



MASSO Lathe Program Sample

In the following program we are going to be turning and threading the part shown below.

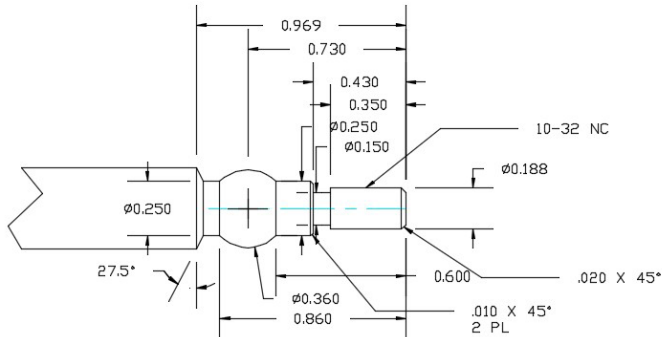


FIGURE 1

We are going to use short individual programs for each operation. Then after we have proofed each program we will cut and past them into one complete program.

Below is a tooling layout for the part that we are making.

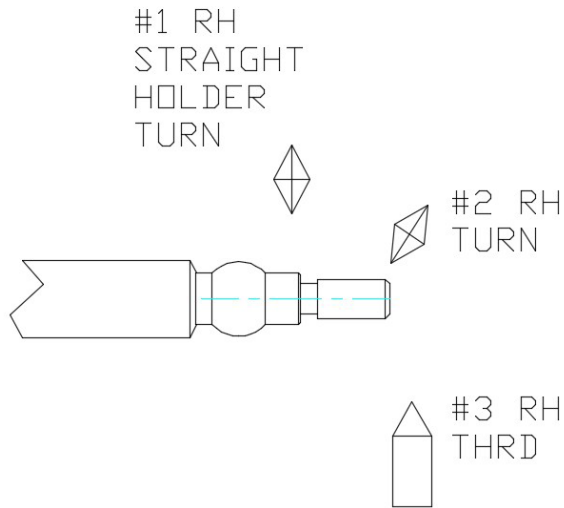


FIGURE 2

1st operation: Rough Turn Thread

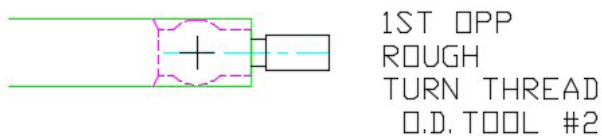


FIGURE 3

PROG 1.NC:

```

(----File PROG 1.NC----)
G90 G20

(---MASSO - OD Wizard---)

T2 M06

(---Start Spindle---)
M3 S2000
G0 X.50
(----- Rough Cut -----)
G0 Z0.0500
G0 Z0.0
G1 X-.020 F1.0
G0 Z.05
G0 X0.3500
G1 Z-0.4250 F5.0000
G0 X0.3750
G0 X0.3750 Z0.0500
G0 Z0.0500
G0 X0.3250
G1 Z-0.4250 F5.0000
G0 X0.3500
G0 X0.3500 Z0.0500
G0 Z0.0500
G0 X0.3000
G1 Z-0.4250 F5.0000
G0 X0.3250
G0 X0.3250 Z0.0500
G0 Z0.0500
G0 X0.2750
G1 Z-0.4250 F5.0000
G0 X0.3000
G0 X0.3000 Z0.0500
  
```

G0 Z0.0500
G0 X0.2500
G1 Z-0.4250 F5.0000
G0 X0.2750
G0 X0.2750 Z0.0500
G0 Z0.0500
G0 X0.2250
G1 Z-0.4250 F5.0000
G0 X0.2500
G0 X0.2500 Z0.0500
G0 Z0.0500
G0 X.130
G1 Z0.0 F3.0
G1 X0.2000 Z-.035
G1 Z-.360 F5.0
G1 X.160 Z-.380 F2.0
G1 Z-0.4250 F3.0
G1 X0.2250
G0 X0.2250 Z0.0500

(----- Finish Cut -----)

