

Lighting Program Display/Optic

SEE THE WORLD IN A NEW LIGHT

OSRAM



GENERAL INFORMATION

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

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

OSRAM reserves the right to make technical modifications without notice.

All supplies are subject to availability.

® = Registered trademark

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

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

References for control gear and igniters are available on request.

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

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

CE LABELLING FOR LUMINAIRES, LAMPS AND ACCESSORIES

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

Notes on CE labelling:

1. CE labelling as a requirement for marketing products

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

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

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

2. The CE label is an administrative mark

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

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

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

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

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

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

Any manipulation of our products or packaging, including but not limited to modification, reworking or restamping, is prohibited and infringes our registered trademark rights. Such modifications may impair the technical properties of our products, destroy them or cause consequential damage or injury, for which OSRAM cannot under any circumstances be held responsible.

For more information on our products go to:

www.osram.de

www.osram.com



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See the world in a new light

For almost 100 years the name of OSRAM has stood for excellence in light throughout the world. The name was registered way back in 1906. In 1919 Siemens & Halske AG, Deutsche Gasglühlicht AG and AEG merged their light bulb production activities to form OSRAM GmbH. We are now one of the two largest lighting manufacturers in the world.

Light is life

With its innovative technologies and solutions, OSRAM has continually opened up new horizons in artificial lighting – in offices, factories and homes, and on the roads. Light is an essential part of our everyday lives. Thanks to a wide range of lamps and lighting systems from OSRAM we can live our lives independently of natural daylight. Artificial light gives us greater

safety and comfort, is important for advances in science and technology and helps us conserve our valuable natural resources.

OSRAM is your partner

We supply customers in more than 140 countries. Our sales logistics and highly developed order processing system ensure that OSRAM products are delivered at the right time to the right place throughout the world.

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



OSRAM Classic



OSRAM DECOSTAR®



*OSRAM DULUX® EL
LONGLIFE E27*



OSRAM LUMILUX® T5



*OSRAM POWERBALL®
HCl®-TC*



*OSRAM ULTRA-
VITALUX®*



Light for technology and entertainment

Ready for action

Ever since the early days of electric lighting OSRAM has been responsible for milestones in the photo-optical sector with its development of innovative lighting solutions and manufacturing technologies. Its special lamps owe their superiority to dedicated development work, setting new standards in cinema, video and data projection.

Professionals in touch with their customers

By concentrating all our entrepreneurial activities – including marketing, development, manufacturing, quality control, logistics and sales – into the special professional sector of light and radiation we have been able to stay close to our customers.

This has had a positive effect on quality, service and technical expertise. Whatever your particular need, there is someone in OSRAM's Display/Optic division who can help you find solutions to your lighting problems.

Innovation as a duty

In our efforts to provide products of the highest quality and maintain a technical lead, we place great importance in the Display/Optic division on research and development.

This division manufactures more than 800 types of halogen and discharge lamps in Germany and abroad.

- OSRAM World:**
- 57 companies and sales offices for 99 countries
 - 50 countries served by local agents or OSRAM GmbH, Munich
 - 54 factories in 18 countries



OSRAM
Halogen lamps



OSRAM XBO®
ReflectORIZED lamps



OSRAM XBO®
Projection lamps



OSRAM HBO®
ReflectORIZED lamps



OSRAM HBO®-IC
for Lithographie



OSRAM HMI®
Metal halide lamps



Setting the pace in lighting design

Versatile technology for a wide range of applications

In addition to the normal, everyday requirements for lighting, there are a large number of applications for artificial light which require a special purpose source of light or radiation. The Display/Optic division of OSRAM has to provide a range of lamps to best meet a diversity of requirements in many different fields of application. In doing so, it makes use of a wide range of technical options for generating light – from simple yet high-precision incandescent lamps and modern halogen lamps, some using XENOPHOT® technology, to xenon and mercury-vapour discharge lamps and metal halide lamps.

The two Oscars® awarded to OSRAM by the ACADEMY OF MOTION PICTURE ARTS AND SCIENCES® for the development and continuous improvement of the HMI® and XBO® lamps from OSRAM, which have been so important and successful in the motion picture industry, are evidence of our world-wide recognition.





SharXS® HTI® short-arc lamps provide excellent light and efficiency for creative effects.



info@sharxs.de
www.sharxs.de



6000 °C in an HMI® arc.



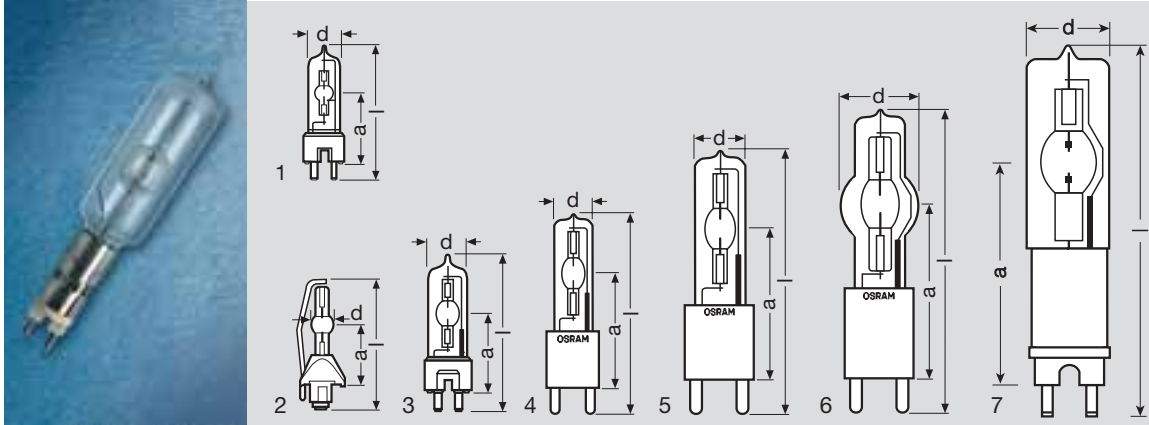
Micrographic chip structure.

Application-driven design

The range of applications for lamps from our Display/Optic division encompasses diverse and contrasting areas such as amateur photography, commercial film projection, microchip fabrication, show business, medical applications, solar simulation and much more. Even if the basic lamp technologies remain the same and are used in all areas of application, there are obvious and often dramatic differences in the way the lamps are designed to produce various lamp characteristics such as electri-

cal output, colour temperature, lamp life, luminance and colour rendering. In every case, however, the design is always the one best suited to the particular application.

HMI® Metal halide lamps



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/SE	4050300 277400	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

Product reference	d [mm]	a [mm]		t [h]		No.
HMI 200 W/SE	20	39	5	200	any	1
HMI 250 W/SE	12	35	5	250	p 45	2
HMI 400 W/SE	23	60	6	650	any	3
HMI 575 W/SEL	30	70	7	1000	any	4
HMI 1200 W/SE	42	107	10	750	any	5
HMI 2500 W/SE XS	60	127	14	500	any	6
HMI 4000 W/SE XS	75	142	23.5	500	any	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

= Square-wave AC
 = Sine-wave AC

W = Watt
 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:

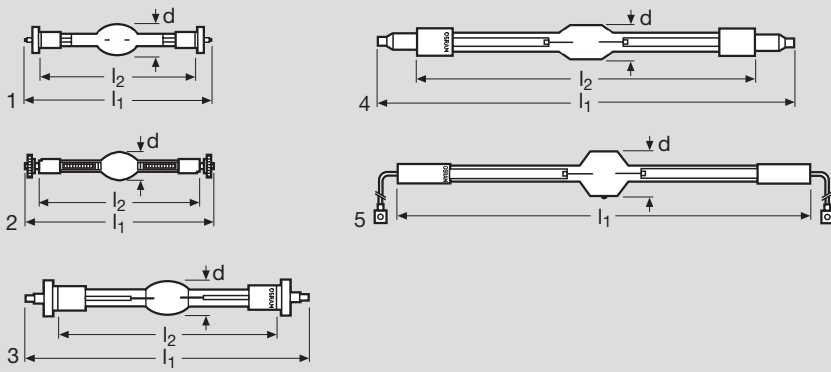
- Very high luminous efficacy of up to 100 lm/W
- Daylight colour temperature of approx. 6000 K
- High colour rendering index of CRI > 90
- Hot restart
- Dimmable

Applications:

- Film and television recording under daylight conditions in the studio or outdoors
- ENG (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	4050300575148	575	95	7.0 ~	SFc10	49000	135
HMI 1200 W/S XS ¹⁾	4050300480800	1200	100	13.8 ~	SFc10-4	110000	135
HMI 1200 W/GS	4050300239774	1200	100	13.8 ~	SFc15.5	110000	220
HMI 2500 W/GS	4050300302775	2500	115	25.6 ~	SFa21	240000	355
HMI 2500 W/S XS ¹⁾	4050300025780	2500	115	25.6 ~	SFa21	240000	210
HMI 4000 W/XS ²⁾	4050300216553	4000	200	24.0 ~	SFa21	380000	405
HMI 6000 W/XS	4050300304137	6000	123	55.0 ~	S25.5	570000	450
HMI 12000 W/XS	4050300857763	12000	160	84.0 ~	S30	1150000	470
HMI 18000 W/XS ²⁾	4050300296432	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	any	1
HMI 1200 W/S XS ¹⁾	21	115	7	750	any	2
HMI 1200 W/GS	27	180	10	1000	any	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 ²⁾	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 ²⁾	70		44	300	p 15	5

Supplied in single packs
 ~ = Sine-wave AC
 GS = Gap Shortened

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

Safety:
 Because HMI® lamps emit UV radiation and operate at overpressure those lamps (including the versions with an outer bulb) must be operated only in appropriate fully enclosed luminaires. Suitable filters should be used to ensure that the UV radiation is reduced to an acceptable level.

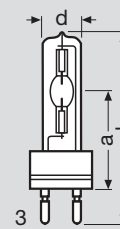
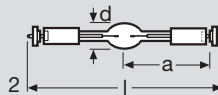
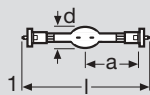
Literature:
 Further information can be found in the following brochures, obtainable on request from OSRAM:


- "Technology and applications/Metal halide lamps"
- "Guidelines for control gear and igniters for metal halide lamps"
- "Availability of control gear and igniters"
- "Rome. 8 pm. Overcast. No problem. HMI lamps"



1) Forced cooling required
 2) Supply voltage 380 V

HMP®

Metal halide lamps



Product reference	Product number	W	V	A		lm	K
HMP® Metal halide lamps							
HMP 400 DE	4050300 396170	400 ¹⁾	100	4.8 ~	SFc10-4	33000	6000
HMP 575 DE	4050300 407845	575 ²⁾	100	6.7 ~	SFc10-4	49000	6000
HMP 575 SE	4050300 401393	575 ²⁾	100	6.8 ~	G22	49000	6000

Product reference	$l_{max.}$ [mm]	\varnothing d [mm]	a max. [mm]		t [h]		No.
HMP 400 DE	92	16	35	5.5	750	p 45 ³⁾	1
HMP 575 DE	135	21.5	57.5	7	1000	any	2
HMP 575 SE	145	30	70	7	1000	any	3

~ = Sine-wave AC
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 wattage. 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



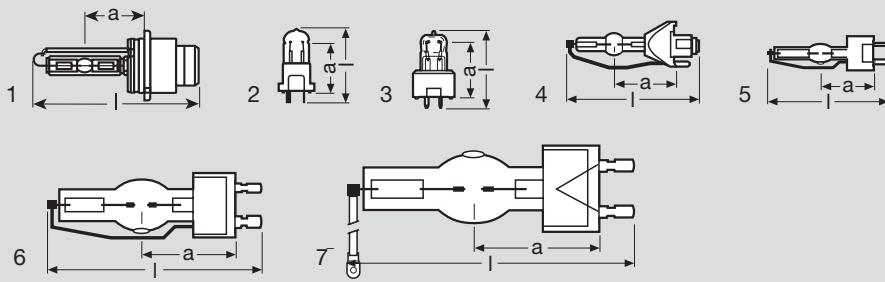
**HMI® and HTI®
create the right
mood on stage.**

Photo: Spectra. ESC 2002 Tallin

1) Permitted from 300 to 600 W
2) Permitted from 400 to 700 W
3) Pumping tip up

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-3	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 705 W/SE XS	4050300 618074	700	70	10	GY9.5	59000	30000
HTI 1200 W/SE XS	4050300 371153	1200	100	13.8 ~	GY22 ¹⁾	105000	26000
HTI 1800 W/SE XS ²⁾	4050300 558127	1800	100	20 ~	GY22 ¹⁾	160000	35000
HTI 2500 W/SE XS ¹⁾	4050300 371146	2500	115	25.6 ~	G22 ³⁾ +Cable	240000	30000
Product reference	K		t [h]	I max. [mm]	a [mm]		No.
HTI S 35/12	4300	4.2	3000 ⁴⁾	79.5	27.1	p 10	1
HTI 150 W	6900	5	750	46	30	any	2
HTI 152 W	5000	6.75	2000	48	30	any	3
HTI 250 W/SE ⁶⁾	4900	2.5	250	80	35	p 45 ⁵⁾	2
HTI 400 W/SE	4800	4	250	84	35	p 45 ⁵⁾	4
HTI 403 W/SE	4800	4	750	84	35	p 45 ⁵⁾	4
HTI 404 W/SE	5800	3	500	84	35	p 45 ⁵⁾	4
HTI 405 W/SE XS	5800	3	500	80	36.5	p 45 ⁵⁾	5
HTI 600 W/SE	5300	5.5	300	84	35	p 45 ⁵⁾	4
HTI 705 W/SE XS	5500	4	500	85	39	p 45 ⁵⁾	5
HTI 1200 W/SE XS	5400	7	750	135	59	s 135 ⁵⁾	6
HTI 1800 W/SE XS ²⁾	5600	7	750	135	59	s 135 ⁵⁾	6
HTI 2500 W/SE XS ¹⁾	6000	14	600	180	85	s 135	7

~ = Sine-wave AC
SE = Single ended

= Square-wave AC
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
- Choke or ECG operation

Applications:

Because of their high luminance and high luminous efficacy, HTI® lamps are primarily employed in lighting systems with optical paths.

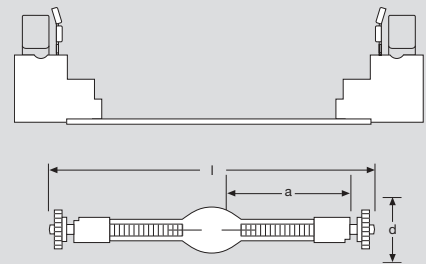
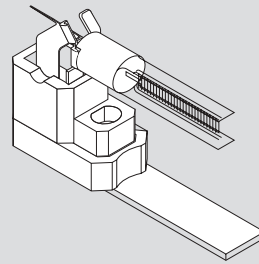
- Effect spotlights/entertainment
- Effect and slide projectors
- Optical waveguide (endoscopy/boroscopy)


1) Special GY22 base. The ignition voltage may be applied only to the thin pin
2) Supplied on request
3) Important: The contact pins of the base are short-circuited; the electrode furthest from the base is connected via cable



4) Depending on the switching cycle, reflector and control gear
5) Current strap underneath
6) To be discontinued

SharXS® HTI®

Metal halide lamps



Product reference	Product number	W	kV START	ECG CCG	A		lm	cd/cm ²
SharXS HTI 200 W/D3/70	4050300854311	200	3/25	60/-	3.3	SFc10-4	13000	30000
SharXS HTI 400 W/D3/75	4050300854502	400	3/25	49/-	8.5	SFc10-4	26000	55000
SharXS HTI 575 W/D4/75	4050300854298	575	3/25	90/95	6.4/7.0	SFc10-4	46000	49000
SharXS HTI 700 W/D4/75	4050300861876	700	3/25	70/73	10.0/11.0	SFc10-4	59000	60000
SharXS HTI 700 W/D4/60	4050300854465	700	3/25	70/73	10.0/11.0	SFc10-4	59000	60000
SharXS HTI 1200 W/D7/60	4050300854595	1200	5/35	95/100	12.7/13.8	SFc10-4	110000	41000
SharXS HTI 1200 W/D7/75 ¹⁾		1200	5/35	95/100	12.7/13.8	SFc10-4	110000	41000

Product reference	K	R _a	t [h]	I _{max} [mm]	Ø d [mm]	a [mm]		
SharXS HTI 200 W/D3/70	7000	> 85	3000	135	15	57.5	3	Universal
SharXS HTI 400 W/D3/75	7500	> 80	750	135	18	57.5	3	Universal
SharXS HTI 575 W/D4/75	7500	> 80	750	135	18	57.5	4	Universal
SharXS HTI 700 W/D4/75	7500	> 80	750	135	21	57.5	4	Universal
SharXS HTI 700 W/D4/60	6000	> 80	750	135	18	57.5	4	Universal
SharXS HTI 1200 W/D7/60	6000	> 90	750	135	21	57.5	7	Universal
SharXS HTI 1200 W/D7/75 ¹⁾	7500	> 80	750	135	21	57.5	7	Universal



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:

- “Licht mit Biss/Light with a bite”: SharXS® HTI® from OSRAM
- “Licht mit Biss/Light with a bite”: SharXS® HTI® CD-ROM



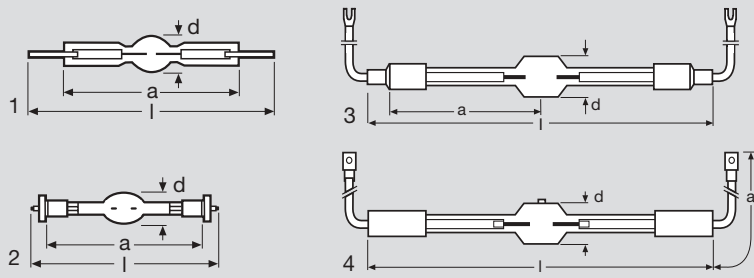
info@sharxs.de
www.sharxs.de

Photo: A & O-Lighting
Technology GmbH, Oytten,
“Festival of German Hits”

¹⁾ Available on request

HTI®

Metal halide lamps



Product reference	Product number	W	V	A		lm	cd/cm ²	K
HTI® double-ended								
HTI 300 W/DX	4050300370651	300	100	3.6 ~	SFc10-4	22000	20000	6500
HTI 300 W/DEL	4050300651248	300	85	4 ~	SFc10-4	20000	18000	5700
HTI 575 W/DE XS	4050300946122	575	90	7.4 ~	SFc11-4	45000	30000	5600
HTI 2500 W/DEL	4050300596709	2500	115	26 ~	Special	270000	30000	6000
HTI 4000 W/DE	4050300519845	4000	115	40 ~	S25.5	360000	35000	6300

Product reference		t [h]	I max. [mm]		a [mm]		No.
HTI 300 W/DX	5.5	750	92	16	70	p 45	2
HTI 300 W/DEL	5.5	3000	92	16	70	p 45	2
HTI 575 W/DE XS	5	500	92	18	70	any	2
HTI 2500 W/DEL	25	2000	295	31.5	108	p 45	3
HTI 4000 W/DE	15	500	270	40	140	p 30	4

D = Double
 DE = Double ended
 DEL = Type of DE (extended service life)

DX = Type of DE (eXtended robustness)
 ~ = Sine-wave AC
 XS = eXtreme Seal (max. permissible foil temperature 450 °C)

Safety:

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

Literature:

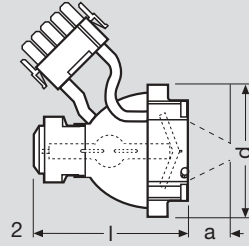
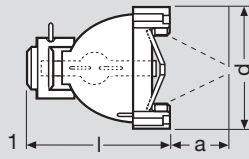
Further information can be found in the following brochures, obtainable on request from OSRAM:

- “Technology and applications/Metal halide lamps”
- “Guidelines for control gear and igniters for metal halide lamps”
- “Availability of control gear and igniters”
- “Staying cool when things hot up”, HTI lamps with eXtreme Seal technology



Photo: Mondiale Publishing, “Live!” disco, Bratislava

HTI® Metal halide lamps



Product reference	Product number	W	V	A	K	$I_{max.}$ [mm]	\varnothing d [mm]	a	t [h]		No.
HTI® with dichroic reflector (hot restart)											
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

⌋ = Square-wave AC

HTI® for effect projection.

