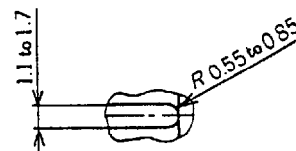
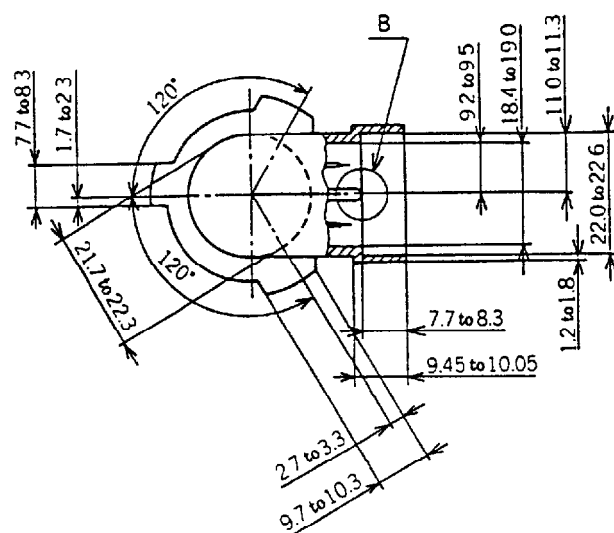
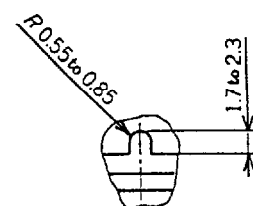


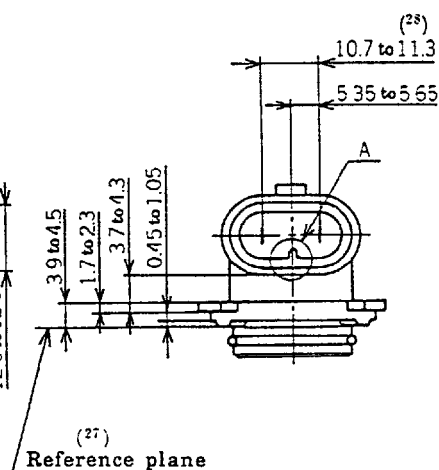
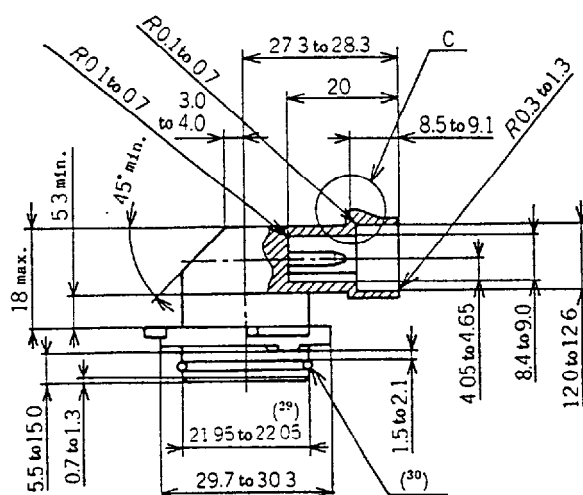
Page	Position	Wrong	Correct
46	Attached Fig.34,(3)	The figure shown below supersedes the former.	



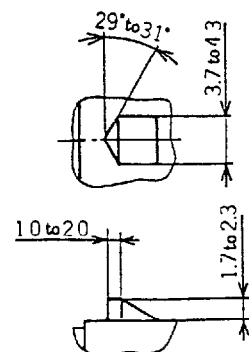
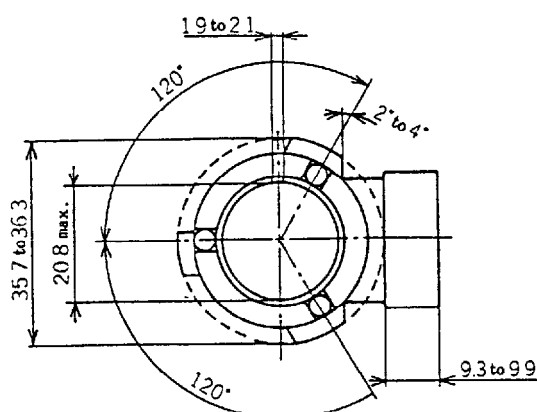
Detail of part B



Detail of part A



(27) Reference plane



Detail of part C

Remarks: This errata is for correcting the first edition of this Standard.

