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## Cross-recessed cheese head screws

*Vis à métaux à tête cylindrique à empreinte cruciforme*





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## Foreword

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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 7048 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 10, *Product standards for fasteners*.

This second edition cancels and replaces the first edition (ISO 7048:1998), of which it constitutes a minor revision.



# Cross-recessed cheese head screws

## 1 Scope

This International Standard specifies the characteristics of cross-recessed cheese head screws of product grade A, with threads from M2,5 to M8 inclusive, and with cross recesses of types H and Z.

NOTE The head dimensions of these screws are identical to those of the slotted cheese head screws in ISO 1207.

If, in special cases, specifications others than those listed in this International Standard are required, they can be selected from existing International Standards, for example ISO 261, ISO 888, ISO 898-1, ISO 965-2, ISO 3506-1 and ISO 4759-1.

## 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 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 261, *ISO general purpose metric screw threads — General plan*

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-1, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1: Bolts, screws and studs*

ISO 4042, *Fasteners — Electroplated coatings*

ISO 4757, *Cross recesses for screws*

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

ISO 6157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements*

ISO 8839, *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals*

ISO 8992, *Fasteners — General requirements for bolts, screws, studs and nuts*

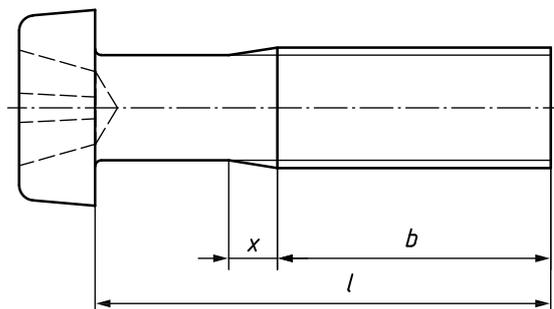
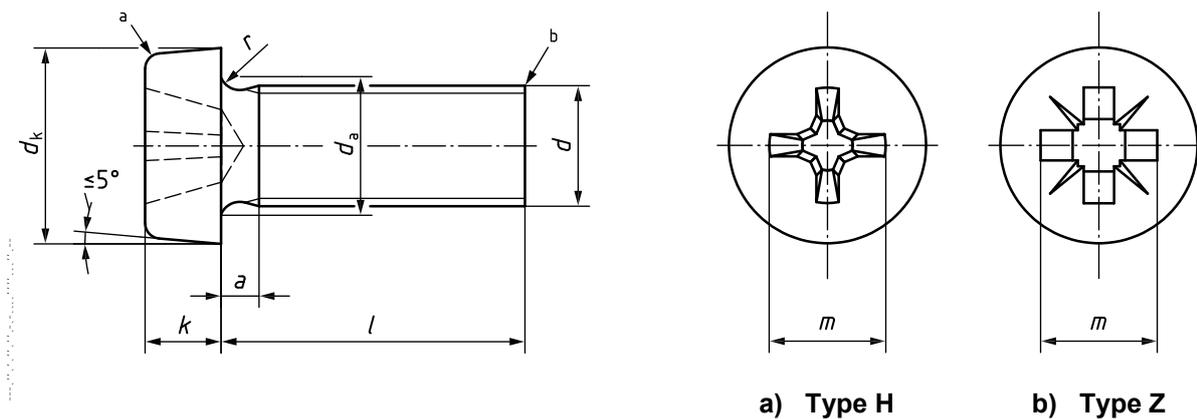
ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

### 3 Dimensions

See Figure 1 and Table 1.

The shank diameter is approximately equal to the pitch diameter or equal to the permissible major thread diameter.

The symbols and descriptions of dimensions are specified in ISO 225.



- a Edge may be rounded or flat.
- b As-rolled end.

