DRAFT INTERNATIONAL STANDARD

ISO/DIS 6626-1

ISO/TC **22**/SC **34** Secretariat: **ANSI**

Voting begins on: **2016-06-06**

Voting terminates on: **2016-09-05**

Internal combustion engines — Piston rings —

Part 1: Coil-spring-loaded oil control rings made of cast iron

Moteurs à combustion interne — Segments de piston —

Partie 1: Segments racleurs régulateurs d'huile mis en charge par ressort hélicoïdal

ICS: 43.060.10

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Reference number
ISO/DIS 6626-1:2016(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

This template allows you to work with default MS Word functions and styles. You can use these if you want to maintain the Table Of Contents automatically and apply auto-numbering if this is your preference. Delete this Table of Contents if not required.

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. 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. 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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC22/SC34.

This part 1 cancels and replaces the ISO 6626:1989, of which has been technically revised.

ISO 6626 consists of the following parts, under the general title Internal combustion engines — Piston rings:

- Part 1: Coil -spring- loaded oil control rings made of cast iron
- Part 2: Coil -spring- loaded oil control rings of narrow width made of cast iron
- Part 3: Coil -spring- loaded oil control rings made of steel

Introduction

ISO 6626 is one of a series of International Standards dealing with piston rings for reciprocating internal combustion engines. Others are ISO 6621[1], [2], ISO 6622[3], ISO 6623[4], ISO 6624[5], ISO 6625[6] ISO 6626[7] [8] and ISO 6627[9].

Internal combustion engines — Piston rings — Part 1: Coil spring loaded oil control rings made of cast iron

1 Scope

This part of ISO 6626 specifies the essential dimensional features of coil spring loaded oil control rings made of cast iron, types DSF-C, DSF-CNP, SSF, GSF, DSF, DSF-NG and SSF-L. It is applicable to piston rings in sizes from 60 mm up to and including 200 mm for reciprocating internal combustion engines for road vehicles and other applications.

1 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 6621-3, *Internal combustion engines — Piston rings — Part 3: Material specifications*

ISO 6621-4, *Internal combustion engines — Piston rings — Part 4: General specifications*

ISO 6621-5, *Internal combustion engines — Piston rings — Part 5: Quality requirements*

2 Overview

The coil spring loaded oil control ring types are specified in Figures 1 to 8. Their common features and the features' dimensions are specified in Tables 1 to 5 and shown in Figures 9 to 11. Essential features of coil springs are shown in Figures 12 to 16. Table 7 specifies different classes of contact pressure. Tables 8 to 13 give the dimensions and forces of coil spring loaded oil control rings.

The normal range for axial width of coil spring loaded oil control rings (3 to 8 mm inclusive) is driven into 0,5 or 1,0 mm steps. In Tables 14 to 19 dimensions are given for coil spring loaded oil control rings with an axial width of 4,75 mm (i.e. 3/16 inch) for existing applications in inch units.

For the cast iron part the recommended material is Class 10 in accordance with ISO 6621-3. For special applications, material Classes 20 to 50 may be used.

Variation from these in face design and spring groove may be used, as recommended by individual manufacturers, in plain or chromed versions.