Japanese Standards Association

JIS

JAPANESE INDUSTRIAL STANDARD

Lamps for road vehicles

Ⓒ JIS C 7506—1994

Translated and Published

by

Japanese Standards Association

Printed in Japan

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.



JAPANESE INDUSTRIAL STANDARD

J I S

Lamps for road vehicles

C 7506-1994

1. Scope This Japanese Industrial Standard specifies general tungsten lamps and tungsten halogen lamps for road vehicles or the like (hereafter referred to as "lamps").

Remarks 1. The following standards are cited in this Standard.

- JIS C 1102 Electrical indicating instruments
- JIS C 7709 Lamp caps and holders
- JIS C 7710 Designation method for glass bulbs of lamps
- JIS C 7711 Designation method for mounted filaments of incandescent tungsten lamps
- JIS C 7801 General rules of testing method for lamps
- JIS D 1601 Vibration testing methods for automobile parts
- JIS D 5005 Nominal voltages and test voltages for automotive electric equipments
- JIS H 3100 Copper and copper alloy sheets, plates and strips
- JIS Z 8113 Glossary of lighting terms
- JIS Z 8724 Methods of measurement for light source colour

2. The International standards corresponding to this Standard are given below.

- IEC 809-1985 (including Amendments 1 to 3)
Lamps for road vehicles

Dimensional, electrical and luminous requirements
- IEC 810-1986 (including Amendments 1 and 2)
Lamps for road vehicles

Performance requirements

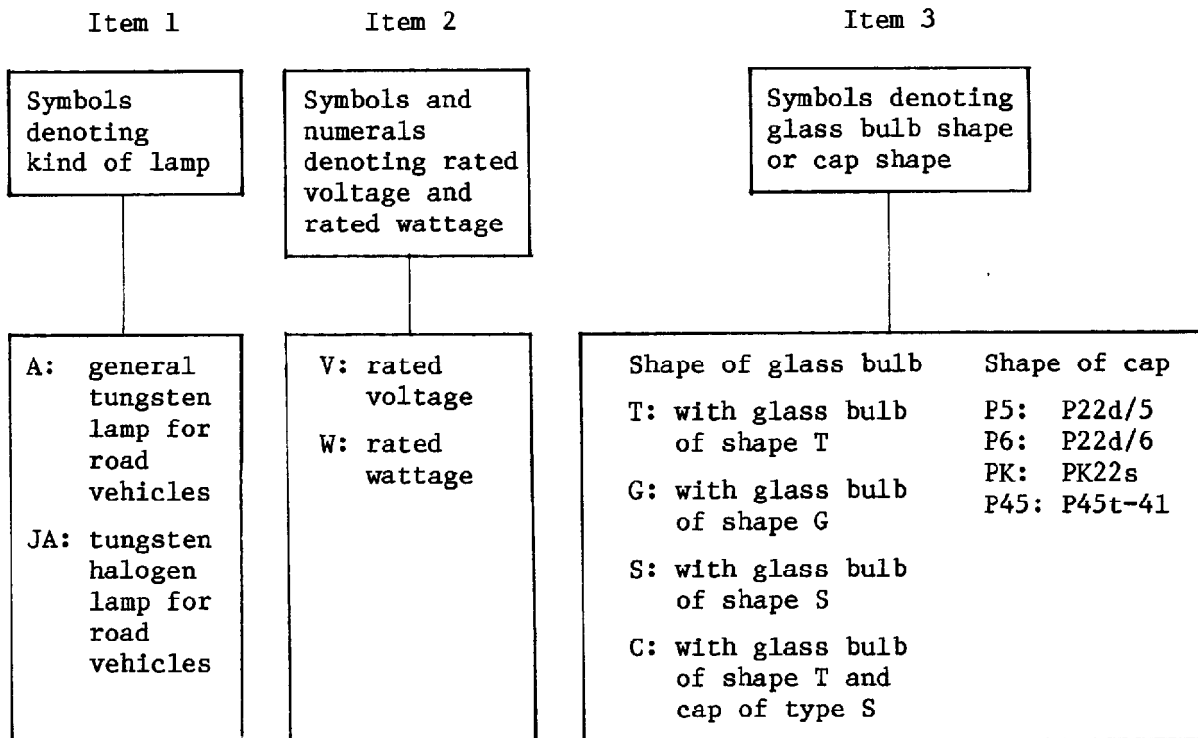
2. Definitions For the purpose of this Standard, in addition to complying with the definitions specified in JIS C 7801 and JIS Z 8113, the following principal definitions apply:

- (1) rated voltage The voltage marked on the lamp.
- (2) rated wattage The wattage marked on the lamp or packaging.
- (3) test voltage The voltage specified in Attached Tables which is to be applied across the lamp terminals when the performances of the lamp are measured.
- (4) reference plane A plane defined on the lamp cap (including wedge base) to serve as the reference.
- (5) reference axis The axis which is perpendicular to the reference plane and passes through the center of the cap when a lamp is structured.
- (6) aging To operate lamp initially under certain conditions to stabilize their characteristics.
- (7) life The time during which a lamp has been operated before becoming useless or regarded as such according to a kind of agreement, e.g. conditions shown in the specification.
- (8) average life The average value (arithmetical mean) of lives of individual lamps of the same type.
- (9) rated life The life specified in Attached Tables based on the average values of lamps of the same type manufactured for a long period.
- (10) life to 3 % failure (97 % survival) The time during which 3 % of the lamps of the same type have reached the end of their individual lamp lives.
- (11) rated life to 3 % failure (97 % survival) The life to 3 % failure specified in Attached Tables based on lives to 3 % failure of the lamps of the same type manufactured for a long period.
- (12) lumen maintenance The ratio between the total luminous flux after 75 % of rated life and the initial total luminous flux of a lamp.
- (13) light center length The distance between a prescribed reference plane and filament center of a lamp, or distance to the position specified in Attached Figures.
- (14) filament offset The discrepancy of the reference axis and the filament center on a plane which is perpendicular to the reference axis and includes the filament center.
- (15) filament angle The angle made by the reference direction and the filament specified in the relevant Attached Table and Attached Figure, when the cap and the filament are projected on the same horizontal plane with the reference axis held vertical.

- (16) box system A system for carrying out the positional test in such a manner that the position of filament relative to the reference axis and reference plane is enlarged and projected on the same plane.

3. Classification Lamps are classified and expressed by the type designation as shown in Attached Tables.

The type designation shall be formed by arranging the symbols as stated below.



Remarks 1. For a lamp with two filaments, the rated wattages shall be expressed with / located between two values.

2. In general, the type designation shall consist of item 1 and item 2. Item 3 shall be added if necessary.

3. Item 3 shall consist of glass bulb shape. For lamps which can not be classified by glass bulb shape, this item shall consist of shape of cap only.

4. Performances

4.1 Adhesive strength of cap The adhesive strength of cap shall be such that the cap withstands the torsional moment specified in Table 1, when the test specified in 9.2.5 is carried out.

Table 1. Adhesive strength of cap

Type of glass bulb	Cap	Tortional moment N•m
T8.5	BA9	0.3
G11		
G18	BA15	1.0
B19	BAY15	
S25	BA15, BAU15, BAY15	
RP35	BA15	

4.2 Initial characteristics The initial characteristics shall comply with Attached Tables when the test specified in 9.2.6 is carried out.

4.3 Life When the life test is carried out as specified in 9.2.7, the average life measured on 20 lamps shall be not less than 96 % of the rated life. For a lamp on which the lumen maintenance is specified, if the measured lumen maintenance does not satisfy the specified value, the life is assumed to be 75 % of the rated life.

Lamps on which the rated life to 3 % failure is specified in Attached Tables shall show at least the relevant values given in Attached Tables.

4.4 Lumen maintenance The lumen maintenance shall be not less than the value specified in Attached Tables.

4.5 Resistance to vibration When the test specified in 9.2.8 is carried out for resistance to vibration, the specimen shall satisfy the initial characteristics shown in Attached Tables and shall show no break of filament nor damage on any part.

4.6 Strength of glass bulb When the test specified in 9.2.9 is carried out for strength of glass bulb, the specimen shall withstand the force specified in Table 2.

For tungsten halogen lamps, the strength is not specified.

