
**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
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° female cones	4
7.4 Pipe end assembly for fabricated 60° female cones	6
7.5 Bore entrance configuration	8
8 Assembly clamps	8
9 External coatings	9
10 Operating pressure	9
11 Pipe inside diameter	9
12 Tightening torque and sealing performance	9
13 Packaging and identification	9
Annex A (normative) Operating pressure	10
Bibliography	11

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain, and powertrain fluids*.

This fourth edition cancels and replaces the third edition (ISO 13296:2012), which has been technically revised by making normative reference to ISO 4288 for the measurement of surface texture.

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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° female cones used on diesel (compression-ignition) engines.

NOTE Dimensions of integral and fabricated 60° female cone connectors are specified in ISO 2974.

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 2974:2011, *Diesel engines — 60° female cones for high-pressure fuel injection components*

ISO 4288, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 8535-1:2011, *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*

<https://standards.iteh.ai/catalog/standards/iso/16a3cbb1-371c-4264-b7b2-08148e7857e5/iso-13296-2016>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7876-4 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 <http://www.iso.org/obp>

4 Dimensions and tolerances

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

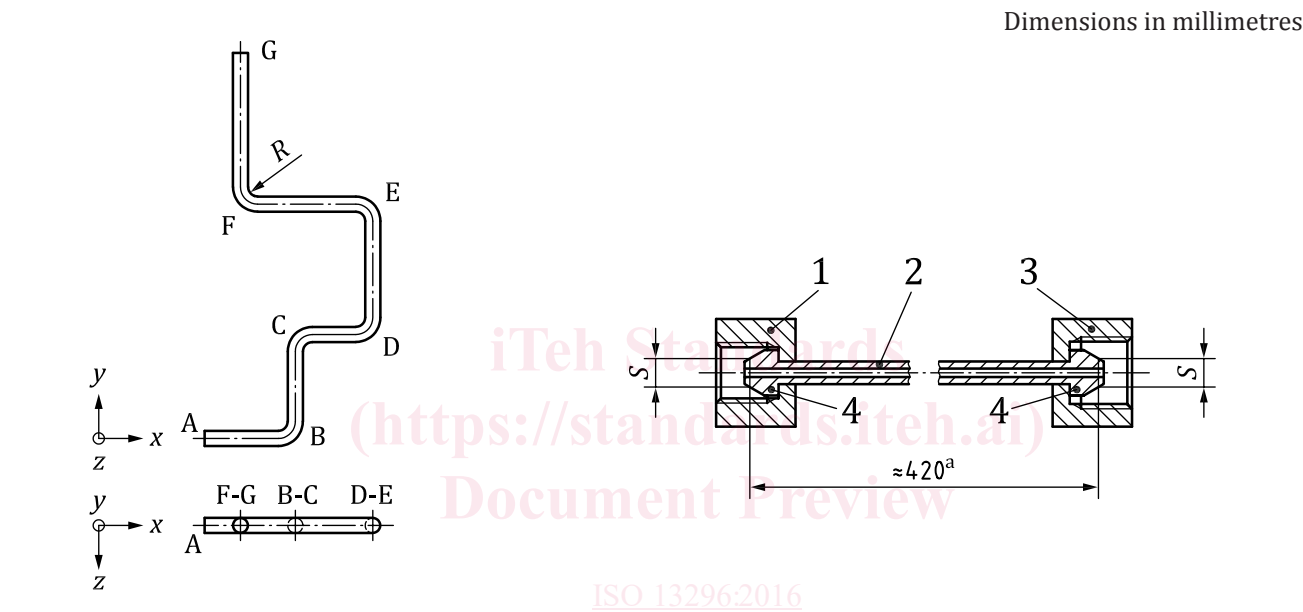
- a) an indication of compliance with this document, i.e. ISO 13296;
- b) the outside diameter and inside diameter of the pipe and an indication of compliance with ISO 8535-1 or ISO 8535-2;
- c) the thread and the hexagon size of the connector nuts according to [Table 2](#) or [Table 4](#);
- d) the 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);

NOTE The coordinates are used to specify the theoretical exact centre-line of the pipe. See the example given in Figure 1.

- f) the developed length of the pipe as an approximated value;
- g) the material and surface finish requirements of the pipe and connector nuts according to ISO 8535-1 or ISO 8535-2.

The dimensional tolerance of a pipe assembly shall be stated in terms of the actual outside contour of the tube in relation to the specified maximum outside contour and the variance of the actual pipe connection end from the specified position, as agreed between supplier and customer.



Point	x	y	z	Radius
A	0	0	0	0
B	65	0	0	15
C	65	100	0	15
D	140	100	0	15
E	140	150	0	15
F	40	150	0	15
G	40	185	0	0

- Key**
- 1 connector nut: thread M12; hexagon across flats 17
 - 2 pipe: tube outside diameter 6 mm
 - 3 connector nut: thread M14; hexagon across flats 19
 - 4 pipe connection ends: both of Type C
 - ^a Developed length.

Figure 1 — Example of a requirement and configuration drawing