

Custom Macro B Quick Reference

Calling Words

M98 - Subroutine call
G65 - Custom macro call
G66 - Custom macro modal call
G66.1 - Custom macro modal call
G67 - Modal call cancel
M99 - End of custom macro
P word - Program number being called
L word - Number of executions

Examples

M98 P1000 (Call subprogram O1000)
G65 P1000 A0.3 B5.0 C2.3 (Call custom macro O1000 with arguments)
G65 P1000 A0.3 B5.0 C2.3 L5 (Execute custom macro O1000 five times)
G66 P1000 X3.4 Y1.2 Z3.2 (Set arguments for custom macro O1000)
G66.1 P1000 U1.3 V2.2 W1.1 (Modal call to custom macro O1000)
G67 (Cancel either modal call)

Note: See manual to learn the differences between G66 and G66.1

Custom Macro Arguments (assignment number one)

A, B, C, D, E, F, H, I, J, K, M, Q, R, S, T, U, V, W, X, Y, Z (Avoid I, J, and K if possible. See manual for reasons.)

Custom Macro Arguments (assignment number two)

A, B, C, I, J, K, I, J, K, I, J, K, I, J, K, I, J, K, I, J, K, I, J, K (A, B, C and ten sets of I, J, K)

Local Variable Assignments (assignment 1)

A: #1 H: #11 R: #18 X: #24
B: #2 I: #4 S: #19 Y: #25
C: #3 J: #5 T: #20 Z: #26
D: #7 K: #6 U: #21
E: #8 M: #13 V: #22
F: #9 Q: #17 W: #23

Local Variable Assignments (assignment 2)

A: #1 I(2): #7 I(4): #13 I(6): #19 I(8): #25 I(10): #31
B: #2 J(2): #8 J(4): #14 J(6): #20 J(8): #26 J(10): #32
C: #3 K(2): #9 K(4): #15 K(6): #21 K(8): #27 K(10): #33
I(1): #4 I(3): #10 I(5): #16 I(7): #22 I(9): #28
J(1): #5 J(3): #11 J(5): #17 J(7): #23 J(9): #29
K(1): #6 K(3): #12 K(5): #18 K(7): #24 K(9): #30

Common Variables

Common Variables
Permanent Common Variables

Option A

#100 - #149
#500 - #549

Option B

#100 - #199
#500 - #599

Option C

#100 - #199
#500 - #699

Option D

#100 - #199
#500 - #999

System Variables (See reverse for more detailed information)

#1000 - #1035 ... Input signals	#3006 ... Stop with message
#1100 - #1135 ... Output signals	#3007 ... Mirror image on/off
#2000 - #2999 ... Tool offsets	#4001 - #4120 ... Modal information
#3000 ... Alarm generation	#5001 - #5015 ... Current absolute position
#3001 ... Milliseconds timer	#5021 - #5035 ... Current machine position
#3002 ... Hour timer	#5061 - #5075 ... Current absolute position at G31
#3003 ... Single block suppression & M code wait	#5201 - #5335 ... Fixture offsets
#3004 ... Feed hold, feedrate override, and exact stop check suppression	Note: For OM controls, #2501 - 2623 are related to fixture offsets

Arithmetic

Function	Symbol	Example	Function	Symbol	Example
Equality	=	#100 = 3	Sine	SIN	#100 = SIN [45]
Addition	+	#100 = 3 + 6	Cosine	COS	#100 = COS [45]
Subtraction	-	#100 = 9 - 2	Tangent	TAN	#100 = TAN [45]
Multiplication	*	#100 = 3 * 4	Arc Tangent	ATAN	#100 = ATAN [3] / [9]
Division	/	#100 = 9 / 3	Square Root	SQRT	#100 = SQRT [9]
Absolute Value	ABS	#100 = ABS [2-5]	Newer	Models	ONLY!
Rounding	ROUND	#100 = ROUND [4.4]	Arc Cosine	ACOS	#100 = ACOS [.23]
Round Down	FIX	#100 = FIX [4.8]	Logrisms	LN	#100 = LN [2.3]
Round Up	FUP	#100 = FUP [3.2]	Eponent	EXP	#100 = EXP [3]
			Decimal adding	ADP	#100 = ADP [#3]

Logic Statements

Statement Label: **N Word**
Unconditional Branching: **GOTO**
Conditional Branching: **IF**
Looping: **WHILE**

Examples

.	.	.
.	.	.
IF [#3 NE 0] GOTO 5	#101 = 1	#101 = 1
M09	N1 IF [#101 GT 10] GOTO 1	WHILE [#101 LE 10] DO 1
GOTO 6	.	.
N5 M08	.	.
N6...	.	.
.	#101 = #101 + 1	#101 = #101 + 1
.	GOTO 1	END 1
.	N1
.	.	.