Table 2. Strength of glass bulb

Type of glass bulb	Strength of glass bulb N
T 8.5	40
T 10	
T 16	
T 19	
T 20	
G 11	
G 18	
B 19	
S 25	
RP 35	

4.7 Color of lamp When the test is carried out as specified in 9.2.10 with the lamp operated at the test voltage, the chromaticity coordinates of the colored light of lamps whose glass bulbs are colored with yellow red shall fall within the range shown by the following equations.

$$\begin{cases} y \geq -x + 0.993 \\ 0.398 \leq y \leq 0.429 \end{cases}$$

5. Construction Lamps to which shield coating is applied on a part of their glass bulbs shall be free from pinholes and peeling detrimental to service.

Further, the coating shall not peel off easily.

6. Dimensions The dimensions shall be as stated in Attached Tables and Attached Figures. However, caps shall be as stated in Attached Figures in addition to complying with JIS C 7709.

The mounted filament type, measuring conditions and definitions concerning the positions shall be as stated in Attached Fig. 35.

Lamps whose filament length is specified shall be as shown in Attached Figures.

The numerical values in parentheses in Attached Figures are approximate values.

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7. Appearance Glass bulbs of lamps shall be free from flaws, bubbles, striae, etc. detrimental to service.

They shall be colorless unless specified in Attached Tables.

8. Materials Materials shall comply with the following requirements:

- (1) The copper alloys specified in JIS H 3100, or suitable materials such as nichel and molybdenum shall be used as the current carrying part of cap.
- (2) Suitable materials such as glass, steatite porcelain and resin shall be used as the insulating part of cap.

9. Tests

9.1 Test conditions The test conditions shall be as follows:

- (1) The voltage shall be measured directly between terminations of the lamp. In this procedure, it is desirable to solder the conductor with the cap, but other methods to eliminate the contact resistance between cap and lamp holder may be employed.
- (2) The initial characteristics test shall be carried out with d.c.
- (3) The life test and vibration resistant test shall be carried out with d.c. or nearly sinusoidal a.c. at a frequency 50 Hz or 60 Hz, and the fluctuation of source voltage shall be within $\pm 1 \%$.
- (4) Indicating instruments used shall be those of Grade 0.5 or better specified in JIS C 1102 or digital meters at least equivalent thereto in accuracy.
- (5) For the measurement of total luminous flux, the light receiver and integrating sphere specified in 3.5 of JIS C 7801 or a luminous flux meter expected to have at least the equivalent accuracy shall be used.

9.2 Test procedures

9.2.1 Dimensional test The dimensions shall be measured by using the measuring apparatus specified in 4.2 of JIS C 7801.

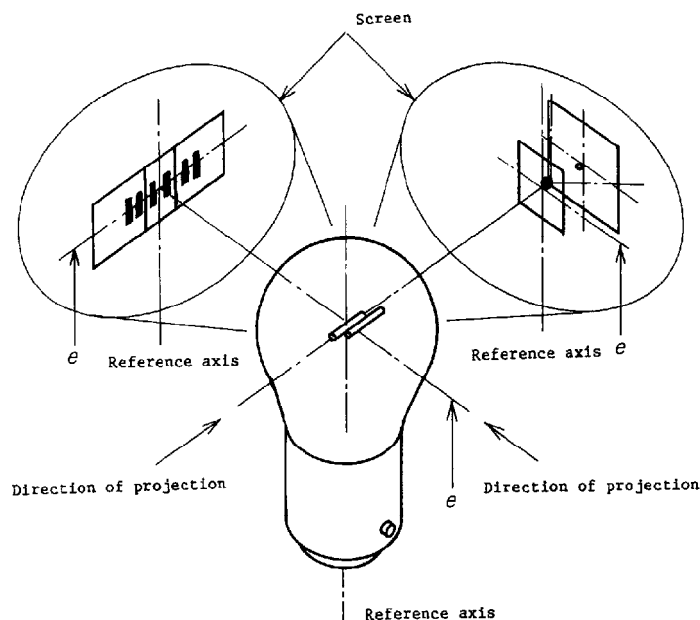
9.2.2 Filament dimension test In general, the distance between the specified extremities of filament in parallel or perpendicular direction to the reference axis shall be measured by projection method or other suitable methods as the length of filament.

