TESLA

NOVÉ ZÁMKY, Ltd.


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ZÁMKY, a.s.

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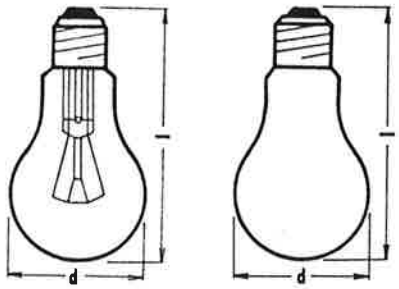
GENERAL LIGHTING SERVICE LAMPS

These are conventional incandescent light sources. The main advantages of these devices are low price and easy operation in different types of luminaires.
This range of lamps includes:
- Clear or frosted incandescent lamps rated up to 200 W
- Long life lamps
- Decorative, candle, pear-shaped and tubular lamps
- Linear tungsten halogen lamps
- Vibration proof lamps
- Low voltage lamps

CLEAR OR FROSTED INCANDESCENT LAMPS RATED UP TO 200 W

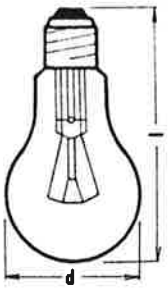


Voltage V	Wattage W	Luminous flux lm	Life h	Base*)	d mm	l mm	Packing pcs
125	25	260	1000	E 27	60±1	102±2	100
125	40	490	1000	E 27	60±1	102±2	100
125	60	820	1000	E 27	60±1	102±2	100
125	75	1070	1000	E 27	60±1	102±2	100
125	100	1560	1000	E 27	60±1	102±2	100
125	150	2460	1000	E 27	80±1	159±3.5	100
125	200	3360	1000	E 27	80±1	159±3.5	50
225	25	230	1000	E 27	60±1	102±2	100
225	40	415	1000	E 27	60±1	102±2	100
225	60	715	1000	E 27	60±1	102±2	100
225	75	950	1000	E 27	60±1	102±2	100
225	100	1350	1000	E 27	60±1	102±2	100
225	150	2180	1000	E 27	68±0.8 80±1	117±3.5 159±3.5	100
225	200	3010	1000	E 27	80±1	159±3.5	50
240	25	225	1000	E 27	60±1	102±2	100
240	40	410	1000	E 27	60±1	102±2	100
240	60	700	1000	E 27	60±1	102±2	100
240	75	930	1000	E 27	60±1	102±2	100
240	100	1330	1000	E 27	60±1	102±2	100
240	150	2160	1000	E 27	68±0.8 80±1	117±3.5 159±3.5	100
240	200	2980	1000	E 27	80±1	159±3.5	50

*) Type B 22d is available in agreement with the manufacturer

LONG LIFE LAMPS

With life of more than 1000 hours, lamps are ideal for application in hardly accessible luminiaires and locations with long interval maintenance.

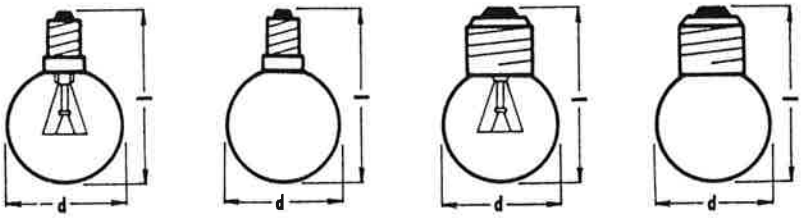


Voltage V	Wattage W	Luminous flux lm	Life h	Base*)	d mm	l mm	Packing pcs
225	40	360	2500	E 27	60±1	102±2	100
225	40	300	5000	E 27	60±1	102±2	100
225	60	620	2500	E 27	60±1	102±2	100
225	60	540	5000	E 27	60±1	102±2	100
225	75	700	5000	E 27	60±1	102±2	100
225	100	1170	2500	E 27	60±1	102±2	100
225	100	1000	5000	E 27	60±1	102±2	100

*) Lamps having base type B 22d are available in agreement with the manufacturer.

CLEAR OR FROSTED DECORATIVE LAMPS

These are conventional incandescent filament lamps designed for application in adequate luminaires in all locations where standard lamps can not be used due to a shortage of space or for aesthetic reasons.

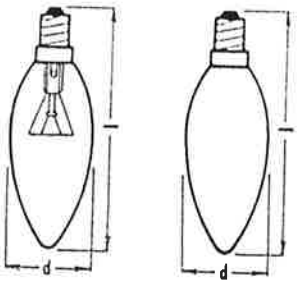


Voltage V	Wattage W	Luminous flux lm	Life h	Base*)	d mm	l mm	Packing pcs
24*)	25	234	1000	E 27	45±1	69.5±3.5	100 (180)
225	25	185	1000	E 14	45±1	73.5±3.5	100 (180)
225	25	185	1000	E 27	45±1	69.5±3.5	100 (180)
225	40	370	1000	E 14	45±1	73.5±3.5	100 (180)
225	40	370	1000	E 27	45±1	69.5±3.5	100 (180)
230	60	600	1000	E 14	45±1	73.5±3.5	100 (180)
230	60	600	1000	E 27	45±1	69.5±3.5	100 (180)
240	25	160	1000	E 14	45±1	73.5±3.5	100 (180)
240	25	160	1000	E 27	45±1	69.5±3.5	100 (180)
240	40	350	1000	E 14	45±1	73.5±3.5	100 (180)
240	40	350	1000	E 27	45±1	69.5±3.5	100 (180)

*) In agreement with the manufacturer

CLEAR OR FROSTED CANDLE LAMPS

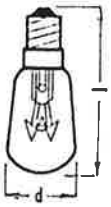
These lamps are designed for decorative interior luminaires.



Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
225	25	185	800	E 14	35±0.5	96.5±3.5	200 (240)
225	40	370	800	E 14	35±0.5	96.5±3.5	200 (240)
230	60	600	800	E 14	35±0.5	96.5±3.5	200 (240)
240	25	160	800	E 14	35±0.5	96.5±3.5	200 (240)
240	40	350	800	E 14	35±0.5	96.5±3.5	200 (240)

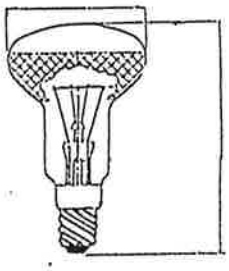
PEAR-SHAPED LAMPS

With enhanced vibration-proofness.



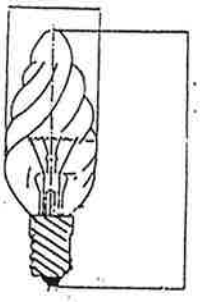
Voltage V	Wattage W	Luminous flux lm	Life h	Base*)	d mm	l mm	Packing pcs
24	25	234	1000	E 14	28±0.5	63.5±3.5	340 (430)
24	25	234	1000	B 15d	28±0.5	62±3.5	340 (430)
110	25	235	1000	E 14	28±0.5	63.5±3.5	340 (430)
225	15	94	1000	E 14	28±0.5	63.5±3.5	340 (430)
225	25	185	1000	E 14	28±0.5	63.5±3.5	340 (430)
225	25	185	1000	B 15d	28±0.5	62±3.5	340 (430)
240	15	92	1000	E 14	28±0.5	63.5±3.5	340 (430)
240	25	180	1000	E 14	28±0.5	63.5±3.5	340 (430)
240	25	180	1000	B 15d	28±0.5	62±3.5	340 (430)

BLOWN-BULB REFLECTOR LAMPS R50 SATINED, CLEAR



Voltage V	Wattage W	Base
225V	25W	E14
230V	40W	E14
240V	60W	E14

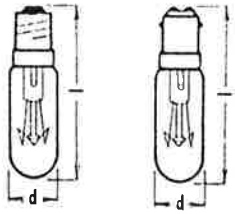
TWISTED CANDLE LAMPS FROSTED, CLEAR



Voltage V	Wattage W	Base
225V	25W	E14
230V	40W	E14
240V	60W	E14

TUBULAR LAMPS OF 18 x 65

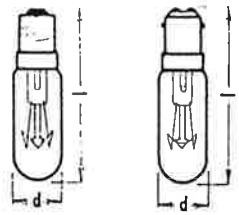
These lamps are specially designed for signalling and special use luminaires.



Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
25	15	116	600	E 14	18±0.5	65±3.5	400
25	15	116	600	B 15d	18±0.5	63.5±3.5	400
60	15	104	600	E 14	18±0.5	65±3.5	400
60	15	104	600	B 15d	18±0.5	63.5±3.5	400
150	15	86	600	E 14	18±0.5	65±3.5	400
150	15	86	600	B 15d	18±0.5	63.5±3.5	400
240	15	67	2000	E 14	18±0.5	65±3.5	400
240	15	67	2000	B 15d	18±0.5	63.5±3.5	400

TUBULAR LAMPS OF 25 x 85

These lamps are specially designed for signalling and special use luminaires.



Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
60	10	64	800	E 14	25±0.5	85±3.5	380
60	10	64	800	B 15d	25±0.5	85±3.5	380
230	25	135	2000	B 15d	25±0.5	85±3.5	400
240	25	135	2000	B 15d	25±0.5	85±3.5	400

LINEAR TUNGSTEN HALOGEN LAMPS

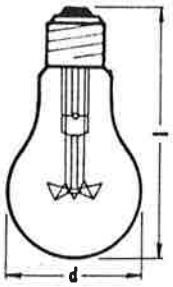
These are incandescent light sources with an increased efficacy. Intended for use in special luminaires, the linear halogen lamps fit a variety of indoor and outdoor lighting applications, particularly in all cases where good colour rendition is of primary importance.

Type	Voltage V	Wattage W	Luminous flux lm	Life h	Base	Recommended fuse A	d max mm	l max mm	Packing pcs
HXJ 500	225	500	9 500	1000	R7s-15	4	12	117.0	70
HXJ 1000	225	1000	22 000	1000	R7s-15	6	12	189.1	100
HXJ 1500	225	1500	33 000	1000	R7s-15	10	12	254.1	100
HXJ 1000	240	1000	22 000	1000	R7s-15	6	12	189.1	100
HXJ 1500	240	1500	33 000	1000	R7s-15	10	12	254.1	100

Notes: – Operating position horizontal within ±4°
– Operating temperature of tungsten halogen lamp envelope is limited to 1073 K (800°C)
– Maximum permissible temperature of vacuum seal 623 K (350°C) and the temperature of the lamp envelope should be above 523 K (250°C)
– It is recommended that linear halogen lamps are fuse protected individually.
– Tungsten halogen lamps are to be cleaned with alcohol, after any manipulation, installation or contamination.

VIBRATION PROOF LAMPS

These are gas-filled single-coil vibration proof lamps intended for use in installation exposed to heavy vibrations. Featuring long life, the vibration proof lamps are specially designed for traffic light application.

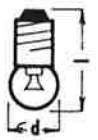


Voltage V	Wattage W	Luminous flux lm	Life h	Base*)	d mm	l mm	Packing pcs
125	25	190	1000	E 27	60±1	102±2	100
125	40	320	1000	E 27	60±1	102±2	100
125	60	490	1000	E 27	60±1	102±2	100
125	100	1190	1500	E 27	60±1	102±2	100
225	25	185	1000	E 27	60±1	102±2	100
225	40	300	1000	E 27	60±1	102±2	100
225	60	470	1000	E 27	60±1	102±2	100
225	60	360	5000	E 27	60±1	102±2	100
225	75	710	1500	E 27	60±1	102±2	100
225	100	1080	1500	E 27	60±1	102±2	100
240	25	180	1000	E 27	60±1	102±2	100
240	40	280	1000	E 27	60±1	102±2	100
240	60	450	1000	E 27	60±1	102±2	100
240	75	680	1500	E 27	60±1	102±2	100
240	100	1060	1500	E 27	60±1	102±2	100

*) Type B 22d is available in agreement with the manufacturer.

