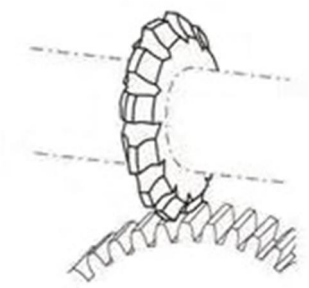
Doppler Gear TechBit:
Methods of Gear Generation

The most commonly used shape in gearing is an **involute profile**. The involute of a circle is a spiraling curve most often illustrated by the end of a taut string unwinding from a stationary circle (the **base circle**). This shape can be generated many different ways but three of the most common are:

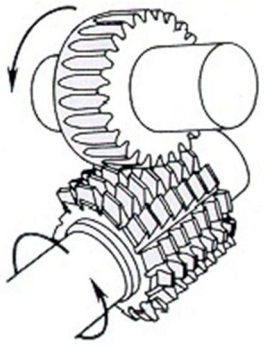


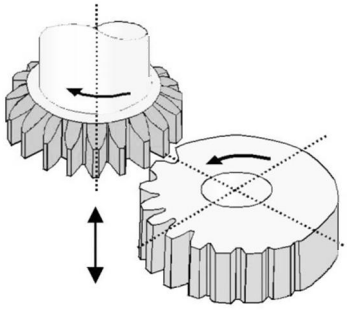
MILLING

Gear milling, or "gashing", can be done on a standard milling machine with a dividing head or indexer. It is also used on large and coarse pitch gears to quickly remove stock. The shape of the specific involute form is ground into the cutting tool and is dependent on the number of teeth in the gear. A gear of infinite diameter would be a rack and the cutting tool would have straight sides equal to the pressure angle of the gear. This method of generation can be prone to spacing errors.

HOBBING

Gear hobbing is an extremely common way to make gears. It is relatively fast, quite accurate, and can easily produce spur, helical, and worm gears. Hobbing is a generating process. The tool, or "hob" is a rack form thread with one or multiple starts. Accurate mounting and tool sharpening are key to producing precise involute forms.





SHAPING

Gear shaping is another generating process that uses special form cutting tools. It is applied mostly in cases where gear hobbing cannot be used. Especially for cutting internal gears and those with shoulders where hob tool collisions would result.

Method of generation will depend on the application, quantity, and quality of gear required. Contact Doppler Gear Company and let us help you determine the most cost effective approach.

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