Modern technologies for professional light

High-tech light for precision tasks
Concentrating all the entrepreneurial activities, including marketing, development, production, inspection, logistics and sales, in the special professional sector of light and radiation has led to close contact with customers; this has had a positive effect on quality, service and technological competence. The technical refinements on our high-tech short-arc lamps metal halide lamps and halogen lamps are as varied as the applications for which they are used – applications that call for particularly high levels of precision. In theatres and cinemas, for filming, for microchip fabrication, in medicine or in airport apron lighting, people rely on special lamps from the Display/Optic division each and every day.

The Display/Optic division is divided into four Business Units: Display Systems, Entertainment, Cinema and Semiconductor & Medical.

Contents

General information

- The standard small tolerances apply to rated values and dimensions
- 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
- 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

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.

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.

Photo: Intel

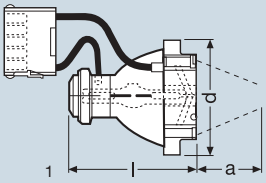
The cinema now performs a whole host of functions. It is a meeting place for people, young and old; it is a place where dreams and imagination come alive; it is where pictures and sound come together. And, lest we get carried away with the magic of the cinema, we should remember that it is an industry 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.

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/cm²
VIP® halogen discharge lamps							
VIP R 273/45	4008321**039989**	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

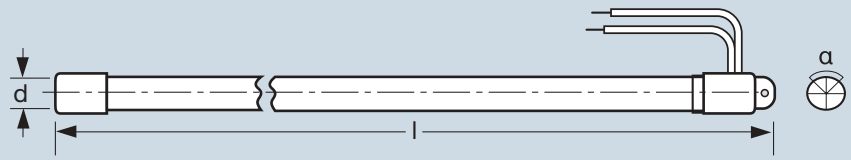
VIP® lamps from OSRAM are used in light valve projectors (video projectors) based on LCD or DLP™ technology. Their spectral distribution has been adapted to the colour filter curves of the projectors and their service life optimised for maximum luminance and luminous efficacy. These benefits make them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

1) Arc tube data

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



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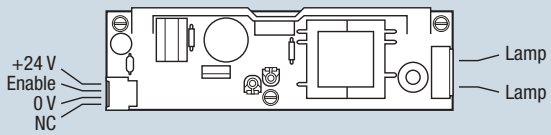
Product reference	Product number	W		Ra	Lx 8 mm	TUBE d [mm]	l [mm]		No.	
LINEX® for ECG operation only										
A2-10W35	4008321**039989**	35	Daylight	1 B	50000	10	510	80	1	40
A3-10W40	4050300**652603**	35	Daylight	1 B	70000	10	392	80	1	50
A4-10W24	4050300**652566**	24	Daylight	1 B	60000	10	277	80	1	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



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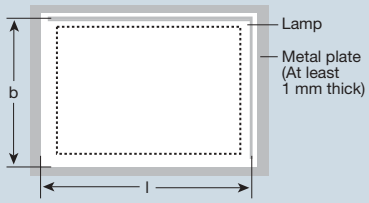
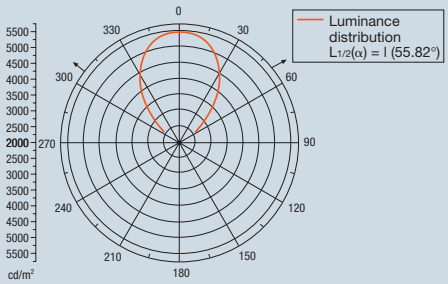
Product reference	Product number		V min.-max.		kHz ECG	A	W SYSTEM
QUICKTRONIC® for OSRAM LINEX®							
QT LINEX 1x40/24	4050300**666662**	40	21.6…26.4		> 100	1.7	40
QT LINEX 1x24/24	4050300**666709**	24	21.6…26.4		> 100	1.0	24

Product reference	l [mm]	b [mm]	h [mm]	g	No.	
QT LINEX 1x40/24	135	40	28	130	1	50
QT LINEX 1x24/24	135	40	28	130	1	50

OSRAM PLANON®





Product reference	Product number	W	Ra 2)	K 2)	cd/m²	AC/DC	W
OSRAM PLANON®							
PLANON 10.4″/880 6	4050300**784304**	24	86	8000	5200	24 V DC	20 % PWM1)
PLANON 15.0″/880 6	4050300**784366**	40	86	8000	4400	24 V DC	20 % PWM1)
PLANON 18.1″/880 8	4050300**789187**	80	86	8000	5100	24 V DC	20 % PWM1)
PLANON 21.3″/880 8	4050300**803906**	65	86	8000	4000	24 V DC	20 % PWM1)
PLANON 21.3″/840 9	4008321**040046**	75	86	4000	4800	24 V DC	20 % PWM1)

Product reference	l [mm]	b [mm]	h [mm]		ECG reference
PLANON 10.4″/880 6	231	174	8.5	5	QT PLANON 10.4″/20/24 6
PLANON 15.0″/880 6	324	258	8.5	5	QT PLANON 15.0″/40/24 6
PLANON 18.1″/880 8	384	317	8.5	5	QT PLANON 18.1″/80/24 8
PLANON 21.3″/880 8	441	359	8.5	5	QT PLANON 21.3″/80/24 8
PLANON 21.3″/840 9	441	359	8.5	5	QT PLANON 21.3″/75/24 9

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

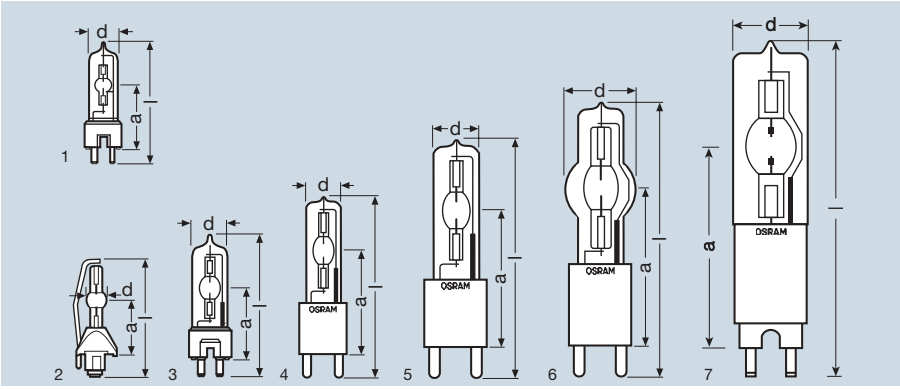
Mercury-free technology:

- 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

1) PWM = Pulse Width Modulation
2) Nominal values



Product reference	Product number	W	V	A		lm	l max. [mm]
HMI® metal halide lamps, single-ended, 6000 K							
HMI 200 W/SE	4050300**307961**	200	70	3.0 ⎍	GZY9.5	16000	80
HMI 250 W/SE	4050300**239064**	270	50	5.4 ⎍	FaX1.5	16200	84
HMI 400 W/SE	4050300**388441**	400	70	6.9 ~	GZZ9.5	33000	110
HMI 575 W/SEL	4050300**422275**	575	95	7.0 ~	G22	49000	145
HMI 1200 W/SEL XS	4008321**062109**	1200	100	13.8 ~	G38	110000	200
HMI 2500 W/SE XS	4050300**284293**	2500	115	25.6 ~	G38	240000	225
HMI 4000 W/SE XS	4050300**309743**	4000	200	24.0 ~	G38	380000	250
HMI 6000 W/SE XS	4050300**564067**	6000	123	55.0 ~	GX38	600000	360
HMI 12000 W/SE XS	4050300**650418**	12000	160	84 ~	GX38	1150000	450
HMI 12000 W/SE/GX51 XS	4008321**098962**	12000	160	84 ~	GX51	1150000	455
HMI 18000 W/SE/GX51 XS	4008321**098955**	18000	225	88 ~	GX51	1600000	260

Product reference	d [mm]	a [mm]		t [h]		No.
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	30	70	7	1000	universal	4
HMI 1200 W/SE	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

⎍ = Square-wave ac current
~ = Sine wave ac current

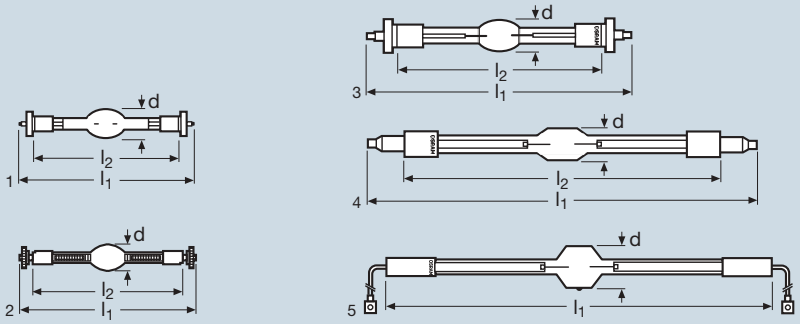
W = Wattss
SE = Single ended
XS = eXtreme Seal (max. permissible foil temperature 450 °C)

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	l_1 max. [mm]
HMI® metal halide lamps, double-ended, 6000 K							
HMI 575 W/GS XS	4050300**575148**	575	95	7.0 ~	SFc10	49000	136
HMI 1200 W/S XS[1)]	4050300**480800**	1200	100	13.8 ~	SFc10-4	110000	136
HMI 1200 W/GS	4050300**239774**	1200	100	13.8 ~	SFc15.5	110000	220
HMI 2500 W/GS	4050300**302775**	2500	115	25.6 ~	SFa21	240000	355
HMI 2500 W/S XS[1)]	4050300**025780**	2500	115	25.6 ~	SFa21	240000	210
HMI 4000 W XS	4050300**216553**	4000	200	24.0 ~	SFa21	380000	405
HMI 6000 W XS	4050300**304137**	6000	123	55.0 ~	S25.5	570000	450
HMI 12000 W/XS	4050300**857763**	12000	160	84.0 ~	S30	1150000	470
HMI 18000 W/XS	4050300**296432**	18000	225	88.0 ~	S30	1700000	500

Product reference	d [mm]	l_2 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

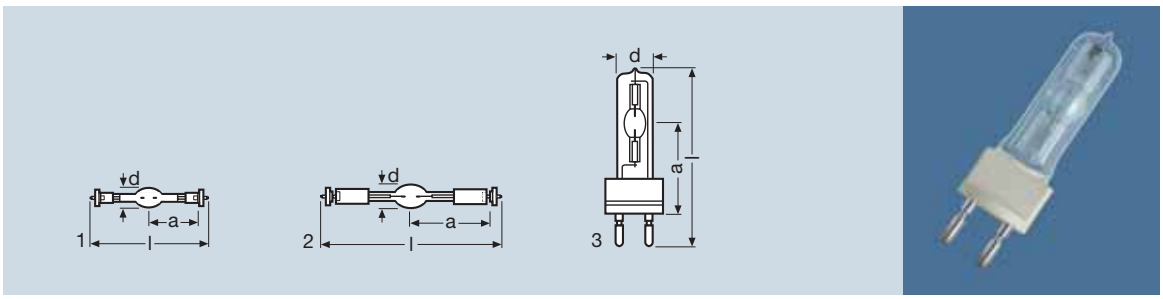
Supplied in single packs
~ = Sine wave ac current
GS = Gap Shortened

W = Wattss
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.

1) Forced cooling required



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	l max. [mm]	d [mm]	a max. [mm]		t [h]		No.
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

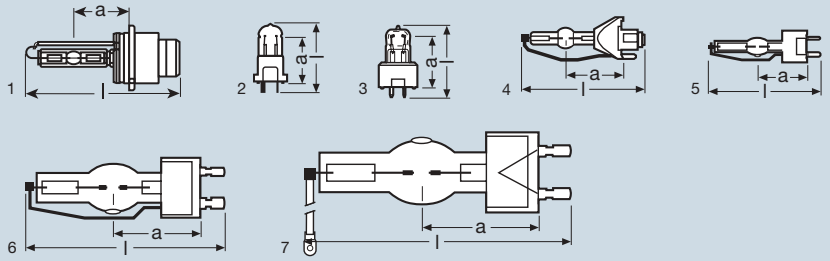
Thanks to their special filling and their electrode system, HMP® metal halide lamps can not only be dimmed, they can be "boosted"; in other words, they can be operated above their rated output. Whether the lamps are being dimmed or boosted, photometric characteristics such as colour temperature, colour 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/cm²
HTI® single-ended							
HTI S 35/12	4050300**503578**	35	85	2.5	P32d-2	3200	–
HTI 150 W	4050300**301402**	150	90	1.8 ~	GY9.5	10000	5000
HTI 152 W	4050300**461519**	150	95	1.8 ~	GY9.5	10000	4200
HTI 250 W/SE[6]	4050300**243795**	270	45	6 ⎍	FaX1.5	16000	40000
HTI 400 W/SE	4050300**248035**	400	55	7.3 ⎍	FaX1.5	28000	30000
HTI 403 W/SE	4050300**398327**	400	55	7.3 ⎍	FaX1.5	28000	30000
HTI 404 W/SE	4050300**426020**	400	55	7.3 ⎍	FaX1.5	28000	40000
HTI 405 W/SE XS	4050300**436074**	400	55	7.3 ⎍	GY9.5	28000	40000
HTI 600 W/SE	4050300**308890**	600	95	7.7 ~	FaX1.5	48000	25000
HTI 700 W/SE/75 XS	4008321**061096**	700	70	10	FaX1.5	59000	30000
HTI 705 W/SE XS	4050300**618074**	700	70	10	GY9.5	59000	30000
HTI 705 W/SE/75 XS	4008321**061119**	700	70	10	GY9.5	59000	30000
HTI 1200 W/SE XS	4050300**371153**	1200	100	13.8 ~	GY22[3]	105000	26000
HTI 1800 W/SE XS[2]	4050300**558127**	1800	100	20 ~	GY22[3]	160000	35000
HTI 2500 W/SE XS[3]	4050300**371146**	2500	115	25.6 ~	G22[4]+Cable	240000	30000

Product reference	K		t [h]	l 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 700 W/SE/75 XS	7500	4	500	85	39	universal	4
HTI 705 W/SE XS	5500	4	500	85	39	p 45[1]	5
HTI 705 W/SE/75 XS	7500	4	500	85	39	universal	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

