INTERNATIONAL STANDARD

ISO 2725-2

Second edition
2007-02-15

Assembly tools for screws and nuts — Square drive sockets —

Part 2: Machine-operated sockets ("impact")

Outils de manœuvre pour vis et écrous — Douilles à carré conducteur femelle —

Partie 2: Douilles à machine («impact»)

Reference number
ISO 2725-2:2007(E)

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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 preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 2725-2 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This second edition cancels and replaces the first edition (ISO 2725-2:1996), which has been technically revised.

ISO 2725 consists of the following parts, under the general title *Assembly tools for screws and nuts — Square drive sockets*:

— *Part 1: Hand-operated sockets*

— *Part 2: Machine-operated sockets ("impact")*

— *Part 3: Machine-operated sockets ("non-impact") — Dimensions*

Assembly tools for screws and nuts — Square drive sockets —

Part 2:
Machine-operated sockets (“impact”)

1 Scope

This part of ISO 2725 specifies dimensions, the designation and the marking of machine-operated “impact” square drive sockets with operating end having a hexagonal or double hexagonal form in accordance with ISO 1174-2.

Hand-operated sockets are dealt with in ISO 2725-1.

NOTE 1 Machine-operated “impact” square drive sockets are listed under number 2 2 02 01 0 in ISO 1703.

NOTE 2 The figures in this part of ISO 2725 are given only as examples. They are not intended to influence the manufacturer's design.

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.

ISO 272, *Fasteners — Hexagon products — Width across flats*

ISO 691, *Assembly tools for screws and nuts — Wrench and socket openings — Tolerances for general use*

ISO 1174-2, *Assembly tools for screws and nuts — Driving squares — Part 2: Driving squares for power socket tools*

ISO 1711-2, *Assembly tools for screws and nuts — Technical specifications — Part 2: Machine-operated sockets (impact)*

ISO 4014, *Hexagon head bolts — Product grades A and B*

3 Tolerances for width across flats

Tolerances for width across flats, s, shall be in conformity with the tolerances for socket openings given in ISO 691. Manufacturers are free to choose the series of deviations.

4 Dimensions

Tables 1 to 7 give the dimensions, in millimetres, of sockets shown in Figures 1 to 3 for driving squares of 6,3 mm to 40 mm (in accordance with ISO 1174-2). Tables 8 and 9 give the dimensions, in millimetres, of the retaining pin and the dimensions of the retaining ring respectively, shown in Figure 4.

Width across flats shall be according to ISO 272.

When using male square drive Form E according to ISO 1174-2, guide-ways in both possible connection positions are at the manufacturer's discretion.

5 Technical specifications

The technical specifications shall be in accordance with ISO 1711-2.

6 Designation

A machine-operated square drive socket in accordance with this part of ISO 2725 shall be designated by:

a) "Hex socket" or "Bi-hex socket" depending on its form;

b) reference to this part of ISO 2725 (i.e. ISO 2725-2);

c) square drive dimensions, in millimetres;

d) width across flats, in millimetres;

e) type.

EXAMPLE A double hexagon machine-operated square drive socket "impact" with 12,5 mm square drive size and width across flats s = 10 mm is designated as follows:

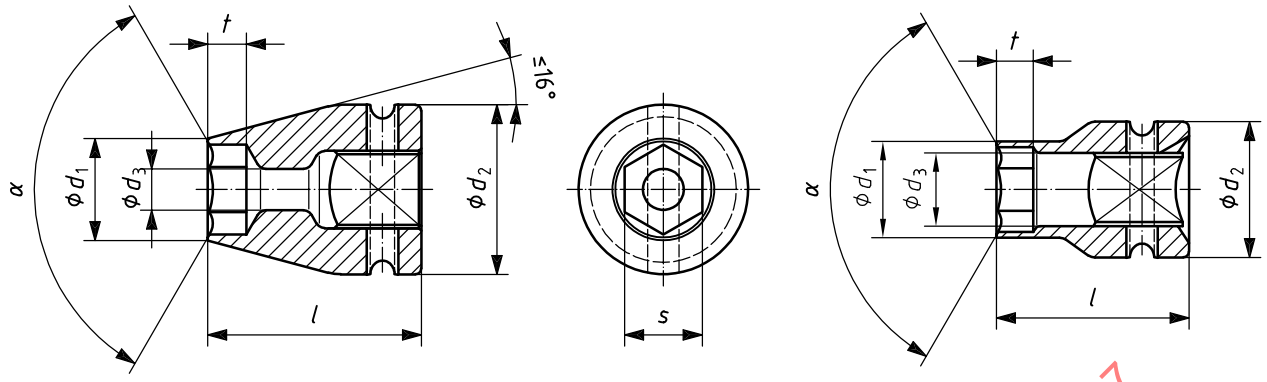
Bi-hex impact socket ISO 2725-2 - 12,5 × 10

