
Section 17: Service Programs

This section has a listing of all the programs that are used during assembly of the machine. The programs may be helpful when servicing the machine. It is not necessary to type in the programs, as they are stored in EPROM on the main CPU.

To load the programs into memory type the command TA,2 (or TA,5 for program O5827) at the command prompt. If there is already a large program in memory, all the service programs may not fit. It may be necessary to save what is in machine memory and then enter the TA,2 (or TA,5) command again.

Tool Offsets for the Service Programs

TO,1,.5,-1
TO 11 .5100 0
TO 12 .5 0
TO,25,,7,-1.1

TA,2 Programs

O5801-45 Deg Test N105801(45 DEG TEST
N2L100
N3X-4.Y-4.F100.G1
N4X4.Y4.
N5M17
N6M30
N7(START OF MAIN PROGRAM
N8L101.1

05802-X Resolver Test	N105802(X RESOLVER TEST N2L100 N3X1.G0 N4X-1. N5G4P1000 N6M17 N7M30 N8G91(START OF THE MAIN PROGRAM N9(THE TABLE WILL MOVE TO THE LEFT IN THE X AXIS N10L130
05803-Y Resolver Test	N105803(Y RESOLVER TEST N2L100 N3Y-1.G0 N4Y1. N5G4P1000 N6M17 N7M30 N8G91(START OF THE MAIN PROGRAM N9(THE TABLE WILL MOVE AWAY FROM YOU IN THE Y AXIS N10L130
05804-Z Resolver Test	N105804(Z RESOLVER TEST N2L100 N3Z1.G0 N4Z-1. N5G4P1000 N6M17 N7M30 N8G91(START OF THE MAIN PROGRAM N9(THE Z AXIS WILL MOVE UP FIRST, THEN DOWN N10L130
05805-Work Toolchanger	N105805(WORK TOOLCHANGER N2L100 N3M3S2000.2 N4X3.Y3.Z-3.F150.G1 N5X-3.Y-3. N6M17 N7L200 N8L101 N9M5M6T5 N10L101 N11M5M6T4 N12L101

N13M5M6T3
N14L101
N15M5M6T2
N16L101
N17M5M6T10
N18L101
N19M5M6T9
N20L101
N21M5M6T8
N22L101
N23M5M6T7
N24L101
N25M5M6T6
N26L101
/N27M5M6T21
/N28L101
/N29M5M6T20
/N30L101
/N31M5M6T19
/N32L101
/N33M5M6T18
/N34L101
/N35M5M6T17
/N36L101
N37M5M6T16
N38L101
N39M5M6T15
N40L101
N41M5M6T14
N42L101
N43M5M6T13
N44L101
N45M5M6T12
N46L101
N47M5M6T11
N48M17
N49M30
N50G91(START OF THE MAIN PROGRAM
N51M0(THIS TEST MAKES A TOOL CHANGE AT EVERY TURRET LOCATION
N52(** SET BLOCK SKIP ON FOR 16 TOOL MACHINES **)
N53L201.1

05806-Scrape Z Head N105806(SCRAPE Z HEAD
N2L100
N3X-0.1G0
N4Y8.2
N5Z0.1
N6Y-8.2
N7Z-0.1
N8M17
N9M30
N10G91(START OF THE MAIN PROGRAM
N11(
N12(
N13(TOOL SHOULD BE POSITIONED TO THE FRONT LEFT
N14(OF THE SPINDLE DIAMETER
N15(
N16(
N17L178
N18X7.8

05807-X Vibration N105807(X VIBRATION
N2L100
N3X6.G0
N4X-6.
N5M17
N6M30
N7G91(START OF THE MAIN PROGRAM
N8(
N9(
N10(CHECK AND MAKE SURE THE X AXIS MOTOR DOES NOT VIBRATE
N11(
N12(
N13L101.1

05808-Y Vibration N105808(Y VIBRATION
N2L100
N3Y-6.G0
N4Y6.
N5M17
N6M30
N7G91(START OF THE MAIN PROGRAM
N8(
N9(
N10(CHECK THE Y AXIS MOTOR FOR VIBRATION
N11(
N12(
N13L101.1

05809-Z Vibration N105809(Z VIBRATION
N2L100
N3Z-6.G0
N4Z6.
N5M17
N6M30
N7G91(START OF THE MAIN PROGRAM
N8(
N9(
N10(
N11(
N12L101.1

05810-Orientation N105810(ORIENTAION
N2L100
N3M49
N4S300
N5M3
N6G4P2500
N7M19
N8G4P2500
N9S2501M3
N10G4P2500
N11M19
N12G4P2500
N13M48
N14M17
N15M30
N16G91(START OF THE MAIN PROGRAM
N17(
N18(
N19(CHECK ORIENTAION IN THE LOW AND HIGH RANGE
N20(
N21(
N22L101.1

05811-Balance N105811(BALANCE INCH: 595, METRIC 700IPM: 302
Inch: 595, Metric N2L100
700ipm: 302 N3M49
N4X5.Y5.Z-5.G1F150.
N5X-5.Y-5.Z5.G1F150.
N6M17
N7M30
N8M91G91(START OF THE MAIN PROGRAM
N9(
N10(*FOR INCH SCREWS:
N11(BALANCE ALL 3 AXES TO 595 ON THE DISPLAY OR 1.44 VDC
N12(AT THE COM AND SIG2 LUGS OF THE AXIS AMPLIFIER
N13(*FOR METRIC SCREWS:
N14(BALANCE ALL 3 AXES TO 302 ON THE DISPLAY OR .735 VDC
N15(AT THE COM AND SIG2 LUGS OF THE AXIS AMPLIFIER
N16(
N17(
N18L101.1

05812-X Balance N105812(X BALANCE 680
680 N2L100
N3M49
N4X6.G1F100.
N5X-6.
N6M17
N7M30
N8M91G91(START OF THE MAIN PROGRAM
N9(
N10(
N11(BALANCE THE X TO 680 OR 1.660 VDC
N12(AT THE COM AND SIG2 LUGS OF THE AMPLIFIER
N13(
N14(
N15L101.1

05813-Y Balance N105813(Y BALANCE 680
680 N2L100
N3M49
N4Y6.G1F100.
N5Y-6.
N6M17
N7M30
N8M91G91(START OF THE MAIN PROGRAM
N9(
N10(
N11(BALANCE THE Y TO 680 OR 1.660 VDC
N12(AT THE COM AND SIG2 LUGS OF THE AMPLIFIER
N13(
N14(
N15L101.1

