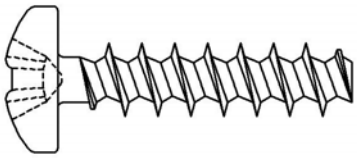
Installation of PF Screws for Plastics

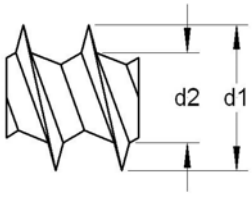
PENCOM's PF screws have a unique thread forming design conceived expressly for thermoplastic materials. The distinctive thread profile allows reduced boss wall thickness, maintains clamp load and resists loosening during vibration, reduces drive torque while increasing stripping torque, and reduces hoop stresses. Successful installation is dependent upon proper boss design, assembly torque, and driver speed.



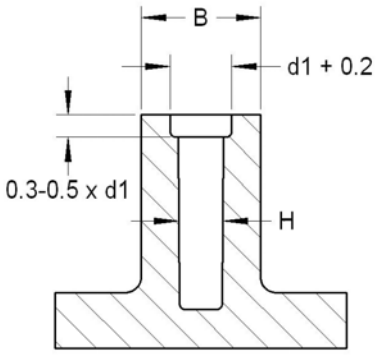
BOSS DESIGN

The boss design recommendations shown below apply to the majority of applications. In some instances, excessive tangential stress encountered during assembly may require a reduction of the external boss diameter and/or increase of the boss hole diameter. In which case, the screw penetration depth should be increased to compensate for the reduced clamping performance.

PENCOM recommends performance testing in the application to validate the boss design. For materials that are sensitive to environmental stress cracking, additional age testing should be conducted per the material manufacturer's recommendations.



Thread Detail



Boss Detail

Thread Size	K15	K18	K22	K25	K30	K35	K40	K50	K60	K70	K80
d1	1.5	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8.0
d2	0.89	1.04	1.25	1.40	1.66	1.91	2.17	2.68	3.19	3.70	4.21

All dimensions in millimeters

(Continued)

Material	Hole Diameter H	Boss Diameter B	Minimum Thread Engagement
Acrylonitrile butadiene styrene (ABS)	.80 x d1	2.00 x d1	2.00 x d1
Acrylonitrile butadiene styrene (ABS) / Polycarbonate (PC) Blend	.80 x d1	2.00 x d1	2.00 x d1
Acryonitrile Styrene Acrylate (ASA)	.78 x d1	2.00 x d1	2.00 x d1
Nylon 4/6	.73 x d1	1.85 x d1	1.80 x d1
Nylon 4/6 30% Glass Filled	.78 x d1	1.85 x d1	1.80 x d1
Nylon 6	.75 x d1	1.85 x d1	1.70 x d1
Nylon 6 30% Glass Filled	.80 x d 1	2.00 x d1	1.90 x d1
Nylon 6/6	.75 x d1	1.85 x d1	1.70 x d1
Nylon 6/6 30% Glass Filled	.82 x d1	2.00 x d1	1.80 x d1
Polyamide (PPA) 15% Glass Filled	.82 x d1	2.00 x d1	2.00 x d1
Polybutylene terephthalate (PBT)	.75 x d1	1.85 x d1	1.70 x d1
Polybutylene terephthalate (PBT) 30% Glass Filled	.80 x d1	1.80 x d1	1.70 x d1
Polycarbonate (PC)	.85 x d1	2.50 x d1	2.20 x d1
Polycarbonate (PC) 30% Glass Filled	.85 x d1	2.20 x d1	2.00 x d1
Polyethylene (PE)	.70 x d1	2.00 x d1	2.00 x d1
Rigid Polyethylene (PE)	.75 x d1	1.80 x d1	1.80 x d1
Polyethylene terephthalate (PET)	.75 x d1	1.85 x d1	1.70 x d1
Polyethylene terephthalate (PET) 30% Glass Filled	.80 x d1	1.80 x d1	1.70 x d1
Polyoxymethylene (POM/Acetal)	.75 x d1	1.95 x d1	2.00 x d1
Polymethyl methacrylate (PMMA) *	.85 x d1	2.00 x d1	2.00 x d1
Polypropylene (PP)	.70 x d1	2.00 x d1	2.00 x d1
Polypropylene (PP) 20% Talc Filled	.72 x d1	2.00 x d1	2.00 x d1
Polyphenylene Oxide (PPO/Noryl)	.85 x d1	2.50 x d1	2.20 x d1
Polystyrene (PS)	.80 x d1	2.00 x d1	2.00 x d1
Rigid Polyvinyl Chloride (PVC)	.80 x d1	2.00 x d1	2.00 x d1
Styrene Acrylonitrile (SAN)	.77 x d1	2.00 x d1	1.90 x d1

* Boss dimensions strongly influenced by installation rpm

ASSEMBLY TORQUE

As clamping load increases so too does material relaxation and potential for stress cracking. Therefore, PENCOM strongly encourages using the minimum necessary tightening torque rather than the maximum that can be achieved.

DRIVER SPEED

Friction between the screw threads and boss wall generates heat during installation. High driver rpm causes excessive heat that can melt the plastic and increase the likelihood of stripping failure during installation. As a guideline, 400-600 rpm generally results in a proper installation while maintaining high productivity. However, the driver rpm should be tested in the application and adjusted as necessary.

This information may be update periodically. Contact Pencom for current information or see ***www.pencomsf.com***

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