
**Internal combustion engines —
Piston rings —**

**Part 3:
Keystone rings made of steel**

Moteurs à combustion interne — Segments de piston —

Partie 3: Segments trapézoïdaux en acier

Sample Document

get full document from standards.iteh.ai



Sample Document

get full document from standards.iteh.ai



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative reference	1
3 Terms and definitions	1
4 Overview	1
5 Ring types and designation examples	1
5.1 Type T — Straight faced keystone ring 6°	1
5.1.1 General features	1
5.1.2 Designation	2
5.2 Type TB — Symmetrical barrel faced keystone ring 6°	2
5.2.1 General features	2
5.2.2 Designation	4
5.3 Type TBA — Asymmetrical barrel faced keystone ring 6°	4
5.3.1 General features	4
5.3.2 Designation	5
5.4 Type TM — Taper faced keystone ring 6°	5
5.4.1 General features	5
5.4.2 Designation	7
5.5 Type K — Straight faced keystone ring 15°	7
5.5.1 General features	7
5.5.2 Designation	7
5.6 Type KB — Symmetrical barrel faced keystone ring 15°	8
5.6.1 General features	8
5.6.2 Designation	8
5.7 Type KBA — Asymmetrical barrel faced keystone ring 15°	9
5.7.1 General features	9
5.7.2 Designation	9
5.8 Type KM — Taper faced keystone ring 15°	10
5.8.1 General features	10
5.8.2 Designation	10
6 Common features	10
6.1 Type T, TB, TBA, TM, K, KB, KBA, KM rings — Outside and inside rounded edges	10
6.2 Type T, TB, TBA, TM, K, KB, KBA, KM rings (positive twist type) — Internal bevel top side	11
6.3 Type TM or KM rings with partly cylindrical machined (LM) or lapped (LP) peripheral surface	12
6.4 Type T, TB, TBA, TM, K, KB, KBA, KM rings — Plating or coating configuration	12
6.4.1 Chromium plated or spray coated rings	12
6.4.2 Nitrided surface	14
6.4.3 PVD rings	15
7 Force factors	15
Bibliography	23

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 voluntary nature of standards, 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.

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

This second edition cancels and replaces the first edition (ISO 6624-3:2001), which has been technically revised. The main changes compared to the previous edition are as follows:

- PVD rings were included; and
- updates were made regarding technology improvements.

A list of all the parts in the ISO 6624 series can be found on the ISO website.

Introduction

ISO 6624 is one of a number of series of International Standards dealing with piston rings for reciprocating internal combustion engines. Others are ISO 6621[2],[3],[4],[5], ISO 6622[6],[7], ISO 6623[8], ISO 6625[9], ISO 6626[10],[11],[12] and ISO 6627[13].

The common features and dimensional tables presented in this document constitute a broad range of variables and, in selecting a particular ring type, the designer must bear in mind the conditions under which it will be required to operate.

It is also essential that the designer refers to the specifications and requirements of ISO 6621-3[4] and ISO 6621-4 before completing a selection.

Sample Document

get full document from standards.iteh.ai

Sample Document

get full document from standards.iteh.ai

Internal combustion engines — Piston rings —

Part 3: Keystone rings made of steel

1 Scope

This document specifies the essential dimensional features of keystone rings made of steel, types T, TB, TBA, TM, K, KB, KBA and KM, having diameters from 70 mm up to and including 160 mm, used in reciprocating internal combustion piston engines.

2 Normative reference

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

3 Terms and definitions

No terms and definitions are listed in this document.