3 Piston ring types and designation

3.1 Types DSF-C,DSF-CNP, SSF, GSF, DSF, DSF-NG and SSF-L

3.1.1 General features and dimensions

See Figure 1 and Tables 8 to 19

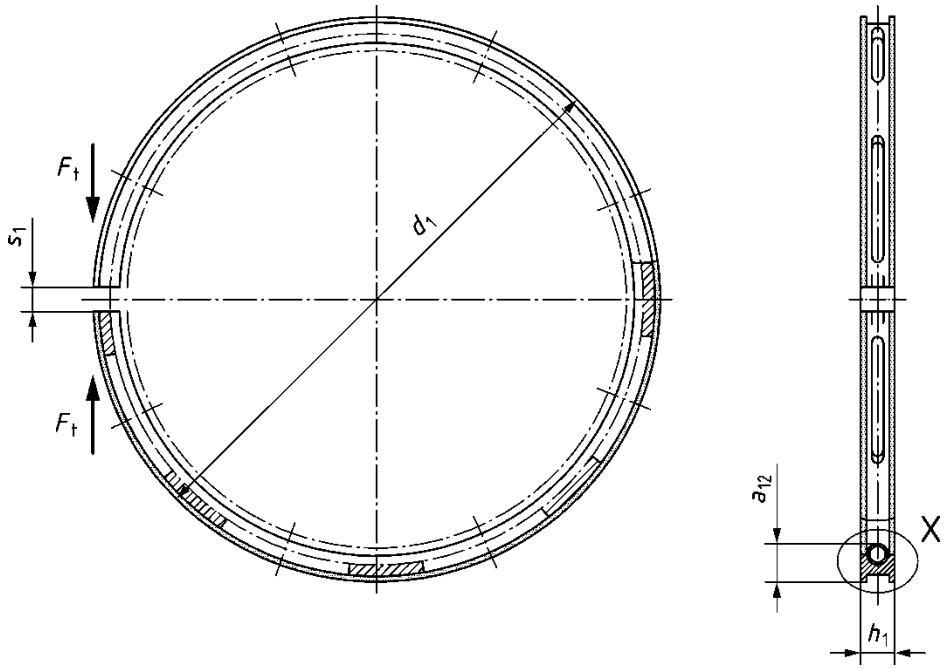


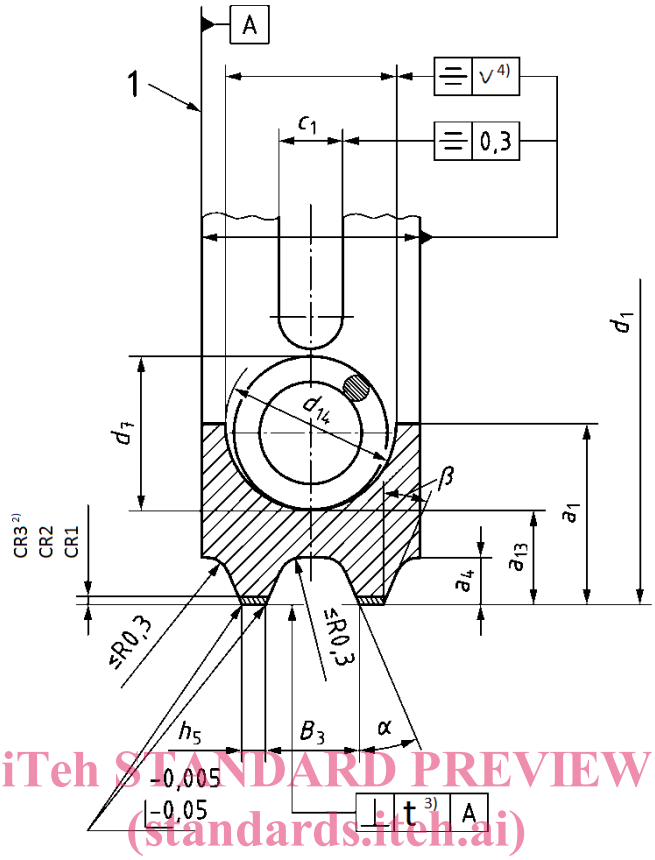
Figure 1 — Types DSF-C, DSF-CNP, SSF, GSF, DSF, DSF-NG and SSF-L

3.2 Type DSF-C — Coil spring loaded bevelled edge oil control ring, chromium plated and profile ground

3.2.1 General features and dimensions

See Figure 2 and Tables 8 and 14.

