

~~08~~
Cross recessed ~~raised~~ countersunk
head tapping screws

DIN
7982

Senk-Blochschrauben mit Kreuzschlitz

Supersedes December 1972 edition.

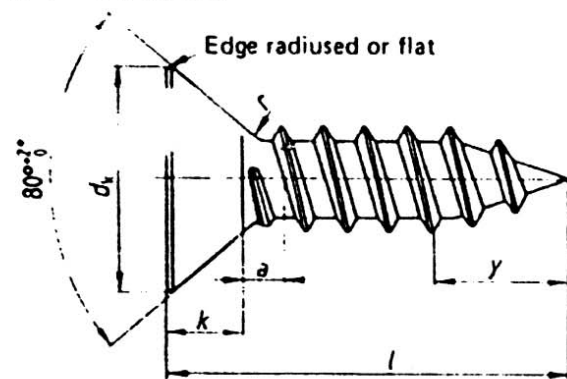
In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

See Explanatory notes for connection with the international standards published by the International Organization for Standardization (ISO).

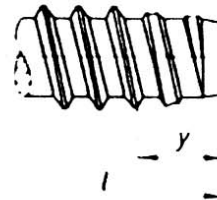
Dimensions in mm

1 Dimensions

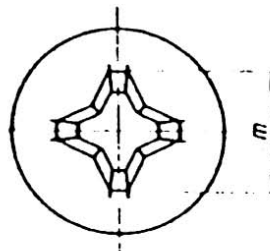
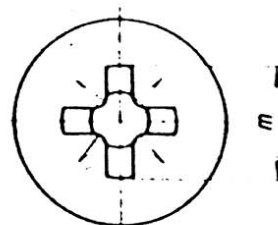
Type C, with cone end
(previously type B)



Type F, with flat end
(previously type BZ)



Other dimensions as in left-hand illustration.

Cross recess type H¹⁾Cross recess type Z¹⁾

¹⁾ Should the type symbol H or Z for the cross recess be absent in the designation, e.g. on existing documents based on previous editions of this standard, then cross recess type H shall be applicable. In future, the symbol identifying the cross recess type shall always be specified for new designs and in purchase order documents (see clause 3).

Continued on pages 2 to 5

Thread size					ST 2,2	ST 2,9	ST 3,5	(ST 3,9)	ST 4,2	ST 4,8	ST 5,5	ST 6,3	
$P^1)$					0,8	1,1	1,3	1,4	1,4	1,6	1,8	1,8	
a max					0,8	1,1	1,3	1,4	1,4	1,6	1,8	1,8	
d_k max = nominal dimension d_k					4,3	5,5	6,8	7,5	8,1	9,5	10,8	12,4	
d_k min					4	5,2	6,44	7,14	7,74	9,14	10,37	11,97	
k ≈					1,3	1,7	2,1	2,3	2,5	3	3,4	3,8	
r max					0,8	1,1	1,4	1,5	1,6	1,9	2,1	2,4	
No.					1			2			3		
Cross recess	type H				m ≈	2,5	3	4,2	4,6	4,7	5,1	6,8	7,1
	penetration depth				min	1,02	1,4	1,62	2,03	2,11	2,59	2,95	3,33
					max	1,32	1,7	2,12	2,53	2,62	3,1	3,53	3,91
	type Z				m ≈	2,4	2,8	4	4,2	4,4	5	6,3	7
	penetration depth				min	1,1	1,48	1,6	1,85	2,05	2,64	2,72	3,38
					max	1,35	1,73	2,06	2,31	2,51	3,1	3,18	3,84
	r max				Type C	2	2,6	3,2	3,5	3,7	4,3	5	6
					Type F	1,6	2,1	2,5	2,7	2,8	3,2	3,6	3,6
	Nominal dimension					Mass (7,85 kg/dm ³), in kg per 1000 units ≈							
						Type C		Type F					
min		max		min	max								
4,5	3,7	5,3	3,7	4,5	0,1								
6,5	5,7	7,3	5,7	6,5	0,14	0,28							
9,5	8,7	10,3	8,7	9,5	0,2	0,35	0,54	0,66	0,77	1,1			
13	12,2	13,8	12,2	13	0,27	0,48	0,72	0,88	1,02	1,45	2,11	2,53	
16	15,2	16,8	15,2	16	0,33	0,58	0,87	1,07	1,23	1,75	2,49	3,07	
19	18,2	19,8	18,2	19		0,69	1,02	1,26	1,44	2,05	2,87	3,61	
22	21,2	22,8	20,2	22			1,17	1,45	1,65	2,35	3,26	4,15	
25	24,2	25,8	23,2	25			1,32	1,64	1,86	2,65	3,65	4,69	
32	30,7	33,3	30,8	32					2,35	3,35	4,56	5,95	
38	36,7	39,3	36,7	38							5,43	7,03	
45	43,7	46,3	43,5	45									
50	48,7	51,3	48,5	50									

