SLOVENSKI STANDARD

SIST EN 3781:2008

01-junij-2008

Aeronavtika - Zareze za spiralne varovalne obroļ e - Standard za projektiranje

Aerospace series - Grooves for spiral wound retaining rings - Design standard

Luft- und Raumfahrt - Nuten für Spiralsicherungsringe - Konstruktionsnorm

Série aérospatiale - Gorges pour anneaux d'arrêt spiralés - Norme de conception

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Ta slovenski standard je istoveten z: **EN 3781:2008**

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ICS:

49.030.99

SIST EN 3781:2008 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 3781

March 2008

ICS 49.030.99

English Version

Aerospace series - Grooves for spiral wound retaining rings - Design standard

Série aérospatiale - Gorges pour anneaux d'arrêt spiralés - Norme de conception

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 3781:2008) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2008, and conflicting national standards shall be withdrawn at the latest by September 2008.

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Introduction

The retaining rings consist of two turns of flat spring steel strip formed in a continuous helix and are concentric with no projecting ears or lugs.

There are two types of these rings, in-springing for use on external grooves (see Figure 1) and out-springing for use on internal grooves (see Figure 2).

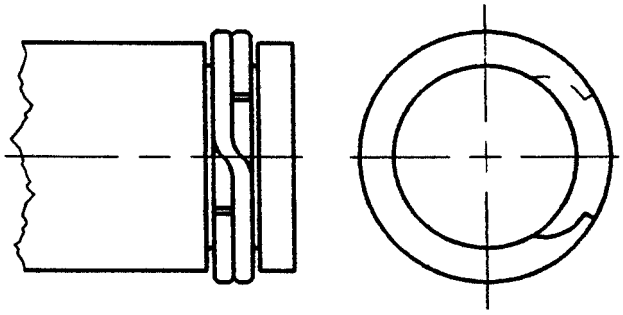

Figure 1

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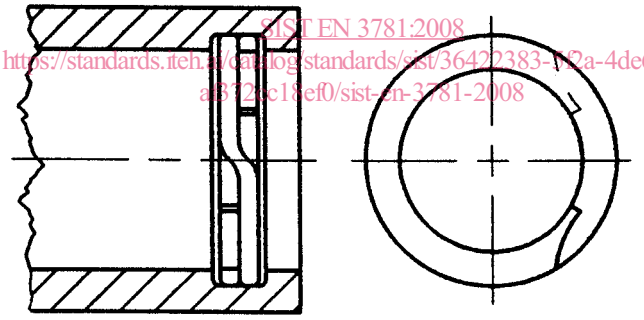

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Figure 2

1 Scope

This standard defines the groove dimensions for retaining rings. It is applicable for rings as per MA4016 for use on external grooves and rings as per MA4017 for use on internal grooves.

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.

MA4016:1987, *Ring, retaining — External, spiral wound, heavy and medium duty, cres, metric.* [1)]

MA4017:1987, *Ring, retaining — Internal, spiral wound, heavy and medium duty, cres, metric.* [1)]

3 Fitting and removal

3.1 General

These retaining rings may be fitted or removed without the use of circlip pliers or other special tools.

3.2 Fitting

A ring is fitted into its appropriate groove by separating the coils, inserting one end of the ring into the groove and, keeping the coils separated, spiralling each turn of the ring into the groove.

3.3 Removal

A ring may be removed by inserting a small screw-driver, or similar tool, into the notch or slot provided at the coil ends and prising until that coil end is free of the groove, and then spiralling each coil out until the complete ring is free of the groove.

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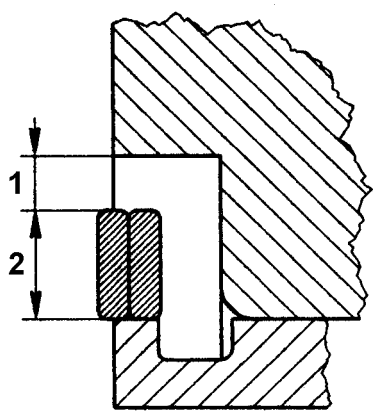
4 Clearance for installation and removal

Since the radial walls of all retaining rings are uniform, with no projecting ears or lugs, the total clearance required for installation or removal equals the radial wall of the ring, plus a radial clearance of at least 0,5 mm.



