HLH Design Guide: CNC Machining

Tips & Tricks

- Radius internal corners
- Loosen tolerances where possible
- Keep all features perpendicular to 6 sides
- Reduce the number of setups
- Keep it simple

Build Volume:
3000 x 1200 x 850mm

Popular Materials

Plastic: ABS, PC, Acrylic
Metal: SS304, 316
Aluminimum 6061, 7075
Plus many more

Surface Finishes

Polishing
Sand Blasting
Painting
Plating & more

Advantages

High speed
High dimensional accuracy
Great surface finish
Wide material selection
Suitable for high volume or one-off prototypes

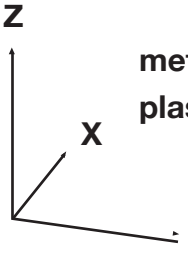
Drawbacks

It can be expensive for complex parts and for larger parts

Tolerances

Tolerances according to ISO 2768-1.

The tightest tolerances as standard are +/- 0.05mm for metals or +/- 0.2mm for plastics, otherwise discussed per project.

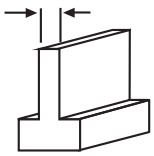


metal = +/-0.05mm
plastic = +/-0.2mm

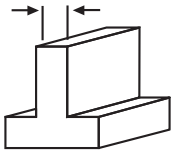
Walls

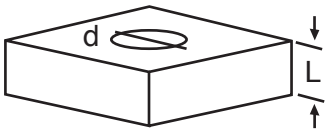
Thin walls risk warping and affecting the accuracy of the part.
We recommend:

Metal > 0.8m



Plastics > 1.5m





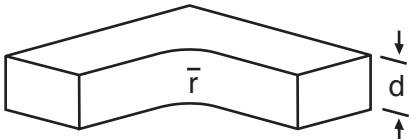
Suggested: L < d x 10
Preffered: L < d x 5

Holes

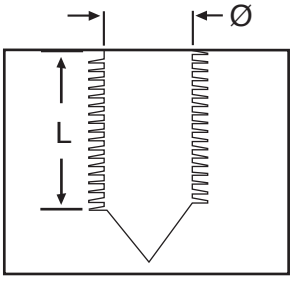
All holes < 20mm diameter should accommodate standard drill bit sizes, metric if possible.
Depth of the hole should be ≤ 10x diammeter.

Cavities & Pockets

will always have an internal radius.



r > 1/3 x d



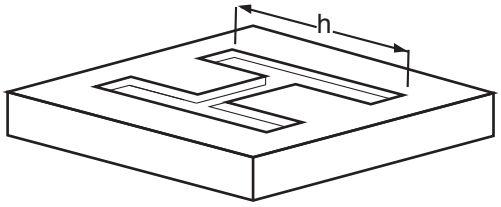
L = Ø x 3

Threads

We can accommodate and cut metric threads, imperial UNX and UNF, pipe threads among others. All threads should be clearly marked on your 2D drawings. Thread length of 3x the hold diameter is recommended.

Text & Logos

Engraved text is better than embossed because less material is removed.
Text ≥ 5mm high and ≥ 0.8mm deep with ≥ 0.5mm clearance between letters.



Sans Serif
20 Point
h ≥ 0.5mm