```
%
O00101 (ADVANCED PROBE-BORE-AND-ADJUST-TOOL MACRO)
(10.1.18 MRT)

M00
(THIS IS A MACRO EXERCIZE, FOR REFERENCE ONLY)

(*** THIS MACRO WILL: ***)
(-FINISH MILL 1.3IN BORE)
(-PROBE BORE)
(-ADJUST TOOL WEAR)
(-MILL AWAY PART IF BORE TOO BIG, STILL UPDATES)
(TOOL DIAMETER WEAR, FOR NEXT PART)
(-RERUN BORE IF TOO SMALL)
(-ALARM IF RERUNNING PART 2x DOES NOT)
(BRING THE BORE INTO TOLERANCE)
(-COMPLETE NORMALLY, M30, IF RUNNING GOOD PARTS)
(*** END MACRO DESCRIPTION ***)

(*** VARIABLE DEFINITIONS ***)
(#100 = TARGET BORE DIAMETER)
(#101 = CALCULATED T WEAR DEVIATION FROM TARGET)
(#102 = PROBE COUNTER, # OF TIMES PROBED)
(#188 = PROBED DIAMETER)
(#2606= TOOL DIAMETER WEAR, TOOL 6)
(*** END VARIABLE DEFINITIONS ***)

(*** OFFSETS, TOOLS ***)
(G54 XY WORK OFFSET IS CENTER OF 1.3IN BORE)
(G54 Z IS TOP OF FINISHED PART)
(T1 = .5IN EM, DESTROYS PART IF NEEDED)
(T6 = .5IN BN EM, MILLS BORE)
(T25 = PROBE)
(*** END OFFSETS ***)

G20 (CHECK FOR INCH MODE)

(TARGET BORE DIA. IS 1.3" +/-.001")
#100=1.3 (ENTER TARGET DIAMETER HERE)

#102 = 0 (SET PROBE COUNTER TO ZERO)

N100 G103 (UNBLOCK LOOKAHEAD FOR MACHINING)

(M97 INTERNAL SUB CALL, SUB AT LINE N1000)
M97 P1000 (FINISH 1.3IN BORE)

G103 P1 (BLOCK LOOKAHEAD)

(M97 INTERNAL SUB CALL, SUB AT LINE N2000)
M97 P2000 (PROBE BORE)

(STORE NEEDED TOOL WEAR ADJUSTMENT IN VAR. #101)
#101= #100 - #188 (TARGET-PROBED BORE DIA. DEVIATION)

(ADJUST T6 TOOL WEAR OFFSET)
#2606= #2606 - #101 (ADJUST WEAR OFFSET BY #101)

(IF PROBED BORE DIA. IS TOO BIG, DESTROY PART)
IF [ #188 GT [#100+.001] ] GOTO4000 (N4000 SUB JUMP IF BIG)
```

Handwritten annotations:
- — N NUMBER,
- — JUMP TO,
- — CONDITIONAL BRANCH, IF
- TARGET BORE Ø, SET BY USER
- RAN ONCE AT BEGINNING
- SETS PROBE COUNTER BACK TO ZERO, EACH TIME A NEW PART IS RUN
- RUN, PROBE, ADJUST
- IF BIG...

```
(IF PROBED BORE DIA. TOO SMALL, JUMP TO N500)
(N500 SUB CHECKS HOW MANY TIMES WE HAVE RERUN)
IF [ #188 LT [#100-.001] ] GOTO500 (N500 SUB, IF TOO SMALL RERUN)
```

```
G103
M30 (END PROGRAM) — NORMAL STOP

(ALL SUBS BELOW, AFTER M30)
```

```
N500
(IF BORE DIA. TOO SMALL, RE-RUN UP TO 2X)
(IF ALREADY RERAN 2X, ALARM OUT)
(#102 IS VAR. I CHOSE FOR PROBE COUNTER)
(LT IS LESS THAN)
(GE IS GREATER THAN OR EQUAL TO)
IF [ #102 LT 3 ] GOTO100 (SENDS BACK TO BORE FIN. MILL, N100)
IF [ #102 GE 3 ] GOTO3000 (SEND TO ALARM N3000 SUB)
M30 (END PROGRAM. SHOULD NEVER END HERE)
```

```
N1000 (FINISH 1.3IN BORE, SUB)
T6 M06 (.5 ENDMILL)
S8500 M03
G54 G00 G90 X.2093 Y-.0344
G43 Z.1 H06 M08
G01 Z-.8 F200.
G41 X.2906 Y.024D06 F30.
G03 X.3249 Y.2333 I-.0875 J.1218
X.2571 Y.3064 I-.3249 J-.2333
I-.2571 J-.3064
X.0458 Y.2879 I-.0964 J-.1149
G40 G01 X-.0185 Y.2113
G00 Z.1 M09
M99 (RETURN TO MAIN PROGRAM, LINE AFTER M97 SUB CALL)
```

```
N2000 (PROBE BORE SUB.)
#102=#102+1 (INCREMENT PROBE COUNTER) → COUNTER. GOES UP EACH TIME PART IS PROBED
M06 T25 (PROBE)
G103 P1
G54 G00 G90 X0. Y0.
G43 H25 Z4.
G65 P9832                     (PROBE ON)
G65 P9810 Z-0.4 F120. (PROTECTED MOVE)
G65 P9814 D1.3             (PROBE FEATURE)
G65 P9810 Z4. F200.     (PROTECTED MOVE)
G65 P9833                     (PROBE OFF)
M99 (RETURN TO MAIN PROGRAM, LINE AFTER M97 SUB CALL)
```

```
N3000 (ALARM SUB)
#3000= 1 (SOMETHING WRONG, RERAN BORE 2X, STILL SMALL)
M30(END PROGRAM. SHOULD NEVER END HERE)
```

```
N4000 (DESTROYS PART IF BORE TOO BIG)
(KNOWN BAD PARTS NEVER LEAVES MACHINE)
T1 M06 (.5 ENDMILL)
S10000 M03
G54 G00 G90 X0 Y0
G43 Z0.1 H01 M08
G13 I0.5 K2. Q0.1 F250. Z-1. (SEE G13 IN MANUAL)
G00 Z0.1 M09
M30 (END PROGRAM HERE IF PART BAD, MILLED AWAY)
%
```