
International Standard



6624/1

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Internal combustion engines — Piston rings — Part 1: Keystone rings

Moteurs à combustion interne — Segments de piston — Partie 1: Segments trapézoïdaux

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6624/1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Internal combustion engines — Piston rings — Part 1: Keystone rings

0 Introduction

ISO 6624/1 is one of a series of International Standards dealing with piston rings for reciprocating internal combustion engines:

ISO 6621, *Internal combustion engines — Piston rings —*

Part 1: Vocabulary.

Part 2: Measuring principles.

Part 3: Material specifications.

*Part 4: General specifications.*¹⁾

*Part 5: Quality requirements.*¹⁾

ISO 6622, *Internal combustion engines — Piston rings —*

Part 1: Rectangular rings.

*Part 2: Rectangular rings with narrow ring width.*²⁾

ISO 6623, *Internal combustion engines — Piston rings — Scraper rings.*

ISO 6624, *Internal combustion engines — Piston rings —*

Part 1: Keystone rings.

*Part 2: Half keystone rings.*³⁾

ISO 6625, *Internal combustion engines — Piston rings — Oil control rings.*

ISO 6626, *Internal combustion engines — Coil spring loaded oil control rings.*¹⁾

The common features and dimensional tables presented in this part of ISO 6624 constitute a broad range of variables, and the designer, in selecting a particular ring type, shall 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 and ISO 6621/4, before completing his selection.

1 Scope and field of application

This part of ISO 6624 specifies the essential dimensional features of T, TB, TM, K, KB and KM keystone piston ring types.

The requirements of this part of ISO 6624 apply to compression rings for reciprocating internal combustion piston engines, up to and including 200 mm diameter.

2 References

ISO 1101, *Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings.*

ISO 6621, *Internal combustion engines — Piston rings —*

Part 3: Material specifications.

*Part 4: General specifications.*¹⁾

1) At present at the stage of draft.

2) At present at the stage of draft (will be published as a Technical Report).

3) In preparation (will be published as a Technical Report).

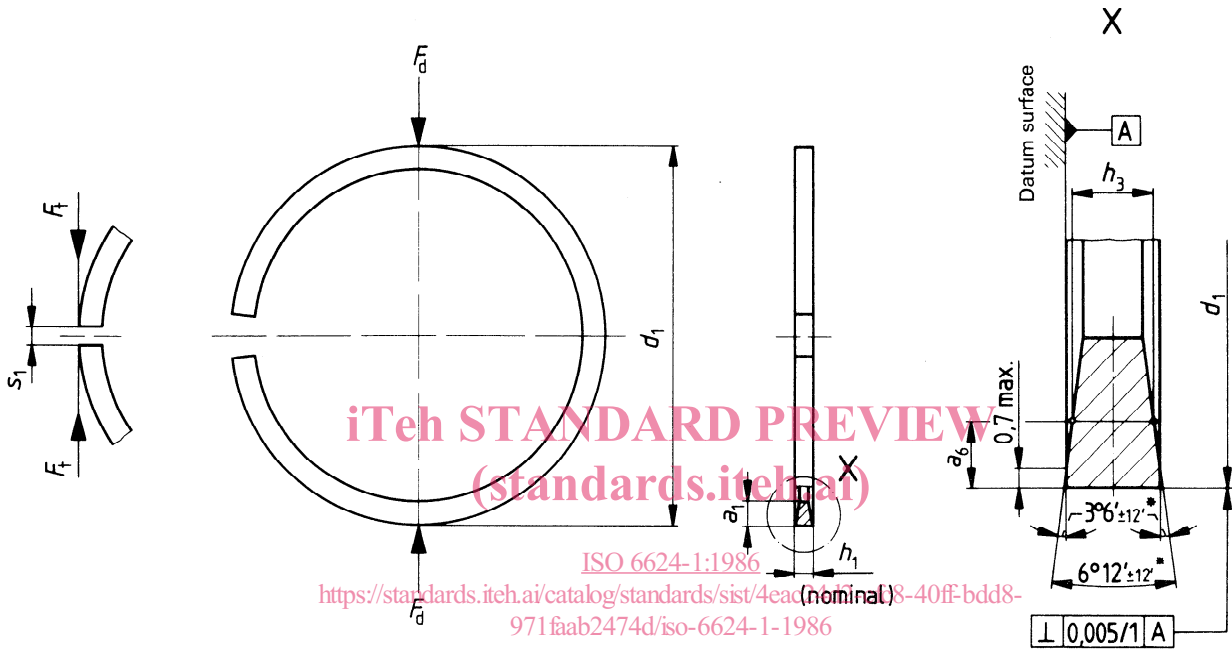
3 Ring types and designation examples

3.1 Type T – Straight faced keystone ring 6°

3.1.1 General features

NOTE – See table 7 for dimensions and forces.