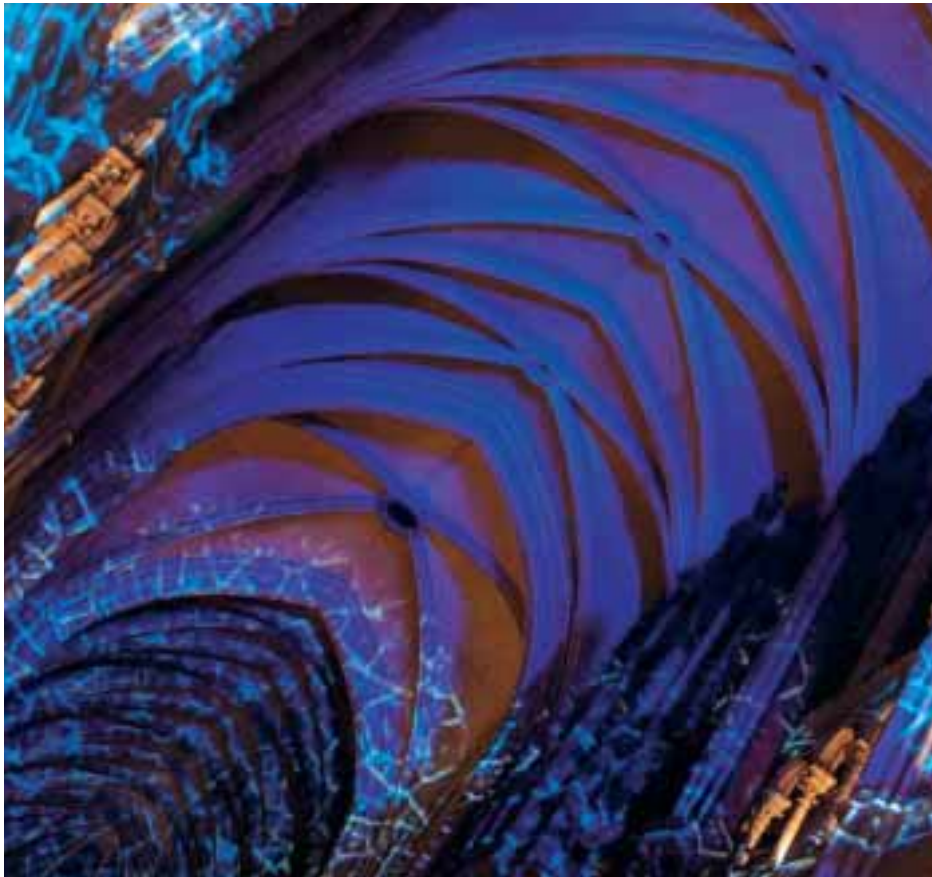


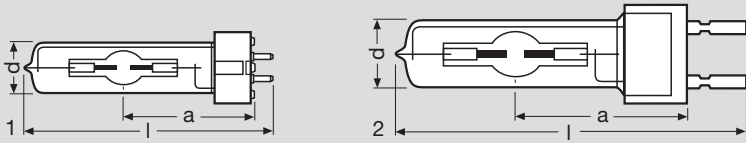
Photo: Clay Paky, Chartres, Paris (Lyrical Days)






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)

HSR®

Metal halide lamps



Product reference	Product number	W	V	A		lm	cd/cm ²	K
HSR® with outer bulb (no hot restart)								
HSR 400/60	4050300315942	400	67	6.9 ~	GX9.5	33000	20000	6000
HSR 575/60	4050300509686	575	95	7 ~	GX9.5	49000	10000	6000
HSR 575/72	4050300651187	575	95	7 ~	GX9.5	49000	10000	7200
HSR 700/60	4050300315959	700	72	11 ~	G22	58000	10000	6000
HSR 1200/60	4050300526836	1200	100	13.8 ~	G22/28x50	110000	20000	6000
Product reference		t [h]	l [mm]		a [mm]			No.
HSR 400/60	5	1000	110	23	62	any	1	
HSR 575/60	7	1000	125	30	65	any	1	
HSR 575/72	7	1000	125	30	65	any	1	
HSR 700/60	8	1000	155	30	75	any	2	
HSR 1200/60	10	1000	175	40	85	any	2	

~ = Sine-wave AC

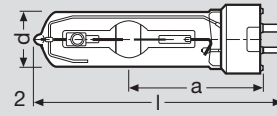
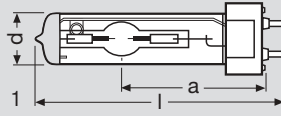
HSR® lamps are similar to HTI® lamps (single-ended) but have an outer bulb for ease of handling. No hot restart.






Photo: Spectra Sweden, ESC 2003, Riga

HSD®

Metal halide lamps



Product reference	Product number	W	V	A		lm	K
HSD® with outer bulb (no hot restart)							
HSD 150/70	4050300665009	150	97	1.8 ~	G12	12000	7000
HSD 200/60	4050300424682	200	70	3.3 ~	GY9.5	13000	6000
HSD 250/60	4050300501925	250	90	3.1 ~	GY9.5	17000	6000
HSD 250/78	4050300617497	250	90	3.1 ~	GY9.5	17000	7800
HSD 250/80	4050300808635	250	90	3.1 ~	GY9.5	17000	8000
HSD 575/60	4050300897684	575	88	7.4 ~	GX9.5	45000	6000
HSD 575/72	4050300593937	575	88	7.4 ~	GX9.5	45000	7200

Product reference		t [h]	I max. [mm]	d [mm]	a [mm]		No.
HSD 150/70	5	3000 ¹⁾	105	20	56	any	1
HSD 200/60	5	2000	108	23	55	any	2
HSD 250/60	5	2000	108	23	55	any	2
HSD 250/78	5	3000	108	23	55	any	2
HSD 250/80	5	3000	108	23	55	any	2
HSD 575/60	7	3000	135	30	65	any	2
HSD 575/72	7	3000	135	30	65	any	2

~ = Sine-wave AC

HSD® lamps are long-life HSR® lamps intended primarily for applications in the commercial sector.

Safety:

Because HSD® and HSR® lamps emit UV radiation and operate at overpressure the lamps must be operated only 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"
- "The perfect stage for your creativity", Metal halide lamps for archtainment: HSR® and HSD®

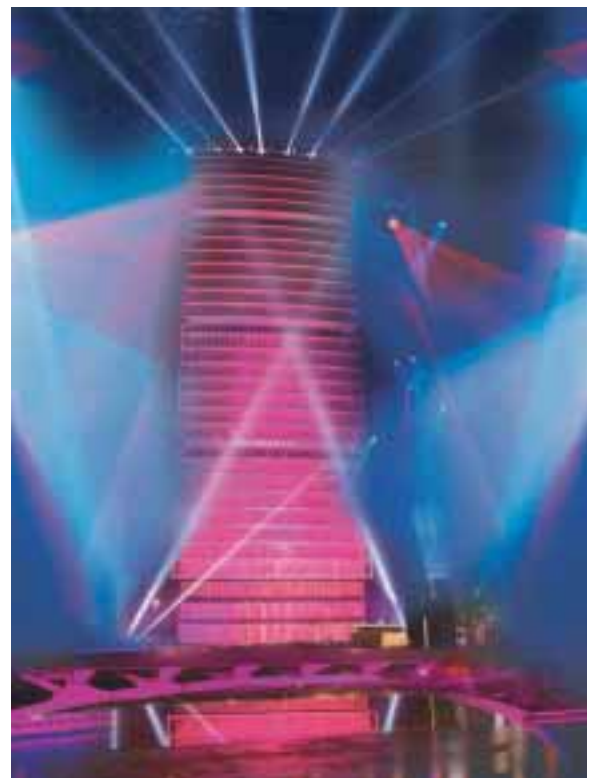


Photo: A & O-Lighting: Arag Tower, Martin Professional: Chicago Bridge

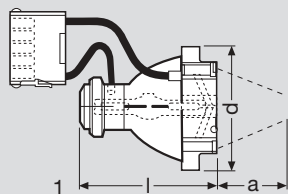
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






¹⁾ If operated on ECG. 2000 h if operated on choke

VIP®

Metal halide lamps



Product reference	Product number	W	V	A		lm	cd/cm ²
VIP® halogen discharge lamps							
VIP R 273/45	4050300 489315	270	38	7.1	Refl.	17000	100000
Product reference	K ¹⁾		t [h]				
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, LCoS or DLP™ technology. Their spectral distribution has been

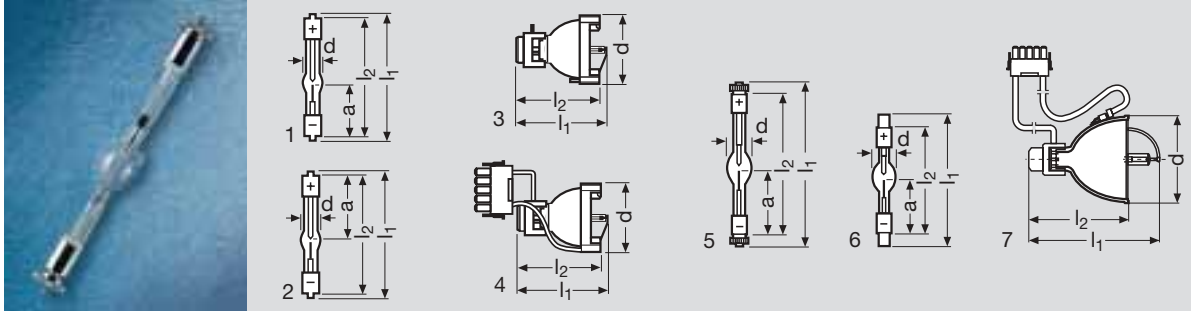
adapted to the colour filter curves of the projectors and their service life optimised for maximum luminance and luminous efficacy. These benefits make them ideal light sources for professional projection applications, light guide systems and effect special lighting.

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 rear projection based on LCD, LCoS or DLP™ light valve technology.



XBO® Xenon short arc lamps



Product reference	Product number	W	V	A	lm	cd	cd/cm ²	t[h]	t[h]			
XBO 75 W/2 ²⁾	4050300508801	75	14	5.4	1000	100	40000	400	400	s105	-	-
XBO 100 W OFR	4050300508429	100	14	7.2	1900	270	31000	500	500	s105	-	requ.
XBO R 100 W/45 OFR ³⁾⁴⁾	4050300317205	100	13	7.2	-	-	-	500	500	p15	-	-
XBO 150 W/1 ²⁾⁵⁾	4050300015804	150	20	7.5	3000	300	15000	1200	-	s15	-	requ.
XBO 150 W/CR OFR	4050300508788	150	17.5	8.5	2900	290	20000	3000	1200	s15 p15	requ.	requ.
XBO 150 W/S	4050300220208	150	20	7.5	2200	220	18000	1000	800	s15 p15	requ.	requ.
XBO R 180 W/45 OFR ³⁾⁴⁾	4050300432175	180	14	12	-	-	-	500	500	p15	-	-
XBO R 300 W/60 C OFR ⁶⁾	4050300611129	300	17.5	17.1	-	-	-	500	500	p15	-	-

Product reference			d [mm]	l1 max. [mm]	l2 max. [mm]	a 7) [mm]			
XBO 75 W/2 ²⁾	-	-	0.25x0.5	10	90	82	SFa9-2	SFa7.5-2	1
XBO 100 W OFR	requ.	requ.	0.4x0.8	11	90	82	SFa9-2	SFa7.5-2	2
XBO R 100 W/45 OFR ³⁾⁴⁾	requ.	-	-	67	83	77	-	-	3/4
XBO 150 W/1 ²⁾⁵⁾	-	-	0.5x2.2	20	150	127	SFc12-4	SFcX12-4	5
XBO 150 W/CR OFR	requ.	requ.	0.5x1.6	20	150	127	SFc12-4	SFcX12-4	5
XBO 150 W/S	requ.	requ.	0.5x1.7	20	117	96	SFa12-11	SFa12-11	6
XBO R 180 W/45 OFR ³⁾⁴⁾	requ.	-	-	67	90.5	81.5	-	-	3/4
XBO R 300 W/60 C OFR ⁶⁾	requ.	-	-	82.5	110	80	-	-	7

OFR = Ozone free
S = Short

W = Watt
requ. = 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 colour appearance throughout the life of the lamp
- High arc stability
- DC operation
- Hot restart
- Almost full luminous flux immediately after ignition

Literature:

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

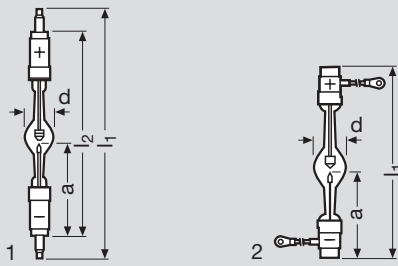
- "Ready for your ideas!" Specialty lamps for innovative applications in medicine and industry



1) For vertical burning position: anode (+) on top
2) Also available in ozone-free version with the same data: XBO 75 W/2 OFR, XBO 150 W/1 OFR
3) Lamp also available with connecting cable and plug contact. Product reference XBO R 100 W/45 C or XBO R 180 W/45 C

4) The focus lies 45 mm in front of the mounting rim on the lamp axis (working distance)
5) Also available in Suprasil quartz version: XBO 150 W/4
6) The focus lies 60 mm in front of the mounting rim on the lamp axis (working distance)
7) Distance from end of base to tip of electrode (cold)

XBO® Xenon short arc lamps



Product reference	Product number	W	V	A	lm	cd	cd/cm ²	A	t[h]	t[h]	s ¹⁾
XBO 250 W OFR ²⁾	4050300221786	250	13	18	4800	530	26000	14 ... 20	1200	–	s 15
XBO 450 W ²⁾³⁾	4050300209135	450	17	25	13000	1300	35000	17 ... 30	2000	–	s 30
XBO 450 W/1	4050300209661	450	17	25	13000	1300	45000	17 ... 30	800	800	s 100
XBO 450 W/2 OFR	4050300213965	450	17	25	13000	1300	35000	17 ... 30	2000	–	s 30

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

OFR = Ozone free
 W = Watt
 requ. = 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:

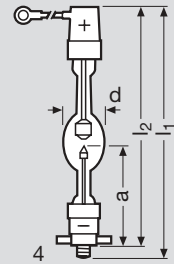
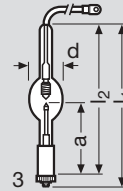
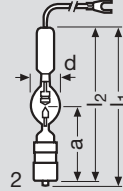
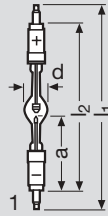
- Classic film projection
- Digital film and video projection
- Architecture lighting and effect lighting (“light finger”)
- Solar simulation















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

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

XBO® Xenon short arc lamps



Product reference	Product number	W	V	A	lm ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A	t[h]	t[h]	
XBO 500 W/H OFR	4050300218526	500	17	28	14500	1450	40000	17...30	2000	2000	s30 p30
XBO 500 W/RC OFR	4050300444031	420	14	30	13000	1800	26000	20...30	400	200	s120
XBO 550 W/HTC OFR	4050300389073	550	22	25	16000	1600	34000	17...27	600	600	s15 p15
XBO 700 W/HSC OFR	4050300219622	700	18	37	20000	2000	40000	30...45	1500	1500	s20 p20

Product reference											
					d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm]	+	-	No.
XBO 500 W/H OFR	requ.	requ.	requ.		0.9x2.5	35	190	165	SFa16-8	SFa15-10	1
XBO 500 W/RC OFR	-	requ.	requ.		0.7x0.8	25	139	134	Cable	SFa21-5	2
XBO 550 W/HTC OFR	-	requ.	requ.		0.9x3.1	25	143	129	Cable	SFc15-6	3
XBO 700 W/HSC OFR	-	requ.	requ.		1.1x2.9	40	236	222	SK27/50	SFcX27-8	4

C = Cable
 H = Suitable for horizontal burning position
 OFR = Ozone free
 R = Ruggedized version
 S = Short
 TC = Thread, cable
 W = Watt
 requ. = Required

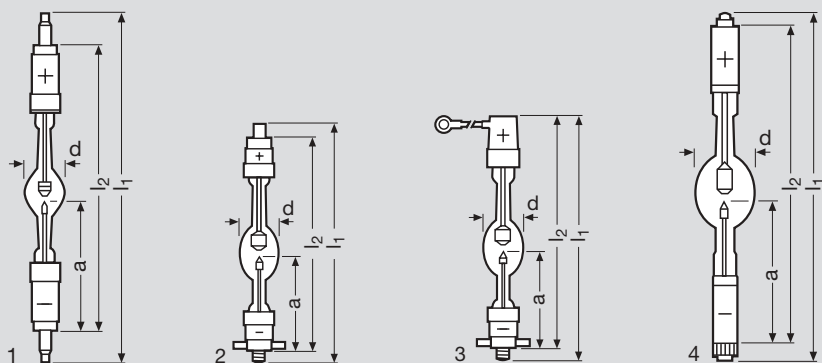



A lighting installation with XBO® 3 and 4 kW. These lamps shower the facades in eye-catching colours from spotlights mounted on the roof of the 200 meter high Bogotá Tower in Colombia.







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

XBO®

Xenon short arc lamps



Product reference	Product number	W	V	A	lm ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A	t[n]	t[n]	 ²⁾
XBO 900 W OFR	4050300213378	900	19	45	30000	3000	50000	30...53	2400	—	s30
XBO 1000 W/HS OFR	4050300217673	1000	19	50	32000	3000	60000	30...55	2000	2000	s20 p20
XBO 1000 W/HSC OFR	4050300219646	1000	19	50	32000	3000	60000	30...55	2000	2000	s20 p20
XBO 1000 W/HTP OFR	4050300219011	1000	21	45	35000	3200	45000	30...55	2400	2400	s30 p30

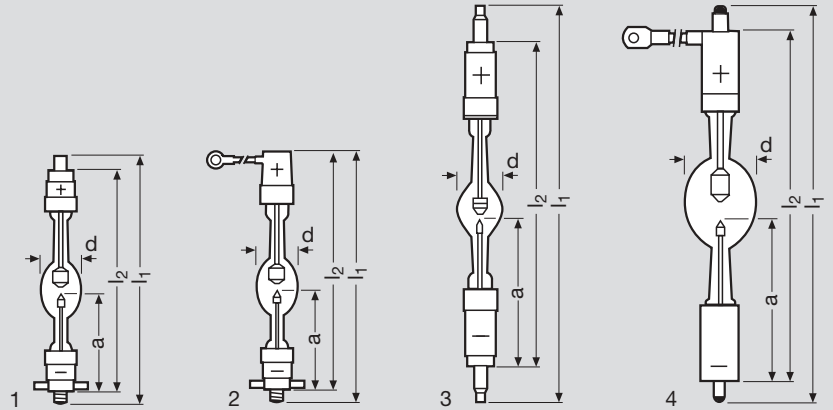
Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a ³⁾ [mm]			No.
XBO 900 W OFR	—	—	—	1.1x3.3	40	325	277	123	SFa25-10	SFa25-12	1
XBO 1000 W/HS OFR	—	requ.	requ.	1.1x2.8	40	235	205	95	SFa27-11	SFcX27-8	2
XBO 1000 W/HSC OFR	—	requ.	requ.	1.1x2.8	40	236	222	95	SK27/50	SFcX27-8	3
XBO 1000 W/HTP OFR	requ.	—	—	1.0x4.0	46	330	277	123	SFa25-14	SFc25-14	4


C = Cable
 CA = Cable on anode base
 H = Suitable for horizontal burning position
 requ. = Required
 OFR = Ozone free
 S = Short
 W = Watt










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

XBO® Xenon short arc lamps



Product reference	Product number	W	V	A	lm ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A	t[h]	t[h]	
XBO 1600 W/HS OFR	4050300 217697	1550	23	65	70000	5500	70000	50...70	2000	2000	s20 p20
XBO 1600 W/HSC OFR	4050300 220024	1550	23	65	60000	5500	70000	50...70	2000	2000	s20 p20
XBO 1600 W OFR	4050300 308012	1600	24	65	60000	6000	65000	45...75	2400	–	s30
XBO 1600 W/CA OFR	4050300 227306	1600	24	65	60000	6000	65000	45...75	2400	–	s30

