

Spezial-Lampen

UV-Programm · IR-Programm

Special lamps

UV-Product range · IR-Product range



**BLV Licht- und
Vakuumtechnik GmbH**
A company of USHIO Group

2004/2005



Das Unternehmen

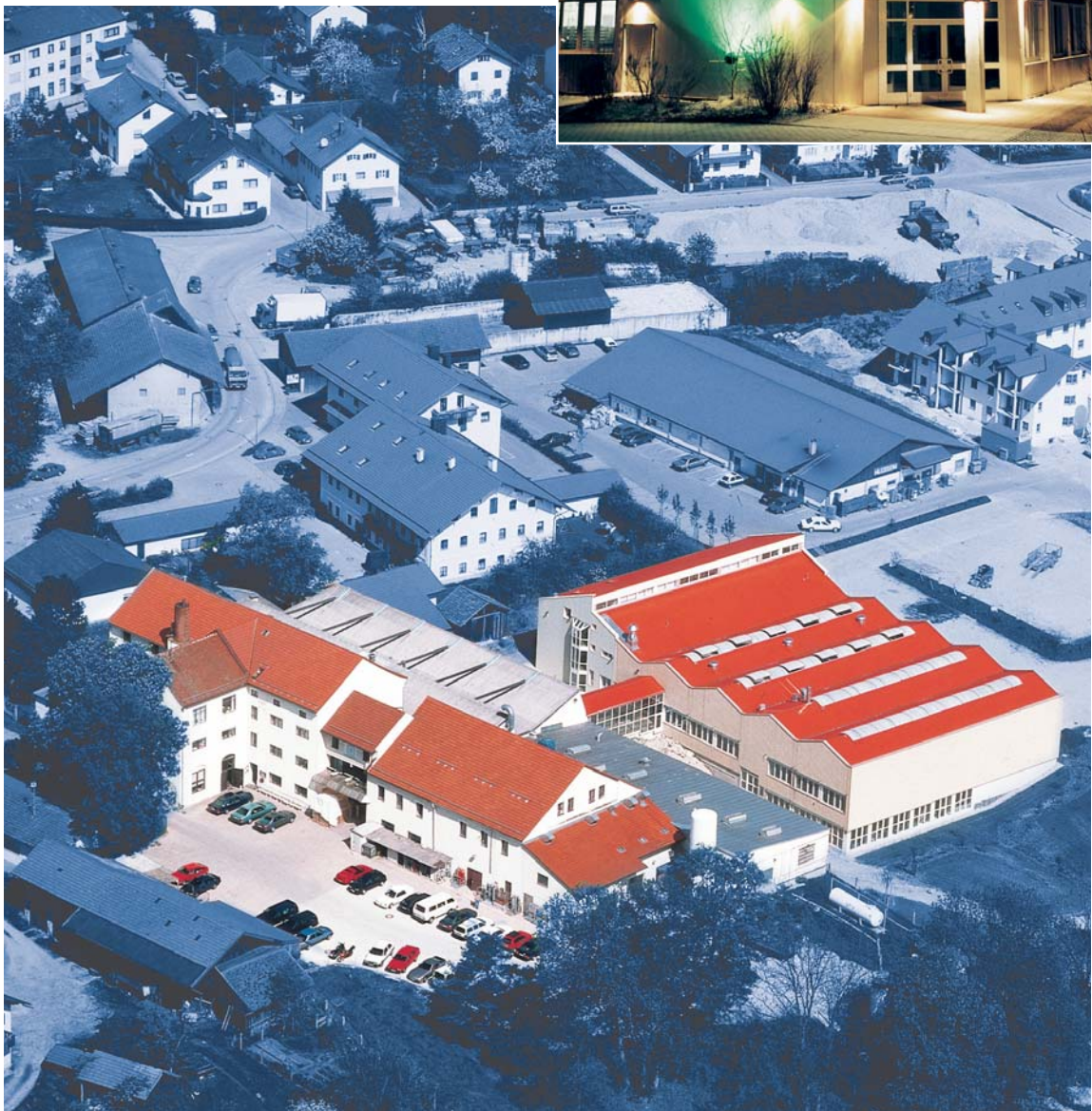
Seit der Gründung im Jahr 1968 hat sich die BLV Licht- und Vakuumtechnik GmbH kontinuierlich zu einem weltweit aktiven Hersteller von Speziallampen entwickelt.

Die hochtechnologischen Lampen werden am Firmensitz in Steinhöring bei München entwickelt und gefertigt. Es ist der Grundsatz der Firmenphilosophie, eine innovative Produktpalette in höchster Qualität anzubieten, die flexibel den Bedürfnissen des Marktes angepasst werden kann.

The Company

Since its foundation in 1968, BLV Licht- und Vakuumtechnik GmbH has developed into a manufacturer of special lamps with worldwide activities.

These high technology lamps are designed and manufactured in BLV's plant at Steinhöring near Munich, Germany. It has always been a guiding principle of BLV's philosophy to serve customers with the highest quality and to offer an innovative range of products in order to remain flexible and meet changing market demands.



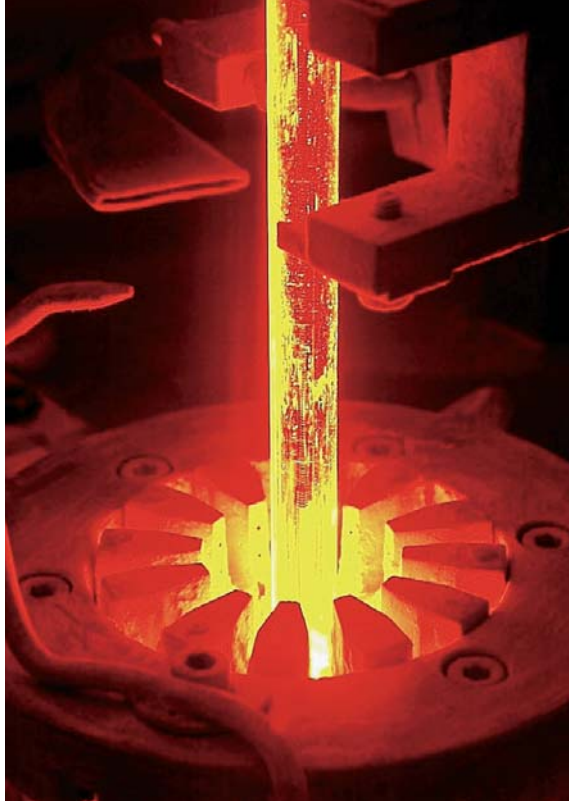
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Qualität

Die BLV wurde weltweit als erster Lampenhersteller nach DIN EN ISO 9001 zertifiziert. Heute „leben“ wir Qualität in allen Bereichen und bei allen Tätigkeiten, von der Auftragsannahme bis zur Auslieferung. Unsere hoch motivierten Mitarbeiter und regelmäßige Schulungsprogramme unterstützen diese Zielsetzung. Die jährlichen Audits bestätigen uns und unseren Kunden, dass wir nach strengsten Qualitätsmaßstäben arbeiten.

Umwelt

Unsere Zielsetzung ist Umweltverträglichkeit in allen Bereichen. Wir arbeiten ständig an deren Optimierung. Die Langlebigkeit der Lampen und eine ökologisch sinnvolle Verpackung sind unser Beitrag zum Umweltschutz.

Kompetenz in Sachen Licht

Das BLV-Programm umfasst eine große Auswahl an Entladungs- und Halogenleuchtampen. Speziallampen im Infrarot- und UV-Bereich ergänzen dieses breit gefächerte Angebot. Unsere besondere Leistung beruht auf der hervorragenden Qualität und der langen Lebensdauer unserer Produkte sowie auf dem ausgereiften Lampensortiment.

Technologie

Die BLV hat eine eigene Entwicklungs- und Konstruktionsabteilung. Dort werden nicht nur die Lampen entwickelt, sondern auch die dazu notwendigen Herstellverfahren und Maschinen. Nur dadurch können wir die hohen Anforderungen aus der Produktion genauestens erfüllen und unserem hohen Qualitätsanspruch im Interesse unserer Kunden entsprechen.

Quality

BLV was the first lamp manufacturer in the world to be awarded the DIN EN ISO 9001 certification. BLV meets the challenge, to "live" quality in all fields of activity, from incoming orders up to the delivery of goods.

Highly motivated employees and regular training programmes support this objective. Yearly inspections ensure that BLV works according to the strictest standards of quality.

Environment

One of the company's principle objectives is to optimize environmental protection in all its fields of activity. Thus particular emphasis is placed upon an ecologically acceptable packaging.

Competence in Lighting

BLV's product range offers a wide choice of discharge and tungsten-halogen lamps. This extensive range is completed by special lamps in the field of infrared and UV-radiation.

The competence of the enterprise is based on the extraordinary quality and the long lifetime of the products as well as on the sophisticated assortment of lamps.

Technology

BLV has its own Research & Development department. All the machinery and procedures for the production lines are developed in-house. This gives the ability to remain flexible in production, meet the ever changing market demands and precisely fulfill customer requirements.



Infrarot-Strahler

individuell hochwertig vielseitig

Infrared-emitters

individual high-quality versatile



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Prinzip der Wärmeübertragung

Zur Erwärmung von Objekten stehen folgende Verfahren zur Verfügung:

Principle of heat transmittance

Objects can be heated by use of one of the following processes:

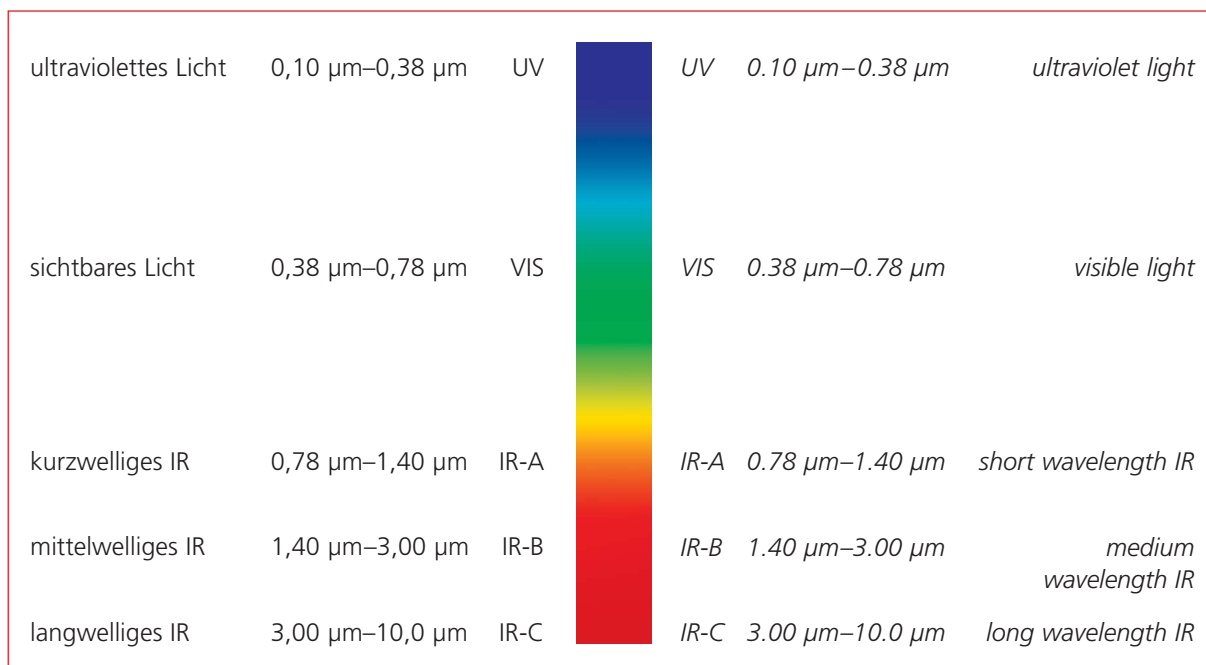
KONDUKTION	Übertragung durch direkten Kontakt mit der Wärmequelle <i>Transmittance by direct contact with the heat source</i>	CONDUCTION
KONVEKTION	Übertragung durch direkten Kontakt mit den erhitzten Medien <i>Transmittance by direct contact with the heated media</i>	CONVECTION
STRAHLUNG	Kontaktlose Übertragung durch elektromagnetische Strahlung <i>Contactless transmittance through electromagnetic radiation</i>	RADIATION

IR-Strahlen liegen außerhalb des Bereiches von sichtbarem Licht und sind deshalb vom menschlichen Auge nicht wahrnehmbar. Nach DIN 5031 ist die IR-Strahlung im Spektralbereich von 0,78 µm bis 10,0 µm definiert.

IR radiation lies beyond the range of visible light and therefore it can not be seen by the human eye. According to DIN 5031 the spectral range of IR radiation is defined from 0.78 µm to 10.0 µm.

Der IR-Bereich ist in die Abschnitte IR-A, IR-B und IR-C unterteilt, wie in der Abbildung dargestellt.

The IR range is divided in the sections IR-A, IR-B and IR-C, as shown in the diagram.



Lichtspektrum

Spectrum of light

Ein von einer Wärmequelle bestrahltes Objekt kann bis zu 92 % der auftreffenden Strahlung aufnehmen. Diese Strahlung kann im Körper in Wärme umgewandelt werden. Um einen möglichst hohen Wirkungsgrad zu erzielen, muss der Absorptionskoeffizient des Körpers mit dem Spektrum der Strahlung übereinstimmen.

An object irradiated by a heat source can absorb up to 92 % of the radiated energy. This radiation can be transformed into heat within the heated object. To gain the highest possible efficiency the material of the heated object has to have an absorption coefficient which matches the spectrum of the IR-emitter.



Einteilung des IR-Bereiches

Mit den Begriffen kurzwellig, mittelwellig und langwellig werden IR-Strahler häufig klassifiziert. Sie sind zwar einprägsam, aber technisch gesehen nicht zutreffend.

Festkörperstrahler, auch Glühstrahler genannt, haben ein Strahlungsspektrum, das immer mindestens zwei der genannten Bereiche überdeckt.

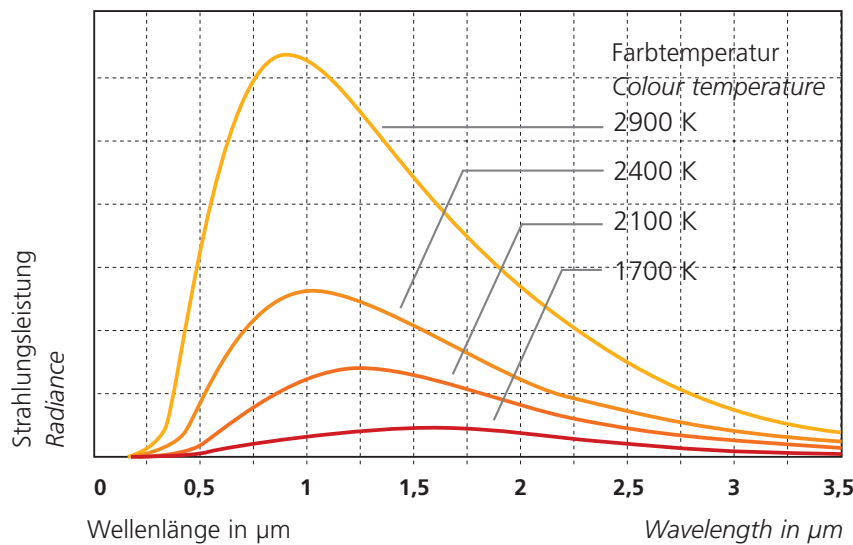
Das Bild zeigt ein typisches Spektrum eines Festkörperstrahlers bei verschiedenen Farbtemperaturen.

Dividing up of the IR range

It is customary to use the terms short wave, medium wave and long wave to classify IR-emitters. These definitions are easily remembered but from a technical point of view they are incorrect.

Solid state or monolithic emitters, i. e. incandescent emitters, continuously emit radiation within two of the above mentioned wavelength ranges.

The diagram shows a typical spectrum of an incandescent emitter at different colour temperatures.



Spektrum eines Festkörperstrahlers

Spectrum of an incandescent emitter

Je nach gewünschter Wellenlänge der Strahlung kommen unterschiedliche Strahlerbauformen zum Einsatz: kurzwellige IR-Strahler, mittelwellige Quarzrohr-Strahler oder langwellige Keramik- oder Metallrohrstrahler.

Kurzwellige Halogen-IR-Strahler werden oft als „Hell-Strahler“ bezeichnet, da sie einen Teil ihrer Strahlung im sichtbaren Bereich abgeben. Das Strahlungsmaximum liegt bei 1 μm. Reaktionszeit: 1–3 Sekunden

Depending on the required wavelength, different types of IR-emitters can be used: short wavelength IR-emitters, medium wavelength open quartz-tube emitters or long wavelength ceramic- or metal-tube emitters.

Short wavelength halogen-IR-emitters are often referred to as “bright emitters”, because a part of the radiation is emitted within the visible light spectrum. Maximum radiance is at 1 μm. Reaction time: 1–3 seconds

Offene Quarzrohr-Strahler, d. h. ohne Abschmelzung der Enden und mit Widerstandsmaterial als Strahlungsquelle, haben ihr Strahlungsmaximum bei ca. 3 μm und nur einen geringen sichtbaren Anteil. Reaktionszeit: bis 60 Sekunden

Open Quartz-tube emitters, i.e. without a pinch at the ends of the IR-emitters and with a highly resistant material as a radiation source, have their maximum radiance at 3 μm, and very little radiance within the visible light spectrum. Reaction time: up to 60 seconds

Keramik- oder Metallrohr-Strahler sind so genannte „Dunkel-Strahler“, deren Strahlungsmaximum bei Wellenlängen größer als 4 μm liegt. Sie geben keine sichtbare Strahlung ab. Reaktionszeit: einige Minuten

Ceramic- or metal-tube emitters are also referred to as “dark emitters” and reach maximum radiance at wavelengths above 4 μm. They emit no visible light. Reaction time: several minutes

BLV-Infrarot-Strahler (IR-Strahler) werden aus Quarzglas gefertigt und sind für eine lange Lebensdauer ausgelegt. Im Produktspektrum sind kurz-, mittel- und langwellige Strahler enthalten.

- ◆ Standardstrahler sind mit Leistungen von 200 W bis 6500 W erhältlich.
- ◆ Erreichbare Farbtemperaturen von unter 800 K bis 3200 K
- ◆ IR-Strahler sind mit oder ohne integrierten Reflektor erhältlich.
- ◆ Individuelle Anpassung durch Zusatzrohre und Beschichtungen möglich
- ◆ Eine Besonderheit sind unsere IR-Strahler mit **Keramik-Schnell-Steck-Verbindern „KSSV“**. Sie gewährleisten einen hervorragenden elektrischen Kontakt und einen problemlosen, schnellen Lampenwechsel ohne Fachpersonal.
- ◆ Kundenspezifische Modifikation oder Neuentwicklung von Strahlern auf Anfrage möglich
- ◆ Bei verminderter Leistungszufuhr kann bei kurzwelligen Strahlern eine mittelwellige Strahlung erreicht werden, ohne eine Lampenschwärzung zu verursachen.

Anwendungsbeispiele für IR-Strahler

- ◆ Glas- und Kunststoff-Verformung (PET)
- ◆ Warmhalten von Speisen in der Gastronomie
- ◆ Heizen von Wafern in der Halbleiterindustrie/ Epitaxie
- ◆ Spachtelmasse und Lacke trocknen (Kfz-Gewerbe)
- ◆ Feuchtigkeitsregulierung in der Papierherstellung
- ◆ Medizinische Behandlungen
- ◆ Toner in Kopiergeräten oder Druckmaschinen fixieren
- ◆ Schweißnähte bei Metallen entspannen
- ◆ Lot in der Leiterplattenfertigung aufschmelzen
- ◆ Kleber aktivieren
- ◆ Harze aushärten
- ◆ Werkstoffprüfung
- ◆ Kugellager aufschumpfen
- ◆ Zementhärtung
- ◆ Hallen-/Raumheizung
- ◆ Folien schrumpfen
- ◆ Lösungsmittel verdampfen (Filmentwicklung)
- ◆ Wasserverdunstung in Luftbefeuchtern

BLV Infrared-emitters (IR-emitters) are manufactured from quartz glass and are constructed to ensure longevity of the emitter. The product range consists of emitters for short wave, medium wave and long wave applications.

- ◆ IR-emitters available from 200 W up to 6500 W
- ◆ Colour temperature from less than 800 K up to 3200 K
- ◆ IR-emitters available with or without integrated reflector
- ◆ Radiation adaptation in accordance with the application, by use of additional tubes or coatings
- ◆ A unique feature is the BLV IR-emitter with the ceramic quick plug-in connector (**KSSV**). This ensures an excellent electrical connection and an easy and fast IR-emitter-exchange, without the necessity of qualified personnel.
- ◆ Customer specific modifications or new developments of IR-emitters on request
- ◆ By reduction of the wattage, the short wave IR-emitter will have a medium wavelength without blackening the quartz tube.

Application fields of IR-emitters

- ◆ Glass and PET thermoforming
- ◆ Keeping food warm in catering
- ◆ Heating of wafers in the semiconductor industry/ epitaxy
- ◆ Drying of filler and varnish in the car industry
- ◆ Humidity control in the paper industry
- ◆ Medical applications
- ◆ Fixing of toner in copy and printing machines
- ◆ Release of tension on metal welding joints
- ◆ Soldering of printed circuit boards
- ◆ Activation of glue
- ◆ Hardening of resins
- ◆ Material testing
- ◆ Shrink-fitting of ball bearings
- ◆ Hardening of cement
- ◆ Heating air in halls and in public transport vehicles
- ◆ Shrinking of foil
- ◆ Evaporation of solvents (development of films)
- ◆ Evaporation of water in air humidifiers

Für IR-Strahler sprechen folgende Vorteile:

- ◆ Extrem kurze Strahler-Reaktionszeit von 1–3 Sekunden, d. h. thermisch sehr geringe Trägheit beim Einschalten, Regeln oder Abschalten
- ◆ **Wichtig beim Stopp der Material-Zufuhr!**
- ◆ IR-Strahler geben 92 % der aufgenommenen elektrischen Leistung in Form von Strahlung im IR-Bereich ab. Ca. 8 % gehen durch Wärmeleitung und Strahlung im sichtbaren Bereich verloren.
- ◆ Typische mittlere Lebensdauer¹ von 5 000 Stunden bei Nennspannung
- ◆ Keine Erwärmung der Luft durch kurzwellige IR-Strahlung
- ◆ Keine Vorheizzeiten/-kosten
- ◆ Mechanische und thermische Robustheit durch hochwertige Quarzrohre
- ◆ Dimmbarkeit beim Einsatz von Phasen-Anschnitts- bzw. Phasen-Abschnitts-Steuerung
- ◆ Gute Richtungsmöglichkeiten der Wärmestrahlung durch Reflektoren, kaum Strahlungsverlust
- ◆ Kühlluft wird gleichzeitig als Transportmedium für Feuchte oder Lösemittel eingesetzt
- ◆ Spezifische Flächenbeheizung in Anlagen von 1–300 kW/m²
- ◆ IR-Strahler ermöglichen aufgrund ihrer kleinen Strahlungsquelle den Bau von kompakten Anlagen.
- ◆ Breites Angebot an Leistungsdichten von 10 bis 270 W/cm Heizlänge

Benefits of use of IR-emitters

- ◆ Short IR-emitter reaction time: 1–3 seconds, i. e. very little delay between switch-on, control and switch-off. **Very important if the material supply is stopped!**
- ◆ IR-emitters transform 92 % of the total input electrical power into IR radiation. 8 % is lost to visible light and through heat conduction.
- ◆ Typical average life¹ of 5,000 hours at rated voltage
- ◆ No heating of the surrounding air through short wave radiation
- ◆ No warm-up cost or heat-up time
- ◆ High quality quartz tubes guarantee mechanical and thermal robustness
- ◆ Dimmable with falling and leading-edge phase cutting dimmers
- ◆ IR radiation can be directed by use of an integrated reflector – Low IR power loss
- ◆ Transport of process humidity and/or solvents by the cooling-air
- ◆ Specific area heating from 1 up to 300 kW/m²
- ◆ Construction of compact machines due to the small dimensions of the IR-emitters
- ◆ Specific power density from 10 up to 270 W per cm heat length

¹ Definition on life see page 11

¹ Definition zur Lebensdauer siehe Seite 11



Papiertrocknung mit IR-Strahlung
Quelle: Jac de Vries, NL

Paper drying with IR-emitters
Source: Jac de Vries, NL

Allgemeine Hinweise

Beim Berühren von IR-Strahlern sollten saubere Handschuhe getragen werden, um Verschmutzungen des Quarzrohres zu vermeiden. Sind Verschmutzungen auf dem nicht beschichteten Quarzrohr vorhanden, müssen diese mit Spiritus oder einem anderen geeigneten Alkohol entfernt werden. IR-Strahler dürfen nur angefasst werden, wenn sie keine Netzspannung führen. Auch nach dem Abschalten kann der IR-Strahler noch so heiß sein, dass Verbrennungen beim Berühren nicht ausgeschlossen werden können. Werden IR-Strahler ausgetauscht, sind die Fassungen auf Verschmorungen zu prüfen und ggf. auszutauschen. Die Nennspannung ist zu beachten, eine Feinabsicherung der Versorgungsspannung wird empfohlen. Bei IR-Strahlern mit integriertem Reflektor ist auf die richtige Position zu achten. Die Hinweise auf dem Beipackzettel der IR-Strahler sind zu beachten.

Zulässige Brennlage

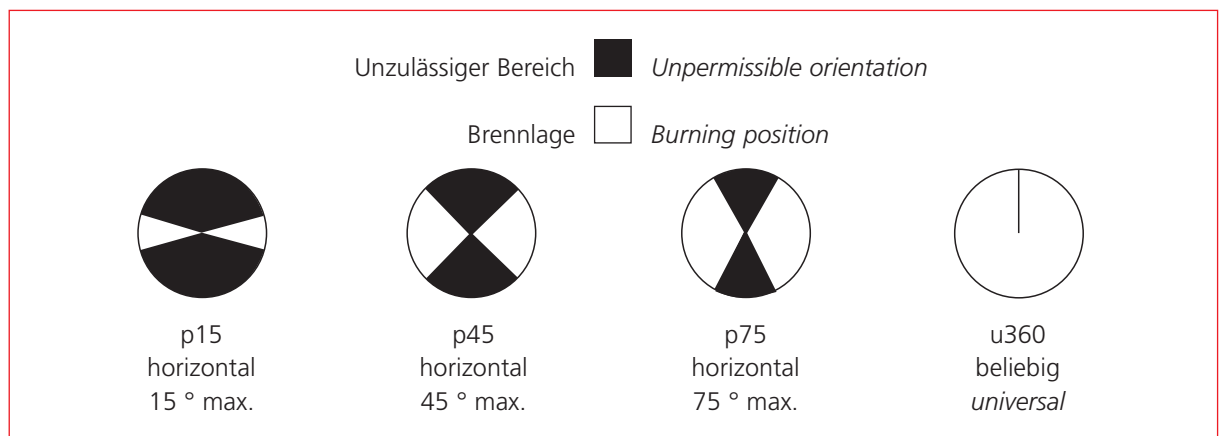
Beim Betrieb von IR-Strahlern ist die zulässige Brennlage der Strahler unbedingt zu beachten. Sie ist im Katalog bei jedem Artikel angegeben. Wird die Brennlage nicht eingehalten, kann das zu einem frühzeitigen Ausfall des Strahlers führen. Für den Betrieb in senkrechter Lage gibt es spezielle Strahler, bei denen die Wendel-Stützelemente am Quarzrohr fixiert werden (dimple).

General Hints

Clean gloves must be worn when handling IR-emitters, to avoid contamination of the quartz tube. If cleaning is necessary, this should be done using spirit or a suitable alcohol. IR-emitters may only be handled if disconnected from the power supply. Even after switching off, IR-emitters can be so hot that they can cause burns. When changing lamps, the lamp holders should be checked for charring and if necessary replaced. The rated voltage must be complied with and a fine fuse is to be recommended. It is important to take care to have the correct positioning when using IR-emitters with reflectors. The instructions which are enclosed with the lamp packing are to be observed at all times.

Permissible burning positions

During operation the burning position must be in accordance with the specification. The burning position is specified for every IR-emitter. If the IR-emitter is operated outside of the permissible burning position, the life will decrease significantly. BLV has IR-emitters which are especially designed for vertical use. These have spacers on the filament which are fixed to the quartz tube (dimple).



Sicherheit

BLV-IR-Strahler unterliegen einer ständigen Fertigungskontrolle und sind so konstruiert, dass sie bei bestimmungsgemäßem Gebrauch grundsätzlich nicht platzen. Völlig lässt sich dies jedoch nicht ausschließen. Bei Bedarf sind konstruktive Schutzmaßnahmen vorzusehen. Für den Betrieb der Strahler dürfen nur geeignete Fassungen verwendet werden. Die vom Hersteller angegebenen maximal zulässigen Betriebstemperaturen und Ströme der Fassungen sind unbedingt zu beachten.

Safety

BLV IR-emitters are subject to continuous quality control measures and are designed not to burst or cause damage when used according to the instructions. However, this can never be totally excluded. If necessary constructive measures should be taken. The emitters may only be used with suitable sockets. Please observe manufacturer's instructions for the maximum operating temperature and current of the sockets.



Defekte Fassungen sind auszutauschen.

Bei Betrieb von Infrarot-Strahlern entstehen zum Teil relativ hohe Temperaturen. Ausreichende Abstände zu den Strahlern müssen bei der Konstruktion der Geräte unbedingt beachtet werden, um Hitzeschäden zu vermeiden.

Zulässige Betriebstemperaturen

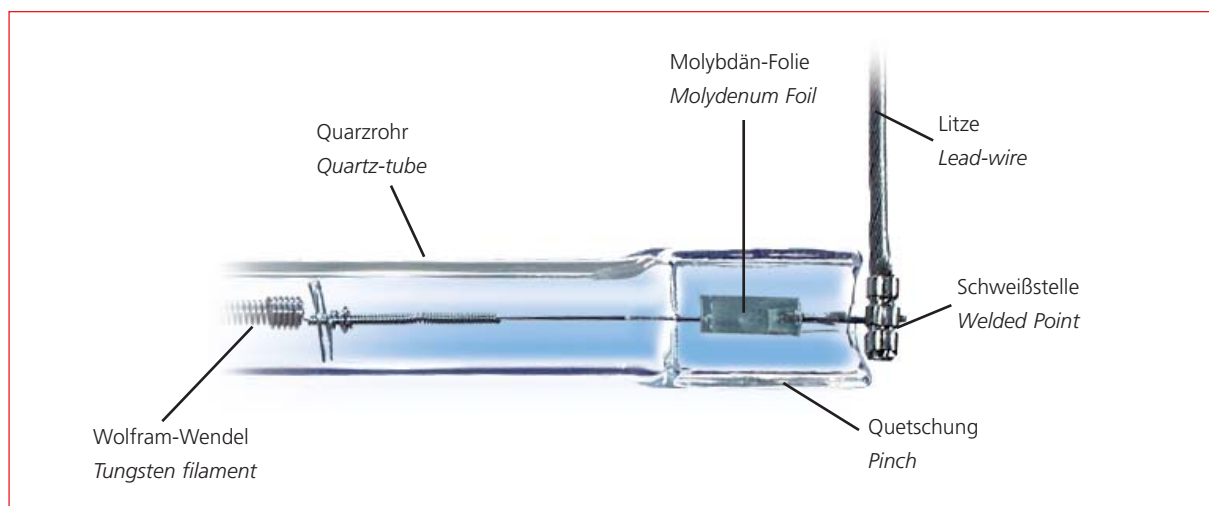
Um beim Betrieb der IR-Strahler das Quarzrohr nicht zu schmelzen, den Halogenkreisprozess nicht zu unterbinden und die gequetschten Strahlerenden nicht zu zerstören, müssen die folgenden Betriebstemperaturen eingehalten werden.

Damaged sockets must be replaced.

IR-emitters generate a high amount of heat. When installing, care must be taken to maintain adequate distance between the emitter and the heated surface, as well as the reflector/fixture, in order not to cause any damage.

Permissible temperature range

To avoid melting of the quartz-tube, interruption of the halogen cycle and breakage at the pinch during operation of the emitter, care has to be taken to keep the operating temperatures as listed below.



max. Quetschungstemperatur: 350 °C
min. Quarzrohrtemperatur: 250 °C
max. Quarzrohrtemperatur: 900 °C
optimale Quarzrohrtemperatur: 300–450 °C

max. pinch seal-temperature: 350 °C
min. quartz tube-temperature: 250 °C
max. quartz tube-temperature: 900 °C
optimum quartz tube-temperature: 300–450 °C

Lebensdauer

Die Lebensdauer von IR-Strahlern ist von der angelegten Netzspannung abhängig. Die Angaben im Katalog beziehen sich auf den Betrieb bei Nennspannung und wurden als Mittelwerte im Laborbetrieb bei 50 Hz Netzfrequenz ermittelt.

Bei Betrieb mit Überspannung kann sich die Lebensdauer erheblich reduzieren.

Bei geringfügiger Unterschreitung der Nennspannung ist eine Lebensdauersteigerung möglich. Die daraus resultierende niedrigere Leistung ist in der Applikation zu berücksichtigen.

Life

Life of IR-emitters depends directly on the voltage of the power supply. The life-value in the specification of the IR-emitter refers to the rated voltage and is an average value which is examined at 50 Hz under laboratory conditions.

If the IR-emitter operates at over-voltage, the life decreases significantly. Lowering the power to a value slightly under the rated voltage leads on the one hand to a small improvement of the life and on the other to a reduction of the radiated power.

Dimmen

Alle BLV-IR-Strahler sind dimmbar.

Eine beliebige Verlängerung der Lebensdauer kann durch den Betrieb mit Unterspannung jedoch nicht erreicht werden.

Dimming

All BLV IR-emitters are dimmable.

The lifetime increases marginally through operation at lower voltage than specified.

Bauformen

BLV bietet IR-Strahler in folgenden Bauformen an:

- ◆ Einzelrohrstrahler
- ◆ Doppelrohrstrahler
- ◆ Zwillingrohrstrahler

Types

BLV has different IR-emitter types

- ◆ Single-tube emitters
- ◆ Double-tube emitters
- ◆ Twin-tube emitters

In den meisten Applikationen werden **Einzelrohrstrahler** eingesetzt. Sie können in Gruppen zusammengeschaltet werden, um die Applikation zu optimieren.

Most applications use the typical **single-tube emitter**. They can be mounted in groups to optimise the application.



Doppelrohrstrahler sind die mechanische Kombination von zwei Einzelrohrstrahlern. Sie bieten die Möglichkeit des einseitigen elektrischen Anschlusses. Man spricht dann von einer Single-ended (SE)-Ausführung. Doppelrohrstrahler werden meistens als so genannte kurzwellige Strahler gefertigt.

Double-tube emitters consist of a mechanical combination of two single-tube emitters. They offer the advantage that the power can be supplied from one side of the emitter. This construction is called single-ended (SE).

Double-tube emitters are usually manufactured as short wave emitters.



Bei **Zwillingrohrstrahlern** sind die beiden Rohre mit einem durchgehenden Steg verbunden, wodurch eine hohe mechanische Stabilität erreicht wird. Eine typische Anwendung der Single-ended (SE)-Version sind technische Öfen.

Both tubes of the **twin-tube emitters** are melted together. This ensures very high stability. One of the typical applications where single ended (SE) twin-tube emitters are used is in technical ovens.



Die intensive Zusammenarbeit von Entwicklung und Fertigung gibt uns die Möglichkeit, anwendungsspezifische IR-Strahler herzustellen. Oft genügt bereits eine kleine Modifikation, um die Applikation zu verbessern.

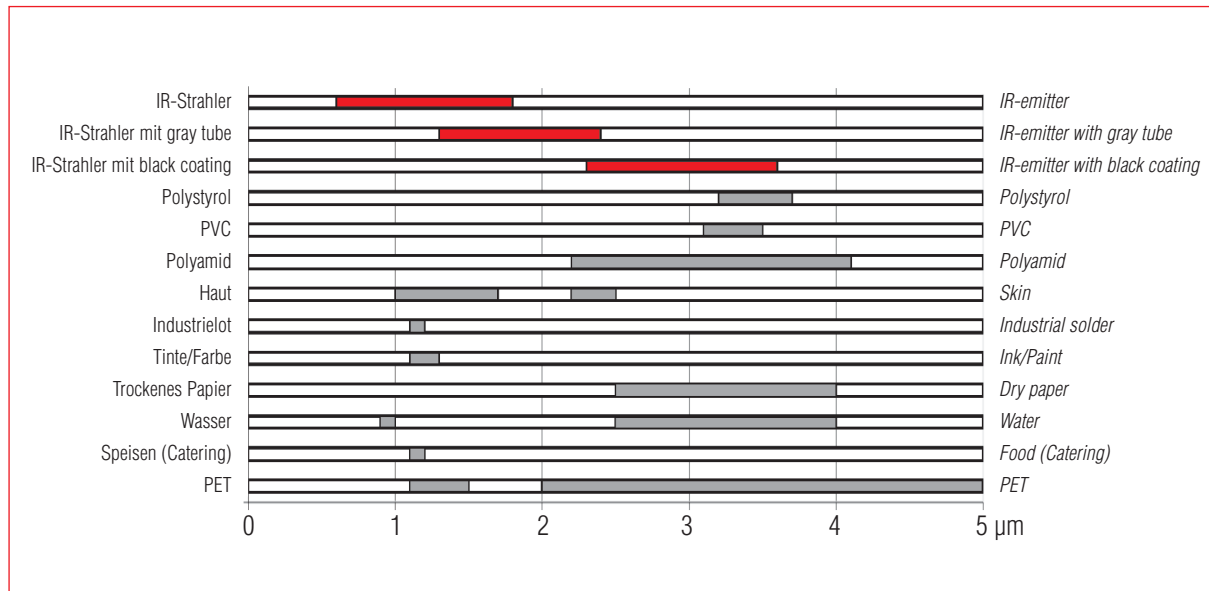
Through close cooperation of the R&D and production departments, BLV is able to develop and produce application-specific emitters. Sometimes a small modification is sufficient to optimise the application.

Absorptionsverhalten

Die Grafik zeigt die Abhängigkeit des Absorptionsverhaltens zur Wellenlänge der Strahlung für gängige Materialien. Zum Vergleich sind die Wellenlängenbereiche der IR-Strahler von BLV zu sehen.

Absorption characteristic

The diagram shows the absorption characteristic of different materials in relation to the wavelength of the radiation. The wavelength range of BLV's IR-emitters is also shown.



Absorptionsverhalten verschiedener Materialien und Spektrum von IR-Strahlern

Absorption characteristic of different materials and radiation of IR-emitters

Abhängig von der Applikation ergibt sich eine optimale Wellenlänge der IR-Strahlung. Deshalb bietet BLV unterschiedliche Strahler und Ausführungen an.

Depending to the application, every process has an optimum wavelength. Therefore BLV offers numerous types of emitters.

Im kurzwelligen Bereich mit dem Strahlungsmaximum innerhalb von 0,78 bis 1,4 µm werden Einzelrohr-, Doppelrohr- und Zwillingsrohrstrahler verwendet.

In the short-wavelength range, with the maximum radiation between 0.78 and 1.4 µm, single-tube, double-tube and twin-tube emitters are used.

Im mittelwelligen Bereich zwischen 1,4 und 3,0 µm können sowohl kurzwellige Strahler mit Zusatzrohr als auch rein mittelwellige Strahler mit Widerstandsdraht eingesetzt werden. Erstere haben den entscheidenden Vorteil, dass sie die mittelwellige Strahlung mit der sehr kurzen Reaktionszeit kurzwelliger Strahler erzeugen.

In the medium wavelength range, from 1.4 up to 3.0 µm, there are two possibilities: first a medium wavelength emitter constructed with a cantal filament, secondly a short wave emitter with an additional tube that converts the radiation to medium wavelength. The big advantage is that such an emitter still has the short reaction time of a short-wave emitter.

Im langwelligen Bereich oberhalb von 3,0 µm werden die Applikationen häufig mit Keramikstrahlern betrieben. Hier bietet BLV als Alternative kurzwellige Strahler mit einer Zusatzbeschichtung (black coating) an, die eine Verschiebung des Strahlungsspektrums in den langwelligen Bereich bewirkt. Damit bleibt auch hier der Vorteil der kurzwelligen Strahler erhalten, die Leistung mit einer sehr kurzen Reaktionszeit zur Verfügung zu haben.

For long wavelength radiation above 3.0 µm, ceramic heaters are used. As an alternative, BLV can offer a short wave emitter with a special coating (black coating). This coating converts the radiation to long wavelengths. The favourable short reaction time is still applicable.



Hitzeverteilung

Die gleichmäßige Wendelstruktur unserer IR-Strahler stellt eine homogene Wärmeverteilung sicher, die über die gesamte Lebensdauer des Strahlers erhalten bleibt.

Eine unregelmäßige Wärmeverteilung kann in einzelnen Anwendungen von Vorteil sein, z. B. wenn am Rand der Heizzone eine höhere oder geringere Wärmeleistung benötigt wird.

Zur Erfüllung dieser Anforderungen hat BLV mit der Technik der segmentierten Wendel ein geeignetes Verfahren entwickelt.

Zusatzrohre

Durch die Fertigung unserer IR-Strahler nach höchsten Qualitätsvorgaben kann ein Bersten der Strahler fast gänzlich ausgeschlossen werden.

Im Catering-Bereich werden IR-Strahler für das Warmhalten von Speisen eingesetzt. Um den entsprechenden Vorschriften gerecht zu werden, bieten wir unsere IR-Strahler mit einem transparenten Schutzrohr an, das auf dem Strahler fest montiert ist und mögliche Glassplitter zurückhält.

Zur Vermeidung der Blendwirkung beim Einsatz von IR-Strahlern kann der sichtbare Anteil der Strahlung gefiltert werden. Durch ein spezielles Schutzrohr aus Rubinglas wird das (sichtbare) Licht um fast 80 % reduziert, sodass nur noch ein rotes Leuchten zu sehen ist. Diese Strahler eignen sich besonders gut zur Raumheizung und in industriellen Anlagen, wo eine Blendung durch das sichtbare Licht vermieden werden soll.

Heat distribution

The continuous filament guarantees a homogenous heat distribution. This heat distribution will not change during the life.

A special and irregular heat distribution is sometimes preferred for the application, e. g.: when the temperature on the materials edges should be higher or lower than in the middle.

For such requirements BLV can offer emitters with a segmented filament and an adapted heat distribution.

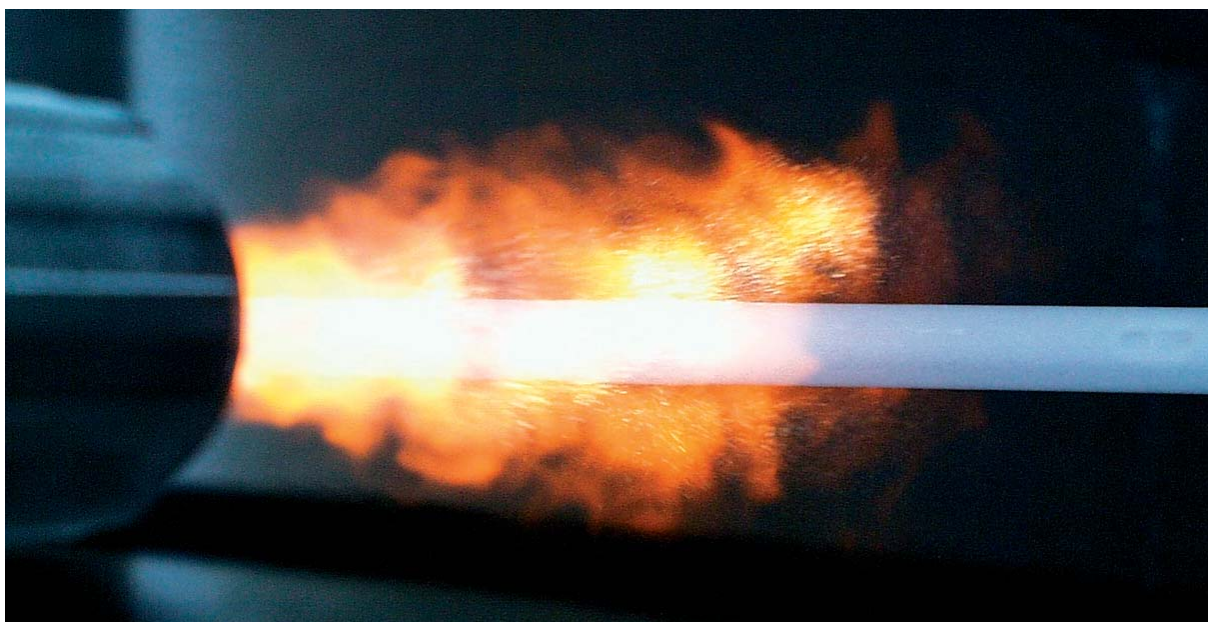
Tube types

Because of the high quality, BLV's IR-emitters will normally not rupture during operation at rated voltage.

In catering applications, IR-emitters are also used to keep food warm. In accordance with the required standards, BLV can offer IR-emitters with an additional clear tube (shroud) which confines possible splinters of glass in the unlikely event of damage.

For eye protection the visible part of the radiation has to be filtered. The visible light can be reduced up to 80 % by use of an additional „ruby tube“, so that only faint red light is visible.

These emitters are usually used for room heating and in industrial machines where visual protection is required.



Aufspritzen des integrierten Reflektors

Spraying of an integrated reflector



Aufgrund der länglichen Bauform von IR-Strahlern wird eine radiale Abstrahlung erreicht. Durch den Einsatz von Reflektoren wird eine Richtwirkung erzeugt, wodurch sich die nutzbare Strahlungsleistung auf bis zu 170 % erhöht.

Due to the longitudinal dimensions of IR-emitters the radiation is radial. By use of a reflector, the radiation can easily be directed, increasing usable IR power up to 170 %.

Zum Einsatz kommen, je nach Anwendung, externe oder integrierte Reflektoren. Letztere garantieren eine einfache Handhabung bei hoher Güte und gleichzeitig einen Hitzeschutz des Strahlergehäuses.

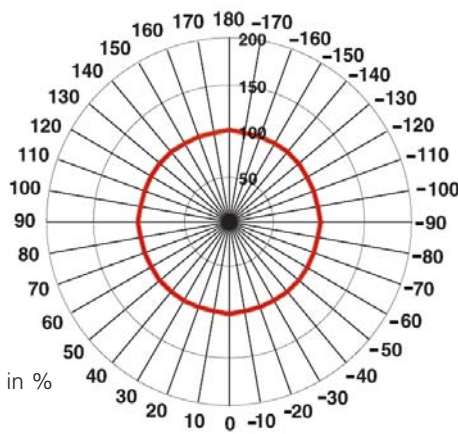
Integrated or external reflectors can be used depending on the application. Integrated reflectors guarantee high quality, easy handling and heat protection of the emitter's housing.

Integrierte Reflektoren werden von außen direkt auf das Quarzrohr aufgebracht. Hierbei hat sich Aluminiumoxidkeramik mit einem Wirkungsgrad von ca. 80 % besonders bewährt.

Integrated reflectors are directly mounted on the quartz tube. In most cases the reflector is made of alumina ceramic. It has an efficiency of approx. 80 %. The high temperature resistance of the alumina ceramic reflector of up to 1000 °C also helps in applications without forced air cooling.

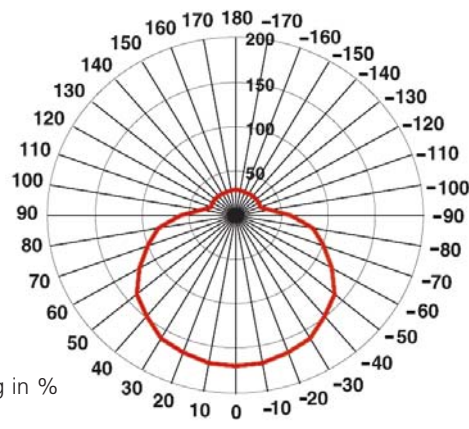
Die hohe Temperaturbeständigkeit von bis zu 1000 °C wirkt sich in Applikationen ohne Kühlung günstig aus.

