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Introduction

The Purpose of this document is to give additional information for the instructional videos. Please click on the Table of Content to jump to the desired information.

M Code List

Main Spindle	Sub Spindle	Description
M00		Program Stop
M01		Program Option Stop
M02		Program End
M03	M203	Spindle CW
M04	M204	Spindle CCW
M05	M205	Spindle Stop
M08	M208	Coolant ON
M09	M209	Coolant OFF
M10	M210	Chuck Clamp
M11	M211	Chuck Unclamp
M19	M219	Spindle Orientation
M30		End of Program and Rewind
M31		
M32		
M34		
M35		
M36	M236	Spindle Center Air Blow ON
M37	M237	Spindle Center Air Blow OFF
M50	M250	Spindle C Axis ON
M51	M251	Spindle C Axis OFF
M57	M257	Spindle Air Blow ON
M58	M258	Spindle Air Blow OFF
M70		
M71		
M72		
M73		
M76		Spindle Synchronization Check Ready
M77		Ignore Spindle Synchronization Finish Signal Available
M78		Spindle Speed Synchronization Finish Check

M79	Spindle Phrase Synchronization Finish Check
M80	Bar Feeder Auto ON
M81	Bar Feeder Auto OFF
M82	Bar Feeder Feeding Allow ON
M83	Bar Feeder Feeding Allow OFF

M84	Bar Feeder Back Allow ON
M85	Bar Feeder Back Allow OFF
M86	Wait Bar Feeder Change Bar ON
M87	Wait Bar Feeder Change Bar OFF
M89	Work Parts Counter
M90	
M91	
M92	
M98	Call Sub Program
M99	Return to Main Program
M133	Chip Conveyor Forward
M134	Chip Conveyor Backward
M135	Chip Conveyor Stop
M170	Call OFF Machining Spindle
M171	Left Spindle As Machining Spindle
M172	Right Spindle As Machining Spindle
M225	Finished Parts Conveyor ON
M226	Finished Parts Conveyor OFF
M259	
M260	

Sample Program

\$1
(BAROUT 2.515)
(IMTS 2018)
(BEARING BALL DEMO PART)
(8/02/2018)
!L1
G0G40G18G99M9
N1(35 DEG R.03)
G0G53Z0
T0101
M170
M171
G97S1500M4
X1.55
Z.005
G99
G1X-.037F.008
G0X1.486W.05
G1Z-1.0445
X1.55
G0Z.0025
G1X1.486
X1.422
Z-.4541
X1.486
G0Z.0025
G1X1.422
X1.358
Z-.3023
G3X1.422Z-.4541R.7463
G0Z.0025
G1X1.358
X1.294
Z-.22
G3X1.358Z-.3023R.7463
G0Z.0025
G1X1.294

X1.23
Z-.1581
G3X1.294Z-.22R.7463
G0Z.0025
G1X1.23
X1.166
Z-.1075
G3X1.23Z-.1581R.7463
G0Z.0025
G1X1.166
X1.102
Z-.0645
G3X1.166Z-.1075R.7463
G0Z.0025
G1X1.102
X1.038
Z-.0272
G3X1.102Z-.0645R.7463
G0Z.0025
G1X1.038
X.974
Z-.0021
G3X1.021Z-.018R.0658
G1X1.038Z-.0272
G0Z.0025
G1X.974
X.9255
G3X.974Z-.0021R.0658
G0X1.55
Z-.4541
X1.486
G1X1.422
G3X1.4273Z-.4868R.7463
X1.422Z-.5042R.0418
G1Z-.5583
X1.486
G0Z-.5042
G1X1.422
G3X1.4113Z-.514R.0418
G2Z-.5485R.0293
G3X1.4273Z-.5757R.0418
X1.422Z-.6084R.7463
G1Z-1.0445
X1.486
G0Z-.6084

