

**60809-
2022**

**(IEC 60809:2021, Lamps and light sources for road vehicles — Dimensional,
electrical and luminous requirements, IDT)**

2022

60809—2022

- 1 . . . » (« . . . ») 4 -
- 2 332 « , -
- 3 10 2022 . 1106-
- 4 60809:2021 « -
- » (IEC 60809:2021 «Lamps and light sources for road vehicles — Dimensional, electrical and luminous requirements», IDT). -
- 1.5—2012 (3.5). -
- 5 60809—2012
- 29 2015 . 162- « 26 -
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- () « » -
- » . , « -
- (www.rst.gov.ru)

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© « », 2022

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Electric light sources for road vehicles. Technical requirements and test methods

— 2023—07—01

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 R.E.5,
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 R.E.5. -
) (, , -
) 60810. -
 , 60983. -

1 « » « » ,
 2 : « » (60050-845:1987, 845-07-17) « 60050-845:1987,
 845-07-04), « » (60050-845:1987, 845-07-17) « » . -
 « » « » , « » « » . -
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« » .
 3 « » « » » ,

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IEC 60050-845, International Electrotechnical Vocabulary — Part 845: Lighting (available at <http://www.electropedia.org/>) [845.
(: <http://www.electropedia.org/>)]

IEC 60051-1, Direct acting indicating analogue electrical measuring instruments and their accessories — Part 1: Definitions and general requirements common to all parts (-
1. ,
)

IEC 60061-1, Lamp caps and holders together with gauges for the control of interchangeability and safety — Part 1: Lamp caps (available at <http://std.iec.ch/iec60061>) [1. (: <http://std.iec.ch/iec60061>)]

IEC 60810:2017, Lamps, light sources and LED packages for road vehicles — Performance requirements, IEC 60810:2017/AMD1:2019 (, , 60810:2017/ .1:2019)

CIE 015:2018, Colorimetry ()

United Nations, Vehicle Regulations — 1958 Agreement, Agreement concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations (Revision 3) Available at: www.unece.org/trans/main/wp29/wp29regs.html (website checked 2021-01-18) [1958 .
/ -
,
()¹⁾]. : www.unece.org/trans/main/wp29/wp29regs.html (- 2021-01-18)

Addendum 3: Regulation No. 4, Uniform provisions concerning the approval of devices for the illumination of rear registration plates of power-driven vehicles and their trailers (3. 4. -
)

Addendum 5: Regulation No. 6, Uniform provisions concerning the approval of direction indicators for power-driven vehicles and their trailers (5. 6. ,
)

Addendum 6: Regulation No. 7, Uniform provisions concerning the approval of front and rear position lamps, stop-lamps and end-outline marker lamps for motor vehicles (except motor cycles) and their trailers [6. 7. ,
-
()]

Addendum 22: Regulation No. 23, Uniform provisions concerning the approval of reversing and manoeuvring lamps for power-driven vehicles and their trailers (22. 23. -
)

Addendum 36: Regulation No. 37, Uniform provisions concerning the approval of filament lamps for use in approved lamp units of power-driven vehicles and of their trailers (36. 37. -
)

Addendum 37: Regulation No. 38, Uniform provisions concerning the approval of rear fog lamps for power-driven vehicles and their trailers (37. 38. ,
)

Addendum 47: Regulation No. 48, Uniform provisions concerning the approval of vehicles with regard to the installation of lighting and light-signalling devices (47. 48.
,
)

¹⁾ 1958 . -
37 R37.

Addendum 49: Regulation No. 50, Uniform provisions concerning the approval of front position lamps, rear position lamps, stop lamps, direction indicators and rear-registration-plate illuminating devices for vehicles of category Labels (49. 50. , -

L)

Addendum 76: Regulation No. 77, Uniform provisions concerning the approval of parking lamps for power-driven vehicles (76. 77. , -

)

Addendum 86: Regulation No. 87, Uniform provisions concerning the approval of daytime running lamps for power-driven vehicles (86. 87. , -

)

Addendum 90: Regulation No. 91, Uniform provisions concerning the approval of side-marker lamps for motor vehicles and their trailers (90. 91. , -

)

Addendum 98: Regulation No. 99, Uniform provisions concerning the approval of gas-discharge light sources for use in approved gas-discharge lamp units of power-driven vehicles (98. 99. , -

,

)

Addendum 100: Regulation No. 101, Uniform provisions concerning the approval of passenger cars powered by an internal combustion engine only, or powered by a hybrid electric power train with regard to the measurement of the emission of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range, and of categories M1 and N1 vehicles powered by an electric power train only with regard to the measurement of electric energy consumption and electric range (100. -

101. , -

/

1 N1,

)

Addendum 118: Regulation No. 119, Uniform provisions concerning the approval of cornering lamps for power-driven vehicles (118. 119. , -

)

Addendum 127: Regulation No. 128, Uniform provisions concerning the approval of light emitting diode (LED) light sources for use in approved lamp units on power-driven vehicles and their trailers [127. 128. , -

() , -

]

Addendum 147: Regulation No. 148, Uniform provisions concerning the approval of light signalling devices (lamps) for power-driven vehicles and their trailers [147. 148. -

()

]

Addendum 148: Regulation No. 149, Uniform provisions concerning the approval of road illumination devices (lamps) and systems for power-driven vehicles [148. 149. -

()

]

R.E.5, United Nations Consolidated Resolution on the common specification of light source categories (R.E.5) [R.E.5. (R.E.5)]

R.E.5 is published by UNECE under the reference ECE/TRANS/WP.29/1127 and is available at the following address (website checked on 2021-01-18): <http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html> (R.E.5 UNECE ECE/TRANS/WP.29/1127 -

(-

2021-01-18): <http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html>)

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3

		60050-845,	60810, R.E.5	
48,				-
-	:	http://www.electropedia.org/ ;		
-	:	http://www.iso.org/obp .		
3.1	(ageing period):			-
[60050-845:2020,	845-27-108,		-
	« »;]		
3.2	(category):			-
	—		P21/5W, 4, D2R, R.E.5.	-
3.3	(conformity of production):			-
	—			-
3.4	(dipped beam, passing beam, low beam):			-
	—	48	« » («passing- beam»).	-
3.5	(initial luminous flux):			-
3.6	10 (life 10):		10 %	-
3.7	(limiting value):	/		-
3.8	(luminous flux maintenance factor):			-
	—	70 %	500	
	—	60810	«luminous flux maintenance» («	-
»),			«luminous flux maintenance factor» («	-
»),				
[60050-845:2020,	845-27-114,	:	-
	« », «driving beam»	« »;		-
]			
3.9	(main beam, driving beam, high beam):			-
	—		« » («driving-beam»).	-
[60050-845:2020,	845-31-066,	:	-
	« », «high beam» —	«driving beam»	;	-
	« »]	« »,	-
3.10	(nominal voltage):			-
1		«	» («rated voltage»).	
2	—	(6 , 12 24)		-

3 .11 (nominal wattage): , -

3 .12 (non-replaceable light source): , -

3 .13 (rated value): / -

1 : : « », « » -
 « ».
 2
 3 , — « ».
 4 () () ()

3. 14 (reference axis): , -

3. 15 (reference plane): , -

3. 16 (standard lamp, etalon lamp): -

1 -

2 , -

3. 17 (test voltage): , -

1
 2

3 ()

3 .18 (type): , -

1 , -

2 , -

3 , -

4 - - - - -

4

4.1

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4.2

«И».

1 — « ».

2 —

15

4.3

4.4

4.4.1

015:2018

W_{12}	:	(- 0,150 + 0,640
w_{23}	:		= 0,440
w_{34}	:		= 0,500
w_{45}	:		= 0,382
W_{56}	:		= 0,050 + 0,750
W_{61}	:		= 0,310

W_p	= 0,310,	= 0,348
$W_2:$	= 0,453,	= 0,440
$W_3:$	= 0,500,	= 0,440
$W_4:$	= 0,500,	= 0,382
$W_5:$	= 0,443,	= 0,382
$W_6:$	= 0,310,	= 0,283

$SY_{12} = 1,290 - 0,100$
 $SY_{23} = 0,138 + 0,580$
 $SY_{34} = 0,440$
 $SY_{45} = 0,940 -$

$S_{Yp} = 0,454, = 0,486$
 $SY_{2:} = 0,480, = 0,519$
 $SY_{3:} = 0,545, = 0,454$
 $SY_{4:} = 0,521, = 0,440$
 $SY_{5:} = 0,500, = 0,440$

$R_{12} = 0,335$
 $R_{23} = 0,980 -$
 $R_{34} = 0,980 -$

$R^{\wedge} = 0,645, = 0,335$
 $R_{2:} = 0,665, = 0,335$
 $R_{3:} = 0,735, = 0,265$
 $R_{4:} = 0,721, = 0,259$

$12 = - 0,120$
 $23 = 0,390$
 $34 = 0,790 - 0,670$

$= 0,545, = 0,425$
 $2: = 0,560, = 0,440$
 $3: = 0,609, = 0,390$
 $4: = 0,597, = 0,390$

0,020

80 %

4.4.2

J.

80 %

4.4.1,

1) . 015:2018.

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				J,		-
4.4.3				.1.1 ()		-
	30 %.		5	n-	70 %	-
4.5						-
				—	A, D, F,	-
4.6						-
60061-1.						-
4.7						-
85 %				()		-
4.8				.1 ()		-
4.8.1					()	-
						-
4.8.2				12		-
4.8.3				6 24		-
					10 %	-
4.8.4					4.8.1,4.8.2	-
	12	85 %,		6 24	—	77 %
						-

4.9

$$I_1 < 2 \cdot 10^{-4} / \quad I_2 < 2 \cdot 10^{-6} /$$

$$\int_{380}^{400} \dots \quad \int_{380}^{315} \dots$$

$$\int_{780}^{315} \dots \quad \int_{380}^{250} \dots$$

= 683 / ;
 ^—
 (2) —
 X—

5 .

4.10

0,010 / 015:2018. 2856

4.11

4.11.1

[()],
) ;
) ;
) ;
 d) () ;
 - ;
 - ;
 - () ;
 - ;

20

4.11.3,
 4.11.4.

60809—2022

20 -

- () -
 - ; () -
). (-

4.11.2

4.11.3

10 1. 10 50 % 1. 1 —

	10 ,	()
	2200	4 148
	500	6, 50 148
	2200	7, 50 148
	1000	7, 50 148
	2200	7 148
	100	23 148
	100	38 148
	2200	77 148
	4000	87 148
	2200	91 148
	200	119 149
	2000	149
	100	149
	200	149
	800	149
	100	149
« »	200 000	-
33,6 /		R101.
	6200 .	-

60810:2017 () .

4.11.4

4.4.

4.11.5

70 %

10.

4.4.1.

(23 ± 5) °C

4.11.6

60810:2017 ().

60810:2017 (),

5

5.1

5.2

1

2

(),

)
)

15

5.3

() : 15

70 %

30 %.

5

n-

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5.4

60061-1.

60061-2.

5.5

5.5.1

G.

5.5.2

5.5.3

5.5.4

()

5.6

5.6.1

5.6.2

5.6.2.1

2000

- 25 %

1 ;

- 80 %

4 .

5.6.2.2

2000

- 800

1 ;

- 1000

4 .

5.6.2.3

2000

- 700

1 ;

- 900

4 .

5.6.2.4

2000

- 800 1 ;
- 1000 4 .

5.6.3

1 80 %

5.7

5.7.1

5.7.2

68 %

5.8

015:2018

015:2018

SY_{12}	:	= 1,290 -0,100
SY_{23}	1)	
SY_{34}	:	= 0,138 + 0,580
SY_{45}	- :	=0,440
SY_{51}	:	= 0,940 -

SY_p	=0,454, =0,486
$SY_2:$	= 0,480, =0,519
$SY_3:$	= 0,545, =0,454
$SY_4:$	= 0,521, =0,440
$SY_5:$	= 0,500, =0,440

/< 0,05.

