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**Lamps for road vehicles—
Part 1: Dimensional, electrical and
luminous requirements**

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Contents

	Page
Introduction	1
1 General	1
1.1 Scope	1
1.2 Normative references	2
1.3 Terms and definitions	2
1.4 Numbering system for lamp data sheets and type designation	4
2 Requirements and test conditions of filament lamps	5
2.1 General	5
2.2 Marking	5
2.3 Bulbs	6
2.4 Colour	6
2.5 Filament lamp dimensions	7
2.6 Caps	7
2.7 Initial electrical and luminous characteristics	7
2.8 UV radiation	8
2.9 Standard filament lamps	8
3 Requirements and test conditions of discharge lamps	8
3.1 General	8
3.2 Marking	8
3.3 Bulbs	9
3.4 Caps	9
3.5 Position and dimensions of electrodes, arc and black stripes	9
3.6 Starting, run-up and hot-restrike characteristics	10
3.7 Initial electrical and luminous characteristics	10
3.8 Colour	10
3.9 UV radiation	11
3.10 Standard discharge lamps	12
4 Sampling inspection plan	12
5 Tables of list of specific lamp types and lamp data sheets	12
5.1 Tables of list of specific lamp types	12
5.2 Lamp data sheets	16
Annex A (normative) Filament shape, length and position	137
Annex B (normative) Measurement method of the colour of filament lamps	142
Annex C (normative) Test conditions for initial electrical and luminous characteristics	144

Annex E (normative)	Method of measuring internal elements of H4 and HS1 lamps	145
Annex G (informative)	Optical set-up for the measurement of the position and form of the arc and of the position of the electrodes of discharge lamps	151
Annex H (normative)	Measurement method of electrical and photometric characteristics of discharge lamps	153
Annex K (normative)	Test conditions for colour endurance measurements	155
Annex JA (normative)	Sampling inspection plan	159
Annex JB (informative)	Comparison table between JIS and corresponding International Standard	161

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Electric Lamp Manufacturers' Association (JELMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS C 7506-1:1999** is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS C 7506 series consists of the following 3 parts under the general title "*Lamps for road vehicles*":

Part 1: Dimensional, electrical and luminous requirements

Part 2: Performance requirements

Part 3: Miniature lamps

Lamps for road vehicles— Part 1: Dimensional, electrical and luminous requirements

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **IEC 60809** published in 1996, its Amendment 1 (1996), Amendment 2 (2002) and Amendment 3 (2004), adopting the corresponding parts of the said International Standard (test conditions and a list of lamps) without modifying the technical contents, but adding **JIS** specifications (marking, method of inspection, and lamp data sheets) that are not given in the said corresponding International Standard.

The portions given continuous sidelines and dotted underlines, and Annex JA are the matters not given in the corresponding International Standard. A list of the modifications, with their respective explanations, is given in Annex JB.

1 General

1.1 Scope

This Standard applies to interchangeable incandescent lamps and halogen lamps to be used in headlamps, fog-lamps and signaling lamps for road vehicles (hereafter referred to as “filament lamps”) and discharge lamps, and specifies the methods of test and the technical requirements of basic interchangeability (dimensional, electrical and luminous).

In this Standard, the term “lamps” generically refers to both filament lamps and discharge lamps.

Details of lamp classification are stated in clause 5.

Performance requirements such as lamp life, lumen maintenance, torsion strength and resistance to vibration are described in clauses 2 and 3 of **JIS C 7506-2**.

Information such as temperature limits and maximum lamp outlines is included in Annex F of **JIS C 7506-2**. Other small filament lamps are stated in **JIS C 7506-3**.

In this Standard, the following details are included:

- a) Requirements for production lamps
- b) Requirements for standard lamps

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows:

IEC 60809:1996 *Lamps for road vehicles—Dimensional, electrical and luminous requirements*, Amendment 1 (1996), Amendment 2 (2002) and Amendment 3 (2004) (MOD)

The symbols which denote the degree of correspondence in the contents between **JIS** and the corresponding International Standard are IDT

(identical), MOD (modified) and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

1.2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions (including amendments) of the standards indicated below shall be applied.

JIS C 1102-2 *Direct acting indicating analogue electrical measuring instruments and their accessories Part 2: Special requirements for ammeters and voltmeters*

NOTE : Corresponding International Standard: IEC 60051-2 *Direct acting indicating analogue electrical measuring instruments and their accessories. Part 2: Special requirements for ammeters and voltmeters* (IDT)

JIS C 7506-2 *Lamps for road vehicles—Part 2: Performance requirements*

NOTE : Corresponding International Standard: IEC 60810 *Lamps for road vehicles—Performance requirements* (MOD)

JIS C 7506-3 *Lamps for road vehicles—Part 3: Miniature lamps*

NOTE : Corresponding International Standard: IEC 60983 *Miniature lamps, Section 1: General, Section 2: Lamps for supplementary purposes in road vehicles* (MOD)

JIS C 7709-1 *Lamp caps and holders together with gauges for the control of interchangeability and safety Part 1: Lamp caps*

NOTE : Corresponding International Standard: IEC 60061-1 *Lamp caps and holders together with gauges for the control of interchangeability and safety—Part 1: Lamp caps* (MOD)

JIS C 7801 *General rules of testing method for lamps*

JIS Z 8113 *Lighting vocabulary*

NOTE : Corresponding International Standard: IEC 60050-845 *International Electrotechnical Vocabulary. Lighting* (MOD)

1.3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS C 7506-2** and **JIS Z 8113** and the following apply.

1.3.1 category

This term is used to describe different basic designs of standardized lamps.

NOTE : Each specific designation, for example A12V35W, P21/5W, H4, D2R forms a category. Most of these designations are taken from the ECE (European Commission for Europe).

1.3.2 nominal voltage

voltage used to designate a lamp, usually being the nominal voltage of the battery (6 V, 12 V or 24 V) of the road vehicle supply network, different from the test voltage

1.3.3 nominal wattage

wattage used to designate a lamp, different from the rated value

1.3.4 test voltage

voltage at the cap terminals for filament lamps and at the input terminals of the ballast for discharge lamps for which some characteristics are specified and at which they shall be tested

1.3.5 rated value

value of a characteristic specified for operation of a lamp at test voltage and/or other specified conditions

1.3.6 tolerance

allowable variation from a rated value

1.3.7 limit value

lowest and/or highest values for characteristics to which the lamp has to comply when operated under specified conditions

1.3.8 test luminous flux

specified luminous flux of a standard lamp at which the photometric characteristics of lighting and light-signalling devices shall be measured

1.3.9 reference plane

plane defined on the cap (including wedge base), which serves as a reference

1.3.10 reference axis

axis vertical to the reference plane in composition of lamps

1.3.11 standard lamp

lamp with colourless bulb, if no other colour is allowed according to the relevant lamp data sheet, and with smaller dimensional tolerances than production lamps, used for the photometric testing of lighting and light-signaling devices

Standard lamps are specified for only one nominal voltage for each category.

1.3.12 production lamp

lamp which shall comply with the requirements of this Standard as indicated in the column “production lamps” or “production discharge lamps”

1.3.13 heavy duty filament lamp

lamp declared as such by the manufacturer or responsible vendor which shall comply with the heavy duty test conditions specified in table B.3 of **JIS C 7506-2** in addition to the requirements specified in this Standard

1.3.14 light centre length

the distance from the prescribed reference plane of a filament lamp to the centre of the filament, or the position specified in the data sheet of a discharged lamp

1.3.15 lateral deviation of filament

the discrepancy between the reference axis and the centre of filament, on a plane including the centre of filament and perpendicular to the reference axis

1.3.16 angular displacement of filament: β

the angle formed by the reference direction specified in the lamp data sheet and the filament, when the cap and the filament are projected on the same horizontal plane while the reference axis is held vertically

1.3.17 box system

a procedure to carry out the test in such a manner that the correlative positions of the filament and the reference axis or the reference plane are projected on a plane being enlarged

1.3.18 ageing period

a period during which unused lamps are operated at their test voltage in order to stabilize their characteristics or performance

1.4 Numbering system for lamp data sheets and type designation

1.4.1 Numbering system for lamp data sheets

The numbering of lamp data sheets shall be in accordance with the following:

- C 7506-1-JIS-**, followed by four-digit number (the corresponding data sheet number of **IEC 60809**) (see table 2)
- C 7506-1-JIS-**, followed by four-digit number and "J" (see table 3)
- The corresponding data sheet number of **IEC 60809**, except for the types given in table 2 (see table 4).

The last figure, attached to the tail, indicates the edition of the relevant data sheet.

Example: **C 7506-1-JIS-0210J-1**

└─ Data sheet of the first edition (changed to the renewed edition, if applicable, e.g. 2,3,4, etc.)

C 7506-1-JIS-2120-1 For lamps stated in **IEC 60809**

└─ Four-digit data sheet number in **IEC 60809**

1.4.2 Type designation of lamps

Lamps dealt with in **IEC 60809** shall be designated by the category number in **IEC 60809** (e.g. P21W, H4, D2R, etc.).

Type designation of lamps given in table 3 shall be shown as in figure 1.

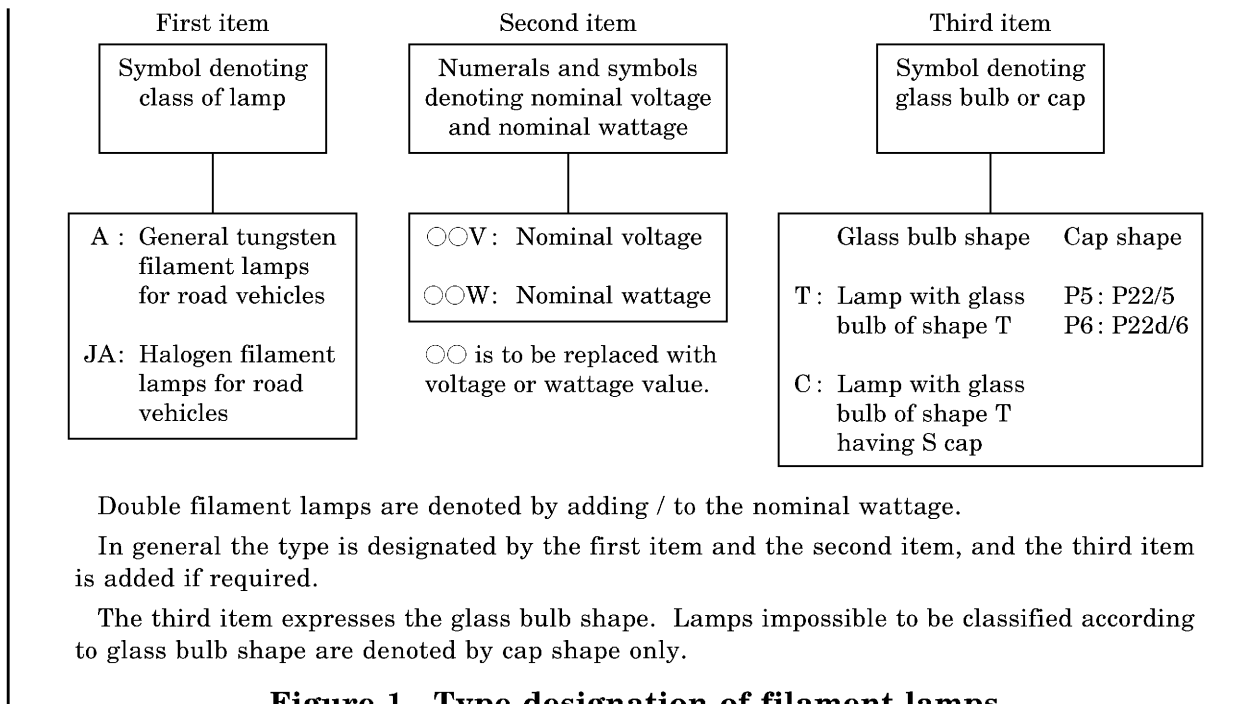


Figure 1 Type designation of filament lamps

2 Requirements and test conditions of filament lamps

2.1 General

Filament lamps shall be so designed and manufactured as to be and to remain in good working order when in normal use.