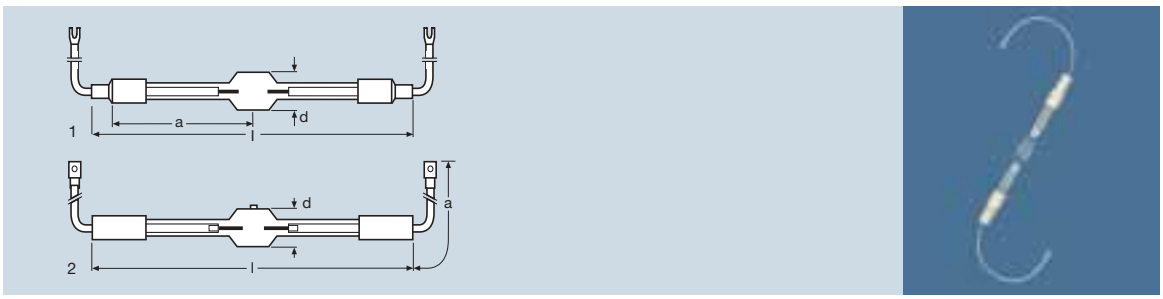
~ = Sine wave ac current
SE = Single ended
⎍ = Square-wave ac current
XS = eXtreme Seal (max. permissible foil temperature 450 °C)

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

1) Current strap underneath
2) Supplied on request
3) Special GY22 base. The ignition voltage may be applied only to the thin pin
4) Important: The contact pins of the base are short-circuited; the electrode furthest from the base is connected via cable
5) Depending on the switching cycle, reflector and control gear
6) Discontinued



Product reference	Product number	W	V	A		lm	cd/cm²	K
HTI® double-ended								
HTI 2500 W/DEL	405030**596709**	2500	115	26 ~	Special	270000	30000	6000
HTI 4000 W/DE	405030**519845**	4000	115	40 ~	S25.5	360000	35000	6300

Product reference		t [h]	l 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
DE = Double ended
DEL = Longlife version of DE

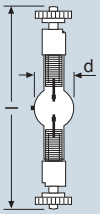
DX = Version of DE (eXtended robustness)
~ = Sine wave ac current
XS = eXtreme Seal (max. permissible foil temperature 450 °C)

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



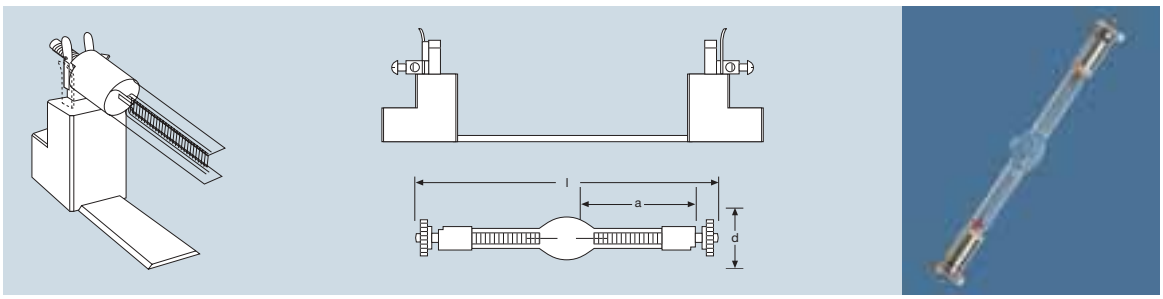
Product reference	Product number	W	kV START	V	A		lm
Baby SharXS® HTI®							
Baby SharXS HTI 250W/D5/80	4008321**129161**	250	2/25	95	3.2	SFc10-4	18000
Baby SharXS HTI 300W/D5/57	4008321**129185**	300	4.5/25	80	4.3	SFc10-4	20000
Baby SharXS HTI 300W/D5/65	4008321**129208**	300	4.5/25	80	4.3	SFc10-4	22000
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]	l 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



Product reference	Product number	W	kV START	V	A		lm	cd/cm²
SharXS® HTI®								
SharXS HTI 200 W/D3/70	4050300**854311**	200	3/25	60/–	3.3	SFc10-4	13000	30000
SharXS HTI 400 W/D3/75[1)]	4050300**854502**	400	3/25	49/–	8.5	SFc10-4	26000	55000
SharXS HTI 575 W/D4/60	4008321**123046**	575	3/25	69/–	8.3	SFc10-4	49000	49000
SharXS HTI 575 W/D4/75	4050300**854298**	575	3/25	64/–	9.0	SFc10-4	44000	49000
SharXS HTI 700 W/D4/75[1)]	4050300**861876**	700	3/25	70/73	10.0/11.0	SFc10-4	59000	60000
SharXS HTI 700 W/D4/60	4050300**854465**	700	3/25	70/73	10.0/11.0	SFc10-4	59000	60000
SharXS HTI 1200 W/D7/60[1)]	4050300**854595**	1200	5/35	95/100	12.7/13.8	SFc10-4	110000	41000
SharXS HTI 1200 W/D7/75	4008321**033833**	1200	5/35	95/100	12.7/13.8	SFc10-4	110000	41000

Product reference	K	R_a	t [h]	l 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[1)]	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[1)]	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[1)]	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

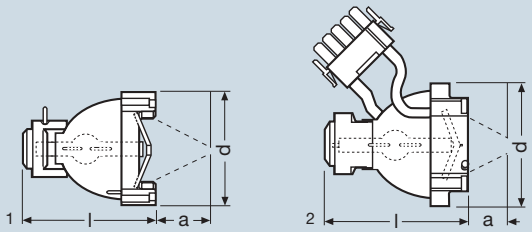
Literature:

- "Das echte Licht mit Biss/The original light with a bite": SharXS® HTI® from OSRAM
- "Das echte Licht mit Biss/The original light with a bite": SharXS® HTI® CD-ROM

1) Also available as a DEM package with 30 units without knurled nuts

info@sharxs.com
www.sharxs.com

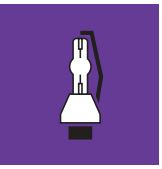
HTI®
Metal halide lamps



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

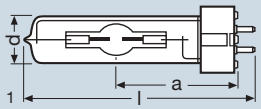
⎍ = Square-wave ac current

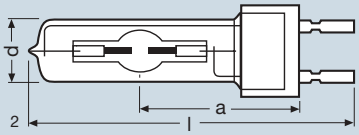
HTI® reflector lamps have dichroic focusing reflectors and are highly efficient lighting systems. They are used in endoscopy, boroscopy and light guide systems in the entertainment sector.



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





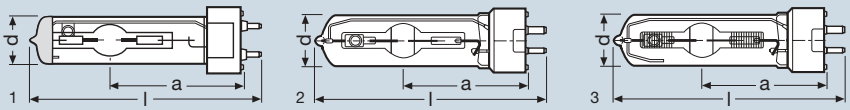
Product reference	Product number	W	V	A		lm	cd/cm²	K
HSR® with outer bulb (not hot restartable)								
HSR 400/60	4050300**315942**	400	67	6.9 ~	GX9.5	33000	20000	6000
HSR 575/60	4050300**509686**	575	95	7 ~	GX9.5	49000	10000	6000
HSR 575/72	4050300**651187**	575	95	7 ~	GX9.5	49000	10000	7200
HSR 700/60	4050300**315959**	700	72	11 ~	G22	58000	10000	6000
HSR 1200/60	4050300**526836**	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.

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]	l 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	–

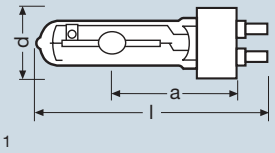
~ = Sine wave ac current

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

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®

1) Outer bulb with UV filter
2) In development



1

Product reference	Product number	W	V	A		lm	K
4ArXS HCD® longlife ceramic lamps with outer bulbs (not hot restartable)							
4ArXS HCD® 35W/30	4008321**126054**	35	90	0.53 ~	G12	3400	3000
4ArXS HCD® 35W/42	4008321**126078**	35	90	0.53 ~	G12	3200	4200
4ArXS HCD® 70W/30	4008321**126092**	70	100	0.98 ~	G12	6700	3000
4ArXS HCD® 70W/42	4008321**126115**	70	90	1.0 ~	G12	6500	4200
4ArXS HCD® 150W/30	4008321**126139**	150	99	1.8 ~	G12	14500	3000
4ArXS HCD® 150W/42	4008321**126153**	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

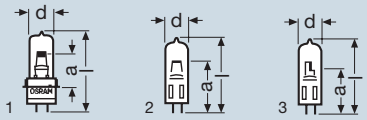
~ = Sine wave ac current

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

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.

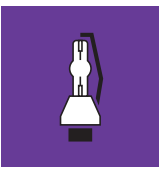
Literature:
Further information can be found in the following brochures, obtainable on request from OSRAM:
- "Technology and applications/Metal halide lamps"
- "Guidelines for control gear and igniters for metal halide lamps"
- "Availability of control gear and igniters"
- "An excellent all-rounder"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



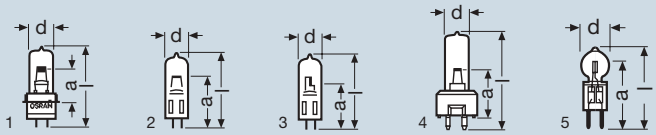
Product reference	Product number	ANSI	LIF	V	W		t [h]	lm
Low-voltage halogen lamps without reflectors								
64222	4050300**327273**			6	10	PG22	300	150
64223	4050300**017372**		M/43	6	10	G4	300	150
64225	4050300**006758**	ESA	M/29	6	10	G4	100	200
64250 HLX	4050300**012407**	ESB	M/30	6	20	G4	100	480
64251 HLX	4050300**582290**			6	20	PG22	100	500
64265 HLX	4008321**107053**			6	30	G4	100	765
64275	4050300**258690**		M/137	6	35	G4	50	780
64258	4050300**285153**			12	20	G4	2000	350
64258 A	4008321**050892**			12	20	G4	2000	350
64260	4050300**099798**		M/185	12	30	PG22	50	800
64261	4050300**220529**		M/130	12	30	G6.35	50	750
64602	4008321**107077**		M/134	12	50	G6.35	1100	1000
64609 HLX	4050300**246253**			12	50	PG22	50	1550
64610 HLX	4050300**006697**	BRL	A1/220	12	50	G6.35	50	1600
64611 HLX	4008321**107091**			12	50	G6.35	100	1350
62138 HLX	4050300**242958**			12	100	G6.35	50	2800
64621 HLX	4050300**535531**			12	100	PG22	2000	2750
64623 HLX	4050300**012018**	EVA	M/28	12	100	GY6.35	2000	2800
64625 HLX	4050300**006703**	FCR	A1/215	12	100	GY6.35	50	3600

Product reference		d [mm]	l [mm]	a [mm]	b h		No.
64222	universal	9	44	14	1.3x0.8	30	1
64223	universal	9	38	24	1.5x0.7	40	2
64225	s 90	9.5	31	19.5	1.7x0.65	40	2
64250 HLX	universal	9	31	19.5	2.3x0.8	40	2
64251 HLX	universal	9	40	14	2.3x0.8	30	1
64265 HLX	universal	9	31	19.5	1.5x1.5	40	2
64275	universal	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	universal	9	40	14	2.6x1.3	30	1
64261	universal	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



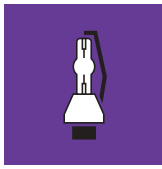
Some lamp models are available as “XENOPHOT®“ versions (HLX® types). With xenon instead of krypton as the filler gas, these lamps produce a luminous flux up to 10 per cent higher than lamps with identical electrical data.

1) Restricted tolerances 3.5±0.25x0.8±0.10



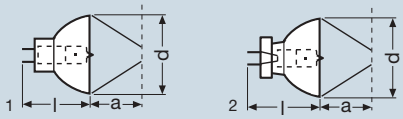
Product reference	Product number	ANSI	LIF	V	W		t [h]	lm
Low-voltage halogen lamps without reflectors								
64626 HLX	4050300**006765**	EHE	A1/45	12	100	PG22	50	3600
64628	4008321**099549**	FDT	A1/261	12	100	GY9.5	50	3000
64633 HLX	4050300**006710**	BRJ	A1/234	15	150	G6.35	50	5600
64650	4008321**107138**			22.8	50	G6.35	1300	1000
64291 XIR	4050300**888859**			22.8	40	G6.35	800	1200
64668 XIR	4050300**785042**			22.8	80	G6.35	750	3000
64292 XIR	4008321**023117**			22.8	150	G6.35	600	6000
64638 HLX	4050300**283050**			24	100	G6.35	300	2900
64640 HLX	4050300**006727**	FCS	A1/216	24	150	G6.35	50	6000
64647	4008321**107114**			24	120	G6.35	300	3600
64641 HLX	4050300**048260**			24	150	G6.35	2000	2700
64642 HLX	4050300**012025**	FDV	M1/84	24	150	G6.35	300	5000
64643	4008321**099648**	FDS	A1/262	24	150	GY9.5	100	5000
64654 HLX	4008321**099723**			24	250	GY9.5	300	9000
64655 HLX	4050300**006734**	EHJ	A1/223	24	250	G6.35	50	10000
64656 HLX	4050300**023120**	FNT		24	275	G6.35	75	10000
64657 HLX	4050300**012001**	EVC	M/33	24	250	G6.35	300	9000
64663 HLX	4050300**006741**	EVD	A1/239	36	400	G6.35	50	16000
64664 HLX	4008321**099747**			36	400	G6.35	150	14500
64665 HLX	4008321**099761**			36	400	G6.35	300	12200
64669 HLX	4050300**521688**	GCD		50	590	GY9.5	50	21500

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
64650	universal	13	44	30	2.0x5.0	40	3
64291 XIR	h 90	12	44	30	3.9x1.4	40	5
64668 XIR	h 90	14	44	30	2.2x5.5	40	5
64292 XIR	h 90	14	44	30	2.8x6.7	40	5
64638 HLX	universal	13	50	30	5.3x2.6	40	2
64640 HLX	s 90	11.5	50	32	5.8x2.9	40	2
64647	universal	13	44	30	2.3x6.4	40	3
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
64669 HLX	s 90	19	70	41.3	12.8x7.0	24	4



1) Round-core double coil

Halogen lamps with reflectors



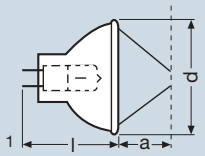
Product reference	Product number	V	W		t [h]
With reflector MR 11 – diameter 35 mm					
64255	4050300**006833**	8	20	GZX4	50
64605[1)]	4050300**252421**	8	50	GZ4	25
64613[2)]	4050300**241012**	12	75	G5.3-4.8	25
64614	4050300**234380**	12	75	G5.3-4.8	25
64617	4050300**231211**	12	75	G5.3-4.8	25
64617 S[3)]	4050300**461106**	12	75	G5.3-4.8	25
64624	4050300**013916**	12	100	G5.3-4.8	25

