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Westfield Fasteners Product Specification:

DIN 7981 - Phillips Pan Head Self Tapping Screws Type C

This product guide contains the specification for phillips pan head self tapping screws, standard parts available from Westfield Fasteners. The basis of this specification is the DIN standard DIN 7981.

Product Description

Self tapping screws are normally used with sheet metal and plastics. This variant has a pan head with a phillips pattern drive. As the name suggests, this type of screw forms its own mating thread as it is installed into a pre-drilled hole.

There are many different types of screw that could be defined as 'self tapping', including several more modern designs. The self tapping screws defined here are the long established type adhering to DIN 7981. The same thread forms with differing head types are defined in other standards. These self tapping screws are manufactured in gauge sizes, from number 2 up to number 14, but these sizes are usually stated alongside the millimetre equivalent.

Scope of the DIN standard.

DIN 7981 specifies the tolerances and the variation in form of phillips pan head self tapping screws, for sizes from No.2 (2.2 mm) up to and including No.14 (6.3 mm). Figure 1 and table 1 below define the overall dimensions and tolerances of this screw type. Table 2 defines the tolerance on the shank length.

Although the DIN 7981 standard has now been superceded by ISO 7049, off the shelf parts are generally still manufactured to the older specification.

Self tapping screw thread forms have historically been classified in a number of different ways, and can cause some confusion. The DIN 7981 standard defines the thread form featuring spaced threads and a cone or pointed tip that we are concerned with here as a 'Type C'. This thread form is also known as 'Type AB' elsewhere. These type definitions help to differentiate these cone pointed tapping screws from the square ended or dog point 'Type F' (also known as 'Type B' or 'Type BZ', depending on who you ask).

In addition to the thread type codes outlined above, the drive is also given its own type: pozidrive is defined as 'type Z', whilst phillips is known as 'type H'.

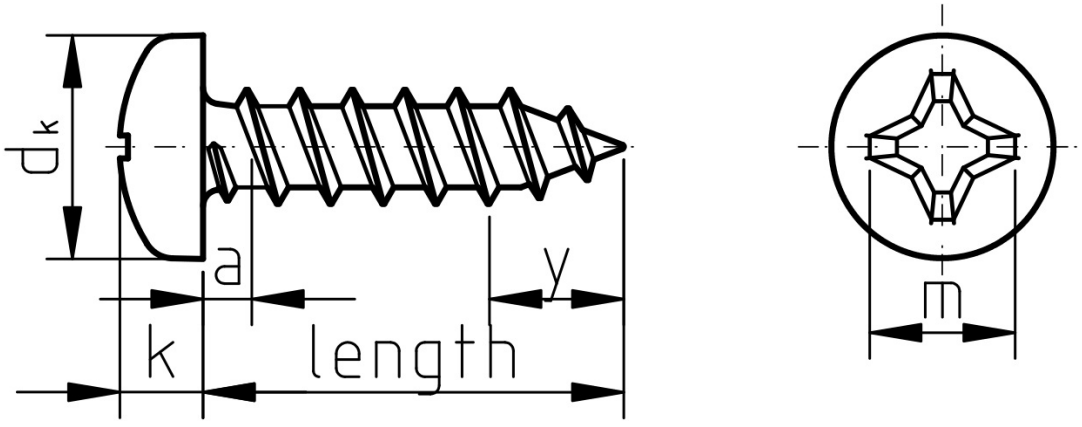

Figure 1: Phillips Pan Head Self Tapping Screw Type C

Table 1: Dimensions and Tolerances according to DIN 7981 (mm)

Thread Size			ST2.2	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
p			0.8	1.1	1.3	1.3	1.4	1.6	1.8	1.8
a		max	0.8	1.1	1.3	1.3	1.4	1.6	1.8	1.8
d_k		max=nom	4.2	5.6	6.9	7.5	8.2	9.5	10.8	12.5
		min	3.9	5.3	6.54	7.14	7.84	9.14	10.37	12.07
k		max=nom	1.8	2.2	2.6	2.8	3.05	3.55	3.95	4.55
		min	1.55	1.95	2.35	2.55	2.75	3.25	3.65	4.25
r		max	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9
r_f		=	3.4	4.4	5.4	5.8	6.2	7.2	8.2	9.5
Cross Recess	Cross Recess No.		1		2				3	
	Type H	m =	2.6	3	4.2	4.4	4.6	5	6.5	7.1
		Penetration Depth min	0.86	1.35	1.4	1.63	1.8	2.26	2.49	3
		Penetration Depth max	1.32	1.8	2.03	2.26	2.46	2.87	3.15	3.66
y 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

Table 2: Shank Length Tolerance according to DIN 7981 (mm)

Nominal Size	Type C	
	min	max
4.5	3.7	5.3
6.5	5.7	7.3
9.5	8.7	10.3
13	12.2	13.8
16	15.2	16.8
19	18.2	19.8
22	21.2	22.8
25	24.2	25.8
32	30.7	33.3
38	36.7	39.3

Notes on Usage of Tapping Screws

Table 3 provides a guide for appropriate drill sizes for each thread diameter. This information is provided on the assumption that the screw is of carbon (non stainless) steel. The actual diameter selected will depend on the thickness and strength of the material involved. This is based on information provided in the standard DIN 7975. Appropriate holes for use with stainless steel screws should be established by trial and error.

Table 3: Tapping Screw Drill Size Guide, Use with Metals, according to DIN 7975 (mm)

Screw Thread Size	Drill Size (min.-max.)
2.2 (No.2)	1.7-1.9
2.9 (No.4)	2.2-2.5
3.5 (No.6)	2.6-3.1
3.9 (No.7)	2.9-3.5
4.2 (No.8)	3.1-3.7
4.8 (No.10)	3.6-4.3
5.5 (No.12)	4.2-5.0
6.3 (No.14)	4.9-5.8
8.0	6.3-7.4
9.5	7.5-8.9

For verification of details and for further information please refer to the relevant DIN standard document.
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