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(JELMA/JSA)

**High-pressure mercury vapour
lamps — Performance specifications**

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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 Manufactures 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 7604:1999** is replaced with this Standard.

This Standard has been made based on **IEC 60188:2001** *High-pressure mercury vapour lamps—Performance specifications* for the purpose of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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.

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the original JIS is to be the final authority.

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Contents

	Page
Introduction	1
Section 1 General	1
1.1 Scope	1
1.2 Normative references	2
1.3 Terms and definitions	2
1.4 Performance	3
1.4.1 General	3
1.4.2 Dimensions	3
1.4.3 Caps	3
1.4.4 Starting characteristics, warm-up time and restarting time	3
1.4.5 Electrical characteristics	4
1.4.6 Photometric characteristics	4
1.4.7 Red ratio (fluorescent coated lamps only)	4
1.4.8 Lamp stability with rapidly reduced supply voltage	4
1.5 Information for luminous design	4
1.5A Type designation of lamps	4
Section 2 Lamp data sheet	5
2.1 Numbering method of lamp data sheet	5
2.2 Lamp data sheet	5
2.2.1 Lamp data sheet	5
2.2.2 Maximum lamp dimensions and inclination of glass axis to cap	5
Annex A (normative) Starting, warm-up time and restarting time test	17
Annex B (normative) Measuring method of electrical and photometric characteristics of lamp	19
Annex C (normative) Measuring method of red ratio of high-pressure mercury vapour lamp	22
Annex D (informative) Information for luminaire design	24
Annex 1 (normative) Type designation of lamps	25
Annex 2 (informative) Comparison table between JIS and corresponding International Standard	26

High-pressure mercury vapour lamps—Performance specifications

Introduction This Japanese Industrial Standard has been prepared based on the third edition of IEC 60188 *High-pressure mercury vapour lamps—Performance specifications* published in 2001 with some modifications of the technical contents.

The portions given continuous sidelines and dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with explanations is given in Annex 2 (informative).

Section 1 General

1.1 Scope This Standard specifies the performance for high-pressure mercury vapour lamps (hereafter referred to as “lamps”) with the ballast for lighting specified in JIS C 8110 for general lighting purposes with or without a red correcting fluorescent coating. A part of requirements of this Standard shall be specified in the relevant data sheets. Other data sheets of lamps which fall under the scope of this Standard, however are not specified in data sheets of this Standard shall be supplied by the lamp manufacturer or the responsible vendor. The requirements of this Standard shall be applied to the type test only.

NOTES 1 The requirements and tolerances specified in this Standard shall be applied to testing of the type test sample supplied by the manufacturer for the type test. Usually, this type test sample should be typical production having characteristics as close to the centre point values as possible. Majority of production manufactured in accordance with the type test sample will usually be in the range of tolerances of this Standard. Due to the production spread, however, it is inevitable that there will sometimes be products outside the specified tolerances. For guidance on sampling plans and procedures for testing, see IEC 60410.

2 The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

IEC 60188 : 2001 *High-pressure mercury vapour lamps—Performance specifications* (MOD)

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

JIS C 7624 *Discharge lamps (excluding fluorescent lamps)—Safety specifications*

NOTE : IEC 62035 *Discharge lamps (excluding fluorescent lamps)—Safety specifications* is equivalent to the said standard.

JIS C 8110 *Ballasts for high pressure mercury vapour lamps and ballasts for low pressure sodium vapour lamps*

NOTE : IEC 60923 *Auxiliaries for lamps—Ballasts for discharge lamps (excluding tubular fluorescent lamps)—Performance requirements* is equivalent to the said standard.

JIS Z 8113 *Lighting vocabulary*

NOTE : IEC 60050-845 *International Electrotechnical Vocabulary—Chapter 845 : Lighting* is equivalent to the said standard.

JIS Z 8120 *Glossary of optical terms*

IEC 60410 *Sampling plans and procedures for inspection by attributes*

1.3 Terms and definitions For the purposes of this Standard, the definitions given in JIS Z 8113 and JIS Z 8120 and the following definitions apply.

1.3.1 high pressure mercury (vapour) lamp high intensity discharge lamp in which the major portion of the light is produced, directly or indirectly, by radiation from the mercury vapour at a partial pressure in excess of 100 kPa while lighting

NOTE : This term covers all mercury lamps of transparent type, fluorescent coated (mercury fluorescent) type and built-in ballast type lamps.