05814-Z Balance 680 N105814(Z BALANCE 680
N2L100
N3M49
N4Z-6.G1F100.
N5Z6.
N6M17
N7M30
N8M91G91(START OF THE MAIN PROGRAM
N9(
N10(
N11(BALANCE THE Z TO 680 ON THE CRT OR 1.660 VDC
N12(AT THE COM AND SIG2 LUGS OF THE AMPLIFIER
N13(
N14(
N15L101.1

05815-A or B 680 Balance N105815(A OR B 680 BALANCE
N2L100
N3M49
N4A360.G1F1.(** CHANGE F,A OR B THIS BLOCK ***)
N5A-360.
N6M17
N7M30
N8(START OF THE MAIN PROGRAM
N9M0(***) BE SURE TO SELECT THE CORRECT FEED ***)
N10(***) BESURE THE F-WORD IS WITH THE ROTARY MOVE ***)
N11(72 TO 1 RATIO = F2500.
N12(90 TO 1 RATIO = F2000.
N13(120 TO 1 RATIO = F1500.
N14(180 TO 1 RATIO = F1000.
N15(360 TO 1 RATIO = F500.
N16(
N17(BALANCE A SINGLE AXIS TO 680 OR 1.660 VDC
N18(AT THE COM AND SIG2 LUGS OF THE AMPLIFIER
N19(
N20L101.1

**05817-Spin Fwd
Rev** N105817(SPIN FWD REV
N2L100
N3M3S1000.2
N4G4P3500
N5M4
N6G4P3500
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM
N10(
N11(
N12(TEST FOR SPINDLE RUNNING FORWARD AND REVERSE
N13(
N14(
N15L101.1

**05818-Workout
2216** N105818(WORKOUT 2216
N2L100
N3(WORK AXIS TO LIMIT WITH Z ALL THE WAY UP
N4Z4.G0
N5Y8.
N6X-11.
N7Y-8.
N8Y-8.
N9X11.
N10X11.
N11Y8.
N12Y8.
N13X-11.
N14Y-8.
N15Z-4.
N16Z-16.
N17Y8.
N18X-11.
N19Y-8.
N20Y-8.
N21X11.
N22X11.
N23Y8.
N24Y8.
N25X-11.
N26Y-8.
N27Z16.
N28M17
N29L200

N30(MOVES BEFORE TOOL CHANGE TEST
N31M3S1000
N32X3.Y3.Z-3.G0
N33X-3.Y-3.Z3.
N34M17
N35L300
N36(TOOL CHANGER TURRET TEST FULL 360 DEGREE ROTATION
N37L201
N38M5M6T1
N39L201
N40M5M6T11
N41L201
N42M5M6T21
N43L201
N44M5M6T11
N45L201
N46M17
N47L400
N48(STEP UP THE RPM AND TEST ORIENTATION
N49M+R3S1000
N50G4P1500
N51M19
N52M+R3S2500
N53G4P1500
N54M19
N55M+R3S2501
N56G4P1500
N57M19
N58M+R3S5000
N59G4P1500
N60M19
N61M+R3S8000
N62G4P1500
N63M19
N64M+R3S10000
N65G4P2000
N66M19
N67M+R3S300
N68G4P1000
N69M19
N70M+R3
N71G4P750
N72M19
N73M+R3
N74G4P750

N75M19
N76M3S10000
N77G4P2500
N78M4S10000
N79G4P2500
N80M3S10000
N81G4P2500
N82M4S10000
N83G4P2500
N84M17
N85L500
N86L101
N87L301
N88L401
N89M17
N90M30
N91G91(START OF THE MAIN PROGRAM
N92(
N93(
N94(*****
N95(***** WARNING *****
N96(*****
N97(
N98(
N99(NO TOOLS CAN BE IN THE SPINDLE AND NOTHING ON THE TABLE
N100(
N101(
N102M0
N103L501.1

**05819-Workout
4020**

N105819(WORKOUT 4020
N2L100
N3(WORK AXIS TO LIMIT WITH Z ALL THE WAY UP
N4Z4.G0
N5Y10.
N6X-20.
N7Y-10.
N8Y-10.
N9X20.
N10X20.
N11Y10.
N12Y10.
N13X-20.
N14Y-10.
N15Z-4.

N16Z-16.
N17Y10.
N18X-20.
N19Y-10.
N20Y-10.
N21X20.
N22X20.
N23Y10.
N24Y10.
N25X-20.
N26Y-10.
N27Z16.
N28M17
N29L200
N30(MOVES BEFORE TOOL CHANGE TEST
N31M3S1000
N32X3.Y3.Z-3.G0
N33X-3.Y-3.Z3.
N34M17
N35L300
N36(TOOL CHANGER TURRET TEST FULL 360 DEGREE ROTATION
N37L201
N38M5M6T1
N39L201
N40M5M6T11
N41L201
N42M5M6T21
N43L201
N44M5M6T11
N45L201
N46M17
N47L400
N48(STEP UP THE RPM AND TEST ORIENTATION
N49M+R3S1000
N50G4P2500
N51M19
N52M+R3S2500
N53G4P2500
N54M19
N55M+R3S2501
N56G4P2500
N57M19
N58M+R3S5000
N59G4P2500
N60M19

N61M+R3S8000
N62G4P3500
N63M19
N64M+R3S10000
N65G4P4000
N66M19
N67M+R3S300
N68G4P2000
N69M19
N70M+R3
N71G4P2000
N72M19
N73M+R3
N74G4P2000
N75M19
N76G4P2000
N77M17
N78L500
N79L101
N80L301
N81L401R3+0.0003(SPINDLE FORWARE
N82L401R3+0.0004(SPINDLE REVERSE
N83M17
N84M30
N85(START OF THE MAIN PROGRAM
N86(
N87(
N88(*****
N89(***** WARNING *****
N90(*****
N91(
N92(
N93(NO TOOLS CAN BE IN THE SPINDLE AND NOTHING ON THE TABLE
N94(
N95(
N96M0
N97L501.1

**05820-Workout
6030** N105820(WORKOUT 6030
N2L100
N3(WORK AXIS TO LIMIT WITH Z ALL THE WAY UP
N4Z4.G0
N5Y10.
N6X-30.
N7Y-10.
N8Y-10.
N9X30.
N10X30.
N11Y10.
N12Y10.
N13X-30.
N14Y-10.
N15Z-4.
N16Z-26.
N17Y10.
N18X-30.
N19Y-10.
N20Y-10.
N21X30.
N22X30.
N23Y10.
N24Y10.
N25X-30.
N26Y-10.
N27Z26.
N28M17
N29L200
N30(MOVES BEFORE TOOL CHANGE TEST
N31M3S1000
N32X3.Y3.Z-3.G0
N33X-3.Y-3.Z3.
N34M17
N35L300
N36(TOOL CHANGER TURRET TEST FULL 360 DEGREE ROTATION
N37L201
N38M5M6T1
N39L201
N40M5M6T11
N41L201
N42M5M6T21
N43L201
N44M5M6T11
N45L201

