# DIN7972-90 (1728x2273x2 tiff)

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This standard should be used together with ISO 1482. For details, see Explanatory notes. It is intended to withdraw the standard by 31 July 1995 at the latest. Dimensions in mm Dimensions Type C, with cone point (previously, type B) Edge rounded or flat. Edge rounded or flat. Thread size ST 2,2 ST 2,9 ST 3,5 (ST 3,9) ST 4,2 ST 4,8 ST 5,5 1 Pi) Thread size ST 2,2 ST 2,9 ST 3,5 (ST 3,9) ST 4,2 ST 4,8 ST 5,5 1 Pi) A max = nominal size 4,3 5,5 5,6 6,4 7,14 7,74 9,14 10,37 k min. Mominal size 0,6 0,8 1 1 1,2 1,2 1,6 1,8 max. 0,8 1,1 1,3 1,7 2,1 2,3 2,5 3 3,4 Nom- inal Type C Type F 1,6 2,1 2,5 2,7 2,8 3,2 3,5 3,7 4,3 5 5 Y max Type C Type F Approximate mass (7,85 kg/dm <sup>3</sup> ), per 1000 units, in kg	-Blechschra	schrauben mit Schlitz							Supe	rsedes M	arch 198	8 edi
tandard by 31 July 1995 at the latest. Dimensions In mm Type C, with cone point (previously, type B) Edge rounded or flat. Type F, with long dog point (previously, type BZ) Type F, with long dog point (previously, type BZ) Type T, with long dog point (previously, type BZ) Type T, with long dog point (previously, type BZ) Thread size ST 2,2 ST 2,9 ST 3,5 (ST 3,9) ST 4,2 ST 4,8 ST 5,5 (ST 3,9) Thread size ST 2,2 ST 2,9 ST 3,5 (ST 3,9) ST 4,2 ST 4,8 ST 5,5 (ST 3,9) Thread size ST 2,2 ST 2,9 ST 3,5 (ST 3,9) ST 4,2 ST 4,8 ST 5,5 (ST 3,9) Thread size ST 2,2 ST 2,9 ST 3,5 (ST 3,9) ST 4,2 ST 4,8 ST 5,5 (ST 3,9) Thread size A,3 5,5 6,8 7,5 8,1 9,5 10,8 d <sub>k</sub> max. = nominal size 4,3 5,5 6,8 7,5 8,1 9,5 10,8 d <sub>k</sub> min. 4 5,2 6,44 7,14 7,74 9,14 10,37 k min. 4 5,2 6,44 7,14 7,74 9,14 10,37 k min. 0,66 0,86 1 1 1,2 1,2 1,2 1,6 1,6 1,9 Treat 0,8 1,1 1,3 1,4 1,5 1,6 1,9 2,1 1,6 1,9 1,9 1 T max. 0,8 1,1 1,4 1,5 1,6 1,9 2,1 1,6 1,9 1,9 1 T max. 0,8 1,1 1,4 1,5 1,6 1,9 2,1 1,6 1,9 1,9 1 T max. 0,6 0,75 0,95 1,05 1,15 1,5 1,5 1,5 1 y max Type C Z 2,6 3,2 3,5 3,7 4,3 5 5 Nom- inal Type C Type F 1,6 2,1 2,5 2,7 2,8 3,2 3,6 1	n keeping with current practice in standards publist as been used throughout as the decimal marker.				ned by the	ə İnternat	ional Org	anizatior	o for Stan	dardizati	on (ISO),	a con
Type C, with cone point (previously, type B)         Type C, with cone point (previously, type B)         Type F, with long dog point (previously, type B2)         Type F, with long dog point (previously, type B2)         Edge rounded or flat.         Type T, with long dog point (previously, type B2)         Type F, with long dog point (previously, type B2)         Type E, with long dog point (previously, type B2)         Type F, with long dog point (previously, type B2)         Type F, with long dog point (previously, type B2)         Type F, with long dog point (previously, type B2)         Other dimensions as shown at left to the dimensions as the dimension as the dimensions as the dimensions as the dimensio	standard she dard by 31 J	ould be used t July 1995 at th	ogether wit e latest.	th ISO 1482	. For deta	ails, see E	xplanato	ry notes.	lt is intend	ded to wit	ihdraw th	e pres
