDIUM	MVSB160



Metal Halide Cross Reference

**G.E.
Multi-Vapor**

MVR50/U/MED
MVR50/C/U/MED
MVR70/U/MED
MVR70/C/U/MED
ARC70/TD/UVC/730
ARC70/TD/UVC/743
CMH70/T/U/830/G12
-
MVR100/U/MED
MVR100/C/U/MED
MVR50/U/MED
MVR70/U/MED
CMH70/PAR30L/830FL
MVR100/U/MED
MVR150/U/MED
ARC150T/U/830G12
ARC150T/U/840G12
MVR150/U/MED
MVR150/C/U/MED
ARC150/TD/UVC/730
ARC150/TD/UVC/742
MVR175/U/MED
MVR175/C/U/MED
MVR175/U
MVR175/C/U
MVR175/VBU/PA
-
-
MVR250/U
MVR250/C/U
MVR250/VBU/PA
MVR320/VBU/XHO/PS
MVR360/VBU/WM/HO
MVR400/U
MVR400/C/U
MVR400/VBU/XHO/PA
MVR1000/U
MVR400/VBU/XHO/PA
MVR1000/U
MXR50/U/MED/0

**PHILIPS
Metal Halide**

MHC50/U/M/4K/ALTO
MHC50/C/U/4K/ALTO
MHC70/U/M/4K/ALTO
-
MHN70/TD/830
CDM70/TD/840
CDM70/T6/830
CDM70/T6/942
MH100/U/M/4K/ALTO
MH100C/U/M/4K/ALTO
MHC50/U/M/3K/ALTO
MHC70/U/M/4K/ALTO
CDM70/PAR30L/M/FL
MHC100/U/M/4K/ALTO
MHC150/U/M/4K/ALTO
-
-
MHC150/U/M/4K/ALTO
MHC150/C/U/M/4K/ALTO
MHN150/TD/840
CDM150/TD/830
MH175/U/M
MH175/C/U/M
MH175/U
MH175/C/U
MH175/BU/PS
-
-
MH250/U
MH250/C/U
MH250/BU/PS
MH320/BU/PS
-
MH400/U
MH400/C/U
-
MH1000/U
-
MH1000/U
MHC50/U/MP/4K/ALTO

**OSRAM/SYLVANIA
Metalarc**

MP50/U/MED
MP50/C/U/MED
MP70/U/MED
MP70/C/U/MED
Hqi-DE70/WDX
Hqi-DE70/NDX
MC70T6/U/G12/830
MC70T6/U/G12/940
MP100/U/MED
MP100/C/U/MED
-
-
MCP70PAR30LN/U/830/FL
-
-
-
Hqi-SE150/NDX
MP150/U/MED
MP150/C/U/MED
Hqi-DE 150/WDX
Hqi-DE 150/NDX
MH175/U/M
MH175/C/U/M
MH175/U
MH175/C/U
MS175/PS/BU-ONLY
MS200/PS/BU-ONLY/BT28
Hqi-DE250/NDX
M250/U
M250/C/U
MP250/PS/BU-ONLY
MS320/350/PS/BU-ONLY/BT28
-
M400/U
M400/C/U
MP350/400/PS/BU-ONLY
M1000/U
MP350/400/PS/BU-ONLY
M1000/U
MP50/U/MED





Infrared Heat Lamps

High-Powered heat sources utilizing Halogen technology

MAIN APPLICATIONS:

EPITAXIAL PROCESSES

- Approximately 90% of electricity is converted to radiated heat
- Shorter process cycle
- Precise control of wafer temperature
- Even heat distribution
- High reproducibility, low rejects
- Clean room packaging

PAINT DRYING

- Instant response time
- Rapid heat transfer
- Flexibility
- Energy efficient
- Improved production times
- Small space requirement
- Reduced contamination of substrate

OTHER APPLICATIONS:

- Bottle Blowing
- Heat Sterilization
- Cooking
- Food Warming
- Chemical Processes
- Drying of Lacquer/Printing Inks
- Paper Drying
- Zone Heating and Thermoforming



Quartz Infrared Heat Lamps

Watts	Bulb	Base	Fig. No.	Volts	Finish	Filament	LL (In.)	(mm)	M.O.L (In.)	(mm)	Avg. Rated Life (hrs)	Diam. (mm)	Part. Number
375	T-3	R7s	2	120	Trans	C-8	5.0	127.0	8.6	217.6	5000	11.00	QH375T3/7
500	T-3	U	6	120	Trans	C-8	5.0	127.0	8.8	223.8	5000	11.00	QH500T3
500	T-3	R7S	2	120	Trans	C-8	5.0	127.0	8.6	217.6	5000	11.00	QH500T3/7
500	T-3	U	6	120	Clear	C-8	5.0	127.0	8.8	223.8	5000	11.00	QH500T3/CL
500	T-3	X	3	120	Clear	C-8	5.6	142.0	9.5	241.0	5000	11.00	QH13169X
500	T-3	Y	7	120	Clear	C-8	5.6	142.0	8.6	218.0	5000	11.00	QH13169Y
500	T-3	X	3	120	Reflector	C-8	5.6	142.0	9.5	241.0	5000	11.00	QH13169X/98
800	T-3	U	6	120	Trans	C-8	8.0	203.0	12.0	303.0	5000	11.00	QH800T3
1000	T-3	U	6	240	Trans	C-8	10.0	254.0	13.8	350.8	5000	11.00	QH1000T3
1000	T-3	U	6	240	Clear	C-8	10.0	254.0	13.8	350.8	5000	11.00	QH1000T3/CL
1000	T-3	X	3	235	Clear	C-8	10.7	272.0	14.6	370.0	5000	11.00	QH13195X
1000	T-3	Y	7	235	Clear	C-8	10.7	272.0	13.7	348.0	5000	11.00	QH13195Y
1000	T-3	Z	4	235	Reflector	C-8	10.7	272.0	14.0	357.5	5000	11.00	QH13713Z/98
1000	T-3	X	3	235	Clear	C-8	10.7	272.0	14.6	370.0	5000	11.00	QH13713X
1000	T-3	SK15	5	235	Reflector	C-8	10.7	272.0	14.1	360.0	5000	11.00	QH13844Z/98
1200	T-3	Y	1	144	Clear	C-8	6.1	155.0	9.0	228.0	5000	11.00	QH135561Y/00
1200	T-3	Y	1	144	Reflector	C-8	6.1	155.0	9.0	228.0	5000	11.00	QH135561Y/98



Infrared Heat Lamps



Fig. 1
(Y Base)
Leads Are Approximately 6"



Fig. 2
(R7s Base)

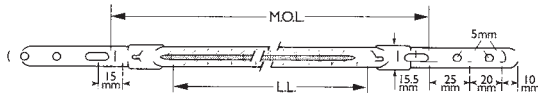


Fig. 3
(X Base)

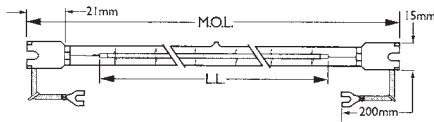


Fig. 4
(Z Base)

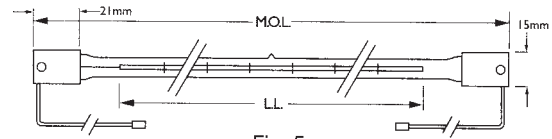


Fig. 5
(SK15 Base)
13844Z/98—Lead is 15.7", 14103Z/98—Lead is 9"

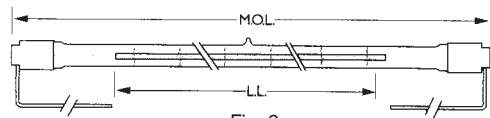


Fig. 6
(U Base)
Leads Are Approximately 6"



Fig. 7
(Y Base)
13169Y—Lead is 6.3". 13195Y—Lead is 7.8"

Quartz Infrared Heat Lamps

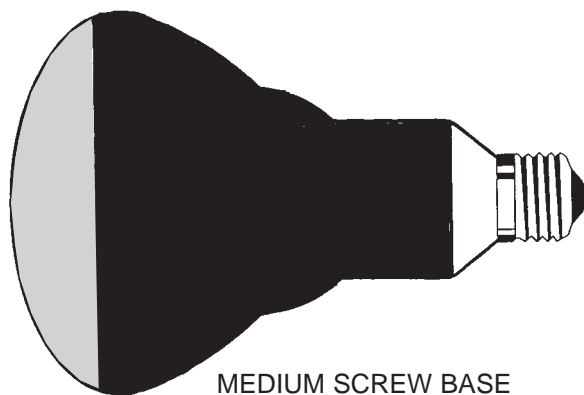
Watts	Bulb	Base	Fig. No.	Volts	Finish	Filament	LL (In.)	LL (mm)	M.O.L. (In.)	M.O.L. (mm)	Avg. Rated Life (hrs)	Diam. (mm)	Part. Number
1600	T-3	U	6	208	Trans	C-8	16.0	406.0	19.8	503.0	5000	11.00	QH1600T3
1600	T-3	U	6	240	Trans	C-8	16.0	406.0	19.8	503.0	5000	11.00	QH1600T3
1600	T-3	U	6	277	Trans	C-8	16.0	406.0	19.8	503.0	5000	11.00	QH1600T3
1600	T-3	R7S	2	240	Trans	C-8	16.0	406.0	19.6	498.5	5000	11.00	QH1600T3/7
1600	T-3	U	6	240	Clear	C-8	16.0	406.0	19.8	503.0	5000	11.00	QH1600T3/CL
1600	T-3	Y	1	144	Clear	C-8	6.1	155.0	9.0	228.0	5000	11.00	QH13568Y/00
1600	T-3	Y	1	144	Reflector	C-8	6.1	155.0	9.0	228.0	5000	11.00	QH13568Y/98
2000	T-3	X	3	235	Clear	C-8	11.1	282.0	14.6	370.0	5000	11.00	QH13168X
2000	T-3	Z	4	235	Reflector	C-8	11.0	280.0	14.0	357.5	5000	11.00	QH13168Z/98
2000	T-3	Y	1	235	Clear	C-8	11.0	280.0	14.0	357.5	5000	11.00	QH13213Y/00
2000	T-3	X	3	400	Reflector	C-8	16.2	410.0	20.0	508.0	5000	11.00	QH13245X/98
2000	T-3	X	3	400	Clear	C-8	16.2	410.0	20.0	508.0	5000	11.00	QH13765X
2000	T-3	SK15	5	235	Reflector	C-8	11.0	280.0	14.0	357.5	5000	11.00	QH14103Z/98
2000	T-3	U	6	240	Clear	C-8	10.0	254.0	12.0	303.0	5000	11.00	QH2000T3/ICL/HT
2000	T-3	U	6	240	Clear	C-8	10.0	254.0	12.0	303.0	5000	11.00	QH2000T3/ICL/HT/UBO
2500	T-3	U	6	480	Trans	C-8	25.0	635.0	28.8	731.0	5000	11.00	QH2500T3
2500	T-3	R7S	2	480	Trans	C-8	25.0	635.0	28.7	730.0	5000	11.00	QH2500T3/7
2500	T-3	U	6	480	Trans	C-8	25.0	635.0	28.8	731.0	5000	11.00	QH2500T3/CL
3000	T-3	X	3	400	Clear	C-8	27.6	700.0	31.4	798.0	5000	11.00	QH13230X
3000	T-3	X	3	400	Reflector	C-8	27.6	700.0	31.4	798.0	5000	11.00	QH13230X/98
3000	T-3	U	6	235	HeLen	C-8	16.2	413.0	19.8	504.0	7000	11.00	QH3000T3/HeLen



BR-40 I.R. HEAT LAMPS

- 90% of energy is transmitted as infrared
- Lamp lifetime 5000 hours
- Instant, accurately controllable radiant heat
- Food warmer
- Drying and curing

AVAILABLE IN TUFF-COAT®
(ADD "TF" TO PART NUMBER)

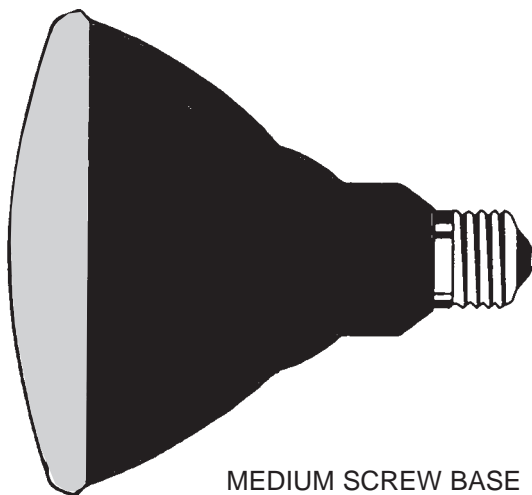


LINE NO.	VOLTS	WATTS	LIFE HOURS	GLASS	PART NUMBER
1	120.0	250	5,000	CLEAR	250BR40/1
2	120.0	250	5,000	RUBY RED	250BR40/10/RED
3					
4	120.0	375	5,000	CLEAR	375BR40/1
5	120.0	375	5,000	RUBY RED	375BR40/10/RED
6					
7	230.0	250	5,000	RUBY RED	250BR40/R/230V

PAR-38 I.R. HEAT LAMPS

- 90% of energy is transmitted as infrared
- Instant, accurately controllable radiant heat
- Special filament design for a concentrated beam
- High IR-A radiation level for deeper penetration of muscles and veins.
- Medical / Industrial
- Drying and curing

AVAILABLE IN TUFF-COAT®
(ADD "TF" TO PART NUMBER)



LINE NO.	VOLTS	WATTS	LIFE HOURS	GLASS	PART NUMBER
8	120.0	175	5,000	CLEAR	175PAR38/IR/CL
9	120.0	175	5,000	RUBY RED	175PAR38/IR/RED
10					
11	230.0	175	5,000	CLEAR	175PAR38/IR/CL-230V
12	230.0	175	5,000	RUBY RED	175PAR38/IR/RED-230V



Black Light Tube Lamps

Black Light Blue – BLB
Black Light – BL

UV LIGHT SOURCE

INSPECTION USE APPLICATIONS
DECORATIVE LIGHTING
SIGN LIGHTING

2-PIN BASE
(120 VOLT OPERATION)



LINE NO.	WATTS	M.O.L	TUBE DIAMETER	HOURS	FINISH	LAMP NUMBER
1	4	6"	5/8"	6,000	Black Light Blue	F4T5-BLB
2	6	9"	5/8"	6,000	Black Light Blue	F6T5-BLB
3	8	12"	5/8"	6,000	Black Light Blue	F8T5-BLB
4						
5	15	18"	1.0"	7,500	Black Light Blue	F15T8-BLB
6	20	24"	1.0"	7,500	Black Light Blue	F20T8-BLB
7	20	24"	1.5"	7,500	Black Light Blue	F20T12-BLB
8	30	36"	1.0"	7,500	Black Light Blue	F30T8-BLB
9	32	48"	1.0"	7,500	Black Light Blue	F32T8-BLB
10	40	48"	1.0"	20,000	Black Light Blue	F40T8-BLB
11						
12	40	48"	1.25"	20,000	Black Light Blue	F40T10-BLB
13	40	48"	1.50"	20,000	Black Light Blue	F40T12-BLB
14						
15	4	6"	5/8"	6,000	Black Light (White)	F4T5-BL
16	6	9"	5/8"	6,000	Black Light (White)	F6T5-BL
17	8	12"	5/8"	6,000	Black Light (White)	F8T5-BL
18	20	24"	1.5"	6,000	Black Light (White)	F20T12-BL

Applications:

Used to reveal properties of materials that would otherwise remain hidden:

- Testing inspecting and analysis in food and textile industry, archeology, criminology, philately, darkrooms, metallurgy, chemistry and medicine
- Decorative lighting for nightclubs and theaters
- Sign Lighting

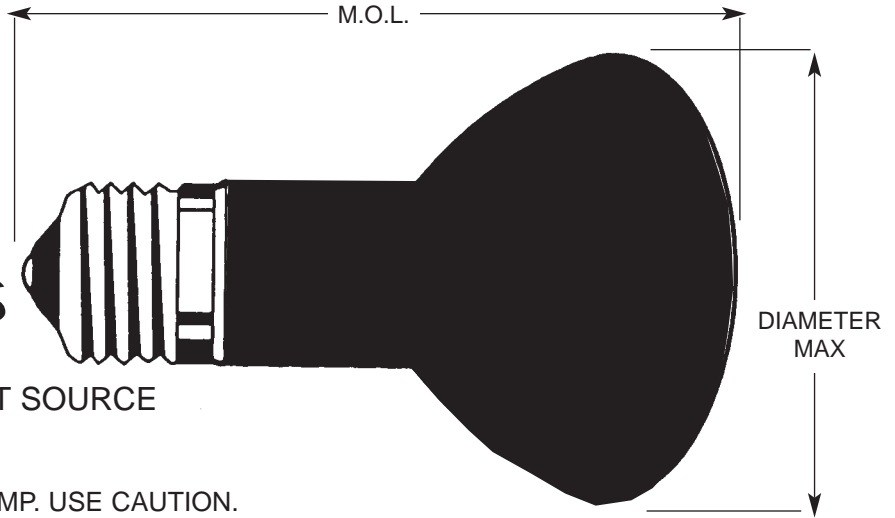
■ OTHER DIAMETERS AND LENGTHS ARE AVAILABLE ON SPECIAL ORDER BASIS.