2.2 Marking

2.2.1 Marking on filament lamps

2.2.1.1 The following information shall be legibly and durably marked on the filament lamp in order to ensure replacement of lamps:

- a) the abbreviation of name of the manufacturer or the responsible vendor, the abbreviation preferably being a trademark;
- b) type designation (for the lamp given in table 3, type designation may consist of second item only);
- c) nominal voltage (this need not be indicated separately if it is part of the type designation);
- d) nominal wattage (in the sequence: high-wattage filament/low-wattage filament or main-beam filament/dipped-beam filament for double filament lamps; this need not be indicated separately if it is part of the type designation)
- e) halogen filament lamps meeting the requirements of 2.8 shall be marked with a "U".

2.2.1.2 Compliance of the marking shall be checked by the following:

- a) presence and legibility of the marking by visual inspection;

- b) durability by applying the following test on unused filament lamps:
the area of the marking on the filament lamp shall be rubbed by hand with a smooth cloth, dampened with water for a period of 15 s. After this test the marking shall still be legible.

2.2.1.3 If the marking is on the bulb, it shall not adversely affect the luminous characteristics.

2.2.2 Marking on packaging

The following information shall be marked on the packaging of filament lamps:

- a) the abbreviation of name of the manufacturer or the responsible vendor, the abbreviation preferably being a trademark;
- b) type designation (for the lamp given in table 3, type designation may consist of second item only);
- c) nominal voltage and nominal wattage (these need not be indicated separately if they are part of the type designation).

2.3 Bulbs

Filament lamp bulbs shall exhibit no flaws, bubbles or striae which might impair their optical performance.

2.4 Colour

2.4.1 The bulb of the filament lamp shall be white, unless otherwise prescribed on the relevant filament lamp data sheet. For some categories a coloured bulb is allowed. The colourimetric characteristics of filament lamps, expressed in CIE chromaticity coordinates shall lie within the following limits:

- a) White light emitted from the bulb
 - Limit towards blue: $x \geq 0.310$
 - Limit towards yellow: $x \leq 0.500$
 - Limit towards green: $y \leq 0.150 + 0.640x$
 - Limit towards green: $y \leq 0.440$
 - Limit towards purple: $y \geq 0.050 + 0.750x$
 - Limit towards red: $y \geq 0.382$
- b) Selective-yellow light emitted from the bulb
 - Limit towards red: $y \geq 0.138 + 0.580x$
 - Limit towards green: $y \leq 1.290x - 0.100$
 - Limit towards white: $y \geq 0.940 - x$ and $y \geq 0.440$
- c) Amber light emitted from the bulb
 - Limit towards green: $y \leq x - 0.120$
 - Limit towards red: $y \geq 0.390$

— Limit towards white: $y \geq 0.790 - 0.670x$

d) Red light emitted from the bulb

— Limit towards yellow: $y \leq 0.335$

— Limit towards purple: $y \geq 0.980 - x$

The colour measurements shall be conducted in accordance with Annex B.

Each of the measured values shall be within the required allowable tolerance range. Furthermore, in the case of white light emitted from a filament lamp, the values shall not be apart by 0.020 or more from a point on the black body radiation trajectory both in x and y directions.

For amber light and red light, at least 80 % of the measured values shall be within the required allowable tolerance range.

2.4.2 Coloured lamps used for signal lamps shall be turned on under the durability test conditions specified in Annex K.

Then colour of the light shall be measured in accordance with the method specified in Annex B, and all the measurement results shall be within the range specified in **2.4.1**. For amber light and red light, at least 80 % of the measured values shall be within the range.

In the case of coloured coating, the coating shall be free from visible cracks when inspected without using any specific optical device.

2.4.3 In the case of a bulb coloured by coating, after the ageing period corresponding to Annex C, the surface of the bulb shall be lightly wiped with a cotton cloth soaked in a mixture of *n*-heptane and toluene (volume ratio: 7:3). After 5 min, the surface shall be inspected visually. It shall not show any apparent changes.

2.5 Filament lamp dimensions

2.5.1 The filament lamp dimensions shall comply with the limiting values given on the relevant filament lamp data sheet.

2.5.2 The definition of and the measuring condition for the filament shape, length and position, shall be in accordance with the appropriate requirements of Annexes A and E.

2.6 Caps

The filament lamps shall have standard caps as specified on the relevant filament lamp data sheet and shall comply with the relevant cap data sheet of **JIS C 7709-1**.

2.7 Initial electrical and luminous characteristics

2.7.1 Filament lamp wattage and luminous flux, when tested in accordance with Annex C, shall comply with the limiting values given in the relevant filament lamp data sheet.

2.7.2 The luminous flux specified on the relevant filament lamp data sheet applies to filament lamps emitting white light, unless a special colour is stated there.

2.7.3 The rated luminous flux of the filament lamp with selective-yellow bulb shall be at least 85 % of the rated luminous flux of the relevant filament lamp with colourless bulb.

2.8 UV radiation

The UV radiation of a halogen filament lamp manufactured such as to reduce UV radiation shall be as follows:

$$k_1 = \frac{\int_{\lambda=250\text{nm}}^{400\text{nm}} \phi_{\lambda} d\lambda}{683 \int_{\lambda=380\text{nm}}^{\lambda=780\text{nm}} \phi_{\lambda} V(\lambda) d\lambda} \leq 2 \times 10^{-4} \text{ W/lm}$$

$$k_2 = \frac{\int_{\lambda=250\text{nm}}^{315\text{nm}} \phi_{\lambda} d\lambda}{683 \int_{\lambda=380\text{nm}}^{\lambda=780\text{nm}} \phi_{\lambda} V(\lambda) d\lambda} \leq 2 \times 10^{-6} \text{ W/lm}$$

where, k_1, k_2 : UV radiation (W/lm)

ϕ_{λ} : spectral distribution of the radiant flux (W/nm)

$V(\lambda)$: spectral luminous efficiency

λ : wavelength (nm)

These values shall be calculated using intervals of five nanometers.

2.9 Standard filament lamps

Standard filament lamps shall fulfill the additional requirements as specified on the relevant filament lamp data sheets.

Bulbs of standard filament lamps emitting white light shall not alter the CIE chromaticity co-ordinates of a luminous source having a colour temperature of 2 856 K by more than 0.010 units in the x and/or y direction.

For standard filament lamps emitting amber or red light, changes of the bulb temperature shall not affect the luminous flux which might impair photometric measurements of signaling devices.

3 Requirements and test conditions of discharge lamps

3.1 General

Discharge lamps shall be so designed and manufactured as to be and to remain in good working order when in normal use.

3.2 Marking

3.2.1 The following information shall be legibly and durably marked on the cap:

- a) the abbreviation of name of the manufacturer or the responsible vendor, the abbreviation preferably being a trademark;
- b) nominal wattage;
- c) type designation.

NOTE : The ballast used for starting and operating discharge lamps should be marked with type, trademark identification and with the nominal voltage and wattage, indicated on the relevant data sheets.

3.2.2 Compliance of the marking shall be checked by the following:

- a) presence and legibility of the marking by visual inspection;
- b) durability by applying the following test on unused discharge lamps:
the area of the marking on the discharge lamp shall be rubbed by hand with a smooth cloth, dampened with water for a period of 15 s. After this test the marking shall still be legible.

3.3 Bulbs

Discharge lamp bulbs shall exhibit no flaws, bubbles or striae which might impair their optical performance.

The bulbs shall satisfy the dimensional specifications given on the relevant data sheets.

In the case of a bulb coloured by coating, after an operating period of 15 h with the ballast at test voltage, the surface of the bulb shall be lightly wiped with a cotton cloth soaked in a mixture of *n*-heptane and toluene (volume ratio: 7:3). After 5 min, the surface shall be inspected visually. It shall not show any apparent changes.

3.4 Caps

The discharge lamps shall have standard caps as specified on the relevant filament lamp data sheet and shall comply with the relevant cap data sheet of **JIS C 7709-1**.

3.5 Position and dimensions of electrodes, arc and black stripes

3.5.1 Electrodes

The geometric position and dimensions of the electrodes shall be as specified on the relevant data sheet.

Compliance shall be checked before the ageing period, the discharge lamp unlit and using optical methods through the glass envelope.

Measurement of position of electrodes of discharge lamps should be in accordance with Annex G.

3.5.2 Arc

The shape and the displacement of the arc shall conform to the requirements as given on the relevant data sheet.

Compliance shall be checked after ageing, with the lamp supplied by the ballast at test voltage.

Example of arc measurement is given in Annex G.

3.5.3 Black stripes

The position, dimensions and transmission of the black stripes (if any) shall comply with the requirements as given on the relevant data sheet.

Compliance shall be checked after ageing, with the lamp supplied by the ballast at test voltage.

3.6 Starting, run-up and hot-restrike characteristics

3.6.1 Starting

The discharge lamp shall start directly and remain alight.

3.6.2 Run-up

After being started, the discharge lamp shall emit at least:

- After 1 s: 25 % of its rated luminous flux.
- After 4 s: 80 % of its rated luminous flux.
- Compliance is checked by the tests specified in Annex H

NOTE : The rated luminous flux is indicated on the relevant data sheet.

3.6.3 Hot-strike

After being switched-off for a period as indicated on the relevant data sheet, when switched-on, the lamp shall restart directly. After 1 s the lamp shall emit at least 80 % of its rated luminous flux.

Compliance is checked by the tests specified in Annex H.

3.7 Initial electrical and luminous characteristics

3.7.1 Voltage and wattage

The voltage and wattage of the lamp shall be within the limits given on the relevant data sheet.

Compliance is checked by the tests specified in Annex H.

3.7.2 Luminous flux

The luminous flux shall be within the limits given on the relevant data sheet of the discharge lamp.

In the case where white and selective-yellow are specified for the same type, the rated value applies to the lamp emitting white light, whereas the luminous flux of the lamp emitting selective-yellow light shall be at least 68 % of the specified value.

Compliance is checked by the tests specified in Annex H.

3.8 Colour

3.8.1 The colour of the light emitted shall be white unless selective-yellow is prescribed on the relevant data sheet of the discharge lamp.

In case of white, the colourimetric characteristics, expressed in CIE chromaticity co-ordinates, shall lie within the limits given on the relevant data sheet of the discharge lamp.

In case of selective-yellow, the colorimetric characteristics shall lie within the area formed by the following limits:

- Limits towards red: $y \geq 0.138 + 0.580x$
- Limits towards green: $y \leq 1.29x - 0.100$
- Limits towards white: $y \geq -x + 0.940$ and $y \geq 0.440$

3.8.2 The minimum red content of the light of a discharge lamp emitting white light shall be such that:

$$k_{red} = \frac{\int_{\lambda=610\text{nm}}^{780\text{nm}} \phi_{\lambda} V(\lambda) d\lambda}{\int_{\lambda=380\text{nm}}^{780\text{nm}} \phi_{\lambda} V(\lambda) d\lambda} \geq 0.05$$

where, k_{red} : red colour content
 ϕ_{λ} : spectral distribution of the radiant flux (W/nm)
 $V(\lambda)$: spectral luminous efficiency
 λ : wavelength (nm)

These values shall be calculated using intervals of one nanometer.

Compliance is checked by the tests specified in Annex H.

3.9 UV radiation

The maximum UV content of the light of a discharge lamp shall be such that:

$$k_{UV} = \frac{\int_{\lambda=250\text{nm}}^{400\text{nm}} \phi_{\lambda} S(\lambda) d\lambda}{683 \int_{\lambda=380\text{nm}}^{780\text{nm}} \phi_{\lambda} V(\lambda) d\lambda} \leq 10^{-5} \text{ W/lm}$$

where, k_{UV} : UV radiation (W/lm)
 ϕ_{λ} : spectral distribution of the radiant flux (W/nm)
 $S(\lambda)$: spectral weighting function
 $V(\lambda)$: spectral luminous efficiency
 λ : wavelength (nm)

These values shall be calculated using intervals of one nanometer.