Product reference		d [mm]	l max. [mm]	a [mm]			No.
64255	p 90/15	35	32	26	White	10	2
64605[1)]	p 90/15	35	32	26	White	10	2
64613[2)]	p 90/15	35	35.5	26	Blue	20	1
64614	p 90/15	35	35.5	26	UV	10	1
64617	p 90/15	35	35.5	26	White	10	1
64617 S[3)]	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	4050300**350110**	EXY		82	250	GX5.3	200
93515	4050300**350158**	EXR		82	300	GX5.3	35
93520	4050300**350196**	FHS		82	300	GX5.3	70

Product reference		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

1) Supplied on request
2) If used in dentistry there may be third-party rights that need observing in certain countries
3) Spot adjustment

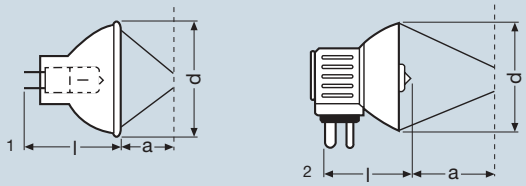


Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 16 – diameter 50 mm							
64607	4050300**006789**	EFM	A1/229	8	50	GZ6.35	50
93609	4050300**659541**	ENL		12	50	GX5.3	3000
64615 HLX	4050300**006796**	EFN	A1/230	12	75	GZ6.35	50
64627 HLX	4050300**006802**	EFP	A1/231	12	100	GZ6.35	50
64629	4050300**943169**			12	100	GZ6.35	600
64637	4050300**291970**		A1/271	12	100	GZ6.35	1500
64608	4050300**014142**	EPZ		13.8	50	GX5.3	1000
64618	4050300**017402**	DED		13.8	85	GX5.3	1000
64619	4050300**017273**	EPX		14.5	90	GX5.3	500
64634 HLX	4050300**006819**	EFR	A1/232	15	150	GZ6.35	50
64635 HLX[1)]	4050300**238807**			15	150	GZ6.35	50
64620	4050300**797397**	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	universal	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	44.5	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[1)]	p 90	51	45	19	Gold	20	1
64620	p 90/15	50	42	32	White	20	1

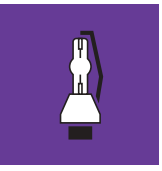
1) Infra-red lamp; temperature at the focal point approx. 1300 °C

Halogen lamps with reflectors



Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 16 – diameter 50 mm							
93637	4050300**350097**	EJV		21	150	GX5.3	100
93638	4050300**456843**	EKE		21	150	GX5.3	200
64653 HLX	4050300**006826**	ELC	A1/259	24	250	GX5.3	50
93653	4050300**636450**	ELC-3		24	250	GX5.3	300
93505	4050300**350172**	EVW		82	250	GY5.3	50
93525	4050300**349992**	ENX		82	360	GY5.3	75
93526	4050300**412917**	FXL		82	410	GY5.3	75
93506	4050300**349930**	ENH		120	250	GY5.3	175
93518	4050300**350059**	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	s 90	51	45	298.5	White	24	1
93525	s 90	51	45	298.5	White	24	1
93526	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	4050300**350011**	DNF		21	150	GX7.9	25

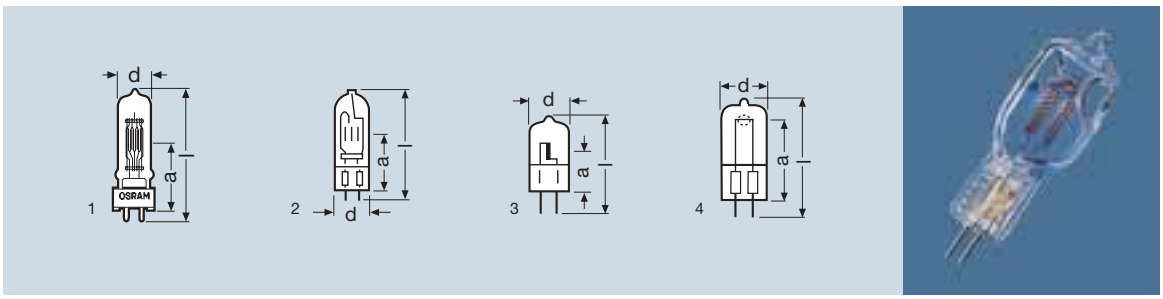
Product reference		d [mm]	l max. [mm]	a [mm]			No.
93631	p 15	57	51	69	White	24	2

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	4050300**279237**			150	120	GX6.35	25	3400
64502	4050300**289977**			150	230	GX6.35	25	3400
64505[2)]	4008321**098436**			200	230	GX6.35	25	3200
64505[2)]	4008321**098610**			200	240	GX6.35	25	3200
64648	4008321**097910**	BSJ		200	230	GX6.35	25	3400
64512[2)]	4008321**098634**	FNS		300	120	GX6.35	15	3350
64513[2)]	4008321**098658**			300	120	GX6.35	150	3200
64514[2)]	4008321**098672**		CP/96	300	120	GX6.35	75	3200
64515[2)]	4008321**098696**			300	230	GX6.35	15	3300
64515[2)]	4008321**098719**			300	240	GX6.35	15	3300
64516[2)]	4008321**098733**		CP/97	300	230	GX6.35	75	3100
64516[2)]	4008321**098757**		CP/97	300	240	GX6.35	75	3100
64661	4008321**098474**		A1/249	300	230	G6.35	50	3000
64662	4008321**097873**		M/38	300	230	GY9.5	2000	2900
64662	4008321**097897**		M/38	300	240	GY9.5	2000	2900

Product reference	lm		d [mm]	l max. [mm]	a [mm]			No.
64501	4500	universal	12	max. 55	30	11x2.2	25	3
64502	4000	universal	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	4500	s 90	20	69.5	40	6x6	12	2
64512[2)]	9300	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)]	7400	s 90	max. 18.5	max. 53	27	9.8x12.5	12	4
64516[2)]	7300	s 90	max. 18.5	max. 53	27	9.7x12.5	12	4
64661	7500	s 90	20	63.5	40	11x8[1)]	12	2
64662	5000	universal	15	80	46.5	9x11[1)]	12	1
64662	5000	universal	15	80	46.5	9x11	12	1

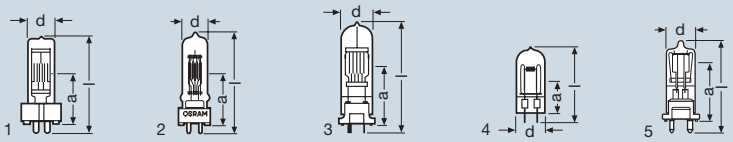
From their designs, halogen mains voltage lamps can be categorised as single-ended and double-ended lamps. Depending on the application, they are designed to operate on 230 V, 240 V or 120 V.

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:
- "A whole lotta shakin' goin' on!" New halogen lamps with quartz pinch technology. (122 W 100 DE)

1) With monoplane filament
2) With quartz pinch technology

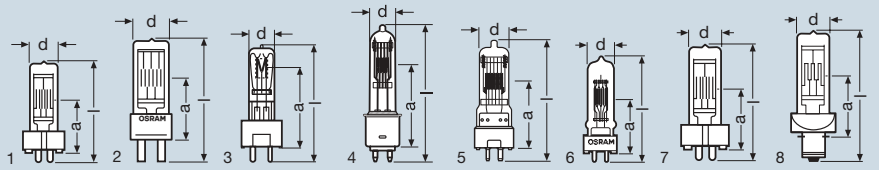
Halogen lamps, medium/high voltage, single-ended



Product reference	Product number	ANSI	LIF	W	V		t [h]
Single-ended							
93592	4050300**481531**		FSX	400	230	GY9.5	75
93591	4050300**481555**		FSY	400	240	GY9.5	75
64672	4008321**098559**		M/40	500	230	GY9.5	2000
64672	4008321**098535**		M/40	500	240	GY9.5	2000
64680	4008321**098573**		A1/244	500	230	GY9.5	50
64680	4008321**098597**		A1/244	500	240	GY9.5	50
64535	4008321**098771**			650	120	GY9.5	15
64540	4008321**098795**	BVM	P1/13	650	230	GY9.5	15
64540	4008321**098818**	BVM	P1/13	650	240	GY9.5	15
64686	4008321**098498**	DYR	A1/233	650	230	GY9.5	50
64686	4008321**098511**	DYR	A1/233	650	240	GY9.5	50
64573	4008321**098832**			1000	120	GY9.5	15
64575	4008321**098856**	EGY	P1/15	1000	230	GY9.5	15
64575	4008321**098450**	EGY	P1/15	1000	240	GY9.5	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	universal	22	85	46.5	12x11	12	2
64672	2900	8500	universal	22	85	46.5	12x11	12	2
64680	3200	14500	universal	22	75	36.5	10x10[2]	12	3
64680	3200	14500	universal	22	75	36.5	10x10[2]	12	3
64535	3400	20000	universal	24	57.5	30	14x15	12	4
64540	3400	20000	universal	24	57.5	30	14x15	12	4
64540	3400	20000	universal	24	57.5	30	14x15	12	4
64686	3200	16500	universal	21	64	36.5	10x10[2]	12	5
64686	3200	16500	universal	21	64	36.5	10x10[2]	12	5
64573	3400	33000	universal	24	67.5	38	14x14	12	4
64575	3400	33000	universal	24	67.5	38	14x14	12	4
64575	3400	33000	universal	24	67.5	38	14x14	12	4

1) With internal reflector
2) With monoplane filament

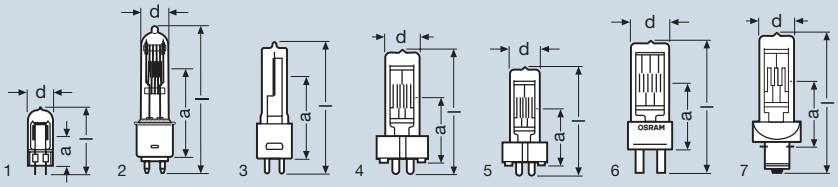


Product reference	Product number	ANSI	LIF	W	V		t [h]
Single-ended							
64673	4008321**099785**		CP/81	300	230	GY9.5	200
64673	4008321**099808**		CP/81	300	240	GY9.5	200
64670	4050300**283449**		T/25	500	230	GY9.5	300
64670	4050300**635859**		T/25	500	240	GY9.5	300
64674	4008321**099822**		CP/82	500	230	GY9.5	200
64674	4008321**099846**		CP/82	500	240	GY9.5	200
64716	4050300**506494**	GKV		600	230	GY9.5	250
64716	4050300**506517**	GKV		600	240	GY9.5	250
64717	4050300**296692**	FRK	CP/89	650	230	GY9.5	150
64717	4050300**304953**	FRK	CP/89	650	240	GY9.5	150
64718	4050300**022543**	GCT	T/27	650	230	GY9.5	400
64718	4050300**283463**	GCT	T/27	650	240	GY9.5	400
64719[1)]	4050300**019154**		T/12	650	230	GY9.5	750
64720	4050300**017716**		CP/23	650	230	GY9.5	100
64721	4050300**217970**	FKH	CP/39	650	230	G22	100
64722[1)]	4050300**225906**	FKB	T/13	650	230	P28s	750

Product reference	K	lm		d [mm]	l max. [mm]	a [mm]			No.
64673	3200	7500	universal	18	90	46.5	6.5x13	12	3
64673	3200	7500	universal	18	90	46.5	6.5x13	12	3
64670	3000	11000	s 90	26	90	46.5	11x11	25	6
64670	3000	11000	s 90	26	90	46.5	11x11	25	6
64674	3200	13500	universal	18	90	46.5	8x18	12	3
64674	3200	13500	universal	18	90	46.5	8x18	12	3
64716	3200	14000	universal	18	101	60.5	11x8	25	4
64716	3200	14000	universal	18	101	60.5	11x8	25	4
64717	3200	16250	s 90	26	90	46.5	11x11	25	5
64717	3200	16250	s 90	26	90	46.5	11x11	25	5
64718	3000	14500	s 90	26	90	46.5	11x11	25	6
64718	3000	14500	s 90	26	90	46.5	11x11	25	6
64719[1)]	3000	12000	s 90	35	110	55	13x17	20	7
64720	3200	16800	s 90	35	110	55	13x17[2)]	20	1
64721	3200	16800	s 90	35	140	63.5	13x17[2)]	20	2
64722[1)]	3000	13000	s 90	26	130	55.6	13x17	20	8

1) 240 V on request
2) With monoplane filament

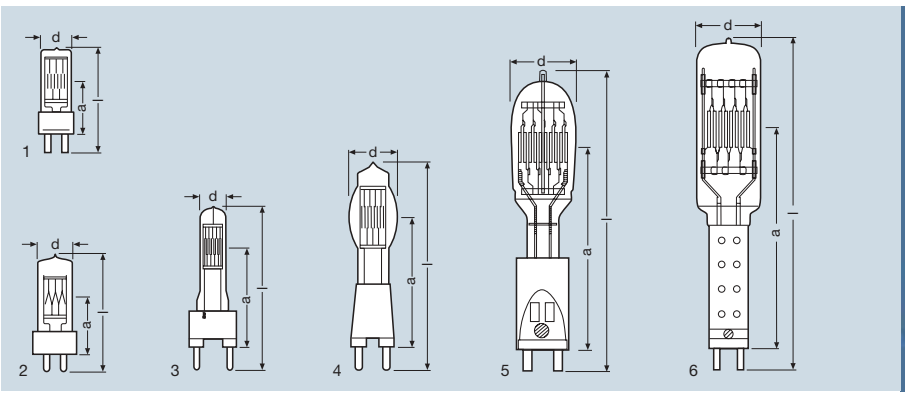
Mains voltage halogen lamps



Product reference	Product number	ANSI	LIF	W	V		t [h]
Single-ended							
64678	4050300**609102**			800	230	G9.5	250
64576	4008321**099860**		P2/17	1000	230	GX6.35	75
64743	4050300**227610**	FEL		1000	230	GX9.5	300
64744	4050300**017723**	FWP	T/19	1000	230	GX9.5	750
64744	4050300**283333**	FWP	T/19	1000	240	GX9.5	750
64745	4050300**213262**	FVA	CP/70	1000	230	GX9.5	200
64745	4050300**283234**	FVA	CP/70	1000	240	GX9.5	200
64746	4050300**226620**	FKD	T/20	1000	230	P28s	750
64747	4050300**217604**	FKJ	CP/71	1000	230	G22	200
64747	4050300**283999**	FKJ	CP/71	1000	240	G22	200
93734	4050300**350073**	FEP	CP/77	1000	240	G9.5	300
64752	4050300**296616**	FWS	T/29	1200	230	GX9.5	400
64752	4050300**305011**	FWS	T/29	1200	240	GX9.5	400
64754	4050300**296746**		CP/90	1200	230	GX9.5	200
64756[1)]	4050300**296722**		CP/93	1200	230	G22	200