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 Overview

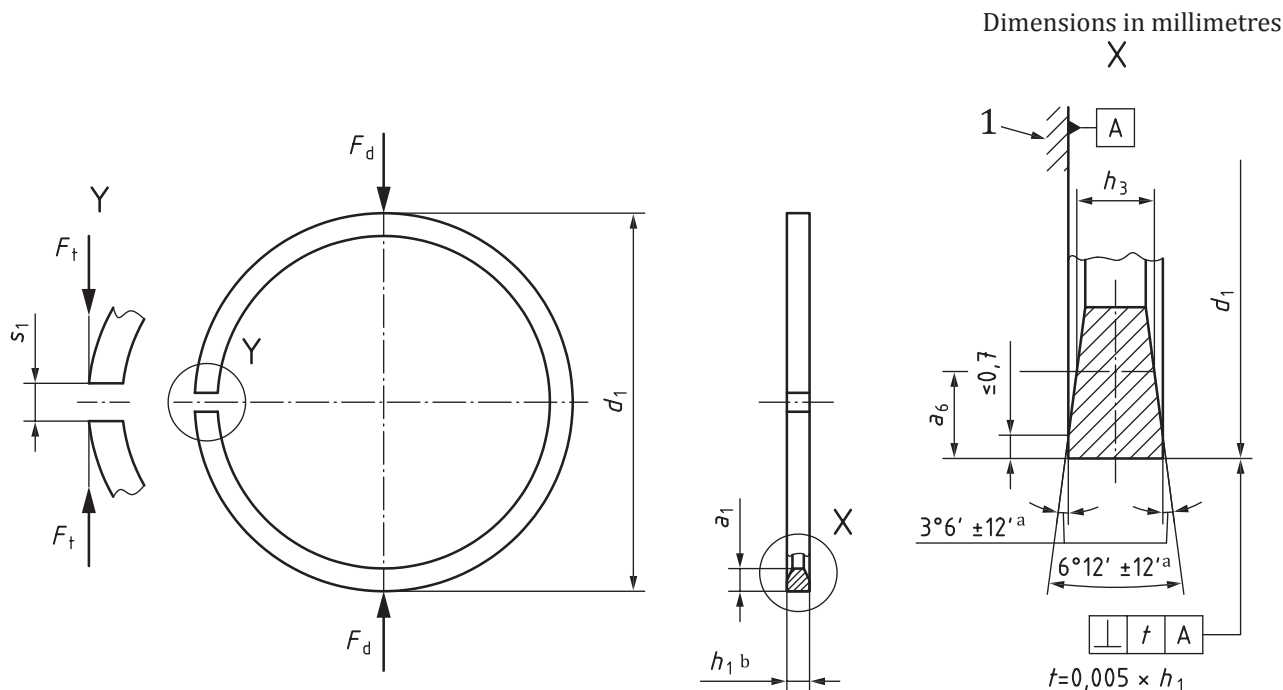
The keystone ring types are specified in [Tables 1 to 3](#) and [Figures 1 to 8](#). Their common features and the dimensions of those features are specified in [Tables 4 to 9](#) and [Figures 9 to 15](#). [Tables 11](#) and [12](#) give the force factors for the different types of rings, while [Table 13](#) and [Table 14](#) give the dimensions and forces of keystone rings 6° and 15°, respectively.

5 Ring types and designation examples

5.1 Type T — Straight faced keystone ring 6°

5.1.1 General features

See [Table 13](#) for dimensions and forces.



Key

- 1 reference plane
- a Due to manufacturing processing, side angle tolerances are not cumulative.
- b Nominal.