The UV radiation shall be weighted according to the values as indicated in the following table 1.

Compliance is checked by the tests specified in Annex H.

Table 1 UV radiation

λ nm	$S(\lambda)$	λ nm	$S(\lambda)$	λ nm	$S(\lambda)$
250	0.43	305	0.06	355	0.000 16
255	0.52	310	0.015	360	0.000 13
260	0.65	315	0.003	365	0.000 11
265	0.81	320	0.001	370	0.000 09
270	1.00	325	0.000 5	375	0.000 077
275	0.96	330	0.000 41	380	0.000 064
280	0.88	335	0.000 34	385	0.000 053
285	0.77	340	0.000 28	390	0.000 044
290	0.64	345	0.000 24	395	0.000 036
295	0.54	350	0.000 2	400	0.000 03
300	0.30				
Wavelengths chosen are representative, other values should be interpolated.					

3.10 Standard discharge lamps

Standard discharge lamps shall comply with the requirements applicable to discharge lamps and to the specific requirements as stated in the relevant data sheet. In case of a type emitting white and selective-yellow light, the standard discharge lamp shall emit white light.

4 Sampling inspection plan

The method of sampling inspection in delivery inspection shall be in accordance with Annex JA.

NOTE : Alternatively, methods designated as No. 37 and No. 99 in ECE regulations may be applied.

5 Tables of list of specific lamp types and lamp data sheets

5.1 Tables of list of specific lamp types

Table 2 lists lamps that are also specified in **IEC 60809** (including types under consideration) and table 3 lists lamps that are not given in **IEC 60809**.

NOTE : Table 4 lists the general requirements of lamps that are specified in **IEC 60809** but rarely used in Japan, or those the future use of which is not recommended in **IEC 60809**.

Table 2 List of lamp data sheets

Type designation	Nominal voltage V	Nominal wattage W	Bulb shape	Cap	Data sheet No.	Data sheet No. in IEC 60809
H4	12	60/55	a)	P43t-38	C 7506-1-JIS-2120-	60809-IEC-2120-
	24	75/70				
HS1	12	35/35	a)	PX43t	C 7506-1-JIS-2130-	60809-IEC-2130-
HS5	12	35/30	a)	P23t	C 7506-1-JIS-2132-	60809-IEC-2132-
H1	12	55	a)	P14.5s	C 7506-1-JIS-2310-	60809-IEC-2310-
	24	70				
H7	12	55	a)	PX26d	C 7506-1-JIS-2315-	60809-IEC-2315-
	24	70				
H8	12	35	a)	PGJ19-1	C 7506-1-JIS-2365-	60809-IEC-2365-
H9	12	65	a)	PGJ19-5	C 7506-1-JIS-2370-	60809-IEC-2370-
H11	12	55	a)	PGJ19-2	C 7506-1-JIS-2380-	60809-IEC-2380-
	24	70				
H14	12	60/55	a)	P38t-33	Under consideration	Under consideration
HB3	12	60	a)	P20d	C 7506-1-JIS-2325-	60809-IEC-2325-
H3	12	55	a)	PK22s	C 7506-1-JIS-2330-	60809-IEC-2330-
	24	70				
HB4	12	51	a)	P22d	C 7506-1-JIS-2335-	60809-IEC-2335-
HIR1	12	65	a)	PX20d	C 7506-1-JIS-2410-	60809-IEC-2410-
HIR2	12	55		PX22d	C 7506-1-JIS-2420-	60809-IEC-2420-
P21/5W	12	21/5	S25	BAY15d	C 7506-1-JIS-3110-	60809-IEC-3110-
W15/5W	12	15/5	T20	WZ3×16q	Under consideration	Under consideration
W21/5W	12	21/5	T20	W3×16q	C 7506-1-JIS-3130-	60809-IEC-3130-
WR21/5W	12	21/5	T20	WY3×16q	C 7506-1-JIS-3135-	60809-IEC-3135-
P21W	12	21	S25	BA15s(BA15d)	C 7506-1-JIS-3310-	60809-IEC-3310-
	24	21				
PY21W	12	21	S25	BAU15s	C 7506-1-JIS-3311-	60809-IEC-3311-
	24	21				
R5W	12	5	a)	BA15s(BA15d)	C 7506-1-JIS-3320-	60809-IEC-3320-
	24	5				
R10W	12	10	a)	BA15s(BA15d)	C 7506-1-JIS-3330-	60809-IEC-3330-
	24	10				
T4W	12	4	T8	BA9s	C 7506-1-JIS-3340-	60809-IEC-3340-
	24	4				
C5W	12	5	T10	SV8.5	C 7506-1-JIS-4110-	60809-IEC-4110-
	24	5				
W5W	12	5	T10	W2.1×9.5d	C 7506-1-JIS-4320-	60809-IEC-4320-
	24	5				
WY5W	12	5	T10	W2.1×9.5d	C 7506-1-JIS-4321-	60809-IEC-4321-
	24	5				

Table 2 (concluded)

Type designation	Nominal voltage V	Nominal wattage W	Bulb shape	Cap	Data sheet No.	Data sheet No. in IEC 60809
W21W	12	21	T20	W3×16d	C 7506-1-JIS-4330-	60809-IEC-4330-
WY21W	12	21	T20	WX3×16d	C 7506-1-JIS-4335-	60809-IEC-4335-
W16W	12	16	T16	W2.1×9.5d	C 7506-1-JIS-4340-	60809-IEC-4340-
D2S	12	35	a)	P32d-2	C 7506-1-JIS-7110-	60809-IEC-7110-
D2R	12	35	a)	P32d-3	C 7506-1-JIS-7120-	60809-IEC-7120-
D4S	12	35	a)	P32d-5	C 7506-1-JIS-7110-	60809-IEC-7110-
D4R	12	35	a)	P32d-6	C 7506-1-JIS-7120-	60809-IEC-7120-
Note a) Type of bulb shall be in accordance with the specification on the relevant data sheet. For data sheets in the corresponding International Standard, the most recent edition shall be referred to.						

Table 3 List of lamp data sheets

Type designation	Nominal voltage V	Nominal wattage W	Bulb shape	Cap	Data sheet No.	Data sheet No. in IEC 60809
JA12V45/45W	12	45/45	T16	P43t-38/65×65	C 7506-1-JIS-0210J-	—
JA12V30/30W	12	30/30	T16	P15d-25-1	C 7506-1-JIS-0220J-	—
A12V25/25W	12	25/25	T19	P15d-25-1	C 7506-1-JIS-0230J-	—
JA12V55WP5	12	55	T13	P22d/5	C 7506-1-JIS-0240J-	—
JA12V35W	12	35	T11	PK22s/6	C 7506-1-JIS-0250J-	—
JA12V35WP6	12	35	T13	P22d/6	C 7506-1-JIS-0260J-	—
A12V35/5W	12	35/5	S25	BAY15d	C 7506-1-JIS-0310J-	—
A24V25/10W	24	25/10	S25	BAY15d	C 7506-1-JIS-0320J-	—
A12V35W	12	35	S25	BA15s	C 7506-1-JIS-0330J-	—
A24V25W	24	25	S25	BA15s	C 7506-1-JIS-0340J-	—
A24V12W	24	12	G18	BA15s(BA15d)	C 7506-1-JIS-0350J-	—
A12V7.5W	12	7.5	G18	BA15s(BA15d)	C 7506-1-JIS-0360J-	—
A12V10WC	12	10	T10	S8.5/8.5	C 7506-1-JIS-0410J-	—
A12V8WC	12	8	T10	S8.5/8.5	C 7506-1-JIS-0415J-	—
A12V5WC	12	5	T10	S8.5/8.5	C 7506-1-JIS-0420J-	—
A12V13W	12	13	T16	W2.1×9.5d	C 7506-1-JIS-0441J-	—
A12V10WT	12	10	T13	W2.1×9.5d	C 7506-1-JIS-0450J-	—
A12V3.8W	12	3.8	T10	W2.1×9.5d	C 7506-1-JIS-0460J-	—
A12V3.4W	12	3.4	T10	W2.1×9.5d	C 7506-1-JIS-0461J-	—

Table 4 List of specific lamp types

Type designation	Nominal voltage V	Bulb shape	Cap	Light centre distance mm	Test voltage V	Nominal wattage W	Total luminous flux lm	Data sheet No. in IEC 60809
R2	6	G40	P45t	28.5	6.3	45/40	720/570	60809-IEC-2110-Annex D
	12				13.2	45/40	860/675	
	24			28.8	28.0	55/50	1 000/860	
H6	12	a)	PZ43t	26.0	13.2	65/55	1 320/880	60809-IEC-2125-
HS1	6	a)	PX43t	28.5	6.3	35/35	700/440	60809-IEC-2130-
HB1	12	a)	P29t	44.5	13.2	65/45	1 320/770	60809-IEC-2135-Annex F
S1	6	B35	BA20d	32.7	6.75	25/25	435/315	60809-IEC-2140-
	12				13.5	25/25	435/315	
S2	6	B35	BA20d	32.7	6.3	35/35	650/465	60809-IEC-2150-
	12				13.5	35/35	650/465	
S4	6	S28	BAX15d	33.6	6.75	15/15	180 min./125 to 190	60809-IEC-2160-
	12				13.5	15/15	180 min./125 to 190	
H5	12	a)	PY43d	26.0	13.2	50	1 210	60809-IEC-2305-
H1	6	T8	P14.5s	25.0	6.3	55	1 350	60809-IEC-2310-
H2	6	T8	X511	12.25	6.3	55	1 300	60809-IEC-2320-
	12				13.2	55	1 800	
	24				28.0	70	2 150	
H3	6	T10	PK22s	18.0	6.3	55	1 050	60809-IEC-2330-
HS2	6	a)	PX13.5s	11.0	6.75	15	320	60809-IEC-2340-
	12				13.5	15	320	
HS3	6	a)	PX13.5s	6.55	6.0	2.4	36	60809-IEC-2350-
S3	6	S25	P26s	19.5	6.75	15	240	60809-IEC-2360-
	12				13.5	15	240	
P21/5W	6	S25	BAY15d	31.8	6.75	21/5	440/35	60809-IEC-3110-
	24				28.0	21/5	440/40	
P21/4W	12	S25	BAZ15d	31.8	13.5	21/4	440/15	60809-IEC-3120-
	24				28.0	21/4	440/20	
P21W	6	S25	BA15s(BA15d)	31.8	6.75	21	460	60809-IEC-3310-
P27W	12	S25	W2.5×16d	27.9	13.5	27	470	60809-IEC-3315-
P27/7W	12	S25	W2.5×16q	27.9	13.5	27/7	475/36	60809-IEC-3140-
PY27/W	12	S25	W2.5×16q	27.9	13.5	27/7	280/21	60809-IEC-3141-
R5W	6	a)	BA15s(BA15d)	19.0	6.75	5	50	60809-IEC-3320-
R10W	6	a)	BA15s(BA15d)	19.0	6.75	10	125	60809-IEC-3330-
T4W	6	T8	BA9s	15.0	6.75	4	35	60809-IEC-3340-
H6W	12	a)	BAX9s	15.0	13.5	6	125	60809-IEC-3410-
H21W	12	a)	BAY9s	20.0	13.5	21	600	60809-IEC-3420-
	24				28.0	21	600	

Table 4 (concluded)