LOW-VOLTAGE LAMPS

These lamps are designed for emergency and safety lighting of escape areas.



Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
6	5	27	200	E 14	18±0.5	38.5±1	1000
12	5	27	200	E 14	18±0.5	38.5±1	1000
24	5	33	200	E 14	18±0.5	38.5±1	1000

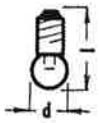
MINIATURE LAMPS

Due to their small dimensions, all lamps whose length is smaller than 30 mm and whose diameter is less than 18 mm are called miniature lamps. Designed to operate within a temperature range from 243 to 323 K (-30 to +50°C), these lamps are resistant to vibrations. They have special lighting applications.

This range of lamps includes:

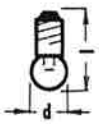
- Torch lamps
- Radio scales lamps
- Other miniature lamps

TORCH LAMPS



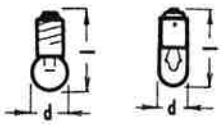
Reference No.	Voltage V	Current A	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
311 221 200	2.2	0.18	2.5	10	E 10	11-0.5	23±1	2400
311 311 200	2.5	0.10	1.5	15	E 10	11-0.5	23±1	2400
311 331 200	2.5	0.20	2.0	15	E 10	11-0.5	23±1	2400
311 351 200	2.5	0.30	5.0	15	E 10	11-0.5	23±1	2400
311 431 200	3.5	0.20	4.5	15	E 10	11-0.5	23±1	2400
311 551 200	3.8	0.30	5.5	15	E 10	11-0.5	23±1	2400

RADIO SCALES LAMPS



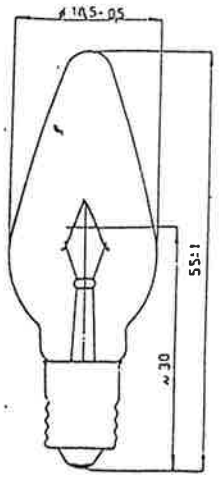
Reference No.	Voltage V	Current A	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
312 121 100	1.5	0.2	0.5	1000	E 10	11-0.5	22.5±1	2400
312 711 100	12.0	0.1	1.5	5000	E 10	11-0.5	23±1	2400
312 441 100	6.3	0.3	8.0	1000	E 10	10.5-0.5	28±1	2400

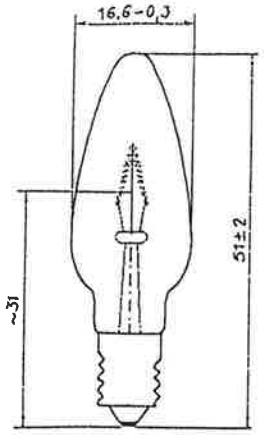
OTHER MINIATURE LAMPS

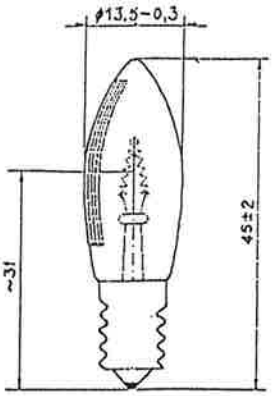


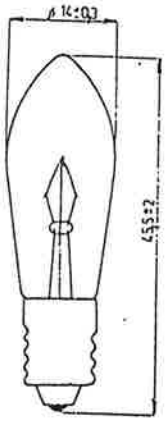
Reference No	Voltage V	Current A	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
319 112 511	1.0	0.550	1.0	500	E 10	11-0.5	22.5±1	2400
319 121 511	1.4	0.075	0.5	50	E 10	11-0.5	22.5±1	2400
319 132 421	2.5	0.500	4.0	200	E 10	15-0.5	27±1	2400
319 162 115	4.0	0.300	4.0	200	BA 9s	11-0.5	23±1	2400
319 162 421	4.0	0.500	5.0	200	E 10	15-0.5	27±1	2400
319 181 311	6.0	0.050	0.5	200	E 10	11-0.5	22.5±1	2400
319 182 421	6.0	0.500	13.0	200	E 10	15-0.5	27±1	2400
319 182 721	6.0	0.800	20.0	200	E 10	15-0.5	27±1	2400
319 211 821	12.0	0.250	12.0	200	E 10	11-0.5	23.5 max.	2400
319 255 411	24.0	3 W	–	200	E 10	11-0.5	23±1	2400
319 251 661	24.0	0.100	18.0	200	E 10	11-0.5	23.5 max.	2400
319 251 655	24.0	0.100	18.0	5000	BA 9s	9.2-0.2	23±1	2400

CHRISTMAS TREE LAMP









Voltage V	Wattage A/W	Luminous flux lm	Base	
8V	3W	8-12	E10/13	max.3.25W
12V	3W	7-11	E10/13	2.7 - 3.3W
14V	0.1A	6-10	E10/13	± 10% A
14V	0.125A	6-10	E10/13	± 10% A
14V	3W	min.8.6	E10/13	max. 3.3W
14V	5W	11-19	E10/13	max. 5.3W
20V	3W	min.4	E10/13	max. 3.3W
23V	5W	11-18	E10/13	4.7-5.3 W
34V	3W	8-12	E10/13	2.7-3.3 W
55V	3W	11-19	E10/13	max. 3.25W

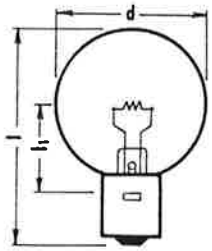
LAMPS FOR SPECIAL LIGHTING APPLICATIONS

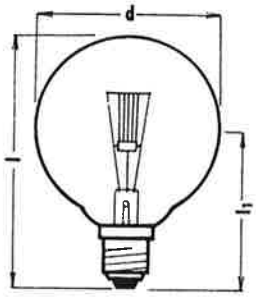
This range of lamps includes:

- Lamps for floodlights
- Projector lamps
- Sound exciter lamps
- Enlarger lamps
- Studio tungsten halogen lamps
- Projector tungsten halogen lamps
- Tungsten halogen low voltage lamps
- Lamps for medical instruments
- Tungsten halogen infra-red lamps

LAMPS FOR FLOODLIGHTS

These are conventional incandescent lamps used in conventional lighting systems.





Reference No.	Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l/l1 mm	Packing pcs
241 355 110	24	200	3240	200	BA 20s	50±1	72±2/31±1	50
241 516 340	110	500	8300	200	E 27	100±1	138±5/107±2.5	30

PROJECTOR LAMPS

Reference No.	Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l/l1 mm	Packing pcs	Fig.
242 204 100	12.0	100.0	1500	25	BA 15s	26±1	80-6/35±1	340	A
243 115 111	6.3	5.0	20	400	BA 9s	15-0.5	30 max./-	100	B
243 115 161	6.3	5.0	20	400	E 10	15-0.5	30 max./-	100	B
243 117 161	12.0	5.0	27	200	E 10	15-0.5	27±1/min. 18	10	C
243 127 161	12.0	5.2	21	75	E 10	15±0.5	27±1/5±1	100	D
243 142 136	4.0	10.0	80	500	BA 15d	34±1	54±2/35±1.5	190	E
243 154 132	6.0	15.0	158	100	BA 15d	19±0.5	48-2/8±0.5	480	F
243 157 132	12.0	15.0	158	100	BA 15d	19±0.5	48-2/8±0.5	480	F
243 157 142	12.0	15.0	250	20	BA 15s	19±0.5	54±2/27±1	400	G
243 187 137	12.0	35.0	535	75	BA 15d	42±1	70±2/47±1	40	H
243 187 216	12.0	35.0	595	50	BA 15s	35±1	54±1.5/28±1	100	I
243 187 226	12.0	35.0	630	50	BA 15s	35±1	54±1.5/30±1	100	J
243 217 155	12.0	50.0	800	100	BA 20d	32±0.5	67±2/40±1.5	100	K
243 217 157	12.0	50.0	800	100	BA 20d	42±1	67±3/40±2	100	L
243 514 121	6.0	0.5A	19	200	BA 10s	15±0.5	27±1/7.5	100	M

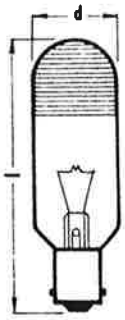


Fig. A

Fig. B

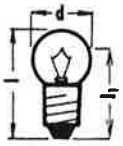


Fig. C

Fig. D

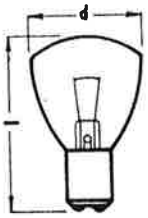


Fig. E

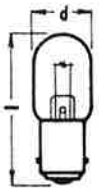


Fig. F

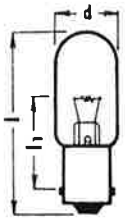


Fig. G

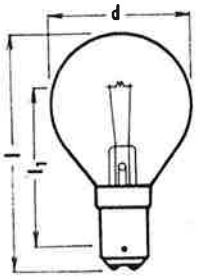


Fig. H

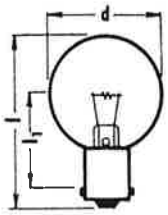


Fig. I

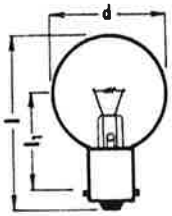


Fig. J

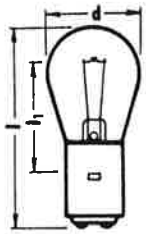


Fig. K

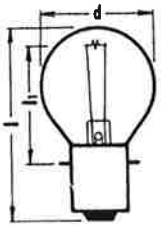


Fig. L

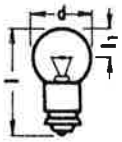


Fig. M

SOUND EXCITER LAMPS

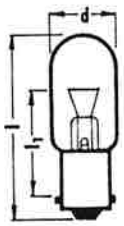


Fig. A

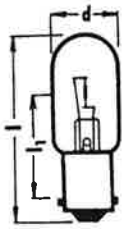


Fig. B

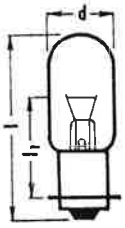


Fig. C

Reference No.	Voltage V	Wattage A	Luminous flux lm	Life h	Base	d mm	l/l_1 mm	Packing pcs	Fig
244 111 110	6	5	300	100	BA 15s	19±0.5	53±1.5/28.5±1	400	A
244 111 120	6	5	300	75	BA 15s	19±0.5	54±2/29±1	200	B
244 112 130	6	5	300	75	H 15s	19±0.5	52.5±1.5/26±0.2	800	C

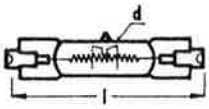
ENLARGER LAMPS

These lamps have an opal bulb, their base being provided with a stamp.

Reference No.	Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
261 131 000	225	40	300	1000	E 27	60±1	102±3.5	150
261 231 000	225	60	540	1000	E 27	60±1	102±3.5	150
261 331 000	225	75	720	1000	E 27	60±1	102±3.5	150
261 431 000	225	100	1060	1000	E 27	60±1	102±3.5	150
261 531 000	225	150	1780	1000	E 27	80±1	159±3.5	50
261 631 000	225	200	2480	1000	E 27	80±1	159±3.5	50

STUDIO TUNGSTEN HALOGEN LAMPS

These are linear lamps intended for use in studio and portable floodlights.

