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
```

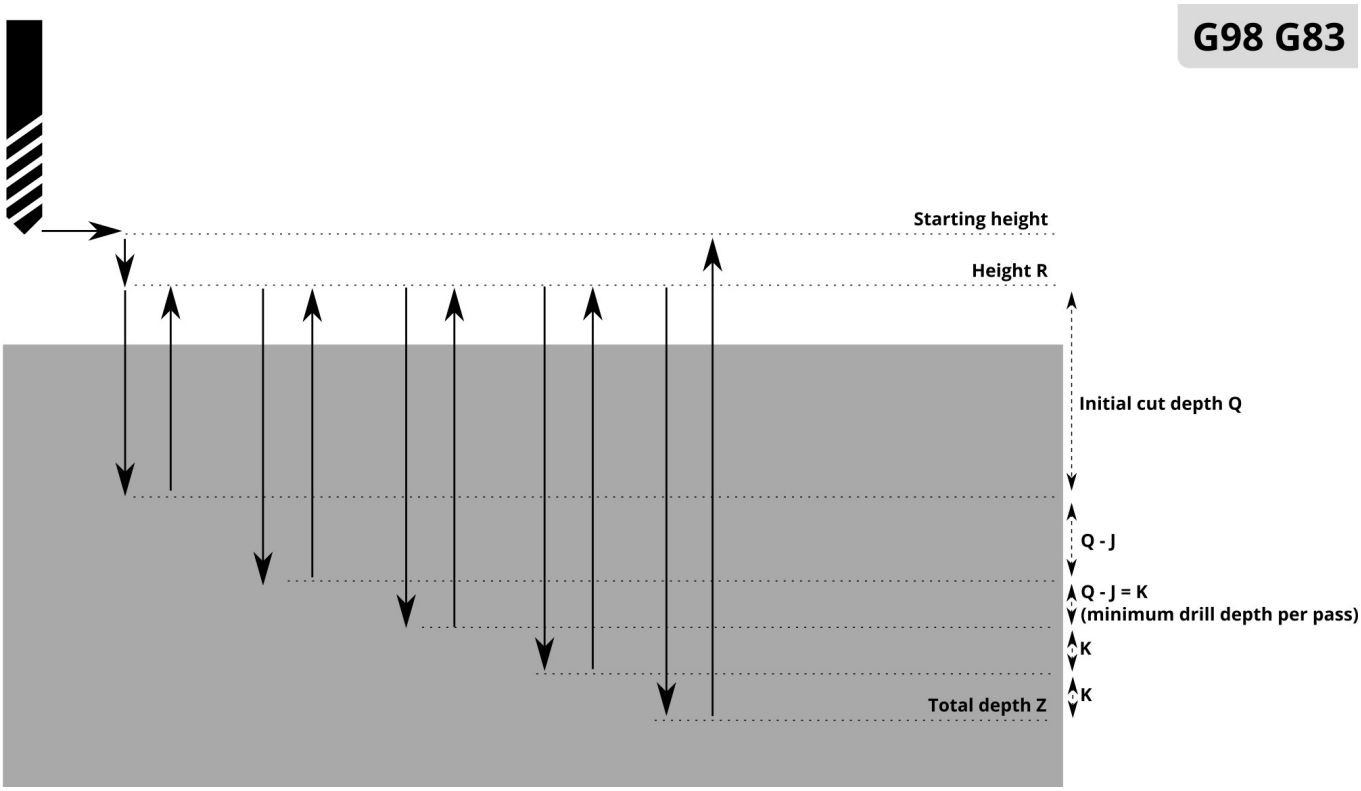
The nomenclature functions in the following manner:

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