KUctUncIzi

$$y_{go} = \frac{780 \cdot J \cdot V() / 610}{J \cdot () (380)}$$

^, () X 4.9.

1 .

1) . 015:2018.

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5.9

$< 10^{-5}$ / .

400
J () 2
250
780
- J ^ ^
380

, ^, () X 4.9;
S(X) —

2.

1 .

2 —

X	SW	X	S(X)	X	S(X)
250	0,430	305	0,060	355	0,00016
255	0,520	310	0,015	360	0,00013
260	0,650	315	0,003	365	0,00011
265	0,810	320	0,0010	370	0,00009
270	1,000	325	0,00050	375	0,000077
275	0,960	330	0,00041	380	0,000064
280	0,880	335	0,00034	385	0,000053
285	0,770	340	0,00028	390	0,000044
290	0,640	345	0,00024	395	0,000036
295	0,540	350	0,00020	400	0,000030
300	0,300				

5.10

6

6.1

6.2

-
-

)
)

:

6.3

6.4

4.4.1.

6.5

Lx5B¹⁾, L1A/6 L1B/6

(23 ± 5) °C.

015:2018

Lx3A, Lx3B, Lx4A, Lx4B, Lx5A,

48

30

LR4A LR4B

2,5 (±0,5
(3,0 ± 0,3)

6.6

60061-1.

60061-2.

1) R, Y /.

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6.7

, (, -)
 ,)
 , 015:2018 ,
 4.4.1. .2 ().
 L

6.8

, / " " $\geq 0,05$ (.5.8),

6.9

$< 10^{-5}$ / , - ,

6.10

7

, 37, 99 128.
 — 60809:2021,
 4, 6, 7, 23, 38, 50, 77, 87, 91 119.

8

8.1

, 8.3, :
 - (60809) « »;
 - ;
 - R.E.5,
 R.E.5.
 |

60809.1

60809- , 2014 .. 809- -
 61-1 — 60061-1.

8.2

3 —

	R.E.5					
60809- -2110-	R2	R2	6 12 24	45/40 45/40 55/50	P45t P45t P45t	
60809- -2120-	4	4	12 24	60/55 75/70	P43t-38 P43t-38	
60809- -2125-	—	6	12	65/55	PZ43t	
60809- -2130-	HS1	HS1	6 12	35/35 35/35	PX43t PX43t	
60809- -2132-	HS5	HS5	12	35/30	P23t	
60809- -2135-	—	1	12	65/45	P29t	
60809- -2140-	S1/S2	S1	6 12	25/25 25/25	BA20d BA20d	
60809- -2150-	S1/S2	S2	6 12	35/35 35/35	BA20d BA20d	
60809- -2160-	—	S4	6 12	15/15 15/15	BAX15d BAX15d	
60809- -2305-	—	5	12	50	PY43d	
60809- -2310-	1	1	6 12 24	55 55 70	P14.5s P14.5s P14.5s	
60809- -2315-	7	7	12 24	55 70	PX26d PX26d	
60809- -2320-	—	2	6 12 24	55 55 70	X511 X511 X511	
60809- -2325-			12 12	60 60	P20d P20d	
60809- -2330-			6 12 24	55 55 70	PK22s PK22s PK22s	
60809- -2335-	4	4 4	12 12	51 51	P22d P22d	
60809- -2340-	HS2	HS2	6 12	15 15	PX13.5S PX13.5S	
60809- -2350-	—	HS3	6	2,4	PX13.5S	
60809- -2360-	S3	S3	6 12	15 15	P26s P26s	
60809- -2365-	8	8	12	35	PGJ19-1	
60809- -2370-	9	9	12	65	PGJ19-5	
60809- -2375-			12	42	PY20d	

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		R.E.5 ⁶				
60809-	-2380-	11	11	12 24	55 70	PGJ19-2 PGJ19-2
60809-	-2385-	12	12	12	53	PZ20d
60809-	-2410-	HIR1	HIR1	12	65	PX20d
60809-	-2420-	HIR2	HIR2	12	55	PX22d
60809-	-3110-	P21/5W	P21/5W	6 12 24	21/5 21/5 21/5	BAY15d BAY15d BAY15d
60809-	-3120-	P21/4W	P21/4W	6 12 24	21/4 21/4 21/4	BAZ15d BAZ15d BAZ15d
60809-	-3130-	W21/5W	W21/5W	12	21/5	W3x16q
60809-	-3135-	WR21/5W	WR21/5W	12	21/5	WY3x16q
60809-	-3140-	PR27/7W	PR27/7W	12	27/7	W2.5x16q
60809-	-3141-	PY27/7W	PY27/7W	12	27/7	WX2.5x16q
60809-	-3310-	P21W	P21W	6 12 24	21 21 21	BA15s(BA15d) BA15s(BA15d) BA15s(BA15d)
60809-	-3311-	PY21W	PY21W	12 24	21 21	BAU15s BAU15s
60809-	-3315-	P27W	P27W	12	27	W2.5x16d
60809-	-3320-	R5W	R5W	6 12 24	5 5 5	BA15s(BA15d) BA15s(BA15d) BA15s(BA15d)
60809-	-3330-	R10W	R10W	6 12 24	10 10 10	BA15s(BA15d) BA15s(BA15d) BA15s(BA15d)
60809-	-3340-	T4W	T4W	6 12 24	4 4 4	BA9s BA9s BA9s
60809-	-3410-	H6W	H6W	12	6	BAX9s
60809-	-3420-	H21W	H21W	12 24	21 21	BAY9s BAY9s
60809-	-3430-	H27W	H27W/1 H27W/2	12 12	27 27	PG13 PGJ13
60809-	-4110-	C5W	C5W	6 12 24	5 5 5	SV8.5 SV8.5 SV8.5
60809-	-4120-	C21W	C21W	12	21	SV8.5
60809-	-4305-	W2.3W	W2.3W	12	2,3	W2x4.6d
60809-	-4310-	W3W	W3W	6 12 24	3 3 3	W2.1x9.5d W2.1x9.5d W2.1x9.5d

	R.E.5 ⁶					
60809-4320-	W5W	W5W	6 12 24	5 5 5	W2.1x9.5d W2.1x9.5d W2.1x9.5d	
60809-4321-	W5W	WY5W	6 12 24	5 5 5	W2.1x9.5d W2.1x9.5d W2.1x9.5d	
60809-4330-	W21W	W21W	12	21	W3x16d	
60809-4335-	WY21W	WY21W	12	21	WX3x16d	
60809-4340-	W16W	W16W	12	16	W2.1x9.5d	
60809-5010-	T1.4W	T1.4W	12	1,4	P11.5d	
60809-7110-	DxS	D1S D2S D3S D4S	12 12 12 12	35 35 35 35	PK32d-2 P32d-2 PK32d-5 P32d-5	
60809-7120-	DxR	D1R D2R D3R D4R	12 12 12 12	35 35 35 35	PK32d-3 P32d-3 PK32d-6 P32d-6	
60809-9310-	—	B1.13W	2,7	1,13	PX13.5S	
60809-9610-	—	B0.6W	6	0,6		
60809-9620-	—	B2.4W	6	2,4	EP10/14x11	
—	H6W	HY6W	12	6	BAZ9s	
—	8	8	12	35	PGJY19-1	
—	9	9	12	65	PGJY19-5	
—	H10W	H10W/1 HY10W	12 12	10 10	BAU9s BAUZ9s	
—	11	11	12 24	55 70	PGJY19-2 PGJY19-2	
—	13	13 13	12 12	55/60 55/60	P26.4t PJ26.4t	
—	14	14	12	55/60	P38t	
—	15	15	12 24	15/55 20/60	PGJ23t-1 PGJ23t-1	
—	16	16 16	12 12	19 19	PGJ19-3 PGJY19-3	
—	17	17	12	35	PU43t-4	
—	18	18	12	65	PY26d-1	
—	19	19	12	55/60	PU43t-3	
—	20	20	12	70	PY26d-6	
—	H21W	HY21W	12 24	21 21	BAW9s BAW9s	
—	HS5A	HS5A	12	45/40	PX23t	
—	P13W	P13W PW13W	12 12	13 13	PG18.5d-1 WP3.3x14.5-7	

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	R.E.5 ⁶				
—	PC16W	PC16W PCY16W PCR16W PW16W PWR16W PWY16W	12 12 12 12 12 12	16 16 16 16 16 16	PU20d-1 PU20d-2 PU20d-7 WP3.3x14.5-8 WP3.3x14.5-9 WP3.3x14.5-10
—	P19W	P19W PY19W PR19W PS19W PSY19W PSR19W PW19W PWR19W PWY19W	12 12 12 12 12 12 12 12 12	19 19 19 19 19 19 19 19 19	PGU20-1 PGU20-2 PGU20-5 PG20-1 PG20-2 PG20-5 WP3.3x14.5-1 WP3.3x14.5-2 WP3.3x14.5-5
—	PR21/5W	PR21/5W	12 24	21/5 21/5	BAW15d BAW15d
—	PR21W	PR21W	12 24	21 21	AW 15s AW 15s
—	PR21/4W	PR21/4W	12 24	21/4 21/4	BAU15d BAU15d
—	PY21/5W	PY/5W	12	21/5	BA15d-3 (1007130°)
—	R37-P24W	P24W PX24W PY24W PR24W PS24W PSX24W PSY24W PSR24W PW24W PWR24W PWY24W	12 12 12 12 12 12 12 12 12 12 12	24 24 24 24 24 24 24 24 24 24 24	PGU20-3 PGU20-7 PGU20-4 PGU20-6 PG20-3 PG20-7 PG20-4 PG20-6 WP3.3x14.5-3 WP3.3x14.5-4 WP3.3x14.5-6
—	PSX26W	PSX26W	12	26	PG18.5d-3
—	P27/7W	P27/7W	12	27/7	WU2.5x16
—	R5W	RR5W	6 12 24	5 5 5	BAW15s BAW15s BAW15s
—	R10W	RR10W RR10W RR10W RY10W RY10W RY10W	6 12 24 6 12 24	10 10 10 10 10 10	BAW15s BAW15s BAW15s BAU15s BAU15s BAU15s
—	W5W	WR5W	6 12 24	5 5 5	W2.1x9.5d W2.1x9.5d W2.1x9.5d

	R.E.5 ⁶				
—	W10W	W10W W10W WY10W WY10W	6 12 6 12	10 10 10 10	W2.1x9.5d W2.1x9.5d W2.1x9.5d W2.1x9.5d
—	W15/5W	W15/5W	12	15/5	WZ3x16q
—	W16W	WY16W	12	16	W2.1x9.5d
—	WP21W	WP21W WPY21W	12 12	21 21	WY2.5x16d WZ2.5x16d
—	WT21W	WT21W	12 24	21 21	WUX2.5x16d WUX2.5x16d
		WTY21W	12 24	21 21	WUY2.5x16d WUY2.5x16d
—	WT21/7W	WT21/7W	12	21/7	WZX2.5x16q
		WTY21/7W	12	21/7	WZY2.5x16q
		WTY21/7W	12	21/7	WZY2.5x16q
—	WY2.3W	WY2.3W	12	2,3	W2x4.6d
—	D5S	D5S	12	25	PK32d-7
—	D6S	D6S	12	25	P32d-1
—	D8S	D8S	12	25	PK32d-1
—	D8R	D8R	12	25	PK32d-8
—	D9S	D9S	12	27/35	PK32d-9
—	17	17	12	35	PU43t-4
—	PY21/5W	PY/5W	12	21/5	BA15d-3 (1007130°)
—	LR1	LR1	12	0,75/3,5	PGJ21t-1
—	LW2	LW2	12	1/12	PGJY50
—	L3	LR3A/LR3B	12	3	PGJ18.5d-1
		LW3A/LW3B	12	4	PGJ18.5d-24
		LY3A/LY3B	12	4	PGJ18.5d-15
—	LR4	LR4A/LR4B	12	3/0,75	PGJ18.5t-5
—	L5	LR5A/LR5B	12	3	PGJ18.5d-10
		LW5A/LW5B	12	6	PGJ18.5d-28
		LY5A/LY5B	12	6	PGJ18.5d-19
—	L1/6	L1A/6/L1B/6	12	6	PGJ18.5d-29

R.E.5,
5 (2012) 2 60809:1995,

R.E.5.