N46M17
N47L400
N48(STEP UP THE RPM AND TEST ORIENTATION)
N49M+R3S1000
N50G4P1500
N51M19
N52M+R3S2500
N53G4P1500
N54M19
N55M+R3S2501
N56G4P1500
N57M19
N58M+R3S5000
N59G4P1500
N60M19
N61M+R3S8000
N62G4P1500
N63M19
N64M+R3S10000
N65G4P2000
N66M19
N67M+R3S300
N68G4P1000
N69M19
N70M+R3
N71G4P750
N72M19
N73M+R3
N74G4P750
N75M19
N76M3S10000
N77G4P2500
N78M4S10000
N79G4P2500
N80M3S10000
N81G4P2500
N82M4S10000
N83G4P2500
N84M17
N85L500
N86L101
N87L301
N88L401
N89M17
N90M30

```
N91(START OF THE MAIN PROGRAM
N92(
N93(
N94(*****
N95(***** WARNING *****
N96(*****
N97(
N98(
N99(NO TOOLS CAN BE IN THE SPINDLE AND NOTHING ON THE TABLE
N100(
N101(
N102M0
N103L501.1
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05821- X Calib 2216 N105821(X CALIB 2216
N2L100
N3Z0.4G1F40.
N4X0.99Z-0.4
N5F2.9X0.01
N6G4P3000
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM
N10(
N11(
N12(VMC 2216 X AXIS CALIBRATION
N13(
N14(
N15M5M19
N16Z0.4G1F40.
N17X-0.2
N18X0.19Z-0.4
N19F2.9X0.01
N20M0
N21(ZERO INDICATOR DIAL
N22L121
N23F40.Z0.4
N24X-21.2
N25X0.19Z-0.4
N26F2.9X0.01
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05822 -Y Calib 2216 N105822(Y CALIB 2216
N2L100
N3Z0.4G1F40.
N4Y0.99Z-0.4
N5F2.9Y0.01
N6G4P3000
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM
N10(
N11(
N12(VMC 2216 Y AXIS CALIBRATION
N13(
N14(
N15M5M19
N16Z0.4G1F40.
N17Y-0.2
N18Y0.19Z-0.4
N19F2.9Y0.01
N20M0
N21(ZERO INDICATOR DIAL
N22L115
N23F40.Z0.4
N24Y-15.2
N25Y0.19Z-0.4
N26F2.9Y0.01

05823-X Calib 4020 N105823(X CALIB 4020
N2L100
N3Z0.4G1F40.
N4X0.99Z-0.4
N5F2.9X0.01
N6G4P3000
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM
N10(
N11(
N12(VMC 4020 X AXIS CALIBRATION
N13(
N14(
N15M5M19
N16Z0.4G1F40.
N17X-0.2
N18X0.19Z-0.4

N19F2.9X0.01
N20M0
N21(ZERO INDICATOR DIAL
N22L139
N23F40.Z0.4
N24X-39.2
N25X0.19Z-0.4
N26F2.9X0.01

**O5824 — Y Calib
4020**

N105824(Y CALIB 4020
N2L100
N3Z0.4G1F40.
N4Y0.99Z-0.4
N5F2.9Y0.01
N6G4P3000
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM
N10(
N11(
N12(VMC 4020 Y AXIS CALIBRATION
N13(
N14(
N15M5M19
N16Z0.4G1F40.
N17Y-0.2
N18Y0.19Z-0.4
N19F2.9Y0.01
N20M0
N21(ZERO INDICATOR DIAL
N22L119
N23F40.Z0.4
N24Y-19.2
N25Y0.19Z-0.4
N26F2.9Y0.01

**O5825 — X Calib
6030**

N105825(X CALIB 6030
N2L100
N3F40.Z0.4
N4X0.99Z-0.4
N5F2.9X0.01
N6G4P3000
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM

N10(
N11(
N12(VMC 6030 X AXIS CALIBRATION
N13(
N14(
N15M5M19G1
N16F40.Z0.4
N17X-0.2
N18X0.19Z-0.4
N19F2.9X0.01
N20M0
N21(ZERO THE INDICATOR
N22L159
N23F40.Z0.4
N24X-59.2
N25X0.19Z-0.4
N26F2.9X0.01

05826-Y Calib 6030 N105826(Y CALIB 6030
N2L100
N3F40.Z0.4
N4Y0.99Z-0.4
N5F2.9Y0.01
N6G4P3000
N7M17
N8M30
N9G91(START OF THE MAIN PROGRAM
N10(
N11(
N12(VMC 6030 Y AXIS CALIBRATION
N13(
N14(
N15M5M19G1
N16F40.Z0.4
N17Y-0.2
N18Y0.19Z-0.4
N19F2.9Y0.01
N20M0
N21(ZERO INDICATOR DIAL
N22L129
N23F40.Z0.4
N24Y-29.2
N25Y0.19Z-0.4
N26F2.9Y0.01

05828-Scrape 6030 Table

N105828(SCRAPE 6030 TABLE
N2(
N3(SET Z HOME +.010 ABOVE TABLE
N4(SET X HOME +30.0
N5(SET Y HOME -14.7
N6(
N7L100
N8X-0.3Y0.3I-0.3
N9X-0.3Y-0.3J-0.3
N10G4P175
N11L200
N12X-0.3Y-0.3J-0.3
N13G4P175
N14X-0.3Y0.3I-0.3
N15L300
N16L199
N17Z0.01
N18X59.4G5
N19Y0.6G5
N20Z-0.01
N21L299
N22Z0.01
N23X59.4G5
N24Y0.6G5
N25Z-0.01
N26M17
N27M30
N28G91M19
N29M0(CHECK IF TOOL IS ORIENTED WITH LOWEST PART TO THE LEFT
N30(***) TOOL TIP IS .01 ABOVE TABLE ***)
N31G1F150.
N32Z-0.01
N33L324
N34L199
N35Z0.01
N36X59.4G5
N37Y0.6G5
N38Z-0.01
N39L299
N40Z0.01
N41M2

**05829 — Mill 6030
Table**

N105829(MILL 6030 TABLE
N2(
N3(SET Z HOME +.010 ABOVE TABLE
N4(SET X HOME +30.
N5(SET Y HOME -13.75
N6(
N7G91M0(CHECK IF TOOL IS .01 ABOVE DESIRED DEPTH OF CUT?
N8M3S200
N9G1F0.1Z-0.01
N10F4.X-60.
N11Y5.5
N12X60.
N13Y5.5
N14X-60.
N15Y5.5
N16X60.
N17Y5.5
N18X-60.
N19Y5.5
N20X60.
N21F0.1Z0.01
N22M5
N23M2

**05830-Scrape 4020
Table**

N105830(SCRAPE 4020 TABLE
N2(
N3(SET Z HOME +.01 ABOVE TABLE
N4(SET X HOME +20.
N5(SET Y HOME -9.9
N6(
N7L100
N8X-0.3Y0.3I-0.3
N9X-0.3Y-0.3J-0.3
N10G4P175
N11L200
N12X-0.3Y-0.3J-0.3
N13G4P175
N14X-0.3Y0.3I-0.3
N15L300
N16Z-0.01
N17L166
N18Z0.01
N19X39.6G5
N20Y0.6G5
N21Z-0.01

N22L266
N23Z0.01
N24X39.6G5
N25L400
N26Z-0.01F150.G1
N27L112
N28Z0.01
N29X7.2G5
N30Y0.6G5
N31Z-0.01
N32L212
N33Z0.01
N34X7.2G5
N35M17
N36M30
N37G91M19
N38M0(CHECK IF TOOL IS ORIENTED WITH LOWEST PART TO THE LEFT
N39 (**TOOL TIP IS .01 ABOVE TABLE **)
N40 (SET LEFT TOOL .01 ABOVE TABLE REMOVE OR RAISE RIGHT TOOL
N41G91G1F150.
N42L333
N43Y-19.8G5