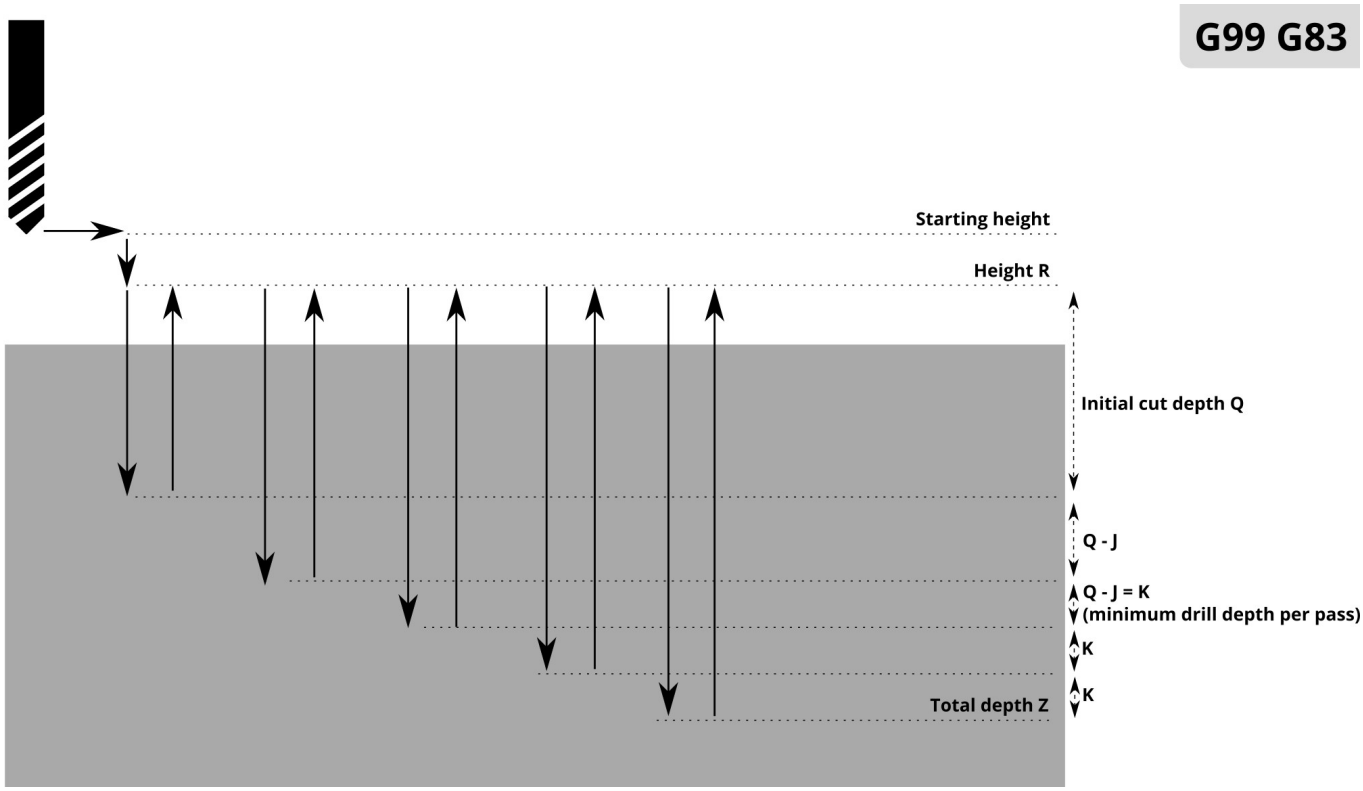
An illustration of the command utilizing the G98 G83 block:



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*[number of current pass])). Repeat until the (Q-J*[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:

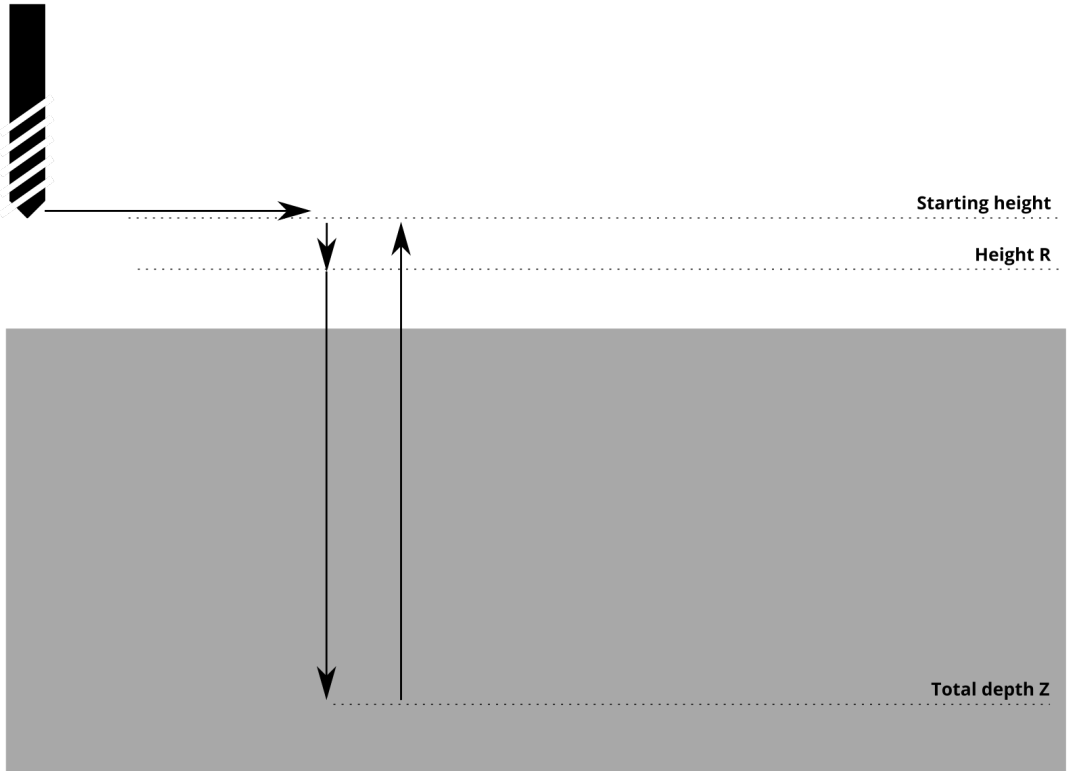


1. The drill is located at Starting Height
2. Move to Height R
3. Begin cutting, lowering itself by initial cut depth, Q
