



Lighting Program Display/Optic







































































100
YEARS OF
INNOVATION
OSRAM

SEE THE WORLD IN A NEW LIGHT

OSRAM



Symbols

	Spacing a max. in mm		Current control range		Length l_2 in mm
	ANSI code		Radiation at 350....450 nm		Max. length l_2 in mm
	Beam angle		Radiant intensity at 350....450 nm		Diameter d in mm
	Axial luminous intensity		Radiant intensity at 365 +/- 2.5 nm		Max. diameter d in mm
	Coating		Filament field w x h in mm		Tube diameter d in mm
	Arc length in mm		Type of current		Burning position
	Arc stability, horizontal		Filament dimensions w x h in mm		Beam angle in degrees
	Burning position, anode down		Luminance in candelas per square meter		Colour rendering group
	Forced cooling		Rated wattage in W		Light colour
	Forced cooling, horizontal		Rated current in amps		Average period of use/life
	Forced cooling, vertical		Voltage in V		Normal pack/pcs.
	Contact spacing/max. length l in mm		Luminous flux in lumen		Standard pack/pcs.
	Filament length in mm		Luminous intensity cd		for lamp
	Luminous efficacy		Base		Colour temperature K
	Illuminance at a distance of 8 mm		Fig. no.		Dimming range
	LIF code		Shape/model		System wattage at 230V/240V
	Max. colour temperature K		Weight		Permissible operating voltage, sinusoidal
	Max. black body temperature		Spacing a in mm		Ignition voltage in kV
	Average luminance		Width b in mm		Operating frequency kHz
	Average luminance (vertical burning position)		Height h in mm		Focal length a in mm
	Average luminance (horizontal burning position)		Length l in mm		Electrode spacing a in mm
	Base anode		Length l_1 in mm		Power W/A
	Base cathode		Max. length l_1 in mm		Spacing a in mm, LCL
	Spectral radiance distribution				

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www.osram.com



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Subject to change without notice. Errors and omission excepted.



General information

- The standard small tolerances apply to rated values and dimensions
- The lamps are warranted only if they are operated with approved control gear or with control gear declared to be suitable
- A list of sources of control gear and igniters is available on request. With the exception of the XBO® product family, all discharge lamps contain small quantities of materials which are harmful to the environment (such as mercury). In Europe, they therefore have to be disposed of under EEC Code 06 04 04*, Waste containing mercury, or 20 01 21*, Fluorescent tubes and other waste containing mercury. In other countries the relevant national regulations must be followed
- Specifications subject to change without notice, delivery subject to availability
- These special lamps should only be operated in casings that prevent exposure of the environment to UV light and the release of splinters

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For further information see the brochures for “Low-voltage tungsten-halogen lamps”, “XBO® cinema lamps” and “Metal halide lamps” and also the product list “HBO® lamps for microlithography”. These are available from OSRAM GmbH, Marketing Display/Optic, Nonnendammallee 44-61, D-13629 Berlin, Fax +49 (0)30 33862359.

See the world in a new light

For 100 years, the name of OSRAM has been synonymous throughout the world with excellence in lighting. OSRAM was registered and protected as a brand name in 1906. In 1919, three manufacturers – Siemens & Halske AG, Deutsche Gasglühlicht Anstalt (Auer-Gesellschaft) and AEG – combined their lamp production operations. This was the birth of the successful company that is now OSRAM GmbH. We are now one of the two leading lighting manufacturers in the world.





OSRAM World:

- 65 companies and sales offices for 100 countries
- 48 countries served by local agents or OSRAM GmbH, Munich
- 49 factories in 19 countries

Light is life.

With its innovative technologies and solutions, OSRAM has continually opened up new horizons in artificial lighting – in offices, factories and homes, and on the roads. Light is an essential part of our everyday lives. A wide range of lamps and lighting systems from OSRAM provides the basis for living independent of natural daylight, with greater safety, better comfort, faster progress in science and technology and more economical use of valuable natural resources.

OSRAM is your partner.

We supply customers in around 150 countries. Our sales logistics and highly developed order processing system ensure that OSRAM products are delivered at the right time to the right place throughout the world.

Because of rapid advances in lighting technology, it is essential to keep knowledge up to date and to keep expanding product ranges. We can help you here with new lighting systems, information on the latest developments and workshops in which we can improve your expertise as a lighting consultant.

The E-CHECK label.



The E-CHECK test label has become the seal of quality for the electrical installation sector. OSRAM has supported the E-CHECK initiative right from the start. This is because it offers real benefits for the electrical trade:

- It paves the way for high-quality customer contact.
- It enhances customer loyalty by showing competence.
- The label is an indication that the electrical installation has been completed properly.

www.voltimum.com – the internet portal for information on electrical installation.



OSRAM is one of the seven founding members of Voltimum, the first European internet portal of leading players in the electrical installation industry. It offers a professional online working environment for experts in this sector. It will expand the services we offer. Electricians will find a wide range of information, services and support at www.voltimum.com.

Setting the pace in lighting engineering



Photo: Spectra (Sweden)



Photo: Spectra (Sweden)

Many events need impressive presentation in order to achieve their full effect. The brilliant large screens at pop concerts and professional multimedia presentations are excellent examples. For these pictures to impress the audience, OSRAM has developed extremely powerful and durable light sources.

In our **Display Systems** Business Unit we have combined all the lamps that are used for presenting images and data. These include innovative high-intensity discharge lamps developed specially for multimedia data and video projection and back-projection televisions, and high-tech lighting solutions for flat screens.

Competition in the entertainment sector is getting fiercer year by year. Success only comes to those who put on the best shows and reach the largest number of fans. Talent, creativity and energy have to be matched by perfect technical implementation. Lamps from OSRAM let stars appear in their best possible light right from the start.

Our **Entertainment** Business Unit supplies lamps and lighting systems for a wide range of applications in the entertainment industry. Our customers – producers, directors, stage designers, club owners, architects and so on – always know where they can find powerful and reliable light sources to turn their creative ideas into reality.



The cinema now performs a whole host of functions. It is a meeting place for people, young and old; it is a place where dreams and imagination come alive; it is where pictures and sound come together. And, lest we get carried away with the magic of the cinema, we should remember that it is an industry that turns over billions of dollars, pounds and euros each year. Yet all this would not be possible without a small but immensely important development – the artificial light source that enabled film to be projected onto a screen.

Our **Cinema** Business Unit offers customer in the cinema industry sophisticated and enormously powerful special lamps for film projection. Here, OSRAM is building on years of tradition. In close cooperation with the film industry and in a spirit of mutual trust we have continually improved these lamps in terms of their brightness, efficiency, durability and environmental impact. It all adds up to hours and hours of pleasure for film fanatics throughout the world.

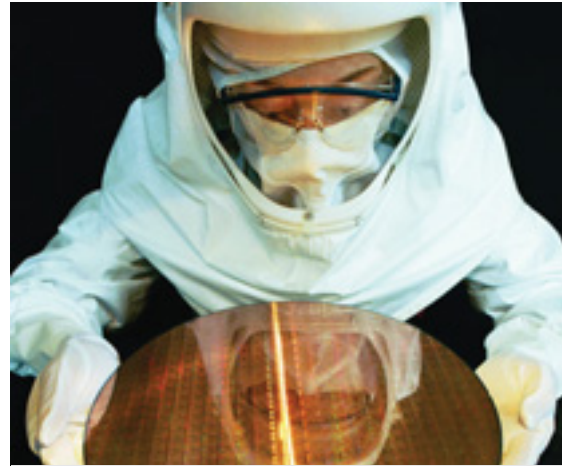
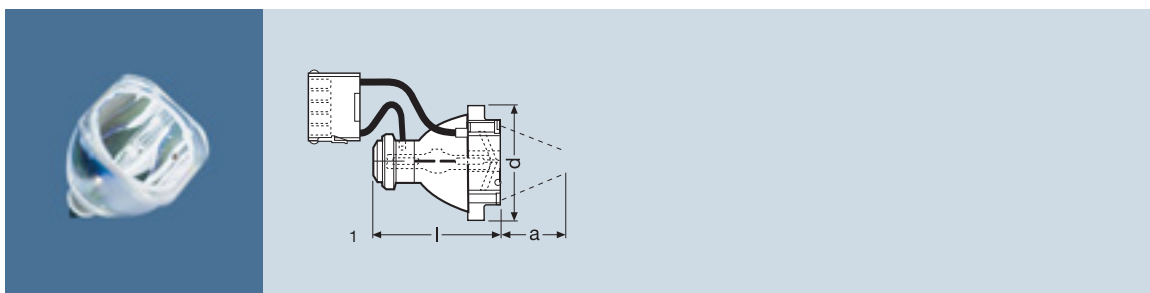


Photo: Intel

However, innovations can only be achieved if the right tools are available. If the manufacture and testing of a product calls for extreme accuracy then optical processes are indispensable. Special lamps from OSRAM provide the perfect light for such processes.

Our **Semiconductors & Medical** Business Unit supplies lamps that illuminate small areas with high precision. This may involve ultra-violet (UV) radiation from HBO® lamps for microlithography or “artificial daylight” from XBO® lamps for endoscopy. To ensure the right results in each case, the lamps are matched to the relevant optical systems and applications to achieve optimum compatibility.

VIP® Halogen discharge lamps



Product reference	Product number	W	V	A		lm	cd/cm ²
VIP® halogen discharge lamps							
VIP R 273/45	4008321039989	270	38	7.1	Refl.	17000	100000
Product reference	K ¹⁾		t [h]	l [mm]	d [mm]	a [mm]	No.
VIP R 273/45	5400	1.9	1000	73	67	45	1

VIP® lamps are halogen discharge lamps that meet the particular requirements of multimedia data and video projection thanks to their extremely short arcs and long life.

Their main characteristics and advantages are as follows:

- Short arc
- Very high luminance
- Long life
- High luminous efficacy
- Tailor-made colour spectrum
- Optimised reflector configuration
- ECG operation

VIP® lamps from OSRAM are used in light valve projectors (video projectors) based on LCD or DLP™ technology. Their spectral distribution has been adapted to the colour filter curves of the projectors and their service life optimised for maximum luminance and luminous efficacy. These benefits make them ideal light sources for professional projection applications, light guide systems and effect lighting.

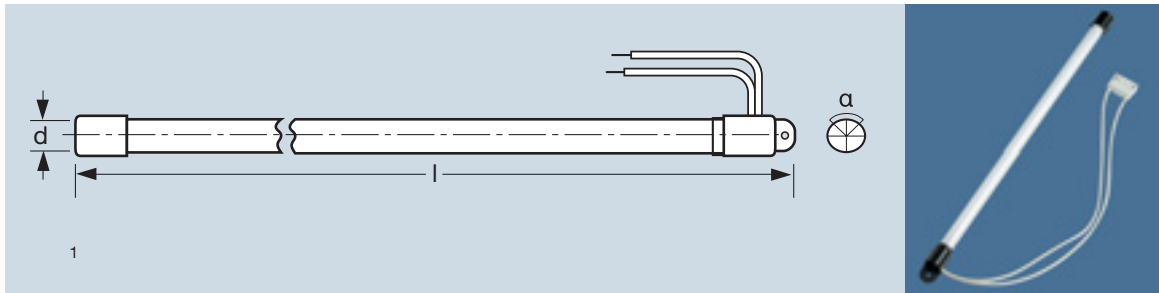
Standard VIP® lamps, on the other hand, are based on more conventional filling systems. With their longer arcs they offer a degree of freedom for spectral matching. Information on special versions for OEMs is available on request.

Special versions for OEMs are supplied on request as P-generation OSRAM VIP® lamps. These P-VIP® lamps are high-pressure mercury lamps. Thanks to their specific filling parameters and very short electrode gaps, they achieve very high luminance values and very small spreads. Typical lamp parameters are luminance of over 200 kCd/cm² at 120 W and electrode gaps of 1.0 mm.

P-VIP® lamps are available with parabolic or elliptical reflectors with optimised contours for front and back projection based on LCD, LCOS or DLP™ light valve technology.



Aperture lamp in tubular form, 10 mm tube diameter LINEX® linear excimer lamp, mercury-free



Product reference	Product number	W		R _a	Lx 8 mm	TUBE d (mm)	l [mm]		No.	
LINEX® for ECG operation only										
A2-10W35	4008321039989	35	Daylight	1 B	50000	10	510	80	1	40
A3-10W40	4050300652603	35	Daylight	1 B	70000	10	392	80	1	50
A4-10W24	4050300652566	24	Daylight	1 B	60000	10	277	80	1	50

How LINEX® works:

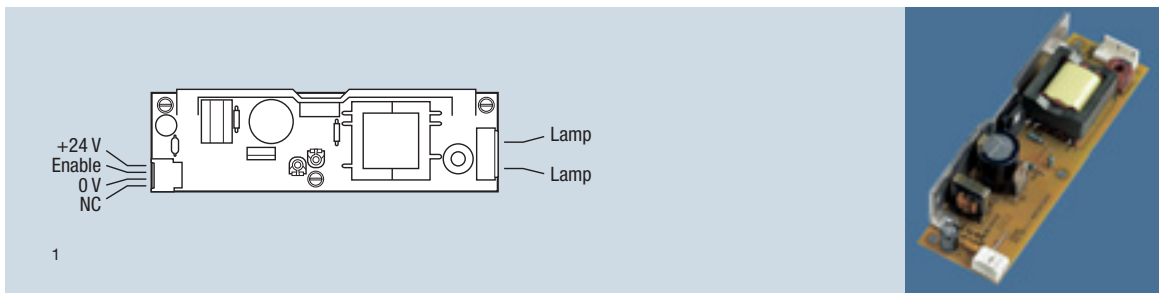
Xenon particles are excited by electrically restricted discharge and emit UV radiation. This radiation is efficiently converted into visible light by a special phosphor.

Product features:

- Long life
- Instant light, flicker-free
- Excellent colour rendering (R_a = approx. 90)
- Luminous flux unaffected by temperature (-25 °C to +60 °C)
- Operating frequency > 100 kHz

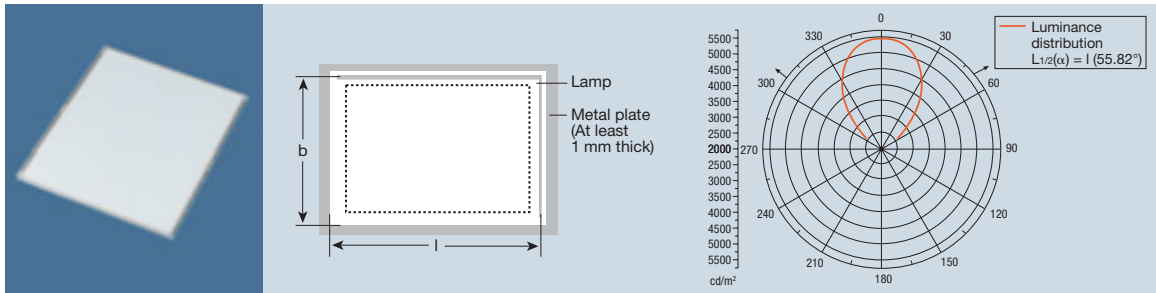
Applications:

- Scanners, copiers, industrial image analysis, additional lighting



Product reference	Product number		V min.-max.	kHZ ECG	A	W SYSTEM
QUICKTRONIC® for OSRAM LINEX®						
QT LINEX 1x40/24	4050300666662	40	21.6...26.4	> 100	1.7	40
QT LINEX 1x24/24	4050300666709	24	21.6...26.4	> 100	1.0	24

Product reference	l [mm]	b [mm]	h [mm]	g	No.	
QT LINEX 1x40/24	135	40	28	130	1	25
QT LINEX 1x24/24	135	40	28	130	1	25



Product reference	Product number	W	Ra ²⁾	K ²⁾	cd/m ²	AC/DC	W
OSRAM PLANON®							
PLANON 10.4"/880 6 ³⁾	4050300784304	24	86	8000	5200	24 V DC	20 % PWM ¹⁾
PLANON 15.0"/880 6 ³⁾	4050300784366	40	86	8000	4400	24 V DC	20 % PWM ¹⁾
PLANON 18.1"/880 8 ³⁾	4050300789187	80	86	8000	5100	24 V DC	20 % PWM ¹⁾
PLANON 21.3"/880 8 ³⁾	4050300803906	65	86	8000	4000	24 V DC	20 % PWM ¹⁾
PLANON 21.3"/840 9 ³⁾	4008321040046	75	86	4000	4800	24 V DC	20 % PWM ¹⁾

Product reference	l [mm]	b [mm]	h [mm]	ECG reference
PLANON 10.4"/880 6 ³⁾	231	174	8.5	QT PLANON 10.4"/20/24 6 ³⁾
PLANON 15.0"/880 6 ³⁾	324	258	8.5	QT PLANON 15.0"/40/24 6 ³⁾
PLANON 18.1"/880 8 ³⁾	384	317	8.5	QT PLANON 18.1"/80/24 8 ³⁾
PLANON 21.3"/880 8 ³⁾	441	359	8.5	QT PLANON 21.3"/80/24 8 ³⁾
PLANON 21.3"/840 9 ³⁾	441	359	8.5	QT PLANON 21.3"/75/24 9 ³⁾

OSRAM PLANON®:

A completely new dimension

- Two-dimensional, mercury-free discharge lamp
- Lamp size (diagonal) from 10.4 to 21.3 inches
- Ultra low profile ≤ 10 mm
- Luminances from 3000 to 10,000 cd/m²
- Homogeneous brightness distribution over the entire surface
- Dimmable in the ratio of 1:5 (20% of rated output)
- Extremely long life of up to 100,000 h (MTTH = Mean Time to Half Brightness)
- Lamp life unaffected by switching cycle
- Lamp and control gear (ECG) available as a system

Mercury-free technology:

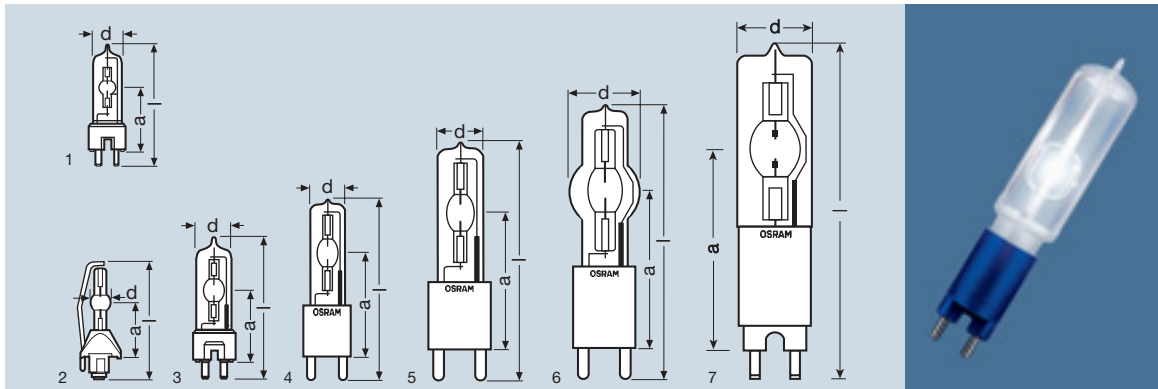
- Luminous flux unaffected by temperature in the range from -30 °C to +85 °C
- Instant light (no warm-up time)
- Environmentally friendly product (waste disposal)

Applications:

- Lighting for indoors and outdoors
- LCD backlighting
- Industrial image processing
- Architecture lighting and image information systems
- Lighting for film and photography



HMI® Metal halide lamps



Product reference	Product number	W	V	A		lm	
HMI® metal halide lamps, single-ended, 6000 K							
HMI 200 W/SE	4050300307961	200	70	3.0 \sqcap	GZY9.5	16000	80
HMI 250 W/SE	4050300239064	270	50	5.4 \sqcap	FaX1.5	16200	84
HMI 400 W/SE	4050300388441	400	70	6.9 ~	GZZ9.5	33000	110
HMI 575 W/SEL XS	4050300422275	575	95	7.0 ~	G22	49000	145
HMI 1200 W/SEL XS	4008321062109	1200	100	13.8 ~	G38	110000	200
HMI 2500 W/SE XS	4050300284293	2500	115	25.6 ~	G38	240000	225
HMI 4000 W/SE XS	4050300309743	4000	200	24.0 ~	G38	380000	250
HMI 6000 W/SE XS	4050300564067	6000	123	55.0 ~	GX38	600000	360
HMI 12000 W/SE XS	4050300650418	12000	160	84 ~	GX38	1150000	450
HMI 12000 W/SE/GX51 XS	4008321098962	12000	160	84 ~	GX51	1150000	455
HMI 18000 W/SE/GX51 XS	4008321098955	18000	225	88 ~	GX51	1600000	260

Product reference				t [h]		
HMI 200 W/SE	20	39	5	200	universal	1
HMI 250 W/SE	12	35	5	250	p 45	2
HMI 400 W/SE	23	60	6	650	universal	3
HMI 575 W/SEL XS	30	70	7	1000	universal	4
HMI 1200 W/SEL XS	42	107	10	1000	universal	5
HMI 2500 W/SE XS	60	127	14	500	universal	6
HMI 4000 W/SE XS	75	142	23.5	500	universal	6
HMI 6000 W/SE XS	75	210	23	500	s 135	7
HMI 12000 W/SE XS	100	255	28	300	s 135	7
HMI 12000 W/SE/GX51 XS	100	260	27	300	s 135	7
HMI 18000 W/SE/GX51 XS	100	260	44	300	s 135	7

\sqcap = Square-wave ac current
 ~ = Sine wave ac current

W = Watts
 SE = Single ended
 XS = eXtreme Seal (max. permissible foil temperature 450 °C)

HMI® lamps are ac-operated discharge lamps in which the arc burns in a dense vapour atmosphere comprising mercury and the halides of rare earths.

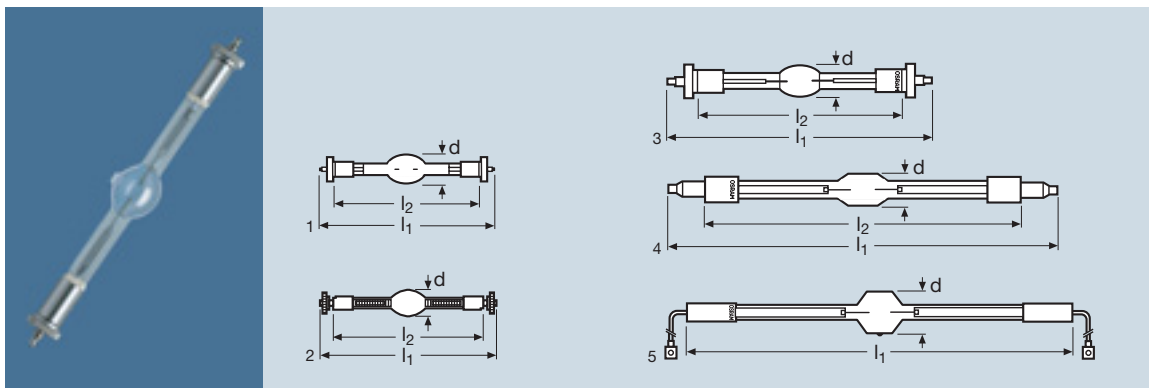
Their main characteristics and advantages are as follows:

- Very high luminous efficacy of up to 100 lm/W
- Daylight colour temperature of approx. 6000 K
- High colour rendering index ($R_a > 90$)
- Hot restart capability
- Dimmable

Applications:

- Film and television recording under daylight conditions in the studio or outdoors
- Reporting (low-wattage lamps)
- Film and TV production (high-wattage lamps)
- Stage (lighting for dramatic effect)
- Professional photography
- Entertainment

HMI® Metal halide lamps



Product reference	Product number	W	V	A		lm	l1 max. [mm]
HMI® metal halide lamps, double-ended, 6000 K							
HMI 575 W/GS XS	4050300575148	575	95	7.0 ~	SFc10	49000	136
HMI 1200 W/S XS ¹⁾	4050300480800	1200	100	13.8 ~	SFc10-4	110000	136
HMI 1200 W/GS	4050300239774	1200	100	13.8 ~	SFc15.5	110000	220
HMI 2500 W/GS	4050300302775	2500	115	25.6 ~	SFa21	240000	355
HMI 2500 W/S XS ¹⁾	4050300025780	2500	115	25.6 ~	SFa21	240000	210
HMI 4000 W XS	4050300216553	4000	200	24.0 ~	SFa21	380000	405
HMI 6000 W XS	4050300304137	6000	123	55.0 ~	S25.5	570000	450
HMI 12000 W/XS	4050300857763	12000	160	84.0 ~	S30	1150000	470
HMI 18000 W/XS	4050300296432	18000	225	88.0 ~	S30	1700000	500

Product reference	d [mm]	l2 max. [mm]		t [h]		No.
HMI 575 W/GS XS	21	115	7	1000	universal	1
HMI 1200 W/S XS ¹⁾	21	115	7	750	universal	2
HMI 1200 W/GS	27	180	10	1000	universal	3
HMI 2500 W/GS	31.5	290	14	500	p 30	4
HMI 2500 W/S XS ¹⁾	31.5	150	14	500	p 30	4
HMI 4000 W XS	36	340	34	500	p 15	4
HMI 6000 W XS	54		21	500	p 15	5
HMI 12000 W/XS	64		25	500	p 15	5
HMI 18000 W/XS	70		44	300	p 15	5

Supplied in single packs
 ~ = Sine wave ac current
 GS = Gap Shortened

W = Watts
 S = Short
 XS = eXtreme Seal (max. permissible foil temperature 450 °C)

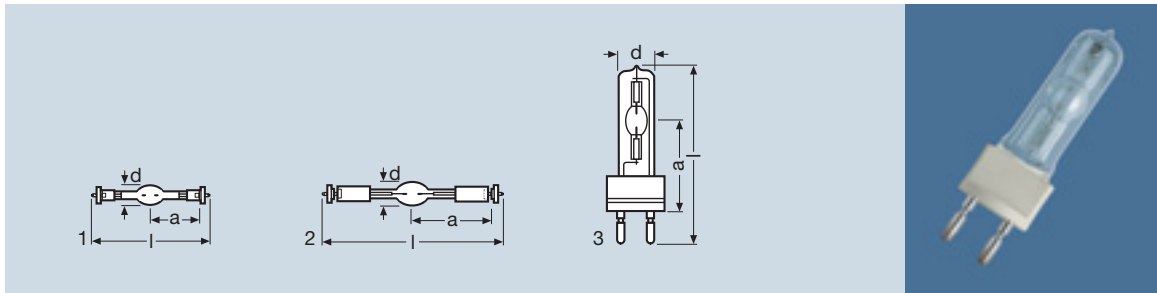
Safety:

Because HMI® lamps emit UV radiation and operate at overpressure the following lamps must only be operated in appropriate fully enclosed luminaires. This also applies to the versions with outer bulbs. Suitable filters should be used to ensure that the UV radiation is reduced to an acceptable level.

Literature:

Further information can be found in the following brochures, obtainable on request from OSRAM:

- “Technology and applications/Metal halide lamps”
- “Guidelines for control gear and igniters for metal halide lamps”
- “Availability of control gear and igniters”
- “Rome. 8 pm. Overcast. No problem. HMI lamps”
- “High Noon” HMI 12 and 18 kW/SE/GX51.