G1X1.422
G3X1.358Z-.7602R.7463
G1Z-1.0445
X1.422
G0Z-.7602
G1X1.358
G3X1.294Z-.8425R.7463
G1Z-1.0445
X1.358
G0Z-.8425
G1X1.294
G3X1.23Z-.9044R.7463
G1Z-1.0445
X1.294
G0Z-.9044
G1X1.23
G3X1.166Z-.955R.7463
G1Z-1.0445
X1.23
G0Z-.955
G1X1.166
G3X1.102Z-.998R.7463
G1Z-1.0445
X1.166
G0Z-.998
G1X1.102
G3X1.038Z-1.0353R.7463
G1Z-1.0445
X1.102
G0Z-1.0353
G1X1.038
X1.021Z-1.0445
X1.038
G0X1.55
M9
G53Z0
M01

N2(DRILL.747 SANDVIK)
G0G53Z0
M170
M171
G97S700M3
T0202
G0G99X0

Z.1
G1Z-.05F.005
G0Z0.
G1Z-.2
G0Z-.15
G1Z-.35
G0Z-.3
G1Z-.5
G0Z-.45
G1Z-.65
G0Z-.6
G1Z-.8
G0Z-.75
G1Z-.95
G0Z-.9
G1Z-1.1
G0Z-1.05
G1Z-1.25
G0Z-1.2
G1Z-1.375
G0Z.2
G53Z0
M1

N3(35 DEG R.015 FINSH OD)
G0G53Z0
M170
M171
G97S2500M3
T0303
G0G99X-.9568
Z.1
G1Z.0025
G2X-1.0296Z-.0132R.0501
X-1.4274Z-.4721R.7306
X-1.4174Z-.4891R.0261
G3Z-.5422R.0449
G2X-1.4274Z-.5592R.0261
X-1.0296Z-1.0181R.7306
G0X-1.55
Z.05
X-.9568
G1Z0.
G2X-1.0259Z-.0149R.0476
X-1.4224Z-.4722R.7281

X-1.4133Z-.4876R.0236
G3Z-.5436R.0474
G2X-1.4224Z-.559R.0236
X-1.0259Z-1.0164R.7281
G0X-1.55
Z0
X-1.1
G1X-.7
G0Z.1
G0G53Z0
M1

N4(BORING BAR R.015 CHAMFER ONLY)
G0G53Z0
M170
M171
G97S1050M3
T0404
G0G99X-.9019
Z.1
G1Z.0025F.005
G3X-.8649Z-.0052R.0261
G1X-.8103Z-.0325
G3X-.795Z-.0509R.0261
G1Z-.5
G0X-.75
Z.05
X-.9019
G1Z0F.0025
G3X-.8685Z-.0069R.0236
G1X-.8138Z-.0342
G3X-.8Z-.0509R.0236
G1
G0X-.75
Z.1M5
G53Z0
M1

N5(ENGRAVING TOOL OUT.600)
G0G53Z0
M170
M171
M111
M05
M50

G0G28C0.
G0C0.
T0505
G98
G0X1.6
Z-.35
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-45.
G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-90.
G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-135.
G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-180.

G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-225.
G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-270.
G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G4X0.5
G0Z-.35C-315.
G4X0.5
M53
G1X1.38F1.5
Z-.65F5.
X1.378
Z-.35F10.
G0X1.5
M54
G0X1.625
M112
M209
M54
M51
G0G53Z0
G53X-7.69

M1

N100(part transfer+cutting)

G0G53Z0

G53X-7.69

G53Z-.5

!L2

M171

S50M4

M77

M70

M8212

M76

G4X1.0

!L100

T0606

Z-1.01

!L102

!L103

M11

G4X.2

G1G98W1.21F50.

M10

G4X0.5

M4S500

G0X-1.55

G1G99X-1.45F0.0025

X-1.46

X-1.4

X-1.41

X-1.35

X-1.36

X-1.3

X-1.31

X-1.25

X-1.26

X-1.2

X-1.21

X-1.15

X-1.16

X-1.1

X-1.11

X-1.05

X-1.06

X-1.00

X-1.01
X-.95
X-.96
X-.90
X-.91
X-.85
X-.860
X-.8
X-.81
X-.75
X-.76
X-.7
X-.71
X-.65
X-.66
X-.6
X-.61
X-.55
X-.56
X-.5
G0X-1.8
!L104
G53Z0.M9
M6000
!L105
M89
M30

\$2
(IMTS 2018)
!L1
(OUT .400)
M20031
N31(80 DEG R.0156)
G0G53Z-6.0
T3131
M170
M172
G97S1800M203
X1.35
Z.005
G1X.7F.005
X.9623
X1.0297Z-.0073
X1.0639Z.0397