9.2.3 Filament position test The position of filament shall be measured as stated below.

- (1) Carry out the filament position test (box system) on lamps to which the application of test is specified in Attached Table Note (1). At first, project the magnified targets of the permitted dimensional limits as stated on the relevant Attached Figure with respect to the position of lamp reference plane, on the screen, without the lamp located. Then, set the reference axis and reference plane of the lamp to be tested with the cap of the lamp downward, and make them coincide with the position of the reference axis and reference plane of the targets of the permitted dimensional limits stated above. Make the filament to face the screen, project image of the filament with the same degree of magnification as that of the permitted dimensional limits on to the screen, and check whether the image of filament falls completely within the permitted dimensional limits or not.

When the center position of filament is specified, check it whether it falls within the permitted dimensional limits or not.

Fig. 1. Measuring method by box system (an example)



- Remarks 1. Make the magnification for projection of permitted dimensional limits equal to that of lamp filament.
2. Make the reference axis and reference plane of the lamp to be tested coincide with those of the permitted dimensional limits initially imaged.
3. Check whether the dimensions and center of filament and the light center length (e) fall within the permitted dimensional limits or not.
- (2) In the measurement of light center length of a lamp for which the test of (1) is not specified in Attached Tables, measure the distance from the reference plane to the filament center or a position specified on the filament by using the measuring apparatus specified in 4.2 of JIS C 7801.

- (3) For the filament offset of a lamp for which the test of (1) is not specified in Attached Tables, measure the distance from the reference axis or reference plane to the filament center or a position specified on the filament.
- (4) For the filament angle of a lamp for which the test of (1) is not specified in Attached Tables, project the cap and filament on the same horizontal plane with the reference axis held vertical, and measure the angle between the reference direction specified in Attached Tables and the filament axis.

9.2.4. Appearance test The appearance test shall be carried out as specified in 4.1 of JIS C 7801.

9.2.5 Cap adhesive strength test The cap adhesive strength test shall be carried out before and after the life test by applying the tortional moment specified in Table 1 to the lamp, gradually starting from zero.

9.2.6 Initial characteristics test The initial characteristics test shall be carried out as stated below. Age the lamp at the test voltage specified in Attached Tables for approximately 1 h or at 120 % of the test voltage for approximately 5 min. After the characteristics are almost stabilized, measure the power consumption at the test voltage specified in Attached Tables by the method specified in 4.3.5 of JIS C 7801, and measure the total luminous flux by the method specified in 4.3.6 of JIS C 7801.

Operate the lamp with its cap located upwards (the lamp axis being horizontal for lamps with caps on both ends). Carry out the measurement on both filaments for lamps equipped with two filaments.

9.2.7 Life test The life test shall be carried out after the lamp has been aged at the test voltage specified in Attached Tables for approximately 1 h or at 120 % of the test voltage for approximately 5 min as stated below.

Carry out the aging separately if the lamp has two filaments. Eliminate the lamps which do not burn during the aging from the test and supplement the lamps to meet the number specified in Table 4.

Carry out the test at the test voltage specified in Attached Tables on the lamps located on a test stand free from vibration in such position that the reference axis and the filament axis are horizontal. If the relationship between the test voltage and the life are previously agreed between the parties concerned with acceptance, the test may be carried out at a voltage other than the test voltage specified in Attached Tables.

Operate the lamps with shield in such a position that the shield is located downwards.

The conditions for operating the lamps shall be as follows:

- (1) Put off the light twice a day for at least 15 min. Do not include the rest time in the life.
- (2) For lamps equipped with two filaments, carry out the test under the operating conditions of (1) on each filament by using separate lamps.

Obtain the lumen maintenance by measuring the total luminous flux by the method specified in 9.2.6 on the lamps during the life test when they reaches to 75 % of the rated life specified in Attached Tables.

9.2.8 Vibration resistance test The vibration resistance test shall be carried out as stated below. Mount the lamp firmly to the vibration tester so that the reference axis is horizontal, operate the lamp at the test voltage specified in Attached Tables, and carry out the test specified in 5.3 (1) of JIS D 1601 under the conditions corresponding to the classification of lamp given in Table 3. For lamps equipped with two filaments, carry out the test using separate lamps.

For lamps with S type cap and with filament of type CC-6, carry out the test of step 4.

