



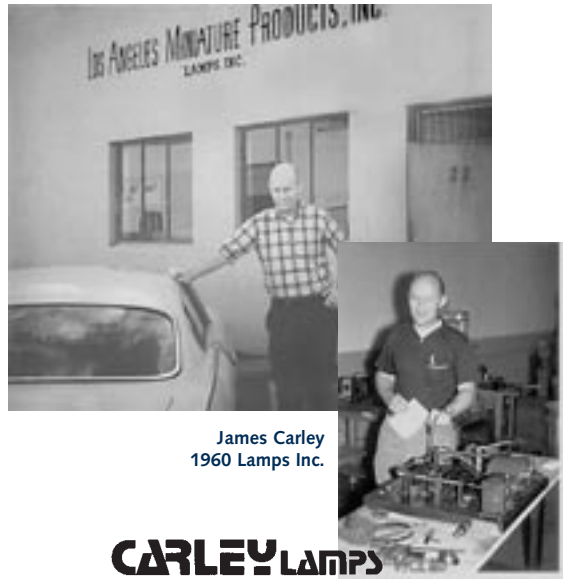
## Carley Lamps History

IN 1943 JAMES CARLEY STARTED WORKING AS A LAMP APPRENTICE AT HIS UNCLE'S FACTORY, CHICAGO MINIATURE LAMPS. AFTER SERVING IN THE U.S. MARINES, GRADUATING FROM THE UNIVERSITY OF ILLINOIS AND AGAIN WORKING FOR CHICAGO MINIATURE LAMPS, JAMES CARLEY STARTED HIS FIRST COMPANY IN LOS ANGELES, CALIFORNIA IN 1960.

LOS ANGELES MINIATURE PRODUCTS OR LAMPS QUICKLY GAINED A REPUTATION FOR BUILDING HIGH QUALITY MINIATURE LAMPS EXACTLY TO CUSTOMER SPECIFICATIONS. LAMPS' REPUTATION CONTINUED TO GROW AS NASA CHOSE JAMES CARLEY TO BUILD SPECIAL MINIATURE LAMPS FOR THE APOLLO SPACE SHOT, VOYAGER PROBE AND MOST RECENTLY THE SPACE SHUTTLE. CARLEY LAMPS ENJOYED RAPID GROWTH AND SUCCESS IN THE AEROSPACE INDUSTRY IN THE 1970S & 80S.



Craig, James, Curt and Suzy Carley  
1999 Carley Lamps Inc.



James Carley  
1960 Lamps Inc.

TO MAINTAIN ITS TECHNICAL EXCELLENCE IN THE MINIATURE LAMPS INDUSTRY AND CONTINUE TO DEVELOP THE COMPANY, JAMES CARLEY EXPANDED CARLEY LAMPS' PRODUCT RANGE AND INTRODUCED HIGH INTENSITY MINIATURE LAMPS TO THE FLASHLIGHT INDUSTRY IN EARLY 1980. TODAY, IN 1999, PROFESSIONAL POLICE, FIREFIGHTERS AND SPECIAL FORCES PREFER AND REQUEST CARLEY LAMPS FOR THEIR FLASHLIGHTS AND WEAPONS MOUNTED ILLUMINATION SYSTEMS. CARLEY LAMPS IS THE LARGEST PRODUCER OF QUALITY FLASHLIGHT LAMPS IN THE WORLD.

IN EARLY 1990 CARLEY LAMPS WAS APPROACHED TO DEVELOP A HIGH INTENSITY MEDICAL LAMP FOR A HAND HELD FIBER OPTIC LARYNGOSCOPE. CURTIS CARLEY, CARLEY LAMPS VICE PRESIDENT DEVELOPED AND PATENTED THE MEDIFLECTOR® BRAND MEDICAL LAMP. THE MEDIFLECTOR® MEDICAL LAMP INCORPORATES A MINIATURE REFLECTOR AROUND A HIGH INTENSITY GAS FILLED LAMP. THE FIBER OPTIC INDUSTRY HAS BEEN QUICK TO CAPITALIZE ON THE PERFORMANCE OF THE MEDIFLECTOR® AND OVER THE PAST NINE YEARS CARLEY HAS EXPERIENCED INTENSE GROWTH IN THE MEDICAL ILLUMINATION FIELD.

TODAY, CARLEY LAMPS HAS THREE LAMP MAKING FACILITIES LOCATED IN MEXICALI, HONG KONG, AND TORRANCE, CALIFORNIA.

QUALITY PRODUCTS IN CONJUNCTION WITH REASONABLE PRICES AND GENUINE CUSTOMER SUPPORT HAVE PROVIDED CARLEY LAMPS WITH A HEALTHY BUSINESS AND LARGE BASE OF FAITHFUL CUSTOMERS.

# Table of Contents



INTRODUCTION .....	1
--------------------	---

TECHNICALLY SPEAKING .....	2
----------------------------	---

TABLES/GRAPHS/ILLUSTRATIONS .....	4
-----------------------------------	---

XENON GAS FILLED SUB-MINIATURE LAMPS .....	6
--	---

ARGON GAS FILLED SUB-MINIATURE LAMPS .....	8
--	---

HALOGEN GAS FILLED SUB-MINIATURE LAMPS .....	9
--	---

T-1 SUB-MINIATURE VACUUM LAMPS .....	10
--------------------------------------	----

INFRARED SOURCES .....	11
------------------------	----

ALUMINUM REFLECTORS .....	12
---------------------------	----

SET SCREW REFLECTORS .....	13
----------------------------	----

LAMP SLEEVES / REFLECTOR SLEEVES .....	14
--	----

CARLEY SOCKETS .....	15
----------------------	----

CARLEY MEDICAL LAMPS .....	16
----------------------------	----

FIBER OPTIC GAS FILLED MEDICAL LAMP DRAWINGS .....	17
--	----

NEW MEDIFLECTOR® BRAND MEDICAL LAMP .....	18
---	----

CONVENTIONAL VACUUM MEDICAL LAMP DRAWINGS .....	19
---	----

XENON STAR® FLASHLIGHT LAMPS .....	20
------------------------------------	----

KRYPTON STAR FLASHLIGHT LAMPS .....	21
-------------------------------------	----

COMMON CUSTOMER QUESTIONS & ANSWERS .....	22
---	----

DEFINITIONS .....	24
-------------------	----

LAMP SPECIFICATION SHEET .....	25
--------------------------------	----





## Introduction

THE PRODUCTION OF HIGH QUALITY MINIATURE AND SUB MINIATURE LAMPS IS NOT A NEW VENTURE FOR THE TECHNICIANS AT CARLEY LAMPS. EXPERIENCE DATING BACK TO 1943, AND THE ISSUANCE OF MILITARY STANDARDS BASED ON DESIGNS PERFECTED BY OUR STAFF, INDICATES THIS TECHNICAL EXCELLENCE.

CARLEY LAMPS HAS A UNIQUE OEM ADVANTAGE. WE ARE BOTH A LAMP AND LAMP ASSEMBLY MANUFACTURER. IN OUR TECHNICAL LIBRARY THERE ARE DESIGNS FOR MORE THAN 1,400 LAMPS AND ASSEMBLIES, EACH WITH ITS SPECIAL CHARACTERISTICS OFFERING IMMEDIATE SOLUTIONS TO A VARIETY OF PROBLEMS. WHETHER YOU REQUIRE HALOGEN, XENON, KRYPTON OR ARGON GAS FILLED LAMPS, INFRA RED SOURCES, REFLECTORS OR MEDICAL LAMPS, CARLEY LAMPS HAS THE ANSWER. TAKE TIME TO REVIEW OUR CATALOG, FILL OUT THE ENCLOSED LAMP SPECIFICATION SHEET, AND PUT OUR ENGINEERING STAFF TO WORK FOR YOU. CARLEY LAMPS OFFERS CONSISTENT QUALITY AT ALL TIMES BECAUSE EVERY PRODUCT CARLEY SELLS IS PRODUCED BY A CARLEY TECHNICIAN IN A CARLEY LAMPS FACTORY.

APPLICATIONS FOR CARLEY LAMPS INCLUDE MEDICAL LARYNGOSCOPES, DENTAL INSTRUMENTS, DIVE LIGHTS, POLICE AND FIRE FLASHLIGHTS, UNDERGROUND MINING, AVIATION WING TIP AND INSTRUMENT LIGHTING, FIBER OPTIC ILLUMINATION, OPTICAL INSTRUMENTS, GAS ANALYZING EQUIPMENT, AND YOUR UNIQUE OEM APPLICATION.

IF CARLEY LAMPS' CURRENT INVENTORY DOES NOT MEET YOUR EXACT NEEDS, CARLEY LAMPS WELCOMES THE OPPORTUNITY TO DESIGN AND BUILD THE EXACT LAMP, REFLECTOR OR I/R SOURCE YOU REQUIRE. PLEASE CONTACT CARLEY LAMPS FOR IMMEDIATE ASSISTANCE.

THANK YOU FOR YOUR INTEREST IN CARLEY LAMPS.

SINCERELY,

CRAIG CARLEY  
NATIONAL SALES MANAGER



# Technically Speaking...

## Gas Filled Lamps

CARLEY LAMPS MANUFACTURES GAS FILLED LAMPS TO FILL THE NEED FOR HIGHER FILAMENT TEMPERATURES. GASES USED ARE ARGON, KRYPTON AND XENON IN ORDER OF INCREASING EFFICIENCY. CURRENT DRAWS ARE FROM .35 TO 10 AMPERES. THE LAMP WALL IS QUITE HOT DEPENDING UPON THE WATTAGE DISSIPATION AND SIZE OF THE ENVELOPE. TEMPERATURES RANGE FROM 250 TO 300C.

## Halogen Lamps

HALOGEN LAMPS ARE MANUFACTURED WHERE SMALL LAMP SIZE AND HIGH WATTAGE ARE REQUIRED. HALOGEN LIGHT OUTPUT MAINTENANCE IS BETTER THAN XENON, KRYPTON OR ARGON GAS FILLED LAMPS. THE EVAPORATED TUNGSTEN FROM THE FILAMENT IS RE-DEPOSITED FROM THE LAMP WALL BACK ONTO THE FILAMENT. THIS KEEPS THE LAMP CLEAN ALLOWING ALL THE LIGHT THE FILAMENT PRODUCES TO ESCAPE AND SHINE OUT OF THE GLASS LAMP. CURRENT DRAWS ARE FROM .5 TO 10 AMPERES. CARLEY LAMPS USES XENON GAS IN ALL OF ITS HALOGEN LAMPS TO ENSURE MAXIMUM EFFICIENCY & PERFORMANCE.

## Lenses

THE ADDITION OF A LENS TO A LAMP WILL CAUSE LIGHT GATHERING WITH SUBSEQUENT INCREASES IN INTENSITY OF UP TO 10X. LENSES ARE AVAILABLE ON ALL OF OUR LAMPS.

NON LENS END LAMP=



LENS END LAMP=



## Reflectors

THE USE OF CARLEY LAMPS' ACCURATE REFLECTORS IS AN EXCELLENT TOOL IN THE COLLIMATION AND REFOCUSING OF ENERGY NORMALLY LOST THROUGH SPHERICAL RADIATION. REFLECTORS ARE A SIMPLE AND IMPORTANT TOOL TO INCREASE LIGHT INTENSITY. INCREASES IN EFFICIENCIES OF 100 TO 600% ARE COMMONPLACE WHEN COMPARED TO A NON REFLECTORIZED LAMP. CARLEY OFFERS PARABOLIC, ELLIPTICAL AND CUSTOM MADE REFLECTORS. OUR STANDARD LINE OF REFLECTORS IS MADE OF ALUMINUM. HIGH TEMPERATURE PLASTIC REFLECTORS ARE AVAILABLE FOR CUSTOM APPLICATIONS. THE REFLECTOR'S SURFACE CAN BE SMOOTH, STIPPLED OR TEXTURE COATED. CARLEY REFLECTORS CAN BE HAND POLISHED, ALUMINIZED, OR UNDERCOATED AND ALUMINIZED. OUR PATENTED MEDIFLECTOR® OFFERS A SUBSTANTIAL INCREASE IN LIGHT OUTPUT FOR HAND HELD MEDICAL INSTRUMENTS, WITH NO INCREASE IN LAMP WATTAGE. THE FIBER OPTIC LARYNGOSCOPE INDUSTRY HAS BENEFITED CONSIDERABLY BY USING THE CARLEY LAMPS MEDIFLECTOR® BRAND MEDICAL LAMP.