BLACK LIGHT
15



NORMAN LAMPS, INC.
Distributing Light To The World

R20, R25, R30, R40 Black Light Reflector Lamps



DECORATIVE USE • NON-U.V. LIGHT SOURCE

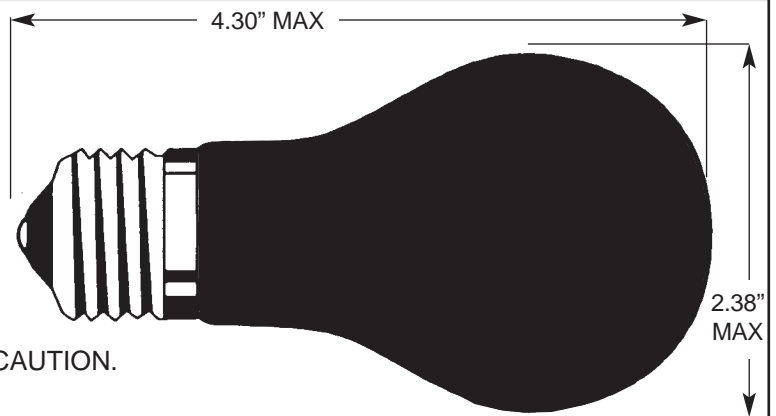
WARNING: EXTREMELY HOT RUNNING LAMP. USE CAUTION.

LINE NO.	VOLTS	AMPS	WATTS	LIFE	M.O.L.	DIAMETER	MEDIUM SCREW BASE
1	120.0	.625	75	3,000	4.0"	2.5"	75R20/BLB
2							
3	120.0	.625	75	3,000	4.75"	3.2"	75R25/BLB
4	120.0	.833	100	3,000	4.75"	3.2"	100R25/BLB
5							
6	120.0	.625	75	3,000	5.40"	3.75"	75R30/BLB
7	120.0	.833	100	3,000	5.40"	3.75"	100R30/BLB
6							
9	120.0	.625	75	3,000	6.50"	5.0"	75R40/BLB
10	120.0	.833	100	3,000	6.50"	5.0"	100R40/BLB

A-19 Black Light Lamps

DECORATIVE USE
NON-U.V. LIGHT SOURCE

WARNING: EXTREMELY HOT RUNNING LAMP. USE CAUTION.



LINE NO.	VOLTS	AMPS	WATTS	LIFE	FINISH	MEDIUM SCREW BASE
11	120.0	.625	75	3,000	BLACK	75A19/BLB

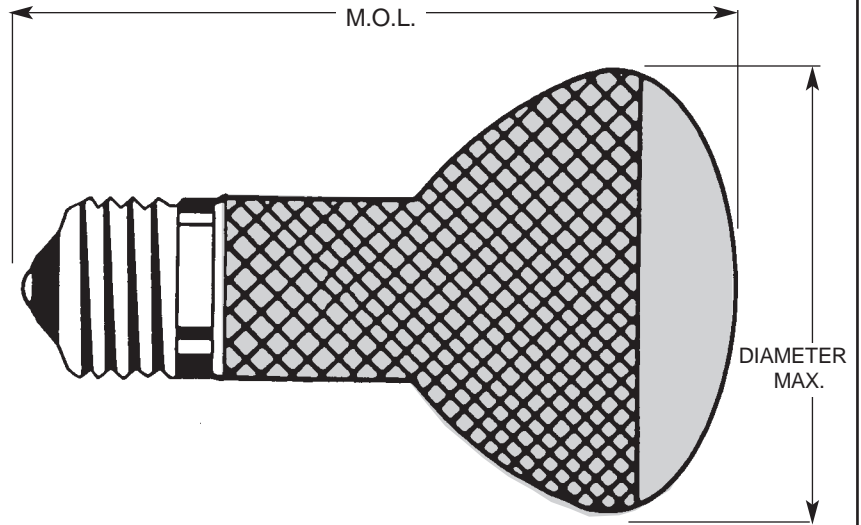


R20, R30, R40
NEODYMIUM
REFLECTOR LAMPS

TRUE DAYLIGHT LAMPS

ENHANCES COLOR

Full Spectrum Light
Excellent for Display Lighting



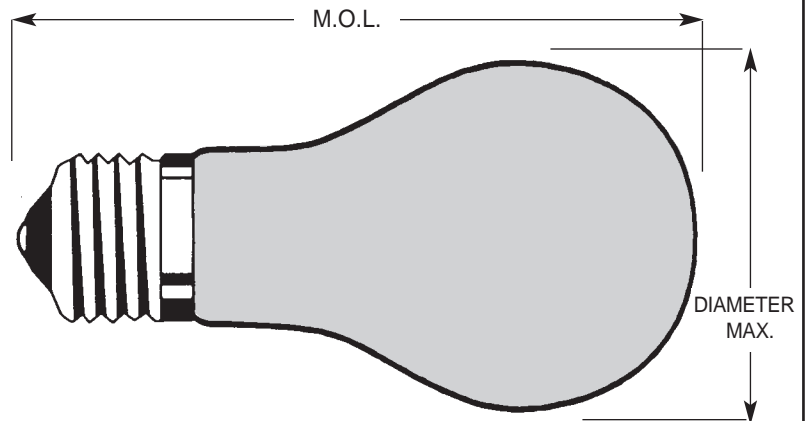
LINE NO.	VOLTS	AMPS	WATTS	LIFE	M.O.L.	DIAMETER	MEDIUM SCREW BASE
1	120.0	.416	50	2,500	4.0"	2.5" R20	50R20/NEO
2							
3	120.0	.625	75	2,500	5.4"	3.75" R30	75R30/NEO
4	120.0	.833	100	2,500	5.4"	3.75" R30	100R30/NEO
5							
6	120.0	.833	100	2,500	6.5"	5.0" R40	100R40/NEO
7	120.0	1.250	150	2,500	6.5"	5.0" R40	150R40/NEO

A19, A21
NEODYMIUM

TRUE DAYLIGHT LAMPS

ENHANCES COLOR

Full Spectrum Light



LINE NO.	VOLTS	AMPS	WATTS	LIFE	M.O.L.	DIAMETER	MEDIUM SCREW BASE
8	120.0	.500	60	2,500	4.3"	2.38" A19	60A19/NEO
9	120.0	.625	75	2,500	4.3"	2.38" A19	75A19/NEO
10							
11	120.0	.833	100	2,500	4.9"	2.60" A21	100A21/NEO
12	120.0	1.25	150	2,500	4.9"	2.60" A21	150A21/NEO



GERMICIDAL U.V. LAMPS

DESCRIPTION:

Germicidal U.V. Lamps are low pressure mercury vapor discharge lamps consisting of a tubular glass envelope and emitting short wave U.V. Radiation that peaks at 253.7NM (UV-C) for optimum germicidal effectiveness.

The glass tube consists of either borax glass or quartz glass depending on the U.V. Lamp type and its application.

APPLICATIONS:

Germicidal U.V. Lamps are used for killing or inactivating bacteria, viruses and other microscopic germs. Typical applications include air, water and surface sterilization in hospitals, research labs, pharmaceutical institutions, food processing, dairies, breweries, and bakeries. They are also used for the disinfection of drinking water, waste water, swimming pools, air conditioning systems, cold storage rooms and more.

Norman Lamps, Inc. stocks a wide variety of U.V. Germicidal Lamps for immediate delivery. Custom lengths and assemblies can be produced with low minimum production runs. Contact us for further information of our entire line of U.V. Germicidal Lamp Products.





GERMICIDAL TUBE LAMPS

U.V. @ 253.7MM

- T-5
- T-8
- T-10



LINE NO	WATTS	LENGTH* INCHES	MM	LIFE HOURS	LAMP BASE	PART NUMBER
T-5 MINIATURE BI-PIN BASE						
1	4	6"	153	6,000	G5	G4T5
2	6	9"	229	6,000	G5	G6T5
3	7	7	180	6,000	G5	G7T5
4	8	12"	305	6,000	G5	G8T5
5	11	8.8"	224	8,000	G5	G11T5
6	16	11.3"	287	8,000	G5	G16T5
7	20	16"	406	8,000	G5	G20T5
T-8 MEDIUM BI-PIN BASE						
8	10	14"	356	8,000	G-13	G10T8
9	15	18"	457	8,000	G-13	G15T8
10	25	18"	457	8,000	G-13	G25T8
11	30	36"	914	8,500	G-13	G30T8
12	36	48"	1,219	10,000	G-13	G36T8
13	55	36"	914	10,000	G-13	G55T8
14	75	48"	1,219	10,000	G-13	G75T8
T-10 MEDIUM BI-PIN BASE						
15	20	24"	610	8,000	G-13	G20T10
16	40	48"	1,220	8,000	G-13	G40T10

*LENGTH AS MEASURED FROM PIN TO PIN.
ABOVE LAMPS CAN BE SUPPLIED IN QUARTZ GLASS WITH CERAMIC END CAPS FOR HIGH OUTPUT (H.O.) APPLICATIONS.



**4-Pin, Single End
Germicidal Tube Lamps**
Quartz Glass
U.V. @ 253.7mm



INSTANT START AND PREHEAT (GPH)

LINE NO	WATTS	LENGTH* INCHES	LENGTH* MM	LIFE HOURS	PART NUMBER
4-PIN SINGLE END BASE					
1	16	14.06"	357	10,000	G10T5L/4P
2	14	11.30"	287	10,000	G14T5L/4P
3	22	17.16"	436	10,000	G22T5L/4P
4	39	33.31"	846	10,000	G36T5L/4P
5	65	61.17"	1,554	10,000	G64T5L/4P
4-PIN SINGLE END BASE					
6	10	8.35"	212	10,000	GPH212T5L/4P
7	18	8.35"	212	10,000	GPH212T5L/4P/HO
8	12	10.12"	257	10,000	GPH257T5L/4P
9	14	11.30"	287	10,000	GPH287T5L/4P
10	15	11.93"	303	10,000	GPH303T5L/4P
11	16	13.99"	330	10,000	GPH330T5L/4P
12	17	14.06"	357	10,000	GPH357T5L/4P
13	21	17.17"	436	10,000	GPH436T5L/4P
14	48	17.17"	436	10,000	GPH436T5L/4P/HO
15	21	17.72"	450	10,000	GPH450T5L/4P
16	22	18.23"	463	10,000	GPH463T5L/4P
17	24	20.00"	508	10,000	GPH508T5L/4P
18	29	24.00"	609	10,000	GPH609T5L/4P
19	29	24.41"	620	10,000	GPH620T5L/4P
20	34	28.00"	711	10,000	GPH711T5L/4P
21	38	30.00"	762	10,000	GPH762T5L/4P
22	38	31.22"	793	10,000	GPH793T5L/4P
23	38	31.90"	810	10,000	GPH810T5L/4P
24	55	42.00"	1,067	10,000	GPH1067T5L/4P

*ALL LENGTHS ARE APPROXIMATE OVERALL DIMENSIONS. CALL FOR EXACT LENGTHS IN STOCK AS WELL AS LENGTHS NOT SHOWN. ALL ABOVE LISTED LAMPS ARE AVAILABLE IN HIGH OUTPUT (H.O.).



**SINGLE PIN, FA8 BASE
 GERMICIDAL TUBE LAMPS**
 U.V. @ 253.7MM

QUARTZ GLASS



LINE NO	WATTS	LENGTH*		LIFE HOURS	LAMP BASE	PART NUMBER
		INCHES	MM			
SINGLE PIN (FA8) BASE						
1	16	14.8"	376	10,000	FA8	G10T5.5L
2	12	10.0"	252	10,000	FA8	G12T5L
3	14	12.0"	306	10,000	FA8	G14T5L
4	17	15.9"	404	10,000	FA8	G18T5L
5	22	18.0"	455	10,000	FA8	G22T5L
6	25	22.0"	557	10,000	FA8	G24T5L
7	39	34.0"	865	10,000	FA8	G36T5L
8	50	45.9"	1,166	10,000	FA8	G48T5L
9	65	62.0"	1,575	10,000	FA8	G64T5L

*ALL LENGTHS ARE APPROXIMATE OVERALL DIMENSIONS. CALL FOR EXACT LENGTHS IN STOCK. AVAILABLE IN HIGH OUTPUT (H.O.).



