Indoor and Outdoor Lighting

GLS Lamps

Fluorescent Lamps

Discharge Lamps

Miniature Lamps

Special Radiation Lamps

Lighting Sets

Decoration Sets

Radiation Sets

OSRAM

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GLS Lamps

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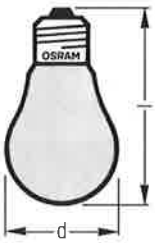
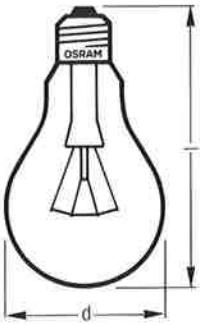
Standard Line Lamps
Krypton Lamps
SUPERLUX® Lamps

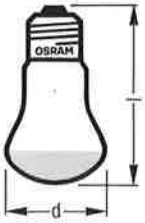
40 W–300 W incandescent lamps are supplied with coiled-coil filament.





Watts	Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price
Standard Line Lamps						
Standard line lamps are general lighting service lamps which can be economically used in households as well as for commercial purposes. The inside-frosted lamps decrease glare and shadows whilst clear-glass lamps emit a bright light.						
Inside frosted or clear						
25	230	60	105	E 27	100	
40	430	60	105	E 27	100	
60	730	60	105	E 27	100	
75	960	60	105	E 27	100	
100	1380	60	105	E 27	100	
150	2220	65	112	E 27	50	
200	3150	80	148	E 27	50	
Clear						
300	5000	90	189	E 40	20	
500	8400	110	240	E 40	20	
1000	18800	130	274	E 40	12	

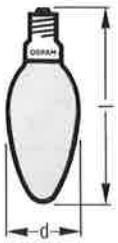
Krypton Lamps						
These small mushroom-shaped lamps are filled with rare Krypton gas on account of which they emit more light, i.e. their luminous flux is 10 % higher than that of conventional incandescent lamps. Krypton lamps improve the general lighting in homes especially where small light sources are required, e.g. in ceiling and wall fittings.						
Inside-frosted						
25	235	45	88	E 27	100	
40	475	45	88	E 27	100	
60	800	45	88	E 27	100	
100	1500	50	96	E 27	100	
75 Watts upon request						

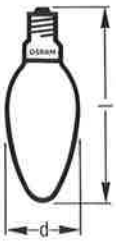


SUPERLUX® Lamps						
SUPERLUX® lamps have a special silica coating which reflects the light through the inside-frosted crown of the lamp. This brings a gain of 35 % more light in the axis of the lamp.						
Mushroom-shaped, inside silica-coated, crown inside-frosted						
40	380	50	92	E 27	100	
60	640	50	92	E 27	100	
100	1240	60	105	E 27	100	

Candle Lamps
Drop Lamps
CENTRA® Lamps

1

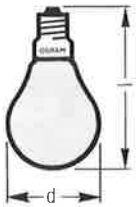


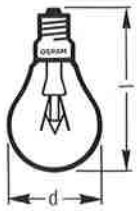


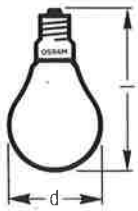
Candle Lamps

These small attractively shaped lamps emit a glarefree light and are especially suitable for decorative lighting, e.g. in crystal chandeliers or other decorative ceiling-, floor- or wall fittings.

Watts	Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price
Inside-frosted or clear						
25	200	35	100	E 14	100	
40	400	35	100	E 14	100	
60	660	35	100	E 14	100	
Twisted candle, clear						
25	200	35	100	E 14	100	
40	400	35	100	E 14	100	
Silica-coated						
25 [1])	180	35	100	E 14	100	
40 [1])	350	35	100	E 14	100	



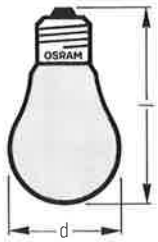




Drop Lamps

Drop lamps are used especially for decorative lighting purposes.
Their small dimensions make them particularly suitable for small fittings.

Inside-frosted or clear						
25	200	45	80	E 14	100	
40	390	45	80	E 14	100	
Silica-coated						
25 [1])	180	45	80	E 14	100	
40 [1])	350	45	80	E 14	100	



CENTRA® Lamps

CENTRA® lamps with their hammer-sign are especially shock- and vibration-proof on account of their additional filament supports.

Inside-frosted						
25 [1])	185	60	105	E 27	100	
40	320	60	105	E 27	100	
60	505	60	105	E 27	100	
100	1000	65	112	E 27	80	
Clear						
200 [1])	2500	80	169	E 27	50	

[1]) To be discontinued shortly.

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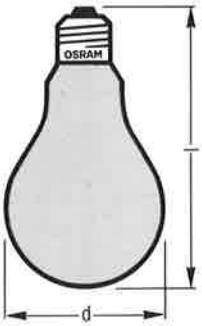
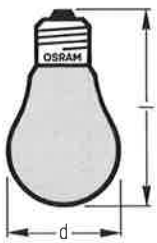
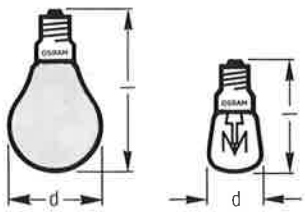
Lamps with ▽®-sign
Standard Line Lamps for low voltage
Oven Lamps
Pear-shaped Lamps



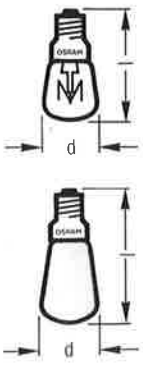
Watts	Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price
Lamps with ▽®-sign						
These lamps meet the specifications laid down for use in hanging or portable handlamps in explosive areas. They bear the temperature sign ▽® and are used mainly in coal mines and other operations where the danger of explosion exists.						
CENTRA® shockproof inside-frosted with single coil						
25 T [1]	185	60	105	E 27	100	
40 T	320	60	105	E 27	100	
60 T	505	60	105	E 27	100	
Standard line lamps inside-frosted with coiled-coil and 2 fuses						
100 T	1380	60	105	E 27	100	
200 T	3150	80	148	E 27	50	
Standard line lamps clear with coiled-coil and 2 fuses						
300 T	5000	90	189	E 40	20	
Standard line lamps clear with single coil						
500 T	8400	110	240	E 40	20	



Standard Line Lamps for low voltage						
Low voltage lamps are used where no mains supply is available and low voltage supply comes from a dynamo or generator.						
Inside-frosted, 24 or 42 Volt						
25 [1]	325/280 [2]	60	105	E 27	50	
40	580/510 [2]	60	105	E 27	50	
60	980/870 [2]	60	105	E 27	50	
100 [1]	1740/1640 [2]	60	105	E 27	50	



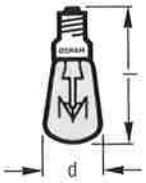
Oven Lamps						
These lamps can withstand ambient temperatures up to 300° C on account of special soldering and kitting techniques and therefore are particularly suitable for use in household ovens.						
Drop-shaped lamps, inside-frosted						
40 300 GR		45	80	E 14	100	
Pear-shaped lamps, clear						
15 300 GR		22	52	E 14	100	



Pear-shaped Lamps						
Pear-shaped lamps are used in places where for technical reasons little space is available and consequently small-sized lamps are required. They are used a.o. in cupboards, refrigerators and deepfreeze boxes.						
Inside-frosted or clear						
15	90	26	57	E 14 [3]	100	
25	190	26	57	E 14	100	
Inside-frosted						
40 [1]	380	30	73	E 14	100	

[1] To be discontinued shortly.
[2] Luminous flux measured with 24/42 Volt supply.
[3] Clear with base B 15 d upon request.

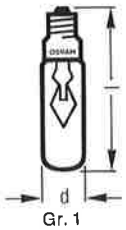
TV-Lamps
Tubular Lamps
LINESTRA® Tubular Lamps

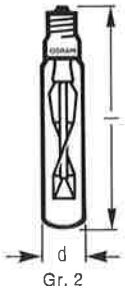


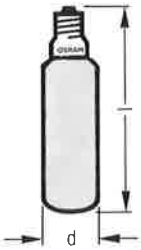
TV-Lamps

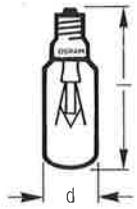
The transparent blue glass bulb makes this lamp particularly suitable for illumination of the area around a TV set which is beneficial for the eyes and delays their tiring.

Watts	Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price
Transparent blue						
25		32	74	E 14	100	





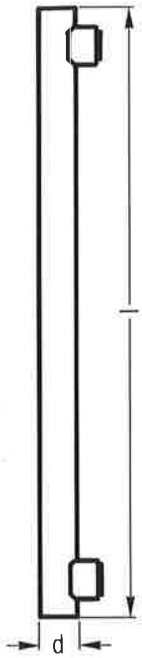


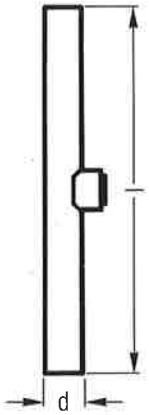


Tubular Lamps

Tubular lamps find a wide field of application both in the domestic and commercial sectors, e.g. refrigerators, sewing machines and other domestic appliances.

Watts		Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price
Clear							
25	Gr. 2	165	20	115	E 14	100	
15	Gr. 4	90	25	85	E 14	100	
25 [2]	Gr. 4	190	25	85	E 14	100	
Inside-frosted							
25	Gr. 3	195	30	100	E 14	100	
40	Gr. 3	380	30	100	E 14	100	
60 [1]	Gr. 5	685	32	144	E 14/E 27	50	
Clear, 24 and 42 Volt							
15	Gr. 1	150/130 [3]	20	85	E 14 [4]	100	





LINESTRA® Tubular Lamps

These modern tubular lamps when installed in a row next to each other enable an attractive linear illumination (e.g. in built-in cupboards, kitchens or drawing rooms). On account of their soft and flattering light they can be used also singly and can easily be installed over working areas in kitchens.

Ordering No.	Watts	Luminous flux lm	Diameter d mm	Length max. l mm	Base	Standard package quantity
1603 [5]	35	220	30	300	S 14 s 2 bases	25
1604 [5]	60	420	30	500		25
1104	120	840	30	1000		16
1613	35	240	30	300	S 14 d 1 base	25
1614 [1]	60	420	30	500		25

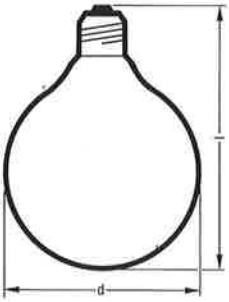
Lampholders with VDE sign

Ordering No.	Colour	for Base	Length mm	Depth mm	Height mm
662	white	S 14 s	59	34	46
670	lightgrey	S 14 d	82	34	46
675 [6]	lightgrey	S 14 d	82	34	46

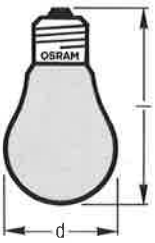
[1] To be discontinued shortly.
[1] Suitable also as sewing machine lamp.
[3] Luminous flux measured with 24/42 Volt supply.
[4] For 24 Volt available also with base B 15 d.
[5] Available also as LINESTRA®-Set (LINESTRA® tubular lamp with lampholder); see page 76.
[6] With press-button switch.

1

OPALINA® Large Round Lamps
BELCOLOR® Lamps
DEKOLUX® Crown Reflector Lamps

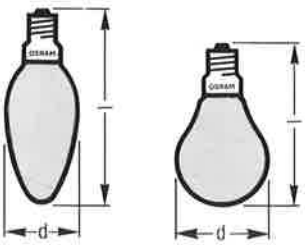


Watts	Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price
OPALINA®						
OPALINA® is an inside-silicated lamp with round bulb. It combines glarefree soft light with an attractive appearance. Many fittings are enhanced when equipped with OPALINA® instead of standard line incandescent lamps.						
60	460	100	142	E 27	20	



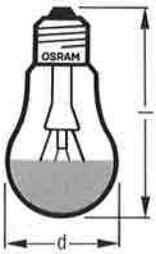
BELCOLOR® Lamps

For festive illumination and decoration



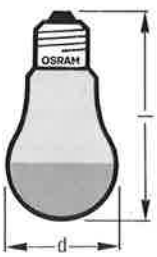
Inside-frosted						
15	Standard	90	60	105	E 27	100
15	Candle	90	35	100	E 14	100
15	Drop	90	45	80	E 14	100
Coloured: red, orange, yellow, green and blue						
25, 40	Standard		60	105	E 27	50
25	Candle		35	100	E 14	50
25	Drop		45	80	E 14	50

For CONCENTRA® BELCOLOR® lamps see page 9.



DEKOLUX® Crown Reflector Lamps

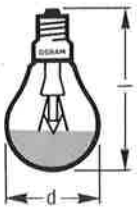
DEKOLUX® lamps are incandescent lamps with gold or silver crown reflectors which meet the demands for decorative or spot lights in the domestic as well as the commercial sectors, e.g. in modern homes or shop windows and salesroom displays.



Standard shape Clear, silver or gold crown reflector					
60	500	60	108	E 27	50
100	1000	70	129	E 27	50

40 Watts upon request

Standard shape Inside-frosted, silver crown reflector					
60	500	60	108	E 27	50
100	1000	70	129	E 27	50
Drop-shaped Clear, silver crown reflector					
25	160	45	80	E 14	50
40	280	45	80	E 14	50



Drop-shaped Clear, gold crown reflector					
40	280	45	80	E 14	50

CONCENTRA® with Standard Glass Bulbs

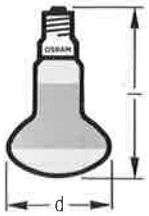
1

Watts	Luminous flux lm	Beam spread degrees [1]	Diameter d mm	Length l max. mm	Mounting length [2] mm	Base	Standard package quantity	Price

CONCENTRA® Reflector Lamps

Their focussed light beam makes these lamps especially suitable for effective illumination of rooms or large spaces, e.g. shop windows, salesrooms, reception halls, arcades etc.

CONCENTRA® sealed beam PAR lamps–see page 10.

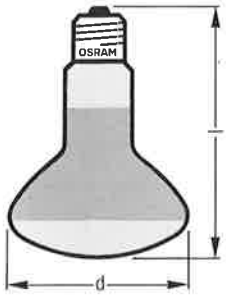


CONCENTRA® R 50

25	180	35°	50	84	72	E 14	50	
40	400	35°	50	84	72	E 14	50	

CONCENTRA® R 50 BELCOLOR®
Scratch-proof coloured crown in red, yellow, green and blue

40		35°	50	84	72	E 14	16	



CONCENTRA® R 63

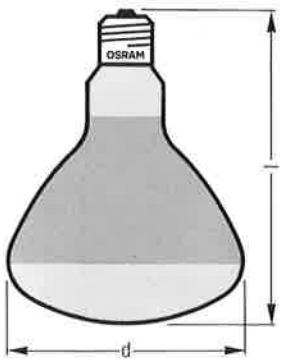
40	340	35°	63	103	85	E 27	50	
60	650	35°	63	103	85	E 27	50	

CONCENTRA® R 63 BELCOLOR®
coloured in red, yellow, green and blue

40		35°	63	103	85	E 27	16	

CONCENTRA® R 80
Flood lamp, beamspread 80°

40	340	80°	80	114	90	E 27	25	
60	650	80°	80	114	90	E 27	25	
75	690	80°	80	114	90	E 27	25	
100	1030	80°	80	114	90	E 27	25	



CONCENTRA® R 95

75 [3]	690	35°	95	134	110	E 27	24	
100 [3]	1030	35°	95	134	110	E 27	24	

CONCENTRA® R 125

150	1520	35°	125	175	128	E 27	12	
300	3700	35°	125	175	128	E 27	12	

Illuminance and Light Distribution Curves are shown on pages 11 and 12.

Discharge lamps with reflector–see page 37.

[1] See drawing on page 12.
[2] Largest bulb diameter up to base of lamp cap.
[3] Available also as CONCENTRA®-Set (lampholder plus lamp); see page 74.

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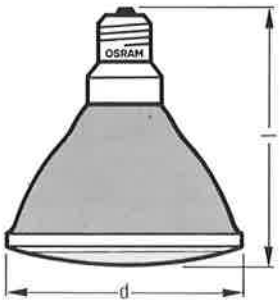
CONCENTRA®
PAR 38 Spot · Flood · Cool
PAR 56



CONCENTRA® Reflector Lamps
Narrow Beam "Spot"—Wide Beam "Flood"

Because of their long life, great economy and good light distribution the CONCENTRA® sealed beam PAR lamps with parabolic aluminium reflector are especially suitable for commercial use, e.g. shop window displays, salesrooms etc. Other advantages of the 75 W, 100 W and 150 W PAR 38 lamps are their sturdy compact shape and the fact that they are weather-proof. This makes them suitable also for outdoor use in watertight lampholders.

CONCENTRA® "Spot" sealed beam PAR 38, internal reflector, finely granulated

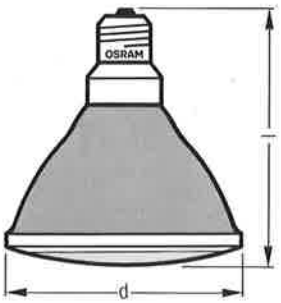
Watts	Ordering abbreviation	Economic-luminous flux lm	Beam spread degrees [1]	Diameter d mm	Length l max. mm	Mounting length [2] mm	Base	Standard package quantity	Price
75 [3]	SP	650	15°	122	136	123	E 27	15	
100	SP	820	15°	122	136	123	E 27	15	
150	SP	1500	15°	122	136	123	E 27	15	

CONCENTRA® "Flood" sealed beam PAR38, internal reflector, coarsely granulated

75 [3]	FL	650	40°	122	136	123	E 27	15	
100	FL	820	40°	122	136	123	E 27	15	
150	FL	1500	40°	122	136	123	E 27	15	

CONCENTRA® BELCOLOR® "Flood" in red, yellow, green and blue

100	FL		40°	122	136	123	E 27	15	



CONCENTRA®-Cool with Dichroic Reflector

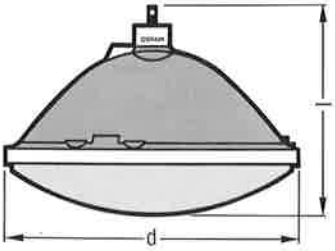
Lamps of which the heat radiation of the lightbeam has been reduced to approx. 25 %. Ideally suited for display of heat-sensitive goods.

Narrow Beam "Spot" sealed beam PAR 38, internal reflector, finely granulated

150	SP-C	1500	15°	122	136	123	E 27	12	

Wide Beam "Flood" sealed beam PAR38, internal reflector, coarsely granulated

150	FL-C	1500	40°	122	136	123	E 27	12	



CONCENTRA® 300 W PAR 56

Narrow Spotlight NSP 9°/15°
Medium Floodlight MFL 11°/25°
Wide Floodlight WFL 16°/40°

The light beams are not club-shaped (circular cross-section, rotation-symmetrical) but fan-shaped (elliptical cross-section).

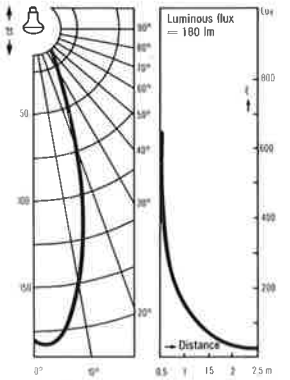
The two beam angles shown refer to the two planes in a perpendicular position to each other with the largest and the smallest beam angle.

Sealed beam with base GX16d (flat pins)

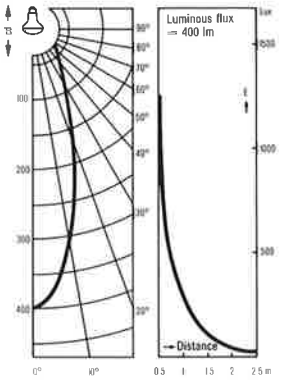
300	NSP	3000	9°/15°	179	127	83	GX16d	12	
300	MFL	3000	11°/25°	179	127	83	GX16d	12	
300	WFL	3000	16°/40°	179	127	83	GX16d	12	

[1] See drawing on page 12.
[2] Largest bulb diameter up to base of lamp cap.
[3] Also available as CONCENTRA® PAR-Set–see page 74.

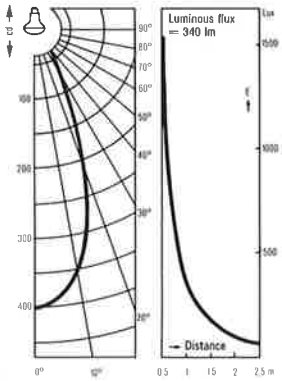
CONCENTRA®
Light Distribution in cd
Illumination Intensity in lx



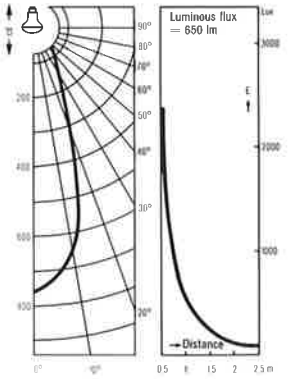
CONCENTRA® R 50, 25 W



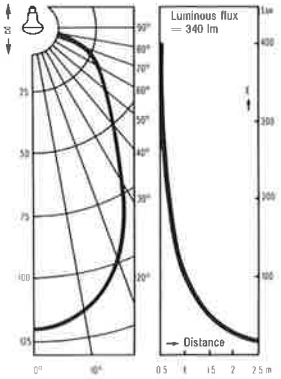
CONCENTRA® R 50, 40 W



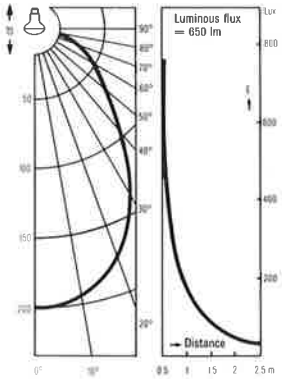
CONCENTRA® R 63, 40 W



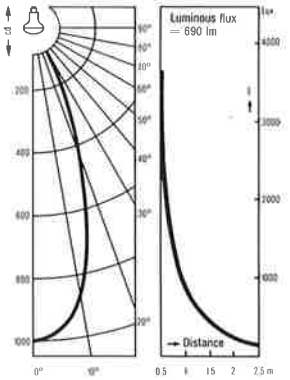
CONCENTRA® R 63, 60 W



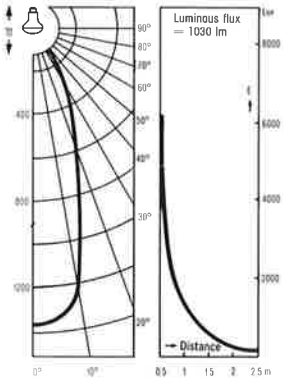
CONCENTRA® R 80, 40 W



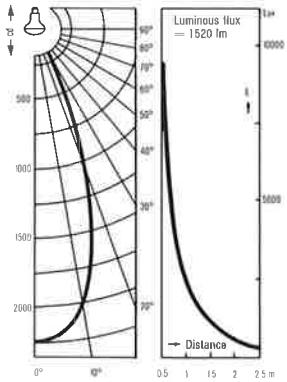
CONCENTRA® R 80, 60 W



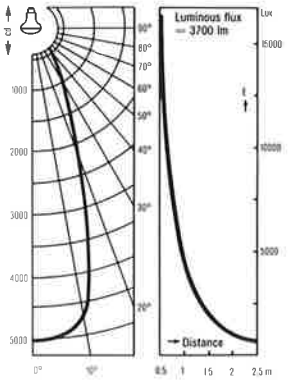
CONCENTRA® R 95, 75 W



CONCENTRA® R 95, 100 W



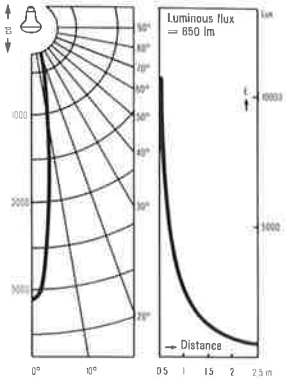
CONCENTRA® R 125, 150 W



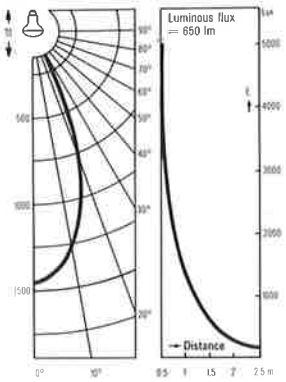
CONCENTRA® R 125, 300 W

1

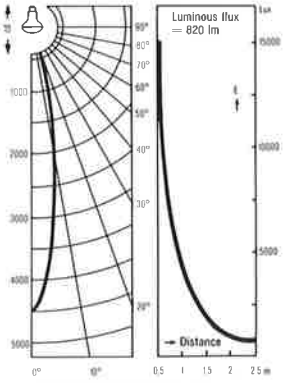
CONCENTRA®
Light Distribution in cd
Illumination Intensity in lx



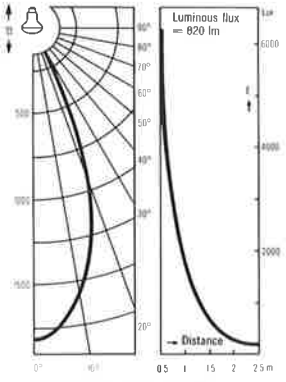
CONCENTRA® PAR 38
75 W SP



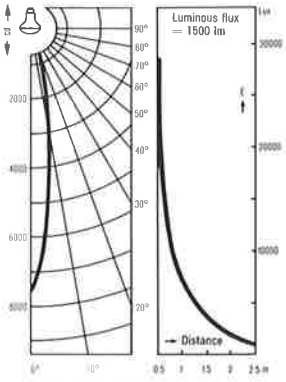
CONCENTRA® PAR 38
75 W FL



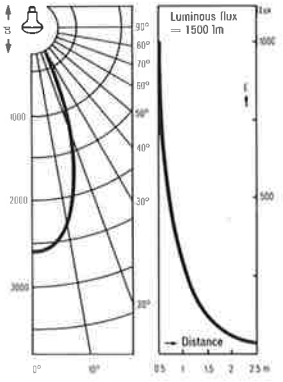
CONCENTRA® PAR 38
100 W SP



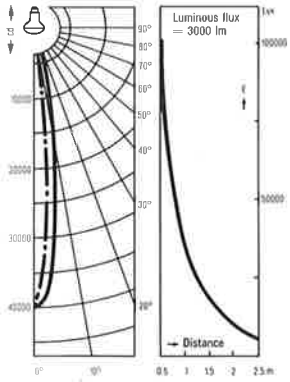
CONCENTRA® PAR 38
100 W FL



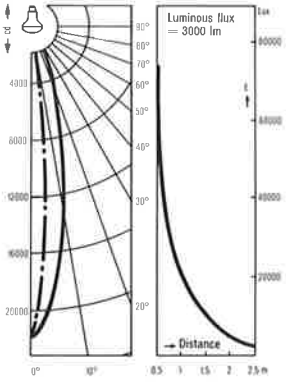
CONCENTRA® PAR 38
150 W SP, SP-C



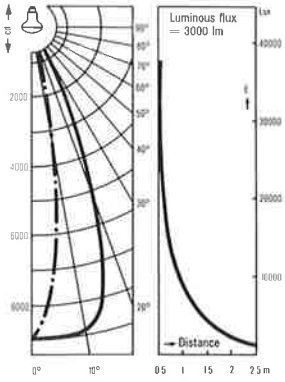
CONCENTRA® PAR 38
150 W FL, FL-C



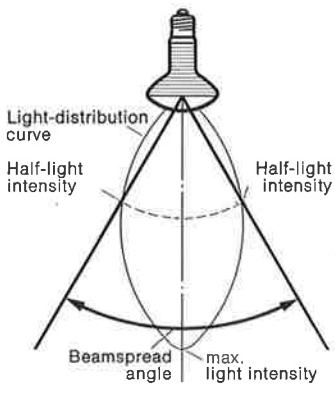
CONCENTRA® PAR 56
300 W NSP



CONCENTRA® PAR 56
300 W MFL



CONCENTRA® PAR 56
300 W WFL



Beamspread

The beamspread angle is the angle of the dynamically balanced light distribution of which the luminous intensity amounts to half the maximum value.

HALO STARS
for low voltage

1

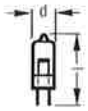
Ordering No.	Watts	Volt	Luminous flux lm	Diameter d mm	Length l max. mm	Base	Standard package quantity	Price

HALO STARS

High luminous flux, long lamp life (2000 h), constant luminous flux during the total life of the lamp combined with pleasant colour rendering are the advantages of the OSRAM HALO STARS.

On account of their small dimensions they are eminently suited for the use in fittings the size of which is primarily determined by their purpose as well as the ideas of the designer and not by the dimensions of the light sources used.