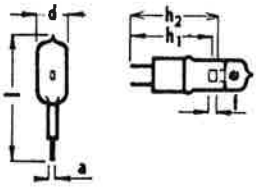


Reference No.	Typ	Voltage V	Wattage W	Luminous flux lm	Colour temperature K	Life h	d max mm	l max mm	Packing pcs
421 211 121	HFP 650	125	650	20 000	3400	15	12	125.1	70
421 321 322	HFP 800	225	800	22 000	3400	15	15	78.3	100
421 421 121	HFP 1000	225	1000	31 000	3400	15	12	125.1	70
421 423 221	HFB 1000	225	1000	26 000	3200	200	12	189.1	100

Note: – All types of studio halogen lamps use base R7s
– Operating position horizontal within ±4°
– Operating temperature of halogen lamp envelope is limited to 1073 K (800°C)
– Maximum permissible temperature of vaccum seal 623 K (350°C) and the temperature of the lamp envelope should be above 523 K (250°C)
– It is recommended that linear halogen lamps are protected individually by a 6A fuse
– Halogen lamps are to be cleaned with alcohol after any maniputation, installation or contamination.

PROJECTOR TUNGSTEN HALOGEN LAMPS

Featuring a high filament concentration, these lamps are designed for optical systems with forced cooling.

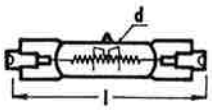


Reference No.	Typ	Voltage V	Wattage W	Luminous flux lm	Colour temperature K	Life h	Base	Recommended fuse A
431 231 121	HPS 50	12	50	1400	3400	50	G 6.35	6
431 431 122	HPS 100	12	100	3000	3400	50	GY 6.35	15
431 551 221	HPS 150	24	150	5000	3400	50	G 6.35	10
431 651 321	HPS 250	24	250	8500	3400	50	G 6.35	15

LAMP DIMENSIONS

Typ	a mm	d max. mm	h_1 mm	h_2 mm	l max. mm	e mm	f mm
HPS 50	1.00	11.5	30±0.25	-	44	3.3±0.25	1.6±0.1
HPS 100	1.25	11.5	-	31.15±0.25	44	4.2±0.3	2.3±0.15
HPS 150	1.00	13.5	-	32-0.5	50	5.8±0.4	2.9±0.2
HPS 250	1.00	13.5	33±0.25	-	55	7±0.7	3.5±0.35

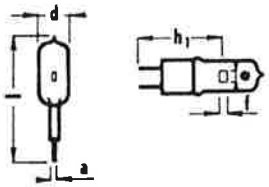
Note: – Operating position vertical with lamp base downwards ±90°
– Projection halogen lamps are packed 200 pieces to package
– Operating temperature of halogen lamp envelope is limited to 1073 K (800°C)
– Maximum permissible temperature of vacuum seal 623 K (350°C) and the temeprature of the lamp envelope should be above 523 K (250°C)
– It is recommended that halogen lamps are fuse protected individually
– Halogen lamps are to be cleaned with alcohol after any manipulation, installation or contamination.



Reference No.	Typ	Voltage V	Wattage W	Luminous flux lm	Colour temperature K	Life h	d max mm	l max mm	Packing pcs
433 114 121	HPZ 600	225	600	15 500	3200	75	15	78.3	100

Note: – Operating position vertical with lamp base downwards ±90°
– Projection halogen lamps are packed 200 pieces to package
– Operating temperature of halogen lamp envelope is limited to 1073 K (800°C)
– Maximum permissible temperature of vacuum seal 623 K (350°C) and the temeprature of the lamp envelope should be above 523 K (250°C)
– It is recommended that halogen lamps are protected individually
– Halogen lamps are to be cleaned with alcohol after any manipulation, installation or contamination.

TUNGSTEN HALOGEN LOW VOLTAGE LAMPS



Reference No.	Type	Voltage V	Wattage W	Luminous flux lm	Colour temperature K	Life h	Base	Recommended fuse A
413 522 222	HXJ 50	12	50	850	2800	1000	G 6.35	6

Dimensions (mm)

a	d	h1	l	e	Ø f
1±0.05	11.5	30±0.5	44	4.5±0.5	1.55±0.15

Note:
- Operating position vertical with lamp base downwards ±90°
- Projection halogen lamps are packed 200 pieces to package
- Operating temperature of halogen lamp envelope is limited to 1073 K (800 °C)
- Maximum permissible temperature of vacuum seal 623 K (350 °C) and the temeprature of the lamp envelope should be above 523 K (250 °C)
- It is recommended that halogen lamps are fuse protected individually
- Halogen lamps are to be cleaned with alcohol after any manipulation, installation or contamination.

LAMPS FOR MEDICAL INSTRUMENTS

These lamps have dimensions and forms necessary for an application in special medical instruments.

Reference No.	Voltage V	Current A	Life h	Packing pcs	Base	Application	Fig.
292 111 110	2.5	0.14	15	100	M 1	bronchoskop	A
292 111 220	2.5	0.14	15	100	S 1	cystoskop	B
292 111 320	2.5	0.14	15	100	P 5	cystoskop	C
292 111 420	2.5	0.14	15	100	P 3	cystoskop	D
292 111 530	2.5	0.14	15	100	M 2	laryngoskop	E
292 111 610	2.5	0.14	15	100	H 1	bronchoskop	F
292 111 720	2.5	0.14	15	100	P 1	cystoskop	G
292 221 840	2.6	0.20	25	100	M 3.5	otoskop	H
292 321 960	4.0	0.20	25	100	M 3.5	anoscop, dentistry	I

Note: Produced specially for medical equipment only

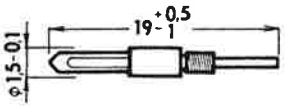


Fig. A

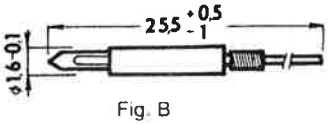


Fig. B

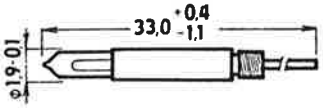


Fig. C

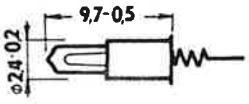


Fig. D

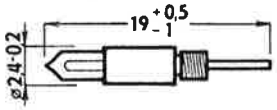


Fig. E

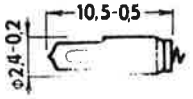


Fig. F

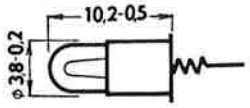


Fig. G

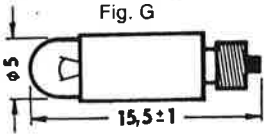


Fig. H

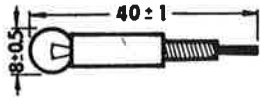
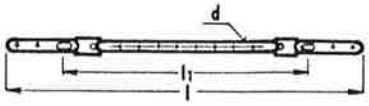


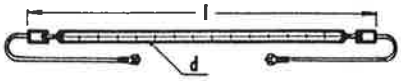
Fig. I

TUNGSTEN HALOGEN INFRA-RED LAMPS

These are modern infra-red radiation sources.
Design HIY – infra-red heating
Design HI – thermal copiers
Active length of filament:
– 850 W 332^{+4}_{-2} mm

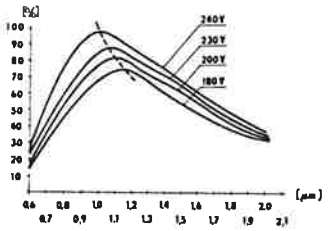


Reference No.	Type	Voltage V	Wattage W	Luminous flux lm	Life	Base	Diameter max. mm	Length mm l/l_1	Packing pcs
441 121 312x	HIY 500Δ	230	500	4000+	5000	Strip	12	$\frac{353\pm4}{243\pm35}$	100
441 421 412	HIY 1000Δ	230	1000	8000+	5000	Strip	12	$\frac{478\pm4}{368\pm3}$	70
441 313 211	HI 850Δ	225	850	5300++	50 000 pulses	Ceramic body with stranded wire	13	$\frac{399\pm3}{xx}$	70



Note: – Operating position horizontal within ±4°
– Operating temperature of halogen lamp envelope is limited to 1073 K (800°C)
– Maximum permissible temperature of vacuum seal 623 K (350°C) and the temeprature of the lamp envelope should be above 523 K (250°C)
– It is recommended that halogen lamps are protected individually
– Halogen lamps are to be cleaned with alcohol after any manipulation, installation or contamination.

x Only when agreed with the manufacturer
xx Wire length 155±2.5
\+ Colour temperature 2400 K
++ Colour temperature 2200–2400 K
Δ Recommended fuse 6A



Radiated IR power vs. voltage

AUTOMOTIVE LAMPS

These lamps are designed for motor vehicles and they should meet all the relevant international recommendations. Voltage drops should be compensated by using such wire cross section that the specified voltage can be maintained. (With a voltage drop of up to 20 percent, the luminous flux decreases by more than 50 percent of its nominal value).

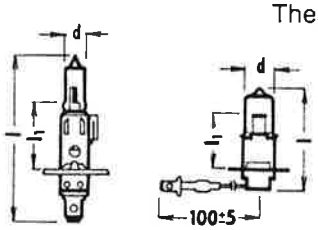
This range of lamps includes:

- Headlight lamps
- Stop-light lamps
- Auxiliary lamps
- Festoon lamps
- Service boxes

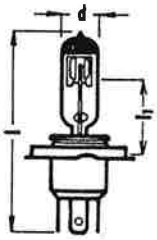
HEADLIGHT LAMPS

These are highly efficient modern light sources

These lamps are provided with the ECE mark.



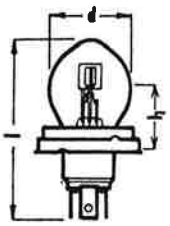
Reference No.	Type	Voltage V	Wattage W	Life h	Base	d mm	l/l_1 mm
451 323 213	H 1	12	55	225	P 14.5s	8.5 max.	49 max. / 25±0.25
451 433 213	H 1	24	70	225	P 14.5s	8.5 max.	49 max. / 25±0.25
451 323 314	H 3	12	55	225	PK 22s	11.5 max.	33 max. / 18±0.5
451 433 314	H 3	24	70	225	PK 22s	11.5 max.	33 max. / 18±0.5



These lamps are used for auxilliary, driving and fog lights of motor vehicles

These lamps are designed for headlights of motor vehicles

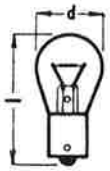
452 121 111	H 4	12	60/55	150/300	P 43t-38	16.5 max.	80 max. / $28.5^{+0.45}_{-0.25}$
452 232 111	H 4	24	75/70	150/300	P 43t-38	16.5 max.	80 max. / $28.5^{+0.45}_{-0.25}$



These are classical double-filament lamps intended for headlight of motor vehicles.

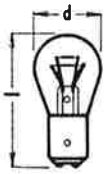
222 152 310	RZ	12	45/40	150/300	P 45t-41	35±1	~77 / 28.5±0.35
222 163 310	RZ	24	55/50	150/300	P 45t-41	35±1	~77 / 28.5±0.35

STOP-LIGHT LAMPS



These lamps are designed for flasher- and stop-lights.

Reference No.	Type	Voltage V	Wattage W	Life h	Base	d max. mm	l max. mm
223 152 200	P 21 W	6	21	100	BA 15s	25.8	52.5
223 252 200	P 21 W	12	21	100	BA 15s	25.8	52.5
223 352 200	P 21 W	24	21	100	BA 15s	25.8	52.5

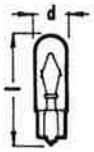


These lamps are used for combined stop- and tail-lights. They are provided with the ECE mark.