**COMPACT SINGLE END
GERMICIDAL LAMPS**
U.V. @ 253.7MM

QUARTZ GLASS



LINE NO	WATTS	LENGTH* INCHES	MM	LIFE HOURS	LAMP BASE	PART NUMBER
1	5	4.0"	102	8,000	G-23	(G23 BASE) PL-S5W/TUV
2	7	5.0"	127	8,000	G-23	PL-S7W/TUV
3	9	6.5"	165	8,000	G-23	PL-S9W/TUV
4	11.8	8.7"	220	8,000	G-23	PL-S11W/TUV
5	13	7.0"	178	8,000	GX-23	(GX23 BASE) PL-S13W/TUV
6	18	8.32"	211	8,000	2G-11	(2G11 BASE) PL-L18W/TUV
7	36	16.0"	406	8,000	2G-11	PL-L36W/TUV
8	55	22.5"	572	8,000	2G-11	PL-L55W/TUV
9	60	38.0"	711	8,000	2G-11	PL-L60W/TUV

**2-PIN, DOUBLE END
GERMICIDAL LAMPS**
U.V. @ 253.7MM

QUARTZ GLASS
PREHEAT (GPH)

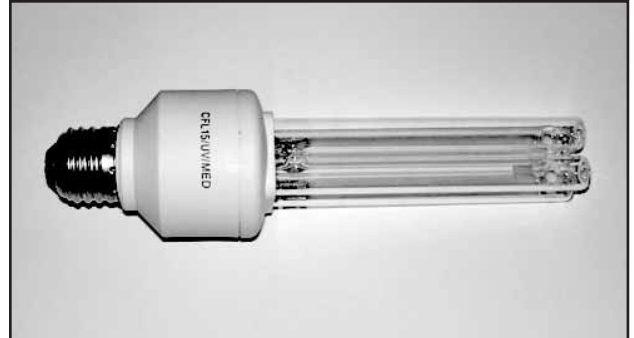


LINE NO	WATTS	LENGTH* INCHES	MM	LIFE HOURS	LAMP BASE	PART NUMBER
2-PIN "GPH" DOUBLE END BASE						
10	10	8.35"	212	10,000	G-5	GPH212T5L
11	14	11.3"	287	10,000	G-5	GPH287T5L
12	17	14.06"	357	10,000	G-5	GPH357T5L
13	21	17.17"	436	10,000	G-5	GPH436T5L
14	23	18.63"	473	10,000	G-5	GPH473T5L
15	29	24.41"	620	10,000	G-5	GPH620T5L
16	38	31.22"	793	10,000	G-5	GPH793T5L



COMPACT U.V.
• **MEDIUM SCREW BASE**
• **E-26**
GERMICIDAL LAMP
U.V. @ 253.7MM

QUARTZ GLASS
FITS TO STANDARD E-26 SOCKET



LINE NO	WATTS	LENGTH* INCHES	MM	LIFE HOURS	LAMP BASE	PART NUMBER
1	15	7.25"	184	7,000	E-26	CFL15/UV/MED

GERMICIDAL LAMP
Low pressure mercury lamps emitting shortwave UV. @ 253.7MM

QUARTZ GLASS
LONG LIFE
COMPACT SIZE



LINE NO.	WATTS	M.O.L	AMPS	LIFE HOURS	FILAMENT	INTERMEDIATE SCREW BASE
2	3	2.5"	.350	5,000	CC-2V (Inverted)	GTL3

Applications:

Germicidal lamps are used for killing and inactivating bacteria, viruses and other primitive organisms. Common uses are:

- Treatment of air in hospitals and air conditioning systems
- Disinfection of drinking water and waste water
- Disinfection of packing materials, bottles and jars in the food processing industries
- Various photo-chemical processes

WARNING: The radiation emitted by these lamps is extremely harmful to all living organisms. Special measures should therefore be taken to protect against direct radiation.



Norman Lamps, Inc. produces a full line of long-life, Multi-Light® lamps which include G-16½, G25, G40, S-14 and T6½ types. These lamps incorporate a series of exclusive, extra-long life krypton lamps, wired within the glass bulb. The result is a 10 to 20 times increase in lamp life while reducing energy consumption by 80%! Contact us for information and pricing on these incredible energy-saving lamps by Norman.



- Decorative Globes (G-16½, G-25, G-40)
- Sign and Marquee (S-14)

- Emergency Exit Signs (T6½)

NOTE: G-25 and G-40 available on Special Order only.

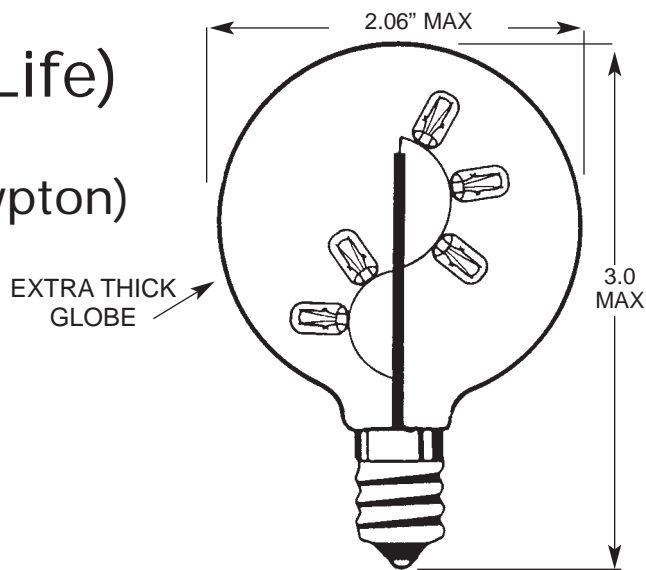
G-16½ **40,000+ HOURS**
(Extended Life)
MULTI-LIGHT® LAMPS
5 WATTS • INCANDESCENT (Krypton)

40,000 LIFE HOURS

SPARKLING LIGHT EFFECT
SHOCK AND VIBRATION RESISTANT
LOW POWER CONSUMPTION
REPLACES: 15 WATT, 25 WATT AND 40 WATT GLOBE LAMPS
HIGH LUMENS PER WATT

BRASS BASE

ENERGY SAVING LAMP



LINE NO	VOLTS	WATTS	LUMENS	FINISH	CANDELABRA SCREW BASE
1	120.0	5	69	CLEAR	5G16½-99-CS

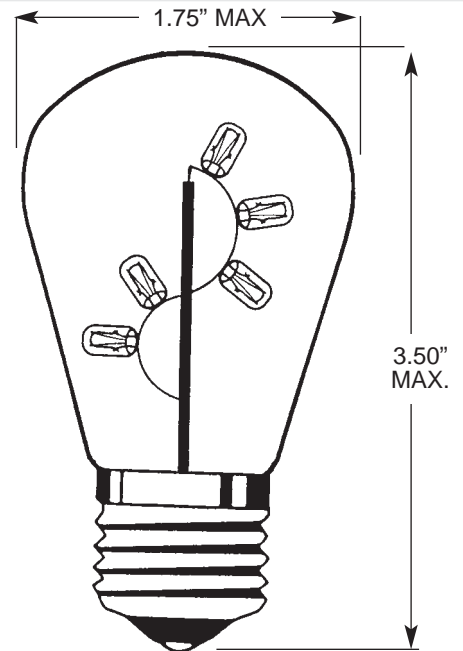


S-14 ^{40,000+ HOURS} (Extended Life)
MULTI-LIGHT® LAMPS
5 WATTS • INCANDESCENT (Krypton)

40,000 LIFE HOURS

SPARKLING LIGHT EFFECT
SHOCK AND VIBRATION RESISTANT
LOW POWER CONSUMPTION
REPLACES: 11 WATT SIGN / MARQUEE LAMPS

ENERGY SAVING LAMP



LINE NO	VOLTS	WATTS	LUMENS	FINISH	MEDIUM SCREW BASE
1	120.0	5	69	CLEAR	5S14-99-MED

T-6^{1/2} ^{30,000+ HOURS} (Extended Life)
MULTI-LIGHT® LAMPS
9 WATTS • INCANDESCENT (Krypton)

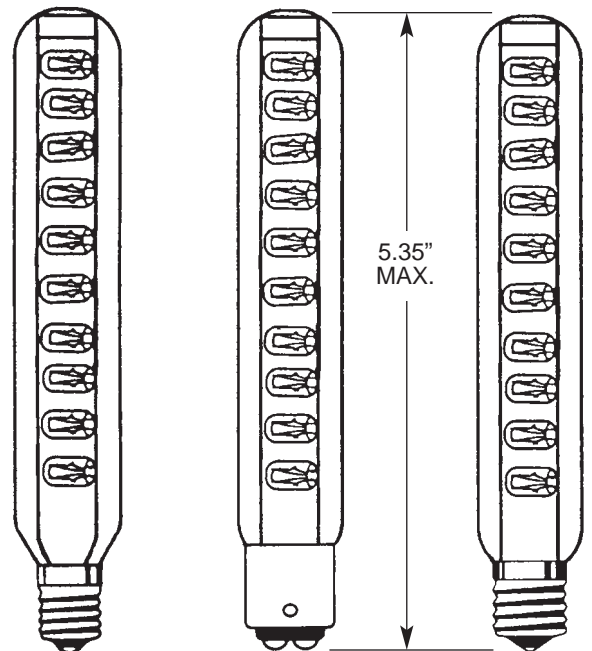
EMERGENCY EXIT LAMPS

30,000 LIFE HOURS

LOW POWER CONSUMPTION (ONLY 9 WATTS)
SHOCK AND VIBRATION RESISTANT
DIRECT REPLACEMENTS FOR EXIT SIGN LAMPS
MEETS NATIONAL FIRE CODES

REPLACES: 15 WATT, 20 WATT AND 25 WATT LAMPS

ENERGY SAVING LAMP



LINE NO	VOLTS	WATTS	LUMENS	FINISH	CANDELABRA SCREW BASE	D.C. BAYONET BASE	INTERMEDIATE SCREW BASE
2	120.0	9	110	CLEAR	9T6.5-99-CS	9T6.5-99-DC	9T6.5-99-INT



Lampholder Assemblies and Lamp Sockets

Norman Lamps, Inc. manufactures a wide variety of standard as well as custom designed lampholders. Norman Lampholders are precision manufactured and many carry UL and CSA certification.

The following pages represent only a small segment of the Lampholders available from Norman, Inc.

Contact Customer Service for further details, drawings and pricing on the exact Lampholder Assembly you require.

- WEDGE BASE
- MINIATURE BAYONET (BA9S)
- D.C. BAYONET (BA15D)
- S.C. BAYONET (BA15S)
- MIDGET SCREW (E-5)
- MINIATURE SCREW (E-10)
- CANDELABRA SCREW (E-12)
- INTERMEDIATE SCREW (E-17)
- EUROPEAN SCREW (E-14)
- MEDIUM SCREW (E-27)
- FESTOON (T-3 TYPE)
- LAMPHOLDER ARRAYS
- HALOGEN BI-PIN
- HALOGEN CERAMIC
- HALOGEN MR-16 and MR-11
- CUSTOM SOCKET ASSEMBLIES

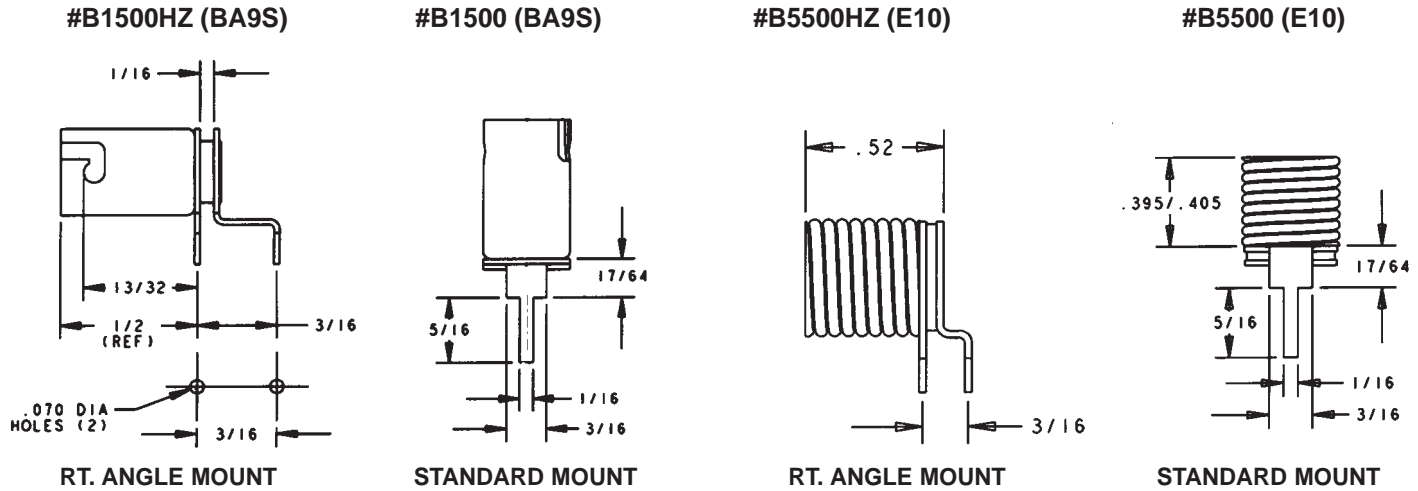


P.C.B. SOCKET ASSEMBLIES

MINIATURE BAYONET (BA9S)
MINIATURE SCREW BASE (E-10)

(ENLARGED TO SHOW DETAIL)

P.C.B. SOLDERABLE CONTACTS
CORROSION RESISTANT, PLATED BRASS SOCKETS



MINIATURE BAYONET SOCKET ASSEMBLY (BA9S)

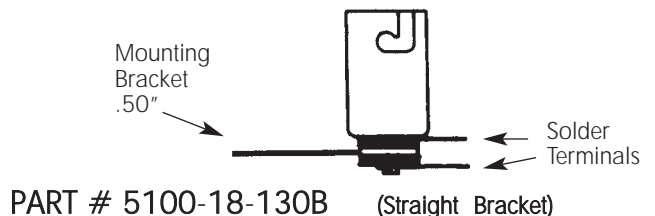
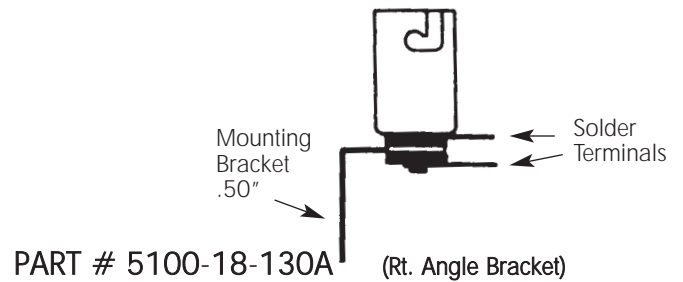
WITH MOUNTING BRACKET

BRACKET HAS .135" DIAMETER HOLE FOR MOUNTING.

CHROME PLATED BRASS CONSTRUCTION

1.5 VOLT ~ 250.0 VOLT APPLICATIONS

STOCK SOCKET ASSEMBLY.
NO MINIMUM

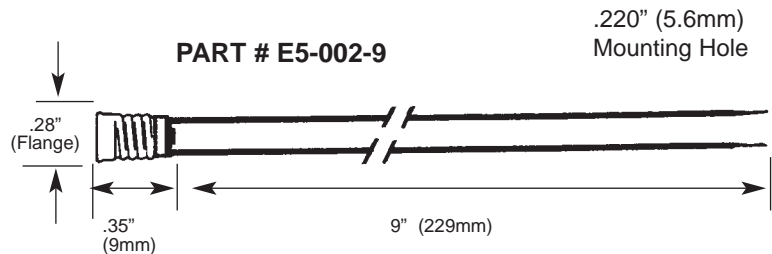




MIDGET SCREW SOCKET ASSEMBLY (E-5) CHROME PLATED SOCKET

9" Insulated Leads (Stripped and Tinned)
22 AWG
Solder Ready Terminals
Panel Mountable
Low Cost

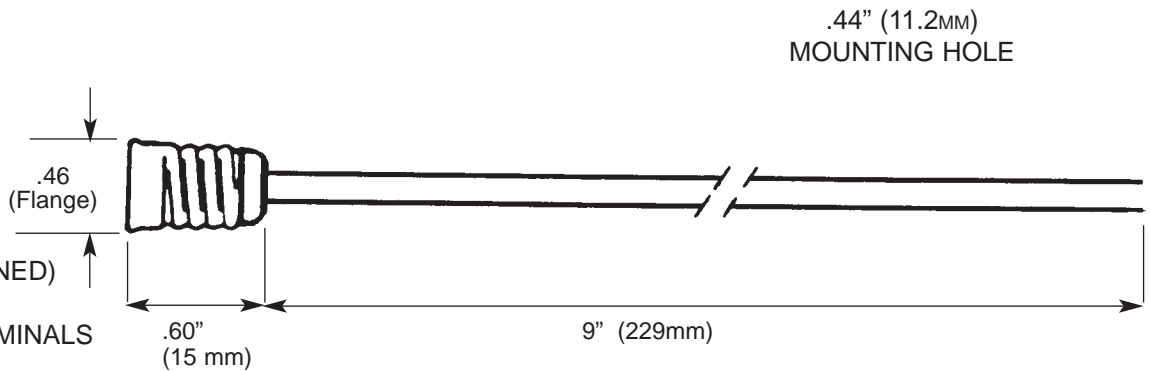
NOTE: Can be supplied with insulated shell.