N44M0 (RAISE LEFT TOOL SET RIGHT TOOL .010 ABOVE TABLE
N45L433
N46Y-19.8
N47M2

**05831-Mill 4020
Table** N105831(MILL 4020 TABLE
N2(
N3 (SET Z HOME +.01
N4 (SET X HOME +20.
N5 (SET Y HOME -10.
N6(
N7M0(CHECK IF TOOL IS .01 ABOVE DESIRED DEPTH OF CUT
N8G91M3S150
N9G0Y9.9
N10G1F2.Y0.1Z-0.01
N11F3.X-40.
N12Y8.25
N13X40.
N14Y-16.5
N15X-40.
N16Y8.5
N17Y0.5Z0.01
N18M5
N19M2

**05832-Scrape 2216
Table** N105832(SCRAPE 2216 TABLE
N2(
N3 (SET Z HOME +.01 ABOVE TABLE
N4(SET X HOME 8.25
N5(SET Y HOME -7.8
N6(
N7L100
N8X-0.3Y0.3I-0.3
N9X-0.3Y-0.3J-0.3
N10G4P175
N11L200
N12X-0.3Y-0.3J-0.3
N13G4P175
N14X-0.3Y0.3I-0.3
N15L300
N16Z-0.01
N17L130
N18Z0.01
N19X18.G5
N20Y0.6G5
N21Z-0.01
N22L230
N23Z0.01
N24X18.G5
N25L400

N26Z-0.01F150.G1
 N27L132
 N28Z0.01
 N29X19.2G5
 N30Y0.6G5
 N31Z-0.01
 N32L232
 N33Z0.01
 N34X19.2G5
 N35M17
 N36M30
 N37G91M19
 N38M0 (CHECK IF TOOL IS ORIENTED WITH LOWEST PART TO THE LEFT
 N39(*** TOOL TIP IS .01 ABOVE TABLE ***
 N40 (SET LEFT TOOL .01 ABOVE TABLE REMOVE OR RAISE RIGHT TOOL
 N41G91G1F150.
 N42L326
 N43Y-15.6G5
 N44M0 (RAISE LEFT TOOL SET RIGHT TOOL .010 ABOVE TABLE
 N45(** MOVE X 2.5 IN. AND SET NEW X HOME ***
 N46(**TO START RIGHT TOOL ENTER AU,48,,1
 N47(**
 N48L426
 N49Y-15.6
 N50M2

05833-Mill VMC N105833(MILL VMC 2216
2216 N2(
 N3(HOME X+11.
 N4(, Y+.100
 N5(Z+.01 ABOVE TABLE
 N6(
 N7S150M3(USE 4020 FLYCUTTER
 N8Y-0.1Z-0.01F1.G1
 N9X-22.F3.
 N10Y8.
 N11X22.
 N12Y-16.
 N13X-22.
 N14Y8.1
 N15Z0.01
 N16M5
 N17M2

**05834-Scrape 20
Table**

N105834(SCRAPE 20 TABLE
N2(
N3(SET Z HOME +.01 ABOVE TABLE
N4(SET X HOME 8.25
N5(SET Y HOME -7.8
N6(
N7L100
N8X-0.3Y0.3I-0.3
N9X-0.3Y-0.3J-0.3
N10G4P175
N11L200
N12X-0.3Y-0.3J-0.3
N13G4P175
N14X-0.3Y0.3I-0.3
N15L300
N16Z-0.01
N17L123
N18Z0.01
N19X13.8G5
N20Y0.6G5
N21Z-0.01
N22L223
N23Z0.01
N24X13.8G5
N25L400
N26Z-0.01F150.G1
N27L125
N28Z0.01
N29X15.G5
N30Y0.6G5
N31Z-0.01
N32L225
N33Z0.01
N34X15.G5
N35M17
N36M30
N37G91M19
N38M0(CHECK IF TOOL IS ORIENTED WITH LOWEST PART TO THE LEFT
N39(* SET LEFT TOOL .01 ABOVE TABLE REMOVE, RAISE RIGHT TOOL
N40G91G1F150.
N41L326
N42Y-15.6G5
N43M0(RAISE LEFT TOOL, SET RIGHT TOOL .010 ABOVE TABLE
N44(** MOVE X-2.3 IN. AND SET NEW X HOME ***
N45(**TO START RIGHT TOOL ENTER AU,48,,1

N46(**
N47(**
N48L426
N49Y-15.6
N50M2

05835-Test Scales

N105835(TEST SCALES
N2L100(TEST 6030 X-TEST
N3G0X-30.
N4G1F50.X60.
N5G0X-30.
N6G4P3000M1
N7L200(TEST 6030 Y-AXIS
N8G0Y-15.
N9G1F50.Y30.
N10G0Y-15.
N11G4P3000M1
N12L300(TEST 4020 X-AXIS
N13G0X-20.
N14G1F50.X40.
N15G0X-20.
N16G4P3000M1
N17L400(TEST 4020 Y-AXIS
N18G0Y-10.
N19G1F50.Y20.
N20G0Y-10.
N21G4P3000M1
N22M17
N23M30
N24(*****
N25(START ALL TESTS AT COLDSTART
N26(*****
N27(TEST 6030 X AXIS
N28L101.1
N29(
N30(TEST 6030 Y AXIS
N31L201.1
N32(
N33(TEST 4020 X AXIS
N34L301.1
N35(
N36(TEST 4020 Y AXIS
N37L401.1
N38(

05836-Test Cut N105836(TEST CUT
N2(11-10-92
N3L100
N4M6T11(TOOL 11=.500 DIA. ROUGHING ENDMILL
N5G90S7000M3
N6X0.75Y4.G0
N7H11Z-1.7M7
N8X0F75.G1G41
N9Y1.G8
N10X-1.Y0I-1.G2
N11X-2.9G1
N12X-3.9Y1.J1.G2
N13Y2.9G1
N14X-2.9Y3.9I1.G2
N15X-1.G1
N16X0Y2.9J-1.G2
N17Y-0.5G1
N18Z-1.25G0G40
N19X-0.6242Y0.6242F75.G1G41
N20X-0.6242Y0.6242I-1.3258J1.3258G2
N21G40
N22X-3.9Y3.9G1F50.
N23M5M9
N24M17
N25M30
N26L101
N27M6T12(TOOL 12=.500 DIA. FINISH ENDMILL
N28S10000M3
N29X0.75Y4.G0
N30H12Z-1.7
N31X0F50.G1G41
N32Y1.G8
N33X-1.Y0I-1.G2
N34X-2.9G1
N35X-3.9Y1.J1.G2
N36Y2.9G1
N37X-2.9Y3.9I1.G2
N38X-1.G1
N39X0Y2.9J-1.G2
N40X0.1Y1.5G1
N41Z-1.25G0
N42X0Y0F50.G1
N43G40
N44G8
N45X-0.6242Y0.6242G1G41

N46X-0.6242Y0.6242I-1.3258J1.3258G2
N47X0Y0G40
N48G8
N49G41Y0.3536G1
N50X-3.5464Y3.9
N51X-3.9Y3.5464
N52X-0.3536Y0
N53G40X0.5Y0G0
N54Y2.8
N55X0.2Y3.1198G41G1F50.
N56X-1.7Y3.4548
N57X-1.7Y2.8456
N58X0.2Y2.5105
N59X0.2Y3.1248
N60X-1.7Y3.4598
N61X-1.7Y2.8406
N62X0.2Y2.5055
N63Z0G0
N64G40X-2.8Y-0.5
N65Z-1.25
N66X-2.5105Y-0.2G41G1F50.
N67X-2.8192Y1.55
N68X-3.4284Y1.55
N69X-3.1198Y-0.2
N70X-2.5055Y-0.2
N71X-2.8142Y1.55
N72X-3.4334Y1.55
N73X-3.1248Y-0.2
N74Z0G0
N75X0.75Y4.G40G0
N76S5000G4P1000
N77Z-1.375
N78X-0.025F50.G1G41
N79Y1.G8
N80X-1.Y0.025I-0.975G2
N81X-2.9G1
N82X-3.875Y0.975J0.975G2
N83Y2.9G1
N84X-2.9Y3.875I0.975G2
N85X-1.G1
N86X-0.025Y2.9J-0.975G2
N87X0.01Y1.5G1
N88Z-1.125G0
N89X0Y0F50.G1
N90G40

N91G8
N92X-0.6492Y0.6492G1G41
N93X-0.6492Y0.6492I-1.3008J1.3008G2
N94X0Y0G1
N95G40
N96G8
N97Y0.3889G41
N98X-3.5111Y3.9G1
N99X-3.9Y3.5111
N100X-0.3889Y0
N101G40X0
N102M5M9
N103G28
N104M2

**O5837-Probe Cycle
Test**

N105837(PROBE CYCLE TEST
N2L100(FIND TARGET POINT)
N3M65
N4G31G1F100.Z-26.
