



# SLOVENSKI STANDARD SIST EN 4020:2009

01-september-2009

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Aerospace series - Pipe coupling 8°30' in titanium alloy - Elbows 90°, welded end with thrust wire nut

Luft- und Raumfahrt - Rohrverschraubung 8°30' aus Titanlegierung - Winkelverschraubungen 90° mit Anschweißende, mit Mutter mit Schubdraht  
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Série aérospatiale - Système de raccordement 8°30' en alliage de titane - Raccords coudés à 90° à souder, avec écrou à jonc  
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**Ta slovenski standard je istoveten z: EN 4020:2009**

**ICS:**

49.080 Š^cp \ žš Ā^• [ |b\ ā @ā|ā} ā ā c { žš Ā^|ā Aerospace fluid systems and components

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 4020**

July 2009

ICS 49.080

Supersedes EN 4020:2001

English Version

## Aerospace series - Pipe coupling 8°30' in titanium alloy - Elbows 90°, welded end with thrust wire nut

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This European Standard was approved by CEN on 12 March 2009.

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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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## Foreword

This document (EN 4020:2009) 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 January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

This document supersedes EN 4020:2001.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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**EN 4020:2009 (E)****1 Scope**

This standard specifies the characteristics of elbows 90°, welded end, with thrust wire nut, for pipe couplings 8°30', in titanium alloy, for aerospace applications.

Nominal pressure: up to 28 000 kPa

Temperature range: – 55 °C to 135 °C

**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.

EN 2424, *Aerospace series — Marking of aerospace products.*

EN 2491, *Aerospace series — Molybdenum disulphide dry lubricants — Coating methods.*

EN 2656, *Aerospace series — Pipe coupling — Coupling end, welded — Geometric configuration.*

EN 3264, *Aerospace series — Pipe coupling 8°30' in titanium alloy — Thrust wire nuts.*

EN 3273, *Aerospace series — Pipe coupling 8°30' — Dynamic beam seal end for elbows, tees and crosses — Geometric configuration.*

EN 3275, *Aerospace series — Pipe coupling 8°30' up to 28 000 kPa — Dynamic beam seal — Metric series — Technical specification.*

EN 3311, *Aerospace series — Titanium alloy TI-P64001 — Annealed — Bar for machining —  $D \leq 150$  mm. <sup>1)</sup>*

EN 3312, *Aerospace series — Titanium alloy TI-P64001 — Grade 2 — Annealed — Forgings —  $D_e \leq 150$  mm. <sup>1)</sup>*

EN 3314, *Aerospace series — Titanium alloy TI-P64001 — Solution treated and aged — Bar for machining —  $D \leq 75$  mm. <sup>1)</sup>*

EN 3315, *Aerospace series — Titanium alloy TI-P64001 — Solution treated and aged — Forgings —  $D_e \leq 75$  mm. <sup>1)</sup>*

EN 4032, *Aerospace series — Pipe coupling 8°30' in titanium alloy — Thrust wire.*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts.*

ISO 5855-3, *Aerospace — MJ threads — Part 3: Limit dimensions for fittings for fluid systems.*

<sup>1)</sup> Published as ASD Prestandard at the date of publication of this standard.

### 3 Required characteristics

#### 3.1 Configuration — Dimensions — Mass

According to Figure 1 and Table 1. The values apply before lubricating.

Dimensions not specified are at the manufacturer's option provided that the qualification and acceptance requirements of EN 3275, type II are met.

#### 3.2 Surface roughness

According to Figure 1, unless otherwise specified in the design documentation.

#### 3.3 Materials

According to EN 3311 or EN 3314, EN 3312 or EN 3315.

#### 3.4 Surface treatment

Welded end without surface treatment min. 10 mm (outside and bore diameters).

Lubrication: according to EN 2491, on contact area between thrust wire and coupling.

Prior to application of the lubricant, the surface shall be abrasive blasted using non-metallic grit.

Film thickness 0,005 mm to 0,013 mm.