Bracketed sizes should be avoided as far as possible.

As a general rule, the tapping screws are manufactured in the sizes for which the mass has been given (for guidance only).

¹⁾ P = pitch of thread.

2 Technical delivery conditions

Material	Steel
General requirements	In accordance with DIN 267 Part 1.
Threads and thread ends	In accordance with DIN 7970.
Cross recesses	In accordance with DIN 7962.
Mechanical properties and material	In accordance with DIN 267 Part 12.
Permissible dimensional deviations and deviations of form	As for product grade A (previously design m) in accordance with ISO 4759 Part 1 ¹⁾ .
Surface finish	As processed. DIN 267 Part 2 shall apply with regard to surface roughness DIN 267 Part 19 shall apply with regard to permissible surface discontinuities. DIN 267 Part 9 shall apply with regard to electroplating Other types of surface protection shall be subject to agreement.
Acceptance inspection	DIN 267 Part 5 shall apply with regard to acceptance inspection.

¹⁾ ISO 4759 Part 1 applies at present only for screws with ISO metric screw thread. The permissible deviations specified in the above standard have been adopted correspondingly for tapping screws. The geometrical tolerances specified in ISO 4759 Part 1 have also been adopted for tapping screws, as appropriate.

Designation

Designation of a countersunk head tapping screw with thread of size ST 3,5, length l (nominal dimension) = 13 mm, with type C cross recess¹⁾ and type H cross recess¹⁾:

Tapping screw DIN 7982 – ST 3,5 × 13 – C – H

Previous designation of the same screw:

Tapping screw DIN 7982 – B 3,5 × 13

DIN 6901 shall apply for the designation of tapping screws with captive washer components (tapping screw assemblies). DIN 4000 – 2 – 1 tabular layout of article characteristics shall apply for screws in accordance with this standard.

Standards referred to

DIN 267 Part 1	Fasteners; technical delivery conditions; general requirements
DIN 267 Part 2	Fasteners; technical delivery conditions; finish and dimensional accuracy
DIN 267 Part 5	Fasteners; technical delivery conditions; acceptance inspection
DIN 267 Part 9	Fasteners; technical delivery conditions; electroplated components
DIN 267 Part 12	Bolts, screws, nuts and similar threaded and formed parts; technical delivery conditions for tapping screws
DIN 267 Part 19	Fasteners; technical delivery conditions, surface discontinuities on bolts and screws
DIN 4000 Part 2	Tabular layouts of article characteristics applying to bolts and nuts
DIN 6901	Tapping screw assemblies
DIN 7962	Cross recesses for screws; modified version of ISO 4757
DIN 7970	Threads and thread ends for tapping screws
ISO 4759 Part 1	Fasteners; tolerances for bolts, screws and nuts with thread diameters from 1,6 to 150 mm and product grades A, B and C

Other relevant standards

DIN 7975 Tapping screws; application and core hole diameters

Previous editions

DIN 7982: 07.53, 12.56, 08.59, 07.70, 12.72

¹⁾ See page 1.