## Infrared Sources

LAMPS ARE A GOOD I/R SOURCE AND WILL PRODUCE ENERGY OUT TO 3+ MICRONS. CARLEY I/R SOURCES WILL PRODUCE ENERGY TO 6 MICRONS USING A SAPPHIRE WINDOW AND TO 16 MICRONS USING A ZINC SELENIDE WINDOW. SEE THE TRANSMITTANCE CURVES ON PAGE 11. DIFFERENT HOUSING STYLES ARE AVAILABLE WITH COLLIMATING AND REFOCUSING REFLECTORS. CUSTOM I/R SOURCES MADE TO YOUR UNIQUE REQUIREMENTS ARE AVAILABLE. CARLEY'S STANDARD I/R SOURCES FEATURED ON PAGE 11 ARE PARABOLIC REFLECTORS. CARLEY LAMPS WELCOMES THE OPPORTUNITY TO CUSTOM MAKE ELLIPTICAL, PARABOLIC, OPEN AND FREE STANDING I/R SOURCES PER CUSTOMER OEM SPECIFICATIONS.



## Medical Lamps

CARLEY'S COMPLETE LINE OF MEDICAL REPLACEMENT LAMPS OFFERS THE HIGHEST QUALITY AT THE LOWEST COST. CARLEY MEDICAL LAMPS ARE AVAILABLE IN VACUUM, GAS FILLED AND HALOGEN TYPES FOR USE IN LARYNGOSCOPES, OPHTHALMOSCOPES, AND DIAGNOSTIC INSTRUMENTS. QUOTING AND BUILDING CUSTOM MADE MEDICAL LAMPS IS A WELCOME OPPORTUNITY FOR CARLEY LAMPS.

## Custom Made Prototype Products

CARLEY LAMPS' REPUTATION IS BUILT UPON CUSTOMER SATISFACTION AND QUALITY PRODUCTS. CARLEY LAMPS WELCOMES THE OPPORTUNITY TO DESIGN AND BUILD THE EXACT LAMP, REFLECTOR, I/R SOURCE OR MEDICAL LAMP YOU REQUIRE. CONTACT CARLEY LAMPS FOR MORE DETAILS.

## Aging and Selecting

EVERY PRODUCT CARLEY SELLS IS MANUFACTURED IN A CARLEY LAMPS FACTORY. EVERY LAMP IS 100% AGED AND SELECTED TO ASSURE COMPLIANCE TO THE LIFETIME AND LIGHT OUTPUTS SPECIFIED. 100% OF CARLEY LAMPS ARE BENCH ENERGIZED FOR A MINIMUM OF 30 MINUTES. TIGHTENED TOLERANCES ARE AVAILABLE IF REQUIRED. LIFETIME FOR ALL LAMPS LISTED IN THIS CATALOG ARE RATED FOR AC VOLTAGE INPUT.

## Filaments

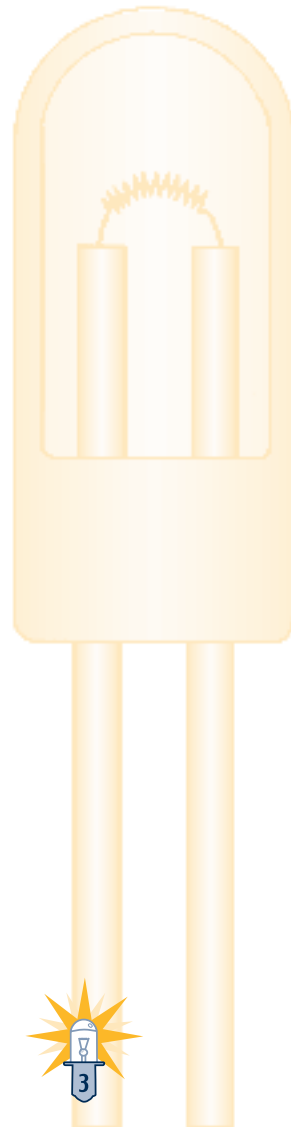
CARLEY LAMPS USES TUNGSTEN AND TUNGSTEN RHENIUM FOR FILAMENTS. RISE TIMES ARE DEPENDENT UPON THE TYPE OF LAMP AND THE WIRE DIAMETER. ELECTROMIGRATION (NOTCHING) OCCURS IN SMALL DIAMETER WIRES AND THIS PHENOMENON IS PREVALENT UNDER DC CONDITIONS WHICH CAN SEVERELY SHORTEN LIFE. THE PULSING OR FLASHING OF TUNGSTEN FILAMENTS CAN REDUCE LIFETIME OF LAMPS DUE TO THERMAL STRESSING. THE PULSING OF INPUT VOLTAGE WILL NOT ALWAYS INCREASE A LAMP'S LIFETIME. LIFE HOURS OF LAMPS ARE RATED FOR AC ENERGY INPUT.

## Sockets

CARLEY LAMPS OFFERS CONVENIENT SOCKETS TO INSTALL OUR BI PIN OR STIFF PIN LAMPS IN SIZE T-1.5 AND T-2.5. CARLEY IS CURRENTLY DEVELOPING SOCKETS FOR T-1 LAMPS.

## Vacuum Lamps

VACUUM LAMPS HAVE LOWER FILAMENT OPERATING TEMPERATURES AND SERVE MARKETS REQUIRING LOWER LAMP SKIN TEMPERATURES AND PRICE CONSIDERATIONS. CURRENT DRAWS ARE FROM .01 TO .7 AMPERES. HIGHER EFFICIENCIES ARE ATTAINED AT CURRENT DRAWS LESS THAN .35 AMPERES THAN THOSE OF GAS FILLED DESIGN. FAILURE OF VACUUM LAMPS IS CAUSED BY THE DEVELOPMENT OF HOT SPOTS IN THE FILAMENT DUE TO CROSS SECTION REDUCTION OF THE TUNGSTEN OR THE DARKENING OF THE BULB WALL DUE TO EVAPORATION OF THE TUNGSTEN FILAMENT. AMBIENT TEMPERATURE OF OPERATION SHOULD BE LIMITED TO 100C±.





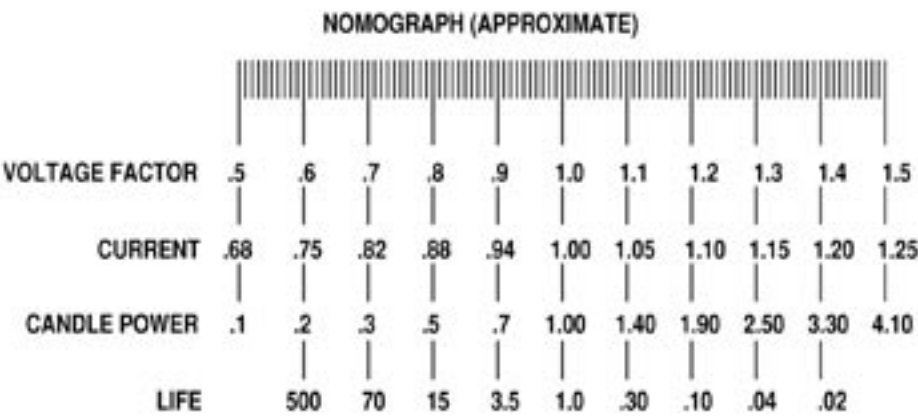
# Tables/Graphs/Illustrations

THE FOLLOWING TABLES/GRAPHS/ILLUSTRATIONS BEST DESCRIBE CERTAIN PROPERTIES AND CHARACTERISTICS OF LAMPS PRODUCED IN CARLEY FACILITIES.

**Table 1** — This table shows the range of values assignable to various lamp types.

ASPECT	VACUUM LAMPS	GAS FILLED AND HALOGEN LAMPS
COLOR TEMPERATURE DEGK	1800-2600	2200-3200
EFFICIENCY, CANDLE POWER/WATT	.1-.7	.2-2.2
FILAMENT CURRENT, AMPERES	.01-.40	.35-10
FILAMENT VOLTAGE	1.0-32	2.5-28
MAX. ALLOWABLE AMBIENT TEMP	100C	250C
BULB SKIN TEMP, APPROX. AVERAGE	60C	300C
FILAMENT RISE TIME, SEC.	.005-.1	.1-1
LIFETIME AVERAGE HOURS AC	250-25,000	20-10,000
LENS END FOOT CANDLES	100-2000	500-40,000

**Nomograph** (Approximate) — This table shows the changes in values of various lamp properties as a result of a voltage increase or decrease.

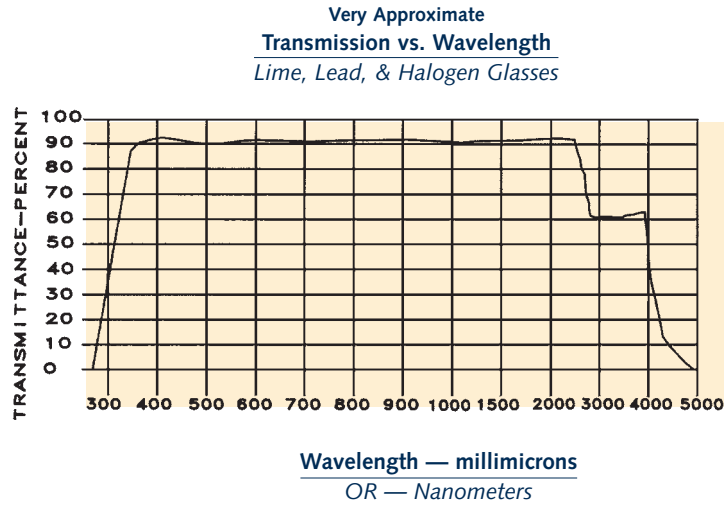


FOR INSTANCE, A 5 VOLT LAMP RUN AT 6 VOLTS ( $6/5=1.2$ ) WOULD HAVE AN APPROXIMATE CANDLE-POWER OF 1.9X, A LIFE OF .1X AND A CURRENT OF 1.1X WHEN COMPARED TO ITS 5 VOLT RATING.



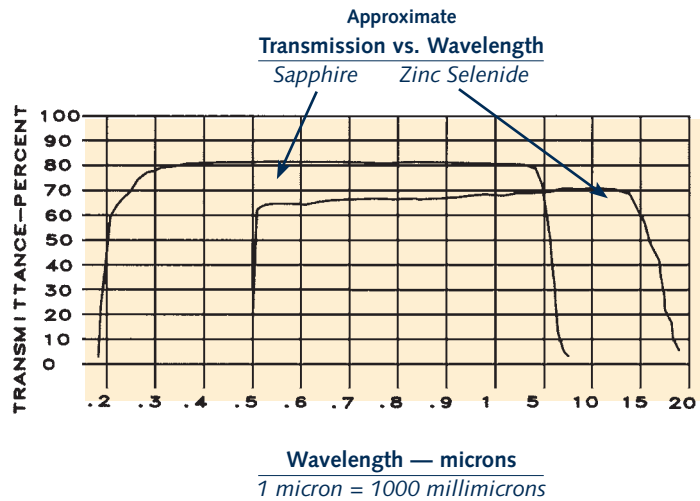
## Graph 1 —

THIS GRAPH SHOWS TYPICAL LAMP ENVELOPE TRANSMISSIONS CURVES. THIS CURVE IS USEFUL IN THE EMPLOYMENT OF LAMPS AS VISUAL OR INFRA RED SOURCES. ALSO CONSIDER THE USE OF ONE OF OUR REFLECTORS TO FURTHER CONCENTRATE ENERGY LEVELS AND TO CONTROL LIGHT PROJECTION.



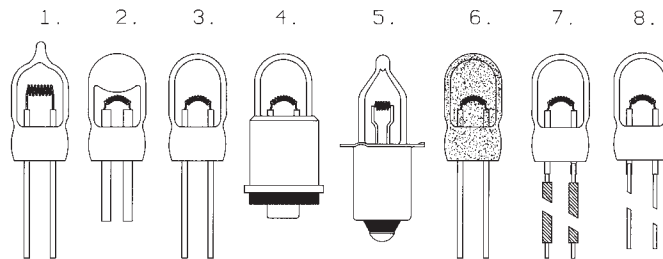
## Graph 2 —

THIS GRAPH SHOWS THE TRANSMISSION OF SAPPHIRE AND ZINC SELENIDE WINDOWS THAT ARE USED IN CARLEY LAMPS INFRA RED SOURCES. SEE PAGE 11.



## Illustration 1

ILLUSTRATION ONE  
FEATURES  
POPULAR LAMPS PRODUCED  
BY CARLEY TECHNICIANS.



1. TIPPED HALOGEN LAMP WITH C6 FILAMENT 2. LENS END HALOGEN LAMP WITH C2R FILAMENT & STIFF PIN LEADS 3. NON LENS, WIRE LEAD, XENON GAS FILLED LAMP 4. NON LENS END LAMP WITH C2R FILAMENT IN A FLANGE BASE 5. TIPPED HALOGEN LAMP WITH C6 FILAMENT IN A PR BASE 6. NON LENS END LAMP WITH FROSTED GLASS, STIFF PIN LEADS WITH C2R FILAMENT 7. NON LENS END LAMP WITH C2R FILAMENT AND INSULATED LEAD EXTENSIONS 8. NON LENS END LAMP WITH C2R FILAMENT AND NICKEL LEAD EXTENSIONS WELDED ON AT GLASS SEAL.