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

1) 240 V on request

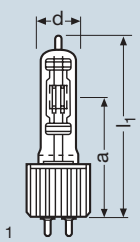


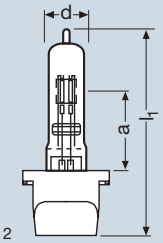
Product reference	Product number	ANSI	LIF	W	V		t [h]
Single ended, 230 and 240 V 3000 K							
64777	4050300**367682**		CP/92	2000	230	G22	400
64787	4050300**246154**		CP/75	2000	230	G22	400
64788	4050300**213286**		CP/72	2000	230	GY16	400
64788	4050300**283258**		CP/72	2000	240	GY16	400
64789	4050300**219103**	FKK	CP/73	2000	230	G38	400
64789	4050300**283371**	FKK	CP/73	2000	240	G38	400
64796	4050300**406428**		CP/91	2500	230	G22	400
64805	4050300**212609**		CP/85	5000	230	G38	400
64805	4050300**283401**		CP/85	5000	240	G38	400
64815	4050300**780696**	ECR	CP/83	10000	230	G38	400
64818	4050300**782713**	BCM	CP/99	20000	230	G38	350

Product reference	K	lm		d [mm]	I max. [mm]	a [mm]	b h		No.
64777	3200	52000	s 90	40	175	90	20x19	20	1
64787	3200	52000	s 90	40	160	75	20x19	20	1
64788	3200	52000	s 90	40	145	70	20x19	20	2
64788	3200	52000	s 90	40	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	40	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	280000	s 45	70	380	254	52x41	1	5
64818	3200	580000	s 45	100	550	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	ANSI	W	V		t [h]	lm
Halogen high-performance lamps HPL®, QXL®							
93728 HPL[1)]	4050300**461816**	HPL 575	575	230	2-pin	400	14900
93728 LL HPL[1)]	4008321**090102**	HPL 575 LL	575	230	2-pin	1500	11780
93729 HPL[1)]	4050300**654201**	HPL 750	750	230	2-pin	300	19750
93729 LL HPL[1)]	4008321**090324**	HPL 750 LL	750	230	2-pin	1500	15600
93721 QXL	4008321**090195**	QXL	750	77	Bayonet[2)]	300	22950
93721 LL QXL	4008321**090218**	QXL LL	750	77	Bayonet[2)]	1500	18000

Product reference	K		d [mm]	l1 max. [mm]	a [mm]			No.
93728 HPL[1)]	3200	universal	19	98	60.3	4-C8	12	1
93728 LL HPL[1)]	3050	universal	19	98	60.3	4-C8	12	1
93729 HPL[1)]	3200	universal	19	98	60.3	4-C8	12	1
93729 LL HPL[1)]	3050	universal	19	98	60.3	4-C8	12	1
93721 QXL	3250	universal	18.5	104	38	6.5x12	12	2
93721 LL QXL	3050	universal	18.5	104	38	6.5x12	12	2

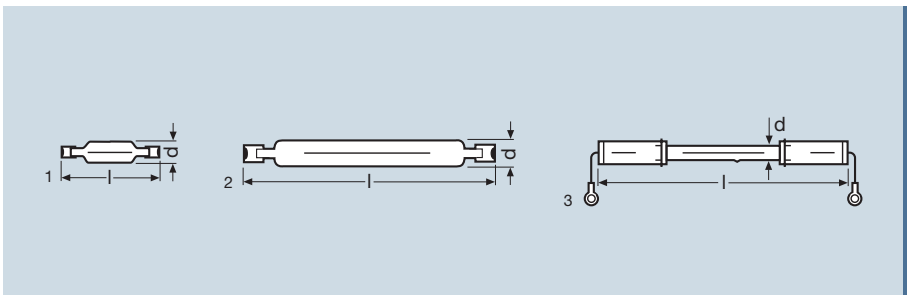
XS = eXtreme Seal (max. permissible foil temperature 450 °C)

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 500 °C. This patented lamp for entertainment and architecture applications has been developed in cooperation with Electronic Theatre Controls (ETC).

1) Also available for 240 V
2) Quick exchange base

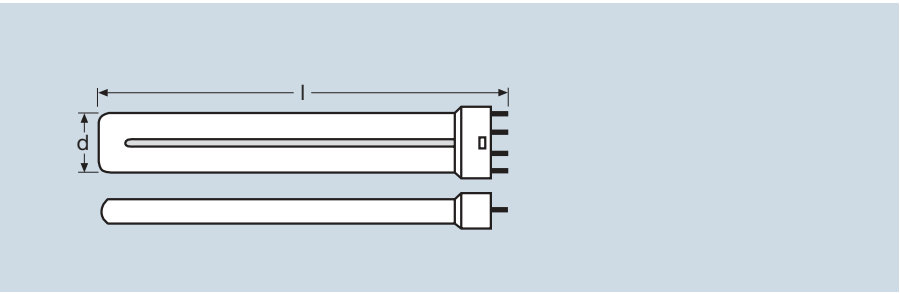
Halogen lamps, double-ended



Product reference	Product number	ANSI	LIF	W	V		t [h]
Double ended							
64553	4050300**014173**			650	230	R7s	75
64570	4050300**014098**			800	230	R7s	15
64571	4050300**014180**	DXX	P2/13	800	230	R7s	75
64571	4050300**283388**	DXX	P2/13	800	240	R7s	75
64579	4050300**014104**	FDG		1000	120	R7s	15
64580	4050300**006888**		P1/12	1000	230	R7s	15
64580	4050300**283173**		P1/12	1000	240	R7s	15
64583	4050300**249094**			1000	230	R7s	200
64583	4050300**411477**			1000	240	R7s	200
64741	4050300**209333**	EKM	P2/7	1000	230	R7s	200
64741	4050300**283197**	EKM	P2/7	1000	240	R7s	200
64751	4050300**214641**		P2/12	1250	230	R7s	200
64751	4050300**283357**		P2/12	1250	240	R7s	200
64781	4050300**229997**	FEX	P2/27	2000	230	RX7s	300
64781	4050300**283500**	FEX	P2/27	2000	240	RX7s	300
64800	4050300**210254**		P2/36	5000	230	K24s	1000

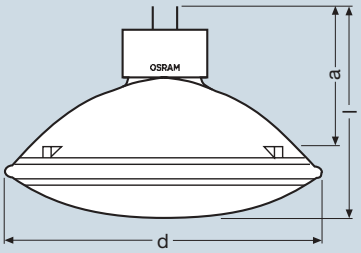
Product reference	K	lm		d [mm]	l max. [mm]			No.
64553	3200	17000	horizontal[1)]	17	74.9	20	25	1
64570	3400	22000	horizontal	15	74.9	25	25	1
64571	3200	21000	horizontal[1)]	17	74.9	20	25	1
64571	3200	21000	horizontal[1)]	17	74.9	20	25	1
64579	3400	33000	horizontal[1)]	12	121.7	81	12	2
64580	3400	35000	horizontal	12	181.7	85	12	2
64580	3400	35000	horizontal	12	181.7	85	12	2
64583	3200	27000	universal	12	114.2	65	12	2
64583	3200	27000	universal	12	114.2	65	12	2
64741	3200	25000	universal	12	185.7	125	12	2
64741	3200	25000	universal	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	35	12	2
64781	3200	50000	p 15	30	138.1	35	12	2
64800	3200	125000	p 4	18	520[2)]	245	1	3

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



Product reference	Product number	W	lm	K	t [h]		
STUDIOLINE®							
STUDIOLINE 55 W/3200	4050300**575278**	55	3800	3200	8000	2G11	10
STUDIOLINE 55 W/5600	4050300**575292**	55	3800	5600	8000	2G11	10

OSRAM STUDIOLINE® fluorescent lamps are matched to the 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.



Product reference	Product number	ANSI	LIF		W	V	
aluPAR® 56							
aluPAR 56 NSP	4008321**108746**			8°/9°	300	120	GX16d
aluPAR 56 NSP	4008321**107923**			8°/9°	300	230	GX16d
aluPAR 56 NSP	4008321**107947**			8°/9°	300	240	GX16d
aluPAR 56 MFL	4008321**108760**			15°/17°	300	120	GX16d
aluPAR 56 MFL	4008321**107961**			15°/17°	300	230	GX16d
aluPAR 56 MFL	4008321**107985**			15°/17°	300	240	GX16d
aluPAR 56 WFL	4008321**108784**			26°/27°	300	120	GX16d
aluPAR 56 WFL	4008321**108128**			26°/27°	300	230	GX16d
aluPAR 56 WFL	4008321**108005**			26°/27°	300	240	GX16d
PAR 64 halogen lamps, 3200 K							
64737/3 NSP	4008321**905727**	EXC	CP/60	12°/9°	1000	230	GX16d
64737/4 NSP	4008321**905741**	EXC	CP/60	12°/9°	1000	240	GX16d
64738/3 SP	4008321**905765**	EXD	CP/61	14°/10°	1000	230	GX16d
64738/4 SP	4008321**905789**	EXD	CP/61	14°/10°	1000	240	GX16d
64739/3 FL	4008321**905802**	EXE	CP/62	22°/14°	1000	230	GX16d
64739/4 FL	4008321**905826**	EXE	CP/62	22°/14°	1000	240	GX16d

Product reference	t [h]	cd	[1]	d [mm]	l max. [mm]	a [mm]	
aluPAR® 56							
aluPAR 56 NSP	2000	68000	universal	177	113	–	6
aluPAR 56 NSP	2000	70000	universal	177	113	–	6
aluPAR 56 NSP	2000	70000	universal	177	113	–	6
aluPAR 56 MFL	2000	24000	universal	177	113	–	6
aluPAR 56 MFL	2000	30000	universal	177	113	–	6
aluPAR 56 MFL	2000	30000	universal	177	113	–	6
aluPAR 56 WFL	2000	11000	universal	177	113	–	6
aluPAR 56 WFL	2000	10000	universal	177	113	–	6
aluPAR 56 WFL	2000	10000	universal	177	113	–	6
PAR 64 halogen lamps, 3200 K							
64737/3 NSP	300	320000	universal	204	152.4	102	6
64737/4 NSP	300	320000	universal	204	152.4	102	6
64738/3 SP	300	270000	universal	204	152.4	102	6
64738/4 SP	300	270000	universal	204	152.4	102	6
64739/3 FL	300	125000	universal	204	152.4	102	6
64739/4 FL	300	125000	universal	204	152.4	102	6

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

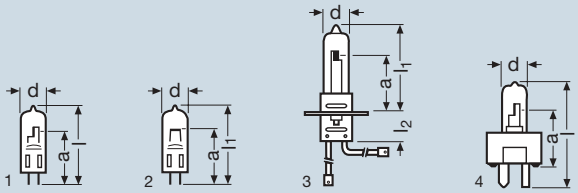
Literature:

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

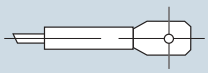


Product reference	Product number	ANSI	LIF	A	W		t [h]	lm
Halogen lamps, current controlled, single-ended								
64322	4008321**100146**	EXL		6.6	30	GZ9.5	1000	600
64311	4008321**106346**		J1/59	6.0	36	GZ(GY)9.5	1200	610
64320	4008321**100122**	EXM		6.6	45	GZ9.5	1000	875
64321	4008321**106360**		J1/57	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	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]	l1 [mm]	l2 [mm]	a [mm]	b h		No.
64322	s 90[1)]	13.5	max. 44.5	–	25.4	4.4x5.5	12	4
64311	s 90	11	max. 50	–	33	1.1x2.6	40	1
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	s 90[1)]	13.5	max. 63.5	–	39.1	4.4x5.5	12	4
58746	universal	13	60.3	20.6	27	5.5x3.8	100	2
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

