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**Automotive parts — Glow plugs for diesel
engines — General requirements and di-
mensions**

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Foreword

This Japanese Industrial Standard has been 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 Society of Automotive Engineers of Japan, Inc. (JSAE) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS D 5103** : 1992), which has been technically revised.

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Automotive parts — Glow plugs for diesel engines — General requirements and dimensions

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 17447-1** : 2015 (Edition 1), **ISO 17447-2** : 2015 (Edition 1), **ISO 17447-3** : 2015 (Edition 1) without any technical modifications for the contents where **JIS** is equivalent to the said corresponding International Standards, but also with addition of **JIS** specific requirements (Clause 6 Appearance) that are not provided in the said corresponding International Standards.

The dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the general requirements and dimensions of metal-sheath-type glow-plugs and ceramic-sheath-type glow-plugs for use with diesel engines.

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

ISO 17447-1 : 2015 *Road vehicles — Glow-plugs with conical seating and their cylinder head housing — Part 1 : Basic characteristics and dimensions for metal-sheath-type glow-plugs*

ISO 17447-2 : 2015 *Road vehicles — Glow-plugs with conical seating and their cylinder head housing — Part 2 : Basic characteristics and dimensions for ceramic-sheath-type glow-plugs*

ISO 17447-3 : 2015 *Road vehicles — Glow-plugs with conical seating and their cylinder head housing — Part 3 : Tests and requirements* (Overall evaluation : MOD)

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 21-1**.

2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. For standards with the year indication, only the editions of the indicated year shall be applied and the revisions (including amendments) made thereafter shall not be applied. For those without the indication of the year, the most recent editions (including amendments) shall be applied.

JIS B 0108-1 *Reciprocating internal combustion engines — Vocabulary — Part 1 : Terms for engine design and operation*

JIS D 1601 Vibration testing methods for automobile parts

ISO 68-1 ISO general purpose screw threads — Basic profile — Part 1 : Metric screw threads

ISO 261 ISO general purpose metric screw threads — General plan

ISO 965-1 : 2013 ISO general purpose metric screw threads — Tolerances — Part 1 : Principles and basic data

ISO 965-3 ISO general purpose metric screw threads — Tolerances — Part 3 : Limit deviations for screw threads

ISO 1101 Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out

IEC 60068-2-6 Environmental testing — Part 2-6 : Tests — Test Fc : Vibration (sinusoidal)

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those given in **JIS B 0108-1** apply.

3.1

nominal voltage

voltage as marked on the housing of the glow-plug, at which the glow-plug is designed to achieve a given performance

Note 1 to entry The nominal voltage of the glow-plug is generally not identical to the supply voltage of the vehicle's electrical system.

3.2

test voltage

voltage(s) applied to the threaded or pin terminal of the glow-plug under test

3.3

metal-sheath-type glow-plugs

glow-plugs of metal sheath type using a metallic heating element

3.4

ceramic-sheath-type glow-plugs

glow-plugs of ceramic sheath type using a ceramic heating element

4 Metal-sheath-type glow-plugs

4.1 Threads — dimension limits and tolerances

The threads of glow-plugs and the corresponding tapped holes in cylinder heads shall be in accordance with **ISO 68-1**, **ISO 261**, **ISO 965-1 : 2013** and **ISO 965-3**.

The tolerance class 6g shall be used for glow-plug threads. For existing designs, tolerance class 6e is also permitted.

The thread in the corresponding tapped holes in the cylinder heads shall have tolerance class 6H.

The dimension limits and tolerances of threads of glow-plugs and the corresponding tapped holes in the cylinder head are given in Tables 1 and 2. Other dimension limits and tolerances than shown may be agreed between the interested parties.

Table 1 Thread dimension limits and tolerances

Unit: mm

Thread size	Tolerance class	Dimension	Major diameter (glow-plug)/major diameter (cylinder head)		Pitch diameter		Minor diameter (glow-plug)/minor diameter (cylinder head)	
			max	min	max	min	max	min
M14 × 1.25	6e	Plug thread	13.937	13.725	13.125	12.993	12.404	12.181 ^{a)}
	6H	Tapped hole in the cylinder head	—	14.000	13.368	13.188	12.912	12.647
M12 × 1.25	6e	Plug thread	11.937	11.725	11.125	10.993	10.404	10.181 ^{a)}
	6H	Tapped hole in the cylinder head	—	12.000	11.368	11.188	10.912	10.647
M10 × 1.25	6g	Plug thread	9.972	9.760	9.160	9.042	8.439	8.251 ^{a)}
	6H	Tapped hole in the cylinder head	—	10.000	9.348	9.188	8.912	8.647
M10 × 1	6g	Plug thread	9.974	9.794	9.324	9.212	8.747	8.563 ^{b)}
	6H	Tapped hole in the cylinder head	—	10.000	9.500	9.350	9.153	8.917
M9 × 1	6g	Plug thread	8.974	8.794	8.324	8.212	7.747	7.596 ^{b)}
	6H	Tapped hole in the cylinder head	—	9.000	8.500	8.350	8.153	7.917
M8 × 1	6g	Plug thread	7.974	7.794	7.324	7.212	6.747	6.596 ^{b)}
	6H	Tapped hole in the cylinder head	—	8.000	7.500	7.350	7.153	6.917
Note ^{a)} With a root radius ≥ 0.125 mm (0.1 P).								
Note ^{b)} With a root radius ≥ 0.1 mm (0.1 P).								

