

# CVNC<sup>TM</sup> System Variables Guide

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CADD5<sup>®</sup> 5 Revision 9.0

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# Preface

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The *CVNC System Variables Guide* presents information about CVNC system variables in a series of tables. The first table lists each CVNC command included in this book and indicates which table includes system variable information for that command. Subsequent tables provide definitions, content descriptions, and defaults for system variables used by commands in each CVNC application.

## Related Documents

The following documents may be helpful as you use the *CVNC System Variables Guide*:

- *Understanding CVNC*
- *CVNC System User Guide and Menu Reference*
- *CVNC Editor Guide*
- Command reference and user guide(s) for your application
- *Customizing CVNC*
- *CVNC Master Index*
- *CVNC Work Examples*

## Book Conventions

The following table illustrates and explains conventions used in writing about CADD5 applications.

Convention	Example	Explanation
Menu selections and options	List Section option, Specify Layer field	Indicates a selection you must make from a menu or property sheet or a text field that you must fill in.
User-selected graphic location	X, d <sub>1</sub> or P1	Marks a location or entity selection in graphic examples.
User input in CADD5 text fields and on any command line	cvaec.hd.data.param tar -xvf /dev/rst0	Enter the text in a CADD5 text field or on any command line.
System output	Binary transfer complete.	Indicates system responses in the CADD5 text window or on any command line.
Variable in user input	tar -cvf /dev/rst0 filename	Replace the variable with an appropriate substitute; for example, replace filename with an actual file name.
Variable in text	tagname	Indicates a variable that requires an appropriate substitute when used in a real operation; for example, replace tagname with an actual tag name.
CADD5 commands and modifiers	INSERT LINE TANTO	Shows CADD5 commands and modifiers as they appear in the command line interface.
Text string	"SRFGROUPA" or 'SRFGROUPA'	Shows text strings. You must enclose text string with single or double quotation marks.
Integer	n	Supply an integer for the <i>n</i> .
Real number	x	Supply a real number for the <i>x</i> .
#	# mkdir /cdrom	Indicates the root (superuser) prompt on command lines.
%	% rlogin remote_system_name -l root	Indicates the C shell prompt on command lines.
\$	\$rlogin remote_system_name -l root	Indicates the Bourne shell prompt on command lines.



## Window Managers and the User Interface

According to the window manager that you use, the look and feel of the user interface in CADD5 can change. Refer to the following table:

**Look and Feel of User Interface Elements**

User Interface Element	Common Desktop Environment (CDE) on Solaris, HP, DEC, and IBM	Window Manager Other Than CDE on Solaris, HP, DEC, IBM, SGI, and NT
Option button	ON — Round, filled in the center OFF — Round, empty	ON — Diamond, filled OFF — Diamond, empty
Toggle key	ON — Square with a check mark OFF — Square, empty	ON — Square, filled OFF — Square, empty

## Online User Documentation

Online documentation for each book is provided in HTML if the documentation CD-ROM is installed. You can view the online documentation in the following ways:

- From an HTML browser
- From the Information Access button on the CADD5 desktop or the Local Data Manager (LDM)

Please note: The LDM is valid only for standalone CADD5.

You can also view the online documentation directly from the CD-ROM without installing it.

From an HTML Browser:

1. Navigate to the directory where the documents are installed. For example,
  - `/usr/apl/cadds/data/html/htmldoc/` (UNIX)
  - `Drive:\usr\apl\cadds\data\html\htmldoc\` (Windows NT)
2. Click `mainmenu.html`. A list of available CADD5 documentation appears.
3. Click the book title you want to view.

From the Information Access Button on the CADD5 Desktop or LDM:

1. Start CADD5.
2. Choose Information Access, the *i* button, in the top-left corner of the CADD5 desktop or the LDM.
3. Choose DOCUMENTATION. A list of available CADD5 documentation appears.
4. Click the book title you want to view.

From the Documentation CD-ROM:

**1. Mount the documentation CD-ROM.**

**2. Point your browser to:**

CDROM\_mount\_point/html/doc/mainmenu.html (UNIX)

CDROM\_Drive:\html\doc\mainmenu.html (Windows NT)

## Online Command Help

You can view the online command help directly from the CADDSS desktop in the following ways:

- From the Information Access button on the CADDSS desktop or the LDM
- From the command line

From the Information Access Button on the CADDSS Desktop or LDM:

- 1. Start CADDSS.**
- 2. Choose Information Access, the *i* button, in the top-left corner of the CADDSS desktop or the LDM.**
- 3. Choose COMMAND HELP. The Command Help property sheet opens displaying a list of verb-noun combinations of commands.**

From the Command Line: Type the exclamation mark (!) to display online documentation before typing the verb-noun combination as follows:

```
#01#!INSERT LINE
```

## Printing Documentation

A PDF (Portable Document Format) file is included on the CD-ROM for each online book. See the first page of each online book for the document number referenced in the PDF file name. Check with your system administrator if you need more information.

You must have Acrobat Reader installed to view and print PDF files.

The default documentation directories are:

- /usr/apl/caddss/data/html/pdf/doc\_number.pdf (UNIX)
- CDROM\_Drive:\usr\apl\caddss\data\html\pdf\doc\_number.pdf (Windows NT)

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- Fill out and mail the PTC Documentation Survey located in the *PTC Customer Service Guide*.



# System Variables

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This book presents information about CVNC system variables in a series of tables. The first table lists each CVNC command included in this book and indicates which table includes system variable information for that command. Subsequent tables provide definitions, content descriptions, and defaults for system variables used by commands in each CVNC application.

- CVNC Commands in this Book
- System-wide System Variables Table
- CVNC-M2 System Variables Table
- CVNC-M3 System Variables Table
- CVNC-M5 4-Axis System Variables Table
- CVNC-M5 System Variables Table
- CVNC-P2 System Variables Table
- CVNC-T2 System Variables Table

# CVNC Commands in this Book

The following table indicates which CVNC commands include system variables listed in subsequent tables, and under which application(s) the information can be found. Note that not all CVNC commands are included in this listing, only those most commonly referenced.

**Table 1-1 CVNC commands in this Book**

<b>Command</b>	<b>Where Listed</b>
ACCEL	CVNC-M5
APPROACH	CVNC-M2, CVNC-T2
AREAMILL	CVNC-M2
AREAOPT	CVNC-P2
AUDIT	System
BORE	CVNC-M2, CVNC-T2
CALCRAD	CVNC-M2
CHECKLIB	System
CHGAGE	CVNC-T2
CHGOFF	CVNC-T2
CHGTOOL	CVNC-M2, CVNC-M3, CVNC-M5, CVNC-T2, CVNC-P2
CLEAR	CVNC-M2, CVNC-T2
COLDIST	CVNC-M3, CVNC-M5
COLISION	CVNC-M5
COMLIB	System
CONFIG	CVNC-M2, CVNC-P2, CVNC-T2
COOLANT	CVNC-M2, CVNC-T2
CPL	CVNC-M2, CVNC-T2
CSINK	CVNC-M2
CUT	CVNC-M2, CVNC-T2
CUT ARC	CVNC-M2, CVNC-T2
CUT ENTITY	CVNC-M2, CVNC-T2
DATUM	CVNC-M2, CVNC-T2
DECEL	CVNC-M5
DEFAMILL	CVNC-M2
DEFPLUN	CVNC-M3
DEFPLUN3	CVNC-M3
DEFPLUN5	CVNC-M5
DEFPROF3	CVNC-M3
DEFPROF5	CVNC-M3
DEFPROJ	CVNC-M3
DEFRET3	CVNC-M3
DEFRET5	CVNC-M5
DEFPROF3	CVNC-M3
DEFPROF5	CVNC-M3
DEFPROJ	CVNC-M3
DEFRET3	CVNC-M3
DEFRET5	CVNC-M5
DEFSINT3	CVNC-M3

**Table 1-1 CVNC commands in this Book**

<b>Command</b>	<b>Where Listed</b>
DEFSORT	CVNC-P2
DEFSURF3	CVNC-M3
DEFSURF5	CVNC-M5
DEFZPRO3	CVNC-M3
DIACOMP	CVNC-M2
DISPLAY	System, CVNC-M2, CVNC-T2
DISPLAY CYCLE	CVNC-M2
DRILL	CVNC-M2, CVNC-T2
FEED	CVNC-M2, CVNC-M5, CVNC-T2
FILE	System
FIRSTPASS	CVNC-M5
GOUGE	CVNC-M5
GR	System
HOMEPT	CVNC-M2, CVNC-T2
INDEX	CVNC-M2
LANGUAGE	System
LEAD	CVNC-M5
LEADOUT	CVNC-T2
MACLIB	System
MATDATA	CVNC-P2
MATERIAL OFFSET	CVNC-M3
MAXSWEEP	CVNC-M3
MODEL	CVNC-M3
MOVE	CVNC-M2, CVNC-P2, CVNC-T2
MPOCKET	CVNC-M3
MULTAX	CVNC-M2
NIBDATA	CVNC-P2
NIBBLE	CVNC-P2
OUTPUT	System, CVNC-M5
OUTPUT VERIFY	System
PLANE ZAPPR	CVNC-M2
PLANE ZCLEAR	CVNC-M2
PLANE ZREF	CVNC-M2
PLANE ZRETRACT	CVNC-M2
PLANE ZWORK	CVNC-M2
PLIB	CVNC-P2
PLUNGE	CVNC-M2, CVNC-T2
POCKET	CVNC-M2, CVNC-M2
PROFILE	CVNC-M2, CVNC-T2
PROFILE3	CVNC-M3
PROFILE5	CVNC-M5
PROJECT	CVNC-M3

**Table 1-1 CVNC commands in this Book**

<b>Command</b>	<b>Where Listed</b>
PUNCH	CVNC-P2
RETRACT	CVNC-M2, CVNC-T2
SCALLOP	CVNC-M5
SETAX	System
SHOW MATERIAL	CVNC-M3
SLEW	CVNC-M5
SPEED	CVNC-M2, CVNC-T2
SPINDLE SPEED	CVNC-M5
STEPIN	CVNC-T2
STEPOUT	CVNC-T2
STOCK	CVNC-M2, CVNC-M3, CVNC-T2
SURFCUT3	CVNC-M3
SURFCUT4	CVNC-M5 4-Axis
SURFCUT5	CVNC-M5
SURFINT3	CVNC-M3
SURFINT5	CVNC-M5
SWARFCUT	CVNC-M5
TAG	System
TAP	CVNC-M2, CVNC-T2
THREAD	CVNC-T2
TLIB	CVNC-M2, CVNC-T2
TOLER	CVNC-M2, CVNC-M5, CVNC-T2
TOOLAXIS	CVNC-M5
TOOLEXT	CVNC-M3
TURN	CVNC-T2
UNCUT	CVNC-M3
UPHILL	CVNC-M3
WATERLINE	CVNC-M3
ZPROF3	CVNC-M3



# System-wide System Variables Table

CVNC system commands that include system variable information are listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced.

