
**Internal combustion engines — Piston
rings —**

**Part 1:
Vocabulary**

Moteurs à combustion interne — Segments de piston —

Partie 1: Vocabulaire



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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 6621-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

This second edition cancels and replaces the first edition (ISO 6621-1:1986) which has been technically revised.

ISO 6621 consists of the following parts, under the general title *Internal combustion engines — Piston rings*:

- *Part 1: Vocabulary*
- *Part 2: Inspection measuring principles*
- *Part 3: Material specifications*
- *Part 4: General specifications*
- *Part 5: Quality requirements*

Introduction

ISO 6621 is one of a series of International Standards dealing with piston rings for reciprocating internal combustion engines. Others are ISO 6622 [1],[2], ISO 6623 [3], ISO 6624 [4],[5],[6],[7], ISO 6625 [8], ISO 6626 [9],[10],[11] and ISO 6627 [12].

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Internal combustion engines — Piston rings —

Part 1: Vocabulary

1 Scope

This part of ISO 6621 defines the most commonly used terms for piston rings. These terms designate either types of piston rings or certain characteristics and phenomena of piston rings.

The terms and definitions in this part of ISO 6621 apply to piston rings for reciprocating internal combustion engines. They may also be used for piston rings of compressors working under analogous conditions.

NOTE 1 Further terms and definitions covering measuring principles are given in ISO 6621-2.

NOTE 2 In addition to terms given in the three official ISO languages (English, French and Russian), this part of ISO 6621 gives the equivalent terms in the German, Spanish, Portuguese, Italian and Japanese languages. However, only the terms given in the official languages can be considered as ISO terms.

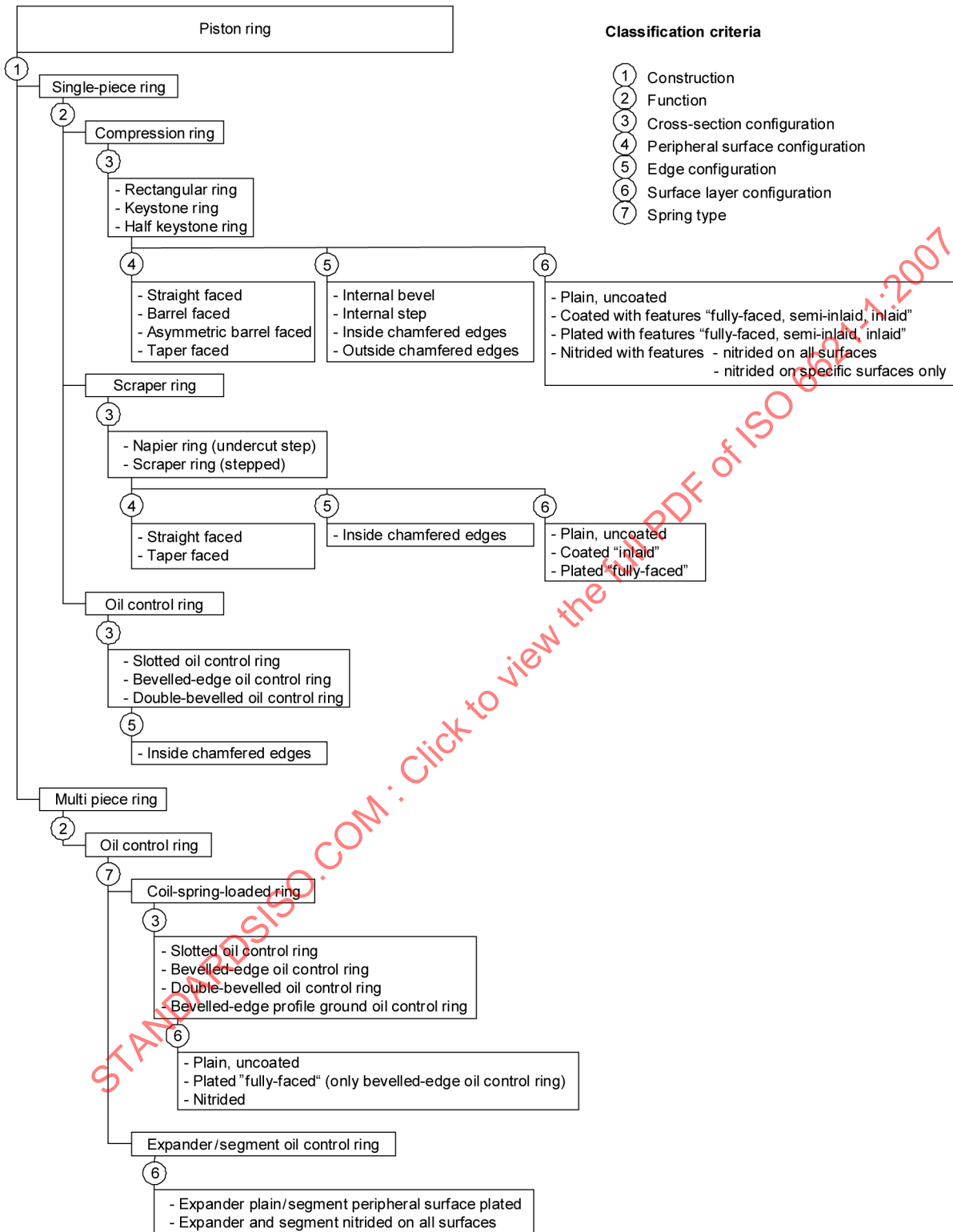
These have been included at the request of Technical Committee ISO/TC 22 and are published under the responsibility of the member bodies for Germany (DIN), Spain (AENOR), Portugal (IPQ), Italy (UNI) and Japan (JIS).

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 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances of linear sizes — Part 1: Basis of tolerances, deviations and fits*

3 Piston ring classification



4 Piston ring types

4.1 Cross section configuration

The more common cross section configurations in general use are shown in Table 1. Combinations of configurations listed in Tables 2 to 5 along with those in Table 1 are shown as “common features” in the relevant ISO Standard referenced in each table.