223 163 200*)	P 21/5 W	6**)	21/5	100/1000	BAY 15d	25.8	52.5
223 263 200	P 21/5 W	12	21/5	100/1000	BAY 15d	25.8	52.5
223 363 200	P 21/5 W	24	21/5	100/1000	BAY 15d	25.8	52.5

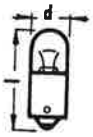
*) In agreement with the manufacturer

AUXILIARY LAMPS



These lamps are used for side-lights and interior illumination.

Reference No.	Type	Voltage V	Wattage W	Life h	Base	d max. mm	l max. mm
229 212 314		12	1.2	1000	W2x4.6d	5.8	20

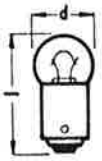


229 114 218	6	2	200	BA 9s	9.2	23±1
229 214 217**)	12	2	200	BA 9s	9.2	23±1
229 214 216	12	2	200	BA 9s	9.2	23±1
229 314 216*)	12	2	200	BA 9s	9.2	23±1

**) blue bulb

These lamps are provided with the ECE mark.

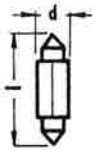
229 116 216	T4W	6	4	200	BA 9s	8.8	27.4
229 216 216	T4W	12	4	200	BA 9s	8.8	27.4
229 316 216*)	T4W	24	4	200	BA 9s	8.8	27.4



These lamps are provided with the ECE mark.

229 117 413	R 5W	6	5	200	BA 15s	19	35
229 217 413	R 5W	12	5	200	BA 15s	19	35
229 317 413	R 5W	24	5	200	BA 15s	19	35
229 218 413	R 10W	12	10	200	BA 15s	19	35

FESTOON LAMPS



These lamps are intended for tail and licence plate- lights and vehicle interior illumination.

They are provided with the ECE mark.

224 232 200*)	C5W	6	5	200	SV 8.5	11	35±1
224 332 200	C5W	12	5	200	SV 8.5	11	35±1
224 432 200	C5W	12	5	200	SV 8.5	11	35±1

*) Only in agreement with the manufacturer

SERVICE BOXES OF 12 V LAMPS

Packed 50 pieces to package

Wattage W	Base	761 139 000 Škoda	761 137 000 Škoda Favorit	761 127 000 Škoda 105 S, 105 L, 105 S	761 128 000 Lada 120 L, 120 LS	761 135 000 Zetor 67
45/40 RZ	P45t-41	–	1	–	–	1
H4 60/55	P43t-38	1	–	1	1	–
21/5	BAY 15d	–	–	–	1	1
21	BA 15s	1	1	1	1	1
10	BA 15s	1	–	–	–	–
5	BA 15s	–	1	1	1	–
4	BA 9s	1	1	1	1	1
3	BA 9s	–	–	–	1	–
2	BA 9s	–	2*)	2*)	–	1
5	SV 8.5	1	1	1	–	1
1.2	W2x4.6d	1	–	–	–	–

*) blue lamp bulb is available

SERVICE BOXES OF 24 V LAMPS

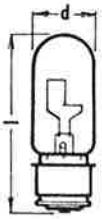
Packed 50 pieces to package

Wattage W	Base	761 132 000 Karosa	761 133 000 Karosa C 734 B731	761 134 000 Tatra 815 C 735, C 736	761 138 000 Tatra 815
55/50 RZ	P 45t-41	1	–	1	–
H4 75/70	P 43t-38	–	1	–	1
21	BA 15s	1	1	1	1
5	BA 15s	1	1	1	1
10	BA 15s	–	–	–	1
5	SV 8.5	1	1	–	–
4	BA 9s	1	1	1	1
2	BA 9s	1	1	–	1

LAMPS FOR OTHER TRAFFIC APPLICATIONS

The production technology of lamps listed below meets basic requirements. They are:
- Increased resistance to vibrations
- Filament position within permissible tolerance limits.

This range of filament lamps includes:
- Lamp for airport signal lights
- Tungsten halogen lamps for signal lights
- Rail vehicles lamps
- Lamps for aircraft lights
- Bicycle lamps

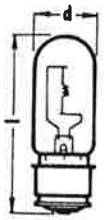


LAMPS FOR AIRPORT SIGNAL LIGHTS

Not to be used in new equipment.

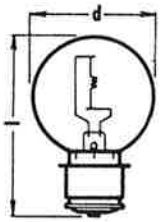
– Series connection

Reference No.	Current A	Wattage W	Luminous flux lm	Life h	Base	Operating position x	d mm	l mm	Packing pcs
231 111 210	6.6	45	620	1000	P 28s	A	32±1	95±3	200



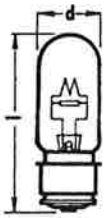
– Series connection

231 121 210	6.6	65	1050	1000	P 28s	A	32±1	95±3	200
231 131 210	6.6	100	1600	1000	P 28s	A	32±1	95±3	200



– Series connection

231 121 220	6.6	65	1260	200	P 28s	A	60±1	88±3	50
231 131 220	6.6	100	2100	200	P 28s	A	60±1	88±3	50
231 141 230	6.6	200	4300	200	P 28s	A	60±1	88±3	50
231 151 230	6.6	300	6300	200	P 28s	B	65±2	97±3	50



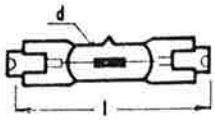
– Parallel connection

231 321 110	220 V	65	530	2000	P 28s	A	32±1	95±3	200
231 331 110	220 V	100	920	2000	P 28s	A	32±1	95±3	200

x A — vertical operating position with lamp base downwards ±10°
B — horizontal operating position ±15°

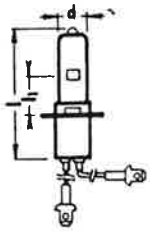
TUNGSTEN HALOGEN LAMPS FOR SIGNAL LIGHTS

These are modern lamps designed for use in airport safety devices with an increased efficacy and intended for series connection.



Double-ended lamps for horizontal operating position ±15°

Reference No.	Type	Current A	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
471 211 113	HRE 100	6.6	100	2000	500	R 7s	15	63.6 max. –	100
471 311 113	HRE 200	6.6	200	4400	500	R 7s	15	63.6 max. –	100



Single-ended lamps for operating position with lamp base downwards ±90°

Maximum cable length 120 mm

472 111 222	HRJF 45	6.6	45	750	1000	PK 30d	13.5	64 max. 20±0.5	35
472 211 222	HRJF 100	6.6	100	2300	1000	PK 30d	13.5	64 max. 20±0.5	35
472 311 222	HRJF 200	6.6	200	4750	1000	PK 30d	13.5	67 max. 20±0.5	35

Note: – Operating temperature of halogen lamp envelope is limited to 1073 K (800°C)
– Maximum permissible temperature of vacuum seal 623 K (350°C) and the temperature of the lamps envelope should be above 523 K (250°C)
– Halogen lamps are to be cleaned with alcohol after any manipulation, instalation or contamination.

FOR AIRCRAFT LIGHTS LAMPS

Delivery sould be agreed with manufacturer; these lamps are to be used for aircraft lighting only.

Reference No.	Type	Voltage V	Wattage W	Life h	Base	d mm	l mm	Packing pcs	Fig.
233 114 140	SM 12	13	10	125	BA 15d	19±1	36	640	A
233 114 240	SM 12	13	10	125	BA 15s	19±1	36	640	A
233 413 130	SM 14	26	5	125	BA 15d	18±0.5	35 max.	640	B
233 414 140	SM 15	26	10	100	BA 15d	19±1	36	640	C
233 414 240	SM 15	26	10	100	BA 15s	19±1	36	640	C
233 416 150	SM 16	26	15	100	BA 15d	25±0.5	45 max.	400	D
233 416 250	SM 16	26	15	100	BA 15s	25±0.5	45 max.	400	D
233 517 590	SM 22	28	24	100	BAY 15s	31±1 26.5±0.5	54-4	150	E
233 523 880	SM 30	28	0.17 A	100	1S-9-1	10.5-0.5	31 max.	2 240	F
233 321 760	PZ 25	24	220	100	5P 27/25	60±1	110 max.	50/100	G
233 215 820	9031	22	12	50	1S-9-1	15-0.5	29-3	2240	H
233 313 130	9015	24	5	200	BA 15d	18±0.5	33±1	640	I
233 318 150	9025	24	25	100	BA 15d	25±0.5	45-4	400	J
233 422 610	9034	26	0.15A	100	E 10	11-0.5	22.5±1	2240	K
233 422 480	9035	26	0.15A	100	BA 9s	10.5-0.5	28.5 max.	2240	L
233 511 370	9012	26	2	200	BA 7s	6±0.2	24±1	2400	M

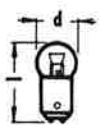


Fig. A

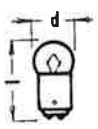


Fig. B

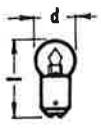


Fig. C

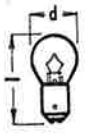


Fig. D

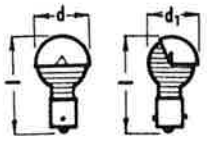


Fig. E

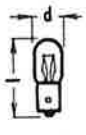


Fig. F

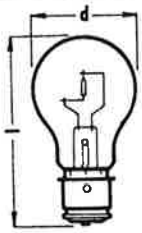


Fig. G

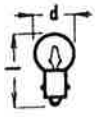


Fig. H

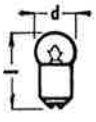


Fig. I

Fig. J

Fig. K

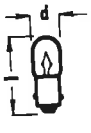


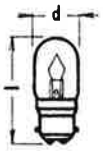
Fig. L

Fig. M

RAIL VEHICLE LAMPS

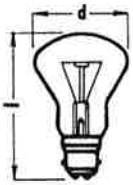
These lamps are used for the lighting of railway coaches.

TUBULAR LAMPS FOR RAIL VEHICLES



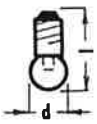
Reference No.	Voltage V	Wattage W	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
232 111 220	25	5	20	800	B 22d	28±0.5	60±3.5	340
232 111 320	25	5	20	800	B 22d-3	28±0.5	60±3.5	340
232 116 220	25	25	250	800	B 22d	28±0.5	60±3.5	340
232 116 320	25	25	250	800	B 22d-3	28±0.5	60±3.5	340
232 411 220	50	5	18	800	B 22d	28±0.5	60±3.5	340
232 411 320	50	5	18	800	B 22d-3	28±0.5	60±3.5	340
232 416 220	50	25	200	800	B 22d	28±0.5	60±3.5	340
232 416 320	50	25	200	800	B 22d-3	28±0.5	60±3.5	340
232 512 220	60	10	50	800	B 22d	28±0.5	60±3.5	340
232 512 320	60	10	50	800	B 22d-3	28±0.5	60±3.5	340
232 611 220	65	5	10	800	B 22d	28±0.5	60±3.5	340
232 611 320	65	5	18	800	B 22d-3	28±0.5	60±3.5	340

RAIL VEHICLE LAMPS TYPE K



232 119 240	25	50	500	1000	B 22d	60±1	85±3.5	100
232 119 340	25	50	500	1000	B 22d-3	60±1	85±3.5	100
232 419 240	50	50	450	1000	B 22d	60±1	85±3.5	100
232 419 340	50	50	450	1000	B 22d-3	60±1	85±3.5	100

BICYCLE LAMPS



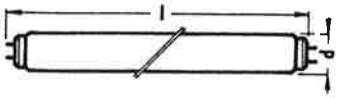
Reference No.	Voltage V	Current A	Luminous lm	Life h	Base	d mm	l mm	Packing pcs
234 121 100	6	0.10	2	75	E 10	11-0.5	23±1	2400
234 161 200	6	0.45	18	75	E 10	15-0.5	27±1	3000

FLUORESCENT LAMPS

Fluorescent lamps are low-pressure mercury vapour lamps usually in the form of long glass tube coated internally with one or more fluorescent powders called phosphors. They are connected to the AC mains of 220 V through a ballast approved by the light source manufacturer. The operating ambient temperature of fluorescent lamps of the types Z and ZRZ is from 278 to 333 K (+5 to +60°C) and of type NT can be up to 253 K (-20°C). Optimum luminous parameters can be obtained at a temperature of 298±1 K (25±1°C). The life expectancy of fluorescent lamps ranges from 5000 to 12 000 hours, depending on the lamp type.
Fluorescent lamps of the types Z, ZRZ and NT are designed for use in luminaires in a standard electrical connection with a starter: Type ZRZ fluorescent lamps can also be used in luminaires having a rapid-start ballast.
Type NT is intended for the lighting of cooling boxes.

