Manufacturing steps for shaving cutters

From the steel bar to a finished shaving cutter there are many steps. Here we give some information about the gear shaving manufacturing process.

1)- 2-) Bar cutting
Normally the blank has obtained from a bar, but some time can be obtained from a forged disk. In this last case the quality of material is better. It’s possible to use a belt saw machine or, better, a hack sawing machine.

3)- Turning
By the modern machine all turning operation are made in the same time, including bore.

4)- Key Way cutting
It’s possible to use a slotting machine with a single point tool or a broaching machine with a flat broach.
5)- **Hobbing**
In the hobbing machine can be work, normally, a pack of two or more shaving cutter, in the same time finish order to save time.

6)- **Clearance milling on root diameter**
This operation can be made by a milling machine or a grinding machine with a CBN wheel. In the past time the clearance was a hole made by a drilling machine.

7)- **Serrating**
This operation has made by a special slotting machine and with a special tool.
8) Heat treatment
Heat treatment can be made by a salt bath or with a vacuum furnace. In order to increase the quality of the structure it’s often made a Deep Cryogenic Treatment.

8. HEAT-TREATMENT

1. Salt bath
2. Deep Cryogenic treatment

9) Surfaces grinding
Both faces of cutter are ground.
The most important parameter to consider is the parallelism of the faces.
10)- Bore diameter grinding

11)- Profile grinding
This is the most important operation in gear shaving manufacturing.

12)- Outside diameter grinding
13) Profile checking