N5G91
N6Z-0.05
N7Z0.075
N8G90
N9G31G1F0.5Z-26.P1(FINAL TOUCH (TARGET POINT)
N10L9101R1+5.(CHANGE P1 TO R1
N11R9+R1(STORE R1 IN MEMORY AS R9
N12G91G1F50.Z-0.05
N13M17
N14L200
N15G90
N16G10L108P+R9(MAKE R8=R9
N17G10L107P+R9(MAKE R7=R9
N18G91
N19G10L108P-0.0011(CHANGE R8 BY -.0011 FOR MAXIMUM RANGE
N20G10L107P0.0010(CHANGE R7 BY .001 FOR MINIMUM RANGE
N21G90
N22G10L12P99R+R9(STORE TARGET POINT AS DIA. #99
N23G0Z0
N24M17
N25L300
N26G91
N27G10L12P75R+0.0001(DIA. #75 REPRESENTS COUNTER
N28D75(DISPLAY COUNTER ON SCREEN
N29G90G0Z0
N30M65

N31G31G1F50.Z-26.
 N32G91
 N33Z-0.05
 N34Z0.075
 N35G90
 N36G31G1F0.5Z-26.P1
 N37L9101R1+5.
 N38G10L12P87R+R1(STORE TOUCH POINT IN TOOL TABLE
 N39D87
 N40M17
 N41M30
 N42G90G1G80G40G17M49
 N43G10L12P75R+0(ZERO COUNTER
 N44L101(INITIAL POINT
 N45L201(ADJUST RANGE
 N46L301(FIND TEST TOUCH
 N47L9101Z+R7R1+7.R2+54.R3+49.R4-1.(AT OR PAST R7?
 N48M99P+R2
 N49L9101Z+R8R1+7.R2+53.R3+54.R4-1.(NOT PAST R8?
 /N50G4P2000
 N51M99P+R2
 N52(****PASSED, CONTINUE PROGRAM*****)
 N53M99P57
 N54(****FAILED*****)
 N55M1
 N56M99P54(LOOP FAILED MESSAGE
 N57G91G1Z-0.05F20.(NEXT TEST
 N58M99P46

**05838-Spindle
Break In**

N105838(SPINDLE BREAK IN
 N2G90ZOG0
 N3G91M49
 N4M3S1000
 N5Z-1.G1F0.2
 N6S2000
 N7Z1.
 N8S3000
 N9Z-1.
 N10S4000
 N11Z1.
 N12S5000
 N13Z-1.
 N14M5
 N15Z1.
 N16S7000M3

N17Z-0.5
N18M5
N19Z-0.5
N20S10000M3
N21Z0.1
N22M5
N23Z0.1
N24M3
N25Z0.8
N26M2

**05839-Pallet
Changer**

N105839(PALLET CHANGER)
N2(TABLE MODIFICATIONS FOR FADAL PALLET CHANGER)
N3L100(3/8-16 8PLS)
N4G90
N5X-19.625Y1.25
N6X-19.625Y-1.25
N7X-16.375Y-1.25
N8X-16.375Y1.25
N9X-15.4Y-9.13
N10X-10.15
N11X-4.9
N12X0.35
N13M17
N14L200(3/8-16 32 PLS)
N15G90
N16X-14.404Y7.5
N17X-12.091
N18X-9.779
N19X-7.468
N20Y3.75X-7.468
N21X-9.779
N22X-12.091
N23X-14.404
N24Y-3.75X-14.404
N25X-12.091
N26X-9.779
N27X-7.468
N28Y-7.5X-7.468
N29X-9.779
N30X-12.091
N31X-14.404
N32X14.403Y7.5
N33X12.091
N34X9.779

N35X7.467
N36Y3.75X7.467
N37X9.779
N38X12.091
N39X14.403
N40Y-3.75X14.403
N41X12.091
N42X9.779
N43X7.467
N44Y-7.5X7.467
N45X9.779
N46X12.091
N47X14.403
N48M17
N49L300(.390 DIA HOLES 16 PLS)
N50G90
N51X-14.404Y5.22
N52X-12.091
N53X-9.779
N54X-7.468
N55Y-5.22X-7.468
N56X-9.779
N57X-12.091
N58X-14.404
N59X7.467
N60X9.779
N61X12.091
N62X14.403
N63Y5.22X14.403
N64X12.091
N65X9.779
N66X7.467
N67M17
N68M30
N69M6T1(CENTER DRILL)
N70G90G0S1200M3
N71H1Z-0.9X-16.8Y5.3
N72G81G98R-0.9F4.Z-1.225
N73L301
N74L101
N75R-2.Z-2.41
N76L201
N77G80
N78M5M9
N79G28

N80M6T2(.312 DRILL)
N81G90G0S1400M3
N82H2Z-0.9X-16.8Y7.6
N83G83G98R-0.9Q0.14F6.Z-2.1
N84L101
N85R-2.Z-3.285
N86L201
N87G80
N88M5M9
N89G28
N90M6T3(3/8-16 TAP EXTENDED)
N91G90G0S200M3
N92H3Z-0.9X-19.7Y1.3
N93G84G98R-0.9Q0.0625F200.Z-1.8
N94L101
N95R-2.Z-2.985
N96L201
N97G80
N98M5M9
N99G28
N100M6T4(.390 DRILL)
N101G90G0S1200M3
N102H4Z-0.9X-16.8Y5.3
N103G83G98R-0.9Q0.14F6.Z-3.9
N104L301
N105G80
N106M5M9
N107G28
N108M0
N109(INSTALL RAIL SUPPORTS)
N110M0
N111M0
N112G90G0S1500M3
N113H4Z1.475
N114G83G98R+1.475Z-1.3
N115L301
N116G80
N117M5M9
N118G28
N119M6T5(.1875 DIA END MILL)
N120G90G0S4000M3
N121H5Z2.Y5.3X-17.434
N122Z1.225Y5.22X-17.434
N123X-5.75G1F15.
N124X5.75G5

N125X17.434G1
 N126Y-5.22G5
 N127X5.75G1
 N128X-5.75G5
 N129X-17.434G1
 N130M5M9
 N131G28
 N132M6T6(1.5 DIA BALL)
 N133G90G0S3200M3
 N134X-18.37Y5.32H6Z2.
 N135Z1.255Y5.22X-18.37
 N136X-5.75G1F30.
 N137X5.75G5
 N138X18.37G1
 N139Y-5.22G5
 N140X5.75G1
 N141X-5.75G5
 N142X-18.37G1
 N143Y5.32G5
 N144Y5.22G5
 N145Z1.25
 N146X-5.75G1F35.
 N147X5.75G5
 N148X18.37G1
 N149Y-5.22G5
 N150X5.75G1
 N151X-5.75G5
 N152X-18.37G1
 N153M5M9
 N154G28
 N155M6T1
 N156M2

**05840-Mill Pallet
Table**

N105840(MILL PALLET TABLE
 N2(HOME IS Y=0 X=19.5 Z=0
 N3(SET HERTEL TO 1.0 ABOVE PALLET TABLE
 N4G0G90(5.0 DIA. HERTEL FACEMILL
 N5M3S5000Y2.375
 N6Z-0.75H1
 N7G1Z-0.99F10.M7
 N8Z-1.002G1F2.
 N9G1X-39.F75.
 N10Y7.125
 N11X0
 N12Y-7.125

N13X-39.
 N14Y-2.375
 N15X0
 N16M5M9
 N17G0G49Z0
 N18M2

**O5841-Mill Pallet
 Slot .687-.689**

N105841(MILL PALLET SLOT .687-.689
 N2(HOME POSITION X=18.75 Y=0 Z=0
 N3(SET TOOL 1.0 ABOVE PALLET TABLE
 N4(.500 DIA. 2FL ENDMILL
 N5G0G90M3S10000
 N6H1Z-1.375M8
 N7G1G41Y0.344F60.
 N8M92
 N9G8
 N10X-37.5
 N11G3Y-0.344J-0.344
 N12G1X0
 N13G3Y0.344J0.344
 N14G9
 N15M90
 N16G0G40Y0
 N17M5M9
 N18G0G49Z0
 N19M2

**O5842-Engrave
 Pallet A**

N105842(ENGRAVE PALLET A
 N2(HOME X= -19.25 Y= -9.15 Z=0
 N3(SET TOOL 1.0 ABOVE PALLET TABLE
 N4(.125 DIA. ENDMILL
 N5G0G90M3S10000
 N6Z-0.98H1