4. Rise back to Height R
5. Cut additional material, distance from R is (Q + (Q-J)), where J is the incremental distance which is reduced each pass
6. Rise back to Height R
7. Cut additional material, distance from R is (Q + (Q-J*[number of current pass])). Repeat until the (Q-J*[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

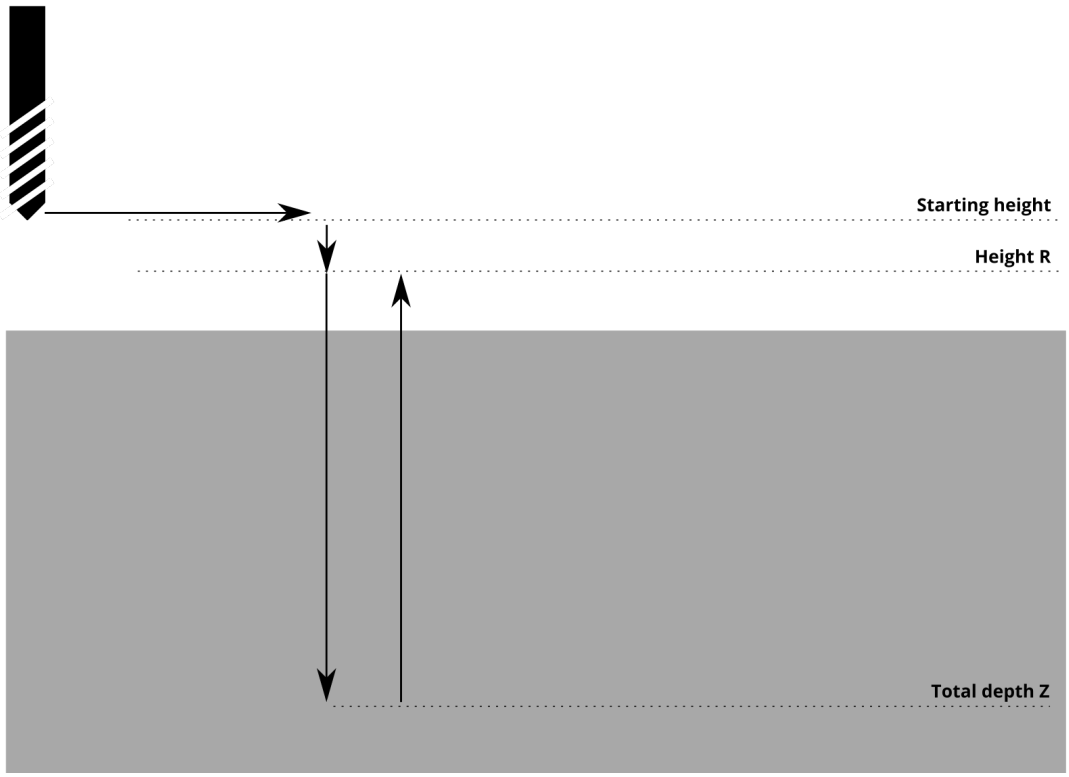
G81

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