Type designation	Nominal voltage V	Bulb shape	Cap	Light centre distance mm	Test voltage V	Nominal wattage W	Total luminous flux lm	Data sheet No. in IEC 60809
H27W/1	12	a)	PG13	31.75	13.5	27	477	60809-IEC-3430-
H27W/2	12	a)	PGJ13	31.75	13.5	27	477	
HB3A	12	a)	P20d	31.5	13.2	60	1 860	60809-IEC-2325-
HB4A	12	a)	P22d	31.5	13.2	51	1 095	60809-IEC-2335-
H10	12	a)	PY20d	28.9	13.2	42	850	60809-IEC-2375-
H12	12	a)	PZ20d	31.5	13.2	53	1 060	60809-IEC-2385-
C5W	6	T10	SV8.5	—	6.75	5	45	60809-IEC-4110-
C21W	12	T15	SV8.5	—	13.5	21	460	60809-IEC-4120-
W2.3W	12	T5	W2×4.6d	10.8	13.5	2.3	18.6	60809-IEC-4305-
W3W	6	T10	W2.1×9.5d	12.7	6.75	3	22	60809-IEC-4310-
	12				13.5	3	22	
	24				28	3	22	
W5W	6	T10	W2.1×9.5d	12.7	6.75	5	50	60809-IEC-4320-
WY5W	6	T10	W2.1×9.5d	12.7	6.75	5	30	60809-IEC-4321-
T1.4W	12	a)	P11.5d	8.3	13.5	1.4	8	60809-IEC-5010-
B1.13W	2.7	a)	PX13.5s	6.35	2.7	1.13	9.4	60809-IEC-9310-
B0.6W	6	a)	E10	18.0	6.0	0.6	3	60809-IEC-9610-
B2.4W	6	a)	EP10/14×11	8.75	6.0	2.4	8.75	60809-IEC-9620-
D1S	12	a)	PK32d-2	27.1	13.5	35	3 200	60809-IEC-7110-
D1R	12	a)	PK32d-3	27.1	13.5	35	2 800	60809-IEC-7120-
D3S	12	a)	PK32d-5	27.1	13.5	35	3 200	60809-IEC-7110-
D3R	12	a)	PK32d-6	27.1	13.5	35	2 800	60809-IEC-7120-
For the details of lamps in the above table, the corresponding IEC data sheet of the most recent edition and the relevant Annexes shall be referred to.								
Note a) Type of bulb shall be in accordance with the specification on the relevant data sheet.								

5.2 Lamp data sheets

The lamp data sheets are shown in the following.

1999	Road vehicle filament lamp data sheet	Page 1/4
	Category: H4 Cap: P43t-38	

Voltage and wattage

Nominal voltage	V	12	24
Nominal wattage	W	60/55	75/70
Test voltage	V	13.2	28.0

Third angle projection
Unit: mm

The drawing shows a side view and an end view of a filament lamp. The side view includes dimensions m (total length), p (distance from bulb axis to reference plane), e (distance from reference plane to terminal), and 20.0 (distance from reference plane to terminal). The bulb axis is shown with a radius $R=s/2$ and a reference axis. The end view shows the terminal arrangement with labels: Dipped-beam terminal, Reference lug, Common terminal, and Main-beam terminal. The diameter of the terminal is ϕM .

Filament lamp drawing

The cap is P43t-38 in accordance with **JIS C 7709-1** (sheet 1-82).

The reference axis is a straight line perpendicular to the reference plane and passes through the centre of the circle of diameter M .

It shall be possible to insert the lamp into a cylinder of diameter s concentric with reference axis. One end of the cylinder is limited by a plane parallel to and 20 mm distant from the reference plane and at the other end by a hemisphere of radius $s/2$.

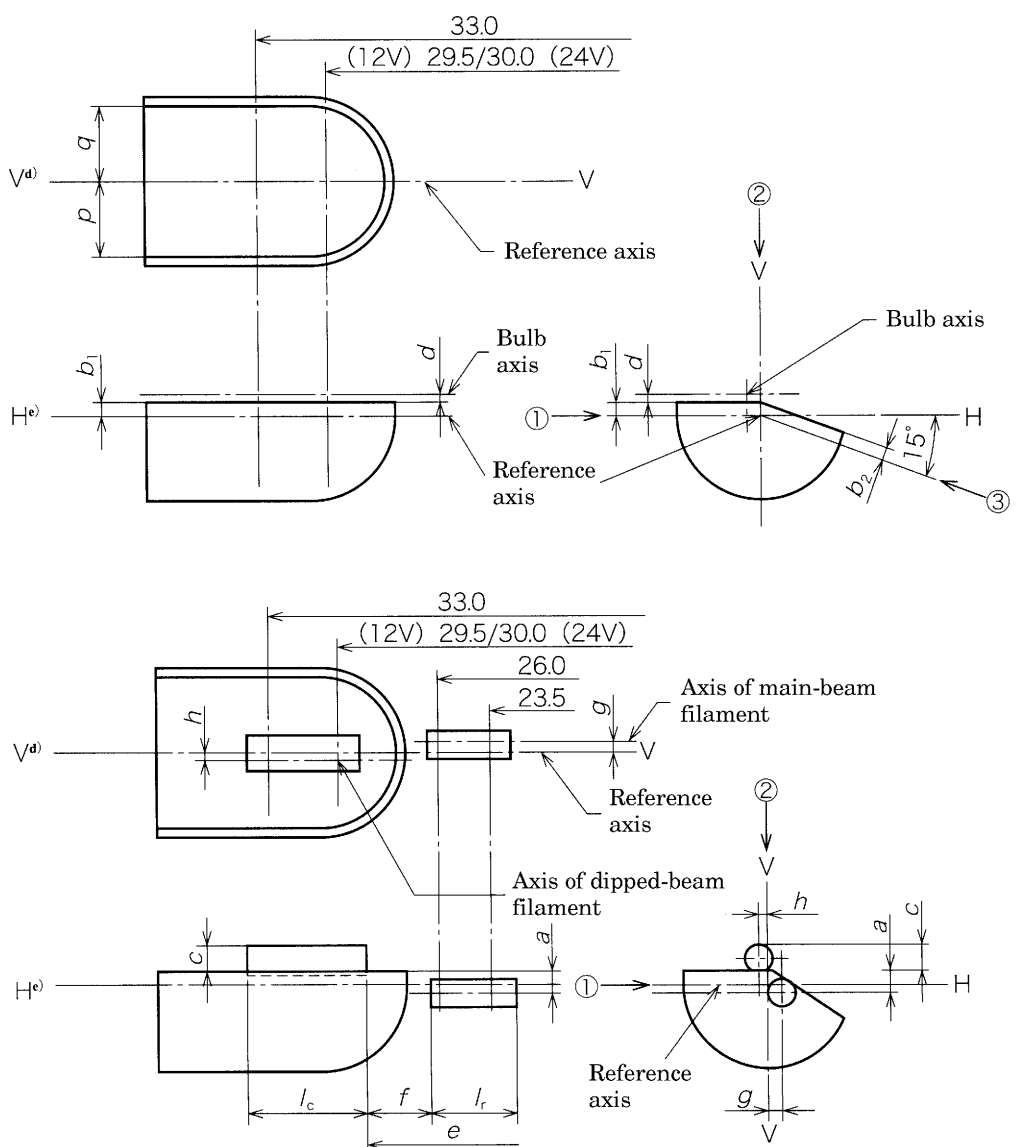
Where a selective-yellow outer bulb is used, m and n denote the maximum dimensions of this bulb.

Where there is no outer bulb, m denotes the maximum dimension of this bulb.

NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.

C 7506-1-JIS-2120-1

1999	Road vehicle filament lamp data sheet					Page 2/4
	Category: H4					
	Cap: P43t-38					
Filament lamp characteristics and dimensions						
Characteristics	Reference values		Tolerances and limiting values			
			Production lamps		Standard lamps	
Nominal voltage V	12	24	12	24	12	
Rated wattage W						
Main-beam filament	—	—	75 min.	85 min.	75 min.	
Dipped-beam filament	—	—	68 min.	80 max.	68 max.	
Rated luminous flux lm						
Main-beam filament	1 650	1 900	±15 %		a)	
Dipped-beam filament	1 000	1 200	±15 %		a)	
Dimensions mm						
<i>e</i>	28.5	29.0	+0.35 −0.25	±0.35	+0.2 0.0	
<i>p</i> ^{b)}	28.95	29.25	—		—	
<i>m</i>	—	—	60 max.	60 max.	60 max.	
<i>n</i>	—	—	34.5 max.	34.5 max.	34.5 max.	
<i>s</i>	45.0	45.0	—	—	—	
<i>α</i>	—	—	40° max.	40° max.	40° max.	
The emitted light of filament lamp shall be white or selective-yellow.						
The top obscuration shall extend at least as far as the cylindrical part of the bulb.						
The top obscuration shall overlap the internal shield when the latter is viewed in a direction perpendicular to the reference axis.						
The effect brought by the top obscuration may also be achieved by other means.						
Notes a) The test luminous flux is 1 250 lm and 750 lm at approximately 12 V.						
b) Dimension <i>p</i> defines the distance of the apex of angle <i>α</i> from the reference plane.						
C 7506-1-JIS-2120-1						

1999	Road vehicle filament lamp data sheet	Page 3/4
	Category: H4 Cap: P43t-38	
Positions of shield and filament ^{c)} Third angle projection Unit: mm  Notes ^{c)} The drawing is not mandatory with respect to the design of the shield. ^{d)} Plane V-V is perpendicular to the reference plane and passing through the reference axis and centre of the circle of diameter <i>M</i>. ^{e)} Plane H-H is perpendicular to both the reference plane and plane V-V and passing through the reference axis. C 7506-1-JIS-2120-1		

1999	Road vehicle filament lamp data sheet				Page 4/4	
	Category: H4 Cap: P43t-38					
Filament and shield dimensions						
Unit: mm						
Dimensions ^{f)}		Reference values		Tolerances and limiting values		
Nominal voltage V		12	24	Production lamps		Standard lamps
				12	24	12
a/26 ^{k)}		0.8		±0.35		±0.20
a/23.5 ^{k)}		0.8		±0.60		±0.20
b ₁ /23.5 ^{k)}	b ₁ /30.0 ^{k)}	0		±0.30	±0.35	±0.20
b ₁ /33 ^{k)}		b ₁ /29.5 mv ^{l)}	b ₁ /30.0 mv ^{l)}	±0.30	±0.35	±0.15
b ₂ /29.5 ^{k)}	b ₂ /30.0 ^{k)}	0		±0.30	±0.35	±0.20
b ₂ /33 ^{k)}		b ₂ /29.5 mv ^{l)}	b ₂ /30.0 mv ^{l)}	±0.30	±0.35	±0.15
c/29.5 ^{k)}	c/30.0 ^{k)}	0.6	0.75	±0.35		±0.20
c/33 ^{k)}		c/29.5 mv ^{l)}	c/30.0 mv ^{l)}	±0.35		±0.15
d		—		0.1 min.		0.1 min.
e ^{g)}		28.5	29.0	+0.35 -0.25	±0.35	+0.20 0.00
f ^{h)} i) j)		1.7	2.0	+0.50 -0.30	±0.40	+0.30 -0.10
g/26 ^{k)}		0		±0.50		±0.30
g/23.5 ^{k)}		0		±0.70		±0.30
h/29.5 ^{k)}	h/30.0 ^{k)}	0		±0.50		±0.30
h/33 ^{k)}		h/29.5 mv ^{l)}	h/30.0 mv ^{l)}	±0.35		±0.20
l _r ^{h)} j)		4.5	5.25	±0.80		±0.40
l _c ^{h)} j)		5.5	5.25	±0.50	±0.80	±0.35
p/33 ^{k)}		Depends on the shape of the shield.		—		—
q/33 ^{k)}		p/33 mv ^{l)}		±1.2		±0.6

Notes ^{f)} The method of measurement is specified in Annex E.

^{g)} *e* denotes the distance from the reference plane to the outside of the beginning of the coiled part of the dipped-beam filament.

