

G-Code Cheat Sheet



Motion		
Common	X Y Z A B C U V W	
G0		Rapid motion
G1		Coordinated motion ("Straight feed")
G2, G3	I J K or R P	Coordinated helical motion ("Arc feed") CW or CCW
G4	P	Dwell (no motion for P seconds)
G38.2...G38.5		Straight probe
G33	K	Spindle-synchronized motion
G33.1	K	Rigid tapping
G80		Cancel motion mode



Tool Length Offset		
G43	H	Use tool length offset from tool table
G43.1	I K	Use specified tool length offset for transient tool
G49		Cancel tool length offset



Flow-control Codes	
O-sub	Subroutines, sub/endsub call
O-while	Looping, while/endwhile do/while
O-if	Conditional, if/else/endif
O-repeat	Run enclosed code more than once

Canned cycles		
Common	X Y Z or U V W	Active parameters depend on active plane
G81, G82	R L (P)	Drilling cycle without (with) dwell
G83, G73	R L Q	Peck and Chip-break drilling cycles
G85, G89	R L (P)	Boring cycle without (with) dwell
G76	P Z I J R K Q H L E	Multipass lathe threading cycle



Plane Selection		
Affects	G2 G3 G81..G89 G40..G42	
G17		Select XY plane
G18		Select XZ plane
G19		Select YZ plane



Return Mode in Canned Cycles		
G98	R	Retract to prior position
G99		Retract to R position



Path Control Mode		
G61	Exact Path mode	
G61.1	Exact Stop mode	
G64	P	Continuous mode with optional path tolerance

Distance Mode		
G90		Absolute distance mode
G91		Incremental distance mode
G90.1		Arc centers I,J,K are absolute
G91.1		Arc centers I,J,K are relative to the arc's starting point
G7		X Diameter mode (lathe)
G8		X Radius mode (lathe)



Coolant		
M7	Turn mist on	
M8	Turn flood on	
M9	Turn all coolant off	



Units		
G20	Inches	
G21	Millimeters	



Spindle Control		
M3, M4	S	Turn spindle clockwise or counterclockwise
M5		Stop spindle
G96	S D	CSS mode (Constant Surface Speed)
G97		RPM mode



Stopping		
M0	Program Pause	
M1	Optional Pause	
M2, M30	End Program	
M60	Pallet Change Pause	



Feed Rate Mode		
G93		Inverse time feed rate
G94		Units per minute feed rate
G95		Units per revolution



Input/Output Codes		
M62...M65	P	Digital Output Control
M66	P E L Q	Digital and Analog Input Control
M67	T	Analog Output Synchronized with Motion
M68	T	Analog Output Immediate

Non-modal Codes		
M6	T	Change tool
M61	Q	Set Current Tool
G4	P	Dwell (seconds)
G10 L1	P Q R axes	Tool offset, radius, orientation setting
G10 L10	P axes	Tool offset, setting calculated from workpiece
G10 L11	P axes	Tool offset, setting calculated from fixture
G10 L2	P R axes	Coordinate system origin, rotation setting
G10 L20	P axes	Coordinate system origin setting calculated
G28, G28.1		Return to or Set reference point 1
G30, G30.1		Return to or Set reference point 2
G53		Motion in machine coordinate system
G92	axes	Offset coordinate systems and set parameters
G92.1		Cancel offset coordinate systems and set parameters to zero
G92.2		Cancel offset coordinate systems but do not reset parameters
G92.3		Apply parameters to offset coordinate systems
M101...M199	P Q	User-defined M-codes