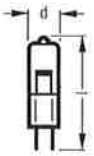
The tungsten-halogen cycle process which takes place in the lamp prevents a settling of the evaporated filament (tungsten) on the wall of the bulb as well as the inevitable loss of light resulting therefrom. The combination of halogen and tungsten remains transparent and gaseous. It does not settle on the wall of the bulb but returns with the thermal current to the vicinity of the filament where it disintegrates. The released tungsten settles on any random part of the filament whilst the halogen is available again for the cycle process.



HALO STARS Tungsten-Halogen Incandescent Lamps for low voltage

This range distinguishes itself on account of the high luminous efficacy of up to 20 lm/W as well as a sturdy and compact construction. These lamps are, therefore, excellently suited for very small lamp fittings.

Application



for commercial use: spotlighting or floodlighting in display windows, show cases and subdivided shop windows (e.g. in jeweller's shops), salesrooms, museums and art galleries, representative rooms; as desk or reading lamps in hotels, hospitals and sanatoriums; for fittings in any kind of working area.

for domestic use: special light emphasis on paintings, sculpture, curtains and walls; also as supplementary lights for reading and working, hobby lights, glass fibre lamps.

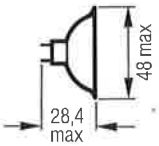
Burning position: optional

64410	10	6	120	9	30	G 4	30	
64425	20	12	300	9	30	G 4	30	
64440	50	12	850	12	44	GY 6.35	30	
64460 [1])	100	24	2000	12	44	GY 6.35	30	

[1]) Quick-acting fine-wire fuse 6.3 Amps required; with the use of a transformer secondary-wise.

1

HALO STARS with Reflector for low voltage
HALO STARS for high voltage single-based

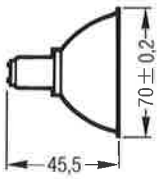


HALO STARS Tungsten-Halogen Incandescent Lamps with Reflector for low voltage

With their accurately computer-calculated reflectors these HALO STARS are especially suited for emphasizing objects of art or putting special light accents. These small light sources make possible excellent floodlighting even in bright surroundings.

HALO STARS with reflector are good sales-aids because they put the merchandise in a correct light. The use of flood or spot lamps depends on the size of the objects and their distance from the light source. Type 41900 proved itself over and over again in the MINISPOT and HALOGEN SERVICE-SPOT (see page 70).

The 50 W types have an anti-glare screen which prevents blinding by light scatter directly from the filament.

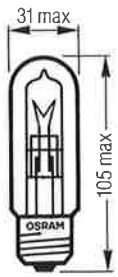


Burning position: optional

Ordering No.	Watts	Volt	Beam spread degrees	Luminous intensity cd	Base	Standard package quantity	Price
41900 BLI [1]	20	12	10° SPOT	3000	G 4	20	
64442 BF	50	12	10° SPOT	11300	B 15 d	20	
64443 BF	50	12	30° FLOOD	2200	B 15 d	20	

Maxium illumination in lux

Ordering No.	Illumination in lux at a distance of		
41900	1 m: 3000	2 m: 900	3 m: 400
64442 BF	1 m: 11300	3 m: 1300	5 m: 450
64443 BF	1 m: 2200	2 m: 550	3 m: 230



E 27

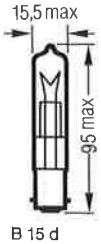
HALO STARS Tungsten-Halogen Incandescent Lamps for high voltage single-based

Modern light sources with long lamp life of 2000 h and yet high luminous efficacy. The filament segments which are almost parallel to the axis provide a 20 % higher useful luminous efficacy in the reflector compared with standard line lamps.

Two types and two watt levels open up many fields of application and combine the advantages of tungsten-halogen incandescent lamps with those of standard line GLS lamps.

Application:
Downlighters, wallwashers, floodlights and suspended lamps as used in reception halls, auditoriums, conference rooms, restaurants, salesrooms and modern living rooms.

Burning position: optional
Clear and inside-frosted

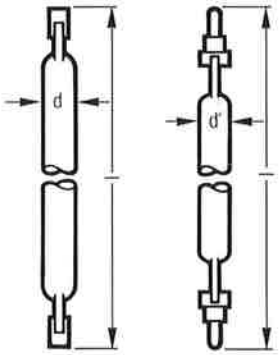


B 15 d

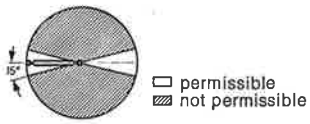
Ordering No.	Watts	Luminous flux lm	Base	Standard package quantity	Price
64478 [2]	150	2500	E 27	15	
64480 [2]	250	4200	E 27	15	
64477 [3]	150	2500	B 15 d	10	
64479 [3]	250	4200	B 15 d	10	

[1] Blister-wrapped; also available in standard pack, Ordering no. 41900.
[2] With outer envelope, base rim temperature max. 250° C.
[3] Pinch temperature max. 350° C.

HALO STARS
for high voltage
double-ended



R7s Fa4



Schedule of burning position p 15

HALO STARS Tungsten-Halogen Incandescent Lamps for high voltage double-ended

Bright, brilliant white light, pleasant colour rendering and high luminous flux combined with long lamp life (2000 h) are the advantages of these lamps. Easy to use–direct operation on mains current without ballast–are qualities which make these HALO STARS ideal light sources for floodlighting installations.

Application:

Floodlighting: Only a few lamps suffice to adequately illuminate buildings, monuments or fountains at night.

Sports: Especially small sportsgrounds and -halls can be easily illuminated at night for training or competition matches.

Traffic installations: In streets, squares, large parking lots these lamps with their constantly bright light facilitate a fast and safe traffic flow.

Also suitable for airports, building sites and factory halls.

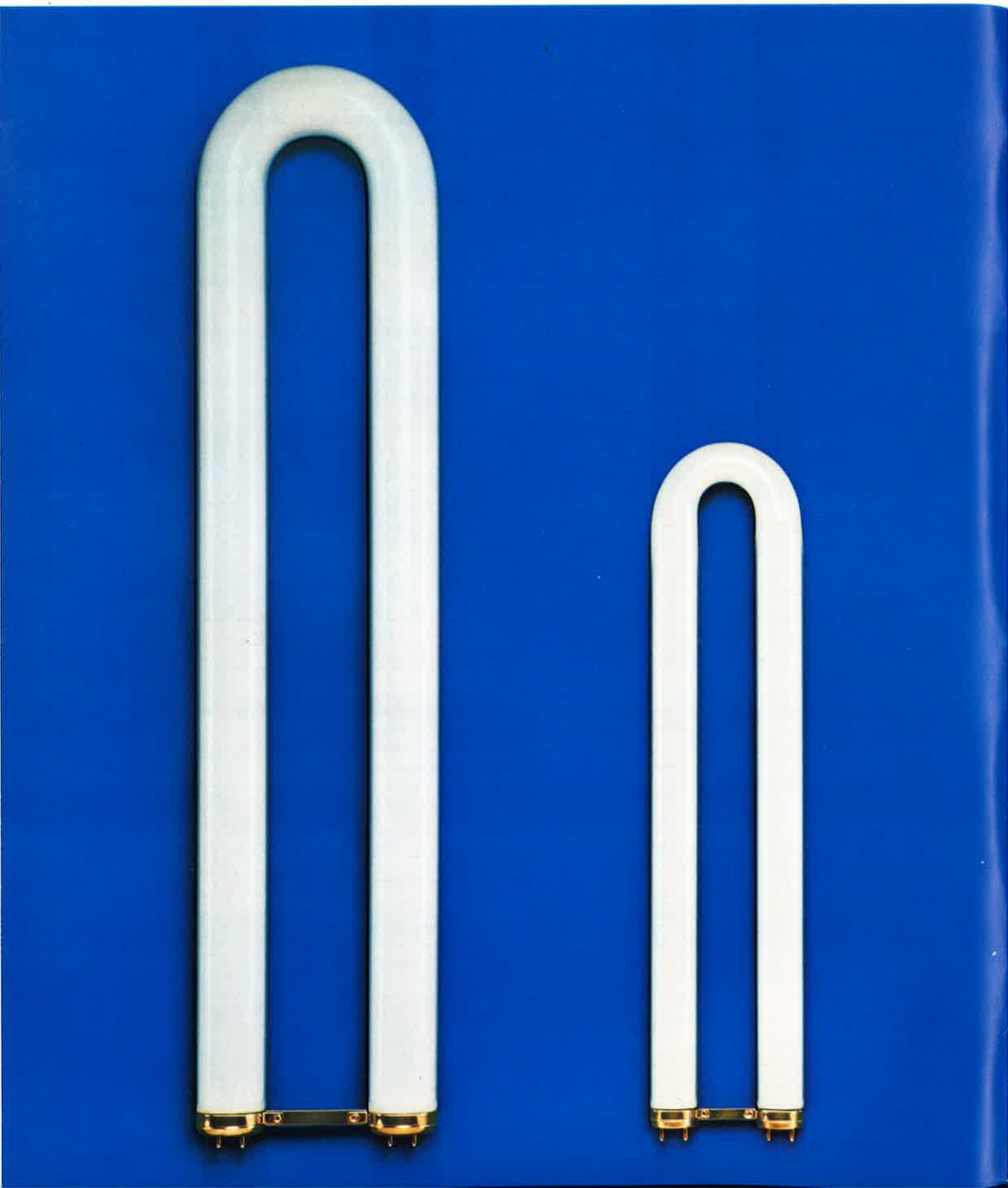
Burning position: vertical p 15

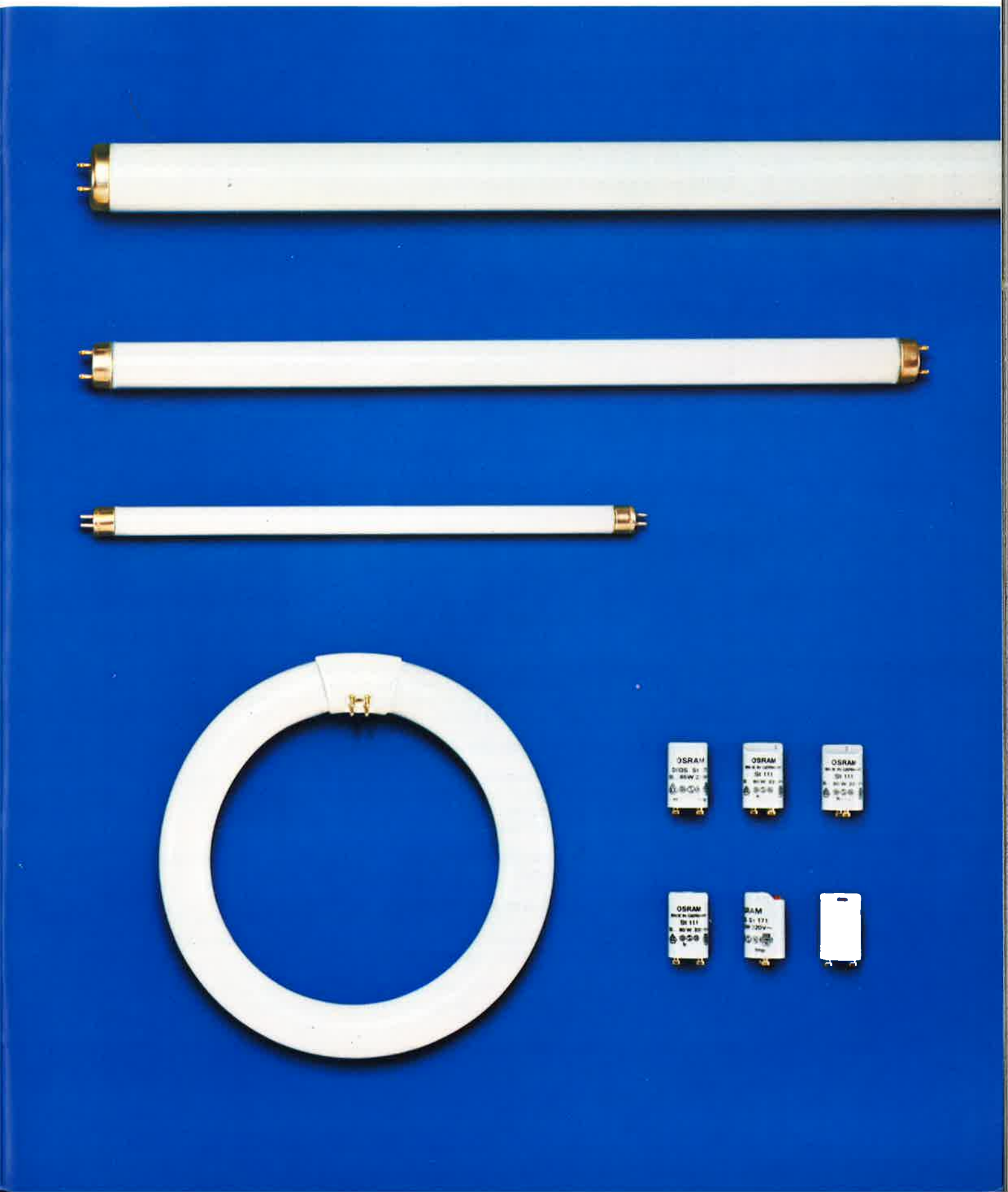
Ordering No.	Watts	Luminous flux lm	Base	Filament length mm	Contact distance l mm	Diameter d mm	Standard package quantity	Price
64701	300	5000	R7s-15	60	114.2	9	12	
64702	500	9500	R7s-15	60	114.2	12	12	
64560	750	16500	R7s-15	125	185.7	12	12	
64740	1000	22000	R7s-15	125	185.7	12	12	
64760	1500	33000	R7s-15	165	250.7	12	12	
64783	2000	44000	Fa4	215	334.3 max.	12	12	
64784	2000	44000	R7s-15	220	327.4	12	12	

Pending a final determination through standardisation fuse protection with the following values is recommended:

Wattage	Ordering No.	Fuse
300 W	64701	2 Amp quick-acting
500 W	64702	4 Amp quick-acting
750 W	64560	6 Amp quick-acting
1000 W	64740	6 Amp quick-acting
1500 W	64760	10 Amp quick-acting
2000 W	64783/84	10 Amp quick-acting

Fluorescent Lamps

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OSRAM

2 Fluorescent Lamps

Fluorescent lamps are discharge lamps which are operated with appropriate ballasts on mains supply voltage, mostly 220 Volt Alternating Current. The phosphor coating on the inside wall is excited to phosphoresce on account of the radiation caused by the discharge and supplies the main share of the luminous flux.

High light output with low power consumption, long lamp life and the choice of light colours are the main characteristics of fluorescent lamps. On account of these economical and photometric advantages fluorescent lamps are used for general lighting purposes in all fields of illumination.

LUMILUX® are energy-saving fluorescent lamps with the highest luminous efficacy and excellent colour rendering.

Special types of fluorescent lamps are available for particular purposes. Fluorescent lamps for starterless operation are shown on page 27.

Fluorescent lamps distinguish themselves on account of their long operating life (under normal conditions and with approved ballasts) and excellent photometric properties. These quality standards guarantee the greatest possible economy.

Shape	Fluorescent lamps are manufactured with straight, U and circular shapes.
Colours	Fluorescent lamps for illumination purposes are available in 12 different colours. As coloured light sources they are available also in pink, yellow, lightgreen and lightblue.
Luminance	Less than that of a stearin candle (see table on page 29).
Luminous flux	Depending on the colour up to 8 times the luminous flux of an incandescent lamp with the same wattage.
Power consumption	Approx. 1/3 of the power consumption required by an incandescent lamp with the same luminous flux.
Burning position	Optional.
Generation of heat	Only a fraction of the heat generated by incandescent lamps with the same luminous flux.
Temperature dependency	The optimum luminous flux of standard fluorescent lamps is achieved at an ambient temperature of +20° C. Low and high temperatures cause a drop in the lumen output. In installations exposed to temperatures of less than +5° C fluorescent lamps should have a glass cover or used in closed fittings. Starter-operated fluorescent lamps are resistant to cold. Amalgam-In lamps have their maximum luminous flux at +35° C; 90 to 100 % of the rated luminous flux is attained over the wide temperature range of +15° C to +85° C. For outdoor installations, air-cooled fittings or ambient temperatures of < 15° C fluorescent lamps without Amalgam-In are recommended. Your enquiries are invited when fluorescent lamps for starterless operation are required for low-temperature conditions.
Resistance to vibrations and shocks	Similar to that of rough-service incandescent lamps.
Voltage dependency	The effect of supply voltage deviations on lamp life and luminous flux of fluorescent lamps is less than on those of incandescent lamps.
Ballasts	The operation of fluorescent lamps requires suitable ballasts depending on the wattage of the lamp. Apart from providing the necessary starting voltage they serve also to limit the discharge current. Please note: A guarantee for the lamps can be given only when approved or tested control gear is used for the operation of the lamps. Ballasts must meet the requirements laid down by local or international specifications.

2

Circuit diagrams

Are shown on page 30.

Supply voltage

Generally 220 Volt Alternating Current. The short-time lower limit of the operating voltage is 200 Volt. Deviations of the supply voltage should be made known with your orders so as to ensure supply of the correct ballast. 4 W, 6 W, 8 W, 15 W, 18 W, 20 W and 22 W fluorescent lamps can be operated singly on 110, 127 Volt AC as well as in series of two lamps of the same wattage on 220 Volt AC.

Information regarding the operation of fluorescent lamps on direct current is available upon request.

Power factor

With the use of a ballast the power factor is approx. 0.5. With a pfc capacitor this factor can be improved to approx. 1 (compare fig. 1 and fig. 2 on page 30). Pfc capacitors for the various types of fluorescent lamps are shown in the schedule on page 29. Group power factor correction is also possible. The power factor for lead-lag circuits is approx. 1.

Starters

Each fluorescent lamp requires a starter for its ignition with the exception of fluorescent lamps for starterless operation.

Careful attention should be paid to the use of the correct OSRAM starter (see page 28) which has been adapted to the properties of the various types of lamps. DEOS® St 171 starters are recommended for quick ignition and switching-off of burnt-out flickering lamps. When conventional starters are used, it is recommended to exchange the starters with new ones together with the replacement of the lamps.

Lampholders

All tubular fluorescent lamps, with the exception of those with a diameter of 16 mm which require special lampholders, fit in the same type of lampholder. Reflector lamps can—if necessary—be fitted into rotary-lock lampholders. U-shaped fluorescent lamps require a special lampholder whereas circular fluorescent lamps need special holders with two clips. All U-shaped lamps should be fitted with an additional support at the bend. Explosion-proof lamps require special lampholders.

In damp rooms moisture-proof lampholders should be used which are recommended also for outdoor use.

Ballasts and lampholders can be obtained from the electrotechnical industry.

2 Which light colour for which purpose?

Applications	lw Daylight			nw Neutral white				ww Warm white			NATURA
	11	19	20	21	22	25	30	31	32	39	36
Office and Administration											
Offices, landscape offices, corridors				●		o		●			
Conference rooms				●				●	o		
Industry, trade and commerce											
Chemical industry	●			●		o					
Electrotechnical industry				●		o					
Foodstuffs industry				●		o		●			
Textile industry	●	o		●	o						
Woodworking industry	●	o		●				●			
Steelmills			o				o				
Printing offices and laboratories	●	o		●		o					
Colour matching		o									
Warehouses, transport depots			o	●		o					
School- and instruction rooms											
Auditoriums, class rooms, kindergardens				●		o		●	o		
Libraries, reading rooms								●			
Salesrooms											
Foodstuffs, bakeries, delicatessen				●		o		●			o
Butcher's shops						o					o
Textiles, leatherware	●			●		o		●			
Furniture, carpets								●		o	
Sporting goods, toys, stationery				●		o		●	o		
Photographic articles, clocks, jewellers	●	o						●		o	
Cosmetics, hairdressers				●				●			
Flowers		o		●							o
Shop windows	●			●				●	o		
Department stores, supermarkets				●		o		●	o		
Public places											
Hotels								●		o	
Restaurants								●		o	
Theaters, concert halls, foyers								●		o	
Museums, art galleries	●	o		●	o			●		o	
Performance halls											
Exhibition halls				●		o		●			
Sports and multiple purpose halls				●		o					
Hospitals and surgeries											
Consulting and treatment rooms	●	o						●			
Waiting rooms				●				●		o	
Hospital rooms				●				●		o	
Homes											
Living rooms										o	
Kitchens, baths, hobby rooms, cellars				●		o		●		o	
Outdoor lighting											
Streets, roads, pedestrian zones						o	o	●			
Transparent advertising and traffic signs			o	●							

● = LUMILUX®

Light colours and colour rendering properties of fluorescent lamps as per DIN 5035

2

Colour rendering properties (Ra)	Colour tw Daylight white more than 5000 K	Colour nw Neutral white 3300–5000 K	Colour ww Warm white less than 3300 K
Group 1 very good Ra 85 . . . 100	11 LUMILUX® Daylight 19 Daylight 5000 de Luxe	21 LUMILUX® White 22 Cool white de Luxe	31 LUMILUX® Warm white 39 INTERNA® 32 Warm white de Luxe
Group 2 good Ra 70 . . . 84	10 Daylight	25 Universal-white	
Group 3 fair Ra 40 . . . 69		20 Cool white	30 Warm white

LUMILUX®

Colour 11 LUMILUX® Daylight
Colour 21 LUMILUX® White
Colour 31 LUMILUX® Warm white are the most economical fluorescent lamps.

With LUMILUX® it has been possible for the first time to combine in one lamp excellent colour rendering properties with high luminous efficacy. The decisive advantages of LUMILUX® are: 10 % less power consumption, luminous efficacy of up to 96 lm/W, excellent colour rendering as per DIN 5035, group 1.

Colour 22 (Cool white de Luxe) and 32 (Warm white de Luxe) have the same colour quality but less luminous efficacy. These colours will, therefore, be gradually replaced by LUMILUX®.

Universal-white Type 25

The most widely used colour for indoor and outdoor illumination purposes. The economical combination of good colour rendering and high luminous flux guarantees cost-saving solutions of illumination problems.

"De Luxe" fluorescent lamps

Colour 19 (Daylight 5000 de Luxe) is similar to daylight and has a colour temperature of 5000 K. This colour meets the highest demands for true rendering of all colours. Daylight 5000 de Luxe is therefore especially suited for colour matching and those places where the stimulating effect of natural daylight is required.

Colour 39 (OSRAM L-INTERNA®) if preferably used in rooms where a cosy atmosphere is required. This warm and pleasant light blends particularly well with the light from incandescent lamps. Very flattering to the complexion.

Special colours

36 (NATURA) of which the harmonic blend of the red spectral share with the other colour components results in a natural colour rendering–especially of meat, sausages, delicatessen, vegetables, flowers, etc.

77 (FLUORA®) is a special radiator for plants and aquariums with particular radiation in the blue and red range of the spectrum and so is especially well adapted to the photo-biological spectral process.

73 for excitation of fluorescence with bulb of Woods glass.

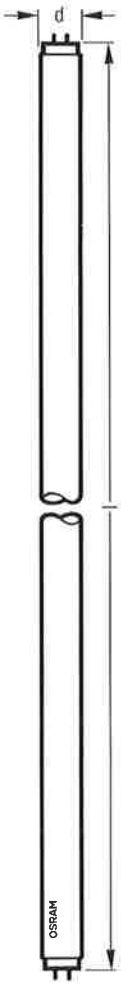
61–64 colour fluorescent lamps in pink, yellow, lightgreen and lightblue for decorative and special effects.

79 UV-A radiator for solariums.

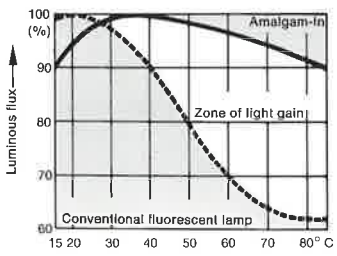
Spectral radiance distribution is shown on page 82.

2

Tubular Fluorescent Lamps
Standard Line
Amalgam-In



Rated power of lamp Watts	Tube dia-meter d mm	Length l mm	Light colour	Ordering abbreviation	Colour render-ing group	Lumi-nous flux lm	Standard package quantity	Price
Standard Line								
20	38	590	Universal-white	L 20 W/25	2	1050	25	
20	38	590	Cool white	L 20 W/20	3	1200	25	
20	38	590	Warm white	L 20 W/30	3	1200	25	
20	38	590	Daylight	L 20 W/10	2	1050	25	
20	38	590	White de Luxe	L 20 W/22 [1]	1	850	25	
20	38	590	Warm white de Luxe	L 20 W/32 [1]	1	850	25	
20	38	590	INTERNA	L 20 W/39	1	700	25	
20	38	590	Daylight 5000 de Luxe	L 20 W/19	1	850	25	
20	38	590	NATURA	L 20 W/36	–	700	25	
25 [1]	38	970	Universal-white	L 25 W/25	2	1500	25	
40 [1]	38	970	Universal-white	L 40 W/25-1	2	2300	25	
40 [1]	38	970	Warm white	L 40 W/30-1	3	2800	25	
40 [1]	38	970	INTERNA	L 40 W/39-1	1	1600	25	
40 [1]	38	970	NATURA	L 40 W/36-1	–	1450	25	
40	38	1200	Universal-white	L 40 W/25	2	2500	25	
40	38	1200	Cool white	L 40 W/20	3	3100	25	
40	38	1200	Warm white	L 40 W/30	3	3100	25	
40	38	1200	Daylight	L 40 W/10	2	2500	25	
40	38	1200	White de Luxe	L 40 W/22 [1]	1	2000	25	
40	38	1200	Warm white de Luxe	L 40 W/32 [1]	1	2000	25	
40	38	1200	INTERNA	L 40 W/39	1	1750	25	
40	38	1200	Daylight 5000 de Luxe	L 40 W/19	1	2000	25	
40	38	1200	NATURA	L 40 W/36	–	1700	25	
65	38	1500	Universal-white	L 65 W/25	2	4000	25	
65	38	1500	Cool white	L 65 W/20	3	5000	25	
65	38	1500	Warm white	L 65 W/30	3	5000	25	
65	38	1500	Daylight	L 65 W/10	2	4000	25	
65	38	1500	White de Luxe	L 65 W/22 [1]	1	3300	25	
65	38	1500	Warm white de Luxe	L 65 W/32 [1]	1	3300	25	
65	38	1500	INTERNA	L 65 W/39	1	2900	25	
65	38	1500	Daylight 5000 de Luxe	L 65 W/19	1	3300	25	
65	38	1500	NATURA	L 65 W/36	–	2700	25	



Dependency of luminous flux on ambient temperature

Amalgam-In

Fluorescent Lamps with Indium-Amalgam

40	38	1200	Universal-white	L 40 W/25 In	2	2500 [2]	25	
42	38	1047	Universal-white	L 42 W/25 In	2	2500 [2]	25	
65	38	1500	Universal-white	L 65 W/25 In	2	4000 [2]	25	

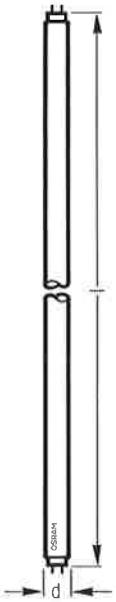
For outdoor installations ventilated fittings or ambient temperatures of $< 15°$ C we recommend fluorescent lamps without Amalgam-In.

[1] Will be discontinued shortly.
[2] With an ambient temperature of approx. +35° C.

For further technical data see pages 29 and 31.