 N7L9201R-0.98R1+OR2+1.R3+OZ-1.01F20.(A
 N8M5M9
 N9G0G49Z0
 N10M2

**O5843 — Center
 Bearing Assy.**

N105843(CENTER BEARING ASSY.
 N2(*****
 N3(PROCEDURE TO SET UP:
 N4(1. SET HOME:
 N5(Z COLD START
 N6(2. SETX AND SETY
 N7(3. SETY AT Y-3.75

N8(*****
N9(START C. DRILL
N10G0G90
N11H1
N12M3S2000
N13G81G99Z-1.15R-0.9F15.
N14X13.25Y3.
N15Y7.334
N16Y11.666
N17Y16.
N18G80
N19Z0G0M5
N20M6T2
N21(START .390 DRILL
N22G0G90
N23H2
N24M3S1100
N25G83G99R-0.9Z-2.9F10.Q0.1X13.25Y16.
N26Y11.666
N27Y7.334
N28Y3.
N29G80
N30Z0G0M5
N31M6T3
N32(START 5/8 END MILL
N33H3
N34M3S950
N35G83G99R-0.9Z-1.44Q0.1F10.X13.25Y3.
N36Y7.334
N37Y11.666
N38Y16.
N39G80
N40Z0G0M5
N41M6T1
N42G28
N43M2

05844-Mill VMC 20 N105844(MILL VMC 20
N2(
N3(HOME X+10.
N4(Y+.100
N5(Z+.01 ABOVE TABLE
N6(
N7S150M3(USE 4020 FLYCUTTER
N8Y-0.1Z-0.01F1.G1

N9X-20.F3.
N10Y8.
N11X20.
N12Y-16.
N13X-20.
N14Y8.1
N15Z0.01
N16M5
N17M2

O5845-Mill VMC 15 N105845(MILL VMC 15
N2(
N3(HOME X+10.
N4(Y+5.5
N5(Z+.01
N6(
N7S150M3(USE VMC15 CUTTER
N8Z-0.01F1.G1
N9X-20.F3.
N10Y11.
N11X20.
N12Y-11.
N13Z0.01
N14M5
N15M2

**O6000-Rigid Tap
Cycle** N106000(RIGID TAP CYCLE
N2G80
N3S750
N4M19
N5G91
N6X0.1Y0.1G1F10.
N7G84.1Z-1.R+0F750.Q0.0714
N8X-0.1Y-0.1G1F10.
N9M45
N10M45
N11M45
N12M45
N13G80
N14M5
N15G4P66000
N16M99P5
N17(!
N18(NOTE: O5827 CNC88 TEST WAS MOVED TO TA,5!!!

TA,5 Programs

05827-Cycle Test N105827(CYCLE TEST)
N2L100(BEGIN XY RECIP
N3G0G90
N4G53X10.Y-8.
N5G1
N6G53X-10.Y8.
N7M11
N8M12
N9M17
N10L200(Z RECIP)
N11G0G90
N12Z0
N13G1
N14G53Z4.(MOVE FROM SETZ TO TOP STROKE)
N15M13
N16M17
N17L300(A AXIS RECIP)
N18G91
N19G1F2000.A360.
N20M15
N21G90
N22M17
N23L400(B AXIS RECIP)
N24G90B5.GO
N25G91G1F2000.B-100.
N26M14
N27G90
N28L500(RIGID TAP CYCLE)
N29S+R1M5
N30L1001
N31#IF R2 GT 1 THEN R2=1
N32T-5
N33G91
N34G84.1R+0Z-R2Q0.0714F+R1
N35G0X-0.1
N36T-4
N37X-0.1
N38T-3
N39X-0.1
N40T-2
N41X-0.1
N42T-1

N43G90X0
N44G80
N45M3
N46G4P3000
N47M5
/N48T-5
/N49G91
/N50G74.1R+OZ-R2Q0.0714F+R1
/N51G91X-0.1
/N52T-4
/N53X-0.1
/N54T-3
/N55X-0.1
/N56T-2
/N57X-0.1
/N58T-1
/N59G90X0
/N60G80
/N61M3
/N62G4P3000
/N63M5
N64L600(CYCLE ORIENTATION AND TURRET)
N65#V11=V11+1
N66#IF V11 GT 16 THEN V11=1
N67#R2=V11
N68M3
N69T-R2
N70G4P3000
N71M19
N72G4P1000
N73M4
N74G4P3000
N75M19
N76G4P1000
N77L700(GAIN SELECTION TEST)
N78T-2
N79M93
N80G4P1000
N81M92
N82T-1
N83G4P500
N84M91
N85G4P500
N86L800(RAPID AXES WITH SPINDLE ON)
N87G0M3S+R9

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N88G53Z4.X-10.Y-8.
N89M19
N90G4P5000
N91X10.Y8.ZOM3(TO Z HOME)
N92M19
N93G4P5000
N94L900(SPINDLE RUN TEST)
N95T-10
N96G4P20000(20 SECONDS)
N97T-1
N98G4P20000
N99L1000(CHECK Z DISTANCE)
N100(THE AZ IS CURRENT DISTANCE FROM Z HOME)
N101(TEST SO Z MOVE DOES NOT GO BELOW Z HOME)
N102G0G90
N103G53Z4.
N104#WAIT
N105#R2=AZ
N106#IF R2=0 THEN R2=.001
N107M17
N108M30
N109(
N110(
N111#V1=-1
N112#V2=-1
N113#V3=-1
N114#V4=-1
N115#V5=10000
N116#V20=0
N117(V1=1 FOR A-AXIS)
N118(V2=1 FOR B-AXIS)
N119(V3=1 FOR RIGID TAP)
N120(V4=1 FOR PALLET TEST)
N121(V5= MAXIMUM RPM)
N122(V10 IS PUBLIC)
N123(V11 IS PUBLIC)
N124(V20 IS CURRENT SPINDLE RUN IN RPM)
N125(V21 IS RPM DIRECTION UP=1,DOWN=-1)
N126(V22 IS RPM INCREMENT)
N127(R9= V20=MAX RPM)
N128(START Z HOME AT THE FURTEST Z- POSITION)
N129#:MAINMENU
N130#PRINT "    CYCLE TEST PROGRAM
N131#PRINT "-----CYCLE TEST PROGRAM-----"
N132#IF V1=1 THEN PRINT "* 1- 4TH AXIS"
```



```
N133#IF V1=-1 THEN PRINT "1- 4TH AXIS"
N134#IF V2=1 THEN PRINT "* 2- 5TH AXIS"
N135#IF V2=-1 THEN PRINT "2- 5TH AXIS"
N136#IF V3=1 THEN PRINT "* 3- RIGID TAP"
N137#IF V3=-1 THEN PRINT "3- RIGID TAP"
N138#IF V4=1 THEN PRINT "* 4- PALLET CHANGER"
N139#IF V4=-1 THEN PRINT "4- PALLET CHANGER"
N140#PRINT "5- MAXIMUM RPM=",V5
N141#PRINT "_____ "
N142#PRINT "SET Z HOME AT MAXIMUM DEPTH"
N143#PRINT "SELECT OPTIONS THEN ENTER 6 TO BEGIN",
N144#INPUT V10
N145#IF V10=1 THEN V1=V1*-1
N146#IF V10=2 THEN V2=V2*-1
N147#IF V10=3 THEN V3=V3*-1
N148#IF V10=4 THEN V4=V4*-1
N149#IF V10 NE 5 THEN:NEXT1
N150#PRINT "ENTER MAXIMUM RPM",
N151#INPUT V5
N152#IF V5=0 THEN V5=10000
N153#:NEXT1
N154#IF V10=6 THEN:STARTING
N155#GOTO:MAINMENU
N156#:STARTING
N157#IF V1=-1 THEN V1=0
N158#IF V2=-1 THEN V2=0
N159#IF V3=-1 THEN V3=0
N160#IF V4=-1 THEN V4=0
N161#R9=V5
N162#V20=0
N163#V21=1
N164#V22=V5/5
N165(
N166(
N167G90
N168G10L12P1R+0(RESET D COUNTER)
N169T1M6
N170#:RUNLOOP
N171G91
N172G10L12P1R+1.(INCREMENT RUN COUNTER IN D-WORD, OFFSET 1)
N173G90M49M3S300D1
N174F150.
N175L101
N176#IF V1=0 THEN:NOARICP
N177L301
```