Type C, with cone point (previously, type B)       Type F, with long dog point (previously, type B2)         Figure F, with long dog point (previously, type B2)         Edge rounded or flat. $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ Thread size ST 2,2         ST 2,2 $\frac{1}{2}$ Thread size ST 2,2         ST 2,5 $\frac{1}{2}$ $\frac{1}{2}$ Thread size ST 2,2         ST 2,5 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{1}$ $\frac{1}{2}$	Dimension	20			Dimensi	ons in m	m					
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$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		900.00				<b>H</b>	•	Othe	t dimensi	y ions as sl	hown at l	left.
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	e 1.		Th:	read size	ST22	ST29	ST35	(ST 3 9)	ST4 2	STAR	STEE	STE
a         max.         0,8         1,1         1,3         1,4         1,6         1,8           d_k         max.         nominal size         4,3         5,5         6,8         7,7         5         8,1         9,5         10,8           k         min.         4         5,2         6,44         7,14         7,74         9,14         10,37           k         min.         4         5,2         6,44         7,14         7,74         9,14         10,37           k         min.         0,6         0,8         1         1         1.2         1.2         1,6           n         Mominal size         0,6         0,86         1         1         1.2         1.2         1.6           n         Mominal size         0,6         0,86         1         1         1.2         1.2         1.6           n         Mode         0,66         0,86         1,06         1.06         1.26         1.26         1.66           max         0,8         1,1         1,4         1,5         1,6         1,9         2,1           f         max         0,6         0,75         0,95         1,05         1	F	<sup>p1</sup> )		iouu oizo								1.8
nin.         4         5,2         6,44         7,14         7,74         9,14         10,37           k         ~         1,3         1,7         2,1         2,3         2,5         3         3,4           n         Nominal size         0,6         0,8         1         1         1,2         1,2         1,6           n         min.         0,66         0,86         1,06         1,26         1,26         1,66           max.         0,8         1         1,2         1,2         1,51         1,91           r         max.         0,8         1         1,2         1,26         1,26         1,26           gain         max.         0,8         1         1,2         1,26         1,26         1,66           max.         0,8         1         1,2         1,26         1,51         1,91           r         max.         0,6         0,75         0,68         0,7         0,75         0,85         1           gain         Type C         2         2,6         3,22         3,5         3,7         4,3         5           y         max         Type F         1.6         2,1	а			max.	0,8	1,1		1,3				1.8
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		r.	max. = nom	ninal size						9,5	10,8	12,4
