G-CODE Quick Reference

Motion		
G0		Rapid motion
G1		Coordinated motion ("Straight feed")
G2, G3	I J K or R	Coordinated helical motion ("Arc feed") CW or CCW
G38.2		Straight Probe
G80		Cancel motion mode
G81	R L P	Drilling Cycle
G82...G89	R L P Q	Other canned cycles
G33	K	Spindle-synchronized motion
G33.1	K	Rigid Tapping
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
Distance Mode		
G90		Absolute distance mode
G91		Incremental distance mode
Feed Rate Mode		
G93		Inverse time feed rate
G94		Units per minute feed rate
G95		Units per revolution
Units		
G20		Inches
G21		Millimeters
Cutter Radius Compensation		
G41, G42	D	Start cutter radius compensation left or right
G41.1, G42.1	D L	Start cutter radius compensation left or right, transient tool
G40		Cancel cutter radius compensation
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
Return Mode in Canned Cycles		
G98		Retract to R position
G99		Retract to prior position
Path Control Mode		
G61		Exact Path mode
G61.1		Exact Stop mode
G64	P	Continuous mode with optional path tolerance
Stopping		
M0		Pause Program
M2		End Program
M1, M30, M60		Other stop codes
Spindle Control		
M3, M4	S	Turn spindle clockwise or counterclockwise
M5		Stop spindle
G96	D S	Constant surface speed mode (foot/minute or meter/minute) with top speed
G97		RPM mode
Coolant		
M7		Turn mist on
M8		Turn flood on
M9		Turn all coolant off
Other Modal Codes		
F		Set Feed Rate
S		Set Spindle Speed
T		Select Tool
M50...M53	P0 (off) or P1 (on)	Feed Override, Spindle Override, Adaptive Feed, Feed Hold
G54...G59, G59.1...G59.3		Select coordinate system
Flow-control Codes		
O ...	sub/endsub, while/endwhile, if/else/endif, do/while, call, break/continue/return	
Non-modal Codes		
M6	T	Change tool
G4	P	Dwell (seconds)
G10 L2	P X Y Z A B C	Coordinate system origin setting
G28		Return to home
G30		Return to secondary home
G53		Motion in machine coordinate system
G92	X Y Z A B C	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
(...)		A comment "..." to the user
(MSG,...)		Display the message "..." to the user (e.g., in a popup)
(DEBUG,...#123...#<foo>)		Display the message (with variables substituted) like MSG
(PRINT,...#123...#<foo>)		Display the message (with variables substituted) to stderr