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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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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13296 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 7, *Injection equipment and filters for use on road vehicles*.

This third edition cancels and replaces the second edition (ISO 13296:2005), which has been technically revised.

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

## 1 Scope

This International Standard 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 referenced documents are indispensable for the application 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° female cones for high-pressure fuel injection components*

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

ISO 8535-1:2011, *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*

## 3 Terms and definitions

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

## 4 Dimensions and tolerances

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

- an indication of compliance with this International Standard, i.e. ISO 13296;
- the outside diameter and inside diameter of the pipe and an indication of compliance with ISO 8535-1 or ISO 8535-2;
- the thread and the hexagon size of the connector nuts according to Table 2 or Table 4;
- the type of connection ends as specified in 7.2;
- 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.