NOTE: Most lamps can be built in a TL lens end or a T non lens end glass envelope. Lamp leads or leg's can be cut or un-cut. Please specify if you require your lamp leads cut to a specific length. Contact Carley Lamps for more information and to discuss your unique application.





## Xenon Gas Filled Sub-Miniature Lamps

XENON GAS FILLED LAMPS ARE MANUFACTURED TO ATTAIN HIGHER FILAMENT TEMPERATURES. XENON GAS IS THE BEST PERFORMING FILL GAS AND PROVIDES THE MAXIMUM CANDLE POWER PER WATT. CURRENT DRAWS ARE FROM .35 TO 10 AMPERES. THE LAMP WALL IS QUITE HOT AND RUNS UP TO 300C. CANDLE POWERS ARE APPROXIMATE. FOLLOWING ARE THE MORE POPULAR TYPES WHICH ARE NORMALLY IN STOCK. FOR A LARGER SELECTION, SEE THE LOWER PART OF THIS PAGE FOR XENON GAS FILLED LAMPS WHICH ARE BUILT TO ORDER IF OUT OF STOCK. XENON GAS FILLED LAMPS WILL EXHIBIT ABOUT 30% MORE CANDLE POWER PER WATT THAN ARGON FILLED LAMPS AND ABOUT 15% MORE CANDLE POWER PER WATT THAN KRYPTON LAMPS.

LAMP No.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG. NO.
706	2.3	.35	.80	1.0	3000	20	C-2R	T-1	1
803	2.6	.60	1.6	1.5	3050	20	C-2R	T-1	1
802	2.3	.35	.80	0.7	2900	20	C-6	T-1 1/2	3
1079	2.3	.45	1.0	.75	2900	20	C-2R	T-1 1/2	3
708	2.4	1.2	2.9	3.5	3050	15	C-2R	T-1 1/2	3
984	2.7	.78	2.1	2.5	3100	10	C-6	T-1 1/2	3
1003	3.7	.76	2.8	4.3	3100	10	C-6	T-1 1/2	3
723	3.7	1.2	4.4	6.2	3000	20	C-6	T-1 1/2	3
724	3.7	1.5	5.5	9.5	3100	20	C-6	T-1 1/2	3
1047	3.7	1.7	6.3	9.5	3050	15	C-6	T-1 1/2	3
709	5.0	1.2	6.0	11.1	3100	20	C-2R	T-1 1/2	3
868	2.7	.70	1.9	2.3	3050	10	C-6	TL-1 1/2	4
1002	3.5	.76	2.7	4.3	3100	10	C-6	TL-1 1/2	4
980	2.5	.50	1.2	1.0	2950	50	C-6	T-2 1/2	5
804	3.7	1.20	4.4	7.0	3100	20	C-6	T-2 1/2	5
805	3.7	1.60	5.9	11.8	3100	20	C-6	T-2 1/2	5
807	4.8	1.60	7.7	13.4	3100	20	C-6	T-2 1/2	5
808	9.6	1.20	11.5	23.0	3100	20	C-6	T-2 1/2	5
999	12.0	1.0	12.0	15.0	2800	1000	C-2R	T-2 1/2	5
1057	6.0	2.00	12.0	19.0	2900	200	C-6	T-2 1/2	7
1164	2.5	.84	2.1	2.0	3000	25	C-6	TL-2 1/2	6
1165	3.8	.85	3.2	4.3	3000	25	C-6	TL-2 1/2	6
1166	5.3	.80	4.2	6.8	3000	25	C-6	TL-2 1/2	6
1167	6.4	.80	5.1	8.4	3000	25	C-6	TL-2 1/2	6
1168	7.6	.80	6.1	10.5	3000	25	C-6	TL-2 1/2	6
1169	9.2	.80	7.4	14.4	3000	25	C-6	TL-2 1/2	6

*Note: Please specify the length you require for your lamp leads or legs when you place your order or your lamps will be shipped out with uncut leads. All Xenon lamps can be manufactured using krypton or argon gas. Krypton and argon gas filled lamps can be considered as a cost saving option for volumes of 1,000 lamps or more.*

## Xenon Gas Filled Sub-Miniature Lamps — Built per customer order

LAMP No.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG. NO.
779	5.0	.40	2.0	3.0	3000	20	C-2R	T-1	1
720	2.6	.60	1.5	2.5	3000	20	C-6	T-1 1/2	3
719	3.8	.60	2.3	2.7	2850	20	C-2R	T-1 1/2	3
880	5.0	.44	2.2	2.0	2750	1000	C-6	T-1 1/2	3
875	5.0	.86	4.3	7.0	3000	20	C-6	T-1 1/2	3
682	5.2	.39	2.0	2.8	2950	25	C-6	T-1 1/2	3
683	5.2	.50	2.6	3.9	3000	25	C-6	T-1 1/2	3
761	5.0	.45	2.2	3.0	3000	20	C-2R	T-1 1/2	3
888	3.6	.70	2.5	4.3	3100	12	C-6	TL-1 1/2	4
809	10.5	1.20	12.6	25.0	3000	20	CC-6	T-2 1/2	5
871	11.5	.63	7.2	9.8	2800	400	C-2R	T-2 1/2	5
926	11.5	.83	9.5	15.9	2900	400	C-2R	T-2 1/2	5
801	12.0	1.0	12.0	20.0	3000	25	CC-6	T-2 1/2	5
762	13.7	.63	8.6	13.5	2900	200	C-2R	T-2 1/2	5

*Note: Have Carley Lamps check stock for you as sometimes built to order lamps are in stock.*





Figure 1 T-1



Figure 2 TL-1

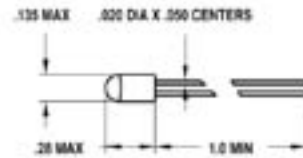


Figure 3 T-1 1/2

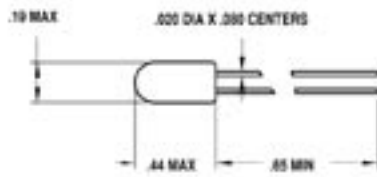


Figure 4 TL-1 1/2

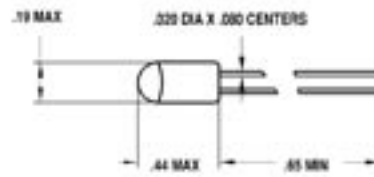


Figure 5 T-2 1/2

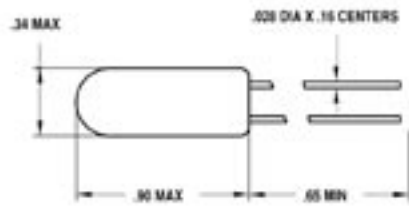


Figure 6 TL-2 1/2

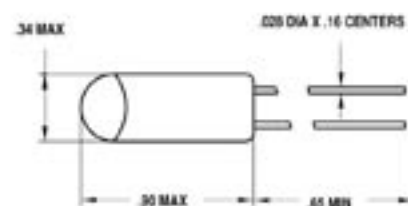


Figure PR

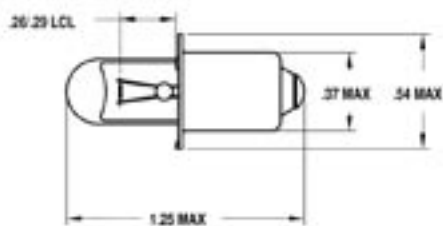
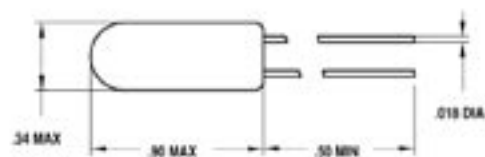


Figure 7 T-2 1/2



NOTE: Figures above are for Xenon, Krypton and Argon Gas Filled Subminiature Lamps

ALL CARLEY UNBASED LAMPS ARE PRODUCED WITH UNCUT LEADS. IF YOU REQUIRE YOUR LAMP LEADS TO BE CUT, PLEASE REQUEST CUT LEADS WHEN YOU PLACE YOUR ORDER AND SPECIFY THE LENGTH THE LEADS ARE TO BE CUT. OUR NORMAL TOLERANCE ON CUT LENGTH IS  $\pm .015$ ". THERE IS AN ADDITIONAL CHARGE FOR LEAD CUTTING.



## Argon Gas Filled Sub-Miniature Lamps

ARGON GAS FILLED LAMPS ARE MANUFACTURED FOR HIGH FILAMENT TEMPERATURES. CURRENT DRAWS ARE FROM .35 TO 10 AMPERES. THE LAMP WALL IS QUITE HOT DEPENDING UPON THE WATTAGE DISSIPATION AND SIZE OF THE LAMP ENVELOPE AND CAN RUN 250 TO 300C. CANDLE POWERS ARE APPROXIMATE. CARLEY LAMPS MANUFACTURES SEVERAL ARGON LAMPS TO FULFILL SPECIFIC CUSTOMER SPECIFICATIONS AND REQUIREMENTS. FOLLOWING ARE POPULAR ARGON LAMPS MOST LIKELY TO BE IN STOCK.

LAMP No.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG. No.
401	5.0	.50	2.5	1.4	2600	4000	C-6	T-1	1
259	5.0	.50	2.5	1.4	2600	4000	C-6	TL-1	2
673	5.0	.50	2.5	1.4	2600	4000	C-6	TL-1	2
666	3.7	1.6	5.9	9.5	3000	25	C-6	T-1 1/2	3
644	5.0	.50	2.5	1.4	2600	4000	C-6	T-1 1/2	3
772	12.0	.50	6.0	8.4	2850	100	C-2R	T-1 1/2	3
671	5.0	1.0	5.0	4.0	2650	5000	C-6	T-1 1/2	3
645	6.0	1.0	6.0	4.4	2700	2500	C-6	TL-1 1/2	4
777	6.0	1.0	6.0	8.3	2850	500	C-6	TL-1 1/2	4
686	2.7	.70	1.9	1.5	3000	25	C-6	TL-1 1/2	4
624	3.7	.74	2.7	2.9	3000	25	C-6	TL-1 1/2	4
622	3.7	1.2	4.4	4.7	3000	25	C-6	TL-1 1/2	4
627	5.0	.50	2.5	1.0	2500	4000	C-6	T-2 1/2	5
771	6.0	1.0	6.0	7.0	2850	500	C-6	T-2 1/2	5
672	6.0	2.0	12.0	15.0	2900	200	C-6	T-2 1/2	5
439	10.5	1.1	11.5	8.5	2500	6000	C-2R	T-2 1/2	5
966	12.0	1.0	12.0	12.0	2700	1000	C-2R	T-2 1/2	5
447	12.0	1.2	14.4	18.0	2900	250	C-2R	T-2 1/2	5
633	5.0	.50	2.5	1.4	2600	4000	C-6	TL-2 1/2	6
634	5.0	1.0	5.0	4.2	2650	5000	C-6	TL-2 1/2	6
653	6.0	1.5	9.0	6.5	2550	5000	C-6	TL-2 1/2	6
660	12.0	.66	8.0	9.0	2650	2500	C-2R	TL-2 1/2	6

## Argon Gas Filled Sub-Miniature Lamps — Built per customer order

LAMP No.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG. No.
744	2.5	.74	1.8	1.2	3000	20	C-2R	T-1 1/2	3
745	3.7	.74	2.7	3.5	3000	20	C-2R	T-1 1/2	3
832	7.0	.50	3.5	3.0	2650	2000	C-2R	T-1 1/2	3
487	6.0	1.30	7.8	8.0	2800	300	C-6	T-2 1/2	5
576	7.0	.70	4.9	5.3	2700	2500	C-6	T-2 1/2	5
519	8.0	1.60	12.8	19.0	2800	200	C-6	T-2 1/2	5
679	10.0	.80	8.0	8.0	2600	5000	C-6	T-2 1/2	5
440	10.5	1.30	13.6	13.0	2600	4000	C-2R	T-2 1/2	5
410	10.5	1.50	15.8	15.0	2650	4000	C-2R	T-2 1/2	5
515	10.5	1.80	19.0	19.0	2800	200	C-6	T-2 1/2	5
796	12.0	1.00	12.0	22.0	3200	10	CC-6	T-2 1/2	5
560	28.0	.33	9.2	9.0	2600	4000	CC-81	T-2 1/2	5
521	28.0	.40	11.2	9.0	2750	2000	CC-6	T-2 1/2	5
681	6.0	.50	3.0	4.0	2800	500	C-6	TL-2 1/2	6

*Note: For an increase of about 15% Candle Power per watt, consider having your argon lamp up-graded to a krypton gas filled lamp. For a roughly 30% increase in Candle Power per watt, have your argon lamp up-graded to a xenon gas filled lamp. Please have Carley Lamps check stock for you as sometimes built to order lamps are in stock.*



## Halogen Gas Filled Sub Miniature Lamps — Normally in stock

CARLEY HALOGEN LAMPS ARE UNIQUE BECAUSE CARLEY PRESSURIZES ALL OF ITS HALOGEN LAMPS WITH ONLY XENON GAS. SEVERAL MINIATURE LAMP COMPANIES PRODUCE HALOGEN LAMPS BUT CHOOSE TO USE ARGON AS THE FILL GAS FOR THEIR HALOGEN LAMPS. XENON GAS PROVIDES A 30% +/- INCREASE IN CANDLE POWER PER WATT OVER ARGON GAS.