**Table 1-2 System-wide System Variables**

Command	Variable	Definition	Contents	Default
AUDIT	#AUDIT	Audit trail status	OFF, ON	OFF
CHECKLIB	#CHECK	Check rules	OFF, ON	OFF
	#CHKLIB	Check library	Library name	CAM.NCMILL.CHECK LIB <sup>1</sup>
COMLIB	#COMLIB	Command file library	File name	CAM.NCMILL.COM.LIB <sup>1</sup>
	#COMLIB2	Command file library	File name	Blanks
	#COMLIB3	Command file library	File name	Blanks
	#COMLIB4	Command file library	File name	Blanks
DISPLAY	#DISPLAY	Display mode	ON, OFF, TOOL	ON
	#DISPDIS	Constant tool display distance	Real number	0.5 in/12.7 mm
	#PAINT	Constant tool paint option	PAINT, blanks	Blanks
	#SFIG	Subfigure for tool	Part name	Blanks
	#TLDISP	Tool display mode	DYN, CONST	Blanks
	FILE	#JCFNAME	Name of current JCF	File name
GR	#GR	Frequency of graphics display	ON, OFF	ON
LANGUAGE	#LANGUAGE	Current language	File name	CAM.NCMILL.GRAMMAR
MACLIB	#MACLIB	MACRO	Library name	CAM.NCMILL.MACRO.LIB <sup>1</sup>
	#MACLIB2	MACRO	Library name	Blanks
	#MACLIB3	MACRO	Library name	Blanks
	#MACLIB4	MACRO	Library name	Blanks
MOVE	#FRSTLOC	First point of the toolpath of a locked command. This variable is available only when the locked command is the next command in the JCF.	Coordinates	System-generated
OUTPUT	#CLTEXT	CLFILE text output flag	TEXT, NOTEXT	NOTEXT
	#LOCAL	Output generator flag	LOCAL	Blanks
	#OUTFILE	Output file name	CLFILE.(Extension)	Blanks
	#OUTMSG	Output message log file	CLFILE.MSGLOG.(Extension)	Blanks
	#OUTMODE	Output mode	OFF, ON	OFF
	#OUTPART	Output partition	OFF, ON	OFF
	#OUTPUT	Output format	CLFILE, CLFILE2, APT, COMPACT, VERIFY	Blanks
	#OUTBLK	Partition status	ON, OFF	OFF

**Table 1-2 System-wide System Variables**

Command	Variable	Definition	Contents	Default
OUTPUT VERIFY	#BLKORG	Block origin	Coordinate	0,0,0
	#BLKSIZE	Block size	Coordinate	0,0,0
	#IMGNAME	Image file name	File name	Blanks
	#IMGRES	Image resolution	100<res<512	512
	#TPVOPT	Workpiece option	BLOCK, IMAGE	Blanks
	#VIEWMAX	View upper extent	Coordinate	0,0,0
	#VIEWMIN	View lower extent	Coordinate	0,0,0
	#VIEWROT	View rotation	Coordinate	0,0,0
SETAX	#XAXIS	X-axis output ordinate	XAXIS, YAXIS, ZAXIS	XAXIS
	#XMIRROR	X-axis output ordinate mirrored flag	MIRROR	Blanks
	#YAXIS	Y-axis output ordinate	YAXIS, ZAXIS, XAXIS	YAXIS
	#YMIRROR	Y-axis output ordinate mirrored flag	MIRROR	Blanks
	#ZAXIS	Z-axis output ordinate	ZAXIS, XAXIS, YAXIS	ZAXIS
	#ZMIRROR	Z-axis output ordinate mirrored flag	MIRROR	Blanks
TAG	#TAG	Flag for tagging option	AUTO, ASK, OFF	AUTO

# CVNC-M2 System Variables Table

CVNC-M2 commands that include system variable information are listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced

**Table 1-3 CVNC-M2 System Variables**

Command	Variable	Definition	Contents	Default
APPROACH	#CURLOC	Current tool location	Coordinate	0, 0, 0
AREAMILL	#CUTTYP	Cut strategy	LACE	LACE
	#CUTDIR	Cut direction	Vector	X-axis of current CPL
	#STEPTYP	Step type	PERCENT, ABSOLUTE	PERCENT
	#STEP	Step over distance	Real number	75
	#LONLY	Lace only indicator	ONLY, blanks	Blanks
	#BEGTYP	Begin type	LOC, AUTO	AUTO
	#BEGIN	User-defined, approximate start point	Coordinate	#CURLOC
	#OFFTYP	Stepoff type	PERCENT, ABSOLUTE	ABSOLUTE
	#STEPOFF	Stepoff value	Real number	0.0
	#CONTOUR	Contour pass	INITIAL, FINAL	FINAL
	#MILLTYP	Boundary pass type	CONV, CLIMG	CONV
	#STARTYP	Start type indicator	AUTO, LOC	AUTO
	#STARTC	User-defined, approximate contour start point	Coordinate	0, 0, 0
	#RUNTYP	Run-in type	STRAIGHT	STRAIGHT
	#RUNVAL	Run-in radius	Real number	0.0
	#POSITN	Position method	CLEAR, RETRACT, DIRECT	CLEAR
	#DIST	Direct distance	Real number	0.0
	#CONLY	Contour only indicator	ONLY, blanks	Blanks
	#CUTLEN	A measure of the tool path length	Real number	0.0
	#CALTIM	A measure that gives an indication of machine time	Real number	0.0
BORE	#STRTP	First start point of area clearance	Coordinate	0, 0, 0
	#ENDPT	Area clearance end point	Coordinate	0, 0, 0
	#CSTART	First start point of contour	Coordinate	0, 0, 0
	#CEND	Contour end point	Coordinate	0, 0, 0
	#DEPTH	Depth value	Real number	0.0
	#THRU	Through-hole value	Real number	0.0
	#SAFDIST	Approach clearance distance	Real number	0.1 in or 2.54 mm
	#THRUCLR	Through-hole end clearance distance	Real number	0.1 in or 2.54 mm
	#BRMODE	Bore mode	Blanks, MANUAL, ORIENT	Blanks

**Table 1-3 CVNC-M2 System Variables**

Command	Variable	Definition	Contents	Default
	#BROFF	Bore offset axis	Blanks, XOFF, YOFF	Blanks
	#BROFVAL	Bore offset value	Real number	0.0
	#DWLMODE	Dwell mode	Blanks, DWELL, REV	Blanks
	#AVOID	Avoidance switch	Blanks AVOID	Blanks
	#AVINC	Avoidance z incremental value	Real number	0.0
	#AVABS	Avoidance z absolute value	Real number	0.0
CALCRAD	#CALCRAD	Effective tool radius	OFF, ON	OFF
	#EFFRAD	Effective tool radius	Real number	Current tool radius
CHGTOOL	#CHGTOOL	Change tool mode	FRONT, REAR, MANUAL	Blanks
	#CHGDIR	Carousel direction	CLW, C CLW	Blanks
	#DANGLVE	Drill point angle	Real number	118
	#TOOL	Tool number	Numeric	1.0
	#TLNAME	Tool name	Text	Blanks
	#TOOLTYP	Tool type	MILL, TURN, DRILL, TAP	MILL
	#TOOLDIA	Tool diameter	Numeric	1.0 in or 25.4 mm
	#TOOLRAD	Tool radius	Real number	0.5 in or 12.7 mm
	#TOOLCRD	Corner radius	Real number	0.0
	#TOOLTAP	Tool taper angle	Real number	0.0
	#TPITCH	Tapping pitch	Real number	12.0
	#TLGAGE	Mill gage length	Real number	0.0
	#TLDESC	Tool description	Text	Blanks
	#DIAREG	Cutter diameter compensation register	Integer	1
	#LENREG	Length compensation register	Integer	1
	#SFIG	SFIGURE for tool	Text	Blanks
	#DIA	Apt-7 d parameter	Double	1.0 in or 25.4 mm
	#CORNER	Corner radius	Double	0.0
	#ALPHA	Alpha angle	Double	0.0
	#BETA	Beta angle	Double	0.0
	#ECORNER	Apt-7 e parameter	Double	0.5 in or 12.7 mm
	#FCORNER	Apt-7 f parameter	Double	0.0
	#HEIGHT	Apt-7 h parameter	Double	05.0 in or 127.0 mm
	#SUBTYPE	Milling tool type (MILL or MILL7)	Blank, MILL, MILL7	Blank
	#EFABSET	ON if ECORNER, FCORNER, ALPHA or BETA were defined for this tool	OFF, ON	OFF
CLEAR	#CURLOC	Current location	Coordinate	0.0, 0.0, 0.0
	#ZCLEAR	Clearance plane	Real number	15 in or 380 mm
CONFIG	#ROTZERO	First pivot point	Coordinate	0.0, 0.0, 0.0
	#ROTZR2	Second pivot point	Coordinate	0.0, 0.0, 0.0
	#ROTABL	ROTABL flag	ROTABL, Blanks	Blanks
	#ROTHED	ROTHED flag	ROTHED, Blanks	Blanks
	#RTHDAN	Current rotary head or AAXIS angle	Real number	0.0
	#RTTBAN	Current rotary table AAXIS absolute position	Real number	0.0