^{h)} Measurement shall be made at the outside of the end turns of the coiled part of the filament coil. The end turns of the coiled part are defined as being the first and last luminous turns that are substantially the correct helix angle. For coiled-coil filaments, the turns are defined by the envelope of the primary coil.

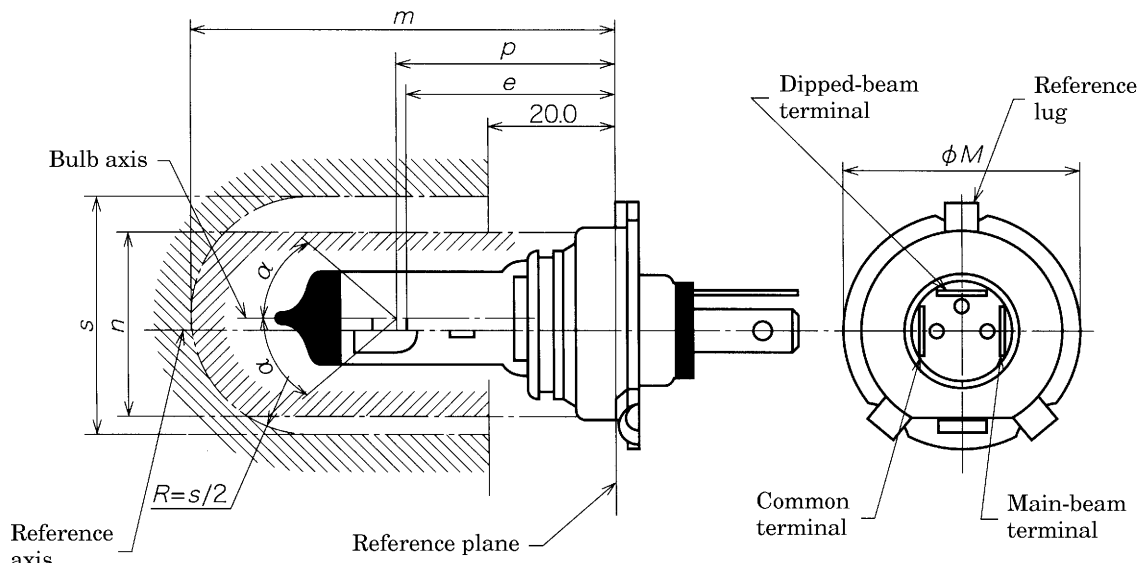
ⁱ⁾ For the dipped-beam filament, the points to be measured are the intersections, seen in the direction ① of the lateral edge of the shield with the outside of the end turns of the coiled part as defined in Note ^{h)}.

^{j)} For the main-beam filament, the points to be measured are the intersections, seen in the direction ① of the outside of the end turns of the coiled part as defined in Note ^{h)} with the plane parallel to plane H-H and situated at a distance of 0.8 mm below it.

^{k)} “*p*/*YY*” denotes dimension *p* to be measured at the distance *YY* from the reference plane.

^{l)} “*p*/*YY* mv” denotes the measured value at a distance *YY* from the reference plane, mv meaning measured value.

C 7506-1-JIS-2120-1

1999	Road vehicle lamp data sheet	Page 1/4									
	Category: HS1 Cap: PX43t										
Voltage and wattage <table border="1"> <tr> <td>Nominal voltage</td><td>V</td><td>12</td></tr> <tr> <td>Nominal wattage</td><td>W</td><td>35/35</td></tr> <tr> <td>Test voltage</td><td>V</td><td>13.2</td></tr> </table> Third angle projection Unit: mm  Filament lamp drawing The cap is PX43t in accordance with JIS C 7709-1 (sheet 1-97). The reference axis is a straight line perpendicular to the reference plane and passes through the centre of the circle of diameter M. It shall be possible to insert the lamp into a cylinder of diameter s concentric with reference axis. One end of the cylinder is limited by a plane parallel to and 20 mm distant from the reference plane and at the other end by a hemisphere of radius $s/2$. Where a selective-yellow outer bulb is used, m and n denote the maximum dimensions of this bulb. Where there is no outer bulb, m denotes the maximum dimension of this bulb. NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.			Nominal voltage	V	12	Nominal wattage	W	35/35	Test voltage	V	13.2
Nominal voltage	V	12									
Nominal wattage	W	35/35									
Test voltage	V	13.2									
C 7506-1-JIS-2130-1											

1999	Road vehicle filament lamp data sheet		Page 2/4
	Category: HS1 Cap: PX43t		
Filament lamp characteristics and dimensions			
Characteristics	Reference values	Tolerances and limiting values	
		Production lamps	Standard lamps
Nominal voltage V	12	12	12
Rated wattage W			
Main-beam filament	35	±5 %	±5 %
Dipped-beam filament	35	±5 %	±5 %
Rated luminous flux lm			
Main-beam filament	825	±15 %	a)
Dipped-beam filament	525	±15 %	a)
Dimensions mm			
<i>e</i>	28.5	+0.45 -0.25	+0.2 0.0
<i>p</i> ^{b)}	28.95	—	—
<i>m</i>	—	60 max.	60 max.
<i>n</i>	—	34.5 max.	34.5 max.
<i>s</i>	45.0	—	—
<i>α</i>	—	40° max.	40° max.

The emitted light of production lamp bulb shall be white or selective-yellow.

The top obscuration shall extend at least as far as the cylindrical part of the bulb.

The top obscuration shall overlap the internal shield when the latter is viewed in a direction perpendicular to the reference axis.

The effect brought by the top obscuration may also be achieved by other means.

Notes ^{a)} The test luminous flux is 700 lm and 450 lm at approximately 12 V.

^{b)} Dimension *p* defines the distance of the apex of angle *α* from the reference plane.

C 7506-1-JIS-2130-1

1999	Road vehicle filament lamp data sheet Category: HS1 Cap: PX43t	Page 3/4
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Positions of shield and filament ^{e)}

Third angle projection
 Unit: mm

The drawing illustrates the geometry of the lamp cap and filament positions. Key dimensions include a total width of 33.0 mm and a specific width of 29.5 mm for the main body. The front view shows a semi-circular shield with a diameter M and a reference axis. The side view shows the bulb axis and the reference axis. The perspective view shows the bulb axis and the reference axis, with a 15° angle indicated. The drawing also shows the positions of the main-beam filament and the dipped-beam filament, with dimensions h , c , g , a , e , f , l_c , and l_r labeled. The reference axis is shown in all views.

Notes ^{e)} The drawing is not mandatory with respect to the design of the shield.

^{d)} Plane V-V is perpendicular to the reference plane and passing through the reference axis and centre of the circle of diameter M .

^{e)} Plane H-H is perpendicular to both the reference plane and plane V-V and passing through the reference axis.

C 7506-1-JIS-2130-1

1999	Road vehicle filament lamp data sheet		Page 4/4
	Category: HS1 Cap: PX43t		
Filament and shield dimensions			
Unit: mm			
Dimensions ^{f)}	Reference values	Tolerances and limiting values	
Nominal voltage V	12	Production lamps	Standard lamps
		12	12
a/26 ^{k)}	0.8	±0.35	±0.20
a/23.5 ^{k)}	0.8	±0.55	±0.20
b ₁ /29.5 ^{k)}	0	±0.35	±0.20
b ₁ /33 ^{k)}	b ₁ /29.5 mv ^{l)}	±0.35	±0.15
b ₂ /29.5 ^{k)}	0	±0.35	±0.20
b ₂ /33 ^{k)}	b ₂ /29.5 mv ^{l)}	±0.35	±0.15
c/29.5 ^{k)}	0.6	±0.35	±0.20
c/31 ^{k)}	c/29.5 mv ^{l)}	±0.30	±0.15
d	—	0.1 min. 1.5 max.	0.1 min. 1.5 max.
e ^{g)}	28.5	+0.45 -0.25	+0.20 0.00
f ^{h) i) j)}	1.7	+0.50 -0.30	+0.3 -0.10
g/25 ^{k)}	0	±0.50	±0.30
g/26 ^{k)}	0	±0.70	±0.30
h/29.5 ^{k)}	0	±0.50	±0.30
h/31 ^{k)}	h/29.5 mv ^{l)}	±0.30	±0.20
l _r ^{h) j)}	4.0	±0.80	±0.40
l _c ^{h) j)}	4.5	±0.80	±0.35
p/33 ^{k)}	Depends on the shape of the shield.	—	—
q/33 ^{k)}	p/33 mv ^{l)}	±1.2	±0.60

Notes ^{f)} The method of measurement is specified in Annex E.

^{g)} e denotes the distance from the reference plane to outside of the beginning of the coiled part of the dipped-beam filament.

^{h)} Measurement shall be made at the outside of the end turns of the coiled part of the filament coil. The end turns of the coiled part are defined as being the first and last luminous turns that are substantially the correct helix angle. For coiled-coil filaments, the turns are defined by the envelope of the primary coil.

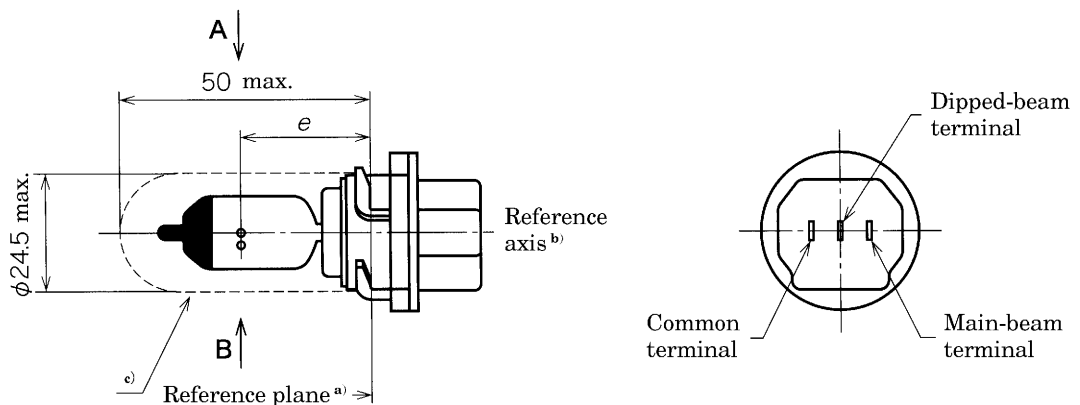
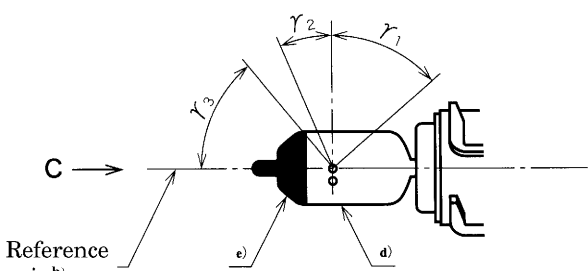
ⁱ⁾ For the dipped-beam filament, the points to be measured are the intersections, seen in the direction ① of the lateral edge of the shield with the outside of the end turns of the coiled part as defined in Note ^{h)}.