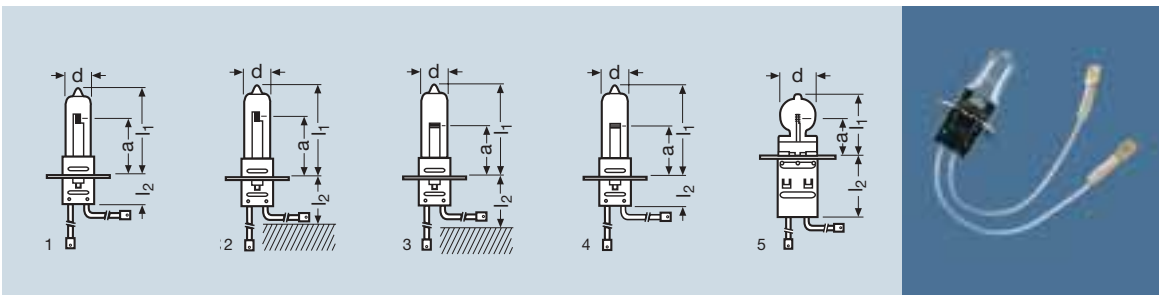
Connector A, female
as per DIN 46247

Connector B, female
round for contacts Ø 4 mm



Connector C, male
as per DIN 46248

1) Despite transverse filament, can be inclined at any angle in s 90 position



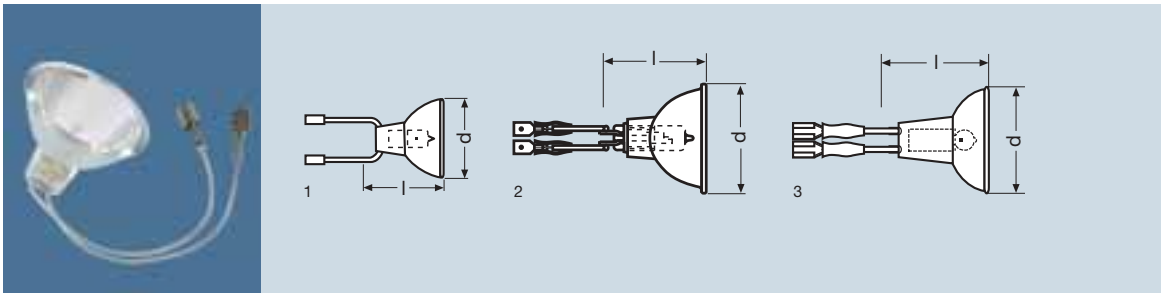
Product reference	Product number	LIF	A	W		t [h]	lm
Halogen lamps, current controlled, with PK30d base							
64317 C 45-10[1]	4050300**206844**	J1/76	6.6	45	PK30d	1000	800
64317 IRC-A 45-30	4008321**012326**		6.6	45	PK30d	3000	800
64317 IRC-C 45-30[1]	4050300**785004**	J1/76	6.6	45	PK30d	3000	800
64318 A 45-10	4050300**245843**	J1/77	6.6	45	PK30d	1000	800
64318 Z 45-10[1]	4050300**258324**	J1/77	6.6	45	PK30d	1000	800
64319 A 45-10	4008321**012289**		6.6	45	PK30d	1000	800
64319 Z 45-10[1)2)]	4050300**440729**		6.6	45	PK30d	1000	800
64319 IRC-A 45-30	4008321**012265**		6.6	45	PK30d	3000	800
64319 IRC-C 45-30[1]	4008321**012289**		6.6	45	PK30d	3000	800
64328 HLX-A 65-10	4050300**440804**		6.6	65	PK30d	1000	1450
64328 HLX-Z 65-10[1]	4050300**302362**		6.6	65	PK30d	1000	1450
64341 HLX-A 100-10	4050300**446301**	J1/79	6.6	100	PK30d	1000	2700
64341 HLX-Z 100-10[1]	4050300**258348**		6.6	100	PK30d	1000	2700
64342 HLX-A 100-10	4050300**308135**	J1/80	6.6	100	PK30d	1000	2700
64342 HLX-C 100-10[1]	4050300**442433**	J1/80	6.6	100	PK30d	1000	2700
64361 HLX-A 150-10	4050300**271866**	J1/83	6.6	150	PK30d	1000	3600
64361 HLX-Z 150-10[1]	4050300**431642**	J1/83	6.6	150	PK30d	1000	3600
64382 HLX-A 200-10	4050300**771649**	J1/84	6.6	200	PK30d	1000	4800
64382 HLX-C 200-10[1]	4050300**431680**	J1/84	6.6	200	PK30d	1000	4800

Product reference		d max. [mm]	l1 [mm]	l2 [mm]	a [mm]	b x h		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 10.32

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

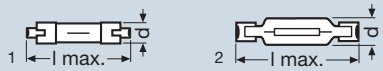


Product reference	Product number	A	W		t [h]
Halogen reflector lamps, current controlled, with dichroic coating					
64331 SP-A 30-10[1)]	4008321**102560**	6.6	30	Connector A	1000
64331 FL-AC 30-10[2)]	4008321**102584**	6.6	30	Connector AC	1000
64333 B 40-15	4008321**104731**	6.6	40	Connector B	1500
64333 C 40-15	4008321**104885**	6.6	40	Connector C	1500
64337 A 45-15	4008321**102515**	6.6	45	Connector A	1500
64337 B 45-15	4008321**104700**	6.6	45	Connector B	1500
64337 C 48-10	4006584**425655**	6.6	48	Connector C	1000
64337 A 48-15	4008321**102737**	6.6	48	Connector A	1500
64337 B 48-15	4008321**105226**	6.6	48	Connector B	1500
64337 C 48-15	4008321**105240**	6.6	48	Connector C	1500
64337 IRC-A 48-30	4008321**102454**	6.6	48	Connector A	3000
64337 IRC-B 48-30	4008321**105264**	6.6	48	Connector B	3000
64337 IRC-C 48-30	4008321**102492**	6.6	48	Connector C	3000
64338 A 48-10	4008321**105301**	6.6	48	Connector A	1000
64339 A 105-10	4008321**101600**	6.6	105	Connector A	1000
64339 AC 105-10	4008321**105424**	6.6	105	Connector AC	1000
64339 B 105-10	4008321**105462**	6.6	105	Connector B	1000
64339 C 105-10	4008321**105486**	6.6	105	Connector C	1000
64355	4050300**361659**	6.6	100	Connector B	1500

Product reference	kcd		d max. [mm]	l max. [mm]		No.
64331 SP-A 30-10[1)]	min. 16	universal	50.2	45.6	20	1
64331 FL-AC 30-10[2)]	min. 3.7	universal	50.2	45.6	20	1
64333 B 40-15	min. 10	universal	35.3	37.0	20	1
64333 C 40-15	min. 10	universal	35.3	37.0	20	1
64337 A 45-15	min. 19	universal	50.2	45.6	20	1
64337 B 45-15	min. 19	universal	50.2	45.6	20	1
64337 C 48-10	min. 23	universal	50.2	45.6	20	1
64337 A 48-15	min. 20	universal	50.2	45.6	20	1
64337 B 48-15	min. 20	universal	50.2	45.6	20	1
64337 C 48-15	min. 20	universal	50.2	45.6	20	1
64337 IRC-A 48-30	min. 20	universal	50.2	45.6	20	3
64337 IRC-B 48-30	min. 20	universal	50.2	45.6	20	3
64337 IRC-C 48-30	min. 20	universal	50.2	45.6	20	3
64338 A 48-10	min. 27	universal	50.2	45.6	20	1
64339 A 105-10	min. 30	universal	50.2	max.50.0	20	2
64339 AC 105-10	min. 30	universal	50.2	45.6	20	2
64339 B 105-10	min. 30	universal	50.2	45.6	20	2
64339 C 105-10	min. 30	universal	50.2	45.6	20	2
64355	min. 19	universal	55.5	45.6	50	1

For a summary of connectors see page 10.32

1) Spot adjustment
2) Flood adjustment

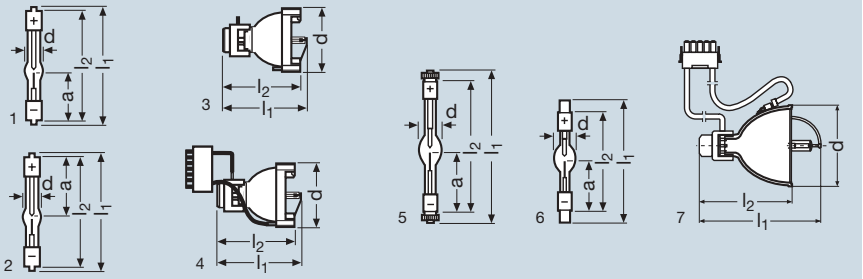


Product reference	Product number	LIF	A	W		t [h]
Halogen lamps, current controlled, double-ended						
64315	4050300**206844**	J1/78	6.6	45	R7s	1000
64340	4050300**017266**	J1/82	6.6	100	R7s	1000
64380	4050300**209944**	J1/40	6.6	200	R7s	1000

Product reference	lm		d max. [mm]	l max. [mm]	b x h		No.
64315	750	universal	8.8	47.5	4x1.5	25	1
64340	2000	universal	12	60.2	6x2.6	25	2
64380	4400	universal	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/cm²	t[h]	t[h]	[3]		
XBO 75 W/2[6]	4050300**508801**	75	14	5.4	1000	100	40000	400	400	s105	–	–
XBO 100 W OFR	4050300**508429**	100	14	7.2	1900	270	31000	500	500	s105	–	req.
XBO R 100 W/45 OFR[1)4]	4050300**317205**	100	13	7.2	–	–	–	–	500	p15	–	–
XBO 150 W/1[6)7]	4050300**015804**	150	20	7.5	3000	300	15000	1200	–	s15	–	req.
XBO 150 W/CR OFR	4050300**508788**	150	17.5	8.5	2900	290	20000	3000	1200	s15	p15	req.
XBO 150 W/S	4050300**220208**	150	20	7.5	2200	220	18000	1000	800	s15	p15	req.
XBO R 180 W/45 OFR[1)4]	4050300**432175**	180	14	12	–	–	–	–	500	p15	–	–
XBO R 300 W/60 C OFR[5]	4050300**857749**	300	17.5	17.1	–	–	–	–	500	p15	–	–

Product reference			d [mm]	l_1 max. [mm]	l_2 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

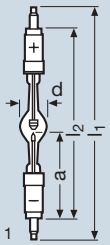
OFR = Ozone-free version
S = Short
W = Watts
req. = required

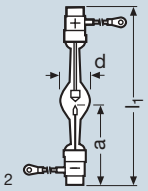
XBO® are short arc lamps in which the discharge arc burns in an atmosphere of pure xenon gas at high pressure.

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

1) Lamp also available with connecting cable and plug contact. Product reference XBO R 100 W/45 C or XBO R 180 W/45 C
2) Distance from end of base to tip of electrode (cold)
3) For vertical burning position: anode (+) on top
4) The focus lies 45 mm in front of the mounting rim on the lamp axis (working distance)
5) The focus lies 60 mm in front of the mounting rim on the lamp axis (working distance)
6) Also available in ozone-free version with the same data: XBO 75 W/2 OFR, XBO 150 W/1 OFR
7) Also available in Suprasil quartz version: XBO 150 W/4





Product reference	Product number	W	V	A	lm	cd	cd/cm²	A	t [h]	2)
XBO 250 W OFR[4]	4008321**082657**	250	13	18	4800	530	26000	14 … 20	1200	s 15
XBO 450 W[3][4]	4008321**082640**	450	17	25	13000	1300	35000	17 … 30	2000	s 30
XBO 450 W/1	4008321**082510**	450	17	25	13000	1300	45000	17 … 30	800	s 100
XBO 450 W/2 OFR	4008321**082626**	450	17	25	13000	1300	35000	17 … 30	2000	s 30

Product reference				d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] 1)	+	−	No.
XBO 250 W OFR4)	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.

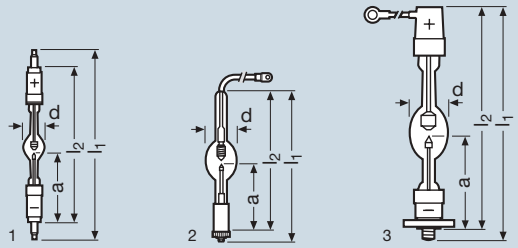
Their main characteristics and advantages are as follows:
- Very high luminance (point light source)
- Daylight colour temperature of approx. 6000 K
- High colour rendering index (R_a > 95)
- Continual colour quality, irrespective of lamp type and lamp wattage
- Hot restart
- DC operation
- Dimmable
- 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



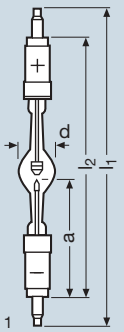
Product reference	Product number	W	V	A	lm [3]	cd [3]	cd/cm² [3]	A	t [h]	[2]
XBO 500 W/H OFR	4008321**082503**	500	17	28	14500	1450	40000	17...30	2000	s30 p30
XBO 550 W/HTC OFR	4008321**082480**	550	22	25	16000	1600	34000	17...27	600	s15 p15
XBO 700 W/HSC OFR	4008321**082428**	700	18	37	20000	2000	40000	30...45	1500	s20 p20

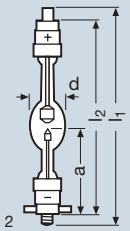
Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] [1]	+	−	No.
XBO 500 W/H OFR	req.	req.	req.	0.9x2.5	35	190	165	75	SFa16-8	SFa15-10	1
XBO 550 W/HTC OFR	–	req.	req.	0.9x3.1	25	143	129	65	Cable	SFc15-6	2
XBO 700 W/HSC OFR	–	req.	req.	1.1x2.9	40	236	222	95	SK27/50	SFcX27-8	3

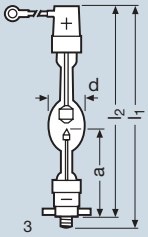
C = Base with cable
H = Suitable for horizontal burning position
OFR = Ozone-free version
S = Short
TC = Thread and cable
req. = required

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







Product reference	Product number	W	V	A	lm [3]	cd [3]	cd/cm² [3]	A	t [h]	[2]
XBO 900 W OFR	400832**1081346**	900	19	45	30000	3000	50000	30...53	2400	s30
XBO 1000 W/HS OFR	400832**1082114**	1000	19	50	32000	3000	60000	30...55	2000	s20 p20
XBO 1000 W/HSC OFR	400832**1082107**	1000	19	50	32000	3000	60000	30...55	2000	s20 p20

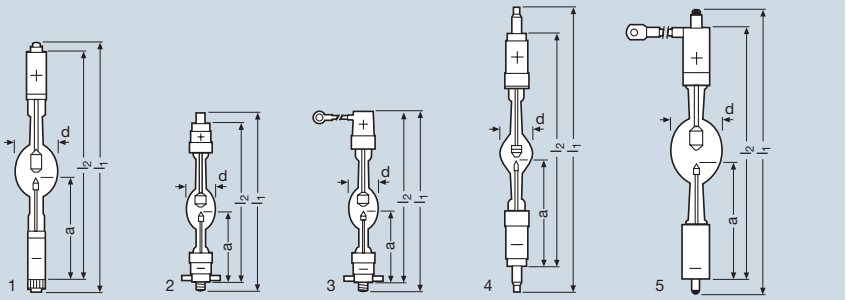
Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] [1]	+	−	No.
XBO 900 W OFR	–	–	–	1.1x3.3	40	325	277	123	SFa25-10	SFa25-12	1
XBO 1000 W/HS OFR	–	req.	req.	1.1x2.8	40	235	205	95	SFa27-11	SFcX27-8	2
XBO 1000 W/HSC OFR	–	req.	req.	1.1x2.8	40	236	222	95	SK27/50	SFcX27-8	3