LINEAR FLUORESCENT LAMPS

Fluorescent lamps of 38 mm O. D. are designed for general lighting service in interiors, industrial areas, schools, offices, etc. In deluxe design, the fluorescent lamps have improved colour rendition.

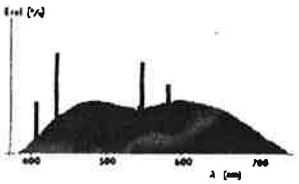


Reference No.	Type	Wattage W	Power consumption, incl. ballast*) W	Light**) colour	Luminous flux***) lm	Base	d mm	l mm	Packing pcs
511 161 153	Z	20	27	1	820	G 13	38	590	30
511 161 353	Z	20	27	2	935	G 13	38	590	30
511 161 553	Z	20	27	3	780	G 13	38	590	30
511 161 653	Z	20	27	4	975	G 13	38	590	30
511 171 153	Z	25	33	1	1280	G 13	38	970	30
511 171 353	Z	25	33	2	1460	G 13	38	970	30
511 171 553	Z	25	33	3	1150	G 13	38	970	30
511 171 653	Z	25	33	4	1520	G 13	38	970	30
511 191 163	Z	40	49	1	2200	G 13	38	1200	30
511 191 363	Z	40	49	2	2600	G 13	38	1200	30
511 191 573	Z	40	49	3	2000	G 13	38	1200	30
511 191 663	Z	40	49	4	2500	G 13	38	1200	30
554 141 662	ZRZ	40	49	1	2200	G 13	38	1200	30
554 141 872	ZRZ	40	49	2	2600	G 13	38	1200	30
554 142 472	ZRZ	40	49	3	2000	G 13	38	1200	30
554 142 162	ZRZ	40	49	4	2500	G 13	38	1200	30
513 191 343	ZNT	40	49	2	2600	G 13	38	1200	30
511 221 163	Z	65	78	1	3340	G 13	38	1500	24
511 221 363	Z	65	78	2	3820	G 13	38	1500	24
511 221 563	Z	65	78	3	2950	G 13	38	1500	24
511 221 663	Z	65	78	4	3980	G 13	38	1500	24

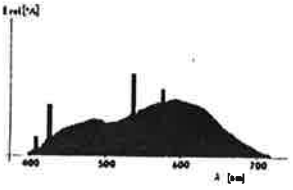
*) Informative value
**) 1 – daylight, 2 – white, 3 – white deluxe, 4 – warm white
***) The values of the luminous flux at an ambient temperature of 298±1 K (25±1°C)

Spectral characteristics of fluorescent lamps 38 mm O. D.

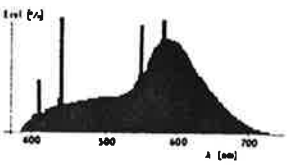
1 – daylight
Tc 6500 K
Ra 70 – 79



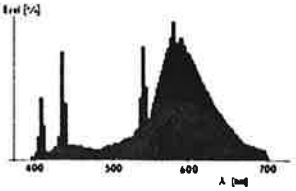
3 – white deluxe
Tc 3200 K
Ra 80 – 89



2 – white
Tc 4300 K
Ra 60 – 69

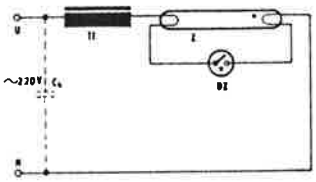


4 – warm white
Tc 2900 K
Ra 40 – 59

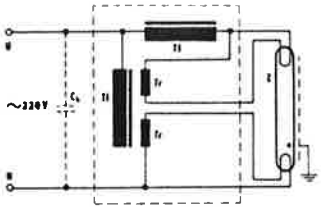


Circuit diagram:

Switch start operation



Starterless operation

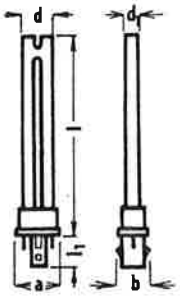


Tl – ballast
Tr – transformer
DZ – glow starter
CK – compensating capacitor

SINGLE-BASED FLUORESCENT LAMPS

These are low-presure discharge lights sources with high efficacy in which ultraviolet rays of the discharge change into light by means of high-quality luminescent materials. The lamps are provided with a special double-pin base, type G 23, and a built-in starter. Rated 9 and 11 W, the two types of DZS fluorescent lamps employ the same ballast rated 220 V.
A very good warm colour of the light emitted by the new fluorescent lamps corresponds to that of incandescent lamps. Thus, Type DZ fluorescent lamps can be used as a replacement of the following incandescent lamps:
– Type DZS 7 W can be used instead of a 40 W lamp, effecting a saving of about 29 W.
– Type DZS 9 W can be used instead of a 60 W lamp, effecting a saving of about 47 W.
– Type DZS 11 W can be used instead of a 75 W lamp, effecting a saving of about 60 W.
Due to a many-fold increase in their life as compared to incandescent lamps and thanks to substantial economies in power requirements, a considerable saving in the costs of electric power can be effected.
Application: Type DZ fluorescent lamps are suitable for working, local, orientation and decorative lighting applications and lounge interiors. They are used in special luminaires provided with adequate ballast and sockets.
Operating conditions: Arbitrary operating position
Designed for operation at an ambient temperature of +10°C to +50°C.

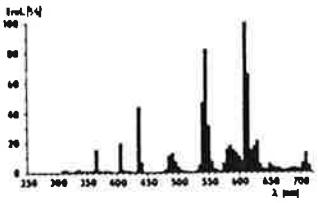
a – max. 28 mm
b – 32±0.5 mm
c – 20.8±2 mm



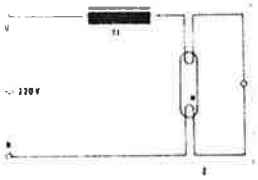
Type	Wattage W	Power consumption. incl. ballast*) W	Light colour	Luminous flux	Base	d mm	l/l1 max	Packing pcs
DZ 7	11	warm white	450	G 23	28/13	138/23	160	
DZ 9	13	warm white	600	G 23	28/13	145/23	110	
DZ 11	15	warm white	900	G 23	28/13	215/23	100	

*) Informative value

Informative spectral characteristics of the single-base fluorescent lamps type DZ



Circuit diagram:



Z – fluorescent lamps DZS 9 or DZS 11 W (inc. starter)
Tl – ballast

FLUORESCENT LAMPS APPLICATION

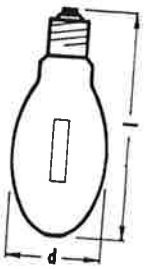
	1	2	3	4
Industry				
mechanical engineering	●	●	●	●
textil production plants	●	●	●	
clothing industry	●	●	●	
printing houses	●	●		
warehouses	●			●
offices		●	●	●
Stores				
groceries		●	●	●
clothing and textile stores	●	●	●	
shoes and leather products	●	●	●	
furniture and bookshops		●	●	
glassware and chinaware	●		●	●
cosmetics		●	●	
flourist's				●
Society interiors				
restaurants		●	●	●
social halls			●	●
schools			●	●
hospitals			●	●
consulting rooms	●		●	
sporting halls	●	●	●	
Residential areas				
living rooms				
bathrooms				●
kitchens			●	●
Various				
greenhouses aquariums				
traffic signs		●		●

HIGH-PRESSURE MERCURY LAMPS

These are high efficacy light sources in which a luminous flux is produced by the electrical discharge in mercury vapour and rare gases. These devices are connected to the AC mains of 220 V through a ballast approved by the lamp manufacturer. In the high-pressure mercury discharge lamp, maximum luminous efficacy is attained about 5 minutes after strating. Reignition takes place after 3 to 7 minutes of cooling.

Mercury discharge lamps have a quartz burner that is sealed in an elliptic envelope provided with an inner coating of phosphors which transform ultraviolet radiation into visible light and increase the percentage of the red component from 6 to 12%. These lamps are used in industrial and outdoor lighting applications.

Reference No.	Type	Voltage V	Wattage W	Power consumption incl. ballast*) W	Current A	Luminous flux lm	Life h	Base	d mm	l mm	Packing pcs
611 131 121	RVLX 50	220	50	65	0.61	1 800	6 000	E 27	55±1	130±5	100
611 131 231	RVLX 80	220	80	95	0.80	3 600	7 000	E 27	70±1	160±5	50
611 131 431	RVLX 125	220	125	137	1.15	5 800	7 000	E 27	75±1	174±5	50
611 131 662	RVLX 250	220	250	270	2.15	13 000	12 000	E 40	90±1	218±5	16
611 131 742	RVLX 400	220	400	425	3.25	20 000	8 000	E 40	120±1	275±5	16

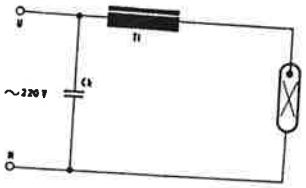


Clear mercury discharge lamps employ a burner sealed in a clear elliptic envelope. They operate as mercury vapour fluorescent lamps. They are designed for use in older types of copiers, but also have a variety of special lighting applications.

611 111 431	RVC 125	220	125	137	1.15	5 400	7000	E 27	75±1	174±5	50
611 111 662	RVC 250	220	250	270	2.15	12 000	8000	E 40	90±1	218±5	16
611 111 742	RVC 400	220	400	425	3.25	22 000	8000	E 40	120±1	275±5	16

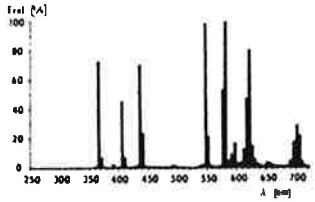
*) Informative value

Circuit diagram:

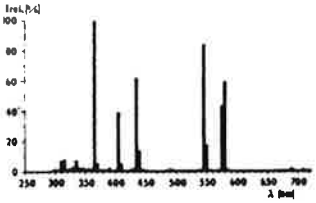


Tl – Ballast
Ck – Compensating capacitor

Informative
Spectral characteristic of an RVLX discharge lamp



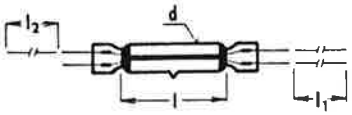
Informative
spectral charakteristic of an RVK discharge lamp



MERCURY DISCHARGE LAMPS FOR ARTIFICIAL SUNLIGHT

These lamps have a quartz-glass burner provided with relatively long insulated lead-in wires. All parameters listed are at an ambient temperature of 293±5 K (20±5 °C). The main application area claimed for these discharge lamps is luminous therapy. Nevertheless, these lamps are also used in agriculture, in artificial material ageing, in the chemical industry, in different physical and chemical research fields, etc.