8.3

R.E.5

60809.1 (3).

60809—2022

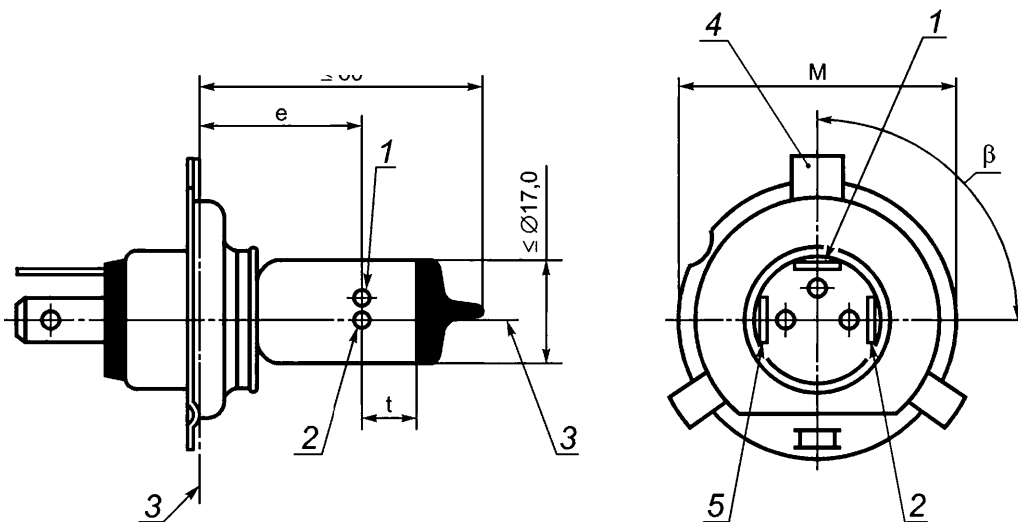
. 1/3

: 6
: PZ43t

1 —

	12
	65/55
	13,2

Размеры в миллиметрах



1 —

; 2 —

5 —

; 3 —

; 4 —

;

1 —

60061-1 (7004-22).

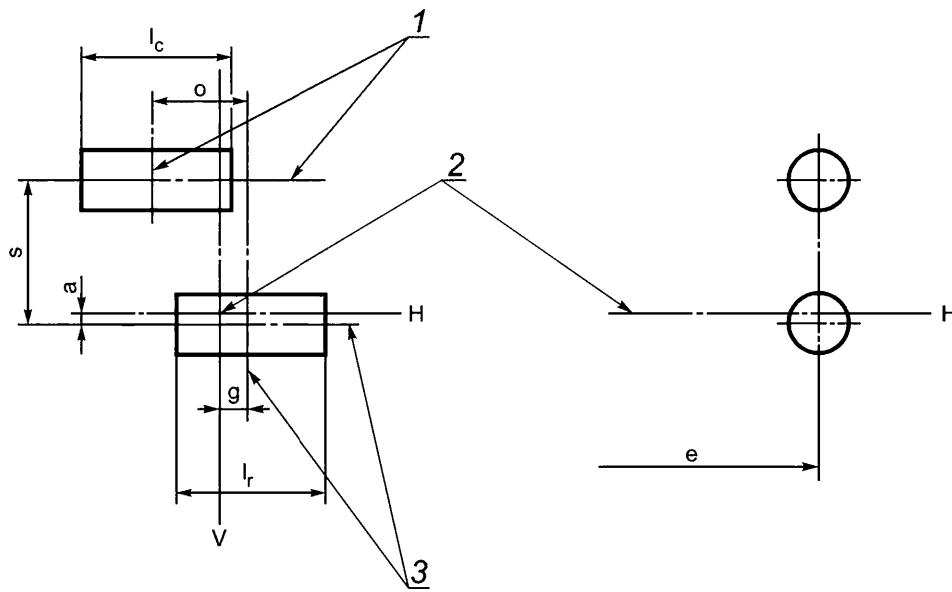
60809- -2125-2

		. 2/3
	: 6 : PZ43t	
2 —		
	12	12
		76 max ^{1>} 64 max ^{2>}
	1320 880	±15% ±15%
³⁾ t	6 26,0	±0,3 3,0 min 0,5 max ⁴⁾
⁵⁾	90°	±15 ⁴⁾
<p>1) , 5,76 .</p> <p>2) , 4,85 .</p> <p>3> .</p> <p>4) .</p> <p>5) , , .</p>		
60809- -2125-2		

60809—2022

. 3/3

: 6
: PZ43t



1 — ; 2 — ; 3 —
2 —

3 —

		g		s	1	1
12	0 + 0,35 ¹⁾	0 + 0,35 ¹⁾	2,4	2,4	6,0 max	6,0 max

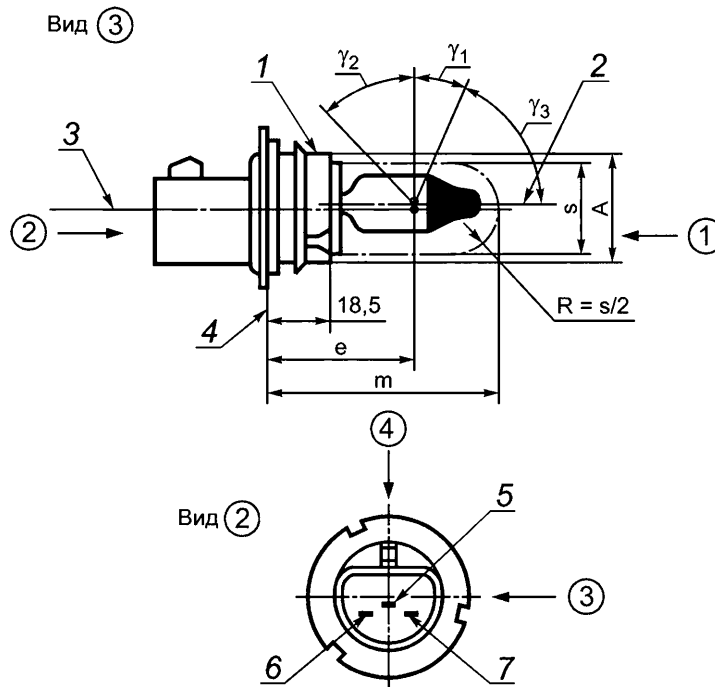
60809- -2125-2

: 1
: P29t

1 —

	12
	65/45
	13,2

Размеры в миллиметрах



1 — ; 2 — ; 3 — ; 4 — ; 5 — (R); 6 — ; 7 — ;

1 —

: P29t

60061-1 (7004-66).

s,

18,5

s/2.

60809- -2135-1

60809—2022

. 2/3

: 1

: P29t

1 2' 1 2' 3' 1(2 3— 44,5 ().

2—

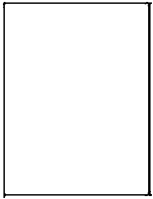
	12	12	12
	—	73 max	73 max
	—	52 max	52 max
	1320	±12%	1)
	770	±12 %	1)
m	28,55	±0,05	±0,05
s	44,50	±0,25	±0,15
Yi	—	70 max	70 max
	24,50	nom	nom
	38°	±5°	±5°
	—	43° min	43° min
	52°	±5°	±5°

1)

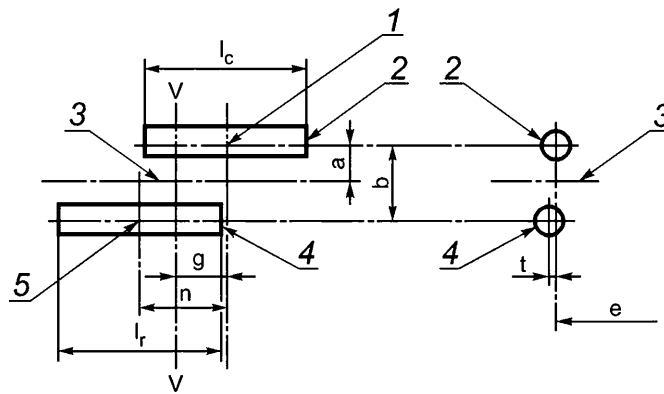
— 990 570

12 .

60809- -2135-1



: 1
: P29t



1 — ; 2 — ; 3 — ; 4 —
; 5 —

V-V —
R

2 —

1)			
	12	12	12
b	1,15	±0,38	±0,20
	2,30	±0,64	±0,25
g	1,20	±0,38	±0,20
l ₀ ^{1 2} »" ³ »,-	4,80	±0,40	±0,40
	4,80	±0,40	±0,40
	2,40	±0,80	±0,40
t	0,00	±0,64	±0,25

1>

F.

2)

0,3

3)

0,4

*

60809- -2135-1

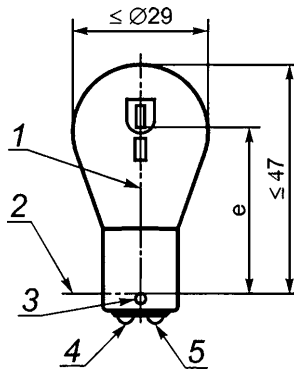
60809—2022

. 1/2

:S4
: BAX15d

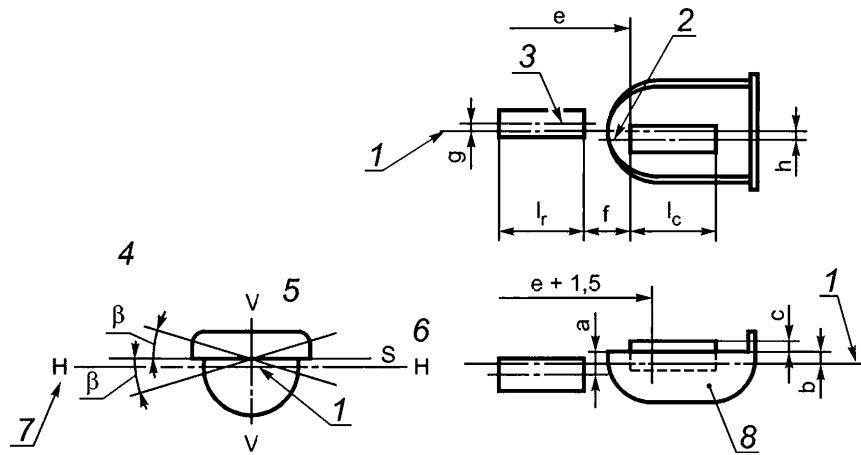
1—

	6	12
	15/15	15/15
	6,75	13,5



1— ; 2— (. 5— 4 . 2/2); 3— ; 4— ; 5—

1—



1— ; 2— ; 3— ; 4— ; 5— ; 6— ; 7— ; 8—

2—

60809- -2160-2

				. 2/2
		: S4 : BAX15d		
1 V-V 2 - 3 S-S				V-V.
: BAX15d	60061-1 (7004-18).			- .
2—				
	1)			
	6 12	6 12	6	
	15	±6%	±6%	
	15	±6%	±6%	
		180 min 125 min/190 max	1) 1)	
f	33,6	±0,35	±0,15	
l _{c>} '	1,8	±0,35	±0,2	
2)	3,5	±1,0	±0,5	
2)	0,4	±0,35	±0,15	
2)	0,2	±0,35	±0,15	
2)	0,6	±0,35	±0,15	
h	0,0	±0,5	±0,2	
g	0,0	±0,5	±0,2	
3,2),3)	0,0	±2°30'	±1°	
1)	240 ()	160 ()	-	
2)	6 .			
3)	+ 1,5 .			
	—			
	2 .			
60809- -2160-2				