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

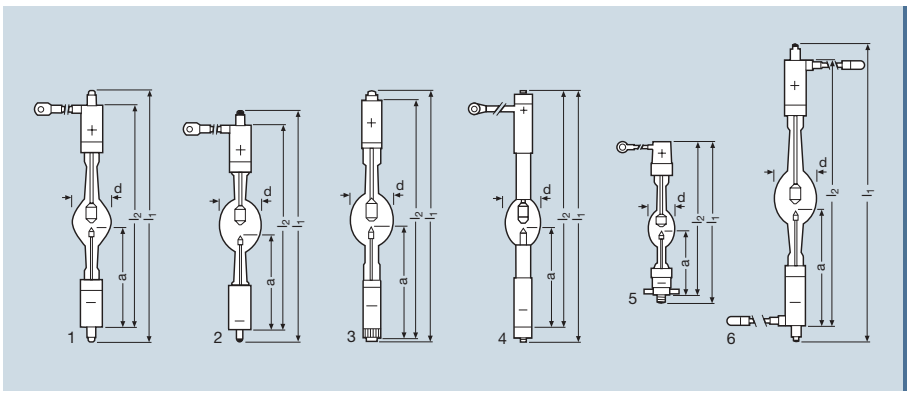


Product reference	Product number	W	V	A	lm [3]	cd [3]	cd/cm² [3]	A	t [h]	[2]
XBO 1000 W/HTP OFR	4008321**081353**	1000	21	45	35000	3200	45000	30...55	2400	s30 p30
XBO 1600 W/HS OFR	4008321**082091**	1550	23	65	70000	5500	70000	50...75	2000	s20 p20
XBO 1600 W/HSC OFR	4008321**082084**	1550	23	65	60000	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

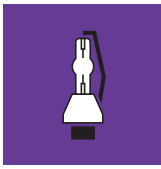
1) Distance from end of base to tip of electrode (cold)
2) For vertical burning position: anode (+) on top
3) Measured in the vertical burning position



Product reference	Product number	W	V	A	lm [4]	cd [4]	cd/cm² [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

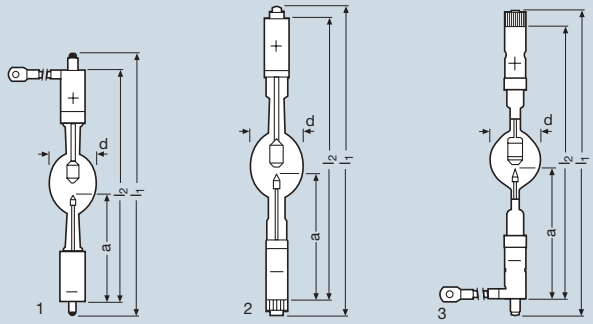
Product reference				d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] [1]	+	−	No.
XBO 2000 W/H OFR	req.	–	–	1.3x4.8	52	370	322	142.5	SFaX27-10	SFaX27-12	1
XBO 2000 W/HS OFR	–	req.	req.	1.3x4.0	60	342	302	145	SFaX27-9.5	SFa27-7.9	2
XBO 2000 W/HTP OFR[5]	req.	–	–	1.3x4.8	52	375	322	142.5	SFa25-14	SFc25-14	3
XBO 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

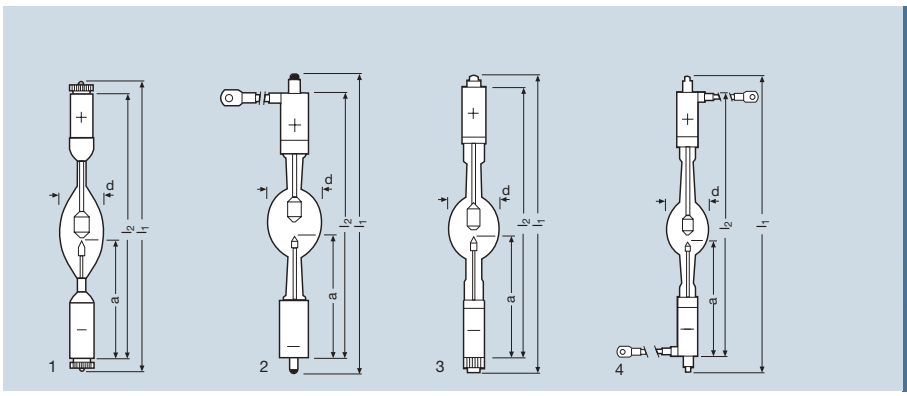


Product reference	Product number	W	V	A	lm [3]	cd [3]	cd/cm² [3]	A	t [h]	[2]
XBO 2500 W/HTP OFR	4008321**064790**	2500	28	90	100000	9500	60000	70...100	1500	s30 p30
XBO 2500 W/HS OFR	4008321**081377**	2500	28	90	100000	10000	80000	70...100	1500	s30 p30
XBO 3000 W/HTP OFR	4008321**064813**	3000	29	100	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

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

H = Suitable for horizontal burning position
OFR = Ozone-free version
TC = Tread and cable
TP = Cable with threaded pin
S = Short
req. = required

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



Product reference	Product number	W	V	A	lm [4]	cd [4]	cd/cm² [4]	A	t [h]	[2]
XBO 3600 W/HTM OFR	4008321**064837**	3600	29	120	160000	16000	85000	80...130	1000	s15 p15
XBO 3600 W/HTC OFR	4008321**064844**	3600	29	120	160000	16000	85000	80...130	1000	s15 p15
XBO 4000 W/HS OFR	4008321**040312**	4000	28	135	155000	17000	90000	80...150	1000	s20 p20
XBO 4000 W/HTP OFR	4008321**057983**	4000	30	130	155000	16000	90000	100...140	1000	s20 p20
XBO 4000 W/HSA OFR	4008321**057990**	4000	29	135	160000	20000	105000	80...150	1000	s20 p20
XBO 4200 W/CA OFR	4008321**057938**	4200	29	140	190000	20000	100000	80...160	1000	s15
XBO 4200 W/GS OFR	4008321**057884**	4200	29	140	190000	20000	100000	80...160	1000	s15
XBO 4500 W/HS OFR	4008321**058447**	4500	32	135	190000	22000	105000	80...150	1000	s15 p15
XBO 4500 W/HTP OFR	4008321**057860**	4500	32	135	190000	22000	105000	80...150	1000	s15 p15

Product reference				d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] [1]	+	−	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

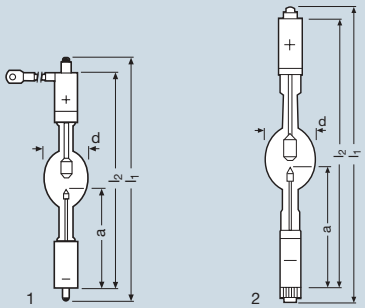
CA = Cable with anode base
GS = Gap short
H = Suitable for horizontal burning position
OFR = Ozone-free version
S = Short
SA = Short arc
TP = Cable with threaded pin
req. = required

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/cm² [3]	A [3]	t [h]	[2]
XBO 5000 W/H OFR	4008321**040428**	5000	35	140	225000	27000	95000	100...150	1000	s15 p15
XBO 5000 W/HBM OFR	4008321**057877**	5000	34	140	225000	27000	95000	100...150	1000	s15 p15
XBO 5000 W/HTP OFR	4008321**058454**	5000	34	140	225000	27000	95000	100...150	1000	s15 p15
XBO 6000 W/HS OFR	4008321**064851**	6000	37	160	280000	40000	105000	110...165	750	s15 p15
XBO 6000 W/HTP OFR	4008321**064868**	6000	37	160	280000	40000	105000	110...165	750	s15 p15
XBO 7000 W/HS OFR	4008321**064875**	7000	42	160	350000	35000	100000	110...165	650	s15 p15
XBO 8000 W/HS OFR	4050300**623061**	8000	45	175	400000	40000	110000	150...180	400	s15 p15
XBO 10000 W/HS OFR	4050300**624532**	9800	50	195	500000	47500	90000	160...200	400	s15 p15
XBO 12000 W OFR	4050300**654539**	12000	56	205	550000	50000	90000	180...210	300	s115

Product reference				d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] [1]	+	–	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 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

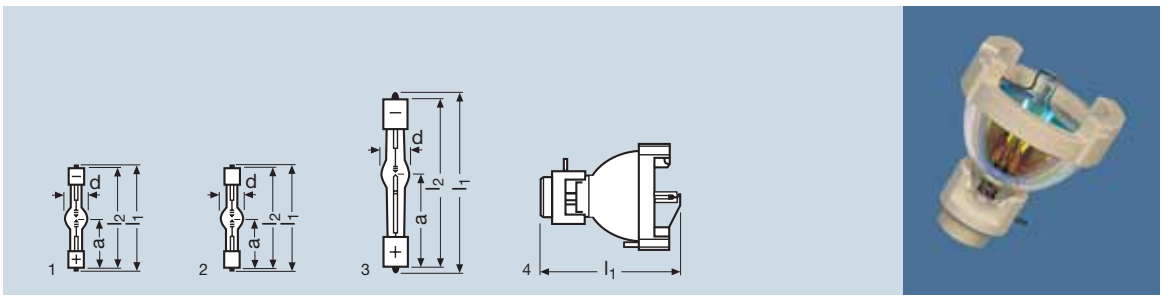
BM = Base modified
OFR = Ozone-free version
S = Short

H = Suitable for horizontal burning position
req. = required

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.

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



Product reference	Product number	AC/DC	W	V	A	lm	lm/W	cd	cd/cm²
HBO 50 W/3	4050300**506692**	DC	50	23	2.2	1300	26	150	90000
HBO 50 W/AC	4050300**507132**	AC	50	L_1: 39…45	L_1: 1.3	2000	40	230	30000
	4050300**507118**			L_2: 34…39	L_2: 1.45				
HBO 100 W/2	4050300**507095**	DC	100	20.5	5.0	2200	22	260	170000
HBO 103 W/2	4050300**382128**	DC	100	22.5	4.4	3000	30	300	170000
HBO R 103 W/45[2]	4050300**405957**	DC	100	22.5	4.4	–	–		–

Product reference		t [h]		d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm][1]			No.
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

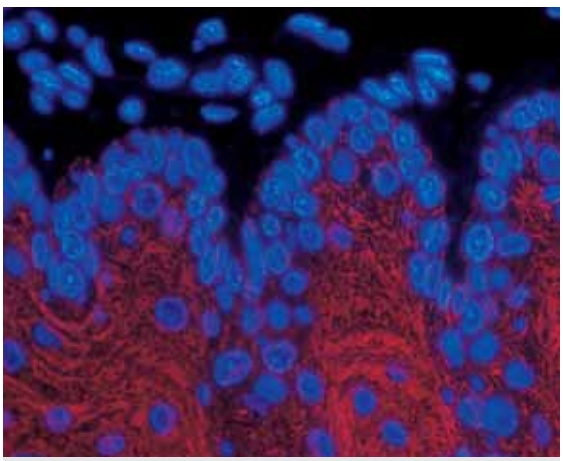
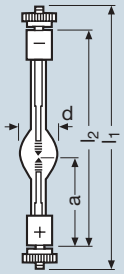


Photo: Zeiss, Fluorescence microscopy

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/cm²
HBO 200 W/2[1)4)]		DC	200	47…65	3.1···4.2	10000	50	1000	40000
	4050300**508153**	AC		L_1:57…65	L_1: 3.6				
	4050300**508283**	AC		L_2:49…57	L_2: 4.2				
HBO 200 W/DC	4050300**506791**	DC	200	57	3.5	10000	50	1100	40000
HBO 200 W/4[3)]	4050300**506715**	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
	4050300**208206**	AC		L_1:77…85	L_1: 7.1				
	4050300**219875**	AC		L_2:69…77	L_2: 7.8				

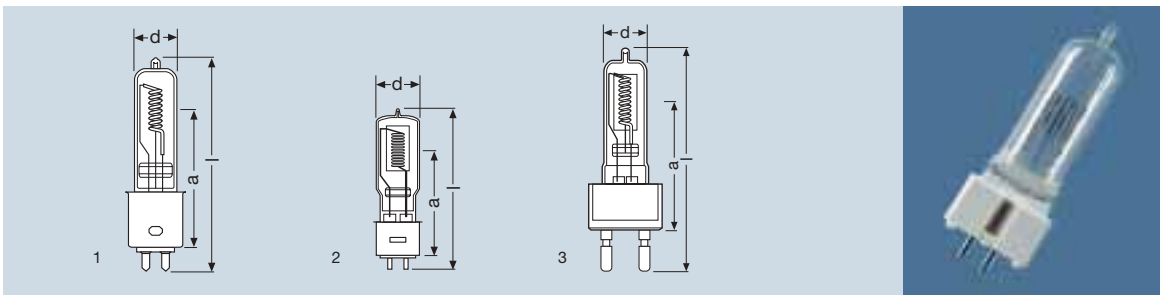
Product reference		t [h]		d [mm]	l_1 max. [mm]	l_2 max. [mm]	a [mm] 2)		
HBO 200 W/2[1)4)]	0.6x2.2	400/200[5)]	s20	17	128	102	40	SFc10-4[1)]	SFc10-4[1)]
HBO 200 W/DC	0.75x2.3	1000	s15	17	128	102	40	SFc10-4/15	SFc10-4/15
HBO 200 W/4[3)]	0.6x2.2	200	s20	17	128	102	40	SFc10-4	SFc10-4
HBO 500 W/2	1.1x4.1	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.