Table 1 — Cross section configuration

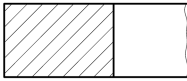
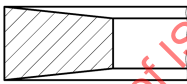
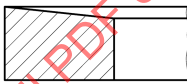
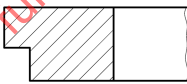
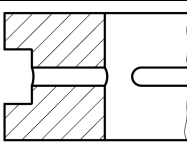
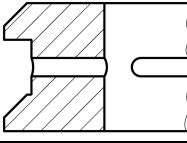
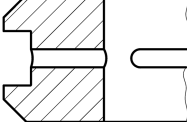
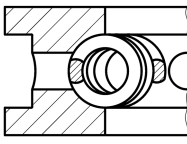
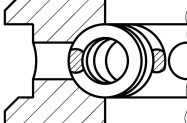
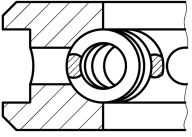
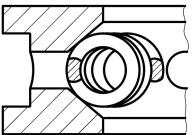
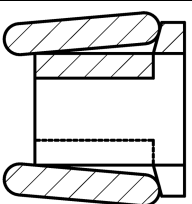
Type	Cross section	Relevant International Standard
Rectangular ring		6622-1 6622-2
Keystone ring		6624-1 6624-3
Half keystone ring		6624-2 6624-4
Scraper ring (stepped)		6623
Napier ring (undercut stepped)		6623
Slotted oil control ring		6625
Double-bevelled-edge oil control ring		6625
Bevelled-edge oil control ring		6625
Coil-spring-loaded slotted oil control ring		6626 6626-2
Coil-spring-loaded double-bevelled-edge oil control ring		6626 6626-2

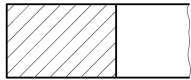
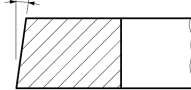
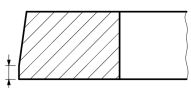
Table 1 (continued)

Type	Cross section	Relevant International Standard
Coil-spring-loaded bevelled-edge oil control ring		6626 6626-2
Steel oil control ring with V-groove		6626-3
Expander/segment oil control ring		6627

4.2 Peripheral surface configuration

The more common peripheral surface configurations in general use are shown in Table 2.

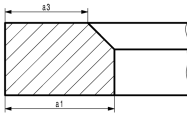
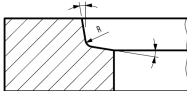
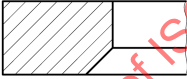
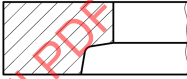
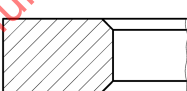
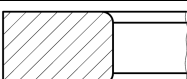
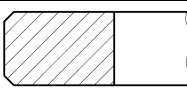
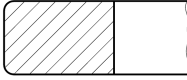
Table 2 — Peripheral surface configuration

Configuration	Cross section	Relevant International Standard
Peripheral surface straight faced		6622-1/6622-2 6623 6624-1/6624-2 6624-3/6624-4
Peripheral surface barrel faced		6622-1/6622-2 6624-1/6624-2 6624-3/6624-4
Peripheral surface asymmetrical barrel faced		6622-1/6622-2 6624-1/6624-3
Peripheral surface taper faced		6622-1/6622-2 6623/6624-1 6624-3
Peripheral surface taper faced partially cylindrical machined or lapped		6622-1/6622-2 6623/6624-1 6624-3

4.3 Edge configuration

The more common edge configurations in general use are shown in Table 3.

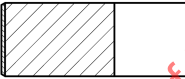
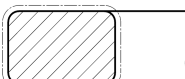
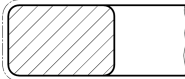
Table 3 — Edge configuration

Configuration	Cross section	Relevant International Standard
Internal bevel top side (positive twist type)		6622-1/6622-2 6624-1/6624-3
Internal step top side (positive twist type)		6622-1 6624-1
Internal bevel bottom side (negative twist type)		6622-1 6622-2
Internal step bottom side (negative twist type)		6622-1
Inside edges chamfered		6622-1/6623 6624-1/6624-2 6625
Inside edges rounded		6622-2 6624-3/6624-4
Outside edges chamfered		6622-1 6624-2
Outside edges rounded		6622-2 6624-3/6624-4

4.4 Coated, plated and nitrided surfaces configuration

The more common coated, plated and nitrided surface configurations in general use are shown in Table 4.

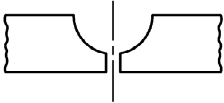
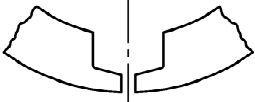
Table 4 — Surface layer configuration

Configuration	Cross section	Relevant International Standard
Peripheral surface plain, i.e., uncoated, unplated and not nitrided		6622-1/6623 6624-1/6624-2 6625 6626/6626-2
Peripheral surface coated or plated "fully-faced configuration"		6622-1/6622-2 6623/6624-1 6624-2/6624-3 6624-4/6626 6626-2/6627
Peripheral surface coated or plated "semi-inlaid configuration"		6622-1 6624-1/6624-2
Peripheral surface coated or plated "inlaid configuration"		6622-1/6622-2 6623/6624-1 6624-2/6624-3 6624-4
Piston ring nitrided on all surfaces		6622-2/6624-3 6624-4/6627/6626-3
Piston ring nitrided on specific surfaces only (e.g., "peripheral surface only")		6624-3/6624-4

4.5 Joint configuration

The more common joint configurations in general use are shown in Table 5.