Tubular Fluorescent Lamps
LUMILUX®
Standard Line 26 mm ϕ

2



Rated power of lamp Watts	Tube diameter d mm	Length l mm	Light colour	Ordering abbreviation	Colour rendering group	Luminous flux lm	Standard package quantity	Price
LUMILUX® Fluorescent Lamps								
LUMILUX® with 26 mm tube diameter represents a new lamp generation:								
Increased luminous efficacy up to 96 lm/W								
10 % less power consumption								
Excellent colour rendering properties: Group 1 as per DIN 5035								
Increased efficiency of the lamp fitting on account of the smaller tube diameter.								
Despite their 26 mm tube diameter and reduced power consumption these new lamps can be operated with the conventional ballasts and fittings.								
Re-equipment of existing installations with LUMILUX® in order to increase the illumination level and decrease the energy costs can be carried out without any problem.								
The three colours LUMILUX® Daylight 11, LUMILUX® White 21 and LUMILUX® Warm white 31 emit more luminous flux than all other comparable colours of conventional fluorescent lamps, e.g. 65 % with L 32 W/21 against L 40 W/22 White de Luxe.								
18	26	590	LUMILUX Daylight	L 18 W/11	1	1350	25	
18	26	590	LUMILUX White	L 18 W/21	1	1450	25	
18	26	590	LUMILUX Warm white	L 18 W/31	1	1450	25	
36	26	1200	LUMILUX Daylight	L 36 W/11	1	3200	25	
36	26	1200	LUMILUX White	L 36 W/21	1	3450	25	
36	26	1200	LUMILUX Warm white	L 36 W/31	1	3450	25	
38	26	1047	LUMILUX White	L 38 W/21	1	3200 [1]	25	
38	26	1047	LUMILUX Warm white	L 38 W/31	1	3200 [1]	25	
58	26	1500	LUMILUX Daylight	L 58 W/11	1	5100	25	
58	26	1500	LUMILUX White	L 58 W/21	1	5400	25	
58	26	1500	LUMILUX Warm white	L 58 W/31	1	5400	25	
For circular and U-shaped LUMILUX® see pages 24 and 25.								
Standard Line 26 mm ϕ								
Advantages compared with conventional 38 mm ϕ lamps:								
10 % less power consumption–30 % less weight–40 % less space.								
They fit into existing lampholders and can be operated with the same type of ballasts as the 38 mm ϕ lamps.								
They have the same colour rendering and luminous flux properties.								
18	26	590	Universal-white	L 18 W/25	2	1050	25	
18	26	590	Cool white	L 18 W/20	3	1200	25	
18	26	590	Warm white	L 18 W/30	3	1200	25	
18	26	590	Daylight	L 18 W/10	2	1050	25	
36	26	1200	Universal-white	L 36 W/25	2	2500	25	
36	26	1200	Cool white	L 36 W/20	3	3100	25	
36	26	1200	Warm white	L 36 W/30	3	3100	25	
36	26	1200	Daylight	L 36 W/10	2	2500	25	
58	26	1500	Universal-white	L 58 W/25	2	4000	25	
58	26	1500	Cool white	L 58 W/20	3	5000	25	
58	26	1500	Warm white	L 58 W/30	3	5000	25	
58	26	1500	Daylight	L 58 W/10	2	4000	25	

LUMILUX® and Standard Line 26 mm ϕ fluorescent lamps are operated with the usual ballasts:

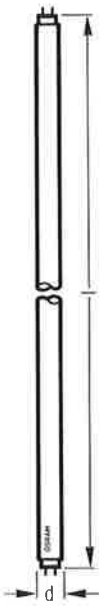
26 mm ϕ lamps	L 18 W/..	L 36 W/..	L 38 W/..	L 58 W/..
Ballast Type	20 W	40 W	40 W/42 W [1]	65 W

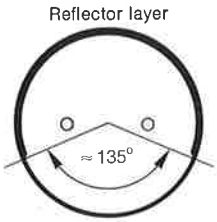
[1] When operated with 42 W-ballast 3400 lm.

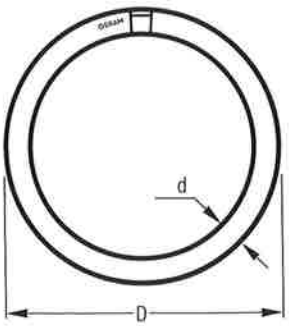
For further technical data see pages 29 and 31.

2

Tubular Fluorescent Lamps 16 and 26 mm ϕ
Fluorescent Reflector Tubular Lamps
High-power Fluorescent Lamps
Circular Fluorescent Lamps







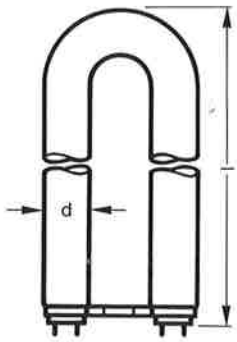
Rated power of lamp Watts	Tube diameter d mm	Length l mm	Light colour	Ordering abbreviation	Colour rendering group	Luminous flux lm	Standard package quantity	Price
Tubular Fluorescent Lamps with 16 mm tube diameter								
4	16	136	Universal-white	L 4 W/25	2	120	25	
6	16	212	Universal-white	L 6 W/25	2	240	25	
8	16	288	Universal-white	L 8 W/25	2	350	25	
13	16	517	Universal-white	L 13 W/25	2	650	25	
with 26 mm tube diameter								
10	26	470	Universal-white	L 10 W/25	2	500	25	
15	26	438	Universal-white	L 15 W/25-2	2	720	25	
15	26	438	INTERNA	L 15 W/39-2	1	500	25	
16	26	720	Universal-white	L 16 W/25	2	950	25	
16	26	720	INTERNA	L 16 W/39	1	650	25	
30	26	895	Universal-white	L 30 W/25-2	2	1800	25	
30	26	895	Warm white de Luxe	L 30 W/32-2 [1])	1	1600	25	
30	26	895	INTERNA	L 30 W/39-2	1	1200	25	
30	26	895	NATURA	L 30 W/36-2	–	1150	25	
Fluorescent Reflector Tubular Lamps								
40	38	1200	Universal-white	L 40 W/25 R	2	2250	25	
40	38	1200	Cool white	L 40 W/20 R	3	2700	25	
65	38	1500	Universal-white	L 65 W/25 R	2	3600	25	
65	38	1500	Cool white	L 65 W/20 R	3	4400	25	
High-power Fluorescent Lamps For starter-operation with St 191 or starterless operation with RD-circuits.								
115	38	1200	Cool white	L 115 W/20 Sa	3	7100	25	
140	38	1500	Cool white	L 140 W/20 Sa	3	9000	25	
Circular Fluorescent Lamps, LUMILUX® colours								
32	32	D 311	LUMILUX White	L 32 W/21 C	1	2150	12	
32	32	D 311	LUMILUX Warm white	L 32 W/31 C	1	2150	12	
40	32	D 413	LUMILUX White	L 40 W/21 C	1	3000	12	
40	32	D 413	LUMILUX Warm white	L 40 W/31 C	1	3000	12	
Standard Line								
22	29	D 216	Universal-white	L 22 W/25 C	2	1000	12	
32	32	D 311	Universal-white	L 32 W/25 C	2	1700	12	
32	32	D 311	Daylight	L 32 W/10 C	2	1700	12	
32	32	D 311	Warm white	L 32 W/30 C	3	2050	12	
32	32	D 311	Warm white de Luxe	L 32 W/32 C [1])	1	1600	12	
32	32	D 311	INTERNA	L 32 W/39 C	1	1300	12	
40	32	D 413	Universal-white	L 40 W/25 C	2	2300	12	
40	32	D 413	Daylight	L 40 W/10 C	2	2300	12	
40	32	D 413	Warm white	L 40 W/30 C	3	2900	12	
40	32	D 413	Warm white de Luxe	L 40 W/32 C [1])	1	2150	12	
40	32	D 413	INTERNA	L 40 W/39 C	1	1800	12	

For further technical data see pages 29 and 31.

[1]) To be discontinued shortly.

U-shaped Fluorescent Lamps

2



Shortened U-shaped Fluorescent Lamps, 570 mm

OSRAM UK-lamps fulfil the economical conditions for compact and space-saving illumination systems. The shorter U-shaped LUMILUX® lamps are ideal light sources for square fittings that have the usual module-measurements.

Their advantages are:
High luminous efficacy–excellent colour rendering–space-saving dimensions on account of compact construction–flexibility in rooms without sub-division.

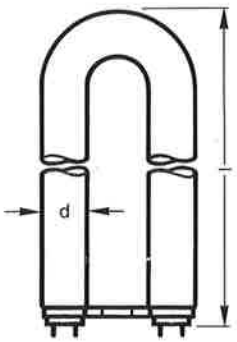
UK-lamps save money compared with 20 W tubular lamps:
Approx. 40 % lower annual operating costs.
Lower power consumption, therefore, lower initial and running costs.
Lower ventilation costs.
Lower investment costs for integrated ceiling systems.

Rated power of lamps Watts	Tube dia-meter d mm	Length l mm	Light colour	Ordering abbreviation	Colour render-ing group	Lumi-nous flux lm	Stand-ard pckg. qty.	Price
40	38	570	Universal-white	L 40 W/25 UK	2	2400	12	
40	38	570	LUMILUX White	L 40 W/21 UK	1	3000	12	
40	38	570	LUMILUX Warm white	L 40 W/31 UK	1	3000	12	
65	38	570	Universal-white	L 65 W/25 UK In[1])	2	3500[2])	12	
65	38	570	LUMILUX White	L 65 W/21 UK In[1])	1	4500[2])	12	
65	38	570	LUMILUX Warm white	L 65 W/31 UK In[1])	1	4500[2])	12	

L 65 W/. . UK can be supplied without indium-amalgam for outdoor installations and ventilated fittings.

Application guide

Type	Particulars	Operated with	Type of fitting
L 40 W/. . UK	without indium-amalgam	St 111, St 171, RS	with and without ventilation
L 65 W/. . UK In	with indium-amalgam	St 111	without ventilation
L 65 W/. . UK	without indium-amalgam	St 111, RS	with ventilation



U-shaped Fluorescent Lamps

with 26 mm and 38 mm tube diameter

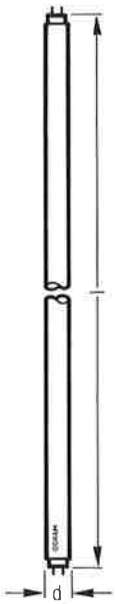
16	26	370	Universal-white	L 16 W/25 U	2	900	12	
16	26	370	Warm white	L 16 W/30 U	3	1100	12	
20	38	310	Universal-white	L 20 W/25 U	2	950	12	
40	38	607	Universal-white	L 40 W/25 U	2	2400	12	
40	38	607	Cool white	L 40 W/20 U	3	2800	12	
40	38	607	Warm white	L 40 W/30 U	3	2800	12	
40	38	607	Warm white de Luxe	L 40 W/32 U[3])	1	2000	12	
40	38	607	INTERNA	L 40 W/39 U	1	1750	12	
65	38	765	Universal-white	L 65 W/25 U	2	3900	12	
65	38	765	Warm white	L 65 W/30 U	3	4700	12	
65	38	765	Warm white de Luxe	L 65 W/32 U[3])	1	3300	12	
65	38	765	INTERNA	L 65 W/39 U	1	2900	12	

[1]) L 65 W/. . UK 570 mm need a special ballast.
[2]) With ambient temperatures of approx. +35° C.
[3]) To be discontinued.

For further technical data see pages 29 and 31.

2

FLUORA®-Radiators
Black Light Tubular Lamps
Coloured Fluorescent Lamps



FLUORA®-Radiator for Plants and Aquariums

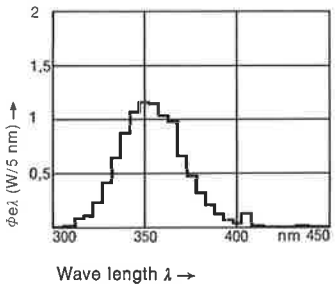
have a strong radiation in the blue and red spectral zones and are well adapted to the photo-biological spectral process. They stimulate plant growing and increase the crops of market gardens for which type L 65 W/77 with reflector layer was especially developed.

Application: Market gardens, hothouse in research centers, aquariums, terrariums, flower windows, showcases for plants, wintergardens, etc.

Their operation is the same as of conventional fluorescent lamps of equal wattage.

Rated power of lamp Watts	Tube diameter d mm	Length l mm	Ordering abbreviation	Standard package quantity	Price
8	16	288	L 8 W/77	25	
15	26	438	L 15 W/77-2	25	
16	26	720	L 16 W/77	25	
20	38	590	L 20 W/77	25	
30	26	895	L 30 W/77-2	25	
40	38	1200	L 40 W/77	25	
65	38	1500	L 65 W/77 R	25	

UV-A Fluorescent Lamps for Solariums and Suntanning Couches are shown on page 64.



Spectral radiance distribution L 40 W/73

Black Light Tubular Lamps

are particularly suited to excite phosphorous material and so create luminescent effects in theaters, shop windows, posters, etc.

The irradiance, measured at a distance of 1 meter at mid-lamp level, amounts to approx. 0.5 W/m² for L 20 W/73, resp. 1 W/m² for L 40 W/73.

Their operation is the same as of conventional fluorescent lamps of equal wattage.

Please note also our HQV-Radiator (page 36).

Rated power of lamp Watts	Tube diameter d mm	Length l mm	Ordering abbreviation	Standard package quantity	Price
20	38	590	L 20 W/73	6	
40	38	1200	L 40 W/73	6	

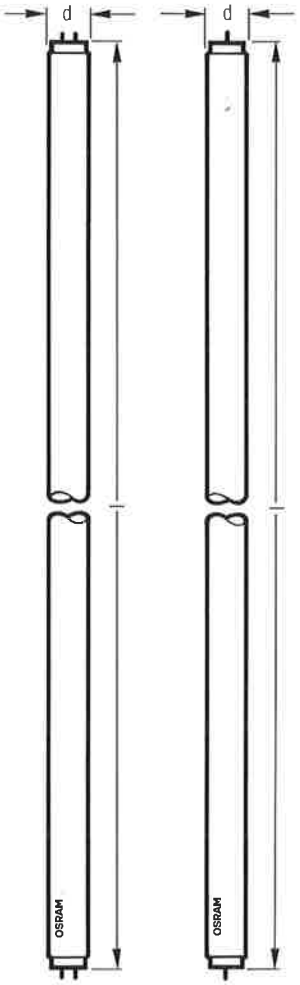
Coloured Tubular Fluorescent Lamps

Rated power of lamp Watts	Tube diameter d mm	Length l mm	Light colour	Ordering abbreviation	Standard package quantity	Price
40	38	1200	Pink	L 40 W/61	25	
40	38	1200	Yellow	L 40 W/62	25	
40	38	1200	Lightgreen	L 40 W/63	25	
40	38	1200	Lightblue	L 40 W/64	25	

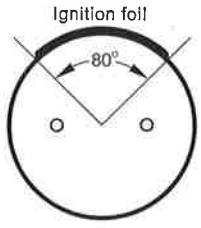
For further technical data see pages 29 and 31.

Fluorescent Lamps for starterless operation explosion-proof fittings dimming circuits

2



Rated power of lamp Watts	Tube diameter d mm	Length l mm	Light colour	Ordering abbreviation	Colour rendering group	Luminous flux lm	Standard package quantity	Price
Fluorescent Lamps for starterless operation—Rapid Start								
These lamps are preferably used for operation at normal and higher ambient temperatures. They ignite almost at once and free of flickering after the electrodes are sufficiently pre-heated. They should preferably be used with Rapid-Start (RS) ballasts. Rated heating voltage is 3.6 Volt as per IEC-Publication 81. Distance between lamp and metal fitting should not exceed 20 mm. Fitting should be bonded to earth, resp. neutralized.								
Circuit diagrams are shown on page 30, Figs. 4 and 5.								
40	38	1200	Universal-white	L 40 W/25 S	2	2500	25	
Fluorescent Lamps for starterless operation—RD-operation with external ignition strip								
for operation at low, resp. normal ambient temperatures. Generally these lamps are operated with a RD (resonance double-choke) circuit. With RS-circuits the rated heating voltage amounts to 3.6 Volt as per IEC-Publication 81. Bonding to earth or neutralizing the fitting is not necessary in regard to trouble-free operation of this type of lamp.								
The circuit diagram is shown on page 30, Fig. 6.								
40	38	1200	Universal-white	L 40 W/25 Sa	2	2500	25	
65	38	1500	Universal-white	L 65 W/25 Sa	2	4000	25	
Fluorescent Lamps for explosion-proof fittings Type "Increased Safety"								
Fluorescent lamps with 2 single-pin Fa 6 bases.								
L 20 W/. . X can be operated with the same ballasts as for corresponding conventional fluorescent lamps at normal as well as low temperatures.								
L 40 W/. . X should be operated with special ballasts the type of which depends on the ambient temperature.								
20	38	574	Universal-white	L 20 W/25 X	2	750	25	
20	38	574	Cool white	L 20 W/20 X	3	980	25	
40	38	1183.5	Universal-white	L 40 W/25 X	2	1800	25	
40	38	1183.5	Cool white	L 40 W/20 X	3	2500	25	
65	38	1484	Cool white	L 65 W/20 X	3	4800	25	



Fluorescent Lamps with aluminium ignition foil for dimming circuits								
In order to achieve good ignition and control qualities, the ignition foil should be earthed or, if recommended by the manufacturer of the ballast, connected with a special auxiliary ignition device. Rated heating voltage for permanent heating is 6.5 Volt for L 40 W/25 DS and L 65 W/25 DS; 4.0 Volt for L 42 W/25 DS.								
40	38	1200	Universal-white	L 40 W/25 DS	2	2250	25	
42	38	1047	Universal-white	L 42 W/25 DS	2	2250	25	
65	38	1500	Universal-white	L 65 W/25 DS	2	3700	25	

For further technical data see pages 29 and 31.

2 Starters

Starters St 111, St 171, St 191
the unsurpassed OSRAM quality starters

OSRAM starters are internationally renowned.

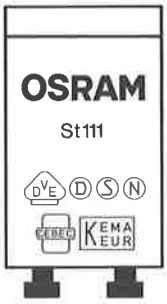
OSRAM starters at all times ignite reliably, quickly and spare the lamps. Each starter is subjected to strict manufacturing and testing procedures.

OSRAM starters are equipped with a canister made of macrolon.

OSRAM starters are approved by VDE as well as DEMKO, SEMKO, NEMKO, CEBEC, KEMA.

OSRAM starters are reliable. They ignite without fail in the temperature range of – 20° C up to + 80° C.

OSRAM starters are equipped with a special radio interference surpressor.



DEOS® St 171, the electronic quick-starter with built-in automatic cut-out

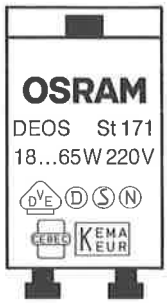
Quick and lamp-sparing ignition–compared with conventional starters the DEOS® St 171 reduces the ignition time under inductive operating conditions by more than half.

Reliably switches off burnt-out or defective lamps when operated under inductive or capacitive conditions. By pushing down the red button the starter is ready for use again.

The automatic cut-out spares the ballast and the starter itself. The operating life of DEOS® St 171 is four times as long as that of conventional starters.

No unsuccessful ignition attemps with de-activated lamps and, therefore, no disturbing flickering and unnecessary power consumption.

Temperature range: – 20° C up to + 80° C.



Application table

Ordering abbreviation	suitable for 4 6 8 W	10 13 16 W	15 W	18 20 W	22 W	25 30 W	32 W	38 40-1 42 W	36 40 W	58 65 80 W	100 115 140 W	Standard package quantity	Price
St 111 for single connection on 220 V AC	x	x	x	x	x	x	x	x	x	x		400/800[3]	
St 151 for series connection on 220 V AC	x[1]		x[1]	x[1]	x[1]							400/800[3]	
St 191 for single connection on 220 V AC											x	400/800	
St 171 for single connection on 220 V AC				x	x	x	x	x	x	x[2]		400/800[4]	

[1] Also for single connection on 110 or 127 V AC.
[2] Except L 65 W/. . UK 570 mm and L 80 W/. .
[3] Available also in cartons containing 1200 pcs.
[4] DEOS® Starter St 171 is available also in blister pack. Packing unit is 200 pcs.

Technical Data

2

Technical data
for tubular, U-shaped and circular fluorescent lamps

Fluorescent lamp Watts	Rated current Amps.	Approx. power required incl. ballast	Luminance colour 25 cd/cm²	Pfc capacitor²) power factor ≈1 μF	Series capacitor for lead-lag switch start³) μF/N_e
4	0.17	10	0.85	2.0	–
6	0.16	12	0.95	2.0	–
8	0.145	14	0.95	2.0	–
10	0.17	14	0.50	2.0	–
13	0.165	19	0.95	2.0	–
15 W/. . -2	0.33	25 (19,5 [1])	0.75	4.5	–
16	0.2	21	0.60	2.5	–
18	0.37	27 (23 [1])	–	4.5	2.9/440
20	0.37	30 (25 [1])	0.55	4.5	2.9/440
20 W/. . X	0.38	30	0.40	4.5	–
22	0.40	27	0.70	5.0	3.2/440
25	0.29	32	0.45	3.5	2.5/420
30 W/. . -2	0.365	39	0.90	4.5	3.0/420
32	0.45	42	0.75	5.0	3.6/420
36	0.43	45	–	4.5	3.6/420
40	0.43	49	0.60	4.5	3.6/420
40 W/. . -1	0.556	51	0.70	6.0	4.4/420
40 W/. . S	0.43	54	0.60	4.5	3.6/420
40 W/. . Sa	0.43	54	0.60	–	–
40 W/. . DS	0.43	55	0.70	–	–
40 W/. . X	0.415	52	0.45	4.5	–
38	0.43	48	–	4.5	3.6/420
42 W/. . In	0.535	52	0.70	6.0	4.4/420
42 W/. . DS	0.535	57	0.80	–	–
58	0.67	69	–	7.0	5.7/420
65	0.67	76	0.80	7.0	5.7/420
65 W/. . UK In	0.845	80	0.95	9.0	6.8/440
65 W/. . Sa	0.67	83	0.80	–	–
65 W/. . DS	0.67	85	0.90	–	–
65 W/. . X	0.67	79	0.75	–	–
115	1.5	135	1.40	18.0	12.2/440
140	1.5	160	1.45	18.0	12.7/440

[1]) Series connection of two lamps on 220 V AC.
[2]) For parallel compensation see circuit diagrams 1 and 2 on page 30.
[3]) Lead-lag circuit see circuit diagram 3 on page 30.

2 Circuit Diagrams of Fluorescent Lamps

for operation with starter

in mains systems with neutral conductor the current-limiting ballast should be inserted in the live lead.

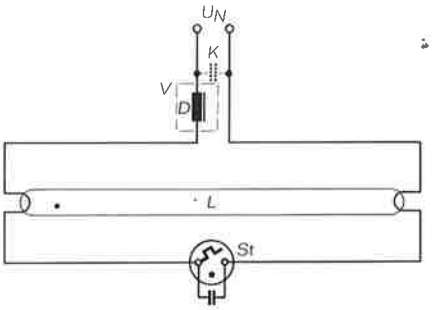


Fig. 1 Single connection

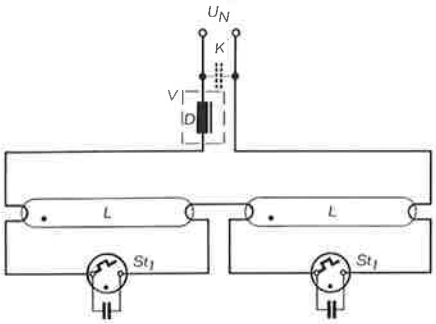


Fig. 2 Series connection of two lamps 4 W, 6 W, 8 W, 15 W, 18 W, 20 W and 22 W on 220 V AC.

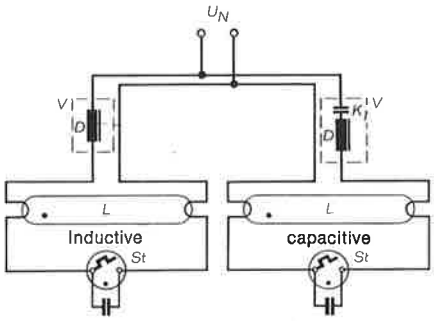


Fig. 3 Lead-lag circuit

for starterless operation

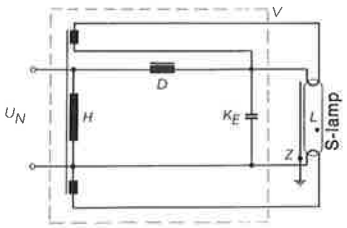


Fig. 4 Inductive RS-circuit

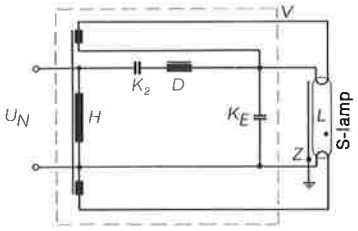


Fig. 5 Capacitive RS-circuit

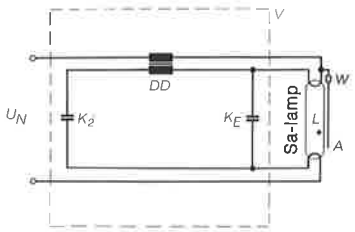


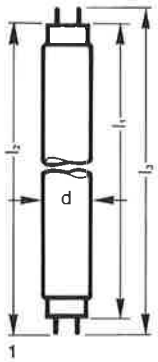
Fig. 6 RD-circuit

A = external ignition strip
D = choke
DD = double choke
H = heater transformer
K = capacitor for p.f. correction (if required)
K_1 = series capacitor
K_2 = capacitor
K_E = capacitor to suppress radio interference 10 nF
L = lamp
St = starter
St_1 = starter[1])
U_N = mains voltage
V = ballast
W = high ohmic resistor (incorporated in lamp base)
Z = capacitive ignition-aid

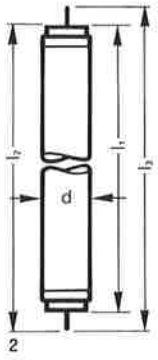
[1]) In case of longer starting time, particularly due to undervoltage, reverse the polarity of one of the starters (by rotating it 180 degrees and inserting it again).