Relative, radiale Strahlungsverteilung in %
Strahler ohne Reflektor

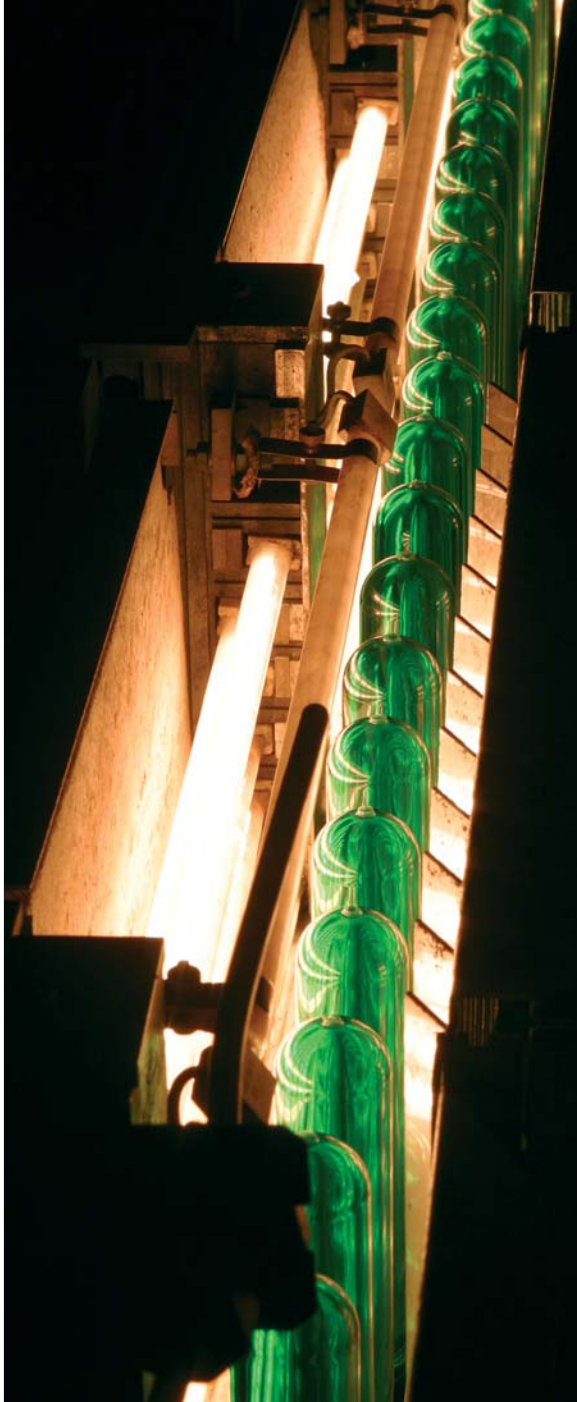


Relative, radial radiant power in %
Emitter without reflector

Relative, radiale Strahlungsverteilung in %
Strahler mit Reflektor



Relative, radial radiant power in %
Emitter with reflector



Heizen von PET-
Flaschen-Rohlingen
(PET preform)
Quelle: Femit, CH

*Heating of PET-
bottle moulds
Source: Femit, CH*

Trocknung des Leiterplatten-Schutzlackes
Quelle: Lantronic, NL

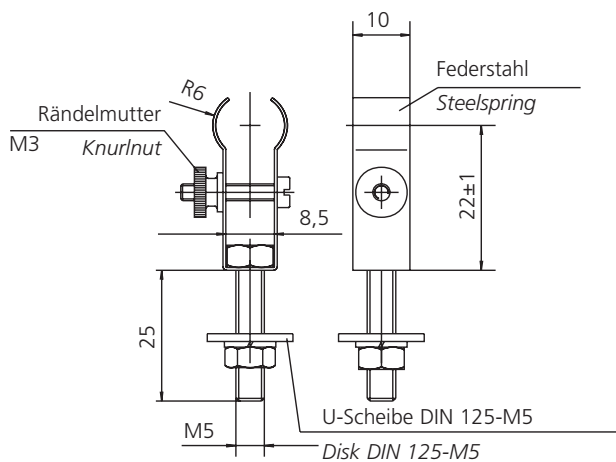
*Drying of protective coating for printed
circuit boards
Source: Lantronic, NL*



Haltefedern für Einzelrohrstrahler (ISE) und Doppel-/Zwillingsrohrstrahler (ISD)

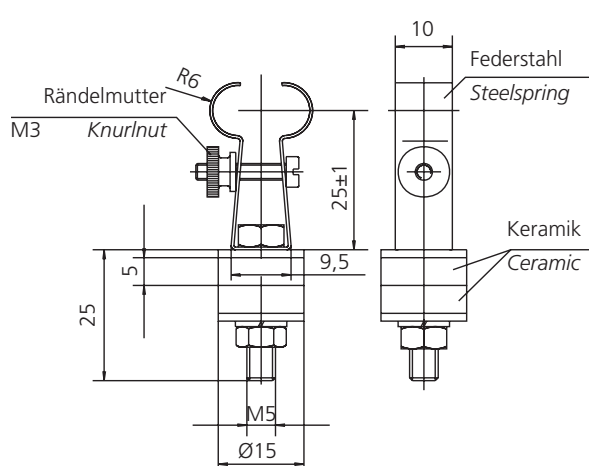
Springholders for single-tube emitters (ISE) and double/twin-tube emitters (ISD)

ISE



Abmessungen in mm

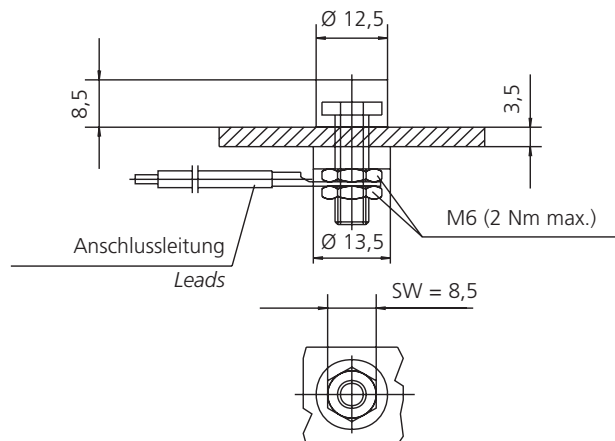
ISD



Dimensions in mm

Steckbuchse für KSSV-Sockel

Socket for KSSV emitter base



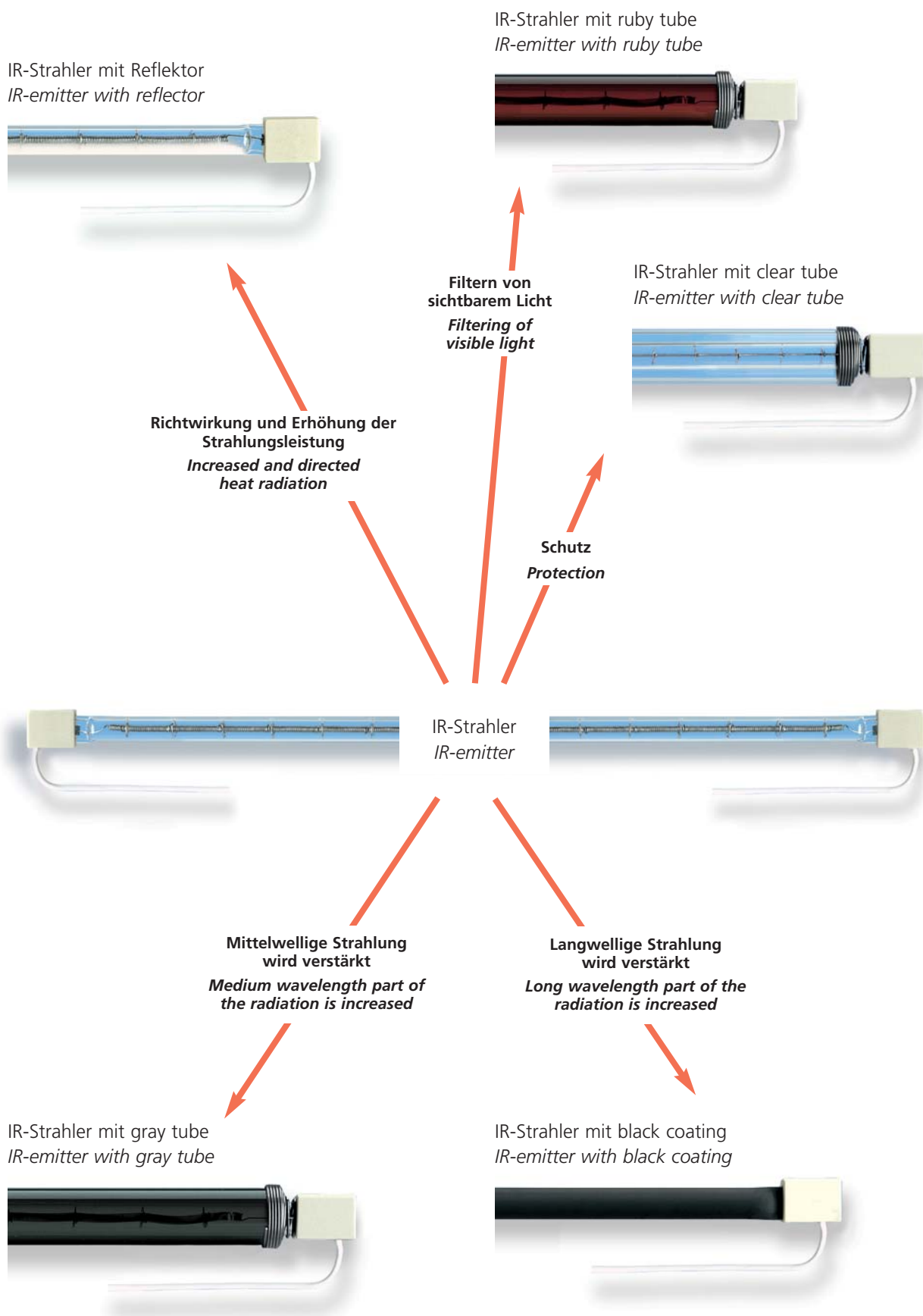
Abmessungen in mm

Dimensions in mm

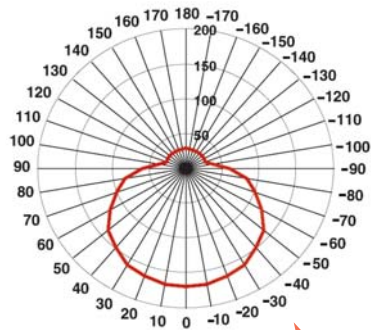
Fassung Lampholder	Verwendung bei Sockel Used for base	Sockelreferenz ¹ Base reference ¹	Art.-Nr. Type no.
xLirU	U	7	41001407
Steatit B	B	1	41001406
KSSV	KSSV	3	41001405
ISE	Einzelrohrstrahler/Single-tube emitter (d = 8–12 mm)	4–6, 9, 10	41019915
ISD	Doppel- und Zwillingsrohrstrahler/Double- and Twin-tube emitter (8–12 mm * 18–23 mm)	12	41019905

¹ Sockel siehe Seite 21

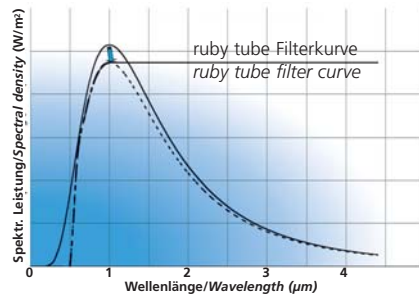
¹ Bases see page 21



IR-Strahler mit Reflektor
IR-emitter with reflector

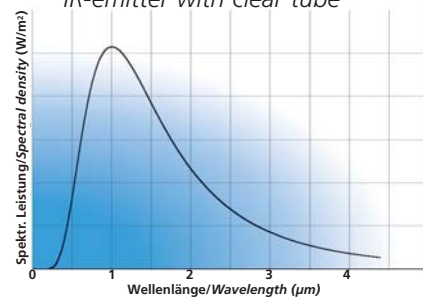


IR-Strahler mit ruby tube
IR-emitter with ruby tube



Filtern von sichtbarem Licht
Filtering of visible light

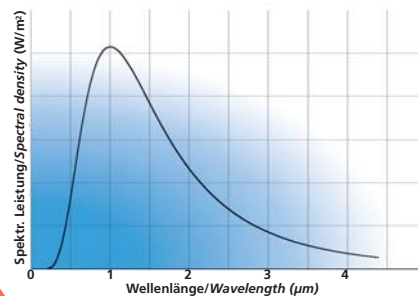
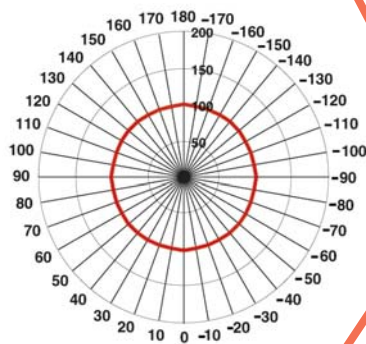
IR-Strahler mit clear tube
IR-emitter with clear tube



Richtwirkung und Erhöhung der Strahlungsleistung
Increased and directed heat radiation

Schutz
Protection

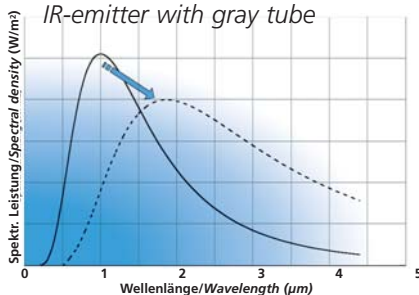
IR-Strahler
IR-emitter



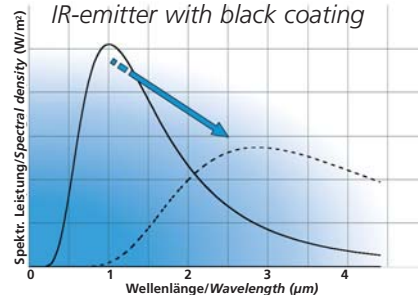
Mittelwellige Strahlung wird verstärkt
Medium wavelength part of the radiation is increased

Langwellige Strahlung wird verstärkt
Long wavelength part of the radiation is increased

IR-Strahler mit gray tube
IR-emitter with gray tube



IR-Strahler mit black coating
IR-emitter with black coating





**Für weitere Informationen wenden
Sie sich bitte an:**

For further information please contact:

**E-Mail: IR@blv-licht.de
Fax: +49 (0) 80 94/9 06-2 11**



Die Bezeichnung der Sockeltypen setzt sich aus folgenden Sockelbauteilen zusammen:

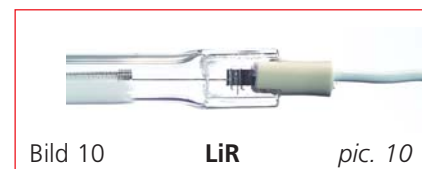
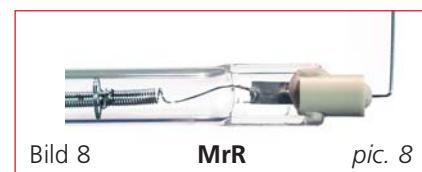
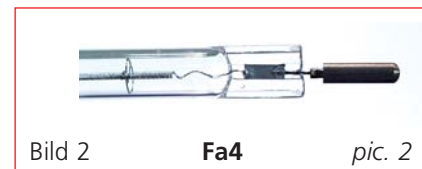
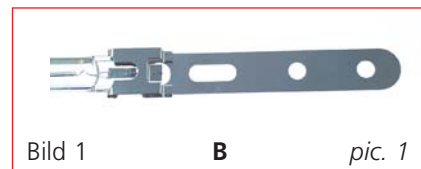
- F Flachstecker
- G Gabelkabelschuh
- R Ringzunge
- S Rundstecker
- L Litze, blank, axial angeschlagen
- Lr Litze, blank, rechtwinklig angeschlagen
- Li Litze, isoliert, axial angeschlagen
- Lir Litze, isoliert, rechtwinklig angeschlagen
- Mr Molybdändraht, rechtwinklig angeschlagen
- U Keramik, u-förmig
- R Keramik, rund
- M Metallkappe
- B Blechlasche
- dU Keramik, u-förmig für Doppelrohr

The code for the base types is a composition of the following base parts:

- F FASTON plug
- G Fork contact
- R Ringterminal
- S Pin contact
- L Leadwire, bare, axially connected
- Lr Leadwire, bare, rectangularly connected
- Li Leadwire, insulated, axially connected
- Lir Leadwire, insulated, rectangularly connected
- Mr Molybdenum wire, rectangularly connected
- U Ceramic, u-type
- R Ceramic, cylindrical
- M Metal cap
- B Metal ribbon
- dU Ceramic, u-type for double-tube

Beispiel einer Sockelcodierung · Example of a base code

- G Lir U** — Keramik, u-förmig · ceramic, u-type
 — Litze, isoliert, rechtwinklig angeschlagen
 — Leadwire, insulated, rectangularly connected
 — Gabelkabelschuh · fork contact



IR-Produktübersicht

IR-Product table

Einzelrohrstrahler

Single-tube emitters

Leistung (W) Wattage (W)	Nennspannung (V) Rated Voltage (V)	Farhtemperatur (K) Colour temperature (K)	Spezifische Leistung (W/cm) Specific Wattage (W/cm)	Mittlere Lebensdauer (h) Average life (h)	Gesamtlänge (mm) Overall length (mm)	Heizlänge (mm) Heating length (mm)	Brennlage Burning position	Sockel Base	Sockelbild Base picture	Reflektor Reflector	Besonderheit Special feature	Art.-Nr. Type No.
200	230	2300	16,8	5000	190	119	p15	R7s	11			191705
300	240	2600	46,2	1000	117	65	p15	R7s	11			196205
300	240	2400	50,0	1000	120	60	p15	LirU/300	7	x		196291
300	240	2500	18,5	5000	224	162	p15	GLirU/230	7		clear tube	311823
330	230	2300	27,7	5000	190	119	p15	R7s	11			191505
430	220	2400	34,1	2000	186	126	p15	R7s	11			190305
500	115	2500	41,7	5000	225	120	p75	Lir/200	10			197702
500	120	2500	30,3	5000	222	165	p15	R7s	11			195405
500	120	2500	30,3	5000	244	165	p15	B	1			195429
500	120	2500	30,3	5000	244	165	p15	B	1	x		195489
500	120	2500	39,4	5000	220	127	p15	Lir/145	5			310510
500	230	2450	30,3	5000	260	165	p15	KSSV	3			192501
500	230	2450	30,3	5000	238	165	p15	Lir/200	10	x		192504
500	230	2500	30,3	5000	220	165	p15	R7s	11			192505
500	230	2500	30,3	5000	226	165	p15	GLirU/150	7			192507
500	230	2400	30,3	5000	260	165	p15	KSSV	3	x		192591
500	235	2500	30,3	5000	244	165	p15	B	1			192509
500	235	2500	30,3	5000	226	165	p15	GLirU/200	7	x		192583
500	240	2450	30,9	5000	224	162	p15	GLirU/240	7		clear tube	310123
650	228	2200	37,6	5000	260	173	p45	KSSV	3			196101
650	228	2200	37,6	5000	235	173	p45	Lir/60	10			196104
650	230	2500	26,0	5000	311	250	p45	R7s	11			191305
700	240	2650	46,7	5000	222	150	p15	LirU/140	7			190125
1000	120	3000	81,3	2000	213	123	p15	Fa4	2			192901
1000	120	3000	81,3	2000	185	123	p15	MrR/30	8			193202
1000	230	2400	36,8	5000	349	272	u360	LirU/200	7			191005
1000	230	2400	36,8	5000	349	272	u360	LirU/200	7	x		191095
1000	230	2400	39,4	5000	340	254	p15	KSSV	3			192601
1000	230	2400	39,4	5000	340	254	p15	KSSV	3	x		192691
1000	235	2400	36,8	5000	349	272	u360	GLirU/200	7			191003
1000	235	2400	36,8	5000	361	272	p15	Lir/100	10	x		191004
1000	235	2400	36,8	5000	370	272	u360	B	1			191009
1000	235	2400	36,8	5000	349	272	p15	GLirU/200	7			191023
1000	235	2400	36,8	5000	349	272	p15	RLirU/150	7			191024
1000	235	2400	36,8	5000	349	272	p15	LirU/200	7			191025
1000	235	2400	36,8	5000	370	272	p15	B	1			191029
1000	235	2400	36,8	5000	349	272	p15	GLirU/200	7	x		191083
1000	235	2400	36,8	5000	349	272	p15	LirU/200	7	x		191085
1000	235	2400	36,8	5000	370	272	p15	B	1	x		191089
1000	235	2400	36,8	5000	349	272	u360	GLirU/200	7	x		191093
1000	235	2400	36,8	5000	370	272	u360	B	1	x		191099
1000	240	2500	36,8	5000	354	272	u360	GLirU/200	7		black coating	310363
1000	400	2650	36,8	2000	354	272	u360	GLirU/200	7		black coating	315563
1100	235	2400	37,9	5000	375	290	p15	Lir/300	10	x		198001
1200	144	2600	77,4	5000	224	155	p15	RLirM/150	6			194226
1200	144	2600	77,4	5000	224	155	p15	GLirU/195	7	x		194291
1200	144	2500	77,4	5000	224	155	p15	GLirU/150	7	x		194292
1200	144	2500	77,4	5000	221	155	p15	GLirM/150	6	x		194298
1200	235	2700	77,4	5000	224	155	p15	GLirU/155	7	x		196791
1500	240	2450	53,6	7000	354	280	p15	GLirU/230	7		gray tube	311123
1500	240	2450	53,6	7000	354	280	p15	GLirU/230	7		ruby tube	311223
1500	245	3000	107,1	1000	221	140	p45	Fa4	2			192801
1600	144	2600	103,2	5000	224	155	p15	RLirM/150	6			194126
1600	144	2500	103,2	5000	224	155	p15	GLirU/195	7	x		194191
1600	144	2500	103,2	5000	224	155	p15	GLirU/150	7	x		194192
1600	144	2500	103,2	5000	221	155	p15	GLirM/150	6	x		194198
1600	230	2500	42,7	5000	445	375	p15	Lir/400	10	x		193992
1600	235	2700	103,2	5000	224	155	p15	GLirU/150	7	x		196691
1600	240	2500	39,4	5000	540	406	u360	KSSV	3			190701
1600	240	2500	39,4	5000	511	406	p15	LirU/200	7	x		190703
1600	240	2500	39,4	5000	503	406	u360	Lr/159	4			190706
1600	240	2500	39,4	5000	506	406	p15	LrM/155	6			190708
1600	240	2500	39,4	5000	512	406	p15	GLirU/200	7	x		190723



IR-Produktübersicht

IR-Product table

Einzelrohrstrahler

Single-tube emitters

Leistung (W) Wattage (W)	Nennspannung (V) Rated Voltage (V)	Farbtemperatur (K) Colour temperature (K)	Spezifische Leistung (W/cm) Specific Wattage (W/cm)	Mittlere Lebensdauer (h) Average life (h)	Gesamtlänge (mm) Overall length (mm)	Heizlänge (mm) Heating length (mm)	Brennlage Burning position	Sockel Base	Sockelbild Base picture	Reflektor Reflector	Besonderheit Special feature	Art.-Nr. Type No.
1600	240	2500	39,4	5000	503	406	p75	Lr/156	4	x		190796
1600	240	2500	36,4	5000	540	440	p15	KSSV	3			197301
1600	240	2500	36,4	5000	540	440	p15	KSSV	3	x		197391
2000	220	2400	71,4	5000	350	280	u360	Lir/90/120	5			196801
2000	230	2400	49,3	5000	503	406	p15	KSSV	3			192701
2000	235	2400	71,4	5000	349	280	u360	GLirU/195	7			194003
2000	235	2400	71,4	5000	349	280	u360	RLr/115	4			194007
2000	235	2400	71,4	5000	370	280	p15	B	1			194009
2000	235	2400	71,4	5000	347	280	p15	RLirM/150	6			194026
2000	235	2400	71,4	5000	347	280	p15	GLirM/195	6			194027
2000	235	2400	71,4	5000	349	280	p15	GLirU/195	7			194029
2000	235	2400	71,4	5000	349	280	p15	GLirU/195	7	x		194089
2000	235	2400	71,4	5000	349	280	u360	GLirU/195	7	x		194093
2000	235	2400	71,4	5000	370	280	u360	B	1	x		194099
2000	240	2900	93,0	1500	334	215	p15	Fa4	2			194501
2000	240	2450	71,4	5000	334	280	p15	GLirU/230	7		ruby tube	310923
2000	240	2500	71,4	5000	354	280	p15	GLirU/230	7		gray tube	311023
2000	400	2500	48,8	7500	508	410	p15	B	1			311011
2400	240	2200	35,0	5000	782	685	u360	RLir/70	10			190405
2500	400	2500	81,4	5000	379	307	p15	LirU/225	7	x		193585
2600	240	2450	52,0	7000	580	500	p15	GLirU/400	7		ruby tube	311523
3000	380	2400	46,9	5000	781	640	u360	B	1	x		198202
3000	380	2400	46,9	5000	781	640	u360	B	1			198209
3000	400	2500	97,7	5000	379	307	p15	LirU/225	7	x		198985
6500	480	3200	267,5	700	300	243	p15	RLr/54	4			195503

Doppelrohrstrahler

Double-tube emitters

Leistung (W) Wattage (W)	Nennspannung (V) Rated Voltage (V)	Farbtemperatur (K) Colour temperature (K)	Spezifische Leistung (W/cm) Specific Wattage (W/cm)	Mittlere Lebensdauer (h) Average life (h)	Gesamtlänge (mm) Overall length (mm)	Heizlänge (mm) Heating length (mm)	Brennlage Burning position	Sockel Base	Sockelbild Base picture	Reflektor Reflector	Besonderheit Special feature	Art.-Nr. Type No.
600	110	2400	75	5000	150	80	u360	LidU/500	12	x	single ended	198301
700	235	2300	56	5000	190	125	p15	LidU/500	12	x	single ended	199291
1500	220	2400	75	5000	315	200	p15	LidU/500	12	x	single ended	198401
3000	220	2400	60	5000	640	500	p15	LidU/500	12	x		198601



Bitte möglichst vollständig ausfüllen und zurückfaxen:

Please fill out the form as accurately as possible and fax it to:

+49 (0)80 94/906-2 11

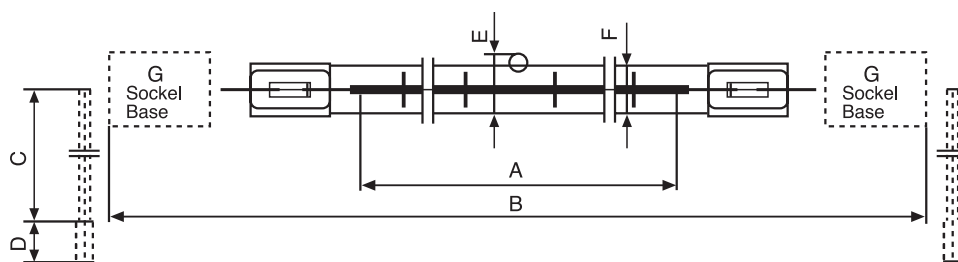
Firma	Company	
Straße/Hausnr.	Street/Code	
PLZ/Ort	ZIP code/City	
Land	Country	
Kontaktperson	Person in charge	
Telefon	Phone	
Telefax	Fax	
E-Mail	E-mail	
Internet	Internet	

Anwendung	Application	
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Stückzahlen	Quantity	Muster/samples	1. Jahr/1st year	2. Jahr/2nd year

Referenztype	Reference type	
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Betriebsspannung	Operational voltage	[V]	
Leistung	Power	[W]	
Spezifische Leistung	Specific power	[W/cm]	
Farbtemperatur	Colour temperature	[K]	
Brennlage	Burning position	horizontal/horizontal	☐
		vertikal/vertical	☐
Bauart	Type	Einzelrohr/single tube	☐
		Doppelrohr/double tube	☐ single ended ☐ double ended
		Zwillingsrohr/twin tube	☐ single ended ☐ double ended



Heizlänge	Heat length	[mm]		A
Gesamtlänge	Overall length	[mm]		B
Litzenlänge	Wire length	[mm]		C
Litzenmaterial	Wire material			
Anschlussstück	Connector			D
Tiphöhe	Tip height	[mm]		E
Kolbendurchmesser	Tube diameter	[mm]		F
Sockel	Base			G
Zusatzkolben	Additional tube			
Integrierter Reflektor	Integrated reflector			
Besonderheiten	Special Features			



UV-Strahler

UV-emitters

Made in Germany



**BLV Licht- und
Vakuumtechnik GmbH**
A company of USHIO Group

UV-Strahler, oft auch als UV-Lampen bezeichnet, gehören zur großen Gruppe der Gasentladungslampen. UV-Strahlung ist ein Teil der elektromagnetischen Strahlung und umfasst den Wellenlängenbereich von ca. 100 bis 380 nm.

Im Gegensatz zur herkömmlichen Glühlampe bildet sich bei diesen Strahlern zwischen zwei Elektroden, die in der Strahlerachse angeordnet sind, eine Gasentladung (Lichtbogen). Der Abstand der Elektroden wird als Bogenlänge bezeichnet.

Unsere Entladungsgefäße bestehen aus Quarzglas, welches unter anderem drei besonders herausragende Eigenschaften aufweist:

- ◆ Hohe Temperaturbeständigkeit (Im Strahlerbetrieb treten Wandtemperaturen bis 950 °C auf.)
- ◆ Hohe Temperaturwechselbeständigkeit durch einen niedrigen thermischen Ausdehnungskoeffizienten
- ◆ Durchlässigkeit für UV-Strahlung

Im Inneren des Strahlers befinden sich Edelgas (meist Argon) und Quecksilber. Durch den Zusatz weiterer Füllstoffe, wie z. B. Eisen, können bestimmte Bereiche des UV-Spektrums hervorgehoben bzw. verschoben werden.

Die Füllung von zusätzlichen Stoffen (Eisen, Gallium oder anderen) zum Quecksilber wird auch Dotierung genannt. Man spricht dann von einem dotierten Strahler. Für bestimmte Anwendungen sind auch noch weitere Füllstoffe einsetzbar.

An den Strahlerenden befindet sich der mechanische und elektrische Übergang vom Strahlerkolben zum Sockel. Es gibt zwei Ausführungsformen, die „Handeinschmelzung“ und die „Quetschung“.

UV-emitters, often referred to as UV-lamps, belong to the general group of gas discharge lamps. UV – radiation is a part of the electromagnetic spectrum between approx. 100 and 380 nm. Unlike in filament lamps, a gas discharge (light arc) is built up between two electrodes, which are themselves in line with the emitter. The distance between the electrodes is known as the arc length.

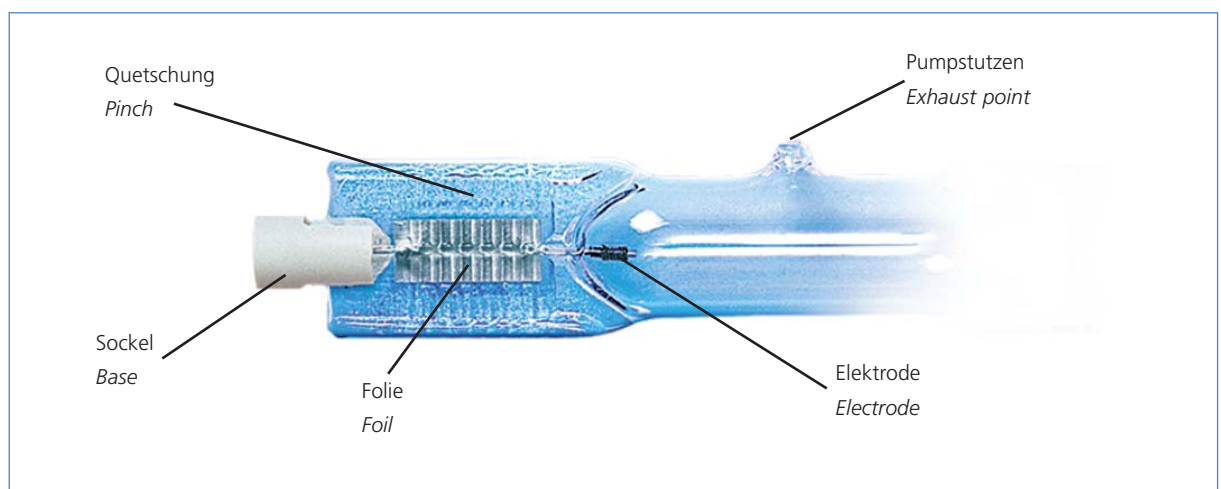
BLV discharge tubes are made of quartz glass, which amongst others is exemplified by three particularly outstanding qualities:

- ◆ *High temperature resistant (tube surface temperatures of 950 °C are reached during operation.)*
- ◆ *High temperature variation resistant as a result of having a low coefficient of thermal expansion*
- ◆ *Permeability for UV-radiation*

In the emitter are to be found rare gas (mostly argon) and mercury. By the addition of further components, such as iron, it is possible to displace or accentuate particular areas of the spectrum.

The adding of additional materials (iron, gallium and others) to the mercury is known as “doping”. The emitter is then described as “doped”. For special applications it can be necessary to add further materials.

At the ends of the emitter envelope is to be found the mechanical and electrical connection to the lamp base. There are two versions, the bonding and the machine pinching method.



Die vakuumdichte Stromdurchführung (von außen zu den Elektroden) wird durch Einschmelzen oder Quetschen des Quarzglas mittels einer speziellen Molybdänfolie realisiert. Die Elektrode besteht aus Wolfram, das im Vergleich zum Quarzglas einen um den Faktor 10 höheren thermischen Ausdehnungskoeffizienten hat. Deshalb kann das Wolfram nicht direkt mit dem Quarzglas verschmolzen werden. Die Verwendung einer speziellen Molybdänfolie ermöglicht jedoch eine vakuumdichte und thermisch belastbare Verbindung mit dem Quarzglas während der gesamten Nutzlebensdauer des Strahlers.

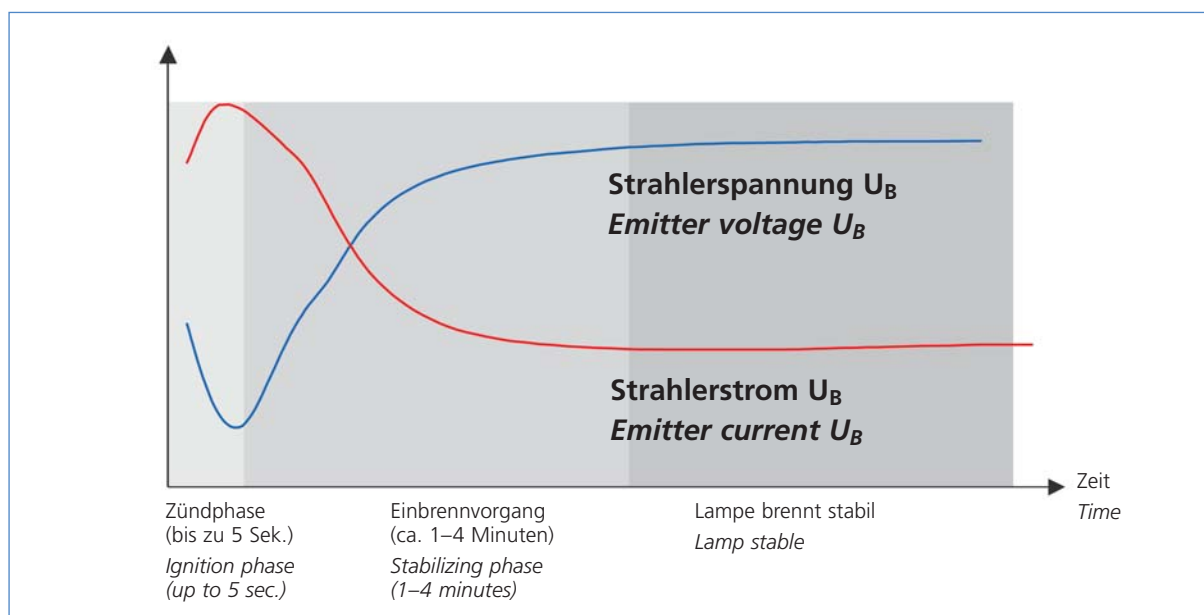
Am äußeren Ende des Elektroden systems befindet sich der elektrische Anschlussdraht, an dem der Strahler kontaktiert wird.

Der Sockel dient sowohl der mechanischen Halterung als auch der elektrischen Isolierung und besteht meist aus Keramik. Die Temperaturbelastung der Folie in der Einschmelzung oder Quetschung darf 350 °C nicht überschreiten, da sonst die Lebensdauer erheblich verkürzt wird. Je nach Anwendung und Einsatzgebiet muss der Gerätehersteller durch eine ausreichend dimensionierte Strahlerkühlung dafür sorgen, dass diese Temperatur an den Strahlerenden nicht überschritten wird. Bei einseitig gesockelten Varianten werden Spannungsüberschläge durch geeignete Konstruktionen vermieden.

The vacuum sealing (externally to the electrodes) is achieved by means of a special molybdenum foil which passes through a pinched or bonded section of the quartz glass. The electrodes are made of tungsten, which has ten times the thermal coefficient of expansion of quartz. For this reason it is not possible to bond the tungsten directly with the quartz glass. However, by use of the special molybdenum foil a vacuum sealed and thermally stable connection with the quartz glass can be achieved for the entire duration of the operating life.

At the outer end of each electrode is the wire, which is the electrical connection of the emitter.

The electrode system, and in particular the foil, serve to transmit the current as well as disperse heat produced by the emitter. The cap fixes the lamp mechanically, and being composed mainly of ceramic, acts also as an isolator. The temperature of the foil must not exceed 350 °C as this will reduce the life of the emitter considerably. Depending on the application and location, the equipment manufacturer must ensure that by using an appropriately designed cooling system, this maximum temperature is not exceeded. It must be ensured that with single ended versions, electrical connections are so constructed that short circuits can not occur. Flash over is avoided by virtue of the construction method.



Anlaufphase eines UV-Strahlers

Warm up phase of an UV-emitter

Lampenphysik

Das Edelgas (z. B. Argon) ist wegen seiner guten Zündeigenschaften im Strahler enthalten und geht mit den Füllstoffen keine Reaktion ein.

Gasentladungslampen benötigen ein Vorschaltgerät und in der Regel ein Zündgerät bzw. eine entsprechend hohe Versorgungsspannung. Durch einen Zündimpuls wird im Inneren des Strahlers ein Lichtbogen gezündet. Das Vorschaltgerät begrenzt den Strahlerstrom. Bei falsch dimensionierten Vorschaltgeräten kommt es zu Fehlfunktionen.

Das im Strahlerkolben bei Zimmertemperatur in flüssiger Form vorliegende Quecksilber verdampft nach und nach vollständig (siehe Bild: Anlaufphase des Strahlers), und es stellen sich der Betriebsdruck und die Strahlerspannung ein. Die zusätzlichen Dotierungen gehen zunächst teilweise in die Gasphase über.

Durch Einbau eines Halogenkreisprozesses wird die vorzeitige Schwärzung, verursacht durch das verdampfende Wolfram der Elektroden, verhindert. Dadurch bleibt die UV-Leistung über die Lebensdauer deutlich konstanter und steht über die gesamte Länge des Strahlers zur Verfügung.

Lebensdauer

Die Nutzlebensdauer eines Strahlers wird bestimmt durch die Konstruktion und Dimensionierung der einzelnen Baugruppen (z. B. Quarzrohrdurchmesser, Elektrodenystem, Elektrodenabstand, Strahlerfüllung) und die vom Anwender eingestellten Betriebsbedingungen (z. B. Brennlage, Kühlung, Schaltzyklen, Teillastbetrieb).

Ozonerzeugung

Beim Betrieb von UV-Strahlern mit undotiertem Quarz entsteht Ozon. Dieser Effekt wird für bestimmte industrielle Anwendungen genutzt. Ozon ist gesundheitsschädlich, es handelt sich jedoch um eine instabile Verbindung, die am Ende einer Absaugvorrichtung wieder in Sauerstoff zerfällt. Ozon verursacht in der umgebenden Luft einen typischen stechenden Geruch. Ozon kann durch geeignete Absaugungen frei von Schadstoffbelastungen in die Abluft eingeleitet werden. Durch die Verwendung von dotierten Quarzglassorten kann die Entstehung von Ozon vermieden werden.

Lamp Physics

The rare gas (e.g. argon) is present in the emitter and is used because of its good ignition characteristics and the fact that it does not react with the other materials.

Gas discharge lamps require control gear and generally also an igniter or correspondingly high supply voltage. An ignition-pulse creates an arc within the emitter. The control gear controls and limits the emitter current. Wrongly specified control gear leads to faults in operation.

The mercury in the emitter envelope, which is fluid at room temperature, gradually evaporates fully (see diagram – warm-up phase), and the operating pressure and voltage are reached. The additional doping ingredients are converted initially into a gas discharge.

By incorporation of a halogen-cycle, early blackening which can be caused by evaporation of the tungsten in the electrodes, is avoided. This is termed "the halogen cycle". The result is that the UV output remains constant and is available throughout the entire operating life of the emitter.

Life

The useful life of an emitter is determined by the construction and specification of the various system components. (e.g. diameter of the quartz, electrode system, electrode spacing, emitter filling) and the operating conditions required by the user (e.g. burning position, cooling, switching cycles, part-load operation).

Ozone production

Ozone is produced when undoped emitters with quartz glass are operated. This effect is used to advantage in specific industrial applications. Ozone, whilst being harmful to health, has an unstable composition and can be drawn off to convert back into oxygen. Ozone causes a typical smell. By use of a suitable suction method, ozone can be dispelled without harm through the exhaust system. By the application of assorted doped quartz glass, it is possible to avoid the production of ozone.

Warum BLV?

Unsere jahrzehntelange Erfahrung in der Produktion von hochtechnologischen UV-Strahlern und unsere Kompetenz sind die Basis der Zusammenarbeit mit unseren Kunden. Der Service ist wesentlicher Bestandteil unseres Handelns und bestimmt unser tägliches Bemühen um ihre Zufriedenheit. Die Fertigungsanlagen sind für kundenspezifische Stückzahlen ausgelegt und ermöglichen uns, in gleichbleibender Qualität Strahler sowohl in Einzelanfertigung als auch in großen Losgrößen zu produzieren. Unsere Strahler sind so konstruiert, dass sie unter entsprechenden Betriebsbedingungen eine optimale Lebensdauer erreichen. Durch den Einsatz einer eigenen Konstruktions- und Maschinenbauabteilung sind wir in der Lage, unsere Fertigungsprozesse zu optimieren. Durch zusätzliche Fülltechnologien sind unsere UV-Strahler während der Nutzlebensdauer nahezu schwärzungsfrei = „everclear“. Für einen schnelleren Anlauf der Strahler wird eine spezielle Verspiegelung der Strahlerenden angeboten.

Partner-Anlagensicherheitsservice (PASS)

Für unsere Partner bieten wir speziell abgestimmte Möglichkeiten der Anlagensicherheit an.

Je nach Bedarf und Kundenwunsch sind Vorräte von Strahlern für Anlagen, die im Dauerschichtbetrieb arbeiten, bei uns vorhanden bzw. können innerhalb festgelegter Zeiten bereitgestellt werden. Wenn Sie Ihre Anlagensicherheit erhöhen möchten, fragen Sie uns nach PASS, damit wir gemeinsam eine auf Ihren Bedarf zugeschnittene Lösung erarbeiten können.

Handhabung

UV-Strahler dürfen nur in den dafür vorgesehenen Geräten verwendet werden. Beachten Sie bitte die Hinweise des Geräteherstellers. Ein Strahlerwechsel darf erst nach Trennung des Gerätes vom Netz und nach vollständiger Abkühlung der Strahler vorgenommen werden. Die Quarzglasstrahler dürfen nicht mit bloßen Händen berührt werden, da Flecken einbrennen und zu einem vorzeitigen Ausfall der Strahler führen können. Verschmutzungen sind mit einem sauberen Tuch und Alkohol zu beseitigen.

Schützen Sie Haut und Augen vor ungefilterter UV-Strahlung!

Wenn Sie die Strahler für Bräunungszwecke nutzen, darf das nur in einem dafür vorgesehenen Gerät mit geeigneten Filtern erfolgen. Zu Bestrahlungsdauer und Intensität konsultieren Sie bitte einschlägiges Fachpersonal, um gesundheitliche Schädigungen zu vermeiden.

Why BLV?

Our many years of experience in the production of UV-emitters and our ability in this field form the basis for our cooperation with our customers. Service is an essential component of our activities and the basis of our desire to satisfy our customer's needs. The production facilities are flexibly designed to be able to satisfy the requirements of specific customer quantities and can maintain the same quality, whether it be for one-off manufacture or for large quantities. Our emitters are constructed to achieve an optimum life for every type of application. Because we at BLV build our own production machines, we are able to optimize our manufacturing processes. As a result of the filling technology applied, our UV-emitters remain practically free of blackening throughout their life. = "everclear". A special reflective coating which shortens the warm up period is also available if required.

Partner equipment continuity service (PASS)

We offer special "tailor-made" possibilities to our partners in the area of continuity of supply. For processes which are in permanent use and depending on the customer requirements, we can hold reserve stocks of lamps, or maintain guaranteed availability within agreed time-parameters. For this service the customer need only mention the word PASS.

Handling

UV-emitters may only be used in suitable equipment. The application instructions of the manufacturer are to be observed at all times. Lamps must only be changed after the equipment has been disconnected from the mains supply and has cooled down fully. The quartz glass should not be touched by bare hands to avoid early lamp failures caused by "hot-spots" on the surface of the quartz glass. Cleaning should be undertaken with a clean cloth and alcohol.

Eyes and skin must be protected from harmful unfiltered UV-radiation at all times!

If the emitter is being used for tanning purposes, this must only be done using correct equipment and filters. Only qualified specialists should be consulted for information on length of exposure and intensity of radiation. This is important to avoid permanent damage to health.



BLV-UV-Hochdruckstrahler (MHL) sind Quecksilber-Hochdrucklampen, deren Spektren durch den Zusatz bestimmter Metallhalogenide an anwendungstechnische und kundenspezifische Anforderungen angepasst werden.

Vorteile

- ◆ Hohe Strahlungsleistung in speziellen Spektralbereichen
- ◆ Kurze Bestrahlungs- und Belichtungszeiten
- ◆ Lang- und Kurzbogenstrahler (d. h. optimale Ausnutzung der Strahlung mittels geeigneter Reflektoren)
- ◆ Produktion nach DIN EN ISO 9001
- ◆ Alle Typen auch in ozonfreier Ausführung lieferbar

UV-Hochdruckstrahler können für den Leistungsbereich von 100 Watt bis 10 000 Watt hergestellt werden.

Anwendungsgebiete

Technik

- ◆ Reprografie
- ◆ Fotochemie/Fotopolymerisation
- ◆ Leiterplattenherstellung
- ◆ CD-Produktion
- ◆ Klebstoffhärtung
- ◆ Härten von Farben, Lacken und Kunststoffen

Medizin

- ◆ Dermatologie (u. a. Neurodermitis, Psoriasis, Akne)
- ◆ Bilirubin-Fototherapie
- ◆ UV-Kaltlichttherapie
- ◆ Dentaltechnik

Kosmetik

- ◆ Solarien/Bräunung
- ◆ Nagelmodellierung

BLV's UV high-pressure emitters (BLV designation: MHL) are high-pressure mercury lamps whose spectra are adapted to customer's specific requirements, through addition of special metal-halides.

Advantages

- ◆ High radiation intensity in special spectral ranges
- ◆ Short irradiation and exposure times
- ◆ Long and short arc emitters available (optimal use of radiation through appropriate reflectors)
- ◆ High standard of quality due to production according to DIN EN ISO 9001
- ◆ Upon request, all types also available in ozone-free versions

UV high-pressure emitters are available for wattages from 100 W to 10,000 W.

Applications

Technology

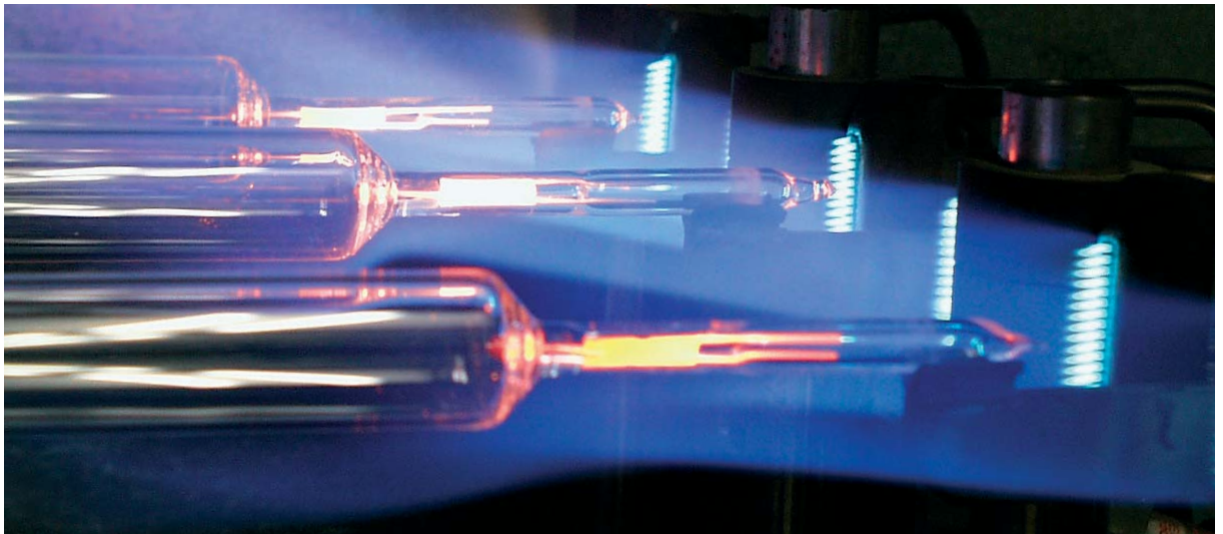
- ◆ Reprographics
- ◆ Photochemistry/Photopolymerisation
- ◆ Production of circuit boards
- ◆ Production of CD
- ◆ Curing of glues
- ◆ Drying of paints, lacquers, varnishes

Medicine

- ◆ Dermatology (e. g. Atopic dermatitis, Psoriasis, Acne)
- ◆ Bilirubin-phototherapy
- ◆ UV cold-light therapy
- ◆ Dental technology

Cosmetic

- ◆ Tanning
- ◆ Manicure / Pedicure Studios





UV-Hochdruckstrahler

UV high-pressure emitters

Bräunung und Medizin

Tanning and medicine

Bezeichnung Designation	Leistung (W) Wattage (W)	Sockel + Anschlussart Base + Connection	Gesamtlänge (mm) Overall length (mm)	Durchmesser (mm) Diameter (mm)	Bild Figure	Art.-Nr. Type No.
MHL 100	100–150	G12-S/einseitig/single ended	93	12	1	23355502
MHL 150	100–150	R7s + R7s-Kontakt /Contact	72	12	4	25020101
MHL 160	150–200	G12-S/einseitig/single ended	105	14	1	25845501
MHL 200	150–250	R7s + R7s-Kontakt/Contact	82	14	4	23020101
MHL 250	200–300	R7s + R7s-Kontakt/Contact	68	15	4	23010102
MHL 250L	200–300	R7s + Litze/Leadwire	75	15	5	23010201
MHL 400	300–500	R7s + R7s-Kontakt/Contact	106	14	4	23170101
MHL 400	300–500	R7s + R7s-Kontakt/Contact	106	14	4	23040101
MHL 400L	300–500	R7s + Litze/Leadwire	114	14	5	23040201
MHL 400L	300–500	R7s + Litze/Leadwire	114	14	5	23170201
MHL 400G	300–500	GY9,5/einseitig/single ended	110	14	3	23332003
MHL 404	300–500	R7s + R7s-Kontakt/Contact	106	14	4	23340101
MHL 450	400–600	R7s + R7s-Kontakt/Contact	106	16	4	23060101
MHL 450L	400–600	R7s + Litze/Leadwire	114	16	5	23060201
MHL 450G	400–600	GY9,5/einseitig/single ended	110	16	3	23372001
MHL 500	500–600	R7s + R7s-Kontakt/Contact	118	16	4	23080101
MHL 500L	500–600	R7s + Litze/Leadwire	118	16	5	23080201
MHL 600	500–700	R7s + R7s-Kontakt/Contact	120	16	4	23090101
MHL 600L	500–700	R7s + Litze/Leadwire	120	16	5	23090201
MHL 600G	500–700	GY9,5/einseitig/single ended	125	16	3	23092002
MHL 800	600–800	R7s + R7s-Kontakt/Contact	117	18	4	23450101
MHL 800L	600–800	R7s + Litze/Leadwire	117	18	5	23450201
MHL 800G	600–800	GY9,5/einseitig/single ended	114	18	3	23452001
MHL 800GS	600–800	GY9,5-S/einseitig/single ended	135	18	2	23453005
MHL 1010	800–1000	GY9,5-S/einseitig/single ended	129	25	2	23142002
MHL 1020	800–1000	GY9,5/einseitig/single ended	102	25	3	23143001
MHL 1040	800–1000	Keramik + Litze/Ceramic + Leadwire	130	25	6	23140501
MHL 1200/230	1000–1400	Keramik + Litze/Ceramic + Leadwire	137	25	6	23110301
MHL 1200/230G	1000–1400	GY9,5/einseitig/single ended	132	25	3	23112001
MHL 1200/400	1000–1400	Keramik + Litze/Ceramic + Leadwire	137	25	6	23150301
MHL 1500/230	1200–1600	Keramik + Litze/Ceramic + Leadwire	137	28	6	23160301
MHL 1500/230G	1200–1600	GY9,5 / einseitig/single ended	130	28	3	23162001
MHL 2000/230	2000–2200	Keramik + Litze/Ceramic + Leadwire	171	28	6	23210401
MHL 2000/400	2000–2200	Keramik + Litze/Ceramic + Leadwire	171	28	6	23200401
MHL 2000/400P	1800–2000	Keramik + Litze/Ceramic + Leadwire	171	25	6	23180401
MHL 2100/400	1800–2000	Keramik + Litze/Ceramic + Leadwire	184	25	6	23230701
MHL 2200/400	2000–2400	Keramik + Litze/Ceramic + Leadwire	192	28	6	23220301
MHL 2200/400P	2000–2200	Keramik + Litze/Ceramic + Leadwire	192	25	6	23460301
MHL 3000/230	2500–3000	Keramik + Litze/Ceramic + Leadwire	215	28	6	23300301
MHL 4000/400	3500–4000	Keramik + Litze/Ceramic + Leadwire	215	28	6	23400301
MHL 4000/ozfr.	3500–4000	Keramik + Litze/Ceramic + Leadwire	215	28	6	23410301

Sonderanfertigungen und FDA-Ausführungen auf Anfrage

Special lamps and FDA approved lamps on request



UV-Hochdruckstrahler

UV high-pressure emitters

Technische Strahler

Technical emitters



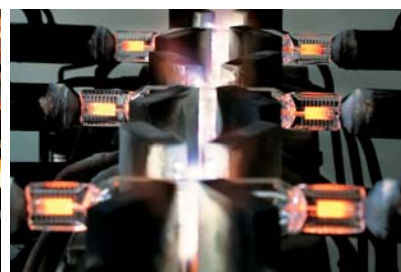
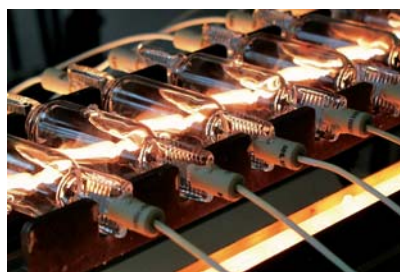
Standardsockel