S2000
G0 X.128
G1 Z0.0 F2.0
G1 X0.1900 Z-.036 F2.0
G1 Z-.350
G1 X.150 Z-.370 F2.0
G1 Z-0.4300 F3.0000
G1 X.3450
G1 X.395 Z-.455 F2.0
G0 X.50 Z1.0

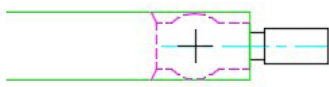
(---Stop Spindle---)

M5

(---END OF PROGRAM---)

M30

2ND Operation: Rough Thread 10-32



2ND OPP
ROUGH THREAD
10-32
TOOL #3

FIGURE 4

(----PROG 1A.NC----)

G90 G20

(---MASSO - Threading Wizard---)

T3 M6

G90G00X.50

(---Start Spindle---)

M3 S400

G4 P3000

(----- Start Threading -----)

G0 Z0.1994

G0 X0.1880

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1989

G0 X0.1860

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1983

G0 X0.1840

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1978

G0 X0.1820

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1972

G0 X0.1800

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1967

G0 X0.1780

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1961

G0 X0.1760
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1956
G0 X0.1740
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1950
G0 X0.1720
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1945
G0 X0.1700
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1939
G0 X0.1680
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1933
G0 X0.1660
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1928
G0 X0.1640
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1922
G0 X0.1620
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1917
G0 X0.1600
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1914
G0 X0.1590
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.2000

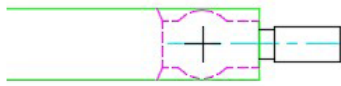
(---Stop Spindle---)

M5

(---END OF PROGRAM---)

M30

3rd Operation: Finish Turn 10-32 Thread



3RD PP
FINISH
TURN THREAD
O.D. TOOL #2

FIGURE 5

(---PROG 1B.NC: inch Finish Turn Threads---)

G90 G20

(---MASSO - OD Wizard---)

T2 M6

(---Start Spindle---)

M3 S2000

G0 X.50

Z.050

G0 X.148

G1 Z0.0 F2.0

G1 X0.1890 Z-.027 F2.0

G1 Z-.380

G0 X0.3750

G0 X.50 Z1.0

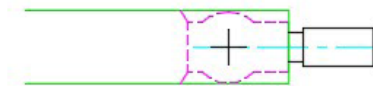
(---Stop Spindle---)

M5

(---END OF PROGRAM---)

M30

4th Operation: Finish Thread 10-32



4TH PP
FINISH
THREAD
10-32
TOOL #3

FIGURE 6

(---PROG 1C.NC: inch FINISH PASSES for 10-32
THREAD ---)

G90 G20

(---MASSO - Threading Wizard---)

T3 M6

(---Start Spindle---)

M3 S400

G4 P3000

G0 X.5

(----- Start Threading -----)

```

G0 X0.2400
G0 Z0.1914
G0 X0.1570
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1914
G0 X0.1570
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z1.2000
(---Stop Spindle---)
M5
(---END OF PROGRAM---)
M30

```

**5th Operation: Rough Turn .250 Diameter
and Front Side of .180 Radius**



```

5TH OPP
TURN 1/4" AND
FIRST HALF OF
.360Ø, LEAVE .010
FOR THE FINISH
TURN. TOOL #2

```

FIGURE 7

(PROG 3.NC)

(---Program3 TURN .250 AND .360 BALL FRONT
SIDE---)

G90 G20

(---MASSO - OD Wizard---)

T1 M6

(---Start Spindle---)

M3 S1500

G0 X.50

(----- Rough Cut -----)