Product reference	Product number	W	V	A		lm	K
HMP® metal halide lamps							
HMP 400 DE	4050300 396170	400 ²⁾	100	4.8 ~	SFc10-4	33000	6000
HMP 575 DE	4050300 407845	575 ³⁾	100	6.7 ~	SFc10-4	49000	6000
HMP 575 SE	4050300 401393	575 ³⁾	100	6.8 ~	G22	49000	6000

Product reference					t [h]		
HMP 400 DE	93	16	35	5.5	750	p 45 ¹⁾	1
HMP 575 DE	136	21.5	57.5	7	1000	universal	2
HMP 575 SE	145	30	70	7	1000	universal	3

~ = Sine wave ac current
DE = Double ended
SE = Single ended

Thanks to their special filling and their electrode system, HMP® metal halide lamps can not only be dimmed, they can be “boosted”; in other words, they can be operated above their rated output. Whether the lamps are being dimmed or boosted, photometric characteristics such as colour temperature, colour rendering index and luminous efficacy remain virtually constant.

Major features:

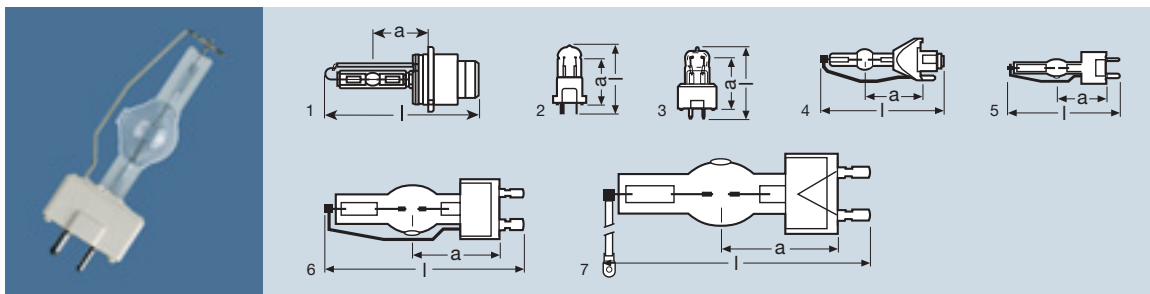
- “Super Dim’n’Boost”
- Hot restart
- Long life at rated output
- Spectrum optimised for projection (daylight spectrum)

Applications:

- Overhead projection
- Video projection
- Multimedia projection

1) Exhaust point at the top
2) Permitted from 300 to 600 W
3) Permitted from 400 to 700 W

HTI® Metal halide lamps



Product reference	Product number	W	V	A		lm	cd/cm ²
HTI® single-ended							
HTI S 35/12	4050300503578	35	85	2.5	P32d-2	3200	–
HTI 150 W	4050300301402	150	90	1.8 ~	GY9.5	10000	5000
HTI 152 W	4050300461519	150	95	1.8 ~	GY9.5	10000	4200
HTI 250 W/SE ⁶⁾	4050300243795	270	45	6	FaX1.5	16000	40000
HTI 400 W/SE	4050300248035	400	55	7.3	FaX1.5	28000	30000
HTI 403 W/SE	4050300398327	400	55	7.3	FaX1.5	28000	30000
HTI 404 W/SE	4050300426020	400	55	7.3	FaX1.5	28000	40000
HTI 405 W/SE XS	4050300436074	400	55	7.3	GY9.5	28000	40000
HTI 600 W/SE	4050300308890	600	95	7.7 ~	FaX1.5	48000	25000
HTI 705 W/SE XS	4050300618074	700	70	10	GY9.5	59000	30000
HTI 1200 W/SE XS	4050300371153	1200	100	13.8 ~	GY22 ³⁾	105000	26000
HTI 1800 W/SE XS ²⁾	4050300558127	1800	100	20 ~	GY22 ³⁾	160000	35000
HTI 2500 W/SE XS ³⁾	4050300371146	2500	115	25.6 ~	G22 ⁴⁾ +Cable	240000	30000

Product reference	K		t [h]	I max. [mm]	a [mm]		No.
HTI S 35/12	4300	4.2	3000 ⁵⁾	79.5	27.1	p 10	1
HTI 150 W	6900	5	750	46	30	universal	2
HTI 152 W	5000	6.75	2000	48	30	universal	3
HTI 250 W/SE	4900	2.5	250	80	35	p 45 ¹⁾	2
HTI 400 W/SE	4800	4	250	84	35	p 45 ¹⁾	4
HTI 403 W/SE	4800	4	750	84	35	p 45 ¹⁾	4
HTI 404 W/SE	5800	3	500	84	35	p 45 ¹⁾	4
HTI 405 W/SE XS	5800	3	500	80	36.5	p 45 ¹⁾	5
HTI 600 W/SE	5300	5.5	300	84	35	p 45 ¹⁾	4
HTI 705 W/SE XS	5500	4	500	85	39	p 45 ¹⁾	5
HTI 1200 W/SE XS	5400	7	750	135	59	s 135 ¹⁾	6
HTI 1800 W/SE XS ²⁾	5600	7	750	135	59	s 135 ¹⁾	6
HTI 2500 W/SE XS ³⁾	6000	14	600	180	85	s 135	7

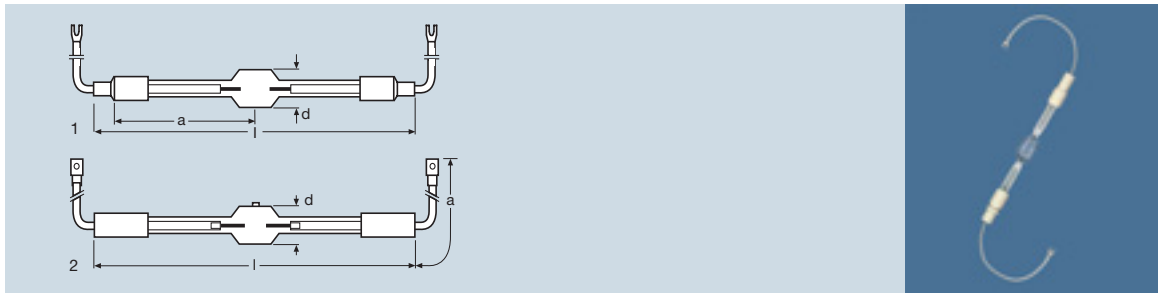
~ = Sine wave ac current
 SE = Single ended

= Square-wave ac current
 XS = eXtreme Seal (max. permissible foil temperature 450 °C)

HTI® are metal halide lamps similar to HMI® lamps but use short-arc technology.

Their main characteristics and advantages are as follows:

- Short arc
- Daylight character
- Compact dimensions
- High luminance
- High luminous efficacy



Product reference	Product number	W	V	A		lm	cd/cm ²	K
HTI® double-ended								
HTI 2500 W/DEL	40503005 96709	2500	115	26 ~	Special	270000	30000	6000
HTI 4000 W/DE	40503005 19845	4000	115	40 ~	S25.5	360000	35000	6300

Product reference		t [h]	I _{max.} [mm]	d [mm]	a [mm]		No.
HTI 2500 W/DEL	25	2000	295	31.5	108	p 45	1
HTI 4000 W/DE	15	500	270	40	140	p 30	2

D = Double-ended		DX = Version of DE (eXtended robustness)
DE = Double ended		~ = Sine wave ac current
DEL = Longlife version of DE		XS = eXtreme Seal (max. permissible foil temperature 450 °C)

Safety:

Because HTI® lamps emit UV radiation and operate at overpressure the following lamps must only be operated in appropriate fully enclosed luminaires. Suitable filters should be used to ensure that the UV radiation is reduced to an acceptable level.

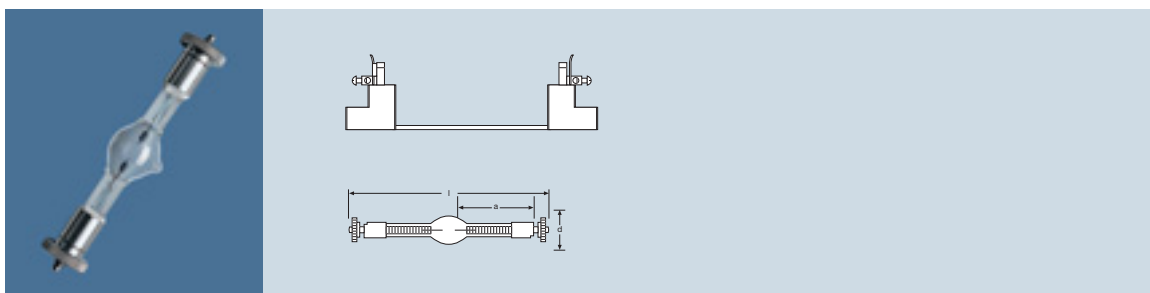
Literature:


- Further information can be found in the following brochures, obtainable on request from OSRAM:
- "Technology and applications/Metal halide lamps"
 - "Guidelines for control gear and igniters for metal halide lamps"
 - "Availability of control gear and igniters"






Photo: Mondiale Publishing, "Live!" disco, Bratislava

Baby SharXS® HTI® Metal halide lamps



Product reference	Product number	W	kV START	V	A		Im
Baby SharXS® HTI®							
Baby SharXS HTI 250W/D5/80	4008321 129161	250	2.0/25	95	3.2	SFc10-4	18000
Baby SharXS HTI 300W/D5/57	4008321 129185	300	4.5/25	80	4.3	SFc10-4	20000
Baby SharXS HTI 300W/D5/65	4008321 129208	300	4.5/25	80	4.3	SFc10-4	22000
Baby SharXS HTI 400W/D5/60	4008321 129321	400	4.5/25	95	4.2	SFc10-4	33000
Baby SharXS HTI 575W/D5/56	4008321 129345	575	4.5/25	95	7	SFc10-4	43000
Baby SharXS HTI 575W/D5/75	4008321 129369	575	4.5/35	95	7	SFc10-4	43000

Product reference	K	R _a	t [h]	I max. [mm]	d [mm]	a [mm]		
Baby SharXS HTI 250W/D5/80	8000	> 80	3000	93	16	35	5	univ.
Baby SharXS HTI 300W/D5/57	5700	> 85	3000	93	16	35	5	univ.
Baby SharXS HTI 300W/D5/65	6500	> 85	750	93	16	35	5	univ.
Baby SharXS HTI 400W/D5/60	6000	> 85	750	93	16	35	5	univ.
Baby SharXS HTI 575W/D5/56	5600	> 85	500	93	16	35	5	univ.
Baby SharXS HTI 575W/D5/75	7500	> 85	750	93	16	35	5	univ.

 XS = eXtreme Seal (max. permissible foil temperature 450 °C)

Baby SharXS® HTI® – the benefits at a glance:

- Standard wattages from 250 to 575 W
- One design, same lamp length, same LCL
- Pre-alignment base with slot
- Short-arc technology (5 mm)
- High average luminance (30 to 50 kcd/cm²)
- Daylight colour temperature (6000 K) and “bright light” character (7500, 8000 K)
- High colour rendering index (R_a > 80 to > 85)
- Greater thermal load capacity thanks to XS technology (450 °C max. pinch temperature)
- Hot restart possible
- Average life 500 h – 3000 h (depending on type)
- AC current

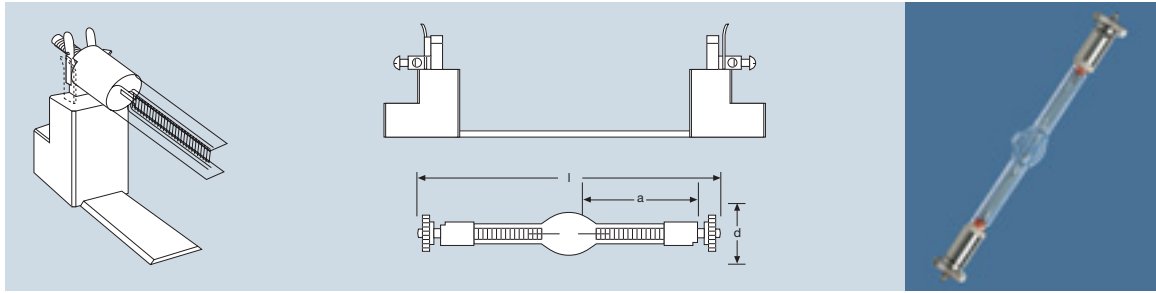
Operation:

- forced cooling





SharXS® HTI® Metal halide lamps



Product reference	Product number	W	kV START	V	A		lm	cd/cm²
SharXS® HTI®								
SharXS HTI 200 W/D3/70	4050300854311	200	3/25	60/-	3.3	SFc10-4	13000	30000
SharXS HTI 400 W/D3/75	4050300854502	400	3/25	49/-	8.5	SFc10-4	26000	55000
SharXS HTI 575 W/D4/60	4008321123046	575	3/25	69/-	8.3	SFc10-4	49000	49000
SharXS HTI 575 W/D4/75	4050300854298	575	3/25	64/-	9.0	SFc10-4	44000	49000
SharXS HTI 700 W/D4/75	4050300861876	700	3/25	70/73	10.0/11.0	SFc10-4	59000	60000
SharXS HTI 700 W/D4/60	4050300854465	700	3/25	70/73	10.0/11.0	SFc10-4	59000	60000
SharXS HTI 1200 W/D7/60	4050300854595	1200	5/35	95/100	12.7/13.8	SFc10-4	110000	41000
SharXS HTI 1200 W/D7/75	4008321033833	1200	5/35	95/100	12.7/13.8	SFc10-4	110000	41000

Product reference	K	R _a	t [h]	I _{max.} [mm]	d [mm]	a [mm]		
SharXS HTI 200 W/D3/70	7000	> 85	3000	136	15	57.5	3	univ.
SharXS HTI 400 W/D3/75	7500	> 80	1000	136	18	57.5	3	univ.
SharXS HTI 575 W/D4/60	6000	> 85	750	136	18	57.5	4	univ.
SharXS HTI 575 W/D4/75	7500	> 80	750	136	18	57.5	4	univ.
SharXS HTI 700 W/D4/75	7500	> 80	750	136	21	57.5	4	univ.
SharXS HTI 700 W/D4/60	6000	> 80	750	136	18	57.5	4	univ.
SharXS HTI 1200 W/D7/60	6000	> 90	750	136	21	57.5	7	univ.
SharXS HTI 1200 W/D7/75	7500	> 80	750	136	21	57.5	7	univ.



XS = eXtreme Seal (max. permissible foil temperature 450 °C)

SharXS® HTI® – the benefits at a glance:

- Standard wattages from 200 to 1200 W
- One design, same lamp length, same LCL
- Pre-alignment base SFc10-4 with slot
- Short-arc technology (3 to 7 mm)
- High average luminance (30 to 60 kcd/cm²)
- Daylight colour temperature (6000 K) and “bright light” character (7000, 7500 K)
- High colour rendering index (R_a > 80 to > 90)
- Greater thermal load capacity thanks to XS technology (450 °C max. pinch temperature)
- Hot restart possible
- Average life 750 h – 3000 h (depending on type)
- AC current

Operation:

- forced cooling

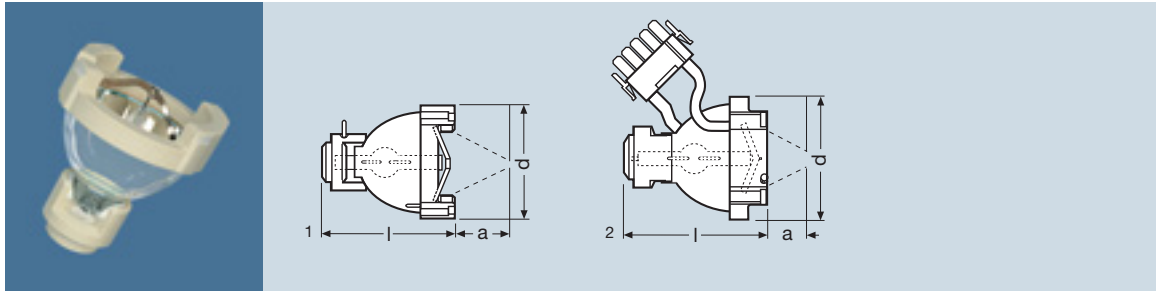
Literature:

- Bissiger Nachwuchs bei den SharXS/A new razor-sharp offspring of the SharXS family
- “Das echte Licht mit Biss/The original light with a bite”: SharXS® HTI® CD-ROM



info@sharxs.com
www.sharxs.com

HTI® Metal halide lamps



Product reference	Product number	W	V	A	K	$l_{max.}$ [mm]	d [mm]	a	t [h]		No.
HTI® with dichroic reflector (hot restartable)											
HTI 250 W/32 ¹⁾	4050300 226576	270	45	6	┐┌	5600	73	67	32	250	p 20 1
HTI 250 W/22 ¹⁾	4050300 367804	270	45	6	┐┌	5600	73	67	22	250	p 20 1
HTI 400 W/24	4050300 228327	400	55	7.3	┐┌	5600	73	67	24	250	p 20 2
HTI 403 W/24	4050300 386331	400	55	7.3	┐┌	5600	73	67	24	750	p 20 2
HTI 404 W/24 ²⁾	4050300 446400	400	55	7.3	┐┌	5600	73	67	24	500	p 20 2

┐┌ = Square-wave ac current

HTI® reflector lamps have dichroic focusing reflectors and are highly efficient lighting systems.

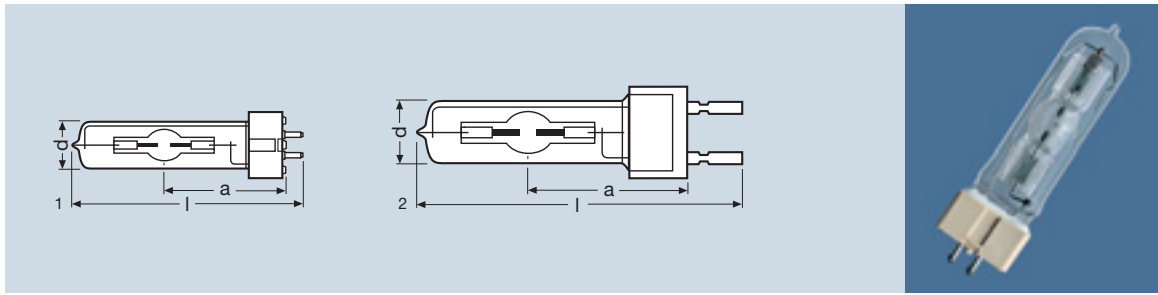
They are used in endoscopy, boroscopy and light guide systems in the entertainment sector.


1) Also with connecting cable and plug contact
Product reference HTI® 250 W/32 C or HTI® 250 W/22 C
(Fig. 2)



2) Special adjustment for particularly uniform illumination in the far field at approx. 250 mm



HSR® Metal halide lamps



Product reference	Product number	W	V	A		lm	cd/cm ²	K
HSR® with outer bulb (not hot restartable)								
HSR 400/60	4050300315942	400	67	6.9 ~	GX9.5	33000	20000	6000
HSR 575/60	4050300509686	575	95	7 ~	GX9.5	49000	10000	6000
HSR 575/72	4050300651187	575	95	7 ~	GX9.5	49000	10000	7200
HSR 700/60	4050300315959	700	72	11 ~	G22	58000	10000	6000
HSR 1200/60	4050300526836	1200	100	13.8 ~	G22/28x50	110000	20000	6000

Product reference		t [h]	l [mm]	d [mm]	a [mm]		No.
HSR 400/60	5	1000	110	23	62	universal	1
HSR 575/60	7	1000	125	30	65	universal	1
HSR 575/72	7	1000	125	30	65	universal	1
HSR 700/60	8	1000	155	30	75	universal	2
HSR 1200/60	10	1000	175	40	85	universal	2

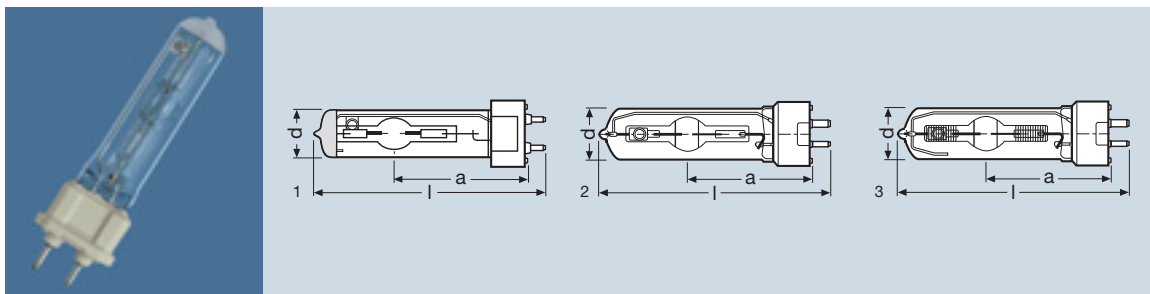
~ = Sine wave ac current

HSR® lamps are single-ended lamps similar to HTI® lamps with have an outer bulb for ease of handling. No hot restart.



Photo: A & O Lighting

4ArXS HSD® Metal halide lamps



Product reference	Product number	W	V	A		lm	K
4ArXS HSD™ longlife lamps with outer bulbs (not hot restartable)							
4ArXS HSD 150W/70 ¹⁾	4050300 665009	150	97	1.8 ~	G12	12000	7000
4ArXS HSD 150W/UL/75 ¹⁾	4008321 083548	150	97	1.8 ~	G12	11000	7000
4ArXS HSD 200W/60	4050300 424682	200	70	3.3 ~	GY9.5	13000	6000
4ArXS HSD 250W/60	4050300 501925	250	90	3.1 ~	GY9.5	17000	6000
4ArXS HSD 250W/80	4050300 808635	250	95	3.2 ~	GY9.5	17000	8000
4ArXS HSD 250W/UL/75	4008321 083586	250	90	3.1 ~	GY9.5	15000	7500
4ArXS HSD 575W/60	4050300 897684	575	88	7.4 ~	GX9.5	45000	6000
4ArXS HSD 575W/72	4050300 593937	575	86	7.6 ~	GX9.5	45000	7200
4ArXS HSD 575W/UL/75	4008321 083609	575	86	7.6 ~	GX9.5	43000	7500
4ArXS HSD 1200W/60 ²⁾	4008321 083562	1200	100	13.8 ~	G22	110000	6000

Product reference		t [h]	I _{max} [mm]	d [mm]	a [mm]		No.
4ArXS HSD 150W/70 ¹⁾	5	3000	105	20	56	universal	1
4ArXS HSD 150W/UL/75 ¹⁾	5	6000	105	20	56	universal	1
4ArXS HSD 200W/60	5	2000	108	23	55	universal	2
4ArXS HSD 250W/60	5	2000	108	23	55	universal	2
4ArXS HSD 250W/80	5	3000	108	23	55	universal	2
4ArXS HSD 250W/UL/75	5	6000	108	23	55	universal	2
4ArXS HSD 575W/60	7	3000	135	30	65	universal	2
4ArXS HSD 575W/72	7	3000	135	30	65	universal	3
4ArXS HSD 575W/UL/75	7	6000	135	30	65	universal	3
4ArXS HSD 1200W/60 ²⁾	12.5	3000	175	40	85	universal	–

~ = Sine wave ac current

4ArXS HSD® lamps are long-life short-arc lamps intended primarily for applications in entertainment and archtainment.

Safety:

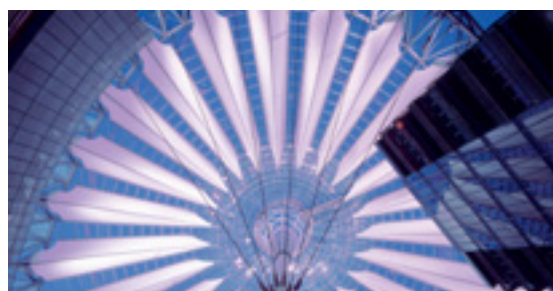
Because 4ArXS HSD® lamps emit UV radiation and operate at overpressure the following lamps must only be operated in appropriate fully enclosed luminaires. Suitable filters should be used to ensure that the UV radiation is reduced to an acceptable level.

Literature:

Further information can be found in the following brochures, obtainable on request from OSRAM:

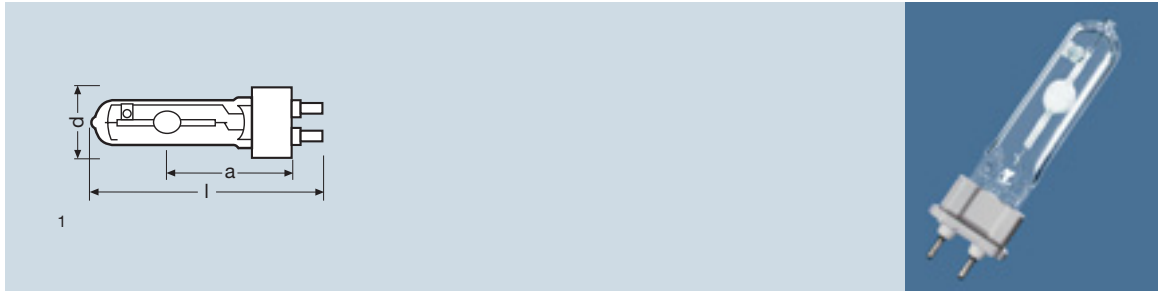
- “Technology and applications/Metal halide lamps”


- “Guidelines for control gear and igniters for metal halide lamps”
- “Availability of control gear and igniters”
- “4ArXS has it all” – Innovative metal halide lamps for creative architecture and effect lighting.
- CD-ROM 4ArXS HSD® and HCD®






4ArXS HCD® Ceramic metal halide lamps



Product reference	Product number	W	V	A		lm	K
4ArXS HCD® longlife ceramic lamps with outer bulbs (not hot restartable)							
4ArXS HCD® 35W/30	4008321126054	35	90	0.53 ~	G12	3400	3000
4ArXS HCD® 35W/42	4008321126078	35	90	0.53 ~	G12	3200	4200
4ArXS HCD® 70W/30	4008321126092	70	100	0.98 ~	G12	6700	3000
4ArXS HCD® 70W/42	4008321126115	70	90	1.0 ~	G12	6500	4200
4ArXS HCD® 150W/30	4008321126139	150	99	1.8 ~	G12	14500	3000
4ArXS HCD® 150W/42	4008321126153	150	92	1.8 ~	G12	14200	4200

Product reference	t [h]	l_{max} [mm]	d [mm]	a [mm]		No.
4ArXS HCD® 35W/30	8000	100	19	56	universal	1
4ArXS HCD® 35W/42	8000	100	19	56	universal	1
4ArXS HCD® 70W/30	8000	100	19	56	universal	1
4ArXS HCD® 70W/42	8000	100	19	56	universal	1
4ArXS HCD® 150W/30	8000	105	25	56	universal	1
4ArXS HCD® 150W/42	8000	105	25	56	universal	1

~ = Sine wave ac current

4ArXS HCD® lamps with ceramic technology are characterised by exceptionally long life. They are intended primarily for applications in entertainment and archtainment.

Safety:

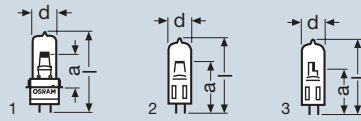
Because they operate at overpressure 4ArXS HCD® lamps must only be used in appropriate fully enclosed casings. A UV filter in the outer bulb ensures that UV radiation is reduced to an acceptable level.









