

Tips and tricks for SINUMERIK Operate

Functions

Softkeys and short keys	
Insert key	Starts the edit mode of input fields or the selection mode of combination boxes and toggle fields. These can be exited without changes being made by pressing the Insert key again
Insert key	Undo function as long as the Input key has not been pressed or the data in the fields accepted
Toggle key	Toggle fields can also be switched directly with the toggle key (Select) without opening them. They can be toggled backwards with Shift Toggle
Cursor keys left and right	Open / close directory — Open / close program — Open / close cycle
CTRL+P for screenshots	Storage location: Start-up (password) — system data — HMI data — logs — screenshots
CTRL+L	Language switchover
CTRL+C	Copy
CTRL+X	Cut
CTRL+V	Paste
CTRL+Y	Redo (editor functionality)
CTRL+Z	Undo — max. five lines in the editor (editor functionality)
CTRL+Next Window	Start of program
CTRL+End	End of program
CTRL+ALT+S	Saving of complete archive
CTRL+ALT+C	Saving of complete archive (828D with .ARC ext)
CTRL+ALT+D	Saving of the log files to the USB or CF-card
Shift+Insert	Commenting out of cycles
"="	Pocket calculator function

Advanced commands for G-code programming

Position commands	
X=IC(value)	non-modal incremental move
X=AC(value)	non-modal absolute move
SPOS=IC(value in degrees)	incremental spindle position
SPOS=AC(value in degrees)	absolute spindle position relative to spindle zero
G75 Z0	moves to a position relative to MD30600 (typically used for tool change position) can support multiple axis motion
G01 X... CHR=...	end of line chamfer
G01 X... RND=...	end of line radius
A=DC(ANGLE)	direct rotary axis approach (shortest path)
G02 X.. Y.. Z.. I.. J.. K.. TURN=...	

Sub-programs and loops	
CALL "sub name" calls up an outside program	
Repeating events within a program	
<pre> MARKE_1: CALL "SUB NAME" MARKE_2: REPEAT MARKE_1 MARKE_2 P=(# of loops) M17 ; End of Sub Program </pre>	
Calling a sub-program with the external call function — use when program resides on external memory	
<pre> EXTCALL("LOCAL_DRIVE:T1.WPD/TEST.MPF"); use for CF card memory EXTCALL("/CARD/USER/SINUMERIK/DATA/PROG/T1.WPD/TEST.MPF"); MUST USE FULL PATH FOR VER7.05 OR OLDER EXTCALL("USB:T1.WPD/TEST.MPF"); USB cal </pre>	
Calling a program from within a different folder in NC/Workpieces	
<pre> CALL "/_N_WKS_DIR/_N_TEST_WPD/_N_TEST1_SPF" or CALL ("/_N_WKS_DIR/_N_TEST_WPD/_N_TEST1_SPF") </pre>	
REPEAT N100 N100 will repeat a single line of your program	

Feed commands	
FB=...	non-modal feedrate
G95 FZ=	...feed per tooth
G95 F...	feed per rev
CFC F...	Constant feed at contour (tool edge)
Programmable Override	OVR=<%> OVERRAP=<%>
FGROUP(X,Y,Z)	feed groups define synchronous axis
FGROUP(A)	will base linear and rotary moves in degrees/rev

Spindle commands	
SETMS (1)	sets main spindle
SETMS (2)	sets live tool spindle (number may vary based upon parameters)
M2=3	spindle 2 start with M03 M(spindle #+)=(M03)
S2=1000	spindle 2 rpm command
G97	constant RPM
G96 S...	constant surface speed
LIMS=...	maximum RPM

Transformation commands	
TRANSMIT	axis substitution between linear and rotary (axial tool orientation)
TRACYL (diameter)	axis substitution between linear and rotary (peripheral tool orientation)
TRANS	linear zero shift
TRAFOOF	transformations off

Miscellaneous	
CUT3DC	3D cutter comp
TOFFL	modifies active tool length offset
TOFFR	modifies active tool radius offset
M2, M30	End of program
M32	End of program (will keep spindle running)

Formulas	
Arc Length = Diameter x 3.1415 x (angle/360) for cylinder surface transformation	
Harp V Thread: Thread height = 0.86603 * thread pitch	
American National Thread: Thread height = .64952 * thread pitch	
Threads Per Inch = 1 / thread pitch	

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