G0 Z0.0500

G0 Z-.38 F5

G00 X.4286

G01 X.329 Z-.43 F3.0

G01 Z-.635

G03 X.380 Z-.73 R.190

G0 Z-.4

G01 X.300 Z-.43
G01 Z-.613
G03 X.329 Z-.635 R.190

G00 X.35 Z-.40

G0 X.20
G1 Z-.430
G1 X.26 Z-.460
G1 X.26 Z-.591 F3.0
G03 X.380 Z-.730 R.190
G1 X.4

G00 X.5
G00 Z1.0

(---Stop Spindle---)
M5

(---END OF PROGRAM---)
M30

6th Operation: Rough Turn Backside of .360 Diameter Ball

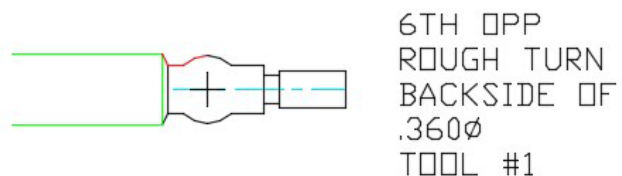


FIGURE 8
(PROG 1D.NC)
(ROUGH TURN 360 DIAMETER BALL BACKSIDE)

G20 G90
N1 T1 M6
(Begin FEATURE LATHE TURNING)
M3 S2000
G0 X.5
G00 X.48 Z-.71
G00 X.4403
G01 X.4003 Z-.73 F5.
G01 X.4 Z-.7614
G03 X.3503 Z-.8614 R.2143
G01 Z-.9788

```
G01 X.3602 Z-.9817
G01 X.4002 Z-.9617
G00 Z-.8414
G00 X.3903
G01 X.3503 Z-.8614
G03 X.3003 Z-.8986 R.2142
G01 Z-.9644
G01 X.3503 Z-.9788
G01 X.3903 Z-.9588
G00 Z-.8786
G00 X.3403
G01 X.3003 Z-.8986
G01 X.29 Z-.9045
G01 Z-.9614
G01 X.3003 Z-.9644
G01 X.3403 Z-.9444
G00 X.5
G00 Z-.65
```

```
G00 X.48 Z-.71
G00 X.4203
G01 X.3803 Z-.73 F3.
G01 X.38 Z-.7614
G03 X.27 Z-.9042 R.2132
G01 Z-.962
G01 X.3382 Z-.9817
G01 X.3782 Z-.9617
G00 X.5
G00 Z1.0
```

M5

M30

7th Operation: Finish Turn .250 Diameter and .188 Radius



7TH OPP
FINISH TURN $\frac{1}{4}$ "
AND .360 ϕ
TOOL #1

FIGURE 9

(PROG 1E.NC)

G20 G90

T1 M6

(Begin FEATURE LATHE TURNING)

M3 S2000
G0 X.5
G00 X.48 Z-.38
G00 X.29
G01 X.25 Z-.4 F3.
G01 Z-.619
G03 X.25 Z-.9034 R.2117
G01 Z-.9632
G01 X.3142 Z-.9817
G01 X.3542 Z-.9617
G00 X.5
G00 Z1.0

M05

M30

Complete Part Program

(----File PROG 1F COMPLETE.NC----)

G90 G20

(---MASSO - OD Wizard---)

T2 M06

(---Start Spindle---)

M3 S2000
G0 X.50
(----- Rough TURN THREAD -----)
G0 Z0.0500
G0 Z0.0
G1 X-.020 F1.0
G0 Z.05
G0 X0.3500
G1 Z-0.4250 F5.0000
G0 X0.3750
G0 X0.3750 Z0.0500
G0 Z0.0500
G0 X0.3250
G1 Z-0.4250 F5.0000
G0 X0.3500
G0 X0.3500 Z0.0500
G0 Z0.0500
G0 X0.3000
G1 Z-0.4250 F5.0000

G0 X0.3250
G0 X0.3250 Z0.0500
G0 Z0.0500
G0 X0.2750
G1 Z-0.4250 F5.0000
G0 X0.3000
G0 X0.3000 Z0.0500
G0 Z0.0500
G0 X0.2500
G1 Z-0.4250 F5.0000
G0 X0.2750
G0 X0.2750 Z0.0500
G0 Z0.0500
G0 X0.2250
G1 Z-0.4250 F5.0000
G0 X0.2500
G0 X0.2500 Z0.0500
G0 Z0.0500
G0 X.130
G1 Z0.0 F3.0
G1 X0.2000 Z-.035
G1 Z-.360 F5.0
G1 X.160 Z-.380 F2.0
G1 Z-0.4250 F3.0
G1 X0.2250
G0 X0.2250 Z0.0500