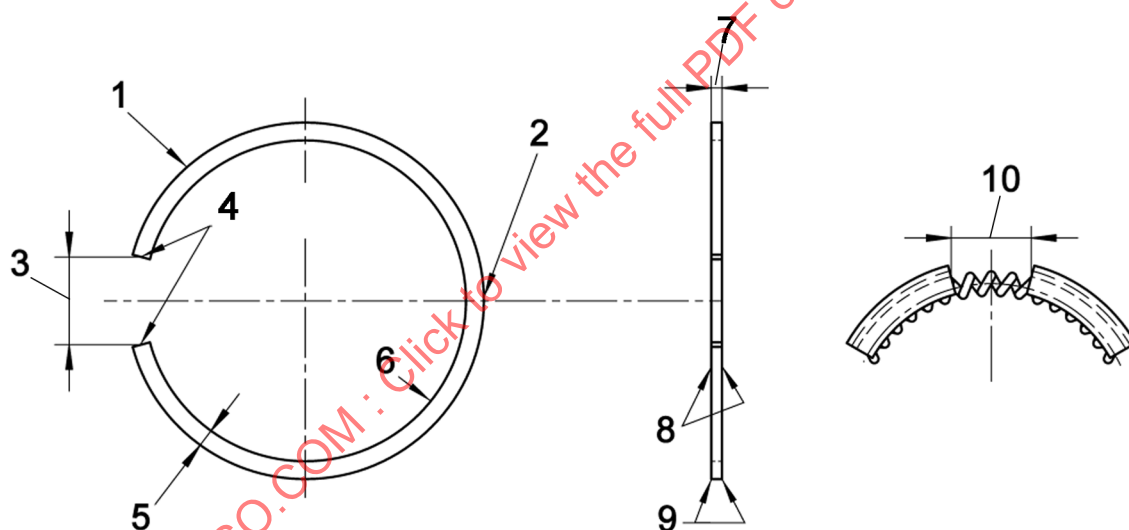
Table 5 — Joint configuration

Configuration	Joint configuration	Relevant International Standard
Joint with side notch		6621-4
Joint with internal notch		6621-4

5 Piston ring nomenclature

5.1 Free (unstressed) ring

Terms commonly used to describe free (unstressed) rings are shown in Figure 1.



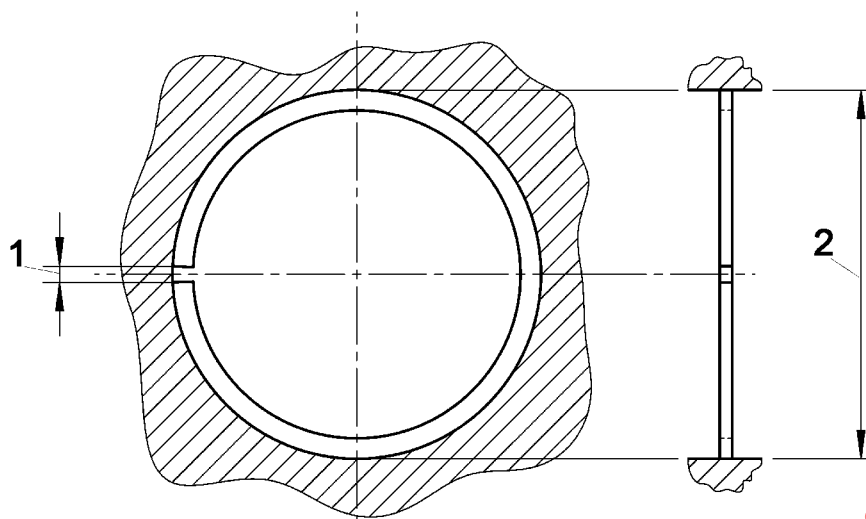
Key

- | | |
|--------------------------------|---------------------------------|
| 1 peripheral surface | 6 inside surface |
| 2 back of the ring | 7 ring width, h_1 |
| 3 free gap, m | 8 side faces |
| 4 butt ends | 9 peripheral edges |
| 5 radial wall thickness, a_1 | 10 coil spring excursion, f_1 |

Figure 1 — (Unstressed) ring

5.2 Closed ring

Additional terms commonly used to describe closed rings are shown in Figure 2.



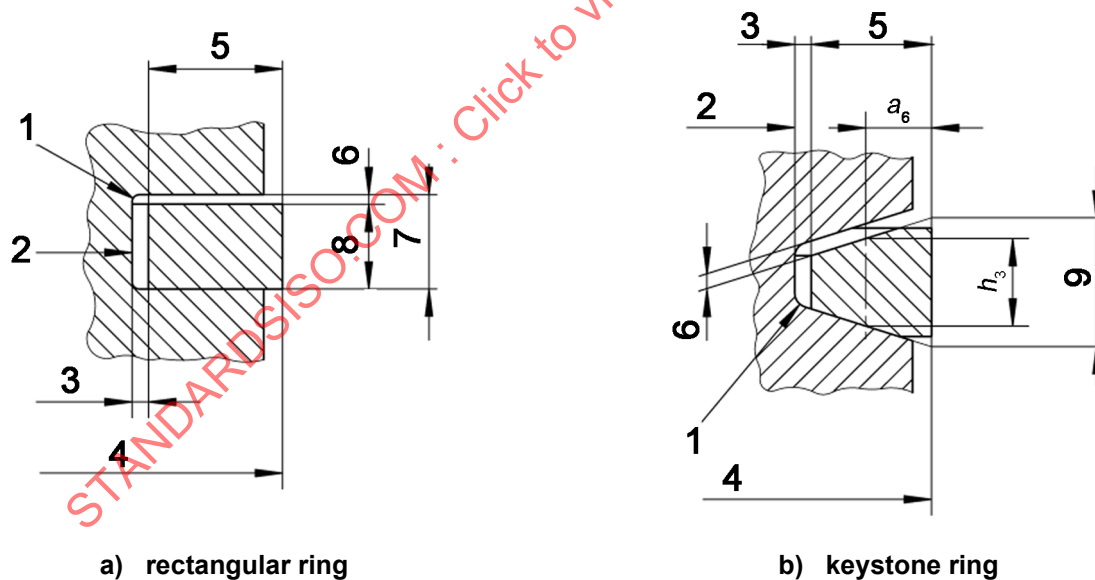
Key

- 1 closed gap, s_1
- 2 cylinder bore/nominal ring diameter, d_1

Figure 2 — Closed ring

5.3 Assembled ring in closed condition

Terms commonly used to describe piston rings assembled in the piston groove are shown in Figure 3.



a) rectangular ring

b) keystone ring

Key

- | | | |
|------------------------|--------------------------------|-----------------------------|
| 1 groove root radius | 4 nominal diameter, d_1 | 7 groove width |
| 2 groove root diameter | 5 radial wall thickness, a_1 | 8 ring width, h_1 |
| 3 radial clearance | 6 side clearance | 9 nominal ring width, h_1 |