**Table 1-3 CVNC-M2 System Variables**

Command	Variable	Definition	Contents	Default
	#AAXIS	AAXIS absolute position	Real number	0.0
	#BAXIS	BAXIS absolute position	Real number	0.0
	#CAXIS	CAXIS absolute position	Real number	0.0
	#HEADAX	Head position with respect to datum	Vector	0, 0, 0
	#HEADTRN	Head translation vector	Vector	0, 0, 0
	#HZERO	Switch for zero degree tool-tip coordinates to output	Blanks, HZERO	Blanks
	#ROTDV1	First rotary device	AAXIS, BAXIS, CAXIS, Blanks	Blanks
	#ROTDV2	Second rotary device	AAXIS, BAXIS, CAXIS, Blanks	Blanks
COOLANT	#COOLANT	Coolant condition	OFF, ON	OFF
CPL	#CPL	Current CPL	Text	TOP
CSINK	#CSKDIA	Countersink diameter	Real number	0.0
	#DWLMODE	Dwell mode	Blanks, DWELL, REV	Blanks
	#DWELL	Dwell value	Real number	0.0
	#SAFDIST	Approach clearance distance	Real number	0.1
	#SAFDIA	Approach clearance diameter	Real number	0.0
	#AVOID	Avoidance switch	Blanks, AVOID	Blanks
	#AVINC	Avoidance z incremental value	Real number	0.0
	#AVABS	Avoidance z absolute value	Real number	0.0
CUT	#CURLOC	Current location	Coordinate	0.0, 0.0, 0.0
CUT ARC	#CURLOC	Current location	Coordinate	0.0, 0.0, 0.0
CUT ENTITY	#DRIVE	Drive entity	Integer	0
	#CURLOC	Current location	Coordinate	0.0, 0.0, 0.0
DATUM	#DATUM	Setup CPL	Text	TOP
	#CPL	Current CPL	Text	TOP
DEFAMILL	#CUTTYP	Cut strategy	LACE	LACE
	#CUTDIR	Cut direction	Vector	X-axis of current CPL
	#STEPTYP	Step type	PERCENT, ABSOLUTE	PERCENT
	#STEP	Step over distance	Real number	75
	#LONLY	Lace only indicator	ONLY, Blanks	Blanks
	#BEGTYP	Begin type	LOC, AUTO	AUTO
	#BEGIN	User-defined, approximate start point	Coordinate	0, 0, 0
	#OFFTYP	Stepoff type	PERCENT, ABSOLUTE	ABSOLUTE
	#STEPOFF	Stepoff value	Real number	0.0
	#CONTOUR	Contour pass	INITIAL, FINAL	FINAL
	#MILLTYP	Boundary pass type	CONV, CLIMB	CONV
	#STARTYP	Start type indicator	AUTO, LOC	AUTO
	#STARTC	User-defined, approximate contour start point	Coordinate	0, 0, 0
	#RUNTYP	Run-in type	STRAIGHT	STRAIGHT
	#RUNVAL	Run-in radius	Real number	0.0
#POSITN	Position method	CLEAR, RETRACT, DIRECT	CLEAR	

**Table 1-3 CVNC-M2 System Variables**

Command	Variable	Definition	Contents	Default
	#DIST	Direct distance	Real number	0.0
	#CONLY	Contour only indicator	ONLY, Blanks	Blanks
DIACOMP	#DIACOMP	Diameter	OFF, ON, LEFT, RIGHT, NORMAL	OFF
	#DIAREG	Cutter diameter compensation register	Integer	1
DISPLAY	#DISPLAY	Display mode	ON, OFF, TOOL	ON
	#SFIG	Subfigure for tool	Text	Blanks
	#TLDISP	Tool display mode	DYN, CONST	Blanks
DISPLAY CYCLE	#PAINT	Constant tool paint option flag	PAINT, NOPAINT	Blanks
	#CYCDISP	Cycle emulation switch	ON, ALL, OFF	OFF
DRILL	#DEPTH	Depth value	Real number	0.0
	#THRU	Through-hole value	Real number	0.0
	#SAFDIST	Approach clearance distance	Real number	0.1
	#THRUCLR	THRU end clearing distance	Real number	0.1
	#DEPCLR	Depth end clearing distance	Real number	0.0
	#ANGL	Tool point angle calculation switch	ATANGL, NOANGL	ATANGL
	#ZPLANE	Z-plane use switch	Blanks, ZPLANE	Blanks
	#DWLMODE	Dwell mode	Blanks, DWELL, REV	Blanks
	#DWELL	Dwell value	Real number	0.0
	#MAXDEP	Maximum depth	Real number	0.0
	#FIRST	First pass value	Real number	0.0
	#LAST	Last pass value	Real number	0.0
	#NPASS	Number of passes	Integer	1
	#AVOID	Avoidance switch	Blanks, AVOID	Blanks
	#AVINC	Avoidance z incremental value	Real number	0.0
	#AVABS	Avoidance z absolute value	Real number	0.0
FEED	#FEDMODE	Feed rate mode	CUT, APPROACH, PLUNGE, CONNECT, RETRACT, CLEAR	CUT
	#FEDRAT	Feed rate value	Real number	0.0
	#FEDUNIT	Feed rate units	IPM, MPPM, IPR, MMPPR, RAPID	IPM or MPPM
	#CTFEDRT	Cut feed rate	Numeric	0.0
	#CTFEDUN	Cut feed rate units	IPM, MPPM, IPR, MMPPR, RAPID	IPM or MPPM
	#APFEDRT	Approach feed rate	Numeric	0.0
	#APFEDUN	Approach feed rate units	IPM, MPPM, IPR, MMPPR, RAPID	RAPID
	#PLFEDRT	Plunge feed rate	Numeric	0.0
	#PLFEDUN	Plunge feed rate units	IPM, MPPM, IPR, MMPPR, RAPID	IPM or MPPM
	#CNFEDRT	Connect feed rate	Numeric	0.0
	#CNFEDUN	Connect feed rate units	IPM, MPPM, IPR, MMPPR, RAPID	RAPID
	#RTFEDRT	Retract feed rate	Numeric	0.0
	#RTFEDUN	Retract feed rate units	IPM, MPPM, IPR, MMPPR, RAPID	IPM or MPPM

**Table 1-3 CVNC-M2 System Variables**

Command	Variable	Definition	Contents	Default
	#CLFEDRT	Clear feed rate	Numeric	0.0
	#CLFEDUN	Clear feed rate units	IPM, MPPM, IPR, MPPR, RAPID	IPM or MPPM
HOMEPT	#HOMEPT	Home point	Coordinate	0.0., 0.0., 0.0
	#FROM	FROM switch	FROM, OFF	OFF
INDEX (a rotary axis)	#CPL	Current CPL	Text	TOP
	#RTHDAN	Rotary head position in degrees	Real number	0.0 °
	#RTTBAN	Rotary table position in degrees	Real number	0.0 °
	#XCPL	Resulting CPL X-offset	Real number	0.0
	#YCPL	Resulting CPL Y-offset	Real number	0.0
	#ZCPL	Resulting CPL Z-offset	Real number	0.0
INDEX (a CPL)	#CPL	Current CPL	Text	TOP
MULTAX	#MULTAX	Set Multax	Text	OFF
MOVE	#CURLOC	Current location	Coordinate	0, 0, 0
PLANE ZAPPR	#ZAPPR	Z-approach value	Real number	10in or 255mm
PLANE ZCLEAR	#ZCLEAR	Z-clearance value	Real number	15in or 380mm
PLANE ZREF	#ZREF	Z-reference value	Real number	0.0
PLANE ZRETRACT	#ZRET	Z-retraction value	Real number	10in or 255mm
PLANE ZWORK	#ZWORK	Z-work value	Real number	0.0
PLUNGE	#CURLOC	Current location	Coordinate	0, 0, 0
POCKET	#RTOL	Rough tolerance	Real number	0.005in or 0.0127mm
	#AUXPT	Auxiliary point	Coordinate	0, 0, 0
	#CURLOC	Current location	Coordinate	0.0, 0.0, 0.0
	#MAXSTEP	Maximum stepover	Real number	0.5in or 12.7 mm
PROFILE	#CURLOC	Current location	Coordinate	0, 0, 0
RETRACT	#CURLOC	Current location	Coordinate	0, 0, 0
	#ZRET	Z-retraction value	Real number	10in or 255mm
SPEED	#MAXRPM	Spindle maximum	Integer	5000 RPM
	#SPINSPD	Spindle speed	Real number	0.0
	#SPINUN	Spindle units	RPM, SFM, SMM	RPM
	#SPINDIR	Spindle direction	CLW, CCLW	CLW
	#RANGE	Spindle range	AUTO, HIGH, MEDIUM, LOW	Blanks
	#SPINSTA	Spindle status	OFF, ON	OFF
STOCK	#DRVSTK	Drive stock	Real number	0.0
	#CHKSTK	Check stock	Real number	0.0
	#STKARC	Indicates if there are floated fillets	ARCFLOAT, ARCFIX	ARCFLOAT
TAP	#DEPTH	Depth value	Real number	0.0
	#SAFDIST	Approach clearance	Real number	1.0in or 25.4mm
	#TPITCH	Tapping pitch	Real number	12.0
TLIB	#TLIB	Tool library	Text	DATA.NC.TLIB
TOLER	#INTOL	Inner tolerance	Real number	0.005in or 0.127mm
	#OUTTOL	Outer tolerance	Real number	0.005in or 0.127mm

## CVNC-M3 System Variables Table

CVNC-M3 commands that include system variable information are listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced.

