

Appendix F - Error Codes and Param Numbers

Error Messages

- | | |
|-----|---|
| 200 | Division by zero |
| 207 | Invalid floating point operation |
| 321 | Invalid custom G code
<i>A custom G code has an error.</i> |
| 322 | Invalid custom M code
<i>A custom M code has an error.</i> |
| 324 | Invalid path or program not found for M6 tool change macro.
<i>The tool change macro may have an error in it.</i> |
| 399 | Software Limit Pre-check |
| 501 | Illegal address “#” encountered
<i>The character within quotes “ ” is not a valid address, such as X, Y, Z, R, G, etc. The block where the error occurred is shown in the block display. Check that block for the invalid address.</i> |
| 502 | Undefined canned cycle |
| 503 | Return without gosub |
| 504 | Coincident points, the start point and end point are the same on an arc without a center. <i>The start point and end point are the same on an arc without a center.</i> |
| 505 | Radius too small to span given points
<i>Start and end points are more than “R” distance apart.</i> |
| 507 | After compensation, line to arc lacks intersection |
| 509 | After compensation, arcs lack intersection |
| 515 | Unexpected file size
<i>The control read a file that was not the correct size.</i> |
| 517 | Parameter out of range
<i>Parameter number is less than zero. For parameter numbers greater than 699 you must use data mode (G10, G11).</i> |
| 518 | Illegal program statement
<i>Command in program statement is not considered valid.</i> |
| 519 | Feedrate out of range
<i>The programmed feedrate is beyond the “maximum feedrate” parameter value in the machine setup parameters. The program feedrate may be negative.</i> |

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- 520 Spindle speed out of range
The programmed spindle speed is beyond the “spindle range” parameter in the machine setup parameters. The programmed spindle speed may be negative.
- 521 Negative arc radius
An attempt was made to generate a negative arc radius
- 522 Negative polar radius
A polar radius must be specified as a positive value.
- 523 Illegal tool number
Valid T numbers are 0 - 99.
- 524 Illegal radius number
Valid D numbers are 0 - 99.
- 525 Illegal length number
Valid H numbers are 0 - 99.
- 529 Duplicate address' encountered
The same address was found twice on the same block, such as X0 Y0 X.5.
- 530 Colinear line to line in round corner
- 531 Colinear line to arc in round corner
- 532 Colinear arc to line in round corner
- 533 Colinear arc to arc in round corner
- 535 Chamfer length is less than zero
Chamfer length must be a positive number.
- 536 Can't chamfer and round the same corner
Choose either chamfer or round corner.
- 537 Can't chamfer to or from arcs
- 538 Loop counter out of range
The maximum number of loops for a call is 999.
- 539 Dwell time out of range
Probably a negative number was specified. The maximum dwell time is 999999999 seconds.
- 540 Illegal dwell time “#” encountered
Try G4 F##.####; specify X, P, or F after G4.

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- 541 No axis moves are allowed on a G31 or G32 block
G31 and G32 are intended to move Z only. Relocate X and Y moves to another block.
- 542 G30 Illegal return to reference parameter on G30 block
Should be P2, P3, or P4 for second, third, and fourth reference point.
- 543 Illegal move while in data mode (G10)
- 544 Too many digits in number
The number of digits used is beyond what the address is expecting. For example, G100 should only be two digits.
- 545 Illegal K value for number of holes
K must be a number between 1 and 1000.
- 546 Nested calls or gosubs too deep
Probably a program is calling itself. Nest limit is 50 for program calls.
- 547 Comment not closed
Always use “()” (parentheses) in pairs for program comments.
- 549 Unrecognized G code
G code encountered is not recognized by the control.
- 550 Bad numeric format
Expecting a numeric value, or a parameter value enclosed within [], after an address X, Y, Z, R, etc.
- 552 Missing “]”
Always use square brackets in pairs.
- 553 Missing “[”
Always use square brackets in pairs.
- 554 Tangent function overflow
Trying to find the tangent of a number close to 90°
- 555 Missing “/”
Arctan “ATAN” syntax is P## = ATAN[##/##].
- 556 Negative SQRT argument
- 557 Unknown function