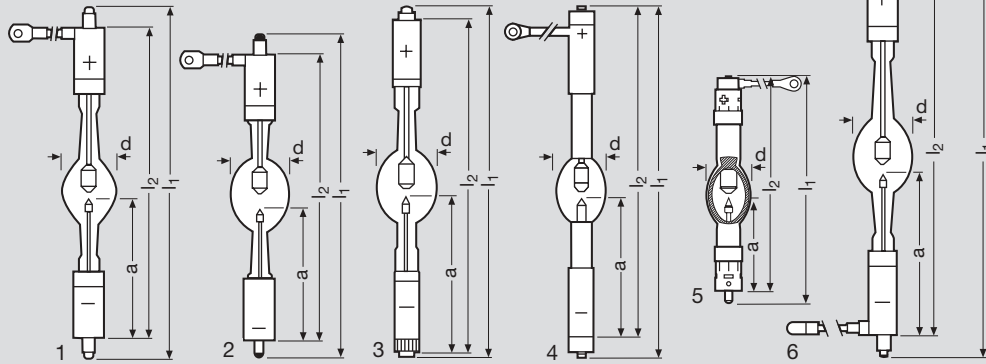
Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a ³⁾ [mm]				
XBO 1600 W/HS OFR	–	requ.	requ.	–	1.0x3.2	46	235	205	95	SFa27-11	SFcX27-8	1
XBO 1600 W/HSC OFR	–	requ.	requ.	–	1.0x3.2	47	236	222	95	SK27/50	SFcX27-8	2
XBO 1600 W OFR	–	–	–	–	1.4x4.0	52	370	322	142.5	SFa27-10	SFa27-12	3
XBO 1600 W/CA OFR	–	–	–	–	1.4x4.0	52	370	322	143	SFaX27-10	SFa27-12	4


C = Cable	S = Short
CA = Cable on anode base	TP = Threaded pin
H = Suitable for horizontal burning position	W = Watt
OFR = Ozone free	requ. = Required











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

XBO® Xenon short arc lamps



Product reference	Product number	W	V	A	Im ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A	t[h]	t[h]	 ²⁾
XBO 2000 W/H OFR	4050300217710	2000	27	70	80000	7500	75000	50...85	2400	2400	s30 p30
XBO 2000 W/HS OFR	4050300274430	2000	24	80	80000	7500	80000	50...85	2400	2400	s30 p30
XBO 2000 W/HTP OFR ³⁾	4050300274348	2000	28	70	80000	7500	75000	50...85	2400	2400	s30 p30
XBO 2000 W/HTT OFR	4050300300818	2000	24	80	80000	7500	75000	50...85	2400	2400	s30 p30
XBO 2000 W/SHSC OFR ⁴⁾	4050300298870	2000	27	70	80000	7500	80000	50...85	2000	2000	s20 p20
XBO 2500 W OFR	4050300213699	2500	29	83	100000	9500	61000	60...95	2000	—	s30

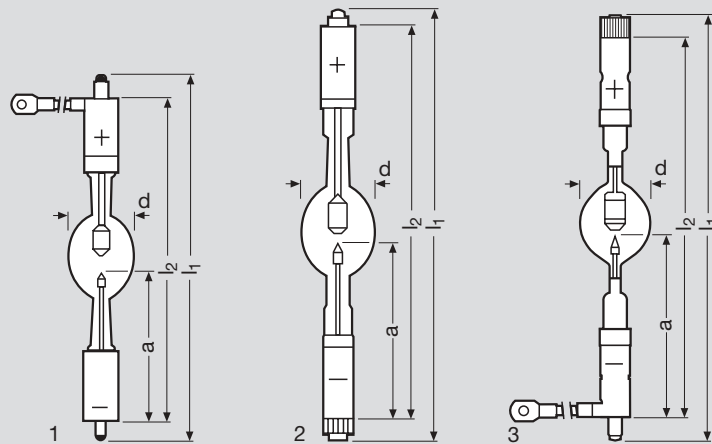
Product reference						l_1 max. [mm]	l_2 max. [mm]	a [mm] ⁵⁾			 No.
XBO 2000 W/H OFR	requ.	—	—	1.3x4.8	52	370	322	142.5	SFaX27-10	SFaX27-12	1
XBO 2000 W/HS OFR	—	requ.	requ.	1.3x4.0	60	342	302	145	SFaX27-9.5	SFa27-7.9	2
XBO 2000 W/HTP OFR ³⁾	requ.	—	—	1.3x4.8	52	375	322	142.5	SFa25-14	SFc25-14	3
XBO 2000 W/HTT OFR	requ.	—	—	1.3x4.8	52	370	322	142.5	SFcX25-10	SFcX25-10	4
XBO 2000 W/SHSC OFR ⁴⁾	—	requ.	requ.	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
 S = Short
 SHSC = Super short
 TP = Threaded pin
 TT = Two threaded pins
 W = Watt
 requ. = Required








1) Measured in vertical burning position at rated wattage
 2) With vertical burning position: anode (+) on top
 3) Also available as XBO 2001 W/HTP OFR with 25 V at 80 A
 4) Same dimensions as XBO® 1600 W/HSC OFR
 5) Distance from end of base to tip of electrode (cold)

XBO®

Xenon short arc lamps



Product reference	Product number	W	V	A	lm ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A	t[h]	t[h]	
XBO 2500 W/HTP OFR		2500	28	90	100000	9500	60000	70...100	1500	1500	s30 p30
XBO 2500 W/HS OFR	4050300 274324	2500	28	90	100000	10000	80000	70...100	1500	1500	s30 p30
XBO 3000 W/HTP OFR	4050300 602219	3000	29	100	130000	12000	85000	60...110	1500	1500	s30 p30
XBO 3000 W/H OFR	4050300 602196	3000	29	100	130000	12000	85000	60...110	1500	1500	s30 p30
XBO 3000 W/HS OFR	4050300 582375	3000	29	100	130000	12000	90000	60...110	1500	1500	s30 p30
XBO 3000 W/HTC OFR	4050300 602202	3000	29	100	130000	12000	85000	60...110	1500	1500	s30 p30

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

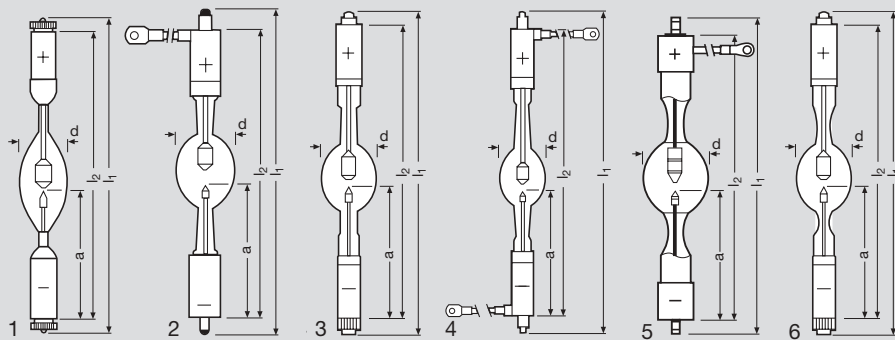
H = Suitable for horizontal burning position
 OFR = Ozone free
 W = Watt
 TC = Thread, cable
 TP = Threaded pin
 S = Short
 requ. = Required



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

XBO®

Xenon short arc lamps



Product reference	Product number	W	V	A	Im ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A			
XBO 3600 W/HTM OFR	4050300249230	3600	28	120	160000	16000	85000	80...130	1000	1000	s15 p15
XBO 3600 W/HTC OFR	4050300350585	3600	28	120	160000	16000	85000	80...130	1000	1000	s15 p15
XBO 4000 W/HS OFR	4050300274317	4000	29	135	155000	17000	90000	80...150	1000	1000	s20 p20
XBO 4000 W/HTP OFR	4050300274355	4000	30	130	155000	16000	90000	100...140	1000	1000	s20 p20
XBO 4000 W/HSA OFR	4050300636429	4000	29	135	160000	17000	105000	80...150	1000	1000	s20 p20
XBO 4200 W/CA OFR ³⁾	4050300274379	4200	29	140	190000	20000	100000	80...160	1000	—	s15
XBO 4200 W/GS OFR	4050300274454	4200	29	140	190000	20000	100000	80...160	500	—	s15
XBO 4500 W/HS OFR	4050300665382	4500	32	135	190000	22000	105000	80...150	1000	1000	s15 p15
XBO 4500 W/HTP OFR	4050300665399	4500	32	135	190000	22000	105000	80...150	1000	1000	s15 p15

Product reference							d [mm]	l1 max. [mm]	l2 max. [mm]	a ⁴⁾ [mm]				
XBO 3600 W/HTM OFR	—	requ.	requ.	—	—	—	1.9x6.0	60	412	362	165	SFc28-13	SFc28-13	1
XBO 3600 W/HTC OFR	—	requ.	requ.	—	—	—	1.9x6.0	60	412	362	165	SFa28-14 ⁵⁾	SFc28-13	1
XBO 4000 W/HS OFR	—	requ.	requ.	—	—	—	1.9x6.0	70	410	370	171	SFaX30-9.5	SFa30-7.9	2
XBO 4000 W/HTP OFR	—	requ.	requ.	—	—	—	1.9x6.0	70	433	382	167.5	SFa27-14	SFc27-14	3
XBO 4000 W/HSA OFR	—	requ.	requ.	—	—	—	1.8x5.6	70	410	370	171	SFaX30-9.5	SFa30-7.9	2
XBO 4200 W/CA OFR ³⁾	—	requ.	—	—	—	—	2.1x5.7	70	428	382	167.5	SFaX27-13	SFaX27-14	2
XBO 4200 W/GS OFR	—	requ.	—	—	—	—	2.1x5.7	60	428	382	167.5	SFaX27-13	SFaX27-14	4
XBO 4500 W/HS OFR	requ.	requ.	requ.	—	—	—	1.9x6.0	70	410	370	171	SFaX30-9.5	SFa30-7.9	5
XBO 4500 W/HTP OFR	requ.	requ.	requ.	—	—	—	1.9x6.0	70	433	382	165	SFa27-14	SFc27-14	6

CA = Cable on anode base
 GS = Gap short
 H = Suitable for horizontal burning position
 OFR = Ozone free
 S = Short

SA = Short arc
 TP = Threaded pin
 W = Watt
 requ. = 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 for XBO® xenon short-arc lamps
- Sourcing information for control gear
- Technology and applications, XBO® cinema lamps
- Technical information on magnetic stabilization of XBO® lamps

1) Measured in vertical burning position at rated wattage

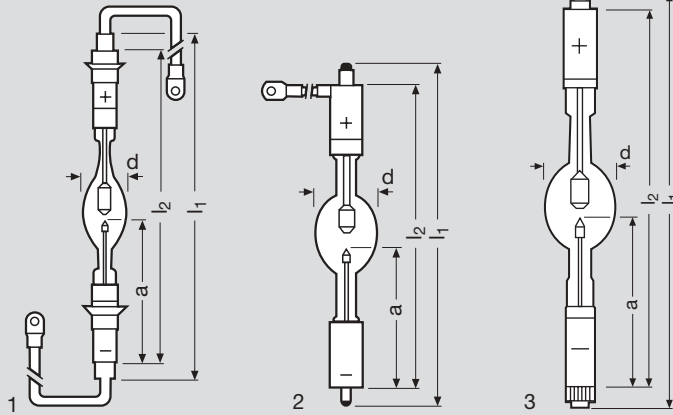
2) With vertical burning position: anode (+) on top

3) Also available as XBO® 4200 W/GS with 60 mm bulb diameter and 500 h life


4) Distance from end of base to tip of electrode (cold)







5) Base with axial cable (560 mm)

XBO® Xenon short arc lamps



XBO® lamps with the OFR suffix do not generate any ozone during operation. Lamps with standard or Suprasil quartz emit intense UV radiation and produce ozone in the surrounding air.

Product reference	Product number	W	V	A	lm ¹⁾	cd ¹⁾	cd/cm ² ¹⁾	A	t[h]	t[h]	
XBO® Xenon short arc lamps											
XBO 5000 W/H OFR	4050300283418	5000	34	140	225000	27000	95000	100...150	1000	1000	s15 p15
XBO 5000 W/HBM OFR	4050300284491	5000	34	140	225000	27000	95000	100...150	1000	1000	s15 p15
XBO 5000 W/HTP OFR	4050300618883	5000	34	140	225000	27000	95000	100...150	1000	1000	s15 p15
XBO 6000 W/HS OFR	4050300636375	6000	37	160	280000	40000	105000	110...165	600	600	s15 p15
XBO 6000 W/HTP OFR	4050300636344	6000	37	160	280000	40000	105000	110...165	600	600	s15 p15
XBO 6500 W	4050300209265	6500	40	160	325000	32000	95000	80...160	500	–	s10
XBO 7000 W/HS OFR	4050300274393	7000	42	160	350000	35000	100000	110...165	500	500	s15 p15
XBO 7000 W/SH OFR	4050300468464	7000	42	160	350000	35000	100000	110...165	500	500	s15 p15
XBO 8000 W/HS OFR	4050300623061	8000	45	175	360000	40000	110000	110...180	500	500	s15 p15
XBO 10000 W/HS OFR	4050300624532	10000	50	195	500000	47500	90000	160...210	500	500	s15 p15
XBO 12000 W OFR	4050300654539	12000	56	205	550000	50000	90000	180...210	300	300	s115

Product reference					d [mm]	l1 max. [mm]	l2 max. [mm]	a ³⁾ [mm]			No.
XBO 5000 W/H OFR	requ.	requ.	requ.	2.2x6.5	70	433	382	167.5	SFaX30-16	SFa28-18	2
XBO 5000 W/HBM OFR	requ.	requ.	requ.	2.2x6.5	70	436	393	170.5	SFaX30-9.5	SFa30-7.9	2
XBO 5000 W/HTP OFR	requ.	requ.	requ.	2.2x6.5	70	433	382	165	SFa27-14	SFc27-14	3
XBO 6000 W/HS OFR	requ.	requ.	requ.	2.0x7.5	78	433	393	170.5	SFaX30-9.5	SFa30-7.9	2
XBO 6000 W/HTP OFR	requ.	requ.	requ.	2.0x7.5	78	433	384	165	SFa30-14	SFc30-14	3
XBO 6500 W	–	requ.	requ.	2.3x9.0	60	483	434	200	SFa30-20	SFa30-22	1
XBO 7000 W/HS OFR	requ.	requ.	requ.	2.6x10.0	78	433	393	170.5	SFaX30-9.5	SFa30-7.9	2
XBO 7000 W/SH OFR	requ.	requ.	requ.	2.6x7.5	78	433	393	170.5	SFaX30-9.5	SFa30-7.9	2
XBO 8000 W/HS OFR	requ.	requ.	requ.	2.3x10.5	90	433	393	170.5	SFaX30-9.5	SFa30-7.9	2
XBO 10000 W/HS OFR	requ.	requ.	requ.	2.3x12.0	90	433	393	170.5	SFa30-9.5	SFa30-7.9	2
XBO 12000 W OFR	requ.	requ.	requ.	2.6x14.0	90	483	434	200	SFaX30-9.5	SFa39-15/110	2

BM = Base modified	H = Suitable for horizontal burning position
W = Watt	HSH = Suitable for horizontal burning position; short; special anode design
OFR = Ozone free	requ. = Required
S = Short	

Safety:

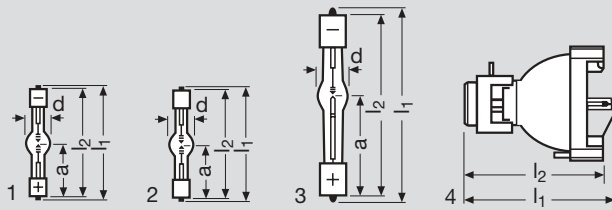
Because of their high luminance, UV radiation and internal pressure in both the hot and cold state, XBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Always use the

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

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

HBO®

Mercury short arc lamps



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

Product reference	Icon	t [h]	Icon	d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ²⁾	Icon	Icon	Icon	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 ¹⁾	-	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

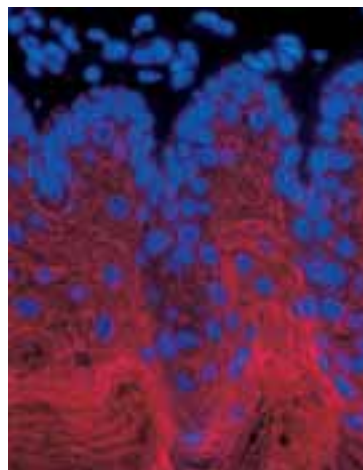
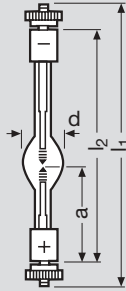


Photo: Zeiss, Fluorescent Microscopy

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

HBO®

Mercury short arc lamps



Product reference	Product number	AC/DC	W	V	A	lm	lm/W	cd	cd/cm ²
HBO 200 W/2 ¹⁾²⁾		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				

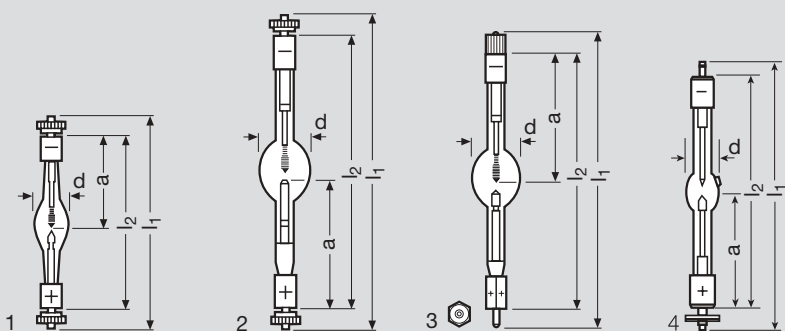
Product reference		t [h]		d [mm]	l ₁ max. [mm]	l ₂ max. [mm]	a [mm] ⁴⁾		
HBO 200 W/2 ¹⁾²⁾	0.6x2.2	400/200 ⁵⁾	s20	17	128	102	40	SFc10-4 ¹⁾	SFc10-4 ¹⁾
HBO 200 W/DC	0.75x2.3	1000	s15	17	128	102	40	SFc10-4/15	SFc10-4/15
HBO 200 W/4 ³⁾	0.6x2.2	200	s20	17	128	102	40	SFc10-4	SFc10-4
HBO 500 W/2	1.1x4.1	400/200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

AC = Alternating current
DC = Direct current

1) HBO 200 W/2 and 500 W/2 can be operated on AC or DC
 2) Also available with threaded pin 8-32 UNC-3A
 3) Lamp also available with increased radiation in the wavelength range below 450 nm for UV-curing. Ref. HBO 202 W/4

4) Distance from end of base to tip of anode (cold)
 5) Reduced life if operated on AC

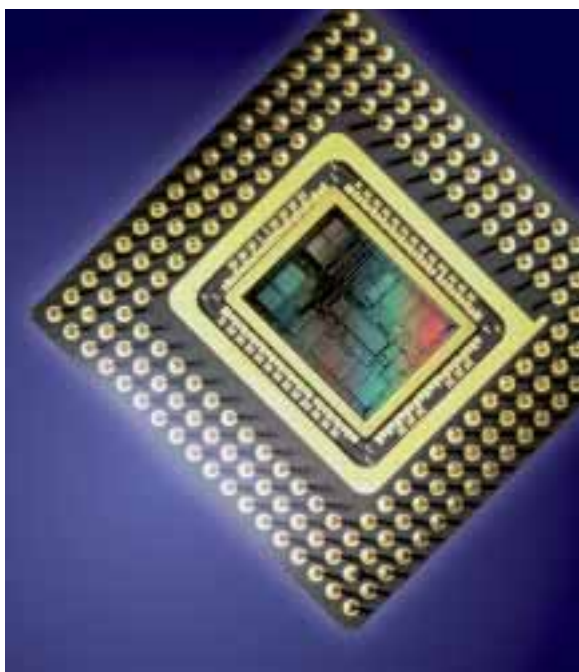
HBO® Mercury short arc lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	W 350-450 nm	mW/sr 350-450 nm	t [h]	Icon
HBO 250 W/BY	4050300803432	DC	250	40	6.5	—	—	1000	Convection
HBO 350 W	4050300351599	DC	350 ¹⁾	67.5	5.3	46	4600	600	Convection
HBO 350 W/S	4050300258041	DC	350	68	5.15	50	4700	600	Convection
HBO 500 W/A	4050300021089	DC	500	60	8.3	61	6200	800	Convection
HBO 500 W/B	4050300275819	DC	500	48.5	10.3	60	5800	800	Convection

