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Road Vehicles — Glow-plugs with conical seating and their cylinder head housing —

Part 1:
Basic characteristics and dimensions for metal-sheath-type glow-plugs

Véhicules routiers — Bougies de préchauffage à fourreau et à siège conique et leur logement dans la culasse —

Partie 1: Caractéristiques de base et dimensions des bougies de préchauffage à fourreau de type métallique

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, Road vehicles, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

This second edition cancels and replaces the first edition (ISO 17447-1:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Table 1, 2, 4, 6, 7 include now additionally M9x1

— Figure A.1 includes now M9

A list of all parts in the ISO 17447 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The purpose of this document is to provide a compact and concise specification on glow-plugs and their cylinder head housings, which shall replace the existing single standards on each type of glow-plugs.

It is intended to specify the main properties, the design requirements and the dimensions of most of the existing types of glow-plugs and their cylinder head housings. It should enable the user to work with one comprehensive document valid for most types of glow-plugs instead of a number of standards each of them specified for one type only.

Part 1 covers basic characteristics and dimensions for metal-sheath-type glow-plugs. Part 2 covers basic characteristics and dimensions for ceramic-sheath-type glow-plugs. Tests and requirements are defined in Part 3 of this document.

It is intended to withdraw the following document on glow-plugs and their cylinder head housing as soon as this standard is published:

ISO 6550-1, ISO 6550-2, ISO 6550-3, ISO 6550-4, ISO 7578.

Road Vehicles — Glow-plugs with conical seating and their cylinder head housing —

Part 1: Basic characteristics and dimensions for metal-sheath-type glow-plugs

1 Scope

This part of the International Standard specifies the main properties and dimensions of metal-sheath-type glow-plugs, including the terminals, and the dimensions of their cylinder head housings, for use with diesel (compression ignition) engines.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

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

ISO 965-3, *ISO general purpose screw threads — Tolerances — Part 3: Deviations for constructional threads*

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

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 8092-1, *Road vehicles — Connections for on-board electrical wiring harnesses — Part 1: Tabs for single-pole connections — Dimensions and specific requirements*

ISO 8092-4, *Road vehicles — Connections for on-board electrical wiring harnesses — Part 4: Pins for single- and multi-pole connections — Dimensions and specific requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply / the terms and definitions given in [external document reference] and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
Nominal voltage
Voltage as marked on the housing of the glow-plug

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 glow-plug under test

4 Dimensions and tolerances

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 and ISO 965-3.

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

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

The threads, dimension limits and tolerances of glow-plugs and the corresponding tapped holes in the cylinder head are given in Table 1 and 2.

Table 1 – Dimension limits

Dimensions in millimeters

Thread size	Tolerance class	Dimension	Major diameter		Pitch diameter		Minor diameter	
			max.	min.	max.	min.	max.	min.
M14 x 1,25	6e	**Plug thread** (on finished plug)	13,937	13,725	13,125	12,993	12,404	12,181[a]
	6H	**Tapped hole in the cylinder head**	not specified	14,000	13,368	13,188	12,912	12,647
M12 x 1,25	6e	**Plug thread** (on finished plug)	11,937	11,725	11,125	10,993	10,404	10,181[a]
	6H	**Tapped hole in the cylinder head**	not specified	12,000	11,368	11,188	10,912	10,647
M10 x 1,25	6g	**Plug thread** (on finished plug)	9,972	9,760	9,160	9,042	8,439	8,251[a]
	6H	**Tapped hole in the cylinder head**	not specified	10,000	9,348	9,188	8,912	8,647
M10 x 1	6g	**Plug thread** (on finished plug)	9,974	9,794	9,324	9,212	8,747	8,563[b]
	6H	**Tapped hole in the cylinder head**	not specified	10,000	9,500	9,350	9,153	8,917

[a] With a root radius ≥ 0,125 mm (0,1 P)

[b] With a root radius ≥ 0,1 mm (0,1 P)

Table 1 *(continued)*

Thread size	Tolerance class	Dimension	Major diameter		Pitch diameter		Minor diameter	
			max.	min.	max.	min.	max.	min.
M9 x 1	6g	**Plug thread** (on finished plug)	8,974	8,794	8,324	8,212	7,747	7,596[b]
	6H	**Tapped hole in the cylinder head**	not specified	9,000	8,500	8,350	8,153	7,917
M8 x 1	6g	**Plug thread** (on finished plug)	7,974	7,794	7,324	7,212	6,747	6,596[b]
	6H	**Tapped hole in the cylinder head**	not specified	8,000	7,500	7,350	7,153	6,917

[a] With a root radius ≥ 0,125 mm (0,1 P)

[b] With a root radius ≥ 0,1 mm (0,1 P)

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

Dimensions in millimeters

Thread size	Minor diameter[a] d_{3max}	Fundamental deviation[b] *es*
M14 x 1,25 – 6e	d_{3max} = (12,647 – 0,063 – 0,180) = 12,404	0,063
M12 x 1,25 – 6e	d_{3max} = (10,647 – 0,063 – 0,180) = 10,404	0,063
M10 x 1,25 – 6g	d_{3max} = (8,647 – 0,028 – 0,180) = 8,439	0,028
M10 x 1 – 6g	d_{3max} = (8,917 – 0,026 – 0,144) = 8,747	0,026
M9 x 1 – 6g	d_{3max} = (7,917 – 0,026 – 0,144) = 7,747	0,026
M8 x 1 – 6g	d_{3max} = (6,917 – 0,026 – 0,144) = 6,747	0,026

[a] The maximum value of the minor diameter, d_{3max}, is calculated according to ISO 965-1: 1999-11 Clause 11 with a truncation of H/6, in accordance with the following equation:

$$d_{3max} = D_1 - es - 2(H/4 - H/6).$$

[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 International Standard to be fitted in existing tapped holes.

4.2 Glow-plugs

4.2.1 General

Sheath-type glow-plug dimensions and tolerances shall be as given in Figure 1 and Table 3 and 4.

Type M14 should not be used for new applications.