Dimensions in millimetres



Method A : a_6 ref., h_3 measured
 Method B : h_3 ref., a_6 measured

* Due to manufacturing processing, side angle tolerances are not cumulative.

Figure 1 – Type T

3.1.2 Designation example

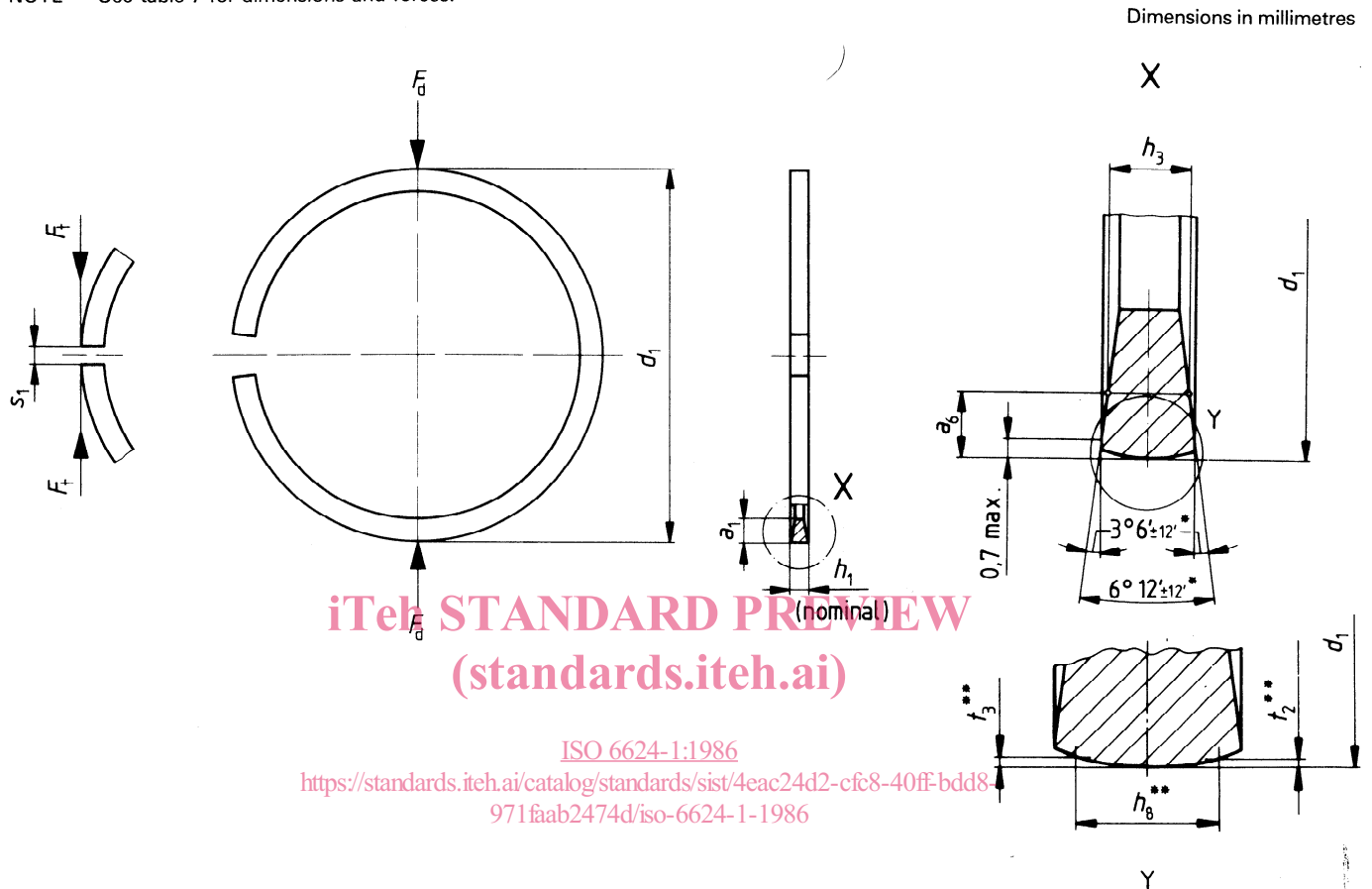
Designation of a straight faced keystone ring 6°, of $d_1 = 90$ mm nominal diameter, $h_1 = 2,5$ mm ring width, made of grey cast iron, non-heat-treated (material subclass 12), general features as shown in figure 1, and periphery coated fully faced with chromium, 0,10 mm minimum thickness:

Piston ring ISO 6624/1 - T - 90 × 2,5 - MC12 CR2

3.2 Type TB – Barrel faced keystone ring 6°

3.2.1 General features

NOTE – See table 7 for dimensions and forces.



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Method A : a_6 ref., h_3 measured
Method B : h_3 ref., a_6 measured

* Due to manufacturing processing, side angle tolerances are not cumulative.

** See table 1.

Figure 2 – Type TB

Table 1 – Gauge width (h_8) and barrel dimensions

Dimensions in millimetres

(h_1)	h_8	t_2, t_3	Maximum peak off centre
2,0	1,2	0,003/0,015	0,30
2,5	1,6		0,40
3,0	2,0	0,005/0,020	0,50
3,5	2,4		
4,0	2,8	0,005/0,023	0,60
4,5	3,2		

3.2.2 Designation example

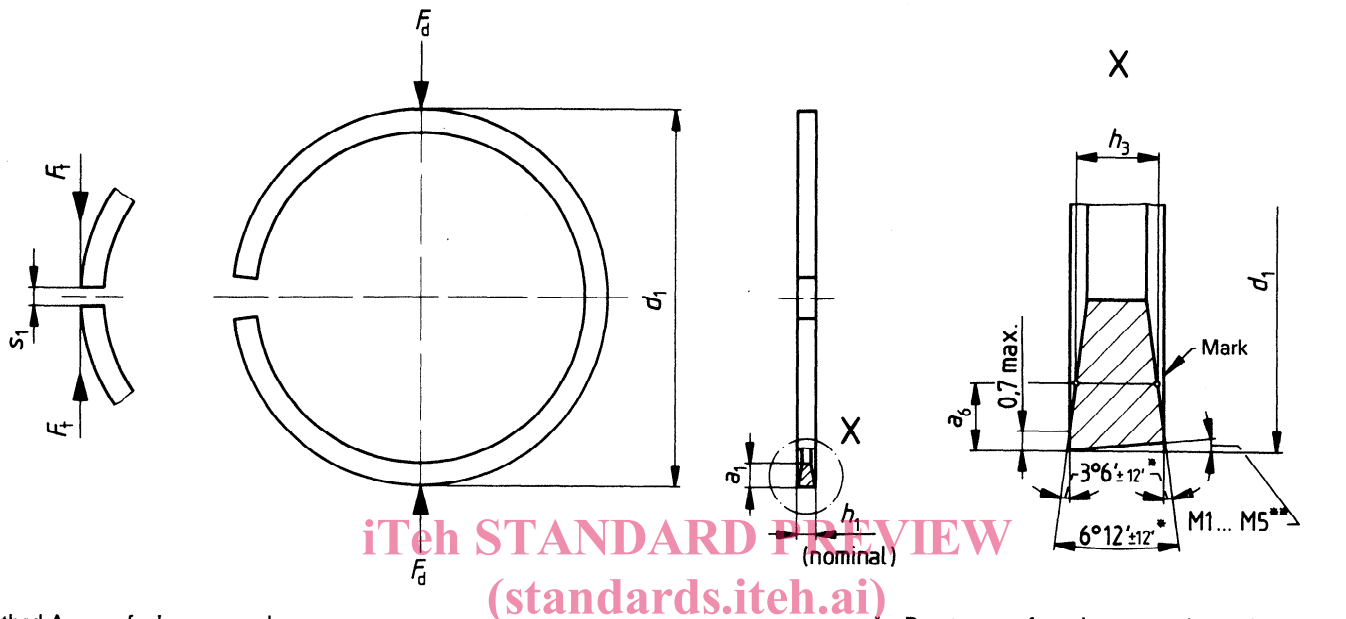
Designation of a barrel faced keystone ring 6°, of $d_1 = 90$ mm nominal diameter, $h_1 = 2,5$ mm ring width, made of spheroidal graphite cast iron, heat-treated martensitic (material subclass 53), general features as shown in figure 2, and periphery semi-inlaid coated with molybdenum, 0,2 mm minimum thickness:

Piston ring ISO 6624/1 - TB - 90 × 2,5 - MC53 MO4E

3.3 Type TM — Taper faced keystone ring 6°

3.3.1 General features

NOTE — See table 7 for dimensions and forces.