Product reference	Icon	d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ²⁾	t [mm]	Icon	No.
HBO 250 W/BY	Vertical ³⁾	20	152	125	62	2	SFc13-5	4
HBO 350 W	Vertical ³⁾	20	128	102	45	2.9	SFcY10-4 ⁴⁾	1
HBO 350 W/S	Vertical ³⁾	20	127	103	52.5	3	SFcY10-4 ⁴⁾	1
HBO 500 W/A	Vertical ³⁾	29	190	161.5	73	4.5	SFcY13-5 ⁵⁾	2
HBO 500 W/B	Vertical ³⁾	29	180	151.5	78.5	3	SFcY13-5/20 ⁶⁾	3

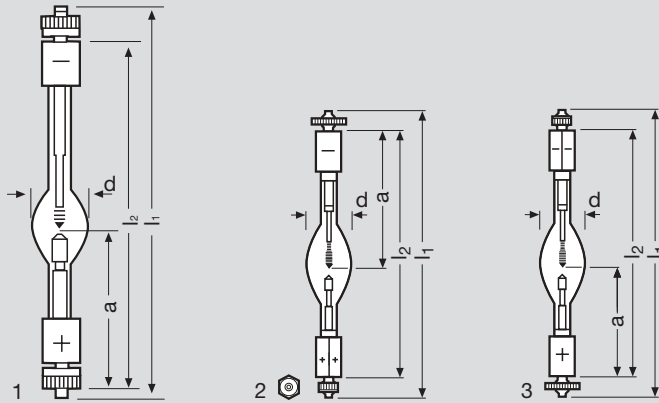
DC = Direct current



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

4) With 8-32 UNC-3 A thread
5) With M5 x 0.9 thread
6) Anode: SXFc13-5/20 hexagon base with M5 x 0.9 thread
Cathode: SXFc13-5/20 with M5 x 0.9 thread

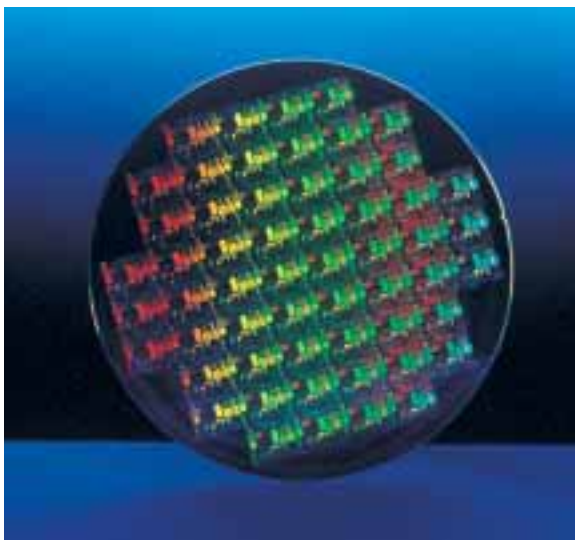
HBO® Mercury short arc lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	W 350-450 nm	mW/sr 350-450 nm	t[h]	Icon
HBO 1000 W/D	4050300 288857	DC	1000	37.7	26.5	105	10800	1000	Convection
HBO 1000 W/CEL ¹⁾	4050300 412627	DC	750 (700/1000) ²⁾	47	16	85	8300	2500	Convection
HBO 1002 W/CEL ³⁾	4050300 412634	DC	750 (700/1000) ²⁾	47	16	85	8300	2500	Convection

Product reference	Icon	d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ⁴⁾	Icon	Icon	Icon	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 ¹⁾	Vertical ⁵⁾	28	175	157	78.5	3	SFc15-6/20 ⁶⁾	SXFc15-6/20 ⁷⁾	2
HBO 1002 W/CEL ³⁾	Vertical ⁵⁾	28	175	157	78.5	3	SXFc15-6/20 ⁷⁾	SFc15-6/20 ⁶⁾	3

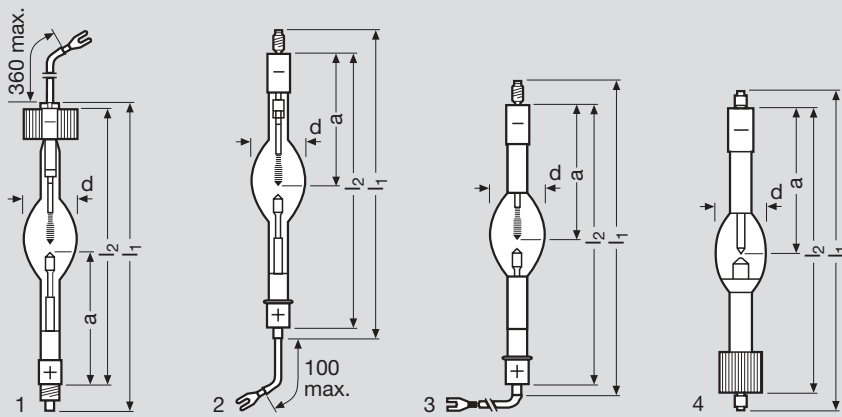
DC = Direct current



1) Also available as HBO 1000 W/CL with 1500 h life.
(Obtainable in Europe, Singapore and Japan only through Canon)
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 1002 W/CL with 1500 h life.
(Obtainable in Europe, Singapore and Japan only through Canon)

4) Distance from end of base to tip of anode or cathode (cold)
5) Anode underneath
6) Sleeve base with M 6 threaded pin
7) Hexagon base with M 6 threaded pin

HBO® Mercury short arc 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	4050300620633	DC	750 (700/1000) ¹⁾	47	16	82.3	8300	2500
HBO 1002 W/NEL	4050300620657	DC	750 (700/1000) ¹⁾	47	16	82.3	8300	2500
HBO 1002 W/NIL	4050300461427	DC	750 (700/1000) ¹⁾	25.8	27.1	18.7 ²⁾	2400 ²⁾	1500
HBO 1003 W/P ³⁾	4050300382135	DC	750 (700/1000) ¹⁾	25.8	27.1	18.7 ²⁾	2400 ²⁾	850

Product reference	Icon	Icon	d [mm]	l1 max. [mm]	l2 max. [mm]	a [mm] ⁴⁾	Icon	Icon	Icon	No.
HBO 1000 W/NEL	Convection	Vertical ⁵⁾	28	190	168	84.5	3	SFaX14-5/21 ⁶⁾	SFa15-5/16 ⁷⁾	1
HBO 1002 W/NEL	Convection ⁸⁾	Vertical ⁵⁾	28	190	168	78.5	3	SFc15-6/25 ⁹⁾	SFaX14-5/21 ⁶⁾	2
HBO 1002 W/NIL	Forced base cooling	Vertical ⁵⁾	29	187	168	78.5	3	SFcX15-6/25 ¹⁰⁾	SFaX14-5/21 ¹¹⁾	3
HBO 1003 W/P ³⁾	Forced base cooling	Vertical ⁵⁾	29	195	169.5	85	3	SFc15-6/25 ¹⁰⁾	SFcX14-6/25 ¹²⁾	4

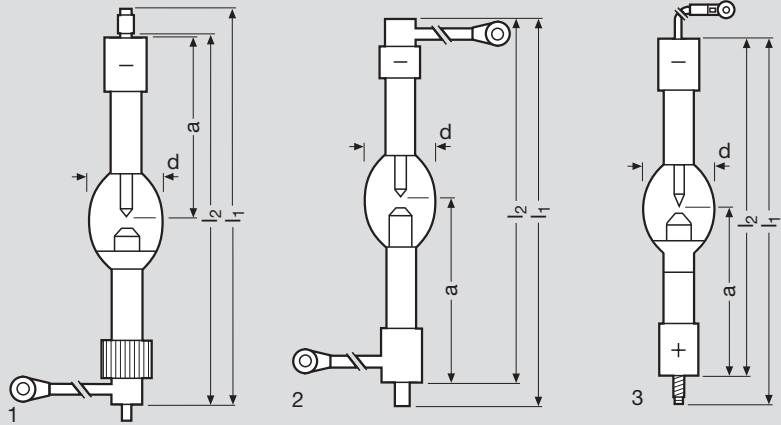
DC = Direct current









1) Lamp suitable for pulsed operation between 700 W and 1000 W
Maximum permissible power is 750 W for constant power operation
2) l-line values in the 365 ± 2.5 nm range
3) Also available as Longlife version HBO 1003 W/PIL with 1500 h life
4) Distance from end of base to tip of anode or cathode (cold)
5) Anode underneath
6) Sleeve base with cooling fins and cable connection (M 5)

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

HBO® Mercury short arc lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	mW/sr 385nm ± 2.5	t [h]	 ¹⁾	
HBO 1500 W/PI ²⁾	4050300 357720	DC	1500	23	65.2	4850	850 ²⁾	Forced base cooling	Vertical ³⁾
HBO 1500 W/CIL	4050300 461434	DC	1500	23	65.2	4850	1500	Forced base cooling	Vertical ³⁾
HBO 2001 W/NIL	4050300 461489	DC	1750	26	67	5500	1500	Forced base cooling	Vertical ³⁾

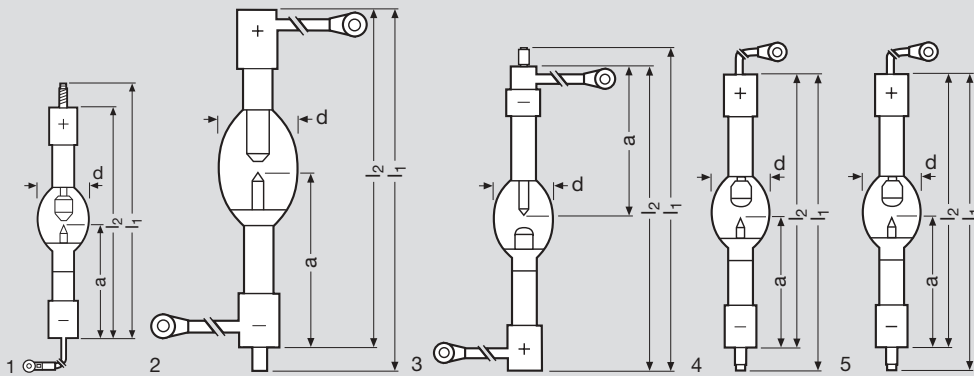
Product reference	d [mm]	l1 max. [mm]	l2 max. [mm]	a ⁴⁾ [mm]				 No.
HBO 1500 W/PI ²⁾	46	263	242	118	4	SFc27-10/35	SFc30-6/25 ⁵⁾	1
HBO 1500 W/CIL	52	262	242	122	4	SFa27-20/22 ⁶⁾	SFa27-10/35 ⁷⁾	2
HBO 2001 W/NIL	52	251	231	112	4.5	SFcX27-7/35 ⁶⁾	SFc27-10/35	3


DC = Direct current






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

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

HBO® Mercury short arc lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	mW/sr 365mm±2.5	t [h]	
HBO 2000 W/NIL	4050300490212	DC	1750	26	67	5200	1500	Forced base cooling
HBO 2001 W/CIL ²⁾	4050300577296	DC	2000	26	77	6000	1500	Forced base cooling
HBO 2002 W/MA	4050300503714	DC	2000 ³⁾	37	54	4200	1000 ⁴⁾	Forced base cooling
HBO 2002 W/NIL	4050300511276	DC	1750	26	67	5100	1500	Forced base cooling
HBO 2011 W/NIL	4050300947556	DC	2000	25	80	5700	1500	Forced base cooling

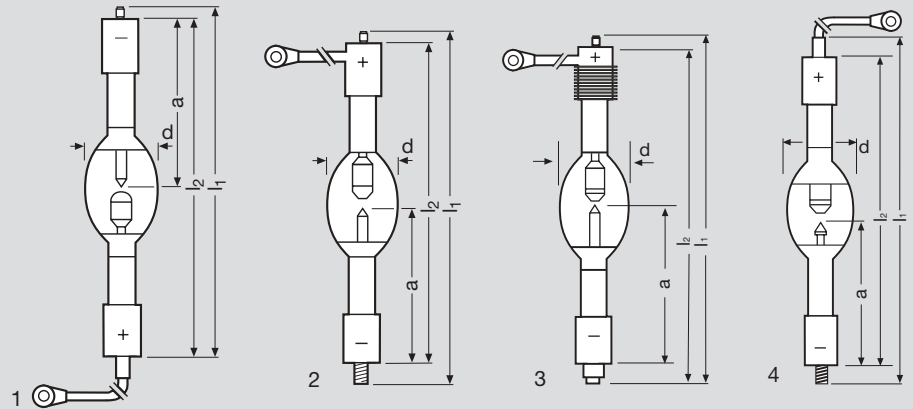
Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a ⁵⁾ [mm]				
HBO 2000 W/NIL	Vertical ⁶⁾	55	241	221	112	4.5	SFc27-7/35 ⁷⁾	SFc27-12/35	1
HBO 2001 W/CIL ²⁾	Vertical ⁶⁾	62	329	309	149	4.5	SFa33.5-10/50 ⁸⁾	SF33.5/50 ⁷⁾	2
HBO 2002 W/MA	Vertical ⁹⁾	62	292	272	138.5	3	SFa27-10/35 ⁷⁾	SF27/35 ⁷⁾	3
HBO 2002 W/NIL	Vertical ⁶⁾	55	254	234	107.5	4.5	SFc27-10x1.25/35	SFc27-7/35 ⁷⁾	4
HBO 2011 W/NIL	Vertical ⁶⁾	55	256	236	107.75	4.5	SFc27-12x1.5/35	SFc27-7/35 ⁷⁾	5


DC = Direct current






1) Maximum permissible base temperature: 200 °C
 2) Obtainable in Europe, Singapore and Japan only through Canon
 3) Range 1700 to 2400 W
 4) Depending on operating mode
 5) Distance from end of base to tip of anode or cathode (cold)

6) Anode on top
 7) With cable connection (M 8)
 8) With cable connection (M 6)
 9) Anode underneath

HBO® Mercury short arc lamps for microlithography



Product reference	Product number	AC/DC	W	V	A	mW/sr 365mm±2.5	t [h]	
HBO 2500 W/PIL	4050300947396	DC	2500	28	90	8200	1500	Forced base cooling
HBO 2501 W/NIL	4050300520735	DC	2500	23	109	7800	1500	Forced base cooling
HBO 2510 W/NIL	4050300568959	DC	2500	23	109	7800	1500	Forced base cooling
HBO 3500 W/PI ²⁾	4050300628226	DC	3400	23	148	9000	850	Forced base cooling
HBO 3501 W/PI ²⁾	4050300628325	DC	3400	23	148	9000	850	Forced base cooling

Product reference		d [mm]	l1 max. [mm]	l2 max. [mm]	a ³⁾ [mm]				
HBO 2500 W/PIL	Vertical ⁴⁾	62	350	315	149	6.7	SFc30-6.5/50	SFc30-6/50 ⁵⁾	2
HBO 2501 W/NIL	Vertical ⁶⁾	70	367	327	157.75	4.5	SFc33.5-14/50	SFa35.5-12/50 ⁷⁾	1
HBO 2510 W/NIL	Vertical ⁴⁾	70	358	327	157.75	4.5	SF9c33.5-14/50	SFc33.5-12/50 ⁷⁾	4
HBO 3500 W/PI ²⁾	Vertical ⁴⁾	77	360	315	154	4.5	SFc32.5-6.7/50	SFaX40-6/50 ⁵⁾	3
HBO 3501 W/PI ²⁾	Vertical ⁴⁾	77	360	315	154	4.5	SFc32.5-6.7/50	SFaX40-6/50 ⁵⁾	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.

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.

Special safety precautions must be taken.

Detailed information is available on request.

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:

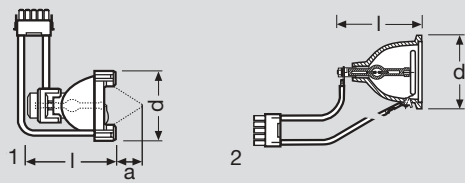
- "Specifications for power supply units for HBO® mercury short arc lamps"
- "Availability of power supply units and igniters"
- "Mercury short arc lamps HBO® for microlithography, Technology and Application"

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

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

HXP®

Mercury short arc lamps, long-life

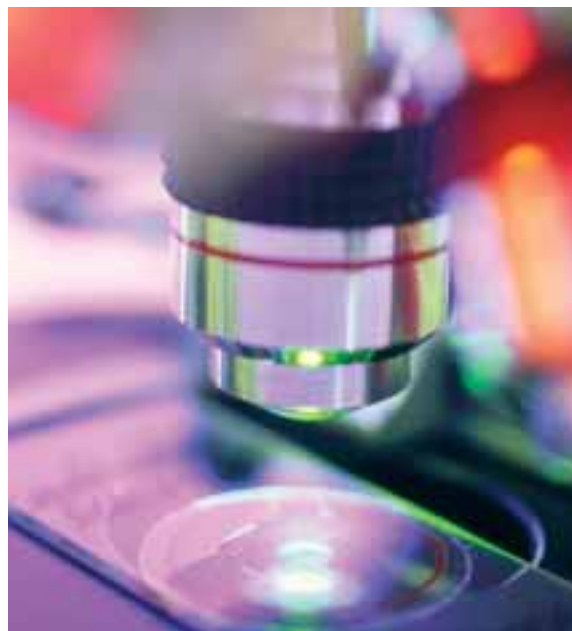


Product reference	Product number	AC/DC	W	V	A	Im ¹⁾	t [h]	d max. [mm]	l max. [mm]	a	Beam spread	No.
HXP R 120W/45C VIS	4050300882772	AC	120	75	1.4	2800 ²⁾	2000	64	77	45	p20 ³⁾	1
HXP R 120W/45C UV	4050300666525	AC	120	75	1.4	— ⁴⁾	2000	64	77	45	p20 ³⁾	1
HXP R 120W/17C	4050300563084	AC	120	75	1.4	4400 ⁵⁾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

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

Their main characteristics are as follows:

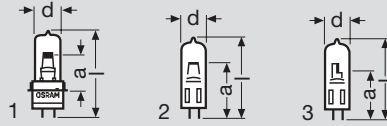
- High luminous efficacy
- Multi-line mercury spectrum superimposed on continuous spectrum
- Colour temperature of approx. 9500 K in the version VIS
- Elliptical reflector with interference coating for selective reflection
- Long life
- AC operation with rectangular current at min. 300 Hz
- Approx. 95 mm long cables terminated with MATE-N-LOK⁷⁾ plug











1) Aperture lumens; typical initial value; for geometry of aperture see the respective footnote
 2) 5 mm diameter aperture in distance a
 3) Horizontal ± 20°
 4) Typically 9.5 W initial aperture radiation in the range 320 ... 500 nm through 5 mm diameter aperture in distance a

5) 5.0 x 3.8 mm² aperture in distance a
 6) Rectangular reflector rim 56 x 52 mm²
 7) MATE-N-LOK is trademark of AMP Inc.