MINIATURE SCREW SOCKET ASSEMBLY (E-10) CHROME PLATED SOCKET

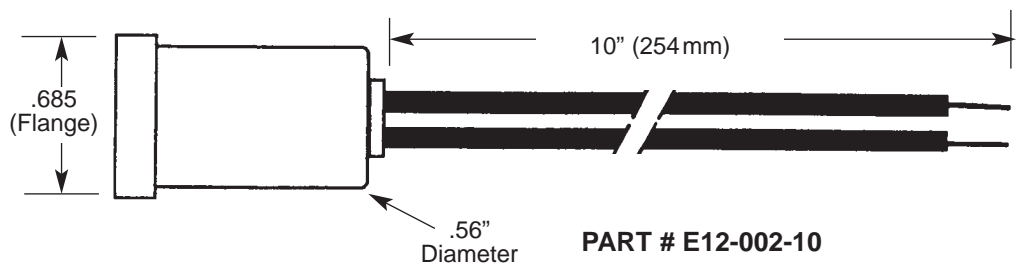
9" INSULATED LEADS
(STRIPPED & TINNED)
22 AWG
SOLDER READY TERMINALS
PANEL MOUNTABLE

NOTE: Can be supplied with insulated shell. P.N. E10-001-9



CANDELABRA SCREW SOCKET ASSEMBLY (E-12) INSULATED SHELL

10" INSULATED LEADS
(STRIPPED & TINNED) (18 AWG)
SOLDER READY TERMINALS
PANEL MOUNTABLE





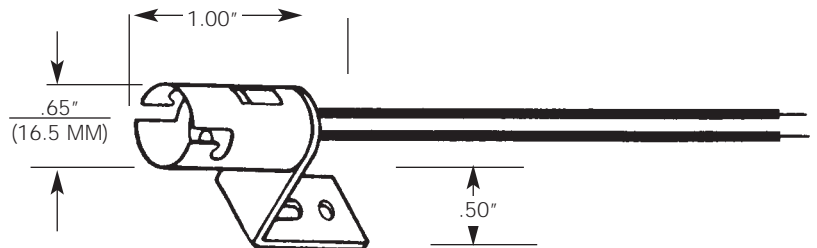
D.C. BAYONET SOCKET ASSEMBLY (BA15D)

DOUBLE CONTACT

WITH MOUNTING BRACKET (Bracket may vary)
Bracket can be bent in order
to accommodate mounting
position required.

STEEL CONSTRUCTION
5" INSULATED WIRE LEADS
6 VOLT ~ 250 VOLT APPLICATIONS

(75 WATT MAX.)



PART # 15B-002

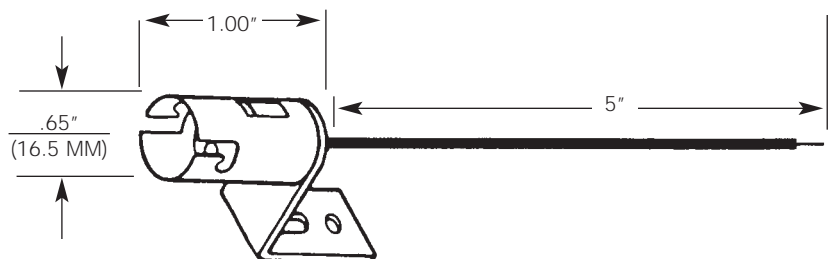
S.C. BAYONET SOCKET ASSEMBLY (BA15S)

SINGLE CONTACT

WITH MOUNTING BRACKET (Bracket may vary)

STEEL CONSTRUCTION
5" INSULATED WIRE LEADS
6 VOLT ~ 250 VOLT APPLICATIONS

(75 WATT MAX.)



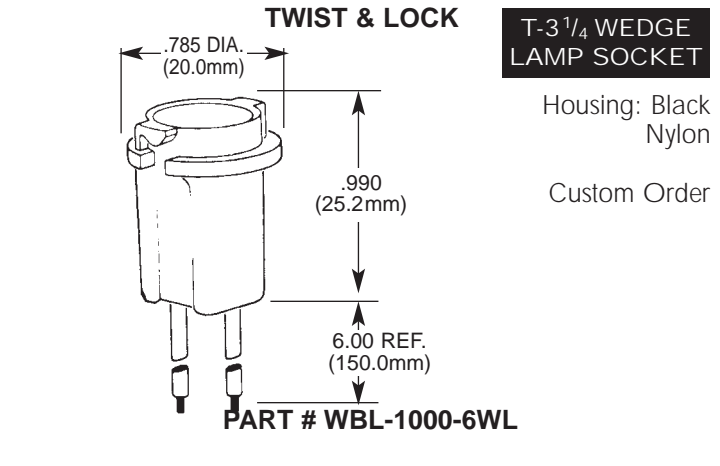
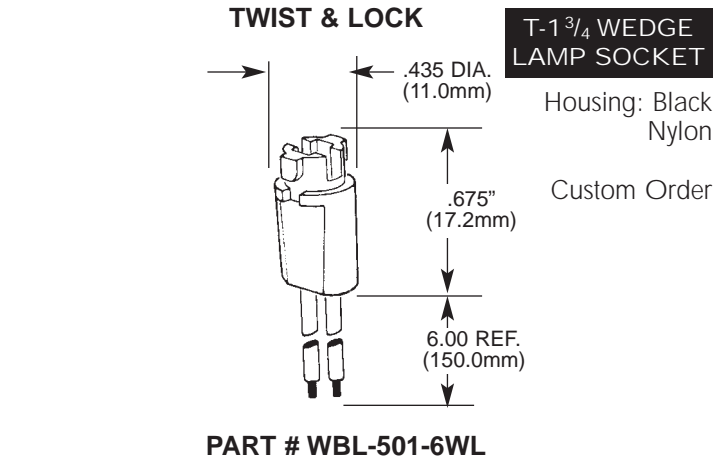
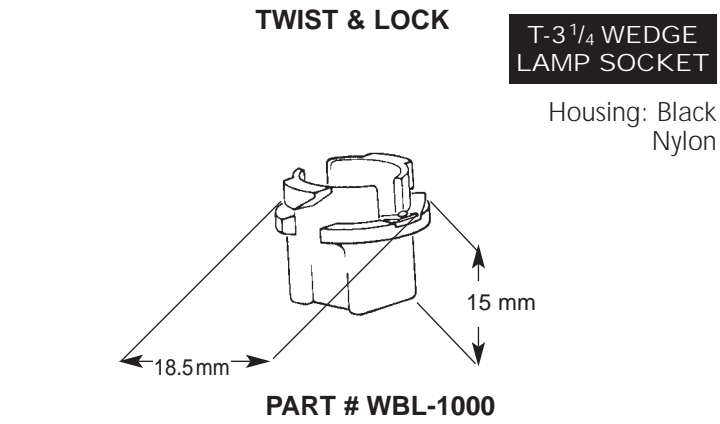
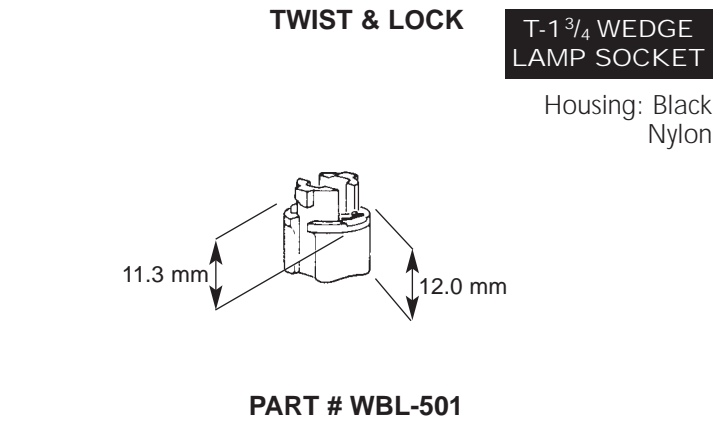
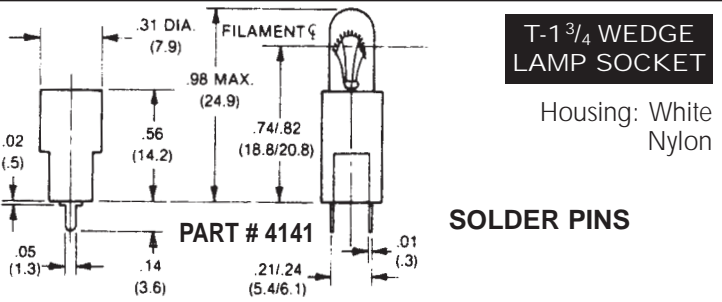
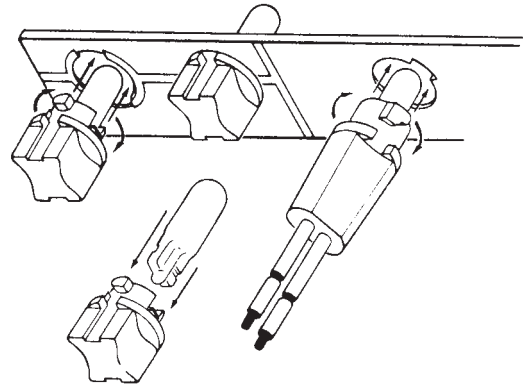
PART # 15S-002



WEDGE BASE SOCKET ASSEMBLIES

TWIST & LOCK (P.C.B. MOUNT)
SOLDER PINS (P.C.B. MOUNT)

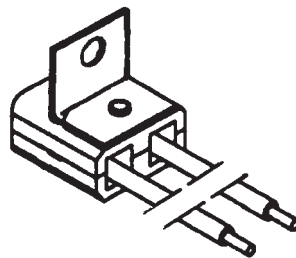
HOLDS LAMP FIRMLY IN PLACE AND CENTERED.
HOLDS T-1³/₄ AND T-3¹/₄ SIZE WEDGE BASE LAMPS.
6~28 VOLT, WATT MAXIMUM.
22 GAUGE WIRE TERMINALS (STRIPPED AND TINNED)





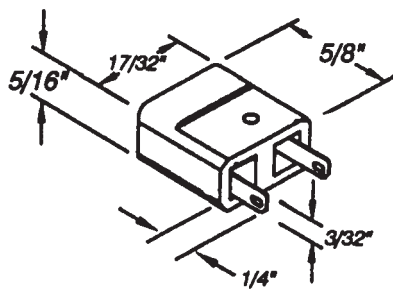
WEDGE BASE SOCKET ASSEMBLIES

DESIGNED TO HOLD LAMP FIRMLY IN PLACE AND CENTERED.
 HOLDS BOTH T-3 $\frac{1}{4}$ AND T-5 SIZE WEDGE BASE LAMPS.
 22 GAUGE WIRE LEADS (STRIPPED AND TINNED) (18 AWG AVAILABLE)
 SOLDER READY TERMINALS
 AVAILABLE IN A VARIETY OF MOUNTING BRACKET STYLES.
 6~28 VOLT, 20 WATT MAXIMUM.



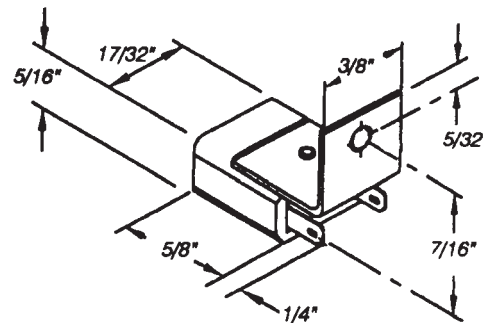
PART # WBL-801

NO MOUNTING
 BRACKET



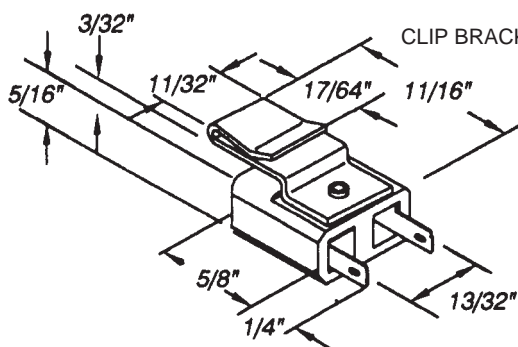
PART # WBL-910

RT. ANGLE
 BRACKET



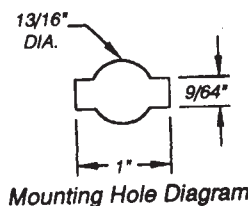
PART # WBL-920

CLIP BRACKET

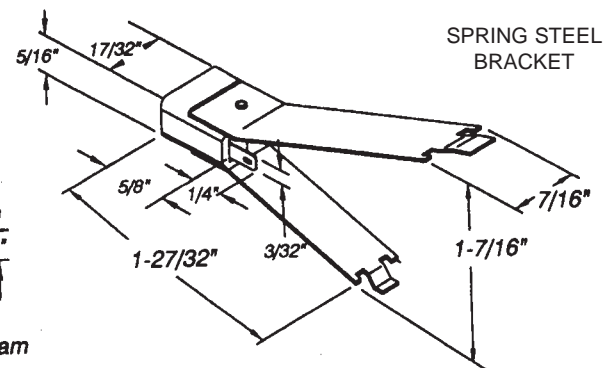


PART # WBL-930

SPRING STEEL
 BRACKET



Mounting Hole Diagram



PART # WBL-970



BI-PIN HALOGEN SOCKETS

CERAMIC AND STEEL CONSTRUCTION

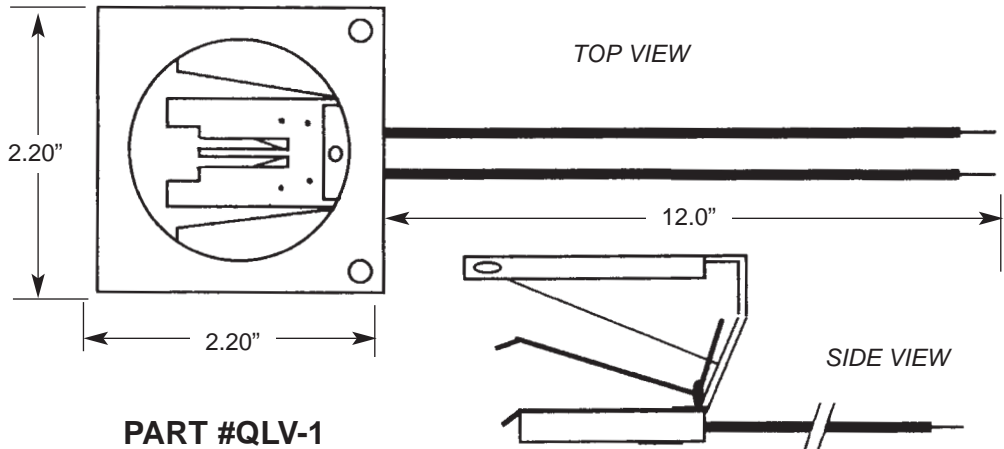
GX5.3 SOCKET

2-PIN (ROUND)

HIGH TEMPERATURE
400 WATTS MAX.