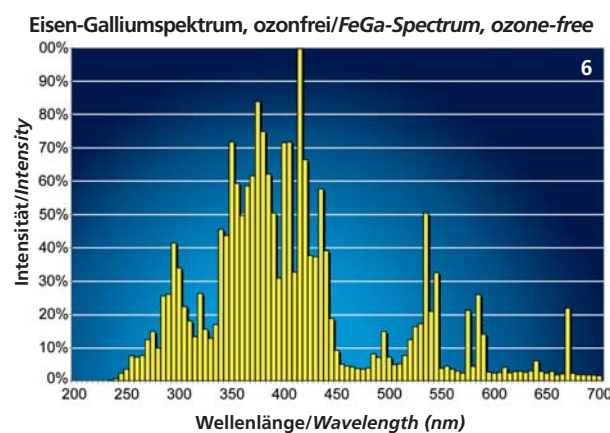
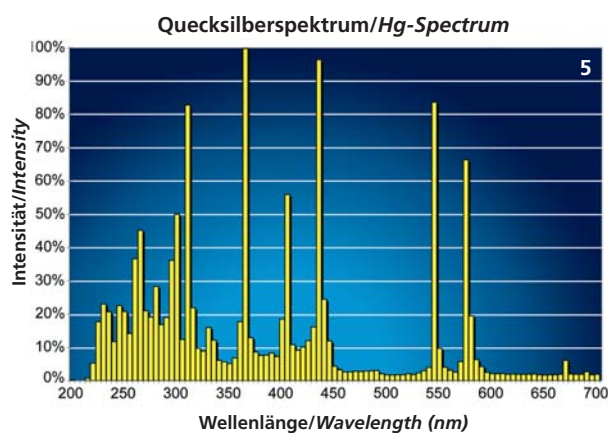
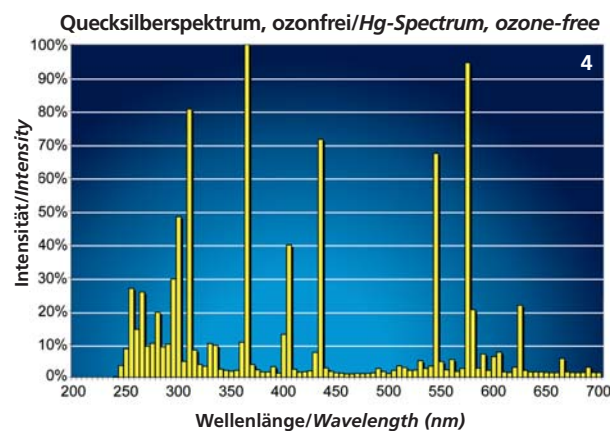
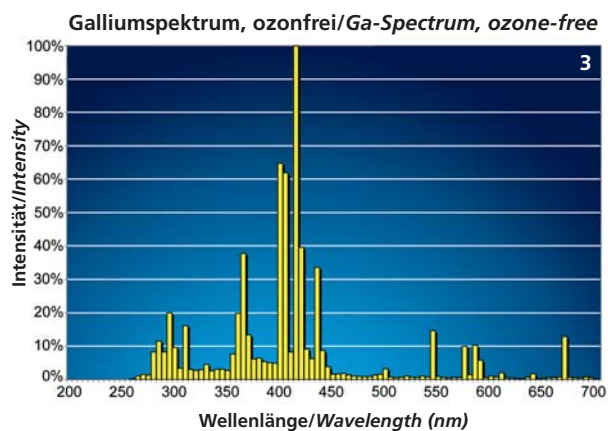
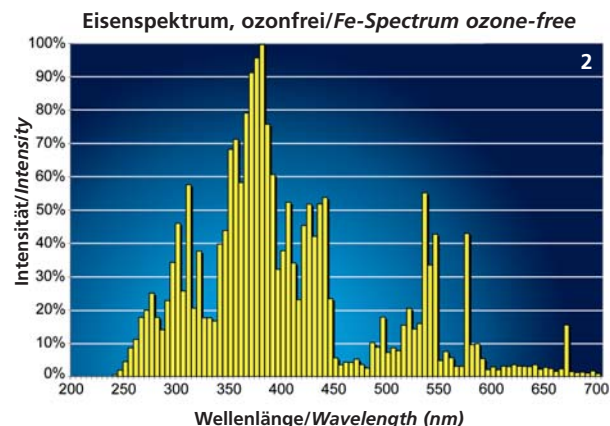
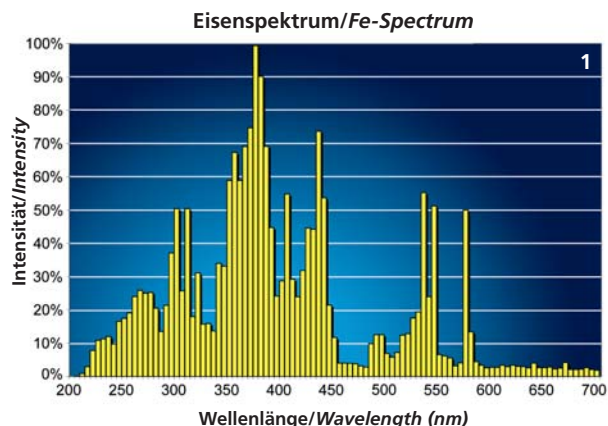
Standard bases

Leistung (W) Wattage (W)	Bezeichnung Designation	Gesamtlänge (mm) Overall length (mm)	Durchmesser (mm) Diameter (mm)	Socket Nr. Base No.	Anschlussart Connection	Spektrum Nr. Spectrum No.	Art.- Nr. Type No.	Bemerkungen Remarks
100	MHL 100	72	12	5	R7s	1	25020101	
150	MHL 150	63	14	5	R7s	1	25840102	
150	MHL 150LO	68	14	5	R7s	1	25840101	
150	MHL 150H	88	23	15	G12	1	25842001	Hüllkolben/Double envelope
250	MHL 250	68	15	5	R7s	1	23010102	
250	MHL 260	68	15	5	R7s	2	23430102	
250	MHL 270	68	15	5	R7s	5	23310101	
400	MHL 460	105	16	5	R7s	2	23070101	
400	MHL 470	105	16	5	R7s	5	23290101	
400	MHL 480	105	16	5	R7s	6	25780101	
400	MHL 490	105	16	5	R7s	4	25790101	
500	MHL 12	110	16	3	Litze/leadwire	2	25120901	OLEC L-900
600	MHL 600	120	16	5	R7s	1	23090101	
600	MHL 650	120	16	5	R7s	3	25850101	
600	MHL 660	120	16	5	R7s	2	25571101	
800	MHL 800M	110	18	5	R7s	3	25440101	
800	MHL 800L	117	18	5	Litze/leadwire	1	23450201	
800	MHL 800	118	18	5	R7s	1	23450101	
800	MHL 800FR	120	18	5	R7s	1	23420101	Eskofot (frosted)
800	MHL 880 MP	208	14	5	R7s	2	25710101	Sylvania MP 800 T4/6B
800	MHL 808	225	25	19	Litze/leadwire	1	25925401	
1000	MHL 1000S	134	25	2	Litze/leadwire	2	25100601	Theimer
1000	MHL 1007S	134	25	2	Litze/leadwire	1	25140601	Theimer
1000	MHL 1000/2	146	18	16	RX7s	2	25110801	
1000	MHL 1000/1	148	23	16	RX7s	4	25100701	NuArc GW114
1000	MHL 2818	157	25	4	Litze/leadwire	4	25860301	Theimer
1000	MHL 13	159	25	3	Litze/leadwire	2	25130901	Philips HPM 13
1500	MHL 1507S	134	25	2	Litze/leadwire	1	25180601	Theimer ESC Amerika
1500	MHL 1500	137	28	4	Litze/leadwire	1	25160301	
2000	MHL 2117S	133	28	1	Litze/leadwire	1	25190401	Theimer AGFA 2000
2000	MHL 3001	133	28	3	Litze/leadwire	2	25310301	Theimer
2000	MHL 3001S	133	28	1	Litze/leadwire	2	25310401	Theimer
2000	MHL 3007	133	28	3	Litze/leadwire	1	25320301	Theimer
2000	MHL 3007S	133	28	1	Litze/leadwire	1	25320401	Theimer
2000	MHL 2000G	171	28	13	Litze/leadwire	2	25760401	



Leistung (W) Wattage (W)	Bezeichnung Designation	Gesamtlänge (mm) Overall length (mm)	Durchmesser (mm) Diameter (mm)	Socket Nr. Base No.	Anschlussart Connection	Spektrum Nr. Spectrum No.	Art.- Nr. Type No.	Bemerkungen Remarks
2000	MHL 1403	180	25	8	Metall/metal	3	25371101	Burgess 1406-03
2000	MHL 2000/2	180	25	8	Metall/metal	4	25351101	Addalux/PAKO
2000	MHL 2000/3	180	25	8	Metall/metal	2	25361101	Addalux/PAKO
2000	MHL 2000/1	187	25	7	Metall/metal	2	25341201	NuArc HT 28
2000	MHL 17	189	28	3	Litze/leadwire	2	25170901	Philips HPM 17
2000	MHL 170L	189	28	3	Litze/leadwire	2	25250901	OLEC L1250
2000	MHL 170LR	189	28	3	Litze/leadwire	2	25260901	OLEC L1250R
2000	MHL 252 L	189	28	3	Litze/leadwire	3	25640901	OLEC L1252
2000	MHL 261L	189	28	3	Litze/leadwire	1	25270901	OLEC L1261
2000	MHL 16	220	28	17	Metall/metal	2	25170801	Beltron
3000	MHL 121HT	181	25	7	Metall/metal	2	25461201	NuArc HT 121
3000	MHL 3020S	190	25	1	Litze/leadwire	2	25210401	Theimer
3000	MHL 3027S	190	25	1	Litze/leadwire	1	25220401	Theimer
3000	MHL 3003	232	25	3	Litze/leadwire	2	25200702	Sylvania MP 3000 T8/6R
3000	MHL 3002	237	25	8	Metall/metal	2	25200701	Sylvania MP 3000 T8/6J
3500	MHL 4001	230	28	6	Metall/metal	2	25420101	DuPont
3500	MHL 4007	230	28	6	Metall/metal	1	25410101	DuPont
4000	MHL 5000	190	28	4	Litze/leadwire	2	25510301	Theimer
4000	MHL 5000S	190	28	1	Litze/leadwire	2	25510401	Theimer
4000	MHL 5007	190	28	4	Litze/leadwire	1	25520301	Theimer
4000	MHL 5007S	190	28	1	Litze/leadwire	1	25520401	Theimer
4000	MHL 4010	198	30	13	Litze/leadwire	2	25300301	Sylvania MO 22
4000	MHL 15	216	33	3	Litze/leadwire	2	25150901	Philips HPM 15
4000	MHL 15 E	216	33	3	Litze/leadwire	1	25620902	
4000	MHL 30	220	30	17	Metall/metal	2	25300801	Beltron
4000	MHL 281L	247	28	10	Litze/leadwire	1	25290601	OLEC L1281
4000	MHL 282L	247	28	10	Litze/leadwire	3	25470601	OLEC L1282
4000	MHL 280L	250	28	13	Litze/leadwire	2	25280301	OLEC L1280
4000	MHL 4000 SPG	255	28	9	Litze/leadwire	2	25610101	GS SPG 4000
4000	MHL 4003	275	28	20	Litze/leadwire	2	25590601	GS UPX 4003
5000	MHL 6020S	215	28	1	Litze/leadwire	2	25870601	Theimer
5000	MHL 6027S	215	28	1	Litze/leadwire	1	25230401	Theimer
5000	MHL 8027S	215	28	1	Litze/leadwire	1	25240401	Theimer
5000	MHL 5020S	240	28	1	Litze/leadwire	2	25550401	Theimer
5000	MHL 5027S	240	28	1	Litze/leadwire	1	25560401	Theimer
5000	MHL 7500/1	242	28	12	Metall/metal	1	23414701	Amergraph/Byerscope
5000	MHL 7500/2	242	28	18	Metall/metal	1	23415701	Amergraph/Byerscope
5000	MHL 7500/G	242	28	18	Metall/metal	2	25915701	Amergraph/Byerscope
5000	MHL 5000/2	281	25	7	Metall/metal	3	25381201	Burgess 1406-457
5000	MHL 5000/4	281	25	7	Metall/metal	2	25391201	Addalux/PAKO
5000	MHL 5000/7	281	25	7	Metall/metal	1	25401201	Addalux/PAKO
5000	MHL 5000/7L	281	25	7	Litze/leadwire	3	25381301	Burgess 754-18017L
5000	MHL 5011	281	25	7	Metall/metal	1	25481201	Addalux/PAKO
5000	MHL 5000 SPG	310	30	9	Litze/leadwire	2	25600101	GS SPG 5000
6000	MHL 6006	142	40	16	Litze/leadwire	1	25770801	Sylvania M250
6000	MHL 38KT	222	28	12	Metall/metal	2	25451601	NuArc KT 38
6000	MHL 153LY	241	26	10	Litze/leadwire	1	25950703	NuArc LY 153
6000	MHL 33LY	241	26	10	Litze/leadwire	3	25810703	NuArc LY 33
7000	MHL 7700/C	332	30	10	Litze/leadwire	1	25720601	Colight
7000	MHL 7000	385	30	11	Litze/leadwire	2	25530701	AutomaTech
7000	MHL 7000/O	385	30	11	Litze/leadwire	2	25540701	
7000	MHL 7007	385	30	11	Litze/leadwire	1	25490301	AutomaTech
7000	MHL 7007/O	385	30	11	Litze/leadwire	1	25500701	
7000	MHL 7001/O	387	30	9	Litze/leadwire	2	25540717	ORC MXA-7000H
7000	MHL 7008/O	387	30	9	Litze/leadwire	1	25500717	ORC SMX-7000H
8000	MHL 8001	305	25	4	Litze/leadwire	1	25580301	Bacher/Colight
9000	MHL 9009	450	30	9	Litze/leadwire	1	25650101	ORC SMX 9000H
10000	MHL 10001	385	34	11	Litze/leadwire	1	25690301	AutomaTech
10000	MHL 10002	385	34	11	Litze/leadwire	2	25700301	AutomaTech





Anwendung

- ◆ UV-Aushärtung
- ◆ Kleben, Fixieren und Vergießen von elektronischen Komponenten
- ◆ Verkleben von Gläsern, Metallen und Kunststoffen
- ◆ Verkleben von Glasfasern
- ◆ Fluoreszenzanregung
- ◆ UV-Bestrahlung ohne Infrarotanteile („kalte“ UV-Bestrahlung)
- ◆ Hochintensive UV-Bestrahlung und kurze Belichtungszeiten

Vorteile

- ◆ Hochleistungs-Punktstrahler für alle Anwendungen, bei denen ein Maximum an UV-Intensität auf eine kleine Fläche aufgebracht werden muß
- ◆ Hohe Strahlungsleistung
- ◆ Kurze Bestrahlungs- und Belichtungszeiten

Applications

- ◆ UV hardening
- ◆ Glueing, fixing and moulding of electronic components
- ◆ Glueing of glass, metals and plastics
- ◆ Glueing of glass-fibre
- ◆ Fluorescent excitation
- ◆ UV treatment without infra-red component ("cold" UV treatment)
- ◆ High intensity UV-exposure times

Advantages

- ◆ High performance point-emitter for all applications where a maximum UV-intensity needs to be applied to a small surface
- ◆ High output
- ◆ Short exposure times



Bezeichnung Designation	Strahlerleistung (W) Emitter wattage (W)	Strahlerspannung (V) Emitter voltage (V)	Strahlerstrom (A) Emitter current (A)	min. Zündspannung (kV) min. Ignition voltage (kV)	Fokusabstand (mm) Focal distance (mm)	Durchmesser (mm) Diameter (mm)	max. Länge (mm) max. Length (mm)	Art.-Nr. Type No.
MHL-R 100 UV	100	110	1,2	3,5	53	70	70	25025001*
MHL-R 150 UV	150	110	1,8	3,5	53	70	70	25845001*

* in Vorbereitung

*in preparation

- ◆ Geeignet für Faserdurchmesser von 8–20 mm
- ◆ Verwendung von Standardvorschalt- und Zündgeräten
- ◆ Einfacher Lampenaustausch ohne erneute Justierung

- ◆ Suitable for fibre diameters of 8–20 mm
- ◆ Used with standard control gear and ignitors
- ◆ Simple lamp changing without re-adjustment



Die UV-Strahler sind für einen hohen Output im UVC-Spektralbereich ausgelegt (siehe Spektrum 1), können aber auch im UVA- oder sichtbaren Spektrum optimiert werden (Spektren 2 und 3). BLV-UV-Strahler sind in Bogenlängen von 60–2600 mm und in Leistungen von 40 bis über 200 W/cm lieferbar.

Die in der Tabelle aufgeführten Strahler sind nur Auszüge aus einem großen Programm – fragen Sie unsere Experten nach dem richtigen Strahler für Ihre Anwendung! Wir bieten verschiedene Sockelvarianten und passen somit den Strahler genau an Ihre Bedürfnisse an.

Anwendungsgebiete

UV-Trocknung von Lösungsmittelfreien Lacken, Farben, Klebstoffen usw.

- ◆ Druckfarben (Bogen-, Endlos-, Trocken-Offsetdruck, Etiketten-, Flexo-, Sieb-, Tief-, Tampondruck)
- ◆ Lacke
- ◆ Klebstoffe
- ◆ Vergussmassen
- ◆ (Glasfaserverstärkte) Polyester-Spachtel, Folien

UV-Desinfektion von Luft, Wasser und Oberflächen

- ◆ Brunnen
- ◆ Öffentliche Wasserversorgung (vorbeugende Desinfektion im Haushalt)
- ◆ Gewerbliches Wasser (Hotels, Campingplätze)

UV-unterstützte Oxidation von organischen Schadstoffen in Luft und Wasser

- ◆ Entkeimung hoch belasteten Industrie-Abwassers
- ◆ Entgiftung von Galvanikabwasser (CN, Komplexbildner)
- ◆ Behandlung von Grundwasser (CKW, PAK, BTX)
- ◆ Reinigung von Deponiesickerwasser
- ◆ Entfärbung von Textilabwasser

Industrielle Photochemie

Sonderanwendungen wie Ozon-Erzeugung und UV-Analytik

The UV-emitters are designed for high output in the UVC spectral range (see spectrum 1), but can be adapted to the UVA or visible spectrum. (spectra 2 and 3).

BLV UV-emitters can be manufactured in arc-lengths from 60–2600 mm and in ratings from 40 to over 200 W/cm.

The UV-emitters in the table represent only a sample of a much larger programme. We can offer various lamp caps and can manufacture lamps to meet specific demands. Ask our experts about the correct emitter for your application.

Applications

UV-drying of solvent-free paints, colours, adhesives, etc.

- ◆ Printing colours (sheet-, continuous-, dry-offset-, label-, flex-, silk screen-, rollerprinting)
- ◆ Paints
- ◆ Adhesives
- ◆ Fillers
- ◆ (Glass fibre strengthened) polyester-spatula, foil.

UV-disinfection of air, water and surfaces

- ◆ Fountains
- ◆ Public water supplies (preventative disinfection in the home)
- ◆ Commercial water supplies (hotels, camping sites)

UV-supported oxidation of organic pollutants in air and water

- ◆ Sterilization of highly polluted industrial waste water
- ◆ Detoxification of waste water from galvanising (CN complex form)
- ◆ Treatment of ground water (CKW, PAK, BTX)
- ◆ Cleaning of disposal site seepage
- ◆ De-colouring of water used for textiles dyeing

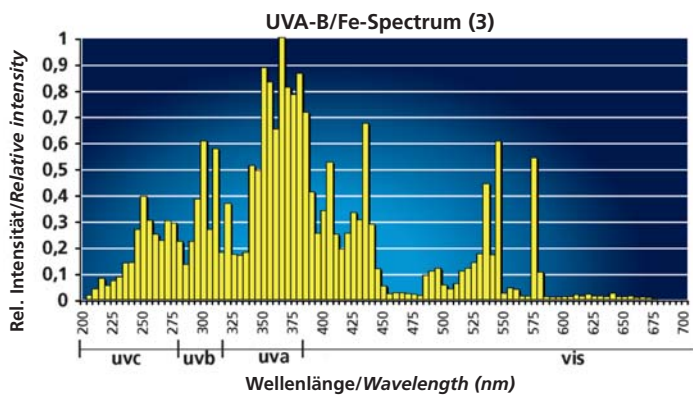
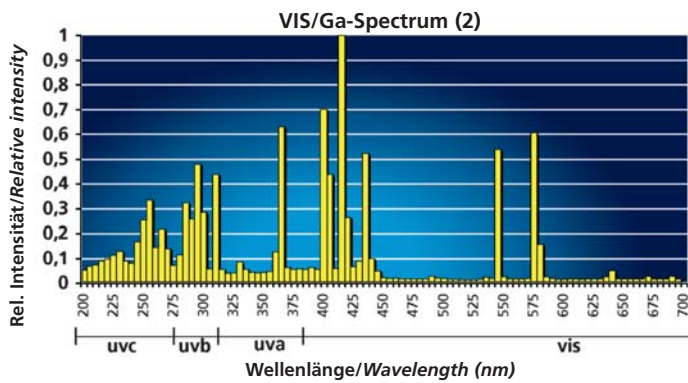
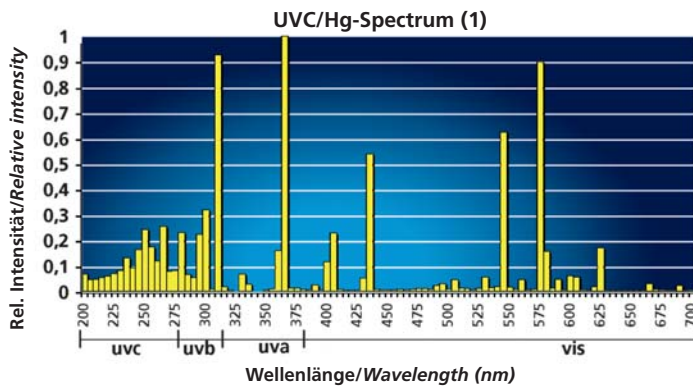
Industrial photo chemistry

Special applications such as ozone production and UV-analysis

Für weitere Informationen wenden Sie sich bitte an:
For further information please contact:

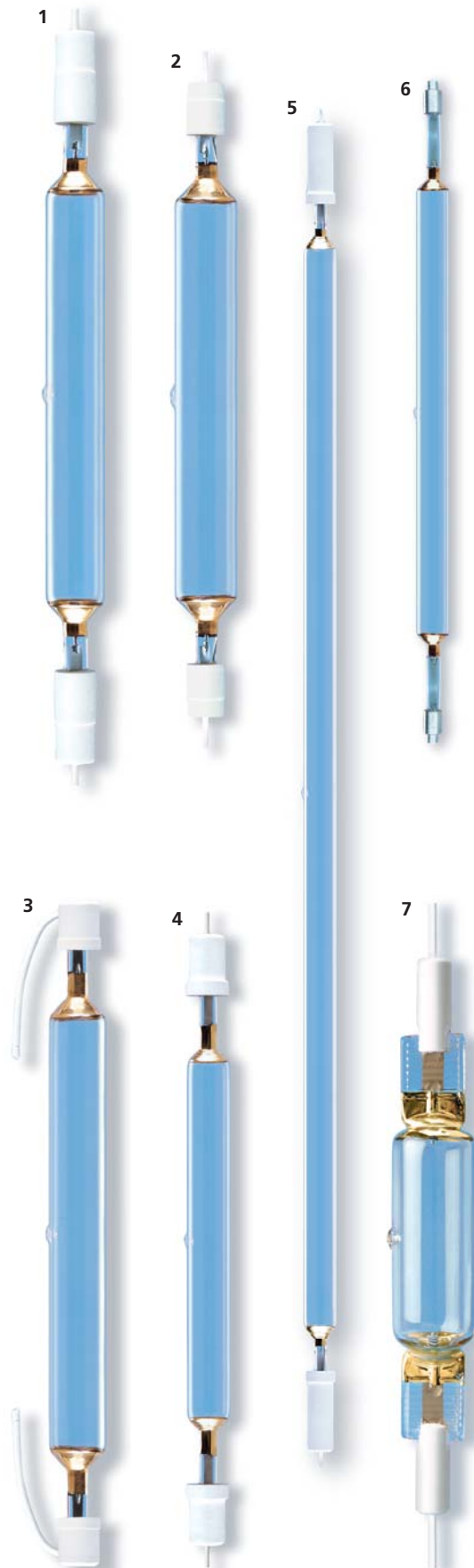
E-Mail: UV@blv-licht.de
Fax: +49 (0) 80 94/9 06-164





Spezialsockel

Special bases



Bezeichnung Designation	Strahlerleistung (W) Nominal Wattage (W)	Strahlerspannung (V) Emitter voltage (V)	Netzspannung (V) Voltage (V)	Zündgerät notwendig Ignitor necessary	Strahlerstrom (A) Emitter current (A)	Spez. Leistung (W/cm) Spec. Wattage (W/cm)	Bogenlänge (mm) Arc Length (mm)	Gesamtlänge (mm) Overall Length (mm)	Durchmesser (mm) Diameter (mm)	Bildnummer des Strahlers Picture reference of emitter	Anschlussart Connection	Art.-Nr. Spektrum 1 Type No. Spectrum 1	Art.-Nr. Spektrum 2 Type No. Spectrum 2	Art.-Nr. Spektrum 3 Type No. Spectrum 3
UVH 1022-0	1000	145	230	X	7.5	100	106	230	22.5	1	PTFE-Litze/Wire	24015002		
UVH 1224-0	1000	130	230	X	8.6	80	120	215	24.5	2	PTFE-Litze/Wire (1)	24025502		
UVH 1322-0	1300	150	230	X	9.7	100	125	230	22.5	1	PTFE-Litze/Wire	24028502		
UVH 1522-0	1500	150	230	X	11	100	152	275	22.5	1	PTFE-Litze/Wire	24035002		
UVH 1522-1	1500	150	230	X	11	100	152	275	22.5	1	PTFE-Litze/Wire (2)	24040502		
UVH 1522/28-0	1700	275	400	X	7	115	152	275	22.5	1	PTFE-Litze/Wire	24037002		
Q-3022 S-1	2500	500	750	X	5	80	305	420	22,5	7	PTFE-Litze/Wire	24073902		
UVH 2022-0	2000	240	400	X	9.7	100	206	330	22.5	1	PTFE-Litze/Wire	24045102	24001102	
UVH 2022-3	2000	240	400	X	9.7	100	206	330	22.5	1	PTFE-Litze/Wire	24049902		
UVH 2420-0	2000	210	400	X	9.5	80	250	361	19.5	1	PTFE-Litze/Wire (1)	24115402		
UVH 1524-1	2250	150	230	X	16	150	152	275	24.5	1	PTFE-Litze/Wire (2)	24306802		
UVH 2026-1	2400	270	400	X	10	120	206	330	26.5	1	PTFE-Litze/Wire	24315502		
UVH 2522-0	2500	280	400	X	10	100	247	380	22.5	1	PTFE-Litze/Wire	24055002		
UVH 3022-0	3000	275	400	X	12	100	305	430	22.5	1	PTFE-Litze/Wire	24065002		
UVH 3023-0	3000	265	400	X	12	120	250	350	22.5	2	Silikon-Litze/Wire	24717002	24727002	
Q-2722-0	2700	280	400	X	10,7	100	272	365	19,5	7	PTFE-Litze/Wire	24376002		
UVH 3522/28-0	3600	275	400	X	14.5	100	356	480	22.5	1	PTFE-Litze/Wire	24074002	24077502	24074102
UVH 3026-3	3700	230	400	X	18	120	300	410	26.5	3	PTFE-Litze/Wire (3)	24338002		
UVH 2524-0	4000	280	400	X	16	160	250	329	24.5	3	PTFE-Litze/Wire	24059502		
UVH 4024-0	4000	360	570		12	150	256	380	24.5	1	PTFE-Litze/Wire (1)	24385102		
UVH 4026-0	4000	360	570		12	150	256	380	26.5	1	PTFE-Litze/Wire (1)	24385202		
UVH 4122-0	4100	270	400	X	16	100	425	550	22.5	1	PTFE-Litze/Wire	24085002		
UVH 4222-0	4200	600	1000		8	100	425	550	22.5	1	PTFE-Litze/Wire	24095002		
UVH 5022/45-0	5000	440	660	X	12.4	100	505	630	22.5	1	PTFE-Litze/Wire	24125002		
UVH 5822/45-0	5800	440	660	X	14.5	100	585	710	22.5	1	PTFE-Litze/Wire	24115102		
UVH 5822-0	5800	725	1200		9	100	585	710	22.5	1	PTFE-Litze/Wire	24105102	24106002	
UVH 6722-0	6700	850	1500		9.3	100	680	800	22.5	1	PTFE-Litze/Wire	24135002		
UVH 6426-0	6900	630	950		12	170	406	530	26.5	1	PTFE-Litze/Wire (1)	24417002		
UVH 7322-0	7300	900	1500		9	100	740	860	22.5	1	PTFE-Litze/Wire	24145002		
UVH 8322-0	8300	1000	1700		9.3	100	829	939	22.5	1	PTFE-Litze/Wire (1)	24155002		
UVH 10022-0	10000	1250	2200		9	100	1005	1130	22.5	1	PTFE-Litze/Wire	24175002		
UVH 11022-0	11000	1500	2300		8.6	100	1105	1230	22.5	1	PTFE-Litze/Wire	24195002		
UVH 14021-0	11000	1870	2500		6.5	80	1397	1575	19.5	6	Metallsockel/Metal Base	24244002	24407002	
UVH 14219-2	11000	1870	2800		6.3	80	1420	1575	19.5	6	PTFE-Litze/Wire	24207502	24206502	
UVH 10522-0	11700	1530	2300		8.5	110	1055	1180	22.5	1	PTFE-Litze/Wire	24185002		
UVH 12522-0	12500	1600	2600		9.2	100	1265	1390	22.5	1	PTFE-Litze/Wire (2)	24215002		
UVH 13022-0	13000	1970	3000		7.6	100	1305	1430	22.5	1	PTFE-Litze/Wire	24225002	24226002	
UVH 14022 G-0	14000	1950	3000		8	100	1405	1530	22.5	1	PTFE-Litze/Wire	24201502		
UVH 14219-0	14200	1900	2500		8.3	100	1420	1575	19.5	6	Metallsockel/Metal Base	24209502	24204502	
UVH 14222-1	14200	1900	2500		8.3	100	1420	1575	22.5	1	PTFE-Litze/Wire	24236502	24237502	
UVH 14522-0	14500	1900	3000		9	100	1455	1580	22.5	1	PTFE-Litze/Wire	24245002		
UVH 16522-0	16500	2000	3200		9.2	100	1655	1780	22.5	1	PTFE-Litze/Wire	24265002	24269002	
UVH 10526-0	16800	1850	3200		9.6	160	1055	1180	26.5	1	PTFE-Litze/Wire	24485002		
UVH 14222-0	16800	1850	2500		9.9	120	1420	1548	22.5	1	PTFE-Litze/Wire	24235002	24236002	
UVH 19022-0	19000	2400	4000		8.8	100	1905	2030	22.5	1	PTFE-Litze/Wire	24275002		
UVH 20022-0	20000	2500	4000		9	100	2005	2130	22.5	1	PTFE-Litze/Wire	24285002		
UVH 14526-0	23200	2000	3200		12.3	160	1455	1580	26.5	1	PTFE-Litze/Wire	24248002		
UVH 22024-0	26400	2500	4000		11.2	120	2205	2330	24.5	1	PTFE-Litze/Wire	24296002		



Standardsockel

Standard bases



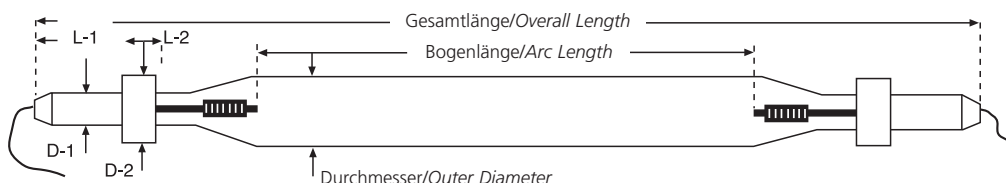
Bitte möglichst vollständig ausfüllen und zurückfaxen:
Please fill out the form as accurately as possible and fax it to:

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Firma	Company	
Strasse/Hausnr.	Street/code	
PLZ/Ort	ZIP code/City	
Land/Region	Country/Region	
Kontaktperson	Person in charge	
Telefon	Phone	
Telefax	Fax	
E-Mail	E-mail	
Internet	Internet	

Anwendung	Application	
Stückzahlen	Quantity	Muster/samples 1. Jahr/1st year
Referenztype	Reference type	

Gesamtlänge	Overall Length	[mm]	
Bogenlänge	Arc Length	[mm]	
Strahlerspannung	Emitter Voltage	[V]	
Strahlerstrom	Emitter Current	[A]	
Rohraußendurchmesser	Outer Diameter	[mm]	
Strahlerleistung	Emitter Power	[W]	
Spezifische Leistung	Specific Emitter Power	[W/cm]	



Pumpstutzen eingedrückt *flattened Exhaust Tube*
Vergoldung *Gold Ends*
Sockeltypbezeichnung *Base Type*

ja/yes ☐ nein/no ☐
ja/yes ☐ nein/no ☐

L1 D1
L2 D2

Litze 1
Durchmesser
Länge
Anschlussart

Lead 1
Diameter
Length
Connector Type

ja/yes ☐ nein/no ☐
ja/yes ☐ nein/no ☐

Litze 2
Durchmesser
Länge
Anschlussart

Lead 2
Diameter
Length
Connector Type

ja/yes ☐ nein/no ☐
ja/yes ☐ nein/no ☐

Dotierung *Doping* Fe ☐ Ga ☐

sonstige/other

Quarzart *Quartztype*
ozonbildend ☐
ozonarm ☐
ozonfrei ☐
synthetisch ☐

Quartztype
ozone producing
ozone reduced
ozone free
synthetic

Besonderheiten *Special features*



Von München-Stadt:

Über Autobahn A94: Autobahn A94 – Richtung „Passau“. Nach Ende Autobahn A94 weiter auf B12 Richtung „Passau“.

*Nach Ortsende „Hohenlinden“ (nach ca. 2 km) rechts Richtung „Wasserburg“. Nach ca. 1 km rechts nach „Steinhöring, Abersdorf“. An Kreuzung mit B304 rechts Richtung „Ebersberg“. Nach ca. 300 m in der Kurve sofort scharf rechts ⇒ Einfahrt BLV

Über B304: B304 Richtung „Wasserburg“. Über Haar, Baldham, Zorneding, Kirchseeon, Ebersberg nach Steinhöring. Vor Ortsausgang in der Kurve links ⇒ Einfahrt BLV

Vom Flughafen München:

Richtung „Erding“ nach Hohenlinden. In Hohenlinden an der Ampel links auf B12 Richtung „Passau“. weiter siehe oben * ff.

From München-City:

Via Autobahn A94 (motorway A94): Take motorway A94 direction „Passau“. At the end of the motorway still follow direction „Passau“ on highway B12.

*About 2 km after the village of Hohenlinden turn right towards „Wasserburg“. 1 km later again turn right to „Steinhöring, Abersdorf“. Follow this road to a crossing with highway B304, turn right towards „Ebersberg“ and after about 300 m turn right and you will find the entrance of BLV.

Via highway B304: Take highway B304 from München to „Wasserburg“. After having passed the villages of Haar, Zorneding, Kirchseeon, Ebersberg you will arrive at Steinhöring. Before leaving the village of Steinhöring you will find the entrance to BLV, clearly marked on the left.

From the airport München (MUC II)

Follow the direction „Erding, Hohenlinden“. In Hohenlinden at the traffic light turn left into highway B12 direction „Passau“. Following see above *



Allgemeine Informationen

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General notes

With the publication of this catalogue, all previous catalogues become invalid. Our emitters are available only in the versions and technical designs shown in this catalogue. For substantial bulk orders however, custom-made emitters or new developments may be possible after consultation with BLV. The emitters are approved for use in accordance with the instructions only.

We reserve the right to make any technical or design changes. Our current delivery and payment conditions as printed on the reverse of our order confirmation apply.

Any form of manipulation of our products or the packaging thereof, including but not limited to changes, modifications, re-etching is forbidden and will inter alia infringe our registered trademark rights. Such alterations can alter or negatively influence product specifications, can destroy our products and create collateral damage to other objects, for any of which BLV Licht- und Vakuumtechnik GmbH can in no case be held liable.

Note for supervisory authorities that the product conforms to European standards. **CE**





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XENON SHORT ARC LAMPS

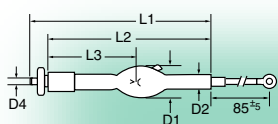
UXL/CXL SERIES

- 350- 2000 Watts
- Searchlight
- Followspot
- Projection

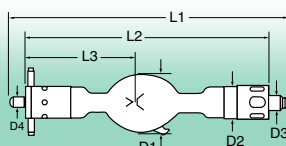
Please see Safety and Handling Instructions on page 85.



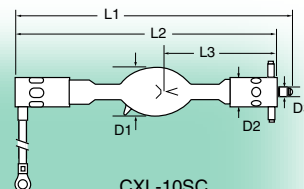
Watts	Ushio Ordering Code	Ushio Lamp Code	Rated Amps	Current Control Range A	Rated Voltage V	Forced Air Cooling m/sec	Arc Gap	Diameter mm				Length mm			Avg Life h
								(D1) max	(D2)	(D3)	(D4)	(L1)	(L2)	(L3)	
Xenon Short Arc															
350	5000350	UXL-351E-0	16	15-17	22	3-6	2.9	22	13	—	M8	133	120	66.5	1000
500	5000360	UXL-500D-0	25	17-25	20	4-6	4.0	29	20	M8P1.25	M8P1.25	234	204	95	1500(V) / 1200(H)
500	5000362	UXL-502HS-0	31	21-31	14	7-8	0.9	30	15	4	—	148	135	65	1200
550	5000368	UXL-553	25	17-25	22	7-8	3.1	30	15	M6P1.0	—	161	135	65	1500
1000	5000009	CXL-10SC	50	30-55	20	4-6	4.2	40	25	5/16-18 UNC	—	236	222	96.5	1500
1000	5001075	UXL-10SB	50	30-55	20	4-6	4.2	40	25	11	5/16-18 UNC	245	214	98.5	1500
1000	5000316	UXL-1000D-0	45	32-47	22	—	5.0	40	25	M10 P1.25	M8 P1.25	315	275	125	1500
1430	5001076	UXL-16SB	65	45-70	22	4-6	4.0	46.5	25	11	5/16-18 UNC	245	214	98.5	1500
1450	5001435	UXL-16SCB	65	45-70	22	4-6	4.0	46.5	25	with lead wire(L:270)	5/16-18 UNC	233	220	98.5	1500
1750	5000337	UXL-2000PR	70	56-70	25	6-9	6.0	45	25.4	—	10	365	320	145	2000
2000	5000012	CXL-20	80	60-85	25	7-10	6.0	55	27	M14x1.5	14	375	320	145	2400
2000	5001062	UXL-20FS	80	50-85	25	10-13	6.0	60	27	7.8	9.4	342	302	147	2000
2000	5000013	CXL-20R	70	50-85	29	10-13	6.0	60	27	12	10	370	320	145.0	2000



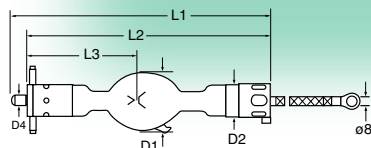
UXL-351E-0
Burn Position: Horizontal $\pm 15^\circ$



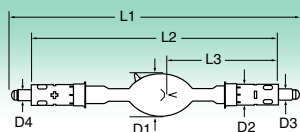
UXL-10SB / UXL-16SB
Burn Position: Horizontal $\pm 15^\circ$ Vertical $\pm 15^\circ$



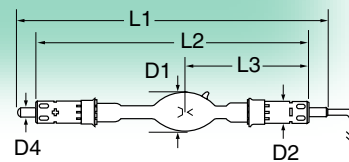
CXL-10SC
Burn Position: Horizontal $\pm 15^\circ$



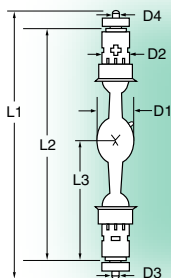
UXL-16SCB
Burn Position: Horizontal $\pm 15^\circ$ Vertical $\pm 15^\circ$



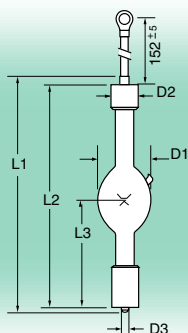
CXL-20
Burn Position: Horizontal $\pm 15^\circ$



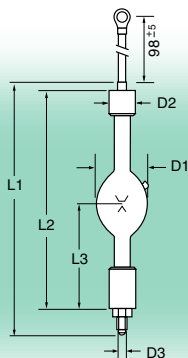
UXL-2000PR
Burn Position: Horizontal $\pm 10^\circ / \sim 45^\circ$



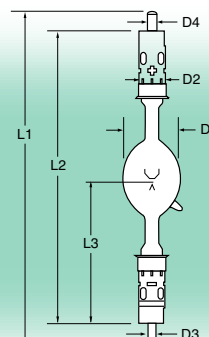
UXL-500D-0 / UXL-1000D-0
Burn Position: Horizontal $\pm 15^\circ$ Vertical $\pm 15^\circ$



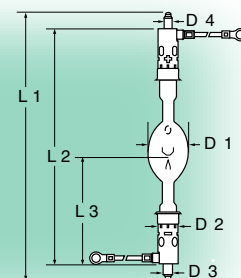
UXL-502HS-0
Burn Position: Vertical $\pm 15^\circ$



UXL-553
Burn Position: Horizontal $\pm 15^\circ$ Vertical $\pm 15^\circ$



UXL-20FS
Burn Position: Horizontal $\pm 15^\circ$ Vertical $\pm 15^\circ$



CXL-20R
Burn Position: Horizontal $\pm 30^\circ$ Vertical $\pm 30^\circ$

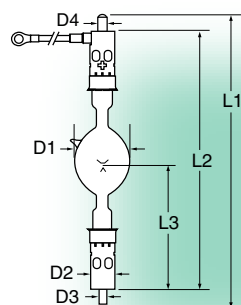
XENON SHORT ARC LAMPS

UXL/CXL SERIES

- 2000- 7000 Watts
- Searchlight
- Followspot
- Projection

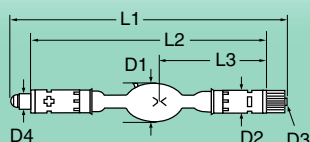
Please see Safety and
Handling Instructions
on page 85.

Watts	Ushio Ordering Code	Ushio Lamp Code	Rated Amps	Current Control Range A	Rated Voltage V	Forced Air Cooling m/sec	Arc Gap	Diameter mm				Length mm			Avg Life h
								(D1) max	(D2)	(D3)	(D4)	(L1)	(L2)	(L3)	
Xenon Short Arc															
2000	5001434	UXL-20SC	70	50-85	29	5-10	5.5	60	27	7.9	9.5	342	302	147.0	2000
2000	5000336	UXL-2000HA	80	60-85	25	7-10	6.0	52	27	M14 P1.5	14	370	320	145.0	2000
2000	5001063	UXL-2000FS	70	50-85	29	10-13	6.0	55	27	12	10	370	320	145.0	2000
2500	5001077	UXL-25SC	90	70-100	28	10-13	6.0	60	25	7.9	9.5	342	300	147.0	1500(V) / 1200(H)
3000	5000764	CXL-30R	60	100-110	28	10-13	7.0	70	27	14	13	428	382	171.0	1400
3000	5001079	UXL-30SC	100	60-110	30	5-10	6.0	60	27	7.9	9.5	342	302	147.0	1500(V) / 1200(H)
3000	5001064	UXL-3000FS	100	60-100	30	10-13	7.0	70	27	13	14	428	—	171.0	1200
4000	5000631	UXL-40SC	135	80-150	29	10-13	7.0	70	30	7.9	9.5	410	370	174.5	800
5000	5002044	UXL-50SCA	140	100-150	35	10-13	8.0	70	30	7.85	9.4	413	370	171.0	
6000	5000943	UXL-60SC	160	120-170	37	10-13	9.0	80	30	9.4	7.85	433	392	176.0	500
6000	5000860	CXL-60	160	110-170	37	10-13	9.0	80	30	14	14	417	381	170.0	600
7000	5000020	CXL-70	160	110-170	44	10-13	10.0	80	30	M14 P1.5	14	417	381	170.0	600
7000	5000634	UXL-70SC	160	120-170	42	10-13	10.0	80	30	7.9	9.4	433	392	171.0	500



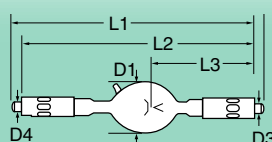
UXL-20SC

Burn Position:
Horizontal $\pm 30^\circ$
Vertical $\pm 30^\circ$



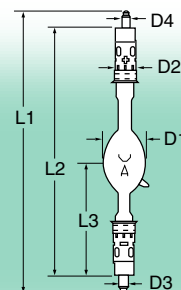
UXL-2000HA

Burn Position:
Horizontal $\pm 15^\circ$



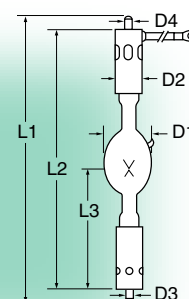
CXL-70

Burn Position:
Horizontal $\pm 15^\circ$



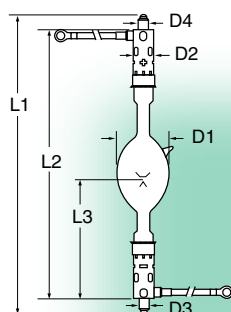
UXL-2000FS

Burn Position:
Horizontal $\pm 15^\circ$
Vertical $\pm 15^\circ$



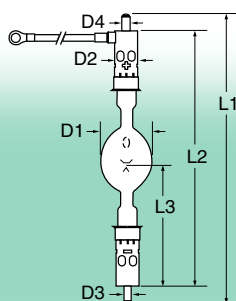
UXL-25SC
UXL-40SC

Burn Position:
Horizontal $\pm 15^\circ$
Vertical $\pm 15^\circ$



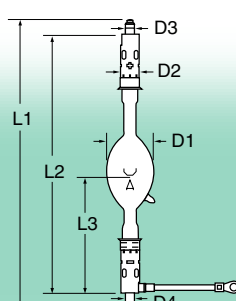
CXL-30R

Burn Position:
Horizontal $\pm 30^\circ$
Vertical $\pm 30^\circ$



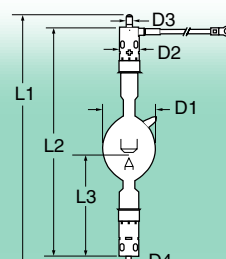
UXL-30SC

Burn Position:
Horizontal $\pm 30^\circ$
Vertical $\pm 30^\circ$



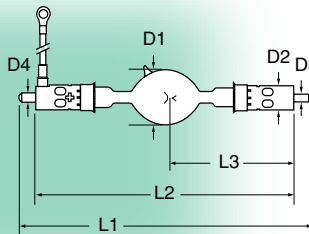
UXL-3000FS

Burn Position:
Horizontal $\pm 15^\circ$
Vertical



UXL-60SC
UXL-50SC

Burn Position:
Horizontal $\pm 15^\circ$
Vertical



UXL-70SC

Burn Position:
Horizontal $\pm 15^\circ / 45^\circ$

LAMP SPECIFICATION ABBREVIATIONS

RATINGS		DIMENSIONS		BURN POSITION (BURN POS)	
W	Watts	LL	Light Length (filament length)	BD	Base Down
V	Volts	LCL	Light Center Length	BD/30	Within 30° of vertical base down
kV	kilovolts	C-to-C	Contact to Contact	BD/45	Within 45° of vertical base down
A	Amps	OAL	Overall Average Length	BD/Hor	Base Down to Horizontal
h	hours	Dia	Diameter	BU	Base Up
K	kelvin	max	Maximum	BU/30	Within 30° of vertical base up
lm	lumens	All dimensions are approximate measurements in millimeters (mm)			
lm/W	lumens per Watt				
cd	candela				
cp	candle power				
CRI	Color Rendering Index				
m/sec	meters per second				

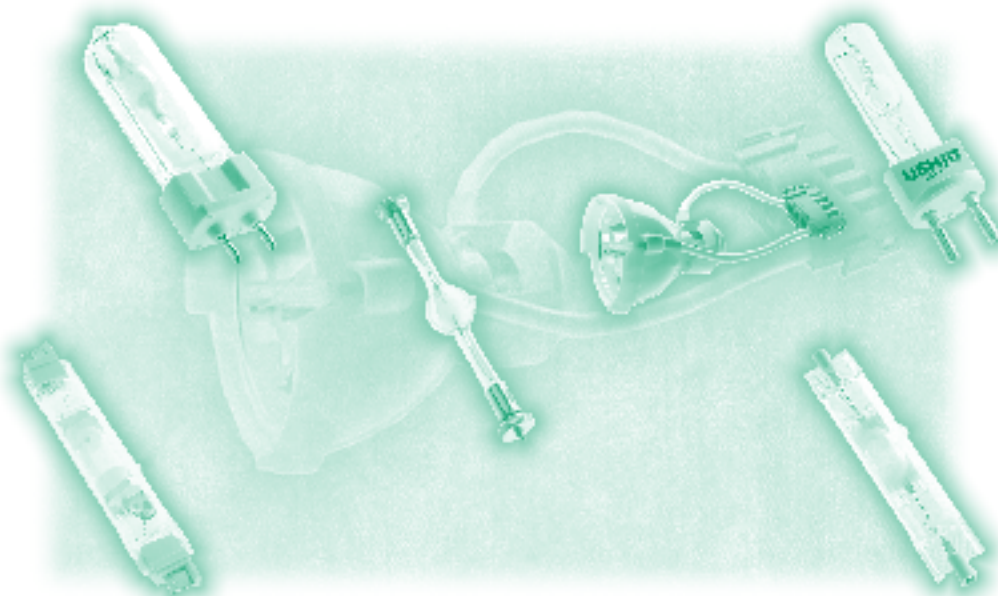
SAFETY AND HANDLING

TUNGSTEN HALOGEN AND INCANDESCENT LAMPS

- Always wear eye protection when installing Halogen lamps. Some Halogen lamps have internal pressures of several atmospheres.
- Halogen lamps operate at extremely high temperatures that can cause serious physical injuries and property damage.
- Only use Halogen lamps in Halogen-approved fixtures. Fixtures should fully contain any parts of the halogen lamp upon the event of a lamp burst.
- Do not use Halogen lamps in close proximity of paper, cloth or other combustible materials that can cause a fire hazard.
- Lamps are very fragile, do not drop, crush, bend or shake them.
- Do not touch the Halogen bulb surface or inside reflectors with your bare hands. Oils from skin can lead to breakage or shorten the life of the lamp. Use clean gloves or lint free cloth for installation and removal.
- Clean any dirt, oil, or lint away from the lamp with alcohol and a lint free cloth or tissue. Any foreign particles or materials on the bulb surface can cause hot spots on the bulb and result in lamp failure.
- Never touch the lamp when it is on, or soon after it has been turned off, as it is hot and will cause serious burns.
- Do not look directly at the operating lamp for any period of time; this may cause serious eye injury.
- Always turn off the electrical power before inserting, removing, or cleaning the lamp.
- Affix the lamp securely in the socket. Improper installations will cause electrical arcing, overheating and short life to lamp and socket. Replace lamp holders and sockets when necessary.
- Keep the temperature of the Halogen lamp seal below 350° C.
- Keep the temperature of the Halogen bulb wall above 250° C.
- Keep the temperature of the Halogen lamp bulb wall below 800° C.
- Make sure lamps of specified wattage and voltage are only used in appropriately rated fixtures. Unspecified use will lead to short lamp life, breakage and overheating of fixture.
- Lamps should not be operated beyond the total rated voltage. Avoid the use of dimmers that may drive your lamp over its rated voltage.
- Operate the lamp only in the indicated burn position. Failure to do so will lead to overheating and short life of the lamp.
- Use an external fuse when required.
- Do not allow one lamp to directly expose another. This may lead to overheating and shortened lamp life.

METAL HALIDE DISCHARGE LAMPS

- Always wear eye protection when installing Metal Halide discharge lamps. Some Metal Halide discharge lamps have high internal pressure even while cold.
- Metal Halide discharge lamps emit ultraviolet radiation which is harmful to eyes and skin!
- Metal Halide discharge lamps should only be used in enclosed fixtures with ultraviolet absorbing filter glass. Failure to do so may cause serious skin burn and eye damage. Do not use these lamps in fixtures where any un-filtered light is emitted from the fixture. Do not operate these lamps if the ultraviolet absorbing filter glass is broken or not installed.
- Metal Halide discharge lamps should only be operated in an enclosed fixture that safely contains all lamp parts in the event of a lamp burst or rupture. These lamps operate at a high internal pressure and at high temperatures. A lamp burst can occur causing physical injury and property damage.
- Lamps should never be operated beyond their rated useful life. The risk of a lamp burst increases with lamp age, temperature, improper operation and improper handling.
- Never bump, drop, apply excessive stress, or scratch the lamp. This could cause the lamp to burst! Do not operate any lamps with any traces of scratches, cracks, or physical damage.
- Never operate a lamp above or below its rated current or voltage. This may cause the lamp to leak or burst.
- Always turn off the electrical power before inserting, removing, or cleaning the lamp.
- Clean any dirt, oil, or lint away from the lamp with alcohol and a lint free cloth or tissue.
- Electrical connections should be clean and in good condition. Replace lamp holders and sockets when needed. Affix the lamp securely in the socket. Improper installations will cause electrical arcing, overheating and short life to lamp and socket.
- Never touch the lamp when it is on, or soon after it has been turned off, as it is hot and will cause serious burns. Lamps should be allowed to cool for a minimum of ten (10) minutes after the lamp is turned off.
- Do not use lamp in close proximity of paper, cloth or other combustible material that can cause a fire hazard.
- Do not look directly at the operating lamp for any period of time; this may cause serious eye injury.
- Metal Halide discharge lamps contain mercury. USHIO strives to preserve the environment and make efficient use of resources. Please refer to your local environmental laws regarding disposal and recycling of mercury containing lamps. For more information, please go to www.lamprecycle.org.



HIGH PRESSURE XENON ARC LAMPS

WARNING!