Tungsten halogen lamps, low voltage without reflector



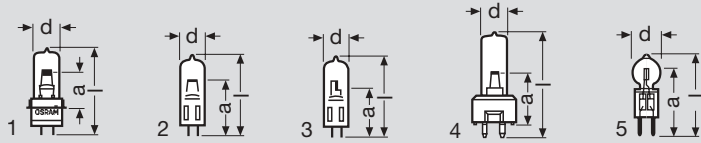
Product reference	Product number	ANSI	LIF	V	W		t [h]	lm
Tungsten halogen lamps, low voltage, without reflector								
64222	4050300 327273			6	10	PG22	300	150
64223	4050300 017372		M/43	6	10	G4	300	150
64225	4050300 006758	ESA	M/29	6	10	G4	100	200
HLX 64250	4050300 012407	ESB	M/30	6	20	G4	100	480
HLX 64251	4050300 582290			6	20	PG22	100	500
HLX 64265	4050300 600277			6	30	G4	100	765
64275	4050300 258690		M/137	6	35	G4	50	780
64258	4050300 285153			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	4050300 281216		M/134	12	50	G6.35	1100	1000
HLX 64609	4050300 246253			12	50	PG22	50	1550
HLX 64610	4050300 006697	BRL	A1/220	12	50	G6.35	50	1600
HLX 64611	4050300 008332			12	50	G6.35	100	1350
HLX 62138	4050300 242958			12	100	G6.35	50	2800
HLX 64621 ¹⁾	4050300 535531			12	100	PG22	2000	2750
HLX 64623	4050300 012018	EVA	M/28	12	100	GY6.35	2000	2800
HLX 64625	4050300 006703	FCR	A1/215	12	100	GY6.35	50	3600
Product reference								
64222	any	9	44	14	1.3x0.8	30	1	
64223	any	9	38	24	1.5x0.7	40	2	
64225	any	9	31	19.5	1.7x0.65	40	2	
HLX 64250	any	9	31	19.5	2.3x0.8	40	2	
HLX 64251	any	9	40	14	2.3x0.8	30	1	
HLX 64265	any	9	31	19.5	1.5x1.5	100	2	
64275	any	9	40	26	1.2x1.5	40	3	
64258	s 90	9	33	19.5	3.5x0.8	40	3	
64260	any	9	40	14	2.6x1.3	30	1	
64261	any	11.5	44	30	2.6x1.3	40	2	
64602	s 90	11.5	44	30	3.0x3.0	100	2	
HLX 64609	s 90	11.5	48	18	3.3x1.6	30	1	
HLX 64610	s 90	11.5	44	30	3.3x1.6	40	2	
HLX 64611	s 90	11.5	44	30	3.3x1.6	100	2	
HLX 62138	p 90/15	11.5	37	27	2.4x1.8	40	3	
HLX 64621 ¹⁾	s 90	11.5	48	18	4.7x2.7	30	1	
HLX 64623	s 90	11.5	44	30	4.7x2.7	40	2	
HLX 64625	s 90	11.5	44	30	4.2x2.3	40	2	

Halogen low voltage lamps without reflectors are offered in a wide range of voltages and wattages, from 6 to 50 V and from 10 to 590 W. Some lamp models are available as "XENOPHOT[®]" versions (HLX[®] types).

With Xenon instead of Krypton as filling gas, these lamps produce a luminous flux up to 10 per cent higher than lamps with otherwise identical data.

1) Available on request

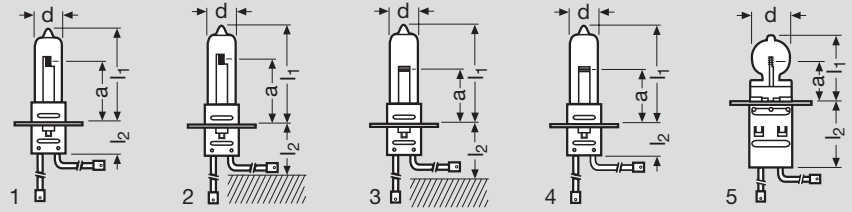
Tungsten halogen lamps, low voltage without reflector











Product reference	Product number	ANSI	LIF	V	W		t [h]	lm
Tungsten halogen lamps, low voltage, without reflector								
HLX 64626	40503000 06765	EHE	A1/45	12	100	PG22	50	3600
64628	40503000 17501	FDT	A1/261	12	100	GY9.5	50	3000
HLX 64633	40503000 06710	BRJ	A1/234	15	150	G6.35	50	5600
64291 XIR	4050300 888859			22.8	40	G6.35	800	1200
64668 XIR	4050300 785042			22.8	80	G6.35	750	3050
64292 XIR	4008321 1023117			22.8	150	G6.35	600	6000
64650	4050300 279473			22.8	50	G6.35	1300	1000
HLX 64638	4050300 283050			24	100	G6.35	300	2900
HLX 64640	40503000 06727	FCS	A1/216	24	150	G6.35	50	6000
64647	4050300 654904			24	120	G6.35	300	3600
HLX 64642	40503000 12025	FDV	M1/84	24	150	G6.35	300	5000
64643	4050300 225920	FDS	A1/262	24	150	GY9.5	100	5000
HLX 64654	4050300 429694			24	250	GY9.5	300	9000
HLX 64655	40503000 06734	EHJ	A1/223	24	250	G6.35	50	10000
HLX 64656	40503000 23120	FNT		24	275	G6.35	75	10000
HLX 64657	40503000 12001	EVC	M/33	24	250	G6.35	300	9000
HLX 64663	40503000 06741	EVD	A1/239	36	400	G6.35	50	16000
HLX 64664	40503000 12537			36	400	G6.35	150	14500
HLX 64665	40503000 26220			36	400	G6.35	300	12200
HLX 64669	4050300 521688	GCD		50	590	GY9.5	50	21500
Product reference								
HLX 64626	s 90	11.5	48	18	4.2x2.3	30	1	
64628	s 90	13	57	27	4.2x2.3	300	4	
HLX 64633	s 90	11.5	44	30	4.8x3	40	2	
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	s 90	14	44	30	2.8x6.7	40	5	
64650	any	13	44	30	2.0x5.0	40	3	
HLX 64638	any	13	50	30	5.3x2.6	40	2	
HLX 64640	s 90	13.5	50	32	5.8x2.9	40	2	
64647	any	13	44	30	2.3x6.4	100	3	
HLX 64642	s 90	11.5	50	32	6x3.2	40	2	
64643	s 90	15	57	33.5	6x3	30	4	
HLX 64654	s 90	13.5	68	35	8x4	30	4	
HLX 64655	s 90	13.5	55	33	7x3.5	40	2	
HLX 64656	s 90	13.5	55	33	7x3.5	40	2	
HLX 64657	s 90	13.5	55	33	8x4	40	2	
HLX 64663	s 90	15	60	36	9.3x4.9	24	2	
HLX 64664	s 105	18	57	36	10x5 ¹⁾	25	2	
HLX 64665	s 90	18	60	36	10.5x5.3	25	2	
HLX 64669	s 90	19	70	41.3	12.8x7.0	24	4	

1) Coiled coil filament

Tungsten halogen lamps current controlled



Product reference	Product number	ANSI	LIF	A	W	Lamp ⁵⁾	t [h] ¹⁾	Im
Tungsten halogen lamps, current controlled, single ended with PK30d base								
64317	4050300442419		J1/76	6.6	45	male	1000	800
64317 IRC-LL-A	4008321012326			6.6	45	female	3000	800
64317 IRC-LL-B				6.6	45	female, round	3000	800
64317 IRC-LL-C	4050300785004			6.6	45	male	3000	800
64318	4050300258324		J1/77	6.6	45	female	1000	800
64318 Z	4050300258324				45	male	1000	800
64319	4050300440767			6.6	45	female	1000	800
64319 Z ³⁾	4050300440729				45	male	1000	800
64319 IRC-LL-A	4008321012265				45	female	3000	800
64319 IRC-LL-C	4008321012289				45	male	3000	800
HLX 64328	4050300440804			6.6	65	female	1000	1450
HLX 64328 Z	4050300302362			6.6	65	male	1000	1450
HLX 64341	4050300446301		J1/79	6.6	100	female	1000	2700
HLX 64341 Z	4050300258348			6.6	100	male	1000	2700
HLX 64342	4050300308135		J1/80	6.6	100	male	1000	2700
HLX 64361	4050300271866		J1/83	6.6	150	female	1000	3600
HLX 64361 Z	4050300431642			6.6	150	male	1000	3600
HLX 64382	4050300431680		J1/84	6.6	200	male	1000	4800
Product reference		 d max. [mm]	 h [mm]	 l2 [mm]	 a ²⁾ [mm]			 No.
64317	s 90	13.5	max. 37	max. 21	16	1.4x3.6	100	1
64317 IRC-LL-A		13.5	max. 37	max. 21	16	1.4x3.6	100	5
64317 IRC-LL-B		13.5	max. 37	max. 21	16	1.4x3.6	100	5
64317 IRC-LL-C	s 90	13.5	max. 37	max. 21	16	1.4x3.6	100	5
64318	s 90	13.5	max. 28	min. 27	16	1.4x3.6	100	2
64318 Z		13.5	max. 28	min. 27	16	1.4x3.6	100	2
64319	s 90	13.5	max. 32	min. 23	20	1.4x3.6	100	2
64319 Z ³⁾		13.5	max. 32	min. 23	20	1.4x3.6	100	2
64319 IRC-LL-A		13.5	max. 32	min. 23	20	1.4x3.6	100	5
64319 IRC-LL-C		13.5	max. 32	min. 23	20	1.4x3.6	100	5
HLX 64328	s 90 ⁴⁾	13.5	max. 32	min. 21	20	3.3x3.2	100	3
HLX 64328 Z	s 90 ⁴⁾	13.5	max. 32	min. 21	20	3.3x3.2	100	3
HLX 64341	s 90 ⁴⁾	13.5	max. 32	min. 23	20	5.4x3.0	100	3
HLX 64341 Z	s 90 ⁴⁾	13.5	max. 32	min. 23	20	5.4x3.0	100	3
HLX 64342	s 90 ⁴⁾	13.5	max. 41	max. 17	20	5.4x3.0	100	4
HLX 64361	s 90 ⁴⁾	13.5	max. 35	min. 23	20	7.2x3.6	100	3
HLX 64361 Z	s 90 ⁴⁾	13.5	max. 35	min. 23	20	7.2x3.6	100	3
HLX 64382	s 90 ⁴⁾	13.5	max. 43	max. 21	20	7.1x3.9	100	4

Applications:

Halogen lamps for current controlled operation are used mainly in series connected systems for airfield lighting. The most popular type of base for these lamps is the "PK30d" cement free prefocus cable base.

1) At 6.6 A

2) Reference plane for length "a" is the upper plane of the adjustment ring; this must be considered when designing optical systems

3) Version 64319 Z substitutes 64316; 64316 has been withdrawn

Literature:

For further information on airfield lighting and IRC technology, please refer to the following brochure:

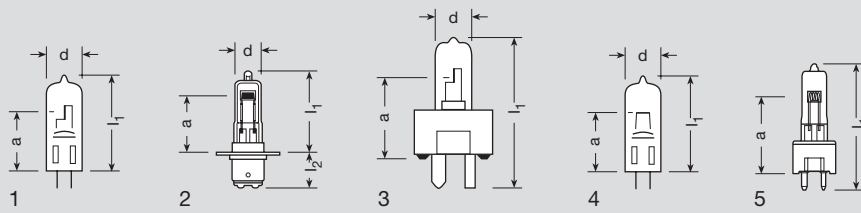
- "The reliable guiding stars", Effective solutions for airfield lighting: Tungsten halogen lamps and the innovative IRC technology.










4) Despite transverse filament, can be inclined at any angle in S90 position

5) Connectors see page 41

Tungsten halogen lamps current controlled

Single ended lamps, for series operation at 6.6 Ampere











Product reference	Product number	ANSI	LIF	W		t [h] ¹⁾	lm	
Tungsten halogen lamps, current controlled, single ended								
58746	4050300657257			200	P30d	1300	5200	any
58750	4050300657936	EZL		200	GZ(GY)9.5	1300	5200	s 90
58793	4050300657226			115	P30d	1100	2900	any
58798	4050300657974	EWV		115	GZ(GY)9.5	1100	2900	s 90
58799	4050300657950			175	GZ(GY)9.5	1000	4700	s 90
64311	4050300289663		J1/59	36	G6.35	1200	610	s 90
64320	4050300273747	EXM		45	GZ9.5	1000	875	s 90
64321	4050300289649		J1/57	45	G6.35	1200	840	s 90
64322	4050300660806	EXL		30	GY(GZ)9.5	2000	400	any
64346	4050300300269		J1/58	100	G6.35	1200	2300	s 90
64354	4050300660820	EWR		150	GY(GZ)9.5	1500	4000	any
64386	4050300317779		J1/39	200	G6.35	1200	4700	s 90
Product reference								
58746	13	60.3	20.6	27	5.5x3.8	100	2	
58750	13	65	–	39.1	5.5x3.8	100	3	
58793	13	39.7	20.6	26.9	6.5x3.1	100	2	
58798	13	65	–	39.1	6.5x3.1	30	5	
58799	13	65	–	39.1	6.6x4.2	30	3	
64311	11	45	–	33	1.3x3.3	100	1	
64320	11	44.5	–	25.4	1.4x3.3	100	3	
64321	11.5	45	–	33	1.3x3.6	100	1	
64322	11.5	44.5	–	25.4	–	30	3	
64346	13.5	47	–	33	4.6x3.0	100	4	
64354	13	56.5	–	39.1	–	30	3	
64386	13.5	47	–	33	6.9x4.5	100	4	

1) At 6.6 A

Tungsten halogen lamps current controlled

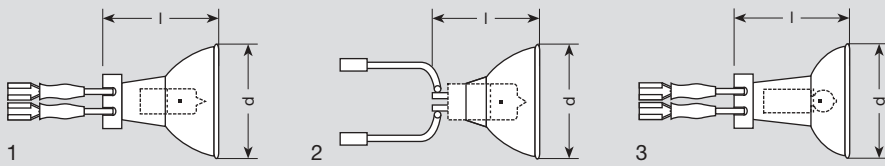
Double ended lamps, for series operation at 6.6 Ampere



Product reference	Product number	ANSI	LIF	W		t [h]	lm	
Tungsten halogen lamps, current controlled, double ended								
64315	4050300 206844		J1/78	45	R7s	1000	750	any
64340	4050300 017266		J1/82	100	R7s	1000	2000	any
64380	4050300 209944		J1/40	200	R7s	1000	4400	any
Product reference								No.
64315		8.8	47.5	–	4.0x1.5	25	1	
64340		12	60.2	–	6.0x2.6	25	2	
64380		15	60.2	–	10.0x3.0	25	2	



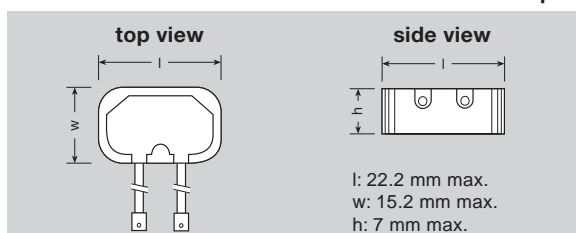
Reflector lamps with dichroic coating



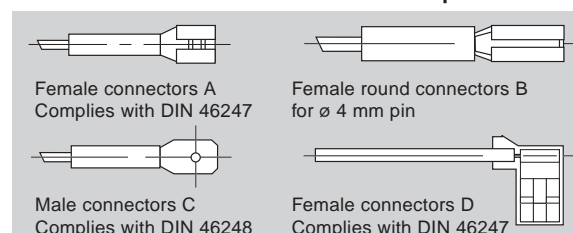
Product reference	Product number	A	W	Lamp	t [h] ¹⁾	kcd ²⁾		d max. [mm]	l max. [mm]		No.
Halogen reflector lamps, current controlled with dichroic coating											
64331SP-A (spot reflector)	4050300785035	6.6	30	female ³⁾	1000	min.16	any	50.2	45.6	10	1
64331FL-AC (flood reflector)	4050300660844	6.6	30	female, male ³⁾	1000	min.3.7	any	50.2	45.6	10	1
64333-A	4050300637402	6.6	40	female ⁴⁾	1500	min.10	any	35.3	37	10	1
64333-B	4050300432106	6.6	40	female, round ⁴⁾	1500	min.10	any	35.3	37	10	1
64333-C	4050300426044	6.6	40	male ⁴⁾	1500	min.10	any	35.3	37	10	1
64337A45-15	4050300381814	6.6	45	female ⁵⁾	1500	min.19	any	50.2	45.6	10	1
64337B45-15	4050300446356	6.6	45	female, round ⁵⁾	1500	min.19	any	50.2	45.6	10	1
64337A48-10	4050300440078	6.6	48	female ⁵⁾	1000	min.23	any	50.2	45.6	10	1
64337A48-15	4050300466248	6.6	48	female ⁵⁾	1500	min.20	any	50.2	45.6	10	1
64337B48-15	4050300666419	6.6	48	female, round ⁵⁾	1500	min.20	any	50.2	45.6	10	1
64337C48-15	4050300488417	6.6	48	male ⁵⁾	1500	min.20	any	50.2	45.6	10	1
64337IRC-LL-A	4050300784915	6.6	48	female ⁵⁾	3000	min.20	any	50.2	45.6	10	3
64337IRC-LL-B	4050300784977	6.6	48	female, round ⁵⁾	3000	min.20	any	50.2	45.6	10	3
64337IRC-LL-C	4050300744991	6.6	48	male ⁵⁾	3000	min.20	any	50.2	45.6	10	3
64337IRC-LL-AC	4008321013538	6.6	48	female, male ⁵⁾	3000	min.20	any	50.2	45.6	10	3
64339-A	4050300522739	6.6	105	female ³⁾	1000	min.30	any	50.2	45.6	10	2
64339-B	4008321900227	6.6	105	female, round ³⁾	1000	min.30	any	50.2	45.6	10	2
64339-C	4050300522753	6.6	105	male ³⁾	1000	min.30	any	50.2	45.6	10	2
64339-AC	4050300575865	6.6	105	female, male ³⁾	1000	min.30	any	50.2	45.6	10	2
64355	4050300151984	6.6	100	female	1500	min.19	any	55.5	49	50	1



Small socket stone for 45 and 48 W reflector lamps



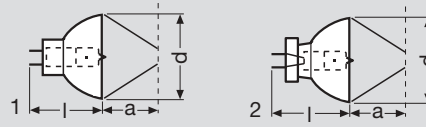
Connectors for reflector and PK30d lamps



















1) At 6.6 A
2) At 0° direction and at 6.6 A
3) No socket stone

4) With socket stone
5) Small socket stone

Tungsten halogen lamps with reflector

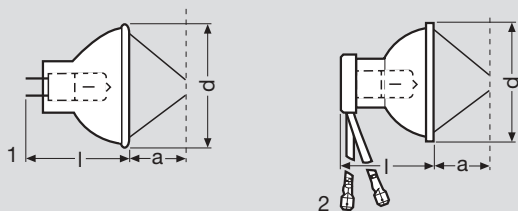










Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 11 – 35 mm diameter							
64255	4050300006833			8	20	GZX4	50
64605 ¹⁾	4050300252421			8	50	GZ4	25
64613 ²⁾	4050300241012			12	75	G5.3-4.8	25
64614	4050300234380			12	75	G5.3-4.8	25
64617	4050300231211			12	75	G5.3-4.8	25
64624	4050300013916			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	20	2
64605 ¹⁾	p 90/15	35	32	26	White	20	2
64613 ²⁾	p 90/15	35	35.5	26	Blue	20	1
64614	p 90/15	35	35.5	26	UV	20	1
64617	p 90/15	35	35.5	26	White	20	1
64624	p 90/15	35	35.5	26	White	20	1
Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 13 – 42 mm diameter							
93510	4050300350110	EXY		82	250	GX5.3	200
93515	4050300350158	EXR		82	300	GX5.3	35
93520	4050300350196	FHS		82	300	GX5.3	70
93513	4050300414423	EXW		82	300	GX5.3	15
Product reference		 d [mm]	 l max. [mm]	 a [mm]			 No.
93510	s 90	42	45	152.5	White	24	2
93515	s 90	42	45	152.5	White	24	2
93520	s 90	42	45	152.5	White	24	2
93513	s 90	42	45	152.5	White	24	2

1) Available on request

2) In certain countries there are third party property rights relating to equipment which must be observed if these lamps are used in dentistry

Tungsten halogen lamps with reflector

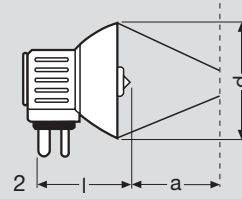
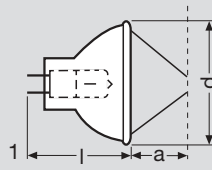


















Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 16 – 50 mm diameter							
64607	4050300006789	EFM	A1/229	8	50	GZ6.35	50
93609	4050300659541	ENL		12	50	GX5.3	3000
HLX 64615	4050300006796	EFN	A1/230	12	75	GZ6.35	50
HLX 64627	4050300006802	EFP	A1/231	12	100	GZ6.35	50
64629	4050300943169			12	100	GZ6.35	600
64637	4050300291970		A1/271	12	100	GZ6.35	1500
64608	4050300014142	EPZ		13.8	50	GX5.3	1000
64618	4050300017402	DED		13.8	85	GX5.3	1000
64658 ¹⁾	4050300346120	GED		13.8	85	Cable	1000
64619	4050300017273	EPX		14.5	90	GX5.3	500
HLX 64634	4050300006819	EFR	A1/232	15	150	GZ6.35	50
HLX 64635 ²⁾	4050300238807			15	150	GZ6.35	50
64620	4050300797397	EFR-5		15	150	GZ6.35	500
Product reference		 d [mm]	 l max. [mm]	 a [mm]			 No.
64607	p 90/15	51	42	32	Alu	20	1
93609	any	51	44.5	44.5	White	20	1
HLX 64615	p 90/15	51	42	32	White	20	1
HLX 64627	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	51	44.5	108	White	50	1
64618	p 90/15	51	44.5	165	White	20	1
64658 ¹⁾	p 90/15	51	46	165	White	10	2
64619	p 90/15	45	45	155	White	50	1
HLX 64634	p 90/15	51	42	32	White	20	1
HLX 64635 ²⁾	p 90	51	45	19	Gold	20	1
64620	p 90/15	50	42	32	White	20	1