Dimensions in millimetres



Key

1 reference plane

2 see table 3

3 see table 4

4 see table 5

Figure 2 — Type DSF-C

3.2.2 Designation of a Type DSF-C piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded bevelled edge oil control ring, chromium plated and profile ground (DSF-C), of nominal diameter d_1 = 125 mm (125), nominal ring width h_1 = 3,5 mm (3,5), a land width h_5=0,25 mm (0,25), made of grey cast iron, non-heat treated, material subclass 11 (MC11), having a selected closed gap of 0,20 mm min. (S020), a chromium layer thickness on the lands of 0,15 mm (CR3), phosphated on all cast iron surfaces to depth of 0,002 mm min. (PO), reduced slot length (WK), a coil spring with reduced heat set (WF), and a variable pitch with coil diameter d_7 ground (CSE), with tangential force F_t in accordance with the nominal contact pressure of 1,5N/mm² (PN1,5) and the ring marked with the manufacturer's mark (MM). Parameters in parenthesis are used in the ISO ring designation:

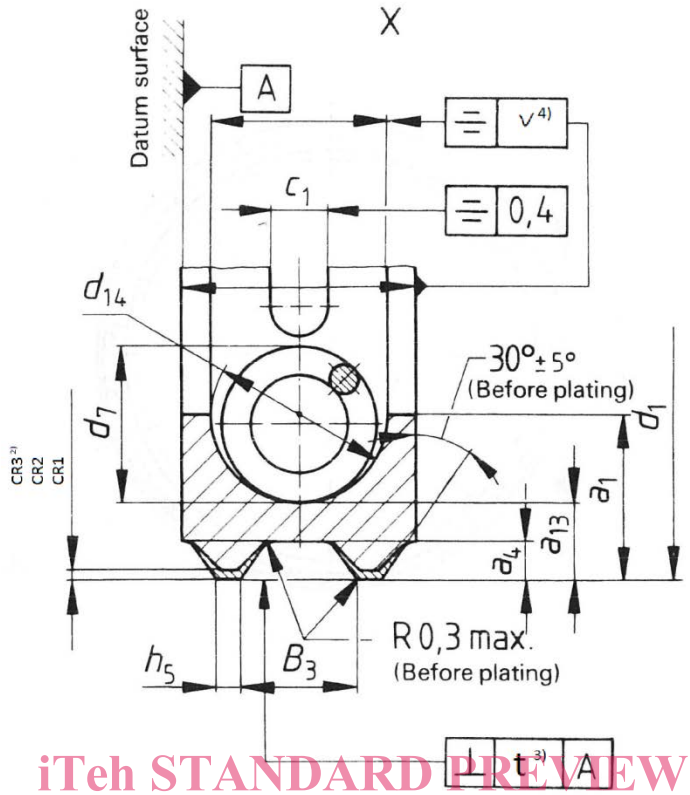
Piston ring ISO 6626-1 DSF-C - 125 × 3,5 x 0,25 - MC11 / S020 CR3 PO WK WF CSE PN1,5 MM

3.3 Type DSF-CNP — Coil spring loaded bevelled edge oil control ring, chromium plated not profile ground

3.3.1 General features and dimensions

See Figure 3 and Tables 9 and 15.

Dimensions in millimetres



Key

1 reference plane
2 see table 3
3 see table 4
4 see table 5

Figure 3 — Type DSF-CNP

3.3.2 Designation of a Type DSF-CNP piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded slotted oil control ring (DSF-CNP) of nominal diameter d_1 = 100 mm (100), nominal ring width h_1 = 4,0 mm (4,0), a land width h_5=0,40 mm (0,40), made of grey cast iron, non-heat treated, material subclass 12 (MC12), constant spring pitch (CSN) and tangential force F_t in accordance with the nominal contact pressure of 1,0N/mm² (PN1,0). Parameters in parenthesis are used in the ISO ring designation:

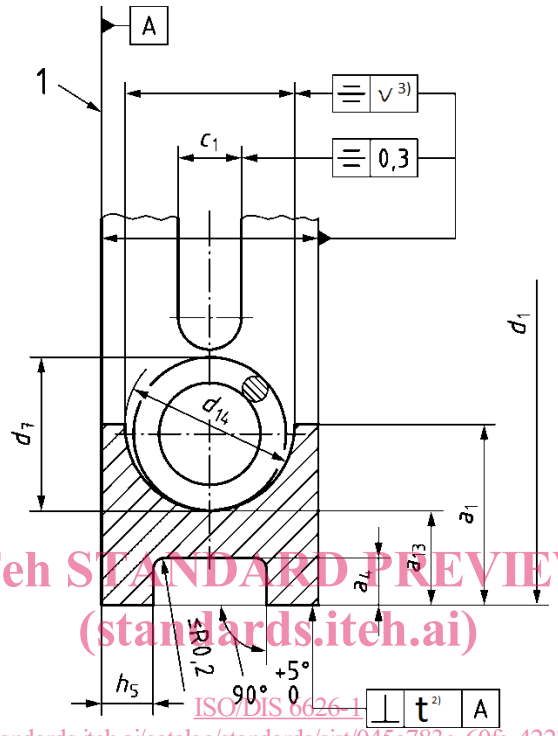
Piston ring ISO 6626-1 SSF- 100 × 4 x 0,40 - MC12 / CSN PN1,0

3.4 Type SSF — Coil spring loaded slotted oil control ring

3.4.1 General features and dimensions

See Figure 4 and Table 10 and 16.

Dimensions in millimetres



Key

1 reference plane

2 see table 4

3 see table 5

Figure 4 — Type SSF

3.4.2 Designation of a Type SSF piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded slotted oil control ring (SSF) of nominal diameter d_1 = 80 mm (80), nominal ring width h_1 = 4 mm (4,0), a land width h_5=0,70 mm (0,70),made of grey cast iron, non-heat treated, material subclass 12 (MC12), constant spring pitch (CSN) and tangential force F_t in accordance with the nominal contact pressure of 1,0N/mm² (PN1,0). Parameters in parenthesis are used in the ISO ring designation:

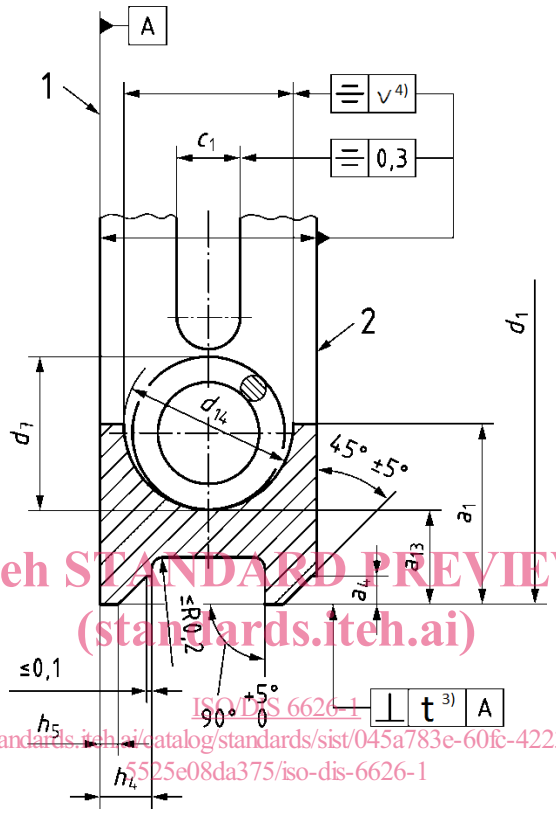
Piston ring ISO 6626-1 SSF- 80 × 4,0 x 0,70 - MC12 / CSN PN1,0

3.5 Type GSF — Coil spring loaded double bevelled oil control ring

3.5.1 General features and dimensions

See Figure 5 and Table 11 and 17. Top-side marking is mandatory in accordance with ISO 6621-4.

