

Drilling Cycles for myCNC

Below is a sample block of code utilizing the myCNC drilling cycle:

```
G90 G21 G54.  
G0 X50. Y50. Z3.  
G0 Z10.  
M3 S800  
G98 G83 X0 Z-9. R1. Q1 P0. F500 L1000  
G98 G83 X10 Z-9. R1. Q3 J0.5 K1 P0. F500. L1000  
G98 G73 X20 Z-9. R1. Q3 J0.5 K1 P0. F500. L1000  
G98 G81 X30 Z-9. R1. Q3 J0.5 K1 P0. F500. L1000  
G99 X40.  
G80  
M5
```

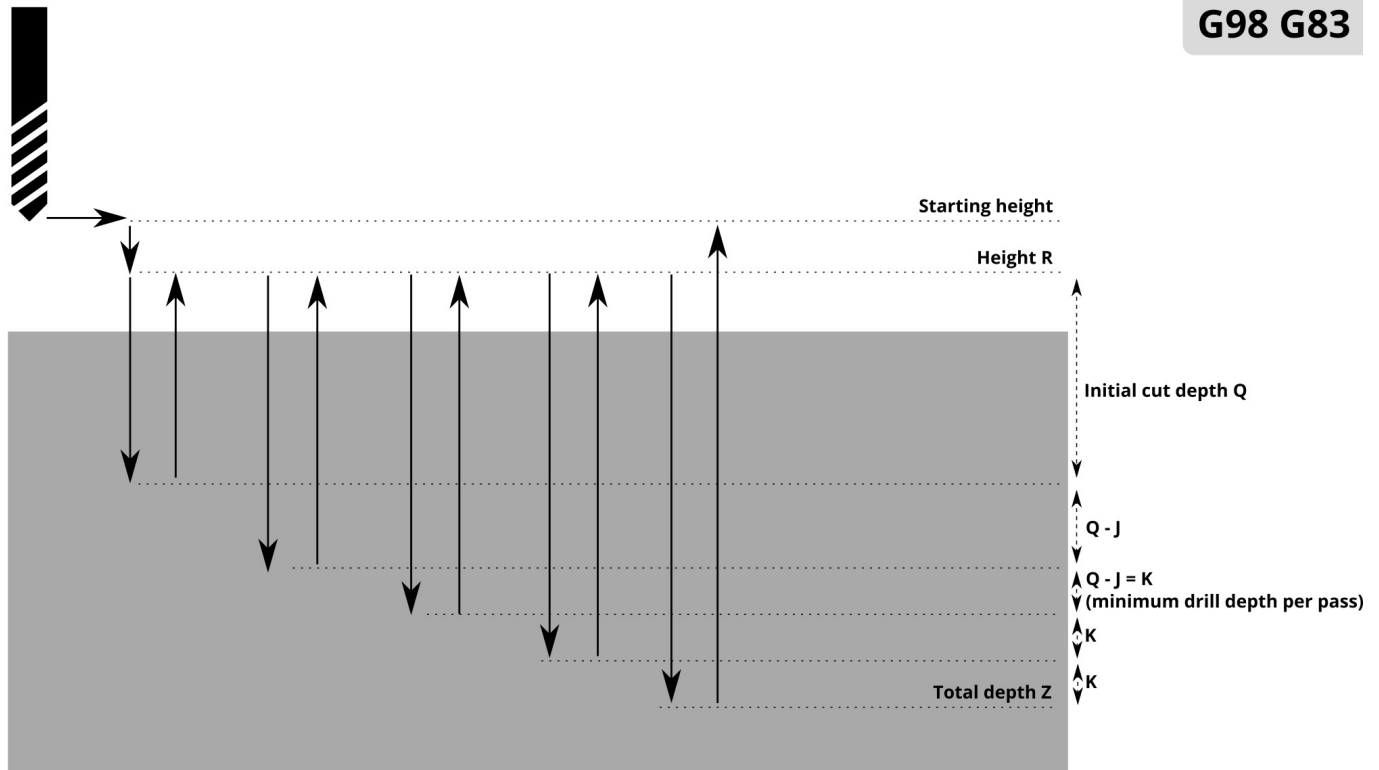
The nomenclature functions in the following manner:

Code	Meaning
G83	Drilling cycle command
G98	Raise to starting height at the end of cycle
G99	Raise to height R at the end of cycle
R	Position of the R height
F	Drill speed
L	Lift speed
Z	Total drill depth
P	Pause (in seconds)
Q	Initial cut depth
J	Distance to incrementally reduce drill depth by on each pass
K	Minimum drill depth per pass

The two major differences for the drilling cycle are the G-codes G98 (raise back to starting height at the end of the cycle) and G99 (raise back to height R at the end of the cycle).

