INTERNATIONAL STANDARD ISO 4095

Fasteners for aerospace construction — Bi-hexagonal wrenching configuration

Éléments de fixation pour constructions aérospatiales — Entraînement bihexagonal

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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 4095 was developed by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, and was circulated to the member bodies in March 1977.

It has been approved by the member bodies of the following countries :

Australia	Germany	Poland
Austria	India	Romania
Belgium	Ireland	South Africa, Rep. of
Brazil	Italy	Spain
Chile	Japan	Sweden
Czechoslovakia	Korea, Rep. of	United Kingdom
France	Netherlands	U.S.S.R.

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

Canada
U.S.A.

Fasteners for aerospace construction — Bi-hexagonal wrenching configuration

1 SCOPE

This International Standard lays down the maximum and minimum dimensional requirements for a bi-hexagonal wrenching configuration for metric fasteners. The configuration described is a design standard.

2 FIELD OF APPLICATION

This International Standard applies to fasteners used in aerospace construction.

3 REFERENCES

ISO/R 128, *Engineering drawing — Principles of presentation.* [1]

ISO/R 286, *ISO System of limits and fits — Part 1 : General, tolerances and deviations.*

4 REQUIRED CHARACTERISTICS

The dimensions of the wrenching configurations shall be as shown in the figure and as given in table 2.

Table 2 defines the bi-hexagonal wrenching configuration maximum and minimum material conditions.

Variations in size, form, and position of the bi-hexagon are permitted within the wrenching length, provided that the actual profile falls within the maximum and minimum material conditions shown in the figure.

Nominal across flat wrenching size values shall be those given in table 2.

The tolerances on across flats dimensions B shall be in accordance with the values given in table 1.

TABLE 1 — Tolerances

Across flats dimensions	Tolerance class
$B \leqslant 12$ mm	h12
$B > 12$ mm	h13

The above tolerances and the values of B_{max} and B_{min} given in table 2 are applicable to self-locking nuts before deformation. Deformation shall not prevent the assembly of the wrench on the fastener.

Dimensions across corners are derived as follows :

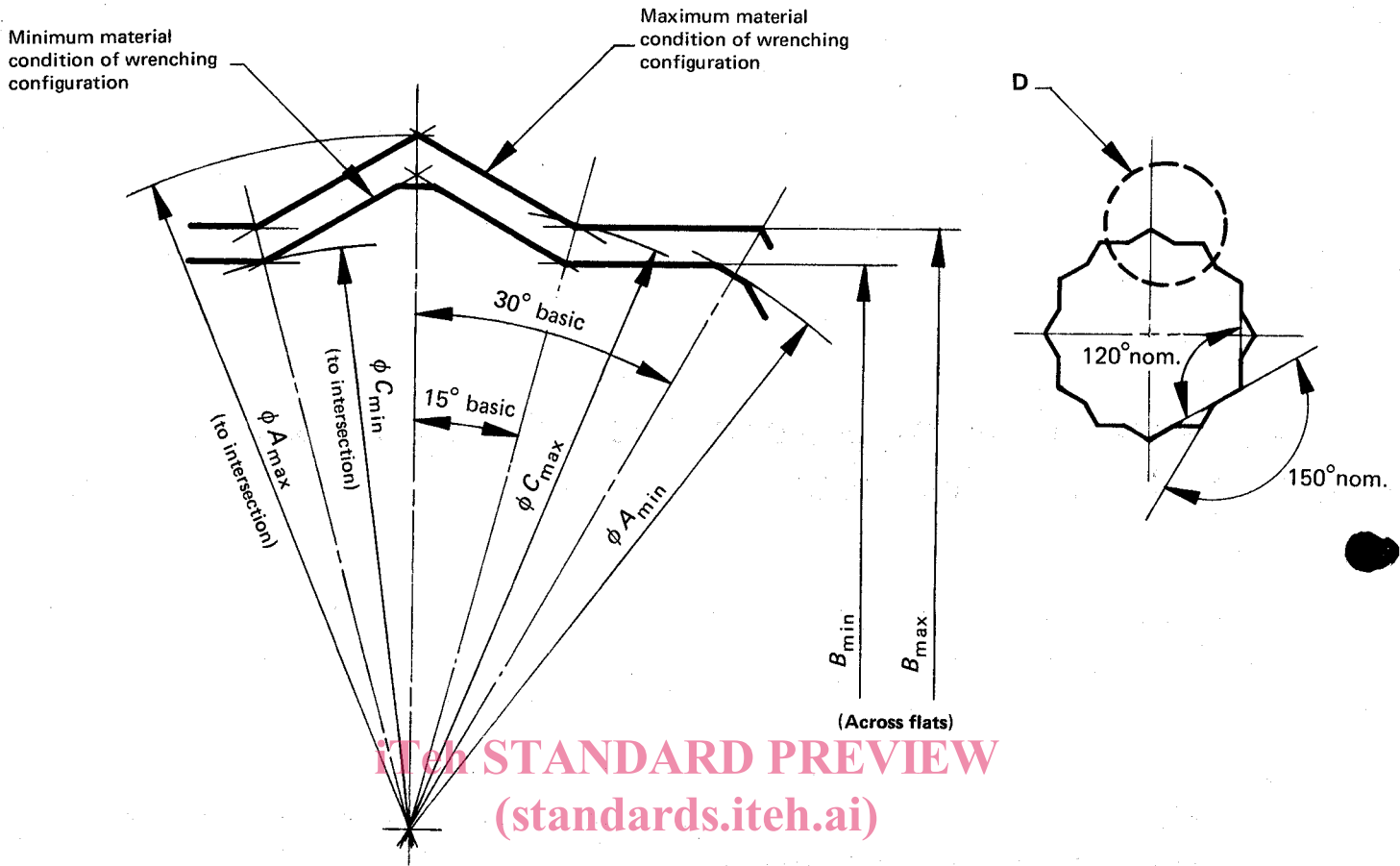$\phi A_{min} = 1,135 \times B_{min}$ (for h12 toleranced parts)

$\phi A_{min} = 1,14 \times B_{min}$ (for h13 toleranced parts)

$\phi A_{max} = 1,154\,7 \times B_{max}$

$\phi C_{min} = 1,035\,276 \times B_{min}$

$\phi C_{max} = 1,043 \times B_{max}$

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1) Under revision.

Enlarged view **D**

FIGURE — Plan view of bi-hexagonal wrenching configuration

TABLE 2 — Dimensions for bi-hexagonal wrenching configuration

Values in millimetres

Nominal wrenching size	Maximum material condition			Minimum material condition		
	ϕA_{max}	B_{max}	ϕC_{max}	ϕA_{min}	B_{min}	ϕC_{min}
05	5,77	5	5,22	5,54	4,88	5,05
06	6,93	6	6,26	6,67	5,88	6,09
07	8,08	7	7,30	7,77	6,85	7,09
08	9,24	8	8,34	8,91	7,85	8,13
09	10,39	9	9,39	10,04	8,85	9,16
10	11,55	10	10,43	11,18	9,85	10,20
12	13,86	12	12,52	13,42	11,82	12,24
14	16,17	14	14,60	15,65	13,73	14,21
17	19,63	17	17,73	19,07	16,73	17,32
19	21,94	19	19,82	21,28	18,67	19,33
22	25,40	22	22,95	24,70	21,67	22,43
24	27,71	24	25,03	26,98	23,67	24,50
27	31,18	27	28,16	30,40	26,67	27,61
30	34,64	30	31,29	33,82	29,67	30,72
32	36,95	32	33,38	36,04	31,61	32,73
36	41,57	36	37,55	40,60	35,61	36,87