
**Internal combustion engines —
Piston rings —**

**Part 2:
Rectangular rings made of steel**

Moteurs à combustion interne — Segments de piston —

Partie 2: Segments rectangulaires en acier

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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. 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.

The committee responsible for this document is ISO/TC 22, *Road vehicles*.

This second edition cancels and replaces the first edition (ISO 6622-2:2003), which has been technically revised.

ISO 6622 consists of the following parts, under the general title *Internal combustion engines — Piston rings*:

- Part 1: Rectangular rings made of cast iron
- Part 2: Regular rings made of steel

Introduction

The ISO 6622 series 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 6623,^[6] ISO 6624,^[7] ^[8] ^[9] ^[10] ISO 6625, ISO 6626,^[12] ^[13] ^[14] and ISO 6627^[15] (see Bibliography for details).

The common features and dimensional tables presented in this part of ISO 6622 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 refer to the specifications and requirements of ISO 6621-3^[4] and ISO 6621-4^[16] before completing his selection.

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Internal combustion engines — Piston rings —

Part 2: Rectangular rings made of steel

1 Scope

This part of ISO 6622 specifies the essential dimensional features of rectangular rings made of steel, types R, B, BA, and M having nominal diameters from 30 mm up to and including 160 mm, used in reciprocating internal combustion piston engines for road vehicles and other applications.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Not applicable.

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3 Overview

The rectangular ring types are specified in [Tables 1 to 5](#) and [Figures 1 to 6](#). Their common features and the dimensions of those features are specified in [Tables 6 to 11](#) and [Figures 7 to 22](#). [Tables 12](#) and [13](#) give the force factors for the different ring types, while [Table 13](#) gives the dimensions and forces of the rectangular rings.

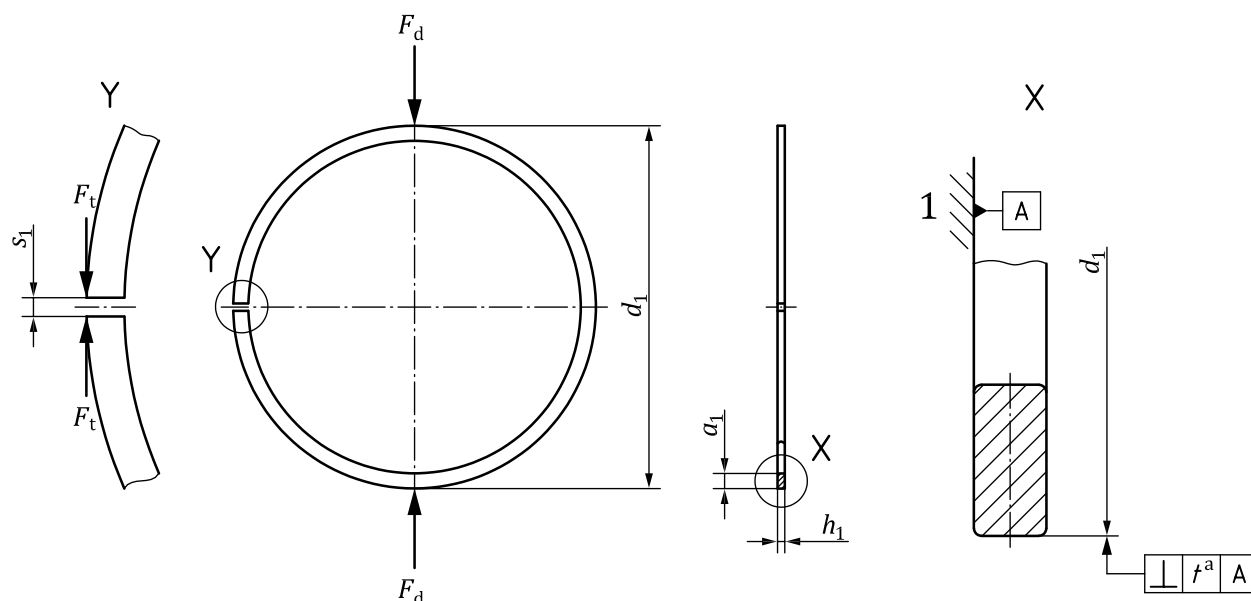
4 Ring types and designation examples

4.1 Type R — Straight-faced rectangular ring

4.1.1 General features

[Figure 1](#) shows the general features of piston ring type R.