THE “HALOGEN” PORTION OF A CARLEY HALOGEN LAMP IS OBTAINED BY ADDING A SMALL PERCENT OF HALOGEN GAS TO A HIGH PRESSURIZED XENON GAS FILLED LAMP. THE HALOGEN IS RESPONSIBLE FOR CLEANING THE TUNGSTEN DEPOSIT OR TUNGSTEN POLLUTION OFF THE INSIDE OF THE LAMP WALL AND THEN PLACING THE COLLECTED TUNGSTEN BACK ONTO THE FILAMENT. THIS CYCLE OF TUNGSTEN POLLUTION AND TUNGSTEN CLEAN UP IS CONSTANTLY OCCURRING IN A HALOGEN LAMP AND IS CALLED THE “HALOGEN CYCLE”

A “CLEAN” HALOGEN LAMP WILL MAINTAIN ITS CANDLE POWER AND BRIGHTNESS OVER ITS SPECIFIED LIFETIME AT A MUCH GREATER RATE THAN THE SAME “DIRTY” LAMP THAT IS A PURE GAS FILLED PUMP. PLEASE CONTACT CARLEY LAMPS TO DISCUSS YOUR HALOGEN LAMP REQUIREMENTS.

LAMP No.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG NO.
885	7.2	4.0			3050	15	C-6	TL-1 1/2 BOTTOM TIPPED	
1122	3.5	2.3	8.0	11.0	3000	50	C-6	T-1 1/2	8
1121	5.1	1.2	6.1	9.0	3100	20	C-6	T-1 1/2	8
928	7.1	1.2	8.5	16.0	3050	25	C-2R	T-1 1/2	8
813	10.0	.6	6.0	13.0	3100	25	CC-6	T-1 1/2	8
814	12.0	.6	7.2	15.0	3100	25	CC-6	T-1 1/2	8
1042	4.0	1.0	4.0	3.5	2800	500	C-6	T-2 1/2	9
1012	28.0	.41	11.5	12.0	2600	3000	CC-6	T-2 1/2	9

## Halogen Gas Filled Sub Miniature Lamps — Built per customer order

LAMP No.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG NO.
811	5.0	.60	3.0	6.0	3100	20	C-6	T-1 1/2	8
812	7.5	.60	4.5	9.0	3100	20	C-6	T-1 1/2	8
816	3.7	.80	2.9	4.0	3100	20	C-6	T-2 1/2	9
817	5.0	.80	4.0	8.5	3100	20	C-6	T-2 1/2	9
851	6.0	1.7	10.2	20.0	3100	20	C-6	T-2 1/2	9
852	6.0	3.3	19.8	40.0	3100	20	C-6	T-2 1/2	9
819	7.5	.80	6.0	13.0	3100	20	C-6	T-2 1/2	9
820	10.0	.80	8.0	17.0	3100	20	CC-6	T-2 1/2	9
821	12.0	.80	9.6	20.0	3100	20	CC-6	T-2 1/2	9

Figure 8 T-1 1/2

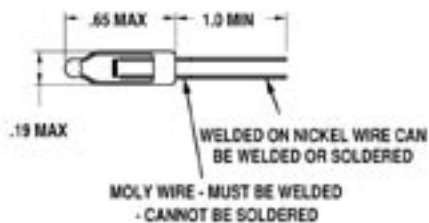
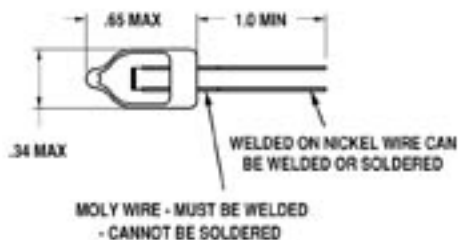


Figure 9 T-2 1/2



NOTE: Lens end halogen lamps are now available to be built to customer specifications in TL-1 1/2 and TL-2 1/2 sizes. Halogen lamps are available with moly wire or nickel stiff pin lead extensions. Please contact Carley Lamps to discuss your unique application.



# T-1 Sub Miniature Vacuum Lamps

CARLEY VACUUM LAMPS HAVE LOWER FILAMENT TEMPERATURES AND SERVE CUSTOMERS REQUIRING COOL LAMP SKIN TEMPERATURES, LONGER LAMP LIFETIME AND REDUCED COST. CURRENT DRAWS ARE FROM .015 TO .7 AMPERES. HIGHER EFFICIENCIES ARE ATTAINED AT CURRENT DRAWS OF LESS THAN .35 AMPERES THAN THOSE ATTAINED BY GAS FILLED LAMPS.

FAILURE OF VACUUM LAMPS NORMALLY RESULTS FROM THE LAMP BECOMING TOO DARK FROM TUNGSTEN POLLUTION DEPOSITS AND/OR THE FILAMENT BECOMING TOO SMALL AND BRITTLE IN A SPECIFIC AREA AND BREAKING. VACUUM LAMPS SHOULD NOT BE OPERATED IN ENVIRONMENTS THAT EXCEED 100C.

MOST OF CARLEY’S VACUUM LAMPS MEET OR EXCEED MILITARY SPECIFICATIONS AS REQUIRED BY THE U.S. GOVERNMENT. CARLEY LAMPS WELCOMES THE OPPORTUNITY TO DESIGN AND BUILD VACUUM LAMPS FOR YOUR UNIQUE REQUIREMENTS. CARLEY LAMPS BUILDS VACUUM LAMPS FROM 1.5 TO 28 VOLTS WITH CURRENTS RANGING FROM .015 TO .70 AMPS. CONTACT CARLEY LAMPS TODAY.

LAMP No.	VOLTS	WATTS	AMPS. POWER	CANDLE HRS.(Av.)	LIFE A.C. FORM	FILAMENT	FIGURE
991	2.7	.81	.30	.30	10	C-2R	3
119	5.0	.1	.02	.02	5,000	C-2R	3
122	5.0	.57	.115	.15	40,000	C-2R	3
108	5.0	.3	.06	.05	100,000	C-2R	1
197	5.0	.3	.06	.15	6,500	C-2R	1
111	5.0	.57	.115	.15	40,000	C-2R	1
234	28.0	.67	.024	.15	16,000	CC-2F	2
342	28.0	.57	.020	.15	10,000	CC-2F	1

Figure 1 Short T-1



Figure 3 Integral Bi Pin

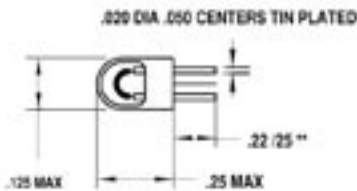


Figure 2 T-1



\*\*\* BI PIN ALSO AVAILABLE WITH 1.0 MIN OL UNCUT LEADS

Note: Vacuum lamps are available in lens end.  
\* Vacuum lamp leads are made of tin plated dumet wire and are easily soldered.



# Carley Infrared Sources

CARLEY LAMPS PRODUCES SEVERAL MINIATURE INFRA RED SOURCES. OFFERED BELOW ARE FIVE “INTRODUCTORY” INFRA RED SOURCES WHICH WILL WORK FOR A VARIETY OF APPLICATIONS OR PROVIDE A POINT OF REFERENCE FOR A CUSTOM MADE INFRA RED SOURCE.

MOST CUSTOMERS REQUIRE A SPECIFIC INFRA RED SOURCE FOR THEIR UNIQUE APPLICATION AND THIS IS WHERE CARLEY CAN HELP. INFRA RED CONSIDERATIONS INCLUDE: DIMENSIONAL REQUIREMENTS, POWER CONSUMPTION, HEAT GENERATION, WAVELENGTH REQUIREMENTS, LIGHT OUTPUT VOLUME, PLATING REQUIREMENTS, REFOCUSING REQUIREMENTS AND COST.

CARLEY LAMPS CURRENTLY PRODUCES OPEN, CLOSED & HERMETICALLY SEALED SOURCES AND WE CAN DESIGN INFRA RED SOURCES IN PARABOLIC & ELLIPTICAL REFLECTORS WITH SAPPHIRE, ZINC SELENIDE OR CALCIUM FLUORIDE TRANSMISSION WINDOWS. CARLEY HAS PRODUCED SEVERAL FREE STANDING INFRA RED SOURCES AS WELL. CURRENTLY CARLEY LAMPS’ INFRA RED SOURCE FILAMENTS ARE WOUND WITH KANTHAL OR NICHROME MATERIALS.

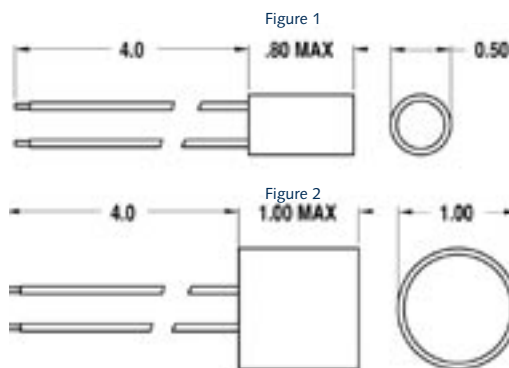
CARLEY LAMPS ENGINEERS WILL WORK WITH YOU EVERY STEP OF THE WAY TO ENSURE THAT THE DEVELOPMENT, PROTOTYPE AND FINAL ASSEMBLY OF YOUR INFRA RED SOURCE IS CORRECT AND TO YOUR SATISFACTION. NOT ONLY IS IT CARLEY LAMPS’ GOAL TO ACCOMMODATE YOUR REQUEST, BUT WE STRIVE TO EXCEED YOUR EXPECTATIONS AND KEEP YOU SATISFIED.

CARLEY LAMPS HAS PRODUCED INFRA RED SOURCES AS SMALL AS 0.25 INCHES UP TO 3.00 INCHES IN DIAMETER. WE CURRENTLY WORK WITH ALUMINUM HOUSINGS AND HAVE COATED REFLECTORS WITH GOLD AND OTHER APPROPRIATE MATERIALS PER CUSTOMER REQUEST. CONTACT CARLEY LAMPS TO DISCUSS YOUR INFRA RED REQUIREMENTS.

SOURCE No.	VOLTS	AMPS.	WATTS	WINDOW TYPE	FIGURE
919	5.0	.50	2.5	SAPPHIRE	1
921	5.0	1.50	7.5	SAPPHIRE	2
1120	5.0	1.50	7.5	SAPPHIRE	1
981	5.0	.50	2.5	ZINC SELENIDE	1
982	5.0	1.50	7.5	ZINC SELENIDE	2

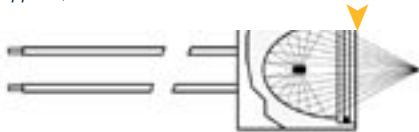
## Notes concerning the 5 sources listed above...

1. ALUMINUM BODIES
2. 28 GAGE TEFLON LEADS
3. ARGON FILLED
4. O RING SEALED (HERMETIC)
5. KANTHAL FILAMENT 975 C
6. 2000 HOUR LIFE
7. AGED AND TESTED
8. BEST OPERATED IN HORIZONTAL POSITION
9. AC OR DC POWER ACCEPTABLE
10. ALL SOURCES ABOVE ARE PARABOLIC

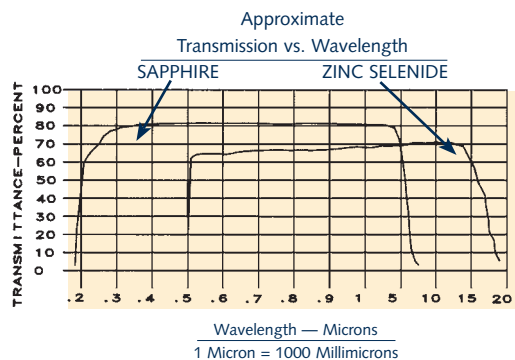


## Note: Elliptical I/R sources built to Typical Layout (Ellipsoid Shown)

Sapphire, Zinc Selenide or Calcium Fluoride transmission window.



Note: an open infra red source will provide approximately 2 1/2 times the volume of I/R light at 15 microns than an I/R source with a “Transmission Window”.