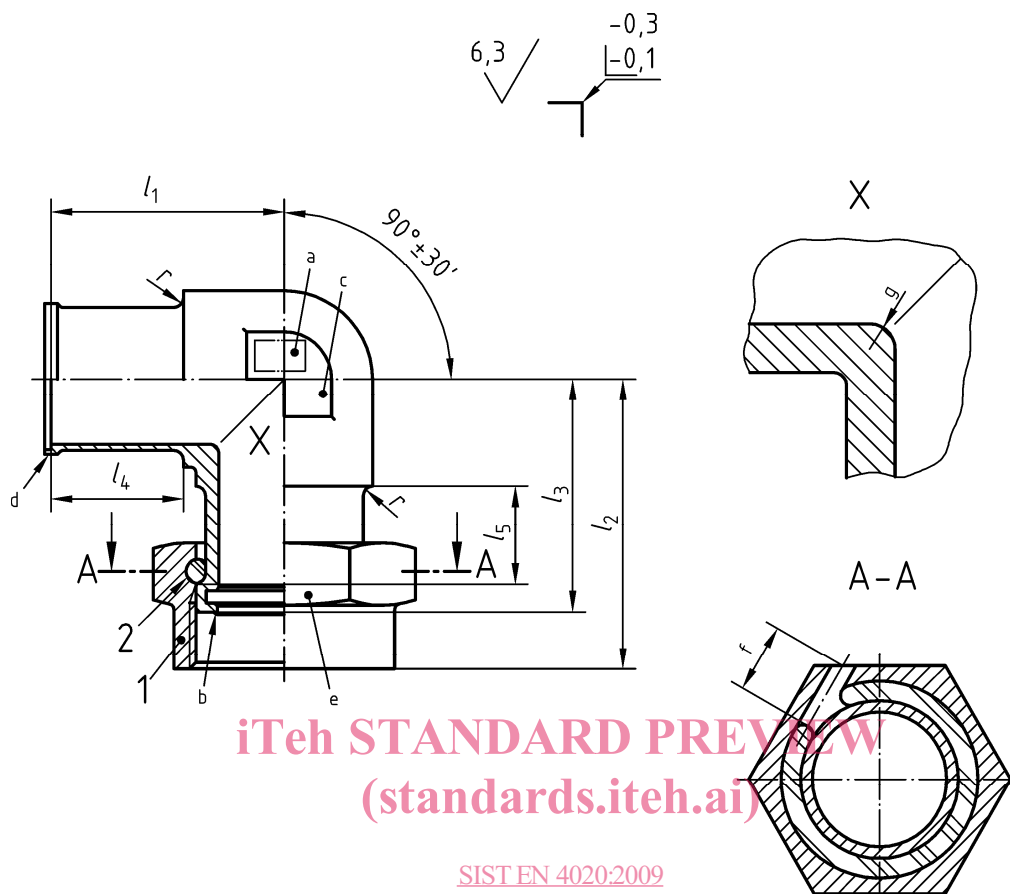
#### 3.5 Internal surface finishing

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Finishing shall give a radius  $R$  of 0,3 mm to 1,0 mm and a surface roughness of 0,8  $\mu\text{m}$ . Hand deburring is not permitted.

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Dimensions in millimetres



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### Key

- |   |                                  |   |                    |
|---|----------------------------------|---|--------------------|
| 1 | Nut according to EN 3264         | e | Across flats $s_1$ |
| 2 | Thrust wire according to EN 4032 | f | Fully inserted     |
| a | Area for marking                 | g | $R$ 0,3 to 1,0     |
| b | According to EN 3273             |   |                    |
| c | Across flats $s_2$               |   |                    |
| d | According to EN 2656             |   |                    |

Figure 1



Table 1

Dimensions in millimetres

Code <sup>a,b</sup>	Thread <sup>c</sup>	$l_1^d$	$l_2$	$l_3^d$	$l_4$	$l_5^e$	$r$	$s_1$	$s_2$	Mass g/piece max.
	4H5H	$\pm 0,2$		$\pm 0,2$	$\pm 0,3$	$\begin{matrix} 0 \\ -0,2 \end{matrix}$	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	h13	h13	
<b>0504</b> <b>0505</b>	MJ10 $\times$ 1	19	24,8	19	14	6,6	1,0	14	8	10,01 10,10
<b>0605</b>	MJ12 $\times$ 1,25	21	27,7	21	15	7,5	1,0	16	9	13,82
<b>0805</b> <b>0806</b>	MJ14 $\times$ 1,5	24	32,6	24	16	9,4	1,0	18	11	16,66 16,82
<b>1005</b> <b>1008</b>	MJ16 $\times$ 1,5	25	33,5	25	16	9,3	1,2	21	13	21,10 21,71
<b>1205</b> <b>1206</b> <b>1209</b>	MJ18 $\times$ 1,5	27	36,2	27	17	10,5	1,2	22	15	28,70 28,96 29,72
<b>1405</b> <b>1408</b> <b>1410</b>	MJ20 $\times$ 1,5	28	37,1	28	19	10,4	1,2	24	16	33,77 34,81 35,44
<b>1605</b> <b>1606</b> <b>1610</b> <b>1612</b>	MJ22 $\times$ 1,5	30	38,9	30	19	10,2	1,2	27	18	46,22 46,62 48,16 48,89
<b>1805</b> <b>1807</b> <b>1810</b> <b>1813</b>	MJ24 $\times$ 1,5	32	41,1	32	19	10,9	1,2	30	21	61,18 62,09 63,38 64,62
<b>2006</b> <b>2007</b> <b>2012</b> <b>2015</b>	MJ27 $\times$ 1,5	35	44,1	35	20	10,9	1,5	32	24	72,27 72,81 75,30 76,74
<b>2208</b> <b>2212</b> <b>2216</b>	MJ30 $\times$ 1,5	37	46,1	37	21	10,8	1,5	36	27	92,36 94,68 96,91
<b>2508</b> <b>2509</b> <b>2514</b> <b>2518</b>	MJ33 $\times$ 1,5	40	49,1	40	23	10,8	1,5	41	30	123,95 124,69 128,28 131,06
<b>2808</b> <b>2810</b> <b>2816</b> <b>2820</b>	MJ36 $\times$ 1,5	43	52,1	43	24	10,8	1,5	46	34	148,91 150,61 155,68 158,92
<b>3210</b> <b>3212</b>	MJ39 $\times$ 1,5	45	53,9	45	25	10,6	1,5	50	36	177,97 180,05

<sup>a</sup> Corresponds to the pipe nominal outside diameter and wall thickness.

<sup>b</sup> Relationship between code and pressure classification according to EN 2656.

<sup>c</sup> According to ISO 5855-3.

<sup>d</sup> Drill depth dimension.

<sup>e</sup> Only applicable when diameter  $d_2$  to EN 3273 is smaller than the actual forging diameter. Differences between these diameters are acceptable.