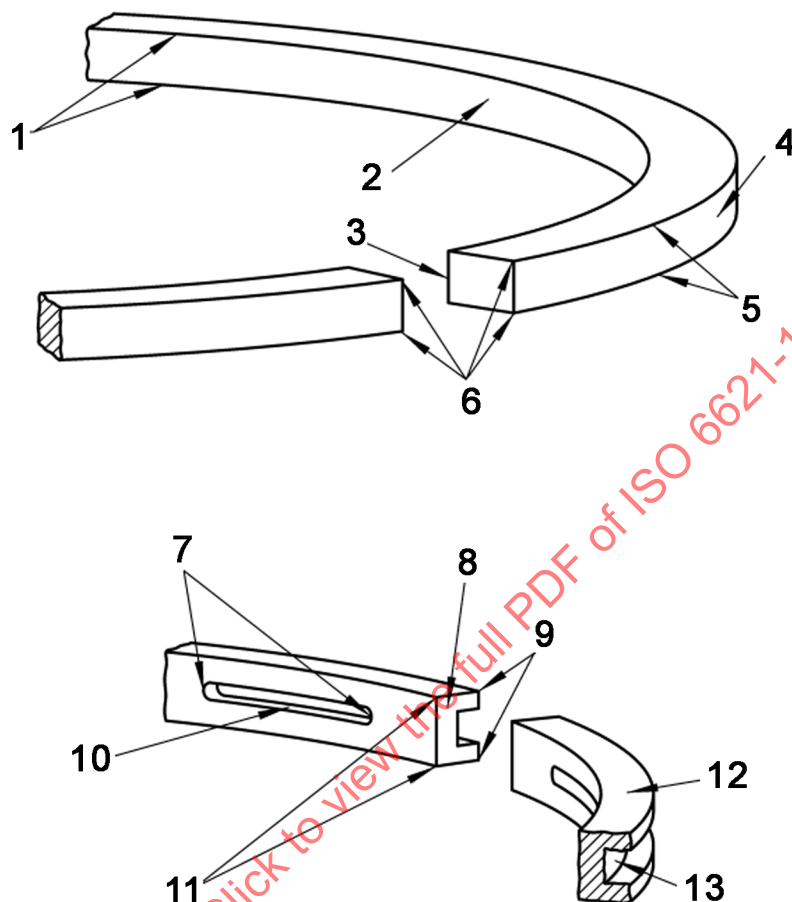
Method A: a_6 ref... h_3 measured

Method B: h_3 ref... a_6 measured

Figure 3 — Ring clearances

5.4 Edges, surfaces and faces

Terms commonly used to describe edges, surfaces and faces on the rings are shown in Figure 4.



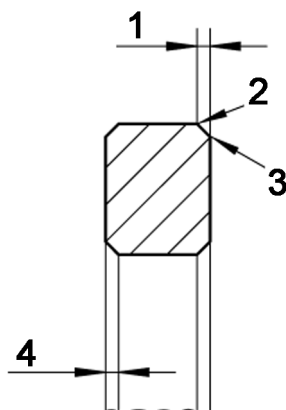
Key

1	inside edges	6	opposite gap corners	11	inside gap corners
2	inside surface	7	inside edge of slot	12	side face
3	inside edge of gap	8	gap face	13	outside groove face
4	peripheral surface	9	outside gap corners		
5	peripheral edges	10	slot face		

Figure 4 — Edges, surfaces and faces

5.5 Chamfered edges

Terms commonly used to describe edge chamfers on rings are shown in Figure 5.



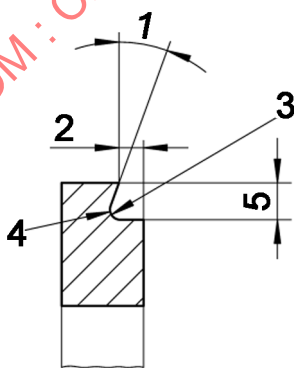
Key

- 1 outside chamfered edge
- 2 peripheral edge
- 3 side face edge
- 4 inside chamfered edge

Figure 5 — Chamfered edges

5.6 Scraper ring

Terms commonly used to describe scraper and Napier rings are shown in Figure 6.



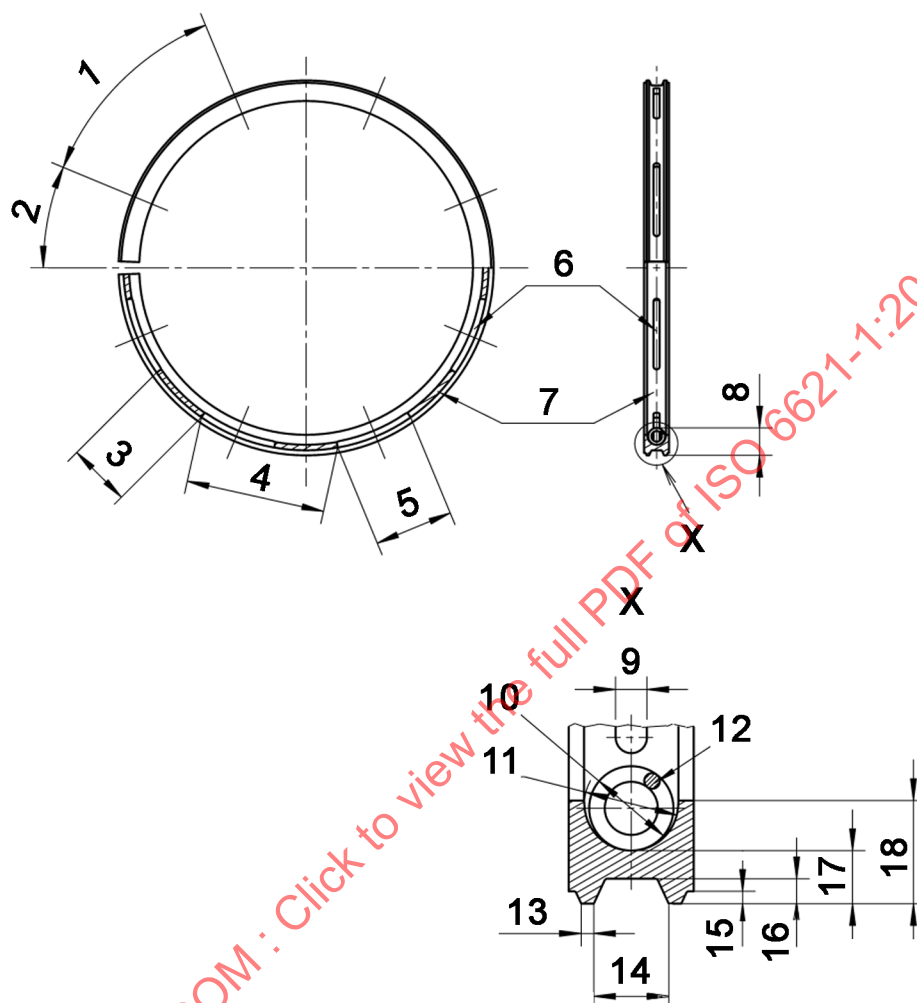
Key

- 1 Napier angle
- 2 step width, h_2
- 3 undercut radius, r_2
- 4 Napier undercut and step
- 5 step depth, a_2

Figure 6 — Section of Napier ring

5.7 Oil control ring

Terms commonly used to describe coil-spring-loaded slotted oil control rings are shown in Figure 7.