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



Key

- 1 reference plane
- a $t = 0,005 \times h_1$.

Figure 1 — Type R
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4.1.2 Designation

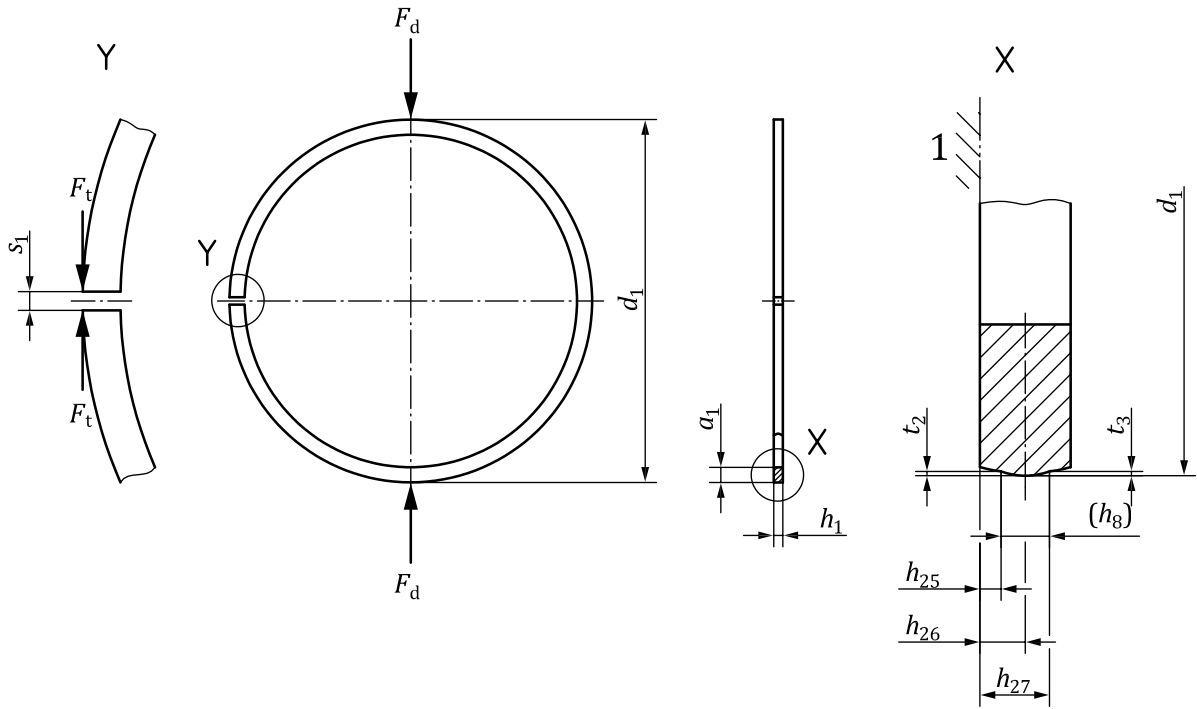
EXAMPLE Designation of a piston ring complying with the requirements of this part of ISO 6622 (i.e. ISO 6622-2) being a steel, rectangular ring with a straight-faced peripheral surface (R), of nominal diameter $d_1 = 60$ mm (60), of nominal ring width $h_1 = 1,2$ mm (1,2), made of CrSi alloyed steel, subclass 62 (MC62), and with a chromium-plated peripheral surface of a minimum thickness 0,1 mm (CR2). Parameters in parenthesis are used in the ISO ring designation:

Piston ring ISO 6622-2 R - 60 × 1,2 - MC62/CR2

4.2 Type B — Barrel-faced rectangular ring

4.2.1 General features

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



Key
1 reference plane

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Figure 2 — Type B

Table 1 — Symmetrical barrel dimensions and gauge width (h_8)

Dimensions in millimetres

h_1	h_{25}	h_{26}	h_{26} tol.	h_{27}	t_2, t_3	h_8^a
0,8	0,20	0,40	$\pm 0,15$	0,60	0,001...0,010	0,40
1,0	0,25	0,50	$\pm 0,15$	0,75	0,001...0,011	0,50
1,2	0,30	0,60	$\pm 0,20$	0,90	0,002...0,012	0,60
1,5	0,35	0,75	$\pm 0,25$	1,15	0,003...0,015	0,80
1,75	0,35	0,85	$\pm 0,30$	1,35		1,00
2,0	0,40	1,00	$\pm 0,30$	1,60		1,20
2,5	0,45	1,25	$\pm 0,40$	2,05		1,60
3,0	0,50	1,50	$\pm 0,50$	2,50	0,005...0,020	2,00
3,5	0,55	1,75	$\pm 0,50$	2,95		2,40

^a Gauge width (h_8) only informative; may be used only if agreed between manufacturer and customer.