7 Marking

The machine-operated "impact" square drive socket shall be marked, permanently and legibly, with at least the following information:

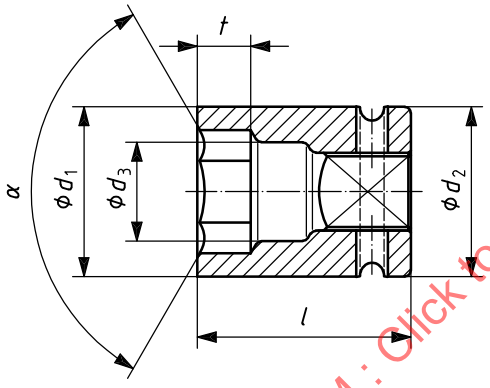
— the name or trademark of the manufacturer (or supplier);

— the width across flats.



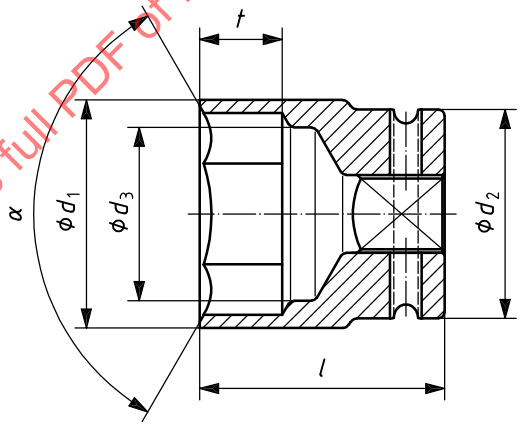
α: $115° \leqslant \alpha \leqslant 150°$

Figure 1 — Sockets with $d_1 < d_2$



α: $115° \leqslant \alpha \leqslant 150°$

Figure 2 — Sockets with $d_1 = d_2$



α: $115° \leqslant \alpha \leqslant 150°$

Figure 3 — Sockets with $d_1 > d_2$

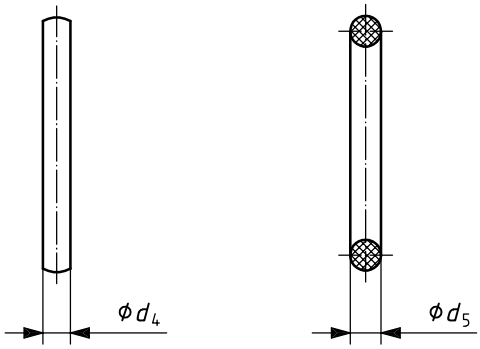


Figure 4 — Retaining pin and ring

Table 1 — Square drive of 6,3 mm

s	t [a]	d_1	d_2	d_3	l	
	min.	max.	max.	min. Bolt clearance hole	max. Type A (normal)	min. Type B (long)
3,2	1,8	6,8	14	1,9	25	45
4	2,1	7,8	14	2,4	25	45
5	2,5	9,1	14	3	25	45
5,5	2,9	9,7	14	3,6	25	45
7	3,7	11,6	14	4,8	25	45
8	5,2	12,8	14	6	25	45
10	5,7	15,3	16	7,2	25	45
11	6,6	16,6	16,6	8,4	25	45
13	7,3	19,1	19,1	9,6	25	45
15	8,3	21,6	22	11,3	30	45
16	8,9	22	22	12,3	35	45

[a] $t_{min} = k_{max} + 0,5$; (k_{max}, height of head, according to ISO 4014).

Table 2 — Square drive of 10 mm

s	t [a]	d_1	d_2	d_3	l	
	min.	max.	max.	min. Bolt clearance hole	max. Type A (normal)	min. Type B (long)
7	3,7	12,8	20	4,8	34	44
8	5,2	14,1	20	6	34	44
10	5,7	16,6	20	7,2	34	44
11	6,6	17,8	20	8,4	34	44
13	7,3	20,3	28	9,6	34	44
15	8,3	22,8	28	11,3	34	45
16	8,9	24,1	28	12,3	34	50
18	11,3	26,6	28	14,4	34	54
21	13,3	30,6	34	16,8	34	54
24	15,3	34,3	34	19,2	34	54

[a] $t_{min} = k_{max} + 0,5$; (k_{max}, height of head, according to ISO 4014).

