

Trial Cut for Turning

The following blocks contain the operation of the first tool only. No block skip is used for that tool, and the listing is included only as the basis for the development of the program for *Tool 3* that will do the finishing.

N1 G21 T0100 M41	(METRIC - TOOL 1 AND LOW GEAR RANGE)
N2 G50 S1500	(MAXIMUM RPM SETTING)
N3 G96 S100 M03	(CONSTANT SURFACE SPEED - NORMAL ROTATION)
N4 G00 G41 X70.0 Z0 T0101 M08	(START POSITION)
N5 G01 X-1.6 F0.25	(FACE PART)
N6 G00 W2.5	(CLEAR AWAY)
N7 G42 X66.0	(START POSITION FOR ROUGHING)
N8 G71 P9 Q13 U1.6 W0.08 D3000 F0.35	(ROUGHING CYCLE PARAMETERS)
N9 G00 X36.0	(START OF CONTOUR)
N10 G01 X44.0 Z-1.5 F0.15	(FRONT CHAMFER CUTTING)
N11 Z-47.0 R4.0 F0.2	(DIAMETER AND RADIUS CUTTING)
N12 X62.0	(MIDDLE FACE CUTTING)
N13 X66.0 W-2.0 F0.15	(MIDDLE CHAMFER CUTTING)
N14 G00 G40 X80.0 Z60.0 T0100	(TOOL CHANGE POSITION)
N15 M01	(OPTIONAL STOP)

Note the block N8, where U1.6 parameter indicates the amount of stock left on the finished diameter. The finished diameter is specified in block N10 as X44.0 (as per drawing). Theoretical rough diameter will be:

$$44.0 + 1.6 = 45.6 \text{ mm}$$

To select the trial cut diameter, it must be between the rough diameter and the finish diameter. Its length should be long enough to use a measuring device, for example, a micrometer.

In the finish program, the trial cut will take place on diameter 44.250, to the Z-length of 7 mm:

N16 T0300 M42	(TOOL 3 AND LOW GEAR RANGE)
N17 G96 S150 M03	(CONSTANT SURFACE SPEED - NORMAL ROTATION)
/ N18 G00 G42 X44.25 Z2.5 T0202 M08	(START POSITION FOR TRIAL CUT)
/ N19 G01 Z-7.0 F0.2	(TRIAL CUT ON DIAMETER 44.25)
/ N20 G00 U5.0	(CLEAR POSITION)
/ N21 G40 X80.0 Z60.0 T0200 M09	(TOOL CHANGE POSITION)
/ N22 M00	(PROGRAM STOP - DIAMETER MUST BE 44.250)
/ N23 S150 M03	(CONSTANT SURFACE SPEED - NORMAL ROTATION)
N24 G00 G42 X70.0 Z2.5 T0202 M08	(FINISHING CYCLE START POSITION)
N25 G70 P9 Q13	(FINISHING CYCLE)
N26 G00 G40 X80.0 Z60.0 T0200	(TOOL CHANGE POSITION)
N27 M30	(END OF PROGRAM)
%	