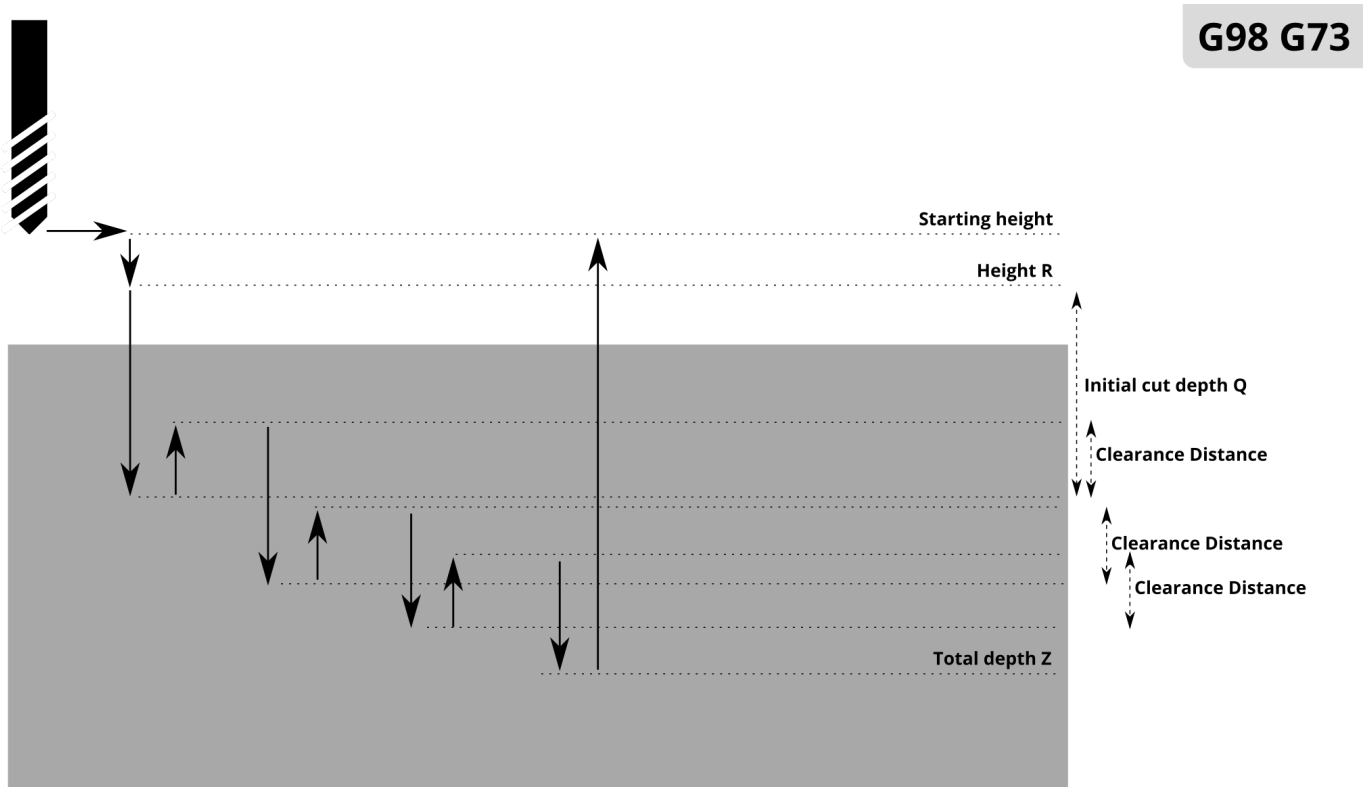
G99 G81



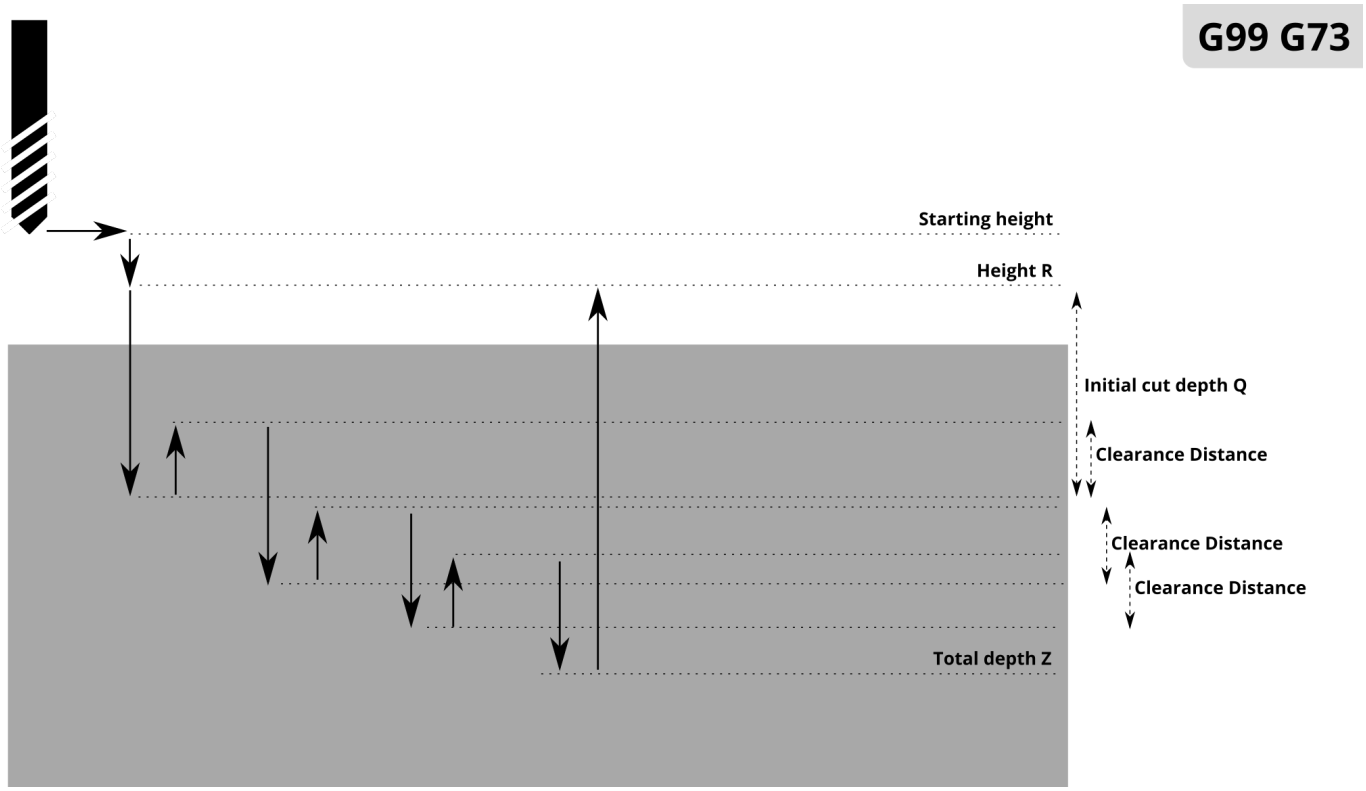
G73

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:



G99 option:

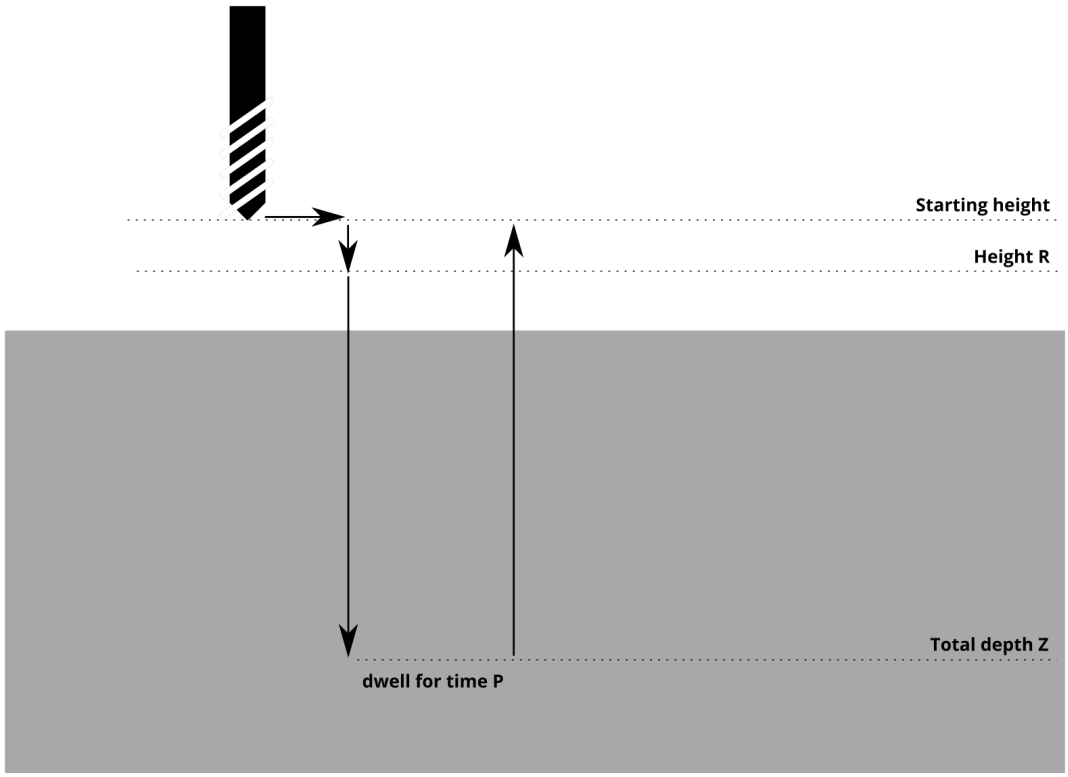


G82