n         Nominal size         0.6         0.8         1         1         1.2<	đ			min,								11,9
n         min.         0.66         0.86         1.06         1.26         1.26         1.66           max.         0.8         1         1.2         1.2         1.51         1.91           r         max.         0.8         1         1.2         1.2         1.51         1.91           r         max.         0.8         1.1         1.4         1.5         1.6         1.9         2.1           t         min.         0.4         0.5         0.6         0.7         0.75         0.85         1           y         max.         0.6         0.75         0.95         1.05         1.15         1.35         1.5           y         max.         1.6         2.1         2.6         3.2         3.5         3.7         4.3         5           y         max         Type F         1.6         2.1         2.5         2.7         2.8         3.2         3.6           Nom-         inal         Type F         Approximate mass (7.85 kg/dm³), per 1000 units, in kg			Nor	nal size						-		3,8
max.         0,8         1         1,2         1,2         1,51         1,91           r         max.         0,8         1,1         1,4         1,5         1,6         1,9         2,1           t         min.         0,4         0,5         0,6         0,7         0,75         0,85         1           t         max.         0,6         0,75         0,95         1,05         1,15         1,35         1,5           y max         Type C         2         2,6         3,2         3,5         3,7         4,3         5           y max         Type F         1,6         2,1         2,5         2,7         2,8         3,2         3,6           Nom- inal         Type C         Type F         Approximate mass (7,85 kg/dm <sup>3</sup> ), per 1000 units, in kg												1,6
f         min. max.         0,4         0,5         0,6         0,7         0,75         0,85         1           y max         Type C         2         2,6         3,2         3,5         3,7         4,3         5           y max         Type C         2         2,6         3,2         3,5         3,7         4,3         5           Nom- inal         Type C         Type F         1,6         2,1         2,5         2,7         2,8         3,2         3,6	k											1,9
max         0,6         0,75         0,95         1,05         1,15         1,35         1,5           y max         Type C         2         2,6         3,2         3,5         3,7         4,3         5           Nom- inal         Type C         Type F         1,6         2,1         2,5         2,7         2,8         3,2         3,6	k									1.9	2.1	2,4
y max         Type C         2         2.6         3.2         3.5         3.7         4.3         5           Nom- inal         Type F         1.6         2.1         2.5         2.7         2.8         3.2         3.6	k			max, max.	0,8	1,1	1,4	1,5				
