3D Printing, Machining and Fabrication Service

3D Printing Guidelines & Requirements

Expected Tolerances:

SLA: ±0.5mm | **Machining:** ±0.1-0.2mm

HP & FDM: See IT12 below:

Manufacturing predictability for HP MJF PA12, Polyjet & FDM

International Tolerance Grades (IT) (mm)

Above	0	3	6	10	18	30	50	80	120	180	250	315
Up to and including	3	6	10	18	30	50	80	120	180	250	315	400
IT12	0.1	0.12	0.15	0.18	0.21	0.25	0.3	0.35	0.4	0.46	0.52	0.57
IT13	0.14	0.18	0.22	0.27	0.33	0.39	0.46	0.54	0.63	0.72	0.81	0.89

*Tolerance is **technology** and **geometry** dependant, so may vary.
This chart is to be used as a guide.

Guidelines are generalised and are very much <u>geometry dependant.</u>
Results and requirements can vary between technologies and materials.

Whilst we take every care to check your parts for below features, sometimes potential failing features make it past us. Please check your data against the notes below and let us know if a further discussion is required.

STEP files are preferred for 3D Printing: if using STL please ensure the resolution deviation is 0.37mm and the resolution angle is 2.3°

Minimum wall thickness *Please note this includes engraved/embossed details on parts*	MJF	0.8mm	
	FDM	0.5-1.32mm	
	Polyjet	Rigid	0.6mm
		Flexible	1mm
		Colours	1mm
Data files	Step files are recommended, or STL files if not		
Part issue confirmation	When ordering, please confirm the issue of the part to be produced		
Unsupported walls/rod	Features 5x longer than the width of the feature is likely the break during clean-up		
Support removal	SLA parts will leave small pip marks, though we will do our best to smooth these down		
Support removal access	Parts require access for support material to be removed post-print If access is limited we will always try our best to remove as much as possible		
Polishing access	Parts require access for polishing post-print If access is limited, we will always try our best to polish as much of the part as possible		
Warpage	Parts with high aspect ratios are likely to warp but every effort will be made to orientate parts to reduce this This is an inherent additive manufacturing pain across all technologies		
Change-over costs	For our Polyjet technology, a change-over cost will be added if your desired material is not already in the machine.		
Engraving & Embossing	As a general guide 0.6mm text thickness with 0.5mm minimum height/depth is suggested Font and logo design are to be considered		
Threads	Threads greater than M8 can usually be printed. Round, angled threads are suggested. Below M8 we suggest either a cut thread post-print or a threaded brass insert – insert must have sufficient space to be accommodated.		
Threaded inserts	Please see our Tappex insert guidelines below		
File resolution	If supplying STL files, please check the file output optimisation for print quality		
Minimum features	Small features falling below minimum wall thickness recommendations are likely to lack clarity or potentially even form		
Hollow features	Parts require access for support material to be removed post-print		
Clarity	Our VeroClear material is translucent, not glass-like in clarity. Depending on geometry of the part we can enhance the clarity, but it will not be altogether clear		
Glossy top	We can provide a glossy top on our Polyjet parts but it is geometry dependent as to how far this will go on each part. angles of 90 degrees and below will not be glossy		
Split parts & bonding	If parts are too large for a single print, we may need to digitally split them and bond them together post-print. Please see our capabilities chart below for print bed sizes		
Clearance for moving features	0.4mm gap required for assembly components		
Applications/strength requirements	Please inform us if your part has a special requirement for: • Heat • Flame retardancy • Specific material • Surface finish • Accuracy deviation (please see our general tolerance info at the top of the page) • Strength or performance in particular feature		

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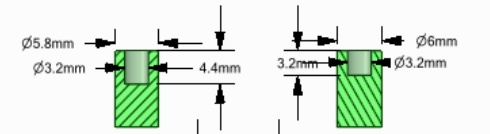
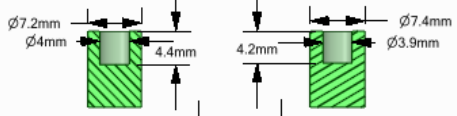
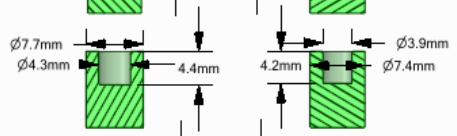
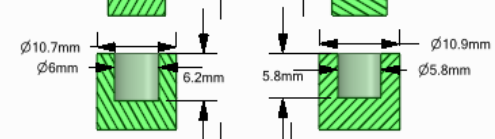
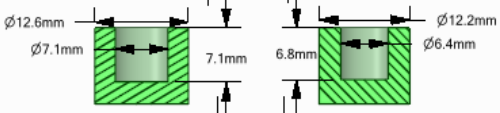
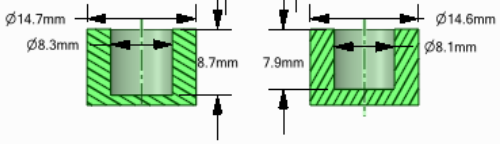
Tappex Inserts Sizes

TRISERT® - DOUBLE ENDED - 145M2		MULTISERT® - UNHEADED - 002M2
TRISERT® - DOUBLE ENDED - 145M2.5		MULTISERT® - UNHEADED - 002M2.5
TRISERT® - DOUBLE ENDED - 145M3		MULTISERT® - UNHEADED - 002M3
TRISERT® - DOUBLE ENDED - 145M4		MULTISERT® - UNHEADED - 002M4
TRISERT® - DOUBLE ENDED - 145M5		MULTISERT® - UNHEADED - 002M5
TRISERT® - DOUBLE ENDED - 145M6		MULTISERT® - UNHEADED - 002M6

Feel free to query any aspects regarding your specific parts with a member of the IPF team

Industrial Plastic Fabrications Limited
3D printing, Machining and Fabrications
Unit 28 Hillgrove Business Park
Nazeing, Essex
EN9 2HB
019928 893231
sales@ipfl.co.uk