

Part Name:	Part Number:	Quantity:	Extra Parts:	Set-Up #:
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Pre-Operations Stock Description:	Part Description:			
	Material:		Date:	

Machine Code:

Tool #	Tool Type:	Tool Holder Type:	Exposed Tool Length:	Spindle Speed:	Feed Rate:
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Step:	Tool #	Operation Description:
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Operation Set-up Sketch:
 Include:
 Part origin
 Tool change position (Bridgeport)

Basic Hass Mill Operations

Startup

To start up the machine simply press the **POWER ON** button and wait for it to load up. Once that is done run the start up program by pressing the **POWER ON RESTART** button.

Tool Loading

To remove the current chucked tool, grasp it firmly with your left hand, be prepared to catch it, and press the **TOOL RELEASE** button to release the tool.

To load a tool place it in the chuck and make sure the tool is properly aligned with the chuck, then press the **TOOL RELEASE** button. If you receive an error message "WRONG MODE" simply press the **MDI DNC** or **HAND JOG** button to change to that mode.

Using the Automatic Tool Changer

You can change the tool one place forward or back by pressing the **ATC FWD** or **ATC REV** buttons respectively. Once the machine begins to beep press the **100% RAPID** button to begin the tool change. To skip a tool position, i.e. change from tool one to tool five, enter the **MDI DNC** mode, then enter "T" followed by the number of the tool you wish to change to, and press **ATC FWD** or **ATC REV**.

Setting Tool Offsets

Press the **OFFSET** button until you reach the Tool Offset page, it will have the tool numbers listed. You can now move your tool by selecting the direction, i.e. **Z+**, and rotating the **HANDLE**. You can also select the motion step by pressing one of the **.0001** thru **.1** buttons, be sure to use the finer movement modes as you near your part and be sure not to run your tool into your part or feeler gauge. Once you have zeroed your tool to your feeler gauge press the **PART ZERO SET** button to record that value, be sure the proper tool is highlighted in the offset menu first. To account for the length of the feeler gauge simply press "-" followed by the length of the gauge, including the decimal point, and hit **ENTER**.

Setting the Work Origin

Press the **OFFSET** button until you reach the Work Origin page, it will have the x, y, z, coordinates listed. You can turn on the machine by entering a desired spindle speed and pressing **CW** or **CCW**. Now move your edge finder to the edge of your datum as you would on a manual mill by using the **X+**, **Y+**, and **Z+** buttons in conjunction with the **HANDLE** and step mode buttons. To record the datum press the **TOOL OFFSET MEASUR** button, then add or subtract the desired offset by entering the value, including the decimal, and pressing **ENTER**.

Special Tooling

Be sure to check that the tooling you need is physically available in the shop before your submit this machining plan to your mentor. If it is not you can special order most tooling parts from either MSC Direct or McMaster-Carr.

www.mscdirect.com

www.mcmaster.com

If the tooling isn't available check the Mindworks website for more information on vendors and suppliers.

<http://www.webs1.uidaho.edu/mindworks/references.htm>