G98 G83

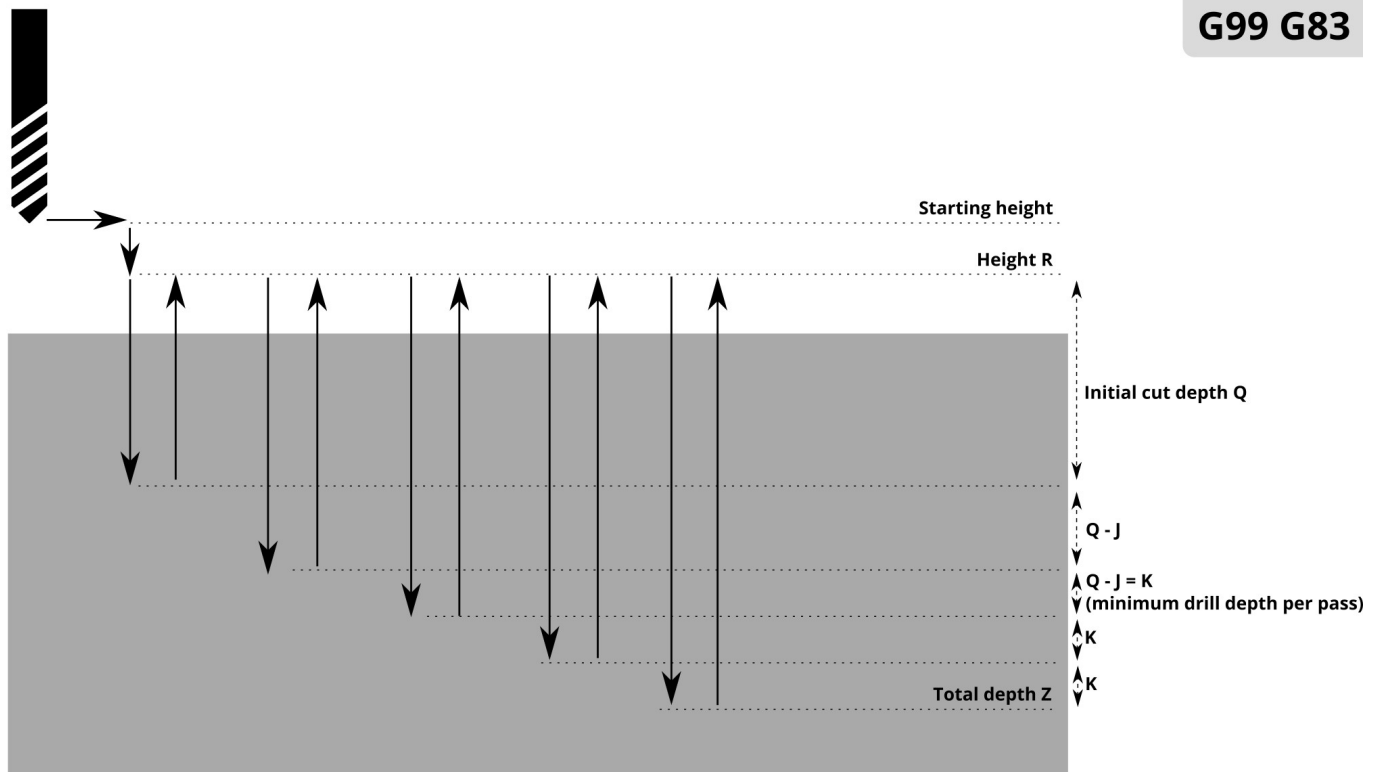
An illustration of the command utilizing the G98 G83 block:

G98 G83

1. The drill is located at Starting Height
2. Move to Height R
3. Begin cutting, lowering itself by initial cut depth, Q
4. Rise back to Height R
5. Cut additional material, distance from R is $(Q + (Q-J))$, where J is the incremental distance which is reduced each pass
6. Rise back to Height R
7. Cut additional material, distance from R is $(Q + (Q-J) \cdot [\text{number of current pass}])$. Repeat until the $(Q-J) \cdot [\text{number of current pass}]$ distance is equal to K, which is the minimum drill depth per pass.
8. Repeat drilling procedure lowering the drill by distance K every pass, until Total Depth Z is reached.
9. Raise drill to initial Starting Height to finish the drilling cycle

