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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Road vehicles — M14 × 1,25 spark-plugs with flat seating and their cylinder head housing

Véhicules routiers — Bougies d'allumage M14 × 1,25 à siège plat et leur logement dans la culasse

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Reference number
ISO 1919: 1988 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 1919 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

This fourth edition cancels and replaces the third edition (ISO 1919 : 1982), of which it constitutes a minor revision and alignment to other TC 22 International Standards on spark-plugs.

Road vehicles — M14 × 1,25 spark-plugs with flat seating and their cylinder head housing

1 Scope

This International Standard specifies the main characteristics of M14 × 1,25 spark-plugs with flat seating with normal or long reach and their cylinder head housing, for use with spark-ignition engines.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 68 : 1973, *ISO general purpose screw threads — Basic profile*.

ISO 261 : 1973, *ISO general purpose metric screw threads — General plan*.

ISO 965-1 : 1980, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*.

ISO 965-3 : 1980, *ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional threads*.

3 Requirements

3.1 Terminals

The spark-plug terminal may be either the solid post or the threaded type. If nuts are used, they shall have the same external dimensions as those of the solid post terminal. See figures 1a) and 1b).

3.2 Dimensions and threads (see figures 1 to 3)

3.2.1 Spark-plug reach

Spark-plug reach shall meet the requirements of table 1.

Table 1

Dimensions in millimetres

Type of reach	A ¹⁾ ±0,2	B max.	Y ±0,3
Normal reach	12,7	21	11,7
Long reach	19	27	18
1) Dimension A may be increased for certain spark-plug types.			

3.2.2 Gasket

When the spark-plugs have been tightened with a torque of 30 N·m, on threads that are clean, smooth and dry, the gaskets shall be 1,3 mm to 2 mm thick. If the gasket thicknesses are different, a corresponding adjustment to dimensions A, B and Y shall be made.

Non-captive gaskets may be used in special cases.

3.2.3 Threads

3.2.3.1 Spark-plug and cylinder head

The threads of M14 × 1,25 spark-plugs and the corresponding tapped holes in the cylinder head shall conform to ISO 68, ISO 261, ISO 965-1 and ISO 965-3. Their limiting dimensions and their tolerance classes shall be as specified in 3.2.3.1.1 and 3.2.3.1.2 respectively.

3.2.3.1.1 Limiting dimensions

The limiting dimensions shall be as given in table 2.

Table 2

Dimensions in millimetres

Dimension		Plug thread (on finished plug)	Tapped hole in cylinder head
Major diameter	max.	13,937	not specified
	min.	13,725	14
Pitch diameter	max.	13,125	13,368
	min.	12,993	13,188
Minor diameter	max.	12,404	12,912
	min.	12,181 ¹⁾	12,647
1) With a root radius > 0,125 mm (0,1 P).			

3.2.3.1.2 Tolerance classes

The thread tolerance classes of finished M14 × 1,25 spark-plugs and of the corresponding tapped holes in the cylinder head shall be as follows:

- 6e for spark-plugs (see note 1);
- 6H for tapped holes in the cylinder head.

NOTES

1 In order that spark-plugs complying with this International Standard can be fitted in existing cylinder heads also in extreme cases, the value for the *maximum truncation* of the minor diameter of the spark-plug base has been slightly reduced with respect to the ISO value.

This maximum value of the minor diameter is calculated from a distance of $H/6$ for the *maximum truncation* according to the formula given below, instead of the value given by the formula in ISO 965-1 : 1980, clause 11:

$$\begin{aligned} \text{Minor diameter, maximum} &= d_1 - e_s - 2(H/4 - H/6) \\ &= 12,647 - 0,063 - 0,180 \\ &= 12,647 - 0,243 = 12,404 \end{aligned}$$

The value for the *basic profile* remains the same as for the ISO thread (12,647 - 0,063 = 12,584).

2 The initial clearance $e = 0,063$ mm 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 spark-plugs.

This clearance is also intended to enable spark-plugs with threads in accordance with this International Standard to be fitted in existing tapped holes.