Literature:

- Further information can be found in the following brochures, obtainable on request from OSRAM:
- "Technology and applications/Metal halide lamps"
 - "Guidelines for control gear and igniters for metal halide lamps"
 - "Availability of control gear and igniters"
 - "An excellent all-rounder" – archtainment lighting for indoors and outdoors: 4ArXS HCD® Ceramic with round arc tube and XS technology.
 - CD-ROM 4ArXS HSD™ and HCD®



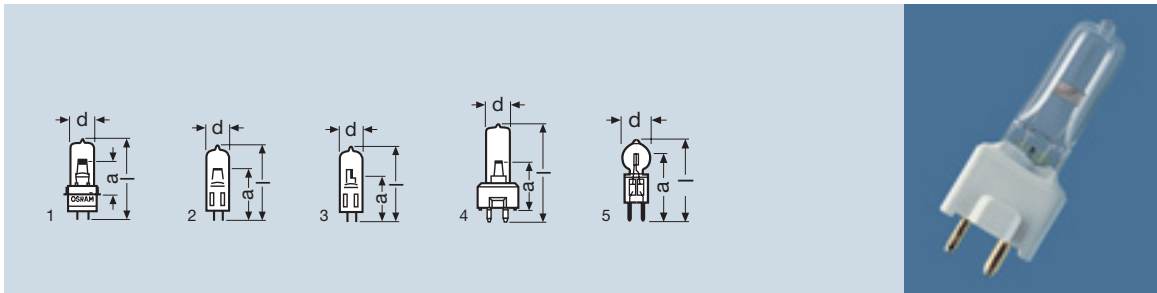
Low-voltage halogen lamps without reflectors



Product reference	Product number	ANSI	LIF	V	W		t [h]	lm
Low-voltage halogen lamps without reflectors								
64222	4050300327273			6	10	PG22	300	150
64223	4050300017372		M/43	6	10	G4	300	150
64225	4050300006758	ESA	M/29	6	10	G4	100	200
64250 HLX	4050300012407	ESB	M/30	6	20	G4	100	480
64251 HLX	4050300582290			6	20	PG22	100	500
64265 HLX	4008321107053			6	30	G4	100	765
64275	4050300258690		M/137	6	35	G4	50	780
64258	4050300285153			12	20	G4	2000	350
64258 A	4008321050892			12	20	G4	2000	350
64260	4050300099798		M/185	12	30	PG22	50	800
64261	4050300220529		M/130	12	30	G6.35	50	750
64602	4008321107077		M/134	12	50	G6.35	1100	1000
64609 HLX	4050300246253			12	50	PG22	50	1550
64610 HLX	4050300006697	BRL	A1/220	12	50	G6.35	50	1600
64611 HLX	4008321107091			12	50	G6.35	100	1350
62138 HLX	4050300242958			12	100	G6.35	50	2800
64621 HLX	4050300535531			12	100	PG22	2000	2750
64623 HLX	4050300012018	EVA	M/28	12	100	GY6.35	2000	2800
64625 HLX	4050300006703	FCR	A1/215	12	100	GY6.35	50	3600
Product reference								No.
64222	any	9	44	14	1.3x0.8	30	1	
64223	any	9	38	24	1.5x0.7	40	2	
64225	s 90	9.5	31	19.5	1.7x0.65	40	2	
64250 HLX	any	9	31	19.5	2.3x0.8	40	2	
64251 HLX	any	9	40	14	2.3x0.8	30	1	
64265 HLX	any	9	31	19.5	1.5x1.5	40	2	
64275	any	9	40	26	1.2x1.5	40	3	
64258	s 90	9	max. 30	19.5	3.5x0.8 ¹⁾	40	2	
64258 A	s 90	9	max. 33	19.5	3.5x0.8	40	2	
64260	any	9	40	14	2.6x1.3	30	1	
64261	s 90	11.5	44	30	2.6x1.3	40	2	
64602	s 90	11.5	44	30	3.0x3.0	40	2	
64609 HLX	s 90	11.5	48	18	3.3x1.6	30	1	
64610 HLX	s 90	11.5	44	30	3.3x1.6	40	2	
64611 HLX	s 90	11.5	44	30	3.3x1.6	40	2	
62138 HLX	p 90/15	11.5	37	27	2.4x1.8	40	3	
64621 HLX	s 90	11.5	48	18	4.7x2.7	30	1	
64623 HLX	s 90	11.5	44	30	4.7x2.7	40	2	
64625 HLX	s 90	11.5	44	30	4.2x2.3	40	2	

Some lamp models are available as “XENOPHOT®” versions (HLX® types). With xenon instead of krypton as the filler gas, these lamps produce a luminous flux up to 10 per cent higher than lamps with identical electrical data.

Low-voltage halogen lamps without reflectors



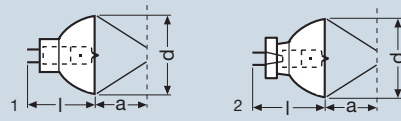
Product reference	Product number	ANSI	LIF	V	W		t [h]	lm
Low-voltage halogen lamps without reflectors								
64626 HLX	4050300006765	EHE	A1/45	12	100	PG22	50	3600
64628	4008321099549	FDT	A1/261	12	100	GY9.5	50	3000
64633 HLX	4050300006710	BRJ	A1/234	15	150	G6.35	50	5600
64291 XIR	4050300888859			22.8	40	G6.35	800	1200
64650	4008321107138			22.8	50	G6.35	1300	1000
64668 XIR	4050300785042			22.8	80	G6.35	750	3000
64292 XIR	4008321023117			22.8	150	G6.35	600	6000
64638 HLX	4050300283050			24	100	G6.35	300	2900
64647	4008321107114			24	120	G6.35	300	3600
64640 HLX	4050300006727	FCS	A1/216	24	150	G6.35	50	6000
64641 HLX	4050300048260			24	150	G6.35	2000	2700
64642 HLX	4050300012025	FDV	M1/84	24	150	G6.35	300	5000
64643	4008321099648	FDS	A1/262	24	150	GY9.5	100	5000
64654 HLX	4008321099723			24	250	GY9.5	300	9000
64655 HLX	4050300006734	EHJ	A1/223	24	250	G6.35	50	10000
64656 HLX	4050300023120	FNT		24	275	G6.35	75	10000
64657 HLX	4050300012001	EVC	M/33	24	250	G6.35	300	9000
64663 HLX	4050300006741	EVD	A1/239	36	400	G6.35	50	16000
64664 HLX	4008321099747			36	400	G6.35	150	14500
64665 HLX LL	4008321099761			36	400	G6.35	300	12200



Product reference		d [mm]	l [mm]	a [mm]			No.
64626 HLX	s 90	11.5	48	18	4.2x2.3	30	1
64628	s 90	13	57	27	4.2x2.3	12	4
64633 HLX	s 90	11.5	44	30	4.8x3	40	2
64291 XIR	h 90	12	44	30	3.9x1.4	40	5
64650	any	13	44	30	2.0x5.0	40	3
64668 XIR	h 90	14	44	30	2.2x5.5	40	5
64292 XIR	s 90	14	44	30	2.8x6.7	40	5
64638 HLX	any	13	50	30	5.3x2.6	40	2
64647	any	13	44	30	2.3x6.4	40	3
64640 HLX	s 90	11.5	50	32	5.8x2.9	40	2
64641 HLX	s 135	11.5	50	32	3.0x6.0	40	2
64642 HLX	s 90	11.5	50	32	6x3.2	40	2
64643	s 90	15	57	33.5	6x3	12	4
64654 HLX	s 90	13.5	68	35	8x4	12	4
64655 HLX	s 90	12.5	55	33	7x3.5	40	2
64656 HLX	s 90	13.5	55	33	7x3.5	40	2
64657 HLX	s 90	13.5	55	33	8x4	40	2
64663 HLX	s 90	15	60	36	9.3x4.9	40	2
64664 HLX	s 105	18	57	36	10x5 ¹⁾	12	2
64665 HLX	s 90	18	60	36	10.5x5.3	12	2

1) Coiled coil filament

Halogen lamps with reflectors



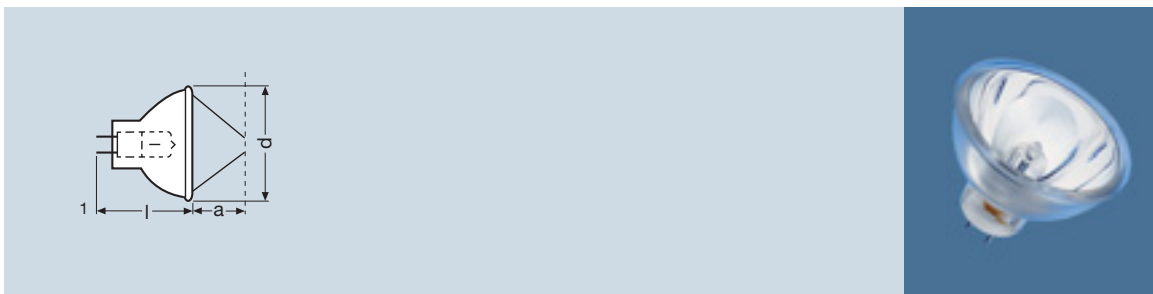
Product reference	Product number	V	W		t [h]
With reflector MR 11 – diameter 35 mm					
64255	405030006833	8	20	GZX4	50
64605	4050300252421	8	50	GZ4	25
64613 ¹⁾	4050300241012	12	75	G5.3-4.8	25
64617	4050300231211	12	75	G5.3-4.8	25
64617 S ²⁾	4050300461106	12	75	G5.3-4.8	25
64624	4050300013916	12	100	G5.3-4.8	25


Product reference							
	p 90/15	d [mm]	l max. [mm]	a [mm]			No.
64255	p 90/15	35	32	26	White	10	2
64605	p 90/15	35	32	26	White	10	2
64613 ¹⁾	p 90/15	35	35.5	26	Blue	20	1
64617	p 90/15	35	35.5	26	White	10	1
64617 S ²⁾	p 90/15	35	35.5	26	White	10	1
64624	p 90/15	35	35.5	26	White	10	1








Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 13 – diameter 42 mm							
93510	4050300350110	EXY		82	250	GX5.3	200
93515	4050300350158	EXR		82	300	GX5.3	35
93520	4050300350196	FHS		82	300	GX5.3	70

Product reference							
	s 90	d [mm]	l max. [mm]	a [mm]			No.
93510	s 90	42	45	152.5	White	24	1
93515	s 90	42	45	152.5	White	24	1
93520	s 90	42	45	152.5	White	24	1

Halogen lamps with reflectors



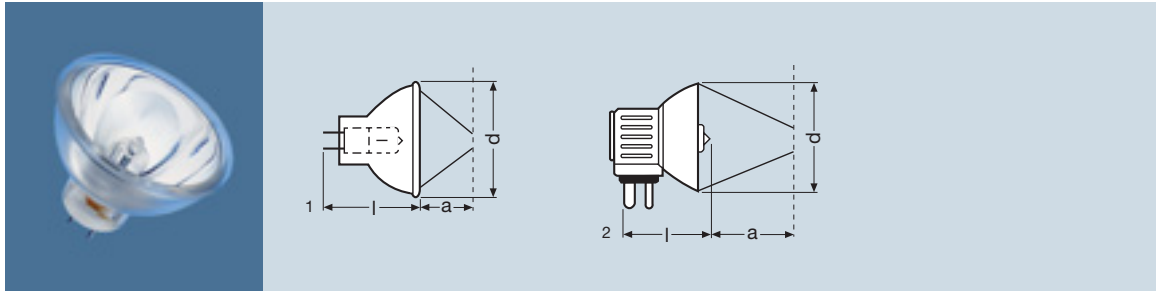
Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 16 – diameter 50 mm							
64607	4050300006789	EFM	A1/229	8	50	GZ6.35	50
93609 ¹⁾	4050300659541	ENL		12	50	GX5.3	4000
64615 HLX	4050300006796	EFN	A1/230	12	75	GZ6.35	50
64627 HLX	4050300006802	EFP	A1/231	12	100	GZ6.35	50
64629	4050300943169			12	100	GZ6.35	600
64637	4050300291970		A1/271	12	100	GZ6.35	1500
64608	4050300014142	EPZ		13.8	50	GX5.3	1000
64618	4050300017402	DED		13.8	85	GX5.3	1000
64619	4050300017273	EPX		14.5	90	GX5.3	500
64634 HLX	4050300006819	EFR	A1/232	15	150	GZ6.35	50
64635 HLX ²⁾	4050300238807			15	150	GZ6.35	50
64620	4050300797397	EFR-5		15	150	GZ6.35	500

Product reference		 d [mm]	 l max. [mm]	 a [mm]			 No.
64607	p 90/15	51	42	32	Alu	20	1
93609 ¹⁾	any	51	44.5	44.5	White	24	1
64615 HLX	p 90/15	51	42	32	White	20	1
64627 HLX	p 90/15	51	42	32	White	20	1
64629	p 90/15	51	42	32	White	20	1
64637	s 120	51	42	32	White	20	1
64608	p 90/15	50	49.7	108	White	50	1
64618	p 90/15	51	44.5	165	White	20	1
64619	p 90/15	51	45	155	White	50	1
64634 HLX	p 90/15	51	42	32	White	20	1
64635 HLX ²⁾	p 90	51	45	19	Gold	20	1
64620	p 90/15	50	42	32	White	20	1



1) Available on request
 2) Infra-red lamp; temperature at the focal point approx. 1300 °C

Halogen lamps with reflectors



Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 16 – diameter 50 mm							
93637	4050300350097	EJV		21	150	GX5.3	100
93638	4050300456843	EKE		21	150	GX5.3	200
64653 HLX	4050300006826	ELC	A1/259	24	250	GX5.3	50
93653	4050300636450	ELC-3		24	250	GX5.3	300
93505 ¹⁾	4050300350172	EVW		82	250	GY5.3	50
93525	4050300349992	ENX		82	360	GY5.3	75
93526 ¹⁾	4050300412917	FXL		82	410	GY5.3	75
93506	4050300349930	ENH		120	250	GY5.3	175
93518	4050300350059	ELH		120	300	GY5.3	35

Product reference		d [mm]	l max. [mm]	a [mm]			No.
93637	s 90	51	44.5	44.5	White	24	1
93638	s 90	51	44.5	44.5	White	24	1
64653 HLX	p 90/15	51	44.5	35	White	20	1
93653	p 90/15	51	44.5	35	White	24	1
93505 ¹⁾	s 90	51	45	298.5	White	24	1
93525	s 90	51	45	298.5	White	24	1
93526 ¹⁾	s 90	51	45	298.5	White	24	1
93506	s 90	51	45	152.5	White	24	1
93518	s 90	51	45	152.5	White	24	1

Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 18 – diameter 58 mm							
93631	4050300350011	DNF		21	150	GX7.9	25

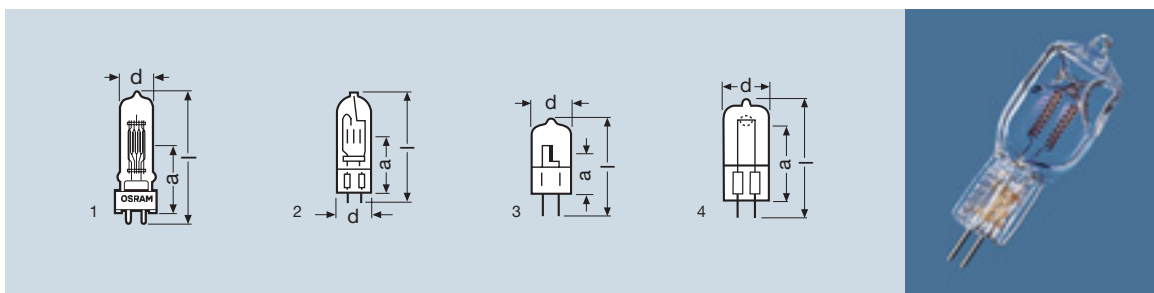
Product reference		d [mm]	l max. [mm]	a [mm]			No.
93631	p 15	57	51	69	White	24	2


Literature:






For further technical information and notes for manufacturers of control gear and lamp casings, please refer to the following OSRAM brochure:

- “Technology and applications, Low-voltage tungsten-halogen lamps”

Halogen lamps, medium/high voltage, single-ended



Product reference	Product number	ANSI	LIF	W	V		t [h]	K
Halogen mains voltage lamps, single-ended								
64501	4050300279237			150	120	GX6.35	25	3400
64502	4050300289977			150	230	GX6.35	25	3400
64505 ²⁾	4008321098436			200	230	GX6.35	25	3200
64505 ²⁾	4008321098610			200	240	GX6.35	25	3200
64648 ¹⁾	4008321097910	BSJ		200	230	GX6.35	25	3400
64512 ²⁾	4008321098634	FNS		300	120	GX6.35	15	3350
64513 ²⁾	4008321098658			300	120	GX6.35	150	3200
64514 ²⁾	4008321098672		CP/96	300	120	GX6.35	75	3200
64515 ²⁾	4008321098696			300	230	GX6.35	15	3300
64515 ²⁾	4008321098719			300	240	GX6.35	15	3300
64516 ²⁾	4008321098733		CP/97	300	230	GX6.35	75	3100
64516 ²⁾	4008321098757		CP/97	300	240	GX6.35	75	3100
64661	4008321098474		A1/249	300	230	G6.35	50	3000
64662	4008321097873		M/38	300	230	GY9.5	2000	2900
64662	4008321097897		M/38	300	240	GY9.5	2000	2900

Product reference	Im		d [mm]		a [mm]			
64501	4500	any	12	max. 55	30	11x2.2	25	3
64502	4000	any	12	55	30	13x1.9	25	3
64505 ²⁾	5100	s 90	max. 18.5	max. 53	27	9.6x12.5	12	4
64505 ²⁾	5150	s 90	max. 18.5	max. 53	27	9.5x12.5	12	4
64648 ¹⁾	4500	s 90	20	69.5	40	6x6	12	2
64512 ²⁾	9800	s 90	max. 18.5	max. 53	27	10x12.5	12	4
64513 ²⁾	7700	s 90	max. 18.5	max. 53	27	11x12.5	12	4
64514 ²⁾	8100	s 90	max. 18.5	max. 53	27	10.3x12.5	12	4
64515 ²⁾	9600	s 90	max. 18.5	max. 53	27	9.8x12.5	12	4
64515 ²⁾	8900	s 90	max. 18.5	max. 53	27	10x12.5	12	4
64516 ²⁾	7900	s 90	max. 18.5	max. 53	27	9.8x12.5	12	4
64516 ²⁾	7800	s 90	max. 18.5	max. 53	27	9.7x12.5	12	4
64661	7500	s 90	20	63.5	40	11x8 ³⁾	12	2
64662	5000	any	15	80	46.5	9x11 ³⁾	12	1
64662	5000	any	15	80	46.5	9x11	12	1



From their designs, halogen mains voltage lamps can be categorised as single-ended and double-ended lamps. Depending on the application, they are designed to operate on 230 V, 240 V or 120 V.

The colour temperature of the lamps varies according to the application: 3400 K for maximum luminous efficacy, 3200 K for professional film and

TV work, 3000 K or 2900 K for applications where long life is important.

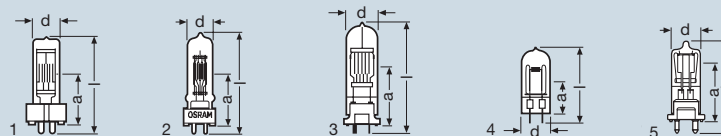
Literature:


For further information on pinch technology, please refer to the following brochure:





- "Good vibrations!" New halogen lamps with quartz pinch technology. (122 W 100 DE)

1) Available on request
2) With quartz pinch technology
3) With monoplane filament

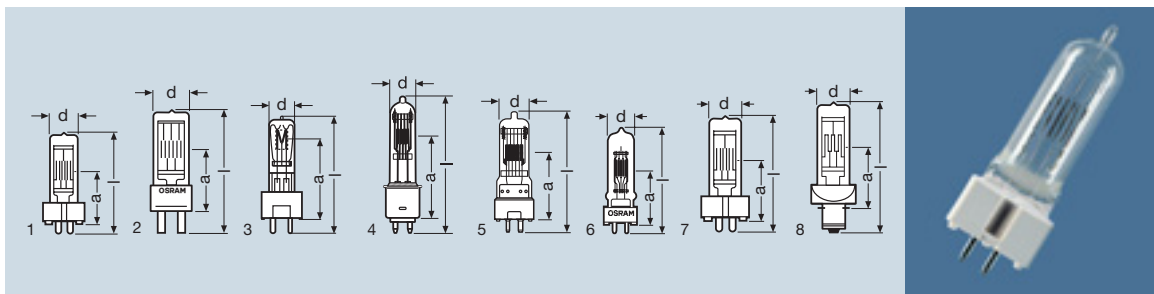
Halogen lamps, medium/high voltage, single-ended



Product reference	Product number	ANSI	LIF	W	V		t [h]
Single-ended							
93592	4050300481531			FSX	400	230	GY9.5 75
93591	4050300481555			FSY	400	240	GY9.5 75
64672	4008321098559			M/40	500	230	GY9.5 2000
64672	4008321098535			M/40	500	240	GY9.5 2000
64680	4008321098573			A1/244	500	230	GY9.5 50
64680	4008321098597			A1/244	500	240	GY9.5 50
64535	4008321098771				650	120	GX6.35 15
64540	4008321098795	BVM	P1/13		650	230	GX6.35 15
64540	4008321098818	BVM	P1/13		650	240	GX6.35 15
64686	4008321098498	DYR	A1/233		650	230	GY9.5 50
64686	4008321098511	DYR	A1/233		650	240	GY9.5 50
64573	4008321098832				1000	120	GX6.35 15
64575	4008321098856	EGY	P1/15		1000	230	GX6.35 15
64575	4008321098450	EGY	P1/15		1000	240	GX6.35 15

Product reference	K	lm		d [mm]	l max. [mm]	a [mm]			 No.
93592	3200	¹⁾	s 90	20	77	36.5	10.7x12.2	24	1
93591	3200	¹⁾	s 90	20	77	36.5	10.7x12.2	24	1
64672	2900	8500	any	22	85	46.5	12x11	12	2
64672	2900	8500	any	22	85	46.5	12x11	12	2
64680	3200	14500	any	22	75	36.5	10x10 ²⁾	12	3
64680	3200	14500	any	22	75	36.5	10x10 ²⁾	12	3
64535	3400	20000	any	24	57.5	30	14x15	12	4
64540	3400	20000	any	24	57.5	30	14x15	12	4
64540	3400	20000	any	24	57.5	30	14x15	12	4
64686	3200	16500	any	21	64	36.5	10x10 ²⁾	12	5
64686	3200	16500	any	21	64	36.5	10x10 ²⁾	12	5
64573	3400	33000	any	24	67.5	38	14x14	12	4
64575	3400	33000	any	24	67.5	38	14x14	12	4
64575	3400	33000	any	24	67.5	38	14x14	12	4

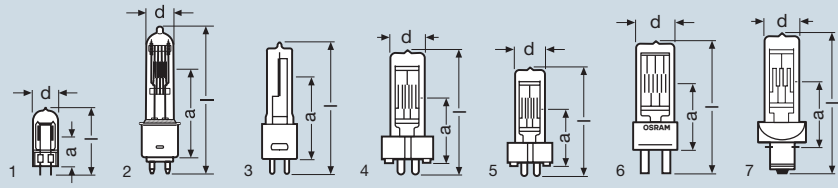
Mains voltage halogen lamps







Product reference	Product number	ANSI	LIF	W	V		t [h]		
Single-ended									
64673	4008321099785		CP/81	300	230	GY9.5	200		
64673	4008321099808		CP/81	300	240	GY9.5	200		
64670	4050300283449	GCV	T/25	500	230	GY9.5	300		
64670	4050300635859	GCV	T/25	500	240	GY9.5	300		
64674	4008321099822		CP/82	500	230	GY9.5	200		
64674	4008321099846		CP/82	500	240	GY9.5	200		
64716	4050300506494	GKV		600	230	G9.5	200		
64716	4050300506517	GKV		600	240	G9.5	250		
64717	4050300296692	FRK	CP/89	650	230	GY9.5	150		
64717	4050300304953	FRK	CP/89	650	240	GY9.5	150		
64718	4050300022543	GCT	T/27	650	230	GY9.5	400		
64718	4050300283463	GCT	T/27	650	240	GY9.5	400		
64719 ¹⁾	4050300019154		T/12	650	230	GX9.5	750		
64720	4050300017716		CP/23	650	230	GX9.5	100		
64721	4050300217970	FKH	CP/39	650	230	G22	100		
64722 ¹⁾²⁾	4050300225906	FKB	T/13	650	230	P28s	750		
Product reference	K	lm		d [mm]	l max. [mm]	a [mm]			No.
64673	3200	7500	any	18	90	46.5	6.5x13	12	3
64673	3200	7500	any	18	90	46.5	6.5x13	12	3
64670	3000	11000	s 90	23	90	46.5	11x11	25	6
64670	3000	11000	s 90	23	90	46.5	11x11	25	6
64674	3200	13500	any	18	90	46.5	8x18	12	3
64674	3200	13500	any	18	90	46.5	8x18	12	3
64716	3200	14000	s 180	19	101	60.5	9x13	25	4
64716	3200	14000	s 180	19	101	60.5	9x13	25	4
64717	3200	16250	s 90	23	90	46.5	26x33	25	5
64717	3200	16250	s 90	23	90	46.5	26x33	25	5
64718	3000	14500	s 90	23	90	46.5	10x10	25	6
64718	3000	14500	s 90	23	90	46.5	10x10	25	6
64719 ¹⁾	3000	12000	s 90	26	110	55	13x11	20	7
64720	3200	16800	s 90	26	110	55	13x17 ²⁾	20	1
64721	3200	16800	s 90	26	140	63.5	13x17 ²⁾	20	2
64722 ¹⁾²⁾	3000	12000	s 90	26	130	55.6	13x17	20	8

1) Available on request
2) With mono-plane filament

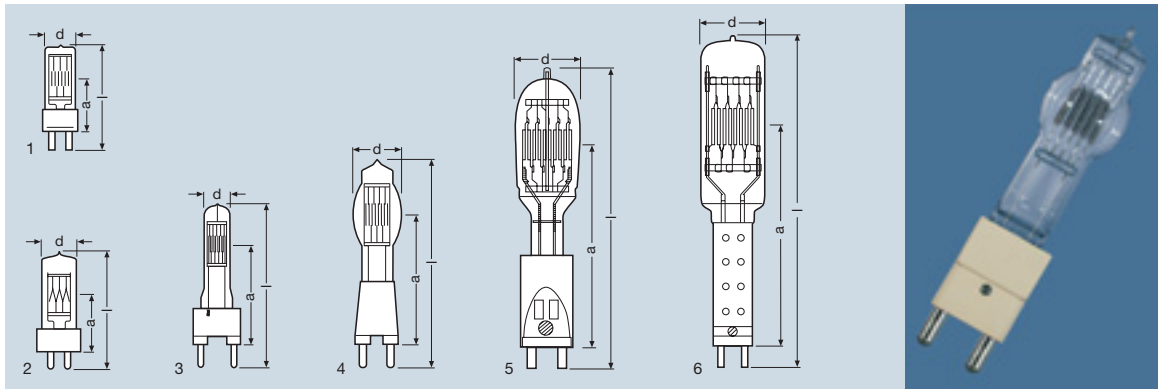
Mains voltage halogen lamps







Product reference	Product number	ANSI	LIF	W	V		t [h]
Single-ended							
64678	4050300609102			800	230	G9.5	250
64576	4008321099860		P2/17	1000	230	GX6.35	75
64743	4050300227610	FEL		1000	230	G9.5	300
64744	4050300017723	FWP	T/19	1000	230	GX9.5	750
64744	4050300283333	FWP	T/19	1000	240	GX9.5	750
64745	4050300213262	FVA	CP/70	1000	230	GX9.5	200
64745	4050300283234	FVA	CP/70	1000	240	GX9.5	200
64746 ¹⁾	4050300226620	FKD	T/20	1000	230	P28s	750
64747	4050300217604	FKJ	CP/71	1000	230	G22	200
64747	4050300283999	FKJ	CP/71	1000	240	G22	200
93734	4050300350073	FEP	CP/77	1000	240	G9.5	150
64752	4050300296616	FWS	T/29	1200	230	GX9.5	400
64752	4050300305011	FWS	T/29	1200	240	GX9.5	400
64754	4050300296746		CP/90	1200	230	GX9.5	200
64756 ²⁾	4050300296722		CP/93	1200	230	G22	200

Product reference	K	lm		d [mm]	l max. [mm]	a [mm]			No.
64678	3200	20000	s 180	19	105	60.5	13x9	25	2
64576	3200	27500	any	24	67.5	38	14x14	12	1
64743	3200	27500	any	20	101	60.5	7x18	20	3
64744	3000	20500	s 90	26	110	55	13x15	20	4
64744	3000	20500	s 90	26	110	55	13x15	20	4
64745	3200	26000	s 90	26	110	55	13x15	20	5
64745	3200	26000	s 90	26	110	55	13x15	20	5
64746 ¹⁾	3000	20500	s 90	35	130	55.6	13x15	20	7
64747	3200	26000	s 90	26	140	63.5	13x15	20	6
64747	3200	26000	s 90	26	140	63.5	13x15	20	6
93734	3200	32000	any	20	102	60.3	5.7x27	12	3
64752	3000	28600	s 90	27	125	67	13x15	20	4
64752	3000	28600	s 90	27	125	67	13x15	20	4
64754	3200	30000	s 90	27	125	67	13x15	20	5
64756 ²⁾	3200	30000	s 90	35	140	63.5	14x16	20	6

Halogen studio lamps



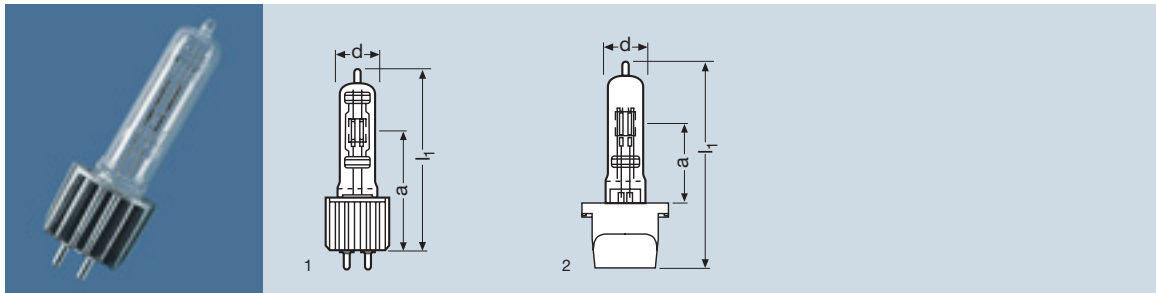
Product reference	Product number	ANSI	LIF	W	V		t [h]
Single ended, 230 and 240 V							
64777	4050300367682		CP/92	2000	230	G22	400
64787	4050300246154		CP/75	2000	230	G22	400
64788	4050300213286	FTM	CP/72	2000	230	GY16	400
64788	4050300283258	FTM	CP/72	2000	240	GY16	400
64789	4050300219103	FKK	CP/73	2000	230	G38	400
64789	4050300283371	FKK	CP/73	2000	240	G38	400
64796	4050300406428		CP/91	2500	230	G22	400
64805	4050300212609		CP/85	5000	230	G38	400
64805	4050300283401		CP/85	5000	240	G38	400
64815	4050300780696	ECR	CP/83	10000	230	G38	400
64818	4050300782713	BCM	CP/99	20000	230	G38	400


Product reference	K	Im		d [mm]	l max. [mm]	a [mm]			No.
64777	3200	52000	s 90	35	175	90	20x19	20	1
64787	3200	52000	s 90	35	160	75	20x19	20	1
64788	3200	52000	s 90	35	145	70	20x19	20	2
64788	3200	52000	s 90	35	145	70	20x19	20	2
64789	3200	52000	s 90	35	210	127	20x19	1	3
64789	3200	52000	s 90	35	210	127	20x19	1	3
64796	3200	65000	s 90	35	175	90	20x19	20	1
64805	3200	135000	s 45	61	265	165	26x33	1	4
64805	3200	135000	s 45	61	265	165	26x33	1	4
64815	3200	285000	s 45	80	400	254	52x41	1	5
64818	3200	570000	s 45	100	560	354	65x68	1	6





Literature:

A summary of studio lamps can be found on the halogen studio lamps poster.