G99 G83

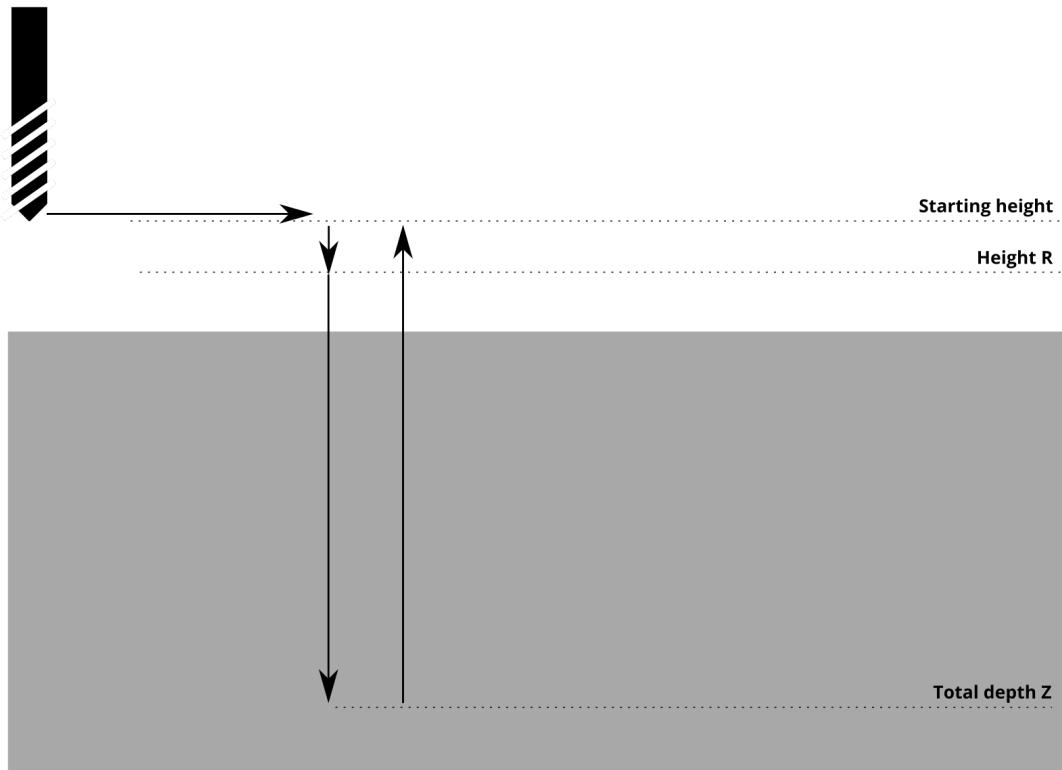
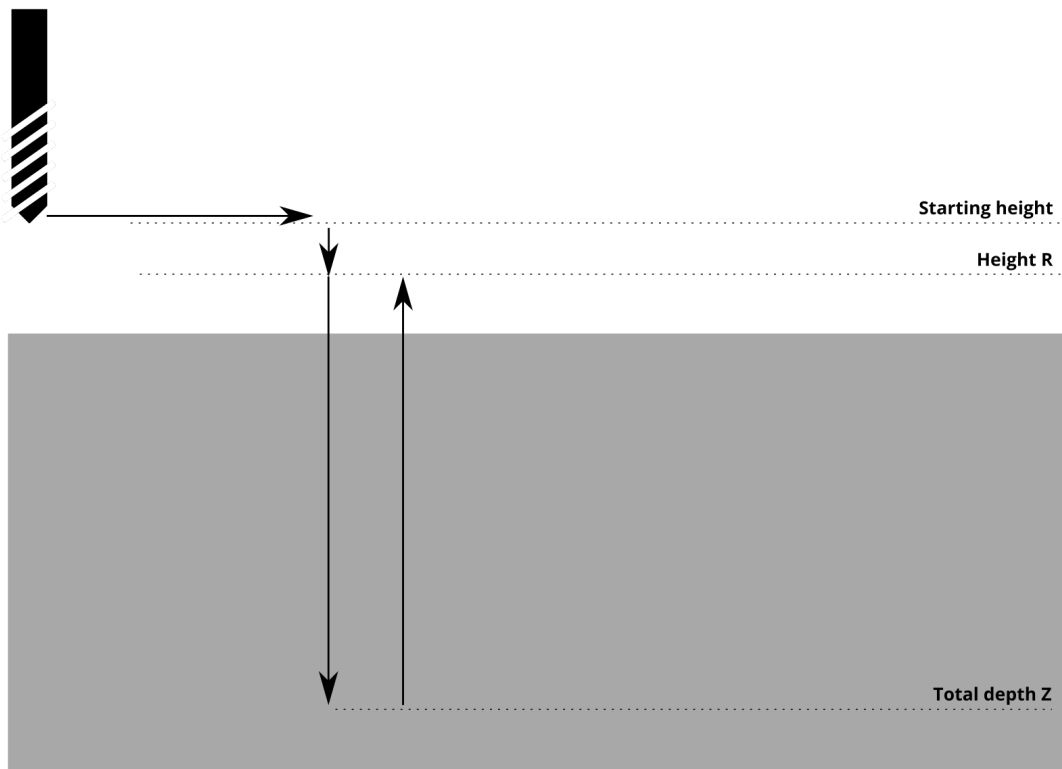
An illustration of the command utilizing the G98 G83 block:

G99 G83

1. The drill is located at Starting Height
2. Move to Height R
3. Begin cutting, lowering itself by initial cut depth, Q
4. Rise back to Height R
5. Cut additional material, distance from R is $(Q + (Q-J))$, where J is the incremental distance which is reduced each pass
6. Rise back to Height R
7. Cut additional material, distance from R is $(Q + (Q-J)*[\text{number of current pass}])$. Repeat until the $(Q-J)*[\text{number of current pass}]$ distance is equal to K, which is the minimum drill depth per pass.
8. Repeat drilling procedure lowering the drill by distance K every pass, until Total Depth Z is reached.
9. Raise drill to height R to finish the drilling cycle

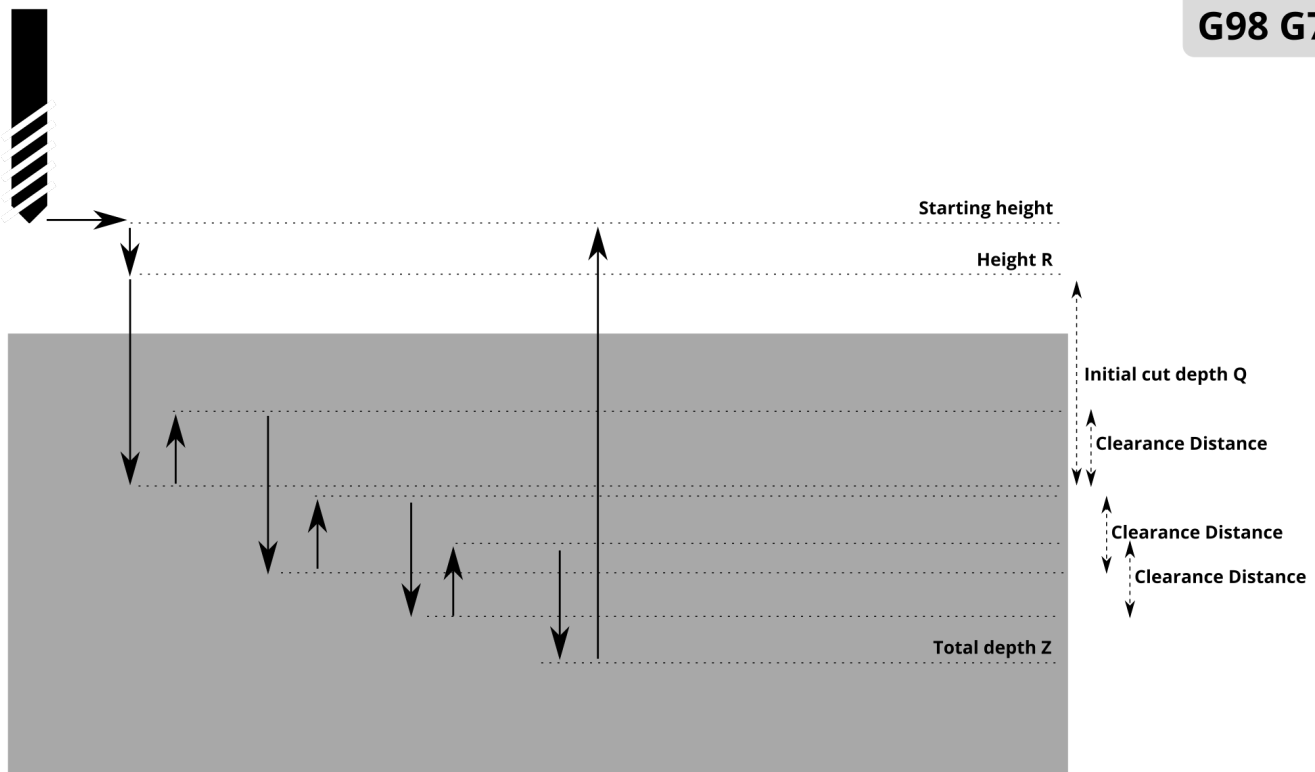
G81

A cycle for drilling in one pass (immediately going down to the Total Depth Z). G98/G99 and drill/lift speeds also apply.

