



# SLOVENSKI STANDARD

## SIST EN 2139:2001

01-januar-2001

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### Aerospace series - Washers, flat heat resisting steel

Aerospace series - Washers, flat heat resisting steel

Luft- und Raumfahrt - Scheiben aus hochwarmfestem Stahl

Série aérospatiale - Rondelles plates en acier résistant a chaud

Ta slovenski standard je istoveten z: **EN 2139:1989**

[SIST EN 2139:2001](https://standards.iteh.ai/catalog/standards/sist/70a56e9a-8f16-4dd8-9c06-d83673c0b575/sist-en-2139-2001)

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#### **ICS:**

49.030.50	Podložke in drugi blokirni elementi	Washers and other locking elements
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**SIST EN 2139:2001**

**en**

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EUROPEAN STANDARD  
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**EN 2139**

March 1989

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Key words : Aircraft industry - Washers - Heat resistant steels - Designation, dimensions

**English version**

**Aerospace series  
Washers, flat  
heat resisting steel**

**Série aérospatiale  
Rondelles plates  
en acier résistant à chaud**

**Luft- und Raumfahrt  
Scheiben  
aus hochwärmfestem Stahl**

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SIST EN 2139:2001

<https://standards.iteh.ai/catalog/standards/sist/70a56e0e-8f66-41d8-9c06-d83673c0b375/EN-EN-2139-2001>  
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Central Secretariat or to any CEN member.

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat : Rue Bréderode 2, B—1000 Bruxelles

### Brief history



ASSOCIATION OF AEROSPACE MANUFACTURERS  
UNION DE FABRICANTS AEROSPATIAUX  
European Association of Aerospace Manufacturers  
ANALJTTUUA

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

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FUNDACIONEAS AEROSPACIALES DE EUROPA

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

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

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## 1 Scope and field of application

This standard specifies the characteristics of flat heat resisting steel washers for use in aerospace applications, at temperatures below 650 °C.

They are intended for use primarily underneath nuts, for use underneath bolt heads the compatibility shall be checked.

## 2 References

EN 2171, Heat resisting steel FE-PA92HT -  $R_m \geq 900$  MPa - Bars - Aerospace series

EN 2175, Heat resisting steel FE-PA93HT, solution treated and precipitation treated - Sheets and strips a  $\leq 3$  mm - Aerospace series

EN 2424, Aerospace series - Identification marking of standard fasteners

EN 2516, Aerospace series - Passivation of corrosion resisting steels 1)

## 3 Required characteristics

### 3.1 Configuration - Dimensions - Tolerances

Configuration shall correspond to the figure ; dimensions and tolerances shall correspond to the figure and table 1.

These dimensions apply after passivation.

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### 3.2 Surface roughness

$R_a = 6,3 \mu\text{m}$  all over unless otherwise specified. The values apply prior to passivation.

### 3.3 Material

Heat resisting steel EN 2171 or EN 2175.

### 3.4 Surface treatment

Passivation EN 2516.

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1) In preparation.

