INTERNATIONAL STANDARD

ISO 6622-2

First edition
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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.

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 6622-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

This first edition of ISO 6622-2 cancels and replaces ISO/TR 6622-2:1988, 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: Rectangular rings made of steel*

Introduction

ISO 6622 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] and ISO 6627[14] (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 before completing his selection.

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 diameters of from 30 mm up to and including 160 mm, used in reciprocating internal combustion piston engines. It is also applicable to piston rings of compressors working under similar conditions.

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

3 Overview

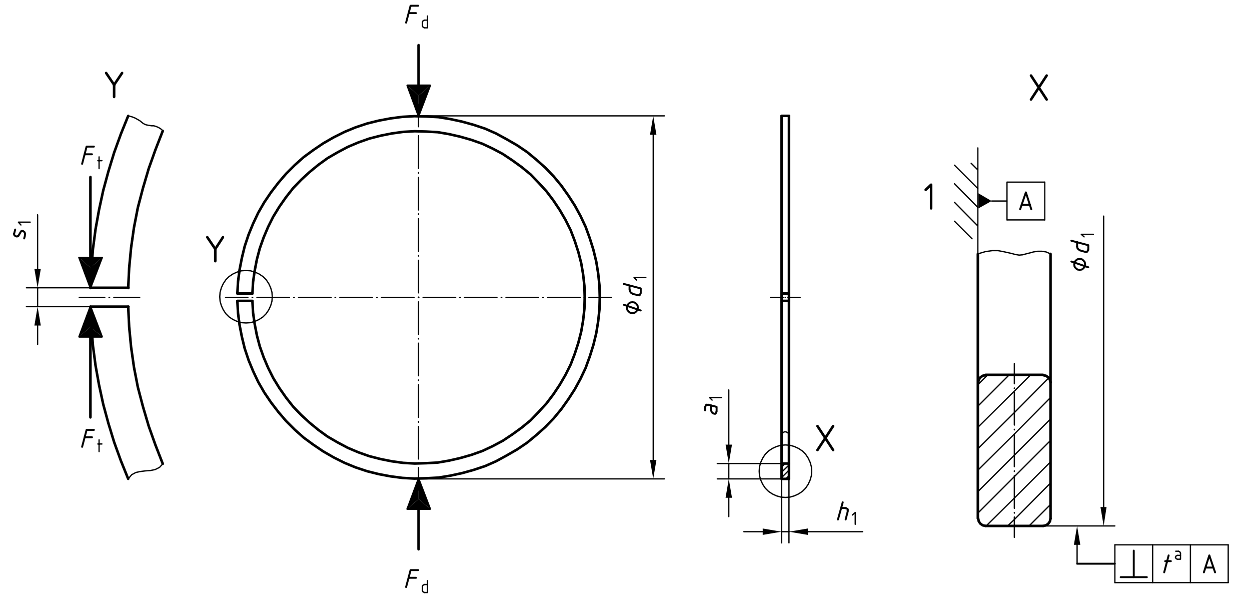
The rectangular ring types are specified in Tables 1 to 3 and Figures 1 to 4. Their common features and the dimensions of those features are specified in Tables 4 to 9 and Figures 5 to 22. Tables 10 and 11 give the force factors for the different ring types, while Table 12 gives the dimensions and forces of the rectangular rings.

4 Ring types and designation examples

4.1 Type R — Straight faced rectangular ring

4.1.1 General features

See Table 12 for dimensions and forces.



Key

1 reference plane

a $t = 0{,}005 \times h_1$.

