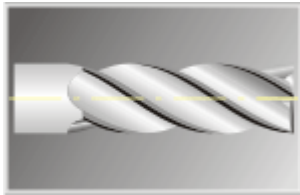
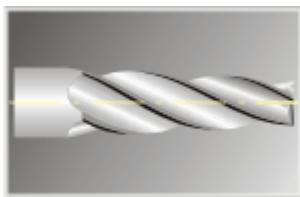


1.1 Basic End Mills

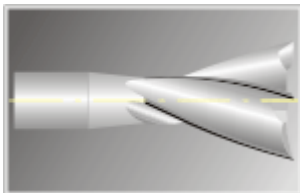
Work Piece:



Cylinder

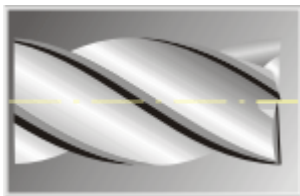


Taper

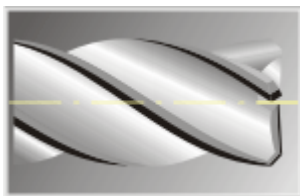


Angular Cutter

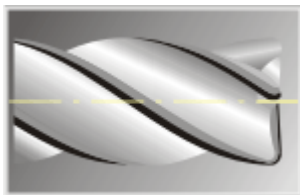
Tool End Face Geometry:



Plane



Chamfer



Corner Radius

**Workpiece:**

1. Cylinder
2. Taper
3. Angular Cutter

**Point:**

1. Plan Face
2. Chamfer
3. Corner Radius
4. Ball Nose
5. Circular Arc
6. Double Radius

**Geometry:**

1. Regular
2. 2 at Center
3. 1 above Center
4. Centring Point
5. 3 at Center

**Cutting Edge Combination:**

- right helix/right cutting
- left helix/left cutting
- right helix/left cutting
- left helix/right cutting

**Division:**

- Equal / unequal division of teeth

**Production / Regrinding:**

- Production by different infeed (several steps)
- Regrinding with calculation of removal length, periphery and rake.
- Regrinding, finishing with different wheels

**Preparation**

- Separating
- Profile roughing
- Profile finishing

**Main Fluting**

- Meas. definition: Point-/ normal cut
- Grind direction: Forward / backward
- Optional spark out grinding
- **Taper:**
- Constant angle / constant helix
- Regrinding with undefined helix

**Periphery**

- Linear relief: 1st/ 2nd /3rd relief angle
- Radial relief: Cross-/ longitudinal
- Roughing
- Grind direction: Forward / backward
- Optional spark out grinding

**Heel**

- Grind procedure: Crosswise-/ longitudinal
- Production by different infeed (several steps)
- Grind direction: Forward / backward
- Optional spark out grinding

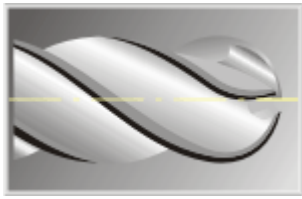
**End Face**

- Linear relief grinding
- Hollow grinding

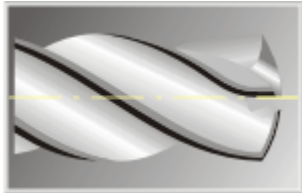
**Chamfer Clearance/Chamfer**

- Linear relief: 1st/ 2nd /3rd relief angle
- Grind. direction: Forward / backward
- Optional spark out grinding

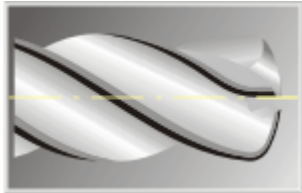
Tool End Face Geometry:



Ball Nose



Circular Arc



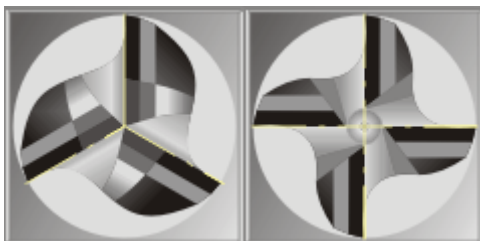
Double Radius

End Face Cutting Edge Geometry:



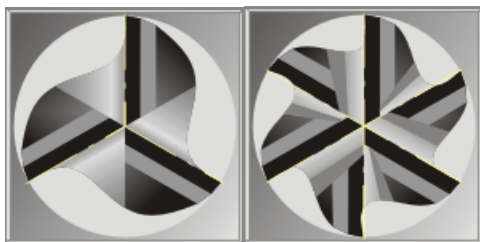
2 to center

1 above center



Centring point

Regular



3 and 6 Cutter

3 to center

**Gashing**

- Grinding procedure:
- Recessing / Interpolation
- Radius at entry and exit
- Variable aperture angle

**Notching**

- Radius at entry and exit
- Variable entry- and aperture angle

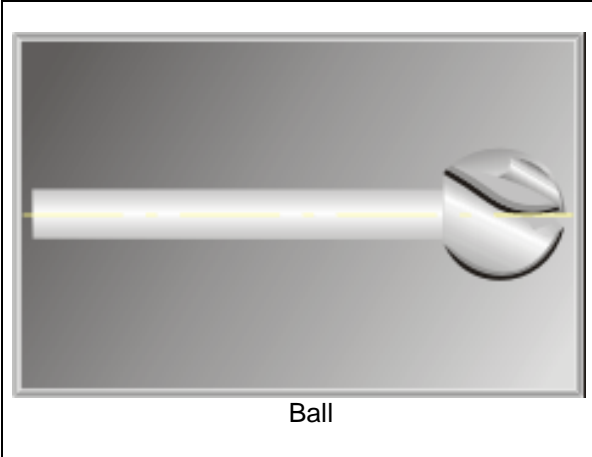
**Profile Simulation**

- Simulation of intersection at all operations
- Wheel/workpiece-simulation
- Machining simulation

**Shank**

- Reducing the shank diameter
- Clamping area

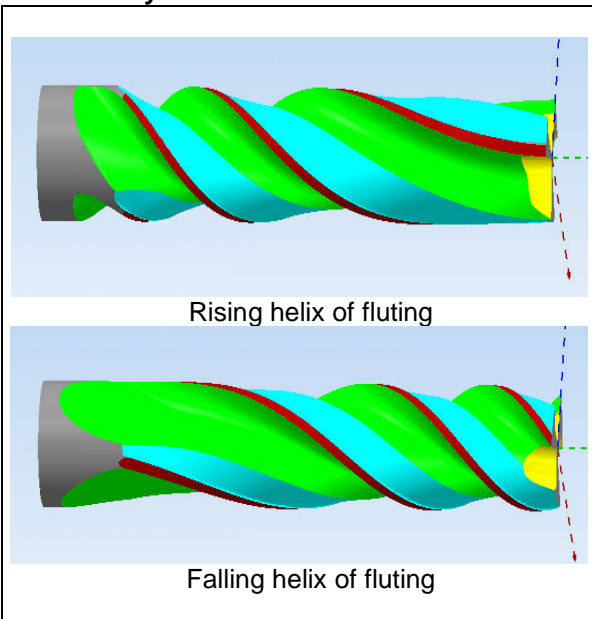
### 1.2 Balls



**Extension to 1.1:**

**Ball:**

### 1.3 Variably Helix

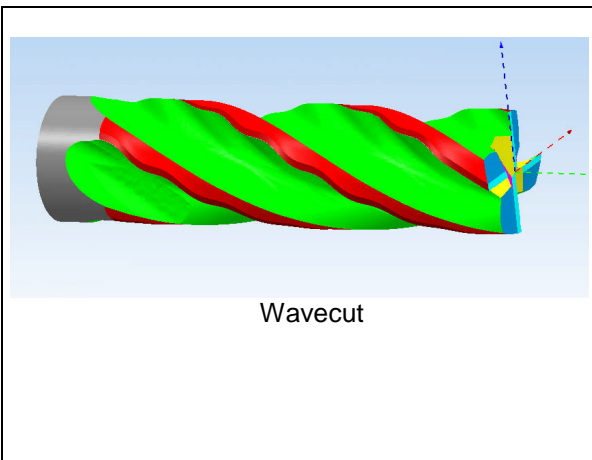


**Extension to 1.1:**

**Variably Helix of Fluting:**

- Cylindrical and tapered tools
- Front and rear angle of helix
- 3 sections: Constant angle within 1. and 3. section; transition between front and rear helix-angle within 3. section
- Rising or falling helix

### 1.4 Wavecut



**Extension to 1.1:**

(Production only; regrinding on demand)

**Wavecut:**

- Cylindrical tools
- Roughing cutting corresponding to a sinusoidal cutting edge along the helix
- Period and amplitude of wave according to sinus-function
- Starting point offset at every tooth
- Orientation of wave to the tool-center or to the cutting edge