60809—2022

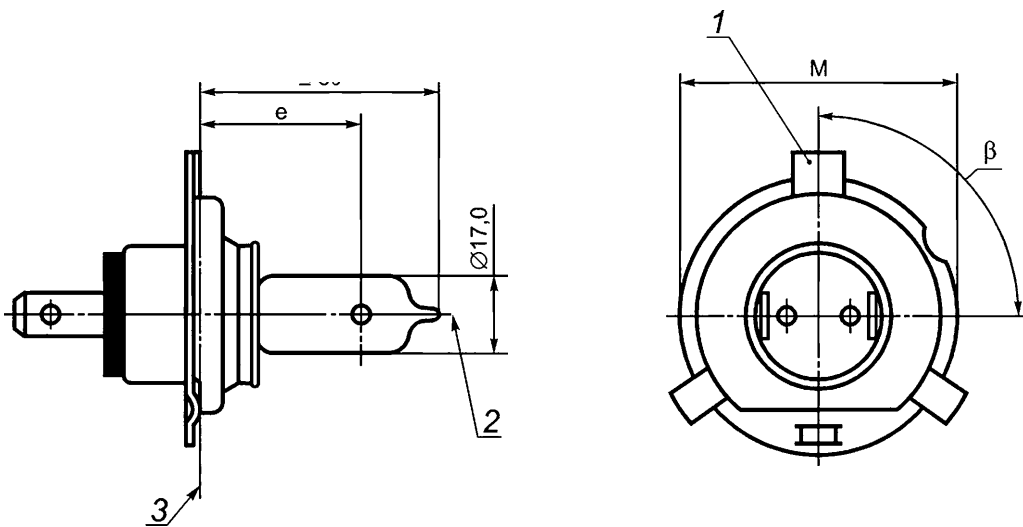
. 1/2

: 5

: PY43d*

1—

	12
	50
	13,2



1— ; 2— ; 3—

1—

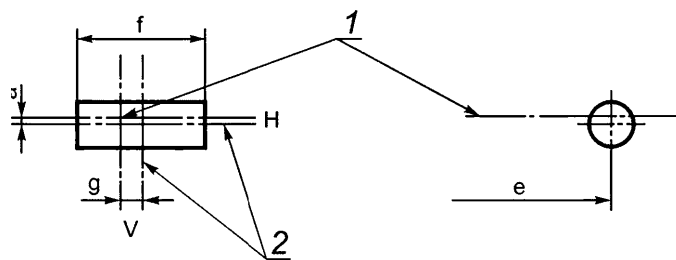
: PY43d 60061-1 (7004-88).

60809- -2305-2

: 5
: PY43d*

2 —

	12	12
	—	58 max
	1210	±15%
	44,50	±0,25 0,5 max ^{1 2 3)}
)	24,50	±15° ²⁾



1 — базовая ось; 2 — оси тела накала лампы

2 —

3 —

		g	f
12	0 + 0,35 ⁴⁾	0 + 0,35 ⁴⁾	6,0 max

- 1 >
- 2 >
- 3)
- 4)
- *

4,39

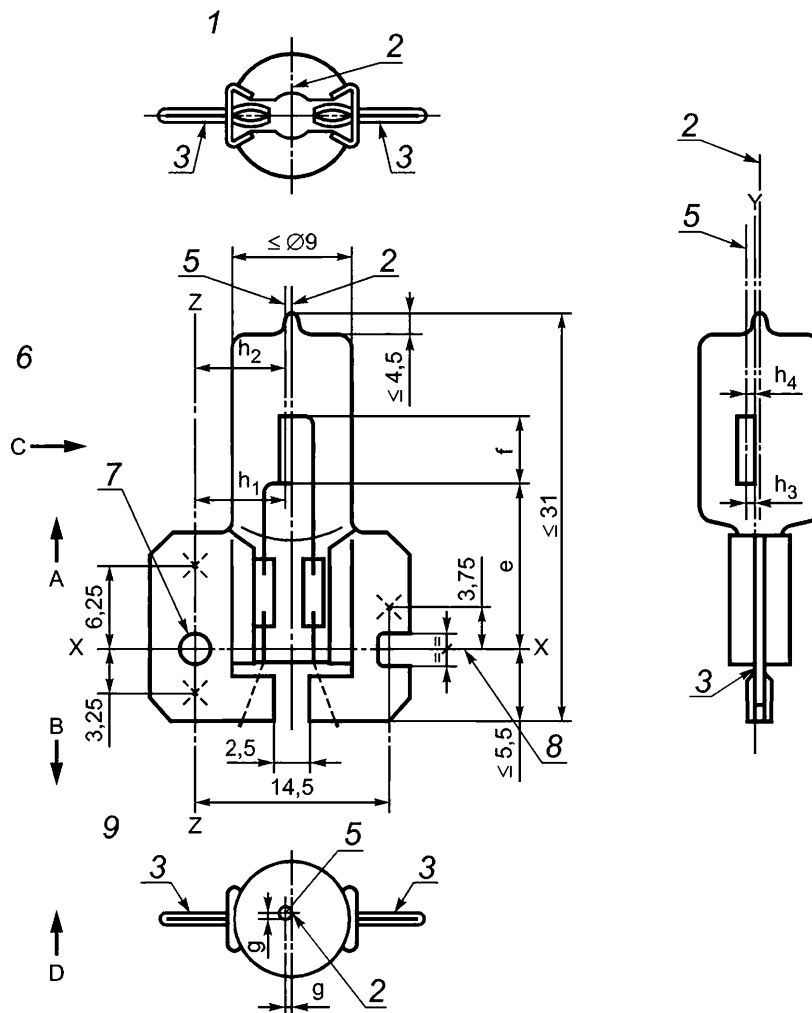
60809—2022

. 1/3

: 2
: 511

1 —

	6	12	24
	55	55	70
	6,3	13,2	28,0



1 — ; 2 — ; 3 — ; 4 — ; 5 — ; 6 — D; 7 — ; 8 — ; 9 —

1 —

60809- -2320-2

: 2

: 511

: 511

60061-1 (7004-99).

3

2—

1)							
	6	12	24	6	12	24	12
,	—	—	—	63 max	68 max	84 max	68 max
,	1300	1800	2150	±15%			1)
1 2 3)	12,25			2)			±0,15
f ³⁾	4,5	5,5		±1,0			±0,5
g ⁴⁾ -5)	0,5d			±0,5d			±0,25d
h ₁ 6)	0,4			2)			±0,20
h ₂ 6)	0,2			2)			±0,15
h ₃ 4) 6)	0,6			2)			±0,15
h ₄ 6>	0,0			2)			±0,2

1>

— 1300

12 .

2>

. 3/3.

3)

D (. 1/3)

Z-Z

7,1

4) d —

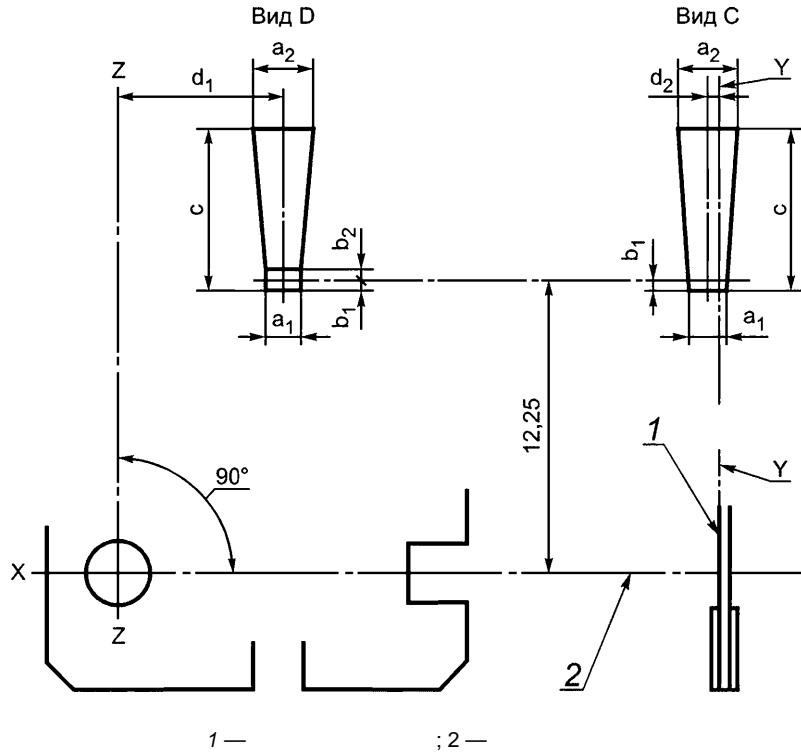
5)

6>

h₁ h₂
h₃ h₄

Z-Z
Y-Y

: 2
: 511



2 — () [. .10 ()]

3 —

	1	2	b ₁	b ₂	c	a ₁	d ₂
6	d + 0,5	d + 1,0	0,25	0,25	6	7,1	0,5d - 0,35
12	d + 0,5	d + 1,0	0,25	0,25	7	7,1	0,5d-0,35
24	d + 1,0	d + 1,0	0,25	0,25	7	7,1	0,5d-0,35

d —

3 . 2/3.

1 2'

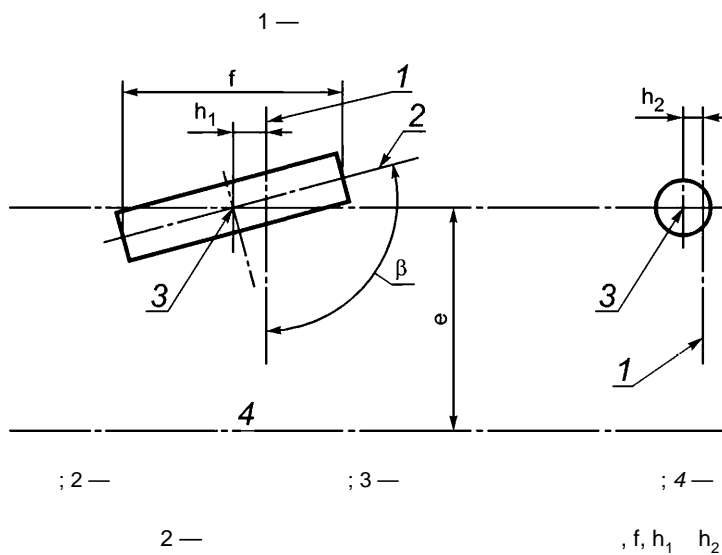
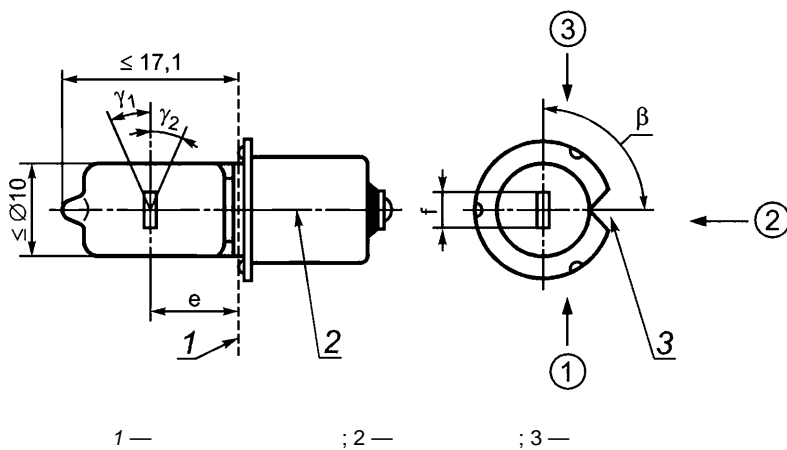
: HS3

: PX13.5S

1 —

	6
	2,4
	6

Размеры в миллиметрах



60809- -2350-2

60809—2022

. 2/3

:HS3

: PX13.5S

: PX13.5S

60061-1 (7004-35).