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

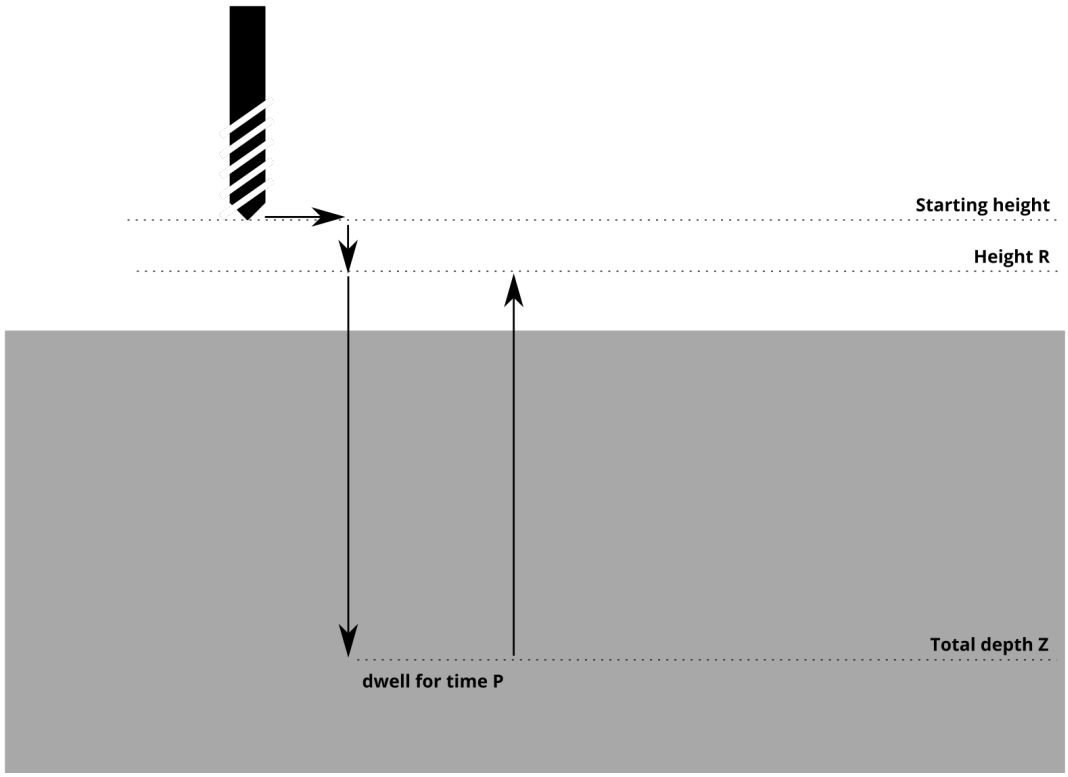
G98 option:

G98 G82



G99 option:

G99 G82

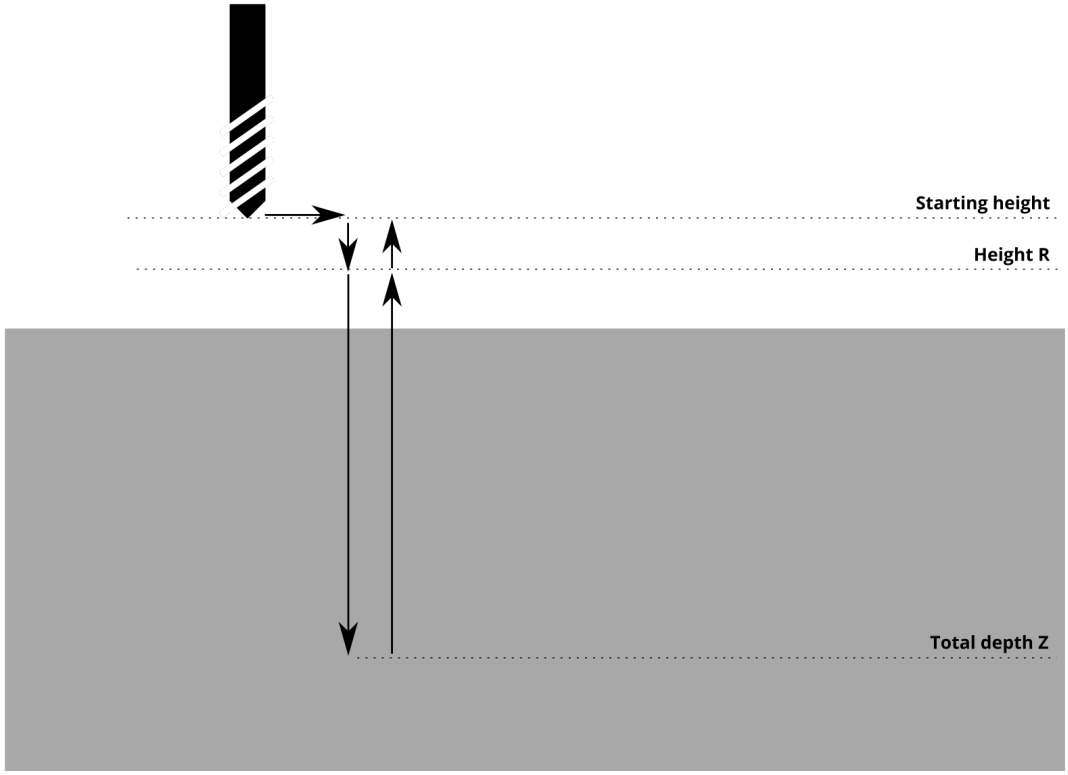


G85