N178#:NOARICP
N179#IF V2=0 THEN:NOBRICP
N180L401
N181#:NOBRICP
N182(AXES RECIPROCATING)
N183(TESTS WITH XY MAYBE A,B)
N184(
N185L1001(MOVE TO Z+4 FROM CS AND SET R2)
N186G91
N187#IF R2 GT 4 THEN R2=4
N188G83R+0Z-R2Q0.5F150.
N189M45
/N190M45
/N191M45
/N192M45
/N193M45
N194G90G80
N195(START Z RICPROCATING)
N196L201
N197(TESTS WITH XYZ AB? RICP)
N198(CYCLE HI/LOW RANGE)
N199M3S1000
N200G4P2000
N201#V10=0
N202#V11=4
N203#:HILOWLOOP
N204S2000.2
N205G4P2000
N206S2000.1
N207G4P2000
N208#V10=V10+V11
N209#IF V10 LT 11 THEN:HILOWLOOP
N210#V10=0
N211#V11=5
N212M5
N213(FAST CHANGE)
N214#:HILOWLOOP1
N215S0.1000
N216S0.2000
N217#V10=V10+V11
N218#IF V10 LT 21 THEN:HILOWLOOP1
N219(RIGID TAP CALIBRATE TEST)
N220#IF V3=0 THEN:NORIGID
N221#V10=100
N222#V11=500

```
N223#:CALLOOP
N224#R1=V10
N225S+R1
N226M3
N227G4P2000
N228G84.2
N229G4P4000
/N230M4
/N231G4P2000
/N232G74.2
/N233G4P4000
N234#V10=V10+V11
N235#IF V10 LT 2000 THEN:CALLOOP
N236#:NORIGID
N237(CYCLE ORIENTATION)
N238#V11=0
N239S100
N240L602
N241S500
N242L604
/N243S1000
/N244L606
/N245S3000
/N246L602
/N247S+R9
/N248L601
N249(CYCLE SPINDLE WHILE MOVING AXES)
N250(V21 CONTROLS S-WORD VALUE; S100,S200,S300,S200
S100,S200,S300)
N251(V21 POSITIVE ADDS, NEG SUBTRACTS)
N252#:SETRPM
N253#IF V21=1 THEN V20=V20+V22
N254#IF V21=-1 THEN V20=V20-V22
N255#IF V20 LT V22 THEN V21=V21*-1
N256#IF V20 LT V22 THEN GOTO:SETRPM
N257#IF V20 GT V5 THEN V21=V21*-1
N258#IF V20 GT V5 THEN GOTO:SETRPM
N259#R1=V20
N260S+R1
N261#IF V21=-1 THEN R1=4
N262#IF V21=1 THEN R1=3
N263M+R1
N264L901(40 SECONDS PER CALL)
/N265L906(7*40=4.6 MINUTES)
N266(SECOND PART, NO RECIPIATION)
```