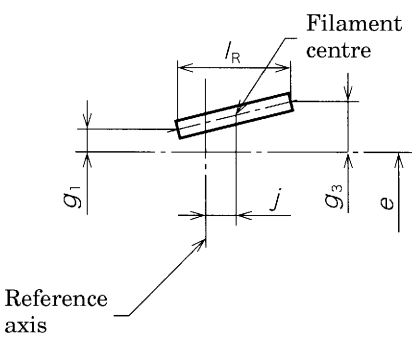
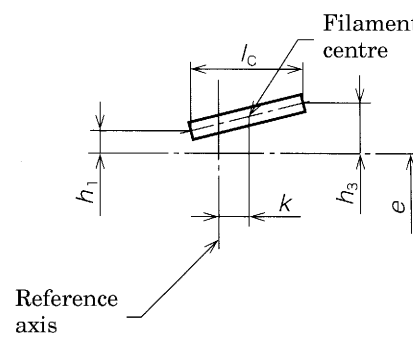
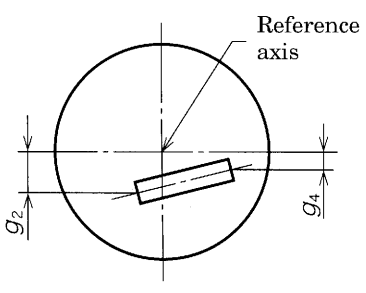
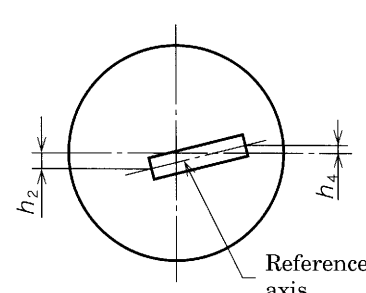
^{j)} For the main-beam filament, the points to be measured are the intersections, seen in the direction ① of the outside of the end turns of the coiled part as defined in Note ^{h)} with the plane parallel to plane H-H and situated at a distance of 0.8 mm below it.

^{k)} “p/YY” denotes dimension p to be measured at the distance YY from the reference plane.

^{l)} “p/YY mv” denotes the measured value at a distance YY from the reference plane, mv meaning measured value.

C 7506-1-JIS-2130-1

2008	Road vehicle filament lamp data sheet	Page 1/4									
	Category: HS5 Cap: P23t										
Voltage and wattage <table border="1"> <tr> <td>Nominal voltage</td><td>V</td><td>12</td></tr> <tr> <td>Nominal wattage</td><td>W</td><td>35/30</td></tr> <tr> <td>Test voltage</td><td>V</td><td>13.2</td></tr> </table> Third angle projection Unit: mm  Filament lamp drawing  Black top and distortion-free areas The cap is P23t in accordance with JIS C 7709-1 (sheet 1-120). NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp. Notes a) The reference plane is the plane formed by the underside of the beveled lead-in flange of the cap. b) The reference axis is perpendicular to the reference plane and passing through the centre of the 23 mm cap diameter. c) Bulb and supports shall not exceed the envelope as indicated in figure. The envelope is concentric to the reference axis. d) The bulb shall be optically distortion free within the angles γ_1 and γ_2. This requirement applies to the whole bulb circumference within the angles γ_1 and γ_2. e) The obscuration shall extend at least to angle γ_3 and shall at least cover the distortion-free angle γ_2.			Nominal voltage	V	12	Nominal wattage	W	35/30	Test voltage	V	13.2
Nominal voltage	V	12									
Nominal wattage	W	35/30									
Test voltage	V	13.2									
C 7506-1-JIS-2132-1											

2008	Road vehicle filament lamp data sheet	Page 2/4
	Category: HS5 Cap: P23t	
 Viewed from B: Main-beam filament  Viewed from A: Dipped-beam filament  Viewed from C: Main-beam filament  Viewed from C: Dipped-beam filament Filament position and dimensions		
C 7506-1-JIS-2132-1		

2008	Road vehicle filament lamp data sheet		Page 3/4
	Category: HS5 Cap: P23t		
Filament lamp characteristics and dimensions			
Characteristics	Reference values	Tolerances and limiting values	
		Production lamps	Standard lamps
Nominal voltage V	12	12	12
Rated wattage W			
Main-beam filament	—	40 max.	40 max.
Dipped-beam filament	—	37 max.	37 max.
Rated luminous flux lm			
Main-beam filament	620	±15 %	f)
Dipped-beam filament	515	±15 %	f)
Dimensions mm			
<i>e</i>	26	g)	±0.15
<i>l_C</i> ^{h)}	4.6	g)	±0.3
<i>k</i>	0	g)	±0.2
<i>h₁, h₃</i>	0	g)	±0.15
<i>h₂, h₄</i>	0	g)	±0.20
<i>l_R</i> ^{h)}	4.6	g)	±0.3
<i>j</i>	0	g)	±0.2
<i>g₁, g₃</i>	0	g)	±0.30
<i>g₂, g₄</i>	2.5	g)	±0.40
<i>γ₁</i>	—	50° min.	50° min.
<i>γ₂</i>	—	23° min.	23° min.
<i>γ₃</i>	—	50° min.	50° min.

Notes f) Test luminous flux is 460 lm and 380 lm at approximately 12 V.

 g) To be checked by the box system in page 4/4.

 h) The points to be measured are the intersections, of the outside of the first and last luminous turns of the coiled part of the filament, with a plane parallel to reference plane and situated at a distance of 26.0 mm.

C 7506-1-JIS-2132-1

2008	Road vehicle filament lamp data sheet	Page 4/4
	Category: HS5 Cap: P23t	

Filament location check system (box system) (see A.5)

This test is carried out to determine whether the dipped-beam filament is correctly positioned relative to the reference axis and to the reference plane, and whether the main-beam filament is correctly positioned relative to the dipped-beam filament.

Unit: mm

Symbol	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>v</i>
Dimension	<i>d</i> ₁ +0.6	<i>d</i> ₁ +0.8	<i>d</i> ₂ +1.2	<i>d</i> ₂ +1.6	2.5

The symbol *d*₁ denotes the diameter of the coiled part of a dipped-beam filament, and *d*₂, that of a main-beam filament.

Side view

Symbol	<i>h</i>	<i>k</i>
Dimension	6.0	0.5

Front view

The outside of the end turns of the coiled part of the dipped-beam filament shall lie entirely within the limits shown in the drawings.

The centre of the filament of the dipped-beam filament shall lie within the limits of dimension *k*.

C 7506-1-JIS-2132-1

1999	Road vehicle filament lamp data sheet	Page 1/3
	Category: H1 Cap: P14.5s	

Nominal voltage	V	12	24
Nominal wattage	W	55	70
Test voltage	V	13.2	28.0

Third angle projection
Unit: mm

Definition of the reference axis (view from H)

Obscuration angle limits of cap (view from FV)

View from FH

Filament lamp drawing

NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.

C 7506-1-JIS 2310-1

1999	Road vehicle filament lamp data sheet				Page 2/3
	Category: H1 Cap: P14.5s				
Filament lamp characteristics and dimensions					
Characteristics	Reference values		Tolerances and limiting values		
			Production lamps		Standard lamps
Nominal voltage V	12	24	12	24	12
Rated wattage W	—	—	68 max.	84 max.	68 max.
Rated luminous flux lm	1 550	1 900	±15 %		e)
Dimensions mm					
e d) f)	25.0		e)		±0.15
f d) f)	5.0	5.5	±0.5	±1.0	±0.50
g g) h)	0.5d		±0.5d		±0.25d
h ₁ i)	0	—	e)		±0.20
h ₂ i)	0	—	e)		±0.25
ε	45°		±12°		±3°

The cap is P14.5s in accordance with **JIS C 7709-1** (sheet 1-66).

The emitted light of production lamp bulb shall be white or selective-yellow.

Range covered by dimension *f* shall be optical distortion-free.

The reference axis is passing through the centre of the cap at the reference plane and perpendicular to the reference plane.

Notes a) As both lead-in electrodes are inside the bulb, the longer one should be positioned above the filament, with the lamp being viewed as shown in the diagram page.

The internal design of the lamp should then be such that stray light images and reflections are reduced to the minimum for example by fitting cooling jackets over the non-coiled parts of the filament.

b) These dimensions define the reference axis.

c) Test luminous flux 1 150 lm at approximately 12 V.

d) The viewing direction is the perpendicular to the reference axis contained in the plane defined by the reference axis and the centre of the second pin of the cap.

e) To be checked by means of the box system, page 3/3.

f) The measuring points are defined as the points where, when viewing direction is as defined in Note d) above, the projection of the outside of the end turns of the coiled part nearest or farthest from the reference plane crosses the reference axis.

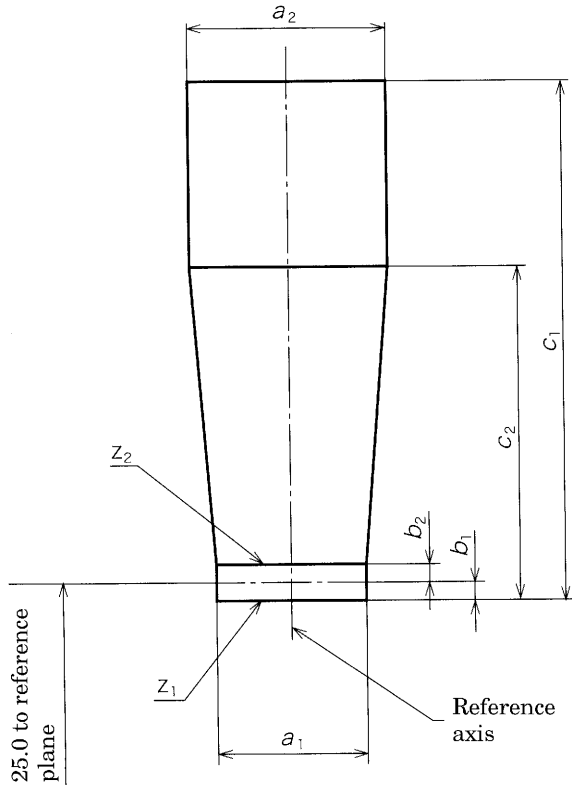
g) *d*=diameter of the coiled part of the filament.

h) Offset of filament in relation to the bulb axis measured at 27.5 mm from the reference plane in direction K.

i) The eccentricity is measured only in the FH and FV directions.

C 7506-1-JIS-2310-1

C 7506-1-JIS-2310-1

1999	Road vehicle filament lamp data sheet	Page 3/3																																
	Category: H1 Cap: P14.5s																																	
Filament location check system (box-system) (see A.5)																																		
Unit: mm																																		
																																		
Filament dimensions and position																																		
<table><tr><th>Type</th><th>a_1</th><th>a_2</th><th>b_1</th><th>b_2</th><th>c_1</th><th>c_2</th></tr><tr><td>12 V</td><td>$1.4d$</td><td>$1.9d$</td><td>0.25</td><td>0.25</td><td>6</td><td>4.5</td></tr><tr><td>24 V</td><td>$1.4d$</td><td>$1.9d$</td><td>0.25</td><td>0.25</td><td>7</td><td>4.5</td></tr></table>	Type	a_1	a_2	b_1	b_2	c_1	c_2	12 V	$1.4d$	$1.9d$	0.25	0.25	6	4.5	24 V	$1.4d$	$1.9d$	0.25	0.25	7	4.5	<table><tr><td colspan="7">d: diameter of coiled part of filament</td></tr></table>						d : diameter of coiled part of filament						
Type	a_1	a_2	b_1	b_2	c_1	c_2																												
12 V	$1.4d$	$1.9d$	0.25	0.25	6	4.5																												
24 V	$1.4d$	$1.9d$	0.25	0.25	7	4.5																												
d : diameter of coiled part of filament																																		
The coiled part of the filament shall lie entirely within the limits shown. The measuring points at the beginning of the coiled part of the filament shall lie within z_1 and z_2 [see Note ^{f)} in page 2/3]. The filament position is checked solely in directions FH and FV, as shown in page 1/3.																																		
C 7506-1-JIS-2310-1																																		

1999	Road vehicle filament lamp data sheet Category: H7 Cap: PX26d	Page 1/5
2008		

Voltage and wattage

Nominal voltage	V	12	24
Nominal wattage	W	55	70
Test voltage	V	13.2	28.0

Third angle projection
Unit: mm

Filament lamp drawing

Maximum lamp outline

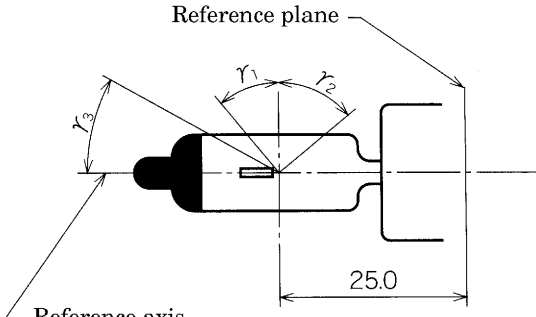
Definition of reference axis

NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.