4.2.2 Designation

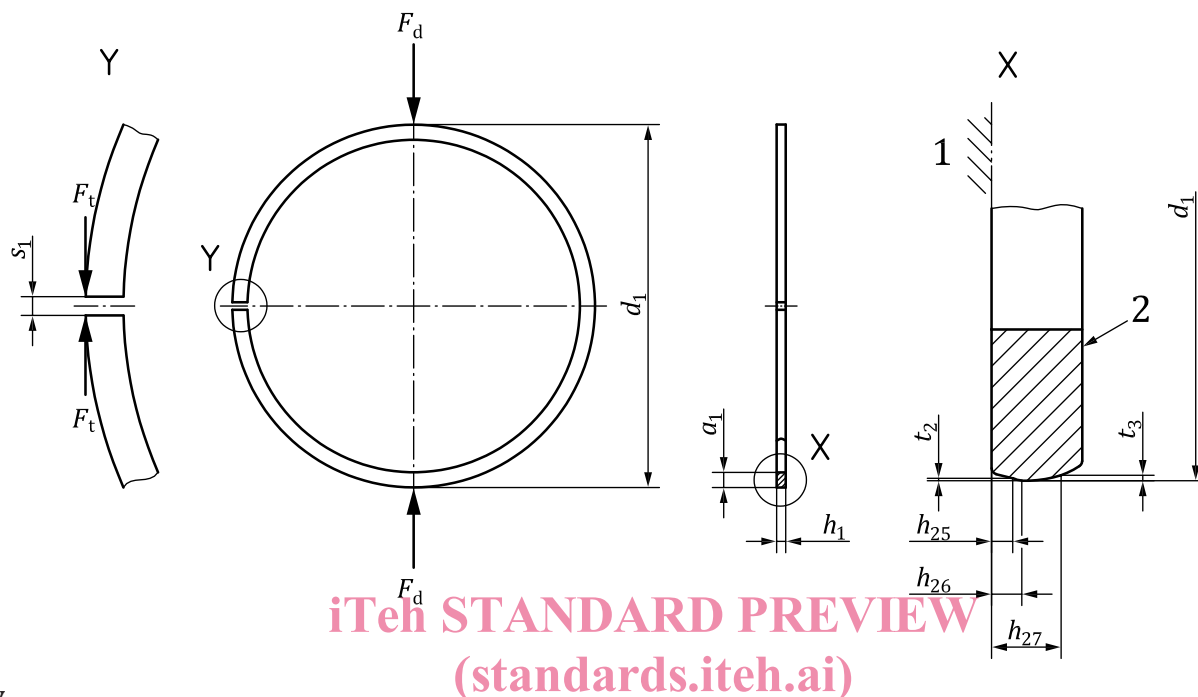
EXAMPLE Designation of a piston ring complying with the requirements of this part of ISO 6622 (i.e. ISO 6622-2) being a steel, rectangular ring with a barrel-faced peripheral surface (B), of nominal diameter $d_1 = 60$ mm (60), of nominal ring width $h_1 = 1,5$ mm (1,5), made of martensitic steel (17 % Cr), subclass 66 (MC66), nitrided on the peripheral surface and side faces (NT), to a depth of 0,03 mm min. on the peripheral surface (030), and with an associated side face depth of 0,010 mm min. Parameters in parenthesis are used in the ISO ring designation:

Piston ring ISO 6622-2 B - 60 × 1,5 - MC66/NT030

4.3 Type BA — Asymmetrical barrel-faced rectangular ring, $h_1 \geq 1,2\text{mm}$

4.3.1 General features

See Table 13 for dimensions and forces.



