

Skipped Holes with Obstacles

The first step is to calculate the absolute XY coordinates of the 12 holes, and store them into a subprogram. The key element of the subprogram development is not just to know which hole locations to precede with the block skip symbol (/), but how to toggle between *G98* and *G99* to control efficiency and safety in jumping between holes and lugs. Also note the apparent repetition of *G99* in blocks with and without the block skip symbol. Also note the use of *L0* (or *K0*) in the fixed cycle call for both tools, to prevent cutting the hole twice at the current XY location.

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(23-03.NC - FIRST TOOL IS IN SPINDLE AT STARTUP)
(X0Y0 IS CENTER OF RING - Z0 IS TOP OF THE RING - NOT THE LUGS)

(** PART A - ALL HOLES ***** BLOCK SKIP SWITCH OFF **)
(** PART B - HOLES 1-2-3-5-6-9-10-12 - SKIPPED 4-7-8-11 ** BLOCK SKIP SWITCH ON **)

(SAFETY NOTE - SET THE BLOCK SKIP SWITCH BEFORE PRESSING THE CYCLE START BUTTON)

(T01 - 15 MM DIA SPOT DRILL)
N1 G21
N2 G90 G54 G00 X59.0 Y0 S900 M03 T02
N3 G43 Z15.0 H01 M08
N4 G99 G82 R2.0 Z-5.3 P200 F150.0 L0
N5 M98 P6001
N6 G80 Z15.0 M09
N7 G28 Z15.0 M05
N8 M01

(T02 - 10 MM DIA DRILL)
N9 T02
M10 M06
N11 G90 G54 G00 X59.0 Y0 S780 M03 T01
N12 G43 Z15.0 H02 M08
N13 G99 G81 R2.0 Z-17.5 F220.0 L0
N14 M98 P6001
N15 G80 Z15.0 M09
N16 G28 Z15.0 M05
N17 G00 X0 Y350.0
N18 M06
N19 M30
%

O6001 (SUBPROGRAM FOR THE 12 HOLE PATTERN)
N601 X59.0 Y0
N602 X51.095 Y29.5
N603 G98 X29.5 Y51.095
/N604 G99 X0 Y59.0
N605 G99 X-29.5 Y51.095
N606 G98 X-51.095 Y29.5
/N607 X-59.0 Y0
/N608 G99 X-51.095 Y-29.5
N609 G99 X-29.5 Y-51.095
N610 G98 X0 Y-59.0
/N611 X29.5 Y-51.095
N612 X51.095 Y-29.5
N613 M99
%
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(METRIC UNITS)
 (START AT THE HOLE 1 LOCATION)
 (INITIAL LEVEL MUST BE MORE THAN 10 MM)
 (NO HOLE AT THE CURRENT LOCATION)
 (CALL SUBPROGRAM FOR HOLES - SPOT DRILL)
 (CANCEL CYCLE - CLEAR - COOLANT OFF)
 (Z-AXIS HOME - SPINDLE STOP)
 (OPTIONAL PROGRAM STOP)

(SEARCH T02 IF NECESSARY)
 (T02 TO THE SPINDLE)
 (START AT THE HOLE 1 LOCATION)
 (INITIAL LEVEL MUST BE MORE THAN 10 MM)
 (NO HOLE AT THE CURRENT LOCATION)
 (CALL SUBPROGRAM FOR 12 HOLES - DRILL)
 (CANCEL CYCLE - CLEAR - COOLANT OFF)
 (Z-AXIS HOME - SPINDLE STOP)
 (CLEAR POSITION)
 (T01 TO SPINDLE)
 (PROGRAM END)

(HOLE 1 - BOTH PARTS)
 (HOLE 2 - BOTH PARTS)
 (HOLE 3 - BOTH PARTS)
 (HOLE 4 - SKIPPED FOR PART B)
 (HOLE 5 - BOTH PARTS)
 (HOLE 6 - BOTH PARTS)
 (HOLE 7 - SKIPPED FOR PART B)
 (HOLE 8 - SKIPPED FOR PART B)
 (HOLE 9 - BOTH PARTS)
 (HOLE 10 - BOTH PARTS)
 (HOLE 11 - SKIPPED FOR PART B)
 (HOLE 12 - BOTH PARTS)
 (END OF SUBPROGRAM O6001)