MOUNTING BRACKET
W/CIRCULAR FRAME
FOR MR-16 LAMP

(GX5.3 ROUND PINS ONLY)



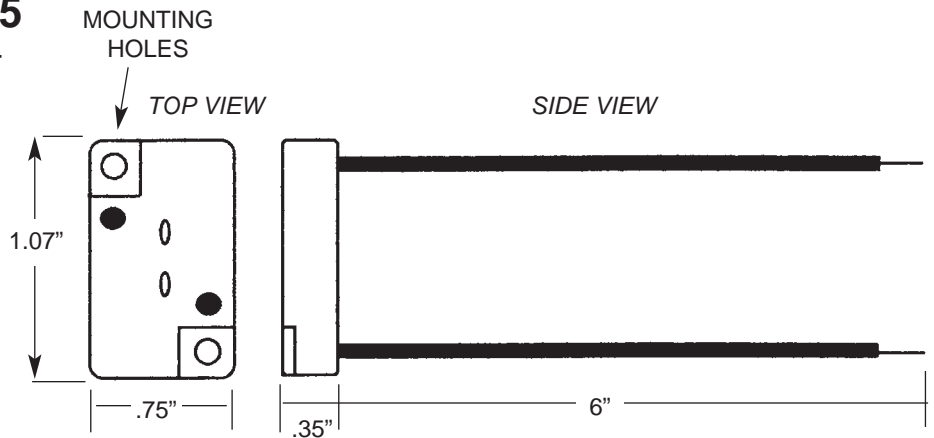
GX5.3, G-4, AND GY6.35

UNIVERSAL 2-PIN SOCKET
(RECTANGULAR TYPE)

500 WATTS MAX.
SILVER CONTACTS
SPRING TENSION SOCKETS

(GLASS 2-PIN, MR-11, MR-16)

PART #QXV-1

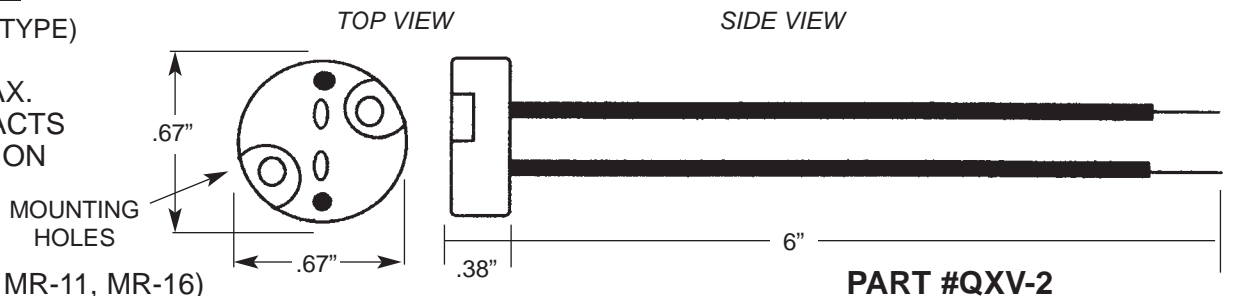


GX5.3, G-4 AND GY6.35

UNIVERSAL 2-PIN SOCKET
(ROUND TYPE)

500 WATTS MAX.
SILVER CONTACTS
SPRING TENSION
SOCKETS

(GLASS 2-PIN, MR-11, MR-16)





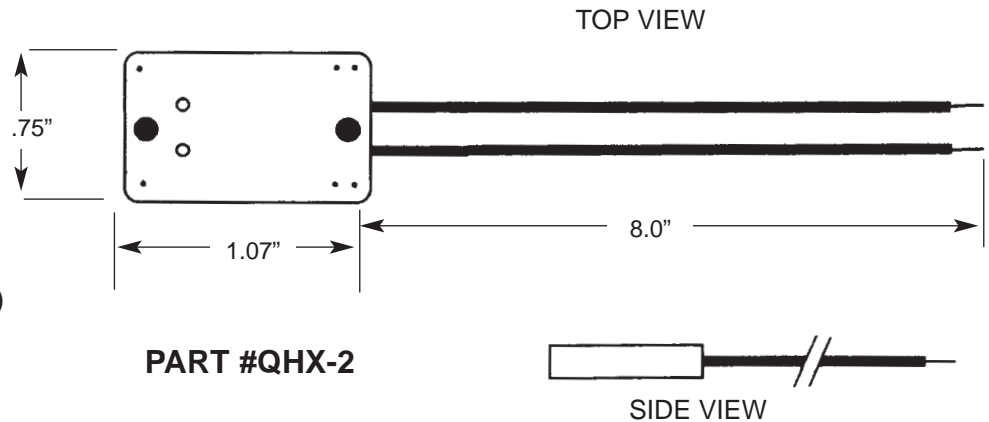
BI-PIN HALOGEN SOCKETS
CERAMIC AND STEEL CONSTRUCTION

GX5.3 SOCKET

2-PIN (ROUND)

HIGH TEMPERATURE
 400 WATTS MAX.

FITS ALL MR-16 (12 VOLT)
 DISPLAY LAMPS.



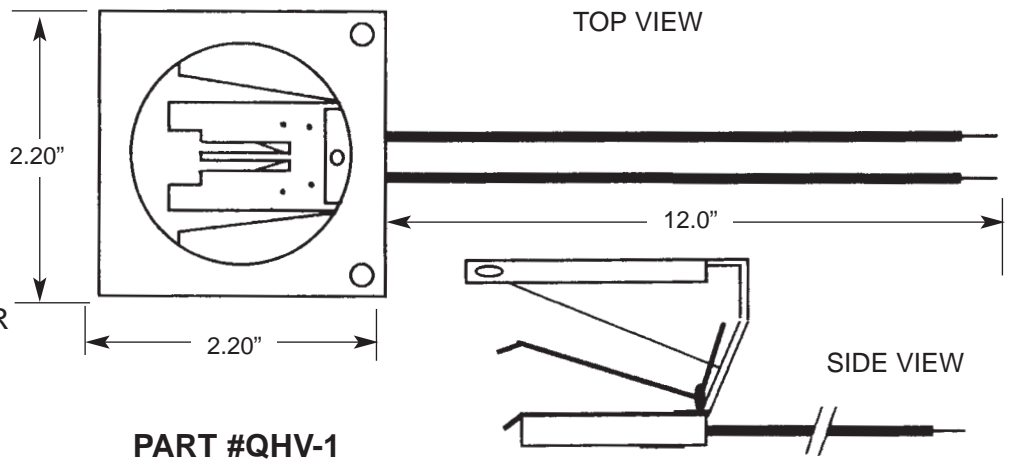
GY5.3 SOCKET

2-PIN (OVAL)
 (1.56mm Flat Pins)

HIGH TEMPERATURE
 400 WATTS MAX.

MOUNTING BRACKET
 W/CIRCULAR FRAME FOR
 MR-16 SIZE LAMP

(GY5.3 FLAT PINS ONLY)

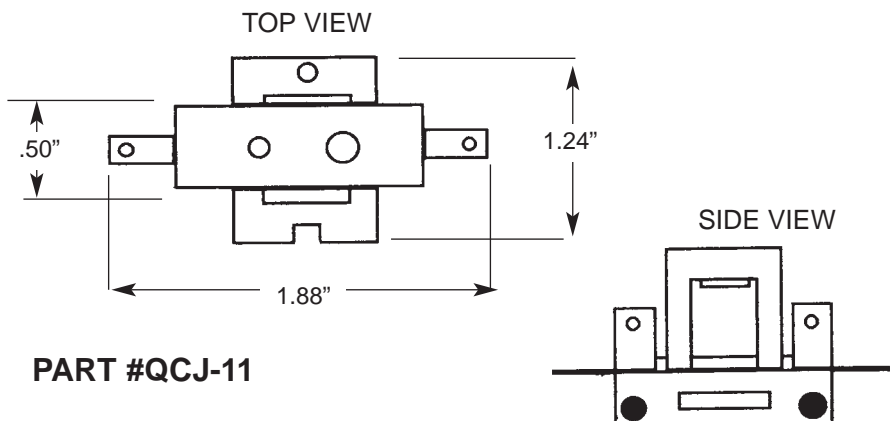


GZ9.5 SOCKET

2-PIN (PREFOCUS)

HIGH TEMPERATURE
 700 WATTS MAX.

"SNAP-IN" FIT, SECURES LAMP
 SILVER PLATED TERMINALS



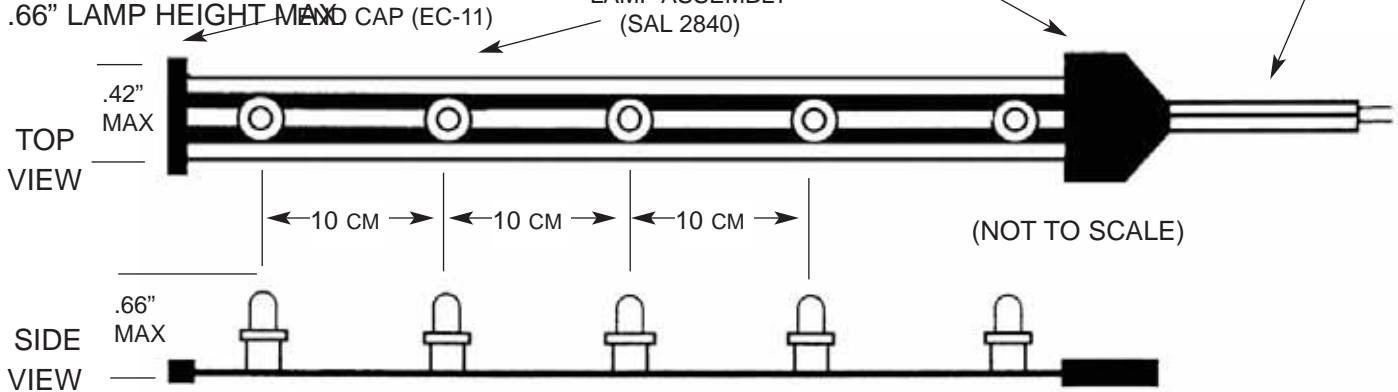


Strip Lighting Cable (24~28 VOLT OPERATION)

2-CONDUCTOR "FLAT" CABLE

ITEM NO. SAL-02/10

25,000 HOUR, REPLACEABLE "LONG LIFE" LAMPS
CLEAR LAMPS (COLORS AVAILABLE)
10 CM LAMP SPACING (APPROX. 4 INCHES ON CENTER)
100 FEET PER ROLL (PRICE IS PER FOOT)
.42" CABLE WIDTH MAX.
.66" LAMP HEIGHT MAX.
LAMP ASSEMBLY (SAL 2840)
CORD CONNECTOR ASSEMBLY (CC-1112)
LEADS TO TRANSFORMER (12")



* AVAILABLE IN L.E.D. (ALL COLORS)

* ALTERNATE 12 VOLT OPERATION

LAMP ASSEMBLY • 28 V
24~28 VOLTS
40mA

Plastic Housing

PART NO. SAL 2840

G
E
M
S
T
A
R[®]

LAMP ASSEMBLY • 12 V
12~14 VOLTS
80mA

Plastic Housing

PART NO. SAL 1280



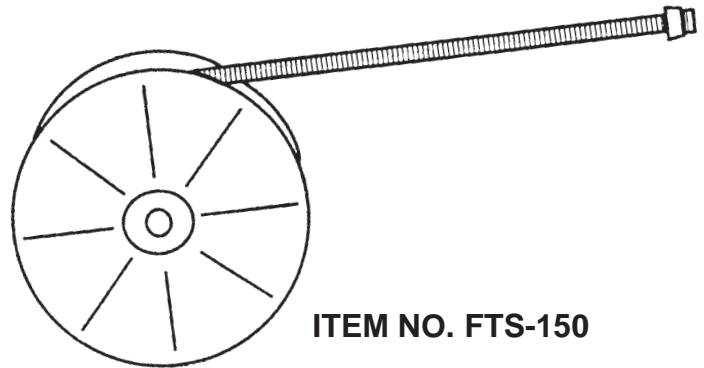
Flexible Tube Lighting (120 VOLT OPERATION)

"ROPE LIGHTS" ^{UL} APPROVED INDOOR/OUTDOOR USE

25,000 HOUR INTERNAL LAMPS
 1 INCH LAMP SPACING (25MM) • 18" CUT INTERVALS
 1/2 INCH TUBE DIAMETER (13MM)

TUBE COLORS: RED, GREEN, YELLOW, BLUE,
 PURPLE, ORANGE, PINK, CLEAR.

HIGH QUALITY PLASTIC FLEX-TUBING
 WATER-PROOF / ALL-WEATHER APPLICATIONS
 (-30°C ~ 80°C) OPERATING TEMP. RANGE
 EASY TO INSTALL SYSTEM



ITEM NO. FTS-150

SPECIFY COLOR AFTER PART NUMBER

150 FEET PER ROLL

EACH 150 FOOT ROLL
 INCLUDES THE FOLLOWING:

- 2 PCS. - 6 FOOT POWER CORD (PC-3)
- 2 PCS. - POWER CONNECTOR (CC-3)
- 2 PCS. - END CAP (EC-3)
- 50 PCS. - MOUNTING CLIP (MC-3)
- 2 PCS. - SPLICE CONNECTOR (SC-3)

MOUNTING ACCESSORIES

6' POWER CORD	PART#	PC-3
POWER CONNECTOR.....	PART#	CC-3
END CAP	PART#	EC-3
SPLICE CONNECTOR	PART#	SC-3
MOUNTING CLIP.....	PART#	MC-3
2-WAY CONNECTOR	PART#	BI-2
3-WAY CONNECTOR	PART#	BI-3
4-WAY CONNECTOR	PART#	BI-4



INCANDESCENT TRADITIONAL LIGHT SETS

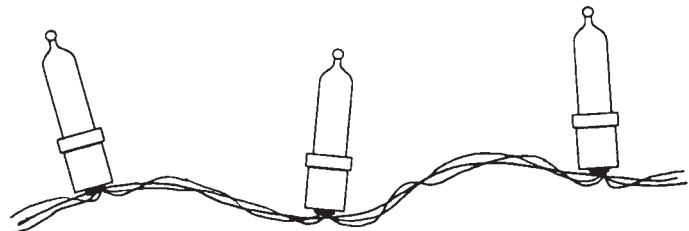
Mini-Light Sets (120 VOLT)

Decorative lighting sets for holidays, special events and commercial displays.

INDOOR OR OUTDOOR USE
END TO END WITH A MAXIMUM OF 3 SETS
INTEGRATED FUSE PLUG
U.L. APPROVED TO LATEST SPECIFICATIONS
COLORFUL • RETAIL SINGLE
PACK BOX.



APPROVED



STEADY BURN OR FLASHING

100 LIGHT SET



Set Number	Length (Approx.)	Bulb Color	Cord Color	Bulb Spacing
MLS100/G/CL	40 ft.	CLEAR	GREEN	4-5 inches
MLS100/G/MX	40 ft.	MULTI-COLOR	GREEN	4-5 inches
MLS100/G/R	40 ft.	RED	GREEN	4-5 inches
MLS100/G/G	40 ft.	GREEN	GREEN	4-5 inches
MLS100/G/B	40 ft.	BLUE	GREEN	4-5 inches
MLS100/G/P	40 ft.	PURPLE	GREEN	4-5 inches
MLS100/G/O	40 ft.	ORANGE	GREEN	4-5 inches
MLS100/G/Y	40 ft.	YELLOW	GREEN	4-5 inches

BULB SPECIFICATIONS: 2.5 VOLT, 140 mA, 2,500 LIFE HOURS, HIGH-BRIGHT. WIRE:24 AWG



LAMP EXTRACTION TOOLS

INSERTS AND REMOVES
LAMPS LOCATED IN TIGHT
FITTING SOCKETS.



FITS T1³/₄ SIZE
LAMPS

COMPACT SIZE
RUGGED CONSTRUCTION



FITS T-2 SIZE
LAMPS



FITS T3¹/₄ SIZE
LAMPS

(EXTRACTOR DESIGN MAY VARY FROM DRAWINGS ABOVE)

LAMP BASES

FOR CUSTOM USE APPLICATIONS
CHROME PLATED BRASS WITH
GLASS INSULATING INCLUDED.

SOLDER-READY CONTACT POINTS.