(----- Finish Cut -----)

S2000
G0 X.128
G1 Z0.0 F2.0
G1 X0.1900 Z-.036 F2.0
G1 Z-.350
G1 X.150 Z-.370 F2.0
G1 Z-0.4300 F3.0000
G1 X.3450
G1 X.395 Z-.455 F2.0
G0 X.50 Z1.5

T3 M6
G90G00X.50

(---Start Spindle---)

M3 S400

G4 P3000

(----- Start ROUGH Threading -----)

G0 Z0.1994

G0 X0.1880

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1989

G0 X0.1860

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1983

G0 X0.1840

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1978

G0 X0.1820

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1972

G0 X0.1800

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1967

G0 X0.1780

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1961

G0 X0.1760

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1956

G0 X0.1740

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1950

G0 X0.1720

G32 Z-0.4000 F0.0312

G0 X0.2400

G0 Z0.1945

G0 X0.1700

G32 Z-0.4000 F0.0312

G0 X0.2400
G0 Z0.1939
G0 X0.1680
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1933
G0 X0.1660
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1928
G0 X0.1640
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1922
G0 X0.1620
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1917
G0 X0.1600
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1914
G0 X0.1590
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z1.5000

(FINISH TURN THREAD)

T2 M06
(---Start Spindle---)
M3 S2000
G0 X.50
Z.050
G0 X.148
G1 Z0.0 F2.0
G1 X0.1890 Z-.027 F2.0
G1 Z-.380
G0 X0.3750
G0 X.50 Z1.5

T3 M6
(---Start Spindle---)

M3 S400
G4 P3000
G0 X.5
(----- Start FINISH Threading -----)
G0 X0.2400
G0 Z0.1914
G0 X0.1570
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z0.1914
G0 X0.1570
G32 Z-0.4000 F0.0312
G0 X0.2400
G0 Z1.5000

T1 M6

(---Start Spindle---)
M3 S1500
G0 X.50
(----- Rough TURN FRONT -----)
G0 Z0.0500

G0 Z-.38 F5
G00 X.4286
G01 X.329 Z-.43 F3.0
G01 Z-.635
G03 X.380 Z-.73 R.190
G0 Z-.4
G01 X.300 Z-.43
G01 Z-.613
G03 X.329 Z-.635 R.190
G00 X.35 Z-.40
G0 X.20
G1 Z-.430
G1 X.26 Z-.460
G1 X.26 Z-.591 F3.0
G03 X.380 Z-.730 R.190
G1 X.4
G00 X.5 Z0.0

(Begin ROUGH TURNING BACKSIDE)

M3 S2000
G0 X.5
G00 X.48 Z-.71
G00 X.4403
G01 X.4003 Z-.73 F5.
G01 X.4 Z-.7614
G03 X.3503 Z-.8614 R.2143
G01 Z-.9788
G01 X.3602 Z-.9817
G01 X.4002 Z-.9617
G00 Z-.8414
G00 X.3903
G01 X.3503 Z-.8614
G03 X.3003 Z-.8986 R.2142
G01 Z-.9644
G01 X.3503 Z-.9788
G01 X.3903 Z-.9588
G00 Z-.8786
G00 X.3403
G01 X.3003 Z-.8986
G01 X.29 Z-.9045
G01 Z-.9614
G01 X.3003 Z-.9644
G01 X.3403 Z-.9444
G00 X.5
G00 Z-.65
G00 X.48 Z-.71
G00 X.4203
G01 X.3803 Z-.73 F3.
G01 X.38 Z-.7614
G03 X.27 Z-.9042 R.2132
G01 Z-.962
G01 X.3382 Z-.9817
G01 X.3782 Z-.9617
G00 X.5
G00 Z0.0

(Begin FINISH TURN)

M3 S2000
G0 X.5
G00 X.48 Z-.38

G00 X.29
G01 X.25 Z-.4 F3.
G01 Z-.619
G03 X.25 Z-.9034 R.2117
G01 Z-.9632
G01 X.3142 Z-.9817
G01 X.3542 Z-.9617
G00 X.5
G00 Z1.0
M05
G53 G90 G00 Z0
G53 G00 X0

M30

Left Hand Thread Program Sample

This is done with the threading tool upside down on the backside of the part. The threading cycle starts at the shoulder of the part and then it threads out to the front of the part.