1.3.2 nominal value (specified in IEC Standard, however not specified in this Standard because lamps can be identified by rated values)

1.3.3 rated value numeric values for the lamp announced by the manufacturer or the responsible vendor under the specified operating conditions while lighting

1.3.4 lamp starting voltage r.m.s. voltage between lamp terminals at which the lamp starts

1.3.4A starting phenomenon of arc discharge starting between the main electrodes of lamp

1.3.4B warm-up time the time from when the lamp starts till when the lamp voltage becomes stable at the specified rated input voltage

1.3.4C restarting time the time from when the lamp whose lamp voltage is stable is put off till when it is restarted immediately by applying the specified voltage one more time

1.3.5 minimum open circuit voltage for stable operation minimum open circuit

voltage to be provided for stable lighting of the lamp (choke coil type ballast)

1.3.6 initial readings initial readings of 100 h aged lamp

1.3.6A rated luminous flux luminous flux value announced by the manufacturer or the responsible vendor

1.3.7 red ratio ratio of the red portion whose wavelength of the visible spectrum is not less than 600 nm to the visible spectrum emission of the lamp

1.3.8 reference ballast special choke coil type ballast designed for testing of the lamp, comparison to ballast under test or selection of reference lamp

1.3.9 calibration current current value calibrated and controlled based on the reference ballast

1.3.10 type test test made on a type test sample for checking the compliance of the relevant specification requirements for the product

1.3.11 type test sample sample consisting of one or more units provided by the manufacturer or the responsible vendor for the type test

1.3.11A light centre length length from the lamp cap end to the centre of the main electrodes

1.3.11B lamp neck length measured length parallel to the lamp axis from the lamp cap end to the bulb portion 2 mm wider than the maximum value of neck diameter shown in the lamp data sheet

1.4 Performance

1.4.1 General The lamp shall comply with **JIS C 7624**. The lamp shall be so designed that its performance is reliable when using under the normal and accepted conditions. Generally, the following items of performance requirements shall be satisfied. These requirements apply to 95 % of all productions.

[In IEC Standard, lamps are classified by the lamp voltage range (HV : 70 V to 180 V and EHV : > 180 V), however in this Standard, classification by the lamp voltage range is not performed because there is no lamp of which lamp voltage exceeds 180 V in Japan.]

1.4.2 Dimensions The dimensions of the lamp shall satisfy the values specified in the relevant lamp data sheet.

1.4.3 Caps The cap on a finished lamp shall comply with 4.3.1 of **JIS C 7624**.

1.4.4 Starting characteristics, warm-up time and restarting time The lamp shall start within the starting time specified in the relevant lamp data sheet when tested according to Annex A, and remain lighting for at least 1 min. The warm-up time shall comply with the value specified in the relevant lamp data sheet when tested according to **A.2A** of Annex A. As for the restarting time, the lamp shall restart within the restart time specified in the relevant lamp data sheet when tested according to **A.2B** of

Annex A.

NOTE : Usually, the lamp shall start even at a temperature down to $-5\text{ }^{\circ}\text{C}$ at 100 % voltage of the rated voltage.

1.4.5 Electrical characteristics The lamp voltage shall be within the range specified in the relevant lamp data sheet when measured under the testing condition shown in Annex B. The lamp power shall not exceed the maximum value specified in the relevant lamp data sheet when measured under the testing condition shown in Annex B.

1.4.6 Photometric characteristics The value of luminous flux shall be not less than 90 % of the rated value when measured under the testing condition shown in Annex B. However, the value of luminous flux of a low wattage lamp of not more than 100 W shall not be less than 83 % of the rated value.

1.4.7 Red ratio (fluorescent coated lamps only) The red ratio of the lamp should be not less than 7 % (informative) when measured under the testing condition shown in Annex B and Annex C.

1.4.8 Lamp stability with rapidly reduced supply voltage The lamp shall not go off for at least 5 s in case when the voltage falls from 100 % to 90 % of the rated voltage within 0.5 s.

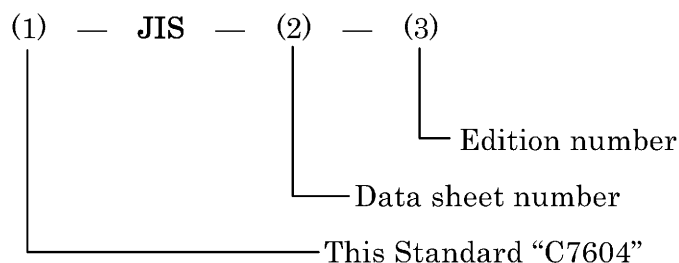
1.5 Information for luminous design The information for luminous design shall be shown in Annex D.

1.5.A Type designation of lamps The type designation of lamps shall be in accordance with Annex 1.

Section 2 Lamp data sheet

2.1 Numbering method of lamp data sheet The number of each lamp data sheet shall consist of the sequence of the designation with the combination of (1) to (3).