# Aluminum Reflectors

CARLEY LAMPS MANUFACTURES PARABOLIC AND ELLIPTICAL REFLECTORS RANGING FROM .25 INCHES TO 3.00 INCHES IN DIAMETER. CARLEY LAMPS CAN PRODUCE REFLECTORS UP TO 6.0" IN DIAMETER, AS WELL AS OFFER SEVERAL COATINGS AND TEXTURES ON THE REFLECTOR FACE. CARLEY REFLECTORS ARE HAND POLISHED, AND VACUUM METALLIZED COATED WHEN REQUIRED. HAND POLISHING REFLECTORS FORMS A FINE COATING OF ALUMINUM OXIDE ON THE REFLECTOR FACE AND THIS PROTECTS THE REFLECTOR, MAINTAINING ITS BRIGHT SURFACE. CARLEY ALUMINUM REFLECTORS ARE EXCELLENT AT ABSORBING HEAT AND THEY HOLD UP AGAINST HIGH WATTAGE LAMPS BETTER THAN PLASTIC REFLECTORS. CARLEY ALUMINUM REFLECTORS ARE EXCELLENT AT REFLECTING, COLLIMATING AND REFOCUSING BOTH VISIBLE, ULTRA VIOLET AND INFRA RED LIGHT. CONTACT CARLEY LAMPS TODAY FOR ASSISTANCE IN CHOOSING THE BEST PERFORMING REFLECTOR FOR YOUR APPLICATION.

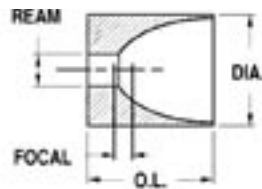
REFLECTOR	TYPE*	DIA.	O.L.	REAM	REFOCUS**	FOCAL	FOR LAMP
1578	ELL	.375	.50	.128	.18		T-1
1579	PAR	.375	.50	.128		.05	T-1
1580	ELL	.375	.50	.189	.18		T-1 1/2
1581	PAR	.375	.50	.189		.05	T-1 1/2
1904	ELL	.500	.50	.128	.22		T-1
1905	PAR	.500	.50	.128		.07	T-1
1906	ELL	.500	.50	.189	.22		T-1 1/2
1907	PAR	.500	.50	.189		.07	T-1 1/2
1582	ELL	.750	.75	.189	.37		T-1 1/2
1583	PAR	.750	.75	.189		.10	T-1 1/2
1584	ELL	.750	.75	.343	.37		T-2 1/2
1585	PAR	.750	.75	.343		.10	T-2 1/2
1586	ELL	1.00	1.00	.343	.49		T-2 1/2
1587	PAR	1.00	1.00	.343		.12	T-2 1/2
1908	PAR	1.37	1.00	.343		.16	T-2 1/2
1909	PAR	2.00	1.30	.343		.20	T-2 1/2
2127	ELL	2.00	1.30	.343	1.00		T-2 1/2
2101	PAR	3.00	2.50	.343		.24	T-2 1/2
2103	ELL	3.00	2.50	.343	1.20		T-2 1/2

\* PAR = PARABOLIC (COLLIMATING) ELL = ELLIPTICAL (REFOCUSING)

\*\* OPTIMUM REFOCUS - REFOCUS CAN BE CHANGED BY MOVING LAMP FORWARD OR BACKWARD INSIDE THE REFLECTOR

*Note: By locating the lamp filament at the "focal point," you will obtain maximum performance. Securing the lamp to a standard reflector is normally accomplished by gluing the lamp into the reflector. For greater options and ease of use, review the Set Screw Reflectors on the next page.*

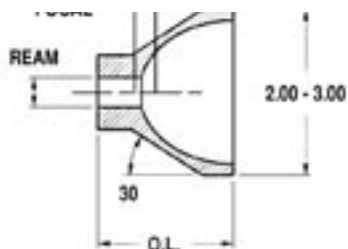
**Parabolic Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



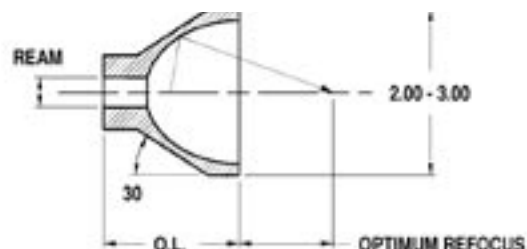
**Elliptical Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



**Parabolic 2 And 3 Inch Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



**Elliptical 2 And 3 Inch Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



\*\* THESE REFLECTORS CAN ALSO BE VACUUM METALLIZED



# Set Screw Reflectors

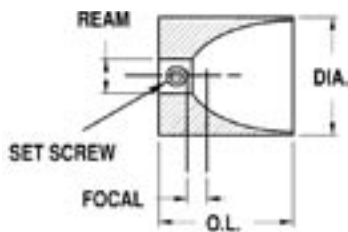
CARLEY SET SCREW REFLECTORS ARE IDENTICAL TO OUR STANDARD ALUMINUM REFLECTORS EXCEPT THEY ALLOW THE CUSTOMER TO ADJUST THE POSITION OF THE LAMP INSIDE THE REFLECTOR AS OFTEN AS DESIRED. ANOTHER BENEFIT OF THE SET SCREW REFLECTORS IS THAT WHEN A LAMP BURNS OUT, ONLY THE LAMP AND LAMP SLEEVE NEED TO BE REPLACED AS THE SET SCREW REFLECTOR WILL LAST FOR YEARS UNDER NORMAL CONDITIONS. WHEN WORKING WITH A SET SCREW REFLECTOR, BE SURE THAT YOUR LIGHT BULB HAS A PROTECTIVE METAL SLEEVE AROUND IT. LAMP SLEEVES CAN BE FOUND ON THE NEXT PAGE OF THIS CATALOG.

REFLECTOR	TYPE*	DIA.	O.L.	REAM	REFOCUS**	FOCAL	FOR LAMP
1925	ELL	.375	.50	.189	.18		T-1
1932	PAR	.375	.50	.189		.05	T-1
1926	ELL	.375	.50	.252	.18		T-1 1/2
1933	PAR	.375	.50	.252		.05	T-1 1/2
1927	ELL	.500	.50	.189	.22		T-1
1934	PAR	.500	.50	.189		.07	T-1
1928	ELL	.500	.50	.252	.22		T-1 1/2
1935	PAR	.500	.50	.252		.07	T-1 1/2
1929	ELL	.750	.75	.252	.37		T-1 1/2
1936	PAR	.750	.75	.252		.10	T-1 1/2
1930	ELL	.750	.75	.377	.37		T-2 1/2
1937	PAR	.750	.75	.377		.10	T-2 1/2
1931	ELL	1.00	1.00	.377	.49		T-2 1/2
1938	PAR	1.00	1.00	.377		.12	T-2 1/2
1939	PAR	1.37	1.00	.377		.16	T-2 1/2
1940	PAR	2.00	1.30	.377		.20	T-2 1/2
2128	ELL	2.00	1.30	.377	1.00		T-2 1/2
2102	PAR	3.00	2.50	.377		.24	T-2 1/2
2104	ELL	3.00	2.50	.377	1.20		T-2 1/2

\* PAR = PARABOLIC (COLLIMATING) ELL = ELLIPTICAL (REFOCUSING)

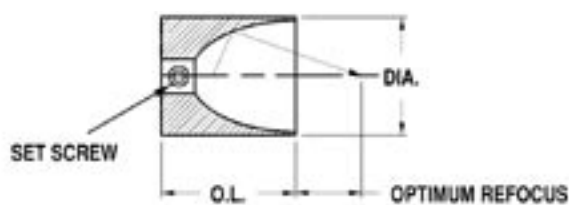
\*\* OPTIMUM REFOCUS - REFOCUS CAN BE CHANGED BY MOVING LAMP FORWARD OR BACKWARD INSIDE OF THE REFLECTOR

**Parabolic Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



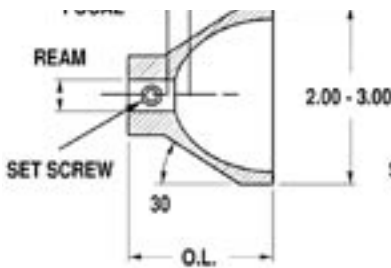
PARABOLIC 2 AND 3 INCH SET SCREW

**Elliptical Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*

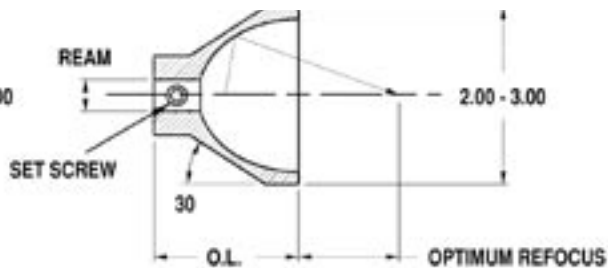


ELLIPTICAL 2 AND 3 INCH SET SCREW

**Parabolic 2 And 3 Inch Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



**Elliptical 2 And 3 Inch Set Screw Reflectors**  
Material Aluminum - Machined and Polished\*\*



\*\* These reflectors can also be vacuum metallized after polishing, for increased reflectance - there is an additional charge for vacuum metallizing.





# Lamp Sleeves/Reflector Sleeves

THE ASSEMBLIES SHOWN BELOW ARE DESIGNED TO FIT CARLEY'S SET SCREW REFLECTOR ASSEMBLIES. CARLEY LAMPS SIZE T-1, T-1 1/2 AND T-2 1/2 CAN BE USED IN ANY SIZE REFLECTOR WE OFFER. BE CAREFUL TO ORDER THE CORRECT SLEEVE FOR THE LAMP AND REFLECTOR COMBINATION YOU WILL BE COMBINING.

Figure 1

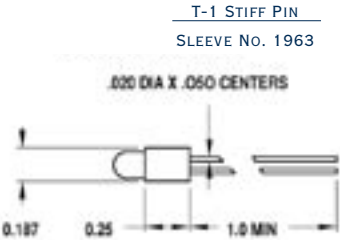


Figure 4

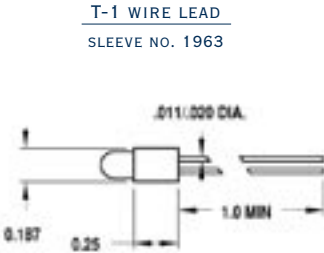


Figure 2

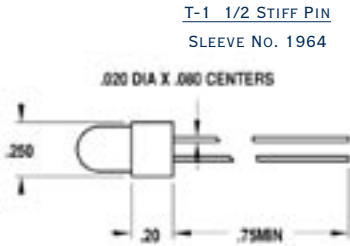


Figure 5

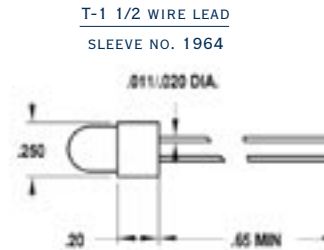


Figure 3

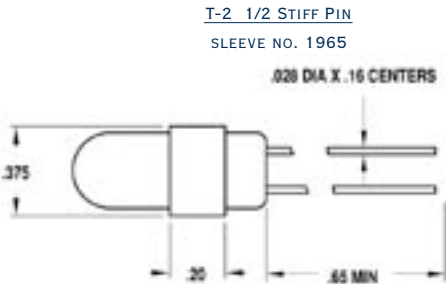
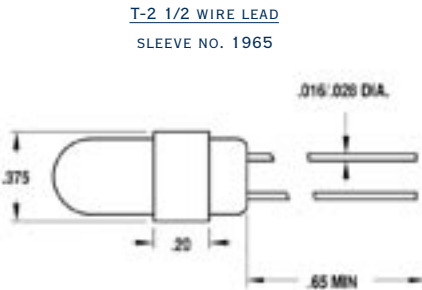


Figure 6



Note: Use sleeve 2129 for a T-1 1/2 lamp to obtain a T-2 1/2 OD sleeve diameter.  
Use sleeve 2138 for a T-2 1/2 lamp in 3 inch diameter reflector.

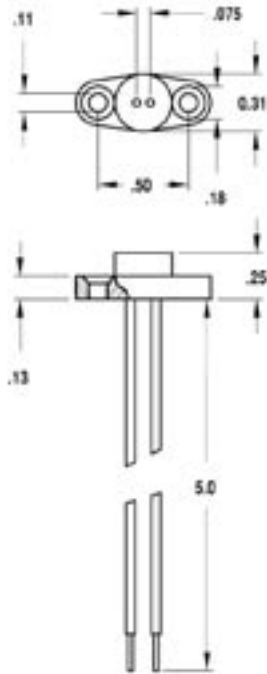


# Carley Sockets

CARLEY SOCKETS ARE A CONVENIENT WAY TO MOUNT T-1 1/2 AND T-2 1/2 CARLEY LAMPS. CARLEY SOCKETS ARE DESIGNED TO BE SCREW MOUNTED TO A SURFACE SO THE LAMPS CAN BE EASILY INSERTED INTO THE SOCKET. REPLACING BURNED OUT LAMPS IS EASY IN A CARLEY SOCKET. LIGHT BULBS WITH AMPERAGES OVER 1.0 AMP SHOULD NOT BE USED IN A CARLEY SOCKET AS THE LAMP CAN GENERATE ENOUGH HEAT TO DAMAGE OR DESTROY THE SOCKET. PLEASE CONTACT CARLEY LAMPS FOR ASSISTANCE AND INFORMATION.