Key

1 angular slot spacing	7 bridge	13 land width, h_5
2 angular pitch at gap	8 radial thickness with coil spring, a_{12}	14 land spacing, B_3
3 bridge length, w_2	9 slot width, c_1	15 external land depth, a_{17}
4 slot spacing, w_3	10 coil spring diameter, d_1	16 groove depth, a_4
5 slot length, w_1	11 coil spring groove diameter, d_{14}	17 groove depth and bridge, a_{13}
6 slot	12 coil spring	18 radial wall thickness, a_1

Figure 7 — Coil-spring-loaded slotted oil control ring

Terms commonly used to describe expander/segment oil control rings are shown in Figure 8.

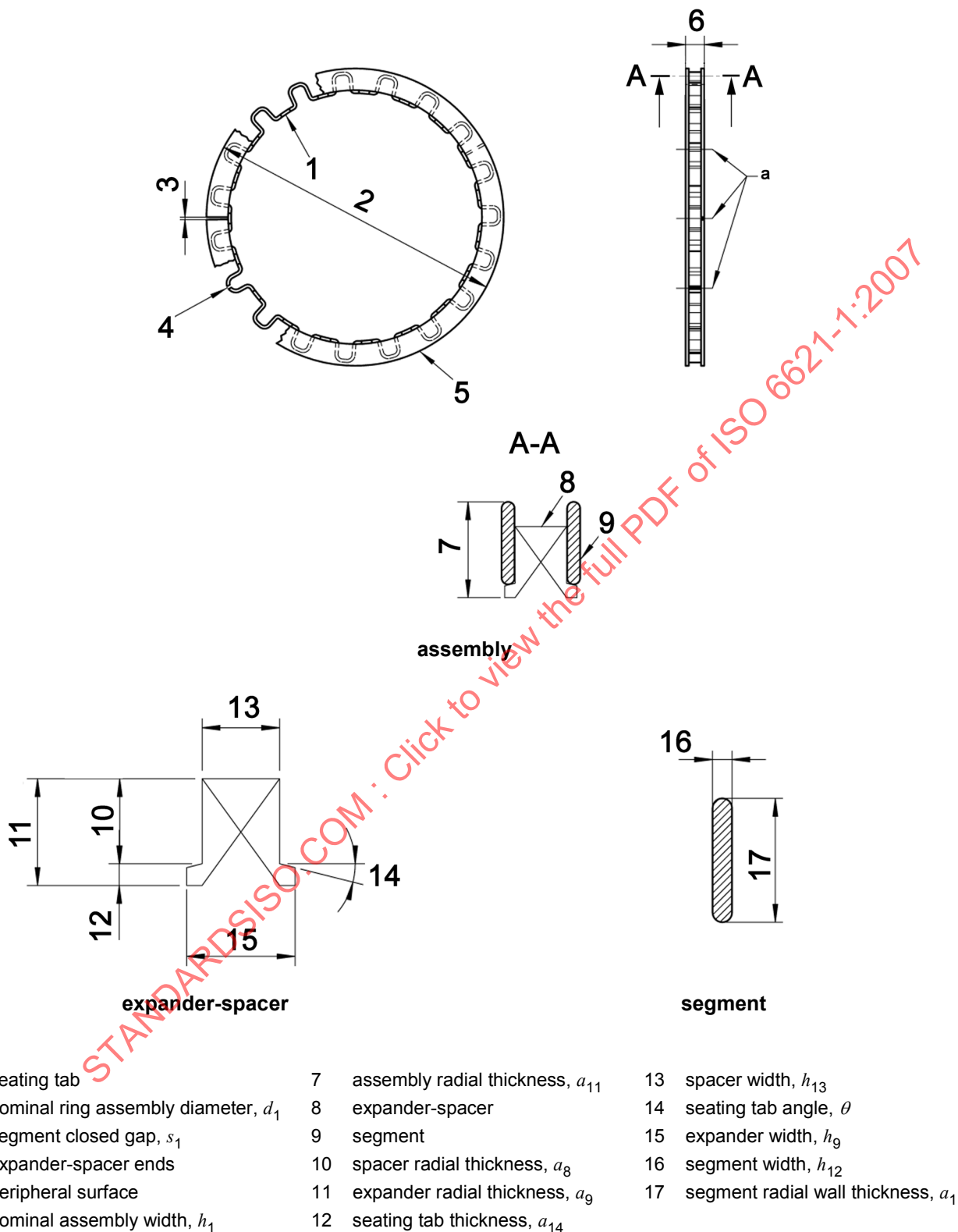


Figure 8 — Expander/segment oil control ring

6 Terms and definitions

For the purpose of this document the following terms and definitions apply.

6.1 Types of piston ring

6.1.1

piston ring

outward expanding annular ferrous spring, fitting into a piston groove, sealing against pressure differential of gases or liquids between the peripheral and side faces of the ring and the bore and piston groove respectively

6.1.2

single-piece ring

piston ring formed from only one part that is intended for installation in a single ring groove

6.1.3

multi-piece ring

piston ring comprising two or more component parts that are intended for installation in a single ring groove

6.1.4

compression ring

piston ring whose primary purpose is to prevent leakage of gas past the piston

6.1.5

oil control ring

piston ring with oil return slots or an equivalent whose primary purpose is to scrape oil from the cylinder wall

6.1.6

rectangular ring

compression ring with a rectangular cross section whose geometrically simple form provides an adequate seal under normal engine operating conditions

6.1.7

keystone ring

compression ring with both sides tapered

NOTE The keystone ring is used in those cases when ring sticking can be expected. Due to its wedge shape, any radial movement of the ring will alter its axial clearance and thus minimize the build-up of combustion residues.