Halogen lamps with special bases



Product reference	Product number	W	V		t _(h)	lm
Halogen high-performance lamps HPL®, QXL®						
93728 HPL	4050300 461816	575	230	2-pin	400	14900
93728 HPL	4008321 090102	575	240	2-pin	400	14900
93728 LL HPL ¹⁾	4008321 090102	575	230	2-pin	1500	11780
93729 HPL	4050300 654201	750	230	2-pin	300	19750
93729 HPL	4050300 654225	750	240	2-pin	300	19750
93729 LL HPL ¹⁾	4008321 090324	750	230	2-pin	1500	15600
93721 QXL	4008321 090195	750	77	Bayonet ²⁾	300	22950
93721 LL QXL	4008321 090218	750	77	Bayonet ²⁾	1500	18000

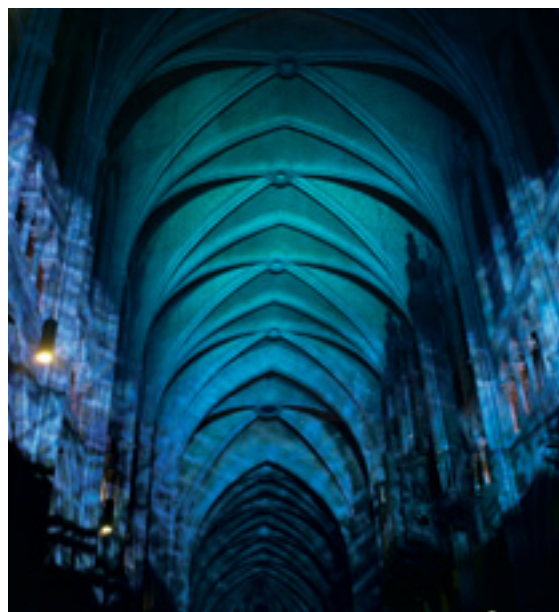
Product reference	K		d [mm]	l ₁ max. [mm]	a [mm]			 No.
93728 HPL	3200	any	19	98	60.3	9.5x11.5 ³⁾	12	1
93728 HPL	3200	any	19	98	60.3	9.5x11.5 ³⁾	12	1
93728 LL HPL ¹⁾	3050	any	19	98	60.3	14.5x11 ³⁾	12	1
93729 HPL	3200	any	19	104	60.3	7.5x11.5 ³⁾	12	1
93729 HPL	3200	any	19	104	60.3	7.5x11.5 ³⁾	12	1
93729 LL HPL ¹⁾	3050	any	19	104	60.3	15.5x11 ³⁾	12	1
93721 QXL	3250	any	18.5	104	38	6.5x12 ⁴⁾	12	2
93721 LL QXL	3050	any	18.5	104	38	6x10 ⁴⁾	12	2



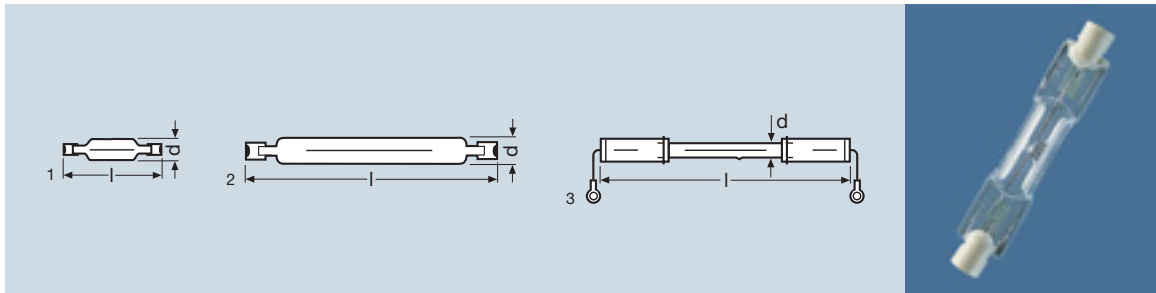
XS = eXtreme Seal (max. permissible foil temperature 450 °C)





High-performance HPL® halogen lamps are manufactured under licence from ENTERTEC Inc., L.A. The special arrangement of the filament segments is matched to the “Source Four” spotlight family of E.T.C. This arrangement makes optimum use of the generated light and achieves the same useful luminous flux for which 1000 W lamps had previously been required.

The QXL® halogen lamp with the special bayonet base can be changed without tools and without opening the spotlight. This special base, equipped with XS technology, permits a base temperature of 450 °C. This patented lamp for entertainment and architecture applications has been developed in cooperation with Electronic Theatre Controls (ETC).

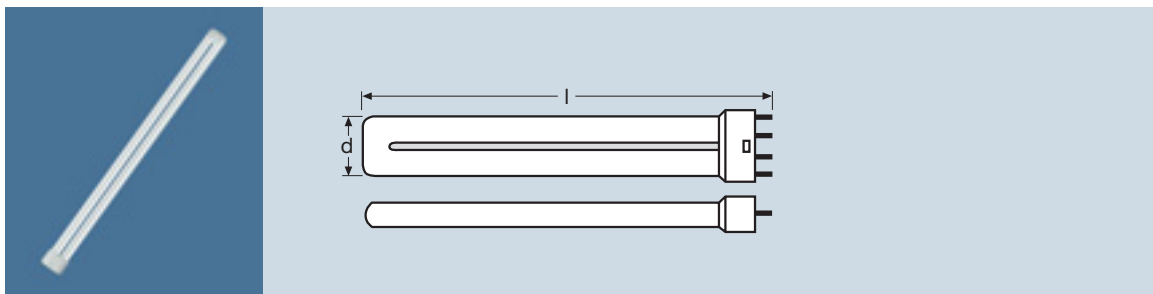




Halogen lamps, double-ended



Product reference	Product number	ANSI	LIF	W	V		t [h]	
Double ended								
64553	4050300014173			650	230	R7s	75	
64570	4050300014098			800	230	R7s	15	
64571	4050300014180	DXX	P2/13	800	230	R7s	75	
64571	4050300283388	DXX	P2/13	800	240	R7s	75	
64579	4050300014104	FDG		1000	120	R7s	15	
64580	4050300006888		P1/12	1000	230	R7s	15	
64580	4050300283173		P1/12	1000	240	R7s	15	
64583	4050300249094		P2/20	1000	230	R7s	200	
64583	4050300411477		P2/20	1000	240	R7s	200	
64741	4050300209333	EKM	P2/7	1000	230	R7s	200	
64741	4050300283197	EKM	P2/7	1000	240	R7s	200	
64751	4050300214641	ELL	P2/12	1250	230	R7s	200	
64751	4050300283357	ELL	P2/12	1250	240	R7s	200	
64781	4050300229997	FEX	P2/27	2000	230	RX7s	300	
64781	4050300283500	FEX	P2/27	2000	240	RX7s	300	
64800 ³⁾	4050300210254		P2/36	5000	230	K24s	1000	
Product reference	K	lm		d [mm]	I max. [mm]			No.
64553	3200	17000	horizontal ¹⁾	17	74.9	20	25	1
64570	3400	22000	horizontal	15	74.9	25	25	1
64571	3200	21000	horizontal ¹⁾	17	74.9	20	25	1
64571	3200	21000	horizontal ¹⁾	17	74.9	20	25	1
64579	3400	33000	horizontal ¹⁾	12	121.7	81	12	2
64580	3400	35000	horizontal	12	181.7	85	12	2
64580	3400	35000	horizontal	12	181.7	85	12	2
64583	3200	27000	s 180	10	114.2	65	12	2
64583	3200	33000	any	12	114.2	65	12	2
64741	3200	25000	any	12	185.7	125	12	2
64741	3200	25000	any	12	185.7	125	12	2
64751	3200	33500	p 15	12	185.7	125	12	2
64751	3200	33500	p 15	12	185.7	125	12	2
64781	3200	50000	p 15	30	138.1	38	12	2
64781	3200	50000	p 15	30	138.1	35	12	2
64800 ³⁾	3200	125000	p 4	18	520 ²⁾	245	1	3

1) Burning position preferably horizontal; vertical possible for a short time
 2) Overall length
 3) Available on request

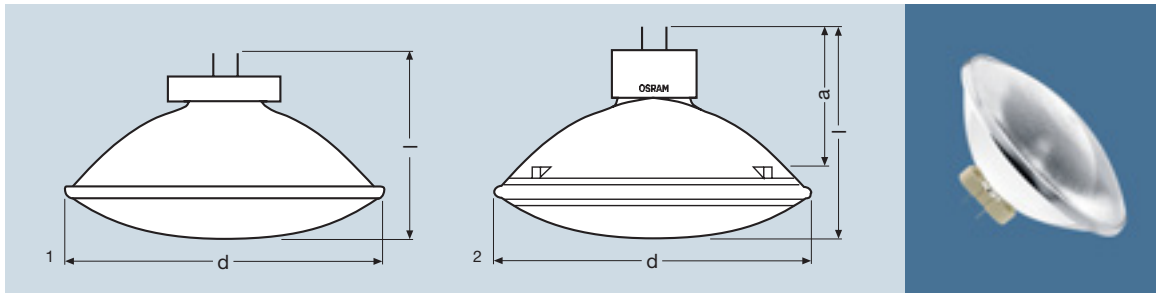


Product reference	Product number	W	lm	K	t _(h)		
STUDIOLINE®							
STUDIOLINE 55 W/3200	4050300575292	55	3800	3200	8000	2G11	10
STUDIOLINE 55 W/5600	4050300575278	55	3800	5600	8000	2G11	10

OSRAM STUDIOLINE® fluorescent lamps are especially designed for lighting requirements for filming and use with electronic cameras. Thanks to the special phosphor combination, STUDIOLINE® lamps can be used with halogen or HMI lamps without any problems.



PAR halogen lamps



Product reference	Product number	ANSI	LIF		W	V		
aluPAR® 56								
aluPAR 56 NSP	4008321108746			8°/9°	300	120	GX16d	
aluPAR 56 NSP	4008321107923			8°/9°	300	230	GX16d	
aluPAR 56 NSP	4008321107947			8°/9°	300	240	GX16d	
aluPAR 56 MFL	4008321108760			15°/17°	300	120	GX16d	
aluPAR 56 MFL	4008321107961			15°/17°	300	230	GX16d	
aluPAR 56 MFL	4008321107985			15°/17°	300	240	GX16d	
aluPAR 56 WFL	4008321108784			26°/27°	300	120	GX16d	
aluPAR 56 WFL	4008321108128			26°/27°	300	230	GX16d	
aluPAR 56 WFL	4008321108005			26°/27°	300	240	GX16d	
PAR 64 halogen lamps, 3200 K								
64737/3 NSP	4008321905727	EXC	CP/60	12°/9°	1000	230	GX16d	
64737/4 NSP	4008321905741	EXC	CP/60	12°/9°	1000	240	GX16d	
64738/3 SP	4008321905765	EXD	CP/61	14°/10°	1000	230	GX16d	
64738/4 SP	4008321905789	EXD	CP/61	14°/10°	1000	240	GX16d	
64739/3 FL	4008321905802	EXE	CP/62	22°/14°	1000	230	GX16d	
64739/4 FL	4008321905826	EXE	CP/62	22°/14°	1000	240	GX16d	
Product reference	t [h]	cd		d [mm]	l max. [mm]	a [mm]		No.
aluPAR® 56								
aluPAR 56 NSP	2000	68000	any	177	113	–	6	1
aluPAR 56 NSP	2000	70000	any	177	113	–	6	1
aluPAR 56 NSP	2000	70000	any	177	113	–	6	1
aluPAR 56 MFL	2000	24000	any	177	113	–	6	1
aluPAR 56 MFL	2000	30000	any	177	113	–	6	1
aluPAR 56 MFL	2000	30000	any	177	113	–	6	1
aluPAR 56 WFL	2000	11000	any	177	113	–	6	1
aluPAR 56 WFL	2000	10000	any	177	113	–	6	1
aluPAR 56 WFL	2000	10000	any	177	113	–	6	1
PAR 64 halogen lamps, 3200 K								
64737/3 NSP	300	320000	any	204	152.4	102	6	2
64737/4 NSP	300	320000	any	204	152.4	102	6	2
64738/3 SP	300	270000	any	204	152.4	102	6	2
64738/4 SP	300	270000	any	204	152.4	102	6	2
64739/3 FL	300	125000	any	204	152.4	102	6	2
64739/4 FL	300	125000	any	204	152.4	102	6	2

Beam angle: NSP = narrow spot, SP = spot, MFL = medium flood, FL = flood, WFL = wide flood

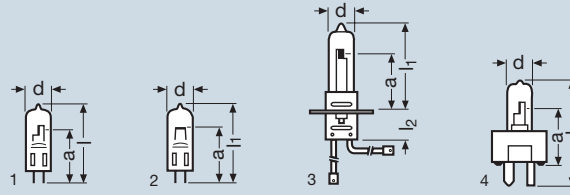
Literature:


Further information on the new aluPAR® lamps can be found in the brochure entitled:




- “A lightweight” The new OSRAM aluPAR® lamps with aluminium reflectors – lighter, brighter, cooler (122 W 101)

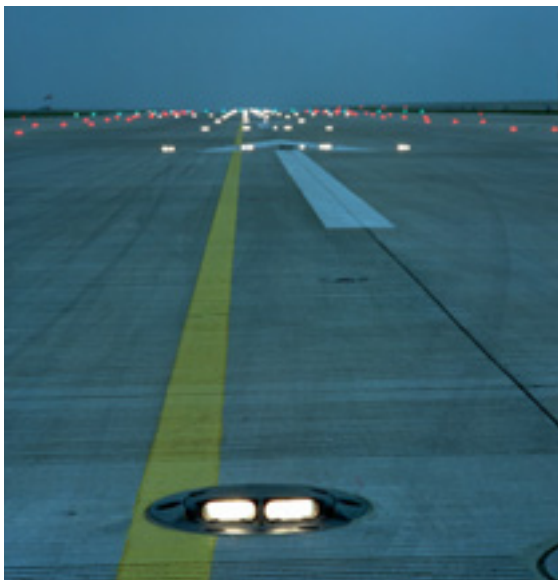
1) Do not tilt perpendicular to the filament

Halogen lamps, current controlled, single-ended



Product reference	Product number	ANSI	LIF	A	W		t [h]	Im	
Halogen lamps, current controlled, single-ended									
64311	4008321 106346			J1/59	6.0	36	GZ(GY)9.5	1200	610
64322	4008321 100146	EXL			6.6	30	GZ9.5	1000	600
64320	4008321 100122	EXM			6.6	45	GZ9.5	1000	875
64321	4008321 106360			J1/57	6.6	45	G6.35	1200	840
64346	4008321 106384			J1/58	6.6	100	G6.35	1200	2300
58798	4008321 100184	EVV			6.6	115	GZ(GY)9.5	1100	2900
64354 ²⁾	4008321 100207	EWR			6.6	150	GZ9.5	1000	3700
58746	4050300 657257	EZL			6.6	200	P30d	1300	5200
58750	4008321 100160	EZL			6.6	200	GZ(GY)9.5	1300	5200
64386	4008321 106407			J1/39	6.6	200	G6.35	1200	4700

Product reference		d max. [mm]	l ₁ [mm]	l ₂ [mm]	a [mm]			No.
64311	s 90	11	max. 50	—	33	1.1x2.6	40	1
64322	s 90 ¹⁾	13.5	max. 44.5	—	25.4	4.4x5.5	12	4
64320	s 90	11.5	max. 44.5	—	25.4	1.4x3.3	12	4
64321	s 90	11	max. 50	—	33	1.25x3.0	40	1
64346	s 90 ¹⁾	13.5	max. 47	—	33	4.6x3.0	40	2
58798	s 90	13	65	—	39.1	6.5x3.1	12	4
64354 ²⁾	s 90 ¹⁾	13.5	max. 63.5	—	39.1	4.4x5.5	12	4
58746	any	13	60.3	20.6	27	5.5x3.8	100	3
58750	s 90	13	65	—	39.1	5.5x3.8	12	3
64386	s 90 ¹⁾	13.5	max. 47	—	33	7.2x4.4	40	2



Connector A, female
complies with DIN 46247

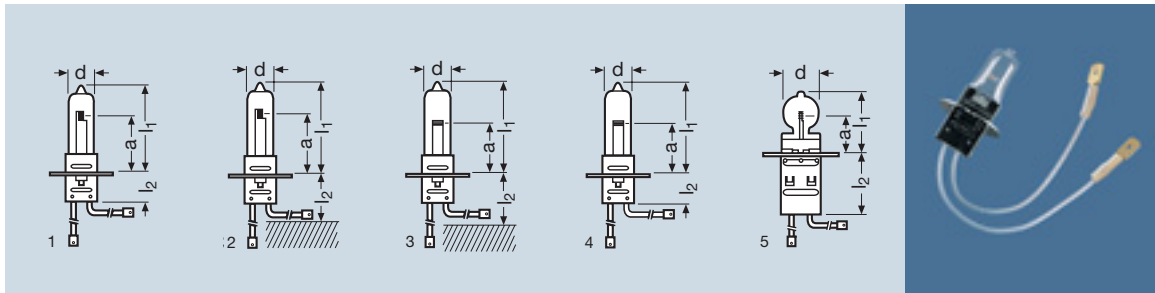



Connector B, female round
for contacts Ø 4 mm






Connector C, male
complies with DIN 46248

Halogen lamps, current-controlled with PK30d base



Product reference	Product number	LIF	A	W		t [h]	Im
Halogen lamps, current controlled, with PK30d base							
64317 C 45-10 ¹⁾	4050300442419	J1/76	6.6	45	PK30d	1000	800
64317 IRC-A 45-30	4008321012326	J1/76	6.6	45	PK30d	3000	800
64317 IRC-C 45-30 ¹⁾	4050300785004	J1/76	6.6	45	PK30d	3000	800
64318 A 45-10	4050300245843	J1/77	6.6	45	PK30d	1000	800
64318 Z 45-10 ¹⁾	4050300258324	J1/77	6.6	45	PK30d	1000	800
64319 A 45-10	4050300440767		6.6	45	PK30d	1000	800
64319 Z 45-10 ¹⁾²⁾	4050300440729		6.6	45	PK30d	1000	800
64319 IRC-A 45-30	4008321012265		6.6	45	PK30d	3000	800
64319 IRC-C 45-30 ¹⁾	4008321012289		6.6	45	PK30d	3000	800
64328 HLX-A 65-10	4050300440804		6.6	65	PK30d	1000	1450
64328 HLX-Z 65-10 ¹⁾	4050300302362		6.6	65	PK30d	1000	1450
64341 HLX-A 100-10	4050300446301	J1/79	6.6	100	PK30d	1000	2700
64341 HLX-Z 100-10 ¹⁾	4050300258348	J1/79	6.6	100	PK30d	1000	2700
64342 HLX-A 100-10	4050300308135	J1/80	6.6	100	PK30d	1000	2700
64342 HLX-C 100-10 ¹⁾	4050300442433	J1/80	6.6	100	PK30d	1000	2700
64361 HLX-A 150-10	4050300271866	J1/83	6.6	150	PK30d	1000	3600
64361 HLX-Z 150-10 ¹⁾	4050300431642	J1/83	6.6	150	PK30d	1000	3600
64382 HLX-A 200-10	4050300771649	J1/84	6.6	200	PK30d	1000	4800
64382 HLX-C 200-10 ¹⁾	4050300431680	J1/84	6.6	200	PK30d	1000	4800

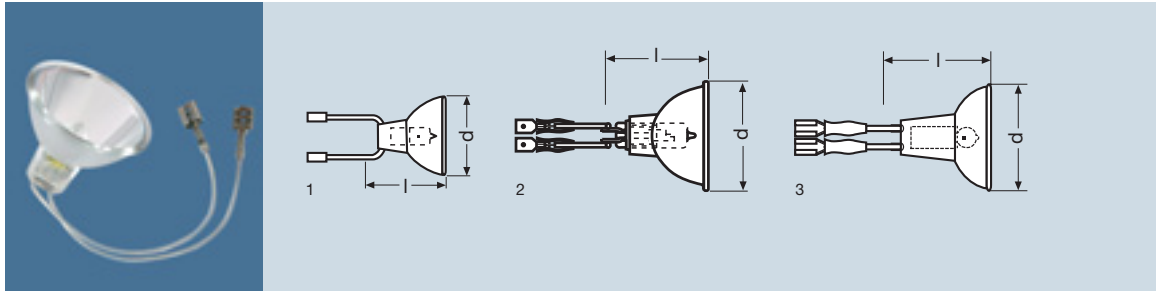
Product reference		d max. [mm]	l1 [mm]	l2 [mm]	a [mm]			No.
64317 C 45-10 ¹⁾	s 90	13.5	max. 37	max. 21	16	1.4x3.6	100	1
64317 IRC-A 45-30	s 90	13.5	max. 37	max. 21	16	1.4x3.6	100	5
64317 IRC-C 45-30 ¹⁾	s 90	13.5	max. 37	max. 21	16	1.4x3.6	100	5
64318 A 45-10	s 90	13.5	max. 28	min. 27	16	1.4x3.6	100	2
64318 Z 45-10 ¹⁾	s 90	13.5	max. 28	min. 27	16	1.4x3.6	100	2
64319 A 45-10	s 90	13.5	max. 32	min. 23	20	1.4x3.6	100	2
64319 Z 45-10 ¹⁾²⁾	s 90	13.5	max. 32	min. 23	20	1.4x3.6	100	2
64319 IRC-A 45-30	s 90	13.5	max. 32	min. 23	20	1.4x3.6	100	5
64319 IRC-C 45-30 ¹⁾	s 90	13.5	max. 32	min. 23	20	1.4x3.6	100	5
64328 HLX-A 65-10	s 90 ³⁾	13.5	max. 32	min. 27	20	3.8x3.2	100	3
64328 HLX-Z 65-10 ¹⁾	s 90 ³⁾	13.5	max. 32	min. 27	20	3.8x3.2	100	3
64341 HLX-A 100-10	s 90 ³⁾	13.5	max. 32	min. 23	20	5.4x3.0	100	3
64341 HLX-Z 100-10 ¹⁾	s 90 ³⁾	13.5	max. 32	min. 23	20	5.4x3.0	100	3
64342 HLX-A 100-10	s 90 ³⁾	13.5	max. 41	max. 17	20	5.4x3.0	100	4
64342 HLX-C 100-10 ¹⁾	s 90 ³⁾	13.5	max. 41	max. 17	20	5.4x3.0	100	4
64361 HLX-A 150-10	s 90 ³⁾	13.5	max. 35	min. 23	20	6.9x3.6	100	3
64361 HLX-Z 150-10 ¹⁾	s 90 ³⁾	13.5	max. 35	min. 23	20	6.9x3.6	100	3
64382 HLX-A 200-10	s 90 ³⁾	13.5	max. 43	max. 21	20	7.1x3.9	100	4
64382 HLX-C 200-10	s 90 ³⁾	13.5	max. 43	max. 21	20	7.1x3.9	100	4






For a summary of connectors see page 36

1) With Z/C connector to DIN 46248
 2) Version 64319 Z replaces 64316; 64316 has been withdrawn
 3) Despite transverse filament, can be inclined at any angle in s 90 position