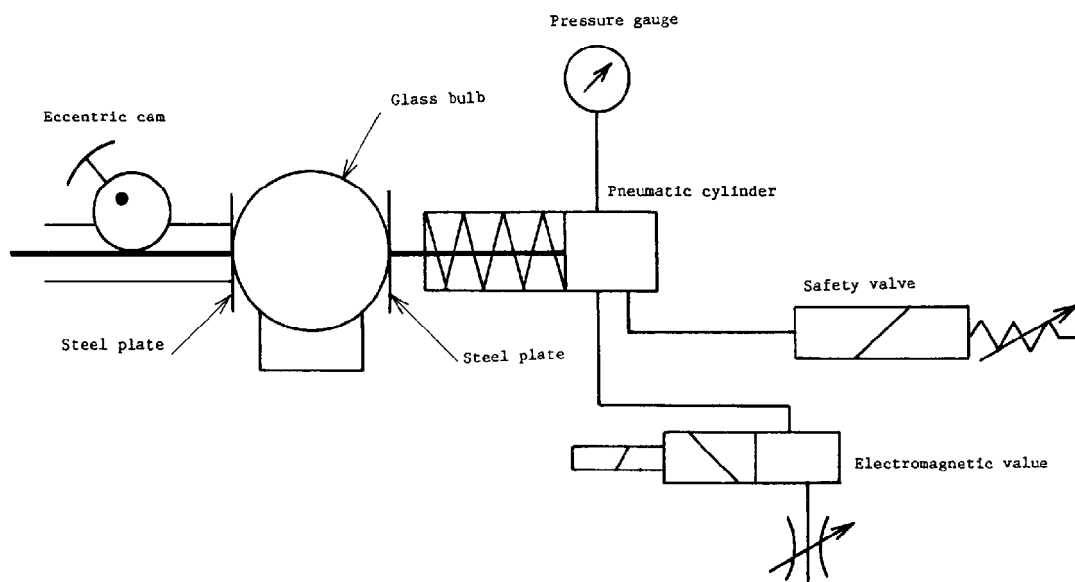
Table 3. Conditions for vibration resistance test

Classification of lamp	Test condition
Less than 5 W	Step 4
Not less than 5 W	Step 7

9.2.9 Glass bulb strength test In the glass bulb strength test, bite the lamp with steel plates of approximately 20 mm in diameter with smooth surface of Rockwell hardness 55 to 60 and linearly apply a force of 0 N to 40 N during approximately one second.

An example of the testing device is shown in IEC 810, and this is shown in Fig. 2.

Fig. 2. Testing device for glass bulb strength test (an example)



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9.2.10 Light color test Operate the lamp with colored bulb at the test voltage and measure the color by the method specified in JIS Z 8724.

10. Inspections

10.1 Type inspection In the type inspection, the tests shall be carried out on the same specimens in accordance with 9. and the results shall comply with the provisions of 4. to 7. and 12. However, the tests for (8) and (9) shall be carried out on separate specimens.

- (1) Dimension
- (2) Appearance
- (3) Construction
- (4) Cap adhesive strength
- (5) Initial characteristics
- (6) Life
- (7) Lumen maintenance
- (8) Resistance to vibration
- (9) Glass bulb strength
- (10) Light color
- (11) Marking

10.2 Acceptance inspection

10.2.1 Inspection item The acceptance inspection shall be carried out only when required. In this inspection, the tests shall be carried out on the same specimens in accordance with 9. and the results shall comply with the provisions of 4. to 7. and 12. However, the tests for (8) and (9) shall be carried out on separate specimens.

The items (4) to (10) may be omitted subject to agreement between the parties concerned with acceptance.

- (1) Dimensions (measurement points are subjected to agreement between the parties concerned with acceptance)
- (2) Appearance
- (3) Construction
- (4) Cap adhesive strength
- (5) Initial characteristics
- (6) Life

- (7) Lumen maintenance
- (8) Resistance to vibration
- (9) Glass bulb strength
- (10) Light color
- (11) Marking

10.2.2 Sampling inspection plan The sampling inspection plan in the acceptance inspection shall be as given in Table 4.

Table 4. Sampling inspection

Inspection item		Sample size <i>n</i>	Acceptance number <i>c</i>	Quality level
Dimension		5	0	As specified in 6.
Appearance		5	0	
Construction		5	0	As specified in 5.
Cap adhesive strength		5	0	As specified in 4.1
Initial characteristics		5	0	As specified in 4.2
Life	Average life and lumen maintenance	20	*	As specified in 4.3, 4.4
	Life to 3 % failure	20	**	
Resistance to vibration		20	2	As specified in 4.5
Glass bulb strength		5	0	As specified in 4.6
Light color		5	0	As specified in 4.7
Marking		5	0	As specified in 12.