2—

1)			
	6	6	6
	2,4	±8%	±8%
	36	±15%	1)
f ⁴⁾	6,55	2)	±0,15
h ₁	1,25	±0,35	±0,25
h ₂	0,0	2)	±0,15
(3 3)	0,0	2)	±0,15
γ ₁ ^{2 3 4 5)}	90°	±20°	±5°
Y ₂ ⁵⁾	—	30° min	30° min
	—	25° min	30° min

— 36

6,0 .

2)

3>

4)

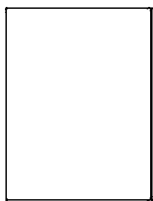
5)

¹ ²
50 %

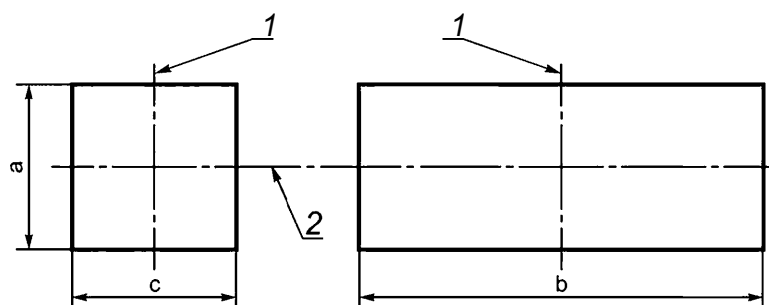
©.

8 .

60809- -2350-2



: HS3
: PX13.5S



1 — ; 2 — 6,55

3 — (« ») [. . 10 ()]

3 —

		b	
6	d + 0,5	2,1	1,1
d —			

(3),

60809—2022

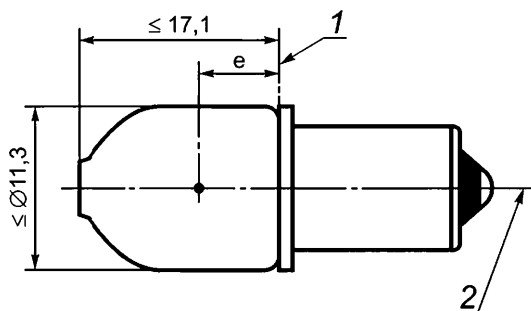
. 1/1

: B1.13W

: PX13.5S

1—

	2,7
	1,13
	2,7



1— ; 2—

1—

: PX13.5S

60061-1 (7004-35).

2—

	1,13	±10 %	±10 %
	9,4	±20 %	1)
	6,35	±0,25	±0,15
1 ²⁾	0,0	0,4 max	0,2 max

1)
2)

— 9,4

2,7

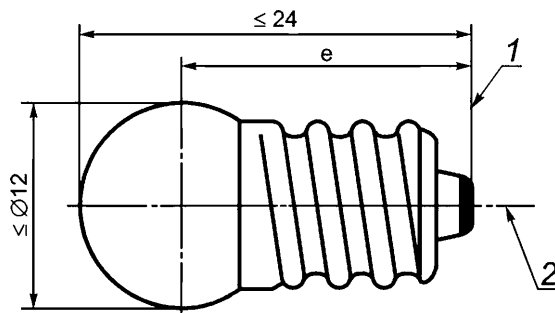
60809- -9310-1

: B0.6W

:

1 —

	6
	0,6
	6



1 — ; 2 —

1 —

60061-1 (7004-22).

2 —

	6	±10 %	±10 %
	0,6	±33 %	1)
	6	±1	±0,15
12)	18,0	1,0 max	0,2 max
	0,0		

1)
2)

— 3,0

6 .

60809- -9610-1

60809—2022

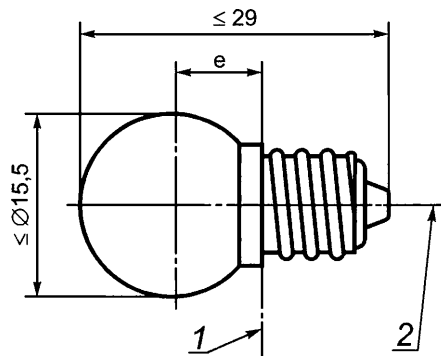
. 1/1

: B2.4W

: 10/14x11

1 —

	6
	2,4
	6



1 — ; 2 —

1 —

60061-1 (7004-22).

2 —

	2,4	±10%	±6%
	24	±20 %	1)
	6		
	8,75	±0,5	±0,15
12)	0,0	1,0 max	0,2 max

1)
2)

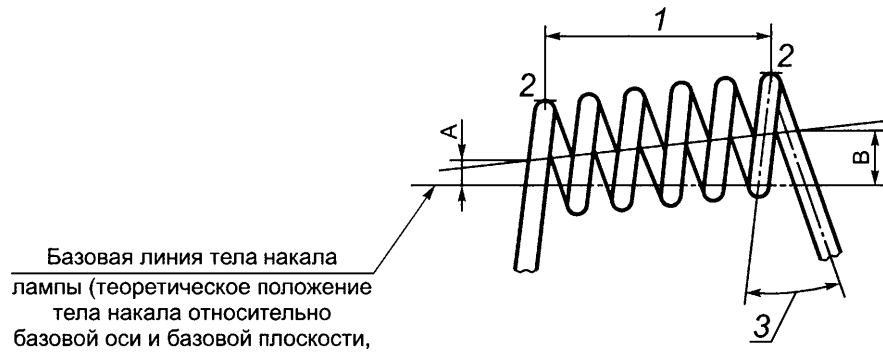
— 24

6 .

60809- -9620-1

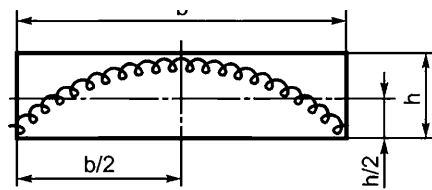
	()	
.1	,	
.2	,	
	.2.	—
		90 % 100 %
.4		
.5		
		150 %
.6		
.6.1		
.6.2	90° (. .1).	
.6.3		
.7		.6 (. .1),
.8		
.5,		(. .1).
.9		
	.2.	
		X, Y, Z (. .).
.10		()

60809—2022

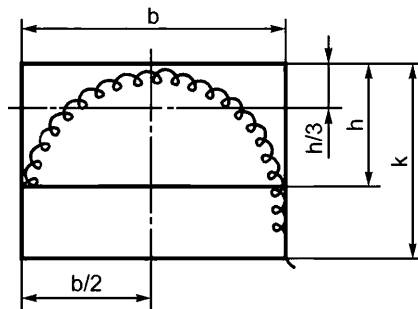


1 — ; 2 — ; 3 — (. . 6)

.1 — ()

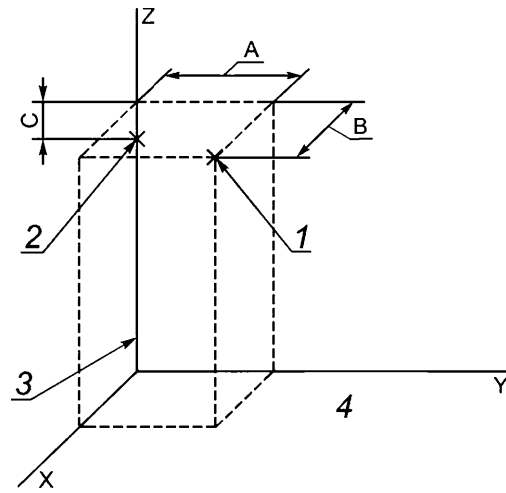


Для $b > 3$



Для $b \leq 3h$ ($k < 2h$)

.2 —



1—

; 2—

; 3—

; 4—

. —

()

()

60809—2022

()

.1

()

$(23 \pm 5) ^\circ\text{C}$.

10

.2

$\pm 0,002$

015:2018.

5°

15°

.3.1

(

)

30°

.3.2

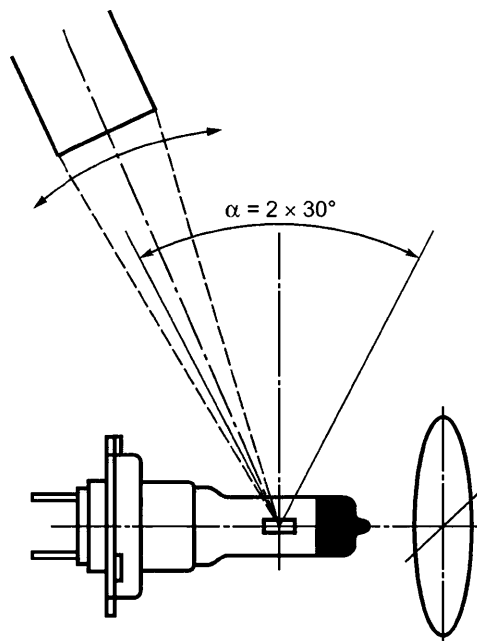
.3.3,

(

.3.2

(.1).

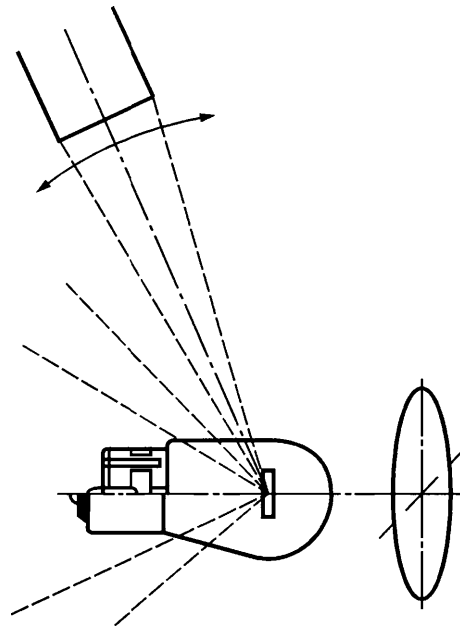
$\pm 30^\circ$



.1 —

.3.3

(. . . .2) :



.2—

60809—2022

()

.1

.1.1

1

.1.2

.1.3

(0,2

60051-1).

.1.4

.2

.2.1

48

(23 ± 2) °C

.2.2

.2.2.1

1 30

30

i)

30

100 % 80 %

ii)

1

30

±20 %

1

.2.2.2

.2.2.3

.1.

.1 —

6	6,0	7,7
12	12,0	14,0
24	24,0	28,0
	±30 %	±15%

.2.3

), : 30 ,)

.2.4

.2.5

.2.6

.2.6.1

(),

.2.6.2

(,) (. .1).
380 780

1,0 /(),

(23 ± 2) °C.

.2.6.3

30

±2 °C.

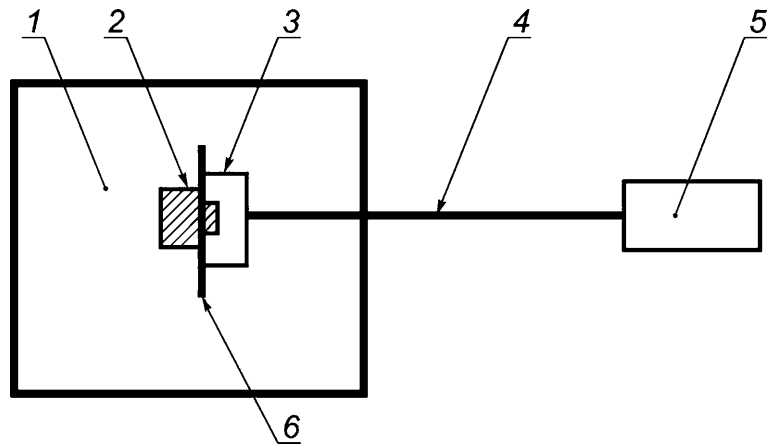
.2.6.4

(. .2).