Halogen lamps, current controlled, with reflectors

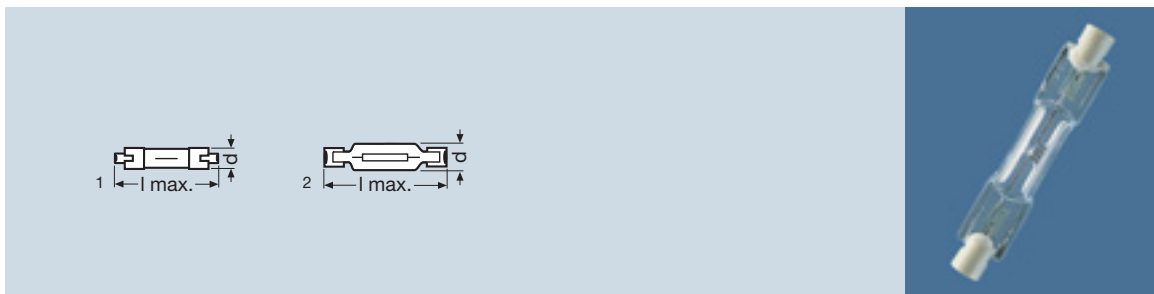



Product reference	Product number	A	W		t[h]
Halogen reflector lamps, current controlled, with dichroic coating					
64331 SP-A 30-10 ¹⁾	4008321102560	6.6	30	Connector A	1000
64331 FL-AC 30-10 ²⁾	4008321102584	6.6	30	Connector AC	1000
64333 A 40-15	4008321166340	6.6	40	Connector C	1500
64333 B 40-15	4008321104731	6.6	40	Connector B	1500
64333 C 40-15	4008321104885	6.6	40	Connector C	1500
64337 A 45-15	4008321102515	6.6	45	Connector A	1500
64337 B 45-15	4008321104700	6.6	45	Connector B	1500
64337 A 48-15 ³⁾	4008321102737	6.6	48	Connector A	1500
64337 B 48-15	4008321105226	6.6	48	Connector B	1500
64337 C 48-15	4008321105240	6.6	48	Connector C	1500
64337 IRC-A 48-30	4008321102454	6.6	48	Connector A	3000
64337 IRC-B 48-30	4008321105264	6.6	48	Connector B	3000
64337 IRC-C 48-30	4008321102492	6.6	48	Connector C	3000
64336 A 60-15 IC NN		6.6	60	Connector A	1500
64336 C 60-15 IC NN		6.6	60	Connector C	1500
64338 A 48-10	4008321105301	6.6	48	Connector A	1000
64339 A 105-10	4008321101600	6.6	105	Connector A	1000
64339 AC 105-10	4008321105424	6.6	105	Connector AC	1000
64339 B 105-10	4008321105462	6.6	105	Connector B	1000
64339 C 105-10	4008321105486	6.6	105	Connector C	1000
64355	4050300361659	6.6	100	Connector B	1500




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64331 SP-A 30-10 ¹⁾	min. 16	any	50.2	45.6	20	1
64331 FL-AC 30-10 ²⁾	min. 3.7	any	50.2	45.6	20	1
64333 A 40-15	min. 10	any	35.3	37.0	20	1
64333 B 40-15	min. 10	any	35.3	37.0	20	1
64333 C 40-15	min. 10	any	35.3	37.0	20	1
64337 A 45-15	min. 19	any	50.2	45.6	20	1
64337 B 45-15	min. 19	any	50.2	45.6	20	1
64337 A 48-15	min. 20	any	50.2	45.6	20	1
64337 B 48-15 ³⁾	min. 20	any	50.2	45.6	20	1
64337 C 48-15	min. 20	any	50.2	45.6	20	1
64337 IRC-A 48-30	min. 20	any	50.2	45.6	20	3
64337 IRC-B 48-30	min. 20	any	50.2	45.6	20	3
64337 IRC-C 48-30	min. 20	any	50.2	45.6	20	3
64338 A 48-10	min. 27	any	50.2	45.6	20	1
64336 A 60-15 IC NN	min. 28	any	50.2	45.6	20	1
64336 C 60-15 IC NN	min. 28	any	50.2	45.6	20	1
64339 A 105-10	min. 30	any	50.2	max.50.0	20	2
64339 AC 105-10	min. 30	any	50.2	45.6	20	2
64339 B 105-10	min. 30	any	50.2	45.6	20	2
64339 C 105-10	min. 30	any	50.2	45.6	20	2
64355	min. 19	any	55.5	45.6	50	1

For a summary of connectors see page 36

Halogen lamps, current controlled, double-ended



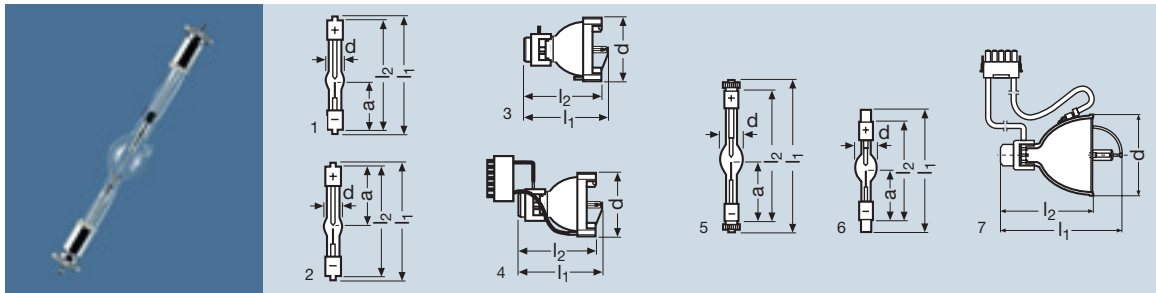
Product reference	Product number	LIF	A	W		t [h]
Halogen lamps, current controlled, double-ended						
64315 ¹⁾	4050300206844	J1/78	6.6	45	R7s	1000
64340	4050300017266	J1/82	6.6	100	R7s	1000
64380	4050300209944	J1/40	6.6	200	R7s	1000

Product reference	Im		d max. [mm]	l max. [mm]			No.
64315 ¹⁾	750	any	8.8	47.5	4x1.5	25	1
64340	2000	any	12	60.2	6x2.6	25	2
64380	4400	any	15	60.2	10x3	25	2



- For more information on airfield lamps see the brochure “The Reliable Guiding Stars – Effective solutions for airfield lighting: Tungsten halogen lamps and innovative IRC technology” (122 D04 10/03).
- All airfield lamps are available with connector combinations A, B, C/Z on request.

XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm	cd	cd/cm ²	t[h]	t[h]			
XBO 75 W/2 ⁶⁾	4050300508801	75	14	5.4	1000	100	40000	400	400	s105	–	–
XBO 100 W OFR	4050300508429	100	14	7.2	1900	270	31000	500	500	s105	–	req.
XBO R 100 W/45 OFR ¹⁾⁴⁾	4050300317205	100	13	7.2	–	–	–	–	500	p15	–	–
XBO 150 W/1 ⁶⁾⁷⁾	4050300015804	150	20	7.5	3000	300	15000	1200	–	s15	–	req.
XBO 150 W/CR OFR	4050300508788	150	17.5	8.5	2900	290	20000	3000	1200	s15 p15 req.	req.	req.
XBO 150 W/S	4050300220208	150	20	7.5	2200	220	18000	1000	800	s15 p15 req.	req.	req.
XBO R 180 W/45 OFR ¹⁾⁴⁾	4050300432175	180	14	12	–	–	–	–	500	p15	–	–
XBO R 300 W/60 C OFR ⁵⁾	4050300857749	300	17.5	17.1	–	–	–	–	500	p15	–	–

Product reference			d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ²⁾				No.
XBO 75 W/2 ⁶⁾	–	0.25x0.5	10	90	82	37	SFa9-2	SFa7.5-2	1	
XBO 100 W OFR	req.	0.4x0.8	11	90	82	44.5	SFa9-2	SFa7.5-2	2	
XBO R 100 W/45 OFR ¹⁾⁴⁾	req.	–	67	83	77	–	–	–	3/4	
XBO 150 W/1 ⁶⁾⁷⁾	–	0.5x2.2	20	150	127	57	SFc12-4	SFcX12-4	5	
XBO 150 W/CR OFR	req.	0.5x1.6	20	150	127	57	SFc12-4	SFcX12-4	5	
XBO 150 W/S	req.	0.5x1.7	20	117	96	47.5	SFa12-11	SFa12-11	6	
XBO R 180 W/45 OFR ¹⁾⁴⁾	req.	–	67	90.5	81.5	–	–	–	3/4	
XBO R 300 W/60 C OFR ⁵⁾	req.	–	82.5	110	80	–	–	–	7	

OFR = Ozone-free version
S = Short

W = Watts
req. = required

XBO® are short arc lamps in which the discharge arc burns in an atmosphere of pure xenon gas at high pressure.

Their main characteristics and advantages are as follows:

- High luminance
- Daylight colour temperature of approx. 6000 K
- Continuous spectrum in the visible range
- High colour rendering index ($R_a > 95$)
- Constant light colour throughout the life of the lamp
- High arc stability
- DC operation
- Hot restart capability
- Instant light on starting

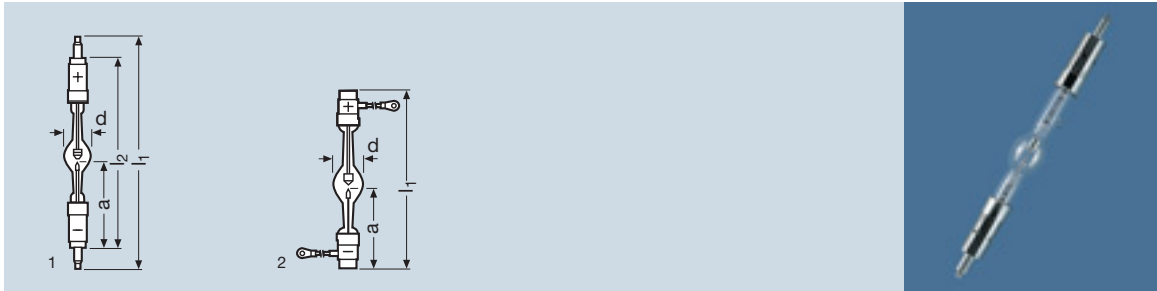
Literature:


Further information can be found in the following brochures, obtainable on request from OSRAM:











- “Ready for your ideas!” Specialty lamps for innovative applications in medicine and industry



XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm	cd	cd/cm ²	A	t [h]	
XBO 250 W OFR ⁴⁾	4008321082657	250	13	18	4800	530	26000	14 ... 20	1200	s 15
XBO 450 W ³⁾⁴⁾	4008321082640	450	17	25	13000	1300	35000	17 ... 30	2000	s 30
XBO 450 W/1	4008321082510	450	17	25	13000	1300	45000	17 ... 30	800	s 100
XBO 450 W/2 OFR	4008321082626	450	17	25	13000	1300	35000	17 ... 30	2000	s 30

Product reference											
				d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm]	+	-	No.	
XBO 250 W OFR ⁴⁾	req.	-	-	0.7x1.7	25	226	192	93	SFa16-8	SFa16-10	1
XBO 450 W ³⁾⁴⁾	req.	-	-	0.9x2.7	29	260	212	95.5	SFa20-8	SFa20-10	1
XBO 450 W/1	req.	req.	-	0.7x2.2	29	260	212	95.5	SFa20-8	SFa20-10	1
XBO 450 W/2 OFR	req.	-	-	0.9x2.7	29	177	-	79	SK19/36	SK19/36	2

OFR = Ozone-free version
 req. = required

XBO® lamps are double-ended short-arc discharge lamps in which the discharge arc burns between the two electrodes in an atmosphere of pure xenon gas.

Their main characteristics and advantages are as follows:

- Very high luminance (point light source)
- Daylight colour temperature of approx. 6000 K
- High colour rendering index ($R_a > 95$)
- Continual colour quality, irrespective of lamp type and lamp wattage
- Hot restart
- DC operation
- Dimmable
- Long life

Applications:

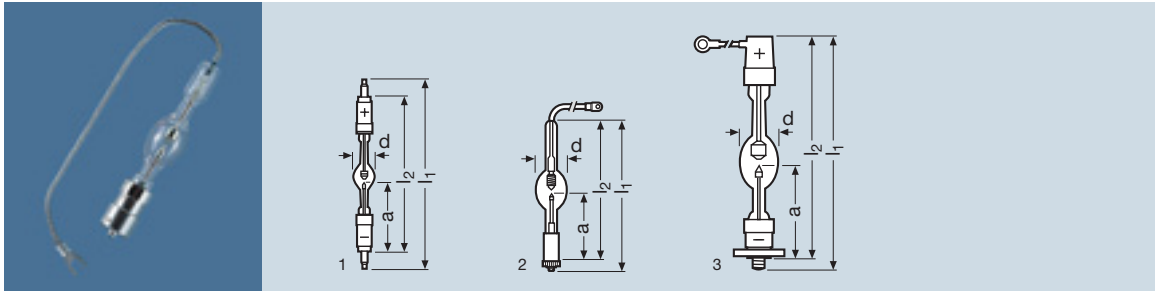
- Classic film projection
- Digital film and video projection
- Architecture lighting and effect lighting ("light finger")
- Solar simulation















XBO® xenon short-arc lamps have a particularly high luminance.

1) Distance from end of base to tip of electrode (cold)
 2) For vertical burning position: anode (+) on top
 3) Also available in ozone-free version with the same data: XBO 450 W OFR
 4) Also available in Suprasil quartz version: XBO 250 W/4, XBO 450 W/4

XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm ³⁾	cd ³⁾	cd/cm ² ³⁾	A	t [h]	 ²⁾
XBO 500 W/H OFR	4008321 082503	500	17	28	14500	1450	40000	17...30	2000	s30 p30
XBO 550 W/HTC OFR	4008321 082480	550	22	25	16000	1600	34000	17...27	600	s15 p15
XBO 700 W/HSC OFR	4008321 082428	700	18	37	20000	2000	40000	30...45	1500	s20 p20

Product reference											
XBO 500 W/H OFR	req.	req.	req.	0.9x2.5	35	190	165	75	SFa16-8	SFa15-10	1
XBO 550 W/HTC OFR	–	req.	req.	0.9x3.1	25	143	129	65	Cable	SFc15-6	2
XBO 700 W/HSC OFR	–	req.	req.	1.1x2.9	40	236	222	95	SK27/50	SFcX27-8	3

C = Base with cable
H = Suitable for horizontal burning position
OFR = Ozone-free version

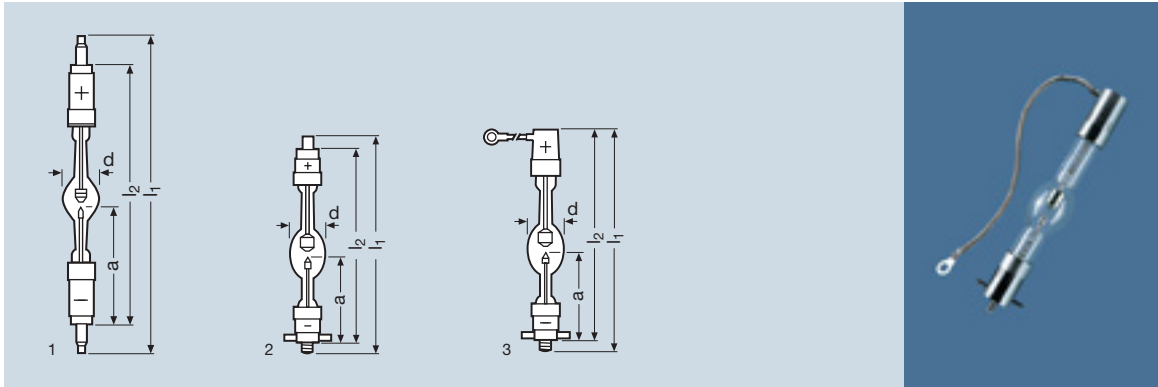
S = Short
TC = Thread and cable
req. = required














*A spectacle in light with XBO® 3 and 4 kW.
Roof-mounted spotlights create colourful effects on the
200 metre high façade of the Bogotá Tower in Columbia.*

1) Distance from end of base to tip of electrode (cold)
2) For vertical burning position: anode (+) on top
3) Measured in the vertical burning position

XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm ³⁾	cd ³⁾	cd/cm ² ³⁾	A	t [h]	
XBO 900 W OFR	4008321 081346	900	19	45	30000	3000	50000	30...53	2400	s30
XBO 1000 W/HS OFR	4008321 082114	1000	19	50	32000	3000	60000	30...55	2000	s20 p20
XBO 1000 W/HSC OFR	4008321 082107	1000	19	50	32000	3000	60000	30...55	2000	s20 p20

Product reference											
XBO 900 W OFR	-	-	-	1.1x3.3	40	325	277	123	SFa25-10	SFa25-12	1
XBO 1000 W/HS OFR	-	req.	req.	1.1x2.8	40	235	205	95	SFa27-11	SFcX27-8	2
XBO 1000 W/HSC OFR	-	req.	req.	1.1x2.8	40	236	222	95	SK27/50	SFcX27-8	3

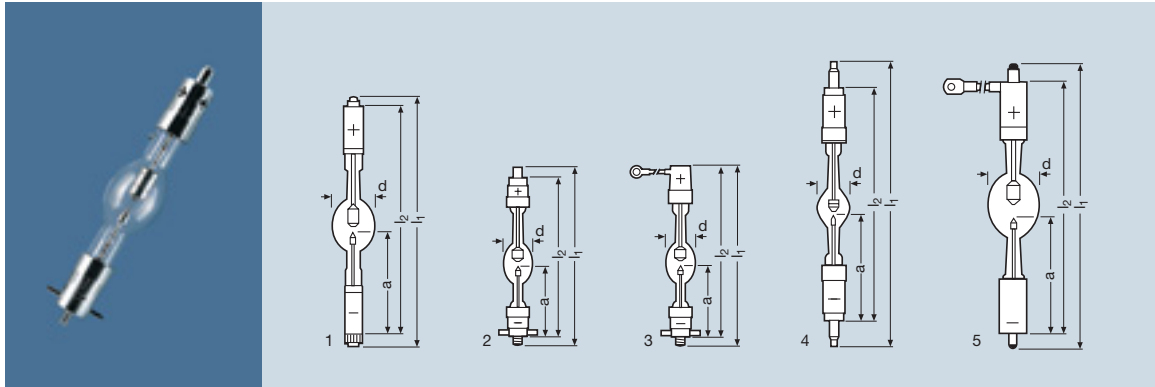
C = Base with cable
 H = Suitable for horizontal burning position
 req. = required


OFR = Ozone-free version
 S = Short









1) Distance from end of base to tip of electrode (cold)
 2) For vertical burning position: anode (+) on top
 3) Measured in the vertical burning position

XBO® xenon short-arc lamps



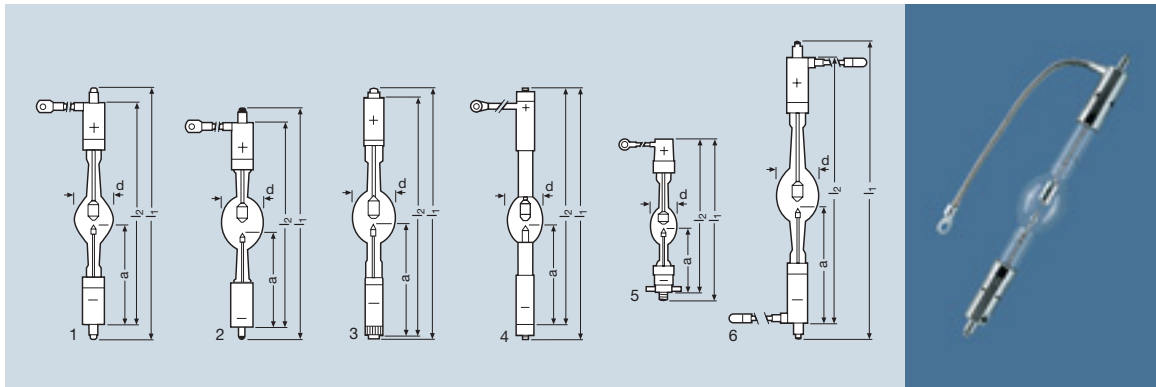
Product reference	Product number	W	V	A	lm ³⁾	cd ³⁾	cd/cm ² ³⁾	A	t [h]	
XBO 1000 W/HTP OFR	4008321 081353	1000	21	45	35000	3200	45000	30...55	2400	s30 p30
XBO 1600 W/HS OFR	4008321 082091	1550	23	65	70000	5500	70000	50...75	2000	s20 p20
XBO 1600 W/HSC OFR	4008321 082084	1550	23	65	60000	5500	70000	50...75	2000	s20 p20
XBO 1600 W OFR	4008321 064721	1600	24	65	60000	6000	65000	45...75	2400	s30
XBO 1600 W/CA OFR	4008321 064738	1600	24	65	60000	6000	65000	45...75	2400	s30


Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ¹⁾			No.
XBO 1000 W/HTP OFR	req.	-	-	1.0x4.0	46	330	277	123	SFa25-14	SFc25-14	1
XBO 1600 W/HS OFR	-	req.	req.	1.0x3.2	46	235	205	95	SFa27-11	SFcX27-8	2
XBO 1600 W/HSC OFR	-	req.	req.	1.0x3.2	47	236	222	95	SK27/50	SFcX27-8	3
XBO 1600 W OFR	-	-	-	1.4x4.0	52	370	322	143	SFa27-10	SFa27-12	4
XBO 1600 W/CA OFR	-	-	-	1.4x4.0	52	370	322	143	SFaX27-10	SFa27-12	5







C = Base with cable
 CA = Cable with anode base
 H = Suitable for horizontal burning position
 OFR = Ozone-free version
 S = Short
 TP = Cable with threaded pin
 req. = required



XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm ⁴⁾	cd ⁴⁾	cd/cm ² ⁴⁾	A	t [h]	 ²⁾
XBO 2000 W/H OFR ⁶⁾	4008321 064745	2000	28	70	80000	7500	75000	50...85	2400	s30 p30
XBO 2000 W/HS OFR	4008321 081360	2000	24	80	80000	7500	80000	50...85	2400	s30 p30
XBO 2000 W/HTP OFR ⁵⁾	4008321 064752	2000	27	70	80000	7500	75000	50...85	2400	s30 p30
XBO 2000 W/HTT OFR	4008321 064769	2000	24	80	80000	7500	75000	50...85	2400	s30 p30
XBO 2000 W/SHSC OFR ³⁾	4008321 082077	2000	27	70	80000	7500	80000	50...85	2000	s20 p20
XBO 2500 W OFR	4008321 064783	2500	29	85	100000	9500	61000	60...95	2000	s30

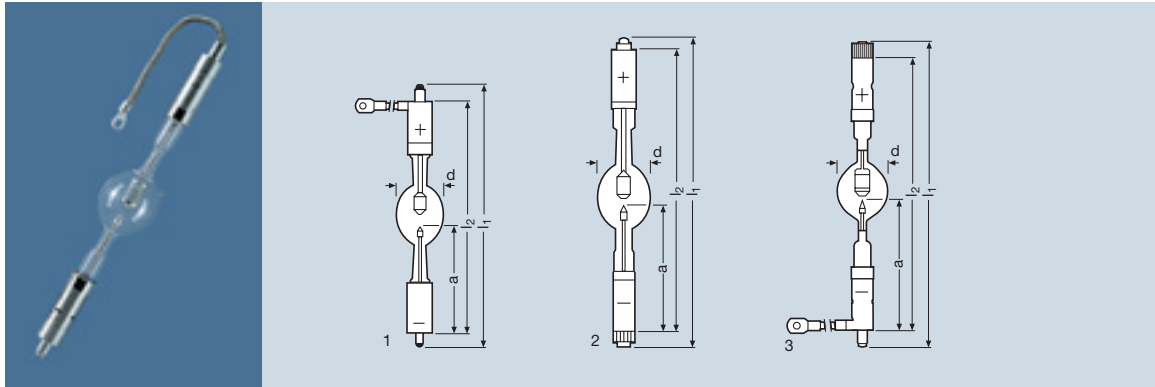
Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ¹⁾			No.
XBO 2000 W/H OFR	req.	-	-	1.3x4.8	52	370	322	142.5	SFaX27-10	SFaX27-12	1
XBO 2000 W/HS OFR	-	req.	req.	1.3x4.0	60	342	302	145	SFaX27-9.5	SFa27-7.9	2
XBO 2000 W/HTP OFR ⁵⁾	req.	-	-	1.3x4.8	52	375	322	142.5	SFa25-14	SFc25-14	3
XBO 2000 W/HTT OFR	req.	-	-	1.3x4.8	52	370	322	142.5	SFcX25-10	SFcX25-10	4
XBO 2000 W/SHSC OFR ³⁾	-	req.	req.	1.3x4.0	46	236	222	95	SK27/50	SFcX27-8	5
XBO 2500 W OFR	-	-	-	1.5x6.0	60	428	382	167.5	SFaX27-13	SFaX27-14	6


- H = Suitable for horizontal burning position
- OFR = Ozone-free version
- S = Short
- SHSC = Extra short version for horizontal burning position, anode connection via cable (super short)
- TP = Cable with threaded pin
- TT = Two threaded pins
- req. = required












1) Distance from end of base to tip of electrode (cold)
 2) For vertical burning position: anode (+) on top
 3) Similar dimensions to XBO® 1600 W/HSC OFR
 4) Measured in the vertical burning position

5) Also available as XBO 2001 W/HTP OFR with 25 V at 80 A
 6) Available as XBO 2000 W/HCC with 2nd cable on cathode base

XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm ³⁾	cd ³⁾	cd/cm ² ³⁾	A	t [h]	
XBO 2500 W/HTP OFR	4008321 064790	2500	28	90	100000	9500	60000	70...100	1500	s30 p30
XBO 2500 W/HS OFR	4008321 081377	2500	28	90	100000	10000	80000	70...100	1500	s30 p30
XBO 3000 W/HTP OFR	4008321 064813	3000	29	100	130000	12000	85000	60...110	1500	s30 p30
XBO 3000 W/H OFR	4008321 064806	3000	29	100	130000	12000	85000	60...110	1500	s30 p30
XBO 3000 W/HS OFR	4008321 081384	3000	29	100	130000	12000	90000	60...110	1500	s30 p30
XBO 3000 W/HTC OFR	4008321 064820	3000	29	100	130000	12000	85000	60...110	1500	s30 p30
XBO 3000 W/HSLA OFR	4008321 913333	3000	29	110	130000	12000	105000	60...120	1500	s30 p30

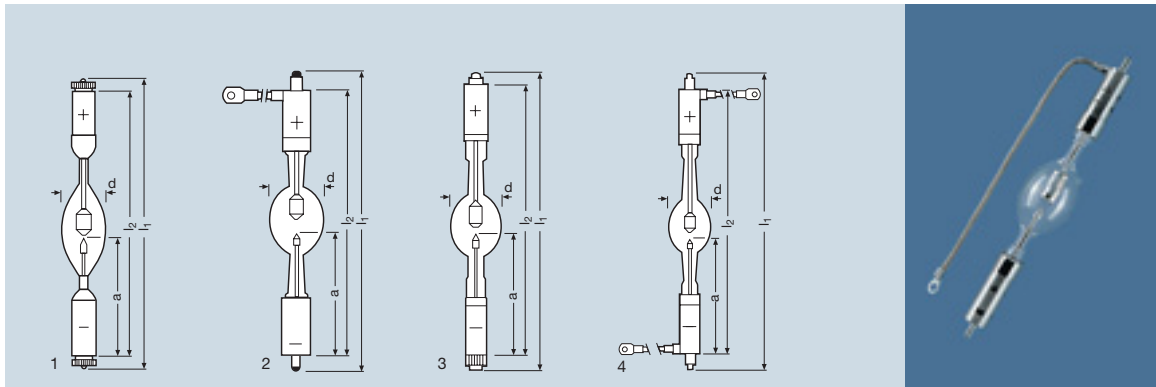
Product reference											
					d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ¹⁾	+	-	No.
XBO 2500 W/HTP OFR	req.	req.	req.	1.5x6.0	60	398	357	165	SFa27-14	SFc27-14	2
XBO 2500 W/HS OFR	-	req.	req.	1.5x4.5	60	342	302	145	SFaX27-9.5	SFa27-7.9	1
XBO 3000 W/HTP OFR	req.	req.	req.	1.7x5.0	66	405	357	162.5	SFa27-14	SFc27-14	2
XBO 3000 W/H OFR	req.	req.	req.	1.7x5.0	66	428	382	167.5	SFaX27-13	SFaX27-14	1
XBO 3000 W/HS OFR	-	req.	req.	1.7x5.0	60	342	302	145	SFaX27-9.5	SFa27-7.9	1
XBO 3000 W/HTC OFR	req.	req.	req.	1.7x5.0	66	398	350	165	SFc28-13	SFaX28-13	3
XBO 3000 W/HSLA OFR	req.	req.	req.	1.7x4.0	54	342	302	145	SFaX27-9.5	SFa27-7.9	1