Notes * The average life on 20 lamps shall be not less than 96 % of the rated life specified in Attached Tables and the lumen maintenance shall have a value not less than that specified in Attached Tables.

** The average life on 20 lamps shall be not less than the rated life to 3 % failure specified in Attached Tables.

Remarks: The sampling inspection plan may be as agreed between the parties concerned with acceptance.

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11. Designation of product The product shall be designated by the name and type designation or by the classification symbol shown in Attached Tables.

Example. 1. Lamp for road vehicle JA 12 V 60/55 W or H4

Example. 2. Lamp for road vehicle A 12 V 5 WC

Example. 3. Lamp for road vehicle JA 12 V 55 WPK

Example. 4. Lamp for road vehicle A 24 V 4 W

12. Markings

12.1 Marking on product The following items shall be indelibly marked on each lamp:

- (1) Type designation (items other than the second item may be omitted) or classification symbol shown in Attached Tables.
- (2) Manufacturer's name or abbreviation

12.2 Marking on package The following items shall be marked on each package:

- (1) Name
- (2) Type designation and classification symbol shown in Attached Tables. (classification symbol may be omitted in some cases)
- (3) Manufacturer's name or abbreviation

12.3 Marking of precaution for use The precaution stating the key points given below shall be widely known by means of instruction manual, print on package container, etc. so that the user can use the lamps under correct conditions.

- (1) Lamps during operation or immediately after putting-off shall not be touched by the hand or skin because they are very hot.
- (2) Lamps shall be handled with a pair of clean gloves put on the hands without direct touch by bare hands, because sometimes the glass bulbs deteriorates and becomes opaque when lamps are operated being dirty.
- (3) Lamps with specified operating direction shall be used in the specified direction without fail.
- (4) Tungsten halogen lamps shall be used with enough care, because they may break and the glass may scatter sometimes if they are dropped, hit by things, or scratched, since the pressure inside the glass bulb is high.
- (5) At the time of replacement of lamps, the ratings (voltage and wattage) and the type of cap shall be verified and then the lamp shall be securely attached to the lamp holder.

Attached Table 1. General tungsten lamps of 12 V grade

Type designation	Shape and dimensions	Type of glass bulb	Cap	Mounted filament type	Light center length ρ mm	Filament offset mm	Filament angle β	Test voltage V	Initial characteristics				Lumen maintenance %	Rated life h	Rated life to 3% failure h	Informative reference	
									Power consumption W	Current A	Total luminous flux lm	Efficiency lm/W				Classification symbol	Principal use
A12V1.2W	Attached Fig. 1	T5	W2×4.6d	C-2V	(10)			13.5	1.20±0.12	(0.09)	8±2	(6.6)		1 000	—		Indicator lamp
A12V2W								13.5	2.00±0.26	(0.15)	12±4	(5.9)	—	1 000	—		
A12V4W	Attached Fig. 2	T8.5	BA9s	C-2V	15.0±2.0	±2.0	(90°)	13.5	4.0±0.4	(0.30)	35±8	(8.8)	70	300	80	T4W (IEC)	
A12V1.7W	Attached Fig. 3	T10	W2.1×9.5d	C-2V	12.7±1.5	±1.5	±15°	13.5	1.60±0.16	(0.12)	10±3	(6.3)	—	2 000	—		
								14.4(2)	1.70±0.17	(0.12)	12.5±3.7	(7.2)	—	1 000	—		
A12V3W					12.7±2.2	±2.2	+20°	13.5	3.00±0.45	(0.22)	22.0±6.6	(7.4)	60	1 000	400	W3W (IEC)	Indicator lamp, Parking lamp
A12V3.4W					14.2±2.3	±1.5	±15°	14.0	3.40±0.34	(0.24)	25±6	(7.4)	—	500	—	158 (SAE)	
								13.5(2)	3.20±0.32	(0.24)	22±5	(6.9)	—	750	—		
A12V5W					12.7±2.0	±2.2	+20°	13.5	5.00±0.75	(0.37)	50.0±12.5	(10)	70	300	80	W5W (IEC)	Turn-signal lamp, front position lamp
A12V3.8W				C-2F	14.2±2.3	±1.5	+15°	14.0	3.80±0.38	(0.27)	25±6	(6.6)	—	1 500	—	194 (SAE)	Indicator lamp, Parking lamp
								13.5(2)	3.60±0.36	(0.27)	22±5	(6.1)	—	2 000	—		
A12V5WC	Attached Fig. 5	T10	S8.5/8.5	C-8				13.5	5.20±0.52	(0.39)	45±10	(8.7)	60	600	—		Room lamp
A12V10WC								13.0(2)	4.90±0.49	(0.38)	38±10	(7.8)	60	1 000	—		
								13.5	10.6±1.1	(0.79)	140±20	(13.2)	60	250	—		
								13.0(2)	10±1	(0.77)	120±14	(12.0)	60	400	—		
A12V5WC	Attached Fig. 7	C18	BA15s	C-2R	19.0±2.3	±2.5	90°±45°	13.5	5.0±0.5	(0.37)	50.0±12.5	(10)	70	200	80	R5W (IEC)	Indicator lamp, Licence-plate lamp, Room lamp, Front position lamp, Tail lamp
A12V7.5W					20.6±2.3	±2.3	90°±30°	13.0	7.50±0.75	(0.58)	75±19	(10)	70	750	—	89 (SAE)	
A12V8W								13.5(2)	8.0±0.8	(0.59)	85±21	(10.6)	70	400	—		
A12V10W					19.0±2.3	±2.5	90°±45°	13.5	8.0±0.8	(0.59)	50±13	(6.3)	70	2 000	—	67 (SAE)	
A12V13W	Attached Fig. 8	T16	W2.1×9.5d	C-2R	20.6±1.0	±1.0	±15°	12.8	12.8±1.3	(1.00)	125±25	(12.5)	70	200	80	R10W (IEC)	Stop lamp
								13.5(2)	13.9±1.4	(1.03)	180±18	(12.9)	60	500	—	912 (ANSI)	
								12.8	17.9±1.8	(1.40)	263±27	(14.7)	60	500	—	921 (ANSI)	Stop lamp, Turn-signal lamp
A12V18W								13.5(2)	19.4±1.9	(1.44)	313±32	(16.1)	60	250	—		