Sequence of lamp data sheet number



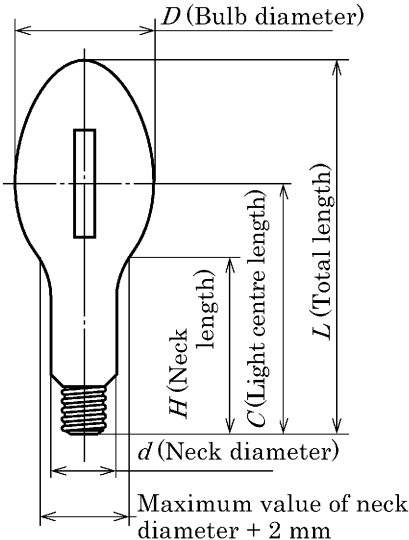
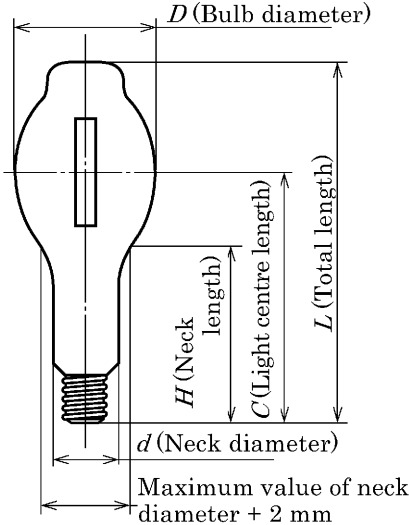
2.2 Lamp data sheet

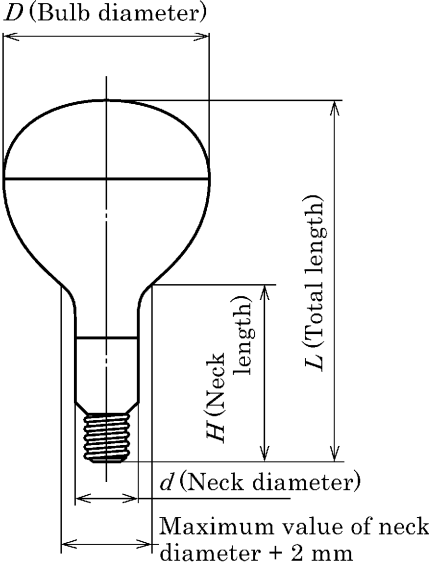
2.2.1 Lamp data sheet The diagram which shows the lamp dimensions shall be in accordance with the data sheet number C7604-JIS-01. The lamp data sheet according to this Standard shall be in accordance with table 1.

Table 1 Lamp data sheet number

Nominal lamp wattage (W)	Cap	Lamp data sheet number
40	E26	C7604-JIS-0100-1
80	E26	C7604-JIS-0200-1
100	E26	C7604-JIS-0300-1
200	E39	C7604-JIS-0400-1
250	E39	C7604-JIS-0500-1
300	E39	C7604-JIS-0600-1
400	E39	C7604-JIS-0700-1
700	E39	C7604-JIS-0800-1
1 000	E39	C7604-JIS-0900-1

2.2.2 Maximum lamp dimensions and inclination of glass axis to cap The maximum lamp dimensions and the inclination of glass axis to cap shall be in accordance with the lamp data sheet.

	Location of lamp dimensions in data sheet High-pressure mercury vapour lamp	Page 1/2
 Bulb shape B  Bulb shape BT		
C7604-JIS-01		

	Location of lamp dimensions in data sheet High-pressure mercury vapour lamp	Page 2/2
 Bulb shape R		
C7604-JIS-01		

	Lamp data sheet High-pressure mercury vapour lamp							
Rated lamp wattage : 40 W							Bulb shape : B	
Lamp dimensions								
Type	Bulb shape	Bulb diameter (max.) <i>D</i> (mm)	Total length (max.) <i>L</i> (mm)	Light centre length <i>C</i> (mm)	Neck diameter (max.) <i>d</i> (mm)	Neck length (min.) <i>H</i> (mm)	Inclination of glass axis to cap (max.) (°)	Cap
Transparent type	B	61	132	84 ± 5	35	36	3	E26
Fluorescent type				—				
Lamp starting test, warm-up time and restarting time								
Item			Test voltage (V)			Specification		
Starting time (max.)			180			10 (s)		
Warm-up time (max.) (1)			200			8 (min)		
Restarting time (max.)			200			10 (min)		
Electrical initial readings of lamp								
Item				Desired value	Maximum value	Minimum value		
Lamp voltage (V)				90	105	75		
Lamp current (A)				0.53	—	—		
Lamp wattage (W)				40	42	—		
Reference ballast characteristics								
Item				Specification				
Rated frequency (Hz)				50/60				
Rated voltage (V)				200				
Reference current (A)				0.53				
Impedance (Ω)				300 ± 0.5 %				
Power factor				0.075 ± 0.005				
Information for ballast design								
Item				Maximum value		Minimum value		
Rising current (A)				0.90		0.53		
Note (1) The testing method of warm-up time shall be in accordance with A.2A of Annex A.								
NOTE : IEC 60188 has no data sheet corresponding to this data sheet.								
C7604-JIS-0100-1								