Please note: If a MILL tool is selected, the system variables for MILL and the system variables for MILL7 will all be set to represent the tool. (CHGTOOL calculates the MILL7 parameters that exactly represent the MILL tool, and stores these values in the MILL7 system variables.)

- If the activated tool is a DRILL, TAP, or BORE, the MILL7 parameters are set to their default states. The existing #TOOLTYP system variable is set to MILL if the active tool is a MILL7 tool.
- If #EFABSET is ON, the tool is a full 7-parameter tool. If #EFABSET is OFF, the tool is a 2-parameter tool, even if it was created using the MILL7 syntax



**Table 1-4 CVNC-M3 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
CHGTOOL	#TLNAME	The tool name	Text	Blank
	#DIAM	The APT-7 D parameter	Real number	1.0 in/ 25.4mm
	#CORNER	The corner radius	Real number	0.0
	#ALPHA	The Alpha angle	Real number	0.0
	#BETA	The Beta angle	Real number	0.0
	#ECORNER	The APT-7 E parameter	Real number	0.5 in/ 12.7mm
	#FCORNER	The APT-7 F parameter	Real number	0.0
	#HEIGHT	The APT-7 H parameter	Real number	5.0 in/ 127.0mm
	#TOOLHFL	Tool half flat	Real number	0.5
	#TOOLTYP	The type of tool	MILL, TURN, DRILL, TAP	MILL
	#EFABSET	ON if ECORNER, FCORNER, ALPHA, or BETA were defined	OFF, ON	OFF
	#SUBTYPE	Type of milling tool (MILL/MILL7)	Blank, MILL, MILL7	Blank
COLDIST	#COLLEN	Tool length for collision checking	Real number	0.0
	#COLDIST	Distance between collision checks	Real number	999999.0
COLISION	#COLALL	Check all points for collisions	ON, OFF	OFF
	#COLEND	Check ends for collisions	ON, OFF	OFF
	#COLEXT	Collision on extensions	ON, OFF	OF
	#COLFLAG	Activate collision detection	ON, OFF	OF
	#COLMODE	Action after collision	STOP, CONTINUE	STOP
	#COLTOOL	Check tool for collisions	ON, OFF	OF
	#COLSAFD	Safe distance for collision surfaces	Numeric	0.0
DEFPLUN	#SAFTOL	Safe tolerance for collision surfaces	Numeric	(INTOL +OUTTOL) /2
	#PLUNGE	Approach mode	NONE, VECT	VECT
DEFPLUN3	#PLNDIST	Vector length	Real number	5 in/ 127 mm
	#PLNFLG	Intersection with approach plane	OFF, ZAPPR	OFF
	#PLNVECT	Direction of plunge vector	Vector	0.0, 0.0, -1.0
	#PLNGE3	Approach mode	NONE, VECT	VECT
DEFPLUN3	#PLDST3	Vector length	Real number	5 in/127 mm
	#PLFLG3	Intersection with approach plane	DIST, ZAPPR	DIST
	#PLVCT3	Direction of plunge vector	Vector	0.0, 0.0, -1.0
DEFPROF3		See PROFILE3		
DEFPROJ		See PROJECT		
DEFRET	#SELRET	Retract mode	NONE, VECT	VECT
	#RTDIST	Vector length	Real number	5 in/127 mm
	#RETFLG	Intersection with approach plane	OFF, ZRETRACT	OFF
	#RETVECT	Direction of retract vector	Vector	0.0, 0.0, 1.0

**Table 1-4 CVNC-M3 System Variables**

Command	Variable	Definition	Contents	Default
DEFRET3	#CTRTR3	Retract mode	NONE, VECT	VECT
	#RTDST3	Vector length	Real number	5 in/127 mm
	#RTFLG3	Intersection with approach plane	DIST, ZRETRACT	DIST
	#RTVCT3	Direction of retract vector	Vector	0.0, 0.0, 1.0
DEFSINT3		See SURFINT3		
DEFSURF3		See also under SURFCUT3		
	#CRNEXT	Method of corner traversal (RULINGS)	EXTEND, NOEXTEND	NOEXTEND
	#ONSRF3	Distance to remove roll when falling on surfaces	Numeric	Tool diameter
	#OFFSRF3	Distance to remove roll when falling off surfaces	Numeric	Tool diameter
	#ONFLG3	ON if ROLL ONSURF value has been set in DEFSURF3	ON, OFF	OFF
	#OFFLG3	ON if ROLL OFFSURF value has been set in DEFSURF3	ON, OFF	OFF
	#GOUGE3	Degouging check flag	ON, OFF	ON
DEFZPRO3	#ZSTON3	Start point on	ON, OFF	OFF
	#ZLACE3	Lace milling switch	ON, OFF	OFF
	#ZMYPE3	Milling type	CONV, CLIMB	CONV
	#ZSTART3	Start point location	Coordinate	0,0,0
	#ZSTEP3	Z stepover value	Real number	Tool radius
	#ZINRAD	Leadin arc radius	Real number	0.0
	#ZINRANG	Leadin arc sweep	Real number	0.0
	#ZOURAD	Leadout arc radius	Real number	0.0
	#ZOURANG	Leadout arc sweep	Real number	0.0
	#ZINLEN	Leadin length	Real number	0.0
	#ZINLANG	Leadin tangent angle	Real number	0.0
	#ZOULEN	Leadout length	Real number	0.0
	#ZOULANG	Leadout tangent angle	Real number	0.0
FEED	#FSTPASS	Activate first pass feed rate	OFF, ON	OFF
	#FPFEDRT	First pass feed rate	Numeric	#CTFEDRT
	#FPFEDUN	First pass feed units	IPM, MPPM, IPR, MMPRT	#CTFEDUN
MATERIAL OFFSET	#MATOFST	Material offset flag	OFF, ON	OFF
	#STKVAL	Material offset value	Numeric	0.0

**Table 1-4 CVNC-M3 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
MAXSWEEP	#MXSWEEP	Maximum sweep	Real number	10 in/254 mm
MODEL	#MODEL	Indicates whether the material model is currently active	OFF, ON	OFF
	#MALTGRM	Indicates alternate grammar file	Text	CAM. MODEL. GRAMMAR
	#STPOVR3	Stepover type	STEPOVER, SCALLOP	STEPOVER
	#MZMIN	Lowest level that can be cut on the workpiece	Numeric	0.0
	#MZMAX	Highest level that can be cut on the workpiece	Numeric	0.0
	#MCUTVOL	remaining volume of uncut material on the workpiece	Numeric	0.0

**Table 1-4 CVNC-M3 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
MPOCKET	#MP02001	lace flag	Text	NOLACE
	#MP02002	milling type	Text	CONV
	#MP02003	cut direction flag	Text	OFF
	#MP02004	cut direction	Co-ordinates	0 1 0
	#MP02005	start point flag	Text	OFF
	#MP02006	start point	Co-ordinates	0 0 0
	#MP02007	material flag	Text	OFF
	#MP02008	material type	Text	OFF
	#MP02009	material value	Numeric Value	0
	#MP02010	max Z flag	Text	OFF
	#MP02011	max Z value	Numeric Value	0
	#MP02012	min Z flag	Text	OFF
	#MP02013	min Z value	Numeric Value	0
	#MP02014	stepover flag	Text	OFF
	#MP02015	stepover value	Numeric Value	0.5
	#MP02016	final Z step flag	Text	OFF
	#MP02017	final Z step value	Numeric Value	0.5
	#MP02018	max step flag	Text	OFF
	#MP02019	max step value	Numeric Value	0.5
	#MP02020	step off flag	Text	OFF
	#MP02021	step off value	Numeric Value	0.5
	#MP02022	circular output	Text	CIRCLE
	#MP02023	byset or byplane	Text	OFF
	#MP02024	plane or depth first	Text	PFIRST
	#MP02025	boundary pass flag	Text	OFF
	#MP02026	boundary pass only	Text	OFF
	#MP02027	boundary pass count flag	Text	OFF
	#MP02028	boundary pass count	Numeric Value	0
	#MP02029	boundary stepover flag	Text	OFF
	#MP02030	boundary stepover	Numeric Value	0.5
	#MP02031	boundary passes first	Text	FINAL
	#MP02032	boundary passes insideout	Text	OUTIN
	#MP02033	boundary feedrate flag	Text	OFF
	#MP02034	boundary feedrate type	Text	OFF
	#MP02035	boundary feedrate value	Numeric Value	0
	#MP02036	leadin flag	Text	OFF
	#MP02037	leadin ramp angle	Numeric Value	0
	#MP02038	leadin length	Numeric Value	0
	#MP02039	leadin tangent angle	Numeric Value	0
	#MP02040	leadin radius	Numeric Value	0
	#MP02041	leadin arc angle	Numeric Value	0
	#MP02042	leadout flag	Text	OFF
	#MP02043	leadout ramp angle	Numeric Value	0
	#MP02044	leadout length	Numeric Value	0
	#MP02045	leadout tangent angle	Numeric Value	0
	#MP02046	leadout radius	Numeric Value	0
	#MP02047	leadout arc angle	Numeric Value	0
	#MP02048	plunge flag	Text	OFF
	#MP02049	milling pattern	Text	LACE