CORROSION RESISTANT,
HEAVY GAUGE METAL.



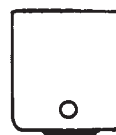
TS-5



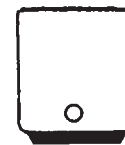
E10



BA9S



BA15S



BA15D



E12



E14



E17



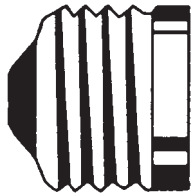
E27



SOCKET REDUCERS

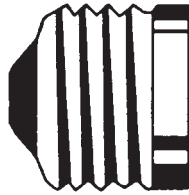
REDUCES THE SIZE OF EXISTING SOCKET TO ACCOMMODATE SMALLER LAMP BASES.

E-27 TO E-12



#BR-313

E-27 TO E-17



#BR-322

E-17 TO E-12



#BR-341

E-17 TO E-10



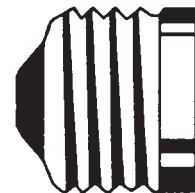
#BR-348

E-12 TO E-10



#BR-336

E-27 TO E-10



#BR-344

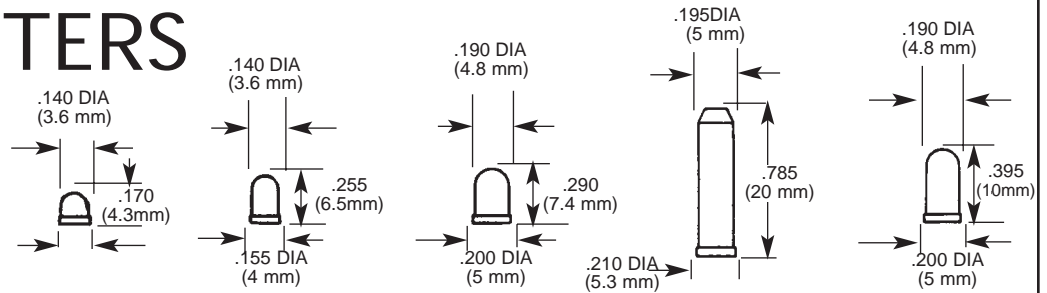
NOTE: SPECIAL CUSTOM SOCKET REDUCERS AND ENLARGERS MAY BE AVAILABLE FOR YOUR APPLICATION. CONTACT NORMAN LAMPS, INC. FOR MORE INFORMATION ON SOCKET ADAPTORS.



COLOR FILTERS

"BOOTS"

100% SILICONE COMPOSITION

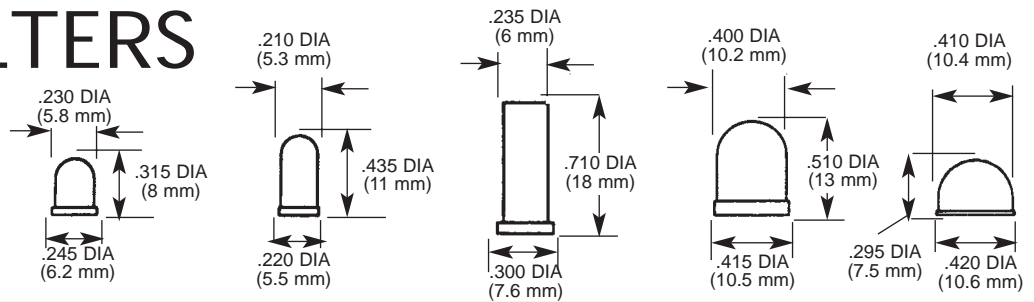


LINE NO.	COLOR	T-1 STANDARD	T-1 LONG	T-1 ¹ / ₄ STANDARD	T-1 ¹ / ₄ AXIAL	T-1 ¹ / ₄ LONG
1	RED	85-01-1	85-02-1	85-03-1	85-04-1	85-05-1
2	GREEN	85-01-5	85-02-5	85-03-5	85-04-5	85-05-5
3	YELLOW	85-01-7	85-02-7	85-03-7	85-04-7	85-05-7
4	BLUE	85-01-6	85-02-6	85-03-6	85-04-6	85-05-6
5	WHITE	85-01-4	85-02-4	85-03-4	85-04-4	85-05-4
6	ORANGE	85-01-3	85-02-3	85-03-3	85-04-3	85-05-3

COLOR FILTERS

"BOOTS"

100% SILICONE COMPOSITION



LINE NO.	COLOR	T-1 ³ / ₄ STANDARD	T-1 ³ / ₄ LONG	T-2 STD.	T-3 ¹ / ₄ STD.	G-3 ¹ / ₂ STD.
7	RED	85-06-1	85-07-1	85-08-1	85-09-1	85-10-1
8	GREEN	85-06-5	85-07-5	85-08-5	85-09-5	85-10-5
9	YELLOW	85-06-7	85-07-7	85-08-7	85-09-7	85-10-7
10	BLUE	85-06-6	85-07-6	85-08-6	85-09-6	85-10-6
11	WHITE	85-06-4	85-07-4	85-08-4	85-09-4	85-10-4
12	ORANGE	85-06-3	85-07-3	85-08-3	85-09-3	85-10-3

FEATURES

REUSABLE:

No need to stock colored lamps. When a lamp burns out, reuse filter on new lamp.

INTERCHANGEABLE:

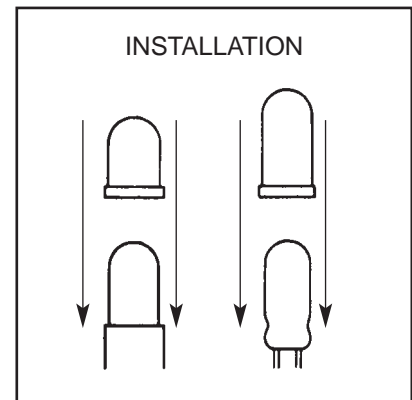
Simply change color filter – not the entire lamp.

NON-BREAKABLE:

Eliminates problems with fragile glass or molded plastic filters encountered in shipping or in use.

COLOR:

Even distribution of color over entire boot surface. Non-fading colors. Can be ordered pre-installed on lamp. Custom Color Matching available.





National Stock No. to Norman Lamp Number

National No.	Norman No.	National No.	Norman No.	National No.	Norman No.
6240-01-009-5827	120PS	6240-00-115-6991	2176	6240-00-155-8717	67
6240-00-011-5173	51	6240-00-117-9533	8655	6240-00-155-8726	1692
6240-01-011-9537	7234	6240-00-117-9957	8022	6240-00-155-8863	64
6240-01-012-0828	7367	6240-00-132-5340	67K	6240-00-159-2364	16ESB
6240-00-012-5588	55	6240-00-143-3159	89	6240-00-161-8099	6833
6240-01-012-6359	8602	6240-00-143-3173	1820	6240-00-168-0411	6838
6240-00-013-1282	53	6240-00-143-3175	1855	6240-00-168-0582	7218
6240-00-014-0815	2171	6240-00-143-6558	6839	6240-00-176-6076	1123
6240-00-014-2306	81	6240-00-144-3091	603	6240-00-178-9941	24X
6240-00-014-2454	93	6240-00-144-3107	6809	6240-00-179-1802	60A
6240-00-014-2455	94	6240-00-144-4693	168	6240-00-179-1811	A1A (NE2)
6240-00-014-2458	1143	6240-00-145-1182	7335	6240-00-179-1814	B7A (NE45)
6240-00-014-5596	713	6240-00-145-1284	7153	6240-00-179-1816	J5A (NE30)
6240-01-014-5597	6803	6240-00-146-3322	326	6240-00-179-5043	7219
6240-01-015-5000	C5A	6240-00-151-5202	8426	6240-00-183-0059	8918
6240-00-018-6528	327LSV	6240-00-151-5250	3942	6240-00-183-0517	374
6240-00-018-6528	376(327LSV)	6240-00-151-5284	7683	6240-00-186-6276	1385
6240-00-018-6836	1501	6240-00-151-5290	1769	6240-00-193-0643	1487
6240-00-019-0877	1251	6240-00-153-6509	1826	6240-00-196-4467	433
6240-00-019-0878	1252	6240-00-153-6515	48C	6240-00-196-4488	1446
6240-00-019-3093	623	6240-00-155-7526	367	6240-00-196-4501	1490
6240-00-019-3096	1195	6240-00-155-7784	307	6240-00-196-4505	1483
6240-00-019-3146	40	6240-00-155-7786	PR2	6240-00-196-4519	87
6240-01-022-5925	7382	6240-00-155-7790	308	6240-00-204-0459	7371
6240-01-024-9856	3149	6240-00-155-7791	305	6240-00-222-0264	3071F
6240-00-025-9203	7341	6240-00-155-7793	304	6240-00-223-9098	J9A (NE56)
6240-00-032-0714	6838-15	6240-00-155-7799	1141	6240-00-223-9100	B1A
6240-01-033-4037	2	6240-00-155-7815	112	6240-00-225-9271	1651
6240-01-033-9717	8112	6240-00-155-7836	327	6240-00-227-0135	1835
6240-01-040-8138	7356	6240-00-155-7841	1224	6240-00-228-7130	331
6240-00-044-5025	1850	6240-00-155-7848	303	6240-00-228-7131	24C
6240-00-044-5026	PR15	6240-00-155-7851	1818	6240-00-234-5781	7153
6240--00-044-6914	1683	6240-00-155-7856	50	6240-00-242-4883	1415
6240-00-050-4520	45	6240-00-155-7857	328	6240-00-246-4909	7207
6240-00-051-4843	8623AS25	6240-00-155-7859	1815	6240-00-246-5059	12C
6240-01-051-5300	6022	6240-00-155-7860	1488	6240-00-246-5060	1767
6240--00-057-2887	44	6240-00-155-7864	323	6240-00-255-9071	8666
6240-00-060-2941	683	6240-00-155-7866	356	6240-00-262-0693	8627
6240--00-060-4648	1762	6240-00-155-7888	123	6240-00-264-9652	714
6240-00-061-3362	24PSB	6240-00-155-7906	605	6240-00-266-9940	1829
6240-00-06204680	967	6240-00-155-7915	PR7	6240-00-267-1157	1822
6240-00-062-6173	683	6240-00-155-7916	PR3	6240-00-267-1821	428
6240-00-062-6174	682	6240-00-155-7929	43	6240-00-269-0960	48D
6240--00-062-7078	18ESB	6240-00-155-7947	301	6240-00-269-0964	1768
6240--00-064-8889	656	6240-00-155-7949	1816	6240-00-270-4698	335
6240-01-065-0009	162	6240-00-155-7955	48	6240-00-270-6827	7373
6240--01-069-2641	198	6240-00-155-7967	1813	6240-00-283-9959	1810
6240-00-072-6127	253X	6240-00-155-8661	90	6240-00-295-1184	1034
6240-01-075-6559	1181	6240-00-155-8664	68	6240-00-295-1368	A2A (NE2H)
6240-00-077-2526	28ES	6240-00-155-8668	41	6240-00-295-1617	334
6240-00-077-5946	7333	6240-00-155-8669	131	6240-00-295-2668	1691
6240-00-079-6416	8632	6240-00-155-8671	27	6240-00-299-4741	1821
6240-00-080-2012	327	6240-00-155-8675	PR6	6240-00-299-4742	1495
6240-00-080-2112	327	6240-00-155-8681	502	6240-00-299-6126	1828
6240-00-080-4508	715	6240-00-155-8683	49	6240-00-299-6767	PR12
6240-00-081-6889	A3C(NE2U)	6240-00-155-8684	1184	6240-00-299-8635	110
6240-00-088-8054	252	6240-00-155-8686	1638	6240-00-313-2212	8369
6240-00-091-9276	387	6240-00-155-8687	1133	6240-00-324-5644	7370
6240-00-103-0058	32	6240-00-155-8693	1142	6240-00-369-9768	1434
6240-00-103-2448	48PSB	6240-00-155-8694	1130	6240-00-401-9868	7381
6240-00-110-4497	6PSB	6240-00-155-8696	88	6240-00-402-1791	7327
6240-00-111-2039	428	6240-00-155-8706	47	6240-00-405-4847	7377
6240-00-112-7934	57	6240-00-155-8707	1819	6240-00-409-8301	7328
6240-00-113-1912	A1G	6240-00-155-8714	313	6240-00-436-5389	6832
6240-00-115-5042	24CSB	6240-00-155-8716	1129	6240-00-437-7216	7241



National Stock No. to Norman Lamp Number

National No.	Norman No.	National No.	Norman No.	National No.	Norman No.
6240-00-442-6322	48ES	6240-00-781-8899	715	6240-00-929-0585	7022
6240-00-422-6324	7216	6240-00-782-5991	2107	6240-00-929-5848	8846
6240-00-442-6327	7210	6240-00-789-3369	48B	6240-00-930-3605	7330
6240-00-472-2299	335LSV	6240-00-789-3370	240	6240-00-931-6683	1157A
6240-00-481-5776	7714	6240-00-795-2339	1458	6240-00-935-6884	713
6240-00-491-0402	3150	6240-00-797-2650	14	6240-00-937-6083	28PSB
6240-00-495-1301	6839	6240-00-797-2700	111	6240-00-939-5500	1408
6240-00-497-2176	7945	6240-00-797-4325	1493	6240-00-939-7859	120MB
6240-00-498-5971	8605	6240-00-797-4370	82	6240-00-940-7069	373
6240-00-498-7669	18A	6240-00-797-4480	12PSB	6240-00-940-7070	370
6240-00-500-1762	329	6240-00-797-7894	13	6240-00-940-7072	350
6240-00-519-1520	425	6240-00-801-5941	328	6240-00-940-7084	PR20
6240-00-538-8545	1004	6240-00-811-2777	714	6240-00-940-7085	PR18
6240-00-538-8548	1471	6240-00-816-0701	24ESB	6240-00-940-7087	PR16
6240-00-539-9659	1383	6240-00-824-0924	7152	6240-00-941-2683	386
6240-00-539-9770	30C	6240-00-835-9029	1705	6240-00-941-2696	385
6240-00-542-6219	10C7DC	6240-00-836-4980	336	6240-00-941-2697	379
6240-00-542-6571	338	6240-00-837-3318	503	6240-00-941-2698	378
6240-00-547-8456	A9A(NE-2E)	6240-00-838-9207	1728	6240-00-941-2699	375
6240-00-555-6347	7387	6240-00-839-5118	1739	6240-00-941-2708	1691IF
6240-00-570-9884	8640	6240-00-839-5126	1738	6240-00-941-5211	1449
6240-00-578-7422	224	6240-00-844-1758	PR13	6240-00-941-8487	755
6240-00-583-9610	1847	6240-00-850-4280	1003	6240-00-941-8488	756
6240-00-586-6393	459	6240-00-851-1852	6ESB	6240-00-941-8503	455
6240-00-602-5940	7112	6240-00-851-4352	330	6240-00-943-8119	1783
6240-00-606-5414	7910	6240-00-851-5356	368	6240-00-944-1261	158
6240-00-617-0187	1823	6240-00-864-5212	8623	6240-00-944-1262	159
6240-00-617-1488	12	6240-00-865-3257	399	6240-00-944-1263	161
6240-00-617-1737	6ES	6240-00-865-7447	1874	6240-00-944-1264	194
6240-00-627-1021	6832	6240-00-866-9092	19	6240-00-944-1267	257
6240-00-635-9800	325	6240-00-870-7776	108	6240-00-944-7021	2162
6240-00-643-4532	342	6240-00-870-7777	109	6240-00-944-9721	1876
6240-00-647-1429	10ESB	6240-00-875-7977	388	6240-00-944-9727	1155
6240-00-660-8467	337	6240-00-875-7979	398	6240-00-944-9728	1095
6240-00-669-6516	1630	6240-00-875-7980	397	6240-00-944-9729	1076
6240-00-673-0991	1073	6240-00-875-7981	394	6240-00-946-9654	1895
6240-00-682-3411	B2A (NE-51H)	6240-00-878-1965	680	6240-00-946-9655	1888
6240-00-683-0560	3345	6240-00-879-4980	682	6240-00-949-8106	2187
6240-00-686-4662	1450	6240-00-881-8076	5ESB	6240-00-949-8107	2185
6240-00-686-4873	509K	6240-00-881-9624	634	6240-00-949-8109	2181
6240-00-690-2274	1775	6240-00-882-8487	A2B(NE2V)	6240-00-949-8120	1784
6240-00-691-0368	1445	6240-00-889-1799	1157	6240-00-950-1678	757
6240-00-713-0237	253	6240-00-892-4420	C7A (NE20)	6240-00-950-1695	2180
6240-00-715-1039	24E	6240-00-892-5797	1869	6240-00-951-3376	A1H
6240-00-715-1044	6A	6240-00-902-4660	120PSB	6240-00-953-8747	965
6240-00-715-1046	6C	6240-00-902-8551	2128	6240-00-954-0124	718
6240-00-722-6467	344	6240-00-905-6050	2158	6240-00-955-3200	1892
6240-00-723-3378	C9A (NE2T)	6240-00-912-5186	A1C	6240-00-955-9324	53X
6240-00-725-3366	324	6240-00-913-8529	1460	6240-00-956-1381	382
6240-00-727-2457	685	6240-00-914-5574	130	6240-00-960-8645	8635
6240-00-731-5071	C2A (NE2H)	6240-00-914-5578	239	6240-00-962-0525	349
6240-00-740-8812	248	6240-00-914-5602	2102	6240-00-963-5964	K1A5
6240-00-740-8901	12A	6240-00-914-5607	2112	6240-00-965-5255	680
6240-00-752-2581	685	6240-00-914-5609	2114	6240-00-965-6059	407
6240-00-756-2596	15	6240-00-916-1638	261	6240-00-968-7971	1764
6240-00-759-2713	363	6240-00-916-1639	268	6240-00-977-0485	10ES
6240-00-761-0979	503	6240-00-916-2693	A7A	6240-00-984-1887	PR4
6240-00-761-3385	7240	6240-00-922-5042	55C	6240-00-984-4518	A1B
6240-00-763-3450	1893	6240-00-924-7504	1866	6240-00-987-5464	2182
6240-00-763-7744	387	6240-00-924-7506	1619	6240-00-988-0522	12ESB
6240-00-764-8237	718	6240-00-924-7526	1156	6240-00-995-5712	30A
6240-00-765-4220	10	6240-00-925-2148	259	6240-00-997-1413	10CSB
6240-00-765-8443	1864	6240-00-926-6909	12ES	6240-00-999-6645	193
6240-00-768-0950	133	6240-00-926-7603	380		
6240-00-770-2618	377	6240-00-927-3180	381		
6240-00-770-3372	1891	6240-00-928-3953	7332		



