International Standard 4147

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Metric fasteners for aerospace construction — Hexagon slotted (castellated) nuts — Strength classification 1 100 MPa — Maximum operating temperature 235 °C

Éléments de fixation métriques pour les constructions aérospatiales — Écrous hexagonaux, à créneaux — Classe de résistance 1 100 MPa — *Température maximale d'utilisation* 235 °C

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (*ISO member bodies*). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4147 was developed by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

This second edition was submitted directly to the ISO Council, in accordance with clause 6.11.2 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 4147-1982), which had been approved by the member bodies of the following countries :

Austria	France	Spain
Belgium	Germany, F.R.	Sweden
Brazil	Korea, Rep. of	United Kingdom
Canada	Netherlands	USA
Czechoslovakia	Romania	
Egypt, Arab Rep. of	South Africa, Rep. of	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Italy
USSR

Printed in Switzerland

Metric fasteners for aerospace construction — Hexagon slotted (castellated) nuts — Strength classification 1 100 MPa — Maximum operating temperature 235 °C

0 Introduction

This International Standard is confined to those dimensional characteristics accepted to date. Sub-clauses 4.5, 4.6 and 4.7 will be completed when the relevant International Standards become available. Sub-clauses relating to "Designation" and "Marking" will be added later.

1 Scope

This International Standard specifies requirements for hexagon nuts with the upper portion slotted to receive a split pin.

2 Field of application

These nuts are intended for use in airborne vehicle assemblies, in which the fasteners are mainly subjected to tensile loads, and where positive locking is required between the nut and the companion threaded part.

They are intended to be used with threaded parts of 1 100 MPa[1] tensile strength classification and split pins in conformity with ISO 1234.

The cadmium plating restricts the use of these nuts to a temperature not exceeding 235 °C.

3 References

ISO 128, *Technical drawings — General principles of presentation.*

ISO 286/1, *ISO system for limits and fits — Part 1: Basis for tolerances, deviations and fits.* [2]

ISO 468, *Surface roughness — Parameters, their values and general rules for specifying requirements.*

ISO 1101, *Technical drawings — Geometrical tolerances — Tolerances of form, orientation, location and runout — Generalities, definitions, symbols, indications on drawings.*

ISO 1234, *Split pins — Metric series.*

ISO 1302, *Technical drawings — Method of indicating surface texture on drawings.*

ISO 2692, *Technical drawings — Geometrical tolerancing — Maximum material principle.* [3]

ISO 5855/1, *Aerospace construction — MJ threads — Part 1: Basic profile.*

ISO 5855/2, *Aerospace construction — MJ threads — Part 2: Dimensions for bolts and nuts.*

4 Required characteristics

4.1 Configuration

Configuration shall be in accordance with the figure, which is presented in conformity with ISO 128.

4.2 Dimensions

All linear dimensions are expressed in millimetres; they shall conform with the table and apply after cadmium plating.

Standard tolerance symbols and values for linear dimensions are in conformity with ISO 286/1. Symbols for tolerances of form and position conform with ISO 1101 and ISO 2692.

4.3 Screw threads

MJ threads : ISO 5855.

4.4 Surface roughness

R_a max., in micrometres, $\overset{6,3}{\sqrt{}}$ ($\sqrt{}$) in accordance with ISO 468 and ISO 1302. These values are applicable before cadmium plating. This requirement does not apply to thread where the surface texture will be as achieved by normal methods of manufacture.

4.5 Material and relevant characteristics

Steel. See clause 0.

4.6 Surface treatment

Cadmium plated. See clause 0.