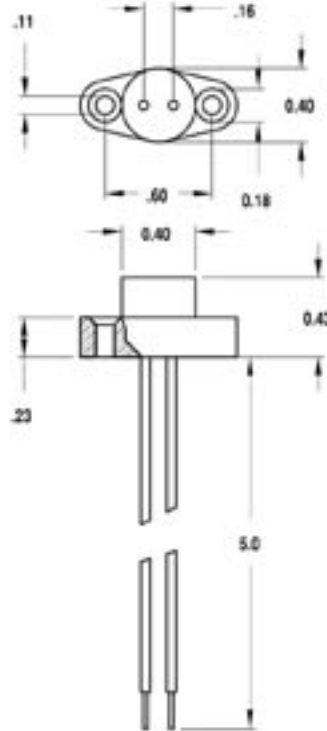
## T-1 1/2 Socket

1 AMPERE MAX. CURRENT  
SOCKET NO. 1017 SHOWN



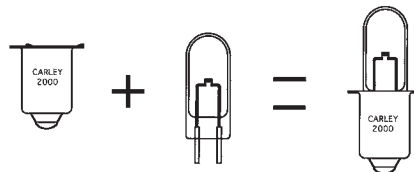
## T-2 1/2 Socket

1 AMPERE MAX. CURRENT  
SOCKET NO. 1051 SHOWN

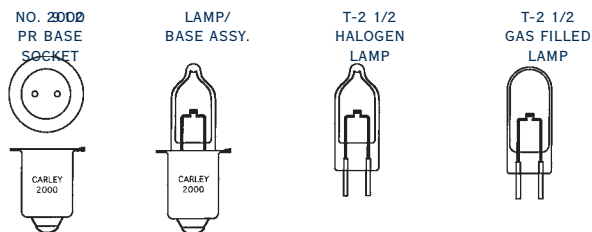


SOCKET NO.	SIZE	
2000	T-2 1/2	STANDARD PR FLASHLIGHT BASE
983	T-2 1/2	.020 DIA NICKEL X 1.5 LENGTH
1051	T-2 1/2	22 AWG TEFLON X 5.0 LENGTH
1016	T-1 1/2	.014 DIA NICKEL X 1.0 LENGTH
1017	T-1 1/2	22 AWG TEFLON X 5.0 LENGTH

NOW YOU CAN PLUG A CARLEY T-2 1/2 LAMP INTO A CARLEY NO. 912 SOCKET AND CREATE A PR BASED LAMP. MAXIMUM ALLOWABLE CURRENT IS 1 AMPERE.



*Note: All illustrations and specifications are subject to change without prior notice for product improvement and development.*



# Carley Medical Lamps

FOR OVER 50 YEARS CARLEY LAMPS HAS MANUFACTURED THE ULTIMATE IN HIGH INTENSITY SUB MINIATURE MEDICAL LAMPS. EXPERIENCE DATING BACK TO 1943, AND THE ISSUANCE OF MILITARY STANDARDS BASED ON DESIGNS PERFECTED BY OUR STAFF, INDICATES THIS TECHNICAL EXCELLENCE.

CARLEY LAMPS ARE THE PRODUCT OF SKILLED WORKMANSHIP AND METICULOUS QUALITY CONTROL. CARLEY LAMPS DOES NOT BUY OR RESELL LAMPS MADE BY OTHERS. EVERY LAMP SOLD BY CARLEY LAMPS IS PRODUCED IN A CARLEY LAMP MAKING FACILITY, ENSURING THE CUSTOMER CONSISTENT QUALITY AT ALL TIMES.

CARLEY LAMPS ARE DISTINGUISHED BY THEIR UNIFORM BRIGHTNESS, SPOT INTENSITY, LONG LIFE AND PERFORMANCE REPEATABILITY DUE TO THE EXACT POSITIONING OF THE FILAMENT IN RELATION TO THE LAMP LENS AND BASE. ALL CARLEY LAMPS ARE AGED AND SELECTED TO ASSURE COMPLIANCE TO THE LIFETIME AND LIGHT OUTPUTS SPECIFIED. EXCLUSIVE USE OF XENON GAS TO FILL CARLEY GAS FILLED MEDICAL LAMPS RESULTS IN A 30% INCREASE IN LIGHT EFFICIENCY OVER CONVENTIONAL GAS FILLED MEDICAL LAMPS. 100% OF OUR LAMPS ARE BENCH ENERGIZED AND AGED FOR A MINIMUM OF 30 MINUTES.

THANKS TO THEIR EXCELLENT BRIGHTNESS, SPOT INTENSITY AND LONG LIFE, CARLEY LAMPS ARE KNOWN THE WORLD OVER AND PREFERRED FOR THEIR UNRIVALED QUALITY.

IF YOU DEMAND TOP PERFORMANCE AND RELIABILITY - INSIST ON HAVING CARLEY LAMPS FOR YOUR INSTRUMENTS.



## Conventional Vacuum Laryngoscope Lamps

LAMP #	VOLTS	AMPS	DESCRIPTION
894	2.5	.28	SMALL FROSTED, STANDARD, LARYNGOSCOPE LAMP
895	2.5	.28	LARGE FROSTED, STANDARD, LARYNGOSCOPE LAMP
904	2.5	.28	SMALL CLEAR, PRE-FOCUSED, LARYNGOSCOPE LAMP
905	2.5	.28	LARGE CLEAR, PRE-FOCUSED, LARYNGOSCOPE LAMP
949	2.5	.38	LARGE FROSTED, STANDARD, LARYNGOSCOPE LAMP
1019	2.5	.28	MEDIUM, PRE-FOCUSED, LARYNGOSCOPE LAMP
1026	2.7	.30	MEDIFLECTOR® LARYNGOSCOPE REFLECTOR LAMP

## Fiberoptic Laryngoscope Gas Filled Lamps

LAMP #	VOLTS	AMPS	DESCRIPTION
882	2.7	.70	GOLD FIBEROPTIC LARYNGOSCOPE, 8/32 THREADS
883	2.7	.70	NICKEL FIBEROPTIC LARYNGOSCOPE, 8/32 THREADS
889	3.5	.70	GOLD FIBEROPTIC LARYNGOSCOPE, 8/32 THREADS
953	2.5	.68	NICKEL, METRIC THREAD, EUROPEAN FIBEROPTIC
954	2.5	.68	GOLD, METRIC THREAD, EUROPEAN FIBEROPTIC
947	2.7	.70	MEDIFLECTOR® LARYNGOSCOPE REFLECTOR LAMP
1022	2.7	.70	SMALL MEDIFLECTOR® LARYNGOSCOPE LAMP

## Halogen Gas Filled Fiberoptic Laryngoscope Lamps

LAMP #	VOLTS	AMPS	DESCRIPTION
1097	2.7	.70	NICKEL FIBEROPTIC LARYNGOSCOPE, 8/32 THREADS

*Note: Carley Lamps offers replacement medical lamps for most battery operated hand held instruments. Contact Carley Lamps for our current cross reference sheet and price list.*



# Medical Lamp Illustrations

**950**



3.5V .72A 15 Hour Life  
Nickel Plated Xenon Filled  
T-1 1/2 Lamp

**951**



10-32 UNF 2A Thread  
2.5V .68A 20 Hour Life  
Nickel Plated Xenon Filled  
TL-1 1/2 Lamp

**995**



3.5V .72A 20 Hour Life  
Nickel Plated  
Xenon Filled  
T-1 1/2 Lamp

**994**



48 Grooves Per Inch  
3.5V .72A 20 Hour Life  
Nickel Plated Xenon Filled  
TL-1 1/2 Lamp

**894 Frosted  
904 Clear**



1/8 72 UNS Thread  
2.5V .28A 20 Hour Life  
Nickel Plated Vacuum  
TL-1 Lamp

**949**



8-32 UNC 2A Thread  
2.5V .38A 20 Hour Life  
Nickel Plated Vacuum  
TL-1 1/2 Lamp

**996**



8-32 UNC 2A Thread  
2.5V .35A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 1/2 Lamp

**1313**



2.5V .64A 20 Hour Life  
Nickel Plated  
Xenon Filled  
TL-1 1/2 Lamp

**1315**



2.5V .64A  
20 Hour Life  
Nickel Plated  
Xenon Filled  
T-1 1/2 Lamp

**1464**



3.5V .81A 20 Hour Life  
Nickel Plated Halogen-Xenon  
Filled  
TL-1 1/2 Lamp

**1340**



10-32 UNF-2A Thread  
6.0V .71A 75 Hour Life  
Halogen-Xenon Gas Lamp  
TL-1 1/2 Lamp

**1309  
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

**1419  
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



**882 Gold  
883 Nickel**



8-32 UNC Thread  
2.7V .70A 20 Hour Life  
Xenon Filled  
TL-1 1/2 Lamp

**889**



8-32 UNC Thread  
3.5V .70A 20 Hour Life  
Nickel Plated Xenon Filled  
TL-1 1/2 Lamp

**953 Nickel  
954 Gold**



3.5 x .35 mm Thread  
2.5V .68A 20 Hour Life  
Xenon Filled  
TL-1 1/4 Lamp

**1019**



8-32 UNC 2A Thread  
2.5V .30A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 1/4 Lamp

**967**



3.0V .40A 20 Hour Life  
Nickel Plated Xenon Filled  
TL-1 1/2 Lamp

**1326**



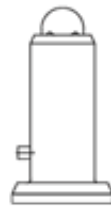
3.5V .76A 20 Hour Life  
Gold Plated Xenon Filled  
TL-1 1/2 Lamp

**1327**



2.7V .50A 25 Hour Life  
Gold Plated Xenon Filled  
TL-1 1/2 Lamp

**1341**



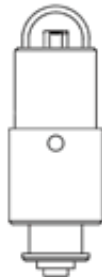
3.5V .70A 25 Hour Life  
Gold Plated Xenon Filled  
TL-1 1/2 Lamp

**1443**



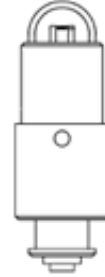
2.7V .50A 30 Hour Life  
Gold Plated Xenon Filled  
TL-1 1/2 Lamp

**944**



2.5V .68A 20 Hour Life  
Nickel Plated Xenon Filled  
T-1 1/2 Lamp

**956**



3.5V .72A 20 Hour Life  
Gold Plated Xenon Filled  
T-1 1/2 Lamp

**1337**



5.0V 1.33A 1000 Hour Life  
Nickel Plated Halogen Filled  
TL-1 1/2 Lamp

**1414**



5.0V 1.4A 1500 Hour Life  
Nickel Plated Halogen Filled  
T-1 1/2 Lamp

**1026  
Mediflector®**



8-32 UNC 2A Thread  
2.5V .30A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 Lamp

**1406**



3.5 x 35mm Thread  
2.5V .30A 15 Hour Life  
TL-1 1/4 Vacuum Lamp



## Carley Lamps New “Mediflector®” Medical Lamp

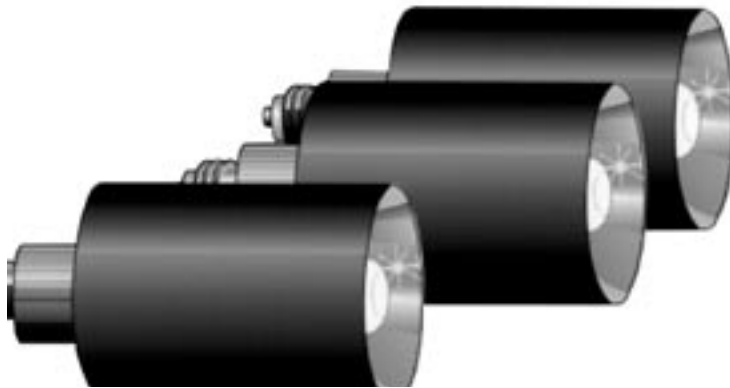
THE NEW MEDIFLECTOR® BRAND MEDICAL LAMP BY CARLEY LAMPS DELIVERS A MINIMUM OF 100% GREATER LIGHT OUTPUT THAN TRADITIONAL MEDICAL LAMPS FOR FIBEROPTIC LARYNGOSCOPES AND DIAGNOSTIC INSTRUMENTS.

THE MEDIFLECTOR'S® PERFORMANCE INCREASE OVER STANDARD MEDICAL LAMPS IS MADE POSSIBLE BECAUSE THE MEDIFLECTOR® INCORPORATES A MINIATURE REFLECTOR THAT INTERCEPTS AND REFOCUSES LIGHT, NORMALLY LOST BY SPHERICAL RADIATION, INTO A PRECISE SPOT FOR UNPARALLELED LIGHT INTENSITY, UNIFORMITY AND REPEAT- ABILITY. ALL OF THIS IS ACCOMPLISHED WITH NO INCREASE IN WATTAGE, HEAT GENERATION OR BATTERY DRAIN.

IN ADDITION TO PRECISE OPTICS THE EXCLUSIVE USE OF XENON GAS IN THE MEDIFLECTOR® PROVIDES A 30% INCREASE IN LIGHT EFFICIENCY OVER TRADITIONAL GAS FILLED MEDICAL LAMPS.