H = Suitable for horizontal burning position
 OFR = Ozone-free version
 TC = Tread and cable
 LA = Lumen Advanced (High Efficiency lamp)











TP = Cable with threaded pin
 S = Short
 req. = required



XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm ⁴⁾	cd ⁴⁾	cd/cm ² ⁴⁾	A	t [h]	
XBO 3600 W/HTM OFR	4008321064837	3600	29	120	160000	16000	85000	80...130	1000	s15 p15
XBO 3600 W/HTC OFR	4008321064844	3600	29	120	160000	16000	85000	80...130	1000	s15 p15
XBO 4000 W/HS OFR	4008321040312	4000	28	135	155000	17000	90000	80...150	1000	s20 p20
XBO 4000 W/HTP OFR	4008321057983	4000	30	130	155000	16000	90000	100...140	1000	s20 p20
XBO 4000 W/HSA OFR	4008321057990	4000	29	135	160000	20000	105000	80...150	1000	s20 p20
XBO 4200 W/CA OFR	4008321057938	4200	29	140	190000	20000	100000	80...160	1000	s15
XBO 4200 W/GS OFR	4008321057884	4200	29	140	190000	20000	100000	80...160	1000	s15
XBO 4500 W/HS OFR	4008321058447	4500	32	135	190000	22000	105000	80...150	1000	s15 p15
XBO 4500 W/HTP OFR	4008321057860	4500	32	135	190000	22000	105000	80...150	1000	s15 p15
XBO 4500 W/HSLA OFR	4008321913340	4500	30	145	190000	22000	115000	80...150	1500	s15 p15

Product reference											No.
XBO 3600 W/HTM OFR	–	req.	req.	1.9x6.0	60	413	362	165	SFc28-13	SFc28-13	1
XBO 3600 W/HTC OFR	–	req.	req.	1.9x6.0	60	388	362	165	SFa28-14 ³⁾	SFc28-13	1
XBO 4000 W/HS OFR	–	req.	req.	1.9x6.0	70	410	370	171	SFaX30-9.5	SFa30-7.9	2
XBO 4000 W/HTP OFR	–	req.	req.	1.9x6.0	70	433	382	167.5	SFa27-14	SFc27-14	3
XBO 4000 W/HSA OFR	–	req.	req.	1.8x5.6	70	410	370	171	SFaX30-9.5	SFa30-7.9	2
XBO 4200 W/CA OFR	–	req.	–	2.1x6.0	70	428	382	167.5	SFaX27-13	SFaX27-14	4
XBO 4200 W/GS OFR	–	req.	–	2.1x5.7	60	428	382	167.5	SFaX27-13	SFaX27-14	4
XBO 4500 W/HS OFR	req.	req.	req.	1.9x6.0	70	410	370	171	SFaX30-9.5	SFa30-7.9	2
XBO 4500 W/HTP OFR	req.	req.	req.	1.9x6.0	70	433	382	165	SFa27-14	SFc27-14	3
XBO 4500 W/HSLA OFR	req.	req.	req.	1.9x5.0	60	410	370	171	SFaX30-9.5	SFa30-7.9	2

CA = Cable with anode base
 GS = Gap short
 H = Suitable for horizontal burning position
 OFR = Ozone-free version
 S = Short
 SA = Short arc
 TP = Cable with threaded pin
 req. = required
 LA = Lumen Advanced (High Efficiency lamp)

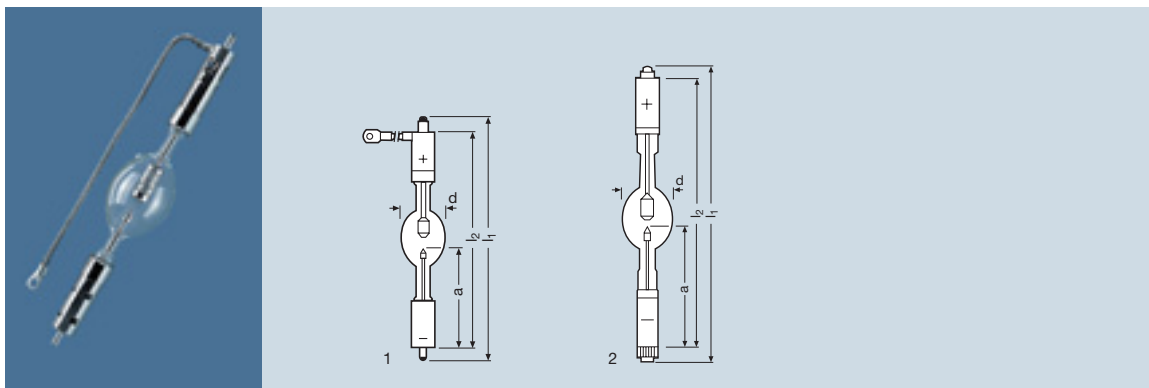
Literature:


For further information on XBO® lamps and notes for manufacturers of control gear, please refer to the following publications, available on request from OSRAM:












- Guidelines for control gear and igniters: xenon short-arc lamps XBO®
- References for control gear
- Technology and applications, XBO® cinema lamps
- Technical information on magnetic stabilisation of XBO® lamps

1) Distance from end of base to tip of electrode (cold)
 2) For vertical burning position: anode (+) on top
 3) Base with axial cable (560 mm)
 4) Measured in the vertical burning position

XBO® xenon short-arc lamps



Product reference	Product number	W	V	A	lm ³⁾	cd ³⁾	cd/cm ² ³⁾	A	t[h]	 ²⁾
XBO 5000 W/H OFR	4008321040428	5000	35	140	225000	27000	95000	100...150	1000	s15 p15
XBO 5000 W/HBM OFR	4008321057877	5000	34	140	225000	27000	95000	100...150	1000	s15 p15
XBO 5000 W/HTP OFR	4008321058454	5000	34	140	225000	27000	95000	100...150	1000	s15 p15
XBO 6000 W/HS OFR	4008321064851	6000	37	160	280000	40000	105000	110...165	750	s15 p15
XBO 6000 W/HTP OFR	4008321064868	6000	37	160	280000	40000	105000	110...165	750	s15 p15
XBO 6000 W/HSLA OFR	4008321129154	6000	35	170	280000	30000	160000	140...175	600	s15 p15
XBO 7000 W/HS OFR	4008321064875	7000	42	160	350000	35000	100000	110...165	650	s15 p15
XBO 8000 W/HS OFR	4050300623061	8000	45	175	400000	40000	110000	150...180	400	s15 p15
XBO 10000 W/HS OFR	4050300624532	9800	50	195	500000	47500	90000	160...200	400	s15 p15
XBO 12000 W OFR	4050300654539	12000	56	205	550000	50000	90000	180...210	300	s115

Product reference					 d [mm]	 l1 max. [mm]	 l2 max. [mm]	 a ¹⁾ [mm]			 No.	
XBO 5000 W/H OFR	req.	req.	req.		2.2x6.5	70	433	382	167.5	SFaX30-16	SFa28-18	1
XBO 5000 W/HBM OFR	req.	req.	req.		2.2x6.5	70	436	393	170.5	SFaX30-9.5	SFa30-7.9	1
XBO 5000 W/HTP OFR	req.	req.	req.		2.2x6.5	70	433	382	165	SFa27-14	SFc27-14	2
XBO 6000 W/HS OFR	req.	req.	req.		2.0x7.5	78	433	393	170.5	SFaX30-9.5	SFa30-7.9	1
XBO 6000 W/HTP OFR	req.	req.	req.		2.0x7.5	78	433	382	165	SFa30-14	SFc30-14	2
XBO 6000 W/HSLA OFR	req.	req.	req.		1.9x6.0	70	433	393	170.5	SFaX30-9.5	SFa30-7.9	1
XBO 7000 W/HS OFR	req.	req.	req.		2.6x9.0	78	433	393	170.5	SFaX30-9.5	SFa30-7.9	1
XBO 8000 W/HS OFR	req.	req.	req.		2.5x10.5	90	433	393	170.5	SFaX30-9.5	SFa30-7.9	1
XBO 10000 W/HS OFR	req.	req.	req.		2.4x12.0	90	433	393	170.5	SFa30-9.5	SFa30-7.9	1
XBO 12000 W OFR	req.	req.	req.		2.6x14.0	90	483	434	200	SFaX30-9.5	SFa39-15/110	1

BM = Base modified

OFR = Ozone-free version

S = Short

H = Suitable for horizontal burning position

req. = required

LA = Lumen Advanced (High Efficiency lamp)

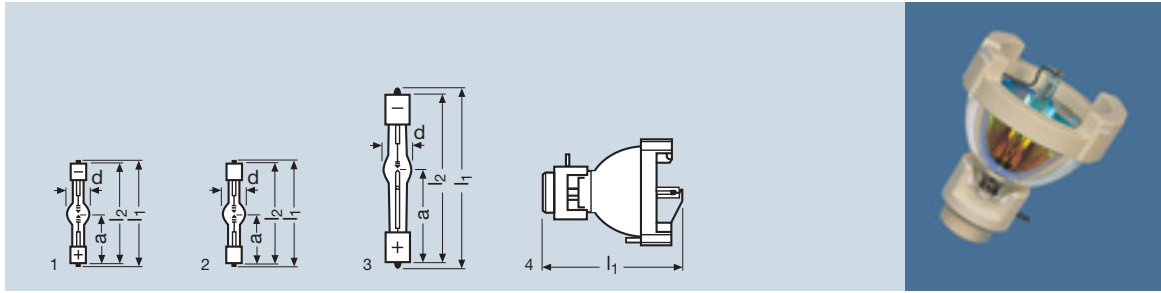
Safety:

Because of their high luminance, UV radiation and internal pressure in both the hot and cold state, XBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose.

Always use the protective jackets supplied when handling XBO® lamps. When handling the lamps without their protective jackets, always wear safety goggles, a face mask and gauntlets with wrist protectors.



HBO® short-arc mercury vapour lamps



Product reference	Product number	AC/DC	W	V	A	lm	lm/W	cd	cd/cm²
HBO 50 W/3	4050300506692	DC	50	23	2.2	1300	26	150	90000
HBO 50 W/AC	4050300507132	AC	50	L ₁ : 39...45	L ₁ : 1.3	2000	40	230	30000
	4050300507118			L ₂ : 34...39	L ₂ : 1.45				
HBO 100 W/2	4050300507095	DC	100	20.5	5.0	2200	22	260	170000
HBO 103 W/2	4050300382128	DC	100	22.5	4.4	3000	30	300	170000
HBO R 103 W/45 ²⁾	4050300405957	DC	100	22.5	4.4	–	–	–	–

Product reference										
HBO 50 W/3	0.2x0.35	200	s45	9.5	53	47	22	SFa6-2	SFa8-2	1
HBO 50 W/AC	0.3x1.0	100	s45	9.5	53	47	22	SFa6-2	SFa6-2	2
HBO 100 W/2	0.25x0.35	200	s90	10	90	82	43	SFa7.5-2	SFa9-2	3
HBO 103 W/2	0.25x0.25	300	s90	10	90	82	43	SFa7.5-2	SFa9-2	3
HBO R 103 W/45 ²⁾	–	300	p15	67	81.5	77	–	Pin	Pin	4

AC = Alternating current
DC = Direct current

HBO® are short arc lamps in which the discharge arc burns in an atmosphere of mercury vapour at high pressure.

Their main characteristics and advantages are as follows:

- High radiance
- Multi-line spectrum
- High radiant power in the UV and the visible range
- AC or DC operation

Applications:

Lamps rated at less than 200 W are predominantly used in scientific and technical applications such as:

- Fluorescence microscopy
- Fluorescence endoscopy
- Light guide applications
- Schlieren photography
- Hologram projection
- UV curing

Lamps rated at 350 W and above are used almost exclusively for the fabrication of electronic chips in microlithography.

Literature:

Further information can be found in the following brochure, obtainable on request from OSRAM:

- "Ready for your ideas!" Specialty lamps for innovative applications in medicine and industry

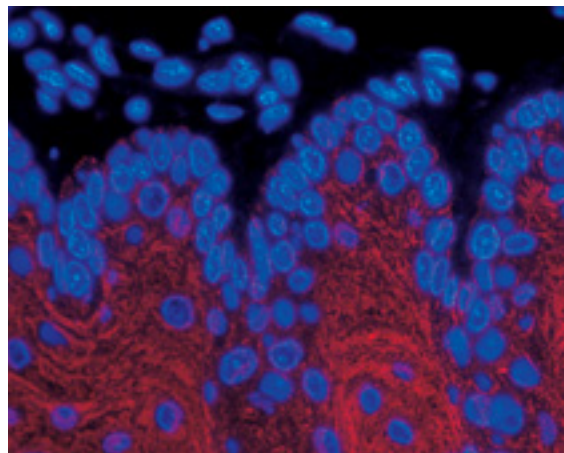
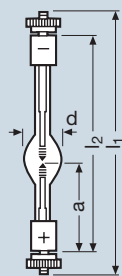


Photo: Zeiss, Fluorescence microscopy

1) Distance from end of base to tip of anode (cold)
2) The focus lies 45 mm in front of the mounting rim on the lamp axis (working distance)

HBO® short-arc mercury vapour lamps



Product reference	Product number	AC/DC	W	V	A	lm	lm/W	cd	cd/cm ²
HBO 200 W/2 ¹⁾⁴⁾		DC	200	47...65	3.1...4.2	10000	50	1000	40000
	4050300508153	AC		L ₁ :57...65	L ₁ : 3.6				
	4050300508283	AC		L ₂ :49...57	L ₂ : 4.2				
HBO 200 W/DC	4050300506791	DC	200	57	3.5	10000	50	1100	40000
HBO 200 W/4 ³⁾	4050300506715	AC	200	55...67	3.6	9500	47.5	950	33000
HBO 500 W/2		DC	500	67...85	5.9...7.4	30000	60	2850	30000
	4050300208206	AC		L ₁ :77...85	L ₁ : 7.1				
	4050300219875	AC		L ₂ :69...77	L ₂ : 7.8				

Product reference		t [h]		d [mm]	l ₁ max. [mm]	l ₂ max. [mm]	a ²⁾ [mm]		
HBO 200 W/2 ¹⁾⁴⁾	0.6x2.2	400/200 ⁵⁾	s20	17	128	102	40	SFc10-4 ¹⁾	SFc10-4 ¹⁾
HBO 200 W/DC	0.75x2.3	1000	s15	17	128	102	40	SFc10-4/15	SFc10-4/15
HBO 200 W/4 ³⁾	0.6x2.2	200	s20	17	128	102	40	SFc10-4	SFc10-4
HBO 500 W/2	1.1x4.1	400/200 ⁵⁾	s20	26.5	170	142	65.5	SFc13-4	SFc13-4

AC = Alternating current
DC = Direct current

The lamps shown on the following pages are designed for the manufacture of semiconductors, LCDs and PCBs. The types listed are just a small selection of the most common types.

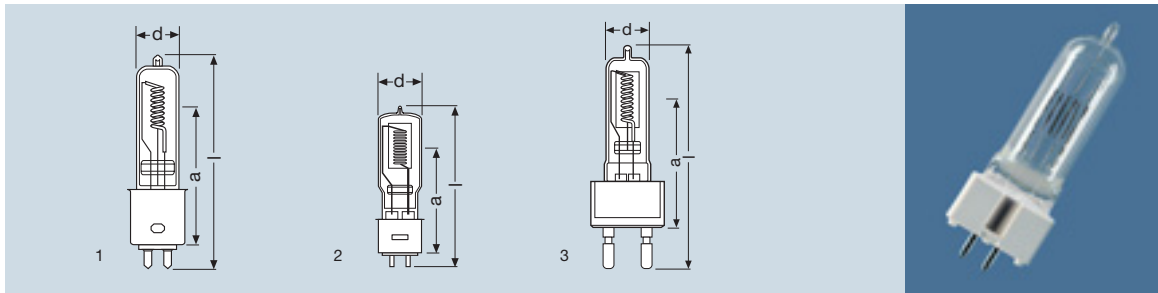
Literature:









For detailed information see the "Technology and application guide, HBO® Mercury short arc lamps for microlithography". This brochure is available on request.

1) HBO 200 W/2 and 500 W/2 can be operated with alternating or direct current
2) Distance from end of base to tip of anode (cold)
3) Lamp also available with increased radiation in the wavelength range below 450 nm for UV curing. Reference HBO 202 W/4

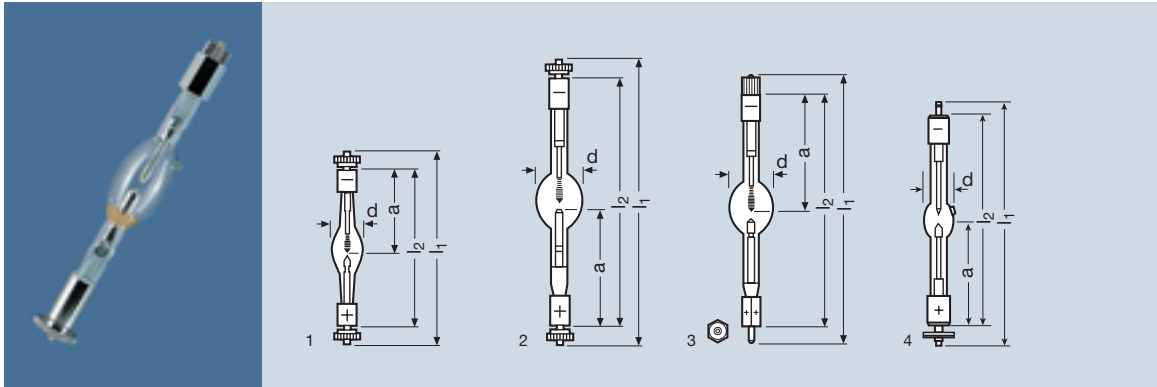
4) Also available as HBO 200 W/2 TM with threaded pin 8-32 UNC-3A
5) Reduced life in ac operation

Special lamps for IR applications



Product reference	Product number	ANSI	LIF	W	V		t [h]	Im
Special lamps for IR applications								
64743 HT	4050300506531	FEL	CP/77	1000	120	GX9.5	300	27500
93734	4050300350073	FEP	CP/77	1000	240	G9.5	300	23000
64773	4050300455280			2000	120	G9.5	300	65000
Product reference		 d [mm]	 l max. [mm]	 LCL a [mm]	 $\frac{b}{h}$		 No.	
64743 HT	any	20	101	60.3	7x18	20	1	
93734	any	20	102	60.3	5.7x27	12	3	
64773	any	20	125	77.5	7x30	12	2	

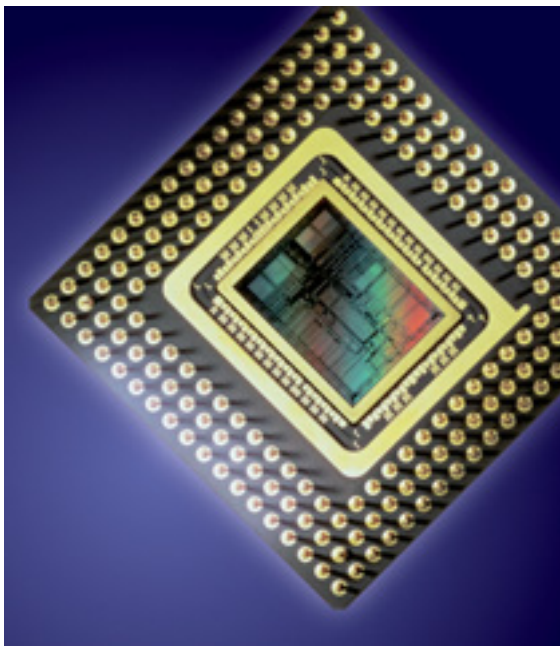
HBO® short-arc mercury vapour lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	W 350-450 nm	mW/sr 350-450 nm	t [h]	
HBO 250 W/BY	4050300803449	DC	250	40	6.0	—	—	2000	Convection ³⁾
HBO 350 W	4050300351599	DC	350 ²⁾	67.5	5.3	46	4600	600	Convection ³⁾
HBO 350 W/S	4050300258041	DC	350	68	5.15	50	4700	600	Convection ³⁾
HBO 500 W/A	4050300021089	DC	500	60	8.3	61	6200	800	Convection ³⁾
HBO 500 W/B	4050300275819	DC	500	48.5	10.3	60	5800	800	Convection ³⁾

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a ¹⁾ [mm]			No.
HBO 250 W/BY	Vertical ⁴⁾	20	152	125	62	2	SFc13-5	4
HBO 350 W	Vertical ⁴⁾	20	128	102	45	2.9	SFcY10-4 ⁵⁾	1
HBO 350 W/S	Vertical ⁴⁾	20	127	103	52.5	3	SFcY10-4 ⁵⁾	1
HBO 500 W/A	Vertical ⁴⁾	29	190	160	73	4.5	SFcY13-5/20 ⁶⁾	2
HBO 500 W/B	Vertical ⁴⁾	29	180	151.5	78.5	3	SFcY13-5/20 ⁷⁾	3

DC = Direct current

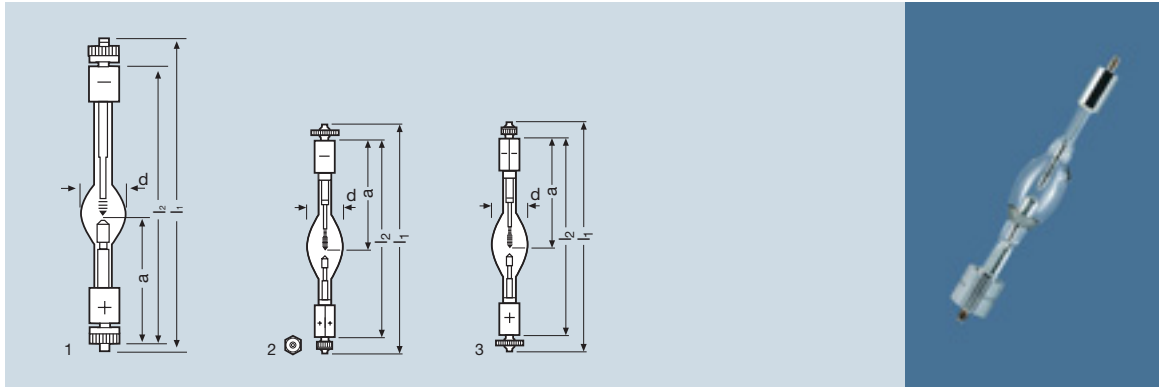


1) Distance from end of base to tip of anode or cathode (cold)
 2) Lamp suitable for pulsed operation between 250 W and 500 W
 Maximum permissible power is 350 W for constant power operation
 3) Cooling fins on cathode base
 4) Anode underneath

5) With 8-32 UNC-3 B thread
 6) With M5 x 0.9 thread
 7) Anode: SFCY13-5/20 with M5 x 0.9 thread
 Cathode: SFCY13-5/20 Ka hexagon base with M5 x 0.9 thread



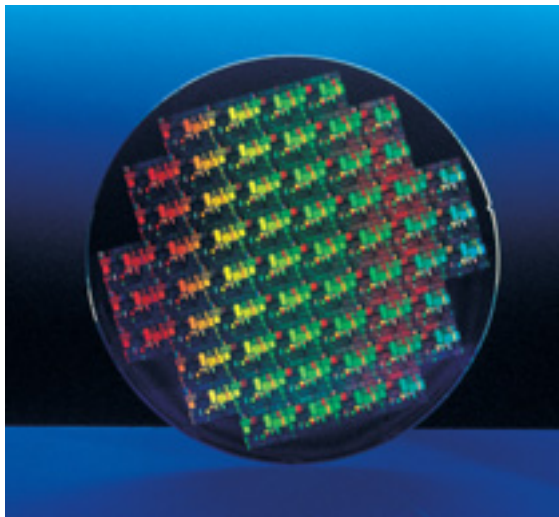
HBO® short-arc mercury vapour lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	W 350 - 450 nm	mW/sr 350-450 nm	t [h]	
HBO 1000 W/D	4050300288857	DC	1000	37.7	26.5	105	10800	1000	Convection
HBO 1000 W/CEL ³⁾	4050300412627	DC	750 (700/1000) ²⁾	47	16	85.4	8300	2500	Convection
HBO 1002 W/CEL ⁴⁾	4050300412634	DC	750 (700/1000) ²⁾	47	16	85	8300	2500	Convection

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ¹⁾				No.
HBO 1000 W/D	Vertical ⁵⁾	40	240	208	89.5	3	SFc15-6/25 ⁶⁾	SFc15-6/25 ⁶⁾	1
HBO 1000 W/CEL ³⁾	Vertical ⁵⁾	28	175	157	78.5	3	SFc15-6/20 ⁶⁾	SXFc15-6/20 ⁷⁾	2
HBO 1002 W/CEL ⁴⁾	Vertical ⁵⁾	28	175	157	78.5	3	SXFc15-6/20 ⁷⁾	SFc15-6/25 ⁶⁾	3

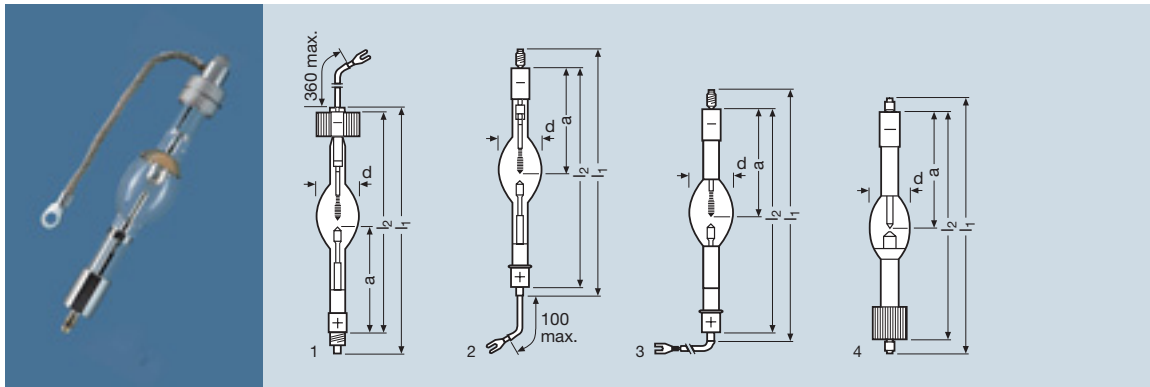
DC = Direct current



1) Distance from end of base to tip of anode or cathode (cold)
 2) Lamp suitable for pulsed operation between 700 W and 1000 W
 Maximum permissible power is 750 W for constant power operation
 3) Also available as HBO 1000 W/CL with 1500 h life.
 (Obtainable in Europe, Singapore and Japan only through Canon)
 (4050300324012)