1) Available on request

2) Infrared lamp (temperature at focal point approx. 1300 °C)

Tungsten halogen lamps with reflector



Product reference	Product number	ANSI	LIF	V	W		t [h]
With reflector MR 16 – 50 mm diameter							
93637	4050300350097	EJV		21	150	GX5.3	40
93638	4050300456843	EKE		21	150	GX5.3	200
HLX 64653	4050300006826	ELC	A1/259	24	250	GX5.3	50
93653	4050300636450	ELC-3		24	250	GX5.3	300
93505	4050300350172	EVW		82	250	GY5.3	50
93525	4050300349992	ENX		82	360	GY5.3	75
93526	4050300412917	FXL		82	410	GY5.3	75
93506	4050300349930	ENH		120	250	GY5.3	175
93518	4050300350059	ELH		120	300	GY5.3	35
Product reference		 d [mm]	 l max. [mm]	 a [mm]			 No.
93637	s 90	51	44.5	44.5	White	24	1
93638	s 90	51	44.5	44.5	White	24	1
HLX 64653	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 – 58 mm diameter							
93631	4050300350011	DNF		21	150	GX7.9	25
Product reference		 d [mm]	 l max. [mm]	 a [mm]			 No.
93631	p 15	57	51	69	White	24	2

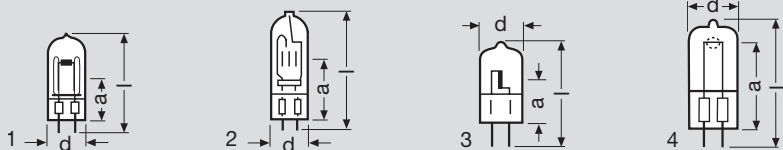
Literature:

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

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

Mains voltage halogen lamps

3400 K



Product reference	Product number	ANSI	LIF	W		V	t _[h]
Mains voltage halogen lamps, single ended							
64501	4050300 279237			150	GX6.35	120	25
64502	4050300 289977			150	GX6.35	230	25
64505 ¹⁾	4008321 004598			200	GX6.35	230	25
64648	4050300 06840	BSJ		200	GX6.35	230	25
64512	4008321 004980	FNS		300	GX6.35	120	15
64514	4008321 004932		CP/96	300	GX6.35	120	75
64515 ¹⁾	4008321 004994			300	GX6.35	230	15
64535	4050300 014074			650	GX6.35	120	15
64540 ¹⁾	4050300 06901	BVM	P1/13	650	GX6.35	230	15
64573	4050300 014081			1000	GX6.35	120	15
64575 ¹⁾	4050300 006918	EGY	P1/15	1000	GX6.35	230	15

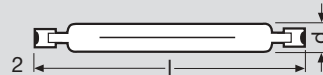
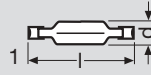
Product reference	lm		\varnothing [mm]	l _{max.} [mm]	a [mm]			No.
64501	4500	any	12	55	30	11x2.2	25	3
64502	4000	any	12	55	30	13x1.9	25	3
64505 ¹⁾	5000	any	18.5 max.	53	27	8.7x8.5	25	4
64648	4500	s 90	20	69.5	40	6x6	25	2
64512	9500	s 90	18.5	57.5	27	9.5x9.8	25	4
64514	7700	any	18.5	57.5	27	9.5x10	25	4
64515 ¹⁾	8500	s 90	18.5	57.5	27	9.5x10	25	4
64535	20000	any	24	57.5	30	14x15	25	1
64540 ¹⁾	20000	any	24	57.5	30	14x15	25	1
64573	33000	any	24	67.5	38	14x14	25	1
64575 ¹⁾	33000	any	24	67.5	38	14x14	25	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.

1) Also available for 240 V

Mains voltage halogen lamps 3400 K



Product reference	Product number	ANSI	LIF	W		V	t [h]	lm
Mains voltage halogen lamps, double ended								
64570	4050300014098			800	R7s	230	15	22000
64579	4050300014104			1000	R7s	120	15	33000
64580 ¹⁾	4050300006888		P1/12	1000	R7s	230	15	35000
Product reference		\varnothing d [mm]	l max. [mm]				No.	
64570	Horizontal	15	74.9	25	25	1		
64579	Horizontal ²⁾	12	121.7	81	12	2		
64580 ¹⁾	Horizontal	12	121.7	85	12	2		

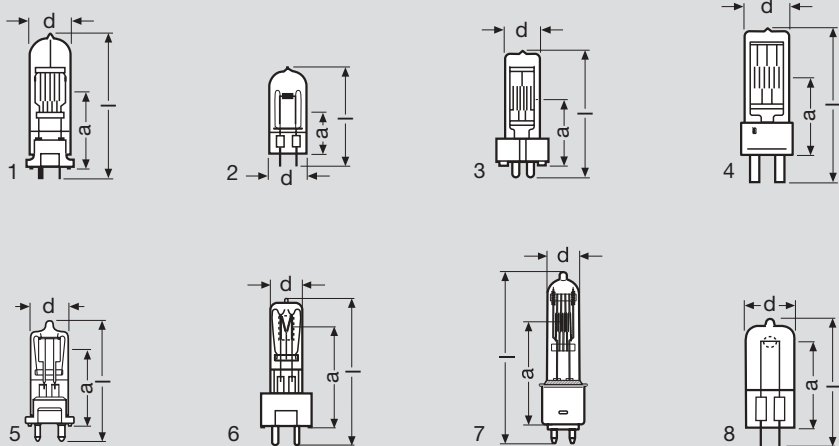







Double-ended mains voltage halogen lamps for stage lighting and video recording.

1) Also available for 240 V
2) Preferred burning position horizontal; vertical possible for short periods

Mains voltage halogen lamps

3200 K

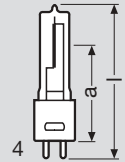
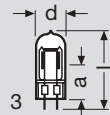
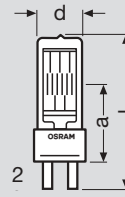
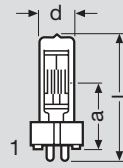



Product reference	Product number	ANSI	LIF	W		V	t [h]	
Single ended								
64673 ¹⁾	4050300635811		CP/81	300	GY9.5	230	200	
64513	4008321005588			300	GX6.35	120	150	
64516 ¹⁾	4050300012032		CP/97	300	GX6.35	230	75	
93592	4050300481531	FSX		400	GY9.5	230	75	
93591	4050300481555	FSY		400	GY9.5	240	75	
64678	4050300609102			800	G9.5	230	250	
64680 ¹⁾	405030006864		A1/244	500	GY9.5	230	50	
64674 ¹⁾	4050300635859		CP/82	500	GY9.5	230	200	
64716 ¹⁾	4050300506494	GKV		600	G9.5	230	250	
64686 ¹⁾	4050300446325	DYR	A1/233	650	GY9.5	230	50	
64720	4050300017716		CP/23	650	GX9.5	230	100	
64721	4050300217970	FKH	CP/39	650	G22	230	100	
64717 ¹⁾	4050300296692	FRL	CP/89	650	GY9.5	230	150	
Product reference	lm		d [mm]	I max. [mm]	a [mm]			 No.
64673 ¹⁾	7500	any	18	90	46.5	6.5x13	25	6
64513	7700	any	18.5 max.	57.5	27	10.5x8.7	25	8
64516 ¹⁾	7300	any	18.5 max.	57.5	27	9.5x10	25	8
93592	— ²⁾	s 90	20	77	36.5	10.7x12.2	24	3
93591	— ²⁾	s 90	20	77	36.5	10.7x12.2	24	3
64678	20000	any	19	105	60.5	13x9	25	7
64680 ¹⁾	14500	any	22	75	36.5	10x10 ³⁾	25	1
64674 ¹⁾	13500	any	18	90	46.5	8x18	25	6
64716 ¹⁾	14000	any	18	101	60.5	11x8		7
64686 ¹⁾	16500	any	21	64	36.5	10x10	25	5
64720	16800	s 90	35	110	55	13x17 ³⁾	20	3
64721	16800	s 90	35	140	63.5	13x17 ³⁾	20	4
64717 ¹⁾	16250	s 90	26	90	46.5	11x11	25	1




1) Also available for 240 V
 2) With internal reflector
 3) With monoplane filament

Mains voltage halogen lamps

3200 K



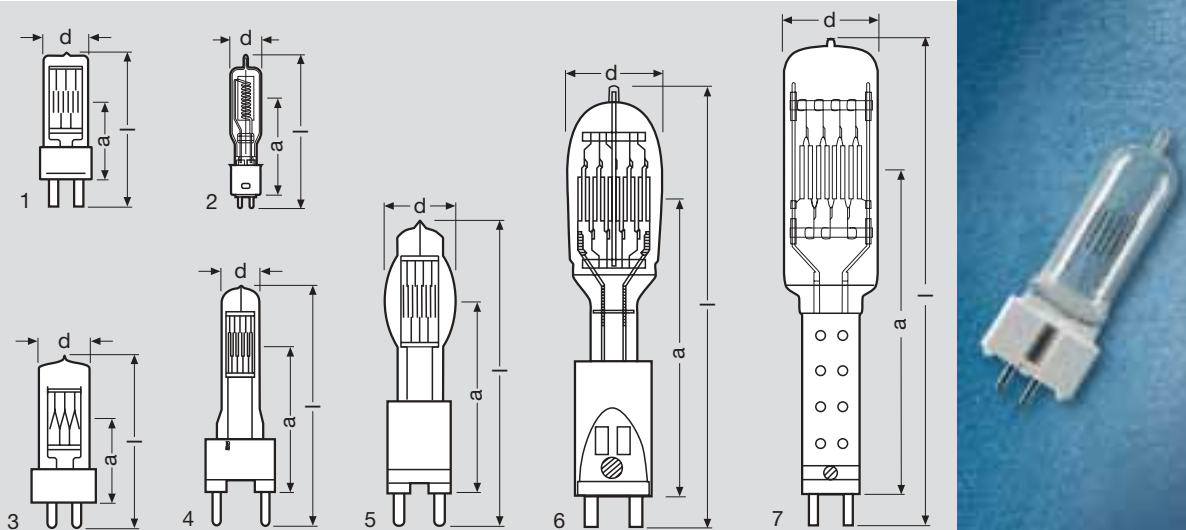
Product reference	Product number	ANSI	LIF	W		V	t [h]
Single ended							
64743	4050300 227610	FEL	CP/77	1000	G9.5	120	300
64743 HT ¹⁾	4050300 506531	(FEL)		1000	G9.5	120	300
64576	4050300 014197		P2/17	1000	GX6.35	230	75
64745 ²⁾	4050300 213262	FVA	CP/70	1000	GX9.5	230	200
64747 ²⁾	4050300 217604	FKJ	CP/71	1000	G22	230	200
93734	4050300 350073	FEP	CP/77	1000	G9.5	240	300
64754	4050300 296746		CP/90	1200	GX9.5	230	200
64756 ²⁾³⁾	4050300 296722		CP/93	1200	G22	230	200

Product reference	Im		d [mm]	l max. [mm]	a [mm]			No.
64743	27500	any	20	101	60.5	7x18	12	4
64743 HT ¹⁾	27500	any	20	101	60.3	7x18	12	4
64576	27500	any	24	67.5	38	14x14	25	3
64745 ²⁾	26000	s 90	35	110	55	13x15	20	1
64747 ²⁾	26000	s 90	35	140	63.5	13x15	20	2
93734	23000	any	20	102	60.3	5.7x27	12	4
64754	30000	s 90	35	125	67	14x16	20	1
64756 ²⁾³⁾	30000	s 90	35	140	63.5	14x16	20	2

1) Only for applications with a high bulb temperature
 2) Also available for 240 V
 3) Supplied on request

Mains voltage halogen lamps

3200 K



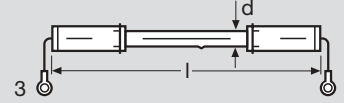
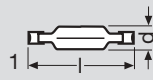
Product reference	Product number	ANSI	LIF	W		V	t [h]
Single ended							
64773 ¹⁾	4050300455280			2000	G9.5	120	300
64777 ¹⁾	4050300367682		CP/92	2000	G22	230	400
64788 ²⁾	4050300213286		CP/72	2000	GY16	230	400
64789 ²⁾	4050300219103	FKK	CP/73	2000	G38	230	400
64787	4050300246154		CP/75	2000	G22	230	400
64796 ¹⁾	4050300406428		CP/91	2500	G22	230	400
64805 ²⁾	4050300212609		CP/85	5000	G38	230	400
64815	4050300229904	ECR	CP/83	10000	G38	230	400
64818	4050300370729	BCM	CP/99	20000	G38	230	350


Product reference	lm		d [mm]	l max. [mm]	a [mm]			No.
64773 ¹⁾	56000	any	27	125	77.5	7x30	12	2
64777 ¹⁾	52000	s 90	40	175	90	20x19	20	1
64788 ²⁾	52000	s 90	40	145	70	20x19	20	3
64789 ²⁾	52000	s 90	35	210	127	20x19	1	4
64787	52000	s 90	40	160	75	20x19	20	1
64796 ¹⁾	65000	s 90	40	175	90	20x19	20	1
64805 ²⁾	135000	s 45	61	265	165	26x33	1	5
64815	280000	s 45	70	380	254	52x41	1	6
64818	580000	s 45	100	550	354	65x68	1	7




1) Available on request
2) Also available for 240 V

Mains voltage halogen lamps

3200 K



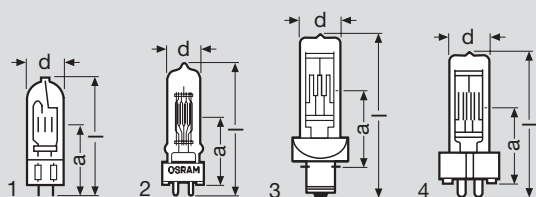
Product reference	Product number	ANSI	LIF	W		V	t [h]
Double ended							
64553	4050300014173			650	R7s	230	75
64571 ¹⁾	4050300014180	DXX	P2/13	800	R7s	230	75
64583 ¹⁾	4050300249094		P2/20	1000	R7s	230	200
64741 ¹⁾	4050300209333	EKM	P2/7	1000	R7s	230	200
64751 ¹⁾	4050300214641		P2/12	1250	R7s	230	200
64781 ¹⁾	4050300229997	FEX	P2/27	2000	RX7s	230	300
64800 ²⁾	4050300210254		P2/36	5000	K24s	230	1000


Product reference	Im		\varnothing d [mm]	l max. [mm]			No.
64553	17000	Horizontal ³⁾	17	74.9	20	25	1
64571 ¹⁾	21000	Horizontal ³⁾	17	74.9	20	25	1
64583 ¹⁾	27000	any	12	114.2	65	12	2
64741 ¹⁾	25000	any	12	185.7	125	12	2
64751 ¹⁾	33500	p 15	12	185.7	125	12	2
64781 ¹⁾	50000	p 15	30	138.1	35	12	2
64800 ²⁾	125000	p 4	18	520 ⁴⁾	245	1	3








1) Also available for 240 V
 2) Available on request
 3) Preferred burning position horizontal; vertical possible for short periods
 4) Maximum overall length

Mains voltage halogen lamps

3000 K

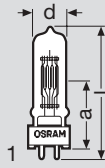



Product reference	Product number	ANSI	LIF	W		V	t[h]
Single ended, 230 and 240 Volt 3000 K							
64661	4050300006871		A1/249	300	GX6.35	230	50
64670 ¹⁾	4050300022536		T/25	500	GY9.5	230	300
64718 ¹⁾	4050300022543	GCT	T/27	650	GY9.5	230	400
64719 ¹⁾	4050300019154		T/12	650	GX9.5	230	750
64722 ¹⁾	4050300225906	FKB	T/13	650	P28s	230	750
64744 ¹⁾	4050300017723	FWP	T/19	1000	GX9.5	230	750
64746	4050300226620	FKD	T/20	1000	P28s	230	750
64752 ¹⁾²⁾	4050300296616	FWS	T/29	1200	GX9.5	230	400




Product reference	Im		 d [mm]	 l max. [mm]	 a [mm]			 No.
64661	7500	s 90	20	63.5	40	11x8 ³⁾	25	1
64670 ¹⁾	11000	s 90	26	90	46.5	11x11	25	2
64718 ¹⁾	14500	s 90	26	90	46.5	11x11	25	2
64719 ¹⁾	12000	s 90	35	110	55	13x17	20	4
64722 ¹⁾	13000	s 90	35	130	55.6	13x17	20	3
64744 ¹⁾	20500	s 90	35	110	55	13x15	20	4
64746	20500	s 90	35	130	55.6	13x15	20	3
64752 ¹⁾²⁾	28600	s 90	35	125	67	14x16	20	4

1) Also available for 240 V
2) Supplied on request
3) With monoplane filament

Mains voltage halogen lamps 2900 K



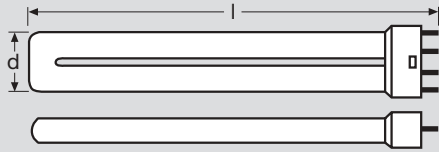
Product reference	Product number	ANSI	LIF	W	V		t [h]
2900 K							
64662 ¹⁾	4050300017419		M/38	300	230	GY9.5	2000
64672 ¹⁾	4050300233451		M/40	500	230	GY9.5	2000

Product reference	Im		d [mm]	l max. [mm]	a [mm]			No.
64662 ¹⁾	5000	any	15	80	46.5	9x11 ²⁾	25	1
64672 ¹⁾	8500	any	22	85	46.5	12x11 ²⁾	25	1



1) Also available for 240 V
2) With monoplane filament

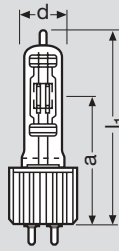
STUDIOLINE®







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

The OSRAM fluorescent lamps STUDIOLINE® 55 W/5600 and STUDIOLINE® 55 W/3200 are especially designed for lighting in cinematography, TV and video recording. Due to a special mixture of the phosphors, the light of the STUDIOLINE® lamps blends without any problems with the light of HMI® respectively tungsten lamps.

HPL® High performance halogen lamps



Product reference	Product number	W		V	t [h]	lm
HPL® High performance halogen lamps, 3150 K						
93728 ¹⁾	4050300 461816	575	2 Pin	230	300	15000
93729 ¹⁾	4050300 654201	750	2 Pin	230	300	19750

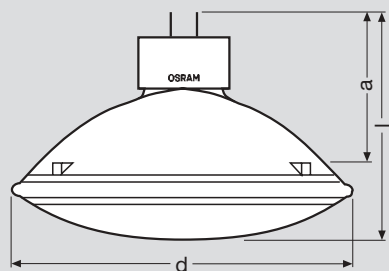
Product reference		d [mm]	l _t max. [mm]	a [mm]		
93728 ¹⁾	any	20	104	60.3		12
93729 ¹⁾	any	20	104	60.3		12

HPL® High performance 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.



¹⁾ Also available for 240 V

PAR 64 Halogen lamps



Product reference	Product number	ANSI	LIF		W		V
PAR 64 Halogen lamps, 3200 K							
64737/3 ¹⁾	4050300361468	EXC	CP/60	NSP	1000	GX16d	230
64738/3 ¹⁾	4050300361475	EXD	CP/61	SP	1000	GX16d	230
64739/3 ¹⁾	4050300361482	EXE	CP/62	FL	1000	GX16d	230

Product reference	t [h]	cd		\varnothing d [mm]	I max. [mm]	a [mm]	
64737/3 ¹⁾	300	320000	any	204	152.4	102	6
64738/3 ¹⁾	300	270000	any	204	152.4	102	6
64739/3 ¹⁾	300	125000	any	204	152.4	102	6

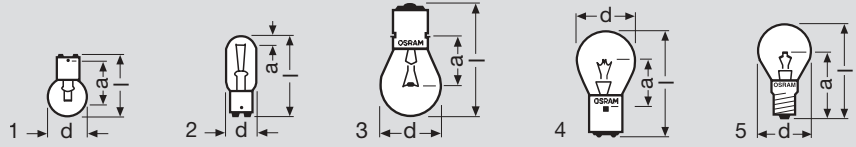
Beam type:
 SP = Spot
 NSP = Narrow spot
 FL = Flood



Parabolic reflector lamps for use in stage lighting. The axial arrangement of the built-in lamp achieves an extremely uniform distribution of light.