IF YOU DEMAND TOP PERFORMANCE AND RELIABILITY, SETTLE FOR NOTHING LESS THAN THE MEDIFLECTOR® MEDICAL LAMP FROM CARLEY LAMPS.

CONTACT CARLEY LAMPS FOR A MEDICAL LAMP CROSS REFERENCE SHEET AND CURRENT PRICE LIST.

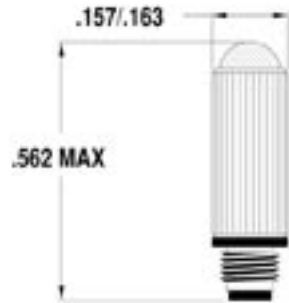


*Note: Most Mediflector® brand medical lamps are used with 2 or 3 “C” or “D” size batteries in hand held diagnostic instruments or fiberoptic laryngoscopes.*



# Carley Conventional Vacuum Medical Lamps

**CL 894 Frosted**  
**CL 904 Clear**



1/8 72 NS3 Thread  
2.5V .28A 20 Hour Life  
Nickel Plated Vacuum  
TL-1 Lamp

**CL 895 Frosted**  
**CL 905 Clear**



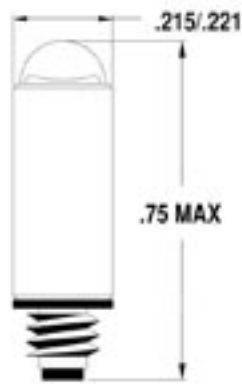
8-32 UNC 2A Thread  
2.5V .28A 20 Hour Life  
Nickel Plated Vacuum  
TL-1 1/2 Lamp

**CL 949**



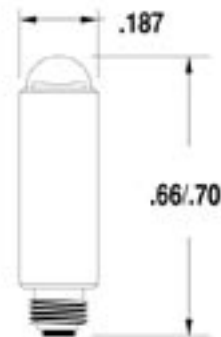
18-32 UNC 2A Thread  
2.5V .38A 20 Hour Life  
Nickel Plated Vacuum  
TL-1 1/2 Lamp

**CL 996**



8-32 UNC 2A Thread  
2.5V .35A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 1/2 Lamp

**CL 1001**



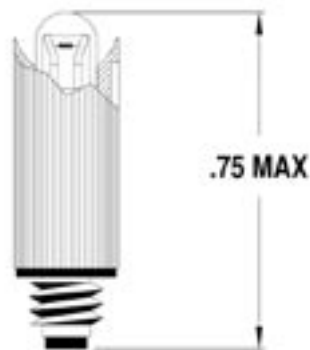
3.5 x .35mm Thread  
2.5V .28A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 1/4 Lamp

**CL 1019**



8-35 UNC 2A Thread  
2.5V .30A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 1/4 Lamp

**CL 1026**  
**Mediflector®**



8-32 UNC 2A Thread  
2.5V .30A 15 Hour Life  
Nickel Plated Vacuum  
TL-1 Lamp



## Xenon Gas Filled Sub-Miniature Lamps

XENON GAS FILLED LAMPS ARE MANUFACTURED TO ATTAIN HIGHER FILAMENT TEMPERATURES. XENON GAS IS THE BEST PERFORMING FILL GAS AND PROVIDES THE MAXIMUM CANDLE POWER PER WATT. CURRENT DRAWS ARE FROM .35 TO 10 AMPERES. THE LAMP WALL IS QUITE HOT AND RUNS UP TO 300C. CANDLE POWERS ARE APPROXIMATE. FOLLOWING ARE THE MORE POPULAR TYPES WHICH ARE NORMALLY IN STOCK. FOR A LARGER SELECTION, SEE THE LOWER PART OF THIS PAGE FOR XENON GAS FILLED LAMPS WHICH ARE BUILT TO ORDER IF OUT OF STOCK. XENON GAS FILLED LAMPS WILL EXHIBIT ABOUT 30% MORE CANDLE POWER PER WATT THAN ARGON FILLED LAMPS AND ABOUT 15% MORE CANDLE POWER PER WATT THAN KRYPTON LAMPS.

LAMP NO.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG. NO.
706	2.3	.35	.80	1.0	3000	20	C-2R	T-1	1
803	2.6	.60	1.6	1.5	3050	20	C-2R	T-1	1
802	2.3	.35	.80	0.7	2900	20	C-6	T-1 1/2	3
1079	2.3	.45	1.0	.75	2900	20	C-2R	T-1 1/2	3
708	2.4	1.2	2.9	3.5	3050	15	C-2R	T-1 1/2	3
984	2.7	.78	2.1	2.5	3100	10	C-6	T-1 1/2	3
1003	3.7	.76	2.8	4.3	3100	10	C-6	T-1 1/2	3
723	3.7	1.2	4.4	8.0	3000	20	C-6	T-1 1/2	3
724	3.7	1.5	5.5	9.5	3100	20	C-6	T-1 1/2	3
1047	3.7	1.7	6.3	9.5	3050	15	C-6	T-1 1/2	3
709	5.0	1.2	6.0	11.1	3100	20	C-2R	T-1 1/2	3
868	2.7	.70	1.9	2.3	3050	10	C-6	TL-1 1/2	4
1002	3.5	.76	2.7	4.3	3100	10	C-6	TL-1 1/2	4
980	2.5	.50	1.2	1.0	2950	50	C-6	T-2 1/2	5
804	3.7	1.20	4.4	7.0	3100	20	C-6	T-2 1/2	5
805	3.7	1.60	5.9	11.8	3100	20	C-6	T-2 1/2	5
807	4.8	1.60	7.7	13.4	3100	20	C-6	T-2 1/2	5
808	9.6	1.20	11.5	23.0	3100	20	C-6	T-2 1/2	5
999	12.0	1.0	12.0	12.0	2700	1000	C-2R	T-2 1/2	5
1057	6.0	2.00	12.0	19.0	2900	200	C-6	T-2 1/2	7
1164	2.5	.84	2.1	2.0	3000	25	C-6	TL-2 1/2	6
1165	3.8	.85	3.2	4.3	3000	25	C-6	TL-2 1/2	6
1166	5.3	.80	4.2	6.8	3000	25	C-6	TL-2 1/2	6
1167	6.4	.80	5.1	8.4	3000	25	C-6	TL-2 1/2	6
1168	7.6	.80	6.1	10.5	3000	25	C-6	TL-2 1/2	6
1169	9.2	.80	7.4	14.4	3000	25	C-6	TL-2 1/2	6

*Note: Please specify the length you require for your lamp leads or legs when you place your order or your lamps will be shipped out with uncut leads. All Xenon lamps can be manufactured using krypton or argon gas. Krypton and argon gas filled lamps can be considered as a cost saving option for volumes of 1,000 lamps or more.*

## Xenon Gas Filled Sub-Miniature Lamps — Built per customer order

LAMP NO.	VOLTS	AMPS	WATTS	CANDLE POWER	KELVIN COLOR	LIFE HRS.	FILAMENT FORM	SIZE	FIG. NO.
779	5.0	.40	2.0	3.0	3000	20	C-2R	T-1	1
720	2.6	.60	1.5	2.5	3000	20	C-6	T-1 1/2	3
719	3.8	.60	2.3	2.7	2850	20	C-2R	T-1 1/2	3
880	5.0	.44	2.2	2.0	2750	1000	C-6	T-1 1/2	3
875	5.0	.86	4.3	7.0	3000	20	C-6	T-1 1/2	3
682	5.2	.39	2.0	2.8	2950	25	C-6	T-1 1/2	3
683	5.2	.50	2.6	3.9	3000	25	C-6	T-1 1/2	3
761	5.0	.45	2.2	3.0	3000	20	C-2R	T-1 1/2	3
888	3.6	.70	2.5	4.3	3100	12	C-6	TL-1 1/2	4
809	10.5	1.20	12.6	25.0	3000	20	CC-6	T-2 1/2	5
871	11.5	.63	7.2	9.8	2800	400	C-2R	T-2 1/2	5
926	11.5	.83	9.5	15.9	2900	400	C-2R	T-2 1/2	5
801	12.0	1.0	12.0	20.0	3000	25	CC-6	T-2 1/2	5
762	13.7	.63	8.6	13.5	2900	200	C-2R	T-2 1/2	5

*Note: Have Carley Lamps check stock for you as sometimes built to order lamps are in stock.*





## Xenon Star® Lamps for Alkaline Batteries

NUMBER OF C OR D BATTERIES	PR BASED XENON STAR® #	VOLTS	AMPS	WATTS	SPHERICAL CANDLEPOWER	UN-BASED TL-2 1/2 STIFF PIN XENON STAR®
2 CELL	712	2.5	.84	2.1	1.9	1164
3 CELL	713	3.8	.84	3.2	4.3	1165
4 CELL	714	5.3	.79	4.2	6.8	1166
5 CELL	715	6.3	.77	4.8	8.4	1167
6 CELL	716	7.6	.77	5.8	10.3	1168
7 CELL	717	9.1	.78	7.1	14.2	1169

## Krypton Star Lamps for Alkaline Batteries

NUMBER OF C OR D BATTERIES	PR BASED KRYPTON STAR #	VOLTS	AMPS	WATTS	SPHERICAL CANDLEPOWER	UN-BASED TL-2 1/2 STIFF PIN KRYPTON STAR
2 CELL	596	2.5	.8	2.0	1.6	1170
3 CELL	597	3.7	.7	2.6	2.7	1171
4 CELL	598	5.2	.7	3.6	4.6	1172
5 CELL	599	6.3	.7	4.4	6.5	1173
6 CELL	600	7.5	.7	5.2	7.8	1174
7 CELL	601	9.0	.7	6.3	9.5	1175

## Krypton Star Lamps for Rechargeable Batteries

NUMBER OF C OR D BATTERIES	PR BASED KRYPTON STAR #	VOLTS	AMPS	WATTS	SPHERICAL CANDLEPOWER	UN-BASED TL-2 1/2 STIFF PIN KRYPTON STAR
2 CELL	618	2.5	1.3	3.3	3.3	1176
3 CELL	604	3.7	1.2	4.4	5.3	1177
3 CELL	605	3.7	1.5	5.6	6.6	1178
3 CELL	606	3.7	1.7	6.3	7.5	1179
4 CELL	607	5.0	1.2	6.0	8.4	1180
4 CELL	608	5.0	1.5	7.5	10.2	1181
4 CELL	609	5.0	1.7	8.5	12.0	1182
5 CELL	610	6.0	1.2	7.2	11.0	1183
5 CELL	611	6.0	1.5	9.0	12.0	1184
5 CELL	612	6.0	1.7	10.2	14.5	1185

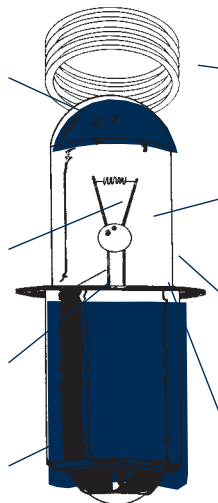
CAUTION: The Krypton Star Rechargeable and Xenon Star® lamps burn hot enough to damage some plastic reflectors.

**Lensed End** – The tip of the Xenon Star® is a lens that focuses light lost with a standard lamp. Turn Off Your Lamp, then look straight down on it. You'll see how the lens magnifies the filament. The Xenon Star® provides usable light even without a reflector.

**Point-Source Filament** – Look closely at the lamp's filament. The coils are in a straight line perpendicular to the beam of light. That lets your flashlight's reflector capture and focus the light from all the filament's coils (not just from a few as in a standard lamp) to achieve the most intense spot possible.

**Shock Mounting** – The filament mounting is uniquely designed to provide maximum shock protection. It's less likely to break if you drop it.