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

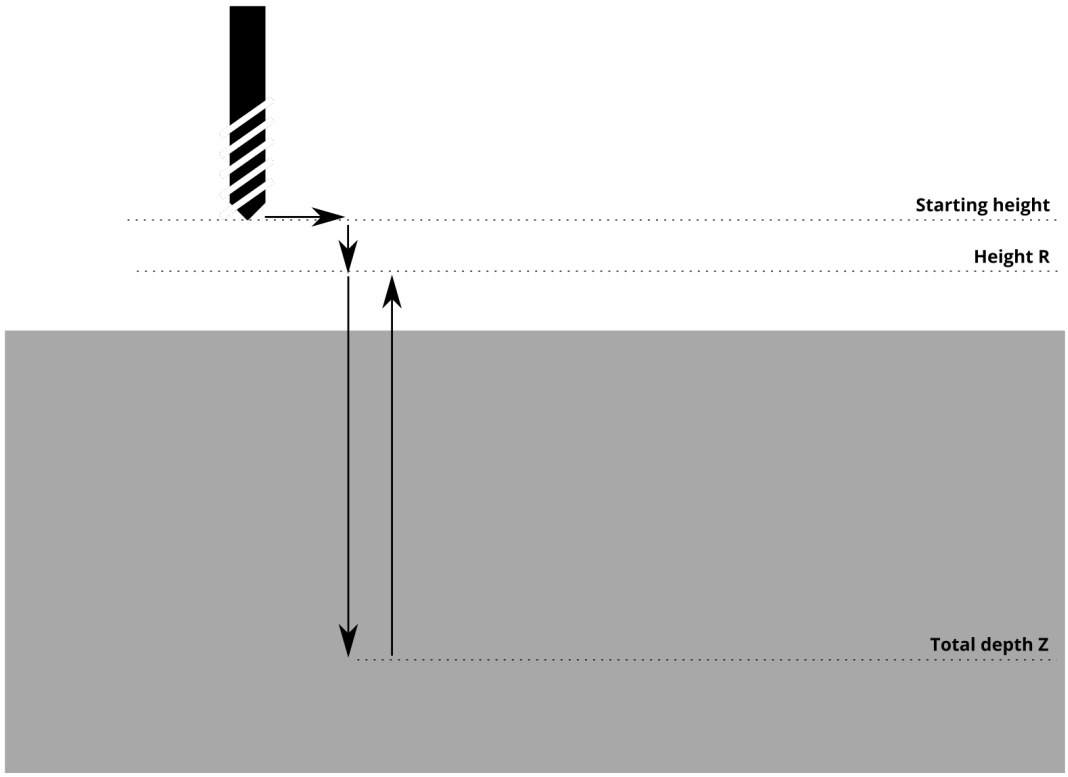
G98 option:

G98 G85



G99 option:

G99 G85

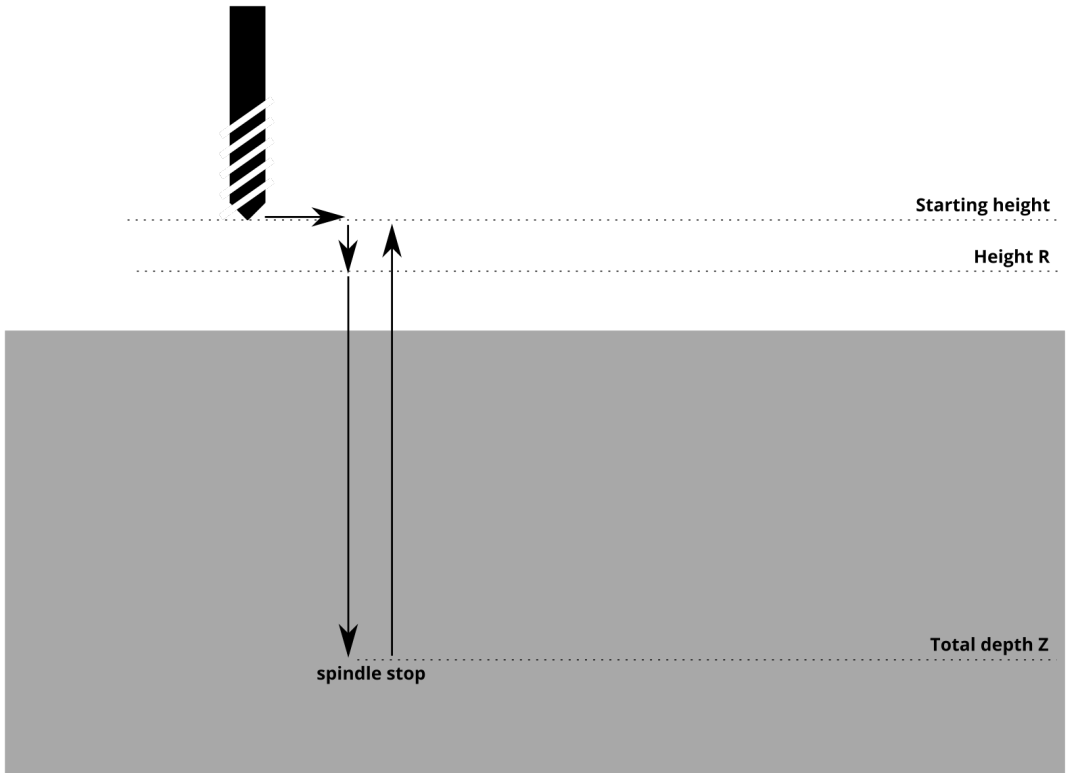


G86

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