Appendix A: Supported G-Code Commands

Supported g-code command summary (less used commands in gray):

Command	Example	Name	Summary
Fn	F10	Feed Rate	Set maximum velocity on speed-limited commands. Unit = G20/21
G0	G0 X-2 Y-1	Rapid Move	Move as fast as possible in a straight line to the specified point
G1	G1 X-2 F1	Linear Move	Move at specified Feed Rate in a straight line to the specified point
G2	search online	CW Arc	Arc at specified Feed Rate in specified plane
G3	search online	CCW Arc	Arc at specified Feed Rate in specified plane
G4	G4 P2	Dwell	Pause for specified period (seconds)
G10 L2	G10 P2 L2 X1	Set WCS point	*P1:P6 indicates which WCS - G54:G59 - to modify, respectively.* Set specified WCS axes to specified value based on machine absolute origin, without movement (current position ignored). *Example sets WCS G55's X axis 1 unit from machine absolute zero*
G10 L20	G10 P2 L20 X1	Set WCS point	*P1:P6 indicates which WCS - G54:G59 - to modify, respectively.* Set specified WCS axes so current position becomes specified value, without movement. Use to set WCS based on probed result. *Example sets current X position to 1 in WCS G55*
G17	G17	Set XY Plane	Sets arc plane to XY
G18	G18	Set XZ Plane	Sets arc plane to XZ
G19	G19	Set YZ Plane	Sets arc plane to YZ
G20	G20	Unit = inch	Set units to inches. Persists until G21 is called, or reset.
G21	G21	Unit = mm	Set units to mm. Persists until G20 is called, default on reset.
G28	G28 Z-1	Move to G28.1 via axes	Move to specified position (in current WCS), then move to absolute position stored in G28.1. *Example moves to Z-1 in the current WCS, then moves to G28.1*
G28.1	G28.1	Store final G28 position	Store the current absolute position, for use by G28
G30	G30 Z-1	Move to G30.1 via axes	Move to specified position (in current WCS), then move to absolute position stored in G30.1 Example moves to Z-1 in the current WCS, then moves to G30.1
G30.1	G30.1	Store final G30 position	Store the current absolute position, for use by G30
G38.2	G38.2 X-2 F5	Probe	Probe towards part, stop on contact, error if no contact
G53	G53 G0 X-2	Use Machine origin	Move in machine coordinates, regardless of active WCS. G53 only applies to code on the same line (not persistent)
G54 G55 G56 G57 G58 G59	G55 X-2	Work Offsets 'WCS'	Work offsets define an origin in relation to absolute machine zero. Work offsets are persistent, Use the origin defined in the specified work coordinate system (persistent). See 'G10' to define the origin. Example moves 2 units from origin defined by WCS G55

Command	Example	Name	Summary
G90	G90 X-2	Absolute Move	Move relative to current WCS. *Example moves 2 units from origin*
G91	G91 X-2	Relative Move	Move relative to current position. *Example moves X axis 2 units*
G92	G92 X0Y0Z1	Coordinate Offset	*Source of epic misery, do not use; use WCS instead.* Set active WCS position as specified (without movement). Modifies all WCS axes to match calculated offset. Unspecified axes aren't modified. Not stored in EEPROM, cleared when reset. *Example sets active WCS origin Z+1 from current position and modifies all WCS axes to match calculated offset.*
G92.1	G92.1	Clear Offset	Clear previously set G92 coordinate offset.
G93	G93	Minutes/Unit	F interpreted as inverse feed rate
G94	G94	Units/Minute	F interpreted as feed rate
M3	M3	Spindle CW	Spin spindle CW at specified speed
M4	M4 S5000	Spindle CCW	Spin spindle CCW at specified speed
M5	M5	Stop Spindle	Stop the spindle, as specified in "Spindle Operation"
M8	M8	Enable Coolant	Ghost Gunner supports coolant, but no system is installed
M9	M9	Disable Coolant	Ghost Gunner supports coolant, but no system is installed
M30	M30	End	End program. Before calling M30, stop spindle as per "Spindle Operation"
M100 Un	M100 X10	Verify Remaining Travel	(Supported in DDcut only) Verify at least *n* distance is available on *U* axis between last probe point and absolute machine limit. Alarm if *n* exceeds available distance on *U* axis. Error if no probe has occurred. M100 disregards unit mode; all arguments are in mm
M101 Vm	M101 X1	Verify Delta Between Points	(Supported in DDcut only) Verify distance between the two most recent G38.2 probe results is less than *m* along axis *V*. Alarm if calculated delta exceeds *m*. Error if less than two previous probe operations have occurred. M101 disregards unit mode; all arguments are in mm.
Sn	S5000	Spindle Speed	Set the spindle speed, as specified in "Spindle Operation"

More Grbl-specific command information:
http://www.shapeoko.com/wiki/index.php/G-Code !

Grbl attempts to follow LinuxCNC's g-code syntax and methodologies:
http://linuxcnc.org/docs/html/gcode/gcode.html !

Grbl configuration commands:
https://github.com/grbl/grbl/wiki/Configuring-Grbl-v0.9