

A Brief Introduction to Metal Spinning

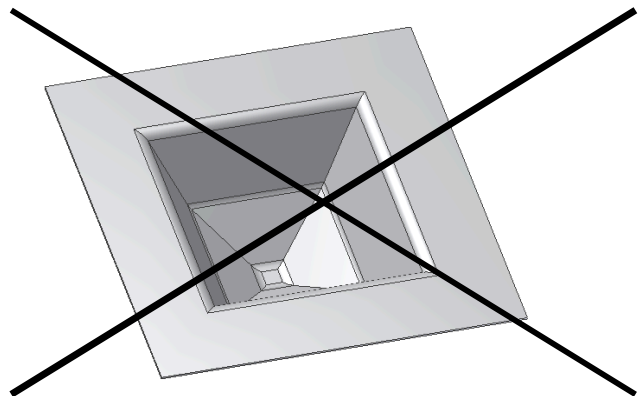
Significant factors that must be considered
when manufacturing metal spinning parts.

1 Design Specifications

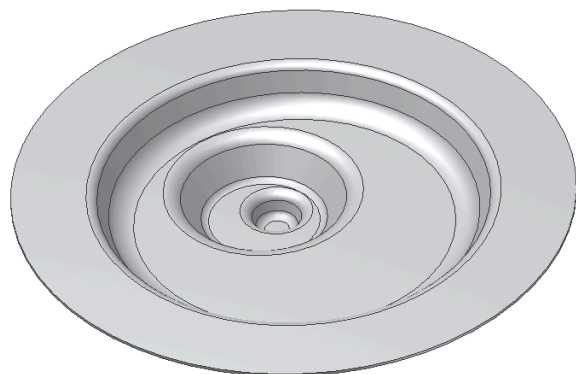
- 1.1 ➤ Only rotationally symmetric contours can be produced.



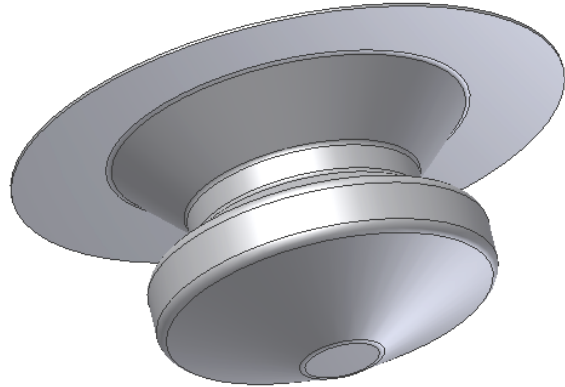
- 1.2 ➤ Forms that are not rotationally symmetric are not possible.



- 1.3 ➤ By processing a part in multiple clampings, contour elements with various centre axes can be created.



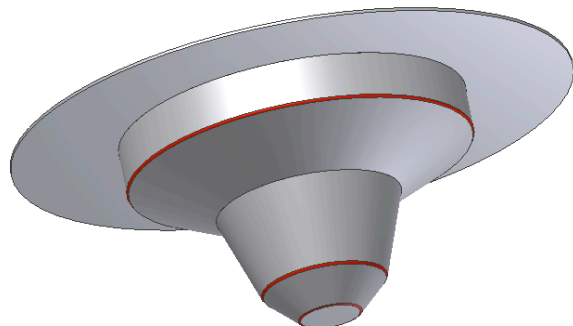
- 1.4 ➤ Undercuts can only be produced with much time and effort and therefore should be avoided.



- 1.5 ➤ Large radii simplify the production and increase the stability of the spinning part.



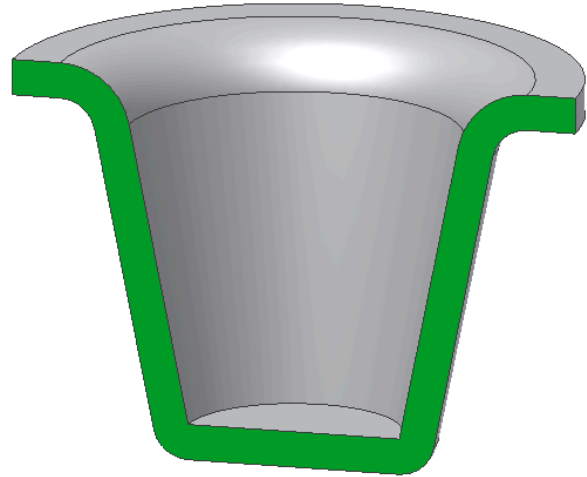
- 1.6 ➤ Producing sharp edges is complicated and tedious.
➤ The sheet thickness is smaller near the sharp edges and it is easier for cracks to form.
➤ Minimum outside radius = sheet thickness