500

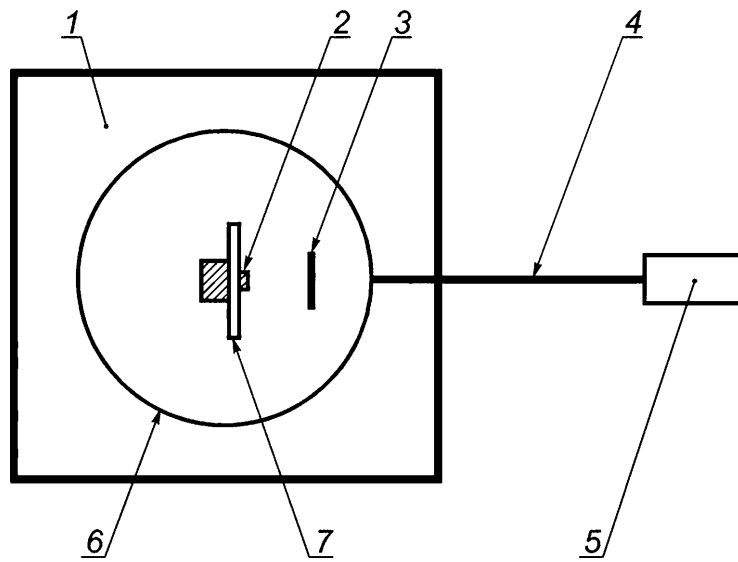
.2.6.2.

60809—2022



1— ; 2— ; 3— ; 4— ; 5— ;
6—

.1—



1— ; 2— ; 3— ; 4— ; 5—
; 7—

.2—

(D)

R2

D.1

D.1.1

D.1.2

1
2

D.1.3

D.2

D.2.1

45

D.2.2

D.2.3

V-V
V-V —

D.2.4

V-V,

D.2.5

15°

D.2.6

Y1-Y1
Y1-Y1 —

30

D.2.7

Y2-Y2
Y2-Y2 —

33

Y2-Y2

(): 13 14. Y1-Y1

Y2-Y2

D.3

(. D.1)

D.3.1

V-V,

D.3.2

(2)

D.3.3

(3)
15°.

D.4

D.2.

1

12

Y1-Y1 Y2-Y2.

2

13

Y2-Y2,

Y1-Y1

Y2-Y2

Y2-Y2

13

14,

Y1-Y1

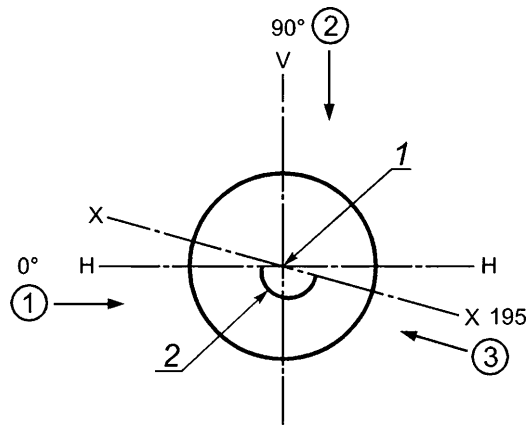
60809—2022

4 8
 5 , 11.
 11 :
 - ;
 - ;
 ©
 7 , 11.
 6 14 Y1-Y1 Y2-Y2.
 9 10 Y2-Y2.
 5 7 (2),
 (3)
 3 15 , 15°, Y1-Y1 Y2-Y2.
D.5
 D.1 R2.
 R2 R.E.5.

D.1 —

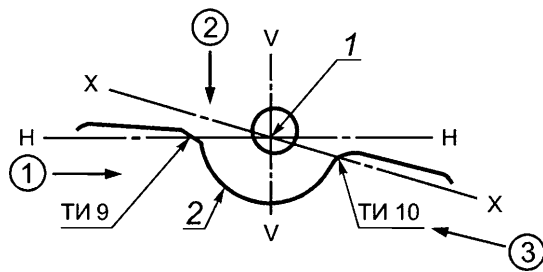
R2

D.1 —		R2	
1	11	-	1
1	-	-	1
12	-	-	1
3	-	-	3
15	-	-	3
9	V-V	V-V	2
10	V-V	V-V	2
2	1	-	1
13	12	-	1
6	V-V	V-V	2
14	V-V	V-V	2
4	-		1
4	5		1
7	V-V	V-V	2
4	8		1

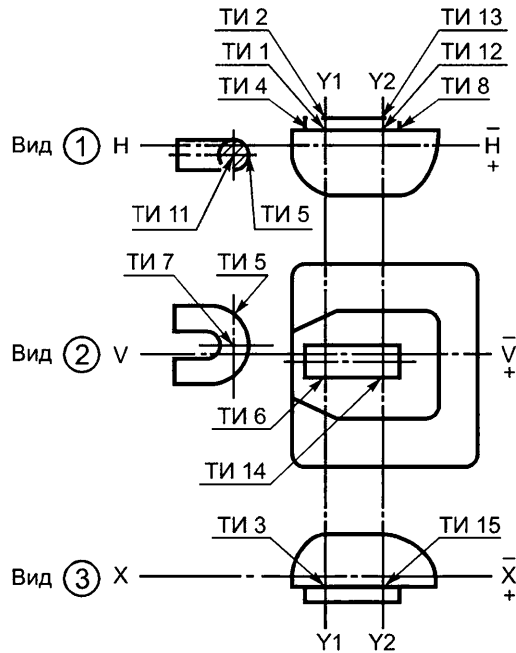


1 — ; 2 —

D.1 —



3
—
3



1 — ; 2 — ; 3 — 1

D.2 —

60809—2022

()

4, 17, 19 HS1

.1					
.1.1					
.1.2			1		
.1.3			2		
.2					
.2.1					
.2.2					
.2.3		V-V			
.2.4				V-V,	
.2.5		15°			
.2.6		Y1-Y1			29,5
(30,0	—	Y1-Y1	24 , 30,5	—	19).
.2.7		Y2-Y2			33,0
(31,0	—	Y2-Y2	HS1).		
.2.8		Y3-Y3			23,5
(25,0	—	Y3-Y3	HS1 17, 24,5	—	19).
.2.9		Y4-Y4			26,0
.2.10		Y5-Y5			
28,95	(29,25	Y5-Y5	24)		
.3.1				V-V,	
.3.2		(2)			
.3.3		(3)			
.3.4				V-V,	
.4					
.4.1				.2	

.4.2

(. . . .2)

1 12

Y3-Y3 Y4-Y4.

3 4

Y1-Y1 Y2-Y2.

5 6

Y1-Y1 Y2-Y2,

7

Y1-Y1.

8 11

10

()

12 13

Y3-Y3 Y4-Y4.

14 15

Y1-Y1 Y2-Y2.

16 17

Y2-Y2.

24 25

Y2-Y2 () ; -

19.

(4 HS1.

17 19).

18 19

Y1-Y1 Y2-Y2.

(17 19. 4 HS1)

18 19

Y1-Y1 Y2-Y2.

.4.3

(. . . .)

20

V-V -

23

Y5-Y5.

21 22

.5

4, 17, 19 .1 HS1.

4, 17, 19 HS1 R.E.5.

.1 —

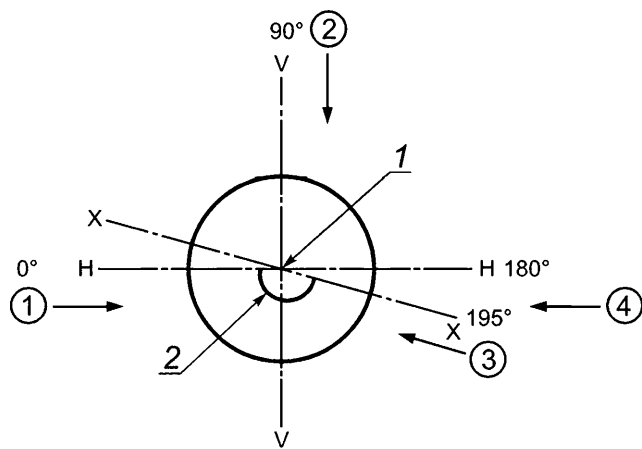
4, 17, 19 HS1

(. . . .2)				
			12	24
2 3	-	1	/26,0	
1	-	1	/23,5	
3 H-H ^d	-	1	b.j/29,5	t ^v /30,0
4 -	-	1	b/33,0	
18 X-X ^e d	-	3	z/29,5	z/ ,
		4		
19 -	-	3	/33,0	
		4		
3 5 ^d	-	1	/29,5	/30,0
4 6	-	1	/33,0	
7 3	-	1	d	

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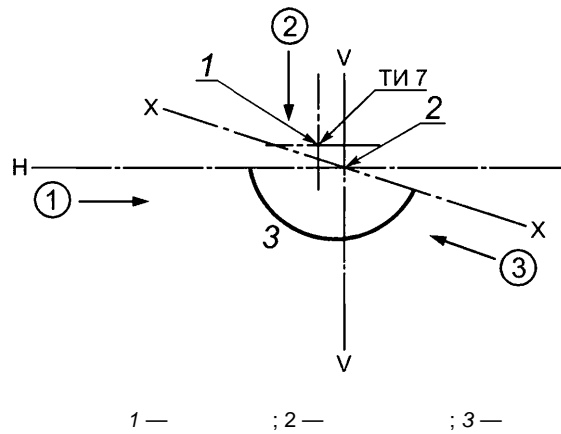
. 1

(. . . .2)					
				12	24
8				1	
8 9				1	
13 V-V		V-V		2	
12 V-V ^a		V-V		2	
14 V-V ^d		V-V		2	
15 V-V		V-V		2	
10				1	
8 11				1	
16 V-V ^b		V-V		2	
17 V-V ^b		V-V		2	
(. . . .)					
23 20		-		1	
23 21		V-V		2	
23 22		V-V		2	
24 25		V-V		2	
19 HS1		24,5		25,0	
HS1		17 19		31,0	
d		19		30,5	



1 — базовая ось; 2 — экран

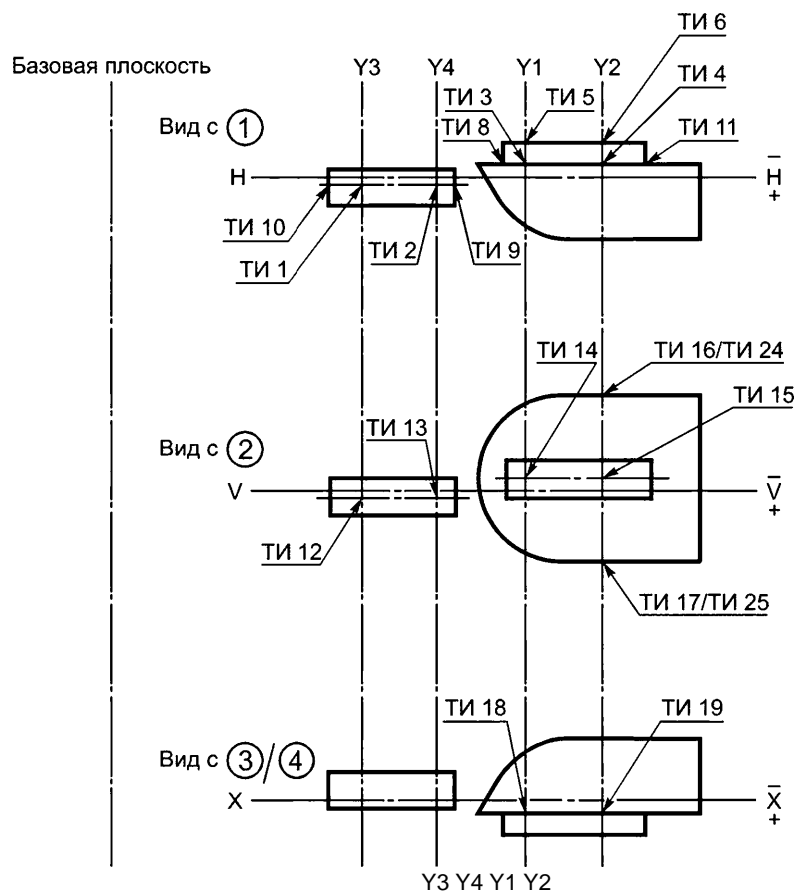
Рисунок Е.1 — Направления видов, вид лампы сверху