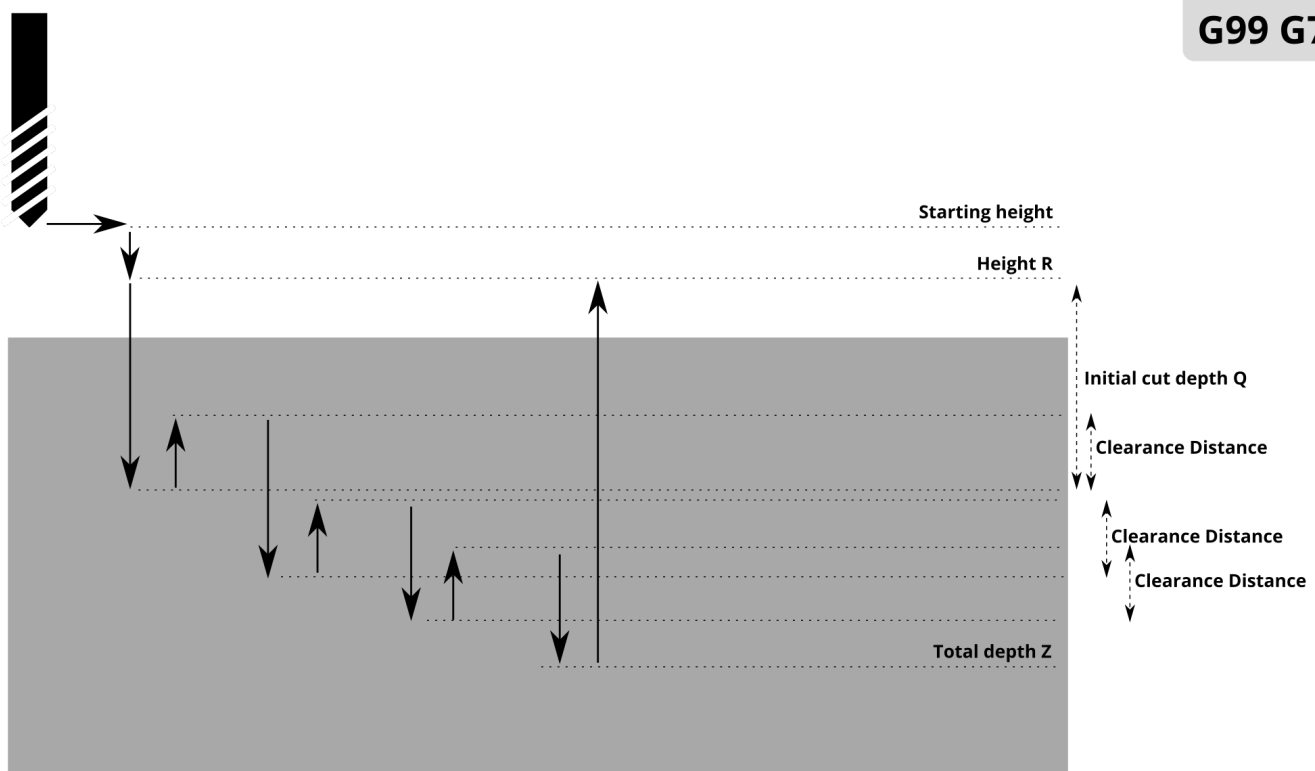
G98 G81**G99 G81****G73**

G73 - cycle with chip breaking. Similar to G83, but G73 differs in that it pulls the tool out not to the very end, but by a fixed (typically a very small, such as 0.5 mm) distance called Clearance Distance. G98/G99 and drill/lift speeds also apply.

G98 option:

G98 G73

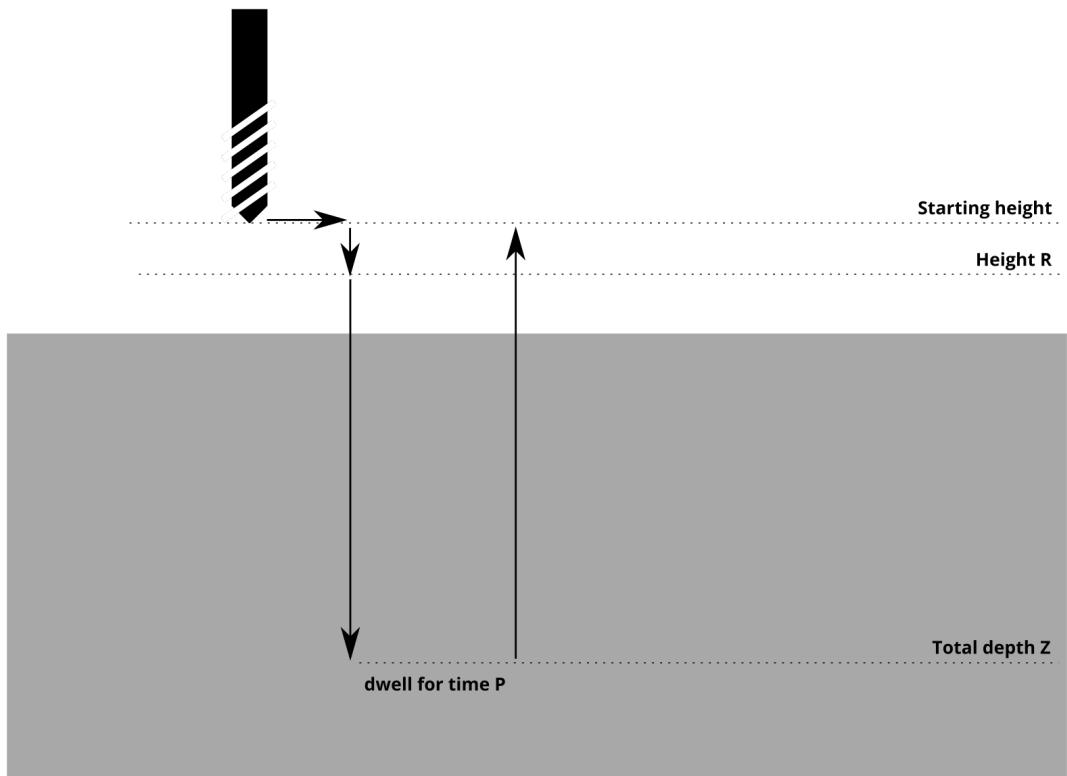
G99 option:

G99 G73**G82**

G82 is the standard drilling cycle with a dwell of time P at the bottom of the hole.