Figure 1

Table 1 — Dimensions

Dimensions in millimetres

Thread, $d$			M2,5	M3	(M3,5) <sup>a</sup>	M4	M5	M6	M8	
$p^b$			0,45	0,5	0,6	0,7	0,8	1	1,25	
$a$	max.		0,9	1	1,2	1,4	1,6	2	2,5	
$b$	min.		25	25	38	38	38	38	38	
$d_k$	max.		4,50	5,50	6,00	7,00	8,50	10,00	13,00	
	min.		4,32	5,32	5,82	6,78	8,28	9,78	12,73	
$d_a$	max.		3,1	3,6	4,1	4,7	5,7	6,8	9,2	
$k$	max.		1,80	2,00	2,40	2,60	3,30	3,9	5,0	
	min.		1,66	1,86	2,26	2,46	3,12	3,6	4,7	
$r$	min.		0,1	0,1	0,1	0,2	0,2	0,25	0,4	
$x$	max.		1,1	1,25	1,5	1,75	2	2,5	3,2	
Cross recess	Recess No.		<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	
	Type H	$m$	ref.	2,7	3,5	3,8	4,1	4,8	6,2	7,7
		Penetration	min.	1,20	0,86	1,15	1,45	2,14	2,25	3,73
			max.	1,62	1,43	1,73	2,03	2,73	2,86	4,36
	Type Z	$m$	ref.	2,4	3,5	3,7	4,0	4,6	6,1	7,5
		Penetration	min.	1,10	1,22	1,34	1,60	2,26	2,46	3,88
			max.	1,35	1,47	1,80	2,06	2,72	2,92	4,34
	$l^c$			Approximate mass in kilograms per 1 000 pieces ( $\rho = 7,85 \text{ kg/dm}^3$ ) (for information only)						
nom.	min.	max.								
<b>2</b>	1,8	2,2								
<b>3</b>	2,8	3,2	0,272							
<b>4</b>	3,76	4,24	0,302	0,515						
<b>5</b>	4,76	5,24	0,332	0,560	0,786	1,09				
<b>6</b>	5,76	6,24	0,362	0,604	0,845	1,17	2,06			
<b>8</b>	7,71	8,29	0,422	0,692	0,966	1,33	2,20	3,56		
<b>10</b>	9,71	10,29	0,482	0,780	1,08	1,47	2,55	3,92	7,85	
<b>12</b>	11,65	12,35	0,542	0,868	1,20	1,63	2,80	4,27	8,49	
<b>16</b>	15,65	16,35	0,662	1,04	1,44	1,95	3,30	4,98	9,77	
<b>20</b>	19,58	20,42	0,782	1,22	1,68	2,25	3,78	5,69	11,0	
<b>25</b>	24,58	25,42	0,932	1,44	1,98	2,64	4,40	6,56	12,6	
<b>30</b>	29,58	30,42		1,66	2,28	3,02	5,02	7,45	14,2	
<b>35</b>	34,5	35,5			2,57	3,41	5,62	8,25	15,8	
<b>40</b>	39,5	40,5				3,80	6,25	9,20	17,4	
<b>45</b>	44,5	45,5					6,88	10,0	18,9	
<b>50</b>	49,5	50,5					7,50	10,9	20,6	
<b>60</b>	59,05	60,95						12,7	23,7	
<b>70</b>	69,05	70,95							26,8	
<b>80</b>	79,05	80,95							29,8	
NOTE Preferred lengths are those between the solid, bold, stepped lines.										
<sup>a</sup> The size in parentheses should be avoided, if possible.										
<sup>b</sup> $P$ is the pitch of the thread.										
<sup>c</sup> Screws with nominal lengths above the discontinuous line are threaded up to the head ( $b = l - a$ ).										

## 4 Requirements and reference International Standards

See Table 2.

**Table 2 — Requirements and reference International Standards**

Material		Steel	Stainless steel	Non-ferrous metal
<b>General requirements</b>	International Standard	ISO 8992		
	Tolerance class	6g		
<b>Thread</b>	International Standard	ISO 261, ISO 965-2		
	Property class	4.8, 5.8	A2-70	Materials are specified in ISO 8839.
<b>Mechanical property<sup>a</sup></b>	International Standard	ISO 898-1	ISO 3506-1	
	<b>Tolerance</b>	Product grade	A	
International Standard		ISO 4759-1		
<b>Cross recesses</b>		ISO 4757		
<b>Finish — Coating</b>		As processed Requirements for electroplating are specified in ISO 4042. Requirements for non-electrolytically applied zinc flake coatings are specified in ISO 10683.	As processed	As processed Requirements for electroplating are specified in ISO 4042.
		Additional requirements or other finishes or coatings shall be agreed between the supplier and the purchaser.		
<b>Surface integrity</b>		Limits for surface discontinuities are specified in ISO 6157-1.	—	—
<b>Acceptability</b>		Acceptance inspection is specified in ISO 3269.		

<sup>a</sup> To meet the requirements of the torsional test, fracture shall occur in the shank or the thread of the screw and not in the junction of the head and shank or the junction of the shank and recess.

## 5 Designation

**EXAMPLE** A cross-recessed cheese head screw with thread M5, nominal length  $l = 20$  mm, property Class 4.8 and cross recess type Z is designated as follows:

**Cheese head screw ISO 7048 - M5 × 20 - 4.8 - Z**

## Bibliography

- [1] ISO 888, *Bolts, screws and studs — Nominal lengths, and thread lengths for general purpose bolts*
- [2] ISO 1207, *Slotted cheese head screws — Product grade A*

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