1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

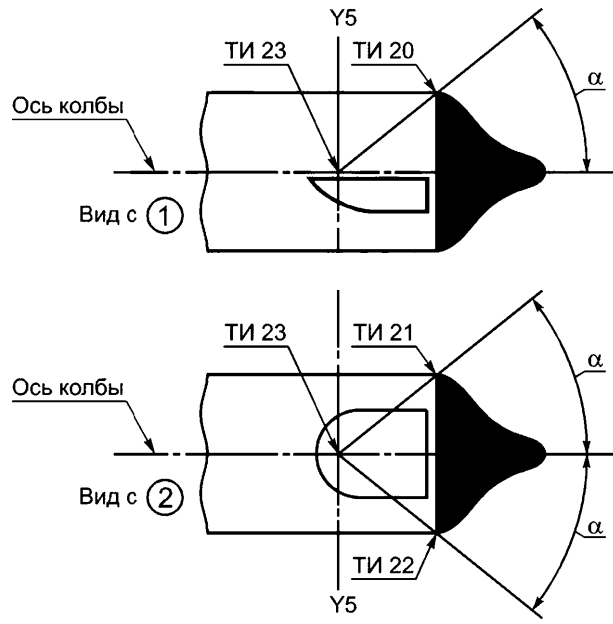
12, 13, 14, 15, 16, 17

18, 19



.2 —

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(F)

1

F.1

F.1.1

F.1.2

1

2

F.1.3

60061 -1, 7004-66.

F.2

F.2.1

() (. F.2,)

F.2.2

() (. F.1,)

F.2.3

() (. F.1,)

F.3

F.3.1

() (. F.2,)
F.2.1,

F.3.2

() (. F.1,)
F.2.2,

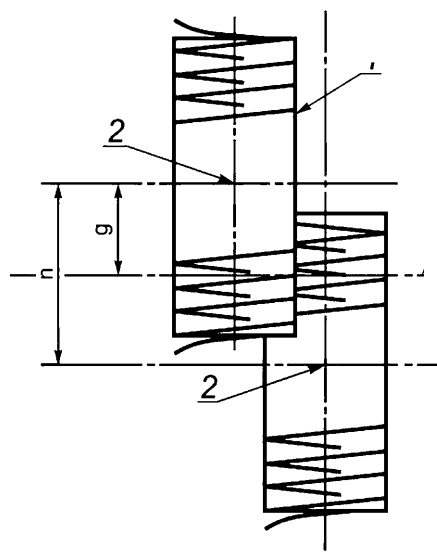
F.3.3

(t) (. F.1,)
F.2.3,

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1— ; 2— ; 3— ; 4— ;
5—

F.1— , (3)'



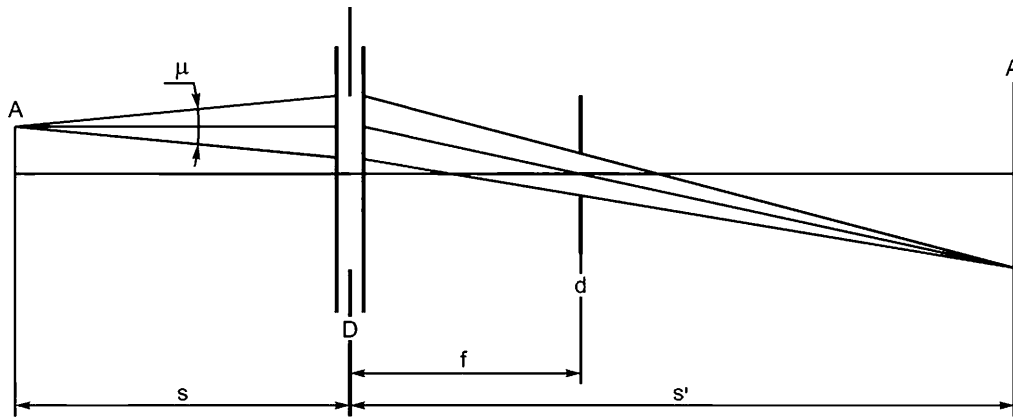
1— ; 2— ; 3— ; 4— ;
5—

F.2— , @

60809- -2135, . 1/3.
V-V, . 60809- -2135, . 3/3.

(G)

G.1
 R.E.5 D1R/D2R/D3R/D4R 1 R.E.5 D1S/D2S/D3S/D4S. 1 1



G.1 —

$= s'/s = 20$ (G.1).

d

$= 0,5^\circ$
 $d = 2f \operatorname{tg} ()$.

$D = (1 + 1/M)d + (1 + 2)/2 (, 1 2)$.

).

(

(—) . 0,2 , ,

0.025 , , —

s.

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	()	
.1		(25 ± 5) °C.
.2		
		±10°
32	60	
.4		15 : 45 , 15 , 5
,10		
.5		
.6		
.7	24	
1		
.8		15
.9		15
.10		±0,002.

() I

1.1.

1.1 —

/

	R.E.5		R.E.5		R.E.5		R.E.5		R.E.5		R.E.5
4	4	S2	S1/S2	1	1	HS2	HS2	D1S	DxS	L1A/6	L1
13/ 13	13	HS1	HS1					D2S	DxS	L1B/6	
		HS5	HS5	7	7			D3S	DxS		
15	15	17	17	8/ 8	8			D4S	DxS		
19	19			9/ 9	9			D1R	DxR		
								D2R	DxR		
				11/ 11	11			D3R	DxR		
				12	12			D4R	DxR		
				16/ 16				D5S	D5S		
				PSX26W ^b	PSX26W			D8S	D8S		
								D8R	D8R		
				4	4			D9S	D9S		
				H27W	H27W						
				HIR2	HIR2						
				PSX24W ^b	P24W						
				18	18						
				20	20						

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l.1

	R.E.5		R.E.5		R.E.5
P21/4W	P21/4W	WY16W	W16W	LR1	LR1
P21/5W	P21/5W	W21W	W21W	LW2	LW2
PR21/5W	PR21/5W	H10W/1	H10W	LR3A	L3
P27/7W	P27/7W	HY10W/1	H10W	LR3B	
PY27/7W	PY27/7W	HY21W	HY21W	LY3A	
W15/5W	W15/5W	HY6W	H6W	LY3B	
W21/5W	W21/5W	P13W	P13W	LW3A	
WT21/7W	WT21/7W	P24W	P24W	LW3B	
WTY21/7W	WTY21/7W	PY24W	P24W	LR4A	
WR21/5W	WR21/5W	PR21W	PR21W	LR4B	
		PS19W	P19W	LR5A	L5
		PS24W	P24W	LR5B	
		PSY19W	P19W	LY5A	
		PSY24W	P24W	LY5B	
		PW13W	P13W	LW5A	
		PW16W	PC16W	LW5B	
		PWY16W	PC16W		
		PW19W	P19W		
		PWY19W	P19W		
		PW24W	P24W		
		PWY24W	P24W		
		WT21W	WT21W		
		WTY21W	WT21W		
		WY21W	WY21W		
		RY10W	R10W		
		W10W	W10W		
		WY10W	W10W		
		C5W	C5W		

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1.1

R.E.5		R.E.5	R.E.5
	H6W	H6W	
	H21W	H21W	
	P21W	P21W	
	PY21W	PY21W	
	P27W	P27W	
	R5W	R5W	

1.1

R.E.5			R.E.5
	R10W	R10W	
	T4W	T4W	
	W2.3W	W2.3W	
	W3W	W3W	
	W5W	W5W	
	WY5W	W5W	
	W16W	W16W	

	60809
B1.13W	60809- -9310
B0.6W	60809- -9610
B2.4W	60809- -9620

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60809—2022

1

2

R.E.5.

(J)

J.1

J.1 J.2:
 - (J.6) — J.1;
 - (J.5), —
 J.2.
 J.1—

	3	J.5
		J.6
		J.7
	13	J.8

J.2 —

3	J.3
> 0 < 10	
> 10 < 20	
> 20 < 30	
> 30 < 45	D
: - ; - (() (« »; R.E.5 — « »).	

J.2

(60 ± 5)

J.3

J.4

J.6.

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J.5

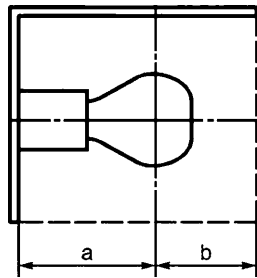
J.2,

J.3.

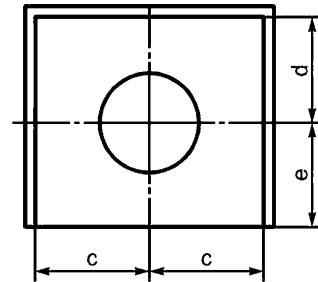
J.1

J.2.

J.1



J.1 — ()



J.2 — ()

J.3 —

				d,	
	13	11	7,75	8	12
	28	15	13	14	26
	42	18	19	19	40
D	42	18	19	19	40

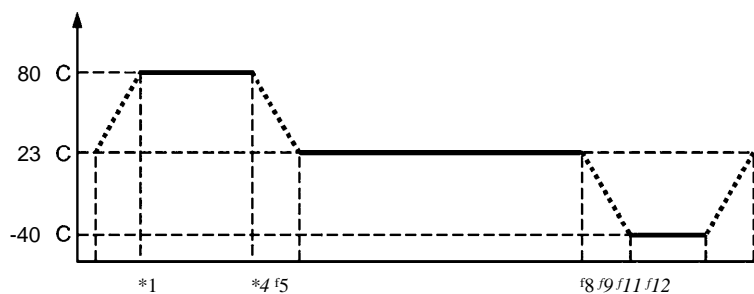
J.6

24 10
J.1, J.4 J.5

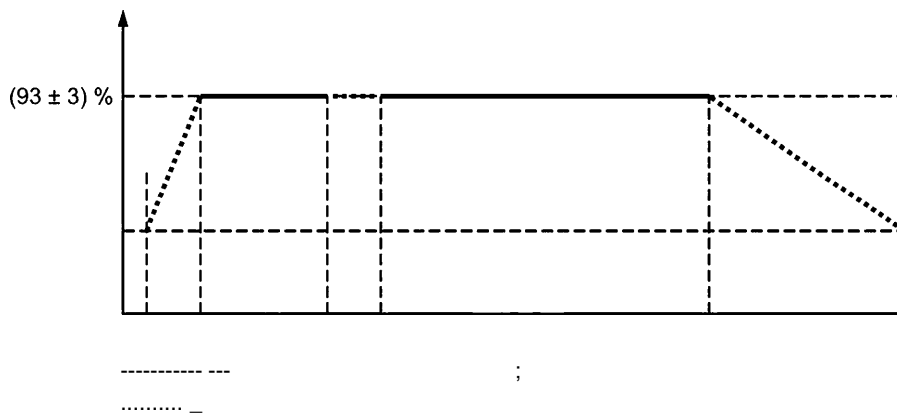
J.3 — J.8.
()