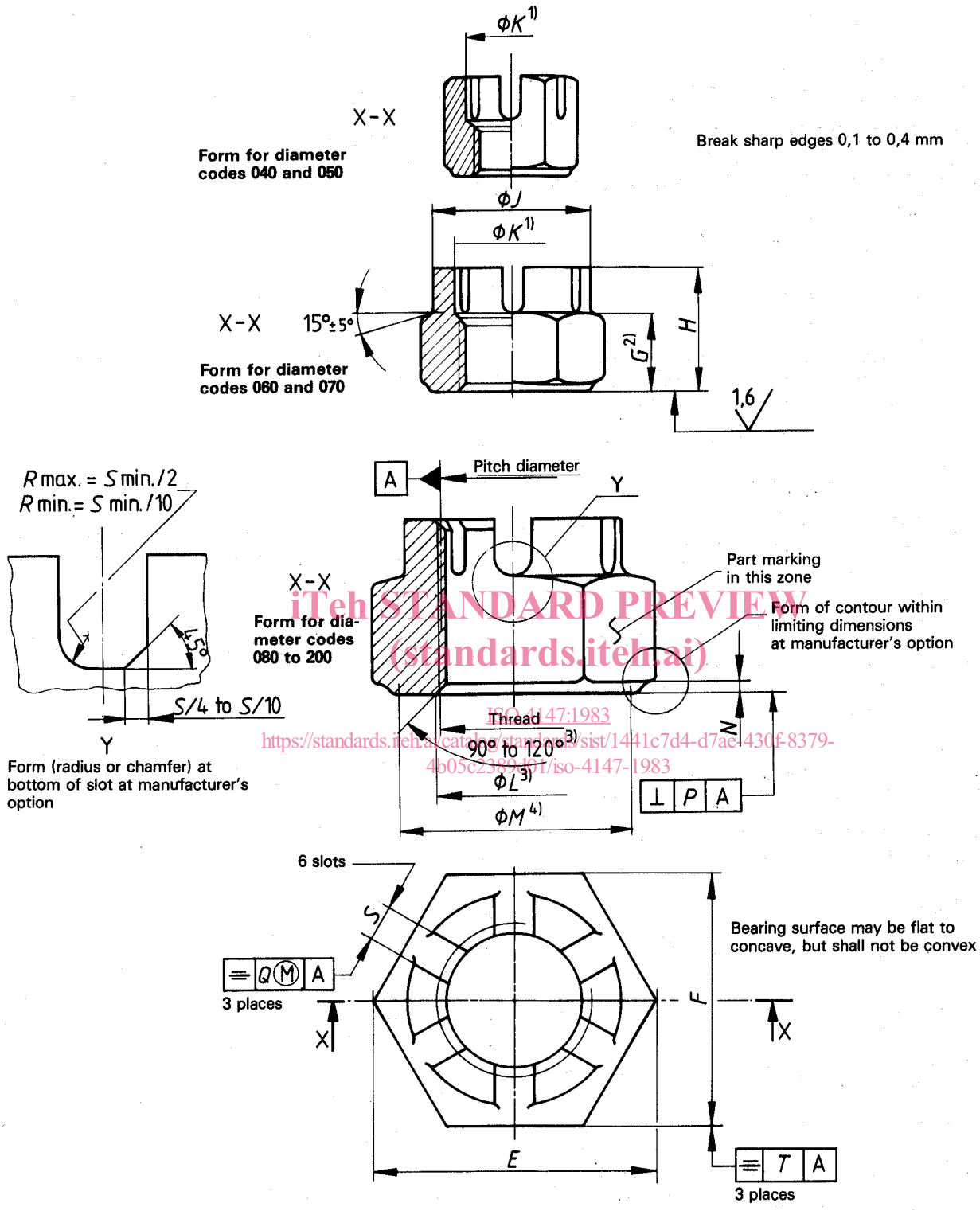
4.7 Procurement specification

See clause 0.

1) This strength class applies at a temperature of 20 °C.

2) At present at the stage of draft. (Revision of ISO/R 286-1962.)

3) At present at the stage of draft. (Revision of ISO 1101/2-1974.)



1) Tool marks permissible within counterbore.

2) Dimension G applies to :

- height below slots (diameter codes 040 to 200)
- height of flats (diameter codes 060 to 200)
- bottom of counterbore (diameter codes 040 to 070)

3) This dimension also applies to the upper chamfer. All forms of entry (chamfer or radius) optional within these limiting dimensions

4) (ϕ) M may be tangential to, but shall not intrude on the flats.

Figure — Configuration

Table — Dimensions and masses

Dimensions in millimetres

Size code	Thread	E	F		G	H	J	K	L		M	N		P	Q	S	T	Mass kg/1000	Split pin max. diameter Reference
		min.			±0,25	±0,25	±0,25	H15	max.	min.	min.	max.	min.			H14		max.	
040	MJ4×0,7–4H6H	7,6	7	h 12	3,0	5,0	—	4	4,8	4,2	6,4	0,5	0,2	0,10	0,2	1,3	0,3	1,3	1,0
050	MJ5×0,8–4H6H	8,7	8	h 12	3,75	6,2	—	5	5,8	5,2	7,4	0,5	0,2	0,10	0,2	1,7	0,3	1,8	1,4
060	MJ6×1–4H5H	10,9	10	h 13	4,5	6,9	9	6	7,1	6,3	9,3	0,5	0,2	0,10	0,2	1,7	0,3	2,8	1,4
070	MJ7×1–4H5H	12,0	11	h 13	5,25	8,1	10	7	8,1	7,3	10,2	0,5	0,2	0,10	0,2	2,1	0,36	3,8	1,8
080	MJ8×1–4H5H	14,3	13	h 13	6,0	8,8	11	—	9,1	8,3	12,2	0,5	0,2	0,10	0,2	2,1	0,36	5,6	1,8
100	MJ10×1,25–4H5H	18,9	17	h 13	7,5	11,1	13	—	11,1	10,3	16,0	0,6	0,3	0,13	0,25	2,6	0,36	11,5	2,3
120	MJ12×1,25–4H5H	21,1	19	h 13	9,0	12,6	16	—	13,1	12,3	18,0	0,6	0,3	0,13	0,25	2,6	0,43	16	2,3
140	MJ14×1,5–4H5H	24,5	22	h 13	10,5	14,9	18	—	15,2	14,4	21,0	0,6	0,3	0,15	0,25	3,2	0,43	24,5	2,9
160	MJ16×1,5–4H5H	26,8	24	h 13	12,0	16,4	22	—	17,2	16,4	23,0	0,6	0,3	0,18	0,3	3,2	0,43	33,5	2,9
180	MJ18×1,5–4H5H	30,2	27	h 13	13,5	18,7	25	—	19,2	18,4	26,0	0,6	0,3	0,18	0,3	4,0	0,43	48,5	3,7
200	MJ20×1,5–4H5H	33,6	30	h 13	15,0	20,2	28	—	21,2	20,4	29,0	0,6	0,3	0,18	0,3	4,0	0,52	66	3,7