1) These lamps are also available for 240 V. The reference will then end in .../4
 2) Do not tilt perpendicular to the filament

Lamps without halogen low voltage



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

Product reference		d [mm]	l max. [mm]	a [mm]	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	any	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 without halogen have an exact filament geometry and high optical quality glass bulb.

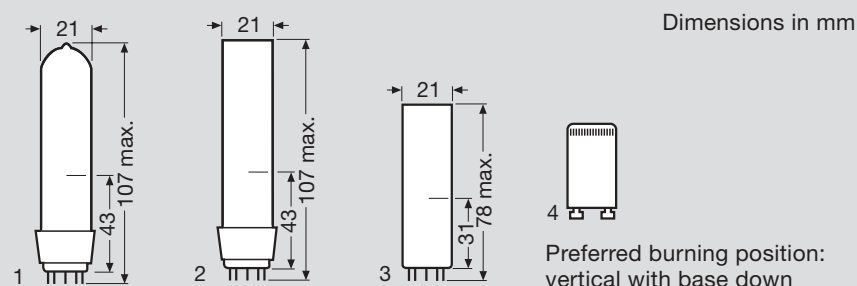
Note: Do not use for new designs.

Applications:

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

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

Spectral lamps



Product reference	Product number		V	A	AC/DC	W			No.
Spectral lamps									
Cd/10	4050300210353	Cadmium	15	1.0	AC	15	15x6	Pico 9	1
Cs/10	4050300213842	Cesium	10	1.0	AC	10	15x6	Pico 9	1
He/10	4050300212258	Helium	60	1.0	AC	55	15x8	Pico 9	1
Hg 100	4050300231310	Mercury	45	0.6...1	AC/DC	22...44	20x3	Pico 9	2
HgCd/10	4050300211459	Mercury/Cadmium	30	1.0	AC	25	20x8	Pico 9	1
K/10	4050300212197	Potassium	10	1.0	AC	10	15x6.5	Pico 9	1
Na/10	4050300210377	Sodium	15	1.0	AC	15	15x6.5	Pico 9	1
Na 10 FL	4050300006925	Sodium	16	0.57	AC	9	—	Pico 9	3
Ne/10	4050300212210	Neon	30	1.0	AC	30	15x8	Pico 9	1
Rb/10	4050300213866	Rubidium	10	1.0	AC	10	15x6	Pico 9	1
Tl/10	4050300211435	Thallium	15	1.0	AC	15	8x3	Pico 9	1
Zn/10	4050300212234	Zinc	15	1.0	AC	15	15x6	Pico 9	1
Accessories	Starter St 191								4
AC = Alternating current DC = Direct current									

Spectral lamps are discharge lamp 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.

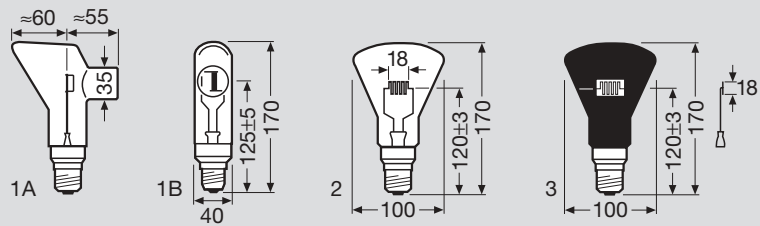
Applications:

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 ¹⁾	A ¹⁾	K _{max.} ²⁾	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
Parameters									
		cd	lm	BLACK TEMP.	K _{max.}				
WI 17/G		–	–	+	(+)	+ 250–800 nm			
WI 40/G		–	–	+	(+)	+ 250–2500 nm			
WI 41/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.

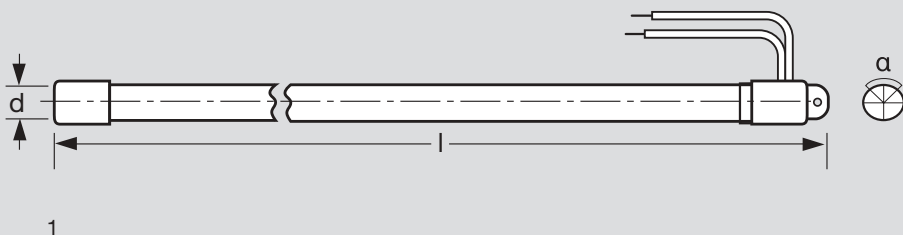
Parameters

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

1) Upper limit values for electrical data
 2) The colour temperature of 2856 K corresponds to light of type A (DIN 5035)
 3) s = standing (base down); h = hanging (base up)
 4) Side view Fig. 1A Front view Fig. 1B

5) Only in addition to measurement of the black body temperature or the colour temperature

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



Product reference	Product number	W		R _a	Lx 8 mm	TUBE d [mm]	l [mm]		No.	
LINEX® for ECG operation only										
A3-10W40	4050300652603	40	Daylight	1 B	80000	10	375	75	1	50
A4-10W24	4050300652566	24	Daylight	1 B	60000	10	277	75	1	50

How LINEX® works:

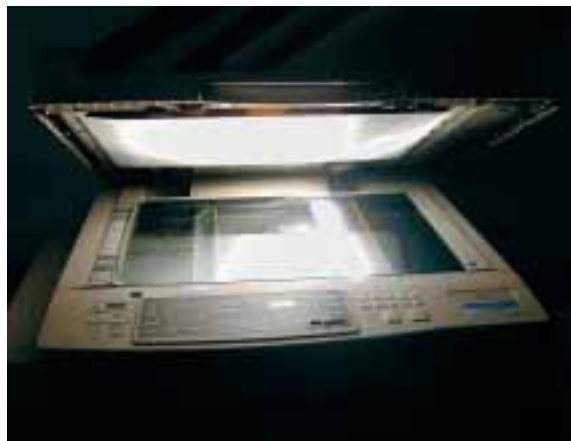
Xenon particles are excited by electrically restricted discharge and emit UV radiation. This radiation is efficiently converted into visible light by a special phosphor.

Product features:

- Long lamp life of up to 10,000 hours
- Instant light, flicker-free
- Excellent colour rendering ($R_a > 86$)
- Luminous flux unaffected by temperature (-25 °C to +60 °C)
- Operating frequency > 100 kHz

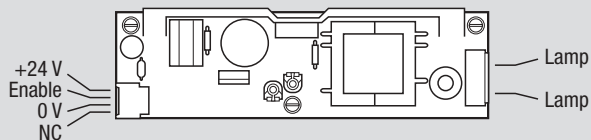
Applications:

- Scanners, copiers, industrial image analysis, additional lighting, backlighting



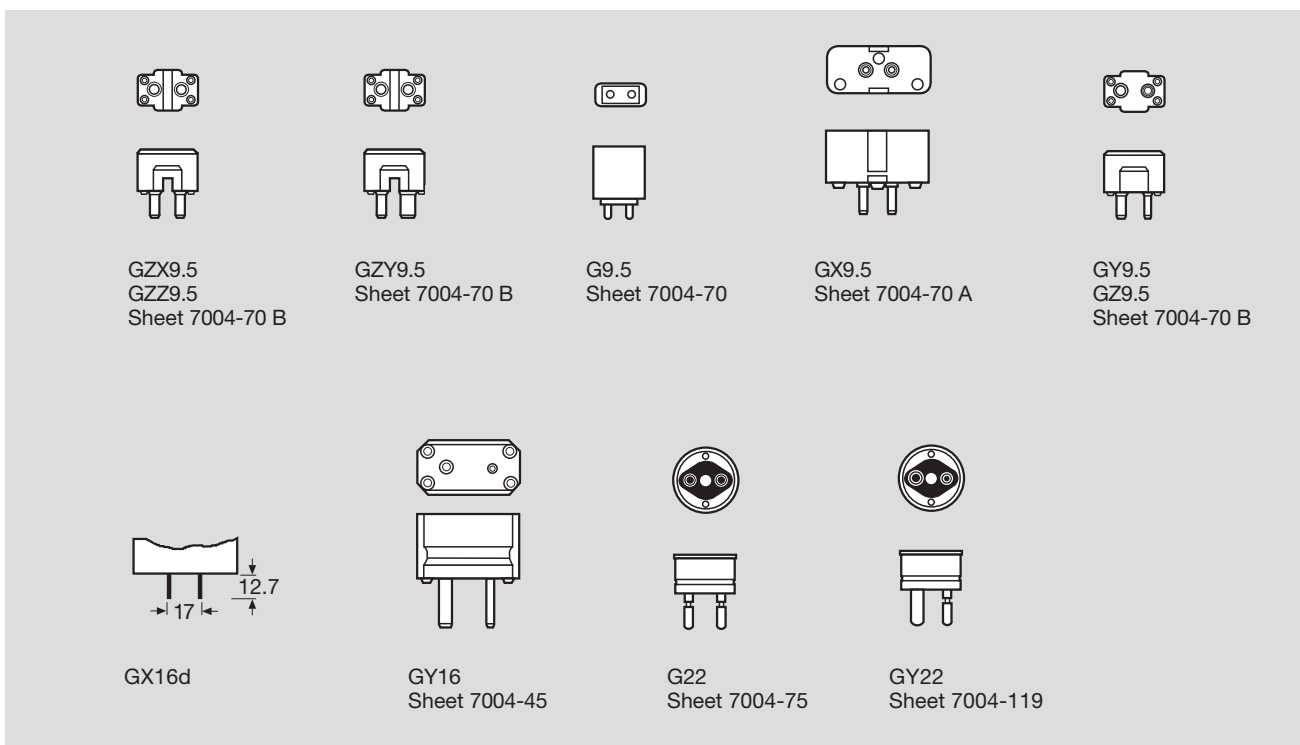
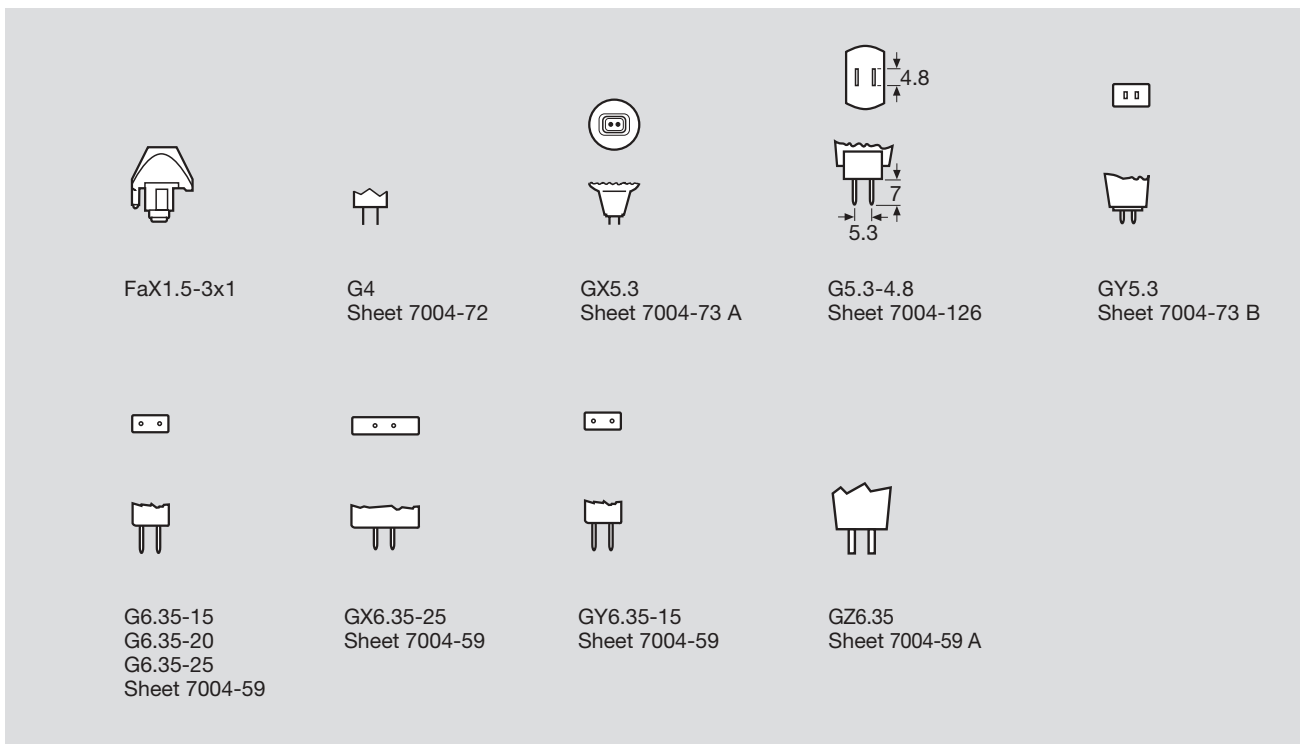
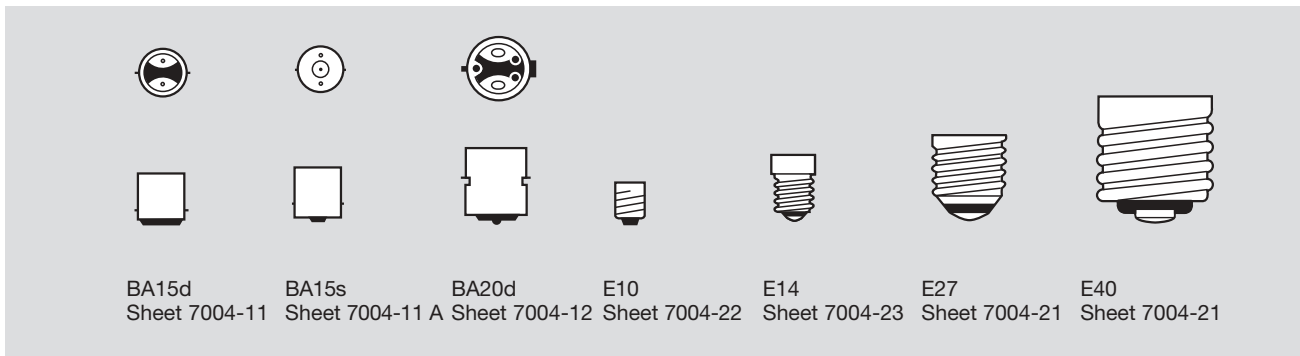
Product reference	Product number		V min.-max.	kHz ECG	A	W SYSTEM
QUICKTRONIC® for OSRAM LINEX®						
QT LINEX 1x40/24	4050300666662	40	21.6...26.4	> 100	1.7	40
QT LINEX 1x24/24	4050300666709	24	21.6...26.4	> 100	1.0	24

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



Bases

IEC/EN 60061-1



Bases

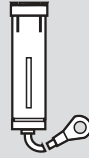
IEC/EN 60061-1



G38
Sheet 7004-76



GX38



K24s
Length of cable
250 mm
Hole of cable lug
ø 8.4 mm



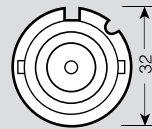
S25.5
S30



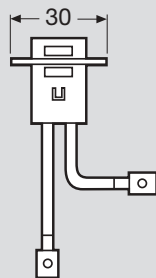
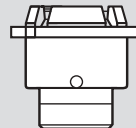
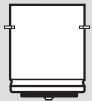
Pico9



P28s
Sheet 7004-42



P32d-3
Sheet 7004-111



PK30d

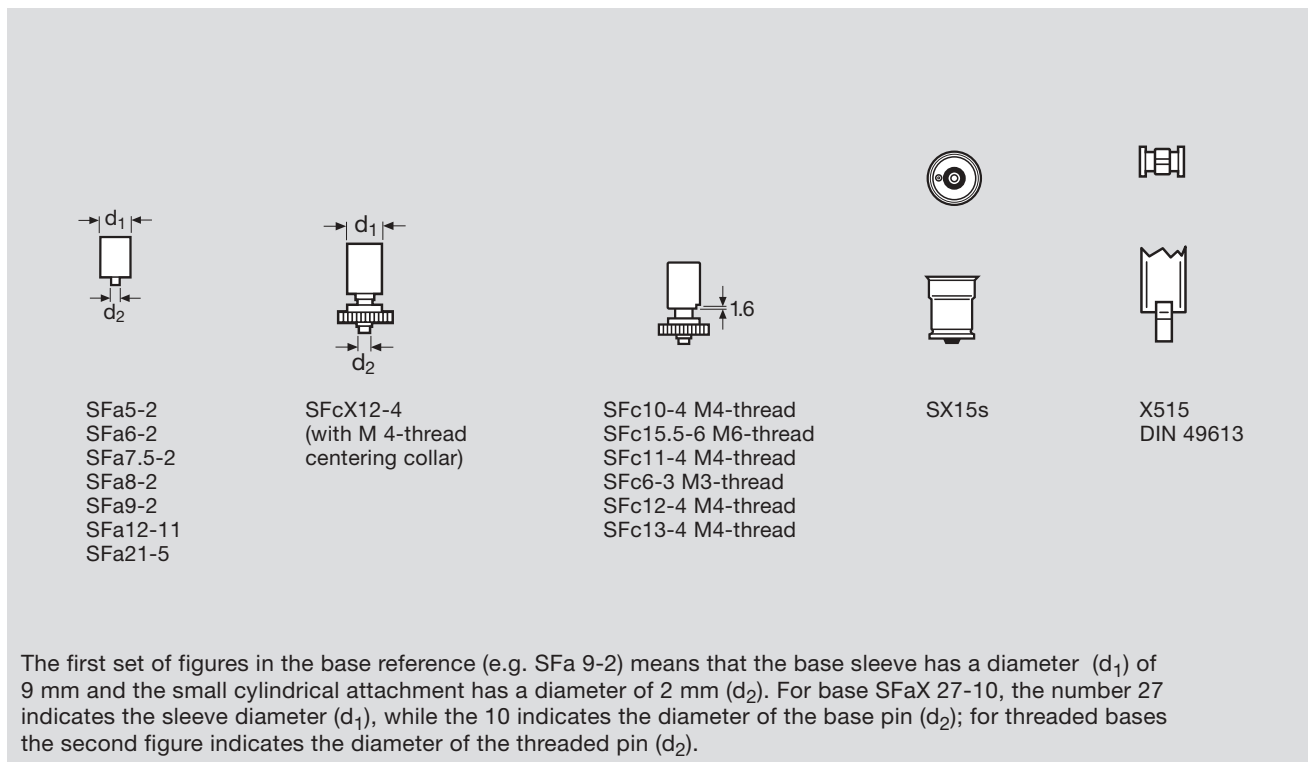
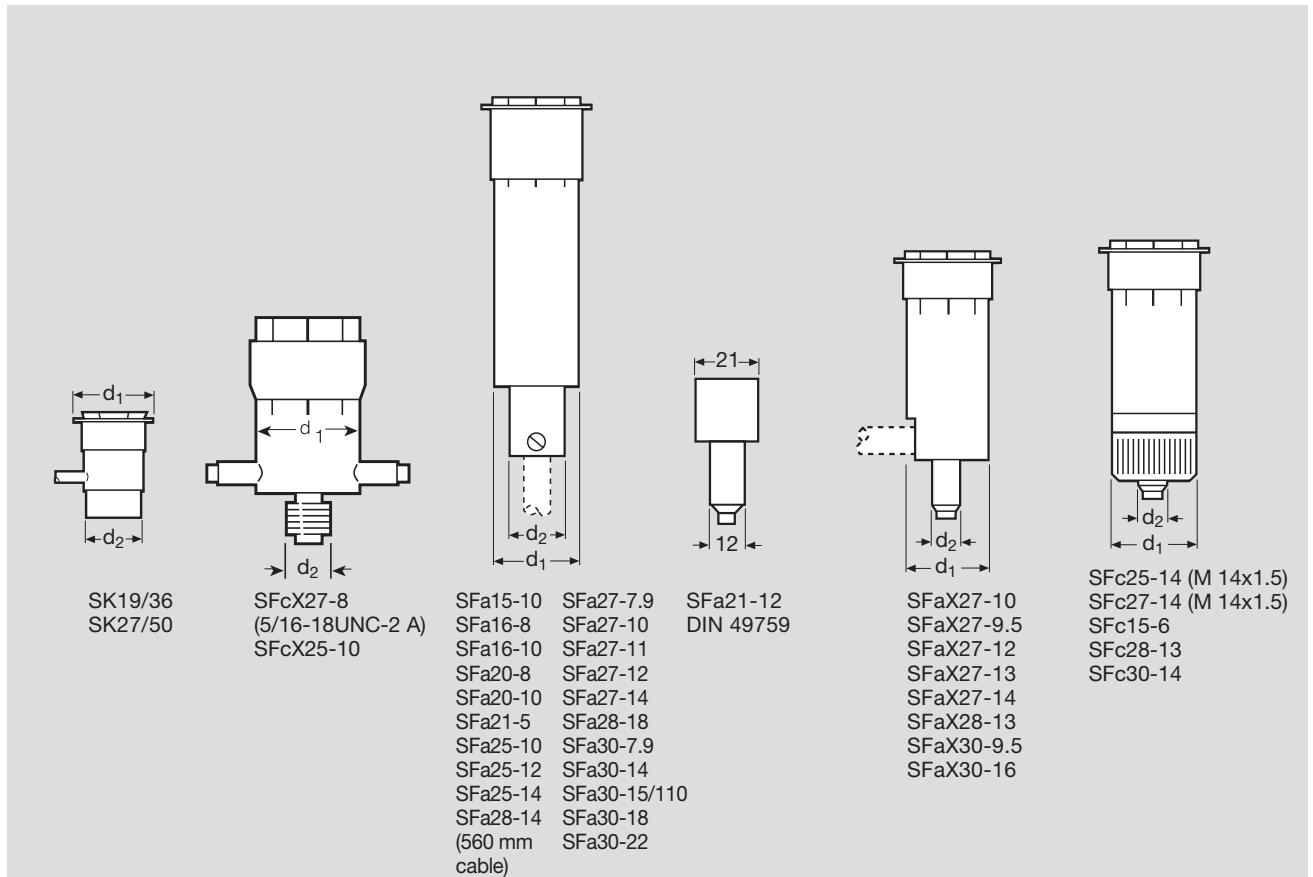