J.4 —

t_{0-4}	$t_{2,4}$	t_{3-4}	$t_{4,4}$	t_{5-4}	$t_{6,4}$	$t_{7,4}$	$t_{8>4}$	t_{g-4}	t_{l_0}	$t_{n,4}$	$t_{l_2>4}$	
0	1	5	5:20	7	8	12	12:20	20	21	21:20	23	24



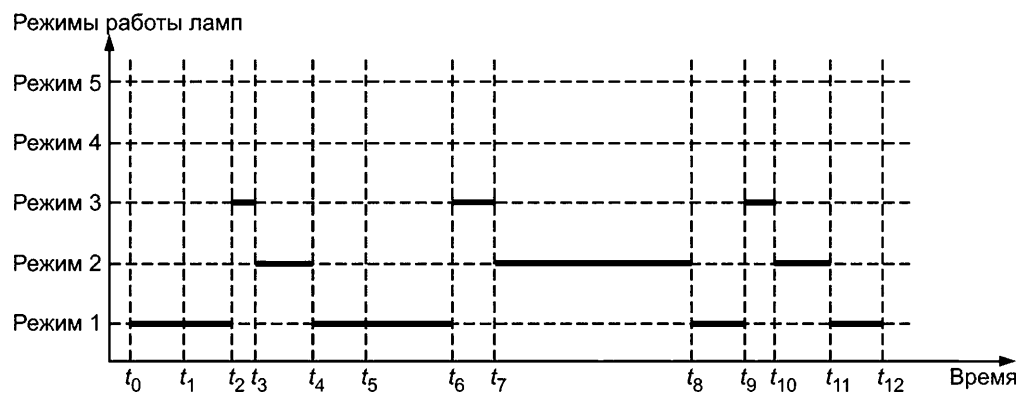
J.3 —



J.4 —

J.5 —

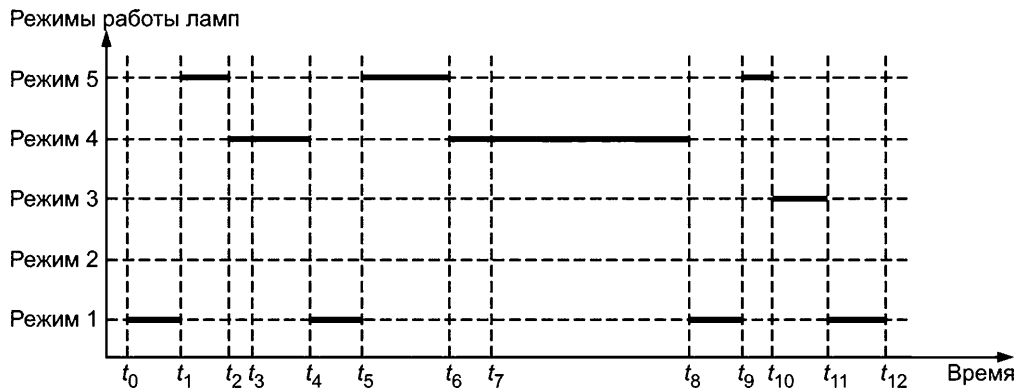
1		« »
2	15 90/ 15	« » / 1:1;
3	90/	« » / 1:1
4	5 , 5	« »
5		« »



J.5 —

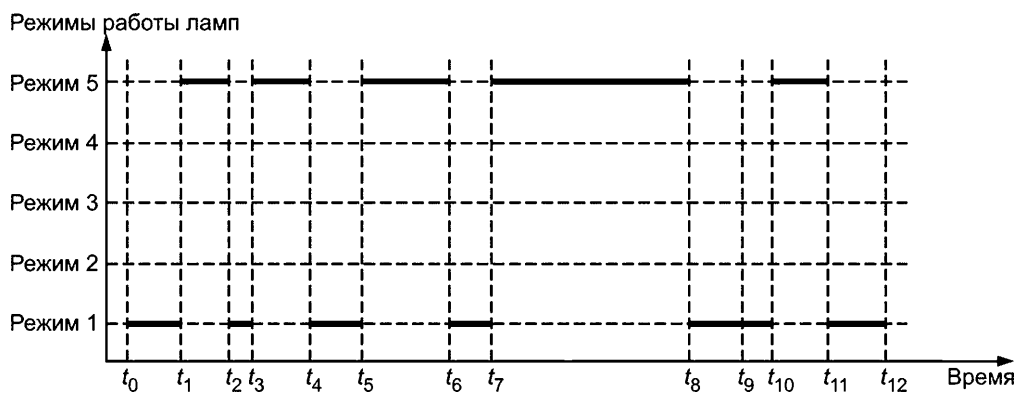
« » « »

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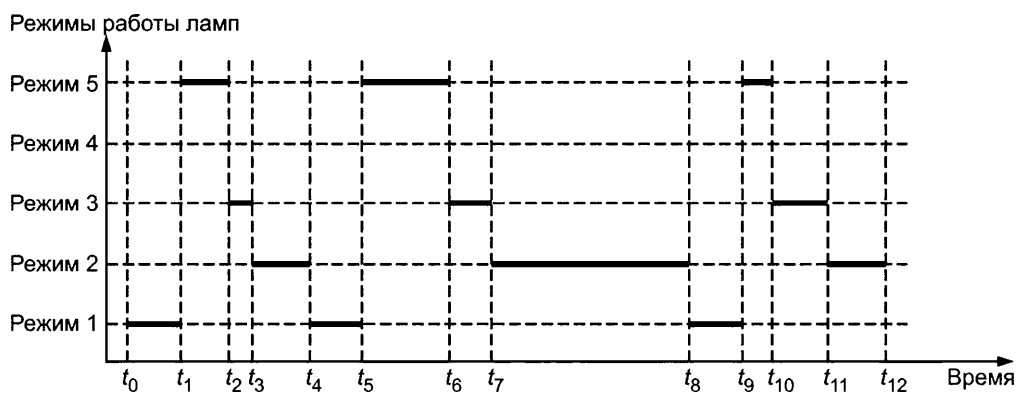


J.6 —

« »



J.7 —



J.8 —

« » « »

J.7

2 10

(23 ± 2) °C

()

11)

Lx3A, Lx3B, Lx4A, Lx4B, Lx5A, Lx5B²), L1A/6 L1B/6

.1

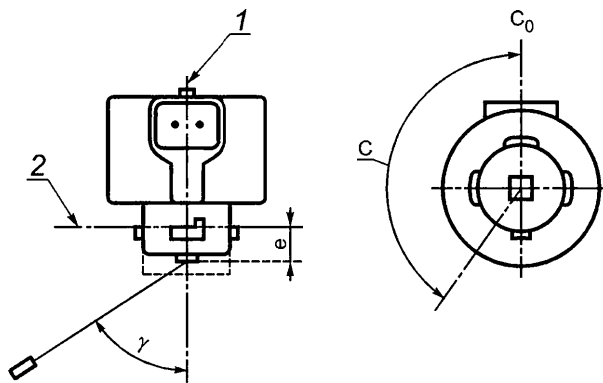
3)

0° < < 180°

1°

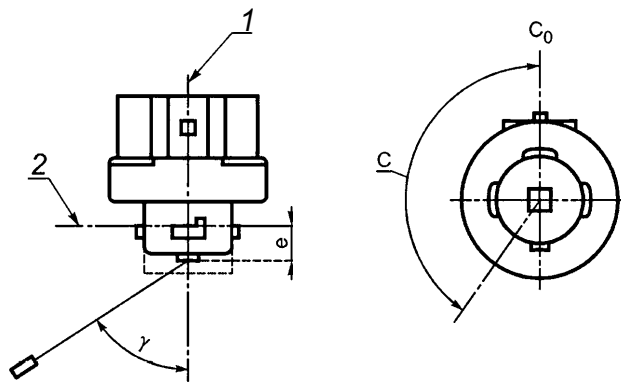
(. .1 .2).

- 90° < < +90°



1 — ; 2 —

.1 —



1 — ; 2 —

.2 —

.2

.1.

1)

2)

3)

R, Y W.
070-1987 «

R.E.5.

».

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(L)

L.1

50
10 20

10—20).

U_{test}

L.2

1.

$L(x)$

L.1.

2.

$L(x)$

s
s (1/50)

3.

$L(x)$

s

G_p

$$G_p(x) = | \log / _ () - \log L(x +) |.$$

4.

$G_p(x)$

G_{pmax}

L.2.

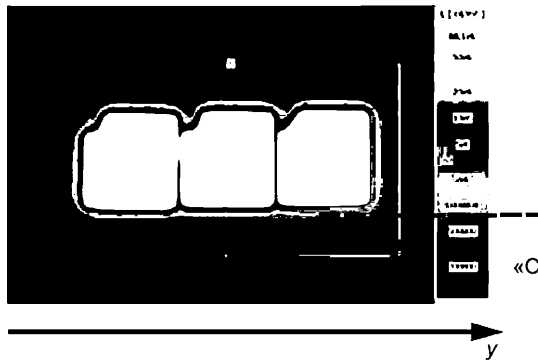
5.

G_{pmax}

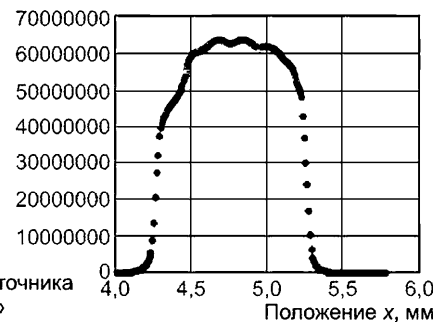
G_{pmax}

1: $G_{50} = 0,95 (I_f - 600, = 50 \text{ }^\circ\text{C}) ($

2: $G_{50} > -0,95 (U_{test} = 13,5, 30, = 25 \text{ }^\circ\text{C}) ($

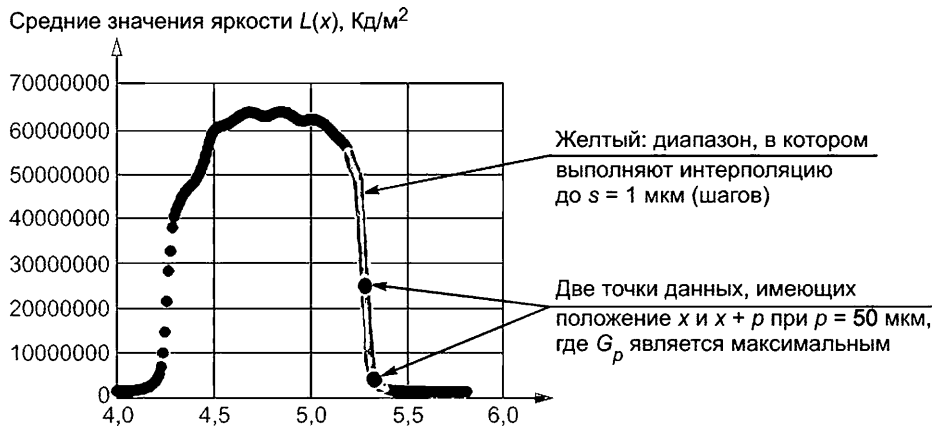


Среднее значение яркости $L(x)$, Кд/м²



«Срез СД источника света»

L.1 —



L.2 — 1 —

60809—2022

()

.1

IEC 60050-845	—	*
IEC 60051-1	IDT	30012.1—2002 « 1. »
IEC 60061-1	IDT	IEC 60061-1—2014 « 1. »
IEC 60810:2017	IDT	60810—2022 « »
CIE 015:2018	—	*
<p>* — : - IDT —</p>		

IEC 60983, Miniature lamps ()

IEC 62504, General lighting — Light emitting diode (LED) products and related equipment — Terms and definitions ()

CIE 070-1987, The Measurement of Absolute Luminous Intensity Distributions ()

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621.326:006.354

29.140.20

43.040.20

13.10.2022.

28.10.2022.

60 84¹/₈.

. . . . 8,84. . - . . . 7,96.

« »

117418

, . . 31, . 2.

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