NOTE: It takes about .100" (2.54mm) Z-axis travel before the spindle and Z-axis are entirely in sync. On a RH thread starting from the front of the part, you can program the thread to start cutting .100 before the part in order to have good threads at the beginning. When you are cutting LH threads and starting inside the part and cutting back to the front of the part, the first .100" - .120" (2.54 – 3.05mm) of the thread will have a bad pitch length. The rest of the threads will be good.

(File LH Thread.NC)

(---Program units: inch---)

(NOTE The first two threads will not be good)

(It takes about .100" 25.4mm of Z travel for the Z-axis and the RPM to be in sync)

G90 G20

(---MASSO - Threading Wizard---)

T1 M6

(---Start Spindle---)

M3 S300

G4 P4000

(----- Start Threading -----)

G0 X0.3000

G0 Z-0.6994

G0 X0.2480
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6989
G0 X0.2460
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6983
G0 X0.2440
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6978
G0 X0.2420
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6972
G0 X0.2400
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6967
G0 X0.2380
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6961
G0 X0.2360
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6956
G0 X0.2340
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6950
G0 X0.2320
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6945
G0 X0.2300
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6939
G0 X0.2280
G32 Z0.0000 F0.0500
G0 X0.3000

G0 Z-0.6933
G0 X0.2260
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6928
G0 X0.2240
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6922
G0 X0.2220
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6917
G0 X0.2200
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6911
G0 X0.2180
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6906
G0 X0.2160
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6900
G0 X0.2140
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6895
G0 X0.2120
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6889
G0 X0.2100
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6884
G0 X0.2080
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6878
G0 X0.2060
G32 Z0.0000 F0.0500

```

G0 X0.3000
G0 Z-0.6873
G0 X0.2040
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6867
G0 X0.2020
G32 Z0.0000 F0.0500
G0 X0.3000
G0 Z-0.6861
G0 X0.2000
G32 Z0.0000 F0.0500
G0 X0.3000

```

(---Stop Spindle---)

M5

(---END OF PROGRAM---)

M30

Masso Air Fitting – Chucker Lathe Sample Program

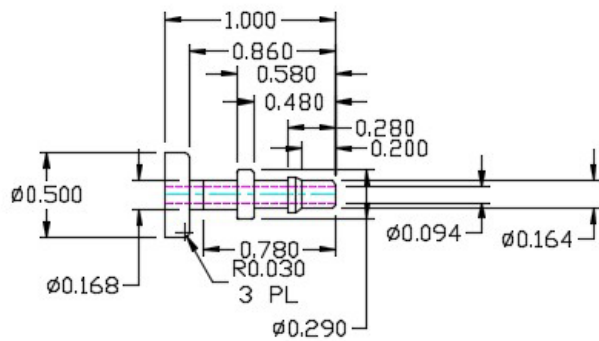


FIGURE 10

(Machine Setup - 1 .040 wide Cutoff)

(TOOL #1)

```

G94 G7 G20 G18 G90 G54

```

```

G90 G20

```

```

T1 M6

```

```

M3 S1800.0

```

```

G00 X-.6 Z.1

```

```

G00 Z-.820

```

```

G00 X-.208

```

```

G01 X-.118 F2.

```

```

G00 X-.208

```

G00 Z-.800
G01 X-.128 Z-.820 F1.0
G01 X.020 F3.0
G00 X0.0
G00 Z.100
G00 X0.0
M01
G01 Z0.0
M01
G00 Z1.