- Xenon arc lamps could burst when not in operation causing serious injuries! It is critical to follow safety instructions when handling Xenon arc lamps!
- Xenon arc lamps have a high internal pressure. Depending upon the lamp, the internal pressure can exceed 10 ATM or 147 PSI, even when not in operation.
- Always wear eye/face and body protection when handling Xenon arc lamps!
- Never bump, drop, apply excessive stress, or scratch the lamp. This could cause the lamp to burst!
- Always transport the lamp in the provided protective case or cover until installation!
- Save the protective case or cover and packaging materials (box) for lamps that have been used to their rated service life. Use the protective case when disposing of the lamps.
- Never touch the lamp when it is on, or soon after it has been turned off, as it is hot and will cause serious burns. Lamps should be allowed to cool for a minimum of ten (10) minutes after the lamp is turned off.
- Always operate the lamp in closed, protective housings.
- Do not look directly at the operating lamp for any length of time; this may cause serious eye injury.
- Do not use lamp in close proximity of paper, cloth or other combustible material that can cause a fire hazard.
- Some Xenon arc lamps produce Ozone that is considered toxic at relatively high concentration levels. Use ozone-producing lamps in lamp housings equipped with exhaust systems.
- Never operate a lamp above or below its rated current or voltage. This may cause the lamp to leak or burst.
- Affix the lamp in the correct polarity according to the lamp and fixture design.
- Affix lamps by hand tightening only. Do not use any tools to tighten nuts or the lamp itself. Any excessive stress to the lamp will cause a burst.
- Electrical connections should be clean and in good condition. Replace lamp holders and sockets when needed. Fix the lamp and its lead wire firmly to the terminals.
- Clean any dirt, oil, or lint away from the lamp with alcohol and a lint free cloth or tissue.
- Xenon arc lamps should not be used beyond their rated service life. Operation beyond the rated service life will cause the lamp to burst.
- The lamp must be operated under the specified conditions such as lamp amperage, voltage, and cooling conditions.
- Do not overcool the lamp. Air should never be directly forced on the bulb because uneven cooling will result.
- Recommended cooling methods are: air flow, N₂ gas flow, heat sink and an exhaust duct.
- The lamp base temperature must be kept below 200° C.

Xenon arc lamp disposal

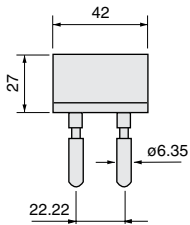
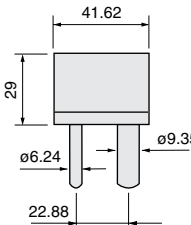
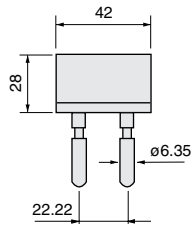
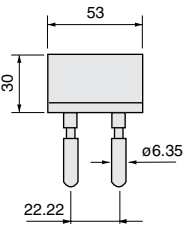
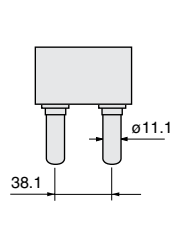
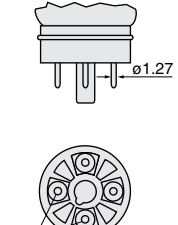
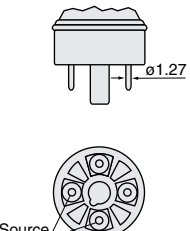
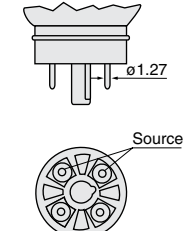
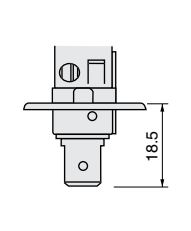
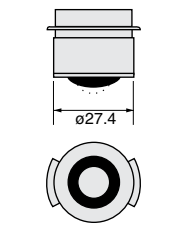
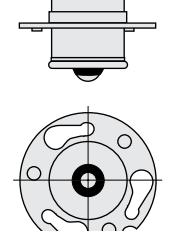
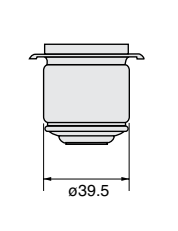
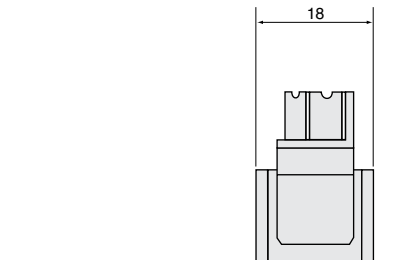
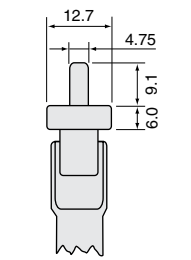
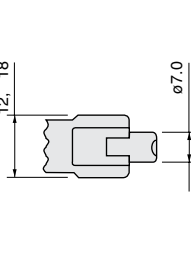
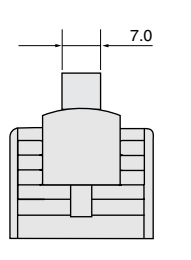
- Xenon arc lamps must be disposed of in a careful and proper manner in order to prevent injury.
 1. Wear a protective mask, leather gloves and protective clothing when handling a spent lamp.
 2. Place the used lamp in its original protective case and original cardboard packaging (box) that was provided when the lamp was new.
 3. Firmly attach tape around the original cardboard box to seal the lamp securely.
 4. From approximately three (3) feet in height, drop the cardboard box, with the lamp and protective case inside, onto a hard floor to break the lamp.

The specifications in this publication supercede all previously published specifications and may be subject to change for design and specification improvement without prior notice.

LAMP BASE TYPES

BA9s 	BA15d 	BA15s 	E10 	E11 	E12/15
E17 	E26 	E39 	E40 	G4 	GZ4
G5.3 	GX5.3/GU5.3 	GY5.3 (Flat Pin) 	G6.35 	G6.35/15X19 	GX6.35
GY6.35 	GZ6.35 	G7.9 	GX7.9 	G9.5 	GX9.5
GY9.5 (GZ9.5) 	GY9.5/15X19 	GY9.5/16X21 	GY9.5/16X24 	GY16 	G12

LAMP BASE TYPES

G22	GY22	G22/28X42	G22/30X53	G38	G17q-7
					
G17t-7	GX17q-7	P14.5s	P28s	P30s	P40s
					
Fc2		Pin Blade	R7s-12/ R7s-18	RX7s	
					

LAMP FILAMENT TYPES

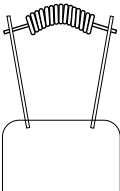
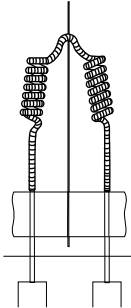
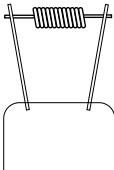
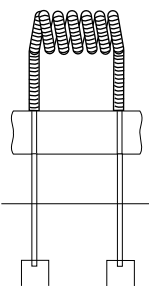
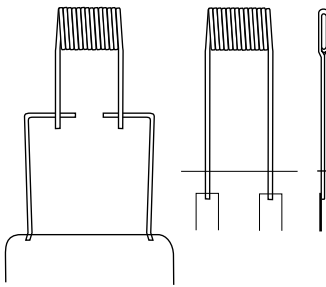
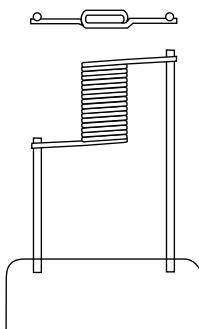
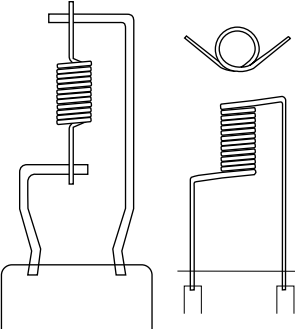
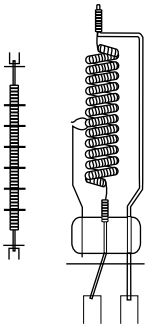
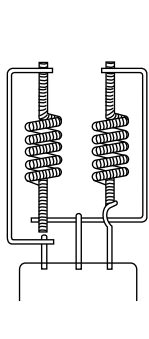
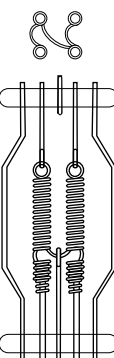
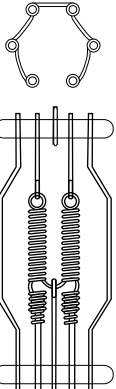
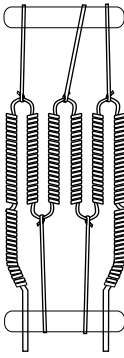
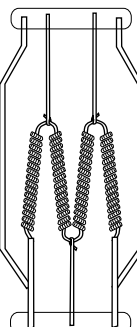
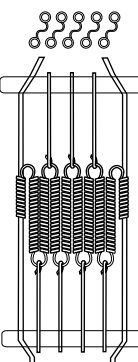
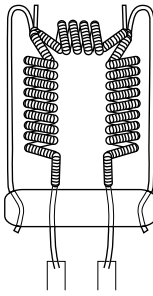
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MR-11 – 35mm Reflector

Miniature 2-Pin Base - GZ458

Double Contact Bayonet Base - BA15d59

MR-13 – 42mm Reflector

2-Pin Base - GX5.360

MR-16 – 50mm Reflector

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MR-16 – EUROSTAR REFLEKTO™

2-Pin Base - GU5.367

MR-16 – SUPERLINE™ & SUPERLINE REFLEKTO™

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MR-16 – WHITESTAR™, POPSTAR™, NEODYMIUM

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JDR Series

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250	1000026	BBA	25
20	1000028	BBF	65
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20	1000037	BBF/FG	65
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250	1000046	BCA	25
500	1000047	BCK	21
20000	1002165	BCM	54
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150	1000049	BEC	18
200	1000051	BEJ	18
750	1000053	BFK/BFL	22
250	1000057	BHB	64
30	1000060	BLC	18
30	1000061	BLK	19
50	1000062	BLX	18
100	1000065	BMV	18
75	1000066	BNF	18
1000	1000068	BRH	33
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50	1000071	BRL	38
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800	1001613	DXV/240V	33
1000	1000236	DXW	33
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6000	5000860	CXL-60	84
6000	5000943	UXL-60SC	83
7000	5000020	CXL-70	83
7000	5000634	UXL-70SC	83
Numerical Cross Reference			
10	1000857	64223 use JC6V-10WH3	36
20	1000532	64250 use FHE/ESB, JC6V-20W/G4	36
300	1000974	64512 use JCV120V-300WC (FNS)	50
300	1001762	64514 use JCD120V-300W	41
300	1002253	64516 use JCD220V-300W	41
650	1000983	64535 use JCV120V-650WC	50
1000	1001822	64573 use JCV120V-1000WC4	50
50	1000071	64610 use BRL	38
75	1000929	64617 use JCR/M12V-75W/HO	59
100	1000921	64624 use JCR/M12V-100W	59
100	1000490	64625 use FCR, JC12V-100W	39
100	1000504	64628 use FDT, JC12V-100W	39
150	1000492	64640 use FCS, JC24V-150WUI	38

Wattage	Ushio Ordering Code	Ushio Product Code	Page
Numerical Cross Reference			
150	1000505	64642 use FDV, JC24V-150V	38
150	1000503	64664 use FDS/DZE, JC24V-150W	39
400	1002141	64664 use EVD/L, JC36V-400H1	38

REPLACEMENT LAMPS FOR LCD AND DLP PROJECTORS

Model #		Order Code	Model #		Order Code	Model #		Order Code	Model #		Order Code	
A+K			BOXLIGHT			DUKANE			EIKI			
	AstroBeam X211	5002051		MP-40T	5001177		Image Pro 8052			LC-NB3 series (E)(S)(W)	5001307	
ASK				MP-41T	5001306		Image Pro 8801			LC-NB3W	5001307	
				MP-42T	5001384		Image Pro 8945	5001305		LC-NB4 series	5001307	
				MP-45T	5002023		Image Pro 9058	5001305		LC-SB10	5002035	
	C100			MP385T	5001306		ImagePro 8020	5000924		LC-SB20	5002031	
	C105	5002051		MP-650i			ImagePro 8020A	5000925		LC-SB21	5002031	
	C300HB			MP-86i			ImagePro 8048	5001114		LC-SB22	5001657	
	C80			SP-5T	5001178		ImagePro 8050			LC-SD10	5002033	
	C85	5002051		SP-6T	5001178		ImagePro 8800			LC-SD12	5002033	
	C90			SP-9T	5001383		ImagePro 8800A			LC-SD15	5001658	
	C95	5002051		XP-5T	5001178		ImagePro 8900			LC-SE10	5002037	
BENQ				XP-8T	5002022	EIKI				LC-SM1	5001178	
	DS650		CANON				EIP-1 (Type:L)	5001640		LC-SM2	5001178	
	DS650D				LV-5100	5001178		Serial #s E03X1009- E03X1308		LC-SM3	5001383	
	DS655				LV-5110	5001178		EIP-1 (Type: 03)	5001642		LC-SM4 series	5001436
	DS660				LV-5210	5002031		Serial #s E03X1309 and up			LC-SVGA860 (U)	5000795
	DX650				LV-5220	5002031		E0391001-E0891008			LC-SVGA870U	5000918
	DX650D				LV-5300	5000858		EIP-10V	5001643		LC-SX1 (U) (UL)	5000843
	DX655				LV-5500	5000918		EIP-25	5001644		LC-SX2 series	5000941
	DX660				LV-7105	5001178		EIP-200	5001648		LC-SX3 series	5000941
BOXLIGHT					LV-7210	5002029		EIP-1000T	5001645		LC-SX4 (A) (i)	5001305
					LV-7215	5002029		EIP-1500T	5001650		LC-SX4L	5001305
	20HD	5001306		LV-7320	5001040		EIP-2500	5001649		LC-SX6	5001656	
	3600 (A)	5000791		LV-7320	5001040		EIP-3500	5001654		LC-UXT1	5001304	
	3650	5000795		LV-7320E	5001040		EIP-4500 LAMP1	5001653		LC-UXT3	5001440	
	6000	5000795		LV-7325	5001040		Requires 2 different lamps			LC-VC1	5001177	
	6001	5000795		LV-7325E	5001040		EIP-4500 LAMP2	5001652		LC-W3	5001655	
	9600	5000843		LV-7340	5001307		Requires 2 different lamps			LC-W4	5001442	
	9601	5000843		LV-7345	5001307		LC-120 (PAL) (U)	5000794		LC-X1	5000843	
	CD-454m	5001114		LV-7500	5000918		LC-150	5000793		LC-X1000	5001306	
	CD-455m	5001114		LV-7510	5000937		LC-1510	5000793		LC-X1U	5000843	
	CD-600m	5002054		LV-7525	5001039		LC-1610	5000777		LC-X1UA	5000843	
	CD-725C			LV-7525E	5001039		LC-180	5000777		LC-X1UL	5000843	
	CD-750m	5002054		LV-7545	5001306		LC-180AR	5000777		LC-X2 series	5000941	
	CP-7T	5000858		LV-7555	5002023		LC-1810	5000777		LC-X3 series	5000941	
	CP-10T	5000858		LV-7565	5001641		LC-200	5000776		LC-X3L	5000941	
	CP-11T	5001040		LV-S1	5001436		LC-300	5000773		LC-X4	5001305	
	CP-12T	5001307		LV-S3	5002033		LC-3010	5000776		LC-X4A	5001305	
	CP-13T	5001040		LV-X1	5002022		LC-330	5000776		LC-X4L	5001305	
	CP-15T	5000919	CHRISTIE				LC-3310	5000776		LC-X5	5001442	
	CP-16T	5001307			Vivid White	5001304		LC-350	5000775		LC-X5/L	5001442
	CP-18T	5001307			Vivid Blue	5001305		LC-3510	5000775		LC-X50	5002023
	CP-19T	5001307			RR L6	5001305		LC-360	5000778		LC-X50M	5002023
	CP-33T	5001040			RR L8	5001304		LC-3610	5000778		LC-X6	5001656
	CP-36T	5001039			LC41 VIVID	5001384		LC-4000	5000777		LC-X60	5001641
	CP-37T	5001039			LS+58	5001656		LC-4200 (PAL)	5000777		LC-X70	5001641
	CP-300T	5001307			LW25U	5001306		LC-4300 (PAL)	5000778		LC-X982	5001039
	CP-305T	5001307			LX20	5001307		LC-4300 (S) (U)	5000778		LC-X983	5001039
	CP-306T	5001307			LX25	5002029		LC-4800	5000778		LC-X984	5001039
	CP-310T	5001307		LX25A	5002031		LC-5000	5000776		LC-X984A	5001039	
	CP-315T	5001307		LX26 VIVID	5001306		LC-5200	5000776		LC-X985	5001306	
	CP-320T	5002035		LX35 VIVID	5001306		LC-5200 (PAL)	5000776		LC-X986	5001384	
	CP-635i			LX32	5001445		LC-5300	5000775		LC-X990	5001039	
	CP-775i	5001445		LX33 VIVID	5001384		LC-5300 (PAL) (U)	5000775		LC-X999	5001039	
	FP-90T	5000941		LX25	5001306		LC-6000	5000779		LC-X999A	5001039	
	FP-95T	5000843		LX41	5001384		LC-6000UL	5000779		LC-X1100	5001384	
	FP-97T	5000941		LX45-PKG	5002023		LC-6200	5000779		LC-XB10	5002035	
	MP-20T	5000918		LX50	5001641		LC-6210	5000779		LC-XB15	5002029	
	MP-25T	5000937		LX65 (RR)	5001442		LC-7000 (U) (UE)	5000791		LC-XB20	5002029	
	MP-30T	5000937		LX66	5001656		LC-NB1 (U) (UW)	5000858		LC-XB22	5002029	
	MP-35T	5000937		LX77	5001440		LC-HDT10	5001651		LC-XB25	5002029	
	MP-36T	5001039		LX100 (RR)	5001440		LC-NB2U	5001040		LC-XB26	5002031	
	MP-37T	5001039					LC-NB2UW	5001040		LC-XB27N	5001657	
	MP-38T	5001039					LC-NB2W	5001040		LC-XB28	5002029	
	MP-39T	5001384								LC-XB30	5002029	

REPLACEMENT LAMPS FOR LCD AND DLP PROJECTORS

Model # Order Code			Model # Order Code			Model # Order Code			Model # Order Code		
EIKI			HITACHI			MITSUBISHI			NEC		
LC-XC1	5001177		CP-S960W			LVP-S290U	5002048		S250	5001046	
LC-XE10	5002037		CP-S960WA			LVP-S490			S290U	5001046	
LC-XG100	5001445		CP-S970W			LVP-S490U			X200	5000931	
LC-XG110	5002021		CP-X380W			LVP-S50			X250	5001046	
LC-XG200	5001445		CP-X385W			LVP-S50			X300	5001046	
LC-XG210	5002021		CP-X860W			LVP-S50U			HT1000	5002052	
LC-XGA860	5000795		CP-X958W			LVP-S50UX			HT1100	5002052	
LC-XGA970	5000795		CP-X960W			LVP-S50UX			LT60LP (K)	5002052	
LC-XGA970 (UE)	5000795		CP-X960WA			LVP-S51			LT140	5001055	
LC-XGA980U	5000918		CP-X970W			LVP-S51			LT220	5002052	
LC-XGA980UE	5000937					LVP-S51U			LT240	5002052	
LC-XGA982U	5000937					LVP-S51U			LT240K	5002052	
LC-XM1	5001178		IBM	ILV200	5002054	LVP-SA51U			LT245	5002052	
LC-XM2	5001383					LVP-SA51U			LT260	5002052	
LC-XM4 series	5002022		INFOCUS			LVP-SD10U	5002050		LT265	5002052	
LC-XNB1U	5000919		LP1000	5000929		LVP-SD200U			LT84	5001055	
LC-XNB2U	5001040		LP1000B	5000930		LVP-SL1	5002053		MT1000	5000816	
LC-XNB2UW	5001040		LP1200	5000931		LVP-SL1U	5002053		MT1035	5000952	
LC-XNB2UWM	5001040		LP210	5000878		LVP-SL2	5002053		MT1035 +	5000952	
LC-XNB3 series	5001307		LP220	5000878		LVP-SL2U	5002053		MT600	5000849	
LC-XNB3S	5001307		LP225	5000878		LVP-SL4SU			MT800	5000849	
LC-XNB3W	5001307		LP-260	5001178		LVP-SL4U			MT810	5000816	
LC-XNB4 series	5001307		LP340	5001114		LVP-X120E			WT600	5002052	
LC-XNB4S	5001307		LP340B	5001114		LVP-X200					
LC-XNB4MS	5001307		LP350	5001114		LVP-X200E					
LC-XNB5M	5001471		LP-500	5002054		LVP-X250U	5002048		PHILIPS		
LC-XNB5MS	5001471		LP-510	5002054		LVP-X290U	5002048		PXG30	5001445	
LC-XT1	5001176		LP-520	5002054		LVP-X300J	5002048		PXG30 Impact	5001445	
LC-XT2	5001304		LP-530	5002054		LVP-X300U	5002048				
LC-XT3	5001440		LP-5300	5002054		LVP-X390			POLAROID		
X1100	5001384		LP-530D	5002054		LVP-X390U			Polaview 238		
X986	5001384		LP580	5000923		LVP-X400U			Polaview 338		
XM4 Series	5002022		LP-630			LVP-X490			Polaview 350		
			LP-690	5002051		LVP-X490U			Polaview 360		
			LP720	5000924		LVP-X500					
			LP725	5000925		LVP-X500U			PROXIMA		
			LP730	5000924		LVP-X50U			DP-5155	5002051	
			LP735	5000925		LVP-X51			DP5600	5000791	
			LP740	5000927		LVP-X51U			DP5610	5000791	
			LP740B	5000928		LVP-X70			DP5900	5000795	
			LP750	5000926		LVP-X70B			DP5950	5000918	
			LP770	5002048		LVP-X70BU			DP-6105	5002051	
			LS-110	5002054		LVP-X70U			DP-6150		
						LVP-X70UX			DP-6155	5002051	
			JVC			LVP-X80			DP-6850		
			LX-D1000			LVP-X80U			DP-6850+		
			LX-D1010			LVP-XD10U	5002050		DP8300	5000776	
			LX-D1010			LVP-XD200U			DP8400	5000776	
						LVP-XD300U			DP9100	5000250	
			MEGAPOWER			LVP-XD350			DP9200	5000795	
			Ultrabeam 228	5000791		LVP-XD350U			DP9210	5000795	
			Ultrabeam 229	5000791		LVP-XD450U			DP9240	5001039	
						LVP-XL1	5002053		DP9250	5000918	
			LIESEGANG			LVP-XL1U	5002053		DP9250+	5000937	
			dv240			LVP-XL1XU			DP9260	5001039	
			dv350			LVP-XL2			DP9260+	5001039	
			dv355			LVP-XL25	5002049		DP9270	5001306	
			dv360			LVP-XL25U	5002049		DP9280	5001177	
						LVP-XL2U			DP9290	5001306	
			MITSUBISHI			LVP-XL30	5002049		DP9295	5001384	
			LVP-AS10	5002053		LVP-XL30U	5002049		DP9300	5000843	
			LVP-AX10	5002053		LVP-XL4U			Impression A4 Plus	5000925	
			LVP-ES100			LVP-XL5900U			Impression A6 Plus	5000925	
			LVP-HC1	5002053		LVP-XL5950			LS1	5000858	
			LVP-HC3			LVP-XL5U			LS2	5001040	
			LVP-S120			LVP-XL8U			LX	5000858	
			LVP-S250U	5002048					LX2	5001040	
EPSON											
ELP-3000	5000923										
ELP-3300	5000923										
ELP-5000	5000924										
ELP-5000XB	5000925										
ELP5100	5000925										
ELP-5500c	5000949										
ELP-7000	5000924										
ELP-7000XB	5000925										
ELP-7100	5000925										
ELP-7500	5000949										
ELP-8000i	5001105										
ELP-9000i	5001105										
EMP-54C											
EMP-600P											
EMP-74C											
EMP-800P											
EMP-810P											
EMP-811P											
EMP-820P											
EMP-8300i											
GENERAL ELECTRIC											
LCD-15	5000773										
LCD-16	5000773										
LCD-12	5000776										
LCD-10	5000793										
HITACHI											
CP-S370W											
CP-S860W											
CP-S958W											

REPLACEMENT LAMPS FOR LCD AND DLP PROJECTORS

Model #	Order Code	Model #	Order Code	Model #	Order Code	Model #	Order Code
PROXIMA		SANYO		SANYO		TOSHIBA	
Pro AV 9300	5000843	PLC-SU30	5001307	PLC-XU30	5001307	TLP-260D	
Pro AV 9310	5000843	PLC-SU31	5001307	PLC-XU31	5001307	TLP-260M	
Pro AV 9320	5000941	PLC-SU32	5001307	PLC-XU32	5001307	TLP-261	
Pro AV 9320L	5000941	PLC-SU33	5001307	PLC-XU33	5001307	TLP-261D	
Pro AV 9330	5000941	PLC-SU35	5001307	PLC-XU35	5001307	TLP-261M	
Pro AV 9340	5001305	PLC-SU37	5001307	PLC-XU36	5002035	TLP-450	
Pro AV 9350	5001176	PLC-SU38	5001307	PLC-XU37	5001307	TLP-450E	
Pro AV 9400	5000843	PLC-SU50	5002031	PLC-XU38	5001307	TLP-450J	
Pro AV 9400+	5000941	PLC-SU51	5002031	PLC-XU41	5002029	TLP-450U	
Pro AV 9400+L	5000941	PLC-SU60	5002037	PLC-XU45	5001471	TLP-451	
Pro AV 9400L	5000843	PLC-SW10	5001178	PLC-XU46	5001471	TLP-451E	
Pro AV 9410	5000941	PLC-SW15	5001178	PLC-XU47	5002029	TLP-451J	
Pro AV 9440	5001305	PLC-SW20	5001436	PLC-XU50	5002029	TLP-451U	
Pro AV 9500	5001305	PLC-SW20AR	5001436	PLC-XU50A	5002031	TLP-470A	
Pro AV 9550	5001305	PLC-SW30	5002033	PLC-XU55	5002029	TLP-470E	
Ultralight LS2	5001040	PLC-UF10L	5001304	PLC-XU55A	5002031	TLP-470EF	
Ultralight LSC	5001040	PLC-UF15	5001440	PLC-XU56	5002031	TLP-470J	
Ultralight LX		PLC-XF10N/NL	5000941	PLC-XU58	5002029	TLP-470K	
Ultralight LX2	5001040	PLC-XF10NZ/L	5000941	PLC-XU60	5002037	TLP-470U	
		PLC-XF12N/L	5000941	PLC-XW15 (N)	5001178	TLP-470UF	
RUNCO		PLC-XF20	5001176	PLC-XW20	5002022	TLP-470Z	
LCP-500	5000849	PLC-XF30L	5001305	PLC-XW20AR	5002022	TLP-471A	
SANYO		PLC-XF30N	5001305	PLV-1N	5000794	TLP-471E	
PLC-100	5000793	PLC-XF30NL	5001305	PLV-20N	5000778	TLP-471EF	
PLC-200N	5000773	PLC-XF31N	5001305	PLV-60 series	5001177	TLP-471J	
PLC-220N	5000776	PLC-XF31NL	5001305	PLV-70 (N)	5001306	TLP-471K	
PLC-250N	5000775	PLC-XF35N/L	5001442	PLV-HD10	5001651	TLP-471U	
PLC-300M	5000776	PLC-XF40L	5001304			TLP-471UF	
PLC-320M	5000776	PLC-XF41	5001304	SHARP		TLP-471Z	
PLC-350	5000775	PLC-XF45	5001440	DT-100	5001645	TLP-510	
PLC-350M	5000775	PLC-XF60	5001656	DT-400	5001650	TLP-510A	
PLC-355M	5000775	PLC-XP07N	5000937	XR-10S	5001648	TLP-510E	
PLC-400N	5000777	PLC-XP10N	5000918	XR-20X	5001649	TLP-510J	
PLC-500M	5000777	PLC-XP10NA	5000937			TLP-510K	
PLC-510M	5000777	PLC-XP17E	5001039	SONY		TLP-510U	
PLC-510M (N) NA	5000791	PLC-XP17N	5001039	VPL-PS10		TLP-510Z	
PLC-550M	5000778	PLC-XP18N	5001039	VPL-PX10		TLP-511	
PLC-5600N	5000795	PLC-XP208C	5001039	VPL-PX11		TLP-511A	
PLC-700M	5000779	PLC-XP20N	5001039	VPL-PX15		TLP-511E	
PLC-750M	5000779	PLC-XP218C	5001039	VPL-X200		TLP-511J	
PLC-755M	5000779	PLC-XP21N	5001039	VPL-X2000	5000858	TLP-511K	
PLC-8800N	5000795	PLC-XP30	5001177			TLP-511U	
PLC-8810N	5000795	PLC-XP40 (L)	5001306	TOSHIBA		TLP-511Z	
PLC-9000 (N) NA	5000843	PLC-XP41 (L)	5001384	TDP-D1		TLP-550	
PLC-9000NL	5000843	PLC-XP45 (L)	5001306	TDP-D2		TLP-550C	
PLC-EF10N (NL)	5000843	PLC-XP46 (L)	5001384	TDP-S2	5001114	TLP-551	
PLC-EF10NA/L	5000941	PLC-XP50	5002023	TDP-S20		TLP-551C	
PLC-EF10NAZ/L	5000941	PLC-XP51	5001641	TDP-S20B		TLP-560	
PLC-EF10NZ/L	5000941	PLC-XP55	5002023	TDP-S21		TLP-560D	
PLC-EF12N/NL	5000941	PLC-XP56	5001641	TDP-S21B		TLP-561	
PLC-EF30L	5001305	PLC-XR70N	5000795	TDP-S25		TLP-561D	
PLC-EF30N	5001305	PLC-XT10	5001445	TDP-S25U		TLP-570	
PLC-EF30NL	5001305	PLC-XT10A	5002021	TDP-S3	5002054	TLP-570E	
PLC-EF31N	5001305	PLC-XT11	5002021	TDP-SC25		TLP-570U	
PLC-EF31NL	5001305	PLC-XT15	5001445	TDP-SC25U		TLP-571	
PLC-EF60	5001656	PLC-XT15A	5002021	TDP-SW20		TLP-571E	
PLC-SP10N	5000918	PLC-XT16	5002021	TDP-T250		TLP-571U	
PLC-SP20N	5000937	PLC-XU07N	5000919	TDP-T3	5002054	TLP-620	
PLC-SU07N	5000858	PLC-XU10N	5000919	TDP-T40		TLP-650	
PLC-SU10N	5000858	PLC-XU10NA	5000919	TDP-T40U		TLP-650E	
PLC-SU208C	5001040	PLC-XU20B	5001040	TDP-TW300		TLP-650J	
PLC-SU20E	5001040	PLC-XU20N	5001040	TLP-250		TLP-650U	
PLC-SU20N	5001040	PLC-XU21N	5001040	TLP-250C		TLP-651	
PLC-SU22N	5001040	PLC-XU22N	5001040	TLP-251		TLP-651E	
PLC-SU25	5002035	PLC-XU25	5002029	TLP-251C		TLP-651J	
		PLC-XU25A	5002031	TLP-260		TLP-651U	

REPLACEMENT LAMPS FOR LCD AND DLP PROJECTORS

Model #	Order Code	Model #	Order Code	Model #	Order Code
TOSHIBA		TOSHIBA		TOSHIBA	
TLP-660		TLP-MT7		TLP-X20DU	
TLP-660E		TLP-MT7E		TLP-X20E	
TLP-661		TLP-MT7J		TLP-X20J	
TLP-661E		TLP-MT7U		TLP-X20U	
TLP-670E		TLP-S10		TLP-X21	
TLP-670EF		TLP-S10U		TLP-X21C	
TLP-670J		TLP-S200		TLP-X21DC	
TLP-670U		TLP-S201		TLP-X21DE	
TLP-670UF		TLP-S220		TLP-X21DJ	
TLP-671E		TLP-S221		TLP-X21DU	
TLP-671EF		TLP-S30		TLP-X21E	
TLP-671J		TLP-S30M		TLP-X21J	
TLP-671U		TLP-S30MU		TLP-X21U	
TLP-671UF		TLP-S30U		TLP-X4100U	5001384
TLP-680		TLP-S40		TXP-B2	
TLP-680E		TLP-S41		TXP-X10	
TLP-680J		TLP-S60		TXP-X11	
TLP-680U		TLP-S61		TY-G1U	
TLP-681		TLP-S70		TY-G3	
TLP-681E		TLP-S70U		TY-G3E	
TLP-681J		TLP-S71		TY-G3U	
TLP-681U		TLP-S71U		TY-G5	
TLP-710		TLP-S80		TY-G5U	
TLP-710E		TLP-S80U		TY-G7	
TLP-710H		TLP-S81		TY-G7U	
TLP-710J		TLP-S81U			
TLP-710U		TLP-T400			
TLP-711		TLP-T401			
TLP-711E		TLP-T420			
TLP-711H		TLP-T421			
TLP-711J		TLP-T50			
TLP-711U		TLP-T500			
TLP-770		TLP-T501			
TLP-770E		TLP-T50M			
TLP-770H		TLP-T50MU			
TLP-770J		TLP-T50U			
TLP-770U		TLP-T520			
TLP-771		TLP-T521			
TLP-771E		TLP-T600			
TLP-771H		TLP-T601			
TLP-771J		TLP-T60M			
TLP-771U		TLP-T61M			
TLP-780		TLP-T620			
TLP-780E		TLP-T621			
TLP-780J		TLP-T700			
TLP-780U		TLP-T701			
TLP-781		TLP-T70M			
TLP-781E		TLP-T71M			
TLP-781J		TLP-T720			
TLP-781U		TLP-T721			
TLP-790		TLP-X10			
TLP-791		TLP-X10C			
TLP-B2		TLP-X10E			
TLP-B2C		TLP-X10J			
TLP-B2E		TLP-X10U			
TLP-B2J		TLP-X11			
TLP-B2S		TLP-X11C			
TLP-B2SE		TLP-X11E			
TLP-B2SU		TLP-X11J			
TLP-B2U		TLP-X11U			
TLP-B2ultra		TLP-X20			
TLP-B2ultraE		TLP-X20C			
TLP-B2ultraU		TLP-X20DC			
TLP-MT4		TLP-X20DE			
TLP-MT4		TLP-X20DJ			
				VIEWSONIC	
				PJ1060	
				PJ750	
				PJ860	



Projector Manufacturers are constantly adding new projector models and delisting existing projectors. Because of this, it is strongly recommended that you contact USHIO to confirm cross reference information, availability and price for LCD and DLP Projection Lamps. Call Ushio Customer Service to request updated Cross Reference Information. Information is subject to change without prior notification.

INCANDESCENT PROJECTION LAMPS

SLIDE, FILM AND OPTICAL PROJECTION LAMPS

- Double Contact Bayonet Base - BA15d
- Single Contact Bayonet Base BA15s
- Operate Base Down (except as noted)



Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
				Dia (A)	OAL (B)	LCL (C)						
Double Contact Bayonet Base – BA15d												
30	1000060	BLC	120	35	60.3	34.9	CC-2V	400	2775	50	BD/Hor	1
35	1000260	EAJ	12	20	101.6	47.6	C-8	650	—	300	Any	2
50	1000062	BLX	120	35	60.3	34.9	CC-2V	780	2850	50	BD/Hor	1
75	1000066	BNF	120	35	60.3	34.9	CC-2V	1300	2900	50	BD/Hor	1
75	1000128	CBX/CBS	120	25	79.4	34.9	CC-13	1250	2950	50	BD	3
100	1000130	CDJ	120	25	79.4	34.9	CC-2V	2000	2975	50	BD	3
100	1000132	CEA/CEB/CDK	120	25	78.0	35.0	CC-13	1800	2970	50	BD	3
150	1000049	BEC	120	38	66.7	34.9	CC-2V	3500	3075	25	BD	2
150	1000135	CGP/CFK	120	25	92.1	34.9	CC-13	2900	3100	50	BD	3
200	1000051	BEJ	120	38	66.7	34.9	CC-2V	4600	3100	25	BD	2
300	1000138	CLX/CMB	120	27	104.8	34.9	C-13	7600	3200	25	BD	3
Single Contact Bayonet Base – BA15s												
75	1000100	BXE	10	25	75.0	40.5	C-8	1700	—	100	BD	3
100	1000104	BXT	12	25	79.4	34.9	CBar6	2800	3250	25	BD	4
100	1000065	BMV	120	35	60.3	34.9	CC-13	1860	2950	50	BD/Hor	1
100	1000129	CDD	120	25	79.4	34.9	CC-2V	2000	2975	50	BD	4
100	1000131	CDS/CDX	120	25	79.4	34.9	CC-13	1800	2900	50	BD	4
120	1000133	CEM	120	25	79.4	34.9	CC-13	1950	3000	200	BD	4
150	1000134	CEW	120	25	92.1	34.9	CC-13	2900	3100	50	BD	4
150	1000136	CHK	120	25	92.1	34.9	CC-13	2995	2850	500	BD	4
300	1000137	CLS/CLG	120	27	104.8	34.9	C-13	7700	3200	25	BD	4
300	1000139	CMV/CMT	120	27	104.8	34.9	C-13D	7300	3100	25	BD	4
300	1000151	CYC	120	29.5	81.0	34.9	C-13	7400	3150	25	BD	4

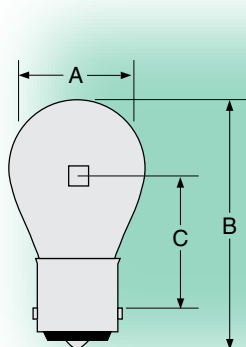


Fig.1

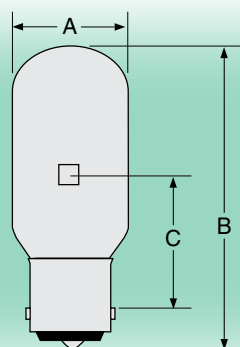


Fig.2

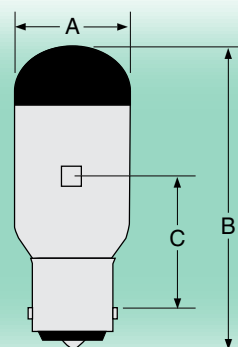


Fig.3

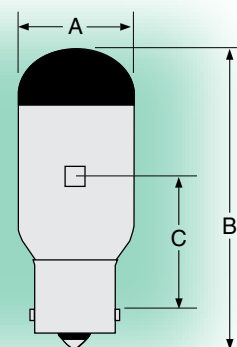


Fig.4

INCANDESCENT PROJECTION LAMPS

• Candelabra Base - E12/15

Mogul Screw Base - E39

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
				Dia (A)	OAL (B)	LCL (C)						
Candelabra Base – E12/15												
30	1000061	BLK	130	30.0	57.2	41.3	CC-2V	420	2700	50	Any	1
Mogul Screw Base – E39												
1000	1001611	DKZ	120	164.0	330	241.3	CC-8	28000	3200	750	Any	2
1000	1000213	DPT	120	64.0	230	125.0	C-13	29000	3200	50	BD	3
1000	1000219	DRW	120	64.0	230	125.0	C-13D	27400	3250	25	BD	3

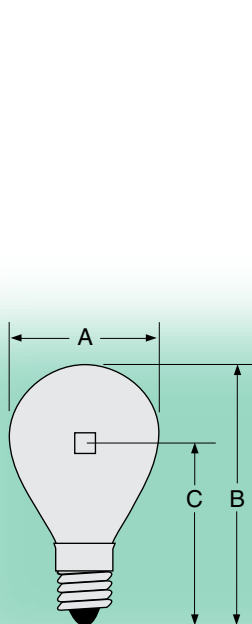


Fig.1

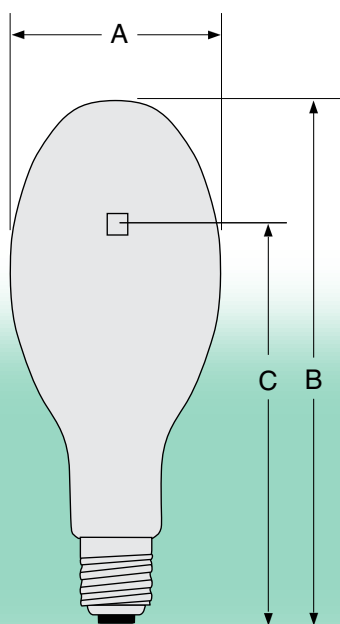


Fig.2

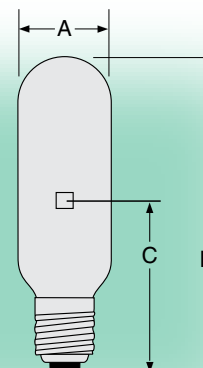


Fig.3

INCANDESCENT PROJECTION LAMPS

- 4-Pin Base - G17q-7
- 1 9/16" (39.7mm), 1 3/4" (44.5mm) Light Center Length
- Proximity and Opaque Reflector Lamps

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
				Dia	OAL	LCL						
				(A)	(B)	(C)						
4-Pin Base – G17q-7 - 1 9/16" (39.7mm), 1 3/4" (44.5mm) LCL												
80	1000186	DFE	30	38.0	82.0	39.7	CC-8 ●	—	3200	15	BD/Hor	1
80	1000192	DGB/DMD	30	38.0	85.7	39.7	CC-6 ●	—	3200	15	BD	1
150	1000196	DJL	120	44.5	88.9	39.7	CC-8 ○	—	3150	15	BD/Hor	1
150	1000166	DCH/DJA/DFP	120	25.0	90.5	39.7	CC-6 ●	—	3150	—	BD	1
150	1000188	DFN/DFC	125	38.0	81.0	39.7	CC-6 ●	—	3150	15	Horiz	1
300	1000119	CAL/CXP	120	32.0	101.6	39.7	C-13 ●	—	3200	25	BD	2
400	1000163	DAT/DAK	120	32.0	103.0	39.7	C-13D ○	10000	3200	25	BD	3
500	1000164	DAY/DAK	120	32.0	104.0	39.7	C-13D ○	12500	3200	25	BD	3
500	1000156	CZA/CZB	120	32.0	101.6	39.7	C-13D ●	—	3300	25	BD	2
500	1000161	DAH	120	38.0	93.0	44.5	C-13D ●	—	3300	200	Horiz	4
500	1000183	DEK/DFW/DHN	120	38.0	89.0	44.5	C-13D ○	—	3200	25	Horiz	4

- Opaque Reflector
- Proximity Reflector

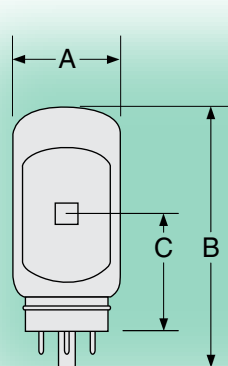


Fig.1

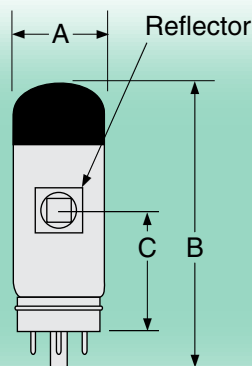


Fig.2

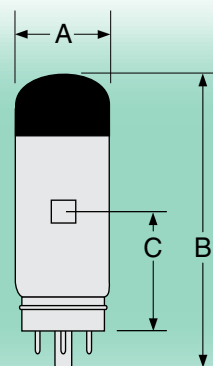


Fig.3

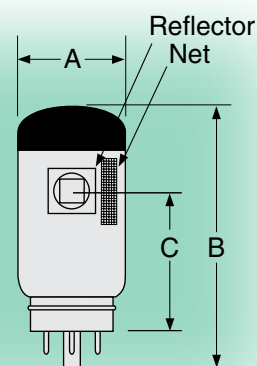


Fig.4

INCANDESCENT PROJECTION LAMPS

- 4-Pin Base - G17t-7
- 1 $\frac{5}{16}$ " (33.4mm) Light Center Length
- Proximity and Opaque Reflector Lamps

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm			Filament Type	Color Temp K	Avg Life h	Burn Position	Fig No
				Dia	OAL	LCL					
				(A)	(B)	(C)					
4-Pin Base – G17t-7 - 1 9/16" (39.7mm) LCL											
500	1000047	BCK	120	19.5	88.9	38.7	C-13D 	3250	50	BD/Hor	1

○ Proximity Reflector

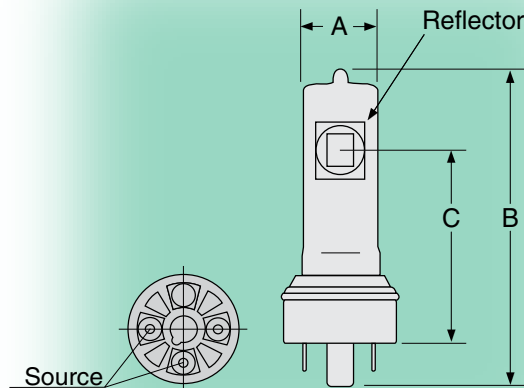


Fig.1

INCANDESCENT PROJECTION LAMPS

FILM AND OVERHEAD PROJECTION LAMPS

- Medium Prefocus Base - P28s
- 2 3/16" (55.5mm) and 3 1/2" (88.9mm) Light Center Length
- Medium Screw Base - E26
- 3" (76mm) Light Center Length

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
				Dia (A)	OAL (B)	LCL (C)						
Medium Prefocus Base – P28S - 2 3/16" (55.5mm) LCL												
300	1000147	CXK	120	32.0	146	55.6	C-13	7500	3200	25	BD	1
500	1000160	CZX/DAB	120	32.0	146	55.6	C-13D	12500	3200	25	BD	1
500	1000179	DEB	120	38.0	144	88.9	C-13D	9000	2850	800	BU	2
500	1000205	DMX	120	64.0	144	55.5	C-13	13200	3200	50	BD	3
500	1000211	DNW	120	64.0	145	55.5	C-13	10000	3050	500	BD/Hor	3
750	1000053	BFK/BFL	120	64.0	146	55.5	C-13	17500	3100	200	BD	4
750	1000170	DDB/DDW	120	38.0	146	55.6	C-13D	20000	3250	25	BD	1
750	1000178	DDY	120	38.0	144	55.5	C-13D	17000	2950	200	BD	1
1000	1000189	DFT	120	38.0	144	55.5	C-13D	27400	3250	25	BD	1
1000	1000217	DRB/DRC	120	64.0	144	55.5	C-13	28000	3250	50	BD	3
1000	1000218	DRS	120	64.0	144	55.5	C-13D	27400	3250	25	BD	3
1000	1000227	DWK	230	64.0	146	55.6	C-13	25000	3100	50	BD	3
Medium Screw Base – E26 - 3" (76mm) LCL												
750	1000169	DCX	120	38.0	139.7	76.2	C-13D	19500	3200	25	BD	5

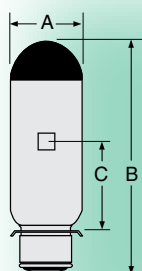


Fig.1

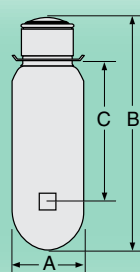


Fig.2

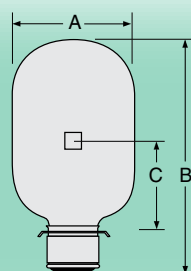


Fig.3

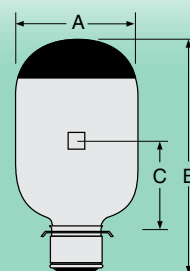


Fig.4

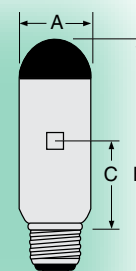


Fig.5

INCANDESCENT PROJECTION LAMPS

- Projection Sound Lamps
- Single Contact Prefocus Base - P30s
- Mogul Prefocus Base - P40s

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Amps	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
					Dia (A)	OAL (B)	LCL (C)						
Single Contact Prefocus Base – P30s													
3	1000070	BRK	4	0.75	16	60	28.5	C-8	30	—	50	Any	1
50	1000148	CXL/CXR	8	—	43	96	47.0	C-6	36	3200	25	BD	2
Mogul Prefocus Base – P40s													
1500	1000221	DTJ	120	—	64	242	87.3	C-13D	42500	3200	25	BD	3

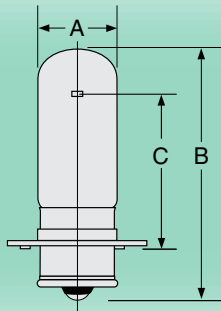


Fig.1

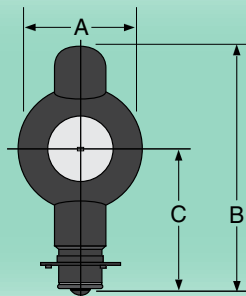


Fig.2

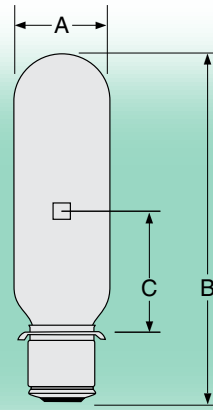
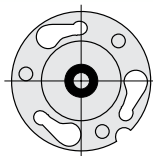


Fig.3



INCANDESCENT PHOTOGRAPHIC ENLARGER LAMPS

- **Single Contact Bayonet Base - BA15s**
- **Medium Screw Base - E26**

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm		Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
				Dia (A)	OAL (B)					
Single Contact Bayonet Base – BA15s										
75	1001265	PH111A, S-11	125	34.9	60.3	1120	2900	25	BD/Hor	1
Medium Screw Base – E26										
75	1001266	PH140, S-14	120	44.45	125.4	1200	2900	50	Any	2
75	1001267	PH211, A-21	115-125	66.68	176.2	1200	3000	100	Any	3
150	1001268	PH212, A-21	115-125	66.68	176.2	2800	3050	100	Any	3
250	1001269	PH213, A-21 NO.1	115-125	66.68	176.2	7000	3400	3	Any	3

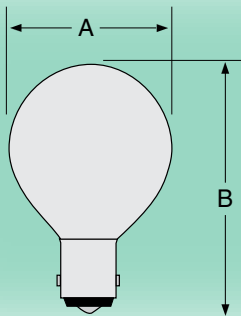


Fig.1

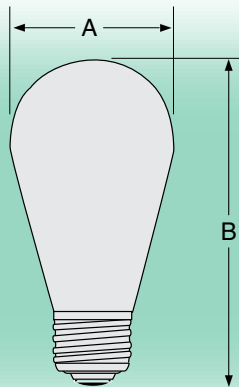


Fig.2

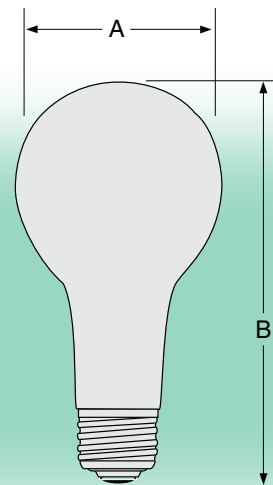


Fig.3

INCANDESCENT PHOTO FLOOD LAMPS

- Medium Screw Base - E26
- Inside Frosted and Blue Bulbs
- 115-120 Volts

Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Dimensions mm		Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Application	Fig No
				Dia (A)	OAL (B)						
Medium Screw Base – E26											
250	1000026	BBA, A-21 NO.1	115-125	66.68	125.4	8500	3400	3	Any	Photoflood	1
250	1000046	BCA, A-21 NO. B1 BLUE	115-125	66.68	125.4	5000	4800	3	Any	Photoflood	1
250	1000265	ECA, A-23	120	73.03	152.4	6500	3200	20	Any	Photoflood	1
300	1000024	BAH, INC115V-300W	115	66.68	125.4	9300	3200	20	Any	Photocopy	1
500	1000263	EBV, PS-25 NO.2	115-125	79.38	176.2	17000	3400	6	Any	Photoflood	2
500	1000264	EBW, PS-25 NO. B2/BLUE	115-125	79.38	176.2	10500	4800	6	Any	Photoflood	2
500	1000266	ECT, PS-25 3200K	120	79.38	176.2	13650	3200	60	Any	Photoflood	2

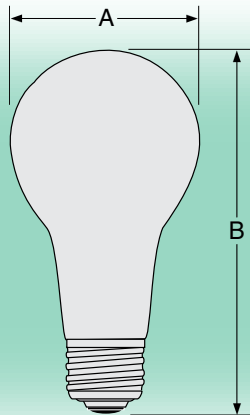


Fig.1

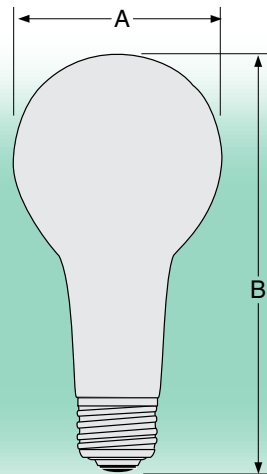


Fig.2

INCANDESCENT PHOTO FLOOD LAMPS

- Medium Screw Base - E26
- 120 Volts



Watts	Ushio	Ushio	Volts	Dimensions mm		Color	Avg	Burn	Fig
	Ordering Code	Lamp Code		Dia	OAL	Temp	Life	Position	No
				(A)	(B)				
Medium Screw Base – E26									
500	1000231	DXB, INC120V-500W	120	127.0	168.3	3400	6	Any	1
500	1000262	EAL, INC120V-500W	120	127.0	168.3	3200	15	Any	1

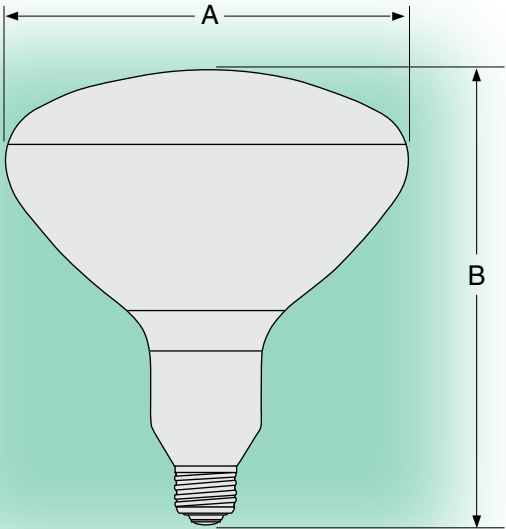


Fig.1

ENTERTAINMENT & PHOTOGRAPHIC FLASH LAMPS CROSS REFERENCE

Lamp Code	Lamp Description	Watts	Volts	Other	System Cross Reference
Entertainment Flash					
5000916	UA-AF1, 1000W, 400V	1000	400		Dataflash HO1
5000177	UA-DF1, 1000W, 400V	1000	400		Dataflash SO1
Photographic Flash					
5000153	UA-20	400	400-450	B-G53	Photogenic H4-6HD Norman 120 Lumedyne #090 (dm15) (FT400)
5000154	UA-20UV	400	400-450	B-G53UV	Photogenic H4-6Hd-UV
5000156	UA-40	400	400-450		Norman 400B
5000157	UA-40UV	400	400-450		Norman 400B-UV
5000175	UA-98UV	2400	600-1000	B-G61UV	Speedotron MW8QVC (14571)



UA-DF1



UA-20



UA-40



UA-98UV

QUARTZ HALOGEN LAMPS • DOUBLE ENDED

J SERIES

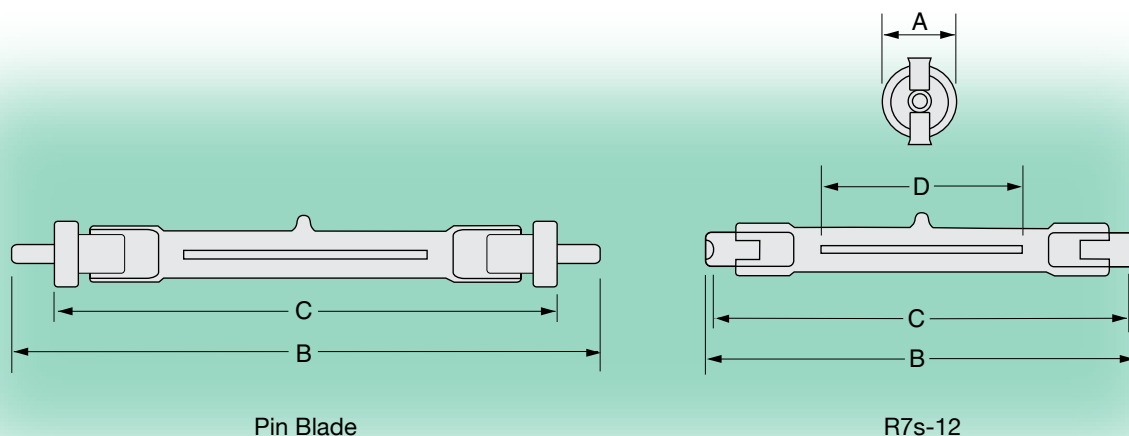
- Only for Use in Approved Enclosed Halogen Fixtures
- Recessed Single Contact & Pin Blade Base
- Compact CC-8 & Linear C-8 Filaments
- Even, Linear Illumination

• T2.5 & T4



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	C-to-C (C)				
Pin Blade Base - OAL $\approx 5\frac{11}{16}$ " (145mm) – T4									
500	1000729	J130V-500WPB	12.7	145.0	127.0	C-8	11000	2000	Clear
R7s-12 Base - OAL $\approx 3\frac{1}{8}$ " (80.3mm) – T2.5, T4*									
100	1000698	J120V-100W/79MM SHORT	8.0	80.3	74.9	CC-8	1450	1500	Clear
100	1000721	J130V-100W/79MM SHORT	8.0	80.3	74.9	CC-8	1450	1500	Clear
100	1000762	J240V-100W/79MM SHORT	8.0	80.3	74.9	CC-8	1250	1500	Clear
150	1001734	J12V-150WA/80*	12.0	85.5	80.0	C-8	2700	2000	Clear
150	1000701	J120V-150W/79MM SHORT	8.0	80.3	74.9	CC-8	2400	1500	Clear
150	1000723	J130V-150W/79MM SHORT	8.0	80.3	74.9	CC-8	2400	2000	Clear
150	1000751	J230V-150W/79MM SHORT	8.0	80.3	74.9	CC-8	1950	1500	Clear
150	1000765	J240V-150W/79MM SHORT	8.0	80.3	74.9	CC-8	1950	1500	Clear
200	1000703	J120V-200W/79MM SHORT	8.0	80.3	74.9	CC-8	3460	2000	Clear
200	1000705	J120V-200WF/79MM SHORT	8.0	80.3	74.9	CC-8	3400	2000	Frosted
200	1000725	J130V-200W/79MM SHORT	8.0	80.3	74.9	CC-8	3460	2000	Clear
250	1001737	J120V-250WG/83	8.0	—	80.0	C-8	4000	2000	Clear
250	1000707	J120V-250W/79MM SHORT	8.0	80.3	74.9	CC-8	4500	2000	Clear
250	1000773	J240V-250W/79MM SHORT	8.0	80.3	74.9	CC-8	3800	2000	Clear
300	1000709	J120V-300W/79MM SHORT	8.0	80.3	74.9	CC-8	5900	2000	Clear
300	1000727	J130V-300W/79MM SHORT	8.0	80.3	74.9	CC-8	5900	2000	Clear

With greater economy through long life and high output, J series lamps are ideal for flood lighting wide areas for both indoor and outdoor lighting installations.