**Standard PR Base** – The Xenon Star® fits any standard flashlight, whether fixed-beam or adjustable focus.



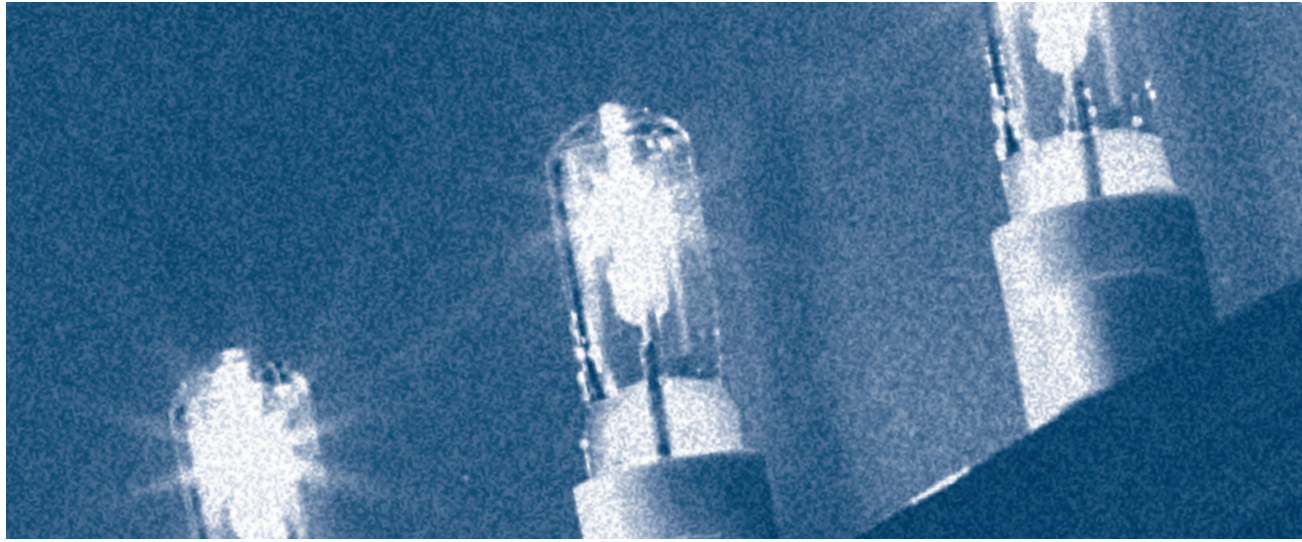
**Focusing Spacers** – Every Xenon Star® comes with five stainless-steel spacing rings that let you custom-fit the lamp to any flashlight to optimize reflection and focus the beam to suit your preference.

**Precision Centering** – Trained technicians, using precision equipment, individually inspect the filament in every Xenon Star® to make certain the filament is aligned and centered to tolerances surpassing military specifications – care that no other flashlight lamp receives.

**Hard-Glass Envelope** – The hard glass enclosing the Xenon Star® is thicker and more durable than the soft glass of a standard lamp. That makes the STAR less likely to break from shock or from the heat generated by this high-intensity lamp.

**Unique Gas Mixture** – A special mixture of xenon and other inert gases, contained at exceptionally high pressure, allows the filament to burn hotter, brighter, and longer (25 hours or more, in your flashlight depending on use and application).





## Common Questions & Answers for Carley Customers

### ➤ If the product I order is out of stock - how long does it take to build?

TO BUILD YOUR LAMP, TIMES RUN AS SHORT AS 2 WEEKS AND AS LONG AS 12 WEEKS DEPENDING ON OUR CURRENT PRODUCTION SCHEDULE. THE TIME FRAME IS ALSO DEPENDENT UPON THE AVAILABILITY OF RAW MATERIALS AND HOW MANY UNITS HAVE BEEN ORDERED.

### ➤ How fast can Carley ship me products that are in stock?

IT MAY TAKE 3 TO 5 DAYS AT TIMES, BUT NORMALLY WE SHIP THE NEXT DAY. ORDER EARLY FOR BEST RESULTS.

### ➤ How long does it take to get a custom made lamp, reflector or I/R source built?

IT NORMALLY TAKES FROM 6 TO 12 WEEKS ONCE ALL OF YOUR SPECIFICATIONS ARE DEFINED.

### ➤ Can I speak directly to a Carley Lamps engineer?

YES, YOU CAN SPEAK DIRECTLY TO A CARLEY LAMPS ENGINEER, BUT WE REQUEST YOU WORK WITH OUR CUSTOMER SERVICE REPRESENTATIVE FIRST AS THEY WILL BE HAPPY TO DIRECT YOU TO THE APPROPRIATE RESOURCES AT CARLEY LAMPS.

### ➤ Can Carley Lamps quote me a price on a custom product they haven't built yet?

CARLEY CAN GIVE YOU A QUOTE IF WE HAVE BUILT A SIMILAR PRODUCT AND HAVE A REASONABLE IDEA OF THE COST INVOLVED. IF CARLEY HAS NO IDEA WHAT THE COSTS INVOLVED ARE, WE WILL REQUEST YOU ORDER A PROTOTYPE SO YOU CAN VERIFY THE PRODUCT'S PERFORMANCE. CARLEY CAN THEN QUOTE DIFFERENT QUANTITIES FOR THE PRODUCT IN QUESTION, ONCE WE HAVE DETERMINED THE COST INVOLVED IN PRODUCING YOUR PRODUCT.

### ➤ Do Carley Lamps produce much ultra violet light or infra red light?

CARLEY LAMPS PROVIDE ALMOST NO UV LIGHT. CARLEY LAMPS TRANSMIT INFRA RED LIGHT OUT TO ROUGHLY 3+ MICRONS, AND CARLEY I/R SOURCES TRANSMIT WELL BEYOND 16+ MICRONS.

### ➤ Does Carley Lamps offer all styles of replacement medical lamps?

CARLEY LAMPS HAS SEVERAL STYLES OF REPLACEMENT MEDICAL LAMPS AND NORMALLY CAN PRODUCE ANY STYLE WE PRESENTLY DO NOT CARRY. IF YOU CAN SEND A PRINT OF THE LAMP IN QUESTION OR EVEN A BURNED OUT SAMPLE, THIS WILL HELP US TO DETERMINE IF WE CAN PRODUCE IT.





# Q&A

## ➤ What is the big deal with halogen lamps?

A HALOGEN LAMP IS A GAS FILLED LAMP USING ARGON, KRYPTON OR XENON WHICH HAS A SMALL AMOUNT OF HALOGEN GAS INSIDE OF IT. THE HALOGEN GAS ACTS AS A “CLEANING SOLUTION” INSIDE OF THE LAMP. THIS KEEPS THE INSIDE OF THE LAMP CLEAN ENABLING ALL OF THE LIGHT THE FILAMENT PRODUCES TO SHINE OUT OF THE LAMP. A DIRTY LAMP TRAPS SOME OF THE FILAMENT’S LIGHT INSIDE OF THE LAMP ITSELF. THE ADDITION OF THE HALOGEN GAS IS AN EXTRA STEP IN PRODUCING THE LAMP. THIS IS WHY HALOGEN LAMPS COST MORE THAN REGULAR GAS FILLED LAMPS.

## ➤ How do I pay for my order of lamps?

YOU CAN PAY FOR YOUR ORDER BY C.O.D., PRE-PAYMENT BY CHECK, CREDIT CARD OR BANK TRANSFER OR BY ESTABLISHING A NET 30 DAYS CREDIT ACCOUNT. IF YOU WOULD LIKE A NET 30 ACCOUNT, PLEASE SEND YOUR LOCAL BANK INFORMATION, 5 CURRENT CREDIT REFERENCES AND INCLUDE THEIR FAX NUMBERS AND E-MAIL ADDRESSES IF POSSIBLE.

## ➤ Can I have net 30 credit if I am an international customer?

IT IS BEST FOR INTERNATIONAL CUSTOMERS TO PRE-PAY BY BANK TRANSFER OR CHECK. IF YOU INSIST ON NET 30 CREDIT, THIS CAN BE GRANTED TO YOU ONLY AFTER YOU HAVE ESTABLISHED YOURSELF AS A GOOD CANDIDATE FOR CREDIT BY PRE-PAYING FOR YOUR FIRST 3 ORDERS.

## ➤ What is the fee for a prototype lamp, reflector or I/R source?

PROTOTYPES NORMALLY COST BETWEEN \$1,500 UP TO \$2,500 +/- DEPENDING ON HOW MANY PARTS YOU NEED AND THE DIFFICULTY OF MANUFACTURING THE PROTOTYPE. EACH PROTOTYPE MUST BE QUOTED INDIVIDUALLY AND ALL PROTOTYPES MUST BE PRE-PAID.

## ➤ What methods are available for shipment of product orders from Carley Lamps?

CARLEY LAMPS SHIPS OUT ORDERS BY UPS, FEDERAL EXPRESS AND THE U.S. POSTAL SERVICE. IF A CUSTOMER WANTS TO USE U.S. MAIL TO SHIP AN ORDER, CARLEY LAMPS CHARGES A MINIMUM FEE OF \$20.00 PER BOX TO SHIP OUT A SPECIAL REQUEST. THIS FEE HELPS TO COVER THE COST OF CUSTOM HANDLING YOUR ORDER (DELIVERY TO OUR NEAREST POST OFFICE) VERSUS UPS OR FEDERAL EXPRESS WHICH PICK UP SHIPMENTS DIRECTLY. U.S. MAIL SHIPMENTS ARE INSURED UP TO \$500.00 AND ORDERS MUST BE FULLY COVERED BY INSURANCE.





## Definitions

**T** - TUBE GLASS LAMP “NON LENS END”

**TL** - TUBE GLASS LAMP WITH LENS END

**T-1** - TUBE GLASS LAMP AT 1 X 1/8TH INCH DIA. OR .132” DIA.

**T-1.5** - TUBE GLASS LAMP AT 1.5 X 1/8 “ DIA. OR .19” DIA.

**T-2.5** - TUBE GLASS LAMP AT 2.5 X 1/8” DIA. OR .34” DIAMETER. MOST LAMPS CAN BE PRODUCED IN A LENS END OR NON LENS END STYLE.



**Lamp Leads or Lamp Legs** - THE LEGS OF A LAMP ARE CALLED LEADS. LEADS CAN BE MADE OF SMALLER, MORE FLEXIBLE WIRE CALLED WIRE LEADS OR MADE WITH STIFF THICK WIRE CALLED STIFF PIN LEADS. CARLEY LAMPS USES NIROMET, NICKEL, KOVAR AND DUMET WIRE TO PRODUCE LAMP LEADS. ALL CARLEY UNBASED LAMPS ARE PRODUCED WITH UNCUT LEADS. IF YOU REQUIRE YOUR LAMP LEADS TO BE CUT TO A SPECIFIC LENGTH, PLEASE SPECIFY THIS WHEN ORDERING YOUR LAMPS. THERE IS AN EXTRA FEE FOR CUTTING LAMP LEADS.

**Mean Spherical Candlepower** - MSCP (OR CP CANDLEPOWER FOR SHORT) IS THE TOTAL LIGHT OUTPUT OF A LAMP IN ALL DIRECTIONS.

**Foot Candles** - TOTAL LIGHT OUTPUT OF A LAMP WHEN THE LIGHT IS COMPRESSED BY A LENS OR REFLECTOR. FOOT CANDLES IS A “DIRECTIONAL SPECIFIC” LIGHT MEASUREMENT.



**Filament Temperature** - THE OPERATING TEMPERATURE OF THE FILAMENT MEASURED IN DEGREES KELVIN.

**Lumens** = MSCP x  $4\pi$ . 1 MSCP = 12.57 LUMENS

**Wattage** - THE AMOUNT OF ELECTRICAL POWER OF A LAMP. VOLTS X AMPS = WATTS

*Note: Carley lamps are typically 20 watts or less. Carley Lamps welcomes the opportunity to quote and produce lamps up to 100 watts for specific OEM applications.*





# Lamp Specification Sheet

**C**ARLEY LAMPS LOOKS FORWARD TO WORKING WITH YOU TO PROVIDE A LAMP FOR YOUR UNIQUE REQUIREMENTS. PLEASE COPY THIS LAMP SPECIFICATION SHEET AND PROVIDE THE FOLLOWING INFORMATION TO CARLEY LAMPS. IF YOU HAVE ANY QUESTIONS REGARDING THE LAMP SPECIFICATION SHEET OR YOUR SPECIFIC APPLICATION, PLEASE CONTACT CARLEY LAMPS AND WE WILL BE HAPPY TO ASSIST YOU.

1. REASON FOR YOUR INQUIRY:

- ☐ FOR PRODUCT DESIGN
- ☐ FUTURE REQUIREMENT/APPLICATION
- ☐ TO KEEP TRACK OF COMPETITIVE PRODUCT
- ☐ TO FIND A NEW SUPPLIER FOR CURRENTLY USED PRODUCTS

2. DOES THE CARLEY LAMPS CATALOG OFFER A LAMP WHICH MEETS YOUR REQUIREMENTS?

- ☐ YES ☐ NO

3. IF "YES," WHAT LAMP # \_\_\_\_\_

4. IF "NO," PLEASE SPECIFY WHAT TYPE OF \_\_\_\_\_

LAMP YOU REQUIRE:

VOLTAGE _____	LAMP SIZE _____
WATTAGE _____	KELVIN TEMP _____
AMPERAGE _____	CANDLE POWER _____
LIFE HOURS _____	FILAMENT STYLE _____
BASE TYPE _____	LEAD TYPE/SIZE _____
LENS END _____	NON LENS END _____
AC OR DC _____	SPECTRAL RANGE _____

5. IN WHAT APPLICATION DO YOU USE MINIATURE LAMPS?

\_\_\_\_\_  
\_\_\_\_\_

6. APPROXIMATELY HOW MANY MINIATURE LAMPS WILL YOUR COMPANY USE IN THE NEXT YEAR?

\_\_\_\_\_

Your Name \_\_\_\_\_

Company Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_

E-mail \_\_\_\_\_

