SLOVENSKI STANDARD
SIST EN 4301:2009

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Aeronavtika - Metode za oznaļevanje delov motorja - Tehniļne zahteve

Aerospace series - Identification marking methods for engine items - Engineering requirements

Luft- und Raumfahrt - Kennzeichnungsverfahren für Triebwerkbauteile - Technische Anforderungen

Série aérospatiale - Méthodes de marquage pour articles moteurs - Exigences techniques

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49.050	Letalski in vesoljski motorji ter pogonski sistemi	Aerospace engines and propulsion systems

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Aerospace series - Identification marking methods for engine items - Engineering requirements

Série aérospatiale - Méthodes de marquage pour articles moteurs - Exigences techniques

Luft- und Raumfahrt - Kennzeichnungsverfahren für Triebwerkbauteile - Technische Anforderungen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 4301:2009) 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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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1 Scope

This standard describes the coding system for marks, the processes used to produce these marks, as well as the general marking requirements for the identification of aerospace engine items.

This document is applicable to items whose engineering drawing or design folder refers to EN 4301 for all issues that are not in contradiction with specific indications appearing on the engineering drawing or in the design folder.

This document is not applicable to items requiring an identification plate.

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 ISO 3098-2, *Technical product documentation — Lettering — Part 2: Latin alphabet, numerals and marks (ISO 3098-2:2000)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
marking
action of affixing one or more marks on a medium

3.2
mark
physical information, composed of legible characters on the item or its packaging

3.3
permanent mark
mark produced by means of a marking process whose characters can only be eliminated by removing material (machining)

3.4
temporary mark
mark produced by means of a marking process whose characters can be easily removed

3.5
character
each of the elements which compose the mark: letter, figure, symbol, separator, etc.

3.6
design authority
person or corporate body who is in charge of the design definition

3.7
design definition
creative activity which, starting from expressed needs, existing means, and technological possibilities, results in the design of a product meeting these needs and industrially feasible

3.8
manufacturer
person or corporate body who masters the design of a product and has complete control over the quality of each item or sample produced

3.9
supplier
person or corporate body party to a business venture, contract, or order they have accepted which commits them, with respect to the customer, to carrying out the provisions stated therein

3.10
production source
person or corporate body who is responsible, with respect to the manufacturer, for manufacturing and inspecting a cast or forged, pre-machined, finished item or material. This may involve a subcontractor or an accessory manufacturer. To the extend that he is given the order, he becomes a producer

3.11
subcontractor
person or corporate body who carries out, on behalf of and under the responsibility of a supplier, all or part of the business venture, contract, or order concluded by the customer

NOTE In the case of Public Contracts, a single subcontractor is not allowed to execute the entire contract entered into by the customer.

4 Symbols and abbreviations

O.C.R. Optical Character Recognition

5 Arrangement of marks

5.1 General

Marks are to be made in the same order as that shown by the combinations for the standard arrangements (alphabetical code) identified by numerical codes given in Table 2 or in accordance with a particular combination indicated in the note on the drawing.

5.2 General arrangement

— character height = h;

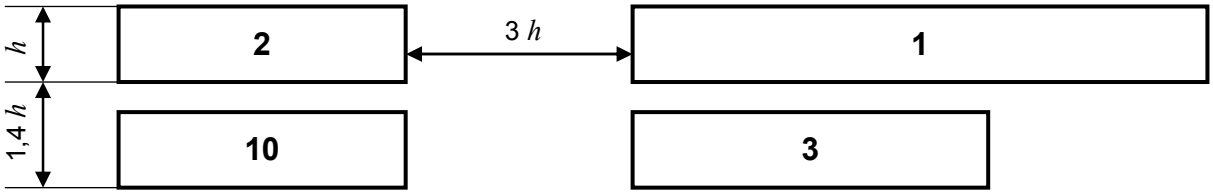
— minimum distance between two marks on the same line: 3 h;

— minimum distance between two successive lines: 1,4 h;

— first character on all lines: aligned on the left;

— any marking placed to the right of the manufacturer's identification number should be at a distance of at least 15 mm from it.

EXAMPLE



2 : Company code (Designer)
1 : Item identification number
10 : Production source's company code
3 : Serialization number

6 Coding system

6.1 Identification marking codes

Identification marking is in accordance with codes specified in Table 1.