6.1.8

half keystone ring

compression ring with one side face tapered

NOTE Usually the tapered side face is the one that faces the combustion chamber.

6.1.9

scraper ring (stepped)

ring with a rectangular shaped step on the lower peripheral edge to scrape oil from the cylinder wall

NOTE It can also act as a lower compression ring.

6.1.10

Napier ring (undercut step)

scraper ring with a radiused undercut step

6.1.11

slotted oil control ring

slotted oil control ring with parallel side faces and two contact lands

NOTE Due to the narrow lands of this type of ring, a high unit pressure is achieved.

6.1.12

bevelled-edge oil control ring

slotted oil control ring with lands that are chamfered on their outer edges

NOTE The peripheral edges of both lands are chamfered in order to achieve a further increase in unit pressure and thereby a better oil scraping effect.

6.1.13

double-bevelled oil control ring

slotted oil control ring with lands that are chamfered on their upward facing edges

NOTE By chamfering the edges of both lands in the same direction the oil scraping effect is even further improved.

6.1.14

coil-spring-loaded slotted oil control ring

slotted oil control ring whose radial pressure is increased by means of a cylindrical coil spring

NOTE This spring acts equally in all directions against the inside of the ring.

6.1.15

coil-spring-loaded bevelled-edge oil control ring

coil-spring-loaded slotted oil control ring with lands that are chamfered on their outer edges

6.1.16

coil-spring-loaded double-bevelled oil control ring

coil-spring-loaded slotted oil control ring with lands that are chamfered on their upward facing edges

6.1.17

coil-spring-loaded bevelled-edge chromium plated oil control ring

coil-spring-loaded slotted oil control ring with lands that are chromium plated and chamfered on their inner and outer edges

NOTE May or may not be profile ground.

6.1.18

expander/segment oil control ring

multi-piece oil control ring comprised of an expander-spacer and two segments

NOTE Expander-spacer design will vary with manufacturer.

6.2 Physical characteristics of rings

6.2.1

nominal ring diameter

nominal diameter, d_1 , identical to the nominal cylinder bore, in accordance with ISO 286

6.2.2

witness line

narrow continuous line of contact lapped on the peripheral surface of the ring which can be seen around the circumference with normal vision

6.2.3

joint

location on a piston ring where the butt ends come together

6.2.4

butting

touching of the two ring gap faces

6.2.5**effective free gap**

free gap, m , minus the measured closed gap, s_1

See Figure 1 for m ; see Figure 2 for s_1 .

NOTE Free gap used in the formulae for calculation of E value, tangential force, F_t , diametral force, F_d , and stresses.

6.2.6**pressure pattern**

contact pressure distribution around the circumference of the ring when closed in its nominal cylinder bore

6.2.7**contact pressure**

pressure that a ring exerts radially against the cylinder wall

NOTE Pressure is expressed in N/mm^2 .

6.2.8**pin point or burry light**

intermittent pinpoints of bright light or hazy light, but not bright direct light, observed in the test for light-tightness

6.3 Piston part**6.3.1****ring groove**

groove in the piston in which the piston ring is fitted

6.4 Measuring devices**6.4.1****ring gauge**

solid annular gauge having an inside diameter of the nominal cylinder bore

6.4.2**reference plane (datum surface)**

plane on which the piston ring is placed for measurements, except where otherwise specified

Annex A

(informative)

List of equivalent terms in English, French, Russian, German, Spanish, Portuguese, Italian and Japanese

English	French	Russian	German	Spanish	Portuguese	Italian	Japanese
barrel-faced	face bombée	с бочкообразной рабочей поверхностью	Balligkeit	bombeado	Face abaulada	Bombatura	バレルフェース
barrel on peripheral surface	bombé sur la périphérie	бочкообразность по рабочей поверхности	ballige Lauffläche	periferia bombeada	Abaulamento na face de contato	Bombatura sul diametro esterno	外周面バレル
bevelled-edge oil control ring	segment racleur régulateur d'huile chanfreiné symétrique	маслосъемное кольцо со встречной фаской	Dachfassen-Ölabstreifring	segmento de engrase de patines achatillados simétricos	Anel de óleo de chanfros simétricos com mola helicoidal	Anello raccogliolio con smussi convergenti	ベベルオイルコントロールリング
butting	arc-boutement	смыкание замка	Berührung der Stossflächen	contacto de las puntas	Batimento de pontas	Contatto delle estremità dell'anello	合い口突き当たり
cam turned	tourné en forme suivant une came	обточенный по копиру	formgedreht	torneado de forma	Torneamento de forma	Tornito di forma (con camma)	カム旋削加工
closed gap	jeu à la coupe	замкнутый тепловой зазор	Stosspiel	ajuste de puntas	Folga entre pontas	Gioco al taglio	合い口すきま
coating layer thickness	épaisseur du revêtement	толщина покрытия	Schichtdicke	espesor del recubrimiento	Espessura da camada de revestimento/enchimento	Spessore rivestimento	コーティング厚さ
coil-spring-loaded oil control ring	segment racleur d'huile à ressort hélicoïdale	маслосъемное кольцо с витым расширителем	Ölabstreifring mit Schlauchfeder	segmento de engrase con expansor helicoidal	Anel de óleo com mola helicoidal	Anello raccogliolio caricato con molla elicoidale	コイルエキスパンダ付オイルコントロールリング