Key

1 This free space (min. 0,5 mm) shall be adequate to permit easy installation and removal of the ring.

2 Radial width of ring.

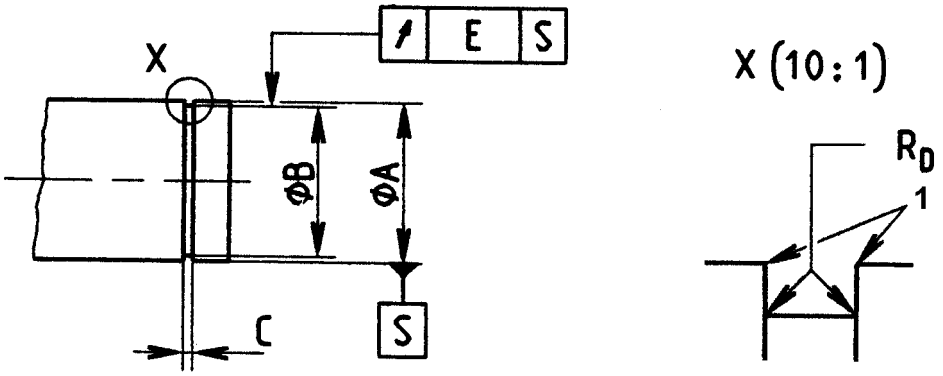
Figure 3

1) Published by: Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096 - USA.

5 Required characteristics

5.1 External grooves for spiral wound retaining rings as per MA4016

Dimensions are in millimetres. See Figures 4 and 5 and Tables 1 and 2.



Key

1 Sharp-edged

Figure 4

Table 1

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Groove runout tolerance E	Basic shaft diameter A from	to
0,05	18	28
0,15	29	55
0,20	56	80
0,25	82	150
0,30	155	280

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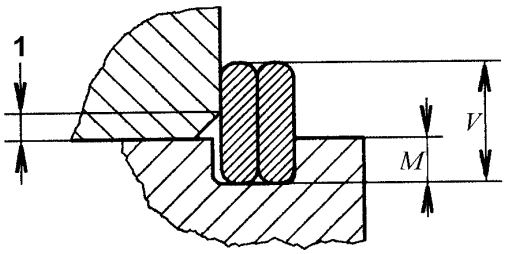
Recommendation:



Key

1 Max. chamfer or max. radius

Maximum allowable chamfer or radius of retained part
max. chamfer or max. radius = 0,375 ($V - M$)
V = nom. radial width = 0,5 (V max. + V min.)
M = nom. depth = 0,5 ($A - B$)

Figure 5

Table 2

Diameter code	Basic shaft diameter A	B	C	R_D max.	Ring dimensions [a] V max.	V min.	Max. chamfer or max. radius [a, b]
E018	18	16,92	1,24 ± 0,04	0,13	1,73	1,52	0,40
E019	19	17,87					
E020	20	18,77					
E021	21	19,72					
E022	22	20,62 $^{0}_{-0,07}$			1,98	1,78	0,45
E023	23	21,57					
E024	24	22,52					
E025	25	23,42			2,24	2,03	0,50
E026	26	24,42					
E027	27	25,35	1,45 ± 0,05		2,69	2,49	0,65
E028	28	26,30					
E029	29	27,27					
E030	30	28,25					
E031	31	29,17 $^{0}_{-0,10}$					
E032	32	30,10					
E034	34	31,90			3,07	2,87	0,75
E035	35	32,80					0,70
E036	36	33,75					
E037	37	34,67					
E038	38	35,65					
E040	40	37,55			3,33	3,12	0,75
E042	42	39,45					
E045	45	42,25					0,70
E046	46	43,15	1,80 ± 0,05				
E047	47	44,31			4,09	3,89	1,00
E048	48	45,05		0,25			0,95
E050	50	47,05					
E052	52	50,15	1,47 ± 0,05		3,33	3,12	0,85
E053	53	51,15					
E054	54	52,15					
E055	55	53,15 ± 0,15			3,58	3,38	0,95
E056	56	54,15					
E058	58	56,01					
E059	59	57,01					
E060	60	58,01					
E061	61	58,91					0,90
E062	62	59,91			3,84	3,63	1,00
E063	63	60,91					
E064	64	61,91					
E065	65	62,81					
E066	66	63,79					
E067	67	64,71					
E068	68	65,71			4,09	3,89	1,05

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