Table 1

Code	Marking	Comments
1	Item identification number	Determined by the manufacturer and indicated in design documents, with change letter if applicable.
2	Company code (designer)	Manufacturer's or designer's company code indicated in item's design documents.
3	Serialization number	
4	Production batch number	
5	Material batch number	
6	Production source's company monogram	For small-sized items, can replace production source's company code. Manufacturer must keep the list of producer monograms up to date.
7	Curing date	For elastomer only, should be indicated as follows: year and quarter: 2Q95 or 2T95.
8	Casting number	For foundry only
9	Manufacturing date	With five characters unless otherwise indicated in design documents. Should be shown as follows: – year and week (recommended): 95W26 – or year and month: 9506.
10	Production source's company code	
11	Additional markings	Indicated in design documents.
–	Inspection marking	As this marking is systematic, it is not codified.
–	Concession marking	As this information does not appear in the design documents, it is not codified.

6.2 Standard combinations of identification marks

Standard combination is in accordance with codes specified in Table 2.

Table 2

Code	Combination	Comments
A	2 – 1 – 10 – 3 (1 line)	3 is replaced by 9 for non-serialized items
B	2 – 1 10 – 3 (2 lines)	
C	2 1 10 3 (4 lines)	
D	2 – 1 – 3 – 9 – 7	
E	2 – 1 – 9	
F	2 – 1 – 3 – 9	
G	1 – 3 – 9	
H	1 – 9	
J	2 – 1 – 9 – 7	

6.3 Indication on drawings

6.3.1 General

Codes for the marks to be made, usable marking processes, and notes if needed, are shown in a symbol (see Figure 1) placed on the drawing.

Marking processes or the process family (see Table 3) are preceded by the identification number of this standard, both separated by a dash.

The note or notes are optional and are written out in full on the drawing near the symbol or the title block and designated by one or more numbers.

MARKING Code combination
Process(es) EN4301
Note(s)

Figure 1 — Symbol

MARKING Code combination B
Process(es) EN4301-02F2
Note(s) 1 – 2

Figure 2 — Example of codified symbol

6.3.2 Meaning of codes given in example (Figure 2)

B : Marking arrangement on two lines (in accordance with combination in Table 2 and rules in 5.1).

02F2 : "Dots" marking process, depth of markings 0,03 mm to 0,10 mm (see Table 3).

6.3.3 Understanding Table 3

Examples of writing on drawing		Interpretation
EN4301-02	:	Permits each of the marking processes in the second column (02A to 02F) or each of the processes in the third column (02A1 to 02F3).
EN4301-02C	:	Permits marking processes 02C1 or 02C2.
EN4301-02B1	:	Permits the "shallow press" marking process.
EN4301-B	:	Permits each of the processes marked with an "X" in column B.
EN4301-02B1-D	:	Permits the 02B1 marking process and each of the processes marked with an "X" in column D.
EN4301-02B-DM5	:	Permits the 02B marking process with a character height of 3,20 mm, O.C.R. writing.

Table 3 — Marking method codes, class letter and depth

Method code			Compatibility	Marking method	Depth (mm)		Marking class letter														
1st tier	2nd tier	3rd tier	O.C.R.	See Clause 11.	min.	max.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
Permanent marking methods																					
01				**Integral**																	
	01A			light																	
		01A1		raised	0,13	0,25	X														
		01A2		depressed	0,13	0,25	X														
	01B			intermediate																	
		01B1		raised	0,20	0,89															
		01B2		depressed	0,20	0,89															
	01C			heavy (raised only)	0,8	3,3															
02				**Metal stamp**																	
	02A		X	Hammer																	
		02A1	X	shallow	0,03	0,15		X													
		02A2	X	deep	0,10	0,25	X		X												
	02B		X	Press																	
		02B1	X	shallow	0,03	0,15		X		X											
		02B2	X	deep	0,10	0,25	X		X		X										
	02C			Roll																	
		02C1		shallow	0,03	0,15		X		X		X	X	X							
		02C2		deep	0,10	0,25	X		X		X										
	02D			Vibro peen, manual																	
		02D1		shallow	0,03	0,15		X		X		X		X							
		02D2		deep	0,10	0,25	X		X		X										
	02E			Vibro peen, controlled																	
		02E1		shallow	Legible	0,05												X			
		02E2		deep	0,05	0,15		X	X	X		X		X							
	02F		X	Dot-peening matrix mode (5×7)																	
		02F1	X	shallow	Legible	0,05															
		02F2	X	intermediate	0,03	0,10				X		X	X								
		02F3	X	deep	0,05	0,15		X	X		X	X		X	X						