4) Also available as HBO 1002 W/CL with 1500 h life.
 (Obtainable in Europe, Singapore and Japan only through
 Canon) (4050300324005)
 5) Anode underneath
 6) With thread M 6
 7) Hexagon base with M 6 threaded pin

HBO® short-arc mercury vapour lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	W 350-450 nm	mW/sr 350-450 nm	mW/sr 365nm±2.5	t [h]
HBO 1000 W/NEL	4050300412603	DC	750 (700/1000) ²⁾	47	16	82.0	8300	–	2500
HBO 1002 W/NEL	4050300412610	DC	750 (700/1000) ²⁾	47	16	82.0	8300	–	2500
HBO 1002 W/NIL	4050300461427	DC	750 (700/1000) ²⁾	25.8	27.1	18.7 ³⁾	–	2400 ³⁾	1500
HBO 1003 W/PI ⁴⁾	4050300739540	DC	700 (700/1000) ²⁾	25.8	27.1	18.7 ³⁾	–	2400 ³⁾	850

Product reference												
HBO 1000 W/NEL	Convection	Vertical ⁶⁾	28	190	168	84.5	3	SFaX14-5/21 ⁷⁾	SFa15-5/16 ¹⁰⁾			1
HBO 1002 W/NEL	Convection	Vertical ⁶⁾	28	190	168	78.5	3	SFc15-6/25 ⁸⁾	SFaX14-5/21 ⁷⁾			2
HBO 1002 W/NIL	Forced base cooling	Vertical ⁶⁾	29	187	168	78.5	3	SFcX15-6/25 ⁸⁾	SFaX14-5/21 ¹¹⁾			3
HBO 1003 W/PI ⁴⁾	Forced base cooling	Vertical ⁶⁾	29	195	167.5	85	3	SFc15-6/25 ⁸⁾	SFcX14-6/25 ⁹⁾			4

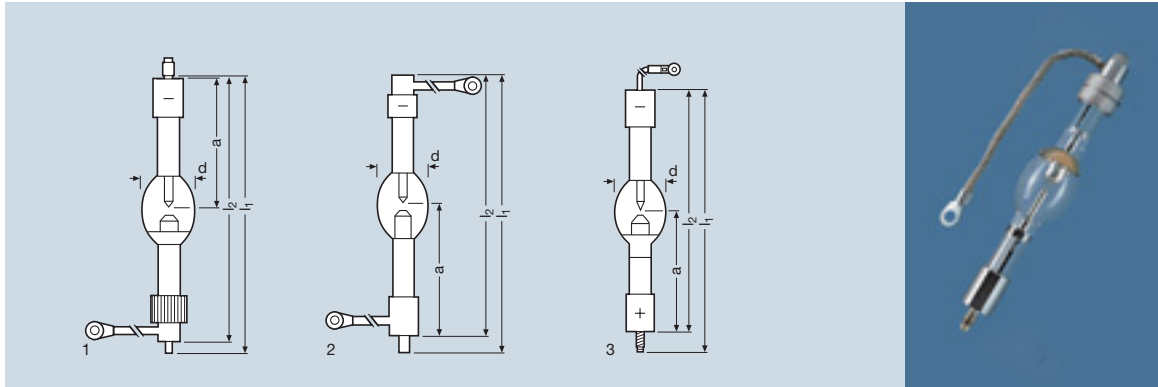
DC = Direct current

1) Distance from end of base to tip of anode or cathode (cold)
 2) Lamp suitable for pulsed operation between 700 W and 1000 W
 Maximum permissible power is 750 W for constant power operation
 3) l-line values in the 365 ± 2.5 nm range
 4) Also available as Longlife version HBO 1003 W/PIL with 1500 h life (4050300640327)

5) Cooling fins on cathode base
 6) Anode underneath
 7) Sleeve base with cable connection (M 5)
 8) Sleeve base with M 6 thread
 9) With cooling fins
 10) Sleeve base without thread
 11) Sleeve base with cable connection (M 5)



HBO® short-arc mercury vapour lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	mW/sr 365 mm ± 2.5	t [h]		
HBO 1500 W/PI ³⁾	4050300585956	DC	1500	23	65	4850	850 ³⁾	Forced base cooling	Vertical ⁶⁾
HBO 1500 W/CIL ⁴⁾	4050300461458	DC	1500	23	65	4850	1500	Forced base cooling	Vertical ⁶⁾
HBO 2001 W/NIL ⁵⁾	4050300461496	DC	1750	26	67	5500	1500	Forced base cooling	Vertical ⁶⁾

Product reference	d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ¹⁾					No.
HBO 1500 W/PI ³⁾	46	273	240	118	4	SFc27-10/35	SFc30-6/25 ⁸⁾	1	
HBO 1500 W/CIL	50	262	242	122	4	SFa27-20/22 ⁷⁾	SFa27-10/35 ⁹⁾	2	
HBO 2001 W/NIL	52	251	231	112.25	4.5	SFcX27-7/35 ⁷⁾	SFc27-10/35	3	

DC = Direct current

Safety:

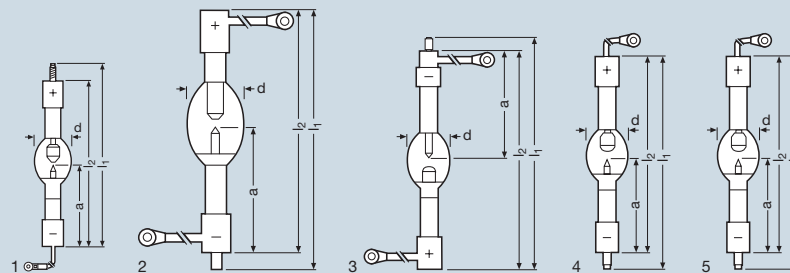
Because of their high luminance, UV radiation and internal pressure, HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose.


Mercury is released if the lamp breaks. **Special safety precautions must be taken.** Detailed information is available on request.






1) Distance from end of base to tip of anode or cathode (cold)
 2) Maximum permissible base temperature: 200 °C
 3) Also available as Longlife version HBO 1500 W/PIL with 1500 h life (4050300640334)
 4) Also available as Super Longlife version HBO 1500 CIEL with 2250 h life (4050300538204)

5) Also available as Super Longlife version HBO 2001 NIEL with 2250 h life (4050300538211)
 6) Anode underneath
 7) With cable connection (M 8)
 8) Cooling fins and cable connection (M 8)
 9) With cable connection (M 10)

HBO® short-arc mercury vapour lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	mW/sr 365mm ± 2.5	t [h]	 ²⁾
HBO 2000 W/NIL	4050300 490212	DC	1750	26	67	5200	1500	Forced base cooling
HBO 2001 W/CIL ⁴⁾⁵⁾	4050300 627564	DC	2000	26	77	6000	1500	Forced base cooling
HBO 2002 W/MA	4050300 634418	DC	2000 ⁶⁾	37	54	4200	1000 ³⁾	Forced base cooling
HBO 2002 W/NIL	4050300 772714	DC	1750	26	67	5100	1500	Forced base cooling
HBO 2011 W/NIL	4050300 652665	DC	2000	25	80	5700	1500	Forced base cooling

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a ¹⁾ [mm]				
HBO 2000 W/NIL	Vertical ⁷⁾	55	251	219	112.25	4.5	SFc27-7/35 ¹⁰⁾	SFc27-12/35	1
HBO 2001 W/CIL ⁴⁾	Vertical ⁷⁾	62	329	309	149	4.5	SFa33.5-10/50 ⁹⁾	SF33.5/50 ¹⁰⁾	2
HBO 2002 W/MA	Vertical ⁸⁾	62	292	272	138.5	3	SFa27-10/35 ¹⁰⁾	SF27/35 ¹⁰⁾	3
HBO 2002 W/NIL	Vertical ⁷⁾	55	254	234	107.75	4.5	SFc27-10x1.25/35	SFc27-7/35 ¹⁰⁾	4
HBO 2011 W/NIL	Vertical ⁷⁾	55	256	234	107.75	4.5	SFc27-12x1.5/35	SFc27-7/35 ¹⁰⁾	5

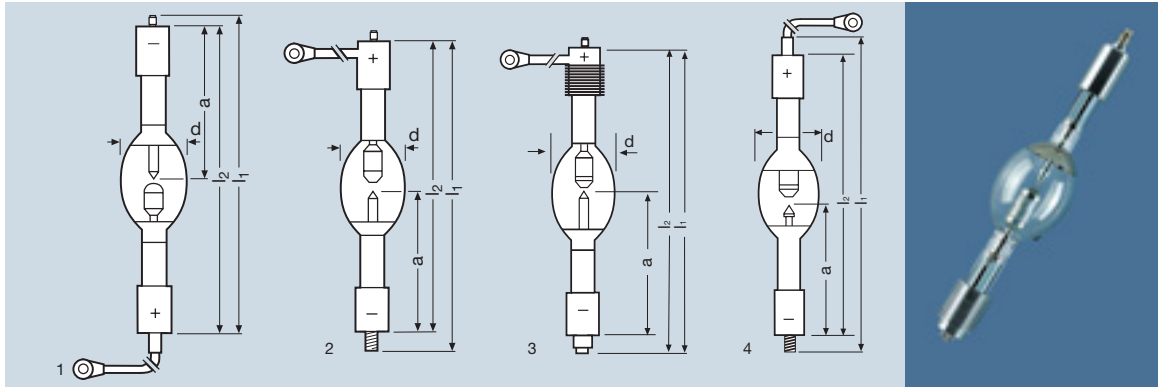
DC = Direct current


1) Distance from end of base to tip of anode or cathode (cold)
 2) Maximum permissible base temperature: 200 °C
 3) Depending on operating mode
 4) Obtainable in Europe, Singapore and Japan only through Canon
 5) Also available as Super Longlife Version HBO 2001 CIEL with 2250 h life (4050300**627663**)






6) Range 1700 to 2400 W
 7) Anode on top
 8) Anode underneath
 9) With cable connection (M 6)
 10) With cable connection (M 8)



HBO® short-arc mercury vapour lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	mW/sf 365nm ±2.5	t [h]	
HBO 2500 W/PIL	4050300634487	DC	2500	28	90	8200	1500	Forced base cooling
HBO 2501 W/NIL	4050300634432	DC	2500	23	110	10600	1500	Forced base cooling
HBO 2510 W/NIL	4050300634500	DC	2500	23	109	7800	1500	Forced base cooling
HBO 3500 W/PI ³⁾	4050300641669	DC	3150	23	148	9000	850	Forced base cooling
HBO 3501 W/PI ³⁾	4050300641676	DC	3400	23	148	9000	850	Forced base cooling

Product reference		d [mm]	h max. [mm]	l max. [mm]	a [mm]	¹⁾ 			
HBO 2500 W/PIL	Vertical ⁴⁾	62	340	312.5	149	6.7	SFc30-6.5/50	SFa30-6/50 ⁶⁾	2
HBO 2501 W/NIL	Vertical ⁵⁾	70	367	327	157.75	4.5	SFc33.5-14/50	SFa35.5-12/50 ⁷⁾	1
HBO 2510 W/NIL	Vertical ⁴⁾	70	367	327	157.75	4.5	SFc33.5-14/50	SFc33.5-12/50 ⁷⁾	4
HBO 3500 W/PI ³⁾	Vertical ⁴⁾	77	360	322	154	4.5	SFc32.5-6.7/50	SFaX40-6/50 ⁶⁾	3
HBO 3501 W/PI ³⁾	Vertical ⁴⁾	77	360	322	154	4.5	SFc32.5-6.7/50	SFaX40-6/50 ⁶⁾	3

DC = Direct current

Disposal:

HBO® discharge lamps contain small quantities of materials (such as mercury) which are harmful to the environment. In Germany, they are classified as special waste (Code 35326 "Mercury, residue containing mercury, mercury vapour lamps, fluorescent lamps, fluorescent tubes"). In other countries the relevant national regulations must be followed.

Literature:

For further information on HBO® lamps and notes for manufacturers of control gear, please refer to the following publications, available on request from OSRAM:

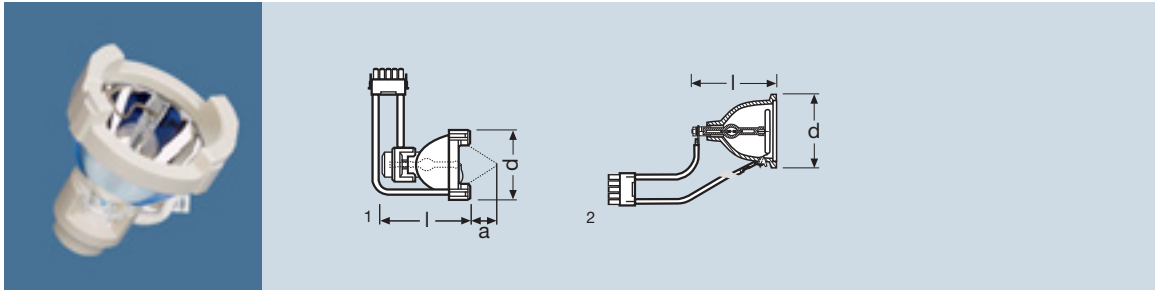
- "Specifications for power supply units for dc operated HBO® mercury short-arc lamps"
- "Specifications for power supply units for ac operated HBO® mercury short-arc lamps"
- "Specifications for igniters for HBO® mercury short-arc lamps"
- "Availability of power supplies and igniters"
- "Mercury short arc lamps HBO® for microlithography, Technology and Application"

1) Distance from end of base to tip of anode or cathode (cold)
 2) Maximum permissible base temperature: 200 °C
 3) Also available as Longlife version HBO 3500/350/PIL with 1500 h life
 4) Anode on top

5) Anode underneath
 6) With cooling fins and cable connection (M 10)
 7) With cable connection (M 8)

HXP®

mercury short arc lamps, long-life



Product reference	Product number	AC/DC	W	V	A	lm ¹⁾	t [h]	d max. [mm]	l max. [mm]	a	Light beam diagram	No.
HXP R 120W/45C VIS	4050300882772	AC	120	75	1.4	2800 ²⁾	2000	64	77	45	p20 ³⁾	1
HXP R 120W/45C UV	4050300666525	AC	120	75	1.4	- ²⁾⁴⁾	2000	64	77	45	p20 ³⁾	1
HXP R 120W/17C	4050300563084	AC	120	75	1.4	4400 ⁵⁾	2000	56 ⁶⁾	77	17.3	p20 ³⁾	2

HXP® are short arc lamps in which the discharge arc burns in an atmosphere of mercury vapour at very high pressure. They use tungsten halogen cycle and are designed exclusively for AC operation.

Their main characteristics are as follows:

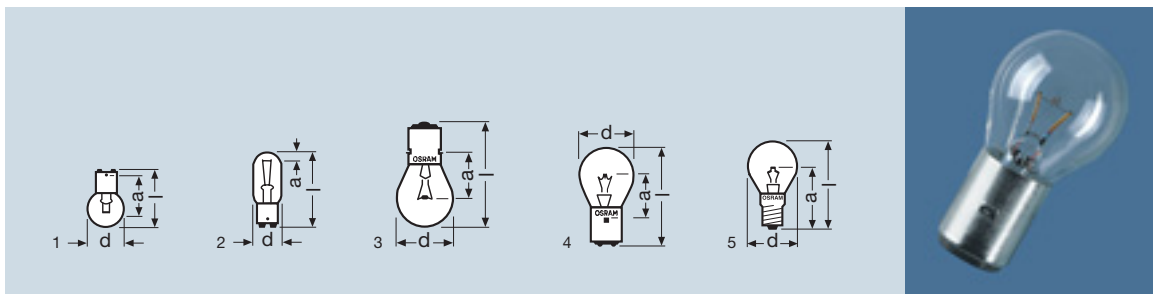
- High luminous efficacy
- Multi-line mercury spectrum superimposed on continuous spectrum
- Colour temperature of approx. 9500 K in the version VIS
- Elliptical reflector with interference coating for selective reflection
- Long life
- AC operation with rectangular current
- Approx. 95 mm long cables terminated with MATE-N-LOK⁷⁾ plug











1) Aperture lumens; typical initial value; for geometry of aperture see the respective footnote
 2) 5 mm diameter aperture in distance a
 3) Horizontal ± 20°

4) Typically 9.5 W initial aperture radiation in the range 320 ... 500 nm through 5 mm diameter aperture in distance a
 5) 5.0 x 3.8 mm² aperture in distance a
 6) Rectangular reflector rim 56 x 52 mm²
 7) MATE-N-LOK is trademark of AMP Inc.

Lamps without halogen, low voltage



Product reference	Product number	ANSI	LIF	V	W/A		t [h]
Lamps for optical and photo-electronic purposes							
8013	4050300206356			6	10 W	BA15d	200
8014	4050300206370			6	10 W	BA15s	600
8017	4050300017327			6	15 W	B15d	1000
8018	4050300206417		M/20	6	15 W	B15d	100
8022	4050300206677			12	50 W	BA20d	50
8024	4050300013817			12	40 W	BA20d	500
8100	4050300342122		F/74	6	5 A	E14	600

Product reference		 d [mm]	 l max. [mm]	 a [mm]			 No.
8013	h 105	25	46	30	1.7x0.9	100	1
8014	s 105	25	46	27	2.1x0.9	100	1
8017	universal	19	54	7	2.3x1.2	100	2
8018	h 30	19	52	5	1.5x1.9 ¹⁾	100	2
8022	h 15	35	69	39.5	3x2	100	3
8024	s 135	35	67	30	3x2.5	100	4
8100	s 105	35	65	45	2x2	100	5

These low-voltage lamps are characterised by their exact filament geometry. The glass bulb has high optical quality.

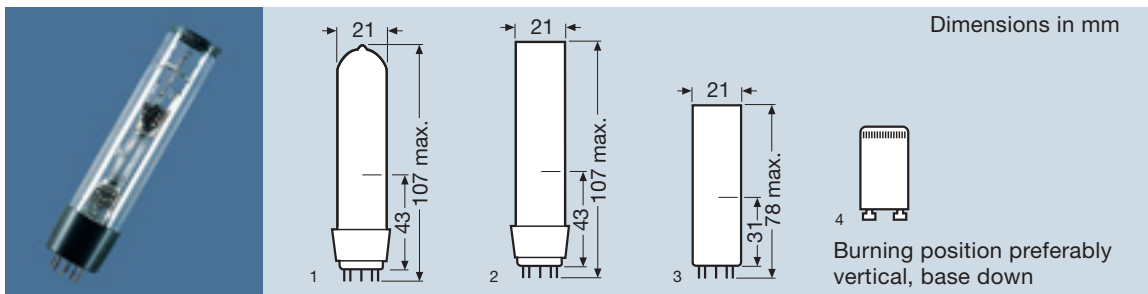
Caution: Discontinued, do not use for new designs.





Applications:

- As replacements in old luminaires used in technical and scientific applications
- As film projector lamps

1) Flat-core filament, filament area perpendicular to the lamp axis

Spectral lamps



Product reference	Product number		V	A	AC/DC	W				
Spectral lamps										
Cd/10	4050300210353	Cadmium	15	1.0	AC	15	15x6	Pico 9	1	
Cs/10	4050300213842	Caesium	10	1.0	AC	10	15x6	Pico 9	1	
He/10	4050300212258	Helium	60	1.0	AC	55	15x8	Pico 9	1	
Hg 100	4050300231310	Mercury	45	0.6...1	AC/DC	22...44	20x3	Pico 9	2	
HgCd/10	4050300211459	Mercury/Cadmium	30	1.0	AC	25	20x8	Pico 9	1	
K/10	4050300212197	Potassium	10	1.0	AC	10	15x6.5	Pico 9	1	
Na/10	4050300210377	Sodium	15	1.0	AC	15	15x6.5	Pico 9	1	
Na 10 FL	4050300006925	Sodium	16	0.57	AC	9	—	Pico 9	3	
Ne/10	4050300212210	Neon	30	1.0	AC	30	15x8	Pico 9	1	
Rb/10	4050300213866	Rubidium	10	1.0	AC	10	15x6	Pico 9	1	
Tl/10	4050300211435	Thallium	15	1.0	AC	15	8x3	Pico 9	1	
Zn/10	4050300212234	Zinc	15	1.0	AC	15	15x6	Pico 9	1	
Accessories	Starter St 191								4	
AC = Alternating current DC = Direct current										

Spectral lamps are discharge lamps that emit the line spectrums of inert gases and metal vapours with high luminance or radiance. They are used wherever a line spectrum or monochromatic radiation is required.

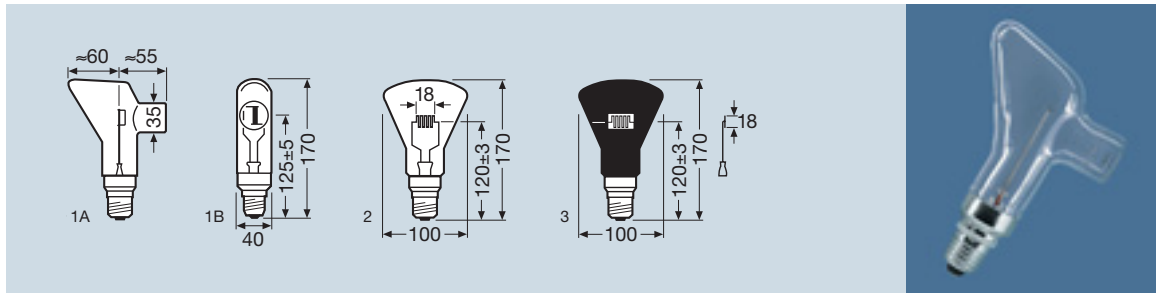
Applications:

Optics, radiation physics, spectroscopy, chemical engineering and medicine.

Safety:

Because of the high-intensity light, the UV radiation and the high internal pressure during operation, spectral lamps may only be used in enclosed purpose-built housings. Suitable filters should be used to ensure that the UV radiation is reduced to an acceptable level.

Lamps for scientific purposes



Product reference	Product number	V ⁵⁾	A ⁵⁾	K _{max.} ¹⁾	BLACK TEMP.				No.
Lamp types									
WI 17/G	4050300209104	9	16	–	2600	1.6 x 20 s	E27/51x39	1 ⁴⁾	
WI 40/G	4050300206783	31	6	2856	–	18 x 18 s + h	E27/51x39	2	
WI 41/G	4050300206806	31	6	2856	–	18 x 18 s + h	E27/51x39	3	
Product reference	cd		lm	BLACK TEMP.	K _{max.}				
Parameters									
WI 17/G	–	–	+	(+)	+ 250–800 nm				
	–	–	+	(+)	+ 250–2500 nm				
WI 40/G	(+)	+	–	(+)	–				
WI 41/G	+	–	–	+	–				

Lamps for scientific purposes

Lamps for scientific purposes are used mainly as comparison standards and calibration lamps for variables and measurements in photometry, colorimetry and radiation physics.

They are gas-filled incandescent lamps which are suitable for calibrating the following variables: luminous intensity, luminous flux, black body temperature, colour temperature and spectral radiance distribution.

Parameters

Parameters for which test certificates can be provided are marked + in the following table. Test certificates can also be provided for parameters marked (+) but the lamps have not been specifically designed for that parameter.

1) The colour temperature of 2856 K corresponds to light type A (DIN 5035)

2) s = standing (base down); h = hanging (base up)

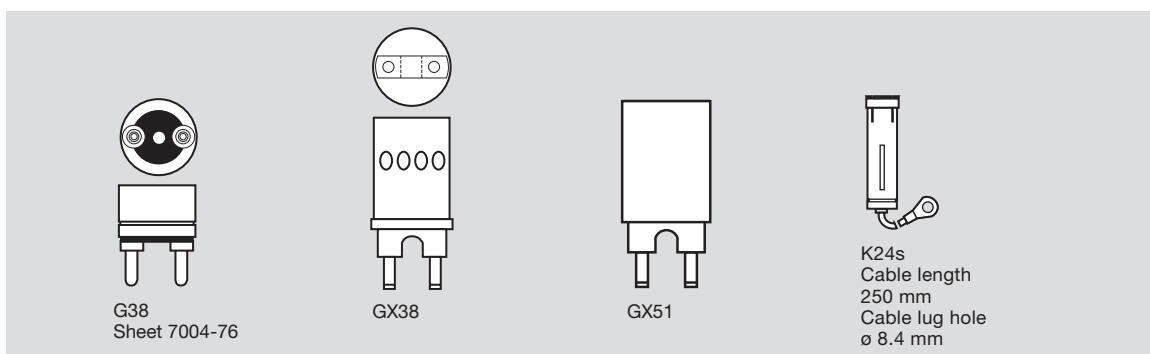
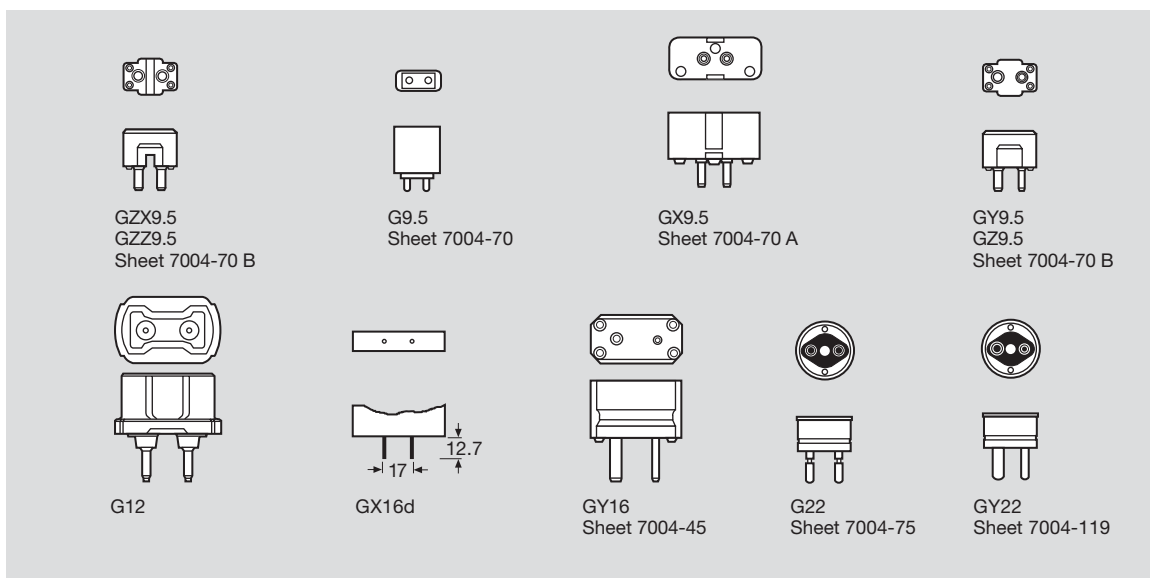
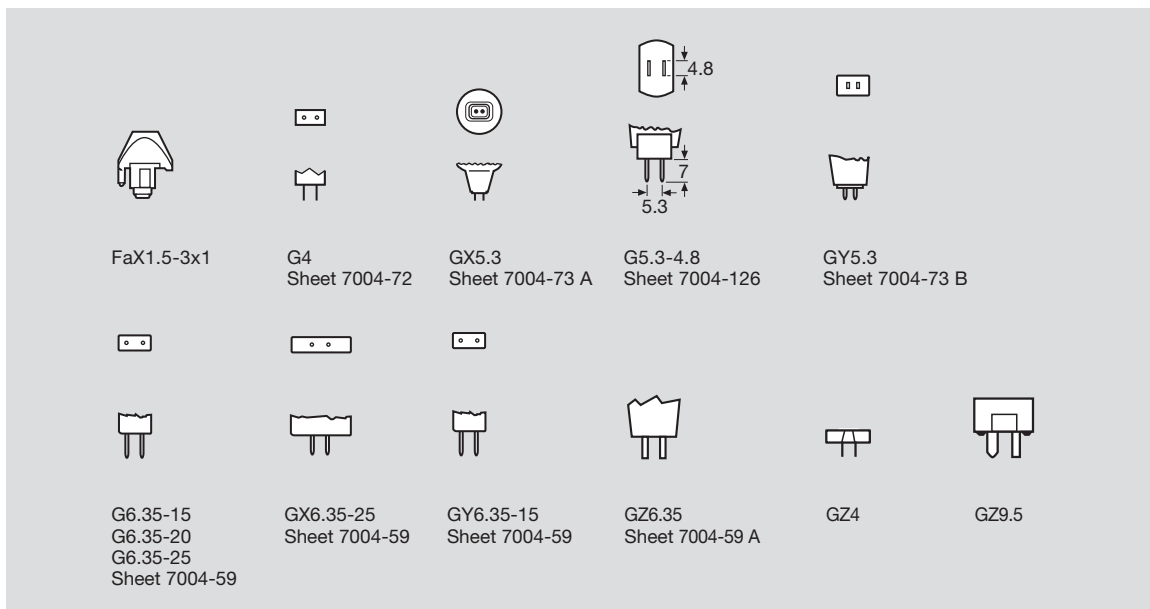
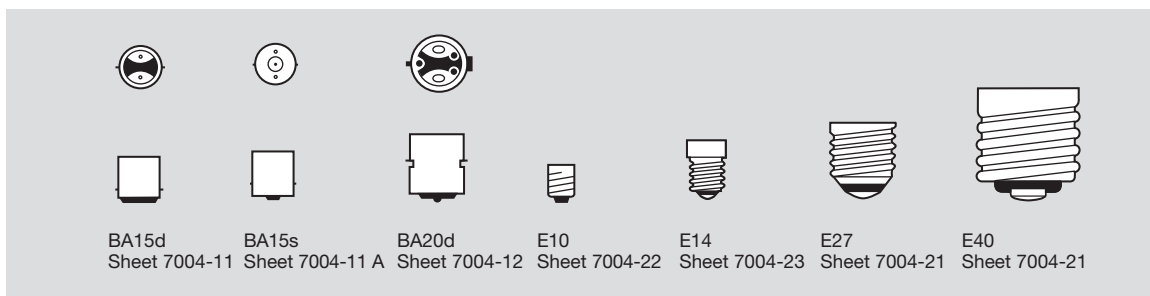
3) Only in addition to measuring the black temperature or the colour temperature