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- 560 Illegal relational operator
- 567 Unresolved call
Program being called does not exist (CALL #####).
- 568 Unresolved GOTO or GOSUB
N##### does not exist in the program (GOTO #####).
- 569 The tool is too large to cut inside the arc “Compensated radius is too small”
Eliminate the arc, or use a smaller tool.
- 570 The tool is too large to cut inside the arc “1st compensated radius in arc to arc is < 0”
Eliminate the arc, or use a smaller tool.
- 571 The tool is too large to cut inside the arc “2nd compensated radius in arc to arc is < 0”
Eliminate the arc, or use a smaller tool.
- 572 Pocket clear is not in a Start/End mill cycle WHILE WEND loop
Use START at the beginning of the mill cycle and END at the end of the mill cycle.
- 573 Round wall is not in a Start/End mill cycle WHILE WEND loop
Use START at the beginning of the mill cycle and END at the end of the mill cycle.
- 574 Round wall radius will not span 1st Z depth and final Z depth
- 575 Tapered wall is not in a Start/End mill cycle WHILE WEND loop
Use START at the beginning of the mill cycle and END at the end of the mill cycle.
- 576 Z increment is 0
- 578 Undefined text cycle
Character specified in a text command is not supported.
Load Text Cycles parameter may not be set in PARMS-CTRL.
- 579 Compensated arcs do not intersect
- 580 Invalid floating point operation.
The argument passed to the LN function was zero or negative.
- 581 Invalid floating point operation.
*The Operand passed to the “**” (exponent) function was zero or negative*
- 582 X not monotonous

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584	X value exceeds starting X
585	Z not monotonous
587	Z value exceeds starting Z
589	Invalid cylindrical parameter
601	Missing WHILE statement <i>May be an end mill cycle without a start mill cycle.</i>
602	Missing WEND statement <i>May be a start mill cycle without an end mill cycle.</i>
603	Program does not exist <i>Program being called as a subprogram does not exist. Check to see if the program called is in the memory.</i>
606	Program is empty <i>Text program being run or verified is empty. Try editing and reposting the conversational file.</i>
608	'P' expected in M98 block
610	Position move required after rotation
611	No inverse time feed
613	Duplicate block label
666	Quill movement detected, reposition the quill to its original position.
805	Invalid probe setup <i>Input file does not start with a comment containing three asterisks. Also, the following three blocks should be X, Y, Z, or Y, X, Z depending on scan plane.</i>
900	RS232 overrun error <i>The system sending data may not have the same baud rate as the CNC. Check RS-232 baud rate parameter in PARMS-CTRL.</i>
901	RS232 parity error <i>The system sending data may not have the same parity as the CNC. Check RS-232 parity parameter in PARMS-CTRL.</i>
902	RS232 framing error <i>Remote system and CNC may not have the same line settings or a loose cable. Check line settings in PARMS-CTRL for baud rate, parity, and stop bits.</i>

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- 903 RS232 break detected (RS232 cable may be loose.)
Check cabling and connectors for good contact.
- 904 Arc 3D required address missing
- 1188 Unknown hardware failure
- 1189 Watchdog Failure
The interface card reported that it dropped the watchdog because no information was received from the ncb card for about 3 heartbeats, about 0015 seconds. CAUSES:
- 1. Fiber-optic cable loose.*
 - 2. Bad ncb card.*
 - 3. Bad interface card, since it must receive the information from the ncb card.*
 - 4. A power glitch at the interface card caused the interface card to reset (the interface card comes up with the watchdog off). If this is the case, however, the error may come up as an error 1194.*
 - 5. It is at least possible communication in one direction would work and not in the other. Especially since each direction has an independent channel, including a separate fiber optic cable. This error would be very rare, especially now that "interface reset" yields a separate error.*
- 1190 Unexpected control (NCB card) reset
The NCB card reset sometime after power-up, the only time it should reset. CAUSES:
- 1. Power glitch at the NCB card.*
 - 2. Noise on the PC bus reset line, which is tied to the NCB card reset line.*
- 1192 Control (NCB card) Failure
The NCB card did not respond for a long period of time. CAUSES:
- 1. Bad NCB card.*
- 1194 Unexpected interface (card) reset
The interface card reset sometime after power-up, the only time it should reset. CAUSES:
- 1. A power glitch at the interface card caused the interface card to reset (the interface card comes up with the watchdog off).*
- 1195 Interface failure
No information was received from the interface card for 10 heartbeats of the control, about .05 seconds. CAUSES:
- 1. Fiber-optic cable loose.*
 - 2. Bad interface card.*
 - 3. Bad NCB card, since it must receive the information from the interface card.*
 - 4. Bad fiber-optic cable.*

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1227	Needs lube
1381	No spindle on feed move
1395	Chiller fault
1401	Software limit
1407	Excess error
1413	Safe Zone
1437	Pay timer expired
1438	Spindle load for tool
1439	Spindle stall
1447	Spindle speed out of range for gear (<i>lathe only</i>)
1448	Air pressure
1449	XXXX Drive Fault (# Axis or Spindle)
1463	Coolant fault
1473	Arm not parked
1449	Drive fault
1450	Emergency stop