Method A: a_6 ref., h_3 measured
 Method B: h_3 ref., a_6 measured

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* Due to manufacturing processing, side angle tolerances are not cumulative.

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 ** See table 2.

Figure 3 — Type TM

Table 2 — Taper

Taper	Uncoated and coated rings (molybdenum or chrome)	
		Tolerance 1)
M1	10'	+50' 0
M2	30'	+60' 0
M3	60'	
M4	90'	
M5	120'	

1) For coated rings with tapered periphery *not* ground, the tolerance shall be increased by 10' (e.g. M3 = 60' : +70'
0).

3.3.2 Designation example

Designation of a taper faced M1 = 10' keystone ring 6°, of $d_1 = 90$ mm nominal diameter, $h_1 = 2,5$ mm ring width, made of grey cast iron, heat-treated (material subclass 22), general features as shown in figure 3, and phosphated all over:

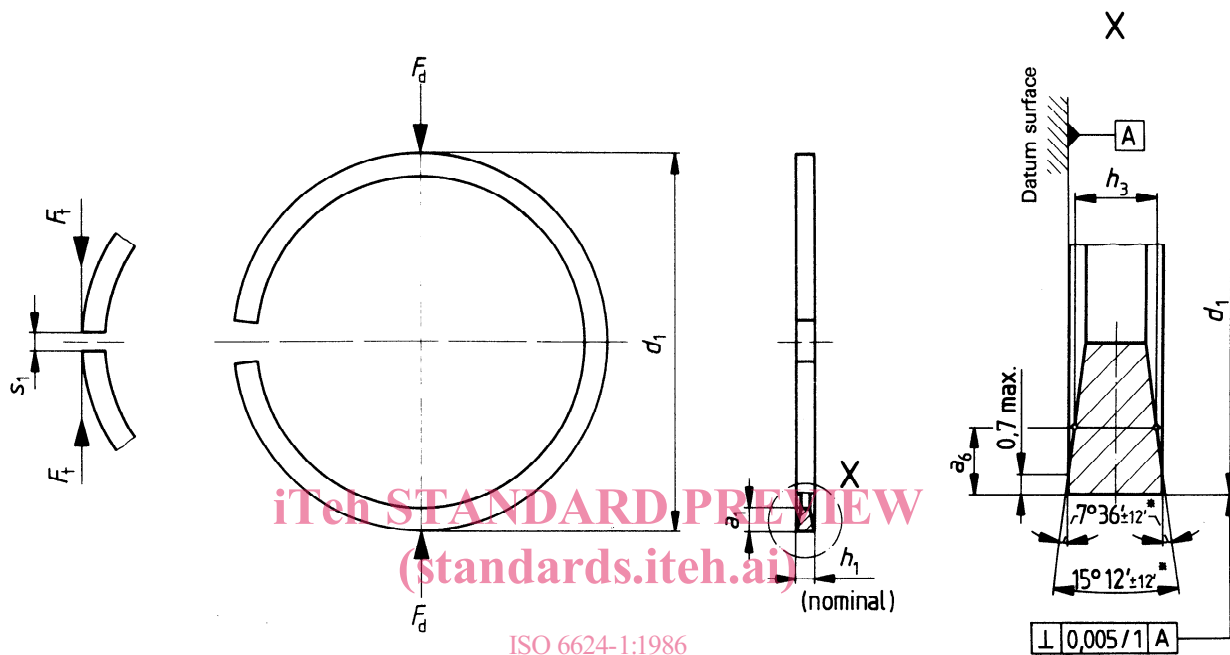
Piston ring ISO 6624/1 - TM1 - 90 × 2,5 - MC22 PO

3.4 Type K — Straight faced keystone ring 15°

3.4.1 General features

NOTE — See table 8 for dimensions and forces.

Dimensions in millimetres



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Method A: a_6 ref., h_3 measured
Method B: h_3 ref., a_6 measured

* Due to manufacturing processing, side angle tolerances are not cumulative.

