Tolerances

- Shrinkage processes during cooling influence the component dimensions depending on the component size and the material used.
- Manufacturing precision ± 0.7% of the linear dimension (minimum tolerance ± 0.1 mm).

Bonded parts

- When designing bonded parts, a gap dimension of 0.1 mm should be allowed for.

Joints

- Axes of rotation should be oriented in the Z direction and should be solid, so that they won’t break when the powder is being removed.
- Cavities must be accessible for powder removal without causing damage to the component.
- The distance between two walls should be at least 0.6 – 0.8 mm.
- For the utmost precision, joints can be constructed as two-part assemblies.

Wall thickness

- The minimum required wall thickness depends on the relations of the entire component.
- For filigree elements: Walls must be at least 0.6 – 0.7 mm thick.
- Whether or not a wall thickness of < 0.6 mm is realistically producible can be checked in each individual situation.
Drilled holes

- Components can be produced with blind holes, but through holes are more suitable.
- In order to minimize the stepped layer effect and achieve a high level of precision, cylindrical components and drilled holes should be oriented in the Z direction.
- The minimum dimensions for drilled holes can be reviewed on a case-by-case basis.

Channels

- Channels should have a minimum cross-sectional dimension of 0.6 mm and be accessible from both sides.
- Notice: The longer and more complex a channel is, the larger the cross-sectional dimension should be.

Thread

- With 3D printing, components are produced directly from CAD data. Since most CAD programs only show threads schematically, these must be created during the design phase.
- The smallest printable thread size is M6.
- Threads as small as M2 can be created manually after production is completed. The appropriate core diameter must be created for this.

Related assembly groups

- For assembly groups with multiple components, the same material should be used on all of them so that the same tolerances and deviations apply to each element.
- Individual elements should be stored as assembly groups.
- Enough space should be left between the components being assembled to avoid damage.