**Table 1-4 CVNC-M3 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
PROFILE3	#PDEPTH	Axial depth	Numeric	0.0
	#3ZPL	Project tool path onto ZWORK plane	OFF, ON	OFF
	#P3GAP	Maximum gap	Numeric	0.0
	#P3OCUT	Overcut distance	Numeric	0.0
	#P3REV	Reverse direction option	REVERSE, NOREV	NOREV
	#INRAD	LEADIN arc radius	Numeric	0.0
	#INRANG	LEADIN arc sweep	Numeric	0.0
	#OUTRAD	LEADOUT arc radius	Numeric	0.0
	#OUTRANG	LEADOUT arc sweep	Numeric	0.0
	#INLEN	LEADIN length	Numeric	0.0
	#INLANG	LEADIN tangent angle	Numeric	0.0
	#OUTLEN	LEADOUT length	Numeric	0.0
#OUTLANG	LEADOUT tangent angle	Numeric	0.0	
PROJECT	#CONTYPE	Connect type	STRAIGHT,VERTICAL, ASDEF	STRAIGHT
	#FOLLOW	Follow height	CLEAR, CUTHGT	CLEAR
	#EXTEND	Surface extension	Real number	0.0
SHOW MATERIAL	#MCOLOR	Color of foreground image for all material display types except MULTI	BLUR,RED,GREEN,GRAY	BLUE
	#MDSPLAY	Model display type	WORKPIECE,UNCUT,PAR TMODEL	PARTMODEL
	#MIMAGE	Method of image display for part model or workspace	SHEDED,DEPTH	SHADED
	#MCUTIMG	Method of image display for uncut	INTENSITY,MULTI	INTENSITY
	#MDSPFRQ	Frequency of image display during command execution	OFF,FEW,MANY,MORE	OFF
STOCK	#PRTHCK	Part stock	Real number	0.0
	#DRVSTK	Drive stock	Real number	0.0
	#STRCHK	Start thickness	Real number	0.0
	#ENDSTK	End thickness	Real number	0.0
	#COLSTK	Stock for collision surface	Real number	0.0

**Table 1-4 CVNC-M3 System Variables**

Command	Variable	Definition	Contents	Default
SURFCUT3	#CUTVEC3	Cutting direction vector (STRAIGHT)	Vector	1 0 0
	#STEPDR3	Stepover direction (STRAIGHT)	LEFT, RIGHT	RIGHT
	#RUL1PT3	Pt 1 of RULINGS cutdir coord	Vector	0 0 0
	#RUL2PT3	Pt 2 of RULINGS cutdir coord	Vector	1 0 0
	#LACE3	Lace type	LACE, NOLACE	LACE
	#PARITY3	Cut count parity	EVEN, ODD, UNSET	UNSET
	#CLEAR3	Clear nolace to ZCLEAR plane	CLEAR, NOCLEAR	CLEAR
	#ENTRY3	Entry type	REENTRY, NOENTRY	REENTRY
	#MXSTEP3	Maximum	Numeric	Tool diameter
	#MXSTEP3	Maximum	Numeric	Tool diameter
	#STPDST3	Stepover/scallop value	Numeric	Tool diam*0.5
	#EXTNDS3	Start surface extension	Numeric	0.0
	#EXTNDE3	End surface extension	Numeric	0.0
	#LATEXTF	Lateral extension before first surface-cutting pass	Numeric	0.0
	#LATEXTL	Lateral extension after last surface-cutting pass	Numeric	0.0
	#STPEXTF	Stepover distance for lateral extensions before first surface-cutting pass	Numeric	Tool diam*0.33
	#STPEXTL	Stepover distance for lateral extensions after last surface-cutting pass	Numeric	Tool diam*0.33
	#FALDST3	Fall On/Fall Off distance	Numeric	Tool diameter
	#FALPRC3	How to get over falloff gaps	CROSS, JMPOVR	CROSS
	#RTVALF3	Retraction parameters	ZRETRACT, ZCLEAR, ZAPPR, ZABS, ZINC, DIST	ZRETRACT
	#RTDSTF3	Value for retraction parameters	Numeric	0.0
	#RTVCTF3	Retraction vector	Vector	0 0 1
	#PLVALF3	Plunge type	ZRETRACT, ZCLEAR, ZAPPR, ZABS, ZINC, DIST	ZRETRACT
	#PLDSTF3	Value for plunge type	Numeric	0.0
	#PLVCTF3	Plunge vector	Vector	0 0 -1
	#FALXTS3	Falloff start extension	Real number	0.0
	#FALXTE3	Falloff end extension	Real number	0.0

**Table 1-4 CVNC-M3 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
	#CONOPT3	Containment type	WIRE, SURFACE, TOOLTIP, CONTACT	SURFACE
	#CONPRC3	Contain process	GOROUND, JMPOVR, CROSS	GOROUND
	#CONWAY3	Traversal direction	SHORTWAY, CUTWAY	SHORTWAY
	#XFEEDC3	Cross feed rate	CUT, CONNECT, APPROACH	CUT
	#ONTYPE3	Stay on surface option	ONSURF, OFFSURF	ONSURF
	#CONXTS3	Start surface extension	Numeric	0.
	#CONXTE3	End surface extension	Numeric	0.0
	#RTVALC3	Retraction type	ZRETRACT, ZCLEAR, ZAPPR, ZABS, ZINC, DIST	ZRETRACT
	#RTDSTC3	Retraction value type	Numeric	0.0
	#RTVCTC3	Retraction vector	Vector	0 0 1
	#PLVALC3	Plunge type	ZRETRACT ZCLEAR, ZAPPR, ZABS, ZINC, DIST	ZRETRACT
	#PLDSTC3	Value for plunge type	Numeric	0.0

**Table 1-4 CVNC-M3 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
SURFINT3	#STRTAN	Start point option	STRTAN, NOSTRTAN	STRTAN
	#ENDTAN	End point option	ENDTAN, NOENDTAN	ENDTAN
	#MACDIR	Machining convention	LEFT, RIGHT	RIGHT
	#ENDEXT	End extension length	Real number	0.0
	#STTEXT	Start extension length	Real number	0.0
	#ENDTYP	End extension type	NONE, DRIVE, PART, ALL STRAIGHT	NONE
	#STTTYP	Start extension type	NONE, DRIVE, PART, ALL STRAIGHT	NONE
TOOLEXT	#COLEXT	Collision extension	ON, OFF	OFF
UNCUT	#UNCUT	Detect uncut areas	ON, OFF	OFF
	#UNLAYS	Start layer for uncut regions	Integer	Current layer
	#UNLAYI	Increment for layers	Integer	0
	#UNPROJ	Project uncut regions	ON, OFF	OFF
	#UNZPLN	Z-value for region	Real number	0.0
	#OMAKR	Overmark by a value	Real number	0.0
	#UNCGRP	Uncut area group	Text	%UNCUT
UPHILL	#UPHILL	Uphill only machining mode	ON, OFF	OFF
	#UPSLOPE	Maximum downward slope angle	Numeric	0.0
	#UPTYPE	Uphill options	CONTINUE, STOP, MINSTART	CONTINUE
	#UPCONNECT	Uphill on connections mode	ON, OFF	OFF
ZPROF3	#ZSTON3	Start point on	ON, OFF	OFF
	#ZLACE3	Lace miling switch	ON, OFF	OFF
	#ZMTYPE3	Milling type	CONV, CLIMB	CONV
	#ZSTART3	Start point location	Coordinate	0,0,0
	#ZSTEP3	Z stepover value	Real number	Tool radius
	#ZINRAD	Leadin arc radius	Real number	0.0
	#ZINRANG	Leadin arc sweep	Real number	0.0
	#ZOURAD	Leadout arc radius	Real number	0.0
	#ZOURANG	Leadout arc sweep	Real number	0.0
	#ZINLEN	Leadin length	Real number	0.0
	#ZINLANG	Leadin tangent angle	Real number	0.0
	#ZOULEN	Leadout length	Real number	0.0
	#ZOULANG	Leadout tangent angle	Real number	0.0



# CVNC-M5 4-Axis System Variables Table

CVNC-M5 4-Axis system variable information (SURFCUT4) is listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced.

