International Standard 691

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

Wrench and socket openings — Metric series — Tolerances for general use

Ouvertures de clés et d'embouts de serrage — Série métrique — Tolérances d'usage courant

Second edition — 1983-11-01

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Descriptors : tools, assembly tools, wrenches, socket wrenches, dimensional tolerances.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 691 was developed by Technical Committee ISO/TC 29, *Small tools*, and was circulated to the member bodies in July 1981.

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

Australia	India	South Africa, Rep. of
Austria	Israel	Spain
Belgium	Italy	Sri Lanka
Brazil	Japan	Sweden
Czechoslovakia	Korea, Dem. P. Rep. of	Switzerland
Egypt, Arab Rep. of	Korea, Rep. of	USSR
France	Mexico	Yugoslavia
Germany, F. R.	Poland	
Hungary	Romania	

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

United Kingdom
USA

This second edition cancels and replaces the first edition (i.e. ISO 691-1975).

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Wrench and socket openings — Metric series — Tolerances for general use

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1 Scope and field of application

This International Standard specifies tolerances on wrench and socket openings for bolts and nuts (or similar parts) having metric across flat dimensions, as shown diagrammatically below.

It gives, for each dimension, the tolerance for general use, defined by its two deviations, minimum and maximum, with respect to the nominal value.

These deviations have been determined in relation to the across flat tolerances for bolts and nuts specified in ISO 4759/1 and with regard to the manufacture of tightening tools.

The nominal dimensions given in the table cover, in addition to the standard values of the metric widths across flats specified in ISO 272, a certain number of possible intermediate values which are indicated in brackets.

Although the inch series of widths across flats no longer appears in ISO 272, it has been considered useful to include intermediate values in inches for tolerances on wrench and socket openings for bolts and nuts having across flat dimensions in inches, as an annex to this International Standard.

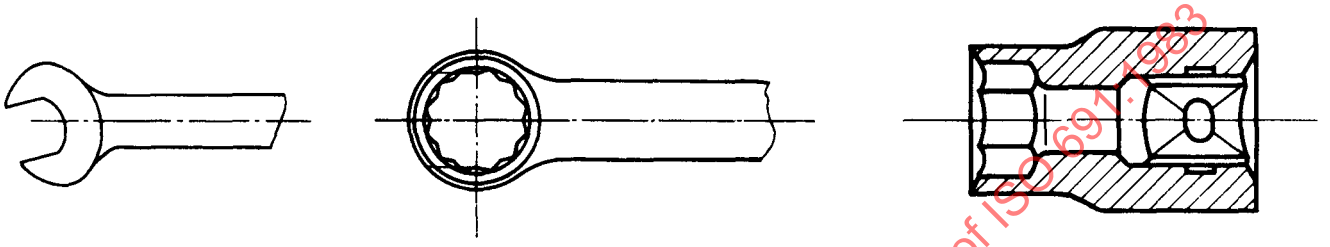
2 References

ISO 272, *Fasteners — Hexagon products — Widths across flats.*

ISO 4759/1, *Tolerances for fasteners — Part 1 : Bolts, screws and nuts with thread diameters* > 1,6 *and* < 150 mm *and product grades A, B and C.*

3 Tolerances

The tolerances are given in the table.



Dimensions in millimetres

Nominal dimensions	Tolerances on wrench and socket openings			
	Machined closed or open		Unmachined closed	
	Deviations		Deviations	
	min.	max.	min.	max.
3,2	+ 0,02	+ 0,08		
4 – 5 – 5,5	+ 0,02	+ 0,12		
(6) – 7	+ 0,03	+ 0,15		
8 – (9)	+ 0,03	+ 0,15	+ 0,03	+ 0,18
10 – 11	+ 0,04	+ 0,19	+ 0,04	+ 0,24
(12) – 13	+ 0,04	+ 0,24	+ 0,04	+ 0,30
(14) – 15 – 16	+ 0,05	+ 0,27	+ 0,05	+ 0,35
(17) – 18	+ 0,05	+ 0,30	+ 0,05	+ 0,40
(19) – (20) – 21 – (22) – (23) – 24 – (25)	+ 0,06	+ 0,36	+ 0,06	+ 0,46
(26) – 27 – (28) – 30 – (32)	+ 0,08	+ 0,48	+ 0,08	+ 0,58
34 – 36 – 41 – 46 – 50	+ 0,10	+ 0,60	+ 0,10	+ 0,70
55 – 60 – 65 – 70	+ 0,12	+ 0,72	+ 0,12	+ 0,92
75 – 80 – 85 – 90 – 95 – 100	+ 0,15	+ 0,85	+ 0,15	+ 1,15
105 – 110 – 115 – 120 – 130 – 135 – 145	+ 0,20	+ 1,00	+ 0,20	+ 1,40
150 – 155 – 165 – 170 – 175 – 180 – 185 190 – 200 – 210	+ 0,25	+ 1,25	–	–

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Annex

Values in inches

Nominal dimensions[1]	Tolerances on wrench and socket openings			
	Machined closed or open		Unmachined closed	
	Deviations[2]		Deviations[2]	
	min.	max.	min.	max.
3/16 (4,77)	+ 0.001 (+ 0,02)	+ 0.005 (+ 0,12)		
1/4 — 5/16 — 11/32 — 3/8 (6,35 — 7,94 — 8,73 — 9,52)	+ 0.001 (+ 0,03)	+ 0.006 (+ 0,15)		
7/16 (11,11)	+ 0.002 (+ 0,04)	+ 0.008 (+ 0,19)	+ 0.002 (+ 0,04)	+ 0.009 (+ 0,24)
1/2 (12,70)	+ 0.002 (+ 0,04)	+ 0.009 (+ 0,24)	+ 0.002 (+ 0,04)	+ 0.012 (+ 0,30)
9/16 — 5/8 (14,29 — 15,87)	+ 0.002 (+ 0,05)	+ 0.011 (+ 0,27)	+ 0.002 (+ 0,05)	+ 0.013 (+ 0,35)
11/16 (17,46)	+ 0.002 (+ 0,05)	+ 0.012 (+ 0,30)	+ 0.002 (+ 0,05)	+ 0.016 (+ 0,40)
3/4 — 13/16 — 7/8 — 15/16 — 1 (19,05 — 20,64 — 22,22 — 23,81 — 25,40)	+ 0.002 (+ 0,06)	+ 0.014 (+ 0,36)	+ 0.002 (+ 0,06)	+ 0.018 (+ 0,46)
1 1/16 — 1 1/8 — 1 1/4 (26,99 — 28,57 — 31,75)	+ 0.003 (+ 0,08)	+ 0.019 (+ 0,48)	+ 0.003 (+ 0,08)	+ 0.023 (+ 0,58)
1 5/16 — 1 3/8 — 1 7/16 — 1 1/2 — 1 5/8 (33,34 — 34,92 — 36,51 — 38,10 — 41,27)	+ 0.004 (+ 0,10)	+ 0.024 (+ 0,60)	+ 0.004 (+ 0,10)	+ 0.028 (+ 0,70)
1 11/16 — 1 13/16 — 1 7/8 — 2 — 2 1/16 (42,86 — 46,04 — 47,62 — 50,80 — 52,39)				
2 3/16 — 2 1/4 — 2 3/8 (55,56 — 57,15 — 60,32)	+ 0.005 (+ 0,12)	+ 0.028 (+ 0,72)	+ 0.005 (+ 0,12)	+ 0.036 (+ 0,92)

1) The conversion to millimetres is given in parentheses.

2) The corresponding values in millimetres (as in the main part of this International Standard) are given in parentheses.

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