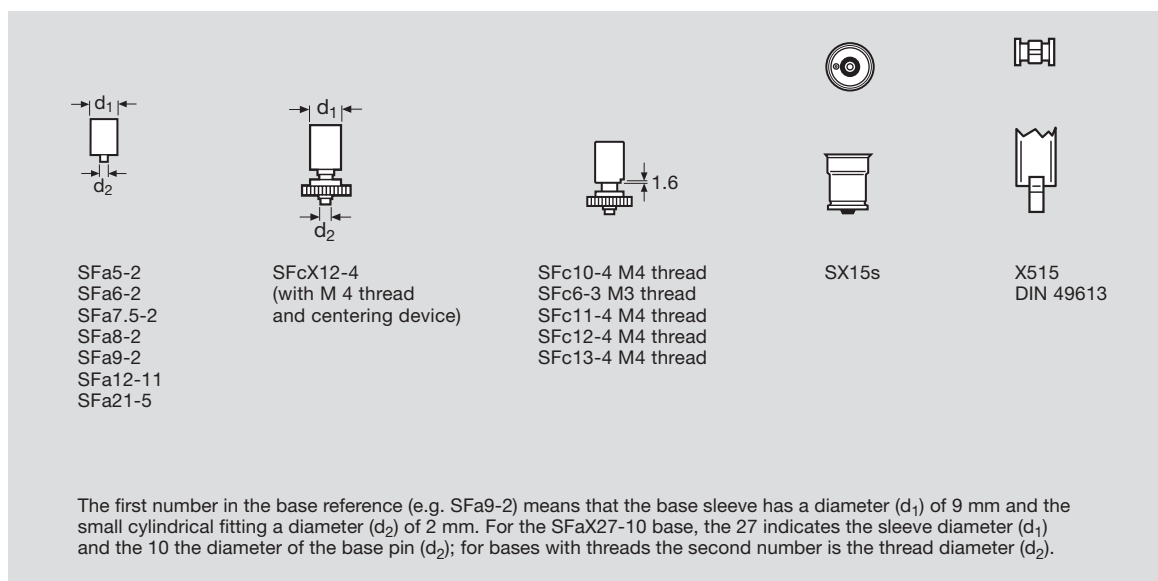
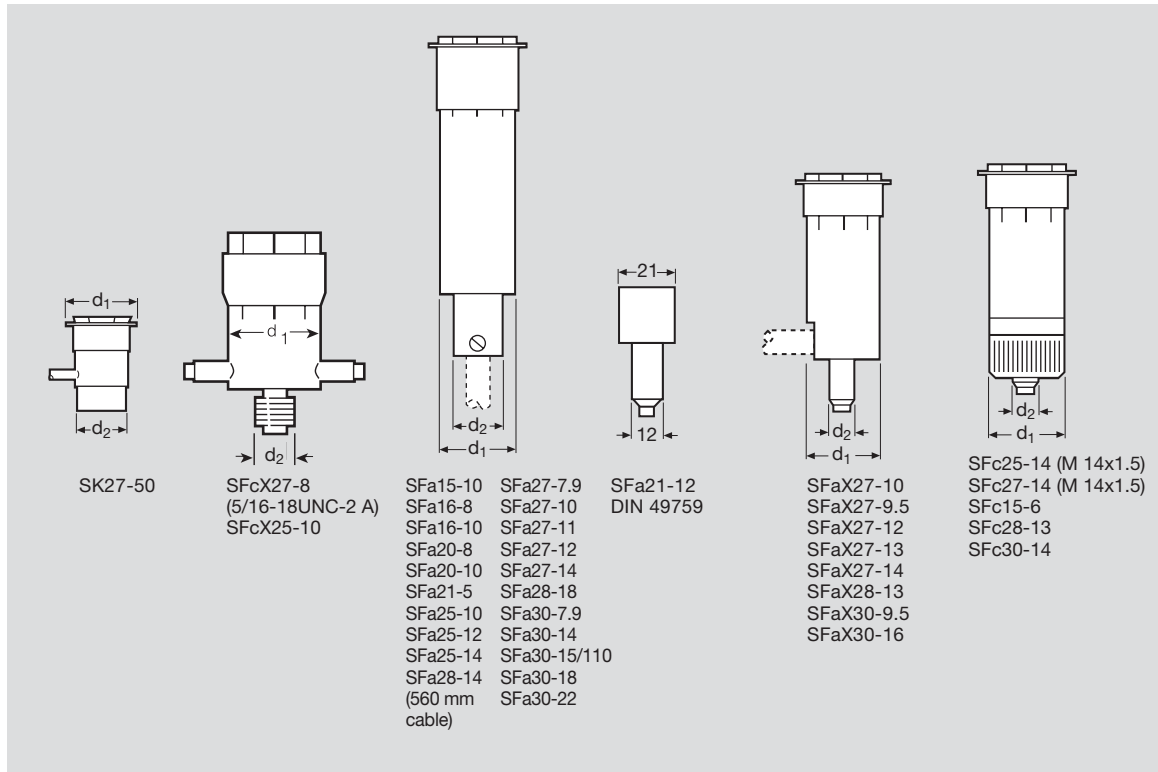
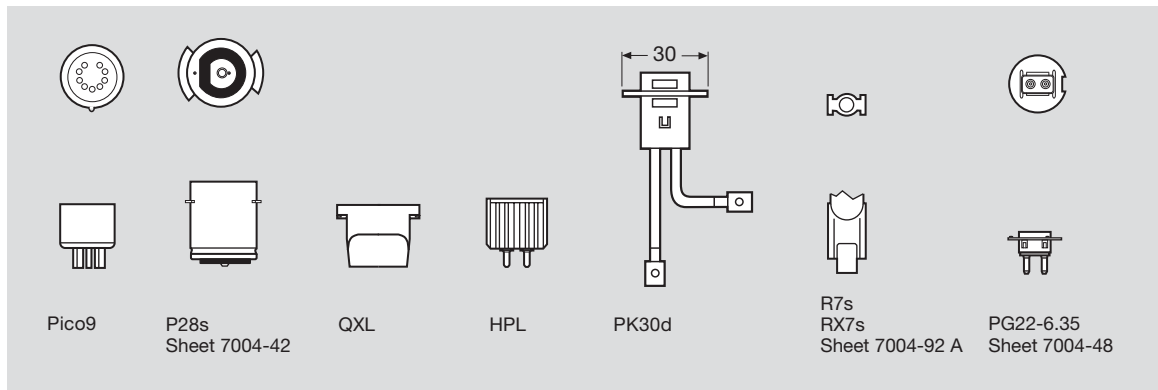
4) Side view Fig. 1A; front view Fig. 1B

5) Upper limit values for electrical data

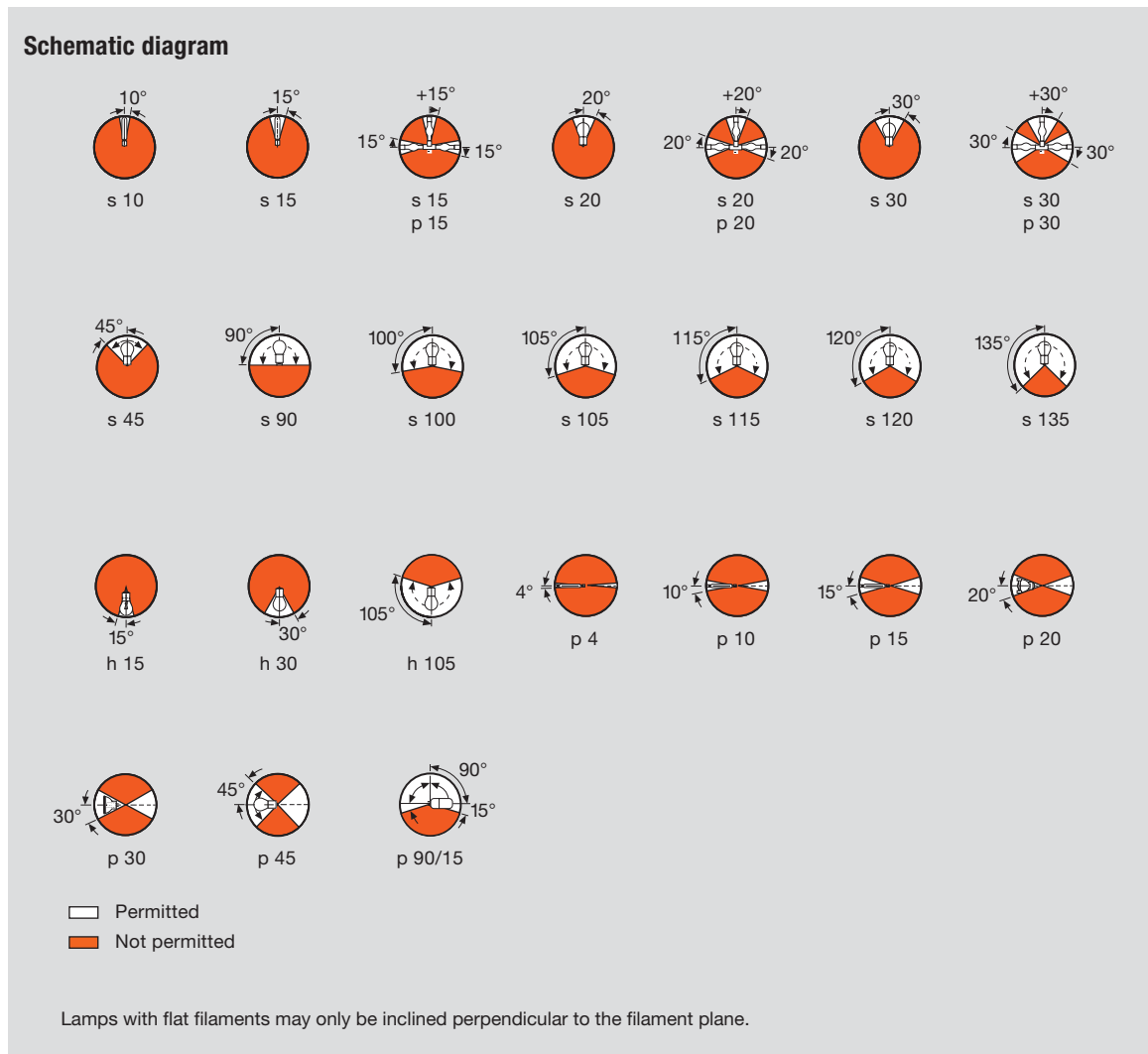
Bases

IEC/EN 60061-1





Burning positions



The lamps are guaranteed only if they are operated with approved control gear or with control gear declared to be suitable. A list of sources of control gear and igniters is available on request. With the exception of the XBO® product family, all discharge lamps contain small quantities of materials

which are harmful to the environment (such as mercury). In Europe, they therefore have to be disposed of under EEC Code 06 04 04*, Waste containing mercury, or 20 01 21*, Fluorescent tubes and other waste containing mercury. In other countries the relevant national regulations must be followed.

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Glossary of the most important lighting terms

As with any technical or scientific discipline, lighting technology has its own special terms and concepts for defining the characteristics of lamps and luminaires and for standardising the units of measurement.

The most important of these are described here.

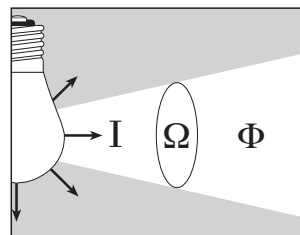
Light and radiation

Light is taken to mean the electromagnetic radiation that the human eye perceives as brightness, in other words that part of the spectrum that can be seen. This is the radiation between 360 and 830 nm, a tiny fraction of the known spectrum of electromagnetic radiation.

Luminous flux Φ

Unit of measurement: lumen [lm].

Luminous flux Φ is all the radiated power emitted by a light source evaluated with the spectral sensitivity of the eye and the photometric radiation equivalent k_m .



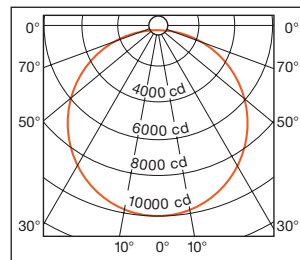
Luminous intensity I is a measure of the luminous flux Ω emitted in solid angle Φ .

Luminous intensity I

Unit of measurement: candela [cd].

Generally speaking, a light source emits its luminous flux Φ in different directions and at different intensities.

Luminous intensity is the luminous flux radiated in a particular direction (solid angle Ω).



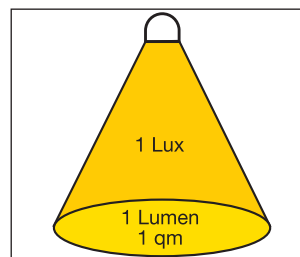
Polar diagram

Illuminance E

Unit of measurement: lux [lx].

Illuminance E is the ratio between the luminous flux and the area being illuminated.

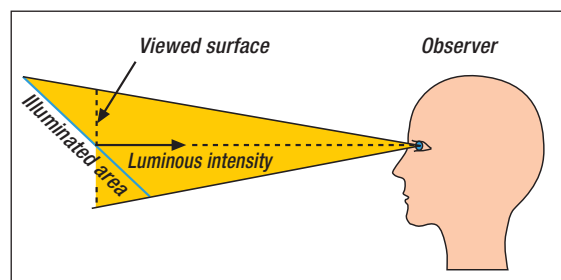
An illuminance of 1 lx occurs when a luminous flux of 1 lm is evenly distributed over an area of 1 m².



Illuminance E

Luminance L

Unit of measurement: candela per square meter [cd/m²]. The luminance L of a light source or an illuminated area is a measure of the impression of brightness.



Luminance L

Glossary of the most photometric formulae:

Luminous intensity I [cd]	Luminous flux Solid angle Ω [sr]	Luminance L [cd/m ²]	Luminous intensity [cd] Viewed luminous area [m ²]
Illuminance E [lx]	Luminous flux falling on area [lm] Illuminated area [m ²]	Luminous efficacy η [lm/W]	Generated luminous flux [lm] Electrical power consumed [W]

Luminous efficacy η

Unit of measurement: lumens per watt (lm/W).
Luminous efficacy η indicates the efficiency with which the electrical power consumed is converted into light.

Colour temperature

Unit of measurement: Kelvin [K].
The colour temperature of a light source is defined in comparison with a "black body radiator" and plotted on what is known as the "Planckian curve". The higher the temperature of this "black body radiator" the greater the blue component in the spectrum and the smaller the red component. An incandescent lamp with a warm white light, for example, has a colour temperature of 2700 K, whereas a daylight fluorescent lamp has a colour temperature of 6000 K.

Light colour

The light colour of a lamp can be neatly defined in terms of colour temperature. There are three main categories here:

- Warm White < 3300 K
- Cool White 3300-5000 K
- Daylight > 5000 K.

Despite having the same light colour, lamps may have very different colour rendering properties owing to the spectral composition of their light.

Colour rendering

As a rule, artificial light should enable the human eye to perceive colours correctly, as it would in natural daylight. Obviously, this depends to some extent on the location and purpose for which light is required.

The criterion here is the colour rendering property of a light source. This is expressed as a "general colour rendering index" (R_a).

The colour rendering index is a measure of the correspondence between the colour of an object (its "self-luminous colour") and its appearance under a reference light source. To determine the R_a values, eight test colours defined in accordance with DIN 6169 are illuminated with the reference light source and the light source under test. The smaller the discrepancy, the better the colour rendering property of the lamp being tested.

A light source with an R_a value of 100 displays all colours exactly as they appear under the reference light source. The lower the R_a value, the worse the colours are rendered.

Luminaire efficiency

Luminaire efficiency (also known as light output ratio) is an important criterion in gauging the energy efficiency of a luminaire. This is the ratio between the luminous flux emitted by the luminaire and the luminous flux of the lamp (or lamps) installed in the luminaire.

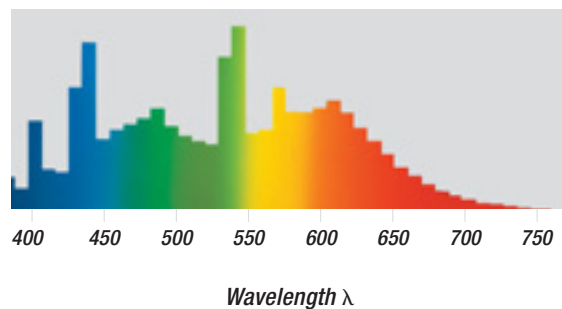
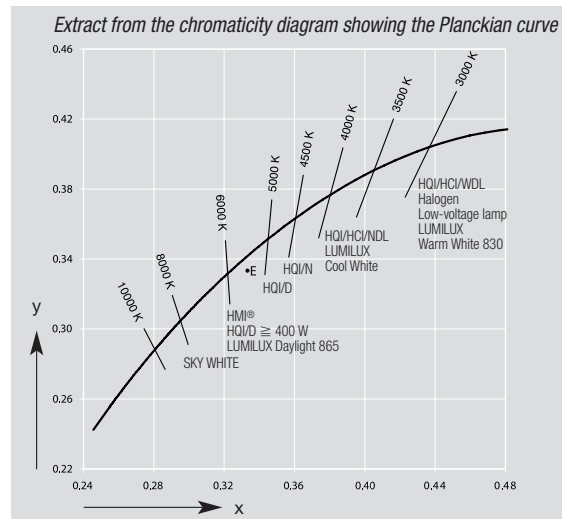
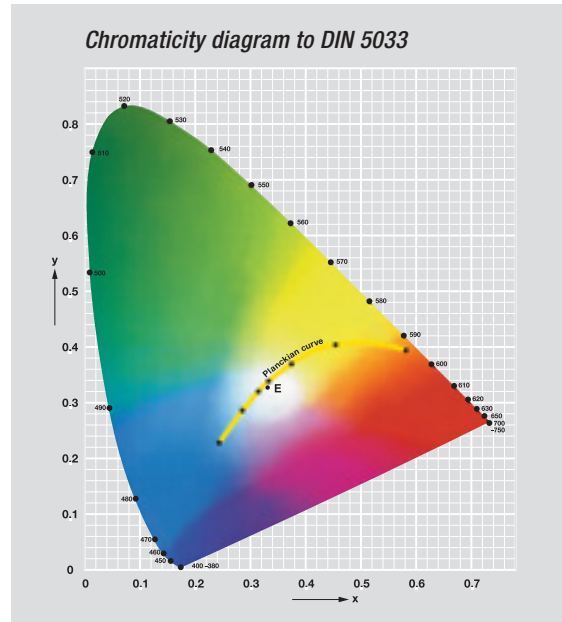
For detailed information on indoor lighting with artificial light, see DIN 5035.

Average life

The average life of a lamp is an average of the lives of individual lamps operated under standard conditions (50% failure = average rated life).

Service life

Service life is a simple practical measure of the economical life of a lamp. It is the number of hours of operation after which the system luminous flux (i.e. the product of the relative luminous flux and the relative proportion of lamps still in operation) is around 80% of the initial value.



Daylight spectrum of a BIOLUX® fluorescent lamp. The radiation is very evenly distributed over the entire visible range.

GENERAL INFORMATION

Sales and deliveries are subject to the OSRAM terms of supply and payment valid on the day the sales agreement is concluded.

Operational data and dimensions are subject to the usual slight tolerances.

OSRAM reserves the right to make technical modifications without notice.

All supplies are subject to availability.

® = Registered trademark

Lamps are design rated wattage in accordance with ANSI standard 78.370-1982 (As Amended)

The use of any ballasts other than those which have been approved or declared suitable will invalidate the warranty.

References for control gear and igniters are available on request.

Generally speaking, Display/Optic lamps may only be operated in casings that prevent exposure to UV light and prevent glass shards escaping.

With the exception of the XBO® product family, all discharge lamps contain small quantities of materials (such as mercury) which are harmful to the environment. In Europe they must therefore be disposed of appropriately under EEC Code 06 04 04* (Waste containing mercury) or 20 01 21* (Fluorescent tubes and other waste containing mercury). In other countries, relevant national regulations must be observed.

CE LABELLING FOR LUMINAIRES, LAMPS AND ACCESSORIES

Since January 1st 1996, products that fall under the scope of the EC guidelines for electromagnetic compatibility (EMC Guidelines) must carry the CE label. The CE label indicates compliance with the principal requirements of these guidelines. From January 1st 1997, the same will apply to products that come under the low voltage guidelines. Of course, all our products meet the requirements of the relevant EC guidelines and therefore carry the CE label.

Notes on CE labelling:

1. CE labelling as a requirement for marketing products

From January 1st 1996, manufacturers and importers are obliged and are responsible for marking products subject to the EMC regulations with the CE label either directly on the product or on its packaging or on accompanying documentation. The CE label is a requirement for sales within the EU and must therefore be applied before a product can be marketed. By applying the CE label to their products, manufacturers and importers are

confirming that their products comply with the "basic requirements" of special European guidelines and that they meet the stated objectives of the guidelines (electromagnetic compatibility, for example).

As a rule, these "basic requirements" are met if the products were manufactured in compliance with the relevant harmonised European standards.

2. The CE label is an administrative mark

The CE label is an administrative mark addressed to the national inspection

agencies. The CE label indicates to these agencies that the labelled product complies with European law at the time of its marketing.

3. Neither retailers nor consumers have the right to inspect the conformity certificates of the manufacturers

The right to request and inspect conformity certificates is reserved exclusively for those market inspection agencies responsible for checking that electrical/electronic products comply with statutory safety requirements.

4. The CE label is not a seal of quality or an approval mark

CE labelling relates solely to compliance with the statutory "basic requirements" contained in certain guidelines. In no way therefore is it an indicator of the quality of the product. As an administrative label required by law and of no value to consumers or users, the CE label should not be confused with the approval marks (such as ENEC and BEAB marks) issued by independent inspectorates. These inspectorates do not even check whether or not a product carries the CE label legitimately.

Disposing of your lamps and luminaires:

The new EU directive relates, among other things, to luminaires (with the exception of luminaires in households), fluorescent lamps, compact fluorescent lamps, discharge lamps including high-pressure sodium lamps, metal halide lamps and low-pressure sodium lamps. Starters, control gear and light emitting diodes are classed as luminaire components and as such are part of the luminaire disposal process.

All OSRAM products that need to be disposed of under the WEEE directive are labelled with the symbol shown here.



All manufacturers must register with their relevant national authority. Products from non-registered manufacturers may no longer be marketed after November 24, 2005.

In Germany, OSRAM is registered as a manufacturer in the "Elektro-Altgeräte-Register" [Old Electrical Equipment Register] (EAR) as number **DE 71568000**.

In addition, there are individual regulations governing the disposal of lamps and luminaires in the member states of the EU and also in Norway and Switzerland. For more information please contact the local OSRAM company.

Together with the European lamp manufacturers in the European Lamp Companies Federation (ELC), OSRAM has developed a model for disposing of lamps cleanly and efficiently.

The primary objectives are to reduce the load on the environment, safeguard valuable resources and protect the environment and public health.

All consumers (commercial and domestic) are obliged to return old lamps for separate disposal. Collection points have been set up for this. Consumers do not have to sort the old lamps by manufacturer or by product age. Lamps from private households and businesses can be disposed of at local recycling centres. Large quantities of lamps can be disposed of via the Lightcycle scheme.

Incandescent lamps and tungsten-halogen lamps do not contain any substances that are harmful to the environment and can be thrown away with household waste.

Discharge lamps are fragile and contain special substances so they have to be disposed of carefully. The lamps are therefore collected separately – tubular fluorescent lamps in rung-type pallets, all other lamps in grid boxes.

On behalf of lamp manufacturers, Lightcycle organises the logistics processes for disposing of the lamps cost-effectively and with minimal impact on the environment, both directly and at local recycling centres. Lightcycle bundles the volume to be transported and coordinates the collection logistics. You drop off the old lamps and Lightcycle does the rest.

Disposal of luminaires from commercial applications is handled by Interseroh. OSRAM is a contract partner of Interseroh. From March 23, 2006 luminaires can be disposed of directly throughout Germany at any one of 100 Interseroh collection points. In addition to dropping off luminaires at collection points, luminaires can also be collected from wholesalers, installers, building sites or customers within a reasonable period. There are basically no volume restrictions on collection jobs. For luminaire volumes in excess of 15 m³ Interseroh can provide an individual container as a permanent collection point. You drop off the luminaires and Interseroh does the rest.

The latest information for Germany can be found on the internet at:

Lightcycle www.lightcycle.de

ISD Interseroh www.interseroh-weee.de

German Ministry for the Environment, Nature and Reactor Safety www.bmu.de

German Central Association of Electrical Engineering and the Electrical Industry www.zvei.org

Stiftung Elektroaltgeräte Register (Old Electrical Equipment Register Foundation) www.stiftung-ear.de

German Environment Office www.uba.de

European Lamp Companies Federation

www.elcfed.org

RoHS Directive:

Greatly reduced mercury content

As of July 1, 2006, this EU Directive will prohibit the use of certain hazardous substances. The mercury content in some discharge lamps will be restricted. As a company committed to the protection of the environment, OSRAM is doing more than just meeting statutory requirements. Our objective is to reduce hazardous substances such as mercury to the absolute minimum needed and to promote the development, for example, of efficient mercury-free lighting systems. Because it promotes the use of new environmentally friendly technologies and materials we see the RoHS Directive (**R**estriction of **H**azardous **S**ubstances) as an exciting challenge with long-term benefits for health and the environment.

1) From 23.03.2006 there will be an obligation in Germany to take products back

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