Lamp Dimensions with permissible tolerances

2



1



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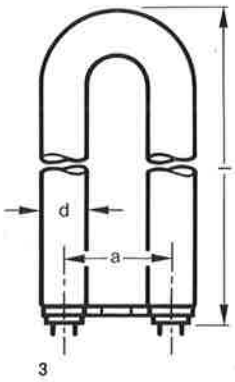

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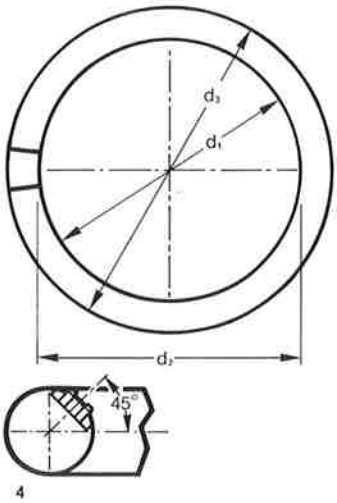


4

Rated Wattage Watts	Base	Length l_1 max. mm	Length l_2 mm	Length l_3 max. mm	Diameter d mm	Fig. No.
Tubular Fluorescent Lamps 16, 26 and 38 mm ϕ. Base G 13 as per DIN 49 653						
4	G 5/11x15	135.7	141.7 ± 1.2	150.0	15.5 ± 0.5	1
6	G 5/11x15	211.9	217.9 ± 1.2	226.2	15.5 ± 0.5	1
8	G 5/11x15	288.1	294.1 ± 1.2	302.4	15.5 ± 0.5	1
13	G 5/11x15	516.7	522.7 ± 1.2	531.0	15.5 ± 0.5	1
10	G 13	470.0	475.9 ± 1.2	484.2	25.0 ± 1.5	1
15	G 13	437.4	443.3 ± 1.2	451.6	25.0 ± 1.5	1
16	G 13	720.0	725.9 ± 1.2	734.2	25.0 ± 1.5	1
30	G 13	894.6	900.5 ± 1.2	908.8	25.0 ± 1.5	1
18	G 13	589.8	595.7 ± 1.2	604.0	25.0 ± 1.5	1
36	G 13	1199.4	1205.3 ± 1.2	1213.6	25.0 ± 1.5	1
38	G 13	1047.0	1052.8 ± 1.2	1061.2	25.0 ± 1.5	1
58	G 13	1500.0	1505.9 ± 1.2	1514.2	25.0 ± 1.5	1
20	G 13	589.8	595.7 ± 1.2	604.0	37.0 + 0.5 / − 0.8	1
25	G 13	970.0	975.9 ± 1.2	984.3	37.0 + 0.5 / − 0.8	1
40 W/. .1	G 13	970.0	975.9 ± 1.2	984.3	37.0 + 0.5 / − 0.8	1
42	G 13	1047.0	1052.8 ± 1.2	1061.2	37.0 + 0.5 / − 0.8	1
40	G 13	1199.4	1205.3 ± 1.2	1213.6	37.0 + 0.5 / − 0.8	1
65	G 13	1500.0	1505.9 ± 1.2	1514.2	37.0 + 0.5 / − 0.8	1
115	G 13	1199.4	1205.3 ± 1.2	1213.6	37.0 ± 2.0	1
140	G 13	1500.0	1505.9 ± 1.2	1514.2	37.0 ± 2.0	1
Fluorescent Lamps for starterless operation X-lamps. Base Fa 6 as per DIN 49 657						
20 W/. . X	Fa 6	574.0	592.5 − 3.5	611.0	37.0 ± 2.0	2
40 W/. . X	Fa 6	1183.5	1202.0 − 3.5	1220.5	37.0 ± 2.0	2
65 W/. . X	Fa 6	1484	1502	1520	37.0 ± 2.0	2

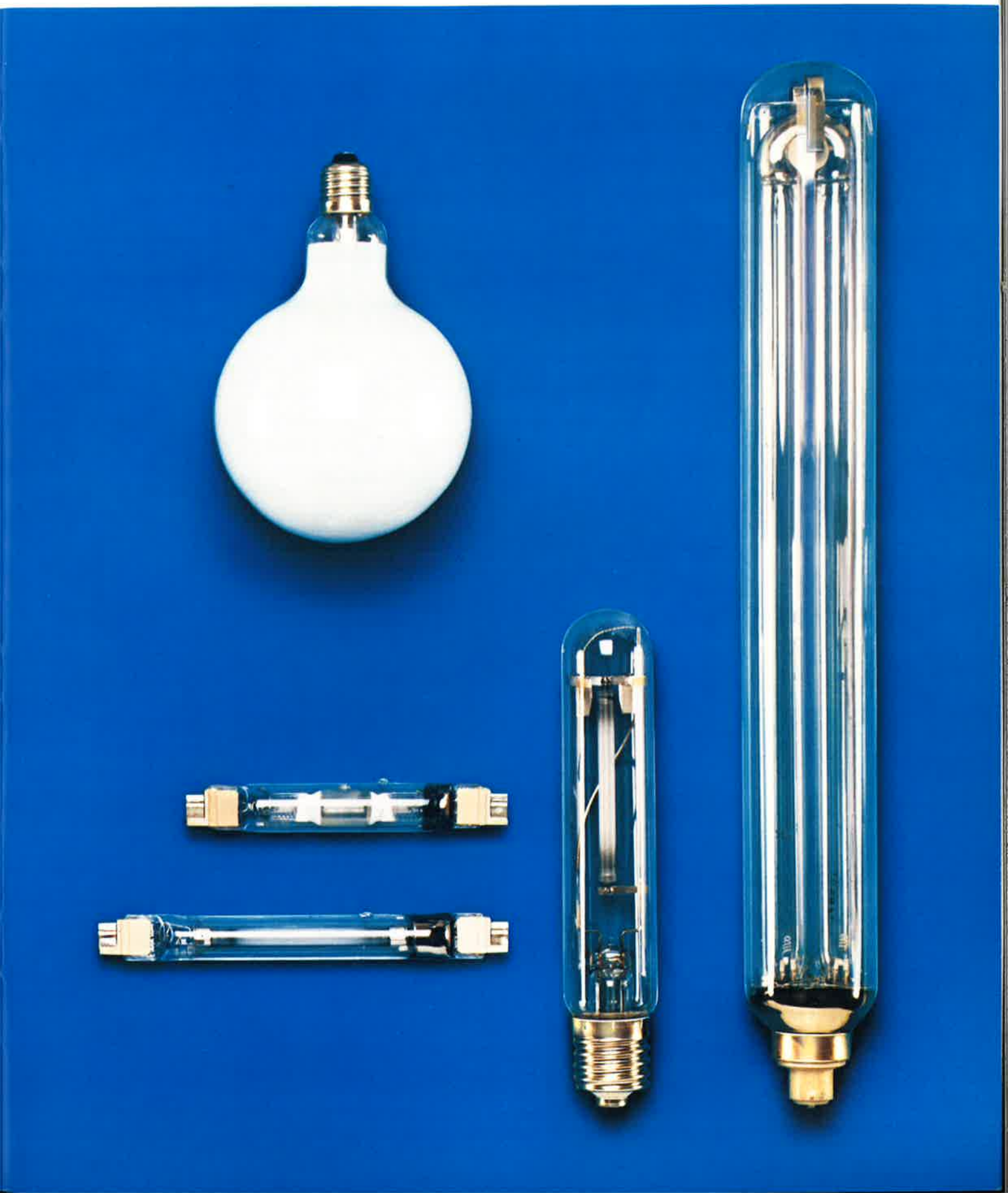
U-shaped Fluorescent Lamps
Base as per DIN 49 653

Rated Wattage Watts	Base	Length l max. mm	Distance a mm	Diameter d mm	Fig. No.
16	2 G 13-56	370.0 − 10	56.0 ± 2	26.0 − 1.0	3
20	2 G 13-92	310.0 − 10	92.0 ± 2	38.0 − 1.3	3
40	2 G 13-92	607.0 − 10	92.0 ± 2	38.0 − 1.3	3
40 W/. . UK	2 G 13-92	570.0 − 10	92.0 ± 2	38.0 − 1.3	3
65	2 G 13-92	765.0 − 10	92.0 ± 2	38.0 − 1.3	3
65 W/. . UK	2 G 13-92	570.0 − 10	92.0 ± 2	38.0 − 1.3	3

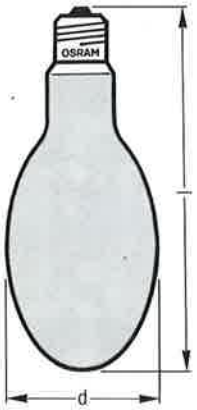
Circular Fluorescent Lamps
Base G 10 q as per DIN 49 663

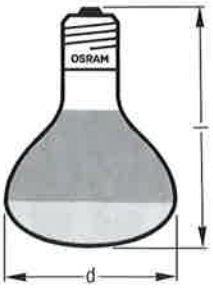
Rated Wattage Watts	Base	Diameter d_1 max. mm	Diameter d_2 max. mm	Diameter d_3 max. mm	Tube diameter mm	Fig. No.
22	G 10 q	160.4	155.6	215.9	29	4
32	G 10 q	245.3	246.1	311.2	32	4
40	G 10 q	346.9	347.7	412.8	32	4

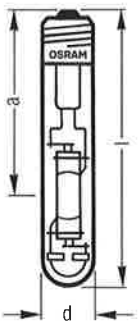
Discharge Lamps

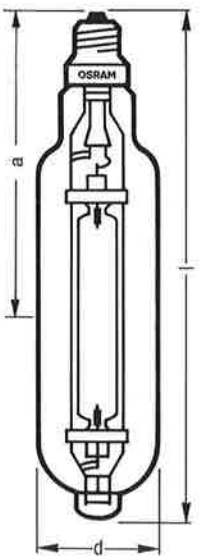


3 POWER STARS









Ordering abbreviation	Rated power of lamp Watts	Luminous flux lm ²	Diameter mean value d mm	Length max. l mm	Distance a mm	Base	Standard pkg. qty.	Price

POWER STARS HQI

Metal halide lamps–POWER STARS–distinguish themselves on account of their high luminous efficacy and excellent colour rendering properties. They are available with the colours Daylight, Neutral white and Neutral white DE LUXE.

Application:

For interior illumination, e.g. factory halls, salesrooms, shopwindows, fair- and exhibition halls, plantgrowing.

For exterior illumination, e.g. floodlighting installations for streets and parks, buildings and monuments.

Ellipsoidal shape, coated

HQI-E 250 W/NDL[1])	250	18000	72	226	–	E 40	12
HQI-E 250 W/D	250	17000	90	226	–	E 40	12
HQI-E 400 W/DH	360	24000	120	290	–	E 40	12
HQI-E 400 W/DV	360	26000	120	290	–	E 40	12
HQI-E 1000 W/N	1000	80000	165	380	–	E 40	6

Mushroom shape with reflector

HQI-R 250 W/NDL	250	15000[2])	125	180	–	E 40	6

Also available as ready-for-use set, see page 75.

Tubular shape, clear

HQI-T 250 W/NDL[1])	250	20000	46	220	150	E 40	12
HQI-T 250 W/D	250	19000	46	220	150	E 40	12
HQI-T 400 W/DH	360	25000	46	285	175	E 40	12
HQI-T 400 W/DV	360	28000	46	285	175	E 40	12
HQI-T 1000 W/D	1000	80000	80	340	220	E 40	6
HQI-T 2000 W/D	2000	170000	100	430	260	E 40	4
HQI-T 2000 W/N	2000	190000	100	430	255	E 40	4
HQI-T 3500 W/D	3500	300000	100	430	260	E 40	4

HQI-T 2000 W/N lamps do not require an igniter.

Identification abbreviations:

HQI-E = Ellipsoidal, coated
HQI-R = with reflector
HQI-T = Tubular, clear
HQI-TS = with double-ended base, instant re-ignition of hot lamp possible

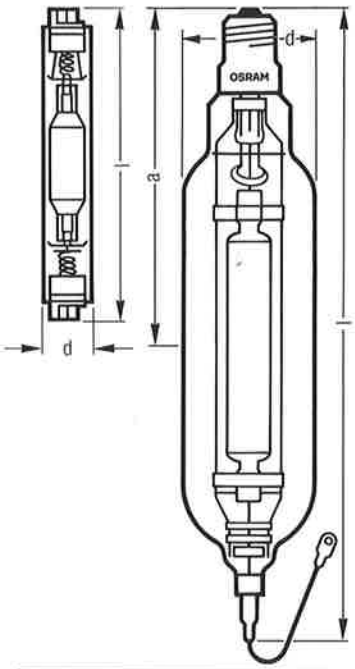
.../D = Daylight (Colour rendering group 1 as per DIN 5035)
.../NDL = Neutral white DE LUXE (Colour rendering group 1 as per DIN 5035)
.../N = Neutral white (Colour rendering group 3 as per DIN 5035)
...H = Horizontal burning position
...V = Vertical burning position

[1]) Available shortly, preliminary data.
[2]) For light distribution curves, see page 45.

Application possibilities are shown on page 47. Further technical data on page 40 ff.

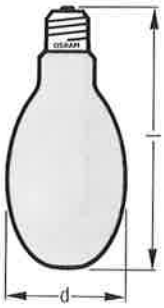
POWER STARS
High-pressure Mercury Lamps

3



Ordering abbreviation	Rated power of lamp Watts	Luminous flux lm	Diameter mean value d mm	Length max. l mm	Distance a mm	Base	Standard pkg. qty.	Price
POWER STARS HQI								
Metal halide lamps "TS" with double ended connection Instant re-ignition of hot lamp possible								
HQI-TS 250 W/NDL[1])	250	20000	24	162	–	Fc 2	12	
HQI-TS 250 W/D	250	19000	24	162	–	Fc 2	12	
HQI-TS 400 W/D	360	25000	30	206	–	Fc 2	12	
HQI-TS 1000 W/D	1000	90000	36	260	–	Fc 2	12	
HQI-TS 2000 W/D	2000	170000	100	490	260	E 40	4	
HQI-TS 3500 W/D	3500	300000	100	490	260	E 40	4	

HQI-TS 250 W, HQI-TS 400 W and HQI-TS 1000 W should be operated only in fittings with silicate glass covers. For materials which are sensitive to light the use of a UV-filter is recommended.

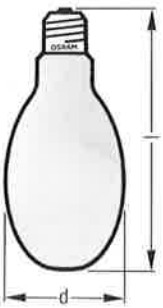


HQL DE LUXE

High pressure mercury lamps with yttrium-vanadate-DE LUXE phosphor. With their pleasant and warm colour HQL-DE LUXE lamps open up new avenues in the field of interior illumination. They meet the trend of point light sources, e.g. the special effects of downlighters, wallwashers as well as the illumination of pedestrian zones and main streets.

Ellipsoidal shape

HQL 50 W DE LUXE	50	2000	55	130	–	E 27	40	
HQL 80 W DE LUXE	80	3850	70	156	–	E 27	40	
HQL 125 W DE LUXE	125	6500	75	170	–	E 27	40	
HQL 250 W DE LUXE	250	14000	90	226	–	E 40	12	
HQL 400 W DE LUXE	400	24000	120	290	–	E 40	12	



HQL

High pressure mercury lamps with yttrium-vanadate, universally suited for traffic and industrial illumination.

Ellipsoidal shape

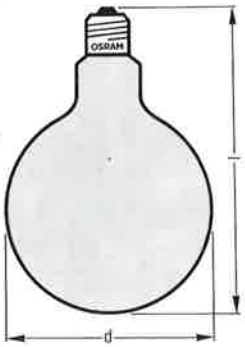
HQL 50 W	50	2000	55	130	–	E 27	40	
HQL 80 W	80	3800	70	156	–	E 27	40	
HQL 125 W	125	6300	75	170	–	E 27 [2])	40	
HQL 250 W	250	13500	90	226	–	E 40	12	
HQL 400 W	400	23000	120	290	–	E 40	12	
HQL 700 W	700	40000	140	330	–	E 40	6	
HQL 1000 W	1000	55000	165	390	–	E 40	6	

HQL 2000 W (380 V) will be discontinued shortly. For new installations we recommend HQI-T 2000 W/N.

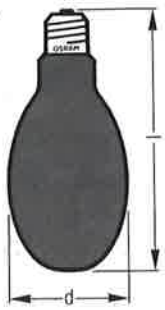
[1]) Available shortly, preliminary data.
[2]) Upon request available also with base E 40, length 183 mm.

Application possibilities are shown on page 47. Further technical data on page 40 ff.

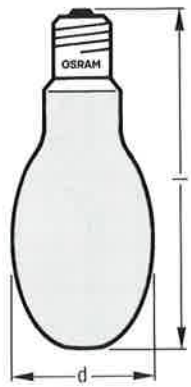
3 Round Lamps Blacklight Lamps Blended Lamps



Ordering abbreviation	Rated power of lamp Watts	Luminous flux lm	Diameter mean value d mm	Length max. l mm	Base	Standard package quantity	Price
HQL-B DE LUXE							
An attractive round lamp, phosphor-coated, for decorative interior and exterior illumination. Practically glare-free, spraywater-proof on account of the large-diameter bulb. Further advantages are a pleasant light colour similar to conventional GLS lamps, long useful lamp life as well as a favourable luminous efficacy.							
HQL-B DE LUXE lamps are particularly suited for single and multiple-way lamp fittings for interior illumination purposes, e.g. foyers, public meeting places and other decorative illumination projects which require long useful lamp life.							
For exterior illumination, e.g. pedestrian zones, promenades, parks, gardens, streets and orientation lights.							
Round shape, coated							
HQL-B 50 W DE LUXE	50	1750	126	190	E 27	6	
HQL-B 80 W DE LUXE	80	3000	126	190	E 27	6	



HQV							
Mercury vapour discharge lamp with Wood glass bulb to excite fluorescence emits long-wave UV-radiation and hardly any visible light. Spectral radiance distribution is shown on page 43.							
Ellipsoidal shape							
HQV 125 W	125	–	75	170	E 27	12	
Excitation of fluorescence can be achieved also with fluorescent lamps. See page 26.							



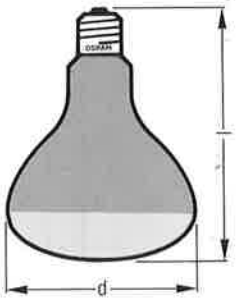
HWL							
Blended lamps with yttrium-vanadate. Can be used instead of incandescent lamps since they do not require a ballast.							
HWL 160 W 225 V	160	3100	75	177	E 27	40	
HWL 160 W 235 V	160	3100	75	177	E 27	40	
HWL 250 W 225 V	250	5600	90	226	E 40 [1]	12	
HWL 250 W 235 V	250	5600	90	226	E 40 [1]	12	
HWL 500 W 225 V	500	14000	120	275	E 40	12	
HWL 500 W 235 V	500	14000	120	275	E 40	12	
HWL 1000 W 225 V	1000	32500	160	315	E 40	1	
HWL 1000 W 235 V	1000	32500	160	315	E 40	1	

[1] Upon request available also with Base E27.

Application possibilities are shown on page 47. Further technical data on page 40 ff.

Reflector Lamps

3



Ordering abbreviation	Rated power of lamp Watts	Luminous flux lm	Diameter mean value d mm	Length max. l mm	Base	Standard package quantity	Price

Discharge Lamps with Reflector

A new range of lamps for directed light with high luminous efficacy. Created for effective illumination and decorative light accents. The main advantages of these lamps are their great economy, high luminous efficacy and long useful life.

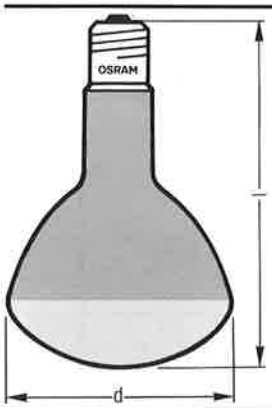
The dimensions of the HQL-R DE LUXE and HWL-R DE LUXE correspond with those of the incandescent reflector lamps 150 W and 300 W. HQL-R DE LUXE lamps can be used only with a choke in fittings designed for incandescent reflector lamps.

HQL-R DE LUXE

High pressure mercury lamps with yttrium-vanadate DE LUXE phosphor and warm light colour.

HQL-R 80 W DE LUXE	80	3000 [1])	125	168	E 27	6	
HQL-R 125 W DE LUXE	125	5000 [1])	125	168	E 27	6	

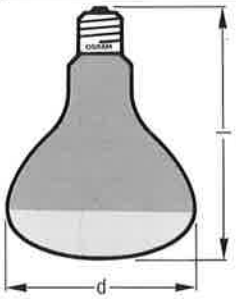
For CONCENTRA® incandescent reflector lamps see page 9.



HQL-R

High pressure mercury lamps with yttrium-vanadate.

HQL-R 250 W	250	11500 [1])	165	260	E 40	6	
HQL-R 400 W	400	20500 [1])	180	300	E 40	6	

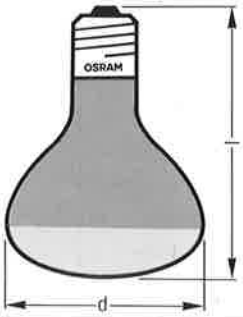


HWL-R DE LUXE

Blended lamps with yttrium-vanadate DE LUXE phosphor.
Colour rendering group 2 as per DIN 5035.
Ballast not required.

HWL-R 160 W DE LUXE	160	2500 [1])	125	168	E 27	6	

For CONCENTRA® incandescent reflector lamps see page 9.



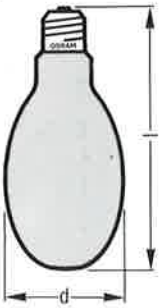
HQI-R POWER STAR

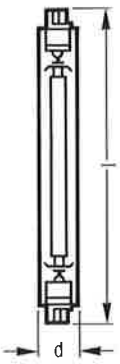
Metal halide lamp with brilliant colour rendering and great economy.
Colour rendering group 1 as per DIN 5035.

HQI-R 250 W/NDL	250	15000 [1])	125	180	E 40	6	

[1]) Light distribution curves are shown on page 45.
Further technical data on page 40 ff.

3 Sodium Lamps





Ordering abbreviation	Rated power of lamp Watts	Luminous flux lm	Diameter mean value d mm	Length max. l mm	Base	Standard package quantity	Price
VIALOX® NAV							
High pressure sodium lamps are particularly economical light sources with luminous efficacies of up to 130 lm/W. Their yellowish-white light makes it possible to distinguish colours. Main fields of use are outdoor installations for traffic and industry as well as indoor installations in heavy industries.							
Ellipsoidal shape, coated							
NAV-E 50 W [1]	50	3300	70	156	E 27	40	
NAV-E 70 W	70	5800	70	156	E 27	40	
NAV-E 150 W/S [1]	150	16000	90	226	E 40	9	
NAV-E 150 W	150	14000	90	226	E 40	12	
NAV-E 250 W	250	25000	90	226	E 40	12	
NAV-E 400 W	400	47000	120	290	E 40	12	
NAV-E 1000 W	1000	120000	165	400	E 40	6	
NAV-E 50 W and NAV-E 70 W do not require an ingniter.							
Ellipsoidal shape, coated Igniter not required, "Replacement lamp"							
NAV-E 210 W [2]	210	18000	90	226	E 40	12	
NAV-E 350 W [2]	350	34000	120	290	E 40	6	
NAV-E 350 W replaces NAV-E 330 W.							
Tubular, clear							
NAV-T 150 W/S [1]	150	17000	46	211	E 40	12	
NAV-T 150 W	150	14500	46	211	E 40	12	
NAV-T 250 W	250	25500	46	257	E 40	12	
NAV-T 400 W	400	48000	46	285	E 40	12	
NAV-T 1000 W	1000	130000	65	400	E 40	6	
"TS" with double-ended connection Instant re-ignition of hot lamp possible							
NAV-TS 250 W	250	25500	23	206	Fc 2	12	
NAV-TS 400 W	400	48000	23	206	Fc 2	12	

Identification abbreviations

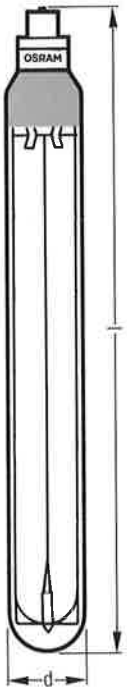
NAV-E = Ellipsoidal, coated
NAV-T = Tubular, clear
NAV-TS = with double-ended connection, instant re-ignition of hot lamp is possible
. . ./S = with increased luminous flux

[1] Available shortly, preliminary data.
[2] These lamps can be used in fittings for 250, resp. 400 W high pressure mercury lamps if the ballast is suited for the higher operating voltage of the high pressure sodium lamps. Check, therefore, the maximum winding temperature values permitted by VDE and CIE specifications. In case of doubt consult the manufacturer of the fitting and/or ballast before interchanging the lamps.

Application possibilities are shown on page 47. Further technical data on page 40 ff.

Sodium Lamps
Accessories for Discharge Lamps

3



Ordering abbreviation	Rated power of lamp Watts	Luminous flux lm	Diameter mean value d mm	Length max. l mm	Base	Standard package quantity	Price
NA							
Low pressure sodium lamps have a luminous efficacy of up to 183 lm/W. The emitted light has a monochromatic yellow-orange colour. Suitable for the illumination of arterial roads and motorways, marking of particularly dangerous spots as well as the illumination of tunnels, canals and locks.							
Tubular, clear with infrared reflecting coating							
NA 18 W[1])	18	1800	53	216	BY 22 d	20	
NA 35 W	35	4800	52	310	BY 22 d	12	
NA 55 W	55	8000	52	425	BY 22 d	9	
NA 90 W	90	13500	66	528	BY 22 d	9	
NA 135 W	135	22500	66	775	BY 22 d	9	
NA 180 W	180	33000	66	1120	BY 22 d	9	
Tubular, clear with infrared reflecting coating This type will be discontinued shortly; available only for replacement purposes							
NAT 200 W-3	200	31000	45	1200	G 13	4	

Accessories for Discharge Lamps

Chokes and igniters are available from the electrotechnical industry.

There are igniters for POWER STARS, resp. VIALOX® which are equipped with StE 501 (built-in glow switch) or with SE 600 (built-in spark gap). Please note that these elements cannot be interchanged.

It is recommended to replace St 400, StE 501, SE 600 resp. St 181 together with each lamp replacement.

St 400 [2])	Starter for POWER STAR 400 W and HQI-E 1000 W/N
StE 501	Spare start element for POWER STARS and VIALOX®
SE 600	Spare switch element for POWER STARS and VIALOX®
St 181	Glow switch for NAT 200 W-3

These lamps are guaranteed only when they are operated with tested and approved control gear.

[1]) Available shortly, preliminary data.
[2]) For replacement purposes.

Further technical data on page 40 ff.

3 Technical Data

	HQ-Lamps	HWL-Lamps	NA-Lamps
	Under normal operating conditions and with approved control gear OSRAM discharge lamps distinguish themselves on account of their extremely long useful service life and outstanding illumination properties. These quality characteristics which have proved themselves in practice over and over again guarantee the greatest possible economy. Millions of OSRAM discharge lamps are in use throughout the world.		
Supply voltage	Generally the lamps are operated on 220 V Alternating Current. Exception: HQ 2000 W on 380 V AC HQI 3500 W on 380 V AC For POWER STARS and VIALOX®: permissible short-time voltage deviation for these lamps is ± 5 %; with supply voltage of ≧ 230 V (resp. ≧ 400 V) correspondingly designed ballasts, resp. devices with a second tap should be used.		
Voltage variation effects	Less critical than with incandescent lamps	Comparable with incandescent lamps	Less critical than with incandescent lamps
Luminous flux	The luminous flux is practically independent of the ambient temperatures. The luminous flux details shown are based on a vertical burning position (except for lamps designed for a horizontal burning position only).		
Installation in fittings	HQI 1000–3500 W lamps should be held without pressure near the free end of the lamp or by any other means of support.	In case of voltage fluctuations of more than 10 % operation of the lamp in a horizontal burning position should be avoided	NA 35–180 W should be held without pressure near the free end of the lamp or by any other means of support
Control gear	≧ 220 V Choke < 220 V leakage transformer POWER STARS: choke and ignition device HQI-T 2000 W/N do not require an igniter	Not required	VIALOX®: ≧ 220 V choke and igniter NA low pressure lamps: leakage transformer Exceptions: NA 18 W: tapped choke and ignition capacitors 5 µF NAT 200 W-3: choke and starter St 181
Starting	Full luminous flux is reached approx. 3 minutes after starting. Starting current is up to twice as much as the operating current depending on the type of ballast used	Instantaneous full luminous flux. Within approx. 2 minutes the luminous flux of the mercury arc tube reaches its rated value, whilst the amount of light emitted by the filament which at first is relatively high will drop to its operating value after the warming-up period	Depending on the type of lamp only a few minutes are required to reach 80 % of the rated luminous flux

Technical Data

3

	HQ-Lamps	HWL-Lamps	NA-Lamps
Re-ignition	After extinction the lamps will restrike only after cooling off for a few minutes since the striking voltage required for a hot lamp is higher than the available supply voltage. For POWER STARS the striking voltage is higher than the surge voltage of the starter or the ignition device POWER STAR model HQI-TS . . . W will restrike immediately when appropriate igniters are used; required surge voltage up to 400 W is 35 kV_S, beyond that 60 kV_S		With a separate igniter VIALOX® restrike approx. one minute after extinction. Without igniter VIALOX® restrike after a few minutes. With appropriate igniters (required surge voltage is 25 kV_S) NAV-TS will restrike immediately: NAT 200 W-3 and NA 18 W are ready for operation again immediately after extinction. All other NA-lamps will restrike only after cooling off for a few minutes
Power Factor	Is about 0.5 . . . 0.7 depending on the type of ballast used. For capacitors for power factor correction see page 42	Practically 1	Is approx. 0.3 depending on the type of leakage transformer used. With chokes (VIALOX® and NA tubular shape) approx. 0.5. For NA 18 W through ignition capacitor 5 μF power factor is approx. 0.9. For power factor correction capacitors see page 43
Radio Interference	Generally, no radio interference will occur except at the instant of switching-on the lamp. With overhead line systems, radio interference has been observed on a few occasions. This can be eliminated by connecting a capacitor of 0.1 μF in parallel to the lamp. With POWER STARS a capacitor should not be connected in parallel to the lamp.		

Please note:

These lamps are guaranteed only when they are operated with tested and approved control gear.

The use of lamps having no or a damaged outer bulb is dangerous and not permissible. HQI-TS 250 W, 400 W and 1000 W should be used only in fitting having a silicate glass cover.