G0X1.25Z.05
X.78
G1Z0F.0015
X.9623
X1.0297Z-.0123
X1.0639Z.0347
G0Z.1
G0G53Z-6.0
M01

N32(BORING BAR R.03 ROUGH)
G0G53Z-6.0
M170
M172
G97S2500M203
T3232
G0G99
M57
X.75
Z.1
G71U.032R.008
G71P10Q20U0.W0.F.0085
N10G1X.9444
Z.0025
X.9265
G3X.8788Z-.0074R.0338
G1X.8148Z-.0394
G3X.795Z-.0632R.0338
G1Z-.6
N20X.75
G0Z.12
G53Z-6.0
M58
M205
M209
M1

N33(BORING BAR R.015 FINISH)
G0G53Z-6.0
M170
M172
G97S2000M203
T3333
G0G99
X.8953

Z.1

G1Z0F.0015

G3X.8732Z-.0046R.0156

G1X.8092Z-.0366

G3X.8Z-.0476R.0156

G1Z-1.02

G0X.75

Z.12

G53Z0

M205

M209

M1

(PART EJECTION)

N37

G0G53Z0

M34(BASKET FORWARD)

G4X.2

M211(COLLET OPEN)

G4X.2

M236(SPINDLE AIR)

G4X.2

M259(EJECTION FORWARD)

G4X.5

M260(EJECTION BACKWARD)

G4X.5

M237(AIR OFF)

G4X.2

M35(BASKET BACKWARD)

G4X.2

M1

N100(SYNCHRONIZATION)

M205

M170

!L2

G0G53Z-6.0

G53X-13.5

G4X0.5

T3030

!L100

X-13.5

M208

!L102

M211



**Instructional Video Series
GenTurn 52GTS
Video Support Document**

M70
M236
Z.1
G98G1Z-.6F10.
M210
G4X.5
M237
!L103
!L104
G53G0G53Z0
G99
!L105
M30
%

How To Take Z Axis Tool Offsets

1. Place the mode select switch in Hand-wheel.
2. Using the handwheel make a face cut
3. Go to the setup page on the control
4. Press the Tool Measure soft key
5. Press the Length Offset key
6. Cursor to the desired offset number and highlight the Z axis offset
7. Press the Zero Point offset key(This value is the current location on the tool in relation to the part zero)
8. If this face is going to be the part zero, then Press zero and input
9. If this face is going to be the rough face then input the rough facing allowance. Such as .015"
10. Now press the Measure Memory Key(Note the value of the Machine Position Counter will now be displayed in the Measure Position at the top of the screen)
11. Now press write offset to place the calculated Z offset value in the tool offset for Z

How To Take X Axis Tool Offsets

1. Manually take a turning cut on the material using the handwheel.(Make sure you take enough material to cut all the way around the stock)
2. Move off the work in Z but leave the tool at the position you took the cut in X
3. Turn off the spindle (Reset will stop the spindle)
4. Measure the cut diameter (You should still be on the tool measure screen)
5. Cursor over to the X offset
6. Press the Zero Point offset key (This is the current diameter you measured)
(In this case we measured .973")
7. Enter .973 and press input (Note the value .973 shows up in the Program Zero Offset area)
8. Now press the Measure Memory Key (Note the value of the Machine Position will now be displayed in the Measure Position at the top of the screen)
9. Press write offset to place the calculated X offset value in the tool offset for X

Notes on Taking Tool Offsets

To find the center of an ID bushing holder use an indicator to sweep in the center of the holder.

Use the same method that we used to pick up the X axis offset on tool 1 only place a zero in the Program Part Zero area instead of the .973

Z can be found after installing the tool in the holder using a gauge pin to touch off the end of the drill or ID tool

Use the same method we used for tool one and place the value of the gauge pin in the Program Zero Offset area by pressing Zero Point Offset entering the gauge value and press input and Press Offset Write

The sub spindle tools touch off the same. Make sure that you are on the correct system before taking the offsets. \$1 for the main spindle and \$2 for the sub spindle.

Tool numbers will have separate offsets for each side. You can have a tool one on the main and the sub and control the offsets independently.