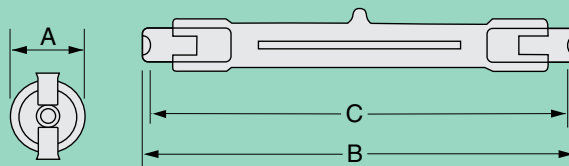
QUARTZ HALOGEN LAMPS • DOUBLE ENDED

J SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Recessed Single Contact Base - R7s-12
- Compact CC-8 & Linear C-8 Filaments
- T2.5 & T4



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	C-to-C (C)					
R7s-12 Base - OAL≈ 4 11⁄16" (119.6mm) – T 2.5										
100	1000697	J120V-100W/119MM LONG	8.0	119.6	114.2	C-8	1450	2750	1500	Clear
100	1000720	J130V-100W/119MM LONG	8.0	119.6	114.2	C-8	1450	2750	1500	Clear
100	1000761	J240V-100W/119MM LONG	8.0	119.6	114.2	C-8	1250	—	1500	Clear
150	1000719	J12V-150WG	8.0	119.6	114.2	C-8	2400	2900	1500	Clear
150	1000700	J120V-150W/119MM LONG	8.0	119.6	114.2	C-8	2400	2800	1500	Clear
150	1000722	J130V-150W/119MM LONG	8.0	119.6	114.2	C-8	2400	2850	1500	Clear
150	1000764	J240V-150W/119MM LONG	8.0	119.6	114.2	C-8	1950	2750	1500	Clear
200	1000704	J120V-200WF/119MM LONG	8.0	119.6	114.2	C-8	2790	—	2000	Frosted
200	1000702	J120V-200W/119MM LONG	8.0	119.6	114.2	C-8	2850	2900	2000	Clear
200	1000724	J130V-200W/119MM LONG	8.0	119.6	114.2	C-8	2850	2900	2000	Clear
200	1000770	J240V-200W/119MM LONG	8.0	119.6	114.2	C-8	3200	2850	1500	Clear
250	1000706	J120V-250W/119MM LONG	8.0	119.6	114.2	C-8	4500	2900	2000	Clear
300	1000777	J24V-300WG	8.0	119.6	114.2	C-8	5000	2900	1500	Clear
300	1000779	J32V-300WG	8.0	119.6	114.2	C-8	5000	2900	1500	Clear
300	1000291	EHM, J120V-300W	8.0	119.6	114.2	C-8	5900	3000	2000	Clear
300	1000296	EHZ, J120V-300WF	8.0	119.6	114.2	C-8	5770	3000	2000	Frosted
300	1000726	J130V-300W/119MM LONG	8.0	119.6	114.2	C-8	5900	—	2000	Clear
300	1000756	J230V-300W	8.0	119.6	114.2	CC-8	4800	2900	2000	Clear
OAL≈ 4 11⁄16" (119.6mm) – T 2.5										
500	1000488	FCL, J120V-500W	8.0	119.6	114.2	C-8	10000	3000	2000	Clear
500	1000497	FCZ, J120V-500WF	8.0	119.6	114.2	C-8	10700	3000	2000	Frosted
500	1000224	DVS, J130V-500WB	8.0	119.6	114.2	C-8	10500	3000	2000	Clear
500	1000736	J220V-500WE	8.0	119.6	114.2	C-8	9500	3000	2000	Clear
500	1000077	BSH, J240V-500WN	10.0	119.6	114.2	C-8	9500	2950	2000	Clear
750	1000738	J220V-750WB1	8.0	119.6	114.2	C-8	16100	3050	1500	Clear
R7s-12 Base - OAL≈ 7 1⁄2" (191.1mm) – T 2.5, T4*										
1000	1000695	J120V-1000WB*	12.0	191.1	185.7	C-8	22000	3000	2000	Clear
1000	1000739	J225V-1000WB	8.0	191.1	185.7	C-8	22000	3050	2000	Clear
1000	1000258	DZX, J240V-1000WB	8.0	191.1	185.7	C-8	22000	3050	2000	Clear



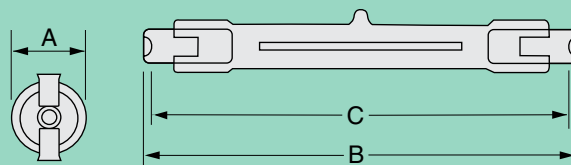
R7s-12

QUARTZ HALOGEN LAMPS • DOUBLE ENDED

J SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Recessed Single Contact Base - R7s-12
- Operate Horizontal $\pm 4^\circ$
- T2.5

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	C-to-C (C)					
OAL ≈ 10 5/64" (256.1mm)										
1000	1000740	J225V-1000WB1	8.0	256.1	250.7	C-8	22000	3050	2000	Clear
1000	1000758	J240V-1000WB1	8.0	256.1	250.7	C-8	2100	3050	2000	Clear
1500	1000699	J120V-1500WB	8.0	256.1	250.7	C-8	35000	3050	2000	Clear
1500	1000750	J230V-1500WB	8.0	256.1	250.7	C-8	35000	3000	2000	Clear
1500	1000243	DYD, J240V-1500WB	8.0	256.1	250.7	C-8	33000	3050	2000	Clear
1500	1000778	J277V-1500WB	8.0	256.1	250.7	C-8	31500	3050	2000	Clear
OAL ≈ 13 7/64" (332.8mm)										
2000	1000766	J240V-2000WB	8.0	332.8	327.4	C-8	44000	3050	2000	Clear
OAL ≈ 13 5/32" (334.4mm)										
2000	1000752	J230V-2000WB	8.0	334.4	322.0	C-8	44000	—	2000	Clear



R7s-12

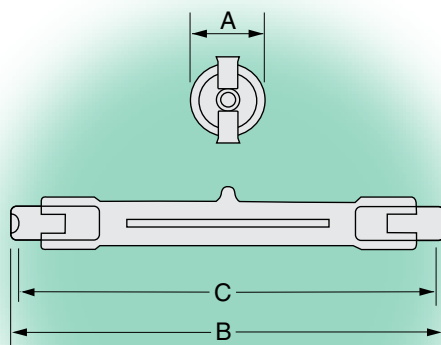
QUARTZ HALOGEN LAMPS • DOUBLE ENDED

JP SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Recessed Single Contact Base - R7s
- Operate Horizontal $\pm 4^\circ$
- T2.5, T3 & T4



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	C-to-C (C)					
OAL ≈ 4 11/16" (119.6mm)										
500	1000502	FDN, JP120V-500WCF6	12.0	119.6	114.2	C-8	12500	3200	400	Frosted
500	1000500	FDF, JP120V-500WC6	12.0	119.6	114.2	C-8	13250	3200	400	Clear
500	1001079	JP120V-500WC7	8.0	119.6	114.0	C-8	13200	3200	25	Clear
500	1001084	JP220V-500WC	12.0	119.6	114.2	C-8	12500	3200	200	Clear
550	1001089	JP225V-550WC	12.0	119.6	115.6	C-8	14000	3200	250	Clear
750	1000327	EMD, JP120V-750WCF	12.0	119.6	114.2	C-8	19500	3200	400	Frosted
750	1000299	EJG, JP120V-750WC	12.0	119.6	114.2	C-8	20600	3200	400	Clear
800	1000329	EMF, JP240V-800WCF	12.0	119.6	114.2	C-8	21400	3200	250	Frosted
800	1000328	EME, JP240V-800WC1UA	12.0	119.6	114.2	C-8	22000	3200	250	Clear
1000	1000489	FCM, JP120V-1000WC1	12.0	119.6	114.2	C-8	27000	3200	300	Clear
1000	1000298	EJD, JP185V-1000WS	12.0	119.6	114.2	C-8	33600	3350	100	Clear
1000	1000533	FHM, JP120V-1000WCF1	12.0	119.6	114.2	C-8	26000	3200	300	Frosted
OAL ≈ 4 23/32" (120.0 mm)										
800	1001096	JP240V-800W	11.0	120.0	114.2	C-8	20000	3200	250	Clear



R7s-12

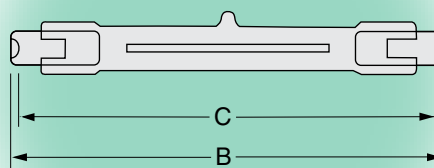
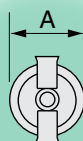
QUARTZ HALOGEN LAMPS • DOUBLE ENDED

JP SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Recessed Single Contact Base - R7s
- Operate Horizontal $\pm 4^\circ$
- T3 & T4



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	C-to-C (C)					
OAL ≈ 5" (127.1mm)										
800	1001081	JP125V-800W	10.0	127.1	121.7	C-8	26000	3400	25	Clear
1000	1000501	FDG, JP225V-1000W	12.0	127.1	121.7	C-8	33000	3400	15	Clear
1000	1001097	JP245V-1000WS	12.0	127.1	121.7	C-8	31000	3400	15	Clear
1000	1001075	JP120V-1000WS	11.0	127.0	121.7	C-8	30000	3400	30	Clear
OAL ≈ 5 5/16" (135.2mm)										
500	1000652	GDA, JP120V-500WC2	12.0	135.2	129.8	C-8	11000	3100	100	Clear
500	1000653	GDA/220V, JP220V-500WC2/UA	12.0	135.2	129.8	C-8	13000	3200	75	Clear
500	1000654	GDA/240V, JP245V-500WC	12.0	135.2	129.8	C-8	11000	3150	100	Clear
OAL ≈ 6 19/32" (167.4mm)										
1000	1000523	FFT, JP120V-1000WC2	12.0	167.4	163.3	C-8	27000	3200	300	Clear
1500	1000529	FGT, JP120V-1500WCF	13.0	167.4	162.0	C-8	40200	3200	400	Frosted
1500	1000499	FDB, JP120V-1500WC	13.0	167.4	162.0	C-8	41200	3200	400	Clear
OAL ≈ 6 21/32" (169.3mm)										
2000	1000524	FFW, JP120V-2000WC	14.0	169.3	163.9	C-8	57000	3200	125	Clear
OAL ≈ 7 9/16" (191.1mm)										
625	1001090	JP225V-625WCL	12.0	191.1	185.7	C-8	15500	3200	200	Clear
625	1001091	JP225V-625WCLF	12.0	191.1	185.7	C-8	15000	3200	200	Frosted
625	1001094	JP240V-625WCL	12.0	191.1	185.7	C-8	15500	3200	200	Clear
650	1001862	JP125V-650WS	12.0	191.1	185.7	C-8	15500	3200	200	Clear
1000	1000310	EKM, JP225V-1000WCL	12.0	191.1	140.0	C-8	25000	3200	200	Clear
1250	1001076	JP120V-1250WCF	12.0	191.1	185.7	C-8	32500	3200	200	Frosted
1250	1001086	JP225V-1250WC1	12.0	191.1	185.7	C-8	33500	3200	200	Clear



R7s-12

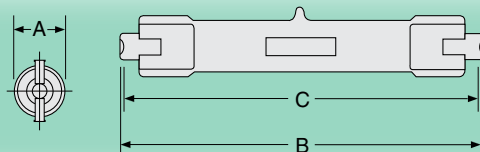
QUARTZ HALOGEN LAMPS • DOUBLE ENDED

JPD SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Recessed Single Contact Base - R7s-18 Base
- Operate in Any Position



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	C-to-C (C)					
Recessed Single Contact Base – R7s-18										
150	1001106	JPD25V-150WG1 fused	15.0	66.7	64.7	CC-8	2700	2900	3000	Clear
200	1000175	DDN, JPD20V-200W	11.0	61.0	54.7	CC-8	5000	3150	100	Clear
300	1000292	EHP, JPD120V-300WG	15.0	80.3	74.9	CC-8	5650	2900	2000	Clear
375	1000230	DWZ, JPD30V-375W	15.0	80.3	74.9	CC-8	7500	3000	1000	Clear
400	1000293	EHR, JPD120V-400WG	15.0	80.3	74.9	CC-8	7750	2900	2000	Clear
400	1000498	FDA, JPD120V-400W	15.0	80.3	74.9	CC-8	10400	3200	200	Clear
420	1000472	FAL, JPD120V-420WC	14.0	66.7	62.0	CC-8	11000	3200	75	Clear
420	1000518	FFM, JPD120V-420WC1	15.0	80.3	74.9	CC-8	11000	3200	75	Clear
600	1000486	FCB, JPD120V-600WD	15.0	95.0	89.6	CC-8	17000	3250	75	Clear
600	1000517	FFJ, JPD120V-600WCG	15.0	66.7	61.3	CC-8	17000	3200	75	Clear
600	1000508	FEA, JPD240V-600WC	15.0	95.0	89.6	CC-8	15000	3200	75	Clear
650	1000229	DWY/FAB, JPD120V-650WS	15.0	80.3	74.9	CC-8	20000	3400	25	Clear
650	1000471	FAD, JPD120V-650WC	15.0	80.3	74.9	CC-8	16500	3200	100	Clear
650	1000482	FBX, JPD120V-650WCF	15.0	80.3	74.9	CC-8	16000	3200	100	Frosted
650	1001103	JPD220V-650WC	15.0	80.3	74.9	CC-8	16300	3200	75	Clear
800	1000238	DXX/220V, JPD220V-800WC1	15.0	80.3	74.9	CC-8	20500	3200	75	Clear
800	1001613	DXV, JPD240V-800WS	15.0	80.3	74.9	CC-8	24800	3400	15	Clear
800	1000240	DXX/240V, JPD240V-800WC	15.0	80.3	74.9	CC-8	20500	3200	75	Clear
1000	1000236	DXW, JPD120V-1000WC5	18.0	95.0	89.6	CC-8	28000	3200	150	Clear
1000	1000234	DXN, JPD120V-1000WS1	18.0	95.0	89.6	CC-8	31000	3400	50	Clear
1000	1000511	FER, JPD120V-1000WC6	19.0	143.5	138.1	CC-8	27500	3200	500	Clear
1000	1000228	DWT, JPD120V-1000WB1	19.0	143.5	138.1	CC-8	23400	3000	2000	Clear
1000	1000068	BRH, JPD120V-1000WC1	18.0	95.0	89.6	CC-8	30000	3350	75	Clear
1000	1000241	DYA, JPD120V-1000WC2	18.0	109.5	104.1	CC-8	28000	3200	200	Clear
1000	1000483	FBY, JPD120V-1000WC5F	18.0	95.0	89.6	CC-8	26000	3200	150	Frosted
1000	1001102	JPD220V-1000WC	18.0	95.0	89.6	CC-8	25000	3200	120	Clear
2000	1000516	FEY, JPD120V-2000WC	29.0	143.5	138.1	CC-8	57000	3200	400	Clear



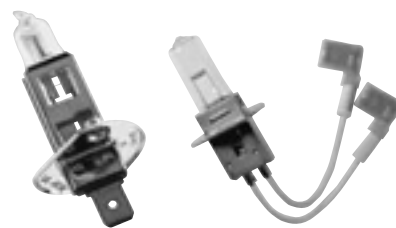
R7s-18



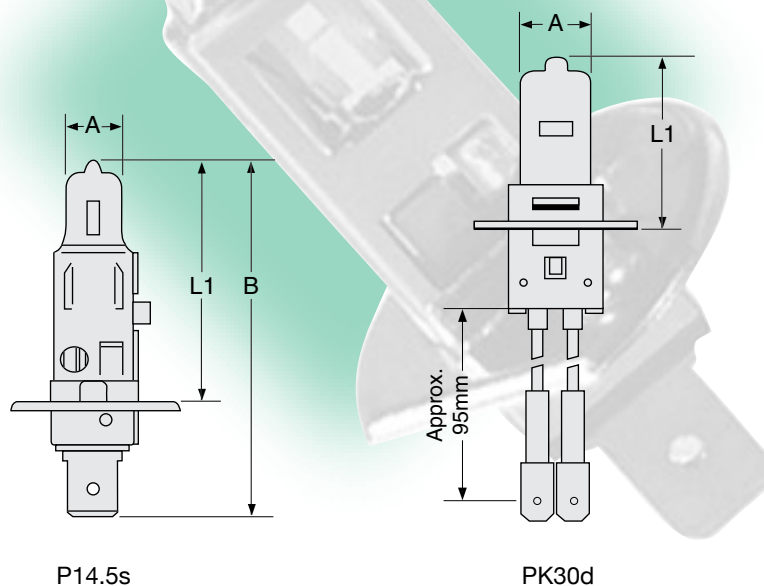
TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

JA & JF SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- P14.5s & PK30d Base
- 13.2 & 28 Volts



Watts	Ushio	Ushio	Volts	Dimensions mm			Filament Type	Luminous Flux lm	Color Temp K	Avg Life h
	Ordering Code	Lamp Code		Dia (A)	OAL (B)	Length (L1)				
P14.5s Base										
55	1000790	JA12V-55W H1-55	13.2	8.5	67.5	25.25	C-8	1550	3000	150
70	1000800	JA24V-70W	28	8.5	49.0	—	—	1900	—	150
100	1000785	JA12V-100W H1-100	13.2	8.5	67.5	25.25	C-8	2700	3050	50
PK30d Base										
			Amperage							
100	1001062	JF6.6A-100W/PK30D	6.6	13.5	—	40.0	C-6	2400	3000	1000

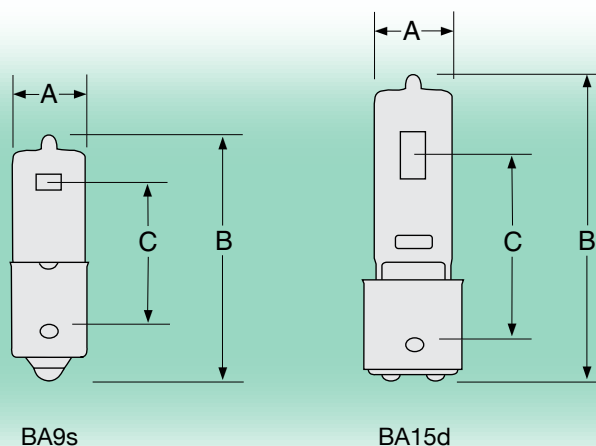


HALOGEN LOW VOLTAGE BAYONET

JC SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Single Contact Bayonet Base - BA9s
Double Contact Bayonet Base - BA15d
- Operate in Any Position

Watts	Ushio	Ushio	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
	Ordering	Lamp Code	Dia	OAL	LCL					
	Code		(A)	(B)	(C)					
Single Contact Bayonet Base – BA9s										
5	1000832	JC12V-5W/BA9S	9.0	28.0	15.0	C-2R	80	3000	240	Clear
10	1000810	JC12V-10W/BA9S	9.0	28.0	15.0	C-6	200	—	240	Clear
20	1000819	JC12V-20W/BA9S	8.0	30.0	13.5	C-6	340	2900	2000	Clear
Double Contact Bayonet Base – BA15d										
125	1000814	JC12V-125WB/BA15D	15.0	49.0	28.8	C-8	1900	2800	1000	Clear



BA9s

BA15d

HALOGEN LOW VOLTAGE BI-PIN

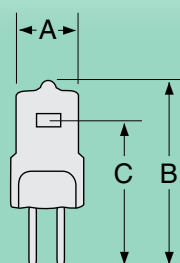
JC SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Miniature 2-Pin Base - G4
- Operate in Any Position



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish	
			Dia (A)	OAL (B)	LCL (C)						
Miniature 2-Pin Base – G4											
5	1000874	JC6V-5W/G4	9.0	28.0	19.5	C-6	100	3006	50	Clear	
5	1000833	JC12V-5W/G4	9.0	28.0	19.5	C-2R	60	2720	2000	Clear	
6	1000876	JC6V-6W/G4	9.0	28.0	19.5	C-6	100	3085	100	Clear	
6	1000884	JC9V-6W/G4	9.0	28.0	19.5	C-6	100	2998	50	Clear	
8	1000878	JC6V-8W/G4	9.0	28.0	19.5	C-6	163	3168	50	Clear	
10	1000856	JC6V-10W/G4	9.0	30.0	19.5	C-6	130	2850	2000	Clear	
10	1000857	JC6V-10WH3 (64223)	8.0	31.0	19.5	C-6	150	2900	300	Clear	
10	1000531	FHD/ESA, JC6V-10W	9.0	30.0	19.5	C-6	200	3200	100	Clear	
10	1003030	JC12V-10W/G4	9.0	30.0	19.5	C-6	120	2800	2000	Clear	
10	1000811	JC12V-10W/G4	9.0	28.0	19.5	C-2R	140	2900	2000	Clear	
10	1000813	JC12V-10WF/G4	9.0	30.0	19.5	C-6	115	2800	2000	Frosted	
10	1000812	JC12V-10W/G4	9.0	28.0	19.5	C-2R	175	2916	300	Clear	
15	1000861	JC6V-15W/G4	9.0	28.0	19.5	C-6	300	3138	100	Clear	
20	1000532	FHE/ESB, JC6V-20W	9.0	30.0	19.5	C-6	450	3200	100	Clear	
20	1000866	JC6V-20W/G4	9.0	30.0	19.5	C-6	280	2850	2000	Clear	
20	1000821	JC12V-20W/G4	9.0	30.0	19.5	C-6	350	2850	2000	Clear	
20	1000804	JC12V-20W/G4	9.0	30.0	19.5	C-8	350	2850	2000	Clear	
20	1000820	JC12V-20WF/G4	9.0	30.0	19.5	C-6	330	2900	2000	Frosted	
20	1000844	JC24V-20W/G4	9.0	30.0	19.5	C-6	280	2850	2000	Clear	
30	1000867	JC6V-30W/G4	9.0	30.0	19.25	C-6	800	3300	50	Clear	
35	1000825	JC12V-35WB/G4	9.0	30.0	19.5	C-6	650	2900	2000	Clear	

Originally developed as light sources for optical instruments, JC lamps feature an overall compact design with precise LCL placement. The exceptional brightness of this compact lamp make this series an ideal choice for task light applications.



G4

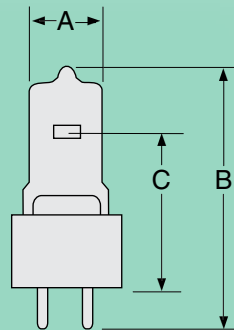
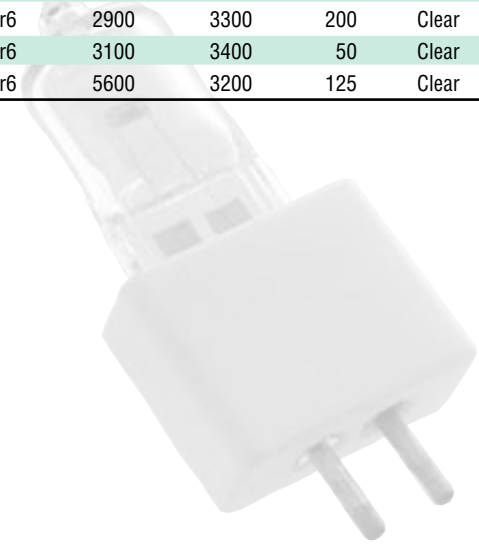
HALOGEN LOW VOLTAGE BI-PIN

JC SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Miniature 2-Pin Base - G5.3



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia	OAL	LCL					
			(A)	(B)	(C)					
Miniature 2-Pin Base – G5.3										
30	1000254	DZA, JC10.8V-30W	11.5	51.0	27.0	C-6	600	3100	400	Clear
50	1000837	JC14.5V-50WC	11.5	55.0	32.0	CBar6	1250	3200	100	Clear
65	1000316	ELA, JC19V-65W	11.5	44.5	25.5	CC-6	1900	3350	25	Clear
100	1000649	GCC, JC12V-100WC5	11.5	57.0	32.0	CBar6	2900	3300	200	Clear
100	1000255	DZB, JC12V-100W	11.5	51.0	27.0	CBar6	3100	3400	50	Clear
175	1000330	EML, JC24V-175W	13.5	57.2	27.0	CBar6	5600	3200	125	Clear



G5.3

HALOGEN LOW VOLTAGE BI-PIN

JC SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Glass 2-Pin Base - G6.35
- 2-Pin Base - G6.35/15X19

Watts	Ushio	Ushio	Dimensions mm			Filament	Approx	Color	Avg	Burn	Bulb	Fig
	Ordering Code	Lamp Code	Dia (A)	OAL (B)	LCL (C)	Type	Lumens lm	Temp K	Life h	Position	Finish	No
Glass 2-Pin Base – G6.35												
20	1000822	JC12V-20W	11.0	44.0	30.0	C-6	280	2850	2000	Any	Clear	1
30	1000868	JC6V-30WT1	11.5	44.0	28.0	C-6	600	3200	100	Any	Clear	1
35	1000823	JC12V-35W	11.0	44.0	30.0	C-6	650	2900	2000	Any	Clear	1
50	1000071	BRL, JC12V-50W	11.5	44.0	30.0	CBar6	1600	3400	50	BD/Hor	Clear	1
50	1000830	JC12V-50WG1.0	11.0	44.0	30.0	C-6	900	2900	2000	Any	Clear	1
50	1000829	JC12V-50WF	10.5	44.0	30.0	C-6	840	3000	2000	Any	Frosted	1
50	1000848	JC24V-50W	10.5	44.0	30.0	C-6	750	2950	2000	Any	Clear	1
75	1000834	JC12V-75W	11.0	44.0	30.0	C-6	2200	3300	2000	Any	Clear	1
75	1000849	JC24V-75W	10.5	44.0	—	CC-8	—	—	—	Any	Clear	2
100	1000839	JC24V-100W	11.0	44.0	30.0	CC-6	1800	3000	2000	Any	Clear	1
150	1000492	FCS, JC24V-150WUI	13.5	50.0	32.0	CBar6	5000	—	50	BD/Hor	Clear	1
150	1000505	FDV, JC24V-150W	13.5	50.0	30.0	CBar6	4300	3300	100	BD/Hor	Clear	1
150	1000537	FHY, JC24V-150W	13.5	50.0	30.0	CBar6	3700	3100	1000	BD/Hor	Clear	1
250	1000290	EHJ, JC24V-250W	13.5	55.0	33.0	CBar6	8500	3400	50	BD/Hor	Clear	1
250	1000382	EVC/FGX, JC24V-250W	13.0	64.0	35.0	CBar6	8400	3400	300	Any	Clear	1
275	1000588	FNT, JC24V-275W	13.5	55.0	33.0	CBar6	10000	3400	75	BD/Hor	Clear	1
400	1000383	EVD, JC36V-400WS1	16.0	60.0	36.0	CBar6	14500	3450	50	BD/Hor	Clear	1
400	1002141	EVD/L, JC36V-400H1	17.0	60.0	36.0	CBar6	14500	3400	100	BD/Hor	Clear	1
2-Pin Base – G6.35/15X19												
150	1000843	JC24V-150WL-H	13.5	61.0	37.0	CBar6	4800	3400	50	BD/Hor	Clear	3

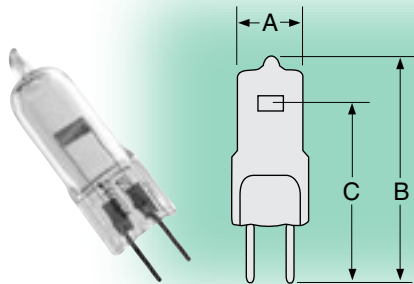


Fig.1

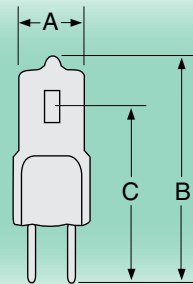


Fig.2

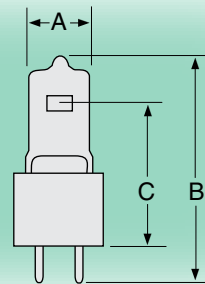


Fig.3

HALOGEN LOW VOLTAGE BI-PIN & BAYONET

JC SERIES

- Only for Use in Approved Enclosed Halogen Fixtures

- Glass 2-Pin Base - GY6.35

2-Pin Prefocus Base - GY9.5



Watts	Ushio	Ushio	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Bulb Finish	Fig No
	Ordering Code	Lamp Code	Dia (A)	OAL (B)	LCL (C)							
Glass 2-Pin Base – GY6.35												
35	1000824	JC12V-35W	11.0	44.0	30.0	C-8	650	2900	2000	BD/Hor	Clear	1
50	1000827	JC12V-50W	11.0	44.0	30.0	C-6	1000	3000	2000	Any	Clear	2
50	1000828	JC12V-50W	11.0	44.0	30.0	C-8	1000	3000	2000	Any	Clear	2
75	1000835	JC12V-75W	11.0	44.0	30.0	C-6	1600	3000	2000	Any	Clear	2
100	1000806	JC12V-100W	11.0	44.0	30.0	C-6	2300	3000	2000	Any	Clear	2
100	1000807	JC12V-100WG	11.0	44.0	30.0	C-8	2300	3000	2000	Any	Clear	1
100	1000381	EVA, JC12V-100H20	11.5	44.0	30.0	CBar6	2400	3000	2000	BD/Hor	Clear	2
100	1000490	FCR, JC12V-100W	11.0	44.0	30.0	CBar6	3400	3300	50	BD/Hor	Clear	2
100	1000507	FDX, JC12V-100WCG2	11.5	44.0	30.0	CBar6	3500	3300	50	Any	Clear	3
300	1000545	FLW, JC24V-300WA-H	13.5	55.0	33.0	CBar6	10450	3500	50	Any	Clear	3
300	1000846	JC24V-300WB	17.5	55.0	23.0	CBar6	6680	6600	1000	Any	Clear	2
2-Pin Prefocus Base – GY9.5												
20	1003049	JC12V-20W	11.0	55.0	30.3	C-6	300	3000	2000	BD/Hor	Clear	4
80	1000171	DDJ/DZZ, JC10V-80W	11.5	51.0	27.0	CBar6	1700	3150	1000	BD/Hor	Clear	4
100	1000459	EYL, JC12V-100WC4	11.5	62.0	36.5	CBar6	2900	3300	50	BD/Hor	Clear	4
100	1000504	FDT, JC12V-100W	11.5	57.0	27.0	CBar6	2900	3300	50	BD/Hor	Clear	4
132	1000176	DDP, JC22V-132W	13.5	57.0	33.4	CBar6	3900	3250	125	BD/Hor	Clear	4
150	1000503	FDS/DZE, JC24V-150W	14.0	57.2	33.4	CBar6	5000	3400	50	BD/Hor	Clear	4

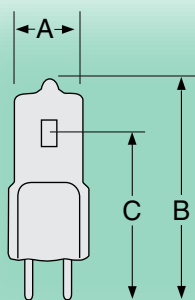


Fig.1

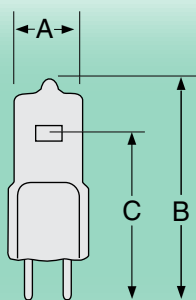


Fig.2

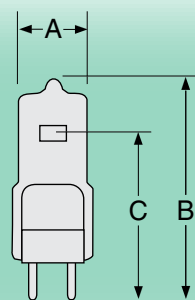


Fig.3

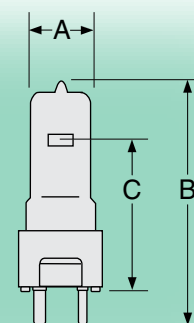


Fig.4

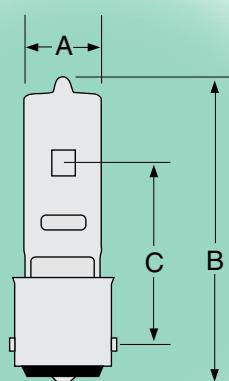
HALOGEN LOW VOLTAGE BI-PIN & BAYONET

JCD SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Double Contact Bayonet Base - BA15d



Watts	Ushio	Ushio	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Bulb Finish
	Ordering	Lamp Code	Dia	OAL	LCL						
	Code		(A)	(B)	(C)						
Double Contact Bayonet Base – BA15d											
60	1000915	JCD24V-60W	12.5	60.5	35.0	CC-6	1260	—	500	BD/Hor	Clear
75	1000916	JCD24V-75W	11.0	55.0	34.9	CC-6	1600	3100	500	BD/Hor	Clear
75	1000917	JCD28V-75W/WGB	13.5	63.5	35.0	CC-6	1400	2950	2000	BD/Hor	Clear



BA15d

HALOGEN BI-PIN SSTV & AV

JCD SERIES

- Only for Use in Approved Enclosed Halogen Fixtures

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Bulb Finish	Fig No
			Dia (A)	OAL (B)	LCL (C)							
Miniature 2-Pin Base – G5.3												
200	1000648	GCB, JCD30V-200WC1	11.5	57.0	32.0	CC-6	5300	3200	200	BD/Hor	Clear	1
250	1000453	EYH/FKT, JCD120V-250WB	22.0	63.5	36.5	CC-6	6050	3050	150	BD/Hor	Clear	2
360	1000442	EYB, JCD82V-360W	11.5	57.0	31.8	CC-8	10000	3300	75	BD/Hor	Clear	1
360	1000443	EYB-5, JCD86V-360WS	11.5	57.0	31.8	CC-8	10000	3300	75	BD/Hor	Clear	1
500	1000476	FBG/FBD, JCD120V-500WCP	22.0	76.0	44.5	CC-6	13200	3200	50	BD/Hor	Clear	2
600	1000246	DYH, JCD120V-600WCP	22.0	63.0	36.5	CC-6	17000	3200	75	BD/Hor	Clear	2
650	1000225	DVY, JCD120V-650WSP	22.0	63.0	36.5	CC-6	20000	3400	25	BD/Hor	Clear	2
Glass 2-Pin Base – G6.35												
100	1000892	JCD120V-100W/A	13.5	50.0	30.0	CC-6	2000	3000	150	BD/Hor	Clear	3
150	1000371	ESY, JCD100V-150WB	13.5	50.0	33.0	CC-6	3300	3075	200	BD/Hor	Clear	4
150	1000893	JCD120V-150WB	14.0	50.0	30.0	CC-6	3200	3075	100	BD/Hor	Clear	4
150	1003102	JCD220V-150W	—	55.0	36.0	CC-8	—	—	100	—	Clear	5
300	1000216	DRA, JCD120V-300W	16.0	50.0	33.0	CC-6	6900	3100	300	BD/Hor	Clear	3
300	1002253	JCD220V-300W	22.0	65.0	37.0	2CC-8	7200	3150	50	BD/Hor	Clear	4
2-Pin Base – G6.35/15x19												
300	1000900	JCD120V-300WL	22.0	63.0	37.0	CC-6	7500	3200	150	BD/Hor	Clear	6
500	1000904	JCD120V-500WL	22.0	63.5	36.5	CC-6	13000	3200	100	BD/Hor	Clear	6
650	1000890	JCD100V-650WL	22.0	63.0	37.0	CC-6	17750	3200	150	BD/Hor	Clear	6
650	1000907	JCD120V-650WL	22.0	63.0	37.0	CC-6	17750	3200	150	BD/Hor	Clear	6
2-Pin Base – GX6.35												
300	1001762	JCD120V-300W (ref. 64514)	19.5	57.5	37.0	Special	7700	3200	75	BD/Hor	Clear	4

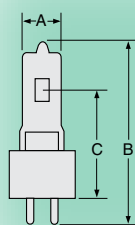


Fig.1

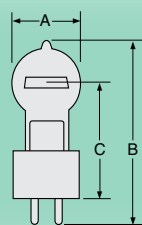


Fig.2

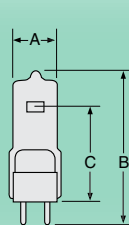


Fig.3

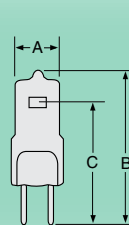


Fig.4

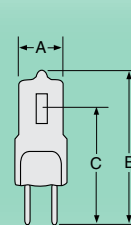


Fig.5

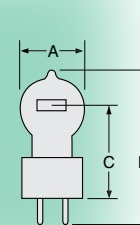


Fig.6

HALOGEN BI-PIN SSTV & AV

JCD SERIES

• Only for Use in Approved Enclosed Halogen Fixtures

• Clear Bulb Finish

• 2-Pin Base - GY6.35

2 Button Base - G9.5

Medium Prefocus 2-Pin Base - GY9.5

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
2-Pin Base – GY6.35											
35	1000902	JCD120V-35W	11.0	55.0	38.0	CC-2V	500	2800	1500	BD/Hor	1
50	1000905	JCD120V-50W	11.0	55.0	38.0	CC-2V	700	2800	1500	BD/Hor	1
75	1000908	JCD120V-75W	11.5	55.0	38.0	CC-8	1100	2850	1500	BD/Hor	2
2 Button Base – G9.5											
600	1000248	DYP, JCD120V-600WM	22.0	60.0	21.9	CC-6	17000	3200	75	BD/Hor	3
Medium Prefocus 2-Pin Base – GY9.5											
150	1000309	EKL, JCD21V-150W	11.5	51.0	27.0	CC-6	4650	3350	40	BD/Hor	4
250	1000245	DYG, JCD30V-250WS	19.9	63.5	36.5	CC-6	8000	3400	15	BD/Hor	4
300	1000886	JCD100V-300WC	22.0	63.0	36.5	CC-6	7500	3200	150	BD/Hor	5
420	1000304	EKB, JCD120V-420WC	22.0	63.0	36.5	CC-6	11000	3200	75	BD/Hor	5
500	1000629	FTK, JCD120V-500WCT	22.0	65.3	36.5	CC-6	13500	3100	200	BD/Hor	4
500	1000914	JCD240V-500WC	24.0	62.0	36.5	2CC-8	12500	3200	50	BD/Hor	6
600	1000251	DYS/DYV/BHC, JCD120V-600WC	22.0	63.0	36.5	CC-6	17000	3200	75	BD/Hor	5
600	1000252	DYS-5, JCD125V-600WC	22.0	63.0	36.5	CC-6	13750	3200	75	BD/Hor	5
650	1000305	EKD, JCD120V-650WS	19.9	66.0	36.5	CC-6	20000	3400	25	BD/Hor	5
650	1000249	DYR/220V, JCD220V-650WC1	24.0	63.0	36.5	2CC-8	16500	3200	50	BD/Hor	6
650	1000250	DYR/240V, JCD240V-650WC2	24.0	63.0	36.5	2CC-8	16500	3200	50	BD/Hor	6
800	1000909	JCD120V-800WC	24.0	62.0	36.5	CC-6	19500	3200	75	BD/Hor	5

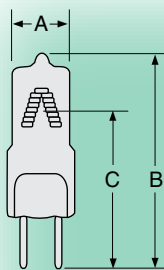


Fig.1

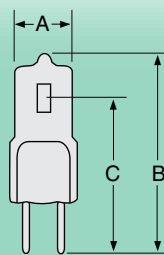


Fig.2

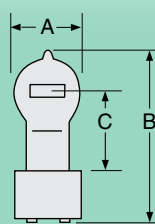


Fig.3

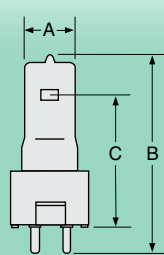


Fig.4

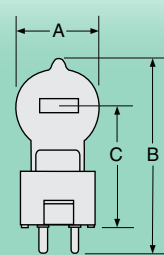


Fig.5

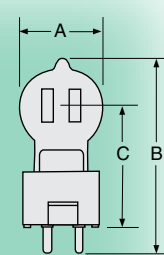


Fig.6

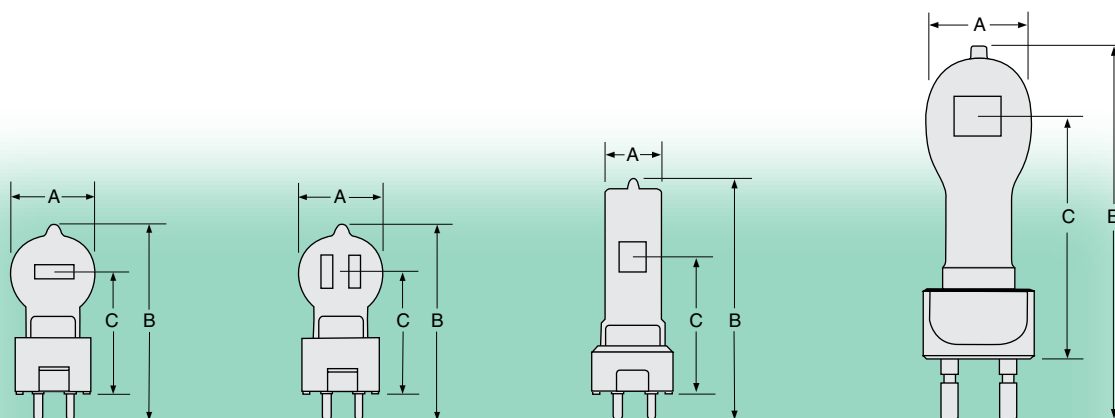
JCD - JCP SERIES

- Only for Use in Approved Enclosed Halogen Fixtures

- Medium Prefocus 2-Pin Base - GY9.5/15x19

GY9.5/16X21, GY9.5/16X24 & G22 Base

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
Medium Prefocus 2-Pin Base – GY9.5/15x19											
300	1000896	JCD120V-300WC	22.0	63.5	36.5	CC-6	7500	3200	100	BD/Hor	1
Medium Prefocus 2-Pin Base – GY9.5/16x21											
300	1000912	JCD230V-300WC	24.0	63.5	36.5	2CC-8	7050	3150	75	BD/Hor	2
500	1000903	JCD120V-500WC	22.0	62.0	36.5	CC-6	13000	3200	100	BD/Hor	1
650	1000889	JCD100V-650WC	22.0	63.0	36.5	CC-6	17750	3200	150	BD/Hor	1
650	1000906	JCD120V-650WC	22.0	63.0	36.5	CC-6	17750	3200	75	BD/Hor	1
GY9.5/16X24 Base											
650	1002110	JCP100V-650WCC	19.5	76.0	36.5	C-13D	18750	3300	75	BD/Hor	3
G22 Base											
2000	1000910	JCD220V-2000WC	40.0	165	100	2CC-8	50000	3200	200	BD/Hor	4



JCS SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- 4-Pin Base
- Standard Voltage (120 volts)
- Monoplane Filament

Watts	Ushio	Ushio	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No	
	Ordering Code	Lamp Code	Dia	OAL	LCL							
			(A)	(B)	(C)							
4-Pin Base – G17T-7												
1200	1000072	BRN, JCS120V-1200W	23.0	95.0	38.7	C-13D 	—	3350	20	BD/Hor	1	
1200	1000082	BTG, JCS120V-1200W	23.0	95.0	39.7	C-13D 	38200	3350	20	BD	1	

 Proximity Reflector

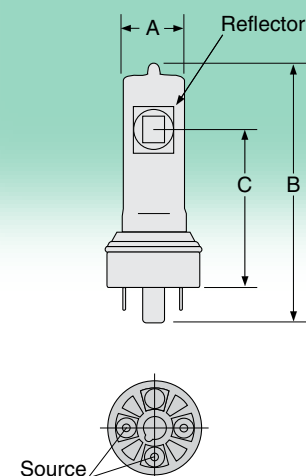


Fig.1

JCS SERIES

• Only for Use in Approved Enclosed Halogen Fixtures

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
Medium 2-Pin Base – G9.5											
575	1003229	GLA/HP-601, JCS115V-575WX	20.0	101.6	60.0	C-13D	12500	3100	1500	Any	1
600	1000665	GLC/HP-600, JCS115V-600WCM	20.0	101.6	60.0	C-13D	15600	3200	300	Any	1
Medium Prefocus 2-Pin Base – GX9.5											
1000	1000948	JCS120V-1000WCGXW (CP24)	36.0	110.0	55.0	C-13D	26000	3200	200	Any	2
Medium Prefocus 2-Pin Base – GY9.5											
300	1000540	FKW, JCS120V-300WC/UA	23.0	90.4	46.5	C-13	7800	3200	200	Any	3
500	1000285	EHA, JCS120V-500W	19.5	76.0	36.5	C-13D	—	3200	75	BD/Hor	4
500	1000603	FRG, JCS120V-500WC1	23.0	90.4	46.5	C-13D	13000	3200	150	Any	3
575	1003326	JCS120V-575WC	25.0	90.0	46.5	8-C-13D	15500	3200	300	BD	3
575	1003327	JCS120V-575WX	25.0	90.0	46.5	8-C-13D	12000	3200	1500	BD	3
625	1000089	BVE, JCS120V-625W	19.5	89.0	44.5	C-13D	—	3350	75	BD/Hor	4
650	1000604	FRK, JCS120V-650WC/UA	22.5	90.4	46.5	C-13D	17500	3200	200	Any	3
900	1000088	BVA, JCS120V-900W	23.0	95.0	44.5	C-13D	—	3300	75	BD/Hor	3
Medium Prefocus 2-Pin Base – GY9.5 / 16x24											
650	1000947	JCS100V-650WCC	19.0	72.0	36.5	C-13D	17000	3200	100	BD/Hor	5

○ Proximity Reflector

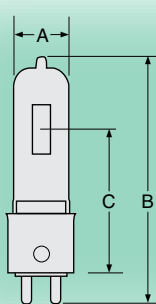
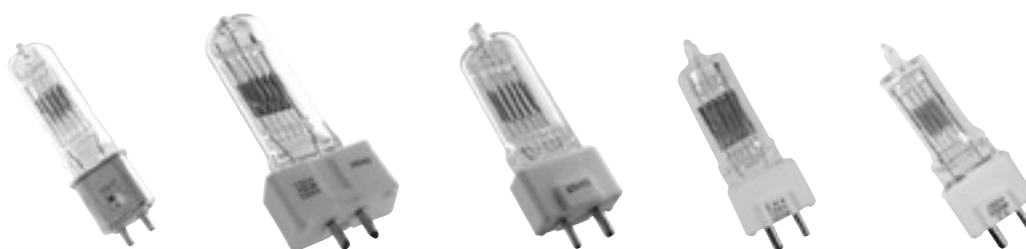


