

IGX.Model.Revolution 1.0

ig CAD Model: Revolution — 2025-10-21

Version Requirement: IG.Model.Processor $\geq$ 1.4.0.100

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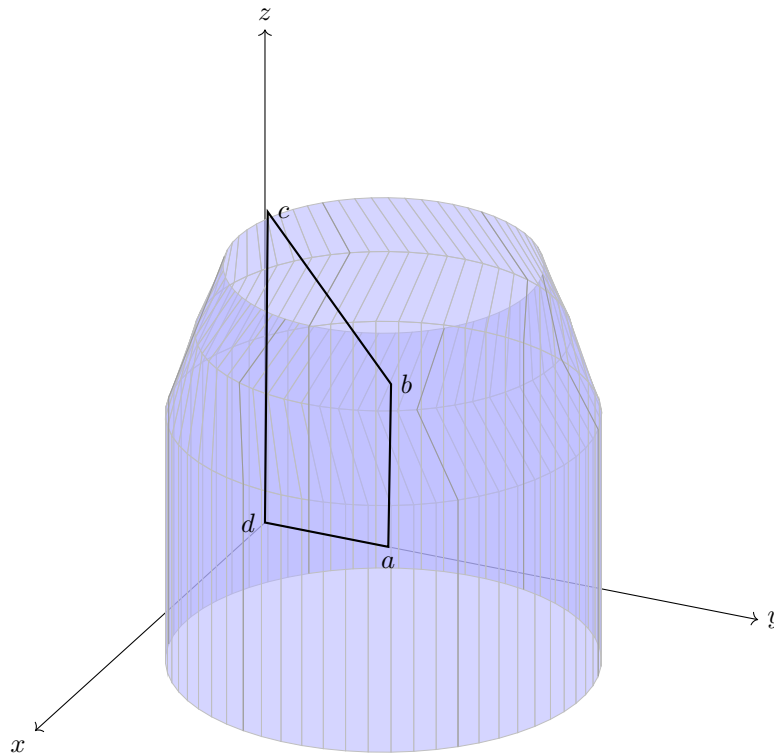


Figure 1: Revolution geometry. The 3D surface is generated by revolving the profile defined by points for example $a-b-c-d$ around the vertical axis. These points form the generating curve of the solid, precomputed to create smooth filled quad strips.

1 paths

Type: array of objects **Required:** Yes

An array specifying one or more 2D profiles. Each profile requires a unique id and a path array that defines its geometry using a sequence of commands similar to SVG.

- **quality**

Type: integer **Range:** 1–100 **Default:** Same as the global quality parameter, if not set; overwrites the global parameter if set. Defines the subdivision of path.

Required: No.

Defines the profile quality used for extrusion of the shape. The default value matches the global quality.

- **mirrorAxis**

Type: string **Enum:** X, Y **Required:** No.

Defines the optional axis along which the path is mirrored. When set to X, the path is mirrored across the vertical plane (YZ); when set to Y, the path is mirrored across the horizontal plane (XZ).

```
"paths": [  
  {  
    "id": "revolveProfile",  
    "quality": 60,  
    "path": [  
      { "type": "M", "end": { "x": 10, "y": 0 } },
```

```
{ "type": "L", "end": {"x": 10, "y": 20} },
{ "type": "C", "control1": {"x": 12,"y":22}, "control2": {"x":15,"y":25}, "end":{"x":18,"y":30} }
]
}
```

2 revolution

Type: object **Required:** Yes

Specifies the parameters for the revolution operation.

- **profile**
Type: string **Required:** Yes
 The id of the path from the paths array to be revolved.
Example: "revolution": { "profile": "ext" }
- **axis**
Type: string **Enum:** ["x","y","z"] **Default:** "z" **Required:** No
 The axis around which the profile is revolved.
- **angle**
Type: number **Unit:** degrees **Default:** 360 **Required:** No
 The sweep angle of revolution. Use values <360 for partial revolutions (open solids may be produced).

3 shading

Type: object **Required:** No

Defines rendering/shading hints used by Model.Processor and downstream renderers.

- **mode**
Type: string **Enum:** ["auto","flat","smooth"] **Default:** "auto"
 Controls normal computation mode. "auto" chooses between flat or smooth based on face angles and tessellation.
- **angle**
Type: number **Unit:** degrees **Default:** 30
 Angular threshold used for smoothing when mode is "auto" or "smooth". Edges with dihedral angle below this value will be smoothed.

Example shading block:

```
"shading": {
  "mode": "auto",
  "angle": 30
}
```

4 axis

Type: string **Enum:** ["x","y","z"] **Default:** "z" **Required:** No

Defines the principal axis for the revolution (the profile is interpreted in the plane orthogonal to the axis).

5 quality

Type: number **Range:** 0–100 **Default:** 25 **Required:** No

A global setting that controls the tessellation density of curved surfaces (including the latitudinal tessellation of the revolution surface). Higher values produce a smoother mesh with more polygons. This can be overridden per-profile by setting quality inside a paths object.

6 uv

Type: object **Required:** No

Defines how a 2D texture is mapped onto the solid model. These parameters are available in version 1.1 and higher. All of these values can also be used as top-level parameters.

- **patchSize**
Type: number **Default:** 150
Size of each UV tile in mm.
 - **uvOrigin**
Type: string **Enum:** CENTER, ORIGIN **Default:** CENTER
Anchor point for the UV map.
 - **uOffset, vOffset**
Type: number **Default:** 0.0
Translates the UV grid along the U and V axes after the origin is applied.
 - **rotation**
Type: number **Default:** 0
Rotation of the UV grid in degrees.
 - **uvType**
Type: string **Enum:** CUBIC, AUTO **Default:** CUBIC
Specifies how the UV mapping is applied to the panel. Use CUBIC for cubic projection or AUTO for automatic mapping.
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