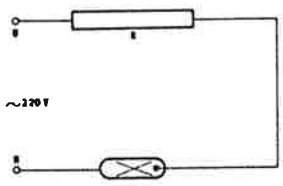
Note: After any manipulation, installation or contamination, clean the burner of the discharge lamp, used for artificial sungliht, with alcohol.
WARNING: When looking on the arc-tube please use the safety goggles. Otherwise your eyes might be endangered !



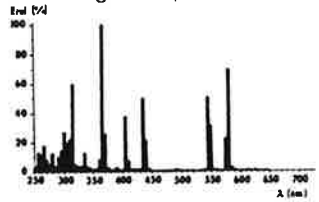
Reference No.	Type	Voltage V	Wattage W	Curent A	Luminous flux lm	Ballast re-sistance Ω	Life h	d mm	Length mm	Packing/ pcs
613 161 415	RVK 125	220	125	1.6	7	90±5%	1000	12.5	l=80 l_1=230 l_2=120	280
613 151 714	RVK 400	220	400	3.8	24	30±5%	1000	20.9	l=143 l_1=500 l_2=500	140

Wiring diagram:

R — ohmic ballast



Informative
spectral characterictic of an RVK 125 W discharge lamp

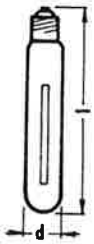


HIGH-PRESSURE SODIUM LAMPS

These are the latest types of light sources featuring a maximum efficacy and saving of electricity. Light is produced in a burner of translucent corundum due to an electric discharge taking place in rare gases, mercury and sodium vapours and representing the source of radiation. The gold-white colour of light provides good colour discrimination, but is not suitable for workplaces where faithful colour renditi-on is the primary requirement. Sodium discharge lamps are connected to the AC mains of 220 V through ballast devices approved by the lamp manufacturer. They are designed to operate at an ambient temperature of 248 to 333 K (-25 to +60 °C). In the sodium discharge lamp, maximum luminous efficacy is obtained within 12 minutes after starting. Reignition is provided after 2 to 5 minutes of cooling.
Sodium discharge lamps could be used for the lighting of thoroughfares, open-air worksites, parking areas, large building sites, open-pit mines, industrial halls and large interiors, for the floodlighting of buildings and monuments as well as of agricultural plants in large plant cultivation facilities to speed up the growth thereof, and for the control of photoperiodism in gardening plants.
From the economical viewpoint, high-pressure sodium discharge lamps are the most suitable light sources which will spur up developements in the lighting engineering due to their high efficacy, while at the same time effecting a considerable electric energy saving.

HIGH-PRESSURE SODIUM LAMPS WITH A CLEAR CYLINDRICAL ENVELOPE

are provided with an adequate ballast and a thyristor starter. Due to small dimension of the burner, luminaires with accurate geometry of the radited luminous flux and high efficiency could be obtained.



Reference No.	Type	Voltage V	Wattage W	Power consumption, incl. ballast*) W	Current A	Luminous flux lm	Life h	Cap	Compens. capacitor µF	d mm	l mm	Packing pcs
622 111 251	SHC 70	220	70	85	0.98	5 800	6 000	E 27	10	72**)	160	25
621 111 332	SHC 100	220	100	115	1.20	8 800	10 000	E 40	12	53	211	25
621 111 572	SHC 150	220	150	170	1.80	13 500	10 000	E 40	20	53	211	25
621 111 772	SHC 250	220	250	277	3.00	27 000	10 000	E 40	32	53	260	25
621 111 982	SHC 400	220	400	438	4.45	46 000	12 000	E 40	50	60	292	25

*) Informative value
**) Elliptical envelope

HIGH-PRESSURE SODIUM LAMPS WITH AN ELLEPTICAL ENVELOPE

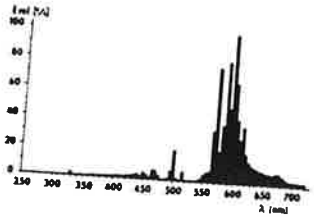
Sodium discharge lamps enclosed in an elliptical envelope provided with a lighttrasmissive scattering layer can be operated under the same conditions as their counterparts with a clear-glass envelope, but due to reduced brightness of the luminous area they can be used in less demanding exterior lighting fittings, or in older types of mercury-lamp lighting fixtures provided that their ballast has been replaced and a starter added.
Types SHLP 110, 210 and 340, see Note

Reference No.	Type	Voltage V	Wattage W	Power consumption, incl. ballast*) W	Current A	Luminous flux lm	Life h	Cap	Compens. capacitor µF	d mm	l mm	Packing pcs
623 111 111	SHL 50	220	50	60	0.76	3 200	2500	E 27	8	72	160	25
623 111 251	SHL 70	220	70	83	0.98	5 300	6000	E 27	10	72	160	25
623 111 562	SHL 150	220	150	170	1.80	12 000	8000	E 40	20	91	227	25
623 111 762	SHL 250	220	250	277	3.00	25 000	8000	E 40	32	91	227	25
623 111 962	SHL 400	220	400	438	4.45	42 000	8000	E 40	50	122	292	18
622 311 441	SHCP 110	220	110	125	1.27	7 300	5000	E 27	10	76Δ	179	25
623 311 441	SHLP 110	220	110	125	1.27	7 000	5000	E 27	10	76	179	25
623 311 692	SHLP 210	220	210	250	2.35	18 000	7000	E 40	25	91	227	25
623 311 892	SHLP 340	220	340	385	3.50	33 000	7000	E 40	35	112	292	18

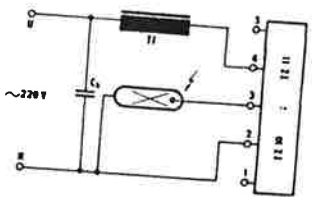
*) Informative value
Δ Clear lamp envelope

Note: High-pressure sodium lamps, Types SHCP and SHLP are designed for operation without starter. In these lamps is starting provided by the application of a special burner charge (the socalled Penning mixture) and an ignitor electrode round the burner body. Sodium discharge lamps, Types SHCP and SHLP 10, SHLP 210 a 340 W, can be used even in luminaire intended for mercury discharge lamps rated 125, 250 and 400 W, without starters. These lamps give a 15% reduction in power consumed and a 30% increase in the luminous flux compared with type RVLX mercury lamps. Thus, they enable older types of luminaires to be used for modernizing the existing industrial and outdoor lighting systems, while at the same time effecting substantial saving of electric power.

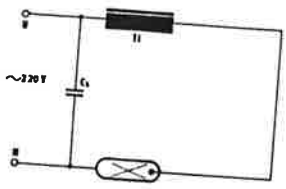
Informative
spectral characteristic
Sodium discharge lamps SHC and SHL



Wiring diagram of SHC and SHL
sodium discharge lamps



Wiring diagram of SHLP
sodium discharge lamps



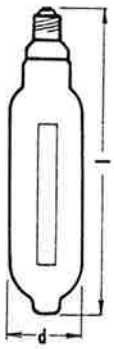
TI – ballast, TZ – electronic starter, Ck – compensating capacitor

METAL HALIDE LAMPS

These are modern light sources featuring a very high eficacy and a very good light color. In case of metal halide lamps, light is produced by an electric discharge in rare gases, mercury and metal vapours, which are contained in the burner in the form of halogenides. These mixtures increase luminous efficacy and enrich the radiated spectrum within the desired ranges. Metal halide lamps are connected to the AC mains power supply through ballasts approved by the lamp manufacturer. They are designed to operate at an ambient temperature of 248 to 333 K (-25 to +60°C). A maximum luminous efficacy is obtained within 12 minutes after starting. Reignition is provided after approx 15 minutes of cooling.

METAL HALIDE LAMPS WITH A CLEAR CYLINDRICAL ENVELOPE

Type RVI metal halide lamps are intended for the lighting of large exteriors. Featuring improved colour rendition. Type RVID halogenide discharge lamps make use of disprosium in their burner in addition to conventional components. Due to their light spectrum and colour, these lamps can meet even the most demanding requirements. They are used primarily in lighting systems intended for colour TV shooting.
With their wide service range, Type RVIM metal halide lamps have a universal application in printing industry.



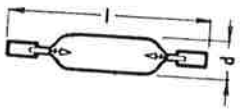
Reference No.	Type	Voltage V	Wattage W	Power consup-tion inc. ballast*) W	Current A	Luminous flux lm	Life h	Colour rendition index	Compens. capacitor µF	Max. d mm	Max. l mm	Packing/ pcs
632 112 602	RVI 400	220	400	425	3.5	30 000	3000	–	40	60	292	25
632 113 802	RVI 1000	220	1000	1050	8.2	90 000	4000	–	90	79	360	20
632 115 802	RVI 2000	380	2000	2100	8.8	190 000	4000	–	42	101	430	4
632 116 502	RVI 3500	380	3500	3700	18.2	340 000	1000	–	120	101	445	4
632 125 402	RVID 2000	380	2000	2100	10.3	170 000	800	≥80	42	101	430	4
632 126 402	RVID 3500	380	3500	3700	18.2	300 000	800	≥80	120	101	445	4
632 325 602	RVIM 2000	380	2000	2100	8.8	–	3000	–	42	101	430	9
632 326 502	RVIM 3500	380	3500	3700	18.2	–	1000	–	120	101	445	9

*) Informative value

Additional data:
- Base E 40
- Horizontal operating position ±5°
- Power consumption of RVIM 3500 lamps in power-saving operation 2000 W
- Intensity of radiationat a one-metre distance within region
  Type RVIM 2000-3000 µW/sq.cm
  Type RVIM 3500-5000 µW/sq.cm
- Time required for the RVIM 3500 lamp to start operating with reduced output
  < 10 minutes
- Time required for the RVIM 3500 lamp to change over from reduced output operation to full output operation to full output operation < 1 minute

METAL HALIDE LAMPS WITHOUT ENVELOPE

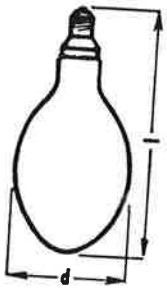
are used in special equipment that provides intensive air-cooling of the lamp so that the temperature of vacuum seal does not exceed 623 K (350 °C). Type RVIF metal halide lamps are designed for reproduction to be effected in potassium dichromate-sensitized layers, whilst type RVIG lamps are used for diazide layers.



Reference No.	Type	Voltage V	Wattage W	Power consumption, incl. ballast*) W	Current A	Lumi-Life h	Cap	Compens. capacitor µF	d mm	l mm	Packing pcs
631 216 203	RVIF 3500	380	3500	3700	14	200	speciál	120	31	245±5	4
631 316 203	RVIG 3500	380	3500	3700	14	200	speciál	120	31	245±5	4

*) Informative value

Additional data:
- Power consumption in power-saving operation 2000 W
- Maximum radiant flux region
  RVIF 350-400 nm
  RVIG 400-450 nm
- Radiant flux within the region
  RVIF lamp 500 W
  RVIG lamp 800 W
- Time required for the lamp to start operating with reduced output < 10 minutes
- Time required for the lamp to change over from reduced output to full output operation < 1 min
- Horizontal operating position



METAL HALIDE LAMPS WITH AN ELLIPTICAL ENVELOPE

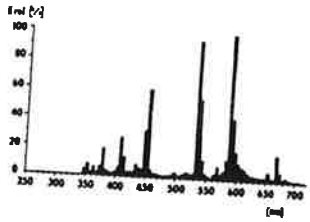
covered with a light-transmissive scattering layer are used in older types of reconstructed luminaires designed for large interior applications.