Fig.1

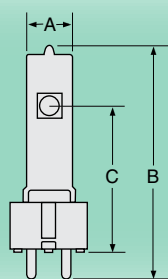


Fig.2

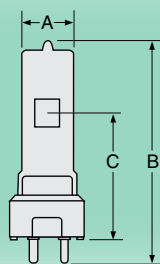


Fig.3

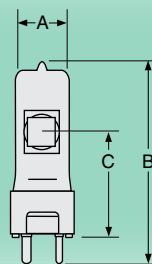


Fig.4

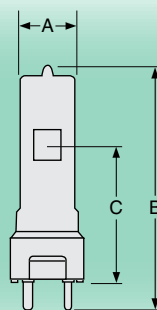


Fig.5

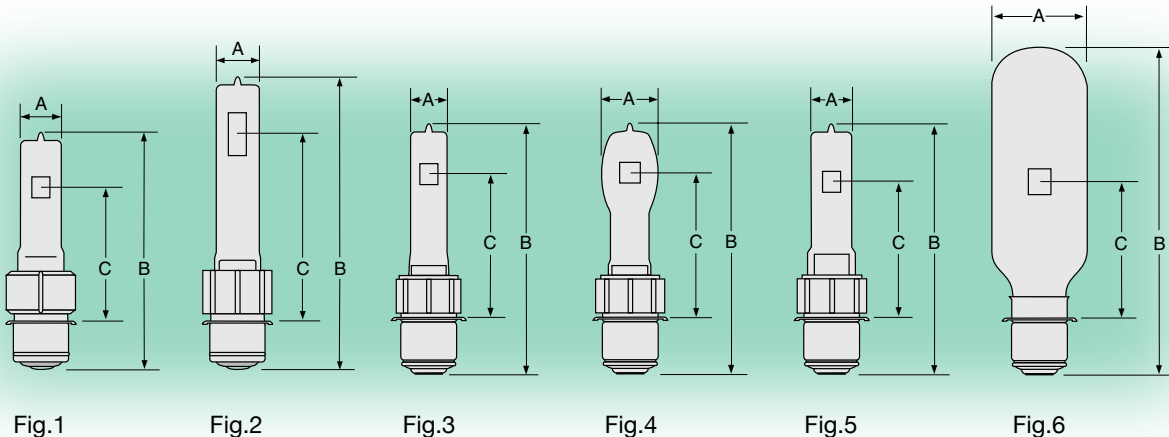
HALOGEN PREFOCUS BAYONET • SSTV

JCS SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Medium Prefocus Base - P28s
- Mogul Prefocus Base - P40s
- 120 Volts



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
Medium Prefocus Base – P28s											
500	1000083	BTL, JCS120V-500WBP28	19.5	127.0	55.5	C-13D	11000	3050	500	BD/Hor	1
500	1000084	BTM, JCS120V-500WCP28	19.5	127.0	55.5	C-13D	13000	3200	100	BD/Hor	1
500	1000208	FMC/DNS, JCS120V-500WB2P28	19.5	156.0	88.9	C-13D	11000	3050	500	Any	2
750	1000085	BTN, JCS120V-750WBP28	23.0	127.0	55.5	C-13D	17000	3050	500	BD/Hor	1
750	1000086	BTP, JCS120V-750WCP28	23.0	127.0	55.5	C-13D	20000	3200	200	BD/Hor	1
750	1000209	FMD/DNT, JCS120V-750WB2P28	23.0	156.0	88.9	C-13D	17000	3050	500	Any	2
1000	1000087	BTR, JCS120V-1000WCP28	23.0	127.0	55.5	C-13D	28500	3200	250	BD/Hor	1
1000	1000210	FME/DNV, JCS120V-1000WC2P28	23.0	156.0	88.9	C-13D	27500	3200	200	Any	2
Mogul Prefocus Base – P40s											
1000	1000091	BVT, JCS120V-1000WBP40	23.0	178.0	100.0	C-13D	23000	3050	500	Any	3
1000	1000092	BVV, JCS120V-1000WCP40	23.0	178.0	100.0	C-13D	27500	3200	200	Any	3
1000	1000214	DPW, JCS120V-1000W	64.0	241.3	87.3	C-13	2800	3200	50	BD	6
1500	1000145	CWZ, JCS120V-1500W	35.0	190.0	100.0	C-13D	38500	3200	325	Any	4
1500	1000220	DTA, JCS120V-1500WCP40	25.0	203.0	87.3	C-13D	39000	3200	100	BD	5
2000	1000093	BVW, JCS120V-2000WCP40	35.0	203.2	100.0	C-13	57500	3200	300	Any	5

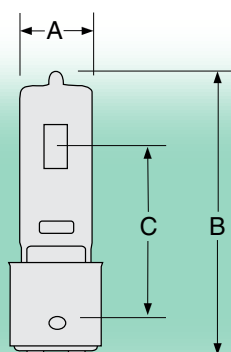


TUNGSTEN HALOGEN LAMPS • SINGLE ENDED BAYONET

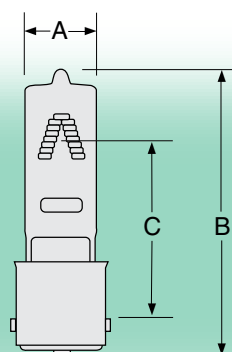
JCV SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Double Contact Bayonet Base - BA15d
- Operate in any position
- 120 Volts (except as noted)

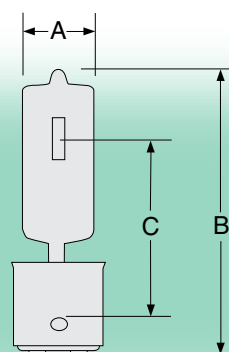
Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	LCL (C)					
Double Contact Bayonet Base – BA15d										
75	1000986	JCV120V-75WGB	12.0	59.0	35.0	CC-8	1200	2800	1000	Clear
75	1000987	JCV120V-75WGBF	14.0	72.0	35.0	CC-8	1125	2850	1000	Frosted
100	1000968	JCV120V-100WGB	13.0	62.0	35.0	CC-8	1600	2800	2000	Clear
100	1000969	JCV120V-100WGBF	13.0	62.0	35.0	CC-8	1550	2800	2000	Frosted
100	1000364	ESR, JCV120V-100WGB2	13.0	62.0	35.0	CC-2V	1800	2850	750	Clear
100	1000374	ETD, JCV120V-100WGB2F	13.0	62.0	35.0	CC-2V	1750	2850	750	Frosted
150	1000373	ETC, JCV120V-150WGB	13.0	62.0	35.0	CC-8	2800	2900	2000	Clear
150	1000362	ESP, JCV120V-150WGB2	13.0	62.0	35.0	CC-2V	2800	2900	1000	Clear
150	1000376	ETF, JCV120V-150WGBF	13.0	62.0	35.0	CC-8	2700	2900	2000	Frosted
200	1000512	FEV, JCV120V-200WCB2	13.0	62.0	35.0	CC-2V	5500	3200	50	Clear
200	1001803	JCV230V-200WGB	15.0	63.0	35.1	CC-8	5000	2800	2000	Clear
250	1000365	ESS, JCV120V-250WGB	13.0	76.0	41.0	CC-8	5000	3000	2000	Clear
250	1000372	ETB, JCV120V-250WGBF	13.0	76.0	41.0	CC-8	4800	3000	2000	Frosted
250	1000990	JCV130V-250WGBF	13.0	76.0	41.0	CC-8	4800	3000	2000	Frosted
500	1000979	JCV120V-500WGB	13.0	87.0	54.0	CC-8	10450	2950	2000	Clear
500	1000980	JCV120V-500WGBF	13.0	87.0	54.0	CC-8	10100	2950	2000	Frosted



BA15d



BA15d



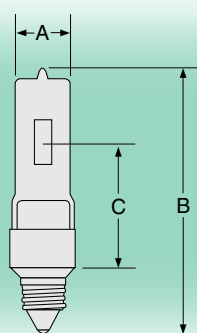
Side View

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED SCREW BASE

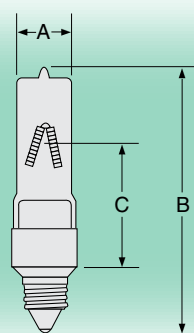
JCV SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Minican Screw Base - E11
- Operate in any position
- 120 Volts (except as noted)

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	LCL (C)					
Mini Candelabra Base – E11										
75	1000989	JCV120V-75WGSNF	12.0	65.0	32.0	CC-8	1170	2850	1000	Frosted
75	1000988	JCV120V-75WGSN	12.0	69.0	32.0	CC-8	1125	2800	1000	Clear
100	1000970	JCV120V-100WGSN	14.0	69.0	32.0	CC-8	1600	2850	1000	Clear
100	1000971	JCV120V-100WGSNF	14.0	69.0	32.0	CC-8	1550	2800	2000	Frosted
100	1000361	ESN, JCV120V-100WGSN2	13.0	71.0	35.0	CC-2V	1800	2850	750	Clear
100	1000375	ETE, JCV120V-100WGSN2F	13.0	71.0	35.0	CC-2V	1750	2850	750	Frosted
150	1000377	ETG, JCV120V-150WGSN	13.0	71.0	35.0	CC-8	2800	2900	2000	Clear
150	1000378	ETH, JCV120V-150WGSNF	13.0	71.0	35.0	CC-8	2700	2900	2000	Frosted
150	1000359	ESL, JCV120V-150WGSN2	13.0	71.0	35.0	CC-2V	2800	2900	1000	Clear
200	1001800	JCV100V-200WGS	14.0	69.0	32.0	CC-8	2900	2900	3000	Clear
250	1000294	EHT, JCV120V-250WGSN	13.5	80.0	41.3	CC-8	5000	3000	2000	Clear
250	1000360	ESM, JCV120V-250WGSNF	13.0	80.0	41.0	CC-8	4800	3000	2000	Frosted
250	1000991	JCV130V-250WGSN	13.0	80.0	41.0	CC-8	5000	3000	2000	Clear
250	1001809	JCV130V-250WGSNF	13.0	80.0	41.0	CC-8	4850	3000	2000	Frosted
250	1000993	JCV220/230V-250WMF	15.0	75.0	—	CC-2V	4500	2900	2000	Frosted
300	1000961	JCV100V-300WGS	15.0	78.0	42.0	CC-8	4650	2850	3000	Clear
300	1001813	JCV120V-300WGS	15.0	78.0	42.0	CC-8	4650	2950	1500	Clear



E11



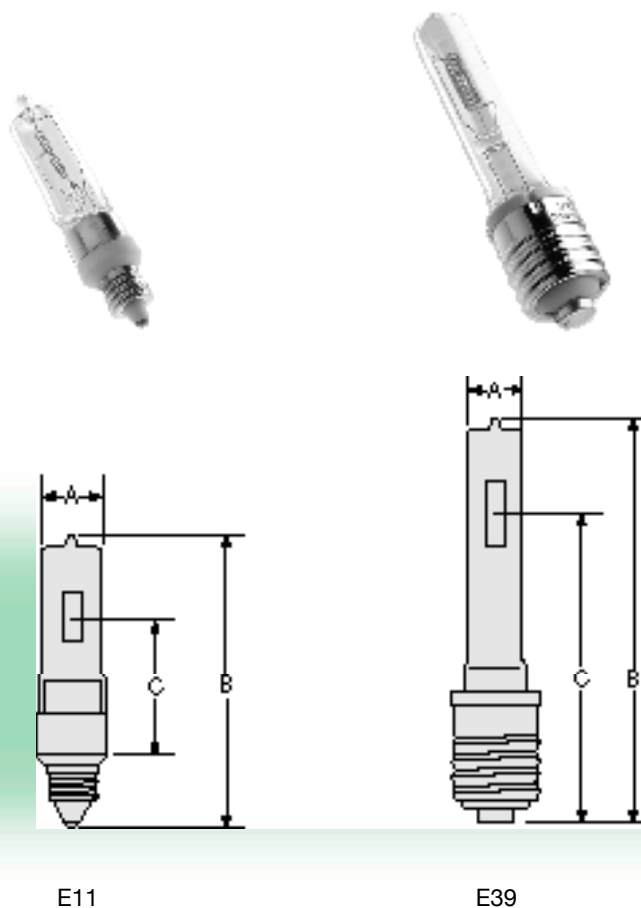
E11

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED SCREW BASE

JCV SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Minican Screw Base - E11
Mogul Screw Base - E39
- 120 Volts (except as noted)

Watts	Ushio	Ushio	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
	Ordering Code	Lamp Code	Dia (A)	OAL (B)	LCL (C)					
Mini Candelabra Base – E11										
325	1000295	EHV, JCV120V-325WBS	13.0	80.0	41.0	CC-8	7800	3100	500	Clear
400	1000976	JCV120V-400WGSN	13.0	92.0	51.0	CC-8	8250	2950	2000	Clear
400	1000977	JCV120V-400WGSNF	13.0	92.0	51.0	CC-8	7850	2950	2000	Frosted
500	1000384	EVR, JCV120V-500WGS	13.0	92.0	51.0	CC-8	10450	2950	2000	Clear
500	1000466	EYX, JCV120V-500WGSF	13.0	92.0	51.0	CC-8	9500	3000	2000	Frosted
500	1000465	EYW, JCV130V-500WGS	13.0	92.0	51.0	CC-8	10000	3000	2000	Clear
500	1000464	EYV, JCV130V-500WGSF	13.0	92.0	51.0	CC-8	9500	3000	2000	Frosted
500	1000995	JCV230V-500WGS	13.0	92.0	50.8	CC-8	9000	2950	2000	Clear
750	1000463	EYT, JCV120V-750WB1	13.0	95.0	51.0	CC-8	18500	3050	500	Clear
1000	1000967	JCV120V-1000WC3	13.5	100.0	51.0	CC-8	26000	3200	300	Clear
Mogul Screw Base – E39										
2000	1000095	BWF, JCV120V-2000W	25.0	190.5	133.4	CC-8	59000	3200	500	Clear
2000	1000096	BWG, JCV120V-2000W	25.0	190.5	133.4	CC-8	57200	3200	500	Frosted



E11

E39

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

JCV SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Miniature 2-Pin Base - G5.3
Glass 2-Pin Base - G6.35, GX6.35

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
Miniature 2-Pin Base – G5.3											
125	1000605	FSH, JCV120V-125WB	11.5	57.0	32.0	CC-8	2500	3000	200	BD/Hor	1
250	1000647	GCA, JCV120V-250WC	11.5	57.0	32.0	CC-8	5880	3200	200	BD/Hor	1
Glass 2-Pin Base – G6.35											
250	1000343	EPL, JCV30V-250WS1	10.0	50.0	24.5	CC-8	7500	3400	6	Any	2
300	1000579	FNB, JCV120V-300WC8/UA	13.5	55.0	32.0	CC-8	8100	3200	75	BD/Hor	2
Glass 2-Pin Base – GX6.35											
300	1000974	(FNS) JCV120V-300WC (64512)	16.0	57.5	30.0	CC-8	8100	3200	30	BD/Hor	3
650	1000983	JCV120V-650WC	24.0	57.5	30.0	2CC-8	1700	3200	100	BD/Hor	4
1000	1001822	JCV120V-1000WC4	23.0	67.5	38.0	2CC-8	27000	3200	100	BD/Hor	4

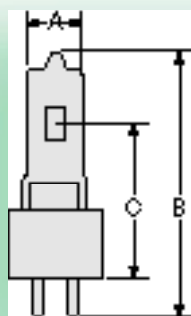


Fig.1

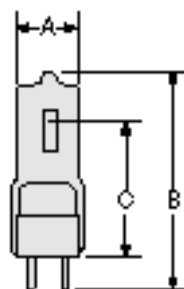


Fig.2

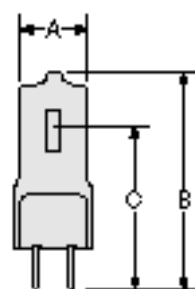


Fig.3

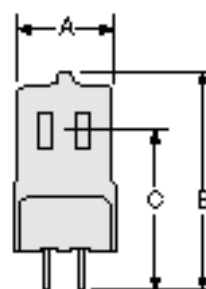


Fig.4

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

JCV SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Medium 2-Pin Base - G9.5
- Medium Prefocus 2-Pin Base - GY9.5, GZ9.5

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
Medium 2-Pin Base – G9.5											
400	1003023	HX-401, JCV115V-400WBM	19.0	104.0	60.3	CC-8	8500	3050	1500	Any	1
400	1003022	HX-400, JCV115V-400WCM	19.0	104.0	60.3	CC-8	10000	3200	300	Any	1
500	1000286	EHC/EHB, JCV120V-500WCM	13.5	101.0	60.3	CC-8	12700	3200	300	Any	2
500	1000287	EHD, JCV120V-500WBH	13.5	101.0	60.3	CC-8	10000	3000	2000	Any	2
500	1001814	JCV220V-500WBM	15.0	102.0	60.3	CC-8	10500	3000	400	Any	2
500	1000997	JCV240V-500WBM	15.0	102.0	60.3	CC-8	10500	3000	400	Any	2
575	1000543	FLK, HX-600, JCV115V-575WCM	18.0	104.0	60.5	CC-8	16500	3200	300	Any	1
575	1002196	HX-601, JCV115V-575WBM	19.0	104.0	60.3	CC-8	12800	3050	1500	Any	1
700	1000998	JCV240V-700WCH	19.5	102.0	60.3	CC-8	18000	3200	350	Any	2
750	1000288	EHF, JCV120V-750WCH	15.0	104.0	60.3	CC-8	20400	3200	300	Any	2
750	1000289	EHG, JCV120V-750WBH	19.0	104.0	60.3	CC-8	15400	3000	2000	Any	2
1000	1000494	FCV, JCV120V-1000WCF	19.0	104.0	60.3	CC-8	26500	3200	300	Any	2
1000	1000509	FEL, JCV120V-1000WCH	19.0	104.0	60.3	CC-8	27500	3200	375	Any	2
1000	1000510	FEP, JCV240V-1000WCH	19.0	104.0	60.3	CC-8	25500	3200	300	Any	2
1200	1000972	JCV120V-1200WCH	22.0	104.0	60.3	CC-8	33000	3250	200	Any	2
Medium Prefocus 2-Pin Base – GY9.5											
600	1000547	FMR, JCV120V-600WGY	17.0	88.9	50.8	CC-8	12500	3000	2000	BD/Hor	3
Medium Prefocus 2-Pin Base – GZ9.5											
300	1000578	FNA, JCV120V-300WGY	16.0	88.9	50.8	CC-8	5800	3000	2000	BD/Hor	4

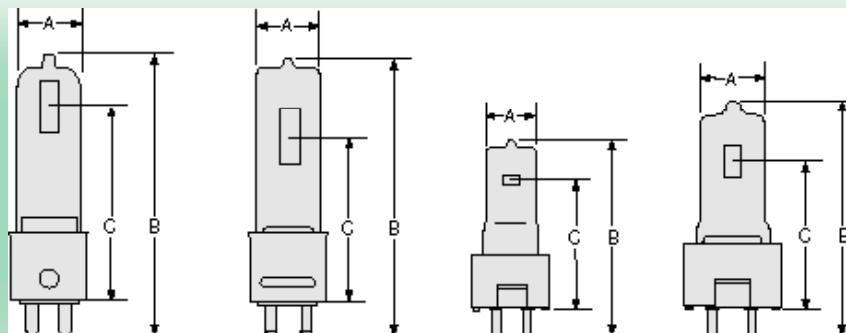
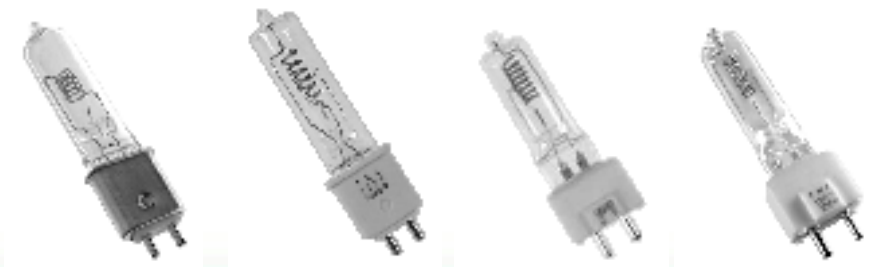


Fig.1

Fig.2

Fig.3

Fig.4

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

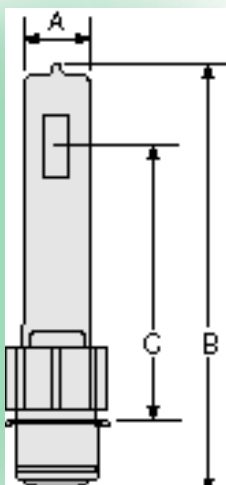
JCV SERIES

- Only for Use in Approved Enclosed Halogen Fixtures



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position
			Dia (A)	OAL (B)	LCL (C)					
Medium Prefocus Base – P28s										
500	1000273	EGC/EGD, JCV120V-500WC	14.0	152	88.9	CC-8	12700	3150	500	Any
500	1000274	EGE, JCV120V-500WB	14.0	152	88.9	CC-8	10450	3000	2000	Any
750	1000275	EGF, JCV120V-750WC	19.0	152	88.9	CC-8	20400	3200	500	Any
750	1000276	EGG, JCV120V-750WB	19.0	152	88.9	CC-8	15750	3000	2000	Any
1000	1000278	EGJ, JCV120V-1000WC	19.0	152	88.9	CC-8	27500	3200	500	Any
1000	1000279	EGK, JCV120V-1000WCF	19.0	152	88.9	CC-8	26500	3200	500	Any
1000	1000280	* EGM, JCV120V-1000WB	19.0	152	88.9	CC-8	21500	3000	2000	Any

* Frosted Envelope



TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

JS SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- 2-Pin Base - GY16
Bipost Base - G22



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
GY16 Base											
2000	1000631	FTM, JS220V-2000WCGY	42.0	145.0	70.0	C-13	54000	3200	400	Any	1
Medium Bipost Base – G22											
500	1000281	EGN, JS120V-500WC	23.0	117.0	63.5	C-13D	13000	3200	100	BD/Hor	2
750	1000282	EGR, JS120V-750WC (CP39)	23.0	127.0	63.5	C-13D	21000	3200	200	BD/Hor	2
1000	1000283	EGT, JS120V-1000WC (CP40)	23.0	127.0	63.5	C-13D	28500	3200	200	BD/Hor	2

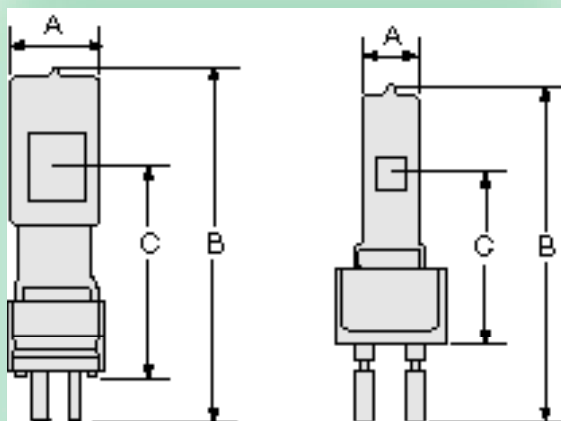


Fig.1

Fig.2

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

JS SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Mogul Bipost Base - G38
P40s Base



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Burn Position	Fig No
			Dia (A)	OAL (B)	LCL (C)						
Mogul Bipost Base – G38											
1000	1000154	CYV, JS120V-1000WC2	23.0	200.0	127.0	C-13	28500	3200	200	BD/Hor	1
1500	1000150	CXZ, JS120V-1500W	40.0	210.0	127.0	C-13	44500	3200	400	BD	2
2000	1000094	BWA, JS120V-2000W/G38	25.0	203.2	127.0	CC-8	54000	3200	500	Any	3
2000	1000155	CYX, JS120V-2000WC	40.0	210.0	127.0	C-13	59000	3200	300	BD/45	2
5000	1000215	DPY, JS120V-5000WC	60.0	268.0	165.0	C-13	145000	3200	500	BD/45	4
10000	1000222	DTY, JS120V-10000WC	80.0	391.0	254.0	C-13	285000	3200	500	BD/45	5
20000	1002288	BCM (208V) JS208V-20000W/C	100.0	550.0	354.0	C-13	580000	3200	400	BD/45	6
20000	1002165	BCM, JS225V-20000W	100.0	550.0	354.0	C-13	580000	3200	400	BD/45	6

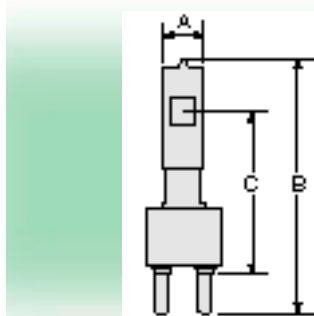


Fig.1

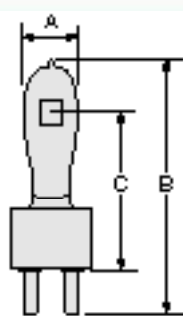


Fig.2

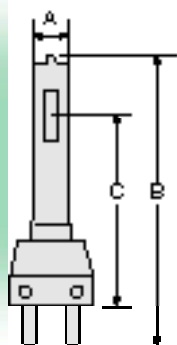


Fig.3

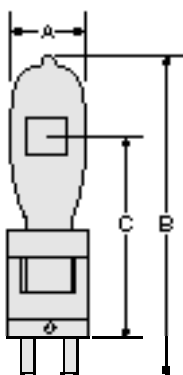


Fig.4

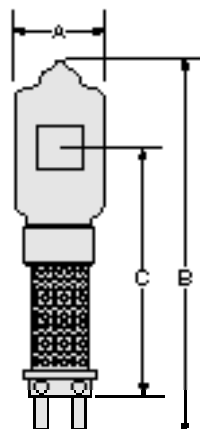


Fig.5

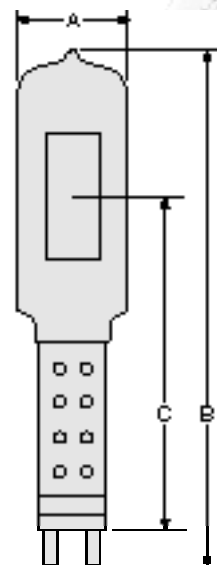


Fig.6

TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

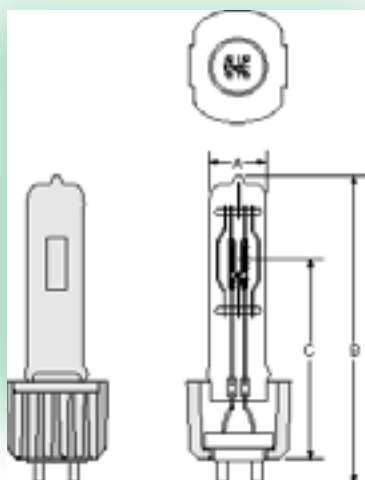
for ETC Source Four™, Source Four JR™ & Source Four PAR™

HPL SERIES

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

Watts	Ushio Ordering Code	Ushio Lamp Code	Description	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h
				Dia (A)	OAL (B)	LCL (C)				
Heat Sink Base – 77 Volt										
550	1000668	HPL-550/77V+	JS77V-550WC	18.35	104	60.3	4-C8	16170	3250	300
550	1000669	HPL-550/77X+	JS77V-550WX	18.35	104	60.3	4-C8	12160	3050	2000
750	1000676	HPL-750/77V	JS77V-750WC	18.35	104	60.3	4-C8	22950	3250	300
115 Volt										
375	1000666	HPL-375/115V+	JS115V-375WC	18.35	104	60.3	4-C8	10540	3250	300
375	1000667	HPL-375/115X+	JS115V-375WX	18.35	104	60.3	4-C8	8000	3050	1000
575	1000670	HPL-575/115V+	JS115V-575WC	18.35	104	60.3	4-C8	16520	3250	300
575	1000671	HPL-575/115X+	JS115V-575WX	18.35	104	60.3	4-C8	12360	3000	2000
750	1000675	HPL-750/115V+	JS115V-750WC	18.35	104	60.3	4-C8	21900	3250	300
750	1003153	HPL-750/115X+	JS115V-750WX	18.35	104	60.3	4-C8	16400	3050	1500
120 Volt										
575	1000672	HPL-575/120V+	JS120V-575WC	18.35	104	60.3	4-C8	16520	3250	300
575	1002283	HPL-575/120X+	JS120V575WX	18.35	104	60.3	4-C8	12360	3050	2000
750	1003144	HPL-750/120V+	JS120V-750WC	18.35	104	60.3	4-C8	21900	3250	300
750	1003178	HPL-750/120X+	JS120V-750WX	18.35	104	60.3	4-C8	16400	3050	1500
230 Volt										
375	1003182	HPL-375/230X+	JS230V-375WXN	18.35	104	60.3	6-C8	7250	3000	1000
575	1000673	HPL-575/230V+	JS230V-575WCN	18.35	104	60.3	6-C8	14900	3200	400
575	1002233	HPL-575/230X+	JS230V-575WXN	18.35	104	60.3	6-C8	11780	3050	1500
750	1002289	HPL-750/230V+	JS230V-750WCN	18.35	104	60.3	6-C8	19750	3200	300
750	1003179	HPL-750/230X+	JS230V-750WXN	18.35	104	60.3	6-C8	15600	3050	1500
240 Volt										
375	1003183	HPL-375/240X+	JS240V-375WXN	18.35	104	60.3	6-C8	7250	3000	1000
575	1000674	HPL-575/240V+	JS240V-575WCN	18.35	104	60.3	6-C8	14900	3050	400
575	1002234	HPL-575/240X+	JS240V-575WXN	18.35	104	60.3	6-C8	11780	3050	1500
750	1003184	HPL-750/240V+	JS240V-750WCN	18.35	104	60.3	6-C8	19750	3200	300
750	1003180	HPL-750/240X+	JS240V-750WXN	18.35	104	60.3	6-C8	15600	3050	1500

Top View



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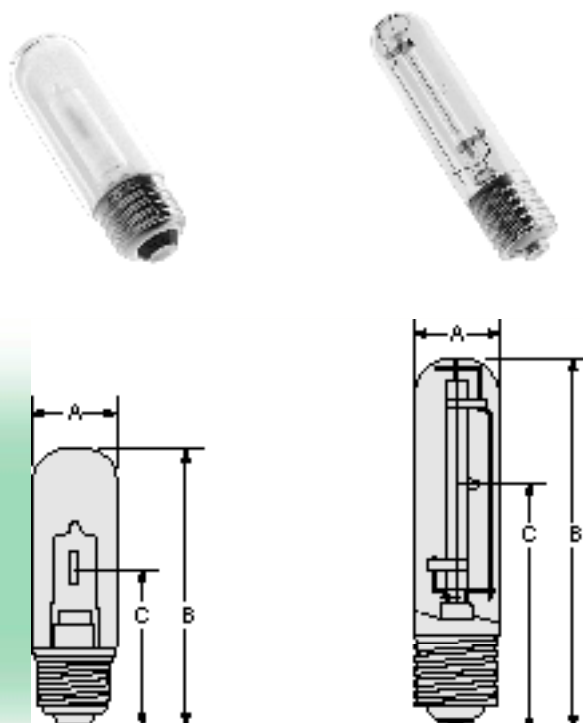
TUNGSTEN HALOGEN LAMPS • SINGLE ENDED

JT SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Medium & Mogul Screw Base
- Double Envelope
- 120 Volt
- Operate in Any Position

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm			Filament Type	Approx Lumens lm	Color Temp K	Avg Life h	Bulb Finish
			Dia (A)	OAL (B)	LCL (C)					
Medium Screw Base – E26 Compact Version										
75	1001156	JT120V-75WG	31.0	85.0	51.0	CC-8	1200	2800	1000	Clear
100	1001137	JT120V-100WG	31.0	85.0	51.0	CC-8	1600	2800	1500	Clear
100	1001140	JT120V-100WGF	31.0	85.0	54.0	CC-8	1552	2800	1500	Frosted
150	1001883	JT120V-150WG	31.0	85.0	54.0	CC-8	2800	2800	2000	Clear
250	1001141	JT120V-250WG	31.0	105.0	58.0	CC-8	5000	2950	2000	Clear
250	1001142	JT120V-250WGF	31.0	105.0	58.0	CC-8	4850	2950	2000	Frosted
Mogul Screw Base – E39										
500	1001143	JT120V-500WB	40.0	193.0	123.0	C-8	11000	3200	2000	Clear
1000	1001134	JT120V-1000WB	42.0	260.0	157.0	C-8	22000	3050	2000	Clear
Mogul Screw Base – E40										
500	1003361	JT120V-1000WC/E40	42.0	195.0	123.0	C-8	25000	3200	150	Clear
500	1001173	JT240V-500WB	42.0	193.0	123.0	C-8	9500	3200	2000	Clear
1000	1001889	JT240V-1000WB	42.0	260.0	175.0	C-8	21500	3400	2000	Clear

JT type Halogen lamps are double enveloped lamps in which a Halogen lamp serves as an inner tube.



E26- Clear or Frosted
Compact Version

E39 and E40

TUNGSTEN HALOGEN LAMPS • MR-8 REFLECTOR

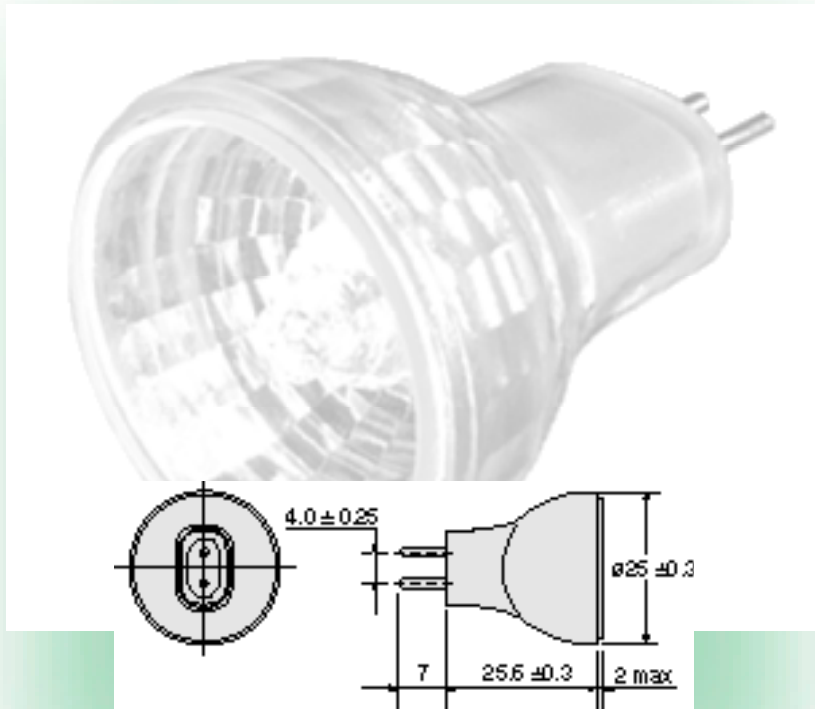
MR-8 SERIES

- Only for Use in Approved Halogen Fixtures
- 25mm, Dichroic Coating, Faceted Mirror Reflector
- Miniature 2-Pin
- Low Voltage - 12 Volt

- Operate in Any Position



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions	Color Temp K	Angle	Beam		Ave Life h
			OAL mm			Spread	Max CP cd	
Miniature 2-Pin Base – GZ4 with Front Glass Cover								
20	1003116	MR-8 12V-20W/NSP10/FG	34.6	3050	10°	Narrow Spot	1700	2000
20	1003117	MR-8 12V-20W/NFL23/FG	34.6	3050	23°	Narrow Flood	800	2000
35	1003118	MR-8 12V-35W/SP13/FG	34.6	3050	13°	Spot	2300	2000
35	1003119	MR-8 12V-35W/NFL26/FG	34.6	3050	26°	Narrow Flood	1400	2000



GZ4

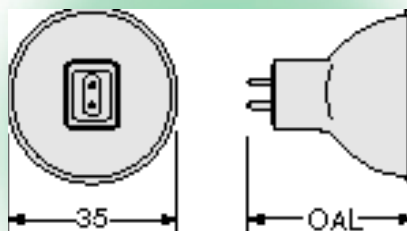
TUNGSTEN HALOGEN LAMPS • MR-11 REFLECTOR

MR-11 SERIES

- Only for Use in Approved Halogen Fixtures
- 35mm, Dichroic Coating, Faceted Mirror Reflector
- Miniature 2-Pin Base
- 12 & 24 Volt
- Operate in Any Position
- Available with Front Glass Cover (FG)



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions	Color Temp K	Angle	Beam	Max CP cd	Ave Life h
			OAL mm			Spread		
Miniature 2-Pin Base – GZ4								
12	1000615	FTA, JDR/M12V-12W/G/NSP9.5	35.0	2925	9.5°	Narrow Spot	2300	2000
12	1000616	FTA/FG, JDR/M12V-12W/G/NSP9.5/FG	35.0	2925	9.5°	Narrow Spot	2300	2000
20	1000617	FTB, JDR/M12V-20W/G/SP10	35.0	2925	10°	Spot	3000	2000
20	1000618	FTB/FG, JDR/M12V-20W/G/SP10/FG	35.0	2925	10°	Spot	3000	2000
20	1000619	FTC, JDR/M12V-20W/G/SP17	35.0	2925	17°	Spot	1400	2000
20	1000620	FTC/FG, JDR/M12V-20W/G/SP17/FG	35.0	2925	17°	Spot	1400	2000
20	1001843	JDR/M12V-20W/G/SP16/FG	35.0	3450	16°	Spot	2000	250
20	1000621	FTD, JDR/M12V-20W/G/FL30	35.0	2925	30°	Flood	600	2000
20	1000622	FTD/FG, JDR/M12V-20W/G/FL30/FG	35.0	2925	30°	Flood	600	2000
35	1000623	FTE, JDR/M12V-35W/G/SP12	35.0	2950	12°	Spot	4800	2000
35	1000624	FTE/FG, JDR/M12V-35W/G/SP12/FG	35.0	2950	12°	Spot	4800	2000
35	1000625	FTF, JDR/M12V-35W/G/SP20	35.0	2950	20°	Spot	2400	2000
35	1000626	FTF/FG, JDR/M12V-35W/G/SP20/FG	35.0	2950	20°	Spot	2400	2000
35	1000627	FTH, JDR/M12V-35W/G/FL30	35.0	2950	30°	Flood	1300	2000
35	1000628	FTH/FG, JDR/M12V-35W/G/FL30/FG	35.0	2950	30°	Flood	1300	2000
24 Volt, Miniature 2-Pin Base – GZ4								
20	1001001	JDR/M24V-20W/SP12	35.0	2925	12°	Spot	2200	2000
20	1001002	JDR/M24V-20W/SP12/FG	35.0	2925	12°	Spot	2200	2000
20	1000999	JDR/M24V-20W/SP19	35.0	2925	19°	Spot	1150	2000
20	1001000	JDR/M24V-20W/SP19/FG	35.0	2925	19°	Spot	1150	2000
20	1001003	JDR/M24V-20W/FL30	35.0	2925	30°	Flood	500	2000
20	1001004	JDR/M24V-20W/FL30/FG	35.0	2925	30°	Flood	500	2000
35	1001007	JDR/M24V-35W/SP13	35.0	2925	13°	Spot	2100	2000
35	1001008	JDR/M24V-35W/SP13/FG	35.0	2925	13°	Spot	2100	2000
35	1001005	JDR/M24-35W/SP19	35.0	2925	19°	Spot	1700	2000
35	1001010	JDR/M24V-35W/FL30/FG	35.0	2925	30°	Flood	1700	2000



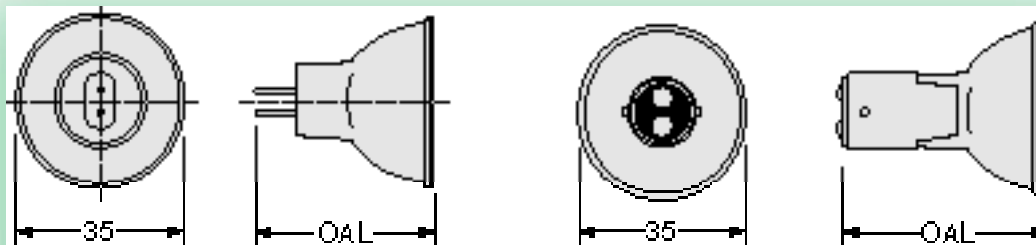
GZ4

TUNGSTEN HALOGEN LAMPS • MR-11 REFLECTOR

MR-11 SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- Miniature 2-Pin & DC Bayonet Base
- Low Voltage - 12 Volt
- Operate in Any Position
- Faceted (except as noted)

Watts	Ushio Ordering Code	Ushio Lamp Code	Reflector Type	Dimensions	Filament Type	Color Temp K	Beam			Ave Life h
				OAL mm			Angle	Spread	Max CP cd	
Miniature 2-Pin Base – GZ4										
10	1000931	JCR/M6V-10WN/FG	Specular	40.8	C-6	3050	8.5°	Narrow Spot	3000	200
25	1000544	FLT, JCR/M13.8V-25W		35.0	CC-6	3100	—	—	50	500
20	1000934	JCR/M6V-20W		33.3	C-6	3200	20°	Spot	1800	50
35	1000930	JCR/M14V-35W		36.0	C-6	—	—	—	—	50
50	1000926	JCR/M12V-50W	Specular	35.0	C-8	—	—	—	—	50
75	1000929	JCR/M12V-75W/HO		35.0	C-8	—	—	—	—	50
100	1000921	JCR/M12V-100W		37.0	C-8	3400	—	—	—	25
Double Contact Bayonet Base – BA15d										
20	1000607	FSS, JDR/M12V-20W/BA/NSP10	Specular	42.0	C-6	2900	10°	Narrow Spot	4000	2000
20	1000608	FSS/FG, JDR/M12V-20W/BA/NSP10/FG		46.5	C-6	2900	10°	Narrow Spot	4000	2000
20	1000609	FST, JDR/M12V-20W/BA/SP17		42.0	C-6	2900	17°	Spot	1400	2000
20	1000610	FST/FG, JDR/M12V-20W/BA/SP17/FG		46.5	C-6	2900	17°	Spot	1400	2000
20	1000611	FSV, JDR/M12V-20W/BA/FL30	Specular	42.0	C-6	2900	30°	Flood	600	2000
20	1000612	FSV/FG, JDR/M12V-20W/BA/FL30/FG		46.5	C-6	2900	30°	Flood	600	2000
35	1000655	GDX, JDR/M12V-35W/BA/SP10		42.0	C-6	2900	10°	Narrow Spot	4500	2000
35	1000656	GDX/FG, JDR/M12V-35W/BA/SP10/FG		46.5	C-6	2900	10°	Narrow Spot	4500	2000
35	1000657	GDY, JDR/M12V-35W/BA/SP20	Specular	42.0	C-6	3000	20°	Spot	2100	2000
35	1000658	GDY/FG, JDR/M12V-35W/BA/SP20/FG		46.5	C-6	3000	20°	Spot	2100	2000
35	1000659	GDZ, JDR/M12V-35W/BA/FL30		42.0	C-6	2950	30°	Flood	1600	2000
35	1000660	GDZ/FG, JDR/M12V-35W/BA/FL30/FG		46.5	C-6	2950	30°	Flood	1600	2000



GZ4

BA15d
with front glass cover

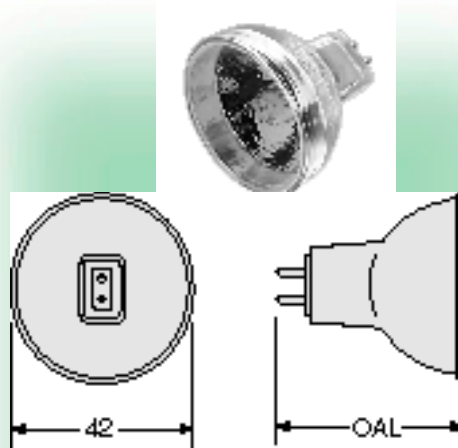
TUNGSTEN HALOGEN LAMPS • MR-13 REFLECTOR

JCR SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- 2-Pin Base
- 42mm Dichroic Coated Reflector
- Operate Base Down to Horizontal
- Focused Beam for Optical Applications

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions OAL mm	Reflector Type	Filament Type	Working Distance mm	Center Screen Illuminance lx	Color Temp K	Avg Life h	Burn Position
2-Pin Base – GX5.3 MR-13 Reflector										
250	1000423	EXY, JCR82V-250W	44.5	Stippled	CC-8	152.4	610	3250	250	BD/Hor
300	1000414	EXR, JCR82V-300W	44.5	Stippled	CC-8	152.4	1100	3350	35	BD/Hor
300	1000421	EXW, JCR82V-300W	44.5	Stippled	CC-8	152.4	1200	3400	15	BD/Hor
300	1000535	FHS, JCR82V-300W	44.5	Stippled	CC-8	152.4	1000	3300	70	BD/Hor

Center Screen Illuminance - Approximate value for reference only



GX5.3

TUNGSTEN HALOGEN LAMPS • MR-16 REFLECTOR

JCR SERIES

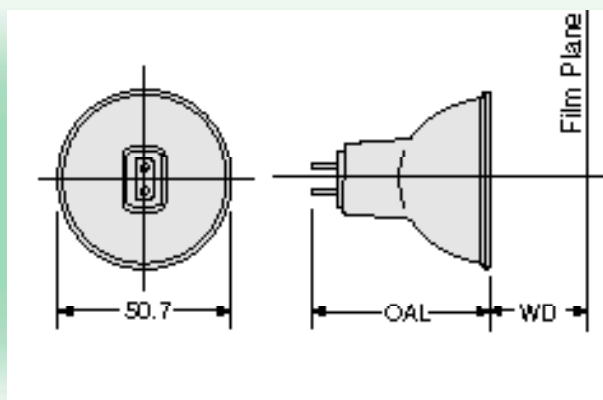
- Focused Beam for Optical Applications
- Only for Use in Approved Enclosed Halogen Fixtures
- 2-Pin Base
- 50mm Dichroic Coated Reflector

- Operate Base Down to Horizontal



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions	Reflector Type	Filament Type	Working Distance mm	Luminous Intensity cd	Center Screen Illuminance lx	Color Temp K	Avg Life h	Burn Position
			OAL mm								
2-Pin Base – GX5.3 Base											
30	1000315	EKZ, JCR10.8V-30W	44.5	Specular	CC-6	38.1	—	400	3100	200	BD/Hor
35	1000344	EPN, JCR12V-35W	44.5	Specular	C-6	9.0	—	350	3300	50	BD/Hor
42	1000346	EPT, JCR10.8V-42W	44.5	Faceted	CC-6	38.1		250	2900	8000	BD/Hor
50	1000335	ENL, JCR12V-50W	44.5	Faceted	C-6	38.1	2000	—	3000	4000	Any
50	1000546	FML, JCR13.8V-50W	44.5	Faceted	CC-6	214.3	—	230	3150	1000	Any
50	1000197	DJT, JCR13.8V-50W	44.5	Faceted	CC-6	152.0	—	538	3150	1000	BD/Hor
50	1000339	ENZ, JCR30V-50W	44.5	Specular	CC-6	29.0	—	650	3400	25	BD/Hor
80	1000303	EJY, JCR19V-80W	44.5	Specular	CC-6	38.1	—	—	3400	25	BD/Hor
80	1000307	EKG, JCR19V-80W	44.5	Specular	CC-6	44.5	—	700	3400	25	BD/Hor
80	1000336	ENW/ENC, JCR19V-80W	44.5	Specular	CC-6	44.5	—	600	3200	400	BD/Hor
80	1000174	DDM, JCR19V-80W	44.5	Faceted	CC-6	152.4	—	680	3350	50	BD/Hor
80	1000177	DDS, JCR21V-80W	44.5	Faceted	CC-6	165.0	—	646	3125	500	BD/Hor
80	1000312	EKP, JCR30V-80W	44.5	Faceted	CC-6	44.5	—	750	3400	25	BD/Hor
80	1000317	ELB, JCR30V-80W	44.5	Specular	CC-6	29.0	—	900	3400	15	BD/Hor
85	1000180	DED, JCR13.8V-85W	44.5	Specular	C-8	165.0	—	1000	3150	1000	BD/Hor
90	1000347	EPV, JCR14.5V-90W	44.5	Stippled	CC-6	155.2	—	1345	3150	500	BD/Hor
90	1000349	EPX, JCR14.5V-90W	44.5	Stippled	CC-6	165.1	—	538	3150	500	BD/Hor
100	1000326	EMC, JCR12V-100W	44.5	Faceted	CC-6	26.5	—	—	3200	200	BD/Hor
100	1001630	EMC/14, JCR13.8V-100W	44.5	Faceted	CC-6	142.0	19000	—	3200	200	BD/Hor
100	1000420	EXV, JCR12V-100W	44.5	Faceted	C-6	—	4500	—	3350	50	BD/Hor
120	1000311	EKN, JCR17.7V-120W	44.5	Specular	CC-6	38.1	—	1000	3200	120	BD/Hor

Center Screen Illuminance - Approximate value for reference only



GX5.3

TUNGSTEN HALOGEN LAMPS • MR-16 REFLECTOR

JCR SERIES

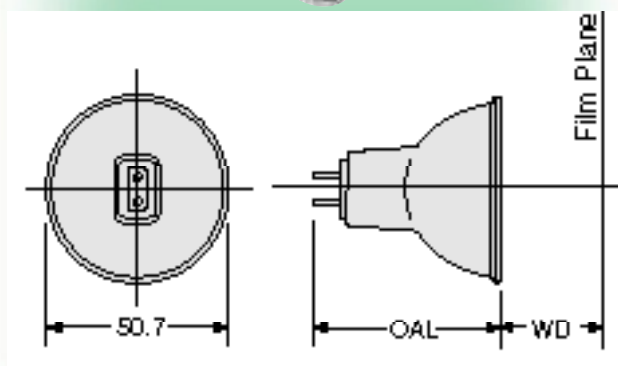
- Focused Beam for Optical Applications
- Only for Use in Approved Enclosed Halogen Fixtures
- 2-Pin Base
- 50mm Dichroic Coated Reflector

- Operate Base Down to Horizontal



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions OAL mm	Reflector Type	Filament Type	Working Distance mm	Luminous Intensity cd	Center Screen Illuminance lx	Color Temp K	Avg Life h	Burn Position
2-Pin Base – GX5.3 MR-16 Reflector											
150	1000173	DDL, JCR20V-150W	44.5	Faceted	CC-6	194.5	—	400	3150	500	BD/Hor
150	1000297	EJA, JCR21V-150W	44.5	Specular	CC-6	28.0	—	—	3400	40	BD/Hor
150	1000301	EJM, JCR21V-150W	44.5	Specular	CC-6	38.1	—	—	3400	40	BD/Hor
150	1000302	EJV, JCR21V-150W	44.5	Specular	CC-6	44.5	—	1500	3400	40	BD/Hor
150	1000306	EKE, JCR21V-150W	44.5	Specular	CC-6	44.5	—	900	3250	200	BD/Hor
150	1000319	ELD/EJN, JCR21V-150W	44.5	Stippled	CC-6	50.8	—	320	3400	40	BD/Hor
150	1002247	ELD/K, JCR21V-150W	44.5	Stippled	CC-6	165.0	—	—	3400	40	BD/Hor
200	1000300	EJL, JCR24V-200W	44.5	Specular	CC-6	31.7	—	1100	3400	50	BD/Hor
200	1000314	EKX, JCR24V-200W	44.5	Stippled	CC-6	139.7	—	—	3400	25	BD/Hor
225	1003034	EZF/K, JCR69V-225W	44.5	Faceted	CC-8	152.4	—	500	—	500	BD/Hor
250	1000318	ELC, JCR24V-250W	44.5	Specular	CC-6	31.7	—	1500	3400	50	BD/Hor
250	1003106	ELC-3, JCR24V-250W	44.5	Specular	CC-6	31.8	—	960	3400	300	BD/Hor
250	1003264	ELC-5, JCR24V-250W	44.5	Specular	CC-6	31.8	—	960	3400	500	BD/Hor
250	1001037	ELC/C, JER24V-250W	44.5	Specular	CC-6	31.8	—	800	3400	50	BD/Hor
340	1000353	ERV, JCR36V-340W	44.5	Faceted	CC-8	298.5	—	—	3300	75	BD/Hor

Center Screen Illuminance - Approximate value for reference only



GX5.3

TUNGSTEN HALOGEN LAMPS • MR-16 REFLECTOR

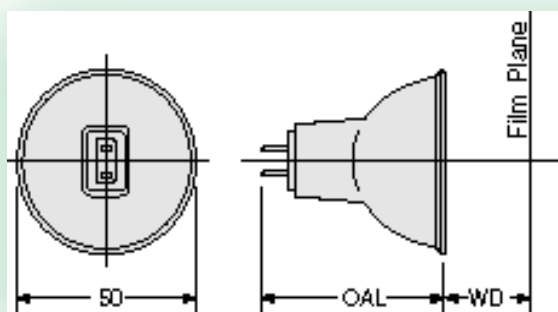
JCR SERIES

- Focused Beam for Optical Applications
- Only for Use in Approved Enclosed Halogen Fixtures
- Oval 2-Pin Base - GY5.3, 2-Pin Base - GZ6.35
- 50mm Dichroic Coated Reflector