Y max         Type F         1.6         2.1         2.5         2.7         2.8         3.2         3.6           Nom- inal         Type C         Type F         Approximate mass (7.85 kg/dm <sup>3</sup> ), per 1000 units, in kg	k 			max. max. min.	0,8 0,4	1,1 0,5	1,4 0,6	1,5 0,7	0,75	0,85	1	1,2
Nom- inal Type C Type F Approximate mass (7,85 kg/dm <sup>3</sup> ), per 1000 units, in kg	k n t			max, max. min. max.	0,8 0,4 0,6	1,1 0,5 0,75	1,4 0,6 0,95	1,5 0,7 1,05	0,75 1,15	0,85 1,35	1 1,5	1,7
	k n t			max, max. min. max. Type C	0,8 0,4 0,6 2	1,1 0,5 0,75 2,6	1,4 0,6 0,95 3,2	1,5 0,7 1,05 3,5	0,75 1,15 3,7	0,85 1,35 4,3	1 1,5 5	1,7 6
	k n r t y om-	max.	1	Type F	0,8 0,4 0,6 2 1,6	1,1 0,5 0,75 2,6 2,1	1,4 0,6 0,95 3,2 2,5	1,5 0,7 1,05 3,5 2,7	0.75 1,15 3,7 2,8	0,85 1,35 4,3 3,2	1 1,5 5 3,6	1,7 6 3.6
	k n r t y om- nal	max. I Type C		max. max. min. max. Type C Type F	0,8 0,4 0,6 2 1,6	1,1 0,5 0,75 2,6 2,1	1,4 0,6 0,95 3,2 2,5	1,5 0,7 1,05 3,5 2,7	0.75 1,15 3,7 2,8	0,85 1,35 4,3 3,2	1 1,5 5 3,6	1,7 6 3.6
	k n f f y om- nal ize min	max I Type C h max	Typ min.	max. max. max. Type C Type F De F max.	0,8 0,4 0,6 2 1,6	1,1 0,5 0,75 2,6 2,1 Approxim	1,4 0,6 0,95 3,2 2,5	1,5 0,7 1,05 3,5 2,7	0.75 1,15 3,7 2,8	0,85 1,35 4,3 3,2	1 1,5 5 3,6	1,7 6 3.6
<b>13</b> 12,2 13,8 12,2 13 0,270 0,476 0,722 0,880 1,02 1,45 2,11	k n r t y om- nat ize min 6,5 5,	max / Type C 1. max 7 7,3	Typ min. 5,7	max. max. min. max. Type C Type F De F max. 6,5	0,8 0,4 0,6 2 1,6 0,140	1,1 0,5 0,75 2,6 2,1 Approxim	1,4 0,6 0,95 3,2 2,5 nate mass	1,5 0,7 1,05 3,5 2,7 s (7,85 kg	0.75 1,15 3,7 2,8 /dm <sup>3</sup> ), pe	0,85 1,35 4,3 3,2 er 1000 u	1 1,5 5 3,6	1,7 6 3.6
<b>16</b> 15.2 16.8 15.2 16 0.330 0.584 0.871 1.07 1.23 1.75 2.49	k n r t y om- nal ize min 6,5 5, 3 12,	max         l           Type C         max.           7         7,3           7         10,3	Typ min. 5,7 8,7		0,8 0,4 0,6 2 1,6 0,140 0,200	1,1 0,5 0,75 2,6 2,1 Approxim 0,242 0,350	1,4 0,6 0,95 3,2 2,5	1,5 0,7 1,05 3,5 2,7	0.75 1,15 3,7 2,8	0,85 1,35 4,3 3,2 er 1000 u 1,10	1 1,5 5 3,6 nits, in kg	1,7 6 3,6
<u>19</u> 18,2 19,8 18,2 19 0.692 1,02 1,26 1,44 2,05 2,87	k n r t y om- nal ize min 6,5 5, 9,5 6, 3 12,2 6 15,3	max / Type C 7 7,3 7 10,3 2 13,8 2 16,8	Tyr min. 5,7 8,7 12,2	max.           min.           max.           Type C           Type F           De F           mex.           6,5           9,5           13	0,8 0,4 0,6 2 1,6 0,140 0,200 0,270	1,1 0,5 0,75 2,6 2,1 Approxim 0,242 0,350 0,476	1,4 0,6 0,95 3,2 2,5 nate mass 0,548 0,722	1,5 0,7 1,05 3,5 2,7 s (7,85 kg 0,658 0,880	0,75 1,15 3,7 2,8 /dm <sup>3</sup> ). pe 0,775 1,02	0,85 1,35 4,3 3,2 er 1000 u 1,10 1,45	1 1,5 5 3,6 nits, in kg	1,7 6 3,6 2,5
25 040	k           n           r           f           y           y           y           y           y           g	max Type C 7 7,3 7 10,3 2 13,8 2 16,8 2 19,8	Tyr min. 5,7 8,7 12,2 15,2 16,2	max.           min.           max.           Type C           Type F           be F           max.           6,5           9,5           13           16           19	0,8 0,4 0,6 2 1,6 0,140 0,200 0,270	1,1 0,5 0,75 2,6 2,1 Approxim 0,242 0,350 0,476 0,584	1,4 0,6 0,95 3,2 2,5 nate mass 0,548 0,722 0,871	1,5 0,7 1,05 3,5 2,7 5 (7,85 kg 0,658 0,880 1,07	0,75 1,15 3,7 2,8 /dm <sup>3</sup> ), pe 0,775 1,02 1,23	0,85 1,35 4,3 3,2 er 1000 u 1,10 1,45 1,75	1 1,5 5 3,6 nits, in kg 2,11 2,49	1,; 6 3,6 2,5 3,0