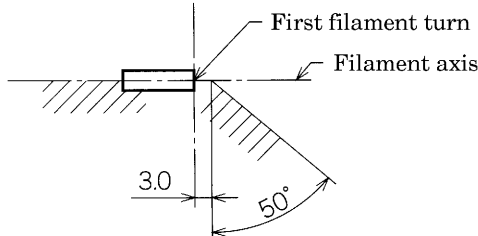
C 7506-1-JIS-2315-2

1999	Road vehicle filament lamp data sheet Category: H7 Cap: PX26d	Page 2/5
2008		

Unit: mm



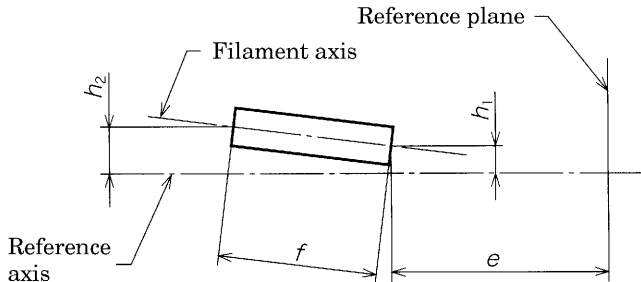
View B
Black top and distortion-free areas



View A

No metal part other than the filament shall be located in the shaded area.

Metal-free zone

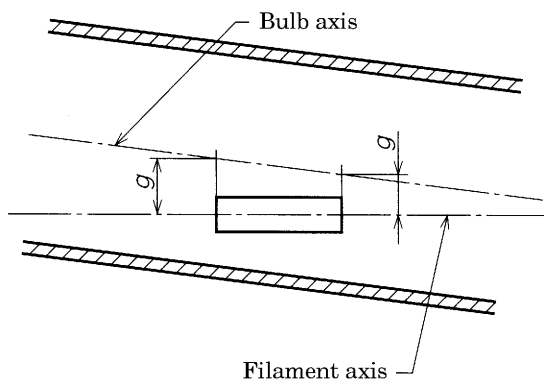


Permissible offset of filament axis

The cap is PX26d in accordance with **JIS C 7709-1** (sheet 1-96).
 The emitted light of production lamp bulb shall be white or selective-yellow.
 The bulb shall be optically distortion-free within the angles γ_1 and γ_2 . This requirement applies to the whole bulb circumference within the angles γ_1 and γ_2 . The obscuration shall extend at least to angle γ_3 and to the cylindrical part of the bulb on the whole bulb top circumference.

C 7506-1-JIS-2315-2

1999	Road vehicle lamp data sheet Category: H7 Cap: PX26d	Page 3/5
2008		



Bulb eccentricity

C 7506-1-JIS-2315-2

1999	Road vehicle filament lamp data sheet				Page 4/5
2008	Category: H7 Cap: PX26d				
Filament lamp characteristics and dimensions					
Characteristics	Reference values		Tolerances and limiting values		
			Production lamps		Standard lamps
Nominal voltage V	12	24	12	24	12
Rated wattage W	—	—	58 max.	75 max.	58 max.
Rated luminous flux lm	1 500	1 750	±10 %		a)
Dimensions mm					
e ^{b)}	25.0		c)		±0.1
f ^{b)}	4.1	4.9	c)		±0.1
g ^{e)}	—		0.5 min.		U.C.
h ₁ ^{d)}	0		c)		±0.1
h ₂ ^{d)}	0		c)		±0.15
γ ₁	—		40° min.		40° min.
γ ₂	—		50° min.		50° min.
γ ₃	—		30° min.		30° min.

The internal design of the lamp shall be such that stray light images and reflections are only located above the filament itself seen from the horizontal direction (view from A as indicated in page 1/5).

Notes

- a) The test luminous flux is 1 100 lm at approximately 12 V.
- b) The measuring points are defined as the points where, when the viewing direction is direction from view A shown in page 1/5, the projection of the outside of the end turns of the coiled part crosses the filament axis.
- c) To be checked by means of the box system, page 5/5.
- d) The offset of the filament with respect to the reference axis is measured only in viewing directions A and B, as shown in page 1/5. The points to be measured are those where the projection of the outside of the end turns of the coiled part nearest to or farthest from the reference plane crosses the filament axis.
- e) Offset of filament axis in relation to the bulb axis shall be measured at the same position as given in Note d).

C 7506-1-JIS-2315-2

1999	Road vehicle lamp data sheet Category: H7 Cap: PX26d	Page 5/5
2008		

Filament location check system (box system) (see A.5)

Unit: mm

Filament dimensions and position

Type	a_1	a_2	b_1	b_2	c_1	c_2
12 V	$d+0.3$	$d+0.5$	0.20	0.20	4.6	4.0
24 V	$d+0.6$	$d+1.0$	0.25	0.25	5.9	4.4

d : diameter of coiled part of filament

The both ends of the coiled part of the filament, to be measured, shall lie within z_1 and z_2 , and z_3 and z_4 [see Note ^{b)} in page 4/5].

The filament position is checked in viewing directions A and B, as shown in page 1/5.

The coiled part of the filament shall lie entirely within the limits shown.

No actual diameter restrictions apply to the present products, but the objective for future development is to have 1.3 mm max. for diameter of the coiled part of the filament of 12 V type lamps and 1.7 mm max. for that of 24 V type lamps.

The diameter of coiled part of filament of standard filament lamp and that of production lamp shall be the same.

C 7506-1-JIS-2315-2

2008	Road vehicle filament lamp data sheet	Page 1/4
	Category: H8 Cap: PGJ19-1	

Voltage and wattage

Nominal voltage	V	12
Nominal wattage	W	35
Test voltage	V	13.2

Third angle projection
Unit: mm

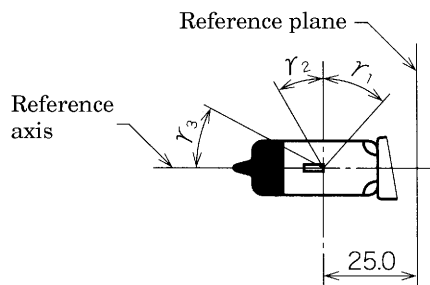
Filament lamp drawing

Maximum lamp outline ^{c)}

NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.

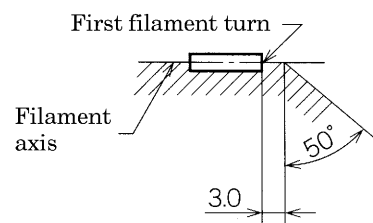
C 7506-1-JIS-2365-1

2008	Road vehicle filament lamp data sheet	Page 2/4
	Category: H8 Cap: PGJ19-1	



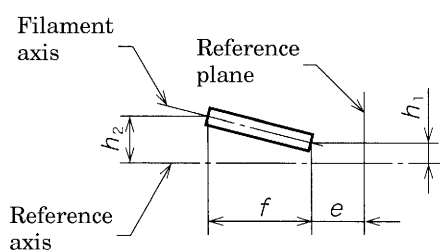
View B

Black top and distortion-free area ^{f) g)}

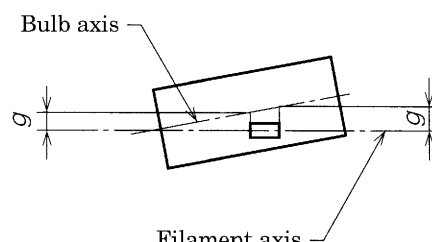


View A

Metal-free zone ^{h)}



Permissible offset of filament axis ⁱ⁾



View A

Bulb eccentricity ^{j)}

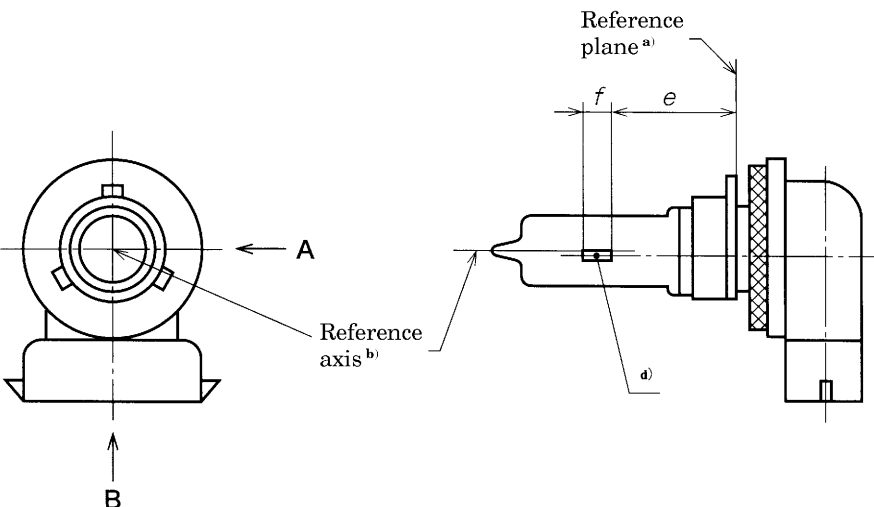
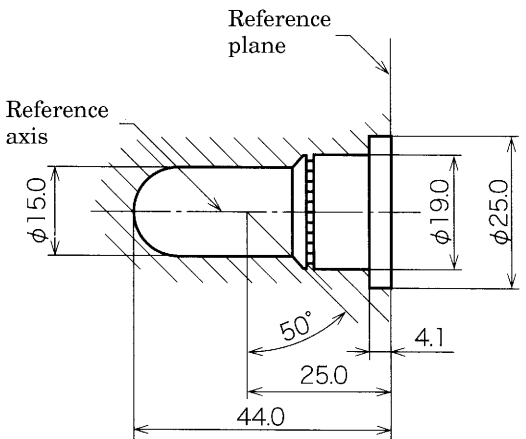
Filament lamp characteristics and dimensions

Characteristics	Reference values	Tolerances and limiting values	
		Production lamps	Standard lamps
Nominal voltage V	12	12	12
Rated wattage W	—	43 max.	43 max.
Rated luminous flux lm	800	±15 %	^{m)}
Dimensions mm			
$e^{k)}$	25.0	^{l)}	±0.10
$f^{k)}$	3.7	^{l)}	±0.10
g	—	0.5 min.	U.C.
h_1	0	^{l)}	±0.10
h_2	0	^{l)}	±0.15
γ_1	—	50° min.	50° min.
γ_2	—	40° min.	40° min.
γ_3	—	30° min.	30° min.

