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SVENSK STANDARD SS-EN 2022

Första giltighetsdag	Utgåva	Sida	Registrering
1988-11-15	1	1(7)	SMS reg 961.5212

Flyg- och rymdteknik

Aerospace series —
Bearings, spherical plain in corrosion
resisting steel with self-lubricating liner —
Light series —
Dimensions and loads

Série aérospatiale —
Rotules en acier résistant à la corrosion
à garniture autolubrifiante —
Série légère —
Dimensions et charges

Luft- und Raumfahrt —
Gelenklager aus korrosionsbeständigem Stahl
mit selbstschmierender Beschichtung —
Leichte Reihe —
Maße und Belastungen

Denna standard utgörs av den engelska versionen av den europeiska standarden EN 2022.

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Key words : Aircraft industry, spherical bearing, corrosion resisting steel, linings, self-lubricating parts, dimensions, loads.

English version

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This European Standard was accepted by CEN on 1987-11-16. CEN members are bound to comply with the requirements of CEN Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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CEN

European Committee for Standardization
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Europäisches Komitee für Normung

Central Secretariat : Rue Bréderode 2, B—1000 Bruxelles

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Brief history

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After enquiries and votes carried out in accordance with the rules of this Association, this draft has successively received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to C.E.N.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 Scope and field of application

This standard specifies the characteristics of spherical plain bearings in corrosion resisting steel with self lubricating liner, light series.

They are intended for use in fixed or moving parts of the aircraft structure and control mechanisms.

They shall be used in the temperature range -55 to +150 °C.

2 References

EN 2030, Steel FE-PM43 - Hardened and tempered - Bars D $\leq$ 150 mm - Aerospace series

EN 2064, Bearings, spherical plain in corrosion resisting steel with self lubricating liner - Technical specification - Aerospace series

EN 2136, Steel FE-PM42 - 900 MPa $\leq$ Rm $\leq$ 1100 MPa - Bars De $\leq$ 100 mm - Aerospace series

EN 2539, Aerospace series - Steel FE-PM61-Rm $\geq$ 960 MPa - Bars De $\leq$ 150 mm 1)

3 Symbols

Δ_{ds} = the deviation of a single bore diameter
Δ_{Ds} = the deviation of a single outside diameter
Δ_{dmp} = single plane mean bore diameter deviation
Δ_{Dmp} = single plane mean outside diameter deviation
α = maximum displacement angle which can be formed by the outer ring with the inner ring the spherical track of the outer ring being fully in contact with the inner ring.

4 Required characteristics

4.1 Dimensions - Tolerances - Masses

Configuration shall correspond with figures 1 or 2.

Dimensions, tolerances and masses shall correspond with table 1.

4.2 Loads - Starting torques

Loads and starting torques shall correspond with table 2.

4.3 Materials

Inner ring : steel EN 2030
Outer ring : steel EN 2136 or steel EN 2539
Liner : Self-lubricating low friction wear resisting material consistent with requirements of EN 2064.

1) In preparation.