G90G00G54 X0 Z0

(TOOL #2 2 CENTER DRILL)
N200 G00 G94 G7 G20 G18 G90 G54

T2 M6
M3 S2000.0

G90 G00 Z.1
G00 X0
G01 Z-.100 F4.0
G90 G00 Z1.2

(TOOL #3 0.0940 Dia.118.0000 Deg. 1.0000 CL)
N300 G00 G94 G7 G20 G18 G90 G54
T3 M6
M3 S2500

G00 Z.1
G00 X0.0
G01 Z-.088 F2.0
G00 Z.1
G00 Z.060

G01 Z-.37
G00 Z.1

G00 Z-.350
G01 Z-.464
G00 Z.1

G00 Z-.440
G01 Z-.558
G00 Z.1

G00 Z-.530
G01 Z-.580
G00 Z.1
G00 Z-.560
G01 Z-.630
G00 Z.1

G00 Z-.610
G01 Z-.680
G00 Z.1
G00 Z-.660
G01 Z-.730
G00 Z.1

G00 Z-.710
G01 Z-.785
G00 Z.1
G00 Z-.76
G01 Z-.840

G00 Z.2

(TOOL #4 55 DIAMNOD BACKSIDE)

N400 G80 G94 G7 G20 G18 G90 G54

T4 M6
M3 S2500.0

G00 X-.7

G00 Z0
G01 X0.0 F3.0

G00 X-.7 Z.052

G00 X-.57
G01 X-.47 Z.002 F6.
G01 Z-.8639
G02 X-.5095 Z-.884 I.0232 K-.0426
G02 X-.5197 Z-.9024 I.0533 K-.0247
G01 X-.52 Z-1.
G01 X-.62 Z-.95
G00 Z.052
G00 X-.52
G01 X-.42 Z.002
G01 Z-.8579
G02 X-.47 Z-.8639 I-.0005 K-.0532
G01 X-.57 Z-.8139
G00 Z.052
G00 X-.47
G01 X-.37 Z.002
G01 Z-.8578
G01 X-.42
G01 X-.52 Z-.8079
G00 Z.052
G00 X-.42
G01 X-.32 Z.002
G01 Z-.8578
G01 X-.37
G01 X-.47 Z-.8078
G00 Z.052
G00 X-.37
G01 X-.27 Z.002
G01 Z-.4807
G02 X-.3044 Z-.498 I.0124 K-.0296
G02 X-.3098 Z-.5083 I.0351 K-.0146
G01 X-.31 Z-.5744
G01 Z-.8578
G01 X-.32
G01 X-.42 Z-.8078
G00 Z.052
G00 X-.32
G01 X-.22 Z.002

G01 Z-.2335
G02 X-.23 Z-.2474 I.0165 K-.0138
G01 Z-.4778
G02 X-.27 Z-.4807 I-.0033 K-.0475
G01 X-.37 Z-.4307
G00 Z.052
G00 X-.27
G01 X-.17 Z.002
G01 Z-.0214
G02 X-.1823 Z-.0313 I.0136 K-.0153
G02 X-.184 Z-.0494 I.0705 K-.0122
G01 Z-.2097
G01 X-.22 Z-.2335
G01 X-.32 Z-.1835
G00 Z.052
G00 X-.22
G01 X-.12 Z.002
G01 Z.0006
G01 X-.1298 Z-.0017
G01 X-.1687 Z-.0207
G01 X-.17 Z-.0214
G01 X-.27 Z.0286
G00 Z.052
G00 X-.1867
G01 X-.0867 Z.002
G01 X-.1122 Z.0017
G01 X-.12 Z.0006
G01 X-.22 Z.0506
G00 X-.53
G00 Z-.2356
G01 X-.33
G01 X-.23 Z-.2856
G01 X-.2282 Z-.3002
G01 X-.1984 Z-.3275
G01 X-.184 Z-.3404
G01 Z-.3571
G01 Z-.4777
G01 X-.23 Z-.4778
G01 X-.33 Z-.4278
G00 X-.61
G00 Z-.5244
G01 X-.41
G01 X-.31 Z-.5744