Dimensions in millimetres



Key

1 reference plane
2 top side identification mark
3 see table 4
4 see table 5

Figure 5 — Type GSF

3.5.2 Designation of a Type GSF piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded double bevelled oil control ring (GSF) of nominal diameter d_1 = 75 mm (75), nominal ring width h_1 = 3,5 mm (3,5), a land width h_5=0,35 mm (0,35), made of grey cast iron, non-heat treated, material subclass 12 (MC12), with constant spring pitch (CSN) and tangential force F_t in accordance with the nominal contact pressure of 1,0N/mm² (PN1,0). Parameters in parenthesis are used in the ISO ring designation:

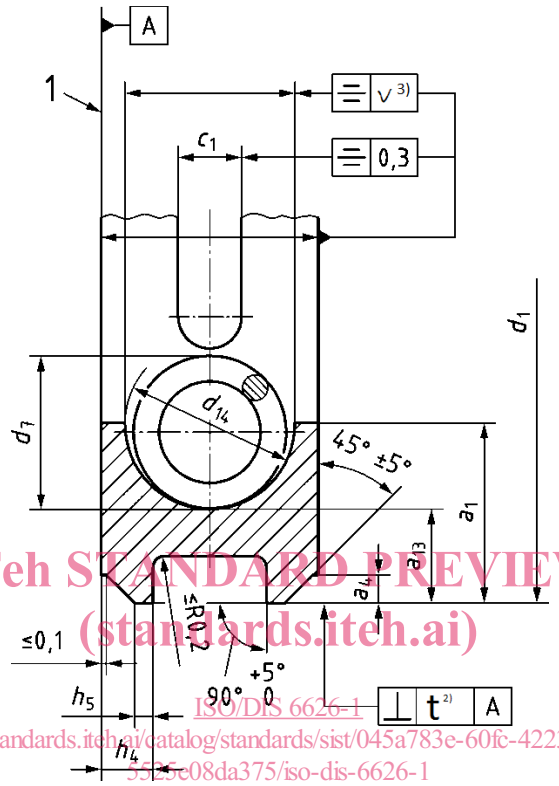
Piston ring ISO 6626-1 GSF- 75 × 3,5 x 0,35 - MC12 / CSN PN1,0

3.6 Type DSF — Coil spring loaded bevelled edge oil control ring

3.6.1 General features and dimensions

See Figure 6 and Tables 11 and 17.

Dimensions in millimetres



Key

1 reference plane
2 see table 4
3 see table 5

Figure 6 — Type DSF

3.6.2 Designation of a Type DSF piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded double bevelled oil control ring (DSF) of nominal diameter d_1 = 90 mm (90), nominal ring width h_1 = 3,5 mm (3,5), a land width h_5=0,35 mm (0,35), made of grey cast iron, non-heat treated, material subclass 12 (MC12), with constant spring pitch (CSN) and tangential force F_t in accordance with the nominal contact pressure of 1,0N/mm² (PN1,0). Parameters in parenthesis are used in the ISO ring designation:

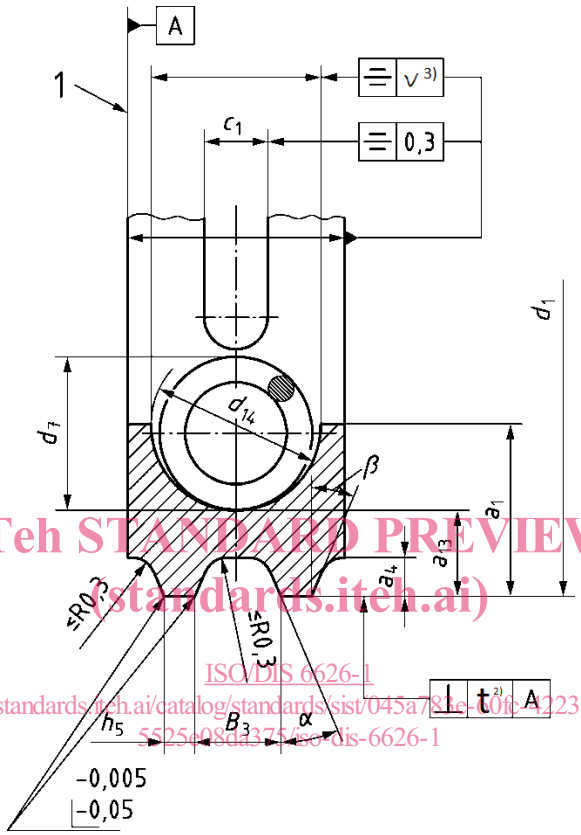
Piston ring ISO 6626-1 DSF- 90 × 3,5 x 0,35 - MC12 / CSN PN1,0