3.2.3.2 Threaded terminal

For spark-plugs with a threaded terminal, the thread tolerance class of the terminal [see figure 1b)] shall be 6e.

NOTE — Depending on manufacturing processes, class 7e is acceptable on the finished product.

Nuts for use with threaded terminals shall have internal threads to 6H tolerance prior to assembly on the threaded post.

3.3 Other dimensions of spark-plug and housing in cylinder head

The other dimensions shall be as indicated in figures 1, 2 and 3.

The contour of the insulator is optional; however, between the reference planes defined for spark-plugs with solid post terminals by the dimensions 29 mm and 33 mm, and for spark-plugs with threaded terminals by the dimensions 26 mm and 30 mm, its largest diameter shall be $12,2 \text{ mm} \pm 0,3 \text{ mm}$.

The Z length of the spark-plug housing in the cylinder head shall be sufficient to ensure that the end of the spark-plug thread does not project into the combustion chamber at any point when the gasket is tightened to maximum compression.

Details not specified are left to the manufacturer's choice.

3.4 Installation tightening torque

The installation torque values apply to new spark-plugs without lubricant on the threads. If threads are lubricated, the torque value shall be reduced by approximately one-third to avoid overstressing.

Spark-plugs shall be tightened with a torque of

- 20 N·m to 30 N·m in aluminium cylinder heads, and
- 20 N·m to 40 N·m in cast iron cylinder heads.

NOTE — Engine manufacturers may specify a different torque for the first spark-plug installation.