A12V25/25W	Attached Fig. 9	T19	P15d 25 1	C 2V/C-6	20.0±0.5	±1.0	90±20°	13.2	25.6±2.6	(1.94)	490±59	(19.1)	70	70	—	Head lamp (for two- wheeled vehicle)
A12V21WT	Attached Fig. 11	T20	W3×16d	C-6	29.0(1)	(1)	±15°	13.5	25.0±1.5	(1.85)	460±69	(18.4)	70	300	—	Backup lamp, Stop lamp, Turn-signal lamp
A12V18/5W	Attached Fig. 12	T20	W3×16q	C-6/C-6	25.0(1)	(1)	±15°	13.5	18.0±1.1	(1.33)	280±28	(15.5)	70	400	—	Stop lamp (for two- wheeled vehicle), Tail lamp (for two- wheeled vehicle)
A12V21/5WT								13.5	25.0±1.5	(1.85)	440±66	(17.6)	70	500	—	Stop lamp, Tail lamp
A12V21W	Attached Fig. 15	S25	BA15s	C-6	31.8(1)	(1)	90±25°	13.5	25.0±1.9	(1.85)	460±83	(18.4)	70	150	40	Backup lamp, Stop lamp, Turn-signal lamp, fog lamp
A12V35W	Attached Fig. 15	S25	BA15s	C-6	31.8±1.0	±1.0	90±15°	13.5	31.8±1.9	(2.36)	690±69	(21.7)	70	150	—	Side illuminating lamp
A12V21WS	Attached Fig. 20	S25(1)	BAU15s	C-6	31.8(1)	(1)	90±25°	13.5	25.0±1.9	(1.85)	280±65	(11.2)	—	—	—	Turn-signal lamp
A12V21/5W	Attached Fig. 21	S25	BAY15d	C-6/C-6	31.8(1)	(1)	90±25°	13.5	25.0±1.9	(1.85)	440±79	(17.6)	70	150	40	Stop lamp, Turn-signal lamp, Tail lamp
A12V35/5W	Attached Fig. 16	S25	BAY15d	C-6/C-6	31.8±1.0	±1.0	90±15°	13.5	28.6±1.7	(2.12)	600±60	(21)	70	150	—	Side illuminating lamp, front position lamp
								13.0(2)	27.0±1.6	(2.08)	520±52	(19.3)	70	150	—	