Table 3 — Square drive of 12,5 mm

s	t [a] min.	d_1 max.	d_2 max.	d_3 min. Bolt clearance hole	l max. Type A (normal)	l min. Type B (long)
8	5,2	15,5	28	6	40	75
10	5,7	17,8	28	7,2	40	75
11	6,6	19	28	8,4	40	75
13	7,3	21,5	28	9,6	40	75
15	8,3	24	37	11,3	40	75
16	8,9	25,3	37	12,3	40	75
18	11,3	27,8	37	14,4	40	75
21	13,3	31,5	37	16,8	40	75
24	15,3	36	37	19,2	45	75
27	17,1	39	39	21,6	50	75
30	18,5	44,6	44,6	24	50	75
34	20,2	49,5	49,5	26,4	50	75

a $t_{min} = k_{max} + 0,5$; (k_{max}, height of head, according to ISO 4014).

Table 4 — Square drive of 16 mm

s	t [a] min.	d_1 max.	d_2 max.	d_3 min. Bolt clearance hole	l max. Type A (normal)	l min. Type B (long)
15	8,3	26,3	35	11,3	48	85
16	8,9	27,5	35	12,3	48	85
18	11,3	30	35	14,4	48	85
21	13,3	33,8	35	16,8	48	85
24	15,3	37,5	37,5	19,2	51	85
27	17,1	41,3	41,3	21,6	51	85
30	18,5	45	45	24	51	85
34	20,2	50	50	26,4	55	85
36	22	52,5	52,5	28,8	55	85

a $t_{min} = k_{max} + 0,5$; (k_{max}, height of head, according to ISO 4014).

Table 5 — Square drive of 20 mm

s	t [a] min.	d_1 max.	d_2 max.	d_3 min. Bolt clearance hole	l max. Type A (normal)	l min. Type B (long)
18	11,3	32,4	48	14,4	51	85
21	13,3	36,1	48	16,8	51	85
24	15,3	39,9	48	19,2	51	85
27	17,1	43,6	48	21,6	54	85
30	18,5	47,4	48	24	54	85
34	20,2	52,4	58	26,4	58	85
36	22	54,9	58	28,8	58	85
41	24,7	61,1	61,1	32,4	63	85
46	26,1	67,4	67,4	36	63	100
50	28,6	74	74	39,6	89	100
55	31,5	80	80	43,2	95	100
60	33,9	86	86	45,6	100	100

[a] $t_{min} = k_{max} + 0,5$; (k_{max}, height of head, according to ISO 4014).

Table 6 — Square drive of 25 mm

s	t [a] min.	d_1 max.	d_2 max.	d_3 min. Bolt clearance hole	l max. Type A (normal)
27	17,1	46,7	58	21,6	60
30	18,5	50,4	58	24	62
34	20,2	55,4	58	26,4	63
36	22	57,9	58	28,8	67
41	24,7	64,2	68	32,4	70
46	26,1	70,4	68	36	76
50	28,6	75,4	68	39,6	82
55	31,5	81,7	68	43,2	87
60	33,9	87,9	68	45,6	91
65	34,5	95,9	70,6	50,4	110
70	36,5	98	70,6	55,2	116

[a] $t_{min} = k_{max} + 0,5$; (k_{max}, height of head, according to ISO 4014).

Table 7 — Square drive of 40 mm

s	t [a] min.	d_1 max.	d_2 max.	d_3 min. Bolt clearance hole	l max. Type A (normal)
36	22	64,2	86	28,8	84
41	24,7	70,4	86	32,4	84
46	26,1	76,7	86	36	87
50	28,6	81,7	86	39,6	90
55	31,5	87,9	86	43,2	90
60	33,9	94,2	86	45,6	95

[a] $t_{min} = k_{max} + 0{,}5$; ($k_{max}$, height of head, according to ISO 4014).

Table 8 — Retaining pin

Driving square	d_4 min.	d_4 max.
6,3	1,4	2,0
10	2,4	2,9
12,5	2,9	4
16	2,9	4
20	3,8	4,8
25	4,8	6,0
40	5,8	7,0

Table 9 — Retaining ring

Driving square	d_5
6,3	2,5
10	3,5
12,5	4
16	4,5
20	5
25	7
40	10