English	French	Russian	German	Spanish	Portuguese	Italian	Japanese
compression ring	segment de compression	компрессионное кольцо	Verdichtungsring	segmento de compresión	Anel de compressão	Anello di compressione	コンプレッションリング
(datum surface) see reference plane	voir plan de référence	базовая поверхность (для измерений)	Messebene	(superficie de referencia) ver : plano de referencia	(Superficie de referência) Veja plano de referência	Piano di riferimento	データ面
diametral force	force diamétrale	диаметральная сила	Diametalkraft	carga diametral	Força diametral	Forza diametrale	直径張力
double-bevelled oil control ring	segment racleur régulateur d'huile chanfreiné parallèle	маслосъемное кольцо с параллельными фасками	Gleichfassen-Ölabstreifring	segmento de engrase de patines achaflanados paralelos	Anel de óleo de chanfros paralelos com mola helicoidal	Anello raccogliolio con smussi paralleli	ダブルベベルオイルコントロールリング
effective free gap	ouverture libre effective	раствор замка минус тепловой зазор	tatsächliche Maulweite	abertura libre efectiva	Abertura livre efetiva	Apertura libera efficace	有効フリーギャップ
free flatness	planéité à l'état libre	отклонение от плоскости кольца в свободном состоянии	Ebenheit im unbelasteten Zustand	planicidad en estado libre	Planicidade no estado livre	Planarità dell'anello libero	平面ひずみ
fully-faced	sur toute la face	с покрытием рабочей поверхности	Laufflächenbeschichtung	totalmente recubierto	Face de contato totalmente revestida	Superficie periferica interamente rivestita	外周全面
half keystone ring	segment semi-trapèze	кольцо трапецевидное одностороннее	einseitiger Trapezring	segmento semitrapezoidal	Anel semi-trapezoidal	Anello semi-trapezoidale	ハーフキーストーンリング
heat-formed	mis en forme à chaud	с горячей формовкой	thermisch gespannt	abertura térmica	Conformação térmica	Formatura a caldo	ヒート・ホーム
helix/wind	voltage	смещение стыкования	Stossversatz	desalineación axial de las puntas	Hélice	Elica / ondulazione	ヘリックス
inlaid	encastré	с заполненной канавкой	Füllung	inserto/cajetin	Incrustado	Rivestimento esterno in cava	インレイド
inside edges chamfered	arêtes intérieures chanfreinées	с внутренними фасками	Innenkantenbruch	cantos interiores biselados	Arestas interiores chanfradas	Spigoli interni smussati	内周面取り
inside and peripheral edges chamfered	arêtes intérieures et périphériques chanfreinées	с фасками на внутренней и рабочей поверхностях	Innen- und Aussenkantenbruch	cantos interiores y exteriores biselados	Arestas interiores e exteriores chanfradas	Spigoli interni ed esterni smussati	内外周面取り
internal bevel bottom (negative twist type)	chanfrein sur le diamètre intérieur, flanc inférieur (type torsion négative)	кольцо с внутренней нижней фаской (обратное скручивание)	Innenfase an Unterflanke (negative Vertwistung)	chaffán interior, inferior (torsional negativo)	Chanfro de torção interior inferior (torção negativa)	Smusso sul diametro interno inferiore (tipo a torsione negativa)	下面インターナルベベル (逆ねじれタイプ)

English	French	Russian	German	Spanish	Portuguese	Italian	Japanese
internal bevel top (positive twist type)	chanfrein sur le diamètre intérieur, flanc supérieur (type torsion positive)	кольцо с внутренней верхней фаской (прямое скручивание)	Innenfase an Oberflanke (positive Verwindung)	chafilán interior, superior (torsional positivo)	Chanfro de torção interior superior (torção positiva)	Smusso sul diametro interno superiore (tipo a torsione positiva)	上面インターナルベベ ル (正ねじれタイプ)
internal step bottom (negative twist type)	embrèvement sur le diamètre intérieur, flanc inférieur (type torsion négative)	кольцо с внутренней нижней выточкой (обратное скручивание)	Innenwinkel an Unterflanke (negative Verwindung)	escalón interior, inferior (torsional negativo)	Rebaixo interior inferior (torção negativa)	Gradino sul diametro interno inferiore (tipo a torsione negativa)	下面インターナルステ ップ (逆ねじれタイ プ)
internal step top (positive twist type)	embrèvement sur le diamètre intérieur, flanc supérieur (type torsion positive)	кольцо с внутренней верхней выточкой (прямое скручивание)	Innenwinkel an Oberflanke (positive Verwindung)	escalón interior, superior (torsional positivo)	Rebaixo interior superior (torção positiva)	Gradino sul diametro interno superiore (tipo a torsione positiva)	上面インターナルステ ップ (正ねじれタイ プ)
joint	coupe	замок	Stoss	corte	Corte	Estremità	回り止め形状
joint with internal notch	coupe avec encoche intérieure	замок с внутренней фиксацией	Stoss mit Innensicherung	entalla para fijo interior	Corte com entalhe interior	Gioco al taglio con arresto interno	内周回り止め
joint with side notch	coupe avec encoche frontale	замок с боковой фиксацией	Stoss mit Flankensicherung	entalla para fijo lateral	Corte com entalhe lateral	Gioco al taglio con arresto frontale	側面回り止め
keystone angle	angle du trapèze	угол трапеции (трапецивидности)	Trapezwinkel	ángulo trapecial	Ângulo do trapézio	Angolo del trapezio	キーストン角度
keystone ring	segment trapèze	кольцо трапецевидное двустороннее	Trapezring	segmento trapecial	Anel trapezoidal	Anello trapezoidale	キーストンリング
land offset	décalage des lèvres	смещение перемычки	Laufstegversatz	desalineación de los patines	Desalinhamento das faces	Disassamento pattino	当たり面段差
land width	hauteur de lèvre	высота перемычки	Laufsteghöhe	altura del patin de roce	Espessura da face de contato	Altezza pattino	当たり幅
light tightness	étanchéité à la boîte lumière	плотность прилегания	Lichtspaltdichtheit	estanqueidad a la luz	Vedação à luz	Tenuta alla luce	ライトタイトネス
modulus of elasticity	module d'élasticité	модуль упругости	Elastizitätsmodul	módulo de elasticidad	Módulo de elasticidade	Modulo di elasticità	縦弾性係数