Local operators:

Equal To: **EQ**
Not Equal To: **NE**
Less Than: **LT**
Greater Than: **GT**
Less Than Or Equal To: **LE**
Greater Than Or Equal To: **GE**

Custom Macro B Quick Reference

System Variables

#1000 - #1035: Input signals for device interface
 #1000 corresponds to input signal UI000
 #1001 corresponds to input signal UI001
 .
 #1031 corresponds to input signal UI031

#1100 - #1135: Output signals for device interface
 #1100 corresponds to input signal UO000
 #1101 corresponds to input signal UO001
 .
 #1131 corresponds to input signal UO031

**#2000-#2999: Tool offsets
Machining Centers**
 (For machining centers
 having one value per offset)
 #2001: Offset 1
 #2002: Offset 2
 #2003: Offset 3
 .
 #2199: Offset 199

#2000-#2999: Tool offsets Turning Centers

Wear Offsets					Geometry Offsets				
#	X	Z	R	T	#	X	Z	R	T
1	#2001	#2101	#2201	#2301	1	#2401	#2501	#2601	
2	#2002	#2102	#2202	#2302	2	#2402	#2502	#2602	
3	#2003	#2103	#2203	#2303	3	#2403	#2503	#2603	
.
32	#2032	#2132	#2232	#2332	32	#2432	#2532	#2632	

#3000: Alarm generation Example: #3000 = 100 (TOOL TOO BIG) 26 characters in message, alarm no. 100-255

#3006: Stop w/ message Example: #3006 = 100 (CLEAR CHIPS) 26 characters in message, alarm no. 100-255

#3001: Millisecond timer #3001 = 0 (Resets timer) **#3002:** Hour timer #3002 = 0

#3003: Suppress single block #3003 = 0 (Enable single block) #3003 = 1 (Disable single block)

#3003: M code await #3003 = 0 (Await M codes) #3003 = 2 (Don't await M codes)

#3004: Suppress feed hold #3003 = 0 (Enable feed hold) #3004 = 1 (Disable feed hold)

#3004: Suppress feed override #3003 = 0 (Enable feed override) #3004 = 2 (Disable feedrate override)

#4000-#4130: Current states (**machining centers**) #4013: G95... **#4000-#4130: (turning centers)**
 #4001: G00... #4004: G22... #4007: G40... #4010: G98... #4014: G54... #4001: G00... #4004: G68... #4007: G40...
 #4002: G17... #4005: G94... #4008: G43... #4011: G50... #4015: G61... #4002: G96... #4005: G98... #4008: G25...
 #4003: G90... #4006: G20... #4009: G80... #4012: G66... #4016: G68 #4003: ABS... #4006: G20...

#5201-#5335 Fixture offsets (not 0 series)

Offset	X	Y	Z
Common	#5201	#5202	#5203
G54	#5221	#5222	#5223
G55	#5241	#5242	#5243
G56	#5261	#5262	#5263
G57	#5281	#5282	#5283
G58	#5301	#5302	#5303
G59	#5321	#5322	#5323

#2501-#2523 Fixture offsets (For 0 series)

Offset	X	Y	Z
G54	#2501	#2502	#2503
G55	#2521	#2522	#2523
G56	#2541	#2542	#2543
G57	#2561	#2562	#2563
G58	#2581	#2582	#2583
G59	#2601	#2602	#2603

Machining & turning
 #4102: B #4120: T
 #4107: D
 #4108: E #4130:
 #4109: F Additional
 #4111: H fixture offset
 #4113: M number
 #4114: N
 #4115: O
 #4119: S

Probing Related Commands

G codes

G00 & G01: Motion commands
 G10: Offset setting
 G20 & G21: Inch & metric modes
 G31: Skip cutting
 G49: Cancel tool length comp.
 G50: Turning center program zero
 G53: Motion relative to zero return
 G54-G59: Fixture offsets
 G65: Custom macro call
 G66: Modal custom macro call
 G66.1: Modal custom macro call
 G67: Cancel modal call
 G90: Absolute mode
 G91: Incremental mode
 G92: Machining center program zero
 G98: Turning center feed per minute
 G99: Turning center feed per revolution

M codes

M00: Program stop
 M01: Optional stop
 M03: Spindle on CW
 M04: Spindle on CCW
 M05: Spindle stop
 M13: Activate probe
 M14: Deactivate probe
 M19: Spindle orient
 M98: Subprogram call
 M99: Subprogram return

Calibration values

#500: Stylus radius
 #501: X+ overshoot & droop
 #502: X- overshoot & droop
 #503: Y+ overshoot & droop
 #504: Y- overshoot & droop
 #505: Probe length

Special program numbers

O9000: T code calling
 O9001-O9009: M code calling
 O9010-O9020: G code calling

External output commands

POPEN: Open RS-232C port
 PCLOS: Close RS-232C port
 BPRNT: Print (no decimal point)
 DPRNT: Print (with decimal point)

Naming #500 series variables

SETVN 500 [RADIUS]
 SETVN 501 [X+ O&D]
 SETVN 502 [X- O&D]
 SETVN 503 [Y+ O&D]
 SETVN 504 [Y- O&D]
 SETVN 505 [LENGTH]