3 Technical Data

Ordering abbreviation	Operating voltage V AC	Operating current Amps	Power consumption with ballast approx. Watts	Luminous flux lm	Luminous efficacy of lamps lm/W	Mean luminance cd/cm²	Pfc capacitor at 50 cps µF	Circuit possibilities Fig. No.[4]	Burning positions[4]
HQI-E 250 W/NDL[3]	220	3.0	275	18000	72	16	32	3	h 150
HQI-E 250 W/D	220	3.0	275	17000	68	15	32	3	h 150
HQI-E 400 W/DV	220	3.5	385	26000	72	11	35	2/3	h 45
HQI-E 400 W/DH	220	3.5	385	24000	67	10	35	2/3	p 45
HQI-E 1000 W/N	220	8.2	1040	80000	80	23	70	2/3	optional
HQI-R 250 W/NDL	220	3.0	275	15000	60	[5]	32	3	h 150
HQI-T 250 W/NDL[3]	220	3.0	275	20000	80	1150	32	3	h 150
HQI-T 250 W/D	220	3.0	275	19000	76	1100	32	3	h 150
HQI-T 400 W/DV	220	3.5	385	28000	78	700	35	2/3	h 45
HQI-T 400 W/DH	220	3.5	385	25000	70	650	35	2/3	p 45
HQI-T 1000 W/D	220	9.5	1050	80000	80	810	85	3	p 60
HQI-T 2000 W/D	380	10.3	2080	170000	85	920	60	3	p 60
HQI-T 2000 W/N [2]	380	8.8	2070	190000	95	530	37	1	optional
HQI-T 3500 W/D	380	18.0	3650	300000	86	880	100	3	p 60
HQI-TS 250 W/NDL[3]	220	3.0	275	20000	80	1600	32	3/4	p 45
HQI-TS 250 W/D	220	3.0	275	19000	76	1500	32	3/4	p 45
HQI-TS 400 W/D	220	3.5	385	25000	69	760	35	2/3/4	p 45
HQI-TS 1000 W/D	220	9.5	1050	90000	90	1200	85	3/4	p 45
HQI-TS 2000 W/D	380	10.3	2080	170000	85	920	60	3/5	p 60
HQI-TS 3500 W/D	380	18.0	3650	300000	86	880	100	3/5	p 60
HQL 50 W DE LUXE	220	0.60	59	2000	40	4	7	1	optional
HQL 80 W DE LUXE	220	0.80	89	3850	48	5	8	1	optional
HQL 125 W DE LUXE	220	1.15	137	6500	52	7.5	10	1	optional
HQL 250 W DE LUXE	220	2.15	266	14000	56	10.5	18	1	optional
HQL 400 W DE LUXE	220	3.25	425	24000	60	11.5	25	1	optional
HQL 50 W	220	0.60	59	2000	40	4	7	1	optional
HQL 80 W	220	0.80	89	3800	48	5	8	1	optional
HQL 125 W	220	1.15	137	6300	50	7	10	1	optional
HQL 250 W	220	2.15	266	13500	54	10	18	1	optional
HQL 400 W	220	3.25	425	23000	58	11	25	1	optional
HQL 700 W	220	5.40	735	40000	57	13	40	1	optional
HQL 1000 W	220	7.50	1045	55000	55	15	60	1	optional
HQL-B 50 W DE LUXE	220	0.6	59	1750	35	<1.3	7	1	optional
HQL-B 80 W DE LUXE	220	0.8	89	3000	38	<2.2	8	1	optional
HQV 125 W	220	1.15	137	–	–	–	10	1	optional
HWL 160 W 225 V	220 – 229	0.8	160[1]	3100	19	3	–	–	hs 30
HWL 160 W 235 V	230 – 239	0.8	160[1]	3100	19	3	–	–	hs 30
HWL 250 W 225 V	220 – 229	1.2	250[1]	5600	22	5	–	–	optional
HWL 250 W 235 V	230 – 239	1.2	250[1]	5600	22	5	–	–	optional
HWL 500 W 225 V	220 – 229	2.4	500[1]	14000	28	6	–	–	optional
HWL 500 W 235 V	230 – 239	2.3	500[1]	14000	28	6	–	–	optional
HWL 1000 W 225 V	220 – 229	4.7	1000[1]	32500	33	8	–	–	optional
HWL 1000 W 235 V	230 – 239	4.5	1000[1]	32500	33	8	–	–	optional

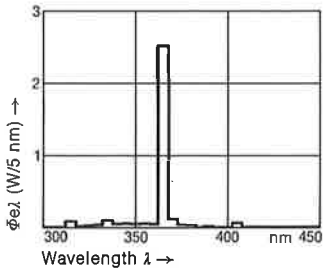
[1] No ballast required.
[2] No igniter required.
[3] Preliminary data.
[4] For circuit diagrams see page 44.
[5] See light distribution curves on page 45.
[6] For examples see page 46.

Technical Data

3

Ordering abbreviation	Operating voltage V AC	Operating current Amps	Power consumption with ballast approx. Watts	Luminous flux lm	Luminous efficacy of lamps lm/W	Mean luminance cd/cm²	Pfc capacitor at 50 cps µF	Circuit possibilities Fig. No.[4]	Burning positions[6]
HQL-R 80 W DE LUXE	220	0.8	89	3000	37	[5]	8	1	optional
HQL-R 125 W DE LUXE	220	1.15	137	5000	40	[5]	10	1	optional
HQL-R 250 W	220	2.15	266	11500	46	[5]	18	1	optional
HQL-R 400 W	220	3.25	425	20500	51	[5]	25	1	optional
HWL-R 160 W DE LUXE	220–230	0.75	160[1]	2500	16	[5]	–	–	optional
HQI-R 250 W/NDL	220	3.0	275	15000	60	[5]	32	3	h 150
NAV-E 50 W[2] [7]	220	0.76	62	3300	66	4	8	1	optional
NAV-E 70 W[2]	220	1.0	83	5800	83	7	12	1	optional
NAV-E 150 W/S[7]	220	1.8	170	16000	107	11	20	3	optional
NAV-E 150 W	220	1.8	170	14000	93	10	20	3	optional
NAV-E 250 W	220	3.0	275	25000	100	19	32	3	optional
NAV-E 210 W[2]	220	2.25	232	18000	86	13		1	optional
NAV-E 350 W[2]	220	3.45	385	34000	97	16		1	optional
NAV-E 400 W	220	4.4	450	47000	118	22	50	3	optional
NAV-E 1000 W	220	10.3	1090	120000	120	30	100	3	optional
NAV-T 150 W/S[7]	220	1.8	170	17000	113	350	20	3	optional
NAV-T 150 W	220	1.8	170	14500	97	300	20	3	optional
NAV-T 250 W	220	3.0	275	25500	102	400	32	3	optional
NAV-T 400 W	220	4.4	450	48000	120	500	50	3	optional
NAV-T 1000 W	220	10.3	1090	130000	130	600	100	3	optional
NAV-TS 250 W	220	3.0	275	25500	102	400	32	3/4	p 45
NAV-TS 400 W	220	4.4	450	48000	120	550	50	3/4	p 45
NA 18 W	220	0.35	25	1800	100	10	5	8	h 150
NA 35 W	220/480[3]	1.4/0.6[3]	56	4800	137	10	20	6	h 110
NA 55 W	220/480[3]	1.4/0.6[3]	76	8000	145	10	20	6	h 110
NA 90 W	220/480[3]	2.1/0.9[3]	113	13500	150	10	26	6	p 20
NA 135 W	220/660[3]	3.1/0.9[3]	175	22500	166	10	45	6	p 20
NA 180 W	220/660[3]	3.1/0.9[3]	220	33000	183	10	40	6	p 20
NAT 200 W-3	220	2.3	235	31000	155	9	–	7	p 20

Spectral radiation distribution of HQV 125 W



For spectral radiation distribution of discharge lamps see page 83.

[1] No ballast required.
[2] No igniter required.
[3] Prim./sec.
[4] For circuit diagrams see page 44.
[5] For light distribution curves see page 45.
[6] For examples see page 46.
[7] Preliminary data.

3 Circuit Diagrams for Discharge Lamps

The circuit diagrams shown on this page refer to the lamps listed on pages 42 and 43.

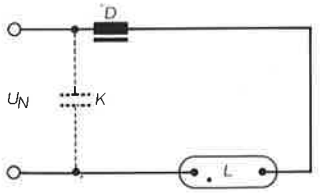


Fig. 1

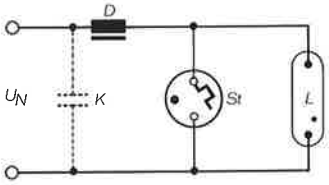


Fig. 2

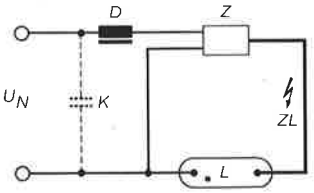


Fig. 3

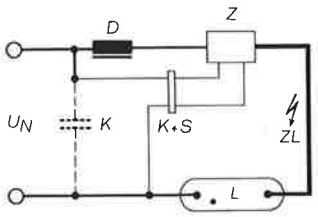


Fig. 4

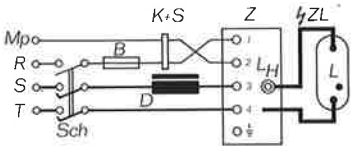


Fig. 5

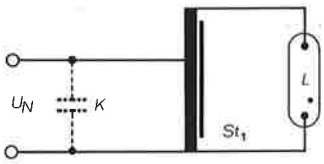


Fig. 6

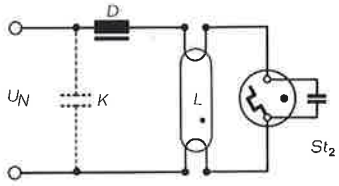


Fig. 7

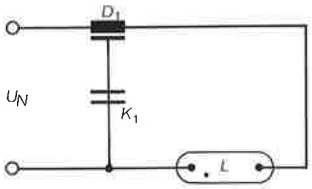


Fig. 8

In mains systems with neutral conductor, the choke must be inserted in the phase lead.

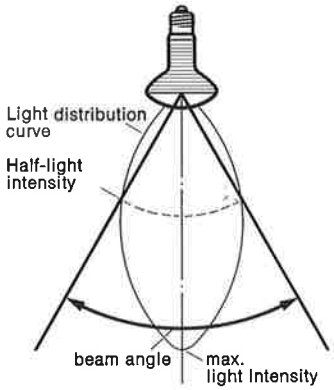
B	=	fuse 6 amps, slow blow	Sch	=	switch
D	=	choke	St	=	starter St 400
D_1	=	choke with tap	St_1	=	leakage transformer
K	=	pfc capacitor	St_2	=	starter St 181
K_1	=	pfc and ignition capacitor	U_N	=	mains voltage 220 V AC (for 2000 W and 3500 W = 380 V AC)
K+S	=	short-time switch and relay	Z	=	igniter to be installed close to the lamp
L	=	lamp	ZL	=	rf-ignition lead to bottom contact of lamp
L_H	=	high voltage terminal			
Mp	=	neutral lead			
R, S, T	=	outer leads			

Chokes, lampholders, capacitors, leakage transformers and igniters are supplied by the electrotechnical industry.

Light Distribution of Reflector Lamps

3

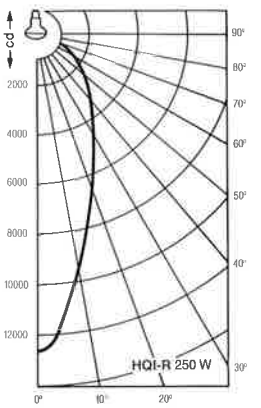
Beamspread angle



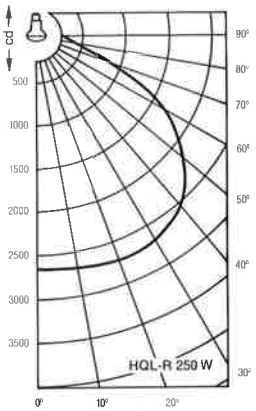
The beamspread angle is the angle of the dynamically balanced light distribution of which the luminous intensity amounts to half the maximum value.

Ordering abbreviation	Beam-spread angle	Max. luminous intensity (lux) at a distance from the lamp of				
		1.5 m	2.5 m	3.5 m	4.5 m	6 m
Discharge reflector lamps Maximum luminous intensity in lx						
HQI-R 250 W/NDL	40°	5000	1900	1000	625	350
HQL-R 250 W	120°	1180	425	215	130	75
HQL-R 400 W	120°	2015	725	370	225	125
HQL-R 80 W DE LUXE	120°	330	120	60		
HQL-R 125 W DE LUXE	120°	530	190	100		
HWL-R 160 W DE LUXE	120°	265	95	50		

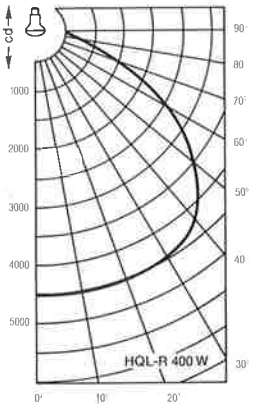
Candle power distribution



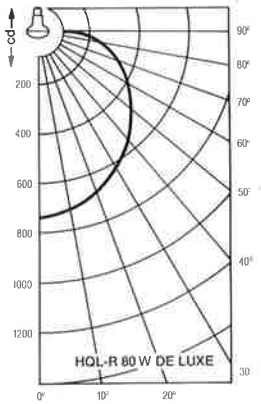
HQI-R 250 W/NDL



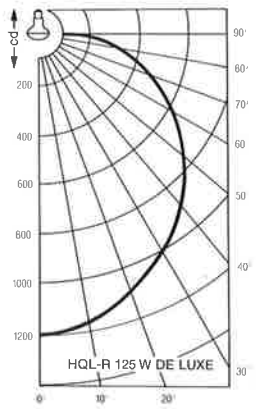
HQL-R 250 W



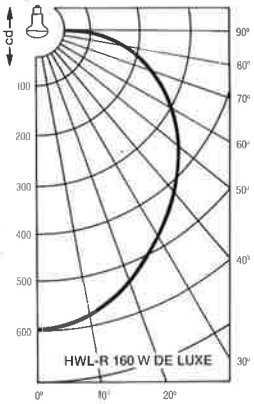
HQL-R 400 W



HQL-R 80 W DE LUXE



HQL-R 125 W DE LUXE



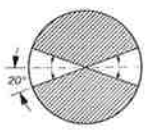
HWL-R 160 W DE LUXE

3 Light colours and colour rendering properties as per DIN 5035 Burning positions

Colour rendering properties	Colour tw Daylight white more than 5000 K	Colour nw Neutral white 3300–5000 K	Colour ww Warm white less than 3300 K
Group 1 very good			Incandescent lamps
	Fluorescent lamps LUMILUX 11 as well as colour 19	Fluorescent lamps LUMILUX 21 as well as colour 22	Fluorescent lamps LUMILUX 31 as well as colour 32 and 39
	POWER STARS HQI-. . ./D	POWER STARS HQI-. . ./NDL	
Group 2 good	Fluorescent lamps colour 10	Fluorescent lamps colour 25	**Blended lamps** **HWL-R. . . DE LUXE**
Group 3 fair		Fluorescent lamps colour 20	Fluorescent lamps colour 30
		POWER STARS HQI-. . ./N	
		High-pressure mercury lamps HQL	**High-pressure mercury lamps HQL . . . DE LUXE**
		Blended lamps HWL	
Group 4 insufficient			VIALOX (NAV)

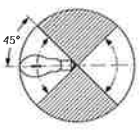
Examples of burning positions for discharge lamps (compare pages 42 and 43)

▭ permissible
▨ not permissible



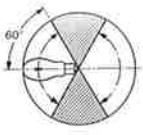
p 20

NA 90 W bis
NA 180 W
NAT 200 W-3



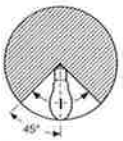
p 45

HQI-E 400 W/DH
HQI-T 400 W/DH
HQI-TS 250 W/NDL
HQI-TS 250 W/D
HQI-TS 400 W/D
HQI-TS 1000 W/D
NAV-TS 250 W
NAV-TS 400 W



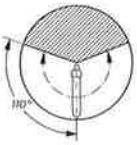
p 60

HQI-T 1000 W/D
HQI-T 2000 W/D
HQI-T 3500 W/D
HQI-TS 2000 W/D
HQI-TS 3500 W/D



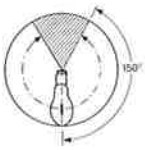
h 45

HQI-E 400 W/DV
HQI-T 400 W/DV



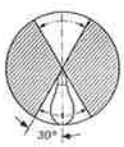
h 110

NA 35 W
NA 55 W



h 150

HQI-E 250 W/NDL
HQI-E 250 W/D
HQI-R 250 W/NDL
HQI-T 250 W/NDL
HQI-T 250 W/D
POWER STAR-Set 250 W
NA 18 W



hs 30

HWL 160 W

Applications

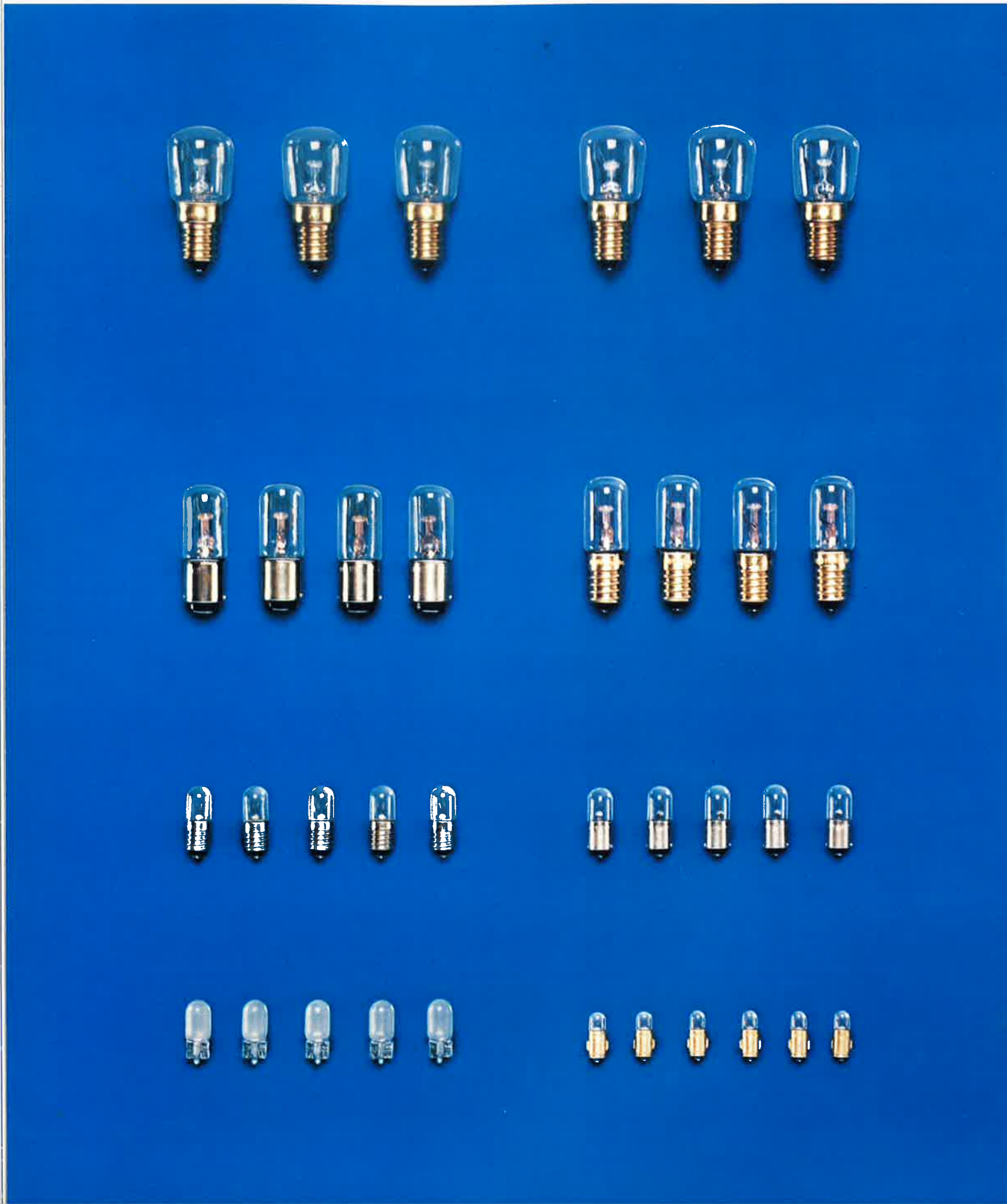
3

Examples of application		Type of lamp					
		POWER STARS HQI	HQL	HQL DE LUXE	HWL	VIALOX NAV	NA
Offices and Administration	Landscape offices	●		●			
	Offices and corridors			●			
Trade and Industry	Chemical works, plastics industry	●		●			
	Electrotechnical, fine mechanical, wood- and paper industry	●					
	Foodstuffs factories	●					
	Textile-, leatherware and printing mills	●					
	Automotive and machine-building industry	●	●	●	●		
	Electrical and heating and power stations	●		●			
	Laboratories	●		●			
	Steel mills, foundries, road metal plants, Cement works		●			●	●
	Warehouses and shipping yards	●		●			
Schools and Instruction halls	Auditoriums, reading rooms	●		●			
Salesrooms Shop windows	Foodstuffs, cakes, delicatessen			●	●		
	Textiles, leather, photo, watches, jewellery	●		●	●		
	Cosmetics, hairdressers	●					
	Flowers			●	●		
	Supermarkets	●		●			
	Department stores	●		●	●		
Public rooms and Variety halls	Foyers	●		●			
	Restaurants			●	●		
	Museums, galleries	●					
	Exhibition halls	●		●	●		
	Sports- and multiple purpose halls	●			●		
Clinics and Surgeries	Diagnosis and treatment rooms	●					
Homes	Plant radiation			●	●		
Traffic installations	Main streets and pedestrian zones	●		●	●		
	Arterial roads and motorways	●	●	●		●	●
	Squares and bridges	●	●	●		●	
	Tunnels and underground passages					●	●
	Sidestreets, park avenues		●	●	●	●	
	Pedestrian crossings	●				●	●
	Street crossings	●	●	●		●	●
	Park and garden lanes			●	●		
	Canals, locks						●
	Railway yards	●	●			●	
	Airports, tarmacs	●	●	●		●	
Industrial installations	Factory yards, parking lots, switchboard plants	●	●	●	●	●	●
	Shipyards, port- and wharf installations	●	●	●		●	
	Coalmines, stockpiles, stockyards		●				●
	Refineries				●		
Building sites	Building sites	●	●			●	●
Sportsgrounds	Sportsgrounds	●	●	●			
	Floodlight installations in stadiums	●					
Floodlighting	Buildings, monuments, parks, gardens	●	●	●		●	●
Special purposes	Plant growing	●		● [2]	● [2]		
	Colour film- and TV productions	●					
	Theatre lighting	● [1]					
	Testing of material surfaces						●
	Colour testing	●					

Spectral radiation distribution of these lamps is shown on page 83.

[1] Particularly HQI-TS.
[2] Particularly reflector lamps e.g. HQL-R DE LUXE and HWL-R DE LUXE.

Miniature Lamps



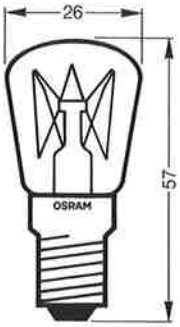
4 MINIWATT®-Lamps

Ordering No.	Output Watts	Voltage Volt	Current mAmp	Average life h	Standard package quantity[4]	Price

MINIWATT®-Lamps

The application of MINIWATT®-lamps is universal, economical and reliable. Their output, current consumption and lamp life are adapted to their fields of application. MINIWATT®-lamps are manufactured for special voltage groups; the values shown in the tables for output, current and lamp life refer–if not stated otherwise–to the lower voltage values.

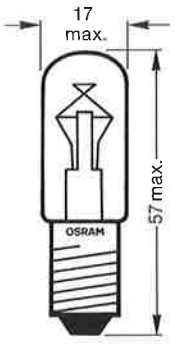
MINIWATT®-lamps are used as indicator lamps, e.g. in domestic appliances, switch gear and office machines as well as in entertainment electronics, electronic data processing equipment and medicinal appliances. The complete range of MINIWATT®-lamps and other technical data are shown in our special catalogue "Indicator and Signal Lamps".



MINIWATT® Pear-shaped Lamps S 25

Base E 14

6514	10	24	417[2]	1000[3]	100	
6522[1]	10/6	140/110	71[2]	1000[3]	100	
6524[1]	10/6	260/220	39[2]	1000[3]	100	

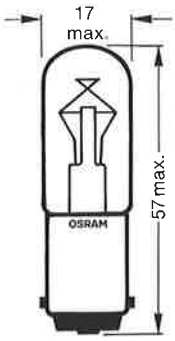


MINIWATT®-Lamps T 17

Base E 14

6814	10/6	30/24	–	1000[3]	480	
6816	10/6	45/36	–	1000[3]	480	
6818	10/6	60/48	–	1000[3]	480	
6822	10/6	140/110	–	1000[3]	480	
6824	10/6	250/220	–	1000[3]	480	

Also available as coloured lamps for telephone equipment.



Base B 15 d

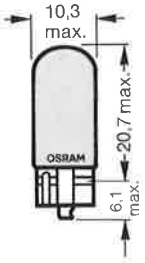
6815	10/6	30/24	–	1000[3]	480	
6817	10/6	45/36	–	1000[3]	480	
6819	10/6	60/48	–	1000[3]	480	
6823	10/6	140/110	–	1000[3]	480	
6825	10/6	250/220	–	1000[3]	480	

Also available as coloured lamps.

[1] Lamps as per DIN 49889, Form B.
[2] Calculated value.
[3] At the upper voltage value.
[4] Small quantities can be obtained upon request.

MINIWATT®-Lamps

4

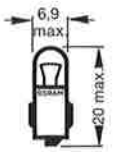


MINIWATT®-Lamps T 10

Radiopanel lamps as per DIN 49846, Leaf 3, Form LC.

Frosted
Base W 2,1x9.5 d

Ordering No.	Output Watts	Voltage Volt	Current mAmp	Average life h	Standard package quantity [2]	Price
2502/1	0.6 [1]	6–7	100	5000	3600	
2506/1	1.2 [1]	12–15	100	10000	3600	
2509/1	1.8 [1]	6–7	300	5000	3600	



Radiopanel lamps as per DIN 49846, Leaf 2, Form LC.
Base BA 7s

3370	0.7 [1]	7	100	3000	2000	
3371	1.4 [1]	14	100	3000	2000	

MINIWATT®-Lamps T 10

Base E 10

3450	2	6–7	333 [1]	5000	1000	
3453	2	12–15	166 [1]	10000	1000	
3456	2	24–30	83 [1]	10000	1000	
3462	2	48–60	42 [1]	10000	1000	

Base BA 9 s

3450 B	2	6–7	333 [1]	5000	1000	
3453 B	2	12–15	166 [1]	10000	1000	
3456 B	2	24–30	83 [1]	10000	1000	
3462 B	2	48–60	42 [1]	10000	1000	

[1] Calculated value.
[2] Small quantities can be obtained upon request.

4 Miniature Lamps

Ordering No.	Amps	Volt	Base	Standard package quantity[2]	Price

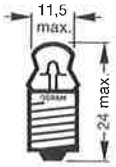
Miniature Lamps

OSRAM miniature lamps distinguish themselves on account of their low power consumption, high luminous efficacy and long life which is especially adapted to their particular purposes.

Miniature lamps are used in electric torches, small domestic appliances, toys and experimental hobby sets.

The electrical data of the NF-miniature lamps "brillant" are suitable for the batteries listed below:

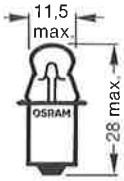
3642, 3570	2 round cells 2 R/6 or 1 duplex-battery 2 R/10
3652, 3575	2 round cells 2 R/14
3656, 3580	2 round cells 2 R/20
3662, 3598	3 round cells 3 R/20
3663	1 standard battery 3 R/12



NF-Miniature Lamps "brillant"

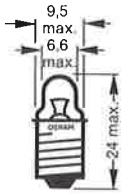
as per DIN 49846, Leaf 1, Form K

3642	0.25	2.2	E 10	600
3652	0.3	2.2	E 10	600
3656	0.4	2.2	E 10	600
3663[1]	0.3	3.3	E 10	600
3662	0.3	3.7	E 10	600



NF-Miniature Lamps "brillant"

3570[1]	0.25	2.2	P 13.5 s	600
3575[1]	0.3	2.2	P 13.5 s	600
3580[1]	0.4	2.2	P 13.5 s	600
3598[1]	0.3	3.7	P 13.5 s	600



Lentiform

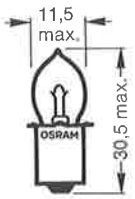
as per DIN 49846, Leaf 1, Form K

3649[1]	0.22	1.2	E 10	1000
3647	0.18	2.2	E 10	1000
3651	0.25	2.2	E 10	1000
3643	0.2	2.5	E 10	1000
3648	0.3	2.5	E 10	1000
3644	0.3	3.7	E 10	1000

[1] Not standardized.
[2] Small quantities can be obtained upon request.

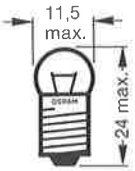
Miniature Lamps

4



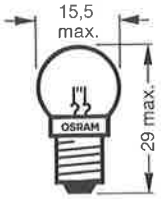
Olive-shaped (Prefocus)

Ordering No.	Amps	Volt	Base	Standard package quantity [2]	Price
3685 (PR 2)	0.5	2.4	P 13.5 s	600	
3688	0.2	2.5	P 13.5 s	600	
3690 (PR 6)	0.3	2.5	P 13.5 s	600	
3686 (PR 3)	0.5	3.6	P 13.5 s	600	
3693 (PR 7)	0.3	3.7	P 13.5 s	600	



Spherical
as per DIN 49 846, Leaf 1, Form K

3645	0.2	2.5	E 10	1000	
3646	0.2	3.5	E 10	1000	
3641 [1]	0.07	3.8	E 10	1000	

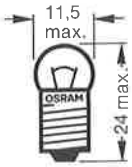


Head and Tail light lamps for bicycles and motorized bicycles

as per DIN 49 848

Headlights

Ordering No.	Watts	Volt	Base	Standard package quantity [2]	Price
3724	2.4	6	EP 10	1000	



Tail lights

3708	0.6	6	E 10	1000	

[1] Not standardized.
[2] Small quantities can be obtained upon request.