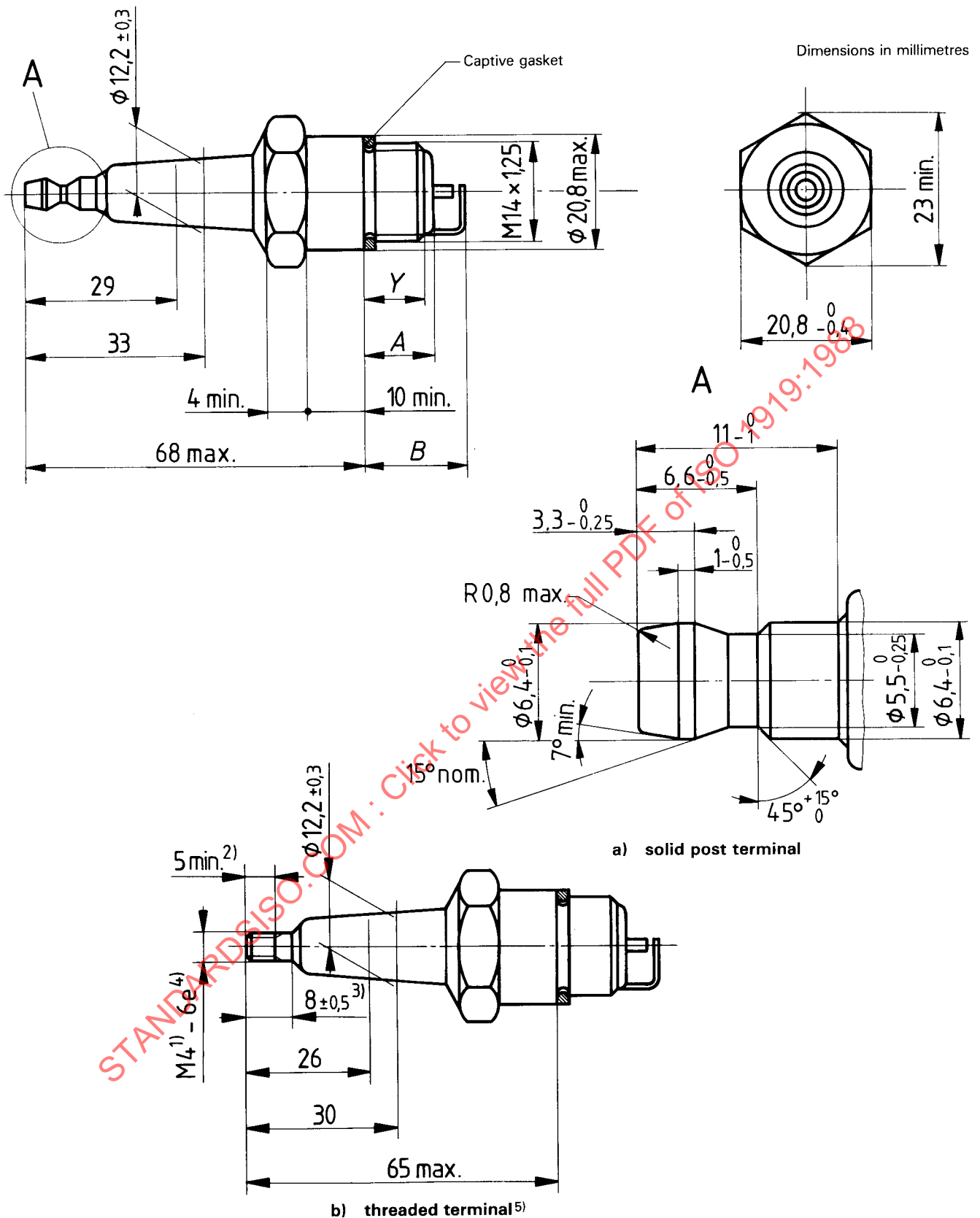


Figure 1 — M14 x 1,25 spark-plug with flat seating

- 1) 0,7 mm pitch complying with ISO 68 and with ISO 261.
- 2) Length of usable thread.
- 3) Cylindrical part.
- 4) Depending on manufacturing processes, class 7e is acceptable on the finished product.
- 5) Other dimensions: see a).

Dimensions in millimetres

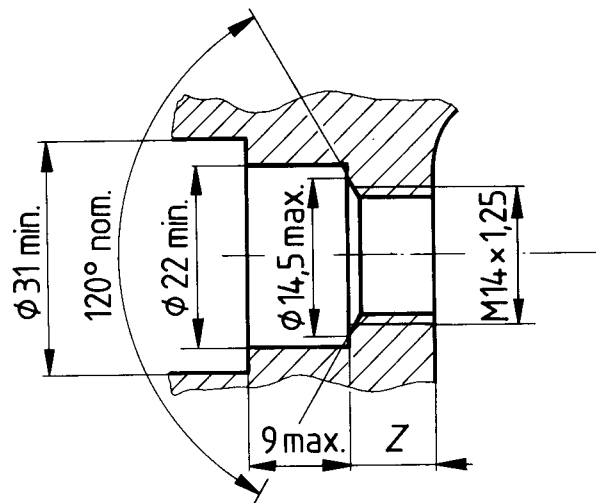


Figure 2 — Housing of spark-plug in cylinder head

Dimensions in millimetres

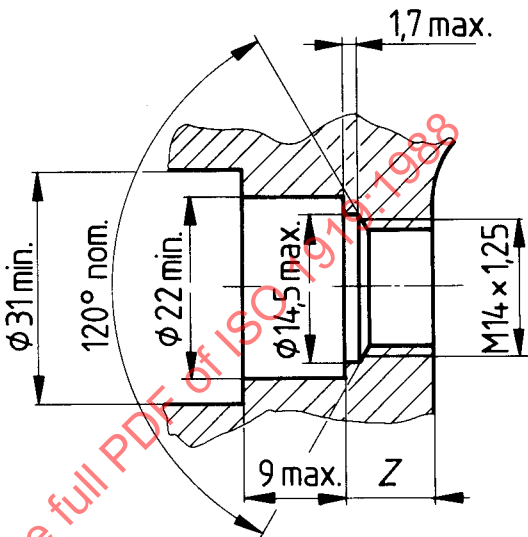


Figure 3 — Optional configuration of housing in cylinder head