2 Spinning Process

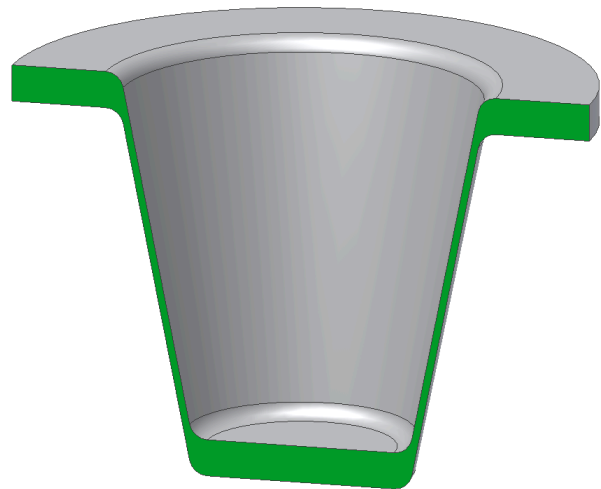
2.1 Spinning with uniform sheet thickness:

- The area near the edges is under tension and does not remain flat, but rather snaps up or down. The wider the edge, the stronger this effect will be.
- Cylindrical parts are also possible.



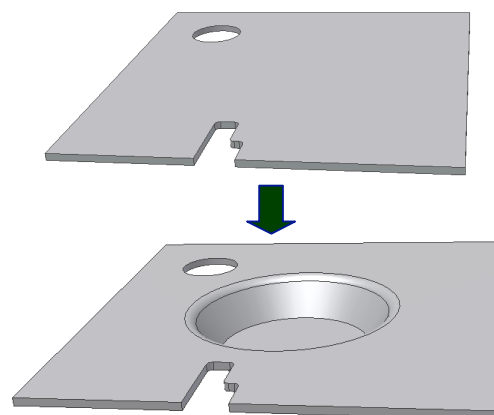
2.2 Shear Forming

- The sheet thickness is reduced in the formed area.
- The sheet thickness depends on the taper angle.
- The larger the angle, the thinner the sheet will be (maximum 75° is possible)
- Zylindrische Körper sind durch Projizierdrücken nicht herstellbar. (entspräche einem Winkel von 90°)
- Cylindrical parts cannot be manufactured by shear forming (it would be an angle of 90°).
- The edge cannot be shaped and therefore remains flat and without tension.



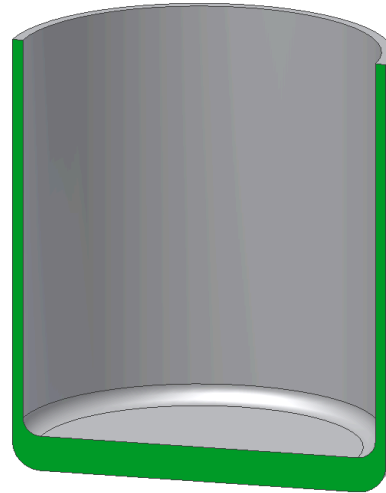
2.2.1

- Because the area near the edges cannot be shaped during shear forming, a sheet thickness that is not rotationally symmetric can also be processed.

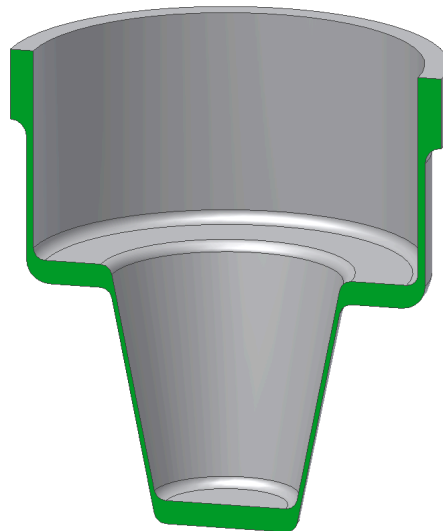


2.3 Flow Forming

- Sheet thickness is specifically reduced in the cylindrical area of the part.
- The thinning can be freely selected and must not be the same throughout the entire length (grading is possible!)



- 2.4
- The processes of shear forming, spinning with uniform sheet thickness and flow forming can be implemented in combination with each other.



3 Production Limitations

Maximum processable sheet thickness:	
Steel:	4.0 mm
Stainless steel:	3.0 mm
Aluminium:	6.0 mm
Smallest part diameter:	20.0 mm
Largest blank diameter	1200.0 mm