Key

1 reference plane

2 top side identification mark

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Figure 3 — Type BA

Table 2 — Asymmetrical barrel dimensions

Dimensions in millimetres

h_1	h_{25}^a	h_{26}	h_{26} tol.	h_{27}	t_2^b	t_3^b
1,2	0,20 ^c	0,35 ^c	$\pm 0,15$	0,80 ^c	0...0,005	0,005...0,016
	0,28	0,43		0,90		
1,5	0,35	0,50	$\pm 0,15$	1,15	0...0,006	0,007...0,022
1,75	0,35	0,55	$\pm 0,20$	1,35	0...0,007	0,008...0,025
2,0	0,40	0,60		1,50		0,009...0,030
2,5	0,45	0,70	$\pm 0,25$	1,80	0...0,008	0,011...0,035
3,0	0,55	0,80		2,10		0,012...0,038
3,5	0,60	0,90	$\pm 0,30$	2,40	0...0,009	0,012...0,040

^a h_{25} may be lowered for rings with reduced edge dimensions.

^b t_2 and/or t_3 may be varied as agreed between manufacturer and customer.

^c Recommended for bottom edge smaller than 0,2 mm.

4.3.2 Designation

EXAMPLE Designation of a piston ring complying with the requirements of this part of ISO 6622 (i.e. ISO 6622-2) being a steel, rectangular ring with an asymmetrical barrel-faced peripheral surface (BA), of nominal diameter $d_1 = 80$ mm (80), of nominal ring width $h_1 = 1,5$ mm (1,5), made of martensitic steel (17 % Cr), subclass 66 (MC66), nitrided on the peripheral surface and side faces (NT) to a depth of 0,05 mm min. on the peripheral surface (050), and with an associated side face depth of 0,015 mm min. Parameters in parenthesis are used in the ISO ring designation:

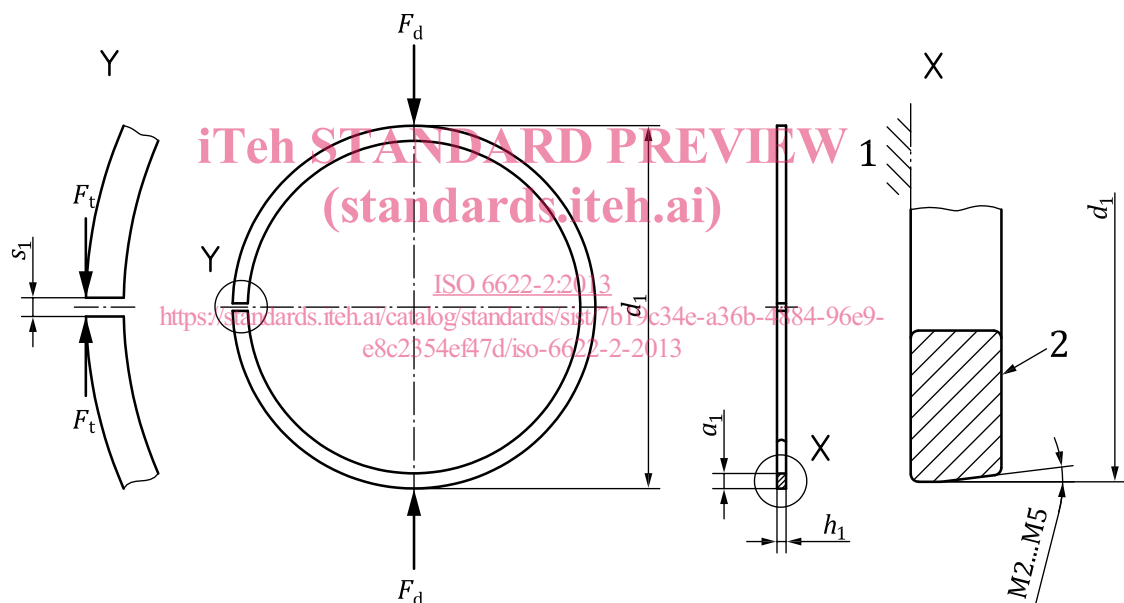
Piston ring ISO 6622-2 BA - 80 × 1,5 - MC66/NT050

4.4 Type M — Taper-faced rectangular ring

NOTE Taper M1 excluded.

4.4.1 General features

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



Key

- 1 reference plane
- 2 top side identification mark

Figure 4 — Type M