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Byte Parameters

16	Measurement base
43	Use other tool diameter <i>Use one value for cutter comp and one for graphics. Also used in FAST.ATC to check for large tools.</i>
44	W instead of Z <i>For HMC70, switching W for Z</i>
50	Spindle range
54	STL binary
55	STL metric
58	Use Small Soft Keys
59	Load Tool Offsets
62	Primary handwheel encoder
64	Boot in metric
65	Number of axes
66	Feed revs (<i>lathe only</i>)
67	Spindle feet (<i>lathe only</i>)
68	Spindle axis
69	Tool change type <i>Other=0; None=1; Milltronics=2</i>
73	Tool table value diameters or radius
75	Load engraving cycles
77	Check spindle up to speed
79	G18 is ZX or XZ plane
80	CAD type DXF or CDL
81	Special Flags
82	Offset Round and Tapered Walls
84	Milltronics ATC type <i>Plunger=0; GenevaTwoStep=1; GenevaOneStep=2; SwingArm=3; HM20SwingArm=4</i>
85	DPRNT RS232
86	Baud rate
87	Parity bits
95	Front turret
96	Power up with block skip on
97	Power up with optional stop on
98	Slow rapid %
99	MDI mode <i>For double tool change messages in FAST.ATC</i>
100	Post M-code table
110-119	Custom G-code table
120-139	Custom M-code table
148	Tri-color cycle light
151	Log option
176-183	ADC comp axis
186	Allow Away Offset

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187	Spindle probe
189	Tap up double RPM
190	Check air pressure
191	Scratch
192	Two axes (<i>legacy CenturionI parameter</i>)
199	Manual option (<i>legacy CenturionI parameter</i>)
204	Electronic spindle gears
208	Default Trig Help and cutter comp
212	Second handwheel
213	Probe axis
214	Probe input
215	Cranking factor (<i>for handwheeling through a program</i>)
216	IPR scale
219	European code
220	Feedhold input
223	Door override input
224	Aux spindle (<i>lathe only</i>)
227	End of cycle light output <i>For tri-color EOC light, the other two outputs are hard-coded</i>
229	AC axis drives
230	Third handwheel axis
231	Inverse feedrate in 1/sec or 1/min
293	Aux safety input (<i>lathe only</i>)
294	Blocks of lookahead
295	Reverse spindle in back gear
338	Look scope blocks
371	Safe zone ON at power-up
393	Log axes
397	Auto rotary brake
400	Ignore 'tool radius too large' errors
404	Front panel type (<i>molded front panel=2</i>)
405	Aux auger button
406	Aux setup button
407	Door open jog (<i>lathe only</i>)
409	Jog override input (<i>lathe only</i>)
410	FeedBack on Quill Scale
411	Tool Setting Any Tool, Current Tool
412	Aux spindle jog (<i>lathe only</i>)
413	Pre-check Software Limits (<i>0=Run Only; 1=Always; 2=Never</i>)
414	Log auto-stop OFF
415	Remote HDW Encoder
416	Quill Scale Encoder
417	Log beats skip
418	Spindle load flag (<i>used in tool load monitoring</i>)
419	Tool Load limits ON
471	Cylinder Parked Axis

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472	Cylinder Rotary Axis
473	Check Spindle Gear Mismatch (<i>lathe only</i>)
475	G65x tool set Add work offset or not.
476	Feedhold G1 and No Spindle
477	Watch Spindle up to Speed Check for stalled spindle
479	Chiller Fault Input
480	Tool Carousel Index Button (<i>at rear of machine</i>)
489	Handwheel G54-Z G5x -Z in handwheel
493	Clutch trip input
494	Home Baruffaldi (<i>lathe only</i>)
495	90 Degree Cutter Compensation
497	Aux air blast
498	Aux CTS
500	Task global defaults
508	Clockwise coast
509	Clockwise brake
510	Counter clockwise coast
511	Counter clockwise brake
530	Auger ON time
532	Washdown ON time
533	Washdown OFF Time
534	Check Tool Door Open
536	Spindle Lube Cycle Time
537	Yaskawa2 Drives <i>A copy of Yaskawa = 229 used in NCB file</i>
538	Put Pot Down on Swing Arm Tool Changers
539	Clamp type - <i>For lathe frames from India with power clamp</i>
540	2GearwithGearBox
541	Check Drawbar
542	Yaskawa M5 Drive
545	Front Panel Flag
546	Soft trigger
547	Changer Type
548	Pump Delay Used on coolant
549	Check Up-to-Speed 2 <i>Copy of PB77 for use in NCB files</i>
552	Up to Speed Input
555	Auto Rotary Brake 2 <i>Copy of PB397 for use in NCB files</i>
556	CTS Type
562	Door Open Timer
700-716	Tool Table Fields
801	Stock Type