4 Miniature Lamps

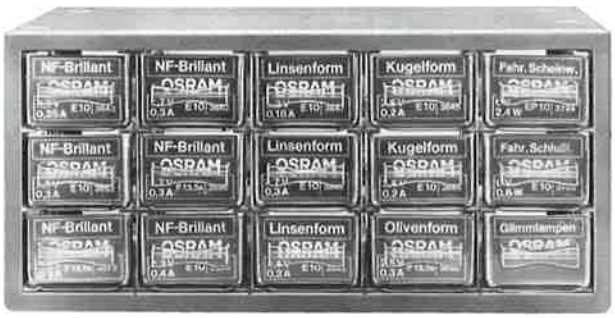
Ordering Description	Lamp-contents	Width mm	Height mm	Depth mm	Drawers	Price

Multiple Cabinet for Miniature Lamps

This multiple cabinet for miniature lamps is adapted to the sales programme of the electrotechnical trade and enables quick service on the counter as well as in the workshop. Always within easy reach these miniature lamps enable a quick turnover.

In twelve clear plastic drawers 290 miniature lamps are neatly stored. Three drawers are left empty so that their contents can be adapted to the customer's needs, e.g. glow lamps, bicycle lamps or radiopanel lamps.

Multiple cabinet E 15	290	303	138	142	15	

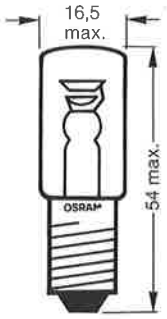


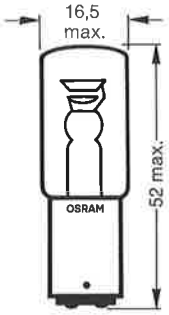
Multiple cabinet E 15 is equipped with

Quantity	Lamp-Ordering No.	Type	Volt	Amps	Base	
30	3645	spherical	2.5	0.2	E 10	
30	3646	spherical	3.5	0.2	E 10	
20	3643	lentiform	2.5	0.2	E 10	
30	3647	lentiform	2.2	0.18	E 10	
30	3644	lentiform	3.7	0.3	E 10	
20	3642	NF "brillant"	2.2	0.25	E 10	
20	3652	NF "brillant"	2.2	0.3	E 10	
20	3656	NF "brillant"	2.2	0.4	E 10	
30	3662	NF "brillant"	3.7	0.3	E 10	
20	3690	olive-shaped	2.5	0.3	P 13.5 s	
20	3598	NF "brillant"	3.7	0.3	P 13.5 s	
20	3575	NF "brillant"	2.2	0.3	P 13.5 s	

Glow Lamps

4





Ordering abbreviation	Current mAmps max.	Rated voltage Volt AC	Starting voltage Volt AC	Base	Standard package quantity [3]	Price

Glow Lamps

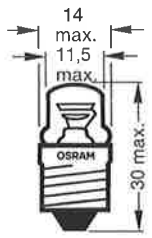
OSRAM glow lamps switch reliably and to a great extent are not influenced by deviations in the supply voltage or shocks. Despite their low power consumption they have a great luminosity, long life and are heat- and cold-proof.

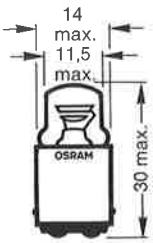
Glow lamps are used as indicator lamps e.g. in electric stoves, laundry machines and dishwashing machines, boilers, heaters, smoothing irons, phonographs, TV-sets, switch- and operating equipment as well as light switches and press buttons.

The glow lamps listed below are supplied with a built-in resistance.

Signal Glow Lamps

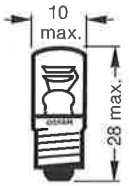
SG 234 [1]	3.5	220	≦ 186	E 14	480	
SG 274 [1]	1.8	380	≦ 186	E 14	480	
SG 233 [1]	3.5	220	≦ 186	BA 15 d	480	

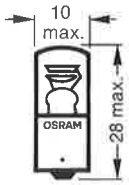




Tapered Miniature Signal Glow Lamps

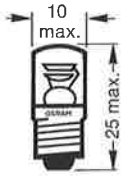
VG 234	2.5	220	≦ 186	E 14	600	
VG 274	1.2	380	≦ 186	E 14	600	
VG 233	2.5	220	≦ 186	BA 15 d	600	

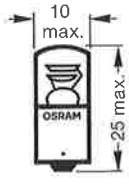




Pigmy Glow Lamps

ZG 204 [2]	0.8	110	≦ 65	EX 10	600	
ZG 234 [2]	1.9	220	≦ 186	EX 10	600	
ZG 274 [2]	0.9	380	≦ 186	EX 10	600	
ZG 233	1.9	220	≦ 186	BA 9 s	600	





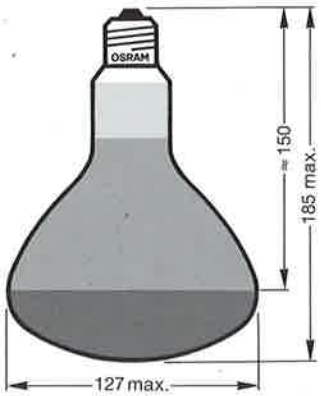
Subminiature Glow Lamps

LG 234 [2]	1.9	220	≦ 186	EX 10	600	
LG 274 [2]	0.9	380	≦ 186	EX 10	600	
LG 233	1.9	220	≦ 186	BA 9 s	600	

[1] As per DIN 49850, Form A.
[2] As per DIN 49850, Form C.
[3] Small quantities can be obtained upon request.

Special Radiation Lamps

5 Infrared Radiation Lamps for Agricultural Purposes



SICCATHERM®-Infrared Radiation Lamps for Agricultural Purposes

The sun-like heat radiation of the SICCATHERM® infrared radiation lamps SL/r 150 W and SL/r 250 W offer ideal conditions for the breeding of young animals. At the same time with their many possibilities of application for drying and heating of agricultural produce they are a welcome aid to the farmer.

Function when irradiating animals

The sun-like infrared radiation emitted by the SICCATHERM® lamp is being transferred directly from the lamp to the animal's body without essential losses of heat, hereby creating good climatic conditions in the stable. Not only the skin surface which is exposed to direct irradiation but also the muscular tissue is heated. This results in a widening of the blood and lymphatic vessels as well as a better blood circulation and nourishment of the cells. The stables may be constantly provided with fresh air without any risk for the health of the young animals.

Results

Favourable growth rate of the young animals due to greater appetite and best possible utilization of the food. Increased resistance against diseases due to constant ventilation. No breeding losses. No squeezing to death due to lack of heat. Clean, hygenic stables because of dry litter. Increased rentability.

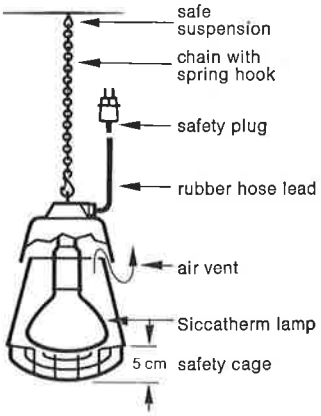
Function when drying and heating

The infrared radiation emitted by the SICCATHERM® lamps, penetrates without loss of heat to the ambient air into the corn, fruit, vegetables etc. where it is absorbed. This means that not only the surface is dried but also that the whole substance is heated. The drying process takes place as if the evaporation area is enlarged many times.

Results

Shorter drying times, improved quality and durability of the dried or heated produce. Savings of costs.

Directions for installation and operation of the SICCATHERM® lamps for animal breeding and drying of agricultural produce are shown in the directions for use which accompany each radiation lamp.



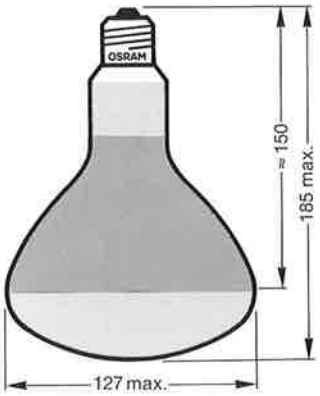
Installation SICCATHERM®

Mushroom-shaped bulb of special glass with interior reflector
Base E 27 as per DIN 49 620, IEC 7004-21
Burning position optional

Ordering abbreviation	Watts	Crown	Average life h	Weight g	Standard package quantity	Price
SL/r 150 W	150	red filter	5000	130	9	
SL/r 250 W	250	red filter	5000	130	9	

Infrared Radiation Lamps for Industrial Purposes

5



SICCATHERM® Infrared Radiation Lamps for Industrial Purposes

The advantages of the SICCATHERM® infrared radiation lamps SI 250 W make them particularly suitable for drying and heating purposes in industrial operations.

Function

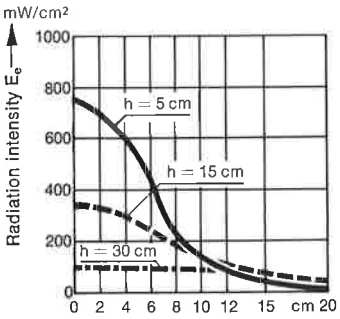
The infrared radiation emitted by the SICCATHERM® lamps penetrates without loss of heat to the ambient air into the products to be dried where it is absorbed. An additional advantage is that not only the surface is dried but also that the whole substance is heated. The drying process takes place as if the evaporation area is enlarged many times.

Application

For many years SICCATHERM® lamps are widely used for applications like drying, baking, warming, distilling, thawing, softening, vulcanizing, melting, evaporating, carbonizing, polymerizing, jellifying, pasteurizing, pest control, determination of humidity in the following industries: electro, metal, chemistry, graphic arts, wood and furniture, textile, foodstuffs, china and glass, pharmacy, photo and film, rubber, tobacco, leather as well as in the building trade, construction of heating systems, etc.

Directions for operation

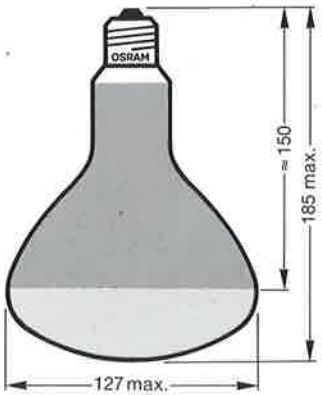
The drying and heating time is influenced not only by the irradiance (see fig.) but also by the shape, the structure of the surface and the physical properties of the material to be irradiated. If the properties of the material are unknown, a trial irradiation should be carried out in order to ascertain the best possible drying conditions. Based on the results of such a test the arrangement of the lamps and the distance between lamps and material can be determined.



Mushroom-shaped bulb of special glass with interior reflector
Base E 27 as per DIN 49 620, IEC 7004-21
Burning position optional

Ordering abbreviation	Watts	Crown	Average life h	Weight g	Standard package quantity	Price
SI 250 W	250	frosted	5000	130	9	

5 UV-Radiation Lamps for Industrial Material Testing



ULTRA-VITALUX®-Radiation Lamps for Industrial Material Testing

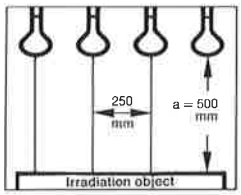
ULTRA-VITALUX® radiation lamps with their sun-like character, cost-saving simple installation and operation on 220 V AC mains voltage are especially suited for climatic tests of materials and equipment as per DIN 50 010 regarding their tropics-proofness, artificial ageing, weather-exposure, changes in the properties of materials, e.g. functional safety, life duration under special climatic conditions etc.

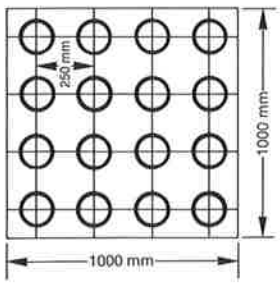
The sun-like radiation is produced by a high pressure mercury discharge vessel of quartz glass (UV-radiation) and a tungsram filament (light and heat radiation) which are incorporated in a mushroom-shaped bulb of special hard glass with interior aluminium reflector which transmits only that part of the spectral radiation which is similar to the radiation of the sun.

Application

The total radiation intensity of the natural sun and the sky at noon has an average value on the surface of the earth of 1.42 calories/cm² or approx. 1 KW/m².
An arrangement of 16 radiation lamps over an area of 1 m² with a distance of 50 cm between lamp crown and irradiation object represent a similar radiation intensity.

Radiation area with 16 ULTRA-VITALUX®

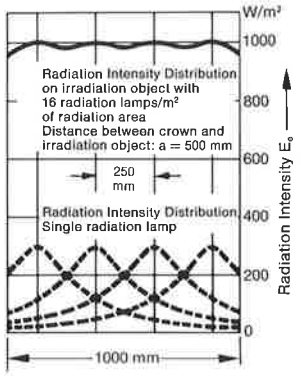




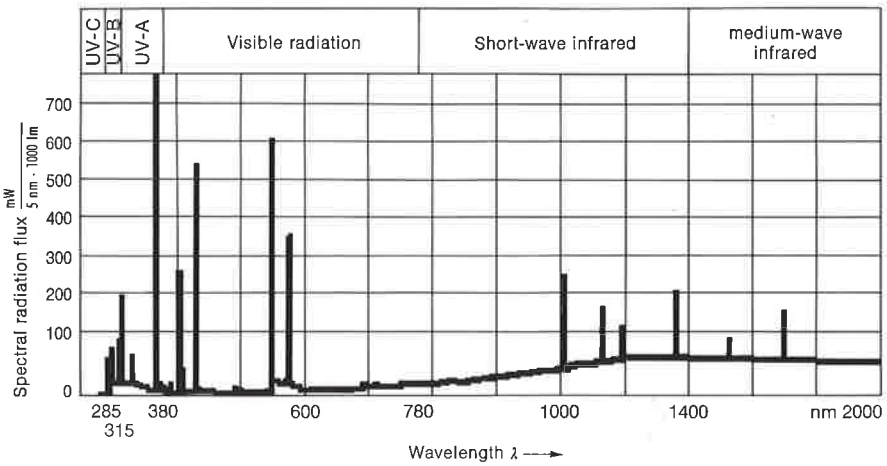
Mushroom-shaped bulb of special hard glass with interior reflector
Base E 27 as per DIN 49 620, IEC 7004-21
Burning position optional

Ordering abbreviation	Watts	Average useful life[1] h	Weight g	Standard package quantity	Price
ULTRA-VITALUX®	300	1000	100	6	

[1] Time in which the UV-radiation intensity decreases to 50 % of the radiation intensity of a new ULTRA-VITALUX® lamp.

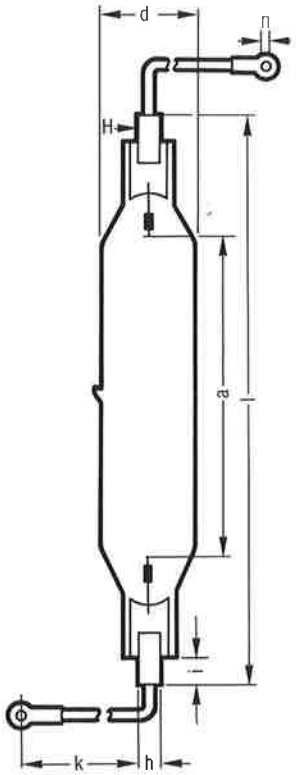


Spectral Radiation Distribution



UVISTRA® HVI
UV-Radiation Lamps for Special Purposes

5



H = Lamp supporting flange

OSRAM-UVISTRA® HVI
UV-Radiation Lamps for Special Purposes

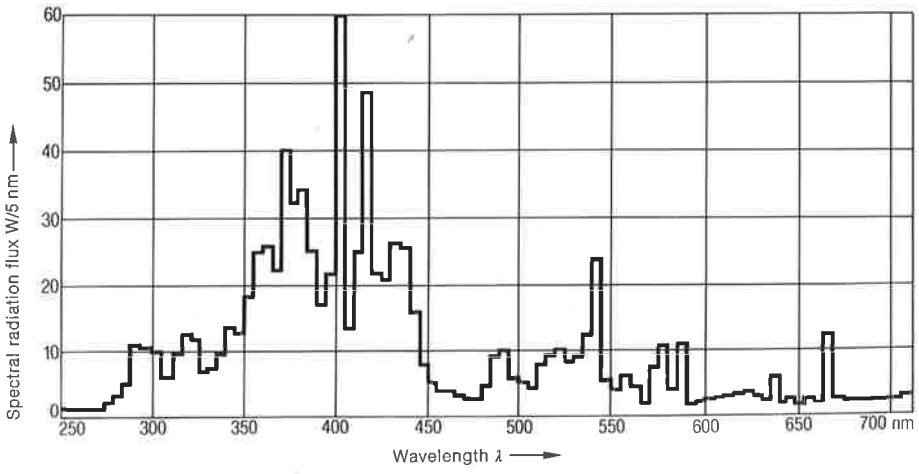
With the OSRAM-UVISTRA®-HVI radiation lamps the OSRAM Laboratories for Research and Development achieved a major break-through.

The addition of special selected halides to the mercury make possible a superior radiation in the spectral range between 300 and 450 nm. Especially this range is of vital importance for the printing trade, lacquer-drying, hardening and polymerizing of plastics.

With the OSRAM-UVISTRA®-HVI lamp a multiple of the radiation intensity of the sun is possible which enables a time-saving test of the UV-fastness of lacquers and other surfaces.

Ordering abbreviation			HVI 400 W	HVI 2000 W	HVI 4000 W
Radiation flux Φ_e 300–450 nm		W	98	630	1300
Voltage		V	100+10/−15	200+10/−20	200+10/−20
Output		W	400	2000	4000
Current		Amps	4.5	10.3	20.6
Power Factor	W/VA approx.		0.9	0.9	0.9
Mains Voltage U_N		V	≧ 220	≧ 380	≧ 380
Contact-breaking Voltage		V	< 200	< 340	< 340
Useful Life	approx. h		500	500	500
Burning position vertical			±30°	±30°	±30°
Chokes as for			NAV 400 W	HQI 2000 W/D	HQI 2000 W/D [1]
Diameter d	max. mm		20	30	34
Length l	max. mm		120	196	196
Distance between electrodes a		mm	38±1	110±1	110±1
Length of bushes i		mm	10	10	10
Diameter of bushes h		mm	8	10	10
Length of cable k		mm	260	260	260
Diameter of cable lug n		mm	3.5	5.3	5.3
Price					

[1]) Two chokes parallel



Spectral Radiation Flux of HVI 2000 W

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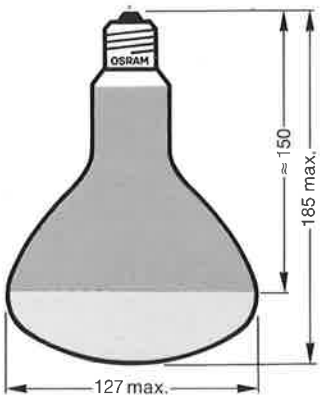
Sun-Lamp ULTRA-VITALUX®

Before treatment of diseases consult your physician regarding the best possible treatment.



Sun-Lamp ULTRA-VITALUX®

The radiation of this well-proved sun-lamp for partial exposure of the body closely resembles the radiation of the sun and has the same large share of the biologically useful effect of the sun. Regular exposures increase the feeling of well-being, improve the resistance against diseases and give the skin a healthy sun-tan. Simple installation and operation on 220 V AC mains voltage.

Properties

The ULTRA-VITALUX® lamp emits a blended radiation which closely resembles the radiation of the sun in high mountain areas and has the same vital biological effect on the organism. This blended radiation is generated by a quartz burner and a tungsten filament. The bulb of this radiation lamp is of special glass which transmits only that part of the radiation which is also part of the solar radiation.

Biological effects

Many medical publications have dealt with the biological effects of the ULTA-VITALUX® sun-lamps, e.g.

Better blood circulation of the skin which becomes more elastic and smoother, whilst a healthy sun-tan is obtained as a cosmetic side-effect.

Regulative effect on the vegetative nervous system. For the organism this means preservation of its resilience and efficiency resp. improvement of its capability to regenerate after hard work or illness.

Reactivation of active substances, e.g. the development of Vitamin-D (anti-rachitic effect) and its accelerated distribution in the organism.

Reduction of SH-groups as a result of which stimulation of many bio-catalysts e.g. enzymes, ferments, vitamins etc. to more intensive activity.

Raising, resp. regulation of the calcium level.

Prevention of infectional diseases on account of the bactericidal effects.

Excellent results in the treatment of acne, furuncles etc.

The effects of ultra-violet radiation can be intensified by simultaneous infrared radiation.

Mushroom-shaped hard glass bulb with reflector
Base E 27 as per DIN 49 620, IEC 7004-21
Burning position optional

Ordering abbreviation	Watts	Run up period ≈ min.	Average useful life h	Weight g	Standard package quantity	Price
ULTRA-VITALUX®	300	2	1000 [1])	100	6	

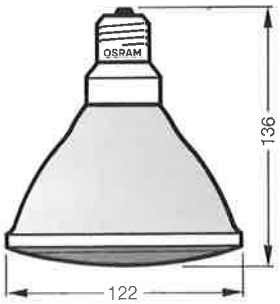
ULTRA-VITALUX® radiation lamp together with lampholder G 176 (see page 77) represent a complete sun-lamp set.

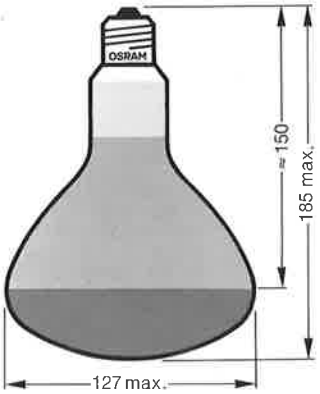
[1]) Time during which the UV-radiation intensity decreases to 50 % of the radiation intensity of a new ULTRA-VITALUX® lamp.

Infrared Radiation Lamps THERATHERM®

5

Before treatment of diseases consult your physician regarding the best possible treatment.





Infrared Radiation Lamps THERATHERM®

The THERATHERM® radiation lamps are well-known for their translaminar effect on account of the shortwave infrared radiation with therapeutic and pain-smoothing effects for all ailments which can be treated with heat-ray therapy. Suitable also for cosmetic purposes.

Properties

The THERATHERM® radiation lamps emit sun-like shortwave infrared rays which are generated in the parabolic pressed or hard glass bulbs with interior reflector and red filter.

THERATHERM® lamps have a long life, beamed radiation for aimed application and immediately emit full heat radiation.

Biological effects

THERATHERM® lamps are infrared radiation lamps of great biological value mainly because of their great translaminar effects as well as the thermal effects in the organism. The cells and organs exposed to the thermal radiation are activated and the blood circulation is improved on account of the widening of the blood vessels. This makes possible an accelerated reduction of metabolites and mobilisation of antigenes in the body.

The absorbed heat is physiologically distributed through the body by the blood circulation.

Application

The THERATHERM® radiation lamps are recommended for

1. rheumatism, muscular pains, sciatica, arthritis, lumbago, face neuralgia, influenza. sinusitis and bronchial catarrhs, inflammations of the throat and middle ear, other inflammations, abrasions, cuts and grazes, fresh scars, other minor injuries, contusions, sprains, strains, effusions of blood, toothache following dental treatment, etc.
   In the consulting rooms of physicians, masseurs and remedial gymnasiums.
2. for face- and beauty treatment.
3. as infrared radiation lamps in SOLARIUM systems and radiator OSRAM ULTRA-VITALUX®.

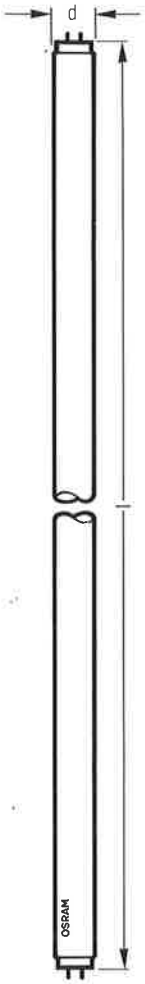
Since the main part of the radiation penetrates the skin and stratum germinativum without being absorbed, the skin is not affected so that–provided the directions for use are followed–no local burns will occur.

THERATHERM® DE LUXE: Pressed glass bulb with reflector
THERATHERM® 250 W: mushroom-shaped hard glass bulb with reflector
Base E 27 as per DIN 49 620, IEC 7004-21
Burning position optional

Ordering abbreviation	Watts	Weight g	Standard package quantity	Price
THERATHERM® DE LUXE	150	400	15	
THERATHERM®	250	150	9	

For complete THERATHERM® radiation sets see page 77.

5 UV-A-Fluorescent Lamps for Solariums and Sun-Tanning Couches



UV-A Fluorescent Lamps for Solariums and Sun-tanning couches

A special phosphor is used for the manufacture of the UV-A fluorescent lamps. This phosphor effectively transforms the shortwave UV-radiation of the low pressure mercury discharge into a longwave UV-radiation (UV-A radiation). On account of the filtering effect of the special glass of which the tube is made the share of UV-B radiation is kept to a minimum.

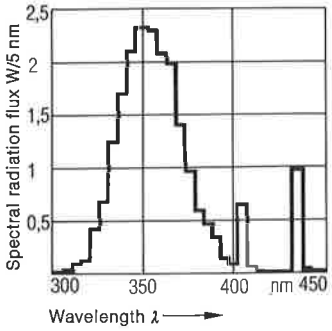
UV-A fluorescent lamps are particularly suited for solariums and sun-tanning couches. The high UV-A output guarantees a quick sun-tan by direct pigmentation without negative effects for the skin. The small share of UV-B radiation allows long exposure times without danger for sunburn and is sufficient to stimulate the formation of pigments which are necessary for obtaining a sun-tan.

Ordering description			L 40 W/79 K In	L 80 W/79	L 100 W/79
Power consumption		W	40	80	100
incl. ballast		W	55	92	119
Voltage		V	47	99	107
Current		Amps	0.88	0.87	1.0
Starter			St 111, St 151[1])	St 111	St 191
Pfc-capacitor		µF	11, 9[1])	9	10
Length l		mm	589.8	1500	1763.8
Diameter d		mm	38	38	38
UV-A radiation flux (315–400 nm)		W	8	19	23
UV-B radiation flux (280–315 nm)		W	0.04	0.1	0.12
UV-C radiation flux (< 280 nm)		W	0	0	0
UV-A radiation reduction referred to 100 h value	after 1000 h	%	21	21	28
	after 2000 h	%	35	35	39
Exposurer time ratio for direct pigmentation/erythema			1/4	1/4	1/4

[1]) For series connection of two lamps: Starter St 151, Pfc-capacitor 9 µF.

The OSRAM L 40 W/79 K In is an indium-amalgam fluorescent lamp which even under high temperature conditions emits its full radiation.

Connection like conventional fluorescent lamps.
Further details are available upon request.

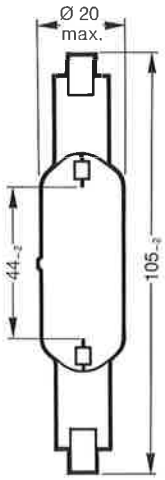


This illustration shows the spectral radiation flux distribution of L 80 W/79.
The distribution of the other types can be calculated by using the following factors:

L 40 W/79 K In: 0.4
L 100 W/79 : 1.2

ULTRAMED®
Halide Radiation Lamp

5



OSRAM-ULTRAMED® Halide Radiation Lamp

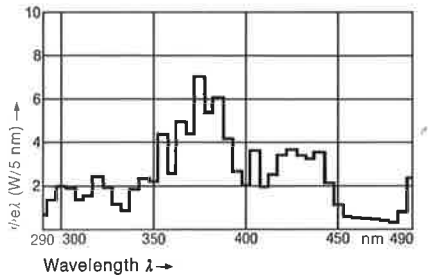
A new UV-radiation lamp for photochemical therapy, resp. phototherapy of skin diseases and sun-tanning through direct pigmentation.

With this UV-radiation lamp which is particularly intensive in the ultraviolet range of 250–400 nm it is possible on account of special additional rare gases and various supplementary filters to treat people suffering from psoriasis vulgaris, parapsoriasis, acne vulgaris etc. with photochemo-therapy, photo-therapy or selective photo-therapy.

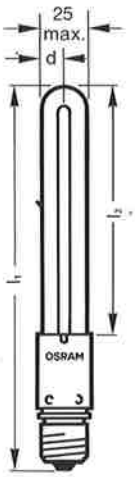
In addition the high radiation intensity in the UV-range enables the use of this lamp for cosmetic purposes e.g. sun-tanning through direct pigmentation. For this type of treatment, however, the radiation flux of the ULTRAMED® lamp in the UV-B range must be reduced by using supplementary filters in order to decrease the danger of sunburn.

