

ISO 6621-4:2024-05 (E)

Internal combustion engines - Piston rings - Part 4: General specifications

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Piston ring codes	1
5	Designation of piston rings	4
5.1	Designation elements and order	4
5.1.1	General	4
5.1.2	Mandatory elements	4
5.1.3	Measurement principles	5
5.1.4	Additional elements	5
5.1.5	Elements for additional marking	5
5.2	Designation examples	5
5.2.1	Designation example of a piston ring in accordance with ISO 6622-1	5
5.2.2	Designation example of a piston ring in accordance with ISO 6624-1	5
5.2.3	Designation example of a piston ring in accordance with ISO 6626-1	6
6	Designation of piston rings	6
6.1	General	6
6.2	Mandatory topside identification marking	6
6.3	Additional marking	7
7	General characteristics	7
7.1	Ring shape	7
7.2	Light tightness	8
7.3	Closed gap	8
7.4	Tangential force, F_t , and diametral force, F_d , of single piece piston rings	8
7.4.1	Calculation of F_t , and F_d values in dimension tables of dimensional standards	8
7.4.2	Correction of F_t , and F_d values	9
7.4.3	Examples for correction of F_t and F_d	10
7.5	Tangential force F_t of multipiece oil control rings as specified in ISO 6626-1, ISO 6626-2, and ISO 6626-3	12
7.5.1	General	12
7.5.2	Rounding of values	12
7.5.3	Examples for calculating tangential force F_t	12
7.6	Tangential force F_t of expander/rail oil control rings as specified in ISO 6627	13
7.6.1	General	13
7.6.2	Example for calculating the tangential force F_t -- Selected type of piston ring: ISO 6627 -ES3 - 85 × 3 - MC67 MC68/CR1 PNH	13
8	Notches for preventing ring rotation	13
8.1	Ring joint with internal notch (only for compression rings as specified in ISO 6622 and ISO 6624)	13
8.2	Ring joint with side notch (only for compression rings as specified in ISO 6622)	15

9	Machining of surfaces	16
9.1	Peripheral surfaces	16
9.2	Side faces	16
9.3	Other surfaces	16
10	Plated, coated, and treated surfaces	17
10.1	Chromium plating on peripheral and side surfaces	17
10.1.1	General	17
10.1.2	Chromium plating thickness	17
10.1.3	Chromium plated rings of fully faced design	17
10.1.4	Chromium plated rings of semi-inlaid design	17
10.1.5	Chromium plated rings of inlaid design	18
10.1.6	Side Chromium plated rings design	19
10.1.7	Radius, chamfer and dimensions of peripheral edges of chromium plated rings	19
10.1.8	Peripheral edges at the gap of chromium plated rings and rails	20
10.1.9	Hardness of chromium plating	21
10.2	Spray-coated peripheral surfaces	21
10.2.1	Codes	21
10.2.2	Spray-coating thickness	21
10.2.3	Spray-coated rings of fully faced design	21
10.2.4	Spray-coated rings of semi-inlaid design	21
10.2.5	Spray-coated rings of inlaid design	22
10.2.6	Radius, chamfer of peripheral edges of spray-coated rings	23
10.2.7	Peripheral edges at gap of spray-coated rings	23
10.2.8	Hardness of spray-coating	24
10.3	Nitride surfaces	24
10.3.1	Codes	24
10.3.2	Nitride case depth	24
10.3.3	Radius and dimensions of outside and inside edges of nitride steel rings	25
10.3.4	Peripheral edges at the gap of nitride steel rings and rails	25
10.4	Treated surfaces	26
10.4.1	Ferro-oxidized all over -- Code FE -- Coating thickness (0,001 to 0,005) mm	26
10.4.2	Phosphated all over -- Code PO -- Coating thickness 0,002 mm min	26
10.4.3	Phosphated all over -- Code PR -- Coating thickness 0,002 mm max	26
10.5	Physical vapour deposition coating (PVD)	26
10.5.1	Codes	26
10.5.2	PVD coating	26
10.5.3	PVD coating thickness	26
10.5.4	Hardness of PVD coating	26
10.5.5	Peripheral edges at the gap of PVD-coated rings and rails	27
11	Miscellaneous	27
11.1	Cleanliness	27
11.2	Corrosion protection	27
11.3	Packaging	27
12	Traceability (optional)	27
	Bibliography	28