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Floating Point Parameters

In many cases in the parameter listing below, the parameter label is for the first of 16 axes. CNC8200 software is designed to support up to 16 axes. For example, parameter 6016 is labeled as “Pulses per unit.” Parameter 6016 is the PPU for the first axis (X), parameter 6017 is the PPU for the second axis (Y) ... and so on.

P00-P99	User Parameters
P120-P139	Used in 3D pocket
P140	R plane
P141	Final Z depth
P142	Z initial level
P143	Z increment
P144	First Z depth
P145	Z feedrate
P146	Peck up increment
P147	Peck clearance
P148	Dwell 1
P149	Dwell 2
P150	Pocket radius
P151	X pocket dimension
P152	Y pocket dimension
P153	XY finish stock
P154	Z finish stock
P155	Cut width
P156	Bolthole radius
P157	Bolthole start angle
P158	number of holes in 360 degrees
P159	number holes to be made in a bolthole circle
P160-P170	Unassigned
P171	Holes to be made in drill cycles “K”
P172	Mirror position
P180	Scale position axis 1
P188	Scale factor axis 1
P196	Rotate I position
P197	Rotate J position
P198	Angle of rotation
P199	Auto Routines Plunge / Ramp
P200	Previous position
P208	Current position
P216	Previous machine
P224	Current machine
P232	Work offset axis 1
P240	Tool offset axis 1
P248	Arc radius

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P149	Arc I value
P250	Arc J value
P251	Feedrate
P252	Dwell
P253	Spindle speed
P254	Temporary X position
P260	Active tool number
P261	Active tool radius
P262	Active tool length
P263	Active radius offset number
P264	Active length offset number
P265	Canned cycle active
P266	Zone status
P267	Unit ratio
P268	Pending tool
P269	Unused
P270	Temporary I
P271	Temporary J
P272	Temporary K
P273	Third axis rotation angle
P274-P282	Rotation table
P283-P285	Unassigned
P286-P292	Rotation coordinates
P293-P299	Unassigned
P300	Modal 00
P301	Modal 01
P302	Modal 02
P303	Modal 03
P304	Data mode
P305	H offset direction
P306	Interpolate
P307	Coordinates
P308	Active plane
P309	Cutter compensation
P310	Canned cycle
P311	Dimension
P312	Feed unit
P313	Spindle unit
P314	Spindle direction
P315	Linear unit
P316	Scale
P317	Rotate
P318	Mirror
P319	Work system
P320	Primary

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P321	Secondary
P322	Tertiary
P323	Return plane
P324	Tapping
P325	Custom code
P326	Custom M-code
P327	Custom G-code
P328	Feed per Rev (wait for marker)
P329	Feedrate override Lock
P330	Spindle override Lock
P331-P334	Unassigned
P335	Hard Tap Fudge Factor
P336-P343	Unassigned
P344	Inverse Time Feedrate
P345	Bore Type
P346	G76 Orient Bore Angle
P347	G76 Orient Bore Distance
P348-P349	Unassigned
P350-P361	Used in tool setting software
P362-P363	Unassigned
P364	Draw Bar Delay used in tool change macros
P365	Feed per Minute Feedrate
P366	Feed per Rev Feedrate
P367-P368	Unassigned
P369	Job time
P370	True tool number
P371-P399	Unassigned
P400	Work G92
P432	Work G52
P448	Tool change offset
P466	Text Rotation Angle
P467-P472	Unassigned
P473	Quill scale PPU
P474	Current Max Feed
P475	R_LogBeatsSkip
P476-P494	Unassigned
P495	ToolChangeSpacing
P496-P509	Unassigned
P510	StartBlock
P511	EndBlock
P512	CutIncrement
P513	RufCutType
P514	Start Mill Options
P515	RufCutDepth
P516	Island