English	French	Russian	German	Spanish	Portuguese	Italian	Japanese
multi-piece ring	segment multi-pièces	составное кольцо (многоэлементное)	mehnteiliger Ring	segmento de varias piezas	Anel de múltiplas peças	Anello multipezzo	組合せリング
Napier ring	segment bec d'aigle	скребковое кольцо с поднутренней канавкой	Abstreifring mit hinterstochener Eindrehung	segmento rascador de uña	Anel raspador "Napier"	Anello raschiaolio (Napier)	ナピアリング
Napier ring, tapered	segment bec d'aigle, face conique	скребковое кольцо с поднутренней канавкой и конической рабочей поверхностью	Abstreifring mit konischer Lauffläche und hinterstochener Eindrehung	Segmento rascador de uña con periferia cónica	Anel raspador "Napier" com face de contacto cônica	Anello raschiaolio (Napier) con superficie periferica conica	テーパフェースナピアリング
nominal ring diameter	diamètre nominal du segment	номинальный диаметр кольца	Nenndurchmesser	Diametro nominal del segmento	Diâmetro nominal do Anel	Diametro nominale dell'anello	リング呼び径
obliqueness	obliquité	коробление	Schiefelage	Inclinación	Inclinação	Obliquità	傾き
oil-control ring	segment racleur d'huile	маслосъемное кольцо	Ölabschleifring	Segmento control de aceite	Anel de óleo	Anello raccogliolio	オイルコントロールリング
ovality or circularity	ovalité	овальность	Ovalität oder Kreisförmigkeit	Ovalidad	Ovalização	Ovalità	オーバリティ又は真円度
peripheral edges chamfered	arêtes périphériques chanfreinées	с наружными фасками	Laufflächenkantenbruch	Canto exteriores biselados	Arestas exteriores chanfradas	Spigoli esterni smussati	外周面取り
peripheral surface (ring face)	surface périphériques (portée du segment)	рабочая поверхность кольца	Lauffläche	Face de Contact	Face de contato	Superficie di scorrimento	外周面
pin point or burry light	pointe d'épingle ou lumière irisée	мерцающий просвет	Lichtpunkte oder Lichtschimmer	Luz difusa	Passagem de luz difusa	Trafilamento luce puntinato o sfumato	かすかな断続的な光
piston ring	segment de piston	поршневое кольцо	Kolbenring	Segmento de pistón	Anel de pistão	Anello (segmento)	ピストンリング
point deflection	protusion	прогиб стыкования	Stosseinfall	Punto de flexion	Ponto de deflexão	Rientranza punte	ポイントデフレクション
pressure pattern	répartition de pression	эпюра распределения давления	Radialdruckverteilung	Distribución de la presión	Distribuição da pressão	Distribuzione della pressione	面圧分布
radial wall thickness	épaisseur radiale	радиальная толщина	radiale Wanddicke	Espesor radial	Espessura radial	Spessore radiale	厚さ
reference plane	plan de référence	базовая поверхность	Messebene	Plano de referencia	Plano de referência	Piano di riferimento	基準面
rectangular ring	segment rectangulaire	прямоугольное кольцо	Rechteckring	Segmento rectangular	Anel regangular	Anello rettangolare	レクタングルリング

English	French	Russian	German	Spanish	Portuguese	Italian	Japanese
ring gauge	bague de contrôle	кольцевой калибр	Kontrollring	Calibre para segmento	Calibre para Anel	Calibro circolare	リングゲージ
ring groove	gorge de segment	поршневая канавка	Ringnut	Ranura de pistón	Canaleta	Cava del pistone	リング溝
ring width	hauteur du segment	высота кольца	Ringhöhe	Altura de segmento	Altura do Anel	Altezza dell'anello	リング幅
scraper ring (stepped)	segment racleur mixte (épaulé droit)	скребковое кольцо (с канавкой)	Abstreifring	Segmento rascador	Anel raspador	Anello raschiaolio (con gradino)	スクレーパーリング
scraper ring (stepped), taper-faced	segment racleur mixte (épaulé droit) à portée conique	скребковое кольцо (с канавкой) с конической рабочей поверхностью	Abstreifring mit konischer Lauffläche	Segmento cónico rascador	Anel raspador com face de contacto cônica	Anello raschiaolio (con gradino) a superficie periferica conica	テーパフェーススクレーパーリング
semi-inlaid	semi-encasté	с полузаполненной канавкой	einseitige Füllung	Semi inserto	Semi incrustado	Riparto esterno in semi-cava	セミインレイド
single-piece ring	segment mono-pièce	одноэлементное кольцо	einteiliger Ring	Segmento de una sola pieza	Anel de uma só peça	Anello monopezzo	シングルピースリング
slotted oil-control ring	segment racleur d'huile avec lumières	маслосъемное кольцо с прорезями	Ölschlitzz-Ölabstreifring	Segmento de engrase con ventanas	Anel de óleo com fendas	Anello raccogliolio con feritoie scarico olio	窓付きオイルコントロールリング
straight-faced	cylindrique	С цилиндрической рабочей поверхностью	zylindrische Lauffläche	Cara recta	Face de contacto plana	Superficie di contatto cilindrica	ストレートフェイス
tangential force	force tangentielle	тангенциальная (касательная) сила	Tangentialkraft	Carga tangencial	Força tangencial	Carico tangenziale	接線張力
taper-faced ring	segment conique	кольцо с конической рабочей поверхностью	Rechteckring mit konischer Lauffläche (Minutenring)	Segmento cónico	Anel com face de contacto cônica	Anello con conicità periferica	テーパフェースリング
taper-faced keystone ring	segment trapèze à face conique	кольцо трапецевидное двустороннее с конической рабочей поверхностью	Trapezring mit konischer Lauffläche	Segmento cónico trapecial	Anel trapezoidal com face de contacto cônica	Anello trapezoidale a superficie periferica conica	テーパフェースキーストーンリング

English	French	Russian	German	Spanish	Portuguese	Italian	Japanese
taper on periphery	cône sur la périphérie	конусность по рабочей поверхности	Winkigkeit (Zylindrizität, Konizität)	Perfil cónico	Conicidade da face de contacto	Conicità sulla periferia	外周面テーパ
total free gap	ouverture libre totale	размер замка кольца в свободном состоянии	Maulweite	Abertura libre	Abertura livre total	Apertura totale anello libero	自由合い口すきま
twist	torsion	скручивание	Vertwistung	Torsión / torsional	Torção	Torsionale	ツイスト
uncoated ring	segment non-revêtu	кольцо без покрытия	unbeschichteter Ring	Segmento sin recubrimiento	Anel sem revestimento	Anello non rivestito	無処理リング
unevenness	inégalité	неровность	Unebenheit	Ondulación	Ondulação	Ondulazione	側面うねり
wind	voilage	смещение стыкования	Stossversatz (axial)	Giro	Desvio das pontas (empeno)	Svergolamento assiale	合口部の軸方向段差
witness line	ligne témoin	линия контакта	Tragspiegel	Linea de testimonio	Linha testemunha	Testimonio di contatto	当たり確認線

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