G02 X-.3019 Z-.5959 I.0383 K-.004
G01 X-.26 Z-.6326
G01 Z-.8578
G01 X-.31
G01 X-.41 Z-.8078
G00 Z-.5826
G00 X-.36
G01 X-.26 Z-.6326
G01 X-.21 Z-.6759
G01 Z-.8577
G01 X-.26
G01 X-.36 Z-.8078
G00 Z-.6259
G00 X-.31
G01 X-.21 Z-.6759
G01 X-.194 Z-.6899
G03 X-.188 Z-.7022 I-.0114 K-.0093
G01 Z-.8577
G01 X-.21
G01 X-.31 Z-.8077
G00 X-.6
G00 Z.2

(TOOL #5 55 DIAMOND FRONTSIDE)
N500 G80 G94 G7 G20 G18 G90 G54

T5 M6
M3 S2500.0

G00 X.7 Z.0497
G00 X.1038
G01 X.0038 Z-.0003 F4.
G01 X.0942
G03 X.1131 Z-.0041 I-.0006 K-.0153
G01 X.1503 Z-.0223
G03 X.164 Z-.0395 I-.0127 K-.015
G01 Z-.2103
G01 X.2071 Z-.2391
G01 X.21 Z-.2464
G01 X.2092 Z-.2977
G01 X.2023 Z-.3063
G01 X.1659 Z-.3378

G01 X.164 Z-.3419
G01 Z-.4797
G01 X.2308 Z-.4799
G01 X.2424 Z-.481
G03 X.2664 Z-.4869 I-.0074 K-.03
G03 X.2892 Z-.5077 I-.0177 K-.0232
G03 X.2884 Z-.5865 I-1.3457 K-.0332
G03 X.2761 Z-.6006 I-.0428 K.0102
G01 X.1744 Z-.6887
G02 X.168 Z-.6965 I.0063 K-.0071
G01 Z-.8597
G01 X.4104 Z-.8599
G03 X.4786 Z-.8766 I-.0016 K-.0463
G03 X.4973 Z-.8955 I-.0308 K-.027
G03 X.5 Z-.9172 I-.0777 K-.0157
G01 Z-1.
G01 X.6 Z-.95
G00 X.8
G00 Z.5

(TOOL #6 OD GROOVE .030 WIDE)
N600 G80 G94 G7 G20 G18 G90 G54
T6 M6
M3 S2500.0

G00 X.5
G00 Z-.3149
G00 X.274
G01 X.214 F4.
G00 X.254
G00 X.224
G01 X.184
G00 X.274
G00 Z-.3349
G01 X.214
G00 X.254
G00 X.224
G01 X.184
G01 X.204 Z-.3299
G00 X.274
G00 Z-.3447

G01 X.214
G00 X.254
G00 X.224
G01 X.184
G01 X.204 Z-.3397
G00 X.274
G00 Z-.3453
G01 X.23
G01 X.25 Z-.3403
G00 X.254
G00 X.184
G00 X.2348

(Machine Setup - 1 Turn Groove Finish)

(TOOL #6 OD GROOVE .030 WIDE)

G00 X.5 Z-.3703
G00 X.25
G01 X.21 Z-.3503 F4.
G01 X.164 Z-.3497
G01 Z-.3103
G00 X.254
G00 Z-.2899
G01 X.214 Z-.3099
G01 X.164
G01 Z-.3103
G00 X.6
G00 Z-.3

(Machine Setup - 1 Turn Groove Rough)

(TOOL #6 OD GROOVE .030 WIDE)

G00 X.5 Z-.5982
G00 X.35
G01 X.3082 F3.
G01 X.3282 Z-.5882
G00 X.35
G00 Z-.6149
G01 X.29
G00 X.33
G00 X.3
G01 X.256
G00 X.296

G00 X.266
G01 X.222
G00 X.262
G00 X.232
G01 X.188
G01 X.35
G00 Z-.6349
G01 X.29
G00 X.33
G00 X.3
G01 X.256
G00 X.296
G00 X.266
G01 X.222
G00 X.262
G00 X.232
G01 X.188
G01 X.208 Z-.6249
G00 X.35
G00 Z-.6549
G01 X.29
G00 X.33
G00 X.3
G01 X.256
G00 X.296
G00 X.266
G01 X.222
G00 X.262
G00 X.232
G01 X.188
G01 X.208 Z-.6449
G00 X.35
G00 Z-.6749
G01 X.29
G00 X.33
G00 X.3
G01 X.256
G00 X.296
G00 X.266
G01 X.222
G00 X.262
G00 X.232
G01 X.188