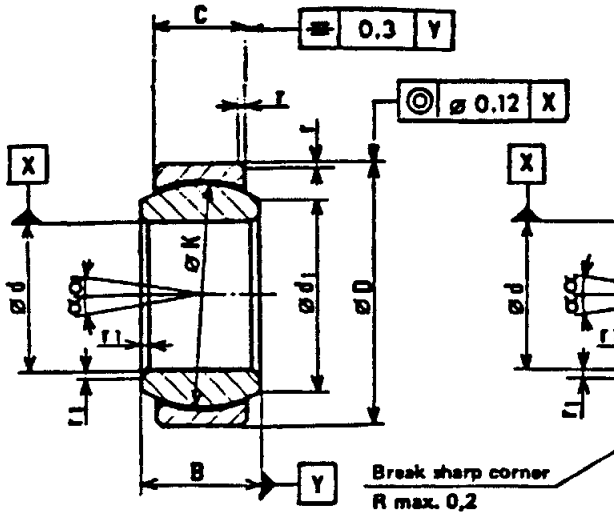

Figure 1 : without swaging groove
Code S

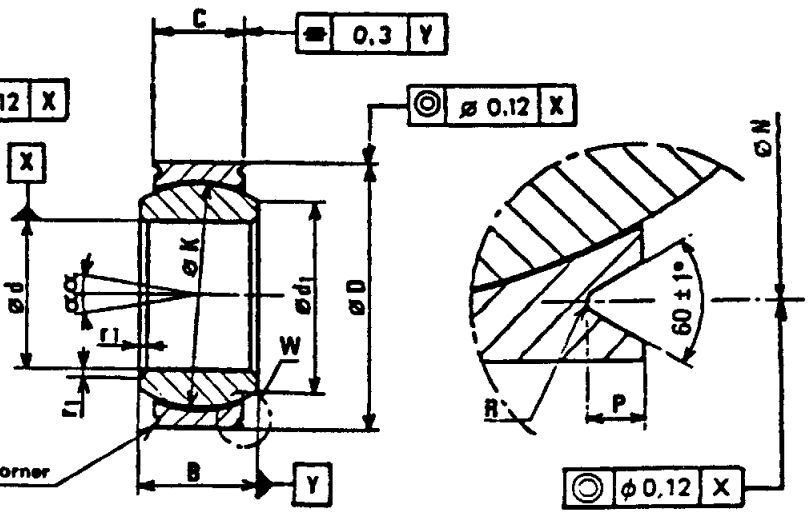

Figure 2 : with swaging grooves
Code R

Detail W

Table 1

Dimensions in millimetres

d		D	C	B	Tolerances µm				d_1 1)	K	r	r_1	N	P	R	α	Mass
Code	Nominal		± 0,1	0 / − 0,06	ΔDmp	ΔDs	Δdmp	Δds	min.	≈			+0,1 / 0	0 / −0,2	+0,1 / 0	in degrees	≈ g
12	12	22	7	10	0 / − 9	+ 6 / −15	0 / − 8	+ 3 / −11	14,3	17,5	0,8 +0,4 −0,3	0,8 0 −0,3	20,2	0,7	0,2	11	17
15	15	26	9	12					18,7	22,2			24,2			9	32
17	17	30	10	14					21,2	25,4			28,2			10	49
20	20	35	12	16	0 / −11	+ 8 / −19	0 / −10	+ 3 / −13	24,9	29,6	1 +0,5 −0,4		33,2			9	65
25	25	42	16	20					30,0	36,0			39,4	0,9	0,3	7	115
30	30	47	18	22					34,3	40,7			44,4			6	160
35	35	55	20	25	0 / −13	+10 / −23	0 / −12	+ 3 / −15	40,5	47,6	1,2 +0,5 −0,4	1 0 −0,4	51,8	1,4		7	229
40	40	62	22	28					45,0	53,0			58,8			7	315
45	45	68	25	32					51,3	60,4			64,8			7	460
50	50	75	28	35					58,2	67,9			71,8			7	560

1) Attention should be paid to the possible indentation of the support mountings by the inner ring bearing faces

Table 2

d nominal mm	Permissible static loads kN			Permissible dynamic radial loads 25000 cycles kN	Starting torques N.m
	radial C_s	axial C_a	axial for spherical bearings with swaging grooves after swaging 1)		
12	40,5	1,5	1,5	16,2	0,12 to 0,80
15	66,9	5,1	5,1	26,7	
17	87,4	7,1	7,1	34,9	
20	127,3	13,7	13,7	50,9	
25	216,7	28,6	22,2	86,7	0,25 to 1,00
30	262,5	38,0	26,0	105,0	0,40 to 2,00
35	348,1	49,0	32,5	139,0	
40	410,2	61,2	37,5	164,1	0,60 to 3,50
45	545,5	81,9	42,0	218,2	
50	695,7	105,6	47,0	278,3	

1) These values are given for information. The actual values obtained depend on the method of swaging.