<u>20</u> <u>1,32</u> <u>1,64</u> <u>1,65</u> <u>2,65</u> <u>3,65</u>	k n r t y y om- nal ize min 6,5 5, 9,5 8,6 3 12, 6 15,5 9 18,2 2 21,1	Imax         I           Type C         max           7         7,3           2         13,8           2         16,8           2         19,8           2         22,8	Typ min. 5,7 8,7 15,2 15,2 15,2 18,2 20,7	твх. твх. туре С Туре F туре F тах. 6,5 9,5 13 16 19 22	0,8 0,4 0,6 2 1,6 0,140 0,200 0,270	1,1 0,5 0,75 2,6 2,1 Approxim 0,242 0,350 0,476 0,584	1,4 0,6 0,95 3,2 2,5 nate mass 0,548 0,722 0,871 1,02	1,5 0,7 1,05 3,5 2,7 s (7,85 kg 0,658 0,880 1,07 1,26	0,75 1,15 3,7 2,8 /dm <sup>3</sup> ), pe 0,775 1,02 1,23 1,44	0,85 1,35 4,3 3,2 er 1000 u 1,10 1,45 1,75 2,05	1 1,5 5 3,6 nits, in kg 2,11 2,49 2,87	1,7 6 3,6
20 203 3,35 4,56	k           n           r           t           y           y           gamma           [22]           min           [22]           min           3           12:           9           18:           2           21:           5           24:	Imax         Imax           Type C         max           7         7.3           2         13.8           2         16.8           2         19.8           2         2.8           2         25.8	Tyr min. 5,7 12,2 15,2 18,2 20,7 23,7	твх. тех. тех. туре С Туре F туре F тех. 6,5 9,5 13 16 19 22 25	0,8 0,4 0,6 2 1,6 0,140 0,200 0,270	1,1 0,5 0,75 2,6 2,1 Approxim 0,242 0,350 0,476 0,584	1,4 0,6 0,95 3,2 2,5 0,548 0,722 0,871 1,02 1,17	1,5 0,7 1,05 3,5 2,7 s (7,85 kg 0,658 0,880 1,07 1,26 1,45	0.75 1.15 3.7 2.8 /dm <sup>3</sup> ), pe 0.775 1.02 1.23 1.24 1.65 1.86	0,85 1,35 4,3 3,2 er 1000 u 1,10 1,45 1,75 2,05 2,35 2,65	1 1,5 5 3,6 nits, in kg 2,11 2,49 2,87 3,26 3,65	1,1 6 3,6 2,5 3,0 3,6 4,1 4,6
<b>38</b> 36,7 39,3 36,7 38 3,95 5,34	k           n           r           t           y           Dom- nal           ize           min           55           6,5           6,5           6,5           6,5           9           18,           2           24,           2           24,           2           30,0	max         l           Type C         max           7         7,3           7         10,3           2         13,8           2         16,8           2         19,8           2         25,8           7         33,3	Typ min. 5,7 8,7 12,2 15,2 18,2 20,7 30,7	max.           min.           max.           Type C           Type F           Pe F           max.           13           16           19           22           32	0,8 0,4 0,6 2 1,6 0,140 0,200 0,270	1,1 0,5 0,75 2,6 2,1 Approxim 0,242 0,350 0,476 0,584	1,4 0,6 0,95 3,2 2,5 0,548 0,722 0,871 1,02 1,17	1,5 0,7 1,05 3,5 2,7 s (7,85 kg 0,658 0,880 1,07 1,26 1,45	0.75 1,15 3,7 2,8 /dm <sup>3</sup> ), pe 0.775 1,02 1,23 1,44 1,65	0,85 1,35 4,3 3,2 ar 1000 u 1,10 1,45 1,75 2,05 2,35 2,65 3,35	1 1,5 5 3,6 nits, in kg 2,11 2,49 2,67 3,26 3,65 4,56	1, 6 3,0 2,5 3,0 3,6 4,1