Ordering description		ULTRAMED® 400 W
Mains voltage	V AC	220
Output	W	360
Voltage	V	120
Current	Amps	3.5
UV-A radiation flux (315–400 nm)	W	60
UV-B radiation flux (280–315 nm)	W	12
UV-C radiation flux (250–280 nm)	W	4
Luminous flux	lm	12000
Useful life	approx. h	1000
Burning position		horizontal ±30°
Base		R7s
Control gear as for		HQI 400 W
Price		

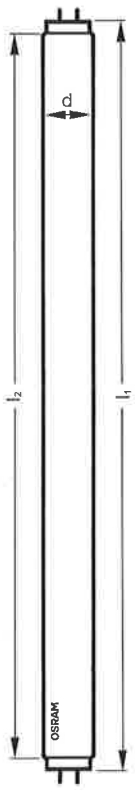
Further information together with a list of equipment manufacturers will be sent upon request.



5 Germicidal- and Ozone Radiation Lamps



HNS 10 W/U



HNS 30 W
HNS 15 W

HNS-Germicidal- and Ozone Radiation Lamps

HNS-Germicidal- and Ozone radiation lamps represent a cost-saving factor on account of their low power consumption, clean operating methods and long operating life and prevent losses resulting from decayed goods whilst at the same time providing healthier surroundings. Their disinfecting effect is equal to a 100-fold air-circulation per hour compared with conventional ventilating plants which allow only a 10-fold air-circulation per hour.

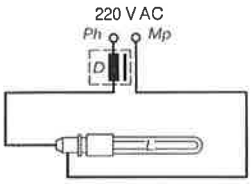
Regarding the results, use of equipment and water-quality the disinfection of water through short-wave UV-radiation is superior to all chemical processes.

Germicidal- and ozone radiation lamps are, therefore, indispensable in all fields of public health and hygiene, the manufacture of foodstuffs, pharmaceutics, bacteriological laboratories, disinfection of drinking water as well as of water in swimming pools and aquariums etc.

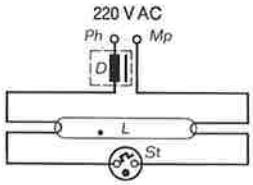
Radiation lamp (ordering abbreviation)		HNS 10 W/U oz[1]) HNS 10 W/U ofr[2])	HNS 15 W ofr[2])	HNS 30 W ofr[2])
Rated voltage	V AC	220	220	220
Current	max. mAmps	170	330	370
Power consumption	W	10	15	30
Irradiation intensity[3])	μW/cm²	35	37	83
UV-radiation flux	W	3.5	3.5	8
Tube diameter d	(Av.) mm	10	26	26
Length l_1	max. mm	221	438	895
Length l_2	max. mm	142	378	835
Base		E 27	G 13[4])	G 13[4])
Standard package	quantity	12	25	25
Starter (see page 28)		built-in	St 111	St 111
Price				

Further information will be sent upon request.

Ballasts and lampholders are available from the electrotechnical industry.



Circuit HNS 10 W/U



Circuit HNS 15 W, HNS 30 W

D = choke
L = radiation lamp
Mp = mid-point conductor
Ph = phase conductor
St = starter

[1]) Germicidal- and ozone radiation lamp.
[2]) Germicidal lamp without ozone radiation.
[3]) UV-radiation 253.7 nm, measured at a distance of 1 m at mid-lamp level at 20° C room temperature, burning free. At distances between 0.3 and 3.0 m radiation is in proportion to the reciprocal value of the square of the distance. Of the HNS 10 W/U lamps the legs of the tube are pointing towards the object receiving the radiation.
[4]) Like fluorescent lamps L 15 W/. .-2 and L 30 W/. .-2.

Germicidal- and Ozone Radiation Lamps

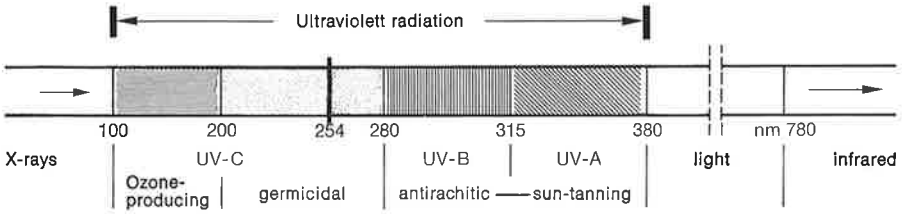
5

OSRAM HNS Germicidal- and Ozone radiation lamps effectively destroy all micro-organisms e.g. bacilli, virus, spores, ferments, algae, protozoa and mould fungi. They prevent sepsis and decay as well as infections through their air- and water-sterilizing effect. The ozone-producing types can be used also for deodorizing purposes e.g. in kitchen ventilators.

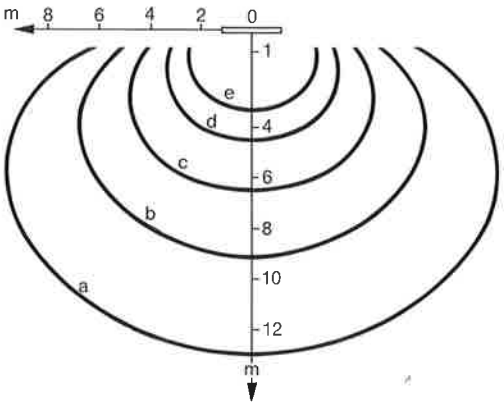
Ultraviolet radiation is an electro-magnetic radiation similar to light or heat. It expands in invisible waves the lengths of which immediately join the wavelengths of light. As shown in the following wavelength-spectrum mainly the radiation in the UV-C range between 200 and 280 nm (1 nm = 10^{-9} m) is germicidal. The destructive effect in the micro-organisms originates in the absorption of the radiation by the protein as a result of which the genetic organs are damaged. This depends on

a) the dosis of radiation = $\frac{\text{UV-energy}}{\text{irradiated area}}$ x time $\frac{\mu W \cdot sec}{cm^2}$ and

b) the possibility of a direct collision between the UV-radiation and the micro-organisms, since UV-radiation in contrast with X-rays (so-called hard radiation) will not penetrate substance.

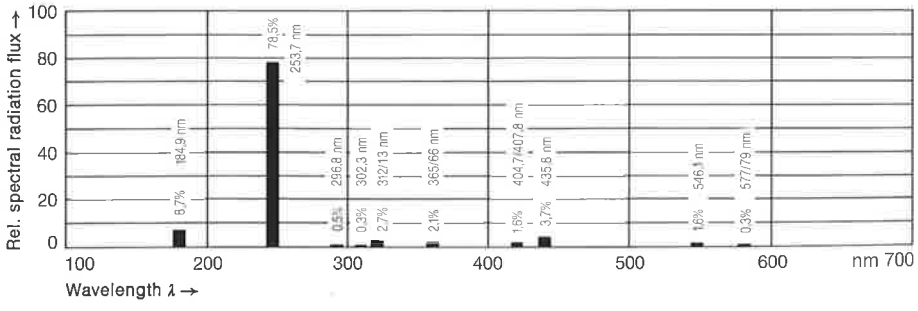


Wavelength-spectrum

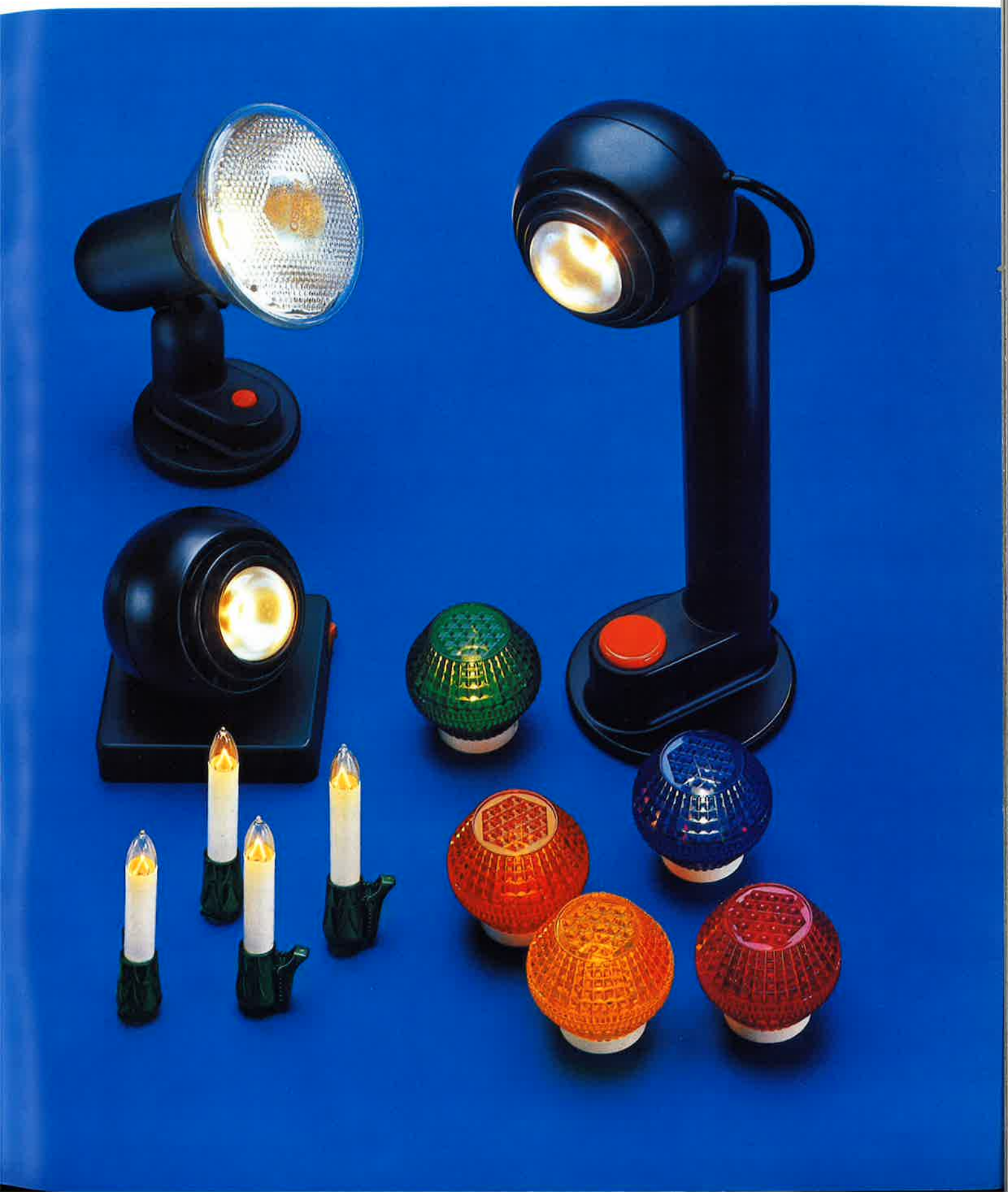


The ratio of the quants which each second hit a spherical cell as shown in the curves a, b, c, d and e is 1:2:4:8:16.

Curves of constant germicidal effect

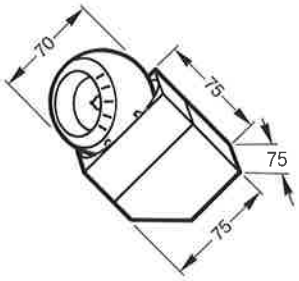


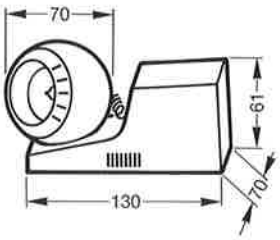
Lighting Sets, Decoration Sets
Radiation Sets



6

MINISPOT
HALOGEN SERVICE-SPOT





MINISPOT

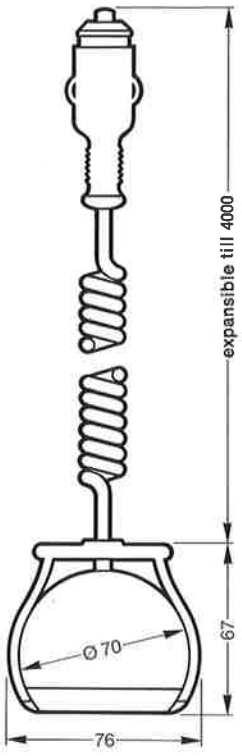
This decorative small handy fitting, equipped with a tungsten-halogen lamp, is available in two versions–cube and "shoe". Both models are equipped with the same attractive stainless steel eyeball fitting. On account of the magnet incorporated in the canopy of the fitting the light beam can be turned in any desired direction. The transformer is also incorporated in the canopy. Equipped with a 2 m long flex with flat plug.

Application:

for home use: spotlighting of paintings, sculptures, flower arrangements etc. and as reading or working light.

for commercial use: light accents from a short distance in shopwindows, showcases, shelves etc. (with ambient temperatures up to 30° C, please read directions for use).

Type	Colour	Watts	Ordering No.	Standard package quantity	Price
Cube with holding clip [1]	white or black	20	41601	4	
Shoe with holding rod [1]	white or black	20	41701	4	
Replacement tungsten-halogen lamp 12 V with reflector		20	41900 BLI [2]	20	



HALOGEN SERVICE-SPOT

Tungsten-halogen light from the cigarette lighter for progressive and safety-conscious motorists and sportsmen. Can be used everywhere and is easily attached on account of its holding magnet. The HALOGEN SERVICE-SPOT combines in a handy modern fitting a superb functional beauty with many possibilities of application e.g.

during motor-car trips as searchlight with a 30 m beam, reading lamp for map reading, illumination of carboot or as auxiliary light for tyre changing

during camping as caravan and tent lighting

aquatic sports: cockpit or cabin lamp, working lamp, searchlight for mooring.

With its attractive gift box and leather pouch the HALOGEN SERVICE-SPOT by OSRAM is an ideal gift.

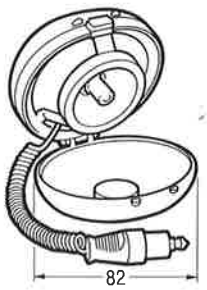
Type	Colour	Watts	Volt	Ordering No.	Standard package quantity	Price
HALOGEN SERVICE-SPOT	stainless steel	20	12	41502	4	
Replacement tungsten-halogen lamp with reflector		20	12	41900 BLI [2]	20	

[1] For wall and ceiling mounting.
[2] Blister-pack; available also in standard pack, Ordering No. 41 900.

HALOGEN MOBIL-SPOT
MINI STAR
MAXISPOT

6

Type	Colour	Watts	Volt	Ordering No.	Std. pckg. qty.	Price



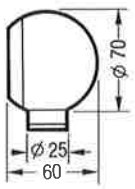
HALOGEN MOBIL-SPOT

The "light-oyster" that has got it! Beautiful design, space-saving, robust. For the motor-car, boat or camping. Plenty of energy-saving light from any 12-Volt energy source.

This ideal multiple-purpose fitting consists of 2 shells of shock- and heat-resistant polyamide. The reflector with its tungsten-halogen lamp, housed in one shell, and the 2 m long coiled flex with standard plug and adapter in the other, are perfectly safe from dust, spray water, oil, petrol and mechanical damage.

The hinge of the HALOGEN MOBIL-SPOT is constructed in such a way that the opened shells can be stopped at any desired angle (90°–180°). With its strong permanent magnet in its lid it can easily be attached. The beam (with a reach of up to 30 m) can be turned in any desired direction.

HALOGEN MOBIL-SPOT	black	20	12	41505	5	
Replacement tungsten-halogen lamp with reflector		20	12	41900 BLI[1])	20	

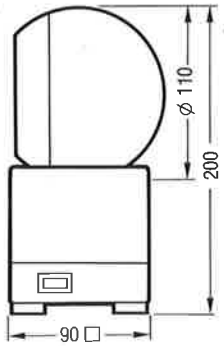


MINI STAR

This tungsten-halogen-light fitting which is ready for mounting will solve many lighting problems. It can be used for light accents in shopwindows, showcases, museums, galleries, exhibition rooms etc.

The attractive eyeball fitting of brushed stainless steel is held by a black magnet with plastic plate. The beamed light can be turned in any desired direction. It is equipped with a 1 m long black flex with special plug for the spherical fitting. The necessary transformer can be obtained from electrotechnical dealers.

MINI STAR	stainless steel	20	12	41301	8	
Replacement tungsten-halogen lamp with reflector		20	12	41900 BLI[1])	20	



MAXISPOT

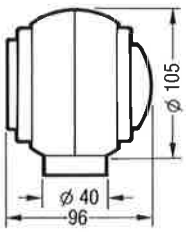
A mini fitting with a maximum of light. At home or commercially it offers many possibilities for spotlighting or light accents. The 50 W tungsten-halogen lamp enables light accents even in bright surroundings with its far reaching narrow beam.

MAXISPOT is available in black or white. The spherical lamphouse with the tungsten-halogen reflector lamp is fitted on the cubical canopy and can be turned or swivelled. Transformer, fuse and rocker switch are incorporated in the canopy. The fitting can be mounted on the wall with a bracket which is supplied with the fitting. Equipped with a 2 m long flex with flat plug.

MAXISPOT	white or black	50	220–230	43601	4	
Replacement tungsten-halogen lamp with reflector		50	12	64442 BF	20	

[1]) Blister-pack; available also in standard pack, Ordering No. 41900.

6 MAXI STAR AGILETTE



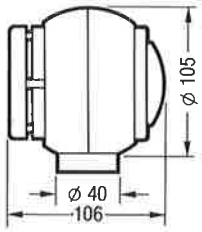
MAXI STAR

MAXI STAR

This tungsten-halogen-light fitting is ready for installation and can be used for many purposes, e.g. light accents in shopwindows, showcases, museums, galleries, exhibition halls, etc.

MAXI STAR is available as spotlight with a narrow beam or floodlight with a wide beam. MAXI STAR COOL is particularly suitable for spotlighting heat-sensitive objects; its heat-protection shield reduces the emitted heat by more than 90 %.

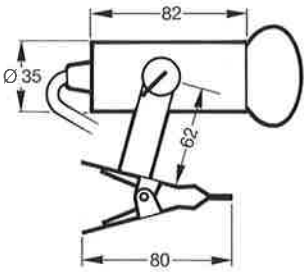
The spherical fitting of black steel is held by a threaded magnet so that the light can be turned in any desired direction. With the strong light emitted by the 50 W HALO STAR tungsten-halogen reflector lamp optimal illumination results can be obtained for commercial purposes as well as in the home. Equipped with a 1 m long black flex. The necessary transformer can be obtained from electrotechnical dealers.



MAXI STAR COOL

Type	Beamspread	Watts	Volt	Ordering No.	Standard package quantity	Price
MAXI STAR	SPOT 10°	50	12	43801	3	
MAXI STAR	FLOOD 30°	50	12	43701	3	
MAXI STAR COOL	SPOT 10°	50	12	43811	3	
MAXI STAR COOL	FLOOD 30°	50	12	43711	3	

Replacement tungsten-halogen reflector lamp HALO STAR 50 W 12 V
Ordering No. 64442 BF SPOT and 64443 BF FLOOD, see page 14.



AGILETTE

This small clamp fitting can be used both as reading or working lamp.
The beamed light of the CONCENTRA® R 50 reflector lamp can be turned in any desired direction. With its clamp it is ready for use on the table, bookshelves etc. and is available in two versions:

Sales-promoting blister-pack for self-service stores
Travel set with zippered pouch

Advantages:

Small dimensions which make it popular for travelling.
Universally adjustable.
Easy to use with a 1.5 m long flex with torpedo switch and flat plug.
The clamp fits on shelves of up to 30 mm thickness.
Dull-black lacquered metal fitting.
Beamed light from the 40 W CONCENTRA® R 50 reflector lamp.

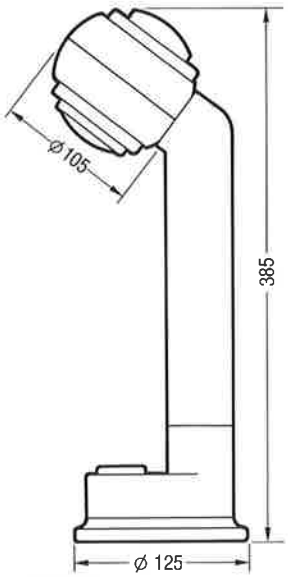
Type	Colour	Watts	Ordering No.	Standard package quantity	Price
AGILETTE Blister-pack	black	40	42720	10	
AGILETTE Travel set	black	40	42760	10	

Replacement lamp CONCENTRA® R 50 with 35° beamspread, 40 W or 25 W, see page 9.

AGILO

6

Type	Colour	Watts	Ordering No.	Standard package quantity	Price



AGILO L

AGILO

Fittings of exceptional functional beauty for beamed light, available in four different versions:

AGILO L
The desk lamp with high stem and great stability

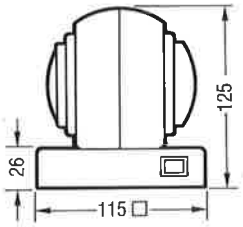
AGILO W
for wall mounting with flat canopy, rocker switch and built-in terminal

AGILO K
with adjustable clamp which fits on shelves with a thickness of 12–30 mm

AGILO T
the table lamp with large base area and great stability

Advantages:

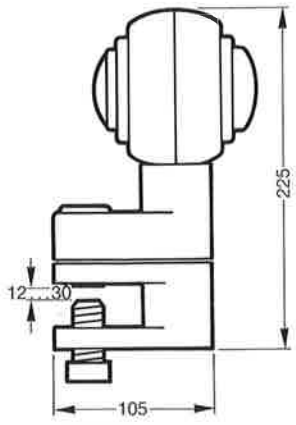
focussed beam from 40 W CONCENTRA® R 50 lamp
outstanding design
lamp and fitting make up a unit
high-quality plastic lamphouse
easy mains connection
2.5 m long flex with flat plug and large switch button
for AGILO L, AGILO T and AGILO K



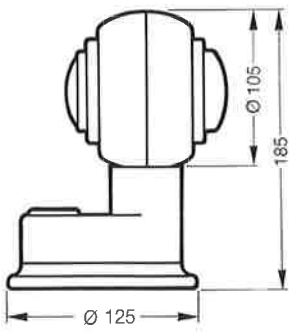
AGILO W

AGILO L 40 Desk lamp	white or black	40	42901	4
AGILO W 40 Wall fitting	white or black	40	42801	4
AGILO K 40 Clamp fitting	white or black	40	42701	4
AGILO T 40 Table lamp	white or black	40	42601	4

Replacement lamp CONCENTRA® R 50 with 35° beamspread 40 W or 25 W, see page 9.



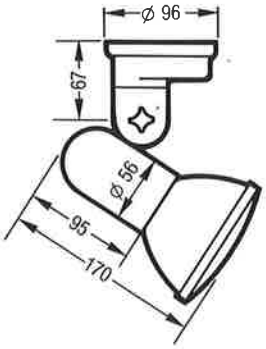
AGILO K



AGILO T

6

CONCENTRA® PAR-Set
CONCENTRA®-Set



CONCENTRA® PAR-Set

This set which can be used everywhere and is easily installed
creates light pools
is an ideal light source for spotlighting of paintings and sculptures
provides light accents in shopwindows, at exhibitions and industrial fairs
serves as reading or working lamp
and was developed for modern interior decoration.

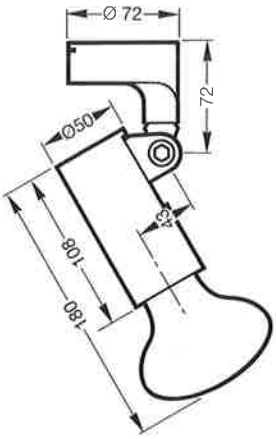
This sturdy 75 W SPOT or FLOOD CONCENTRA® PAR 38 reflector lamp of pressed glass makes up an optimal unit with the fitting of high-quality black plastic.

This brilliant light source which can be turned and swivelled, can be mounted on wall or ceiling and has a red rocker switch incorporated in the canopy.

Type	Beamspread	Colour	Watts	Ordering No.	Std. pckg. qty.	Price
CONCENTRA® PAR-Set 75 W	SPOT 15°	black	75	20332	5	
CONCENTRA® PAR-Set 75 W	FLOOD 40°	black	75	20331	5	

Replacement lamp CONCENTRA® PAR 38 75 W, SPOT resp. FLOOD, see p. 10.

It is recommended that the distance between lamp and combustible material should not be less than 50 cm.



CONCENTRA®-Set

Beamed light in rooms: a modern light source of functional beauty with the well-proved 75 W or 100 W CONCENTRA® lamp by OSRAM.
Fitting and lamp are available as a set in an attractive handy box.
It offers many possibilities of application for interior decoration:

The CONCENTRA®-Set creates light pools
is ideal for spotlighting of paintings, sculptures etc.
serves as reading or working lamp
puts accents in showcases.

The fitting can be turned and swivelled and can be mounted on walls and ceilings.

Type	Beamspread	Colour	Watts	Ordering No.	Std. pckg. qty.	Price
CONCENTRA®-Set 75	35°	white	75	20311	5	
CONCENTRA®-Set 100	35°	white	100	20312	5	

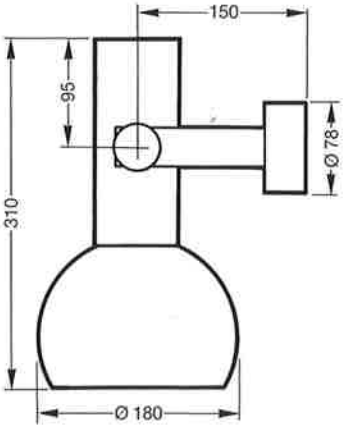
Replacement lamps CONCENTRA® 75 W and 100 W with 35° beamspread, see page 9.

It is recommended that the distance between lamp and combustible material should not be less than 30 cm.

POWER STAR-Set 250 W
FLORA-Set

6

Type	Colour	Watts	Ordering No.	Standard package quantity	Price



POWER STAR-Set 250 W

The POWER STAR-Set 250 W with the new 250 W metal halide reflector lamp makes up a complete unit ready for installation. It represents the ideal combination of modern design and functional service. The fitting is adjustable and can be installed everywhere. The HQI-R 250 W lamp offers excellent colour rendering and a very high luminous efficacy. Useful luminous flux is 60 lm/W whilst the beamspread is 40°.

The set consists of:

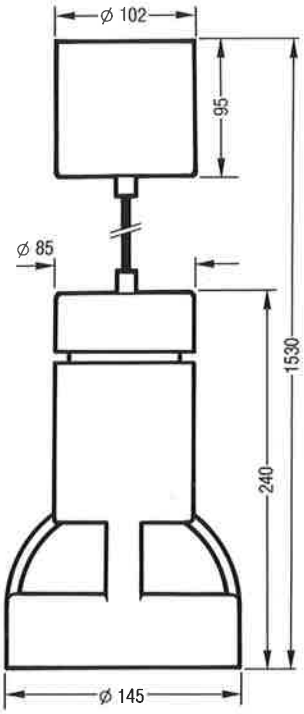
HQI-R 250 W mushroom-shaped metal-halide reflector lamp.
The matt-black finished metal fitting with supply terminal can be turned 350° on its base and swivelled 180° in its stirrups bracket. The igniter is incorporated in the dome of the lamphouse with easy accessibility to startelement StE 501. The choke has 4 free leads. Accessories as per VDE 0712. Connector box with 4 terminals for connection with the feeder wires.

Application:

Shopwindow illumination, especially as supplementary illumination during daytime, spotlighting of certain objects,
irradiation of decorative plant groups in rooms,
daylight pools in draperies etc.

POWER STAR-Set 250 W	black	250	76011	1	

Replacement lamp HQI-R 250 W/NDL, see page 34.



FLORA-Set

The FLORA-Set offers the optimal illumination of plants. For groups of plants which are a major design element for interior decoration light is an elementary factor for their growth.

Sufficient light, however, is not always available but this problem can be solved with the FLORA-Set. The discharge lamp emits those spectral light colours which are required to excite the photosynthesis and through the so-called substances favourably influence the growth, the ability to blossom and many other factors.

The FLORA-Set is a pendant of modern design ready for use. The ballast which is required for the operation of this set is incorporated in the canopy which makes this set suitable for mains operation. The flex between fitting and canopy can be shortened optionally.

Application:

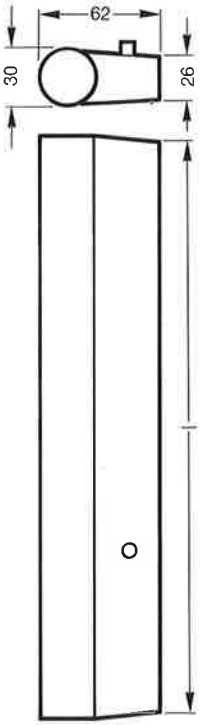
Irradiation of plants in the home, landscape offices, at industrial fairs and exhibitions, in museums, foyers etc.

FLORA-Set	black	80	76110	4	

Replacement lamp HQL-R 80 W DE LUXE, see page 37.

6

LINESTRA®-Set
LUNETTA



LINESTRA®-Set

The LINESTRA® tubular lamp by OSRAM of which millions have been sold is available also as part of a set which is ready for installation.

Two types, viz. LINESTRA®-Set 35 and LINESTRA®-Set 60 are available in an attractive and handy box which has great advertising value.

