

2.1 Drilling cycles

2.1.8 Boring 2 – CYCLE86



Programming

CYCLE86 (RTP, RFP, SDIS, DP, DPR, DTB, SDIR, RPA, RPO, RPAP, POSS)



Parameters

RTP	real	Retraction plane (absolute)
RFP	real	Reference plane (absolute)
SDIS	real	Safety clearance (enter without sign)
DP	real	Final drilling depth (absolute)
DPR	real	Final drilling depth relative to reference plane (enter without sign)
DTB	real	Dwell time at final drilling depth (chip breaking)
SDIR	int	Direction of rotation Value: 3 (for M3) 4 (for M4)
RPA	real	Retraction path in abscissa of the active plane (incremental, enter with sign)
RPO	real	Retraction path in ordinate of the active plane (incremental, enter with sign)
RPAP	real	Retraction path in applicate of the active plane (incremental, enter with sign)
POSS	real	Spindle position for oriented spindle stop in the cycle (in degrees)



Function

The tool drills at the programmed spindle speed and feedrate to the programmed final drilling depth. With Boring 2, oriented spindle stop is activated with the SPOS command once the drilling depth has been reached. Then, the programmed retraction positions are approached in rapid traverse and, from there, the retraction plane.



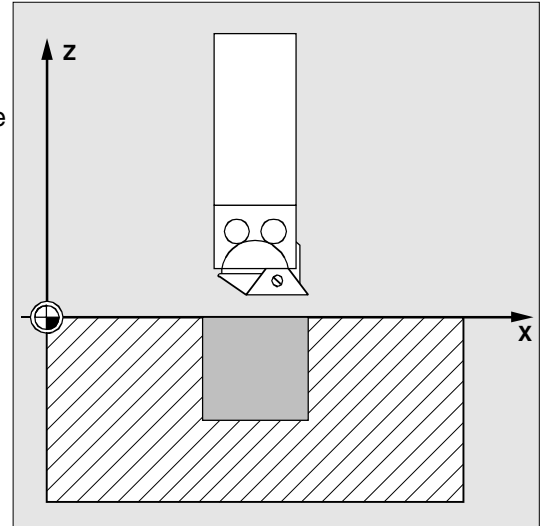
Sequence of operations

Position reached prior to cycle start:

The drilling position is the position in the two axes of the selected plane.

The cycle implements the following motion sequence:

- Approach of the reference plane brought forward by the safety clearance with G0
- Traverse to final drilling depth with G1 and the feedrate programmed before the program call
- Dwell time at final drilling depth
- Oriented spindle stop at the spindle position programmed under POSS
- Traverse retraction path in up to three axes with G0
- Retraction to the reference plane brought forward by the safety clearance with G0
- Retraction to the retraction plane with G0 (initial drilling position in both axes on the plane)



Description of parameters

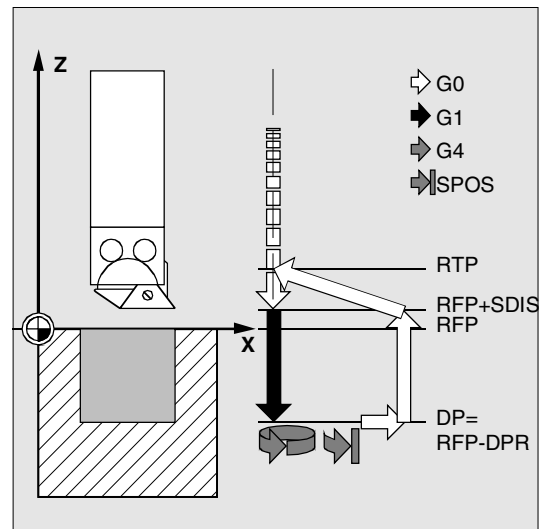
See Section 2.1.2. (Drilling, Centering – CYCLE81) for a description of parameters RTP, RFP, SDIS, DP, DPR

DTB (dwell time)

Parameter DTB is the dwell time at the final drilling depth (chip breaking) in seconds.

SDIR (direction of rotation)

With this parameter you determine the direction of rotation with which boring is performed in the cycle. If values other than 3 or 4 (M3/M4) are generated, alarm 61102 "No spindle direction programmed" is output and the cycle is not executed.



2.1 Drilling cycles

RPA (retraction path, in abscissa)

Under this parameter you define a retraction movement in the abscissa, which is executed after the final drilling depth has been reached and oriented spindle stop has been performed.

RPO (retraction path, in ordinate)

Under this parameter you define a retraction movement in the ordinate which is executed after the final drilling has been reached and oriented spindle stop has been performed.

RPAP (retraction path, in applicate)

Under this parameter you define a retraction movement in the boring axis which is executed after the final drilling has been reached and oriented spindle stop has been performed.

POSS (spindle position)

Under POSS the spindle position for the oriented spindle stop which is performed after the final drilling depth has been reached is programmed in degrees.

Further notes

With the SPOS command you can perform an oriented spindle stop of the active master spindle. The angular value is programmed with a transfer parameter.

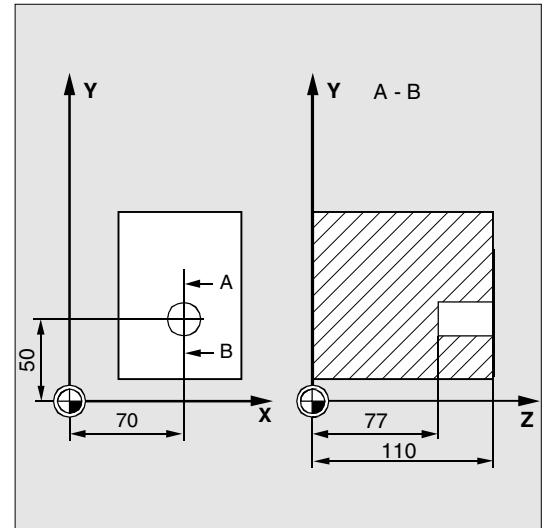
Cycle CYCLE86 can be used if the spindle to be used for the boring operation is technically able to go into position-controlled spindle operation.



Programming example

Second boring pass

Cycle CYCLE86 is called at position X70 Y50 in the ZX plane. The boring axis is the Z axis. The final drilling depth is programmed as an absolute value, a safety clearance is not defined. The dwell time at the final drilling depth is 2 s. The top edge of the workpiece is positioned at Z110. In the cycle, the spindle is turned with M3 and stops at 45 degrees.



DEF REAL DP, DTB, POSS	Definition of parameters
N10 DP=77 DTB=2 POSS=45	Value assignments
N20 G0 G17 G90 F200 S300	Specification of technology values
N30 D3 T3 Z112	Traverse to retraction plane
N40 X70 Y50	Traverse to drilling position
N50 CYCLE86 (112, 110, , DP, , DTB, 3, -> -> -1, -1, +1, POSS)	Cycle call with absolute drilling depth
N60 M30	End of program

-> Must be programmed in a single block