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Westfield Fasteners Product Specification:

Thread Forming Screws for Plastics - Phillips Pan Head with 30° Thread Angle

This product guide contains the specification for thread forming screws for plastics, a series of standard parts available from Westfield Fasteners. The information presented here is specific to products with a phillips pan head and a 30° thread angle.

Product Description

Phillips Pan Head thread forming screws for thermo plastics, made from through hardened steel, with a silver coloured zinc plated Cr3 finish.

These thread forming screws have a 30 degree thread angle to optimise performance in all types of thermoplastics. Correctly used these screws will minimise the stress to the plastic and give optimal thread engagement and clamping loads.

Thread forming screws deform the plastic around the thread as they are inserted. This gives an optimum fastening force, which is superior to standard self-tappers. The narrow thread profile increases the pull out resistance and gives lower radial stress. The lower radial stress also prevents boss damage.

Table 1 below defines the overall dimensions and tolerances for these phillips pan head thread forming screws, whilst figure 2 and table 2 together offer data on the recommended pre-drilled or moulded holes required for use with different plastics.

Useful principles to follow when specifying plastic fasteners:

- Pilot holes should ideally be chamfered (or have a counterbore) to the thread major diameter to prevent cracking.
- Boss heights should be designed so that there is no gap between the top of the boss and the component being clamped.
- Boss diameters should be approximately 2.5 to 3 times the diameter of the pilot hole.
- The stripping torque to tapping torque ratio should be at least 3-1 or around 5-1 for automated high volume manufacturing.
- Pilot holes should have a thread engagement of at least twice the screw diameter.
- Specific application testing is advisable where there is uncertainty of type and size.

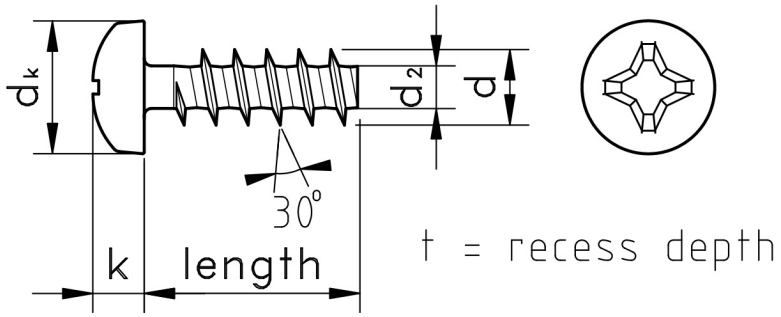
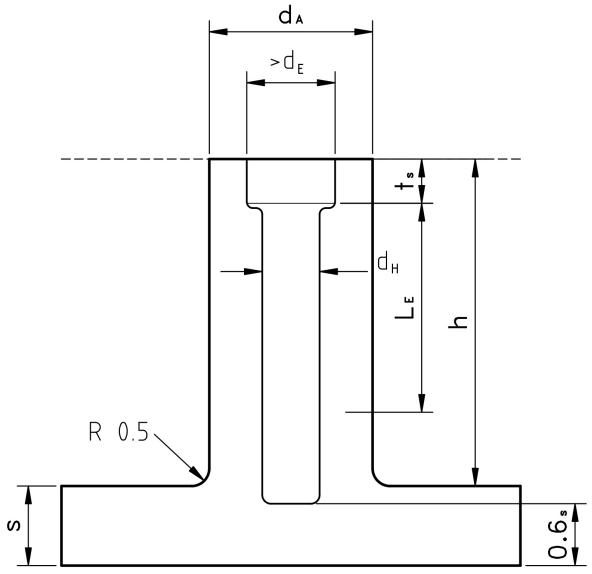


Figure 1: Phillips Pan Thread Forming Screw for Plastics (30° Thread)

Table 1: Dimensions & Tolerances (mm) for Phillips Pan Head Thread Forming Screws

d	d_k	k	d_2	t		Z
				Min	Max	
2.5	4.4	1.7	1.4	0.92	1.38	1
3	5.3	2	1.66	1.19	1.65	1
3.5	6.1	2.5	1.91	1.23	1.86	2
4	7	2.7	2.17	1.51	2.14	2
5	8.8	3.4	2.68	2.12	2.75	2



d = Nominal screw diameter
$d_A \geq$ (2 x d)
$d_H =$ (0.70 to 0.85 x d)
t_s = 0.4 x d
h $\geq$ LE + 1 x d
$L_E \geq$ (2 x d)
s = without set parameter
d_E = 1.05 x d

Figure 2: Pilot Hole Diameter For Threadforming Screws for Plastics with 30° Thread

Table 2: Recommended Pilot Hole Diameter For Threadforming Screws for Plastics with 30° Thread (mm)

Material	Hole Diameter	Outer Diameter	Screw-in-depth
	d_H	d_A	L_E
ABS	0.80 x d	2.00 x d	2.00 x d
ABS/PC Blend	0.80 x d	2.00 x d	2.00 x d
ASA	0.78 x d	2.00 x d	2.00 x d
PA 4.6	0.73 x d	1.85 x d	1.80 x d
PA 4.6 GF 30	0.78 x d	1.85 x d	1.80 x d
PA 6	0.75 x d	1.85 x d	1.70 x d
PA 6 GF 30	0.80 x d	2.00 x d	1.90 x d
PA 6.6	0.75 x d	1.85 x d	1.70 x d
PA 6.6 GF 30	0.82 x d	2.00 x d	1.80 x d
PBT	0.75 x d	1.85 x d	1.70 x d
PBT GF 30	0.80 x d	1.80 x d	1.70 x d
PC	0.85 x d	2.50 x d	2.20 x d
PC GF 30	0.85 x d	2.20 x d	2.00 x d
PE LD	0.70 x d	2.00 x d	2.00 x d
PE HD	0.75 x d	1.80 x d	1.80 x d
PET	0.75 x d	1.85 x d	1.70 x d
PET GF 30	0.80 x d	1.80 x d	1.70 x d
PMMA	0.85 x d	2.00 x d	2.00 x d
POM	0.75 x d	1.95 x d	2.00 x d
POM GF 30	0.80 x d	1.95 x d	2.00 x d
PP	0.70 x d	2.00 x d	2.00 x d
PP GF 30	0.72 x d	2.00 x d	2.00 x d
PP TV 20	0.72 x d	2.00 x d	2.00 x d
PPO	0.85 x d	2.50 x d	2.50 x d
PS	0.80 x d	2.00 x d	2.00 x d
PVC (hart)	0.80 x d	2.00 x d	2.00 x d
PEEK	0.85 x d	2.00 x d	2.00 x d
SAN	0.77 x d	2.00 x d	2.00 x d