

Threaded Fasteners

Protogenic can handle the installation of threaded fasteners into your functionally finished SLA's, sintered nylon parts, Polyjet parts, and cast urethanes, when your bosses are sized per the tables below. We have four types of fasteners available; Tapped Threads, Self-threading inserts, Helicoils, and glued-in brass inserts. Self-threading inserts and tapped threads have the greatest pull-out strength of the four, and are recommended for more "production-oriented" prototype jobs. Helicoils are more robust than the glued-in threaded inserts, but often require a deeper boss size. Glued-in threaded inserts are more suited to work with shallow bosses and thinner walls, but are the least robust of the four options.

We recommend you use threaded fasteners rather than self-tapping screws for prototype parts you intend to assemble more than one or two times. For your convenience, we have supplied the dimensions that work best with our inserts and installation processes. Remember, the sizing below is for our prototype applications, always consult your tool maker or injection molder for production boss sizing.

Tap Drill Sizing: Best for Nylon

Thread	Hole ID
2-56	0.067
4-40	0.086
6-32	0.104
8-32	0.136
10-32	0.156

Thread	Hole ID
¼-20	0.196
½-20	0.453
¾-14	0.766
⅝ NPT	0.339
¾ NPT	0.4375

Thread	Hole ID
M2 x .4	0.062
M2.5 x .45	0.081
M3 x .5	0.098
M4 x .7	0.130
M5 x .8	0.165



Helicoils: Best for SLA's, Cast Urethanes, and Sintered Nylon

Thread	Length	Boss ID		Boss OD		Boss Depth	
		Drill/Core size - MM	Drill/Core Size - English	Minimum Boss OD - MM	Minimum Boss OD - English	Minimum Hole Depth - MM	Minimum Hole Depth - English
M2.5 x 0.45	1.5 Dia.	2.55	0.104	5.82	0.229	5.55	0.320
M3 x 0.5	1.5 Dia.	3.15	0.125	6.35	0.250	6.50	0.360
M3.5 x 0.6	1.5 Dia.	3.70	0.144	6.83	0.269	7.65	0.400
M4 x 0.7	1.5 Dia.	4.20	0.166	7.39	0.291	8.80	0.450
2-56	1.5 Dia.	2.38	0.094	5.56	0.219	5.08	0.320
4-40	1.5 Dia.	3.05	0.120	6.22	0.245	6.85	0.370
6-32	1.5 Dia.	3.81	0.150	6.99	0.275	8.51	0.435
8-32	1.5 Dia.	4.45	0.175	7.62	0.300	9.53	0.475
10-32	1.5 Dia.	5.16	0.203	8.33	0.328	10.41	0.510
1/4 - 20	1.0 Dia.	6.83	0.269	10.01	0.394	12.70	0.500



Brass Threaded Inserts: Best for SLA's, Polyjet, and Cast Urethanes

Thread	Length	Boss ID		Boss OD		Boss Depth	
		Drill/Core size - MM	Drill/Core Size - English	Minimum Boss OD - MM	Minimum Boss OD - English	Minimum Hole Depth - MM	Minimum Hole Depth - English
M2 x 0.4	2.900	3.53	0.139	6.71	0.264	4.00	0.157
M2.5 x 0.45	3.400	4.32	0.170	7.50	0.295	4.80	0.189
M3 x 0.5	3.800	5.51	0.217	8.69	0.342	6.00	0.236
M3.5 x 0.6	3.800	5.51	0.217	8.69	0.342	6.00	0.236
M4 x 0.7	4.700	6.30	0.248	9.48	0.373	6.80	0.268
2-56	0.115	3.53	0.139	6.71	0.264	3.56	0.140
4-40	0.135	4.32	0.170	7.49	0.295	4.06	0.160
6-32	0.150	5.51	0.217	8.69	0.342	4.45	0.175
8-32	0.185	6.30	0.248	9.47	0.373	5.21	0.205
10-32	0.225	7.49	0.295	10.67	0.420	6.35	0.250
1/4 - 20	0.300	9.47	0.373	12.65	0.498	8.26	0.325

Self-Threading Inserts: Best for Production Urethanes, Polyjet, and Sintered Nylon

Thread	Length	Boss ID		Boss OD		Boss Depth	
		Drill/Core size - MM	Drill/Core Size - English	Minimum Boss OD - MM	Minimum Boss OD - English	Minimum Hole Depth - MM	Minimum Hole Depth - English
M2 x 0.4	4.750	3.28	0.129	8.36	0.329	6.02	0.237
M2.5 x 0.45	5.940	3.96	0.156	9.04	0.356	7.14	0.281
M3 x 0.5	7.140	5.03	0.198	10.11	0.398	8.56	0.337
M3.5 x 0.6	7.140	5.03	0.198	10.11	0.398	8.56	0.337
M4 x 0.7	8.330	5.84	0.230	10.92	0.430	10.01	0.394
2-56	0.187	3.28	0.129	8.36	0.329	6.02	0.237
4-40	0.234	3.96	0.156	9.04	0.356	7.85	0.309
6-32	0.281	5.03	0.198	10.11	0.398	9.68	0.381
8-32	0.328	5.84	0.230	10.92	0.430	10.87	0.428
10-32	0.375	6.86	0.270	11.94	0.470	12.07	0.475