Amendments

The following amendments have been made in comparison with the December 1972 edition:

- Cross recess type Z has been adopted for the first time.
- The designation of the screws has been amended and harmonized with international specifications (see DIN 7962 and DIN 7970).
- The standard has been editorially revised.

Explanatory notes

For some years, screws with the so-called Pozidriv cross recessed head have been manufactured and used in ever increasing quantities, and they now have a considerable share of the market, along with the screws with the so-called Phillips cross recessed head which is standardized in DIN 7962 Part 1, August 1959 edition. A standardization of the Pozidriv cross recess had been under consideration on several occasions, but was initially postponed in view of international standardization work being done in the same field.

In the meantime, standards relating to tapping screws have been published by the International Organization for Standardization (ISO), which specify both types of cross recessed head. These cross recesses have now been given the symbols H and Z respectively, because the names mentioned above are proprietary brand names (see DIN 7962).

The tapping screws in accordance with International Standards

ISO 7049 – 1983 Cross recessed pan head tapping screws

ISO 7050 – 1983 Cross recessed countersunk (flat) head tapping screws

ISO 7051 – 1983 Cross recessed raised countersunk (oval) head tapping screws

are not interchangeable with the screws complying with DIN 7982 and DIN 7983, and are only interchangeable to a limited extent in the case of screws complying with DIN 7981. A so-called "common head style" has been selected internationally for countersunk head tapping screws; this common head style is used both for countersunk head screws with a metric screw thread and for countersunk head screws with a tapping screw thread, and it exhibits a 90° countersink angle (previously, tapping screws had an 80° countersink angle). The table below compares DIN and ISO head dimensions.

Thread size		ST 2,2	ST 2,9	ST 3,5	ST 3,9	ST 4,2	ST 4,8	ST 5,5	ST 6,3	ST 8	ST 9,5
Diameter of head (max.)	ISO 7049	4	5,6	7	–	8	9,5	11	12	16	20
	DIN 7981	4,2	5,6	6,9	7,5	8,2	9,5	10,8	12,5	–	–
	ISO 7050	3,8	5,5	7,3	–	8,4	9,3	10,3	11,3	15,8	18,3
	DIN 7982	4,3	6,8	6,8	7,5	8,1	9,5	10,8	12,4	–	–
	ISO 7051	3,5	5,5	7,3	–	8,4	9,3	10,3	11,3	15,8	18,3
	DIN 7983	4,3	5,5	6,8	7,5	8,1	9,5	10,8	12,4	–	–
Height of head (max. or approx.)	ISO 7049	1,6	2,4	2,6	–	3,1	3,7	4	4,6	6	7,5
	DIN 7981	1,8	2,2	2,6	2,8	3,05	3,55	3,95	4,55	–	–
	ISO 7050	1,1	1,7	2,35	–	2,6	2,8	3	3,15	4,65	5,25
	DIN 7982	1,3	1,7	2,1	2,3	2,5	3	3,4	3,8	–	–
	ISO 7051	1,1	1,7	2,35	–	2,6	2,8	3	3,15	4,65	5,25
	DIN 7983	1,3	1,7	2,1	2,3	2,5	3	3,4	3,8	–	–

Apart from the absence of interchangeability in the case of countersunk head tapping screws due to the different countersink angles (90° for ISO; 80° for DIN), the other head dimensions clearly demonstrate also that no interchangeability exists in fact. Only in the case of screws conforming to ISO 7049 and those conforming to DIN 7981, interchangeability is given to a limited extent.

Consequently, DIN 7981, DIN 7982 and DIN 7983 have not been adapted to ISO 7049, ISO 7050 and ISO 7051, but have been revised only to the extent necessary to meet the requirements of the national situation as it exists today. These revisions include the adoption of a second cross recess type in DIN 7962 (ISO 4757 – 1983), the complementing of the screw thread symbol in accordance with DIN 7970 (ISO 1478 – 1983), the adoption of limits of size and the harmonization of the technical delivery conditions with the corresponding basic standards.