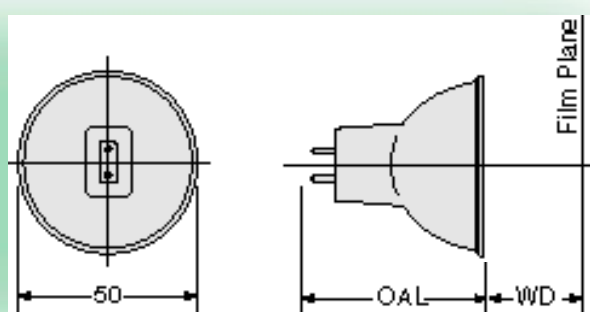
- Operate Base Down to Horizontal



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions		Reflector Type	Filament Type	Working Distance mm	Color Temp K	Avg Life h	Burn Position
			Dia mm	OAL mm						
Oval 2-Pin Base – GY5.3										
85	1000357	ESH, JCR82V-85W	50.67	44.5	Stippled	CC-8	152.0	2950	250	BD/Hor
85	1000358	ESJ, JER82V-85W	50.67	44.5	Specular	CC-8	32.0	3350	40	BD/Hor
150	1000356	ESD, JCR120V-150W	50.67	44.5	Stippled	CC-8	44.5	3350	12	BD/Hor
150	1000940	JCR120V-150W/B	50.67	44.5	Stippled	CC-8	—	3050	100	BD/Hor
200	1000441	EYA, JCR82V-200W	50.67	44.5	Faceted	CC-8	38.1	3300	50	BD/Hor
250	1000386	EVW, JCR82V-250W	50.67	44.5	Faceted	CC-8	298.5	3300	50	BD/Hor
250	1000333	ENH, JCR120V-250W	50.67	44.5	Faceted	CC-8	152.4	3250	175	BD/Hor
250	1000379	ETJ, JCR120V-250W	50.67	44.5	Specular	CC-8	36.5	3250	175	BD/Hor
250	1000422	EXX, JCR120V-250W	50.67	44.5	Stippled	CC-8	298.5	3300	75	BD/Hor
300	1000332	ENG, JCR120V-300W	50.67	44.5	Stippled	CC-8	152.4	3450	15	BD/Hor
300	1000458	EYK, JCR120V-300W	50.67	44.5	Specular	CC-8	31.7	3300	60	BD/Hor
300	1000321	ELH, JCR120V-300W	50.67	44.5	Stippled	CC-8	154.3	3350	35	BD/Hor
300	1003020	ELH-5, JCR125V-300W	50.67	44.5	Stippled	CC-8	152.4	3350	35	BD/Hor
360	1000542	FLE, JCR82V-360W U/D	50.00	44.5	Faceted	CC-8	209.6	3300	75	BD/Hor
360	1000337	ENX, JCR82V-360W	50.67	44.5	Faceted	CC-8	298.5	3300	75	BD/Hor
360	1000338	ENX-5, JCR86V-360W	50.67	44.5	Faceted	CC-8	298.5	3300	75	BD/Hor
350	1000348	EPW, JCR100V-360W	50.67	44.5	Stippled	CC-8	298.5	3300	75	BD/Hor
410	1000636	FXL, JCR82V-410W	50.67	44.5	Faceted	CC-8	298.5	3300	75	BD/Hor
2-Pin Base – GZ6.35										
55	1000945	JCR9.5V-55W	50.0	42.0	Specular	C-8	—	3000	1500	BD/Hor
75	1000270	EFN, JCR12V-75W	50.0	42.0	Specular	C-6	32.0	3400	50	BD/Hor
100	1003003	JCR12V-100W/H10	50.0	42.0	Specular	C-8	36.0	3100	1000	BD/Hor
100	1000941	JCR12V-100WB/XX	50.0	44.5	Specular	C-6	32.0	3100	1000	BD/Hor
100	1000271	EFP, JCR12V-100W	50.0	42.0	Specular	C-6	32.0	3400	50	BD/Hor
150	1000272	EFR, JCR15V-150W	50.0	42.0	Specular	C-8	32.0	3400	50	BD/Hor



GY5.3



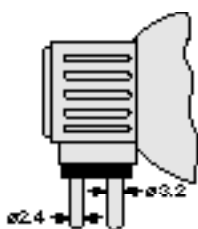
GZ6.35

TUNGSTEN HALOGEN LAMPS • MR-14 AND MR-18 REFLECTOR

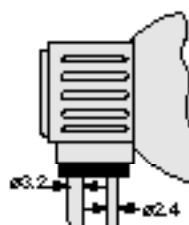
JCR SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- 2-Pin Vented Base - G7.9
- 2-Pin Vented Base - GX7.9
- 45mm and 57mm Dichroic Coated Reflector
- Operate in Horizontal Position

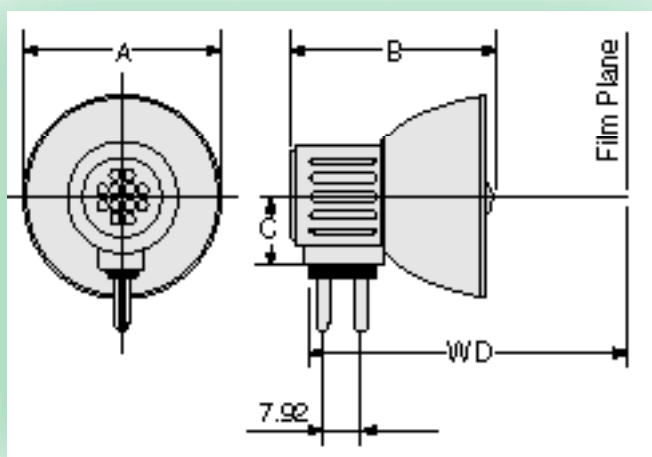
Watts	Ushio	Ushio	Dimensions mm			Reflector Type	Filament Type	Working Distance mm	Color Temp K	Avg Life h	Burn Position
	Ordering	Lamp Code	Dia	OAL	Ref.						
	Code		(A)	(B)	(C)						
MR-14 & MR-18, 2-Pin Vented Base – G7.9 Line Voltage											
150	1000206	DNE, JCR120V-150W	57.2	49.9	15.9	Specular	CC-8	69.1	3350	12	Horiz
250	1000057	BHB, JCR120V-250W	44.5	47.5	15.9	Specular	CC-8	65.8	3400	50	Horiz
MR-14 & MR-18, 2-Pin Vented Base – GX7.9 Low Voltage											
150	1000207	DNF, JCR21V-150W	57.2	45.1	15.9	Specular	CC-6	69.1	3400	25	Horiz
150	1000325	ELZ, JCR21V-150W	57.2	45.1	15.9	Specular	CC-6	69.1	3350	60	Horiz



G7.9



GX7.9



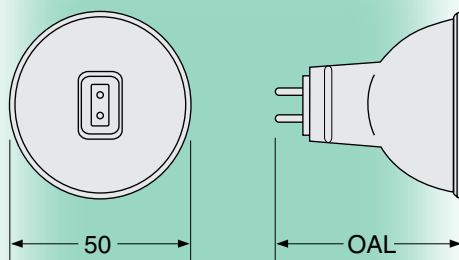
TUNGSTEN HALOGEN LAMPS • MR-16 REFLECTOR

JR 12V SERIES - EUROSTAR™

- Only for Use in Approved Halogen Fixtures
- Titanium Oxide Coated Reflector
- Axial Filament
- Low Voltage - 12 Volts
- Consistent Color
- Integrated UV Protection
- Precisely Focused Light Cone
- Cool Beam Effect
- Available with Front Glass Cover (/FG)



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimension	Filament Type	Beam		Color Temp K	Avg Life h	Burn Position
			OAL mm		Angle	Max CP cd			
2-Pin Base – GU5.3									
10	1001107	JR12V-10W/NFL21	44.9	C-8	21°	600	2800	1500	Any
10	1001108	JR12V-10W/NFL21/FG	44.9	C-8	21°	600	2800	1500	Any
10	1003154	JR12V-10W/FL32	45.2	C-8	32°	400	2800	1500	Any
20	1000366	ESX, JR12V-20W/SP12	44.9	C-8	12°	3500	2950	5000	Any
20	1000370	ESX/FG, JR12V-20W/SP12/FG	45.2	C-8	12°	3500	2950	5000	Any
20	1000028	BBF, JR12V-20W/NFL24	44.9	C-8	24°	1200	2950	5000	Any
20	1000037	BBF/FG, JR12V-20W/NFL24/FG	45.2	C-8	24°	1200	2950	5000	Any
20	1000000	BAB, JR12V-20W/FL36	44.9	C-8	36°	600	2950	5000	Any
20	1000014	BAB/FG, JR12V-20W/FL36/FG	45.2	C-8	36°	600	2950	5000	Any
20	1000001	BAB/60, JR12V-20W/WFL60	44.9	C-8	60°	270	2950	5000	Any
20	1000004	BAB/60/FG, JR12V-20W/WFL60/FG	45.2	C-8	60°	2700	2950	5000	Any
35	1000548	FMT/FRB, JR12V-35W/SP12	44.9	C-8	12°	6000	2950	5000	Any
35	1000551	FMT/FG, JR12V-35W/SP12/FG	45.2	C-8	12°	6000	2950	5000	Any
35	1000552	FMV/FRA, JR12V-35W/NFL24	44.9	C-8	24°	2300	2950	5000	Any
35	1000559	FMV/FG, JR12V-35W/NFL24/FG	45.2	C-8	24°	2300	2950	5000	Any
35	1000564	FMW, JR12V-35W/FL36	44.9	C-8	36°	1300	2950	5000	Any
35	1000573	FMW/FG, JR12V-35W/FL36/FG	45.2	C-8	36°	1300	2950	5000	Any
35	1000565	FMW/60, JR12V-35W/WFL60	44.9	C-8	60°	510	2950	5000	Any
35	1000566	FMW/60/FG, JR12V-35W/WFL60/FG	45.2	C-8	60°	510	2950	5000	Any
50	1000416	EXT, JR12V-50W/SP12	44.9	C-8	12°	11000	3000	5000	Any
50	1000419	EXT/FG, JR12V-50W/SP12/FG	45.2	C-8	12°	11000	3000	5000	Any
50	1000424	EXZ, JR12V-50W/NFL24	44.9	C-8	24°	3600	3000	5000	Any
50	1000430	EXZ/FG, JR12V-50W/NFL24/FG	45.2	C-8	24°	3600	3000	5000	Any
50	1000398	EXN, JR12V-50W/FL36	44.9	C-8	36°	2000	3000	5000	Any
50	1000405	EXN/FG, JR12V-50W/FL36/FG	45.2	C-8	36°	2000	3000	5000	Any
50	1000589	FNV, JR12V-50W/WFL60	44.9	C-8	60°	850	3000	5000	Any
50	1000592	FNV/FG, JR12V-50W/WFL60/FG	45.2	C-8	60°	850	3000	5000	Any



GU5.3

TUNGSTEN HALOGEN LAMPS • MR-16 REFLECTOR

JR 12V & 24V SERIES - EUROSTAR™

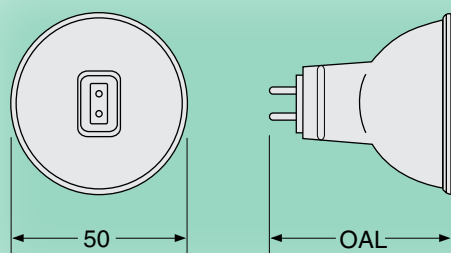
- Only for Use in Approved Halogen Fixtures
- 50mm Diameter Dichroic Coated Reflector
- 2-Pin Base
- 12 & 24 Volt

- Available with Front Glass Cover (FG)
- Consistent Color

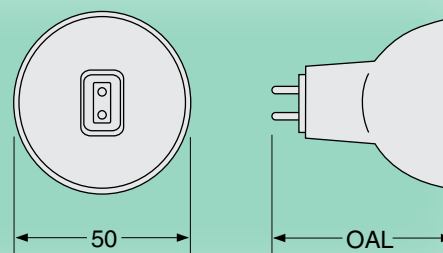


Watts	Ushio	Ushio	Dimension	Filament	Beam		Color	Avg	Burn
	Ordering	Lamp Code	OAL	Type	Angle	Max CP			
	Code		mm				K	h	
2-Pin Base – GU5.3									
75	1000451	EYF, JR12V-75W/SP12	44.9	C-8	12°	13000	3000	5000	Any
75	1000452	EYF/FG, JR12V-75W/SP12/FG	45.2	C-8	12°	13000	3000	5000	Any
75	1000454	EYJ/EZZ, JR12V-75W/NFL24	44.9	C-8	24°	4800	5000	5000	Any
75	1000455	EYJ/EZZ/FG, JR12V-75W/NFL24/FG	45.2	C-8	24°	4800	3000	5000	Any
75	1000444	EYC, JR12V-75W/FL36	44.9	C-8	36°	2700	3000	5000	Any
75	1000447	EYC/FG, JR12V-75W/FL36/FG	45.2	C-8	36°	2700	5000	5000	Any
75	1000445	EYC/60, JR12V-75W/WFL60	44.9	C-8	60°	1220	5000	5000	Any
75	1000446	EYC/60/FG, JR12V-75W/WFL60/FG	45.2	C-8	60°	1220	3000	5000	Any
24V, 2-Pin Base – GU5.3									
20	1001112	JR24V-20W/SP12	44.9	C-6	12°	3500	2900	2500	Any
20	1001113	JR24V-20W/SP12/FG	45.2	C-6	12°	3500	2900	2500	Any
20	1001114	JR24V-20W/FL36*	44.9	C-6	36°	600	2900	2500	Any
35	1003110	JR24V-35W/SP12*	44.9	C-6	12°	4600	2900	3500	Any
35	1003111	JR24V-35W/NFL24*	44.9	C-6	24°	1600	2900	3500	Any
35	1003112	JR24V-35W/FL36*	44.9	C-6	36°	900	2900	3500	Any
50	1003113	JR24V-50W/SP12*	44.9	C-6	12°	7000	2950	4000	Any
50	1003114	JR24V-50W/NFL24*	44.9	C-6	24°	2900	2950	4000	Any
50	1003115	JR24V-50W/FL36*	44.9	C-6	36°	1600	2950	4000	Any
2-Pin Base – GX5.3									
35	1000600	FRB, JR12V-35W/NSP, GX5.3	46.0	C-6	12°	7800	3000	3000	Any
42	1000461	EYR, JR12V-42W/SP12	46.0	CC-6	12°	9000	3000	4000	Any
42	1000462	EYS, JR12V-42W/NFL23	46.0	CC-6	23°	2800	3000	4000	Any
42	1000460	EYP, JR12V-42W/FL38	46.0	CC-6	38°	1400	3000	4000	Any
65	1000595	FPA, JR12V-65W/SP13	46.0	CC-6	13°	11500	3050	4000	Any
65	1000596	FPB, JR12V-65W/FL/FL38	46.0	CC-6	38°	2000	3050	4000	Any

* Front glass versions available



GU5.3



GX5.3

TUNGSTEN HALOGEN LAMPS • MR-16 EUROSTAR REFLEKTO™

EUROSTAR REFLEKTO™

- Only for Use in Approved Halogen Fixtures
- Aluminized Multimirror Reflector
- Low Voltage - 12 Volt
- Less heat to back of the lamp

- Axial Filament
- Consistent Color
- Integrated UV Protection
- Precisely Focused Light Cone

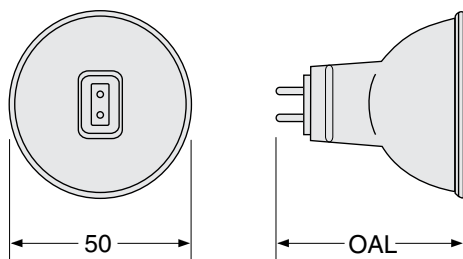
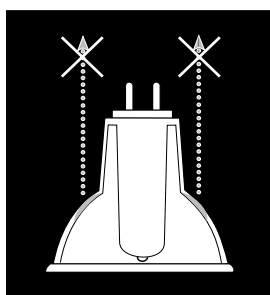
- Universal Burn Position
- Available with Front Glass Cover (/FG)



Watts	Ushio Ordering Code	Ushio Lamp Code	Dimension	Color Temp K	Angle	Beam		Avg Life h	
			OAL mm			Spread	Max CP cd		
2-Pin Base – GU5.3 - Multimirror Reflector									
10	1002143	JR12V-10W/NFL24/A, EUROSTAR-REFLEKTO	44.9	2800	24°	Narrow Flood	400	1200	
20	1000368	ESX/C/A, EUROSTAR-REFLEKTO	44.9	2950	12°	Spot	3500	3500	
20	1000369	ESX/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	12°	Spot	3500	3500	
20	1000033	BBF/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	24°	Narrow Flood	1200	3500	
20	1000009	BAB/C/A, EUROSTAR-REFLEKTO	44.9	2950	36°	Flood	600	3500	
20	1000010	BAB/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	36°	Flood	600	3500	
35	1000549	FMT/C/A, EUROSTAR-REFLEKTO	44.9	2950	12°	Spot	6000	3500	
35	1000550	FMT/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	12°	Spot	6000	3500	
35	1000556	FMV/C/A, EUROSTAR-REFLEKTO	44.9	2950	24°	Narrow Flood	2300	3500	
35	1000557	FMV/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	24°	Narrow Flood	2300	3500	
35	1000570	FMW/C/A, EUROSTAR-REFLEKTO	44.9	2950	36°	Flood	1300	3500	
35	1000571	FMW/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	36°	Flood	1300	3500	
35	1001682	FMW/60/C/A, EUROSTAR-REFLEKTO	44.9	2950	60°	Wide Flood	510	3500	
35	1001683	FMW/60/C/A/FG, EUROSTAR-REFLEKTO	44.9	2950	60°	Wide Flood	510	3500	
50	1000417	EXT/C/A, EUROSTAR-REFLEKTO	44.9	3000	12°	Spot	11000	3500	
50	1000418	EXT/C/A/FG, EUROSTAR-REFLEKTO	44.9	3000	12°	Spot	11000	3500	
50	1000427	EXZ/C/A, EUROSTAR-REFLEKTO	44.9	3000	24°	Narrow Flood	3600	3500	
50	1000428	EXZ/C/A/FG, EUROSTAR-REFLEKTO	44.9	3000	24°	Narrow Flood	3600	3500	
50	1000402	EXN/C/A, EUROSTAR-REFLEKTO	44.9	3000	36°	Flood	2000	3500	
50	1000403	EXN/C/A/FG, EUROSTAR-REFLEKTO	44.9	3000	36°	Flood	2000	3500	
50	1000590	FNV/C/A, EUROSTAR-REFLEKTO	44.9	3000	60°	Wide Flood	850	3500	
50	1000591	FNV/C/A/FG, EUROSTAR-REFLEKTO	44.9	3000	60°	Wide Flood	850	3500	

Reflektol™ lamps are made with an aluminum dichroic deposition process for an 80% reduction in heat emission through the back of the lamp.

With no light diffusion from back-spill, all visible light is projected through the front of the lamp. Excellent for high light output requirements.



GU5.3



60° Beam Spread

TUNGSTEN HALOGEN LAMPS • MR-16 SUPERLINE™ & SUPERLINE REFLEKTO™

MR-16 SUPERLINE™ & SUPERLINE REFLEKTO™

- Only for Use in Approved Halogen Fixtures
- 50mm Diameter Multilense Reflector
- Excellent Center-to-Edge Beam Uniformity
- Consistent Color

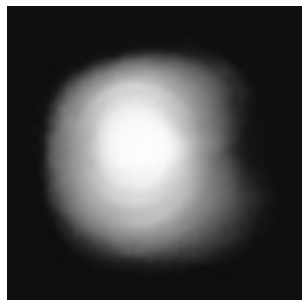
- Low Voltage - 12 Volt
- Integrated UV Protection
- Universal Burn Position
- Available with Front Glass Cover (FG)

Decorative Aluminum
Coating in matte colors
black, silver & bronze



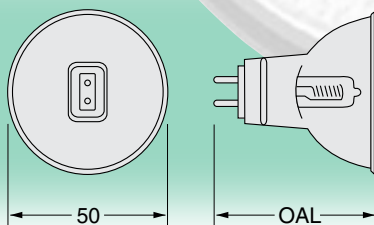
Watts	Ushio Ordering Code	Ushio Lamp Code	Dimension	Color Temp K	Angle	Beam		Avg Life h
			OAL mm			Spread	Max CP cd	
SUPERLINE™, Superior Beam Spread – GU5.3 Base								
20	1000043	BBF/SL, SUPERLINE	45	2950	24°	Narrow Flood	870	5000
20	1000015	BAB/FG/SL, SUPERLINE	45	2950	36°	Flood	510	5000
20	1000020	BAB/SL, SUPERLINE	45	2950	36°	Flood	510	5000
35	1000563	FMV/SL, SUPERLINE	45	2950	24°	Narrow Flood	2000	5000
35	1000560	FMV/FG/SL, SUPERLINE	45	2950	24°	Narrow Flood	2000	5000
35	1000577	FMW/SL, SUPERLINE	45	2950	36°	Flood	1200	5000
35	1000574	FMW/FG/SL, SUPERLINE	45	2950	36°	Flood	1200	5000
50	1000440	EXZ/SL, SUPERLINE	45	3050	24°	Narrow Flood	3000	5000
50	1000431	EXZ/FG/SL, SUPERLINE	45	3050	24°	Narrow Flood	3000	5000
50	1000406	EXN/FG/SL, SUPERLINE	45	3050	36°	Flood	1580	5000
50	1000409	EXN/SL, SUPERLINE	45	3050	36°	Flood	1580	5000
SUPERLINE-REFLEKTO™, Aluminized Colored Back – GU5.3 Base								
20	1000005	BAB/B, REFLEKTO BLACK	45	2900	36°	Flood	510	3500
20	1000007	BAB/B/FG, REFLEKTO BLACK	45	2900	36°	Flood	510	3500
20	1000018	BAB/S, REFLEKTO SILVER	45	2900	36°	Flood	510	3500
20	1000019	BAB/S/FG, REFLEKTO SILVER	45	2900	36°	Flood	510	3500
35	1000567	FMW/B, REFLEKTO BLACK	45	2950	36°	Flood	1200	3500
35	1000568	FMW/B/FG, REFLEKTO BLACK	45	2950	36°	Flood	1200	3500
35	1003543	FMW/BZ/FG, REFLEKTO BRONZE	45	2950	36°	Flood	1200	3500
35	1000575	FMW/S, REFLEKTO SILVER	45	2950	36°	Flood	1200	3500
35	1000576	FMW/S/FG, REFLEKTO SILVER	45	2950	36°	Flood	1200	3500
50	1001652	EXZ/B, REFLEKTO BLACK	45	3000	24°	Narrow Flood	3000	3500
50	1003542	EXZ/BZ/FG, REFLEKTO BRONZE	45	3000	24°	Narrow Flood	3000	3500
50	1000425	EXZ/B/FG, REFLEKTO BLACK	45	3000	24°	Narrow Flood	3000	3500
50	1001653	EXZ/S, REFLEKTO SILVER	45	3000	24°	Narrow Flood	3000	3500
50	1000439	EXZ/S/FG, REFLEKTO SILVER	45	3000	24°	Narrow Flood	3000	3500
50	1000399	EXN/B, REFLEKTO BLACK	45	3000	36°	Flood	1580	3500
50	1000400	EXN/B/FG, REFLEKTO BLACK	45	3000	36°	Flood	1580	3500
50	1003541	EXN/BZ/FG, REFLEKTO BRONZE	45	3000	36°	Flood	1580	3500
50	1000407	EXN/S, REFLEKTO SILVER	45	3000	36°	Flood	1580	3500
50	1000408	EXN/S/FG, REFLEKTO SILVER	45	3000	36°	Flood	1580	3500

Standard Multimirror Reflector Lamps



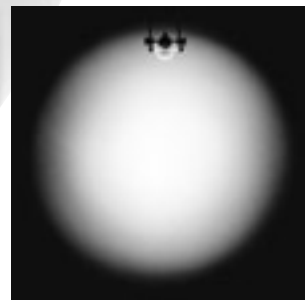
All Photos: 20 Watt, flood distribution,
taken 1 meter from screen

The geometry of the Multilense Reflector together with an axial filament design, guarantees an absolute uniform appearance across the beam without unsightly, dark spots or rings.



GU5.3

Superline™- Multilense Reflector



TUNGSTEN HALOGEN LAMPS MR-16 SPECIALTY DICHROIC COATINGS

SPECIALTY LAMPS

- Only for Use in Approved Halogen Fixtures
- 50mm Diameter Multilens Reflector
- UV-Cut Halogen Capsule
- Low Voltage - 12 Volt
- 2-Pin Base
- Universal Burn Position
- Integrated Front Glass Cover (/FG)

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimension	Color	Beam			Avg Life h
			OAL	Temp	Angle	Spread	Max CP cd	
			mm	K				
WHITESTAR™ High Color Temperature 2-Pin Base – GU5.3								
35	1003340	FMW/FG/WS/4200, WHITESTAR	45.2	4200	36°	Flood	600	4000
35	1003341	FMW/FG/WS/5300, WHITESTAR	45.2	5300	36°	Flood	500	4000
50	1002286	EXZ/FG/WS/4200, WHITESTAR	45.2	4200	24°	Narrow Flood	2000	4000
50	1002249	EXN/FG/WS/4200, WHITESTAR	45.2	4200	36°	Flood	1200	4000
50	1002287	EXT/FG/WS/4700, WHITESTAR	45.2	4700	12°	Spot	5000	4000
50	1003225	EXN/FG/WS/5300, WHITESTAR	45.2	5300	36°	Flood	600	4000
50	1003224	EXZ/FG/WS/5300, WHITESTAR	45.2	5300	24°	Narrow Flood	1100	4000
50	1003226	EXT/FG/WS/6500, WHITESTAR	45.2	6500	12°	Spot	3300	4000
POPSTAR™ Colored Dichroic Lens 2-Pin Base – GU5.3				Color				
50	1000580	FNC/FG, JR12V-50W/FG	45.2	Yellow	12°	Spot	9000	4000
50	1000582	FND/FG, JR12V-50W/FG	45.2	Red	12°	Spot	2000	4000
50	1000584	FNE/FG, JR12V-50W/FG	45.2	Green	12°	Spot	4400	4000
50	1000586	FNF/FG, JR12V-50W/FG	45.2	Blue	12°	Spot	2200	4000
50	1003132	EXT/OR/FG, JR12V-50W/FG	45.2	Orange	12°	Spot	5000	4000
50	1003200	EXT/MG/FG, JR12V-50W/FG	45.2	Magenta	12°	Spot	4400	4000
NEODYMIUM 2-Pin Base – GX5.3								
50	1000435	EXZ/N NEODYMIUM COATED	47.0	—	24°	Narrow Flood	2000	2000



WHITESTAR™

Whitestar™ 4200K lamp was designed to provide a full spectrum MR-16 for display and task lighting. This high color temperature lamp projects a high luminous intensity with low ultraviolet and infrared emissions to protect artwork and valuable merchandise.

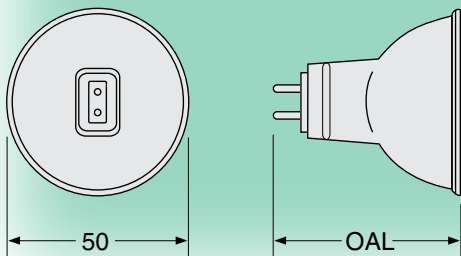


POPSTAR™

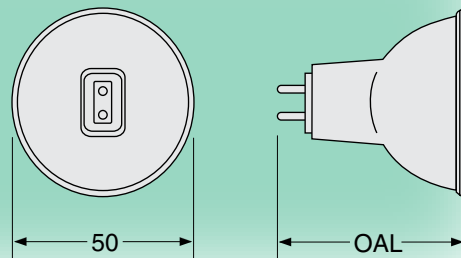
The **EXZ/N** neodymium coated EXZ reduces yellow content, enhancing reds, blues, and purples.



NEODYMIUM



GU5.3



GX5.3

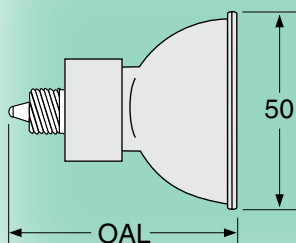
TUNGSTEN HALOGEN LAMPS • MR-16 REFLECTOR

JDR SERIES

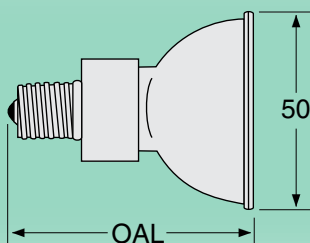
- Only for Use in Approved Enclosed Halogen Fixtures
- 50mm Dichroic Coated Reflector
- Line Voltage - 120 Volt
- Operate Base Up
- Mini Candelabra Screw Base
- Intermediate Screw Base
- Medium Screw Base

Watts	Ushio Ordering Code	Ushio Lamp Code	ANSI Code	Dimensions	Angle	Beam	Max CP cd	Color Temp K	Avg Life h
				OAL mm		Spread			
Minican Screw Base - E11									
100	1002223	JDR120V-100W/FL36		50	36°	Wide	3000	3000	2000
Intermediate Screw Base - E17									
75	1001032	JDR120V-75WL/SP14	FSA	75	14°	Narrow	5000	3000	2000
75	1001030	JDR120V-75WL/NFL24	FSB	75	24°	Medium	1800	3000	2000
75	1001033	JDR120V-75WL/FL38	FSD	75	38°	Wide	1300	3000	2000
100	1001013	JDR120V-100WL/SP12	FSC	75	14°	Narrow	7100	3000	2000
100	1001011	JDR120V-100WL/NFL24	FSE	75	24°	Medium	4200	3000	2000
100	1001016	JDR120V-100WL/FL38	FSF	75	38°	Wide	2800	3000	2000
Medium Screw Base - E26									
75	1001834	JDR120V-75WL/SP14		75	14°	Narrow	5000	3000	2000
75	1001022	JDR120V-75W/NFL20/FG *		75	20°	Medium	2800	3000	2000
75	1001031	JDR120V-75WL/NFL24		75	24°	Medium	2800	3000	2000
75	1001836	JDR120V-75WL/FL30		75	30°	Wide	2100	3000	2000
75	1001029	JDR120V-75W/FL30/FG *		75	30°	Wide	2100	3000	2000
100	1001014	JDR120V-100WL/SP10		75	10°	Narrow	6300	3000	2000
100	1001012	JDR120V-100WL/NFL20		75	20°	Medium	4200	3000	2000
100	1001017	JDR120V-100WL/FL30		75	30°	Wide	2500	3000	2000

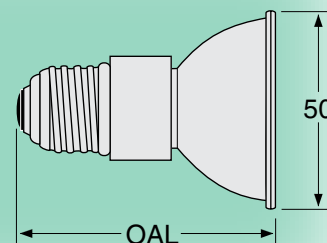
* Front glass versions available



E11



E17

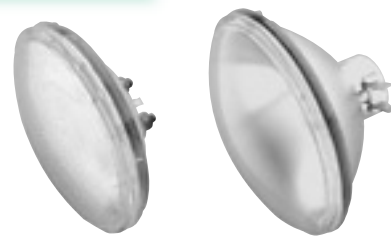


E26

TUNGSTEN INCANDESCENT & HALOGEN LAMPS PARABOLIC ALUMINIZED REFLECTOR

PAR SERIES

- Only for Use in Approved Enclosed Halogen Fixtures
- PAR46 - 5 3/4" Diameter; PAR56 - 7" Diameter; PAR64 - 8" Diameter
- Operate in Any Position

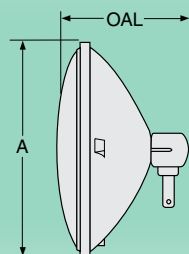


Watts	Ushio	Ushio	Dimensions mm		Approx	Approx	Approx	Beam	Color	Ave
	Ordering	Lamp Code	Dia	OAL	Field Angle	Field Beam	Field Lumens	Spread	Temp	Life
	Code		(A)	(B)	Degrees ¹	Degrees ²	lm ³		K	h
PAR46 w/Medium Side Prongs - Incandescent										
200	1001441	200PAR46/3NSP	143.1	101.6	—	—	—	Narrow Spot	2750	2000
200	1001439	200PAR46/3MFL	142.3	101.6	—	—	—	Medium Flood	2750	2000
PAR56 – Mogul End Prong (GX16d) Base										
300	1001453	300PAR56/MFL	178.6	127.0	34x19	23x11	2100	Medium Flood	2750	2000
300	1001457	300PAR56/WFL	178.6	127.0	57x27	37x18	2200	Wide Flood	2750	2000
500	1001282	Q500PAR56/NSP	178.6	127.0	32x15	13x8	4000	Narrow Spot	2950	4000
500	1001281	Q500PAR56/MFL	178.6	127.0	42x20	26x10	4800	Medium Flood	2950	4000
500	1001284	Q500PAR56/WFL	178.6	127.0	66x34	44x20	6400	Wide Flood	2950	4000
PAR64 – Extended Mogul End Prong (GX16d) Base										
500	1001495	500PAR64/NSP	205.7	152.4	—	—	6500	Narrow Spot	2850	2000
500	1001493	500PAR64/MFL	205.7	152.4	—	—	6500	Medium Flood	3000	2000
500	1001497	500PAR64/WFL	205.7	152.4	—	—	6500	Wide Flood	2850	2000
1000	1000519	FFN, PAR64/VNSP	205.7	152.4	24x10	12x6	11000	Very Narrow Spot	3150	800
1000	1000520	FFP, PAR64/NSP	205.7	152.4	26x14	14x7	12000	Narrow Spot	3150	800
1000	1000521	FFR, PAR64/MFL	205.7	152.4	44x21	28x12	14000	Medium Flood	3150	800
1000	1000522	FFS, PAR64/WFL	205.7	152.4	71x45	48x24	19000	Wide Flood	3150	800

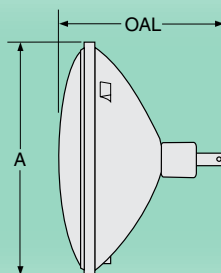
¹ Beam Spread at 10% peak candle power

² Beam Spread at 50% peak candle power

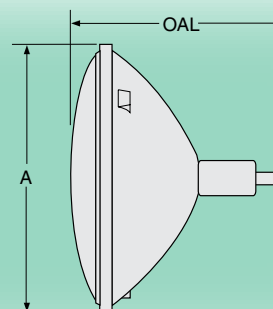
³ Measured within field angle



Medium
Side Prongs



Mogul End Prong
GX16d



Extended Mogul End Prong
GX16d

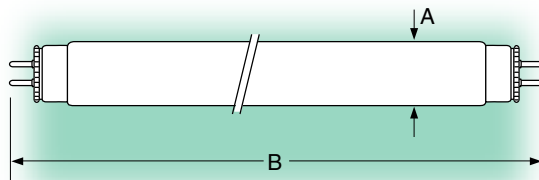
FLUORESCENT BLACKLIGHT BLUE

BLACKLIGHT BLUE FLUORESCENT LAMPS

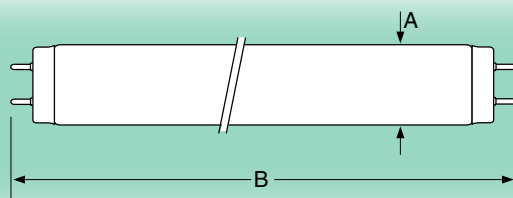
- Linear Fluorescent Lamps
- High CRI

Watts	Ushio Ordering Code	Ushio Lamp Code	Dimensions mm		Current A	Volts V	Spectral Peak (nm)	UV Output (W)	Avg Life h	Base
			Dia (A)	OAL (B)						
BLACKLIGHT BLUE T-5 DIAMETER										
4.5	3000106	F4T5BLB	15.5	134.5	0.170	29	306	0.5	3000	G5
6	3000111	F6T5BLB	15.5	210.5	0.160	42	368	1.0	3000	G5
7.2	3000116	F8T5BLB	15.5	287.0	0.145	57	368	1.2	3000	G5
BLACKLIGHT BLUE T-8 DIAMETER										
9.5	3000305	F10T8BLB	25.5	330.0	0.230	46	368	1.5	4000	G13
15.0	3000078	F15T8BLB	25.5	436.0	0.305	55	368	2.6	4000	G13
18.0	3000307	F18T8BLB	25.5	588.5	0.370	57	368	3.7	4000	G13
30.5	3000148	F30T8BLB	25.5	893.0	0.355	99	368	6.3	4000	G13
36.0	3000308	F36T8BLB*	25.5	1198.0	0.430	103	368	8.1	8000	G13
BLACKLIGHT BLUE T-10 DIAMETER										
19	3000306	F20T10/BLB*	32.5	588.5	0.360	58	368	3.7	4000	G13
39.5	3000138	F40T10/BLB/R (RAPID START)	32.5	1198.0	0.420	106	368	8.1	5000	G13
BLACKLIGHT BLUE, COMPACT										
7.0	3000330	FPX7BLB	28.0	115.0	0.180	45	368	1.0	4000	G23
9.0	3000325	FPX9BLB	28.0	145.0	0.180	59	368	1.4	4000	G23
18.0	3000327	FPX18KBLB	40.0	225.0	0.375	58	368	3.3	4000	2G11

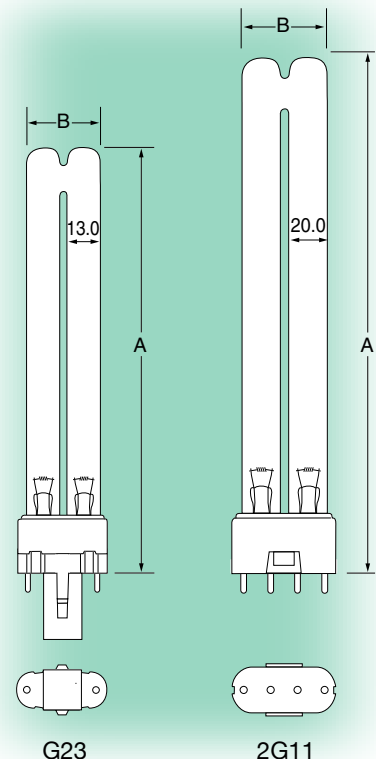
* Preheat



T5 Miniature Bi Pin G5 Base



T8 & T10 Medium Bi Pin G13 Base



(Hg) - LAMP CONTAINS MERCURY
 Manage in Accord with Disposal Laws
 See: www.lamprecycle.org

COLORED METAL HALIDE LAMPS • SINGLE & DOUBLE ENDED

COLORLITE™ SERIES

- Consistent Color
- High Color Saturation
- No Color Filter or Gels Required for Fixture
- 6,000 Hours Useful Life

Please see Safety and
Handling Instructions
on page 84.



Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Lamp Current A	Dimensions mm			Luminous Flux lm	Wavelength nm	Saturation %	ANSI Ballast/ Fixture	Burn Position	Case Qty
					Dia (A)	MOL (B)	LCL (C)						
Single Ended – E39 Mogul Screw Base													
250	5001484	UHI-S250/E39/BLUE	—	3.00	46	225	150	5400	465	66	M80/E*	Univ	12
250	5001485	UHI-S250/E39/GREEN	—	3.00	46	225	150	21000	530	50	M80/E*	Univ	12
250	5001486	UHI-S250/E39/MAGENTA	—	3.00	46	225	150	11000	-560	29	M80/E*	Univ	12
250	5001487	UHI-S250/E39/ORANGE	—	3.00	46	225	150	17000	595	54	M80/E*	Univ	12
400	5000947	UHI-S400BL, BLUE	—	3.25	46	275	175	8000	465	66	M59/E	Univ	12
400	5000946	UHI-S400GR, GREEN	—	3.25	46	275	175	35000	535	63	M59/E	Univ	12
400	5000948	UHI-S400MG, MAGENTA	—	3.25	46	275	175	21000	-500	25	M59/E	Univ	12
1000	5001189	UHI-S1000BL, BLUE	—	4.10	76	340	220	22000	455	61	M47/E	H±60°	6
1000	5001188	UHI-S1000GR, GREEN	—	4.10	76	340	220	92000	535	60	M47/E	H±60°	6
Single Ended – E26 Medium Screw Base													
150	5001453	UHI-S150/E26/BLUE	—	1.80	54	138	86	3900	470	70	M102/E	Univ	12
150	5001452	UHI-S150/E26/GREEN	—	1.80	54	138	86	12500	530	46	M102/E	Univ	12
150	5001498	UHI-S150/E26/MAGENTA	—	1.80	54	138	86	7500	-530	43	M102/E	Univ	12
150	5001499	UHI-S150/E26/ORANGE	—	1.80	54	138	86	11200	600	54	M102/E	Univ	12
175	5001455	UHI-S175/E26/BLUE	—	1.50	54	138	86	3900	470	70	M57/E	Univ	12
175	5001454	UHI-S175/E26/GREEN	—	1.50	54	138	86	12500	530	46	M57/E	Univ	12
175	5001500	UHI-S175/E26/MAGENTA	—	1.50	54	138	86	7500	-530	43	M57/E	Univ	12
175	5001501	UHI-S175/E26/ORANGE	—	1.50	54	138	86	11200	600	54	M57/E	Univ	12
Double Ended – RX7s Base													
150	5000821	UHI-150BL, BLUE	95	1.80	23	132	66	3000	465	56	M81/E	H±45°	10
150	5000822	UHI-150GR, GREEN	95	1.80	23	132	66	9500	535	50	M81/E	H±45°	10
150	5000823	UHI-150MG, MAGENTA	95	1.80	23	132	66	8000	-515	33	M81/E	H±45°	10
150	5000824	UHI-150OR, ORANGE	95	1.80	23	132	66	10000	595	60	M81/E	H±45°	10

Recommended Ignition Voltage: 4kV

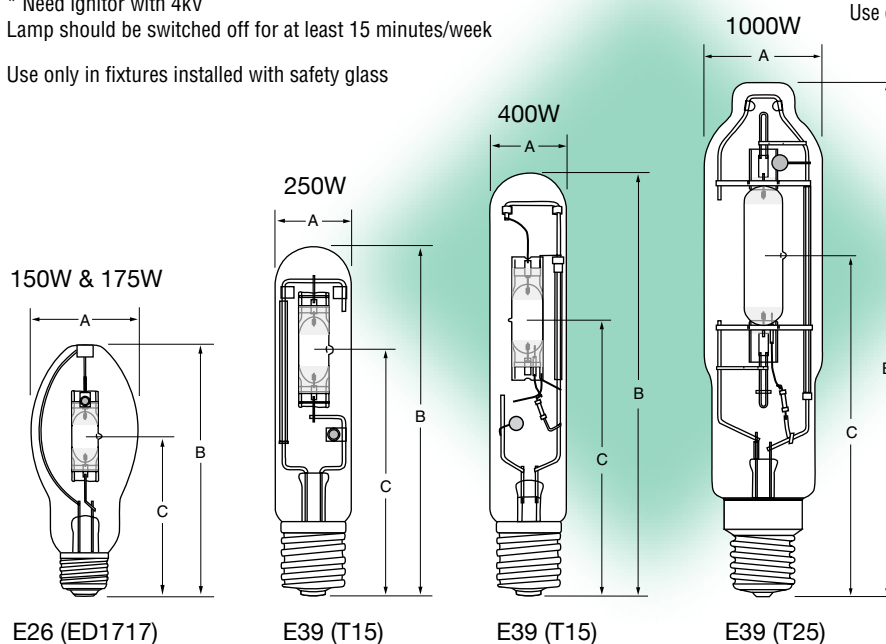
* Need ignitor with 4kV

Lamp should be switched off for at least 15 minutes/week

Use only in fixtures installed with safety glass

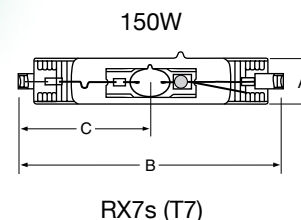
/E = Enclosed Fixture Required

Use only in fixtures installed with tempered safety glass.



Average Life:

RX7s– 150W	= 6000 hours
ED17– 150W, 175W	= 6000 hours
T15– 250W, 400W	= 8000 hours
T25– 1000W	= 6000 hours



LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

COMPACT METAL HALIDE LAMPS • SINGLE ENDED

EUROSPOT™ UHI SERIES

- Color Stable
- High Efficacy - 80 Lm/W
- Long Life - 10,000 Hours Average
- Compact Design

- 80 Color Rendering Index
- UV Protection

Please see Safety and Handling Instructions on page 84.



Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Amps	Dimensions mm				Color Temp K	Luminous Flux lm	Avg Life h*	Ballast
					Dia (A)	OAL (B)	LCL (C)	Arc Gap				
G12 Axial - Arc 99mm, Long length												
75	5000439	UHI-S75DW/UVP	95	0.9	23	99	56	8.5	3000	6000	10000	M98/E
150	5000950	UHI-S150DW/A/UVP	95	1.8	23	99	56	6.5	3000	13000	10000	M102/E
150	5000875	UHI-S150DM/A/UVP	95	1.8	23	99	56	6.5	4200	13000	10000	M102/E

Burn Position: Universal 360°

Recommended Ignition Voltage: 4kV

Lamp should be switched off for at least 15 minutes/week

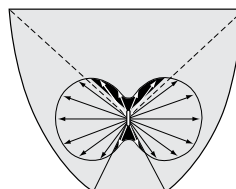
Use only in fixtures installed with safety glass

/E = Enclosed Fixture Required

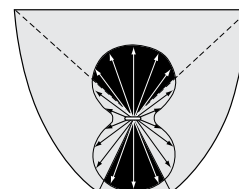
Lamp Code Suffix Designation

- DWS = Warm White, Shorter version
 DW = Warm White
 DMS = Cool White, Shorter version
 DM = Cool White

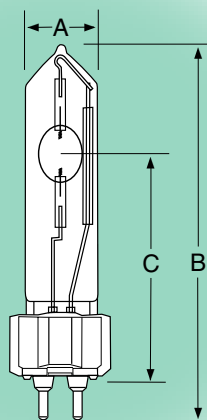
USHIO has incorporated an axial arc-tube which not only increases raw lumen output, but allows light to be more efficiently collected within a reflector



Axial, low stray light portion: approximately 30% higher luminous efficiency can be attained by axial arrangement



Transverse, high stray light portion; stray light leads to dazzle or loss



G12

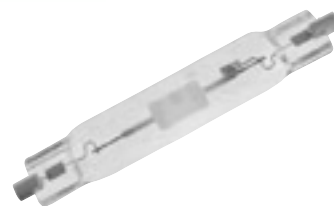
Hg - LAMP CONTAINS MERCURY
 Manage in Accord with Disposal Laws
 See: www.lamprecycle.org

CERAMIC METAL HALIDE LAMPS • SINGLE & DOUBLE ENDED

CERAMIQUE™ SERIES

- High Color Rendering - 80 CRI
- Ceramique Arc Tube
- Consistent Color
- Long Life

Please see Safety and
Handling Instructions
on page 84.



Watts	Ushio	Ushio	Lamp Current A	Dimensions mm			Color Temp K	Luminous Flux lm	Avg Life h	ANSI Ballast/Fixture
	Ordering Code	Lamp Code		Dia (A)	MOL (B)	LCL (C)				
Single Ended – G12 Base										
39	5001320	CMS-39/T4.5/830/G12	0.50	14.5	100	56	3000	3400	10000	M130/E
70	5001321	CMS-70/T6/830/G12	0.98	19.0	100	56	3000	6200	12000	M85/E, M98/E, M139/E
70	5001322	CMS-70/T6/942/G12	0.98	19.0	100	56	4200	6400	12000	M85/E, M98/E, M139/E
150	5001323	CMS-150/T6/830/G12	1.85	19.0	110	56	3000	14000	12000	M81/E, M102/E, M142/E
150	5001324	CMS-150/T6/942/G12	1.85	19.0	110	56	4200	13000	12000	M81/E, M102/E, M142/E
Double Ended – RX7s Base				C-to-C						
70	5001410	CMD-70/TD/828/RX7S	0.90	20.0	114.2	—	2800	6500	8000	M85/E, M98/E, M139/E
70	5001316	CMD-70/TD/830/RX7S	0.90	20.0	114.2	—	3000	7000	15000	M85/E, M98/E, M139/E
70	5001317	CMD-70/TD/942/RX7S	0.90	20.0	114.2	—	4200	7000	15000	M85/E, M98/E, M139/E
150	5001318	CMD-150/TD/830/RX7S	1.80	23.0	132.0	—	3000	14500	15000	M81/E, M102/E, M142/E
150	5001319	CMD-150/TD/942/RX7S	1.80	23.0	132.0	—	4200	12500	15000	M81/E, M102/E, M142/E

Burn Position:

G12 Base: Universal 360°

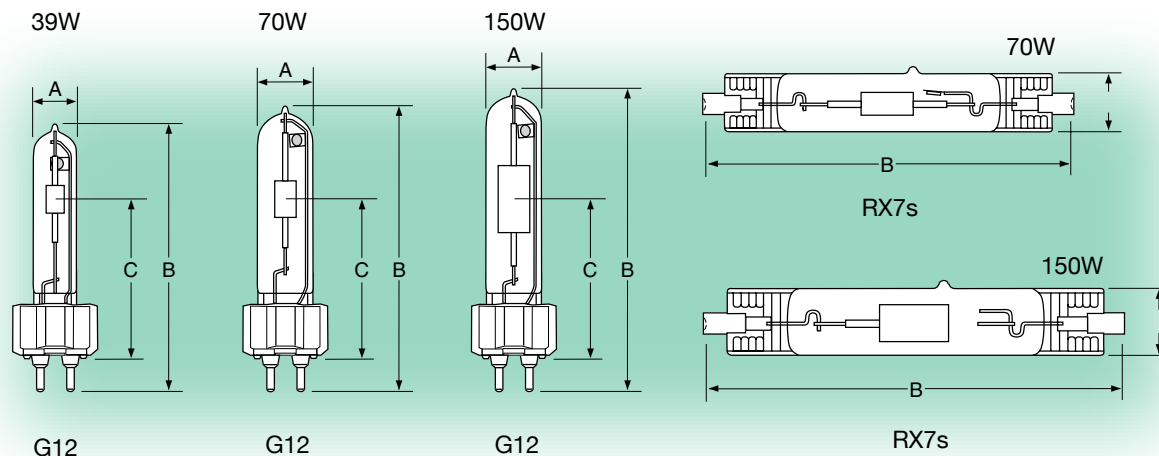
RX7s Base: Horizontal ±45°

Recommended Ignition Voltage: 4kV

Lamp should be switched off for at least 15 minutes/week

Use only in fixtures installed with safety glass

/E = Enclosed Fixture Required



Hg - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

UV METAL HALIDE • DOUBLE ENDED

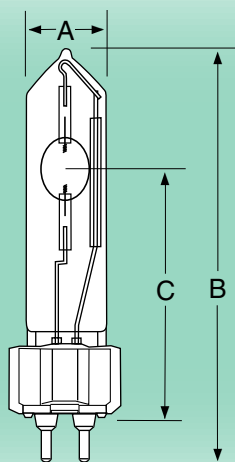
MHL SERIES

- Recessed Single Contact Base - R7s
- For Blacklight Special Effects
- Only Use in UV Protective Housing!

Please see Safety and
Handling Instructions
on page 84.

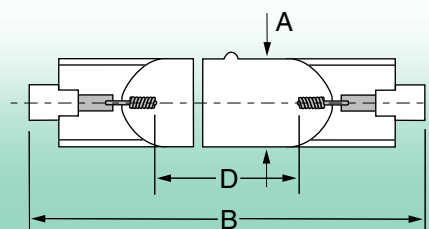
Watts	Ushio Ordering Code	Ushio Lamp Code	Volts	Spectral Range	Dimensions mm			Arc Length (D)	Base	Contact	Avg Life h
					Dia (A)	OAL (B)	LCL (C)				
Single Ended Metal Halide											
70	5001468	MHL-70	95	300-450NM	23.0	102	56	—	G12	—	500
150	5001381	MHL-150	95	300-450nm	23.0	102	56	—	G12	—	500
Double Ended Metal Halide											
250	5000089	MHL-250	125	300-450nm	15.5	68	—	15.5	RSC	R7s	500
450	5000114	MHL-450	140	300-450nm	16.3	105	—	31.0	RSC	R7s	500
1200	5000062	MHL-1000/1	135	350-370nm	23.0	147	—	68.0	RSC	R7s	500

70W & 150W

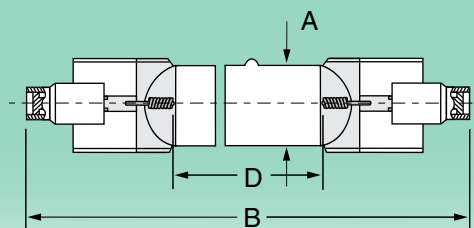


G12

250W



450W, 600W & 1200W



R7s

(Hg) - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

METAL HALIDE LAMPS • DOUBLE ENDED

UMI & SMH SERIES

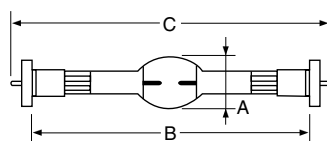
- High Brightness
- 5600K Daylight Color Temperature

Please see Safety and Handling Instructions on page 84.

