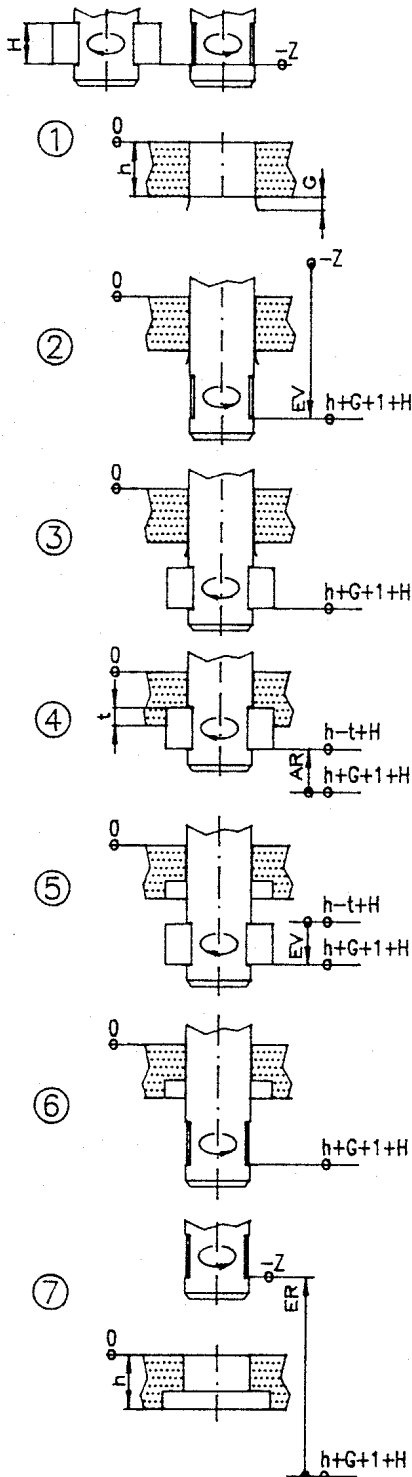


## 2. Application of GH-Z Tools

### 2.1. GH-Z Operational sequence / Programming reference



1. After **each** tool change the start position of the tool has to be newly defined. This can be achieved by **minimum two spindle rotations** clockwise and afterwards counter-clockwise. This changeover guarantees the perfect function of the tool.

G ..... Burr Length

2. Spindle rotating **counter-clockwise** passing through the bore with rapid-feed, forwards (blades retracted).

h ..... Workpiece Height

H ..... Blade Height

EV ..... Rapid-Feed, forwards

3. Change over the sense of the spindle rotation to **clockwise** (blades extended).

4. Machine the work piece with working-feed, backwards.

t ..... Countersink Depth

AR ..... Working feed, backwards (0.05 - 0.1 mm/U)

5. Travel out of the work piece with rapid-feed, forwards (direction of spindle rotation: **clockwise**).

6. Change the direction of the spindle rotation **counter-clockwise** (blades retracted).

7. Withdraw the tool from the work piece with rapid-feed, backwards.

ER ..... Rapid-Feed, backwards

## 2.2. Cutting Data

Apart from the quality of the material the cutting values depend on the stability of the machine and the state of the preparatory treatment (casting inclusions, interrupted cut, etc.). The following data can be referenced as standard values:

**Cutting speeds:** According to other two-bladed HSS tools in the corresponding material and with the equivalent countersink diameter.

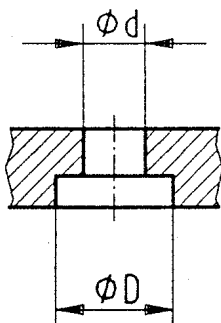
Please pay attention to the kinematics of the tool. When working with high speed rates we recommend you to reduce them when changing the sense of rotation.

Examples (standard values):

revs. / min.  D	steel cast iron materials		non-ferrous heavy metals	
	HSS 20 m/min. (65 sfpm)	carbide 35 m/min. (115 sfpm)	HSS 30 m/min. (98 sfpm)	carbide 45 m/min. (148 sfpm)
Ø 8	800	1400	1200	1800
Ø 10	640	1120	960	1440
Ø 20	320	560	480	720
Ø 30	220	380	320	480
Ø 40	160	280	240	360
Ø 50	120	220	200	280
Ø 60	100	180	160	240

(sfpm = 3.28 \* m/min.)

**Feed rates:** 0,04 to 0,1 mm/rev.  
The feed is based on the relation between the countersink diameter (D) and the bore diameter (d).  
(as diameter (D) approaches 2x that of diameter (d) ==> the slower the feed)



Standard values:

Feed rates	Relation D / d				
	1.9	1.8	1.6	1.4	1.2
mm/rev.	0.03	0.04	0.06	0.08	0.1
in./rev.	0.0012	0.0016	0.0023	0.0030	0.0040