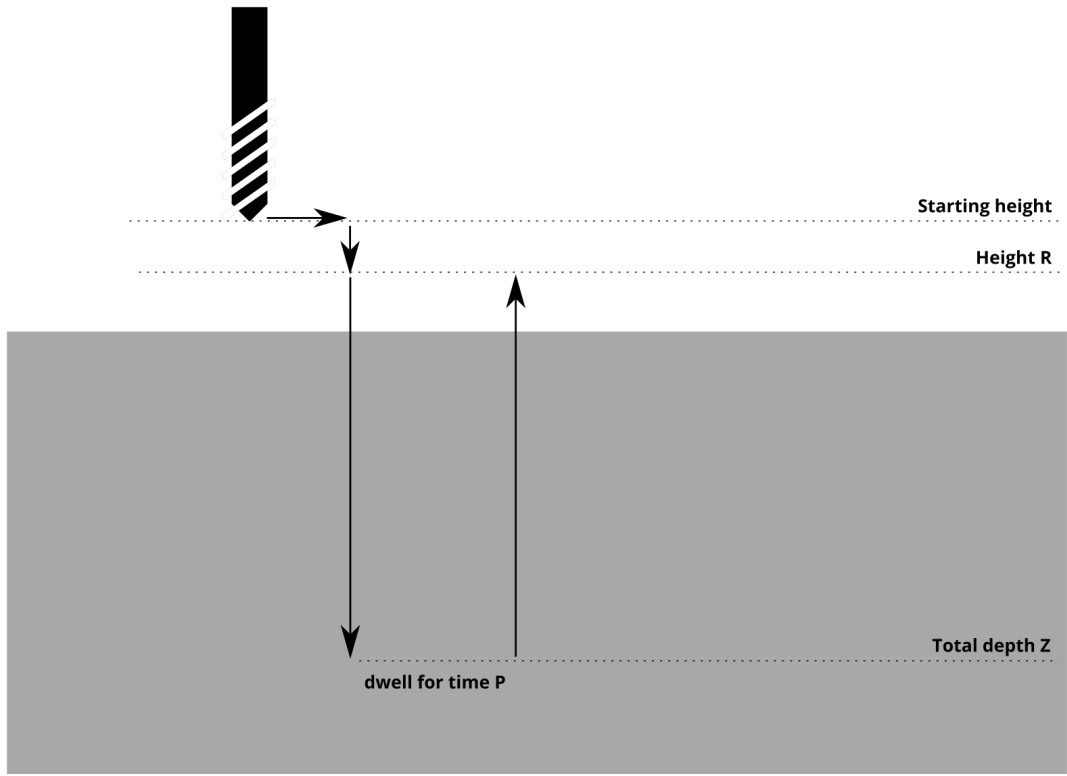
G98 option:

G98 G82



G99 option:

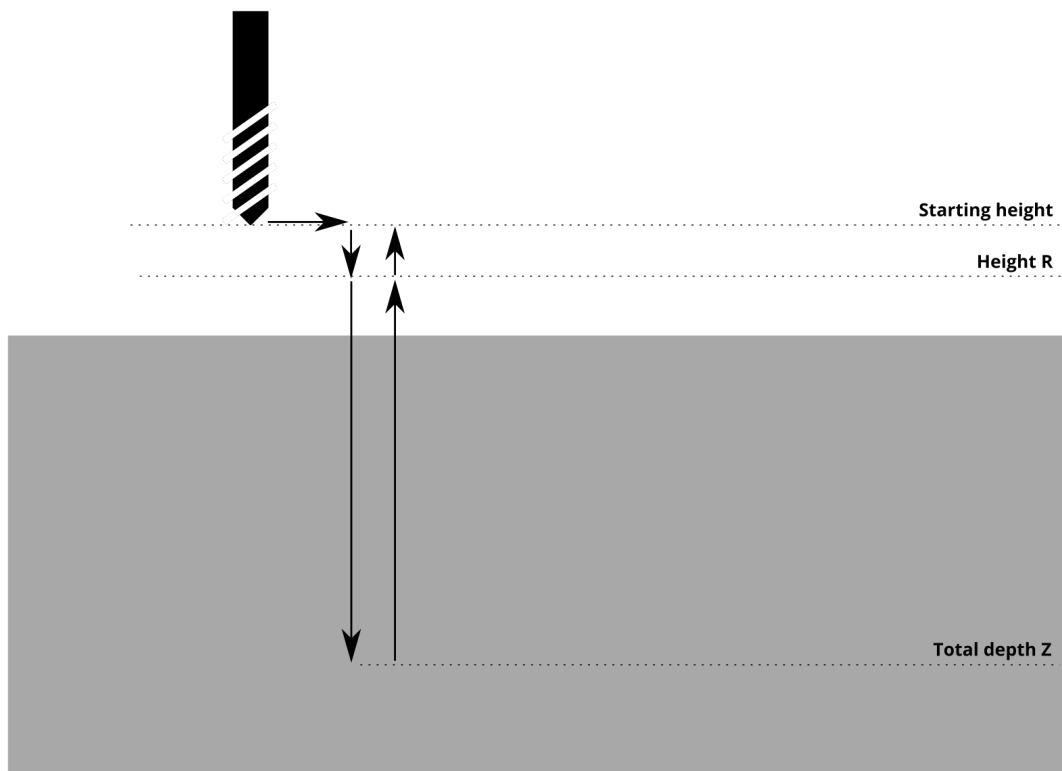
G99 G82



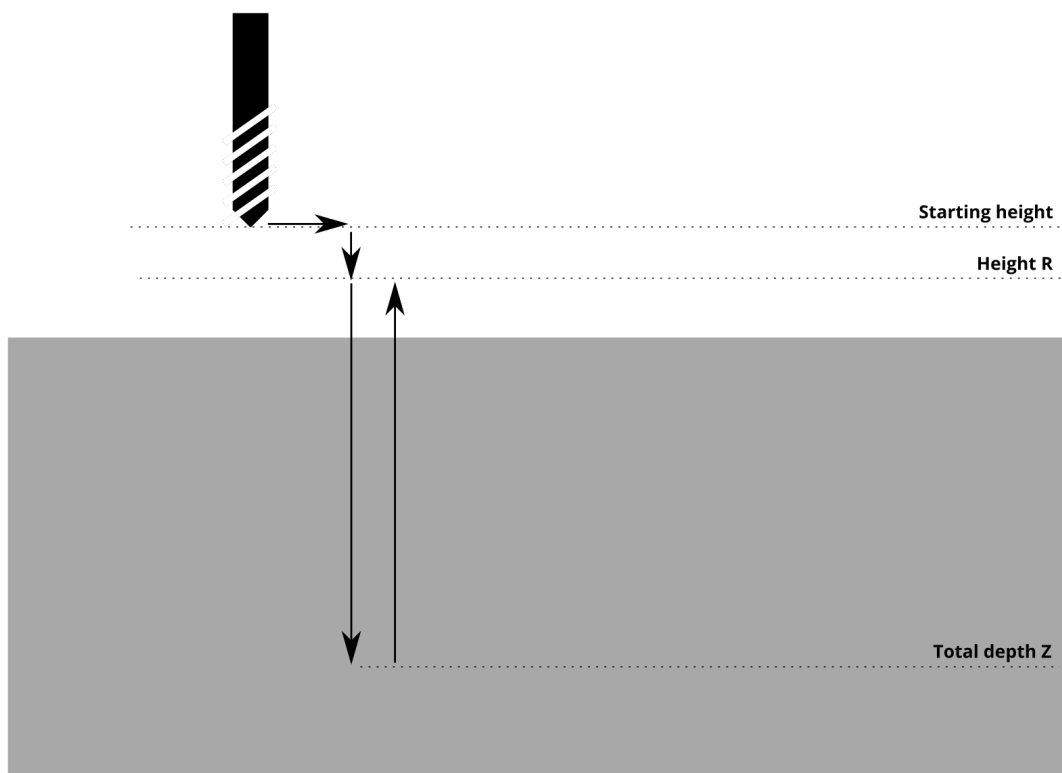
G85

G85 boring cycle is similar to G82, minus the dwell time at the bottom of the hole.

G98 option:

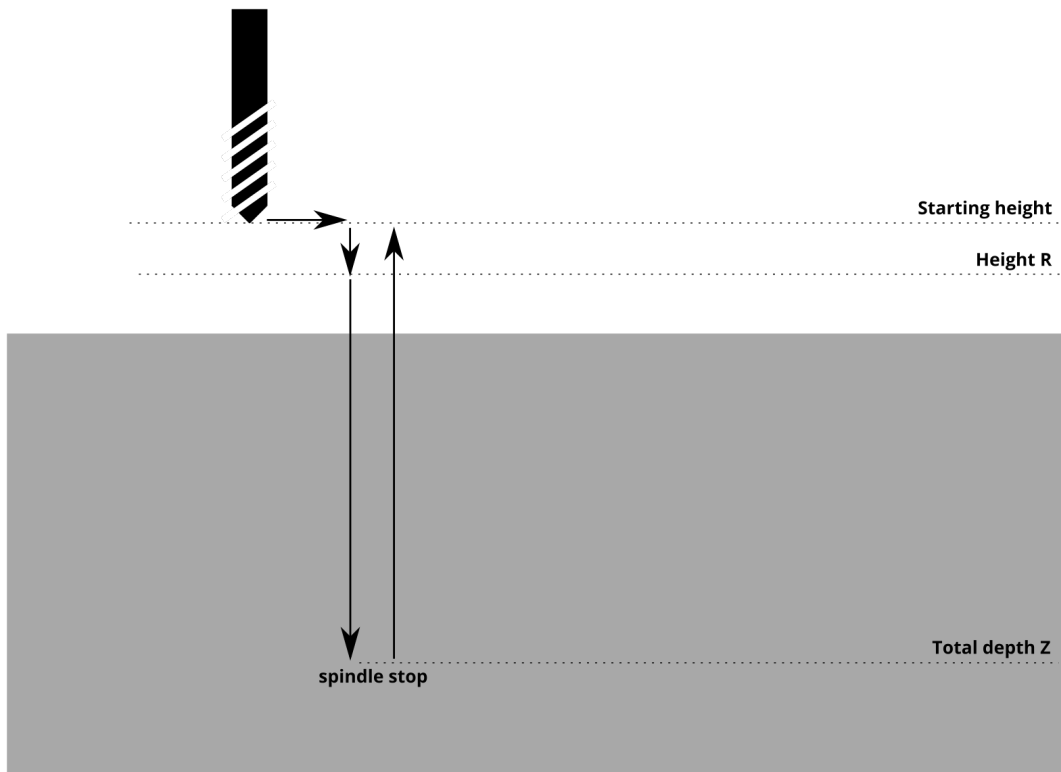
G98 G85

G99 option:

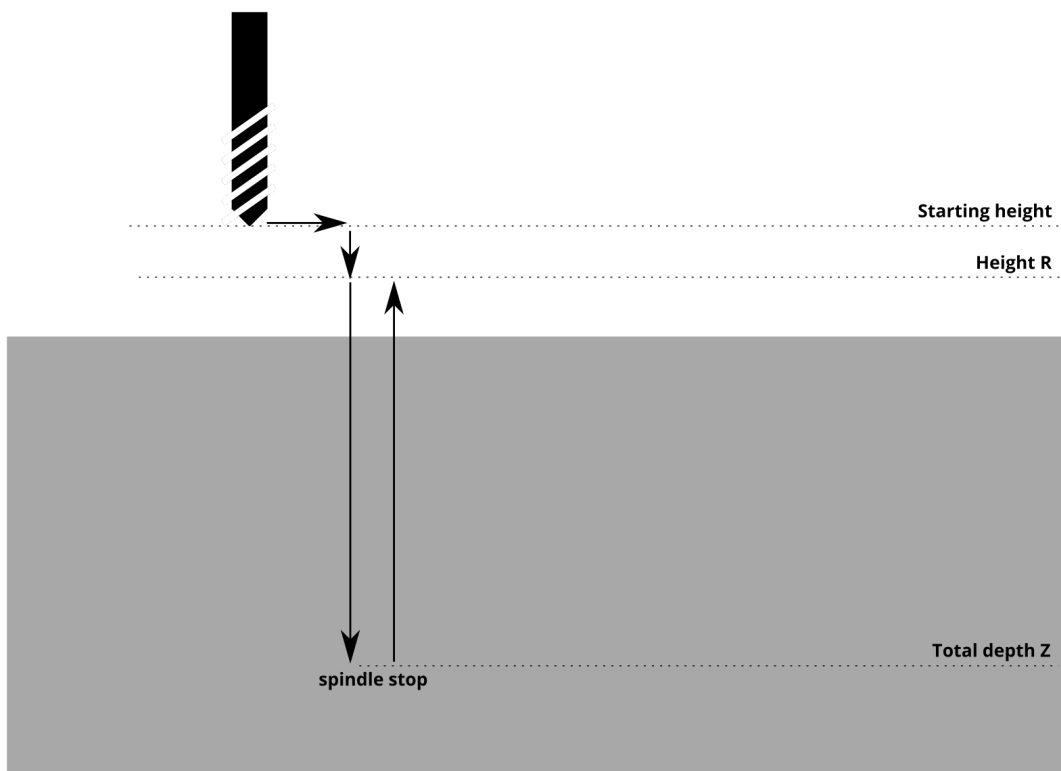
G99 G85**G86**

The G86 cycle is similar to the G82/G85 cycles, with a regular boring cycle down to Total Depth Z and a spindle stop at the bottom of the hole.

G98 option:

G98 G86

G99 option:

G99 G86

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