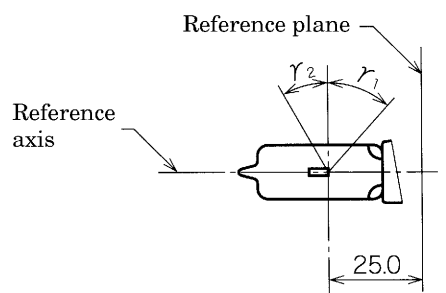
C 7506-1-JIS-2365-1

2008	Road vehicle filament lamp data sheet	Page 3/4
	Category: H8 Cap: PGJ19-1	
The cap is PGJ19-1 in accordance with JIS C 7709-1 (sheet 1-89A). Notes a) The reference plane is formed by the underside of the beveled lead-in flange of the cap. b) The reference axis is perpendicular to the reference plane and passing through the centre of 19 mm cap diameter. c) Bulb and supports shall not exceed the envelope as indicated in the figure. The envelope is concentric to the reference axis. d) The emitted light of production lamp bulb shall be white or selective-yellow. e) Notes concerning the filament diameter - No actual diameter restrictions apply to the present products, but the objective for future development is to have $d_{\max.} = 1.2$ mm for the diameter of coiled part of the filament. - For the same manufacturer, the design diameter of standard lamp and that of production lamp shall be the same. f) The bulb shall be optically distortion free within the angles γ_1 and γ_2. This requirement applies to the whole bulb circumference within the angles γ_1 and γ_2. g) The obscuration shall extend at least to angle γ_3 and shall extend at least to the cylindrical part of the bulb on the whole bulb top circumference. h) The internal design of the lamp shall be such that the stray light images and reflections are only located above the filament itself seen from the horizontal direction. (View A as indicated in the figure on page 1/4). No metal parts other than filament turns shall be located in the shaded area as seen in figure on page 2/4. i) The offset of the filament axis with respect to the reference axis is measured only in viewing directions A and B as shown in figure on page 1/4. The points to be measured are those where the projection of the outside of the end turns of the coiled part nearest to or furthest from the reference plane crosses the filament axis. j) Offset of the filament axis with respect to the reference axis is measured only with two planes parallel to the reference plane where the projection of the outside of the end turns of the coiled part nearest to or furthest from the reference plane crosses the filament axis. k) The measurement points are defined as the points where, when the viewing direction is direction A, the projection of the outside of the end turns of the coiled part crosses the filament axis. l) To be checked by means of a "box-system" in page 4/4. m) The test luminous flux is 600 lm at approximately 12 V.		
C 7506-1-JIS-2365-1		

2008	Road vehicle filament lamp data sheet Category: H8 Cap: PGJ19-1	Page 4/4														
Filament location check system (box system) (see A.5)																
		Unit: mm														
<table border="1"> <tr> <th>Type</th> <th>a_1</th> <th>a_2</th> <th>b_1</th> <th>b_2</th> <th>c_1</th> <th>c_2</th> </tr> <tr> <td>12 V</td> <td>$d+0.5$</td> <td>$d+0.7$</td> <td colspan="2">0.25</td> <td>4.6</td> <td>3.5</td> </tr> </table>			Type	a_1	a_2	b_1	b_2	c_1	c_2	12 V	$d+0.5$	$d+0.7$	0.25		4.6	3.5
Type	a_1	a_2	b_1	b_2	c_1	c_2										
12 V	$d+0.5$	$d+0.7$	0.25		4.6	3.5										
d: diameter of coiled part of filament																
The both ends of the coiled part of the filament, to be measured, shall lie within Z_1 and Z_2, and Z_3 and Z_4 [see Note ^{k)} in page 3/4]. The filament position is checked solely in viewing directions A and B as shown on page 1/4. The coiled part of the filament shall lie entirely within the limits shown.																
C 7506-1-JIS-2365-1																

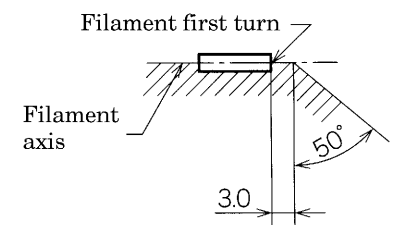
2008	Road vehicle filament lamp data sheet	Page 1/4									
	Category: H9 Cap: PGJ19-5										
Voltage and wattage <table border="1"> <tr> <td>Nominal voltage</td><td>V</td><td>12</td></tr> <tr> <td>Nominal wattage</td><td>W</td><td>65</td></tr> <tr> <td>Test voltage</td><td>V</td><td>13.2</td></tr> </table> Third angle projection Unit: mm  Filament lamp drawing  Maximum lamp outline ^{c)} NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.			Nominal voltage	V	12	Nominal wattage	W	65	Test voltage	V	13.2
Nominal voltage	V	12									
Nominal wattage	W	65									
Test voltage	V	13.2									
C 7506-1-JIS-2370-1											

2008	Road vehicle filament lamp data sheet	Page 2/4
	Category: H9 Cap: PGJ19-5	



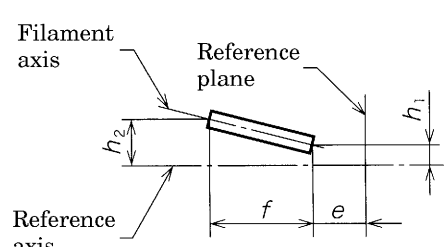
View B

Black top and distortion-free area ^{e)}

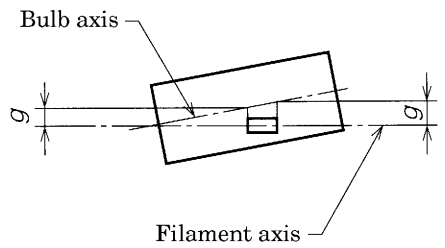


View A

Metal-free zone ^{f)}



Permissible offset of filament axis ^{g)}



View A

Bulb eccentricity ^{h)}

Filament lamp characteristics and dimensions

Characteristics	Reference values	Tolerances and limiting values	
		Production lamps	Standard lamps
Nominal voltage V	12	12	12
Rated wattage W	—	73 max.	73 max.
Rated luminous flux lm	2 100	±10 %	m)
Dimensions mm			
$e^{i) j)}$	25.0	k)	±0.10
$f^{i) j)}$	4.8	k)	±0.10
$g^{i)}$	0.70	±0.5	±0.30
h_1	0	k)	±0.10 ^{l)}
h_2	0	k)	±0.15 ^{l)}
γ_1	—	50° min.	50° min.
γ_2	—	40° min.	40° min.

C 7506-1-JIS-2370-1

2008	Road vehicle filament lamp data sheet	Page 3/4
	Category: H9 Cap: PGJ19-5	
The cap is PGJ19-5 in accordance with JIS C 7709-1 (sheet 1-89A). Notes a) The reference plane is the plane formed by the underside of the beveled lead-in flange of the cap. b) The reference axis is perpendicular to the reference plane and passing through the centre of 19 mm cap diameter. c) Bulb and supports shall not exceed the envelope as indicated in the figure. The envelope is concentric to the reference axis. d) Notes concerning the filament diameter - No actual diameter restrictions apply to the present products, but the objective for future development is to have $d_{max.} = 1.4$ mm. - For the same manufacturer, the design diameter of standard lamp and that of production lamp shall be the same. e) The bulb shall be optically distortion free within the angles γ_1 and γ_2. This requirement applies to the whole bulb circumference within the angles γ_1 and γ_2. f) The internal design of the lamp shall be such that the stray light images and reflections are only located above the filament itself seen from the horizontal direction. (View A as indicated in the figure on page 1/4). No metal parts other than filament turns shall be located in the shaded area as seen in figure on page 2/4. g) The offset of the filament axis with respect to the reference axis is measured only in viewing directions A and B as shown in figure on page 1/4. - The points to be measured are those where the projection of the outside of the end turns of the coiled part nearest to or furthest from the reference plane crosses the filament axis. h) Offset of the filament axis with respect to the bulb axis is measured only with two planes parallel to the reference plane where the projection of the outside of the end turns of the coiled part nearest to or furthest from the reference plane crosses the filament axis. i) Viewed from viewing direction A shown in page 1/4. j) The measurement points are defined as the points where, when the viewing direction is direction A, the projection of the outside of the end turns of the coiled part crosses the filament axis. k) To be checked by means of a "box-system" in page 4/4. l) The offset of axis is measured only in viewing directions A and B as shown in figure on page 1/4. - The points to be measured are those where the projection of the outside of the end turns of the coiled part nearest to or furthest from the reference plane crosses the filament axis. m) The test luminous flux is 1 500 lm at approximately 12 V.		
C 7506-1-JIS-2370-1		

2008	Road vehicle filament lamp data sheet	Page 4/4
	Category: H9 Cap: PGJ19-5	

Filament location check system (box system) (see A.5)

Unit: mm

The diagram illustrates the filament location check system (box system) for a filament lamp. It shows a cross-section of the filament, which is a tapered cylinder. The filament is divided into four sections labeled Z1, Z2, Z3, and Z4 from right to left. The diameter of the coiled part of the filament is denoted as d. The distance from the reference axis to the center of the filament is denoted as a1 and a2. The distance from the reference axis to the outer edge of the filament is denoted as b1 and b2. The distance from the reference axis to the center of the filament is denoted as c1 and c2. A vertical line is labeled '25.0 to reference plane'.

Type	a ₁	a ₂	b ₁	b ₂	c ₁	c ₂
12 V	d+0.4	d+0.7	0.25		5.7	4.6

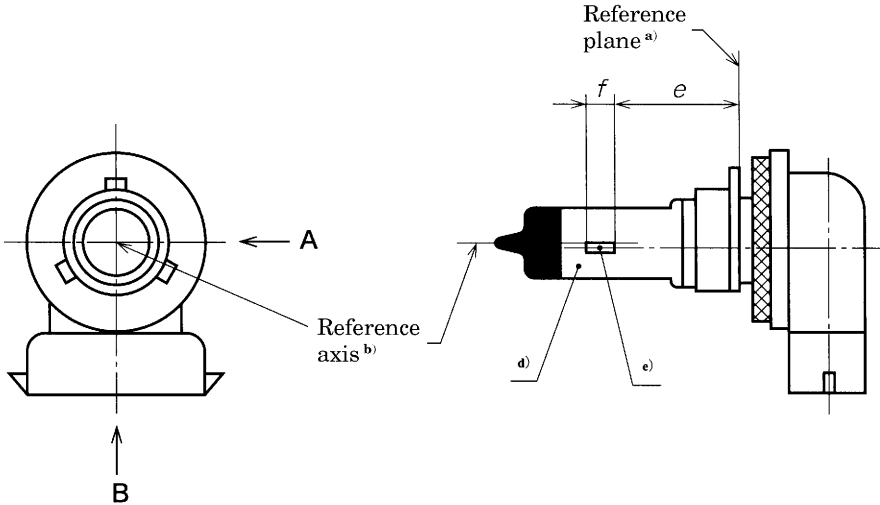
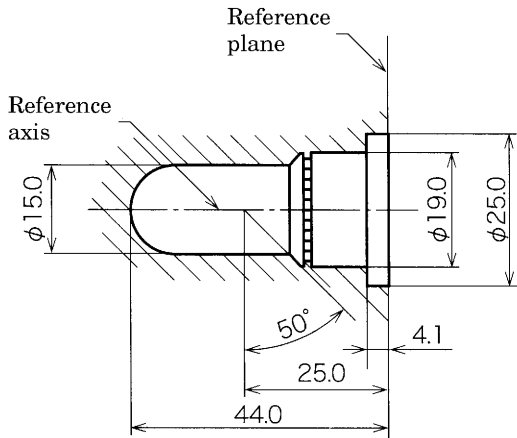
d: diameter of coiled part of filament

The both ends of the coiled part of the filament, to be measured, shall lie within Z₁ and Z₂, and Z₃ and Z₄ [see Note ^{j)} in page 3/4].

The filament position is checked solely in viewing directions A and B as shown on page 1/4.

The coiled part of the filament shall lie entirely within the limits shown.

C 7506-1-JIS-2370-1

2008	Road vehicle filament lamp data sheet Category: H11 Cap: PGJ19-2	Page 1/4												
Voltage and wattage <table><tr><td>Nominal voltage</td><td>V</td><td>12</td><td>24</td></tr><tr><td>Nominal wattage</td><td>W</td><td>55</td><td>70</td></tr><tr><td>Test voltage</td><td>V</td><td>13.2</td><td>28</td></tr></table> Third angle projection Unit: mm  Filament lamp drawing  Maximum lamp outline ^{c)} NOTE : The drawings are intended only to illustrate the essential dimensions of the filament lamp.			Nominal voltage	V	12	24	Nominal wattage	W	55	70	Test voltage	V	13.2	28
Nominal voltage	V	12	24											
Nominal wattage	W	55	70											
Test voltage	V	13.2	28											
C 7506-1-JIS-2380-1														