N267T-1
N268M10
N269G4P10000
N270G0G28
N271(CYCLE GAIN SELECTION, 3 SEC PER TEST)
N272#:GAINSEL
N273L703
/N274L712
N275#IF V3=0 THEN:NORIGIDCYCLE
N276(RIGID TAP CYCLES:G84.1,G74.1)
N277R1+750.
N278L501
N279R1+3000.
N280L501
N281#:NORIGIDCYCLE
N282(RAPID AXIS FULL TRAVEL WITH SPINDLE ON)
N283G0G90M5
N284G53X10.Y8.Z4.
N285L801
/N286L801
/N287L801
/N288L801
/N289L801
N290(TEST TOOL CHANGER)
N291#V10=2
N292#V11=2
N293M3S500
N294#:TCLOOP
N295#R1=V10
N296T+R1M6
N297M3
N298G4P2500
N299#V10=V10+V11
N300#IF V10 LT 17 THEN:TCLOOP
N301T1M6
N302(PALLET CYCLE)
N303(RECIPROCATE Z, A, B)
N304#IF V4=0 THEN:NOPALLET
N305#R1=V20
N306M3S+R1
N307L201(RECIP Z)
N308#IF V1=0 THEN:NOARICP1
N309L301
N310#:NOARICP1
N311#IF V2=0 THEN:NOBRICP1

N312L401
N313#:NOBRICP1
N314M31(CYCLE PALLET)
N315G4P2000
N316M31
N317G4P2000
N318M31
N319G4P2000
N320M31
N321G4P2000
N322M5
N323M10
N324G4P10000
N325G0G28
N326#:NOPALLET
N327#GOTO:RUNLOOP

6001-Ballbar Test N106001(BALLBAR XY PLANE 5.907 RADIUS
N2G91
N3M19
N4M49
N5R1+5.907
N6G1F40.
N7X-0.06
N8M0
N9G1F40.
N10X0.06
N11G2I+R1
N12I+R1
N13M99P6

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