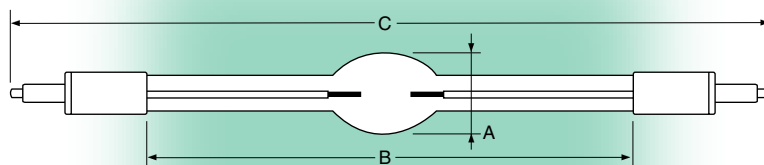


Watts	Ushio	Ushio	Volts	Amps	Arc Gap	Dimensions mm			Luminous Flux lm	Color Temp K	Avg Life h	Base Type	Burn Position
	Ordering Code	Lamp Code				Dia (A)	LCL (B)	OAL (C)					
UMI Series – Double Ended Metal Halide													
575	5000250	• UMI-575/GS	95	7.0	7	21	115	145	49000	5600	750	SFc10-4 M4	Any
1200	5000235	UMI-1200/HB	100	13.8	7	21	115	145	110000	5600	750	SFc 10-4 M4	Any
1200	5000234	• UMI-1200/GS	100	13.8	10	27	180	220	110000	5600	750	SFc 15.5-6 0.5	Any
2500	5000241	• UMI-2500/GS	115	25.6	14	30	290	355	240000	5600	500	SFa 21-12	H±15°
4000	5000245	UMI-4000	200	24.0	34	38	340	405	410000	5600	500	SFa 21-12 ••	H±15°
6000	5000251	UMI-6000	125	55.0	20	52	—	450	650000	5600	300	25.4x50.8	H±15°
SMH Series – Double Ended Metal Halide													
300	5000962	SMH-300/A1 (HTI300W/DX)	95	3.6	5.5	17	—	92	22000	5600	1000	SFc10-4	H±15°

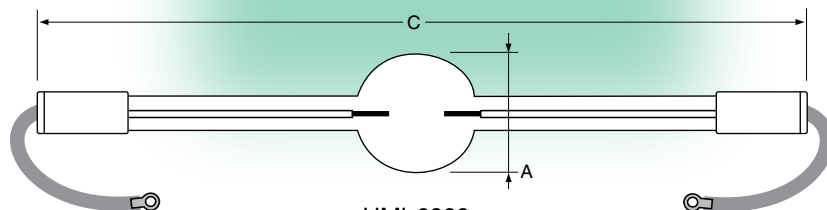
- Gap Short Version
- 165mm (x2) lead wire with 8mm diameter ring terminal



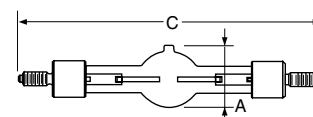
UMI-575/GS UMI-1200/GS, HB



UMI-2500/GS UMI-4000



UMI-6000



SMH-300/A1

(Hg) - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

METAL HALIDE LAMPS • SINGLE ENDED

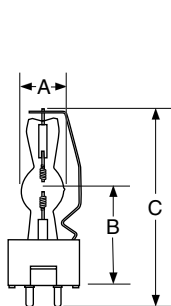
USR SERIES

- Compact Design
- High Brightness
- Daylight Color Temperature
- Universal Burn Position

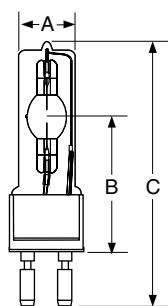
Please see Safety and
Handling Instructions
on page 84.



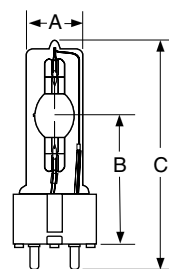
Watts	Ushio	Ushio	Volts	Arc	Nominal Dimensions mm			Luminous	Color	Avg	Base Type
	Ordering	Lamp Code		Gap	Dia	LCL	OAL	Flux	Temp	Life	
	Code				(A)	(B)	(C)	lm	K	h	
Single Ended Metal Halide											
400	5002007	USR-400/SA	54	3	17	35	76.0	30000	5500	500	GY9.5
575	5000283	USR-575/BE	95	7	30	70	145	49000	5600	750	G22
575	5002008	USR-575/2	95	7	28	63	121	49000	7200	1000	GX9.5
700	5002009	USR-700/2	72	8	28	73	149	55000	7200	1000	G22/28X42
700	5002010	USR-700/SA	72	4	18	37	79.5	54000	5600	500	GY9.5
1200	5000278	USR-1200 HR	100	11	42	107	200	110000	5600	750	G38
1200	5002012	USR-1200/SA	100	7	28	59	131	96000	5600	750	GY22
1200	5002013	USR-1200/2	90	10	38.5	112	169	105000	7200	800	G22/30X53
2500	5000280	USR-2500 HR	115	14	60	127	240	240000	5600	500	G38
4000	5002014	USR-4000 HR	200	20	75	127	250	380000	6000	500	G38



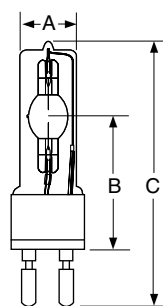
USR-400/SA
USR-700/SA



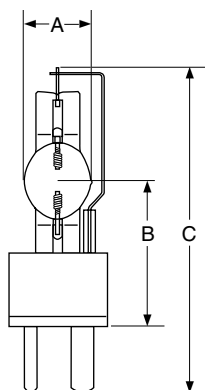
USR-575BE



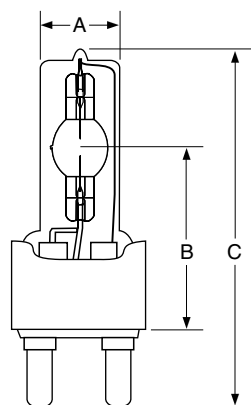
USR-575/2



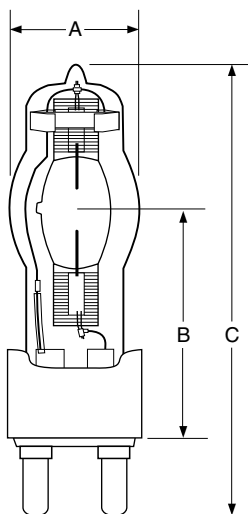
USR-700/2
USR-1200/2



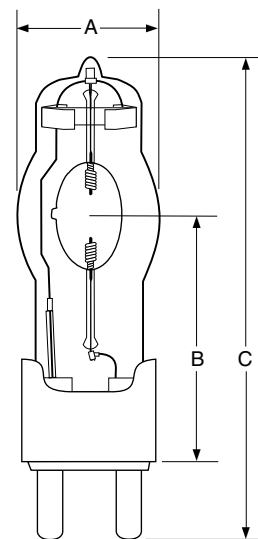
USR-1200/SA



USR-1200 HR



USR-2500 HR



USR-4000 HR

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Manage in Accord with Disposal Laws
See: www.lamprecycle.org

METAL HALIDE LAMPS • SINGLE ENDED

USD SERIES

- Compact Design
- High Luminous Efficacy
- Excellent Color
- Universal Burn Position

Please see Safety and
Handling Instructions
on page 84.

Watts	Ushio	Ushio	Volts	Amps	Dimensions mm		Arc Gap (C)	Initial Lumens lm	Color Temp K	Avg Life h	Base Type	Fig No
	Ordering Code	Lamp Code			Dia	OAL						
					(A)	(B)						
Single Ended Metal Halide												
200	5002002	USD-200	68	2.95	23	108	5.0	13500	6000	2000	GY9.5	1
250	5002003	USD-250/2	90	3.6	23	108	5.0	17000	8500	2000	GY9.5	1
575	5002004	USD-575	95	6.1	30	125	8.0	45000	6000	3000	GX9.5	1
700	5002005	USD-700	72	11	40	175	10.0	55000	6000	3000	G22	2
1200	5002006	USD-1200	115	25.6	41	183	14.0	92000	6000	2000	G22	2

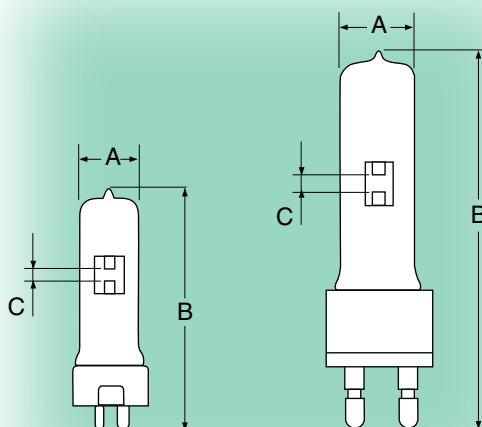


Fig. 1

Fig. 2

(Hg) - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

METAL HALIDE LAMPS • WITH REFLECTOR

MHR SERIES

- Cold Mirror Reflector
- Compact Design
- Standard AMP Connector

Please see Safety and Handling Instructions on page 84.

Watts	Ushio	Ushio	Volts	Ignition	Lamp	Luminous Flux through Aperature			Color	CRI	Avg	ANSI
	Ordering Code	Lamp Code		Voltage kV	Current A	ø13mm	ø10mm	ø25mm				
						distance 42mm lm*	distance 44mm lm*	distance 33mm lm**				
AMP Connector												
100	5000789	MHR-100D/L	95	4	1.2	1600	1800	4600	5200	72	6000	M90/E
100	5000790	MHR-100D/HR	95	4	1.2	1600	1800	4600	5200	72	6000	M90/E
150	5000834	MHR-150N	95	4	1.8	2000	2200	5300	4200	75	6000	M81/E
250	5001377	MHR-250N	100	4	3.0	3500	—	—	4200	72	4000	M80/E

Optimal distance from reflector to fiber
(with ø13mm fiber bundle):

100W & 150W: 42mm
250W: 53mm

Length of Base Lead Wire: Approx. 75mm

Base Type: AMP Universal Mate-N-Lok

MHR-100D/L: 3 channel plug

MHR-100D/HR: 5 channel plug

MHR-150N: 5 channel plug

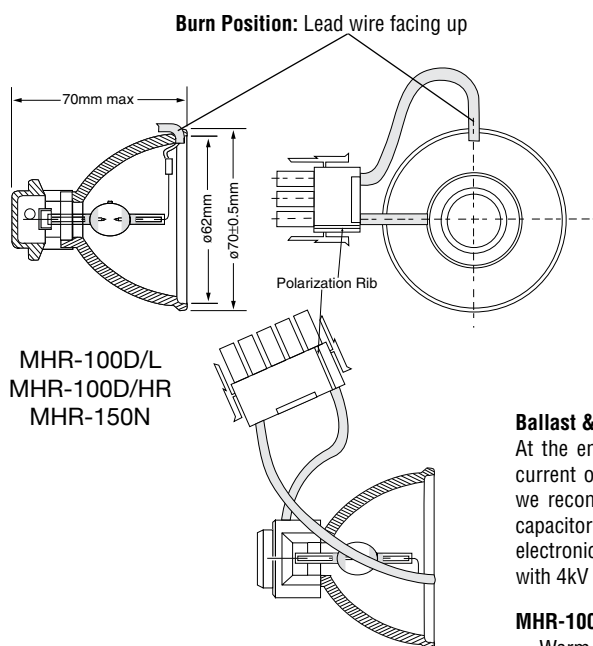
MHR-250N: 5 channel plug



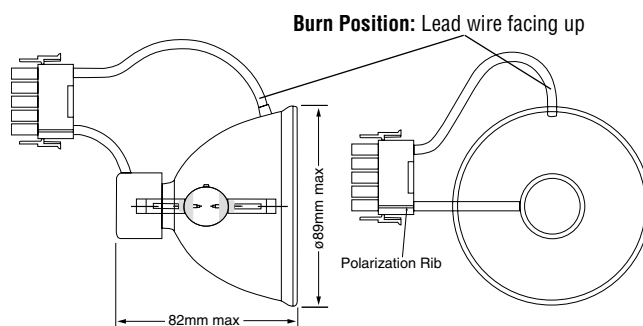
/E = Enclosed Fixture Required

* Measurement taken with optical sphere

** Measurement taken through fiber bundle
▲ (ø13mm; distance 53mm)



MHR-100D/L
MHR-100D/HR
MHR-150N



MHR-250N

Ballast & Ignitor Information

At the end of their lifetime, metal halide lamps may show rectifier effects causing a rise in current of up to 3 times of the rated value thereby possibly damaging the ballast. Therefore we recommend to use only ballasts with integrated thermoswitch. For line compensation, a capacitor should be used. It is recommended to use ignitors with a timer switch. The use of electronic ballasts is possible if the operating frequency is below 250Hz. All lamps must be used with 4kV ignitor.

MHR-100D/L

Warm-up Time to 95% luminous flux: 2.5 minutes with standard ballast

Reignition Time: Approximately 1 minute

MHR-100D/HR

Warm-up Time to 95% luminous flux: 2.5 minutes with standard ballast

Hot re-strike version

MHR-150N

Warm-up Time: 3 minutes

Reignition Time: Approximately 2 minutes

MHR-250N

Warm-up Time: 10 minutes

Warning!

The lamp emits UV radiation which can cause serious eye and skin damage. Therefore, the lamp must be used only in closed lamp houses.

Hg - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

LAMP SOCKETS

Sockets for Single and Double Ended Quartz Halogen Lamps

Order Code	Description Lead Wire Spec	Volts	Amps	Lamp Type
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Sockets for Single Ended Halogen Lamps Miniature Bipin — 4.0mm Pin Spacing

G4 Base — 0.7mm Pin Diameter

1000108	C-14A	1.00X150L (Teflon Leads)	24V 3A	JC, MR-11
---------	-------	--------------------------	--------	-----------

GZ4 Base — 1.0mm Pin Diameter

1000109	C-14B	0.75X150L	24V 3A	JC
---------	-------	-----------	--------	----

Miniature 2-Pin (Blade) Base — 5.33mm Pin Spacing

G5.3-4.8 Base — 0.5mm x 4.8mm Pin Dimensions

1000111	C-21	2.50X150L	125V 6A	JCR/M-50, 75, 10W
---------	------	-----------	---------	-------------------

2-Pin Base — 5.33mm Pin Spacing

GX5.3 or GU5.3 Base — 1.6mm Pin Diameter

1002142	C-33U	0.75X150L	24V 7A	MR-16, GU5.3
1000114	C-5	1.25X160L	125V 15A	JCD, MR-16
1000115	C-5(A)	1.25X300L	125V 15A	JCD, MR-16
1001414	S-221	(rim mount)		

Oval 2-Pin Base — 5.33mm Pin Spacing

GY5.3 Base — 1.56mm Flat Pin

1000116	C-5Y	1.25x160L	125V 15A	JCR-MR-16
1001415	S-331	(rim mount)		

G6.35 Base — 6.35mm Pin Spacing

G6.35 Base — 1.0mm Pin Diameter

1000687	J-6A	0.75X145L	125V 10A	JC, JCR
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G6.35 Base — 1.25mm Pin Diameter

1000681	J-11(A)	1.25X160L	125V 10A	JC, JCR
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GY6.35 Base — 1.25mm Pin Diameter

1000688	J-6B	0.75X145L	125V 10A	JC
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G6.35/15X19 Base — 1.6mm Pin Diameter

1000689	J-7		250V 10A	JC, JCD
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GZ6.35 Base — 1.0mm Pin Diameter

1000680	J-11	0.75X160L	125V 10A	JC, JCR
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2-Pin Vented Base — Low Voltage — 7.92mm Pin Spacing

GX7.9 Base — 3.2mm, 2.4mm Pin Diameters

1001413	S-201			JCR - MR-14
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C-21



C-33U



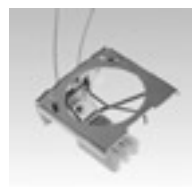
C-5



S-221



C-5Y



S-331



J-6A



J-7



J-11



S-201

LAMP SOCKETS

Sockets for Single and Double Ended Quartz Halogen Lamps

Order Code	Description Lead Wire Spec	Volts	Amps	Lamp Type
Sockets for Single Ended Halogen Lamps Medium 2-Pin Base — 9.53mm Pin Spacing				
G9.5 Base - 3.17mm Pin Diameter				
1002225	3.17 Contacts for J-10 Socket	250V	10A	
1000106	C-10 1.25X300L	125V	10A	JCD, JCV
1000112	C-3 1.25X300L	125V	10A	JCD, JCV
1000113	C-3(A) 1.25X1000L	125V	10A	JCD, JCV
1000679	J-10	250V	10A	JCD, JCV

2-Pin Prefocus Base — 9.53mm Pin Spacing

GY9.5 Base — 3.2mm, 2.4mm Pin Diameters

1002222	Contacts for J-9G Socket	250V	10A	
1000690	J-9G	250V	10A	JCD
1003123	J-9G/4 W/4" UL Leadwire	250V	10A	JCD
1002162	J-9G/PTA 3.17 Terminals	250V	10A	

2-Pin Base — 12.0mm Pin Spacing

G12 Base — 2.35mm Pin Diameter

1000638	G12/3801 Screw Fixing		230L	UHI
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2-Pin Base — 22.22mm Pin Spacing

G22 Base — 6.35mm Pin Diameter

1003149	G22	1000V	20A	JS
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2-Pin Base — 38.1mm Pin Spacing

G38 Base — 11.1mm Pin Diameter

1003150	G38	1000V	40A	JS
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Minican Screw Base

E11 Base — 10.7mm Diameter Screw

1000683	J-12CS(A) 0.75X150L UL	125V	6A	JCV
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Medium Prefocus Base

P28 Base — 27.4mm Base Diameter

1001264	P28S Lamp Socket	250V	10A	JCS, JS
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Sockets for Double Ended Halogen Lamps

Recessed Single Contact Base

R7S Base — 7.0mm Base Diameter

1000110	C-16	W/O Leads	250V	10A	J, JP, JPD
1000117	C-8	2.00X150L	250V	10A	J, JP, JPD
1000677	J-1	2.00X300L UL	250V	10A	J, JP, JPD
1000686	J-3A	W/O Leads	220V	6A	J, JP, JPD



C-10



C-3



J-9G



J-10



G-12/3801



G-22



G-38



C16



P28S



J-1



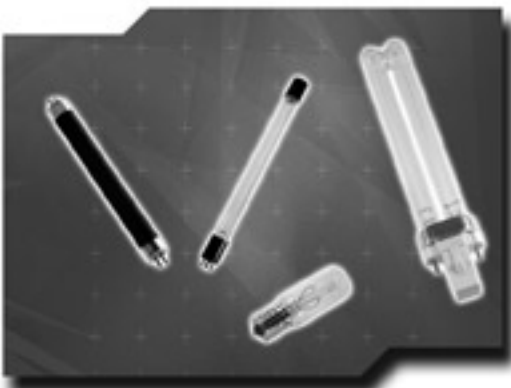
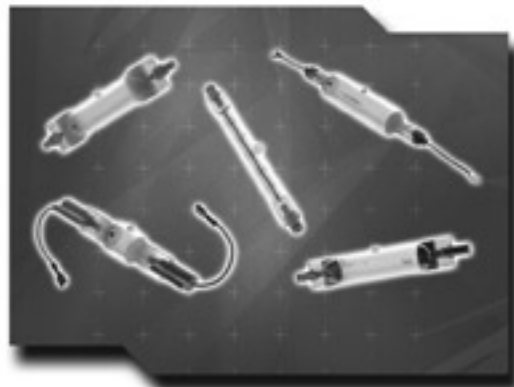
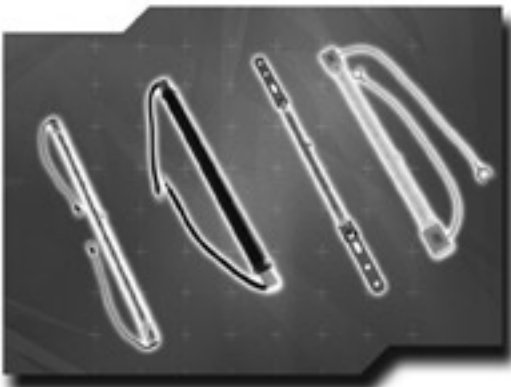
C8



J-3A

USHIO

Other Lamps Available from



NOTES

PULSESTRIKE™ SERIES

- Formed Arc Tube Body
- High Efficacy
- Faster Warm-up Time
- Faster Re-strike Time
- Better Lumen Maintenance
- Better Color Performance & Uniformity
- Long Life
- Universal Burn Position

Please see Safety and Handling Instructions on page 82.

Watts	Ushio Ordering Code	Ushio Lamp Code	Bulb Type	Color Temp K	Initial Lumens Vert / Horiz Burn Position	Approx Mean Lumens Vert / Horiz Burn Position	Avg Life h	ANSI Ballast/ Fixture	Case Qty
Medium Screw Base – E26									
70	5001340	MH70/U/MED/32/PS	○ ED17	3200	6000 / 5250	4100 / 3400	15000*	M98/E	12
70	5001341	MH70/C/U/MED/32/PS	● ED17	3200	5700 / 5050	3900 / 3200	15000*	M98/E	12
70	5001342	MP70/U/MED/32/PS	○ EDX17	3200	5500 / 5200	4100 / 3300	15000*	M98/O	12
70	5001343	MP70/C/U/MED/32/PS	● EDX17	3200	5200 / 4800	3900 / 3100	15000*	M98/O	12
70	5001344	MH70/U/MED/42/PS	○ ED17	4200	6000 / 4850	4100 / 3150	15000*	M98/E	12
70	5001345	MH70/C/U/MED/42/PS	● ED17	4200	5700 / 4650	3900 / 2950	15000*	M98/E	12
70	5001346	MP70/U/MED/42/PS	○ EDX17	4200	5500 / 5150	4000 / 3550	15000*	M98/O	12
70	5001347	MP70/C/U/MED/42/PS	● EDX17	4200	5200 / 4800	3800 / 3400	15000*	M98/O	12
100	5001412	MH100/U/MED/32/PS	○ ED17	3200	9200 / 8550	6000 / 5750	15000*	M90/E	12
100	5001413	MH100/C/U/MED/32/PS	● ED17	3200	8700 / 8100	5750 / 5450	15000*	M90/E	12
100	5001414	MP100/U/MED/32/PS	○ EDX17	3200	8800 / 8400	5700 / 5575	15000*	M90/O	12
100	5001415	MP100/C/U/MED/32/PS	● EDX17	3200	8200 / 7900	5600 / 5500	15000*	M90/O	12
100	5001348	MH100/U/MED/40/PS	○ ED17	4000	8500 / 8100	5300 / 5100	15000*	M90/E	12
100	5001349	MH100/C/U/MED/40/PS	● ED17	4000	8000 / 7650	5000 / 4800	15000*	M90/E	12
100	5001350	MP100/U/MED/40/PS	○ EDX17	4000	8100 / 8050	4900 / 4800	15000*	M90/O	12
100	5001351	MP100/C/U/MED/40/PS	● EDX17	4000	7600 / 7500	4800 / 4650	15000*	M90/O	12
150	5001352	MH150/U/MED/32/PS	○ ED17	3200	14000 / 12500	9400 / 8600	15000*	M102/E	12
150	5001353	MH150/C/U/MED/32/PS	● ED17	3200	13500 / 12000	9100 / 8200	15000*	M102/E	12
150	5001354	MP150/U/MED/32/PS	○ EDX17	3200	13300 / 12400	9200 / 8300	15000*	M102/O	12
150	5001355	MP150/C/U/MED/32/PS	● EDX17	3200	12800 / 11600	8900 / 8100	15000*	M102/O	12
150	5001356	MH150/U/MED/42/PS	○ ED17	4200	14000 / 12100	9700 / 9600	15000*	M102/E	12
150	5001357	MH150/C/U/MED/42/PS	● ED17	4200	13500 / 11600	9600 / 9400	15000*	M102/E	12
150	5001358	MP150/U/MED/42/PS	○ EDX17	4200	12300 / 12200	9500 / 9400	15000*	M102/O	12
150	5001359	MP150/C/U/MED/42/PS	● EDX17	4200	11700 / 11400	9600 / 9300	15000*	M102/O	12

Burn Cycle:

* 11 hours ON, 1 hour OFF
 ** 120 hours ON, 1 hour OFF
 (Lamp should be switched off for at least 15 minutes per week)

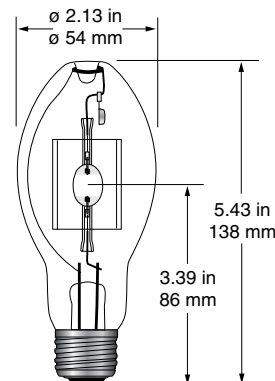
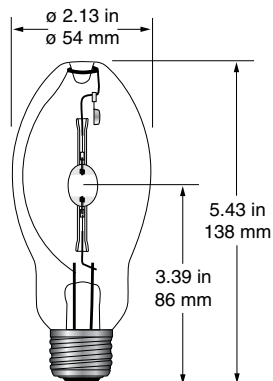
Bulb Type

- Clear
- Coated

All dimensions shown in inches unless otherwise noted.
 /E = Enclosed Fixture Required /O = Open Fixture Permissible

Color Rendering Index:

3200K & 4000K— 70 CRI
 4200K— 75CRI



(Hg) - LAMP CONTAINS MERCURY
 Manage in Accord with Disposal Laws
 See: www.lamprecycle.org

ED17
 /E = Enclosed fixtures only

EDX17
 /O = Open or Enclosed fixtures

PULSESTRIKE™ SERIES

- Formed Arc Tube Body
- High Efficacy
- Faster Warm-up Time
- Faster Re-strike Time
- Better Lumen Maintenance
- Better Color Performance & Uniformity
- Long Life
- Universal Burn Position

Please see Safety and
Handling Instructions
on page 82.

Watts	Ushio Ordering Code	Ushio Lamp Code	Bulb Type	Color Temp K	Initial Lumens Vert / Horiz Burn Position	Approx Mean Lumens Vert / Horiz Burn Position	Avg Life h	ANSI Ballast/ Fixture	Case Qty
Mogul Screw Base – E39, EX39									
250	5001360	MH250/U/MOG/40/PS	○ ED28	4000	25000 / 23500	19000 / 17500	15000*/20000**	M153/E	12
250	5001361	MH250/C/U/MOG/40/PS	● ED28	4000	23500 / 22000	18000 / 16500	15000*/20000**	M153/E	12
250	5001362	MP250/U/MOG/40/PS	○ ED28	4000	26000 / 24500	19500 / 18200	15000*/20000**	M153/O	12
250	5001363	MP250/C/U/MOG/40/PS	● ED28	4000	24000 / 22500	18000 / 16800	15000*/20000**	M153/O	12
320	5001364	MH320/U/MOG/40/PS	○ ED28	4000	32500 / 31500	25500 / 25000	20000*/30000**	M154/E	12
320	5001365	MH320/C/U/MOG/40/PS	● ED28	4000	30800 / 29600	24000 / 23000	20000*/30000**	M154/E	12
320	5001366	MP320/U/MOG/40/PS	○ ED28	4000	32500 / 30500	23000 / 22000	20000*/30000**	M154/O	12
320	5001367	MP320/C/U/MOG/40/PS	● ED28	4000	30000 / 28500	21500 / 20500	20000*/30000**	M154/O	12
350	5001368	MH350/U/MOG/40/PS	○ ED28	4000	37000 / 35500	28000 / 27000	20000*/30000**	M131/E	12
350	5001369	MH350/C/U/MOG/40/PS	● ED28	4000	35500 / 33800	27000 / 26000	20000*/30000**	M131/E	12
350	5001370	MP350/U/MOG/40/PS	○ ED28	4000	39000 / 36500	29000 / 26500	20000*/30000**	M131/O	12
350	5001371	MP350/C/U/MOG/40/PS	● ED28	4000	37000 / 34500	27000 / 24000	20000*/30000**	M131/O	12
400	5001372	MH400/U/MOG/40/PS	○ ED28	4000	39000 / 40000	30000 / 32000	20000*/30000**	M155/E	12
400	5001373	MH400/C/U/MOG/40/PS	● ED28	4000	37000 / 39000	29000 / 31000	20000*/30000**	M155/E	12
400	5001374	MP400/U/MOG/40/PS	○ ED28	4000	42000 / 41000	30000 / 30500	20000*/30000**	M155/O	12
400	5001375	MP400/C/U/MOG/40/PS	● ED28	4000	39500 / 40500	30000 / 29500	20000*/30000**	M155/O	12

Burn Cycle:

* 11 hours ON, 1 hour OFF

** 120 hours ON, 1 hour OFF

(Lamp should be switched off for
at least 15 minutes per week)

Bulb Type

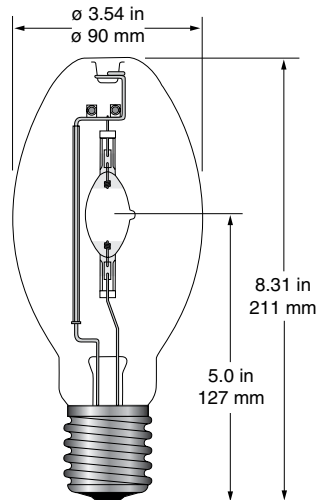
- Clear
- Coated

All dimensions shown in inches unless otherwise noted.

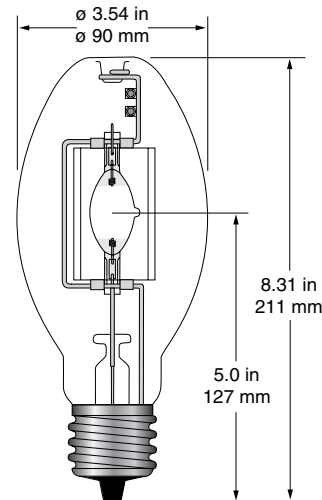
/E = Enclosed Fixture Required /O = Open Fixture Permissible

Color Rendering Index: 70 CRI

ED28
/E = Enclosed fixtures only



ED28
/O = Open or Enclosed fixtures



(Hg) - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

PULSESTRIKE™ SERIES

- T15 Shape Formed Arc Tube Body
- High Efficacy
- Faster Warm-up Time
- Faster Re-strike Time
- Better Lumen Maintenance
- Better Color Performance & Uniformity
- Long Life
- Universal Burn Position

Please see Safety and
Handling Instructions
on page 82.

Watts	Ushio Ordering Code	Ushio Lamp Code	Bulb Type	Color Temp K	Approx Initial Lumens Horiz ± 15° Burn Position	Approx Initial Lumens Vertical Burn Position	Avg Life h	ANSI Ballast/ Fixture	Case Qty
Mogul Screw Base – E39									
250	5001510	MH250/T15/40/PS	T15 Clear	4000	25000	23750	10000*	M153/E	12
320	5001511	MH320/T15/40/PS	T15 Clear	4000	32000	30400	10000*	M154/E	12
350	5001512	MH350/T15/40/PS	T15 Clear	4000	35000	33250	10000*	M131/E	12
400	5001513	MH400/T15/40/PS	T15 Clear	4000	40000	38000	10000*	M155/E	12

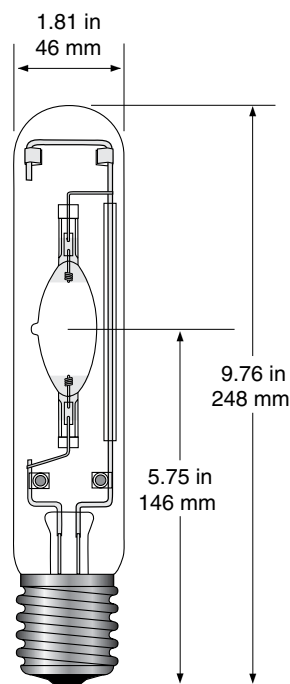
Burn Cycle:

* 11 hours ON, 1 hour OFF
(Lamp should be switched off for
at least 15 minutes per week)

All dimensions shown in inches unless otherwise noted.

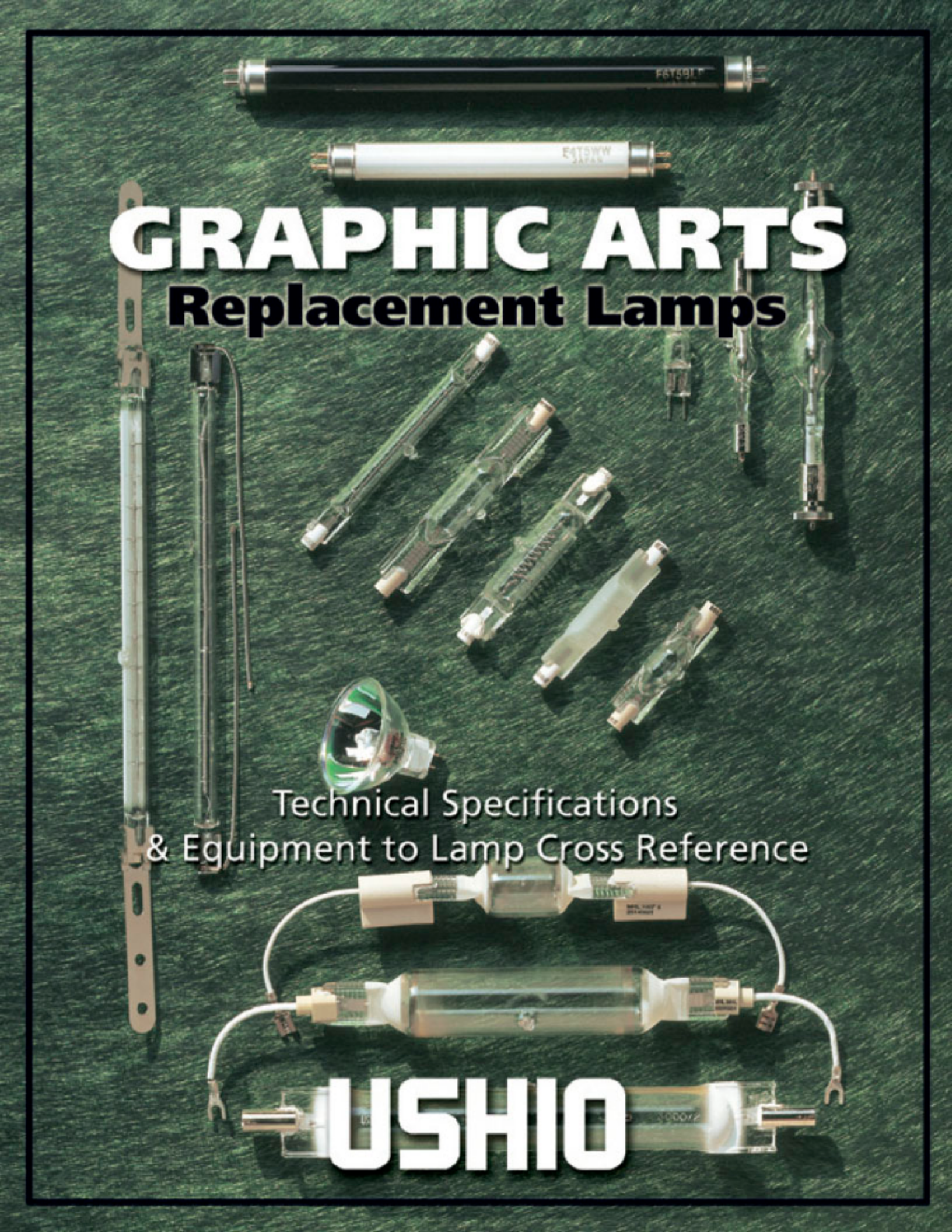
/E = Enclosed Fixture Required

Color Rendering Index: 70 CRI



E39

Hg - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org



GRAPHIC ARTS

Replacement Lamps

Technical Specifications
& Equipment to Lamp Cross Reference

USHIO

Lamps contained in this publication have been manufactured under the strict guidelines of the International Standards Organization for quality control.

Launched in 1987 at Geneva, Switzerland, the International Standards Organization (ISO) verification unified many of the existing quality standards. Purchasing magazine defines ISO 9000 certification as security for the purchaser. It is “a guarantee that a supplier has the ability to provide a quality product or service, and that he will be able to do so whether you purchase it today, next week, or a year from now.” Certification is awarded by independent auditors and proves to customers that a facility meets the quality systems requirements set by the International Organization for Standardization.

There are five classes of individual, but related, series on quality management and assurance of ISO standards ranging from 9000 to 9004. Providing guidelines and definitions, the 9000 and 9004 serve as a road map to other standards. Involving terse inspection procedures and a search for weak management links, the 9003 is the most limited. The 9002 rates quality requirements in production, installation, and inspection. Our Harima Factory received ISO-9002 in May of 1993 and is rated globally in the top 200 of this range.

The 9001 Certification is the most prestigious, comprehensive, and difficult to obtain; it rates the quality of self-designing companies manufacturing products from scratch, and now includes new product design. Inspection starts with the manufacturing process and is closely scrutinized all the way to the consumer. In 1991, Ushio's BLV German Subsidiary proudly received the first 9001 certification in the illumination industry. In addition to its ISO 9002 certification, Ushio's Harima factory also acquired ISO 9001 certification in 1994.



GRAPHICARTS

Cross Reference / Catalog

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145 Exposure		JP125V-800W	25
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B1421-14 (5kW)			
B1601-03 (5kW)			
B1601-23 (5kW)			
B1801-06 (5kW)			
B1801-07 (5kW)			
B1801-08 (5kW)			
B1801-09 (5kW)			
B1801-17 (5kW)			
B1801-18 (5kW)			
B1801-19 (5kW)			

MANUFACTURER MODEL #	MANUFACTURER LAMP #	USHIO LAMP CODE	PAGE #
BURGESS/ASCOR, BERKEY, PAKO			
Addalux			
B1801-20 (5kW)	1406-07 (754-18017)	MHL-5000/7	64
B1801-21 (5kW)			
B1801-22 (5kW)			
B1801-23 (5kW)			
B1801-24 (5kW)			
B1801-25 (5kW)			
B1801-26 (5kW)			
B1801-27 (5kW)			
B1801-30 (5kW)			
B1801-40 (5kW)			
B1801-50 (5kW)			
1401-11 (2kW)	1406-03 (754-18025)	MHL-1403	57
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1401-52 (2kW)			
1401-53 (2kW)			
1601-02 (2kW)			
1601-12 (2kW)	1406-01 (754-18013)	MHL-2000/3	58
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1601-14 (2kW)			
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1601-18-50 (2kW)	1406-02 (754-18014)	MHL-2000/2	58
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1601-22 (2kW)	1406-03 (754-18025)	MHL-1403	57
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1601-49 (2kW)	1406-01 (754-18013)	MHL-2000/3	58
1601-50 (2kW)	1406-03 (754-18025)	MHL-1403	57
1601-50 (5kW)	1406-05 (754-18016)	MHL-5000/5	64
1601-51 (2kW)	1406-01 (754-18013)	MHL-2000/3	58
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1601-58 (5kW)			
1601-64 (2kW)	1406-03 (754-18025)	MHL-1403	57
1601-65 (5kW)	1406-05 (754-18016)	MHL-5000/5	64
1601-65-50 (5kW)			
5KW-OH (5kW)	1406-07 (754-18017)	MHL-5000/7	64
5KW-SM (5kW)			
5K-3343 (5kW)			
5K-3343-W (5kW)			
5K-3343/755-10084			
5K-3545 (5kW)			
5K-4252 (5kW)			
5K-4862 (5kW)			
5K/754/1200A (5kW)			
5K/754/1201A (5kW)			
5K/754/1202A (5kW)			
5K/754/1203A (5kW)			

CROSS REFERENCE

BY MANUFACTURER / EQUIPMENT MODEL

MANUFACTURER MODEL #	MANUFACTURER LAMP #	USHIO LAMP CODE	PAGE #
BROWN			
2000	2-91702-000	DXN	30
	2-14009-000	FCB	28
26	2-91702-000	DXN	30
26SP			
3000	2-91702-000	DXN	30
	2-14009-000	FCB	28
4000	2-91702-000	DXN	30
	2-14009-000	FCB	28
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185	190682-001	JP120V-500WC7	22
275	190682-001	JP120V-500WC7	22
	190682-003	JP240V-500WC1	23
400	190682-001	JP120V-500WC7	22
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613	190682-001	JP120V-500WC7	22
615E			
KENRO			
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V-184			

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V-185	02-6314	FCL	21
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V-24	02-6314	FCL	21
V-240			
V-242			
V-243			
186 Superbeam	532-0020	EHZ	20
187	02-6314	FCL	21
		JP120V-500WC7	22
187DM	02-6314	FCL	21
187K	532-0019	FCZ	21
240	02-6314	JP120V-500WC7	22
241	02-6314	FCL	21
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3700		EHR	28
4150			
4800 Superbeam	532-0019	FCZ	21
613			
7000		EHR	28
7100			
7350			
7400			
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AA12TQ60CB	MX-14	UPX-45	68
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MITSUBISHI			
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835 EXPOSURE		JP125V-500WS	22
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885 EXPOSURE			
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BBC1418	VE-959	ENH	37
BBC1418-2			
FT18L	HE-15, VE-677	UPX-56	69
FT18L-1			
FT18L-2			
FT18V-1	GW114	MHL-1000/1	56
FT18V-2			
FT26L	CN-42, VE357	UPX-50	69
FT26LNS			
FT26V-1	GW114	MHL-1000/1	56
FT26V-2			
FT26V2UP	HT28	MHL-2000/1	58
FT26V2UPNS			
FT26V2UPNSLSP			
FT26V2UPSP			
FT26V3UP	HT121 KM5	MHL-121HT use MHL-121HT	51
FT26V3UPNS	HT121 KM5	MHL-121HT use MHL-121HT	51
FT26VNS-1	GW114	MHL-1000/1	56
FT26VNS-2			
FT26VNSLSP			
FT26VNSSP			
FT26VSP			
FT32L	HE-15, VE-677	UPX-56	69
FT32LNS			
FT32UP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT32UPNS	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT32V2UP	HT28	MHL-2000/1	58
FT32V2UPNS			
FT32V3UP	HT121 KM5	MHL-121HT use MHL-121HT	51
FT32V3UPNS	HT121 KM5	MHL-121HT use MHL-121HT	51
FT40-3UP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT40-3UPNS	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT40-3V2UP	HT28	MHL-2000/1	58
FT40-3V2UPNS			

MANUFACTURER MODEL #	MANUFACTURER LAMP #	USHIO LAMP CODE	PAGE #
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FT40APNS			
FT40APR			
FT40APRNS			
FT40APRVE			
FT40APRNSVE			
FT40L	HE-15, VE-677	UPX-56	69
FT40LNS	CU-71, VE409	UPX-80	69
FT40UPNS	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT40UPNSLSP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT40UPNSSP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT40UPSP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT40V2UP	HT28	MHL-2000/1	58
FT40V2UPNS			
FT40V2UPNSLSP			
FT40V2UPNSSP			
FT40V2UPSP			
FT40V3UP	HT121 KM5	MHL-121HT use MHL-121HT	51
FT40V3UPNS	HT121 KM5	MHL-121HT use MHL-121HT	51
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FT46APR	LY33	MHL-33LY	51
FT46APRNS			
FT46LNS	CU-71, VE409	UPX-80	69
FT46UPNS	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT46V6UP	KT38 Replaces KT98	MHL-38KT	51
FT46V6UPNS			
FT52APR	LY33	MHL-33LY	51
FT52APRNS			
FT52APRVE			
FT52APRNSVE			
FT52L	CN-42, VE357	UPX-50	69
FT52LNS	CU-71, VE409	UPX-80	69
FT52UPNS	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT52UPNSLSP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT52UPNSSP	FS90 HQ89	MHL-4000/U1 MHL-4000/U2	61 61
FT52UPSP	FS90	MHL-4000/U1	61

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BY MANUFACTURER / EQUIPMENT MODEL

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FT52V6UP	KT38 Replaces KT98	MHL-38KT	51
FT52V6UPNS			
FT66LNS	CU-71, VE409	UPX-80	69
FT66UPNS	FS90	MHL-4000/U1	61
	HQ89	MHL-4000/U2	61
N1000-1	GW114	MHL-1000/1	56
N1000-2			
N1000SP			
N1500	HE-15, VE-677	UPX-56	69
N1500-1			
N1500-2			
N750-1	GW114	MHL-1000/1	56
N750-2			
NCP22			
NCP28			
NL43	LY33	MHL-33LY	51
NL52			
NU8000P	CN-42, VE357	UPX-50	69
NUQ2600	VE-366	FAD	29
NUQ3200	VE-377	DXX	29
NUQ3200A			
NUQ4800			
NUQ6400A			
NUQ5300			
OH6000	LY33	MHL-33LY	51
OH631			
PL6000			
PL631			
SST1418	VE-377	DXX	29
	VE-598	EHP	28
SST1418S	VE-377	DXX	29
SST1418-1-3	VE-598	EHP	28
SST1418-1-4	VE-479	FFM	28
SST1418-1-6	VE-366	FAD	29
SST1418-3	VE-598	EHP	28
SST1418-6	VE-366	FAD	29
SST2024	VE-377	DXX	29
SST2024C			
SST2024CS			
SST2024S			
SST2024SB			
SST2024SBS			
SST3131			
SST3131S			
SSTE2024SB			
SSTE2024SBS			

MANUFACTURER MODEL #	MANUFACTURER LAMP #	USHIO LAMP CODE	PAGE #
NUARC			
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VIP18-2			
VIP26			
VIP26-2			
VIP26NS			
VIP26NS-2			
VIC1418	VE-479	FFM	28
VIC1418-15			
VIC1418-15-6	VE-366	FAD	29
VIC1418-2			
VIC1418-25			
VIC1418-6			
VV1418	VE-479	FFM	28
VV1418BL			
VV1418BL-2			
VV1418BL-6	VE-366	FAD	29
VV1418SS	VE-479	FFM	28
VV1418SS-6	VE-366	FAD	29
VV1418SSBL	VE-479	FFM	28
VV1418SSBL-2			
VV1418SSBL-6	VE-366	FAD	29
VV1418SS-2	VE-479	FFM	28
VV1418-2			
VV1418-6	VE-366	FAD	29
VV2024M	VE-377	DXX	29
VV2024MBL			
VV2024M2			
VV2024M2BL			
VVE1418	VE-479	FFM	28
VVE1418-2	VE-377	DXX	29
VVE2024M			
VVE2024M2			
1418SC2	VE-366	FAD	29
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1418SC2-4	VE-479	FFM	28
2024V	VE-377	DXX	29
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2024V-6	VE-366	FAD	29
26-1K	GW114	MHL-1000/1	56
	GW114 Diazo	MHL-1000/2	56
26-1KSP	GW114	MHL-1000/1	56
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3K	HT121	MHL-121HT	51
32-1K	GW114	MHL-1000/1	56
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4000UP	HQ89	MHL-4000/U2	61
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40-1K	GW114 Diazo	MHL-1000	55
40-1KSP	GW114	MHL-1000/1	56
	GW114 Diazo	MHL-1000	55
40-6K	KT38 Replaces KT98	MHL-38KT	51
5140-631	LY33	MHL-33LY	51
52-6K	KT38 Replaces KT98	MHL-38KT	51
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215 EXPOSURE		JP125V-800W	25
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ALKT	L1K3	JCV120V-1000WC4	32
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AL1KT	L1KS	JCV120V-1000WC4	32
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AL1KT-C6	L6C2	FCB	28
AL1KT-K4		DXN	30
AL1KT-K2		FBY	30
AL100	L1250 Diazo	MHL-170L	52
	L1250R Matchprint	MHL-170LR	52
AL100A	L1250 Diazo	MHL-170L	52
	L1250R Matchprint	MHL-170LR	52
AL100M	L1250 Diazo	MHL-170L	52
	L1250R Matchprint	MHL-170LR	52
AL11KT	L1K3	JCV120V-1000WC4	32
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AL25-2	L1250 Diazo	MHL-170L	52
	L1250R Matchprint	MHL-170LR	52
AL252M	L1250 Diazo	MHL-170L	52
	L1250R Matchprint	MHL-170LR	52
AL2521	L1250 Diazo	MHL-170L	52
	L1250R Matchprint	MHL-170LR	52
AL6CX	L6C2	FCB	28
AL83	L1280 Diazo	MHL-280L	53
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FX1200			
FX2400			
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Matchprint L1250	L1250M3	MHL-170LR	52
PL100	L1250 Diazo	MHL-170L	52
	L1250M3 Matchprint	MHL-170LR	52
PL15	L1250 Diazo	MHL-170L	52
	L1250M3 Matchprint	MHL-170LR	52
PL25	L1250 Diazo	MHL-170L	52
	L1250M3 Matchprint	MHL-170LR	52
PL50	L1250 Diazo	MHL-170L	52
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PL53	L1250 Diazo	MHL-170L	52
	L1250M3 Matchprint	MHL-170LR	52
PMX2411	10431	MHL-1000/1	56
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RP2820	L1250 Diazo	MHL-170L	52
	L1250M3 Matchprint	MHL-170LR	52
RP3350	L1250 Diazo	MHL-170L	52
	L1250M3 Matchprint	MHL-170LR	52
RP3350D	L1250 Diazo	MHL-170L	52
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SV-403-004		DYH	31
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TEANECK			
TFD-2	L1250	MHL-170L	52
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THEIMER			
D61-2150	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
D61-2155	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
D70-2152	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
D70-2157	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
F61-2300	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
F70-2303	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
F70-2308	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
F70-2502	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
F70-2505	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
Montakop			
Multi 4 (3kW)	THS 3027 (821397)	MHL-3027S	61
Multi 6 (5kW)	THS 5027 (822597)	MHL-5027S	66
Multi 10	THS 8027 (821897)	MHL-8027S	67
3000 Series	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
5000 Series	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
7.5kW	THS 8027 (821897)	MHL-8027S	67
Spektra-Proof			
2000 Series	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
3000S Series	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
5000S Series	THS 5000 (820596)	MHL-5000S	63
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S65-2120	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
S65-2320	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
S80DS-2322	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
S80DS-2521	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
S80-2321	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
S80-2520	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
S95DS-2324	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
S95DS-2523	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
S95-2323	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
S95-2522	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
Theimoquick	THS 1007 (820197)	MHL-1007S	56
TU01a (uses 2)	KX 10 (823110)	UPX-45	68
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TU04a (uses 4)	KX 30	UPX-47	69
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TU112	THS 1000 (820190)	MHL-1000S	55
	THS 1007 (820197)	MHL-1007S	56
TU112/11	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU112/14	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU1125a/11	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU1125a/18	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU116	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU117	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU118	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU118/11	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU118/14	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU132a (uses 4)	KX 10 (823110)	UPX-45	68

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TU150	THS 5000 (820596)	MHL-5000S	63
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TU16a (1800)	KX 150	UPX-80	69
TU16a/11 (1802)			
TU16c (1800)			
TU16c/11 (1802)			
TU174	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU174/11	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU175	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU175/11	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU175/14	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU177	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU177T	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU178	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU178/11	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU178/14	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU179	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU179/11	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU179/14	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU195	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU195/21	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU195T	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU197	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU197/21	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU197T	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU199	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU199/11	THS 3000 (820390)	MHL-3001S	60

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TU199/11	THS 3007 (820397)	MHL-3007S	60
TU199T	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU212	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU212/11	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU212T	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU222	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU222/14	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU223	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU223/11	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU223/14	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU224	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU224/11	THS 5000 (820596)	MHL-5000S	63
	THS 5007 (820597)	MHL-5007S	64
TU225	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU225/11	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU225/14	THS 3000 (820390)	MHL-3001S	60
	THS 3007 (820397)	MHL-3007S	60
TU263	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU263/14	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
TU263/14 Copymat	THS 1000 (820190)	MHL-1000S	55
	THS 1007 (820197)	MHL-1007S	56
TU403	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU403/24	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU403/T	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU404	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU404/24	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU404T	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66

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TU405	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU405/24	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU405T	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU406	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU406/24	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU406T	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU409/11	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU410	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU410T	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU412/11	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU413	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU413T	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU415	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU415T	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU416	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU416T	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
TU417/11	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU418	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU418T	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU419/11	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU421	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU421T	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
TU52a	THS 1000 (820190)	MHL-1000S	55
	THS 1007 (820197)	MHL-1007S	56
TU52a/11	THS 1000 (820190)	MHL-1000S	55

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TU52a/11	THS 1007 (820197)	MHL-1007S	56
Violux			
Exposure Frame Systems			
	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
	THS 5020 (821397)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
	THS 8027 (821897)	MHL-8027S	67
Multi 10	THS 8027 (821897)	MHL-8027S	67
Violux Super Series			
1000s Series	THS 1000 (820190)	MHL-1000S	55
	THS 1007 (820197)	MHL-1007S	56
	THS 1507 (823197)	MHL-1507S	57
1500s Series	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
3002	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
3002S	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
5002	THS 5027 (822597)	MHL-5027S	66
5002S			
Xenolux OT8	KX 150	UPX-80	69
1050	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
1054	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
1058	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
110-3626	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
110-3821	THS 8027 (821897)	MHL-8027S	67
110-3826			
1125	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
1126	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
1127	THS 1000 (820190)	MHL-1000S	55
	THS 1507 (823197)	MHL-1507S	57
125-3640	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
125-3645	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
125-3650	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
125-3655	THS 5020 (822590)	MHL-5020S	65
	THS 5027 (822597)	MHL-5027S	66
125-3840	THS 8027 (821897)	MHL-8027S	67

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125-3845	THS 8027 (821897)	MHL-8027S	67
125-3850			
125-3855			
1340 (TU63a)	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1340S (TU63c)	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1341 (TU63a/11)	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1341S (TU63c/11)	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1344	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1344S	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1348	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
1348S	THS 3020 (822390)	MHL-3020S	61
	THS 3027 (821397)	MHL-3027S	61
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