Reference No.	Type	Voltage V	Wattage W	Power consumption, incl. ballast*) W	Current A	Life h	Cap	Compens. capacitor µF	d mm	l mm	Packing pcs
634 112 602	RVIL 400	220	400	425	3.5	28 000	4000	40	122	292	18
634 113 802	RVIL 1000	220	1000	1050	8.2	82 000	4000	90	162	380	5

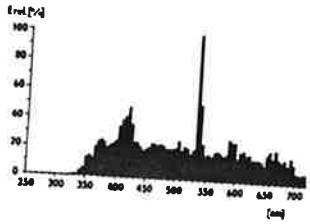
*) Informative value

Additional data:
- Base E 40
- Vertical operating position with lamp base upwards

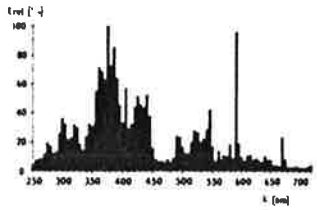
Informative spectral characteristic of metal halide lamps



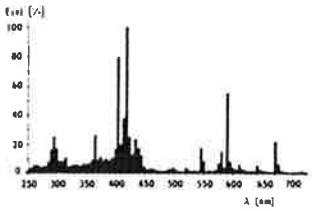
RVI and RVIL



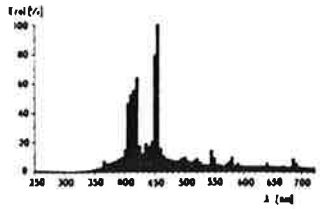
RVID



RVIF

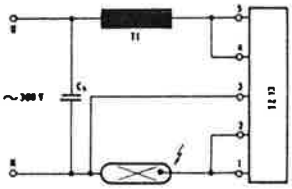


RVIG

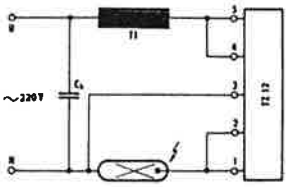


RVIM

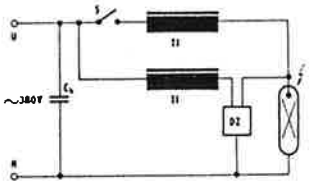
Circuit diagram of RVI and RVIL 1000



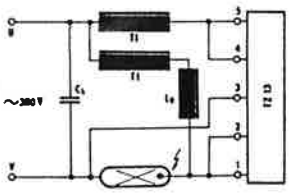
Circuit diagram of RVI (RVID, RVIM) 2000



Circuit diagram of RVI 3500



Circuit diagram of RVID (RVIF, RVIG and RVIM) 3500 lamps with glow-starter, Typ 121.0 manufactured by Elektrosvit Nové Zámky



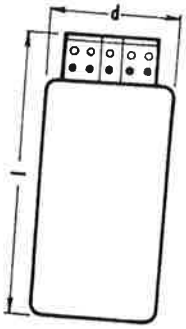
TI – choke coil
L_0 – separating choke coil
TZ – electronic starter;
DZ – glow starter
C_k – compensation capacitor
S – reduced output switch

IGNITORS FOR HIGH PRESSURE DISCHARGE LAMPS

These ignitors produce high-voltage pulses required for metal halide or high-pressure sodium lamps to start. After the lamp lights-up the ignitor is automatically disconnected.

THYRISTOR STARTER WITH DISCONNECTER

Ensures the starting of discharge lamps but is automatically disconnected in following cases:
– after certain time considered sufficient for ignition of a faultless discharge lamp which has not been operated immediately before and whose thermal condition therefore can be considered as a quiescent state,
– for a certain time after the disconnection of the supply voltage during which the discharge lamp changes over from the operating condition to a thermal equilibrium state and thus can not be started by conventional methods



**) A) SHL 50 W, SHC and SHL 70 W

B) 1 x SHC and SHL 150, 250 and 400 W
1 x RVI 250 AND 400 W

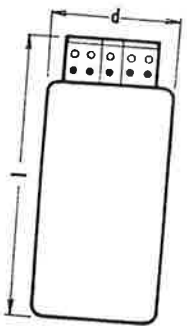
C) 2 x SHC and SHL 150, 250 and 400 W
2 x RVI 250 and 400 W
1 x RVI and RVIL 1000 W

D) 1 x RVI 2000 and 3500 W

Reference No.	Type	Voltage V	Pulse voltage kV	Operating temperature K	Max. d mm	Max. l mm	Packing/ pcs	Application
642 132 001	TZ 10	220	1.9-2.8	233-348	64	125	16	A
642 132 002	TZ 10R*)	220	1.9-2.8	233-348	64	125	16	A
642 142 001	TZ 11	220	3-4.5	248-338	64	165	16	B
642 142 002	TZ 11R*)	220	3-4.5	248-338	64	165	16	B
642 152 001	TZ 12	220	3-4.5	248-338	64	220	16	C
642 162 001	TZ 13	380	3-4.5	248-338	64	220	16	D

*) Modified starting device

THYRISTOR STARTER WITHOUT DISCONNECTER



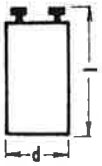
This thyristor starter contains an electronic block enclosed in a cylindrical metal casing provided with a terminal board. In an operating conection, the thyristor starting device is considered a source of short-time interference. The high-voltage cable should be connected to the central contact of the socket and its lenght should not exceed 1 metre.
In the case of RVI discharge lamps rated 3,500 W, a separating ballast should not be connected more than 1 metre apart from the discharge lamp. (See Wiring diagram.)

Warning ! The starter should not be handled when it is „alive".

Reference No.	Type	Voltage V	Pulse Voltage kV	Operating temperature K	Max. d mm	Max. l mm	Pack-ing/ pcs	Application
643 172 001	TZ 21	220	3-4.5	248-343	64	165	16	SHC and SHL 150, 250 a 400 W

GLOW-STARTER

Intended for fluorescent lamps rated 25 to 65 W, this starter initiates an electric discharge. Its life corresponds to that of the fluorescent lamps. Thus, when replacing the lamp it is advisable to replace the starter as well.

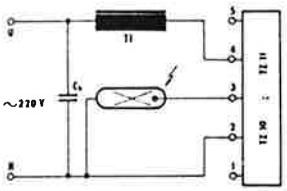


Reference No.	Wattage	Voltage V	Pulse Voltage kV	Operating temperature K	d max. mm	l max. mm	Pack-ing pcs
646 111 000	25-65 W	250 max.	0.9	–	21	34.4	1400
646 141 000	18-20 W	250 max.	0.8	–	21	34.4	1400

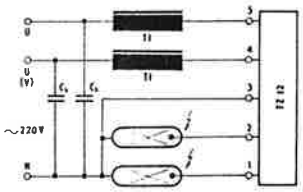
DESIGNED ACCORDING

to Specification TPF 03-7070/71, this gllow-starter is intended for use in a starting circuit, Type 121.0 (manufactured by Elektrosvit Nové Zámky), which provides for ignition of Series RVI metal halide lamps, Types F, G and M 3500 W.

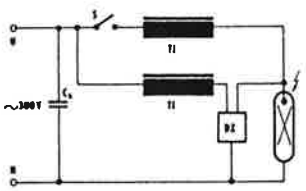
Reference No.	Type	Voltage V	Pulse Voltage kV	Operating temperature K	d max. mm	l max. mm	Pack-ing pcs
646 211 000	RVI 2000	380	1.5-3.5	248-333	21	34.4	1400
646 191 000	RVI 400-1000	220	min. 1.5	248-333	21	34.4	1400



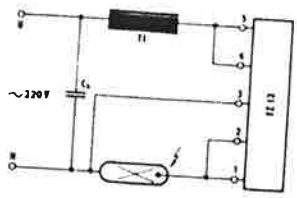
Circuit diagram of TZ 10 starter with SHL 50 or SHC (SHL) 70 and of TZ 11 starter with SHC (SHL) 150, 250, 400 or RV I 250, 400



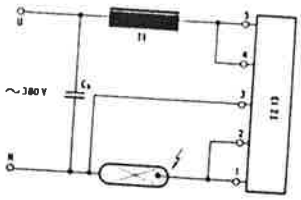
Circuit diagram of TZ 12 starter with 2 x SHC (SHL) 150, 250, 400 or 2 x RVI 250, 400



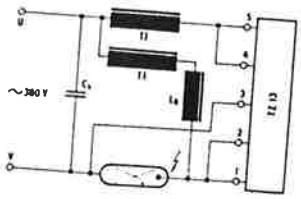
Circuit diagram of ES 121.0 glow-starter for RVID (F, G and M) 3500
S – reduced output switch



Circuit diagram of TZ 12 starter with RVI (RVIL) 1000

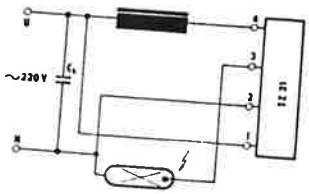


Circuit diagram of T 13 starter with RVI (RVID, RVIM) 2000



Circuit diagram of TZ 13 starter with RVI 3500

Specification: Core – ferrite E 42; materials H 10, Al = 2800±25%; winding 2 x 38 turns of Cu-wire parallelly – LCTA Ø 1.12mm in four layers with intermediate layers of glass-fibre cloth 2x0.12 mm.



Circuit diagram of TZ 21 starter with SHC (SHL) 150, 250, 400 and RVI 250, 400

TI – ballast
TZ – electronic starter
Ck – compensating capacitor

NEON LAMPS

These are light sources in which light is produced by a glow discharge taking place between electrodes of different shape. They serve for operating state indication in the electrical engineering field. Their main advantages are low power requirements, a small rise of surface temperature and long life.
Neon lamps without built-in resistors are designed for use in equipment whose electric circuit incorporates a limiting series resistor.
Neon lamps with a built-in resistor are intended for direct connection to the AC mains to indicate the ON/OFF-condition.

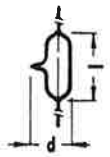


Fig. A

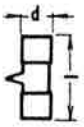


Fig. A1

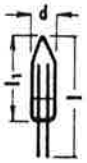


Fig. B

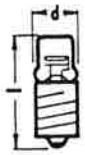


Fig. C

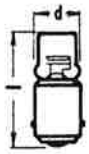


Fig. D

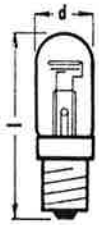


Fig. E

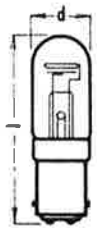


Fig. F

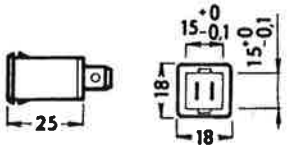
Reference No.	Type	Voltage V	Starting voltage V	Current	Life h	Base	d mm	l/l1 mm	Packing/ pcs	Figure
561 551 210	FN 2	–	≤70=	1	100	without base	9±0.1	24±2	2000	A
561 551 215	FN 2	–	≤70=	1	100	S 9	9±0.1	24±2	2000	A1
561 541 150	built-in	–	≤100~	0.8	10 000	without base	6 max.	49/20 max.	5000	B
562 221 421*)	–	110-130≅	≤110=	0.6	1 000	E 14	11±0.3	33-3/-	1600	C
562 221 424*)	–	110-130≅	≤110=	0.6	1 000	BA 15d	11±0.3	33-3/-	1600	D
561 531 421*)	–	-	≤110=	0.6	1 000	E 14	11±0.3	33-3/-	1600	C
561 531 424*)	–	-	≤110=	0.6	1 000	BA 15d	11±0.3	33-3/-	1600	D
562 221 521*)	–	110-130≅	≤110=	3	1 000	E 14	16.5±0.5	55-4/-	800	E
562 221 523*)	–	110-130≅	≤110=	3	1 000	B 15d	16.5±0.5	55-4/-	800	F
561 561 521*)	–	–	≤110=	3	1 000	E 14	16.5±0.5	55-4/-	800	E
561 561 523*)	–	–	≤110=	3	1 000	B 15d	16.5±0.5	55-4/-	800	F
562 121 421	–	210-230≅	≤190≅	0.5	1 000	E 14	11±0.3	33-3/-	1600	C
561 521 421	–	–	≤190≅	0.5	1 000	E 14	11±0.3	33-3/-	1600	C
561 521 424	–	–	≤190≅	0.5	1 000	BA 15d	11±0.3	33-3/-	1600	D
562 121 521	–	210-230≅	≤190≅	3	1 000	E 14	16.5±0.5	55-4/-	800	E
562 121 523	–	210-230≅	≤190≅	3	1 000	B 15d	16.5±0.5	55-4/-	800	F
561 571 521	–	–	≤190≅	3	1 000	E 14	16.5±0.5	55-4/-	800	E
561 571 523	–	–	≤190≅	3	1 000	B 15d	16.5±0.5	55-4/-	800	F

*) Only in agreement with the manufacturer.
Note: Neon lamps whose voltage has not been given above have no built-in resistor.