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P517-P527	Used in Autoroutines
P522	Ramp Angle in Autoroutines
P528-P697	Unassigned
P698	Parts Counter Increment
P699	Parts Counter
P700-P703	Unassigned
P704	Power on Feedrate
P705-P789	Unassigned
P790	Spindle range 1
P791	Spindle range 2
P792	Spindle range 3
P793	Spindle Range 4
P794	Spindle Range 5
P795	Spindle Range 6
P796	Spindle Range 7
P797	Spindle Range 8
P798	Max Graph Size
P799-P811	Unassigned
P812	Block Rate
P814	CAD Epsilon
P815-P816	Unassigned
P817	Spindle Encoder PPU1
P818	Actual Spindle RPM
P819-P839	Unassigned
P840	Pulse Delay
P841	Max Spindle RPM
P842	Tapping Ramp Low Gear
P843	Spindle Acceleration Ramp
P844	Spindle Deceleration Ramp
P845-P849	Unassigned
P850	ADC Sample
P851	ADC Scale
P852	ADC Value
P853	ADC Trigger
P854	Tapping Ramp High Gear
P855	Spindle Encoder PPU2
P856-P892	Unassigned
P893	Soft Start Delay
P894	Clamped Feedrate
P895	Cranking Max ipm
P896	Handwheel Encoder PPU
P897	Cranking Minutes Per Turn
P898	Screen Blank Time
P899	Digitizing Enable
P900-P962	Unassigned

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P963	Max Corner Deviation
P964	Unassigned
P965	SpindleScale (<i>fraction of full spindle dac</i>)
P966	Minimum Block Time (<i>seconds, min time when not in fast DNC</i>)
P967	Unassigned
P968	Minimum Linear Feed AccDec
P969	Minimum Rotary Feed AccDec
P970	Minimum Linear Rapid AccDec
P971	Minimum Rotary Rapid AccDec
P972	Quill Epsilon
P973	Front Panel Base Port
P974	Quill Scale PPU
P975-P999	Unassigned
P1500	Unassigned
P1501	Software Version
P1502-P1503	Unassigned
P1504	Turret Pocket Count
P1505-P1554	Unassigned
P1555	Current Pocket
P1556-P1595	Tool Slots for swing arm style tool changers
P1596-P1598	Unassigned
P1599	Spindle Orient Delay
P1700	Thermal comp degrees per volt
P1708	Thermal comp inches per volt
P1716	Thermal comp inverse growth per degree
P1724	Thermal comp position sensor
P1732	Thermal comp voltage reference
P1740	Thermal comp position reference
P1748	Thermal comp lower backlash
P1756	Thermal comp inches per degree
P1764	Thermal comp adjust positionA
P1772	Thermal comp adjust voltageA
P1780	Thermal comp adjust positionB
P1788	Thermal comp adjust voltage
P1900-P2099	Tool Radii 0..199
P2100-P2299	Tool Lengths 0...199
P5024	Work Coordinate1 (<i>G54</i>)
P5040	Work Coordinate2
P5056	Work Coordinate3
P5072	Work Coordinate4
P5088	Work Coordinate5
P5104	Work Coordinate6
P6000	Axis address label
P6016	Pulses per unit
P6032	Home position

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P6048	Home direction		
P6064	Positive limit		
P6080	Negative limit		
P6096	Maximum feed		
P6112	Dry run feed		
P6128	Rapid velocity		
P6144	Home sequence		
P6160	Velocity toward home		
P6176	Velocity away from home		
P6192	Velocity toward marker		
P6208	Encoder multiplier		
P6224	Slow jog velocity		
P6240	Rapid jog velocity		
P6256	In position		
P6272	G00 unidirectional		
P6288	G60 unidirectional		
P6304	Backlash		
P6320	Excess error		
P6336	Rotary=0 Linear=1		
P6352	English Lead		
P6368	English Trail		
P6384	Metric Lead		
P6400	Metric Trail		
P6416	Jog Key Direction		
P6432	Home Marker Switch	<i>(Home Switch = 0, Marker = 1)</i>	
P6448	G28 reference point		
P6464	G30 reference point 2		
P6480	G30 reference point 3		
P6496	G30 reference point 4		
P6512	Max Handwheel Error		
P6528	Feed Back		
P6544	Invert Handwheel		
P6560	Gain Proportional		
P6576	Gain Velocity		
P6592	Gain Handwheel		
P6608	Max acceleration/deceleration		
P6624	Max jerk		
P6640	G187 velocity gain	P6656	G188 velocity gain
P6672	G189 velocity gain	P6688	G187 max jerk
P6704	G188 max jerk	P6720	G189 max jerk
P6736	Acting velocity gain		
P6752	Acting max jerk		
P6768	Positive safe zone		
P6784	Negative safe zone		
P6800	Away offset	P6816	Rotary rollover