**Table 1-5 CVNC-M5 4-Axis System Variables**

Variable	Definition	Contents	Default
#PLGOPT4	Plunge option	VECTOR, NORMAL, TOOLAXIS	VECTOR
#RETOPT4	Retract option	VECTOR, NORMAL, TOOLAXIS	VECTOR
#SAFE4	Set safe flag	SAFE, NOSAFE	SAFE
#MCHOPT4	Machining option	FINISH, ROUGH	FINISH
#MCHTYP4	Machining type	RULINGS, STRAIGHT	RULINGS
#PLVCT4	4-axis plunge vector	Vector	0. 0. -1.
#RTVCT4	4-axis retract vector	Vector	0. 0. 1.
#PLFLG4	Plunge option	DIST, ZAPPR	DIST
#RTFLG4	Retract option	DIST, ZRET	DIST
#PLRAD4	Radius of plunge curve	Real number	6.0
#PLANG4	Angle of plunge curve	Real number	60.0
#RTRAD4	Radius of retract curve	Real number	6.0
#RTANG4	Angle of retract curve	Real number	60.0
#PLDST4	Plunge distance	Real number	5. / 127.
#RTDST4	Retract distance	Real number	5. / 127.
#LACE4	SURFCUT4 connect type	LACE, NOLACE	LAC
#CLEAR4	SURFCUT4 clear type	ONSURF, CLEAR, NOCLEAR	ONSURF
#STPVR4	SURFCUT4 stepover type	STEPOVER, SCALLOP	STEPOVER
#SDIST4	SURFCUT4 step value	Real number	0.25/6.4
#XTNDS4	SURFCUT4 start extension	Real number	0.0
#XTNDE4	SURFCUT4 end extension	Real number	0.0
#PLOPTF4	First plunge option	VECTOR, NORMAL, TOOLAXIS	VECTOR
#PLVCTF4	First plunge vector	Vector	0. 0. -1.
#PLFLGF4	First plunge flag	DIST, ZAPPR	DIST
#PLDSTF4	First plunge distance	Real number	5./127.
#PLRADF4	First plunge radius	Real number	6.0
#PLANGF4	First plunge angle	Real number	60.0
#RTOPTL4	Last retract option	VECTOR, NORMAL, TOOLAXIS	VECTOR
#RTVCTL4	Last retract vector	Vector	0. 0. 1.
#RTFLGL4	Last retract flag	DIST, ZRET	DIST
#RTDSTL4	Last retract distance	Real number	5./127.
#RTRADL4	Last retract radius	Real number	6.0
#RTANGL4	Last retract angle	Real number	60.0
#CLERSF4	SURFCUT4 entry clear	CLEAR, NOCLEAR	NOCLEAR
#SAFESF4	SURFCUT4 entry safe	SAFE, NOSAFE	SAFE
#CLERSL4	SURFCUT4 exit clear	CLEAR, NOCLEAR	NOCLEAR
#SAFESL4	SURFCUT4 exit safe	SAFE, NOSAFE	SAFE
#TESFLG4	Which tessellation to use	SURFACE, CURVE	SURFACE

# CVNC-M5 System Variables Table

CVNC-M5 commands that include system variable information are listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced.

**Table 1-6 CVNC-M5 System Variables**

Command	Variable	Definition	Contents	Default
ACCEL	#ACLPASS	Activate acceleration	ON, OFF	OFF
	#ACLTRAT	Tool diameter ratio	Real number	0.5
	#ACLSTEP	Number of steps	Integer	3
	#ACLOSET	Acceleration offset	Real number	0.0
CHGTOOL	#COLLEN	Tool length for collision checking	Real number	0.0
	#SWFLEN	Length of flute on tool	Real number	0.0
COLDIST	#COLDIST	Distance between collision checks	Real number	999999.0
COLISION	#COLFLAG	Activate collision detection	ON, OFF	OFF
	#COLTOOL	Check tool for collisions	ON, OFF	OFF
	#COLALL	Check all points for collisions	ON, OFF	OFF
	#COLEND5	Check ends for collisions	ON, OFF	OFF
	#COLMODE	Action after collision	STOP, CONTINUE	STOP
	#COLHEAD	Activate collisions - machine head	ON, OFF	OFF
	#COLEXT	Collision on extensions	ON, OFF	OFF
DECEL	#DCLPASS	Activate deceleration	ON, OFF	OFF
	#DCLTRAT	Tool diameter ratio	Real number	0.5
	#DCLSTEP	Number of steps	Integer	3
	#DCLOSET	Deceleration offset	Real number	0.0
DEFPLUN5	#PLNGOPT	Plunge option	VECTOR, NORMAL, TOOLAXIS	VECTOR
	#PLVCT5	5-axis plunge vector	Vector	0.0 0.0 -1.0
	#PLFLG5	Plunge by/from	DIST, ZAPPR	DIST
	#PLDST5	Distance along plunge vector	Real number	5.0/127.0
	#PLRAD5	Radius of plunge curve	Real number	6.0
	#PLANG5	Angle of plunge curve	Real number	60.0
DEFPROF5	#P5DEPTH	PROFILE5 depth	Real number	Tool corner radius

**Table 1-6 CVNC-M5 System Variables**

Command	Variable	Definition	Contents	Default
	#INRAD5	Leadin arc radius	Real number	0.0
	#INRANG5	Leadin arc sweep	Real number	0.0
	#OTRAD5	Leadout arc radius	Real number	0.0
	#OTRANG5	Leadout arc sweep	Real number	0.0
	#INLEN5	Leadin length	Real number	0.0
	#INLANG5	Leadin tangent angle	Real number	0.0
	#OTLEN5	Leadout length	Real number	0.0
	#OTLANG5	Leadout tangent angle	Real number	0.0
	#P5GAP	PROFILE5 gap	Real number	0.5 * (INTOL + OUTTOL)
	#P5REV	PROFILE5 reverse	REVERSE, NOREV	NOREV
	#P5EXTS	Start extension	Real number	0.0
	#P5EXTE	End extension	Real number	0.0
DEFRET5	#RETOPT	Retract option	VECTOR, NORMAL, TOOLAXIS	VECTOR
	#RTVCT5	5-axis retract vector	Vector	0.0 0.0 1.0
	#RTFLG5	Retract by/from	DIST, ZAPPR	DIST
	#RTDST5	Distance along retract vector	Real number	5.0/127.0
	#RTRAD5	Radius of retract curve	Real number	6.0
	#RTANG5	Angle of retract curve	Real number	60.0
DEFSURF5	#PLOPTF	First plunge option	VECTOR, NORMAL, TOOLAXIS	VECTOR
	#PLVCTF	First plunge vector	Vector	0.0 0.0 -1.0
	#PLFLGF	First plunge flag	DIST, ZAPPR	DIST
	#PLDSTF	First plunge distance	Real number	5.0/127.0
	#PLRADF	First plunge radius	Real number	6.0
	#PLANGF	First plunge angle	Real number	60.0
	#RTOPTL	Last retract option	VECTOR, NORMAL, TOOLAXIS	VECTOR
	#RTVCTL	Last retract vector	Vector	0.0 0.0 -1.0
	#RTFLGL	Last retract flag	DIST, ZAPPR	DIST
	#RTDSTL	Last retract distance	Real number	5.0/127.0
	#RTRADL	Last retract radius	Real number	6.0
	#RTANGL	Last retract angle	Real number	60.0
FEED	#ACFEDRT	Acceleration feed rate	Real number	#CTFEDRT
	#DCFEDRT	Deceleration feed rate	Real number	#CTFEDRT
	#FPFEDRT	First pass feed rate	Real number	#CTFEDRT
	#SPINACL	Accelerate spindle	Real number	#SPINSPD
	#SPINDCL	Decelerate spindle	Real number	#SPINSPD
	#SPINFST	First pass spindle speed	Real number	#SPINSPD
	#ACFEDUN	Acceleration feed rate units	IPM, MPPM, IPR, MMPR	#CTFEDUN
	#DCFEDUN	Deceleration feed rate units	IPM, MPPM, IPR, MMPR	#CTFEDUN
	#FPFEDUN	First pass feed rate units	IPM, MPPM, IPR, MMPR	#CTFEDUN
	#SPACLUN	Spindle acceleration units	RPM SFM, SMM	#SPINUN
	#SPFSTUN	First pass spindle units	RPM, SFM, SMM	#SPINUN
FRSTPASS	#FSTPASS	Activate first pass	ON, OFF	OFF

**Table 1-6 CVNC-M5 System Variables**

Command	Variable	Definition	Contents	Default
GOUGE	#GGOPT	Gouge option	STOP, CONTINUE	STOP
	#GGFLAG	Gouge flag	ON, OFF	OFF
LEAD (TOOLAXIS)	#LEADADD	Add lead angle	Real number	0.0
	#LEADOPT	Lead angle option	VARYING, CONSTANT, NODEC	VARYING
	#LEADMIN	Minimum lead angle	Real number	0.0
	#LEADMAX	Maximum lead angle	Real number	90.0
OUTPUT	#OUTPUT	Output format	CLFILE, CLFILE2, APT, VERI FY	Blanks
PROFILES	#P5DEPTH	PROFILES depth	Real number	Tool radius
	#INRAD5	Leadin arc radius	Real number	0.0
	#INRANG5	Leadin arc sweep	Real number	0.0
	#OTRAD5	Leadout arc radius	Real number	0.0
	#OTRANG5	Leadout arc sweep	Real number	0.0
	#INLEN5	Leadin length	Real number	0.0
	#INLANG5	Leadin tangent angle	Real number	0.0
	#OTLEN5	Leadout length	Real number	0.0
	#OTLANG5	Leadout tangent angle	Real number	0.0
	#P5GAP	PROFILE5 gap	Real number	0.5 * (INTOL + OUTTOL)
	#P5REV	PROFILES reverse	REVERSE, NOREV	NOREV
	#P5EXTS	Start extension	Real number	0.0
	#P5EXTE	End extension	Real number	0.0
SCALLOP	#SCACAL	Set scallop calculation type	MAXLEAD, CURRLEAD, NONE	CURRLEAD
SLEW (TOOLAXIS)	#SLEWOPT	Slew option	FIXED, CONSTANT, VARYIN G, NODEC	FIXED
	#SLEWADD	Add slew angle	Real number	0.0
	#SLEWMIN	Minimum slew angle	Real number	0.0
	#SLEWMAX	Maximum slew angle	Real number	90.0
	#SLEWFIX	Fix slew angle	Real number	0.0
SPINDLE SPEED	#SPACLUN	Acceleration spindle speed units	RPM, SFM, SMM	#SPINUN
	#SPDCLUN	Deceleration spindle speed units	RPM, SFM, SMM	#SPINUN
	#SPFSTUN	First pass spindle speed units	RPM, SFM, SMM	#SPINUN