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# 2 Technical delivery conditions

Table 2.

Material	Steel			
General requirements	As specified in DIN 267 Part 1.			
Screw threads and thread ends	As specified in DIN 7970.			
Mechanical properties				
and material	As specified in DIN 267 Part 12.			
Limit devlations and geometrical tolerances	Product grade A as specified in ISO 4759 Part 11).			
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 being subject to agreement.			
Acceptance inspection	DIN 267 Part 5 shall apply with regard to acceptance inspection.			

Although ISO 4759 Part 1 covers only screws with ISO metric thread, the tolerances specified there have been adopted by analogy for tapping screws.

2) Although DIN 267 Part 19 covers only screws with ISO metric thread, the specifications for surface discontinuities given there have been adopted by analogy for tapping screws.

# 3 Designation

Designation of an ST 3,5 countersunk head tapping screw of length, / (nominal size) = 13 mm, with cone point (type C):

Tapping screw DIN 7972 - ST  $3,5 \times 13$  - C

The DIN 4000 - 2 - 1 tabular layout of article characteristics shall apply for screws as covered in this standard.

# Standards referred to

DIN 267 Part 1	Fasteners; technical delivery conditions; general requirements
DIN 267 Part 2	Fasteners; technical delivery conditions; design and dimensional accuracy
DIN 267 Part 5	Fasteners; technical delivery conditional accuracy
DIN 267 Part 9	Fasteners; technical delivery conditions; acceptance inspection (modified version of ISO 3269, 1984 edition) Fasteners; technical delivery conditions; electroplated parts
DIN 267 Part 12	Fasteners; technical delivery conditions; tapping screws
DIN 267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts
DIN 4000 Part 2	Tabular layouts of article characteristics for screws and nuts
DIN 7970	Threads and broad and a characteristics for screws and nuts
DIN 7975	Threads and thread ends for tapping screws (modified version of ISO 1478) Tapping screws; application and core hole diameters
ISO 4759 Part 1	Tolerances for fasteners; bolts, screws and nuts with thread diameters from 1,6 to 150 mm; product grades A, B and C

## **Previous editions**

DIN 7509: 04.43; DIN 7972: 08.52, 12.56, 07.70, 03.88.

#### Amendments

The following amendments have been made to the March 1988 edition.

- a) A note on the period of validity has been included.
- b) For thread size ST 3,9, the values of pitch, P, and dimension a have been amended.
- c) The standard has been editorially revised.

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Values given in mm

### Explanatory notes

In 1983, ISO 7721 was published in order to establish a common head style for all types of countersunk head screws. In the same vear, a number of ISO Standards on metric countersunk head screws and countersunk head tapping screws with head styles complying with the specifications given in ISO 7721 were published. In these standards, a countersunk angle of 90° was specified for both types of screw, this being a departure from the previous international specification of tapping screws with an 80° angle. The performance of screws with a 90° angle was verified in a number of tests.

Although the decision to introduce the ISO common head style as established in ISO 7721 was made in 1977, it took guite a long time for this style to be adopted in national standards since ISO 7721 was primarily concerned with reducing the variety of screw heads but not with specifying other properties of such screws. The question was also whether it would be justifiable to ignore an International Standard on tapping screws and, instead, to introduce a head style for Germany only. In 1987, several countries, among them Germany, proposed to reconsider the decision to introduce the ISO common head style for tapping screws, where it was found that the majority of member countries had already adopted the ISO head in their national standards. The responsible ISO Committee, therefore agreed not to make any alterations to the 1983 version of ISO 7721.

Taking the international development into account, the responsible German committee came to the conclusion that adoption of the international specifications on countersunk head screws would be inevitable, and decided to issue national standards on countersunk head screws with ISO head, granting, however, an adequate transition period after which the relevant DIN Standards would be withdrawn

The decision to adopt the ISO head was seen to be justified by the formation of CEN/TC 185. Fasteners, in 1989 since relevant European Standards dealing with such screws will be published shortly. Note that such EN Standards will be accepted only if they agree with existing ISO Standards, to avoid another transition, and that the transition period mentioned on page 1 may be shorter if the EN Standards appear sooner than expected.

The following table, which compares the most essential head dimensions of screws, is intended to make it easier for the user to see whether screws are interchangeable. Note that the decision on interchangeability has to be made on case-to-case basis,



Thread size ST2.2 ST 2.9 ST3.5 STRO ST4,2 ST4.8 ST 5.5 ST6,3 STA ST9.5 ISO 1482 38 7.3 55 R A 9,3 10.3 11.3 15.8 \_ 18.3 dk max DIN 7972 4.3 5.5 6.8 7.5 8.1 95 10.8 124 -150 1482 1.1 1.7 2.35 ----2.6 2.8 з 3.15 4.65 5,25 Þ max DIN 7972 13 17 21 23 25 з 3.4 3.8

published.

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Table 3

Note. In order to facilitate the use of ISO 7721 countersunk head screws, a standard on mating countersinks, DIN 66, has been

# International Patent Classification