Figure 1 — Type T

get full document from standards.iteh.ai

5.1.2 Designation

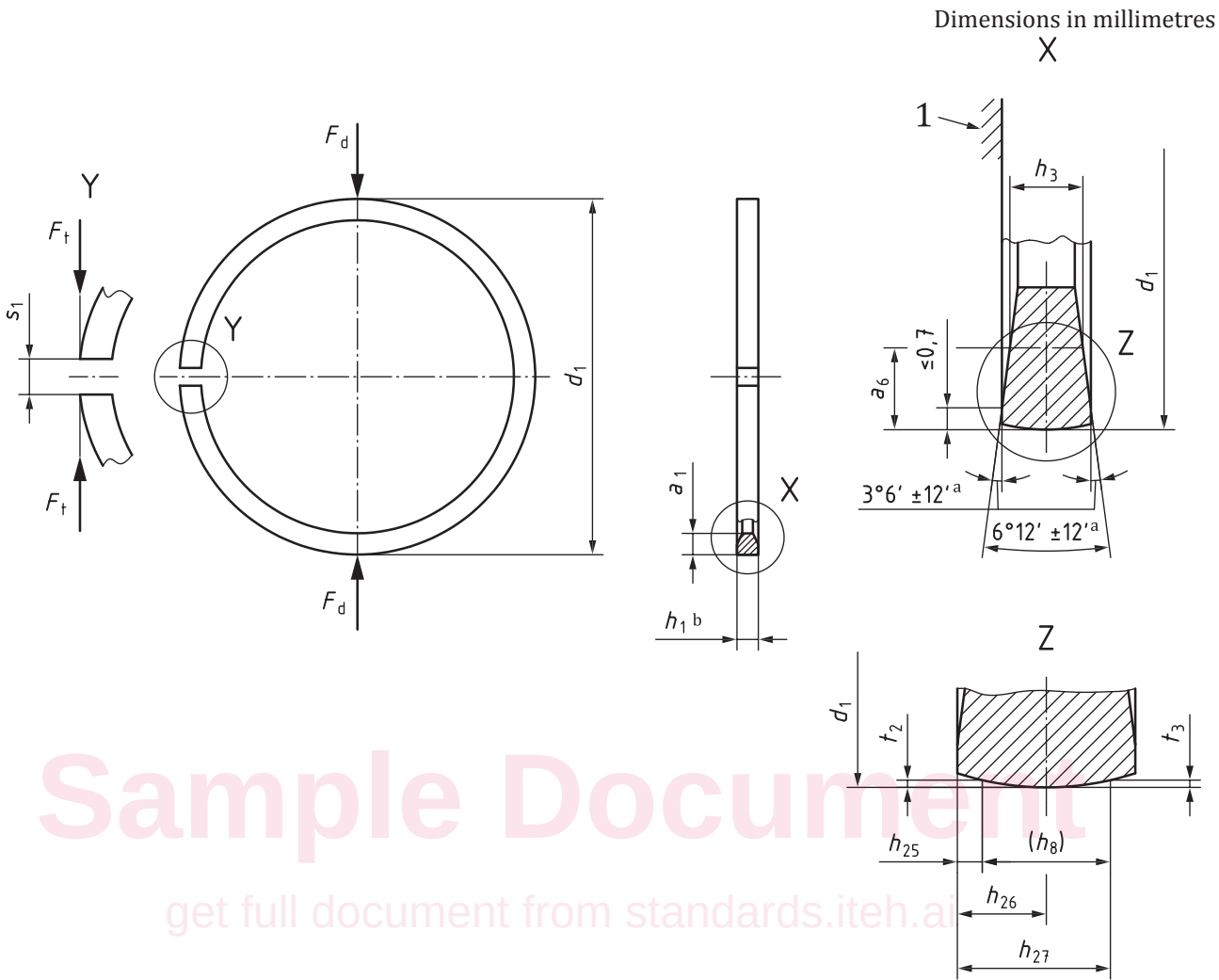
EXAMPLE Designation of a piston ring complying with the requirements of ISO 6624-3, being a steel, 6° keystone ring with straight-faced peripheral surface (T), of nominal diameter $d_1 = 90$ mm (90) and nominal ring width $h_1 = 2,5$ mm (2,5), made of CrSi alloyed steel, subclass 62 (MC 62), and having a fully faced chromium plated peripheral surface with a minimum thickness of 0,1 mm (CR2). Parameters in parenthesis are used in the ISO ring designation:

Piston ring ISO 6624-3 T - 90 x 2,5-MC 62/CR2

5.2 Type TB — Symmetrical barrel faced keystone ring 6°

5.2.1 General features

See [Table 13](#) for dimensions and forces.



Key

- 1 reference plane
- a Due to manufacturing processing, side angle tolerances are not cumulative.
- b Nominal.

Figure 2 — Type TB

Table 1 — Symmetrical barrel dimensions

Dimensions in millimetres

h_1	h_{25}	h_{26}	h_{27}	t_2, t_3	h_8^a
		Tolerance			
2,0	0,40	1,00	±0,30	1,60	1,2
2,5	0,45	1,25	±0,40	2,05	1,6
3,0	0,50	1,50	±0,50	2,50	2,0
3,5	0,55	1,75		2,95	2,4
4,0	0,60	2,00	±0,60	3,40	2,8

^a Gauge width h_8 , informative only, shall be used only if agreed between the manufacturer and customer.