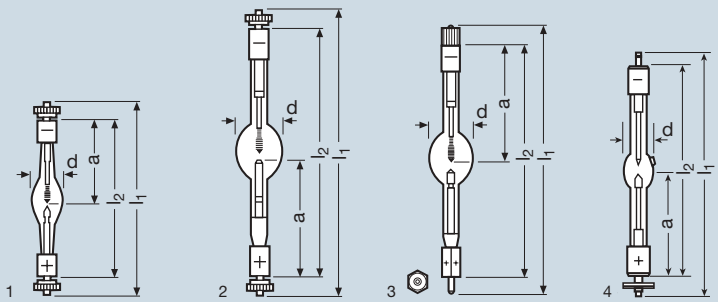
1) HBO 200 W/2 and 500 W/2 can be operated with alternating or direct current
2) Distance from end of base to tip of anode (cold)
3) Lamp also available with increased radiation in the wavelength range below 450 nm for UV curing. Reference HBO 202 W/4
4) Also available as HBO 200 W/2 TM with threaded pin 8-32 UNC-3A
5) Reduced life in ac operation



Product reference	Product number	ANSI	LIF	W	V		t [h]	lm
Special lamps for IR applications								
64743 HT	4050300**506531**	FEL	CP/77	1000	120	GX9.5	300	27500
93734	4050300**350073**	FEP	CP/77	1000	240	G9.5	300	23000
64773	4050300**455280**			2000	120	G9.5	300	65000

Product reference		d [mm]	l max. [mm]	LCL a [mm]	b x h		No.
64743 HT	universal	20	101	60.3	7x18	20	1
93734	universal	20	102	60.3	5.7x27	12	3
64773	universal	20	125	77.5	7x30	12	2

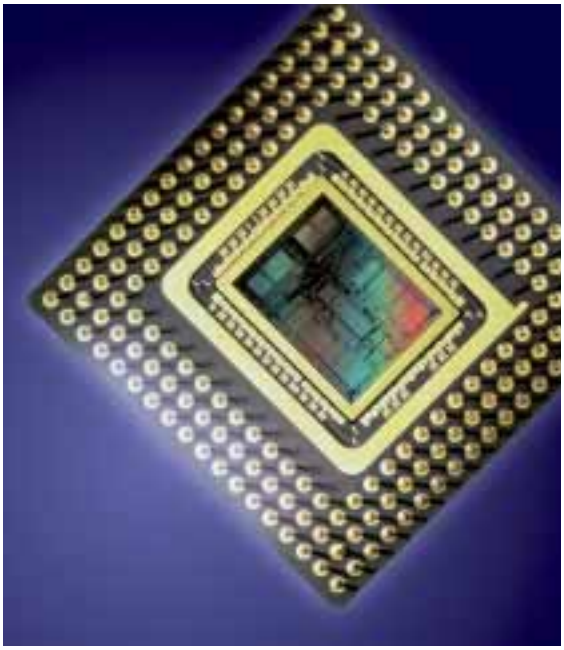
HBO® short-arc mercury vapour lamps for microlithography



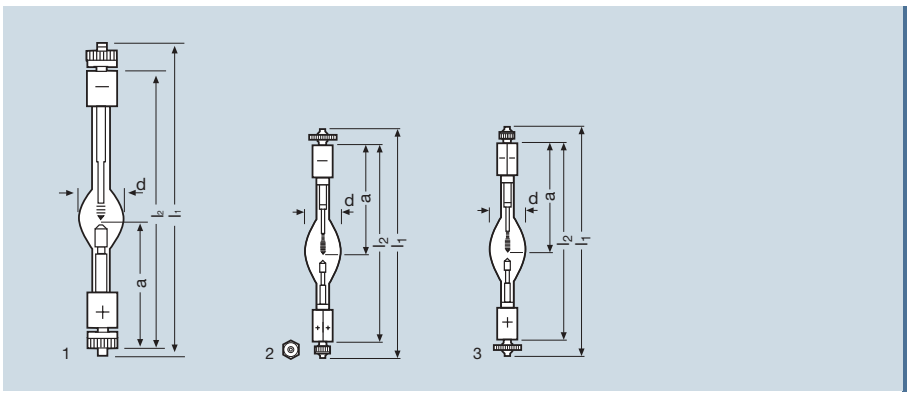
Product reference	Product number	AC/DC	W	V	A	W 350–450 nm	mW/sr 350–450 nm	t [h]	
HBO 250 W/BY	4050300**803432**	DC	250	40	6.5	–	–	2000	Convection[3]
HBO 350 W	4050300**351599**	DC	350[2]	67.5	5.3	46	4600	600	Convection[3]
HBO 350 W/S	4050300**258041**	DC	350	68	5.15	50	4700	600	Convection[3]
HBO 500 W/A	4050300**021089**	DC	500	60	8.3	61	6200	800	Convection[3]
HBO 500 W/B	4050300**275819**	DC	500	48.5	10.3	60	5800	800	Convection[3]

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm][1]			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	161.5	73	4.5	SFcY13-5[6]	2
HBO 500 W/B	Vertical[4]	29	180	151.5	78.5	3	SFcY13-5/20[7]	3

DC = Direct current



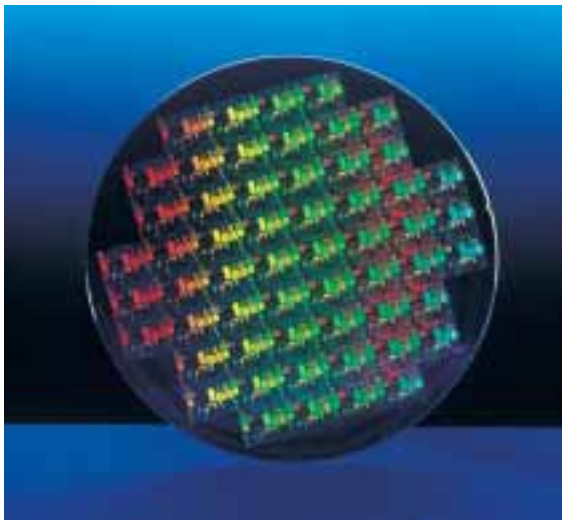
1) Distance from end of base to tip of anode or cathode (cold)
2) Lamp suitable for pulsed operation between 250 W and 500 W
Maximum permissible power is 350 W for constant power operation
3) Cooling fins on cathode base
4) Anode underneath
5) With 8-32 UNC-3 A thread
6) With M5 x 0.9 thread
7) Anode: SXFc13-5/20 hexagon base with M5 x 0.9 thread
Cathode: SXFc13-5/20 with M5 x 0.9 thread



Product reference	Product number	AC/DC	W	V	A	W 350–450 nm	mW/sr 350–450 nm	t [h]	
HBO 1000 W/D	4050300**288857**	DC	1000	37.7	26.5	105	10800	1000	
HBO 1000 W/CEL[3]	4050300**412627**	DC	750 (700/1000)[2]	47	16	85.4	8300	2500	Convection
HBO 1002 W/CEL[4]	4050300**412634**	DC	750 (700/1000)[2]	47	16	85	8300	2500	Convection

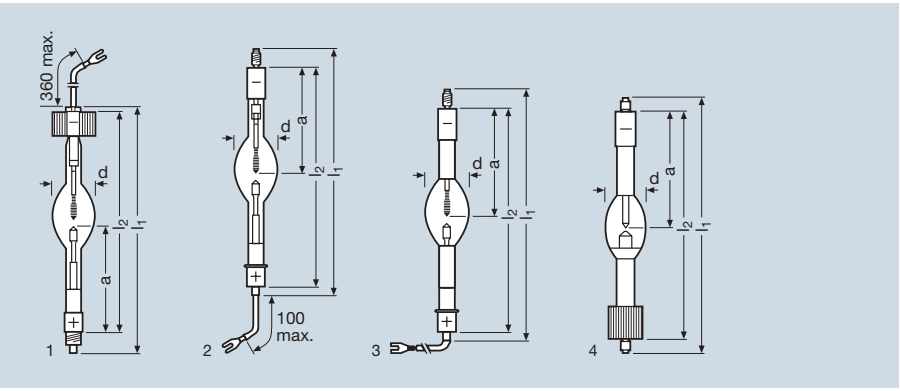
Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm]	1)			No.
HBO 1000 W/D	Vertical[5]	40	240	208	89.5	3	SFc15-6/25[6]	SFc15-6/25[6]	1
HBO 1000 W/CEL[3]	Vertical[5]	28	175	157	78.5	3	SFc15-6/25[6]	SXFc15-6/20[7]	2
HBO 1002 W/CEL[4]	Vertical[5]	28	175	157	78.5	3	SXFc15-6/25[7]	SFc15-6/20[6]	3

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)
4) Also available as HBO 1002 W/CL with 1500 h life.
(Obtainable in Europe, Singapore and Japan only through Canon)
5) Anode underneath
6) With 8-32 UNC-3 A thread
7) Hexagon base with M 6 threaded pin

HBO® short-arc mercury vapour lamps for microlithography

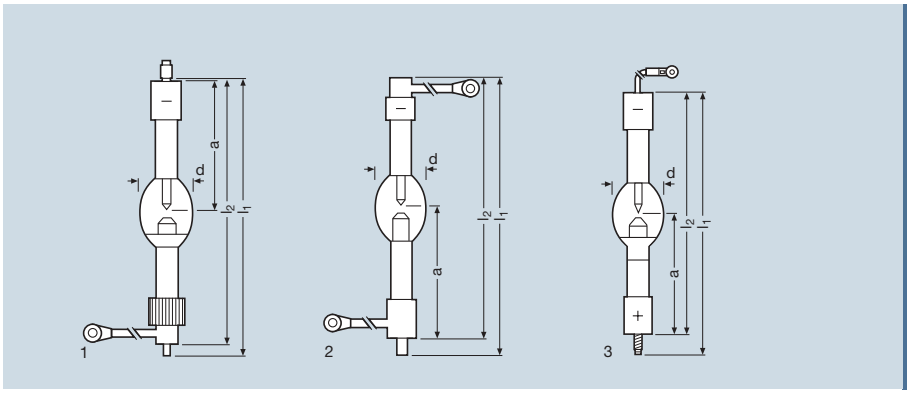


Product reference	Product number	AC/DC	W	V	A	W 350–450 nm	mW/sr 350–450 nm	t [h]
HBO 1000 W/NEL	4050300**412603**	DC	750 (700/1000)[2]	47	16	82.3	8300	2500
HBO 1002 W/NEL	4050300**412610**	DC	750 (700/1000)[2]	47	16	82.3	8300	2500
HBO 1002 W/NIL	4050300**461427**	DC	750 (700/1000)[2]	25.8	27.1	18.7[3]	2400[3]	1500
HBO 1003 W/PI[4]	4050300**739540**	DC	700 (700/1000)[2]	25.8	27.1	18.7[3]	2400[3]	850

Product reference			d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm][1]				No.
HBO 1000 W/NEL	Convection	Vertical[6]	28	190	168	84.5	3	SFaX14-5/21[7]	SFa15-5/16[11]	1
HBO 1002 W/NEL	Convection[5]	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[9]	SFaX14-5/21[12]	3
HBO 1003 W/PI[4]	Forced base cooling	Vertical[6]	29	195	167.5	85	3	SFc15-6/25[9]	SFcX14-6/25[10]	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) I-line values in the 365 ± 2.5 nm range
4) Also available as Longlife version HBO 1003 W/PIL with 1500 h life
5) Cooling fins on cathode base
6) Anode underneath
7) Sleeve base with cooling fins and cable connection (M 5)
8) Sleeve base with M 6 threaded pin
9) With M 6 threaded pin
10) With cooling fins
11) Sleeve base without thread
12) Sleeve base with cable connection (M 5)



Product reference	Product number	AC/DC	W	V	A	mW/sr 365nm ± 2,5	t [h]	2)	
HBO 1500 W/PI[3]	4050300**585956**	DC	1500	23	65.2	4850	850[3]	Forced base cooling	Vertical[4]
HBO 1500 W/CIL	4050300**461458**	DC	1500	23	65.2	4850	1500	Forced base cooling	Vertical[4]
HBO 2001 W/NIL	4050300**461489**	DC	1750	26	67	5500	1500	Forced base cooling	Vertical[4]

Product reference	d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm]	1)	−	+	No.
HBO 1500 W/PI[3]	46	263	242	118	4	SFc27-10/35	SFc30-6/25[6]	1
HBO 1500 W/CIL	50	262	242	122	4	SFa27-20/22[5]	SFa27-10/35[7]	2
HBO 2001 W/NIL	52	251	231	112	4.5	SFcX27-7/35[5]	SFc27-10/35	3

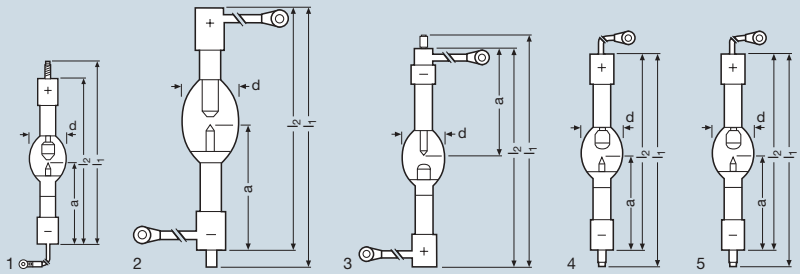
DC = Direct current

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
4) Anode underneath
5) With cable connection (M 8)
6) Cooling fins with cable connection (M 8)
7) With cable connection (M 10)

HBO® short-arc mercury vapour lamps for microlithography

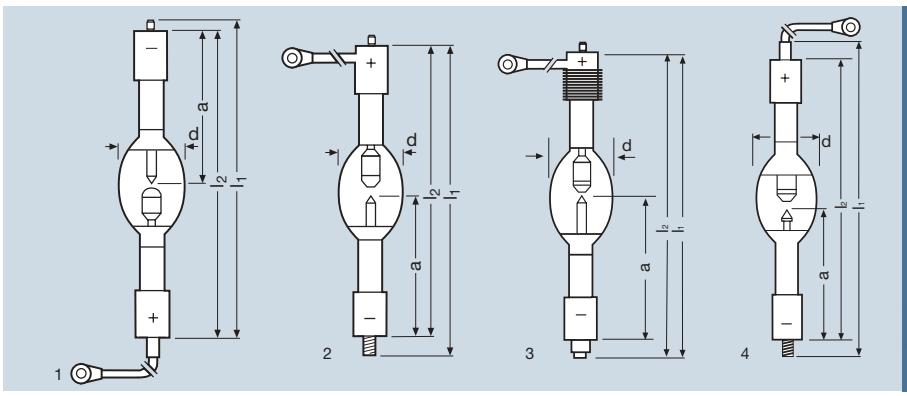


Product reference	Product number	AC/DC	W	V	A	mW/sr 365 nm ± 2,5	t [h]	2)
HBO 2000 W/NIL	4050300**490212**	DC	1750	26	67	5200	1500	Forced base cooling
HBO 2001 W/CIL[4]	4050300**947235**	DC	2000	26	77	6000	1500	Forced base cooling
HBO 2002 W/MA	4050300**947259**	DC	2000[5]	37	54	4200	1000[3]	Forced base cooling
HBO 2002 W/NIL	4050300**772714**	DC	1750	26	67	5100	1500	Forced base cooling
HBO 2011 W/NIL	4050300**947556**	DC	2000	25	80	5700	1500	Forced base cooling

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] 1)				No.
HBO 2000 W/NIL	Vertical[6]	55	251	219	112	4.5	SFc27-7/35[9]	SFc27-12/35	1
HBO 2001 W/CIL[4]	Vertical[6]	62	329	309	149	4.5	SFa33.5-10/50[8]	SF33.5/50[9]	2
HBO 2002 W/MA	Vertical[7]	62	292	272	138.5	3	SFa27-10/35[9]	SF27/35[9]	3
HBO 2002 W/NIL	Vertical[6]	55	254	234	107.5	4.5	SFc27-10x1.25/35	SFc27-7/35[9]	4
HBO 2011 W/NIL	Vertical[6]	55	256	234	107.75	4.5	SFc27-12x1.5/35	SFc27-7/35[9]	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) Range 1700 to 2400 W
6) Anode on top
7) Anode underneath
8) With cable connection (M 6)
9) With cable connection (M 8)