3.7 Type DSF-NG — Coil spring loaded bevelled edge oil control ring (face geometry similar to type DSF-C or type DSF-CNP)

3.7.1 General features and dimensions

See Figure 7 and Tables 12 and 18.

Dimensions in millimetres



Key

1 reference plane
2 see table 4
3 see table 5

Figure 7 — Type DSF-NG

3.7.2 Designation of a Type DSF-NG piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded slotted oil control ring (DSF-NG) of nominal diameter d_1 = 140 mm (140), nominal ring width h_1 = 4,5 mm (4,5), a land width h_5=0,40 mm (0,40), made of grey cast iron, non-heat treated, material subclass 12 (MC12), constant spring pitch (CSN) and tangential force F_t in accordance with the nominal contact pressure of 1,0N/mm² (PN1,0). Parameters in parenthesis are used in the ISO ring designation:

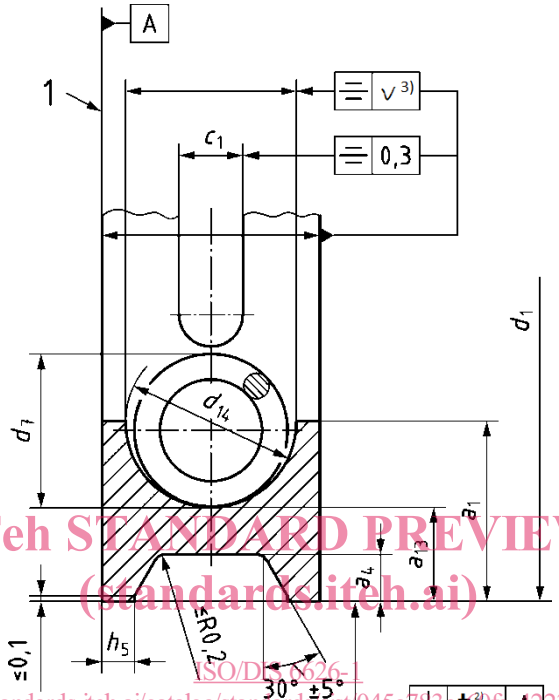
Piston ring ISO 6626-1 DSF-NG - 140 × 4,5 x 0,40 - MC12 / CSN PN1,0

3.8 Type SSF-L — Coil spring loaded slotted oil control ring with 0,6 mm nominal land width

3.8.1 General features and dimensions

See Figure 8 and Tables 13 and 19.

Dimensions in millimetres



Key

1 reference plane
2 see table 4
3 see table 5

Figure 8 — Type SSF-L

3.8.2 Designation of a Type SSF-L piston ring in accordance with ISO 6626-1

EXAMPLE Coil spring loaded slotted oil control ring (SSF-L) of nominal diameter d_1 = 80 mm (80), nominal ring width h_1 = 3,0 mm (3,0), made of grey cast iron, non-heat treated, material subclass 12 (MC12), constant spring pitch (CSN) and tangential force F_t in accordance with the nominal contact pressure of 1,0N/mm² (PN1,0). Parameters in parenthesis are used in the ISO ring designation:

Piston ring ISO 6626-1 SSF-L - 80 × 3,0 - MC12 / CSN PN1,0

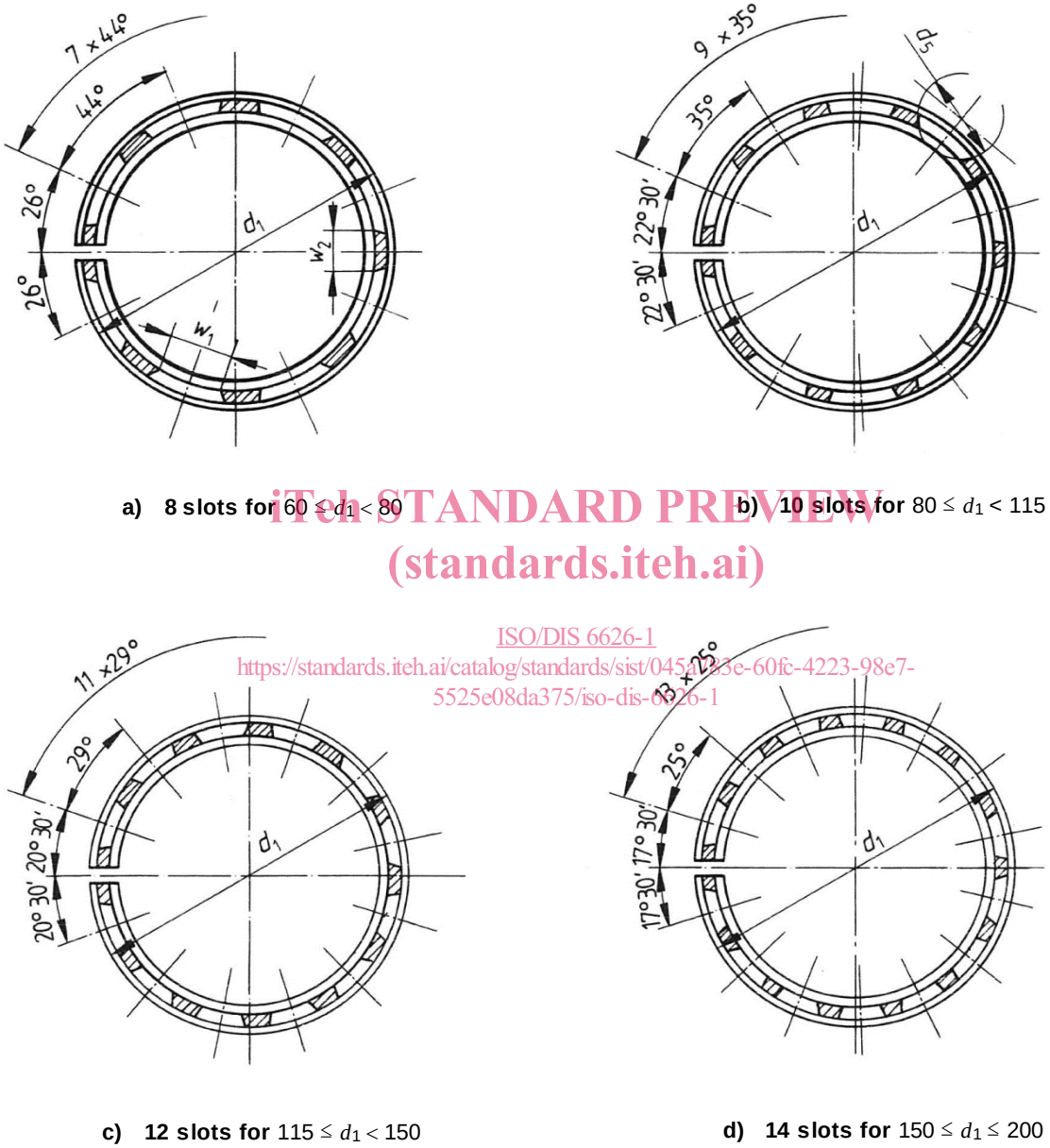
4 Common features

4.1 Oil drainage by slots or holes

4.1.1 Arrangement of slots

See Figure 9 and Table 1.

Dimensions in millimetres



a) 8 slots for $60 \leq d_1 < 80$ **b) 10 slots for** $80 \leq d_1 < 115$

c) 12 slots for $115 \leq d_1 < 150$ **d) 14 slots for** $150 \leq d_1 \leq 200$

Figure 9 — Arrangement of slots