R7s
RX7s
Sheet 7004-92 A



PG22-6.35
Sheet 7004-48

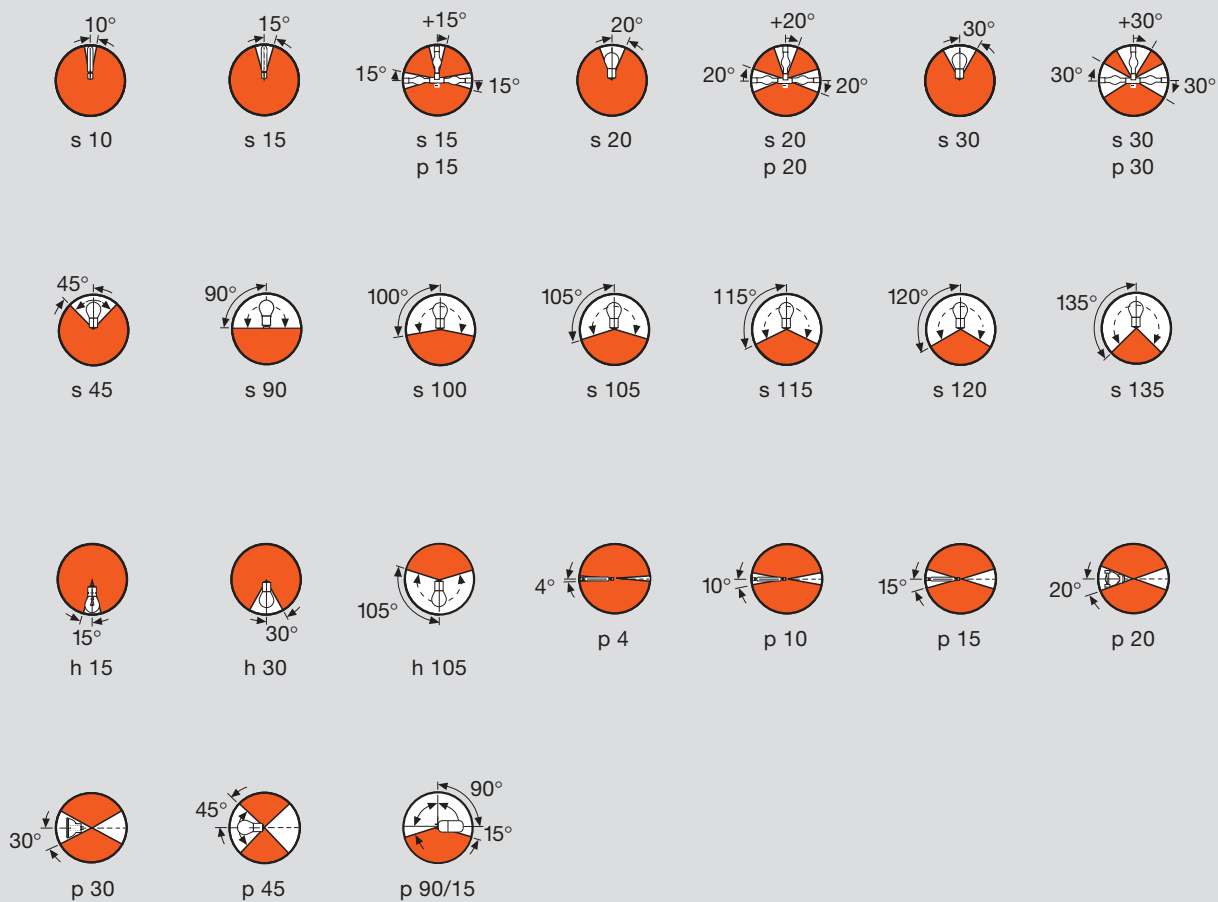
Bases





The first set of figures in the base reference (e.g. SFa 9-2) means that the base sleeve has a diameter (d_1) of 9 mm and the small cylindrical attachment has a diameter of 2 mm (d_2). For base SFaX 27-10, the number 27 indicates the sleeve diameter (d_1), while the 10 indicates the diameter of the base pin (d_2); for threaded bases the second figure indicates the diameter of the threaded pin (d_2).

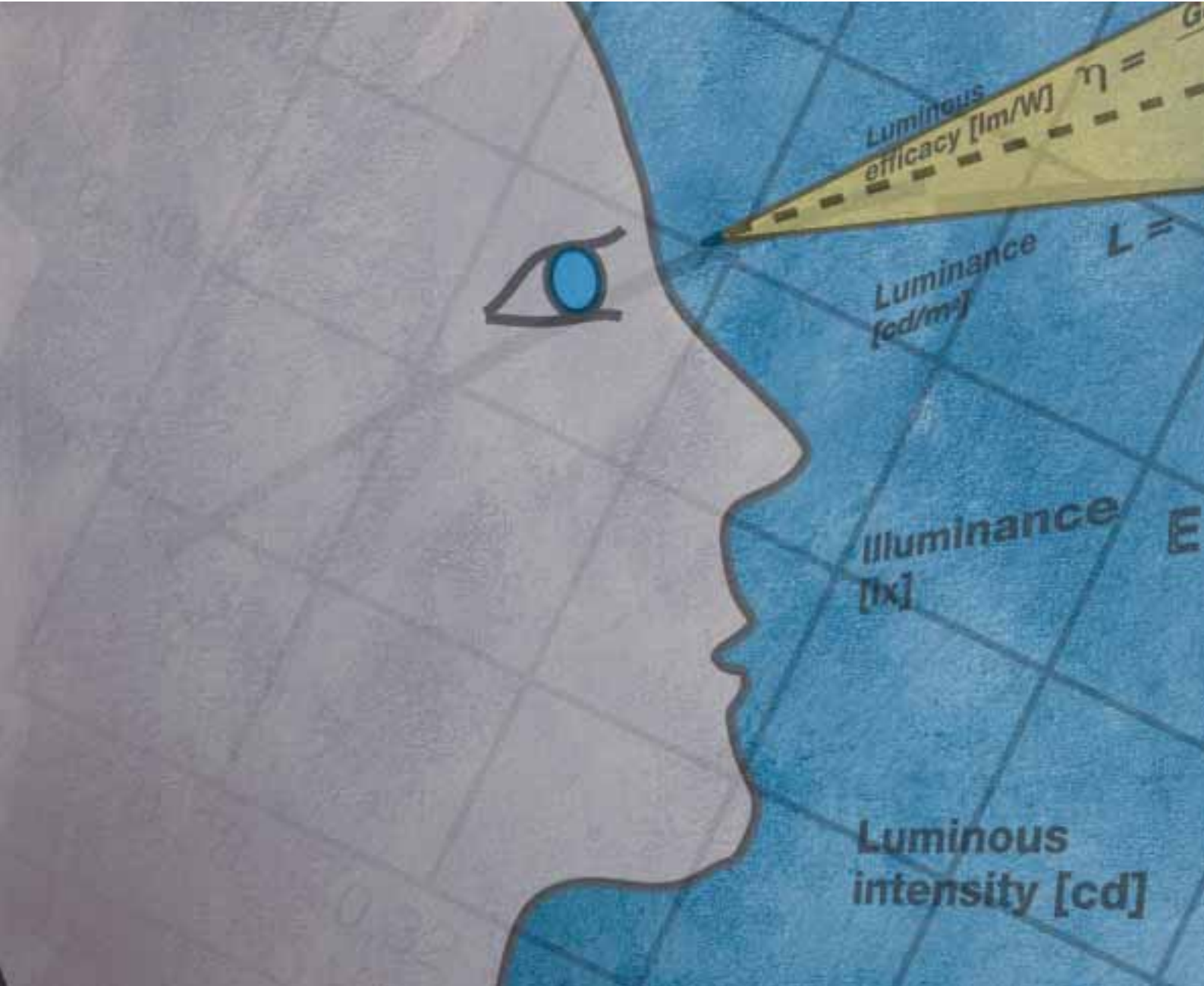
Burning positions

Schematic diagrams



 permitted
 not permitted

Lamps with plane or flat mandril filaments should only be inclined perpendicular to the filament plane.



Glossary of the most important lighting terms

Index of types
Index ANSI code
Index LIF code

Electrical P

Luminous intensity [cd]
Viewed luminous area [m²]

$$= \frac{\text{Luminous flux falling on area [lm]}}{\text{Illuminated area [m}^2\text{]}}$$

$$I = \frac{\text{Luminous flux in solid angle}}{\text{Solid angle } \Omega \text{ [sr]}}$$

Glossary of the most important lighting terms

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

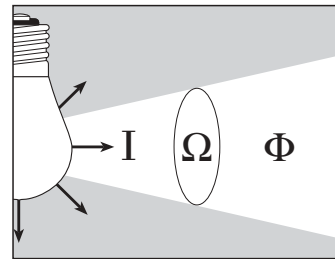
The most important of these are described here.

Light and radiation

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

Luminous flux Φ

Unit of measurement: lumen [lm]
Luminous flux Φ is all the radiated power emitted by a light source evaluated with the spectral sensitivity of the eye and the photometric radiation equivalent k_m .

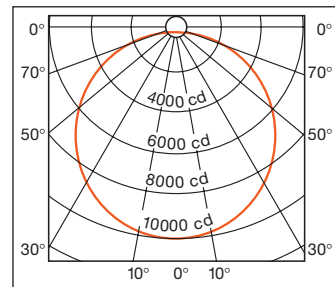


Luminous intensity I is a measure of the luminous flux Φ emitted in solid angle Ω .

Luminous intensity I

Unit of measurement: candela [cd]
Generally speaking, a light source emits its luminous flux Φ in different directions and at different intensities.

The visible radiant intensity in a particular direction is called luminous intensity I .

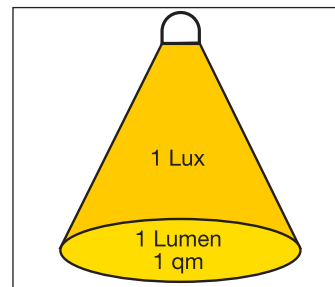


Polar diagram

Illuminance E

Unit of measurement: lux [lx]
Illuminance E is the ratio between the luminous flux and the area being illuminated.

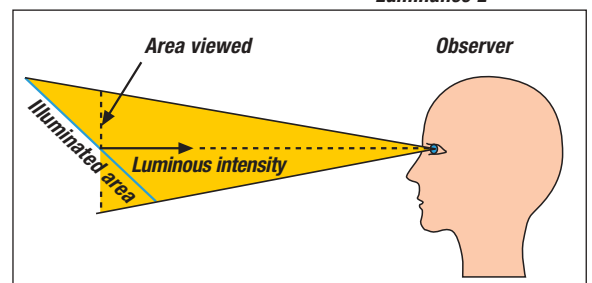
An illuminance of 1 lx occurs when a luminous flux of 1 lm is evenly distributed over an area of 1 m².



Illuminance E

Luminance L

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



Luminance L

The most important photometric formulae:

Luminous intensity I [cd]	$\frac{\text{Luminous flux in solid angle}}{\text{Solid angle } \Omega \text{ [sr]}}$	Luminance L [cd/m ²]	$\frac{\text{Luminous intensity [cd]}}{\text{Viewed luminous area [m}^2\text{]}}$
Illuminance E [lx]	$\frac{\text{Luminous flux falling on area [lm]}}{\text{Illuminated area [m}^2\text{]}}$	Luminous efficacy η [lm/W]	$\frac{\text{Generated luminous flux [lm]}}{\text{Electrical power consumed [W]}}$

Luminous efficacy η

Unit of measurement: lumens per watt [lm/W]

Luminous efficacy η indicates the efficiency with which the electrical power consumed is converted into light.

Colour temperature

Unit of measurement: Kelvin [K]

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

Colour appearance

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

Warm White < 3300 K

Cool White 3300 to 5000 K

Daylight > 5000 K

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

Colour rendering

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

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

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

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

Luminaire efficiency

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

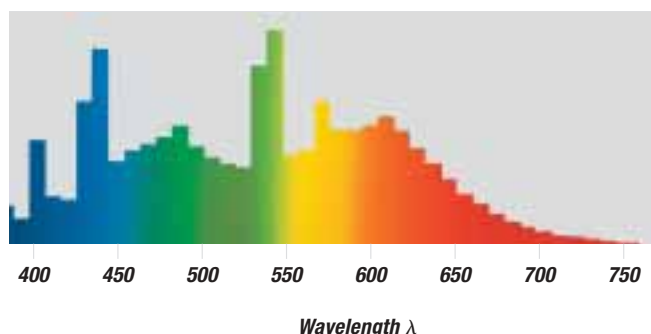
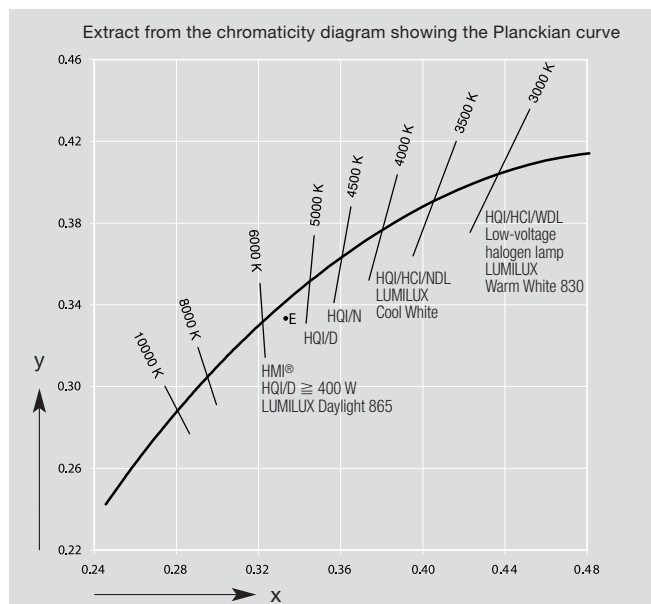
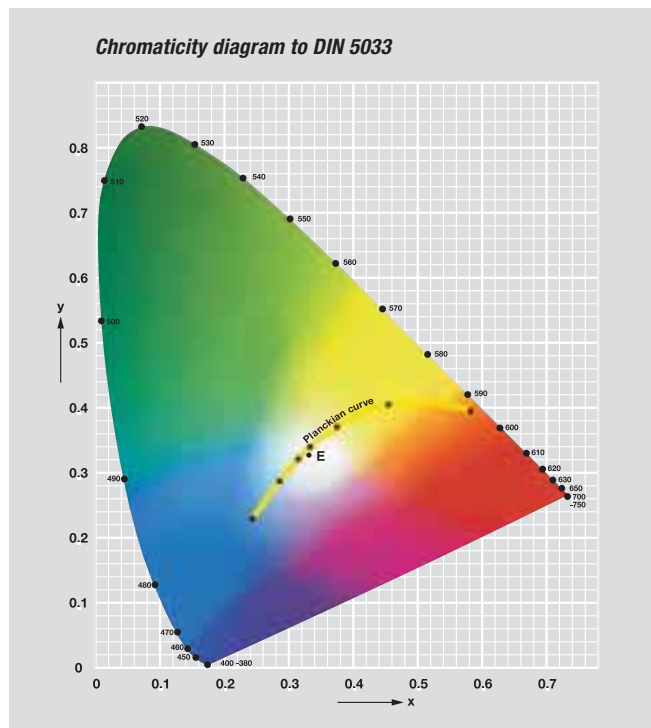
For detailed information on indoor lighting with artificial light, see DIN 5035.

Average life

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

Service life

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



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

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CP/99	4050300370729	49			
F/74	4050300342122	56			
J1/39	4050300317779	39			
J1/40	4050300209944	40			
J1/57	4050300289649	39			
J1/58	4050300300269	39			
J1/59	4050300289663	39			
J1/76	4050300442419	38			
J1/77	4050300258324	38			
J1/78	4050300206844	40			
J1/79	4050300446301	38			
J1/80	4050300308135	38			
J1/82	4050300017266	40			
J1/83	4050300271866	38			
J1/84	4050300431680	38			
M/20	4050300206417	56			
M/28	4050300012018	36			
M/29	4050300006758	36			
M/30	4050300012407	36			
M/33	4050300012001	37			
M/38	4050300017419	52			
M/40	4050300233451	52			
M/43	4050300017372	36			
M/130	4050300220529	36			
M/134	4050300281216	36			
M/137	4050300258690	36			
M/185	4050300099798	36			

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Symbols

Display/Optic

	Rated wattage in W		Average life		Luminous efficacy
	Rated current in amps		Normal pack/pcs.		LIF Code
	Voltage in V		Standard pack/pcs.		Max. color temperature (Kelvin)
	Luminous flux in lumen		for lamp		Max. black body temperature (Kelvin)
	Luminous intensity cd		Colour temperature K		Average luminance
	Bases		Type of current		Average life (hours) (Burning position vertical)
	Connector to lamp		System wattage at 230V/240V		Average life (hours) (Burning position horizontal)
	Fig. no.		System wattage, ECG/CCG		Base anode
	Shape/model		Permissible operating voltage, sinusoidal		Base cathode
	Weight		Ignition voltage in kV		Spectral radiance distribution
	Illuminance in 8 mm distance		Operating frequency kHz		Current control range
	Spacing a in mm		Focal length a in mm		Radiant power in 350...450 nm range
	Width b in mm		Electrode spacing a in mm		Radiant intensity 350...450 nm range
	Height h in mm		Power W/A		Radiant intensity in the wavelength range 365 +/- 2.5 nm
	Length l in mm		Filament dimensions w x h in mm		Luminous area w x h (mm)
	Max. length l in mm		Distance a max. (mm)		
	Length l ₁ in mm		ANSI Code		
	Max. length l ₁ in mm		Beam angle		
	Length l ₂ in mm		Axial luminous intensity		
	Max. length l ₂ in mm		Coating		
	Diameter d in mm		Arc length (mm)		
	Max. diameter d in mm		Magnetic arc stabilization		
	Tube diameter d in mm		Burning position anode underneath		
	Burning position		Forced cooling		
	Beam angle in degrees		Forced cooling horizontal		
	Colour rendering group		Forced cooling vertical		
	Light colour		Luminous element length (mm)		

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