G01 X.208 Z-.6649

G00 X.35

G00 Z-.6949

G01 X.29

G00 X.33

G00 X.3

G01 X.256

G00 X.296

G00 X.266

G01 X.222

G00 X.262

G00 X.232

G01 X.188

G01 X.208 Z-.6849

G00 X.35

G00 Z-.7149

G01 X.29

G00 X.33

G00 X.3

G01 X.256

G00 X.296

G00 X.266

G01 X.222

G00 X.262

G00 X.232

G01 X.188

G01 X.208 Z-.7049

G00 X.35

G00 Z-.7349

G01 X.29

G00 X.33

G00 X.3

G01 X.256

G00 X.296

G00 X.266

G01 X.222

G00 X.262

G00 X.232

G01 X.188

G00 X.6

G00 Z-.6

```
(Machine Setup - 1 Turn Groove Finish )
(TOOL #6 OD GROOVE .030 WIDE )
G00 X.5 Z-.790
G00 X.33
G01 X.29 Z-.770 F3.
G01 X.168
G01 Z-.6103
G00 X.33
G00 Z-.5724
G01 X.29 Z-.5924
G03 X.2579 Z-.6097 I-.0172 K-.0002
G01 X.168 Z-.6099
G01 Z-.6103
G00 X1.0
G00 Z1.0
```

```
G90G00G53Z0
G00 G53 X0
M30
%
```

Note on the Threading Cycle on the Lathe

If you are doing a turning operation (or other operation) before the threading operation, and you are using a higher RPM range (2500 RPM). There may be some lag time between the first operation and the threading operation while the controller gets the spindle RPM into the range for threading (Ex 300 RPM). Additionally, if the threading cycle begins moving in the Z-axis before the spindle is turning (or if the RPM are not set), you may have to add a (G04 P1000) for a dwell of 1 second to the program. A “P” value of 1000 is equal to 1 second. P2000 is equal to 2 seconds, and so on. This will allow the spindle time to turn on before the threading cycle starts or adjust to the new speed.

Secondary Note:

The threading cycle may begin the threading cut when the RPM is lower than programmed. However, because the controller is taking readings from the optical encoder, the feed rate will be adjusted automatically to match the current spindle RPM. Generally, in this situation, the RPM range will increase to the programmed speed as the threading cycle is cutting the first thread. Since the first threading pass is generally not more than a witness line on the part this “RPM to feed” adjustment will not be detrimental to the quality or accuracy of the finished thread.

MASSO LATHE PROGRAM (THREADING):

(---Program units: inch---)

G90 G20

(---MASSO - Threading Wizard---)

T1 M6

(---Start Spindle---)

M3 S300.000

(----- Start Threading -----)

G0 X0.183 Z0.050

G32 Z-0.500 F0.031

G0 X0.238

G0 Z0.050

G0 X0.178 Z0.050

G32 Z-0.500 F0.031

G0 X0.238

G0 Z0.050

G0 X0.173 Z0.050

G32 Z-0.500 F0.031

G0 X0.238

G0 Z0.050

G0 X0.168 Z0.050

G32 Z-0.500 F0.031

G0 X0.238

G0 Z0.050

G0 X0.163 Z0.050

G32 Z-0.500 F0.031

G0 X0.238

G0 Z0.050

G0 X0.159 Z0.050

G32 Z-0.500 F0.031

G0 X0.238

G0 Z0.050

G0 G53 Z0

G0 G53 X0

(---Stop Spindle---)

M5

(---END OF PROGRAM---)

M30

Infinite Loop Program sample:

(---Start Spindle---)

(----- Rough Cut-----)

t1 m6

G0 Z0.0200

G0 X0.1630

G1 Z-0.1150 F5.0000

G0 X0.1880

G0 X0.1880 Z0.0200

M30 L0