Military Standard to Norman Lamp Number

MS No.	Norman No.	MS No.	Norman No.	MS No.	Norman No.	MS No.	Norman No.
3338-6839	6839	15572-3	423	15612-3	1769	25237-338	338
15531-1	319 Amber	15573-1	51	15612-4	1767	25237-387	387
15531-2	310 Red	15573-2	51Red	15612-5	342	25237-387R	387R
15531-3	319 White	15573-3	356	15613-1	78	25238-301	301
15535-5	4545	15573-4	53	15613-2	302	25238--301R	301R
15536-1	46	15573-5	1450	15618-5	1240	25238-77	77
15536-2	41	15573-6	354	16123-1	10C7/DC120V	25239-4501	4501
15536-3	42	15574-1	15T7C(120V)	16524-2	4546	25242-4559	4559
15536-4	40	15576-1	87K	18002-4015	4015	25243-4502	4502
15537-1	222	15579-1	6S6C(115V)	18002-4503	4503	25252-NE2D	C7A(NE-2D)
15538-1	1452	15579-2	6S6C(135V)	18004-4012	4012	25252-NE2J	C9A(NE-2J)
15559-2	1323	15579-3	6S6C/10 (250V)	18009-6013	6013	27569-339AS15	339AS15
15563-1	905	15579-4	6S6C(120V)	21376-933	933	27569-341AS15	341AS15
15564-1	1184	15579-5	6S6C(155V)	21376-932	932	27570-1189AS15	1189AS15
15564-2	1134	15579-7	3S6C(125V)	24367-680	680	27570-1190AS15	1190AS15
15564-3	1054	15580-1	81K	24367-683	683	27570-1191AS15	1191AS15
15564-4	1144	15580-3	63K	24367-713	713	27570-8515AS15	8515AS15
15564-5	1000	15582-1	471	24367-715	715	27571-6806AS15	6806AS15
15564-6	1196	15584-1	88	24367-680AS15	680AS15	27571-6807AS15	6807AS15
15564-7	1124	15584-2	94	24367-683AS15	683AS15	27571-6808AS15	6808AS15
15565-1	1133	15584-3	1130	24367-713AS15	713AS15	27571-6809AS15	6809AS15
15565-2	1183	15584-4	1142	24367-715AS15	715AS15	28798-222	222
15565-3	1143	15584-5	1666IF	24515-682	682	28926-4570	4570
15565-4	1195	15584-6	1204	24515-685	685	35478-87	87
15566-2	1605	15584-7	1228	24515-714	714	35478-93	93
15567-1	6S6DC(120V)	15584-8	1692	24515-718	718	35478-305	305
15568-1	1491	15584-9	1636	24515-682AS15	682AS15	35478-307	307
15568-2	1226	15584-10	92	24515-685AS15	685AS15	35478-307SB	307SB
15569-1	64	15584-11	1696	24515-714AS15	714AS15	35478-307R	307Red
15569-2	64 Red	15584-12	1694	24515-718AS15	718AS15	35478-315	315
15569-3	82	15584-13	1158	25069-1495	1495	35478-1073	1073
15569-4	90	15584-14	1176	25069-1467	1467	35478-1129	1129
15569-5	90 Red	15584-15	306	25231-313	313	35478-1141	1141
15569-6	68	15584-16	308	25231-313R	313Red	35478-1680	1680
15569-7	1252	15584-17	308 Red	25231-316	316	35478-1683	1683
15569-8	304	15584-18	1666	25231-316R	316Red	35478-1691	1691
15570-63	63	15585-3	1020	25231-1819	1819	35480-1	1383
15570-63R	63 Red	15594-1	6006	25231-1819R	1819Red	35480-2	1385
15570-81	81	15607-6	4010	25231-1829	1829	35480-3	1384
15570-67	67	15609-1	488(Tel)	25235-311	311	35481-1	1154
15570-89	89	15609-2	32A(Tel)	25235-311R	311Red	35481-2	1016
15570-303	303	15609-3	12A(Tel)	25235-311SB	311SB	51680-1	8461
15570-303R	303Red	15609-4	48G(Tel)	25236-323	323	51680-2	329
15570-1251	1251	15609-5	60A(Tel)	25236-323R	323Red	51680-3	325
15570-623	623	15609-6	48C(Tel)	25236-8623	8623	51680-4	673
15571-1	44	15609-7	12C(Tel)	25236-8623R	8623Red	51680-5	8662
15571-2	47	15609-8	24D(Tel)	25236-8639	8639	51680-6	8644
15571-3	1806	15609-9	30B(Tel)	25236-8639R	8639Red	51680-7	8635
15571-4	313	15609-10	6C(Tel)	25237-327	327	90451-6802	6802AS15
15571-5	1809	15610-1	PR6	25237-327R	327Red	90451-6832	6832AS15
15571-6	1819	15610-2	PR3	25237-328	328	90451-7132	7132AS15
15571-7	44 Red	15611-1	13	25237-328R	328Red	90451-7152	7152AS15
15571-8	1815	15611-2	365	25237-368	368	90452-6803	6803AS15
15571-9	1810	15611-3	14	25237-327-15	327-15	90452-6833	6833AS15
15571-10	1819 Red	15611-4	131	25237-327R-15	327Red-1	90452-7133	7133AS15
15571-11	45	15611-5	403	25237-328-15	328-15	90452-7153	7153AS15
15572-1	55	15612-1	1768	25237-328R-15	328 Red-1		
15572-2	55 Red	15612-2	335	25237-330	330		



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00200	.225	63	.30	259	.74	394	.65	778	.125
00300	.224	64	.30	265	.27	397	.65	782	.125
01300	.225	67	.30	266	.65	398	.65	783	.125
03000	.224	68	.30	267	.74	399	.65	784	.125
03000	.225	70	.64	268	.65	400	.75	785	.125
03100	.224	71	.30	280	.74	423	.28	786	.125
03100	.225	72	.30	301	.29	425	.28	787	.125
03400	.224	73	.64	302	.29	426	.28	788	.125
03400	.225	74	.64	303	.30	427	.28	789	.125
03900	.225	78	.29	304	.30	428	.28	790	.125
04100	.224	79	.64	305	.49	430	.28	791	.125
04100	.225	81	.30	306	.49	431	.28	794	.125
04200	.225	82	.30	307	.49	432	.28	872	.76
04400	.224	84	.64	308	.49	433	.28	880	.144
04400	.225	85	.64	309	.52	447	.74	881	.144
04700	.224	86	.64	310	.52	455	.28	884	.144
04700	.225	87	.48	311	.52	456	.28	885	.144
04800	.224	88	.48	312	.52	457	.65	886	.144
04800	.225	89	.30	313	.75	458	.27	889	.144
04900	.224	90	.30	315	.49	459	.65	890	.144
04900	.225	93	.48	316	.74	464	.75	893	.144
06000	.224	94	.48	323	.61	500	.76	894	.144
06000	.225	97	.30	324	.60	502	.28	895	.49
06100	.224	100	.27	325	.60	503	.28	901	.78
06100	.225	104	.19	326	.61	509	.30	903	.78
06200	.225	105	.19	327	.65	515	.60	904	.78
06300	.225	109	.49	328	.65	536	.30	906	.78
06400	.225	110	.49	329	.60	555	.74	908	.78
07800	.224	112	.71	330	.65	561	.73	909	.78
07800	.225	123	.27	331	.65	562	.73	912	.78
09500	.225	130	.27	334	.65	563	.73	914	.78
2	.55	131	.27	335	.65	580	.60	915	.78
6	.48	132	.27	336	.65	583	.60	916	.78
10	.27	133	.27	337	.65	585	.75	917	.78
12	.27	134	.27	338	.65	605	.28	918	.78
13	.27	136	.28	342	.65	607	.28	921	.78
14	.27	138	.27	343	.65	612	.27	922	.78
15	.28	147	.74	344	.65	623	.30	926	.78
17	.64	152	.75	345	.65	624	.30	927	.78
18	.64	153	.30	346	.65	624	.221	928	.78
19	.27	157	.30	349	.65	631	.30	939	.78
20	.28	158	.74	350	.65	632	.30	957	.76
25	.27	159	.74	354	.27	634	.60	965	.76
27	.28	161	.74	356	.27	655	.75	967	.75
30	.55	168	.74	359	.27	656	.75	967	.85
31	.28	192	.74	363	.27	657	.75	967	.85
32	.59	193	.74	365	.27	658	.74	977	.75
35	.29	194	.74	367	.65	673	.60	1000	.44
37	.64	198	.50	368	.65	679	.59	1003	.19
40	.74	199	.48	370	.65	680	.59	1004	.19
41	.74	209	.19	371	.60	682	.59	1005	.48
42	.74	210	.19	373	.65	683	.59	1016	.50
43	.74	216	.75	375	.65	685	.59	1019	.31
44	.74	219	.27	376	.65	698	.65	1020	.31
45	.74	222	.71	377	.65	709	.65	1021	.45
46	.74	233	.27	378	.65	713	.59	1025	.45
47	.74	238	.74	379	.65	714	.59	1034	.50
48	.74	238	.85	380	.65	715	.59	1035	.50
49	.74	239	.74	381	.65	718	.59	1054	.44
50	.27	240	.74	382	.65	737	.60	1056	.44
51	.27	243	.71	385	.65	750	.75	1062	.44
52	.27	245	.27	386	.65	755	.74	1073	.48
53	.27	246	.71	387	.65	756	.74	1076	.48
55	.28	248	.29	388	.65	757	.75	1080	.49
56	.64	250	.27	389	.65	773	.125	1095	.48
57	.28	251	.65	390	.65	774	.125	1096	.51