Product reference	Product number	AC/DC	W	V	A	mW/sr 365 nm ± 2,5	t [h]	2)
HBO 2500 W/PIL	4050300**947396**	DC	2500	28	90	8200	1500	Forced base cooling
HBO 2501 W/NIL	4050300**947297**	DC	2500	23	109	10600	1500	Forced base cooling
HBO 2510 W/NIL	4050300**947433**	DC	2500	23	109	7800	1500	Forced base cooling
HBO 3500 W/PI[3)]	4050300**947495**	DC	3400	23	148	9000	850	Forced base cooling
HBO 3501 W/PI[3)]	4050300**947518**	DC	3400	23	148	9000	850	Forced base cooling

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] 1)				No.
HBO 2500 W/PIL	Vertical[4)]	62	350	315	149	6.7	SFc30-6.5/50	SFc30-6/50[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	SF9c33.5-14/50	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

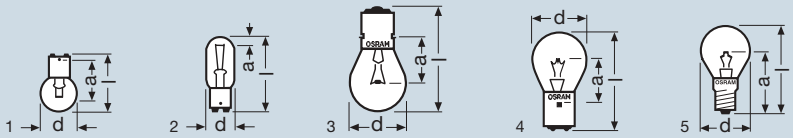
Disposal:
HBO® discharge lamps contain small quantities of materials (such as mercury) which are harmful to the environment. In Germany, they are classified as special waste (Code 35326 “Mercury, residue containing mercury, mercury vapour lamps, fluorescent lamps, fluorescent tubes”). In other countries 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 1500 W/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)

Lamps without halogen, low voltage



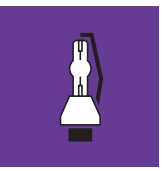
Product reference	Product number	ANSI	LIF	V	W/A		t [h]
Lamps for optical and photo-electronic purposes							
8013	4050300**206356**			6	10 W	BA15d	200
8014	4050300**206370**			6	10 W	BA15s	600
8017	4050300**017327**			6	15 W	B15d	1000
8018	4050300**206417**		M/20	6	15 W	B15d	100
8022	4050300**206677**			12	50 W	BA20d	50
8024	4050300**013817**			12	40 W	BA20d	500
8100	4050300**342122**		F/74	6	5 A	E14	600

Product reference		d [mm]	l max. [mm]	a [mm]	b h		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

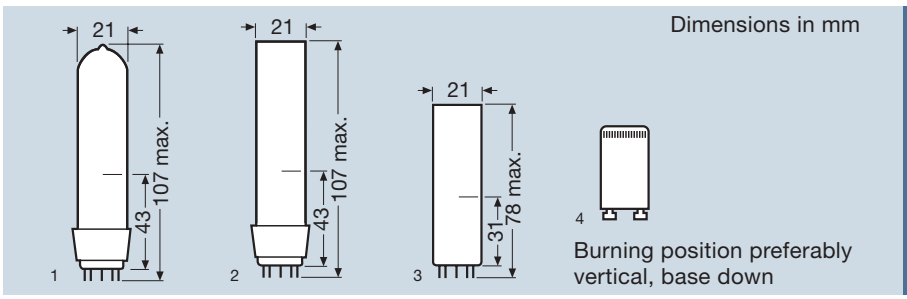
These low-voltage lamps are characterised by their exact filament geometry. The glass bulb has high optical quality.

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



Dimensions in mm

Burning position preferably vertical, base down

Product reference	Product number		V	A	AC/DC	W	b, h		No.
Spectral lamps									
Cd/10	4050300**210353**	Cadmium	15	1.0	AC	15	15x6	Pico 9	1
Cs/10	4050300**213842**	Caesium	10	1.0	AC	10	15x6	Pico 9	1
He/10	4050300**212258**	Helium	60	1.0	AC	55	15x8	Pico 9	1
Hg 100	4050300**231310**	Mercury	45	0.6…1	AC/DC	22…44	20x3	Pico 9	2
HgCd/10	4050300**211459**	Mercury/Cadmium	30	1.0	AC	25	20x8	Pico 9	1
K/10	4050300**212197**	Potassium	10	1.0	AC	10	15x6.5	Pico 9	1
Na/10	4050300**210377**	Sodium	15	1.0	AC	15	15x6.5	Pico 9	1
Na 10 FL	4050300**006925**	Sodium	16	0.57	AC	9	–	Pico 9	3
Ne/10	4050300**212210**	Neon	30	1.0	AC	30	15x8	Pico 9	1
Rb/10	4050300**213866**	Rubidium	10	1.0	AC	10	15x6	Pico 9	1
Tl/10	4050300**211435**	Thallium	15	1.0	AC	15	8x3	Pico 9	1
Zn/10	4050300**212234**	Zinc	15	1.0	AC	15	15x6	Pico 9	1
Accessories		Starter St 191							4

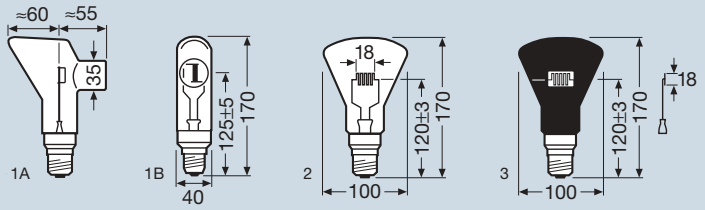
AC = Alternating current
DC = Direct current

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	4050300**209104**	9	16	–	2600	1.6 x 20	s	E27/51x39	1 [4]
WI 40/G	4050300**206783**	31	6	2856	–	18 x 18	s + h	E27/51x39	2
WI 41/G	4050300**206806**	31	6	2856	–	18 x 18	s + h	E27/51x39	3

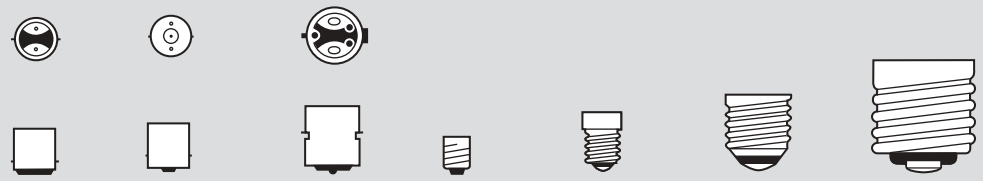
Product reference	cd	lm	BLACK TEMP.	K max.	[3]
Parameters					
WI 17/G	–	–	+	(+)	+ 250–800 nm
	–	–	+	(+)	+ 250–2500 nm
WI 40/G	(+)	+	–	(+)	–
WI 41/G	+	–	–	+	–

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



BA15d
Sheet 7004-11

BA15s
Sheet 7004-11 A

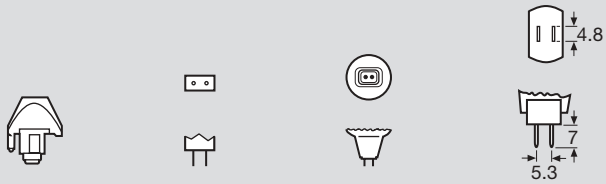
BA20d
Sheet 7004-12

E10
Sheet 7004-22

E14
Sheet 7004-23

E27
Sheet 7004-21

E40
Sheet 7004-21



FaX1.5-3x1

G4
Sheet 7004-72

GX5.3
Sheet 7004-73 A

G5.3-4.8
Sheet 7004-126

GY5.3
Sheet 7004-73 B

G6.35-15
G6.35-20
G6.35-25
Sheet 7004-59

GX6.35-25
Sheet 7004-59

GY6.35-15
Sheet 7004-59

GZ6.35
Sheet 7004-59 A

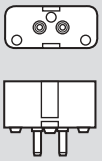
GZ4

GZ9.5

Bases
IEC/EN 60061-1

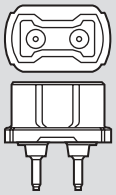
GZX9.5
GZZ9.5
Sheet 7004-70 B

G9.5
Sheet 7004-70

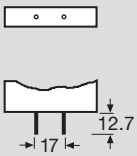


GX9.5
Sheet 7004-70 A

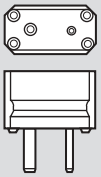
GY9.5
GZ9.5
Sheet 7004-70 B



G12



GX16d

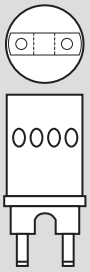


GY16
Sheet 7004-45

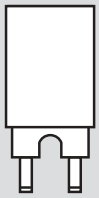
G22
Sheet 7004-75

GY22
Sheet 7004-119

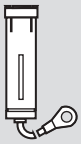
G38
Sheet 7004-76



GX38



GX51



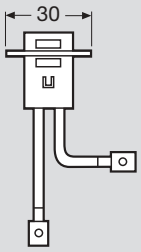
K24s
Cable length
250 mm
Cable lug hole
ø 8.4 mm

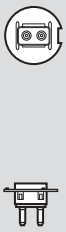
Pico9

P28s
Sheet 7004-42

QXL

HPL



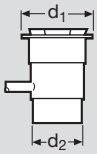


PK30d

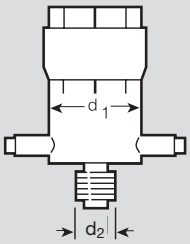
R7s
RX7s
Sheet 7004-92 A

PG22-6.35
Sheet 7004-48

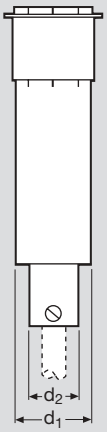
Bases



SK27-50

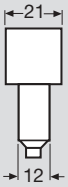


SFcX27-8
(5/16-18UNC-2 A)
SFcX25-10

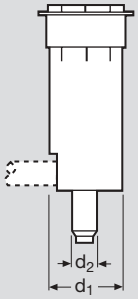


SFa15-10
SFa16-8
SFa16-10
SFa20-8
SFa20-10
SFa21-5
SFa25-10
SFa25-12
SFa25-14
SFa28-14
(560 mm
cable)

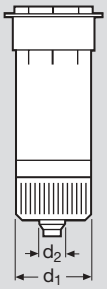
SFa27-7.9
SFa27-10
SFa27-11
SFa27-12
SFa27-14
SFa28-18
SFa30-7.9
SFa30-14
SFa30-15/110
SFa30-18
SFa30-22



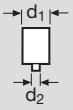
SFa21-12
DIN 49759



SFaX27-10
SFaX27-9.5
SFaX27-12
SFaX27-13
SFaX27-14
SFaX28-13
SFaX30-9.5
SFaX30-16

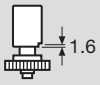


SFc25-14 (M 14x1.5)
SFc27-14 (M 14x1.5)
SFc15-6
SFc28-13
SFc30-14



SFa5-2
SFa6-2
SFa7.5-2
SFa8-2
SFa9-2
SFa12-11
SFa21-5

SFcX12-4
(with M 4 thread
and centering device)



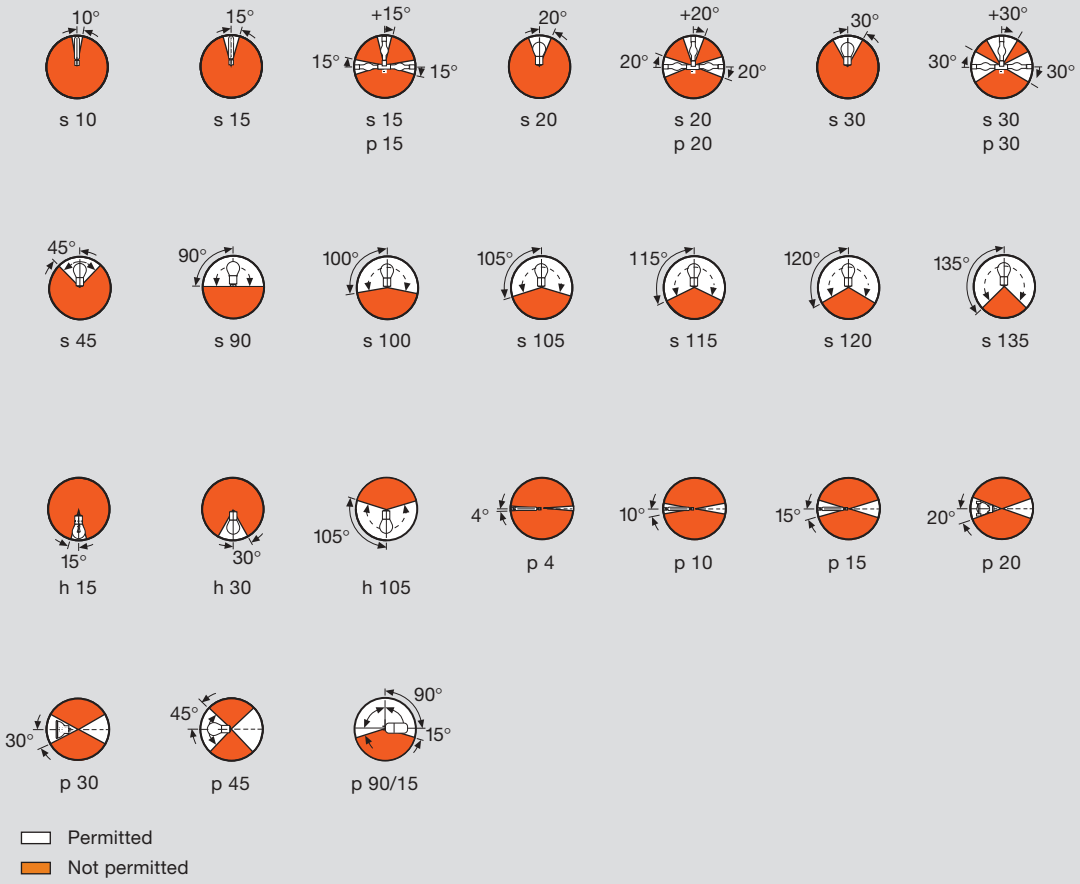
SFc10-4 M4 thread
SFc6-3 M3 thread
SFc11-4 M4 thread
SFc12-4 M4 thread
SFc13-4 M4 thread

SX15s

X515
DIN 49613

The first number in the base reference (e.g. SFa9-2) means that the base sleeve has a diameter (d_1) of 9 mm and the small cylindrical fitting a diameter (d_2) of 2 mm. For the SFaX27-10 base, the 27 indicates the sleeve diameter (d_1) and the 10 the diameter of the base pin (d_2); for bases with threads the second number is the thread diameter (d_2).

Schematic diagram



Lamps with flat filaments may only be inclined perpendicular to the filament plane.

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.