Figure 4 — Type K

3.4.2 Designation example

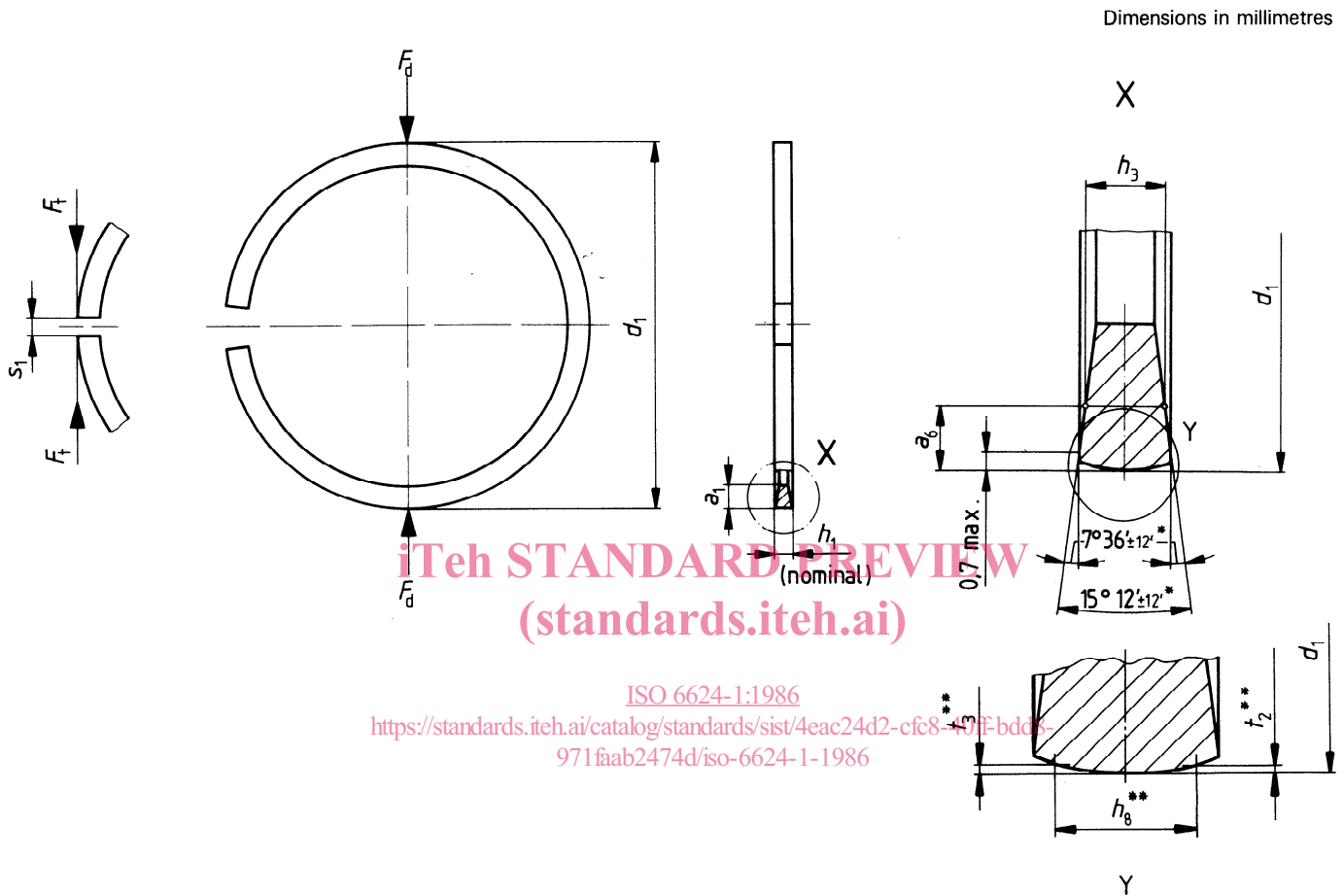
Designation of a straight faced keystone ring 15°, of $d_1 = 90$ mm nominal diameter, $h_1 = 2,5$ mm ring width, made of carbidic cast iron, heat-treated martensitic (material subclass 32), general features as shown in figure 4, and ferroxided all over:

Piston ring ISO 6624/1 - K - 90 × 2,5 - MC32 FE

3.5 Type KB — Barrel faced keystone ring 15°

3.5.1 General features

NOTE — See table 8 for dimensions and forces.