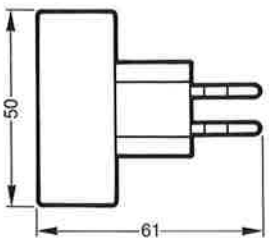
The lampholder of white fiberglass-reinforced plastic with incorporated press button switch is supplied with screws and dowels for easy installation.

The soft light on account of the opalin coating is pleasant, cosy and indeed flattering for the complexion.

LINESTRA® tubular lamps offer a photometrically correct and tasteful illumination in the home, e.g. for mirrors, kitchens, hanging cupboards, wardrobes or as modern light sources on large wall areas.

Type	Watts	Length l mm	Ordering No.	Standard package quantity	Price
LINESTRA®-Set 35	35	300	92410	5	
LINESTRA®-Set 60	60	500	92420	5	

Replacement LINESTRA® tubular lamps 35 W and 60 W (Ordering No. 1603, resp. 1604), see page 7.



LUNETTA

A soft night- and orienting light which does not disturb. Available with red or green glow light. It has sufficient brightness to enable orientation in an otherwise unlighted room. Ideal for nurseries, bedrooms, hospital rooms as well as corridors, staircases and rooms without windows.

LUNETTA is especially suited for nurseries. This friendly nightlight takes away the fear from children before falling asleep. The illustrations of animals on the LUNETTA will soon help the children to become accustomed to it.

LUNETTA has an attractive design and is made of white plastic with a flat plug which fits in every conventional wall socket. The power consumption is minimal, e.g. uninterrupted use of this 0.3 Watt nightlight costs no more than a few pennies a year. The operating life of LUNETTA is practically unlimited.

Available in sales-promoting blister-pack.

Type	Dimensions of the hood	Total length mm	Base	Standard package quantity	Price
LUNETTA Red	50 x 50	61	flat plug	20	
LUNETTA Green	50 x 50	61	flat plug	20	

LUMILUX® Combi
THERATHERM® Infradred-Radiation-Set
Tablestand G 176

6

Type	Colour	Watts	Ordering No.	Standard package quantity	Price

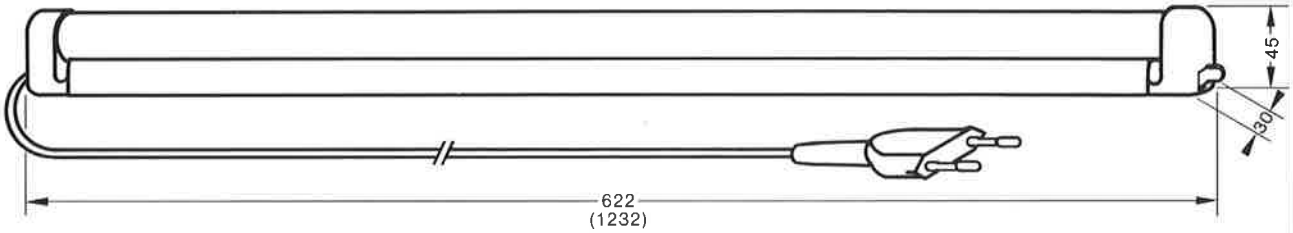
LUMILUX® Combi

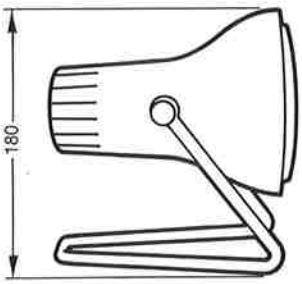
New double insulated flat fitting offering the advantages of the LUMILUX® fluorescent lamps: high luminous efficacy with excellent colour rendering, low power consumption and long operating life.

LUMILUX® Combi can be used as working light in the kitchen, nursery, hobby room; for indirect illumination; in furniture or as supplementary light in the bathroom. Easy mounting on all types of material. Ballast and fuse are incorporated in the fitting. 2 m long flex with flat plug.

LUMILUX® Combi 18 W	white or black	18	72011	4	
LUMILUX® Combi 36 W	white or black	36	72021	4	

For replacement lamps LUMILUX® L 18 W/31, resp. L 36 W/31, see page 23.





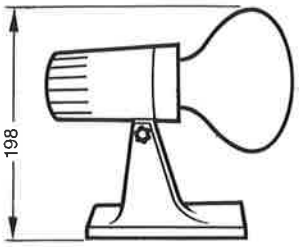
THERATHERM® Infrared-Radiation-Set

Well-proved radiation sets with translaminar effect on account of its shortwave infrared radiation. They have a therapeutic and pain-soothing effect and are recommended for all ailments which require heatray treatment. Suitable also for cosmetic purposes.

THERATHERM® DE LUXE-Set G 172. A modern appliance equipped with a robust 150 W pressed-glass radiation lamp.

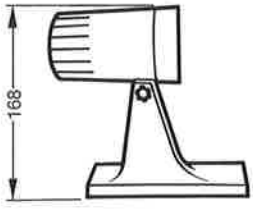
THERATHERM®-Set G 176–a reasonably priced set equipped with a 250 W infrared radiation lamp.

G 172: ⧈ Ⓢ G 176: ⧈ DVE ⒹⓃⓈⓈ



Type	Watts	Standard package quantity	Price
THERATHERM® DE LUXE-Set G 172	150	4	
THERATHERM®-Set G 176	250	4	

For replacement radiation lamps THERATHERM® DE LUXE 150 W and THERATHERM® 250 W, see page 63.



Tablestand G 176

Suitable for sunlamp ULTRA-VITALUX® and infrared radiation lamp THRATHERM® 250 W. See pages 62 and 63.

It consists of an orange fitting with black distance ring both of heat-proof plastic and a light-grey base. Equipped 1.5 m long flex with flat plug.

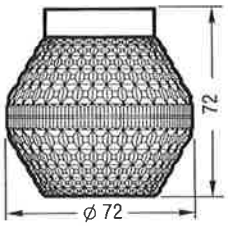
⧈ DVE ⒹⓃⓈⓈ

Universal tablestand G 176	6	

6

PARTYLUX®
LIGHTSTAR

Type	Ordering No.	Watts	Volt	Standard package quantity	Price



OSRAM-PARTYLUX®

OSRAM-PARTYLUX® is a colourful set which enhances the atmosphere in bars, nightclubs, restaurants as well as parties at home. PARTYLUX is an eye-catcher when displayed in shopwindows and salesrooms. It offers a welcome solution for decoration problems and attracts the attention of customers to special offers.

It has numerous ways of application and wrapped in an attractive box it is a welcome gift article.

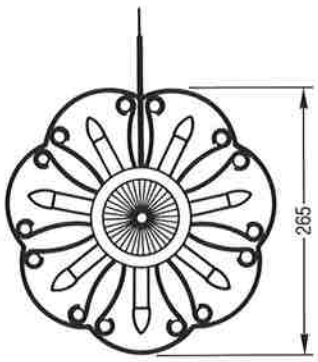
OSRAM-PARTYLUX® is a high-quality decoration set of exclusive design which can be used with many variations:
By interchanging the halves of the various coloured crystal shades it is possible to obtain interresting effects. An attractive alternative is reached by removing the lower part of the crystal lampshades.

10 crystal shades in five colours: red, blue, green, yellow and orange with spaces of 50 cm in between. Total length 6.5 m with 2 m long white flex.

11 crystal shades and 11 candle lamps including a spare one of each.

10 lampholders of white knock-resistant plastic.

PARTYLUX	21010	30	220–230	5	
Replacement lamp	6123 BLI	3	23	80[1])	



LIGHTSTAR

This shining star originates from Sweden and offers many possibilities of application during the advent season and the Christmas period. At the window it is a bright eye-catcher whilst as decoration over the table or on the wall it creates a cosy Christmas atmosphere in the home.

Commercially it offers great possibilities for window-dressing purposes. As Christmas decoration the LIGHTSTAR is suitable also for hotels, restaurants, kindergardens, homes for the aged and sanatoriums and can be installed everywhere without problems or great expense.

Compared with traditional Christmas decorations the LIGHTSTAR offers considerable advantages:

safe operation, no danger of fire like with real burning candles,
troublefree uninterrupted operation with little expense,
clean operation (no melted wax or fallen pine-needles).

The LIGHTSTAR consists of a

black metal star with 7 red candles and red and green plastic decoration.
4 m long flex with flat plug and suspensor.
Equipped with 7 top candles.

LIGHTSTAR	40010	21	220	3	
Replacement lamp	6125 BLI	3	34	80[1])	

[1]) Blister-pack; available also in bulk-pack of 1200 pcs., Ordering No. 6123, resp. 6125.

Christmas Candles

6

Ordering abbreviation	Candle shaft colour	Watts	Standard package quantity	Replacement lamp Ordering No.	Price

The OSRAM Christmas candle-set is a high-quality product that has proved itself and is popular on account of its reliability and safety which is guaranteed by the VDE-sign.

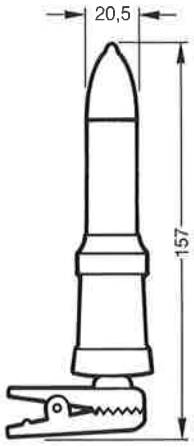
Four various sets are available to satisfy the individual needs for out- and indoor illumination as well as any other type of Christmas decoration.

OSRAM Christmas candle-sets are packed ready for use in boxes with a transparent lid which makes it possible to show the customer the set in a burning condition. In addition these sets have the following considerable advantages:

Shaft candles which closely resemble real candles because the light shines through the opaque upper part of the candle shafts.
Because of the vertical clips the candles will always stay upright on the branches of the Christmas tree.
The colour of the flex closely resembles the colour of the branches of the Christmas tree and, therefore, the flex remains almost invisible.

The candles have an ivory-coloured shaft and the well-proved series cutout.

An electric OSRAM Christmas candle-set can be burned for long periods. It has a long operating life with negligible power consumption.



15-candle Outdoor-set

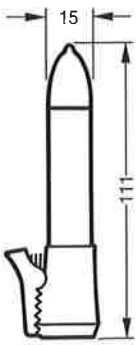
Equipped with candles.
Suitable for up to 3 m tall Christmas trees and can be used indoors as well as outdoors. Total length of the set is 17 m. It has a two-part plug which facilitates its installation.

15 watertight holders with clip which can be released. The candles are spaced at 1 m intervals whilst the length of the flex is 1.5 m.

15 mounted wax-coloured candle lamps with scratch-proof plastic-coated shafts and series cutout. 1 spare candle lamp.

15 assembled seals for the holders.

CAK 15	ivory	15x7	5	6141



15-candle Indoor-set

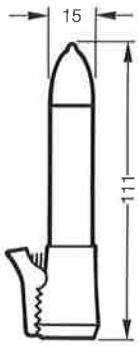
Equipped with candles.
Suitable for up to 1.8 m tall Christmas trees. Total length of the set is 11.4 m. It can be separated at the centre and has a two-part plug which facilitates its installation.

15 lampholders with vertical clip which are spaced at 60 cm intervals whilst the length of the flex is 1.5 m.

15 mounted wax-coloured candle lamps with scratch-proof plastic-coated shafts and series cutout. 1 spare candle lamp.

CIK 15	ivory	15x3	10	6131

6 Christmas Candles



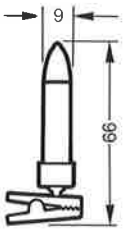
10-candle Indoor-set

Equipped with candles.
Suitable for 1 m tall Christmas trees. Total length of the set is 8.4 m.
It has a two-part plug which facilitates its installation.

10 lampholders with vertical clip which are spaced at 60 cm intervals whilst the length of the flex is 1.5 m.

10 mounted wax-coloured candle lamps with scratch-proof plastic-coated shafts and series cutout. 1 spare candle lamp.

Ordering abbreviation	Candle shaft colour	Watts	Standard package quantity	Replacement lamp Ordering No.	Price
CIK 10	ivory	10x3	10	6134	



16-miniature-candle Indoor-set

Suitable for 75 cm tall Christmas trees, twigs and table decoration.
Total length of the set is 7 m. It has a two-part plug which facilitates its installation.

16 candle-shafts with interchangeable clear cap and holding clip which can be released. The candles are spaced at 26 cm intervals whilst the length of the flex is 1.5 m.

17 miniature candle lamps with series cutout including a spare lamp.

16 coloured caps which transform the set into a colourful decoration set.

Ordering abbreviation	Candle shaft colour	Watts	Standard package quantity	Replacement lamp Ordering No.	Price
CKK 16	ivory	16x1	12	6118	

Christmas decoration sets with top candle lamps

OSRAM Christmas decoration sets with top candle lamps are available as 10- and 15-candle indoor sets as well as a 15-candle outdoor set.
Further information is available in a separate product information bulletin.

Replacement Candle Lamps
Spare Parts for Christmas Candles
PLASTIFLOR-Christmas Tree

6

Ordering No.	Suitable for Christmas decoration set	Watts	Volt	Base	Std. pckg. qty.	Blister-pack quantity	Price
Replacement candle lamps							
For all OSRAM Christmas decoration sets replacement candle lamps are available also as blister-pack suitable for self-service.							
6131	CIK 15	3	14	E 10	600	20 = 60 candles	
6134	CIK 10	3	23	E 10	600	20 = 60 candles	
6118	CKK 16	1	16	W 2 x 4.6 d	600	20 = 120 candles	
6141	CAK 15	7	14	E 14	720	20 = 60 candles	
6115 [1])	26100	3	12	W 2.1 x 9.5 d	180	20 = 80 candles	

Spare parts for Christmas candle lamps

Type	Suitable for Christmas decoration set	Ordering description	Standard package quantity	Price
Spare clips	CIK 10, CIK 15	CIK/K	1000	
Spare clips	CKK 16	CKK/K	1000	
Spare clips	CAK 15	CAK/K	1000	
Seals	CAK 15	CAK/D	4000	
Spare clips	17152 (old)	AK/K	100	
Spare clips	16151, 16161 (old)	IK/K	1000	

PLASTIFLOR Christmas tree for 16-miniature-candle-set

A natural-looking collapsible 70-cm tall plastic Christmas tree with stand which will hold for many years.

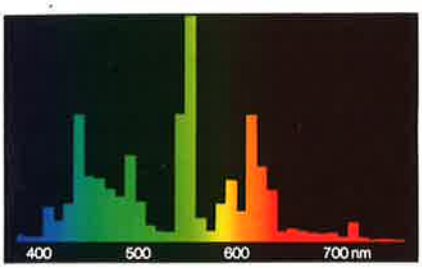
Christmas tree	CKK 16	PLASTIFLOR	6	

[1]) Replacement lamps for current types.

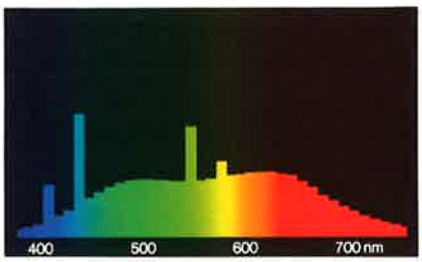
7 Spectral Radiation Distribution of Fluorescent Lamps

Visible range from 380 to 780 nm
Based on 1000 lm in mW/10 nm
Height of illustration corresponds with $\frac{400\ mW}{1000\ lm \cdot 10\ nm}$

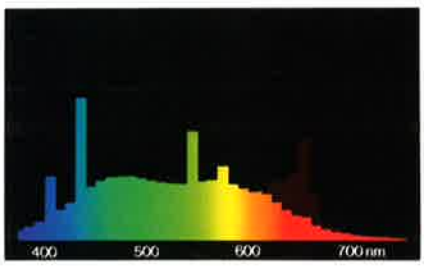
tw
daylight white



Colour 11 LUMILUX® Daylight

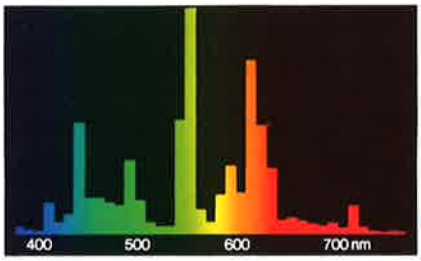


Colour 19 Daylight 5000 de Luxe

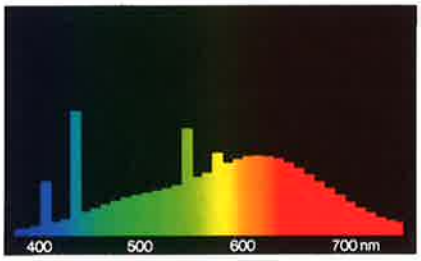


Colour 10 Daylight

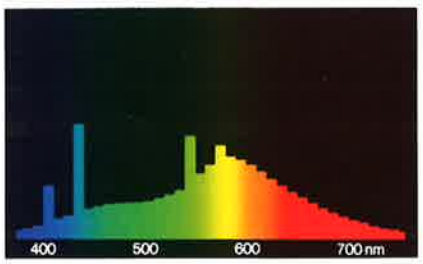
nw
neutral white



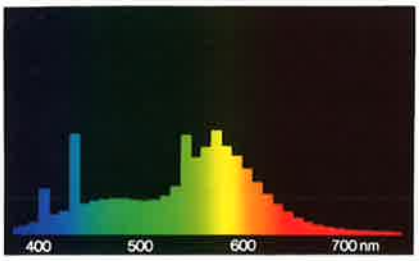
Colour 21 LUMILUX® White



Colour 22 White de Luxe

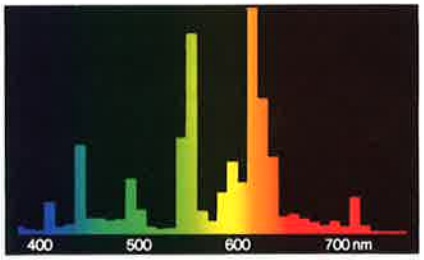


Colour 25 Universal-White

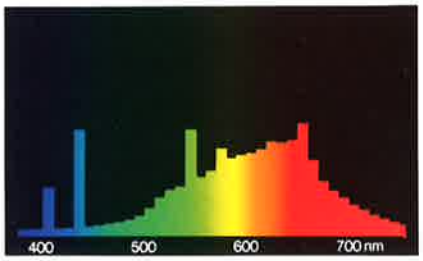


Colour 20 Cool white

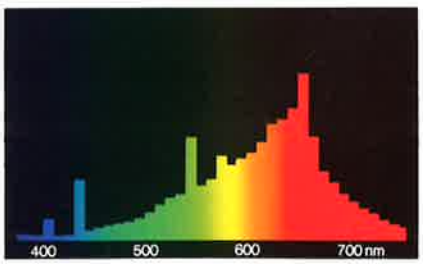
ww
warm white



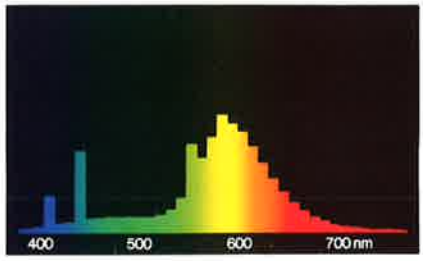
Colour 31 LUMILUX® Warm white



Colour 32 Warm white de Luxe

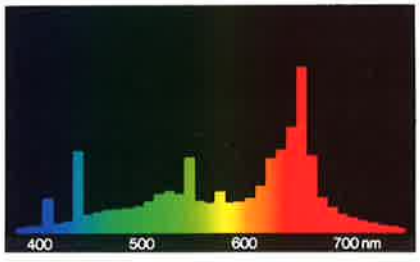


Colour 39 INTERNA

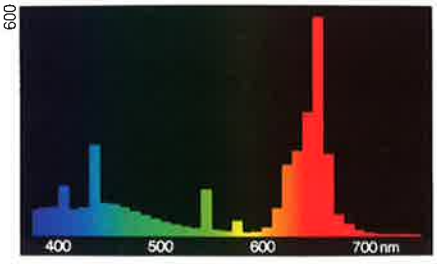


Colour 30 Warm white

Light colours
with special properties



Colour 36 NATURA



Colour 77 FLUORA®

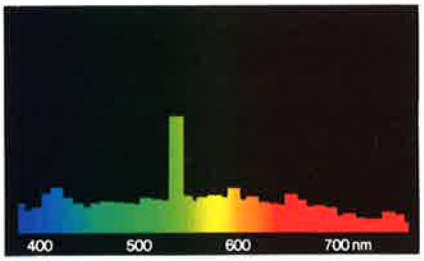
Colour 77 based on
rated luminous flux in mW/10 nm

1 nm (Nanometer) = 10 Å = 10^{-9} m

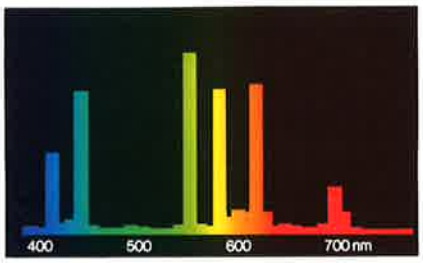
Spectral Radiation Distribution of Discharge Lamps

Visible range from 380 to 780 nm
Based on 1000 lm in mW/10 nm
Height of illustration corresponds with $\frac{400\ mW}{1000\ lm \cdot 10\ nm}$

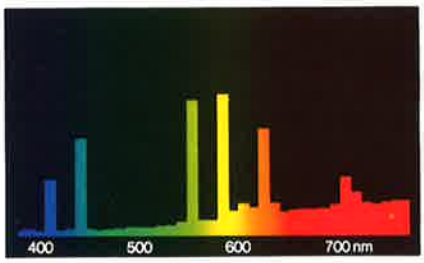
7



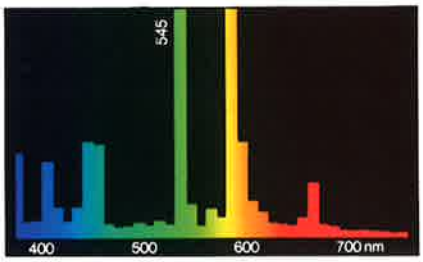
POWER STARS HQI . . ./D



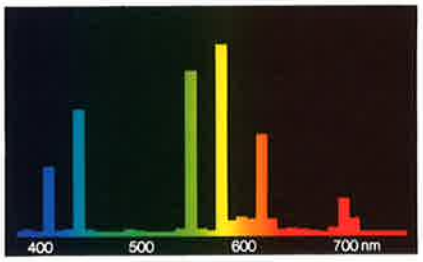
HQL DE LUXE



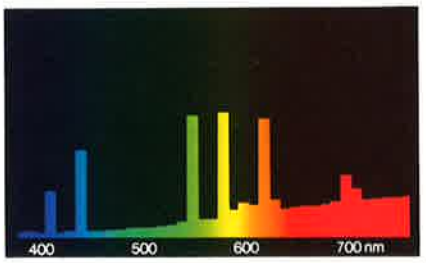
HWL



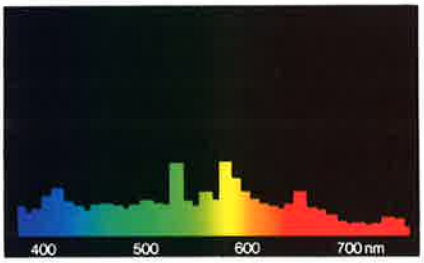
POWER STARS HQI . . ./N



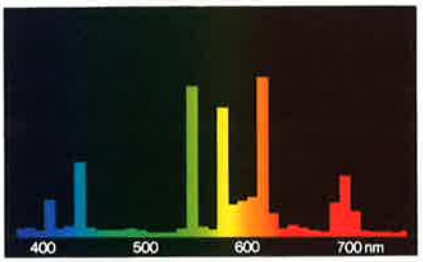
HQL



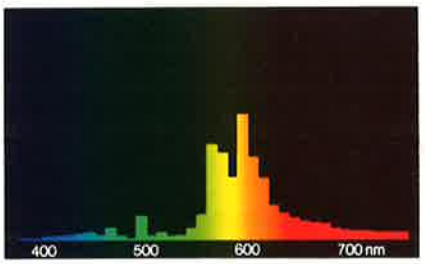
HWL-R DE LUXE



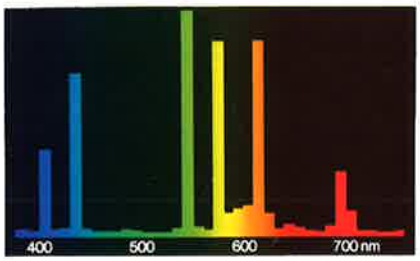
POWER STARS HQI . . ./NDL



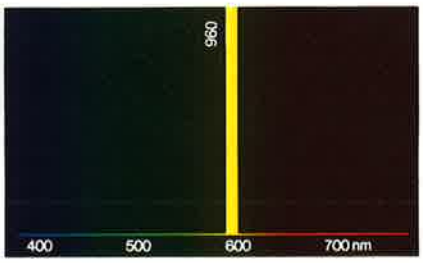
HQL-B DE LUXE



VIALOX® NAV



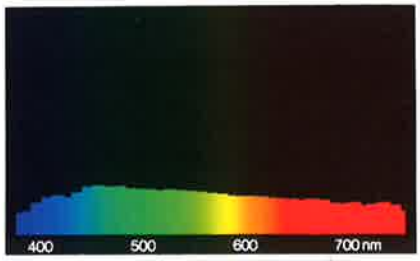
HQL-R DE LUXE



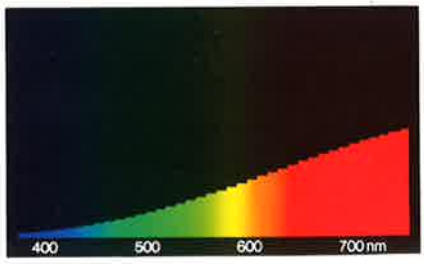
NA

Daylight
based on $\frac{mW}{m^2 \cdot 1000\ lx \cdot 10\ nm}$

Light of incandescent lamps
based on 1000 lm in mW/10 nm



Daylight (D 65)



Light of incandescent lamp

1 nm (Nanometer) = 10 Å = 10^{-9} m

8 Sales Programme

Sales Programme

Indoor and Outdoor Lighting
General Lighting Service Lamps
Fluorescent Lamps
Discharge Lamps
Miniature Lamps
Reflector Lamps
Fittings, Decoration Sets, Radiator Sets

Automotive Lamps
Car Lamps
Motorcycle Lamps
Bicycle Lamps
Car and Motorcycle sparelamp boxes
Sales-Aids

Signal Lamps
MINIWATT® Lamps
Telephone Lamps
Radiopanel Lamps
Aircraft Lamps
Glow Lamps
Pygmy Lamps

Traffic Light Lamps

Photo- and Filmlights
FlipFlash, FlashBar, Flashcube, VACUBLITZ®
SUPERPHOT® and NITRAPHOT® Photographic Lamps
BELLAPHOT® Lamps for Slides- and Cine Projection
Projector Lamps
Cinema and Episcope Lamps
Enlarger Lamps
Darkroom Lamps
Tungsten-Halogen Incandescent Lamps for Overhead and Advertising Projectors
Microfilm Reading Apparatuses and for Use in Microscopes
HCI Metal Halide Lamps for Overhead Projectors
Photo- and Filmlights
Electronic Flash Units

Light for Studios and Stage
Lamps for Film, TV and Photo Studios
Lamps for Stagelighting
HMI METALLOGEN® Projector Lamps

Light for Cine Projection, Technology and Science
HBO Short-Arc Mercury Lamps
XBO Short-Arc Xenon Lamps
XBF Water-cooled High Pressure Xenon Lamps
KBF Water-cooled High Pressure Krypton Lamps
XIE Impulse-Discharge Xenon Lamps
EURAM® Electronic Flashtubes
Spectral Lamps
Tungsten-Halogen Lamps for Airport Lights
Tungsten-Halogen Infrared Reflector Lamps
Lamps for Scientific Application

General Information

8

General Information
The technical data are in accordance with the DIN (German Industrial Standards) and IEC (International Electrotechnical Commission).

All lamps–with the exception of those lamps which are clearly marked otherwise–are constructed for supply voltages of 220–230 Volt.

The supply of lamps which are not mentioned–including those with deviating lampbases and voltages–will be investigated upon request.

Sales and delivery are subject to the OSRAM Terms of Delivery and Payment valid on the day the sales contract was effected.

Operating data and dimensions are subject to the usual insignificant tolerances.

Technical modifications and the possibilities of supply are reversed.

® = Registered Trademark

The lamps are wrapped in the original bright »white-orange" folding box.

The packing units differ depending on the size and the shape of the lamps.

Orders based on these packing units enjoy important advantages:

Prompt delivery
Simple and cost-saving warehouse handling
No time-consuming individual count at arrival of the goods
Exact contents description on each stacked carton
No danger of wrong type identification
Less breakage.

OSRAM Gesellschaft mit beschränkter Haftung Berlin · München
866/1E/479 Printed in West Germany