**Table 1-6 CVNC-M5 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
SURFCUT5	#INTOL	Inner tolerance	Real number	0.005
	#OUTOL	Outer tolerance	Real number	0.005
	#GAP	Gap value	Real number	0.1/0.254
	#LINTOL	Linearization tolerance	Real number	0.0
	#MACHOPT	Machining option	ROUGH, FINISH	FINISH
	#MCHTYP	Machining type	RULINGS, STRAIGHT	RULINGS
	#LACE5	Connection type	LACE, NOLACE	LACE
	#CLEAR5	Clear type	CLEAR, NOCLEAR	NOCLEAR
	#STPVR5	Step type	STEPOVER, SCALLOP	STEPOVER
	#SDIST5	Stepover value	Real number	0.5/12.7
	#PLNGOPT	Plunge option	VECTOR, NORMAL, TOOLAXIS	VECTOR
	#RETOPT	Retract option	VECTOR, NORMAL, TOOLAXIS	VECTOR
	#COLALL	Check all points for collisions	ON, OFF	OFF
	#COLEND5	Check ends for collisions	ON, OFF	OFF
	#COLFLAG	Activate collision detection	ON, OFF	OFF
	#COLMODE	Action after collision	STOP, CONTINUE	STOP
	#COLTOOL	Collision detection on the tool	ON, OFF	OFF
	#TOOLOPT	Tool contact point	ON, FACE, LEFT, RIGHT	FACE
	#LEADADD	Additional lead angle	Real number	0.0
	#LEADOPT	Lead angle option	VARYING, CONSTANT, NODEC	VARYING
	#LEADMIN	Minimum lead angle	Real number	0.0
	#LEADMAX	Maximum lead angle	Real number	90.0
	#SLEWOPT	Slew option	FIXED	FIXED
	#SLEWFIX	Fixed slew angle	Real number	0.0
	#XTNDS5	Start extension	Real number	0.0
	#XTNDE5	End extension	Real number	0.0
	#TLTANG	Angle for surface tangency	Real number	1.0
	#TLMAXDM	Max. tool axis angle against datum	Real number	180.0
	#LINTOL	Linearization tolerance	Real number	0.0
	#SCACAL	Scallop calculation type	MAXLEAD, CURRLEAD, NONE	CURRLEAD
	#COLDIST	Collision check flag	Real number	999999.0
	#CPL	Current CPL	Text	'TOP'
	#SETUP	Job setup CPL	Text	'TOP'
	#TOOLRAD	Tool radius	Real number	0.5 inches

**Table 1-6 CVNC-M5 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
	#TOOLCRD	Tool corner radius	Real number	0.0 inches
	#TOOLHFL	Tool half flat	Real number	0.5 inches
	#TLGAGE	Mill tool gage length	Real number	2.5 inches
	#ZCLEAR	ZCLEAR value	Real number	0.0
	#ZRET	ZRETRACT value	Real number	0.0
	#ZAPPR	ZAPPROACH value	Real number	0.0
	#PLVTC5	5-axis plunge vector	Vector	0.0 0.0 -1.0
	#RTVCT5	5-axis retract vector	Vector	0.0 0.0 1.0
	#PLFLG5	Plunge option	DIST, ZAPPR	DIST
	#RTFLG5	Retract option	DIST, ZAPPR	DIST
	#PLDST5	Distance along plunge vector	Real number	5.0/127.0
	#RTDST5	Dist. along retract vector	Real number	5.0/127.0
	#CLERSF	Entry clear	CLEAR, NOCLEAR	NOCLEAR
	#SAFESF	Entry safe	SAFE, NOSAFE	SAFE
	#CLERSL	Exit clear	CLEAR, NOCLEAR	NOCLEAR
	#SAFESL	Exit safe	SAFE, NOSAFE	SAFE
	#TESFLG	Which tessillation to use	SURFACE, CURVE	SURFACE

**Table 1-6 CVNC-M5 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
SURFINT5	#STKUAL	Material offset	Real number	0.0
	#PRTTHCK	Part surface stock	Real number	0.0
	#DRUSTK	Drive surface stock	Real number	0.0
	#STRTHVK	Start surface stock	Real number	0.0
	#ENDSTK	End surface stock	Real number	0.0
	FEDRAT	Feed Rate	Real number	0.0
SWARFCUT	#CLEARW	CLEAR type	CLEAR, NOCLEAR	NOCLEAR
	#GAP	Gap value	Real number	0.01/0.254
	#MCHOPW	Machining option	ROUGH, FINISH	FINISH
	#SAFEW	Swarfcut safe type	SAFE, NOSAFE	SAFE
	#CLERWF	Entry clear	CLEAR, NOCLEAR	NOCLEAR
	#SAFEWF	Entry safe	SAFE, NOSAFE	SAFE
	#CLERWL	Exit clear	CLEAR, NOCLEAR	NOCLEAR
	#SAFEWL	Exit safe	SAFE, NOSAFE	SAFE
	#XTNDEW	End tool path extension	Real number	0.0
	#XTNSW	Start tool path extension	Real number	0.0
	#PERDST	Tool to surface contact	PERCENT, DIST	PERCENT
	#PERCTG	Percentage of tool	Real number	100
TOLER	#INTOL	Inner tolerance	Real number	0.005
	#OUTOL	Outer tolerance	Real number	0.005
	#LINTOL	Linearization tolerance	Real number	0.0
TOOLAXIS	#TLAXIS	Tool axis vector	Vector	0.0 0.0 1.0
	#TLTANG	Angle for surface tangency	Real number	1.0
	#TLMAXDM	Max. tool axis angle against datum	Real number	180.0
	#TLMAXCH	Max. angle between cuts	Real number	90.0
	#SLEWFIX	Fixed slew angle	Real number	0.0
	#SLEWOPT	Slew option	FIXED, CONSTANT, VARYING, NODEC	FIXED
	#SLEWADD	Add slew angle	Real number	0.0
	#SLEWMIN	Minimum slew angle	Real number	0.0
	#SLEWMAX	Maximum slew angle	Real number	90.0
	#LEADOPT	Lead angle option	VARYING, CONSTANT, NODEC	VARYING
#LEADADD	Add lead angle	Real number	0.0	
#LEADMIN	Minimum lead angle	Real number	0.0	
#LEADMAX	Maximum lead angle	Real number	90.0	

# CVNC-P2 System Variables Table

CVNC-P2 commands that include system variable information are listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced.

**Table 1-7 CVNC-P2 System Variables**

Command	Variable	Definition	Contents	Default
AREAOPT	#AREAMD	Area clearance mode	SINGLE, DOUBLE, NOCORNER	SINGLE
	#AREAPN	Area clearance punch type	REGULAR, FILLET	REGULAR
CHGTOOL	#PNCNAM	Name of active punch	Text	Blanks
	#PNCTYP	Shape of active punch	CIRCLE, SQUARE, FSQUARECT, FRECT, DEE, DDEE, OVAL, SPECIAL	CIRCLE
	#DIA	Diameter of active punch	Real number	1.0 inch/ 12.7 mm
	#RAD	Radius of active punch	Real number	0.5 inch/ 6.35 mm
	#PLENGTH	Length of active punch	Real number	0.0
	#WIDTH	Width of active punch	Real number	0.0
	#OLENGTH	Overall length of active punch	Real number	1.0 inch/ 12.7 mm
	#ROTCLS	Rotation class of active turret station	Letter	A
	#CHGTRT	Option switch	ATHOME, CURLOC	CURLOC
CONFIG	#MCHNAM	Name of machine associated with this punch group	Text	Blanks
	#CYCMOD	Cycle mode switch	CYCLE, NOCYCLE	CYCLE
	#MAXTUR	Maximum number of turret positions available on this machine	Integer	9999
	#MAXTON	Maximum tonnage allowed for this machine	Real number	99999
	#MAXSTA	Maximum number of station types for this machine	Integer	23
	#UNITS	Punch group units	INCH, MM	Database units
	#MAXCLS	Maximum number of distinct rotation classes for this machine	Real number	23
DEFSORT	#LSTANG	Angle at end of OUTPUT BEGIN/END block	Real number	0.0



**Table 1-7 CVNC-P2 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>
	#SRTANG	Sort by punch angle	ANGLE, OFF	OFF
	#SRTURT	Sort option for turrets	TURRET, SIZE, TURTSEQ	SIZE
	#SRTDIS	Sort option for punch hits with same turret position	OPTIM, XAXIS, YAXIS	OPTIM
MATDATA	#SHEAR	Shear strength of material	Real number	0.0
	#THICK	Sheet thickness	Real number	.5 inch/ 6.35 mm
	#MATUNT	Units for sheet	INCH, MM	Database units
MOVE	#CURLOC	Current path position	Coordinate	Origin
	#LASTHIT	Current punch hit position	Coordinate	Origin
NIBDATA	#SCALLOP	Scallop height	Real number	.01 inch/ 0.127 mm
	#PEROVLP	Percent overlap	Real number	20.0
	#CHKOVLP	Check overlap distance	Real number	.1 inch/ 1.27 mm
	#NIBMOD	Nibble mode	REGULAR, ALT	REGULAR
NIBBLE	#CURLOC	Current path position	Coordinate	Origin
	#LASTHIT	Current punch hit position	Coordinate	Origin
PLIB	#PLIBNM	Name of active punch library	Text	DATA. NC.PLIB
	#LIBUNT	Default units	INCH, MM	Database units
	#FIGLIB	Special punch directory	Text	DATA. NC.FIGLIB
PUNCH	#CURLOC	Current path position	Coordinate	Origin
	#LASTHIT	Current punch hit position	Coordinate	Origin

# CVNC-T2 System Variables Table

CVNC-T2 commands that include system variable information are listed below. Note that not all CVNC system variables are included in this listing, only those most commonly referenced.