Table 2 Minor diameters and fundamental deviations for glow-plug threads

Unit: mm

Thread size	Minor diameter ^{a)} $d_{3\max}$	Fundamental deviation ^{b)} es
M14 × 1.25-6e	$d_{3\max} = (12.647 - 0.063 - 0.180) = 12.404$	0.063
M12 × 1.25-6e	$d_{3\max} = (10.647 - 0.063 - 0.180) = 10.404$	0.063
M10 × 1.25-6g	$d_{3\max} = (8.647 - 0.028 - 0.180) = 8.439$	0.028
M10 × 1-6g	$d_{3\max} = (8.917 - 0.026 - 0.144) = 8.747$	0.026
M9 × 1-6g	$d_{3\max} = (7.917 - 0.026 - 0.144) = 7.747$	0.026
M8 × 1-6g	$d_{3\max} = (6.917 - 0.026 - 0.144) = 6.747$	0.026
Note ^{a)} The maximum value of the minor diameter, $d_{3\max}$, is calculated according to ISO 965-1 : 2013, Clause 11 with a truncation of H/6, in accordance with the following formula: $d_{3\max} = D_1 - es - 2(H/4 - H/6)$ Note ^{b)} The fundamental deviation, es, between the pitch diameters of the thread and of the tapped hole is intended to prevent the possibility of seizure, as a result of combustion deposits on the bare threads, when removing the glow-plugs. This clearance is also intended to enable glow-plugs with threads in accordance with this Standard to be fitted in existing tapped holes.		

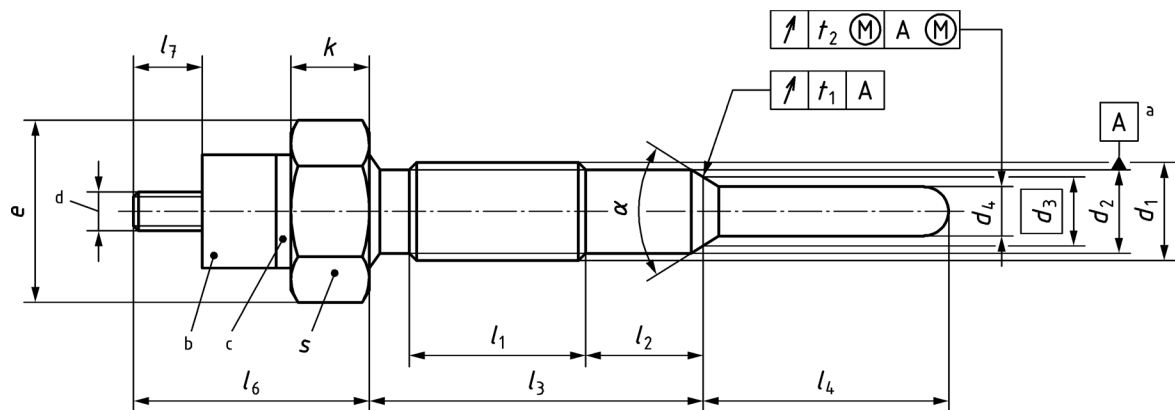
4.2 Metal-sheath-type glow-plugs

4.2.1 General

Metal-sheath-type glow-plug outside dimensions shall be as given in Figure 1 and Tables 3 and 4. Other dimensions than shown may be agreed between the interested parties.

Type M14 should not be used for new applications.

Unit: mm



Key

a : Major diameter in accordance with **ISO 1101**

b : Cylinder or hexagonal nut (only for threaded terminal)

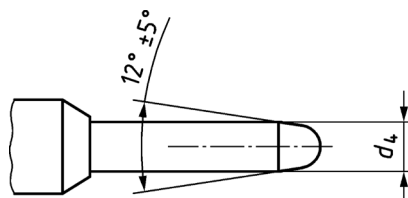
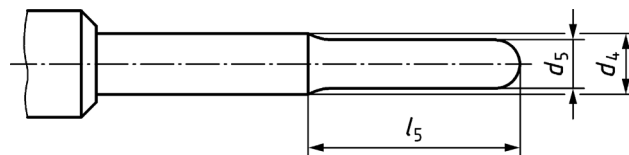
c : Insulator

d : M4, M5 or pin terminal (for details, see **4.2.3**)

NOTE See Tables 3 and 4 for dimensions.

Figure 1 Glow-plug outside dimensions**4.2.2 Heating elements**

Figures 2 and 3 show dimensions of heating elements of metal-sheath-type glow-plugs. For other dimensions see Figure 1. Other dimensions than shown may be agreed between the interested parties.

**Figure 2** With cone end diameter**Figure 3** With reduced tip end diameter**4.2.3 Electrical connection**

Figures 4 to 8 show dimensions of the pin and blade terminals. Other dimensions than shown may be agreed between the interested parties.