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Method A: a_6 ref., h_3 measured
Method B: h_3 ref., a_6 measured

* Due to manufacturing processing, side angle tolerances are not cumulative.

** See table 1.

Figure 5 — Type KB

3.5.2 Designation example

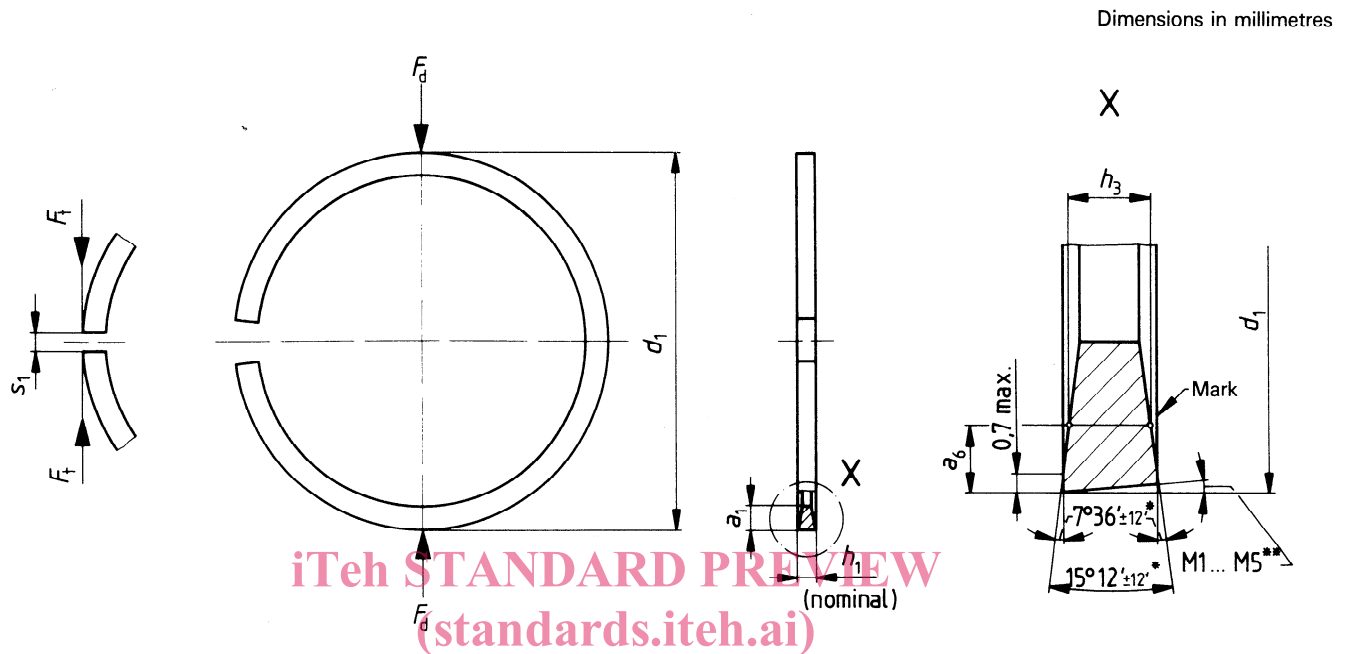
Designation of a barrel faced keystone ring 15°, of $d_1 = 90$ mm nominal diameter, $h_1 = 2,5$ mm ring width, made of malleable cast iron, heat-treated perlitic (material subclass 41), general features as shown in figure 5, and periphery fully faced, coated with molybdenum, 0,2 mm minimum thickness:

Piston ring ISO 6624/1 - KB - 90 × 2,5 - MC41 MO4

3.6 Type KM — Taper faced keystone ring 15°

3.6.1 General features

NOTE — See table 8 for dimensions and forces.



Method A: a_6 ref., h_3 measured
Method B: h_3 ref., a_6 measured

* Due to manufacturing processing, side angle tolerances are not cumulative.

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Figure 6 — Type KM

3.6.2 Designation example

Designation of a taper faced M1 = 10' keystone ring 15°, of $d_1 = 90$ mm nominal diameter, $h_1 = 2,5$ mm ring width, made of grey cast iron, non-heat-treated (material subclass 12), general features as shown in figure 6:

Piston ring ISO 6624/1 - KM1 - 90 × 2,5 - MC12