**Table 1-8 CVNC-T2 System Variables**

Command	Variable	Definition	Contents	Default
APPROACH	#CURLOC	Current location	Coordinate	0,0,0
BORE	#DEPTH	Depth value	Real number	0.0
	#THRU	Through-hole value	Real number	0.0
	#SAFDIST	Approach clearance distance	Real number	0.1
	#THRUCLR	Through-hole end clearance distance	Real number	0.1
	#DEPCLR	Depth end clearance distance	Real number	0.0
	#BRMODE	Bore mode	Blanks, MANUAL, ORIENT	Blanks
	#BROFF	Bore offset axis	Blanks, XOFF, YOFF	Blanks
	#BROFVAL	Bore offset value	Real number	0.0
	#DWLMODE	Dwell mode	Blanks, DWELL, REV	Blanks
CHGAGE	#AVOID	Avoidance switch	Blanks, AVOID	Blanks
	#TLXGAGE	X-gage length	Real number	0.0
	#TLYGAGE	Y-gage length	Real number	0.0
CHGOFF	#OFFSET	Offset register	Integer	0
CHGTOOL	#CHGTOOL	Change tool mode	FRONT, REAR, MANUAL	Blanks
	#CHGDIR	Turret direction	CLW, CCLW	Blanks
	#TOOL	Tool number	Integer	0
	#TLNAME	Tool name	Text	Blanks
	#TOOLDIA	Tool diameter	Real number	1.0 inch/ 25.4 mm
	#TOOLRAD	Tool radius	Real number	0.5 inch/ 12.7 mm
	#TOOLTYP	Tool type	MILL, TURN, DRILL, TAP	TURN
	#TLXGAGE	X-gage length	Real number	0.0
	#TLYGAGE	Y-gage length	Real number	0.0
	#OFFSET	Offset register	Integer	0
	#SFIG	Subfigure for tool	Text	Blanks
CLEAR	#CURLOC	Current location	Coordinate	0,0,0
CONFIG	#PRIMARY	Primary turret	REAR, FRONT	Blanks
	#XDIF	X-turret separation distance	Real number	0.0
	#YDIF	Y-turret separation distance	Real number	0.0
COOLANT	#COOLANT	Coolant condition	ON, OFF	OFF
CPL	#CPL	Current CPL	Text	TOP
CUT	#CURLOC	Current location	Coordinate	0,0,0
CUT ARC	#CURLOC	Current location	Coordinate	0,0,0

**Table 1-8 CVNC-T2 System Variables**

Command	Variable	Definition	Contents	Default
CUT ENTITY	#DRIVE	Drive entity	MIPTR (Integer)	0
	#CURLOC	Current location	Coordinate	0,0,0
DATUM	#DATUM	Setup CPL	Text	TOP
	#CPL	Current CPL	Text	TOP
DISPLAY	#DISPLAY	Display mode	ON, OFF, TOOL	ON
	#SFIG	Subfigure for tool	Text	Blanks
	#TLDISP	Tool display mode	DYN, CONST	Blanks
	#DISPDIS	Constant tool display distance	Real number	5 inches/ 127 mm
	#PAINT	Constant tool print option flag	PAINT, NOPAINT	Blanks
DRILL	#DEPTH	Depth value	Real number	0.0
	#SAFDIST	Approach clearance distance	Real number	0.1 inch/2.54 mm
	#MAXDEP	Maximum depth	Real number	0.0
	#FIRST	First pass value	Real number	0.0
	#LAST	Last pass value	Real number	0.0
	#NPASS	Number of passes	Integer	1
	#DRLMODE	Drill mode	Blanks, PECK, BREAK	Blanks
	#DWLMODE	Dwell mode	DWELL, REVS	Blanks
FEED	#DWELL	Dwell value	Real number	0.0
	#FEDMODE	Feed rate mode	CUT, APPROACH, RETRACT, PLUNGE, STEPIN, STEPOUT, POSITION, CLEAR	CUT
	#FEDRAT	Feed rate value	Real number	0.0
	#FEDUNIT	Feed rate units	IPM, MMPM, IPR, MMPR, RAPID	IPM/MMPM
	#CTFEDRT	Cut feed rate	Real number	0.0
	#CUTFEDUN	Cut feed rate units	IPM, MMPM, IPR, MMPR, RAPID	IPM/MMPM
	#APFEDRT	Approach feed rate	Real number	0.0
	#APFEDUN	Approach feed rate units	IPM, MMPM, IPR, MMPR, RAPID	RAPID
	#SIFEDRT	Step-in feed rate	Real number	0.0
	#SIFEDUN	Step-in feed rate units	IPM, MMPM, IPR, MMPR, RAPID	IPM/MMPM
	#PLFEDRT	Plunge feed rate	Real number	0.0
	#PLFEDUN	Plunge feed rate units	IPM, MMPM, IPR, MMPR, RAPID	IPM/MMPM
	#SOFEDRT	Step-out feed rate	Real number	0.0
	#SOFEDUN	Step-out feed rate units compensation	IPM, MMPM, IPR, RIGHT, LEFT, ON	IPM/MMPM
	#RTFEDRT	Retract feed rate	Real number	0.0
	#RTFEDUN	Retract feed rate units	IPM, MMPM, IPR, MMPR, RAPID	IPM/MMPM
#CLFEDRT	Clear feed rate	Real number	0.0	
#CLFEDUN	Clear feed rate units	IPM, MMPM, IPR, MMPR, RAPID	RAPID	
#PSFEDRT	Position feed rate	Real number	0.0	

**Table 1-8 CVNC-T2 System Variables**

Command	Variable	Definition	Contents	Default
	#PSFEDUN	Position feed rate units	IPM, MPPM, IPR, MMPR, RAPID	RAPID
HOMEPT	#HOMEPT	Home point	Coordinate	0,0, 0.0
	#FROM	FROM switch	FROM, OFF	OFF
LEADOUT	#LEADOUT	Leadout direction	Vector	-0.5,.866,0
MOVE	#CURLOC	Current location	Coordinate	0,0,0
PLUNGE	#CURLOC	Current location	Coordinate	0,0,0
PROFILE	#CURLOC	Current location	Coordinate	0,0,0
RETRACT	#CURLOC	Current location	Coordinate	0,0,0
SPEED	#SPINSPD	Spindle speed	Real number	0.0
	#SPINUN	Spindle units	RPM, SFM, SMM	RPM
	#SPINDIR	Spindle direction	CLW, CCLW, MEDIUM, LOW	CLW
	#MAXRPM	Spindle speed maximum	Integer	5000
	#RANGE	Spindle range	AUTO, HIGH	Blanks
	#SPINSTA	Spindle status	OFF, ON	OFF
STEPIN	#STEPIN	Step-in direction	Coordinate	0,-1,0

**Table 1-8 CVNC-T2 System Variables**

<b>Command</b>	<b>Variable</b>	<b>Definition</b>	<b>Contents</b>	<b>Default</b>	
STEPOUT	#STEPOUT	Step-out direction	Coordinate	0,1,0	
TOLER	#INTOL	Inner tolerance	Real number	0.005 inch/ .127 mm	
	#OUTTOL	Outer tolerance	Real number	0.005 inch/ .127 mm	
TURN	#DEPCUT	Cut depth	Real number	0.15 inch/3.81 mm	
	#NONAPR	Noncontoured approach flag	NONAPR	Blanks	
	#NONRET	Noncontoured retract flag	NONRET	Blanks	
	#RETSTRT	Return to start	RETSTRT	Blanks	
	#LOKAHD	Look-ahead analysis	LOKAHD	Blanks	
STOCK	#UDEPTH	Maximum undercut depth	Real number	0.0	
	#DRVSTK	Drive stock	Real number	0.0	
	#CHKSTK	Check stock	Real number	0.0	
TAP	#STKARC	Indicates if there are floated fillets	Text, ARCFLOAT, ARCFIX	ARCFLOAT	
	#DEPTH	Depth value	Real number	0.0	
	#START	Start x-coordinate	Real number	0.0	
	#SAFDIST	Approach clearance	Real number	0.1	
THREAD	#TPITCH	Tapping pitch	Real number	12.0	
	#PITCH	Thread pitch	Real number	0.0	
	#LEAD	Thread lead	Real number	0.0	
	#NSTRT	Number of starts for thread	Integer	0	
	#START	Tag name of start line	Text	Blanks	
	#THDEPCT	Thread depth	Real number	0	
	#LENGTH	Thread length	Real number	0	
	#STLOC	Start cut location	xy-coordinate	0,0,0	
	#MAXDEP	Maximum depth	Real number	0.0	
	#NPASS	Number of passes	Integer	1	
	#FIRST	Depth of first pass	Real number	0.0	
	#LAST	Depth of last pass	Real number	0.0	
	#RETSTRT	Return to start	RETSTRT	Blanks	
	#RPTLST	Number of repeats of last pass	Integer	0	
TLIB	#TLIB	Tool library	Text	DATA. NC.TLIB	



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