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Diesel engines — High-pressure fuel injection pipe assemblies — General requirements and dimensions

Moteurs diesels — Lignes assemblées d'injection de carburant à haute pression — Exigences générales et dimensions

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Dimensions and tolerances **1**
5 Cleanliness **3**
6 Minimum bend radii **3**
7 Pipe end connections **3**
7.1 General 3
7.2 Types of connection ends 3
7.3 Pipe end assembly for integral 60° concave cones 4
7.4 Pipe end assembly for fabricated 60° concave cones 6
7.5 Connection end with crimped sleeve 7
7.6 Bore entrance configuration 10
8 Assembly clamps **10**
9 External coatings **10**
10 Operating pressure **10**
11 Pipe inside diameter **11**
12 Tightening torque and sealing performance **11**
13 Packaging and identification **11**
Annex A (informative) **Operating pressure** **12**
Bibliography **13**

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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).

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain and powertrain fluids*.

This fifth edition cancels and replaces the fourth edition (ISO 13296:2016), which has been technically revised.

The main changes are as follows:

— some combinations of dimensions of pipe end connections were added for integral 60° concave cones with a pipe outer diameter 8;

— subclause 7.5 on the connection end with crimped sleeve was added.

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.

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Introduction

To comply with recent exhaust gas regulations and fuel consumption regulations for internal combustion engines, the fuel injection pressure of automobile diesel engines is generally 2 000 bar[1)] or more. Engines of 2 700 bar are also being introduced to the market.

Since this fuel injection pressure is extremely high, the dimensions and specifications for the assembly of high-pressure fuel injection pipes are serialised. This is to account for failure due to high stress and to prevent fuel leaking from the joint.

1) 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2.

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Diesel engines — High-pressure fuel injection pipe assemblies — General requirements and dimensions

1 Scope

This document specifies dimensions and requirements for high-pressure fuel injection pipe assemblies and assembled pipe sets for both integral and fabricated 60° concave cones used on 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 2974, *Diesel engines — 60° concave cones for high-pressure fuel injection components*

ISO 7876-4, *Fuel injection equipment — Vocabulary — Part 4: High-pressure pipes and end-connections*

ISO 8535-1:2016, *Diesel engines — Steel tubes for high-pressure fuel injection pipes — Part 1: Requirements for seamless cold-drawn single-wall tubes*

ISO 8535-2:2003, *Compression-ignition engines — Steel tubes for high-pressure fuel injection pipes — Part 2: Requirements for composite tubes*

ISO 12345, *Diesel engines — Cleanliness assessment of fuel injection equipment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7876-4 apply.

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

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

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

4 Dimensions and tolerances

The requirement and configuration drawing for a pipe assembly shall include at least the following:

a) an indication of conformity with this document;

b) the outside diameter and inside diameter of the pipe and an indication of conformity with ISO 8535-1 or ISO 8535-2;

c) the thread and the hexagon size of the connector nuts according to Table 2 or Table 4;

d) the type of connection ends as specified in 7.2;

e) a graphic representation of the centre-line of the pipe with the connection ends and each bend intersection labelled as a point, with each point listed in a table with Cartesian coordinates x, y and z with the orthogonal distance from the axis and the bend radius (the beginning and end points are given as the "*S*" dimension for the defined configuration);

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