Figure 1 — Type R

4.1.2 Designation

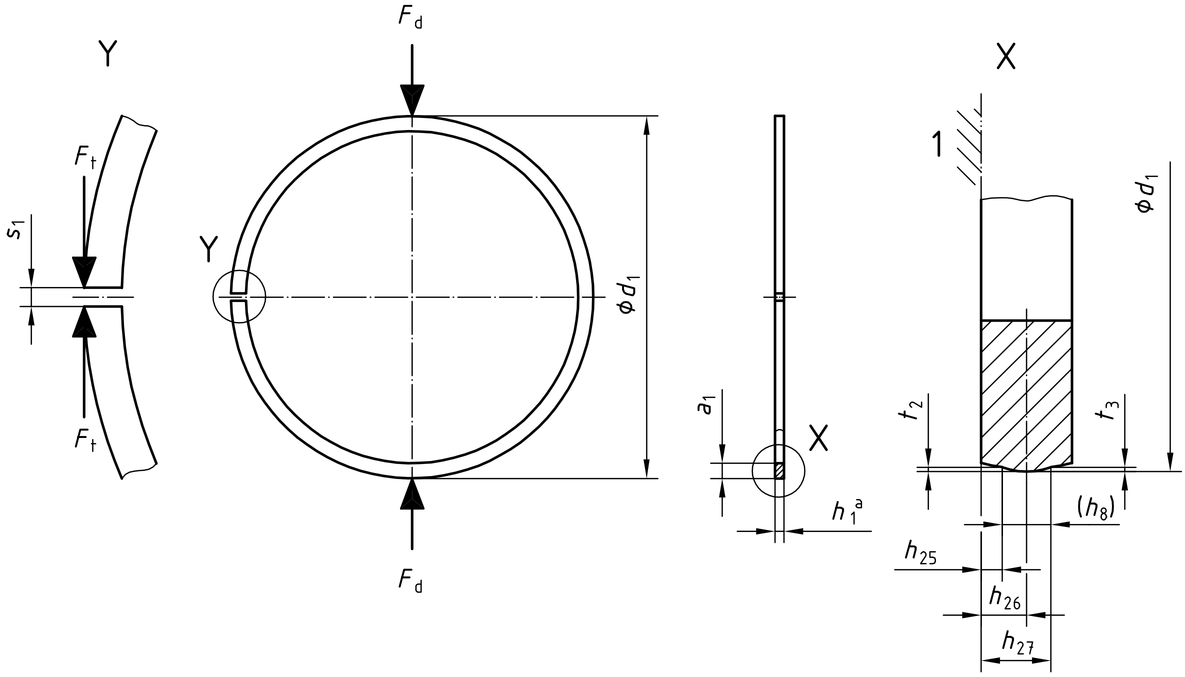
EXAMPLE Designation of a piston ring complying with the requirements of ISO 6622-2, being a steel, rectangular ring with a straight faced peripheral surface (R), of nominal diameter d_1 = 60 mm (60), of nominal ring width h_1 = 1,2 mm (1,2), made of CrSi alloyed steel, subclass 62 (MC62), and with a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

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 12 for dimensions and forces.



Key

1 reference plane

a See Table 1.

Figure 2 — Type B

Table 1 — Gauge width (h_8) and barrel dimensions for symmetrical barrel faced compression rings

Dimensions in millimetres

h_1	h_{25}	h_{26}	h_{26} tol.	h_{27}	t_2, t_3	h_8[a]
1,0	0,25	0,50	± 0,15	0,75	0,003...0,012	0,50
1,2	0,30	0,60	± 0,20	0,90		0,60
1,5	0,35	0,75	± 0,25	1,15	0,003...0,015	0,80
1,75	0,35	0,85	± 0,30	1,35		1,00
2,0	0,40	1,00	± 0,30	1,60		1,20
2,5	0,45	1,25	± 0,40	2,05		1,60
3,0	0,50	1,50	± 0,50	2,50	0,005...0,020	2,00
3,5	0,55	1,75	± 0,50	2,95		2,40

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

4.2.2 Designation

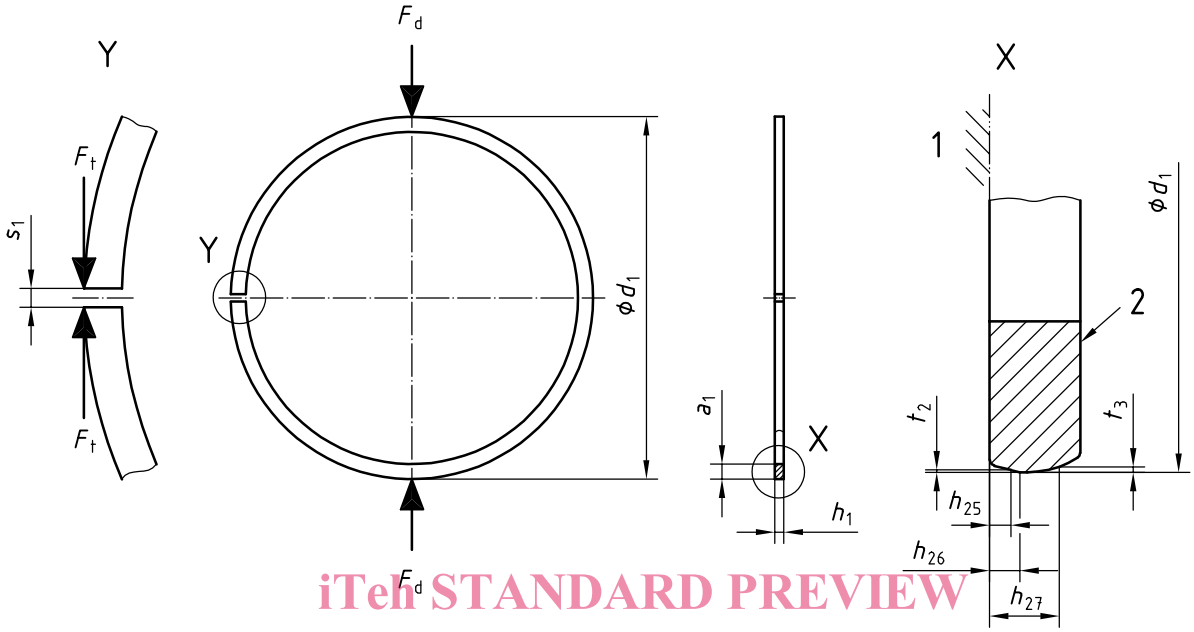
EXAMPLE Designation of a piston ring complying with the requirements of ISO 6622-2 being a steel, rectangular ring with barrel faced peripheral surface (B), of nominal diameter d_1 = 60 mm (60), of nominal ring width h_1 = 1,5 mm (1,5), made of martensitic steel (17 % Cr), subclass 66 (MC66), nitrided 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.:

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

4.3 Type BA — Asymmetrical barrel faced rectangular ring $h_1 \geqslant 1{,}5$ mm

4.3.1 General feature

See Table 12 for dimensions and forces.



Key

1 reference plane
2 mark

Figure 3 — Type BA

Table 2 — Barrel dimensions

Dimensions in millimetres

h_1	h_{25} [a]	h_{26}	h_{26} tol.	h_{27}	t_2 [b]	t_3 [b]
1,5	0,35	0,50	± 0,15	1,15	0…0,005	0,007…0,022
1,75	0,35	0,55	± 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	± 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	± 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 client.

4.3.2 Designation

EXAMPLE Designation of a piston ring complying with the requirements of ISO 6622-2 being a steel, rectangular ring with an asymmetrical barrel faced peripheral surface (BA), of nominal diameter d_1 = 80 mm (80) and 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.:

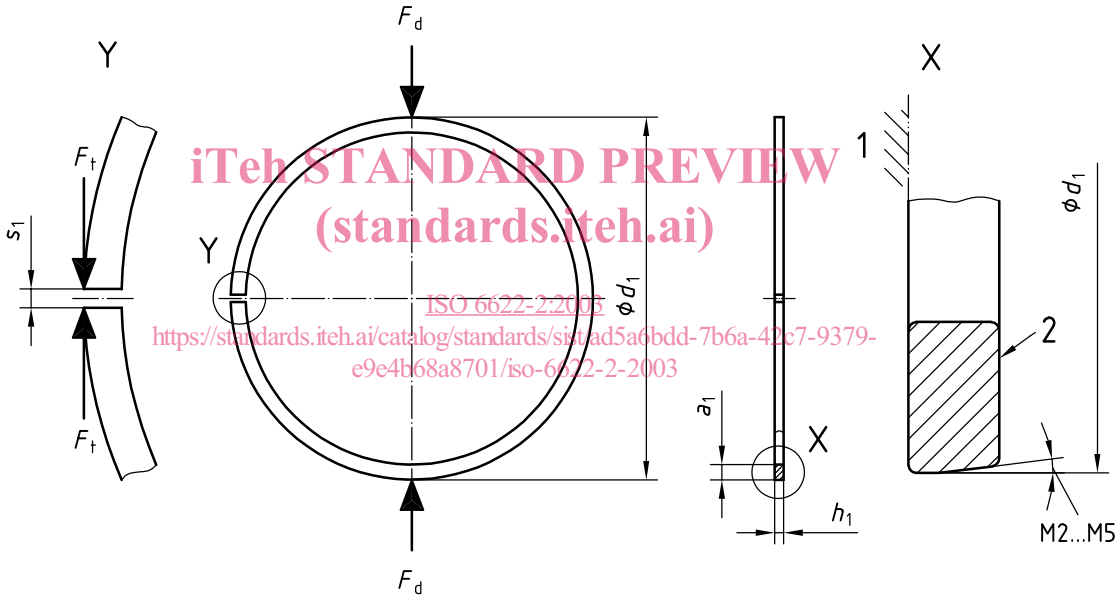
Piston ring ISO 6622-2 BA - 80 × 1,5 - MC66/NT050

4.4 Type M — Taper faced rectangular ring

NOTE Taper M1 excluded.

4.4.1 General features

See Table 12 for dimensions and forces.



Key

1 reference plane
2 mark

Figure 4 — Type M