INDICATOR LIGHT SOURCES,

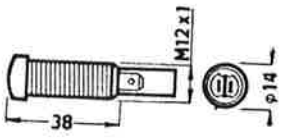
These devices provide for visible state or state change indication of electrical systems. They have a built-in neon lamp. They are intended for use in the consumers field, e. g., domestic electrical appliances, but are also used in equipment included in complete machinery and plant equipment complexes.

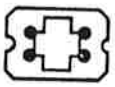
SQUARE GLOW-DISCHARGE INDICATORS



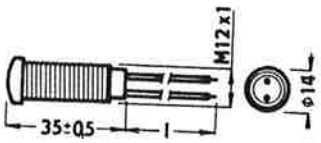
Reference No.		Type	Voltage V	Starting voltage V	Current mA	Thermal resistance °C	Life h	l mm	Packing/ pcs
581 211 312	ISZ 70	red	220	≤100~	0.8	343	10 000	-	1000
581 221 312	ISZ 70	yellow	220	≤100~	0.8	343	10 000	-	1000
581 231 312	ISZ 70	green	220	≤100~	0.8	343	10 000	-	1000
581 251 312	ISZ 70	clear	220	≤100~	0.8	343	10 000	-	1000

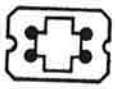
CIRCULAR GLOW-DISCHARGE INDICATORS





Reference No.		Type	Starting Voltage V	Thermal voltage mA	Current K	Lead-in wire resistance h	Life mm	Length	Packing/pcs
582 212 312	ISZ 90	red	220	≤100~	0.8	363	10 000	-	800
582 222 312	ISZ 90	yellow	220	≤100~	0.8	363	10 000	-	800
582 232 312	ISZ 90	green	220	≤100~	0.8	363	10 000	-	800
582 252 312	ISZ 90	clear	220	≤100~	0.8	363	10 000	-	800





582 213 313	ISZ 150	red	220	≤100~	0.8	423	10 000	200	450
582 223 313	ISZ 150	yellow	220	≤100~	0.8	423	10 000	200	450
582 253 313		clear	220	≤100~	0.8	423	10 000	200	450
582 213 314*)	ISZ 150	red	220	≤100~	0.8	423	10 000	350	450
582 223 314*)	ISZ 150	yellow	220	≤100~	0.8	423	10 000	350	450
582 253 314*)	ISZ 150	clear	220	≤100~	0.8	423	10 000	350	450
582 213 315*)	ISZ 150	red	220	≤100~	0.8	423	10 000	500	450
582 223 315*)	ISZ 150	yellow	220	≤100~	0.8	423	10 000	500	450
582 253 315*)	ISZ 150	clear	220	≤100~	0.8	423	10 000	500	450

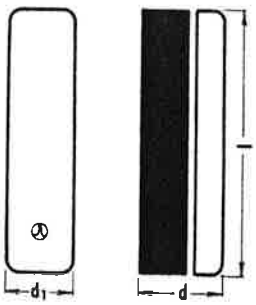
*) Only in agreement with the manufacturer

LUMINAIRES FOR COMPACT LAMPS

these luminaires are designed for the lighting of bathrooms, mirrors and working areas of kitchen fitments, but are also suitable for use in entrance halls, corridors, stairs, chambers and closets.

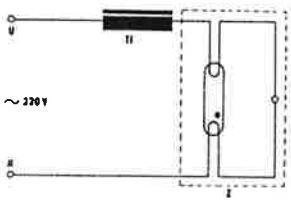
TYPE Z 9/11–DZ–1

Featuring compact design, this luminaire consists of plastic mouldings. The body of the fitting is made of heat-resistant material SILAMIDE F, enclosing a ballast and a terminal board enabling the luminaire to be connected to the AC mains.
Break-off windows are fitted on the side walls of the device to permit connection to a vertical or horizontal bar distributing. Conductors can pass through the fixture without interruption. The fitiing can also be connected to a detachable cord which should be secured against break-out in an inner bridge.
A light-transmissive scattering cover of plastic material trade-marked UMAPLEX encloses a socket and the light source proper, i. e., the DZ single base fluorescent lamp rated 9 or 11 W.



Basic technical data:

Type of luminairre	Z 9/11–DZ–1
Supply voltage	220 V AO, 50 Hz
Light source	1 x DZ fluorescent lamp rated 9 W, or 11 W
Overall power consumption	13 or 15 W
Protection against electric-shock hazard	Class II
Weight	0.9 kg
l	280 mm
d	95 mm
d_1	70 mm
Spacing of mounting holes	250 mm
ČJKPOV	348 187 0506 01

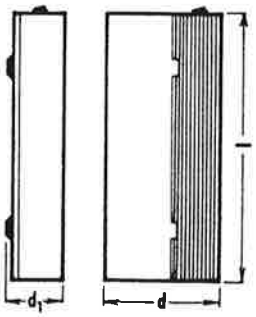


Circuit diagram:

Z – DZ fluorescent lamp rated 9 or 11W (including a starter)
Tl – ballast

TYPES Z 9/11-DZ-3
Z 9/11-DZ-4

These luminaires have a flat body made of varnished metal sheet that encloses ballast and terminal board enabling the fitting to be connected to the AC mains. Type Z 9/11–DZ–3 has no switch, whilst Type Z 9/–DZ–4 has a builting switch on its side wall. The DZ fluorescent lamp rated 9 or 11 W is provided with a cover of plastic material trade-marked UMAPLEX that can be removed, if required.
A fluorescent lamp can be mounted in this luminaire by simply inserting it in a socket.

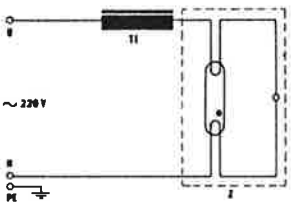


Basic technical data:

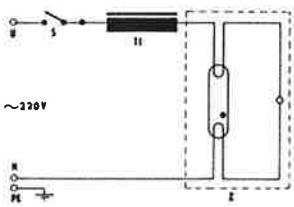
Type of luminaire	Z 9/11–DZ–3; Z 9/11–DZ–4
Rated voltage	220 V; 50 Hz
Light source	1 x DZ glow-discharge lamp rated 9 or 11 W
Wattage	13 or 15 W
Protection against electric-shock hazard	class I.
Weight	1.3 kg
l	302 mm
d	126 mm
d_1	60 mm
Spacing of mounting holes	150 mm
ČJKPOV DZ 3	348 187 0803 01
ČJKPOV DZ 4	348 187 1803 01

Circuit diagram:

Typ Z 9/11–DZ–3

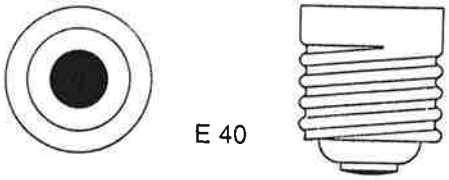


typ Z 9/11–DZ–4



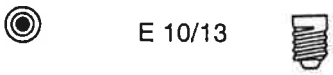
Z – DZ fluorescent lamp rated 9 or 11 W (incl. a starter)
Tl – ballast
S – switch

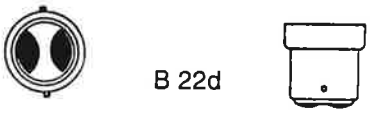
CAPS USED FOR OUT PRODUCTS

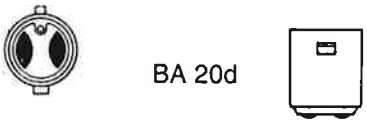

E 40

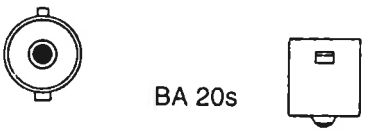

E 27


E 14

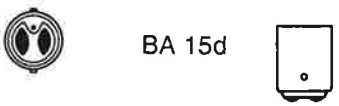

E 10/13


B 22d

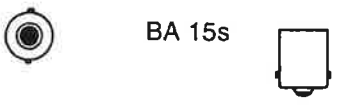

BA 20d


BA 20s


B 15D


BA 15d


BAY 15d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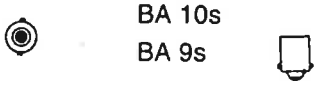
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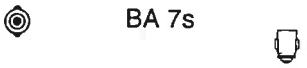
BA 9s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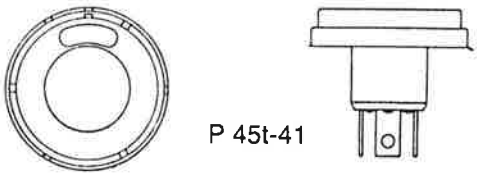
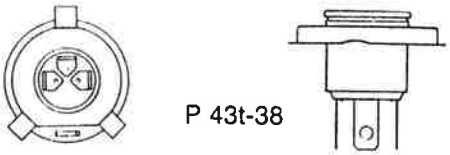

P 45t-41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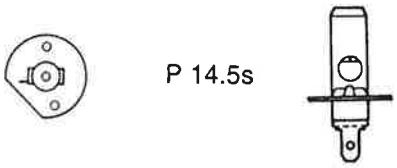
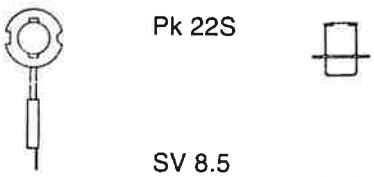
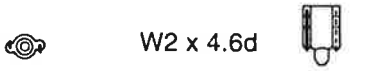
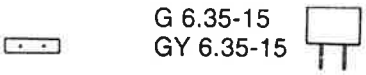

P 14.5s

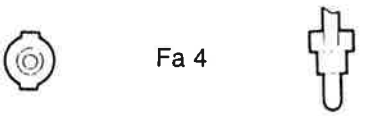

Pk 22S

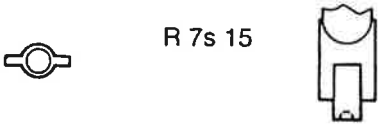

SV 8.5


W2 x 4.6d


G 13


G 6.35-15
GY 6.35-15


Fa 4


R 7s 15


G 23

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