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1133	44	1459	48	1768	65	1994	131	3476	85
1134	44	1460	51	1769	65	1995	131	3515	60
1141	48	1462	78	1775	65	1996	131	3516	61
1142	48	1464	29	1777	48	1997	131	3518	60
1143	44	1467	76	1783	64	1999	131	3580	60
1144	44	1468	51	1784	64	2022	59	3581	61
1150	44	1471	30	1804	74	2052	221	3582	60
1152	48	1474	71	1809	74	2057	50	3583	60
1154	50	1476	71	1810	74	2059	196	3584	61
1155	30	1477	71	1811	74	2102	64	3585	60
1156	48	1479	76	1813	75	2107	64	3599	57
1157	50	1480	76	1815	74	2112	64	3796	85
1158	48	1482	28	1816	74	2114	60	3797	85
1161	48	1483	28	1818	75	2119	64	3798	85
1176	48	1487	74	1818	85	2128	59	3799	85
1183	44	1488	74	1819	75	2135	60	3800	85
1184	44	1489	78	1820	75	2148	64	3810	55
1195	44	1490	74	1821	75	2149	64	3811	55
1196	44	1492	48	1822	75	2162	64	3829	75
1203	49	1493	48	1822	85	2169	64	3894	85
1204	49	1495	76	1823	75	2171	64	3895	85
1209	45	1497	48	1826	75	2174	64	3896	85
1223	30	1499	57	1828	75	2176	64	3898	85
1224	30	1501	45	1829	75	2179	64	3899	85
1228	49	1503	45	1830	74	2180	64	3901	63
1229	49	1507	45	1832	75	2181	64	3902	63
1240	31	1534	47	1835	75	2182	64	3903	63
1251	30	1563	49	1835	85	2184	64	3904	63
1252	30	1565	51	1841	76	2185	64	3905	57
1283	57	1584	48	1843	75	2187	64	3906	57
1284	57	1591	49	1847	74	2191	64	3950	64
1285	57	1594	48	1850	74	2200	64	3999	57
1293	44	1605	48	1855	76	2203	64	4000	188
1295	48	1608	48	1862	75	2232	49	4001	188
1299	57	1612	48	1864	75	2233	49	4013	188
1302	74	1613	48	1866	74	2330	45	4014	188
1308	19	1615	51	1867	74	2331	45	4019	188
1309	19	1618	48	1869	64	2336	45	4020	188
1315	29	1619	48	1873	75	2338	45	4040	188
1317	19	1621	44	1874	78	2530	45	4042	188
1321	45	1630	51	1876	78	2950	65	4141	258
1323	45	1634	51	1881	75	3001	205	4313	188
1325	45	1638	49	1886	76	3011	52	4340	188
1327	45	1648	48	1888	74	3013	85	4350	188
1380	37	1649	51	1889	74	3022	59	4405	188
1383	37	1651	48	1891	74	3057	51	4406	188
1384	37	1662	50	1892	75	3075	85	4411	188
1385	37	1665	49	1893	74	3080	85	4412	188
1388	37	1666	49	1893	85	3085	85	4413	188
1406	28	1676	49	1895	28	3102	55	4414	188
1408	74	1680	48	1898	74	3150	65	4415	188
1413	57	1680	48	1906	74	3152	65	4416	188
1414	76	1683	49	1940	80	3153	65	4419	188
1415	57	1691	49	1944	80	3155	51	4420	188
1416	76	1692	49	1949	74	3156	51	4421	188
1418	57	1696	49	1962	195	3157	51	4422	188
1434	78	1705	64	1965	196	3211	59	4431	188
1436	74	1723	52	1968	196	3225	59	4435	188
1437	75	1724	52	1974	195	3229	59	4436	188
1438	27	1728	64	1975	196	3335	59	4446	188
1445	27	1730	64	1976	196	3374	63	4459	188
1446	27	1731	52	1977	196	3411	55	4461	188
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4478	.189	6180	.59	7132	.59	7309	.60	7583	.60
4492	.189	6183	.55	7133	.55	7310	.60	7599	.57
4502	.189	6201	.65	7151	.59	7311	.60	7613	.191
4505	.189	6211	.59	7152	.59	7312	.65	7628	.60
4505	.189	6212	.59	7153	.55	7313	.65	7632	.60
4510	.189	6336	.145	7200	.59	7314	.65	7636	.60
4511	.189	6392	.72	7201	.59	7315	.65	7637	.60
4515	.189	6394	.72	7203	.59	7316	.65	7646	.60
4516	.189	6397	.72	7204	.59	7317	.65	7660	.60
4519	.189	6410	.73	7205	.59	7318	.65	7680	.59
4522	.189	6411	.73	7207	.59	7319	.65	7683	.59
4530	.189	6411	.73	7208	.59	7320	.65	7714	.59
4531	.189	6413	.73	7209	.59	7321	.65	7715	.59
4535	.189	6416	.72	7210	.59	7323	.65	7732	.59
4537	.189	6416	.73	7211	.59	7325	.65	7810	.55
4541	.189	6418	.72	7212	.59	7326	.65	7811	.55
4543	.189	6418	.73	7213	.59	7327	.64	7838	.64
4545	.189	6422	.223	7216	.59	7328	.64	7839	.59
4546	.189	6423	.72	7218	.59	7329	.65	7868	.64
4551	.189	6424	.73	7219	.59	7330	.64	7876	.64
4552	.189	6425	.72	7220	.59	7331	.65	7905	.57
4553	.189	6427	.72	7225	.59	7332	.65	7906	.57
4554	.189	6428	.72	7226	.59	7333	.65	7907	.57
4555	.189	6429	.72	7228	.59	7334	.65	7908	.57
4556	.189	6429	.73	7229	.59	7335	.65	7931	.64
4559	.189	6430	.72	7231	.59	7336	.65	7945	.64
4570	.189	6432	.72	7232	.59	7338	.65	7950	.64
4571	.189	6433	.72	7233	.59	7341	.65	7968	.64
4572	.189	6434	.72	7234	.59	7343	.65	7999	.57
4572	.190	6435	.72	7235	.59	7344	.64	8022	.59
4578	.189	6439	.72	7236	.59	7345	.65	8022	.87
4579	.189	6444	.72	7239	.59	7346	.65	8024	.87
4580	.189	6450	.73	7240	.59	7347	.65	8029	.87
4581	.189	6453	.72	7241	.59	7348	.65	8095	.59
4582	.189	6465	.73	7244	.59	7349	.64	8096	.59
4587	.189	6748	.64	7245	.59	7350	.65	8097	.59
4589	.189	6801	.59	7246	.59	7351	.65	8098	.59
4591	.189	6802	.59	7247	.59	7352	.65	8099	.59
4593	.189	6803	.55	7248	.59	7353	.65	8102	.59
4594	.189	6831	.59	7249	.59	7354	.65	8111	.59
4595	.189	6832	.59	7250	.59	7355	.65	8112	.59
4596	.189	6833	.55	7251	.59	7356	.65	8162	.65
4614	.189	6838	.59	7252	.59	7359	.64	8175	.59
4626	.189	6839	.59	7253	.59	7360	.64	8176	.65
4627	.189	6848	.65	7254	.59	7361	.64	8177	.65
4635	.190	6950	.65	7255	.59	7362	.64	8178	.65
4651	.190	7001	.64	7256	.59	7363	.64	8179	.59
4652	.190	7009	.59	7257	.59	7364	.64	8270	.55
4675	.190	7022	.59	7258	.59	7365	.64	8299	.63
4700	.190	7100	.55	7259	.59	7367	.64	8350	.64
4800	.190	7101	.55	7260	.59	7368	.64	8361	.64
4811	.190	7102	.55	7261	.59	7369	.64	8362	.65
4860	.190	7110	.55	7262	.59	7370	.64	8369	.65
4908	.63	7111	.55	7263	.59	7371	.64	8383	.55
4909	.63	7112	.55	7264	.59	7373	.64	8384	.65
4910	.63	7113	.55	7265	.59	7374	.64	8393	.63
6006	.190	7114	.55	7266	.59	7376	.64	8425	.64
6014	.190	7115	.55	7267	.59	7377	.64	8437	.65
6015	.190	7116	.55	7268	.59	7380	.64	8443	.63
6022	.59	7117	.55	7269	.59	7381	.64	8534	.55
6034	.65	7118	.55	7301	.61	7382	.64	8536	.65
6052	.191	7119	.55	7302	.60	7387	.64	8537	.55
6053	.191	7120	.55	7303	.60	7400	.191	8538	.55
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NLI-5034X	201	OP-3742	221	PL-S9W/TUV	250	Q1000T6/CL	133	Q200T3/CL-20V	132
NLI-6225X	201	OP-3745	221	PL-T18W/30/4P	172	Q1000T7/4CL	232	Q200T3/CL-80MM	132
NLI-6246X	201	OP-3750	222	PL-T18W/35/4P	172	Q1000T7/4CL/BP	232	Q20A/PAR56/1/C	197
NLI-6292X	201	OQ177L	222	PL-T18W/41/4P	172	Q1000T74CL/TP	232	Q20A/PAR56/2	197
NLI-643-00	199	OQ177L	223	PL-T26W/30/4P	172	Q1000T74CL2P	232	Q20A/PAR56/3	197
NLI-643-09	199	OQ348Z	223	PL-T26W/35/4P	172	Q1000TS/1CL	232	Q20A/PAR56/C	197
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NLI-643-17	199	OQ53Z	223	PL-T32W/30/4P	172	Q100CL/MDE	129	Q20DC-F	128
NLI-643-28	199	OQ58Z	223	PL-T32W/35/4P	172	Q100DC (ESR)	128	Q20G9-120V	127
NLI-643-28	199	OQ77Z	223	PL-T32W/41/4P	172	Q100DC-F (ETD)	128	Q20GY8-120V	126
NLI-643-42	199	P129249-001	221	PL-T42W/30/4P	172	Q100FR/MDE	129	Q20GY8S-120V	126
NLI-643-82	199	P129359-934	221	PL-T42W/35/4P	172	Q100G9-120V	127	Q20MC	128
NLI-7079-24	193	P129362-228	221	PL-T42W/41/4P	172	Q100G9B/CL	127	Q20MC-F	128
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NLI-7512-24	193	PC-3	263	PR 13	18	Q100GY8.6-120V	126	Q250/4CL/2PP	231
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Q250DC (ESS)	128	Q500PAR64/NSP	155	Q75CL/MDE	129	QHV-1	261	SHO-85W-CW	162
Q250DC-F (ETB)	128	Q500PAR64/WFL	155	Q75DC	128	QHX-2	261	SHO-85W-D	162
Q250FR/MDE	129	Q500T3/4	231	Q75DC-F	128	QLV-1	260	SHO-85W-WW	162
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Q250MC-F (ESM)	128	Q500T3/4CL	231	Q75G9-120V	127	QXV-1	260	S-LM3A001	58
Q250MED	130	Q500T3/4FR	133	Q75GY8.6-120V	126	QXV-2	260	SMW21DC-130V	106
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Q25G9B/FR	127	Q500T3/CL-240V-190MM	133	Q75MED	130	RL24GS	118	SMW21INT-240V	106
Q25GY8-120V	126	Q500T3/CL-277V	133	Q75T3/CL	133	RL24RS	118	SMW21INT-24V	106
Q2MT10/4CL/MP	232	Q500T3/PB	133	Q75T3/CL-80MM	132	RL24YS	118	SMW21SC-130V	106
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Q300T3/CL-80MM	132	Q50G9-120V	127	QBA15D2420	131	RL27RS	118	SP-7	49
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Q400DC-F	128	Q6.6A/PAR64/2P	197	QBA9S2420	131	SB5-12A	102	T1654B15M	86
Q400MC	128	Q6.6A/PAR64/3P	197	QCJ-11	261	SB5-12B	102	T1654B15Q	86
Q400MC-F	128	Q600T4/CL-120V-67MM	132	QH1000T3	240	SB5-12G	102	T1654B15U	86
Q400T3/CL-80MM	132	Q600T4/CL-95MM	132	QH1000T3/CL	240	SB5-12R	102	T1654B15Y	86
Q400T4/CL-80MM	132	Q600T5	231	QH13168X	241	SB5-12W	102	T1654E14E	86
Q40DC	128	Q60G9B/CL	127	QH13168Z/98	241	SB5-12Y	102	T1654E14K	86
Q40DC-F	128	Q60G9B/FR	127	QH13169X	240	SB5-28A	102	T1654E14M	86
Q40G9B/CL	127	Q62/6.6A/18C	198	QH13169X/98	240	SB5-28B	102	T1654E14Q	86
Q40G9B/FR	127	Q650/3CL/2PP	231	QH13169Y	240	SB5-28G	102	T1654E14U	86
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Q420T4/CL-80MM	132	Q650PAR36/6	231	QH13230X/98	241	SB5-48B	102	T4.5-24V-20MA	60
Q45/6.6A/18C	198	Q650PAR36/7	231	QH13245X/98	241	SB5-48G	102	T4.5-24V-40MA	60
Q4509	189	Q650T4/4	231	QH135561Y/00	240	SB5-48R	102	T4.5-24V-50MA	60
Q4554	189	Q650T4/4CL	132	QH13561Y/98	240	SB5-48W	102	T4.5-28V-20MA	60
Q4559	189	Q650T4/4CL	231	QH13568Y/00	241	SB5-48Y	102	T4.5-28V-40MA	60
Q4559X	189	Q650T4/CL-80MM	132	QH13568Y/98	241	SB5-60A	102	T4.5-28V-50MA	60
Q4566	189	Q650T4/CL-95MM	132	QH13713X	240	SB5-60B	102	T4.5-48V-20MA	60
Q4631	190	Q650T4/RS	132	QH13713Z/98	240	SB5-60G	102	T4.5-48V-40MA	60
Q4632	190	Q650T5/FR-80MM	132	QH13765X	241	SB5-60R	102	T4.5-48V-50MA	60
Q500/5CL	231	Q650T8	231	QH13844Z/98	240	SB5-60W	102	T4.5-60V-20MA	60
Q500/5CL/P	231	Q650T8	231	QH14103Z/98	241	SB5-60Y	102	T4.5-60V-40MA	60
Q5000T20/4CL	232	Q750/4CL	231	QH1600T3	241	SB5-6A	102	T4.5-60V-50MA	60
Q500CL/E14	130	Q750/4CL/P	231	QH1600T3	241	SB5-6B	102	T4.5-6V-20MA	60
Q500CL/MC	231	Q750/CL/TP	231	QH1600T3/CL	241	SB5-6G	102	T4.5-6V-40MA	60
Q500CL/P	231	Q750CL/P	231	QH2000T3/ICL/HT	241	SB5-6R	102	T4.5-6V-50MA	60
Q500CL/TP	231	Q750T3/4	231	QH2000T3/ICL/HT/UBO	241	SB5-6W	102	T4.6-12V-20MA	60
Q500DC	128	Q750T3/4CL	231	QH2500T3	241	SB5-6Y	102	T4.6-12V-40MA	60
Q500DC-F	128	Q750T3/CL	133	QH2500T3/7	241	SC-3	263	T4.6-12V-50MA	60
Q500MC (EYW)	128	Q750T3/CL-190MM	133	QH2500T3/CL	241	SE-1274	85	T4.6-24V-20MA	60
Q500MC-F (EYX)	128	Q750T3/CL-240V-190MM	133	QH3000T3/HELEN	241	SHO-105W-CW	162	T4.6-24V-40MA	60
Q500MED	130	Q750T3/FR	133	QH375T3/7	240	SHO-105W-D	162	T4.6-24V-50MA	60
Q500PAR56/MFL	154	Q750T7/4CL	232	QH500T3	240	SHO-105W-WW	162	T4.6-28V-20MA	60
Q500PAR56/NSP	154	Q750T7/4CL2P	231	QH500T3/7	240	SHO-65W-CW	162	T4.6-28V-40MA	60
Q500PAR56/WFL	154	Q750T7/4CLTP	232	QH500T3/CL	240	SHO-65W-D	162	T4.6-28V-50MA	60



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T4.6-60V-40MA	60	TL'D15W/89	177	TL'I40W/05	181	W904-24R	101
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T4.6-6V-20MA	60	TL'D18W/03	180	TL'K40W/05	181	W904-24Y	101
T4.6-6V-40MA	60	TL'D18W/15	185	TL'K40W/10-R	182	W904-48A	101
T4.6-6V-50MA	60	TL'D18W/16	185	TL40W/05	181	W904-48B	101
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T5.5-24V-20MA	62	TL'D18W/54	176	W206CG6-6V	98	W904-60A	101
T5.5-24V-40MA	62	TL'D18W/827NG	178	W206CR6-12V	98	W904-60B	101
T5.5-24V-50MA	62	TL'D18W/830NG	178	W206CR6-28V	98	W904-60G	101
T5.5-28V-20MA	62	TL'D18W/840NG	178	W206CR6-6V	98	W904-60R	101
T5.5-28V-40MA	62	TL'D18W/865NG	178	W206CY6-12V	98	W904-60W	101
T5.5-28V-50MA	62	TL'D18W/89	177	W206CY6-28V	98	W904-60Y	101
T5.5-48V-20MA	62	TL'D18W/930	179	W206CY6-6V	98	W904-6A	101
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T5.5-60V-50MA	62	TL'D30W	178	W901-120W	101	W904-6Y	101
T5.5-6V-20MA	62	TL'D30W/03	180	W901-120Y	101	W90X-12B	101
T5.5-6V-40MA	62	TL'D30W/33	176	W901-12A	101	W90X-12G	101
T5.5-6V-50MA	62	TL'D30W/54	176	W901-12B	101	W90X-12R	101
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T5.5K-12V-40MA	62	TL'D30W/827NG	178	W901-12R	101	W90X-12Y	101
T5.5K-12V-50MA	62	TL'D30W/830NG	178	W901-12W	101	W90X-24B	101
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T5.5K-24V-40MA	62	TL'D30W/865NG	178	W901-24A	101	W90X-24R	101
T5.5K-24V-50MA	62	TL'D30W/89	177	W901-24B	101	W90X-24W	101
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T5.5K-48V-50MA	62	TL'D36W/18	185	W901-48B	101	W90X-6Y	101
T5.5K-60V-20MA	62	TL'D36W/29	176	W901-48G	101	W99UW-12V	98
T5.5K-60V-40MA	62	TL'D36W/33	176	W901-48R	101	W99UW-28V	98
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TL'60WR	182	TL'D40W/03RS	180	W904-120A	101	XRL-1210FR	73
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TL'D15W	178	TL'D58W/840NG	178	W904-12B	101	XT-400	265
TL'D15W/03	180	TL'D58W/865NG	178	W904-12G	101		
TL'D15W/05	181	TL'D58W/89	177	W904-12R	101		
TL'D15W/33	176	TL'D58W/930	179	W904-12W	101		