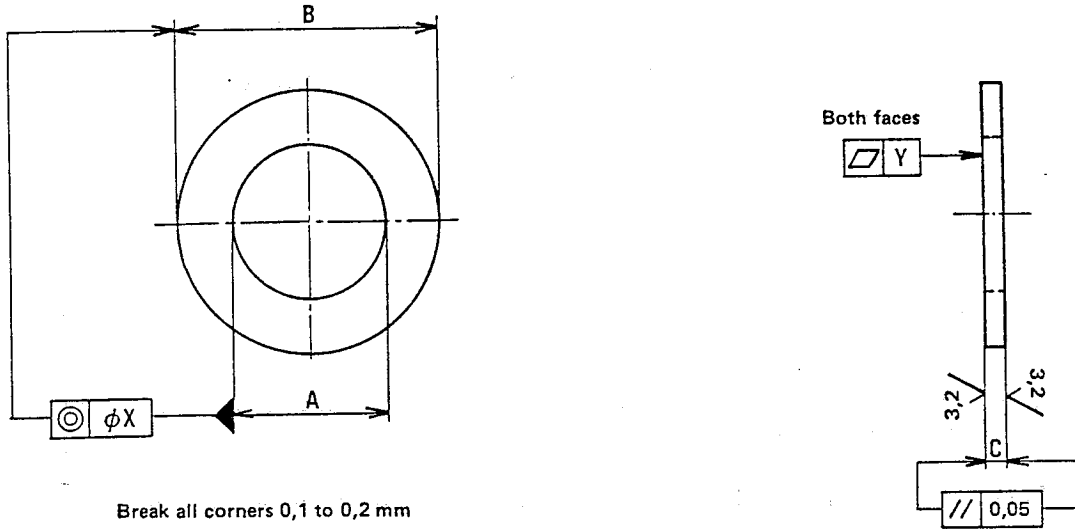


FIGURE – Configuration

**TABLE 1 – Dimensions - Tolerances**  
**(standards.iteh.ai)**

Dimensions in millimetres

Diameter code	A		B h14	C ± 10 %						X	Y
	tol.										
016	1,8	H13	3,2	0,4	—	—	—	—	—	0,3	0,18
020	2,2		4	0,4	—	—	—	—	—		
025	2,7		5	0,5	—	—	—	—	—		
030	3,2		6	0,5	1	—	—	—	—		
035	3,7		7	0,5	1	—	—	—	—		
040	4,3		8	0,5	1	1,6	—	—	—		
050	5,5		10	0,5	1	1,6	—	—	—		
060	6,5		12	0,5	1	1,6	2	—	—		
070	7,5		14	0,5	1	1,6	2	—	—		
080	8,5		16	0,5	1	1,6	2	—	—		
100	10,5		20	—	1	1,6	2	2,5	—		
120	12,5		24	—	1	1,6	2	2,5	—		
140	14,5		26	—	1	1,6	2	—	3,2		
160	16,5		28	—	1	1,6	2	—	3,2		
180	18,5	31	—	1	1,6	2	—	3,2			
200	20,5	35	—	—	1,6	2	—	3,2			
220	22,5	37	—	—	1,6	2	—	3,2			
240	24,5	42	—	—	—	2	—	3,2	0,5	0,25	
270	27,5	47	—	—	—	2	—	3,2			
300	30,5	53	—	—	—	2	—	3,2			
330	33,5	57	—	—	—	2	—	3,2			
360	36,5	63	—	—	—	2	—	3,2			
390	39,5	69	—	—	—	2	—	3,2			

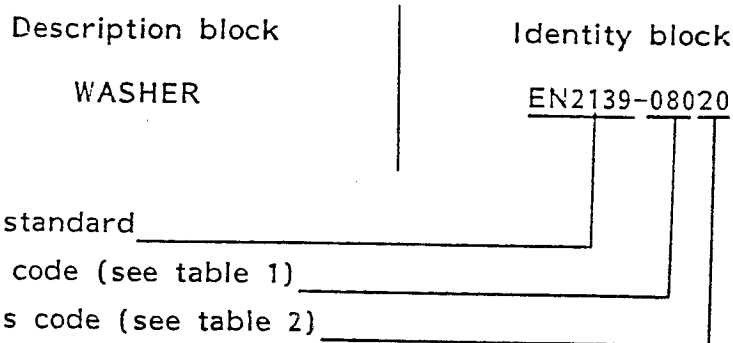
TABLE 2 – Thickness code and masses

Dimensions in millimetres

Thickness	C	0,4	0,5	1,0	1,6	2,0	2,5	3,2	4,0
	Code	04	05	10	16	20	25	32	40
Diameter code	Masses (7,95 kg/dm <sup>3</sup> ) kg/1000 pieces ≈								
016	0,017	–	–	–	–	–	–	–	–
020	0,028	–	–	–	–	–	–	–	–
025	–	0,05	–	–	–	–	–	–	–
030	–	0,08	0,16	–	–	–	–	–	–
035	–	0,11	0,22	–	–	–	–	–	–
040	–	0,14	0,28	0,45	–	–	–	–	–
050	–	0,21	0,43	0,69	–	–	–	–	–
060	–	0,31	0,62	1,00	1,25	–	–	–	–
070	–	0,43	0,86	1,37	1,71	–	–	–	–
080	–	0,56	1,13	1,80	2,25	–	–	–	–
100	–	–	1,77	2,84	3,55	4,44	–	–	–
120	–	–	2,57	4,12	5,14	6,43	–	–	–
140	–	–	2,85	4,57	5,70	–	9,15	–	–
160	–	–	3,14	5,02	6,27	–	10,04	–	–
180	–	–	3,79	6,07	7,58	–	12,15	–	–
200	–	–	4,93	7,90	9,86	–	15,80	–	–
220	–	–	–	8,47	10,57	–	16,94	–	–
240	–	–	–	–	14,26	–	22,85	28,52	–
270	–	–	–	–	17,80	–	28,52	35,60	–
300	–	–	–	–	23,02	–	36,89	46,04	–
330	–	–	–	–	26,06	–	41,76	52,12	–
360	–	–	–	–	32,30	–	51,77	64,61	–
390	–	–	–	–	39,22	–	62,85	78,43	–

#### 4 Designation

Each washer shall only be designated as in the following example :



Note : If necessary the originator code S9005 may be introduced between the description block and the identity block.

#### 5 Marking

EN 2424, style G.

In addition, the quantity shall be introduced (Mass or number).