Basic Mill Operator

Training course

www.hfoallendale.com

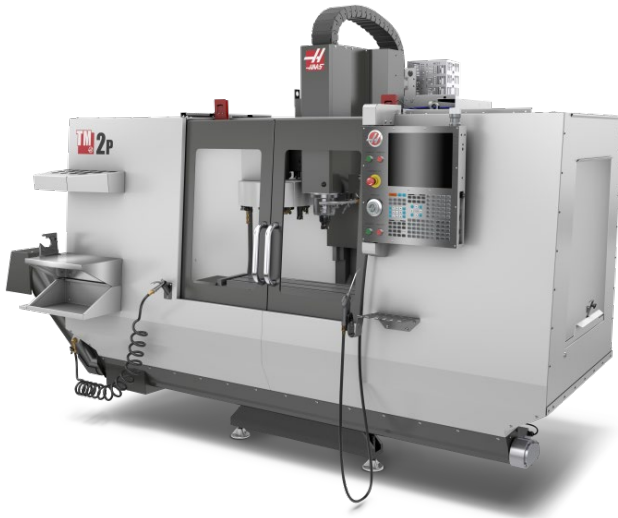# Table of Contents

Types of haas mills

VF SERIES

(VF 1 – 12, SS, YT, SSYT)

VM Series

(VM-2, VM-3, VM-6)

Toolroom Mill

(TM1 – TM3 & TM1P – TM3P)
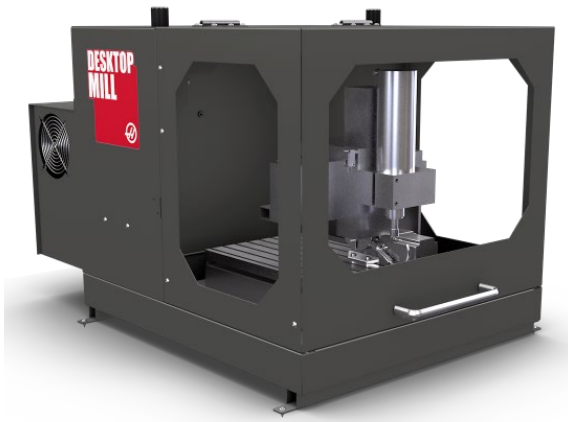
DRILL TAP & DRILL MILL MACHINES

(DM1-DM2 AND DT1-DT2)

MINI MILLS

(MINI MILL 1 & 2, SUPER MINI MILL 1 & 2, MINI MILL EDU)

COMPACT MILL

COMPACT MILL

Desktop MILL

VC Series

(VC-400, VC-400SS)

HORIZONTAL MILLS

(EC-400, EC-500, EC-1600, EC-1600ZT, EC-1600ZT-5AX)

UNIVERSAL MACHINING CENTER

(UMC 500, 750, 1000, 1250, 1500 DUO, SS, P, UMC-1600-H, ZT-5AX)
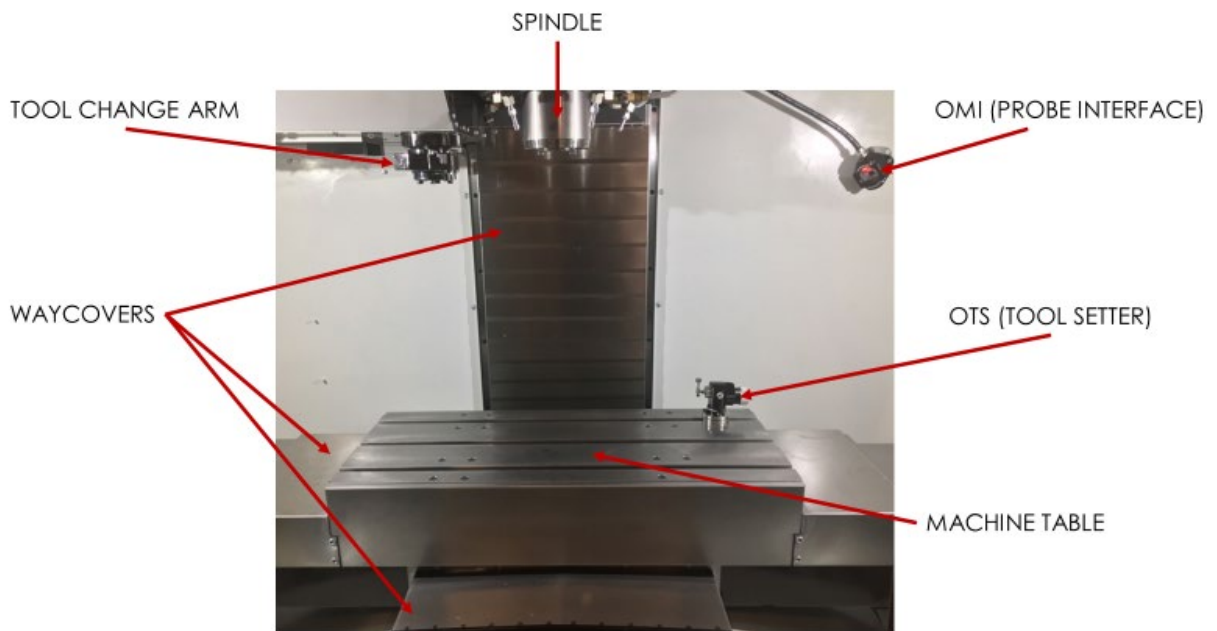
VR Series

(VR-8, VR-9, VR-11, VR-14)

GANTRY ROUTER MACHINE

(GR-510, GR-712, GM-2, GM-2-5AX)
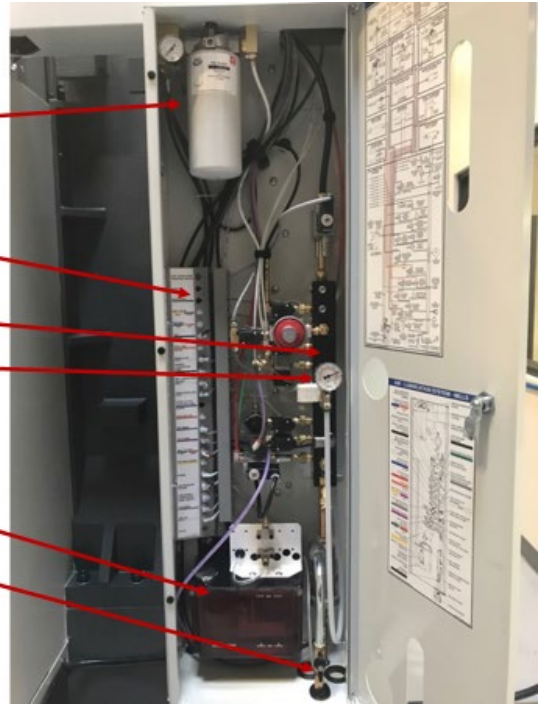
Machine layout

AXIS GREASE RESERVOIR

SOLENOID CONNECTION PORTS

AIR MANIFOLD

INCOMING AIR (PSI) GAUGE

SPINDLE LUBE RESERVOIR

INCOMING AIR SHUT OFF VALVE
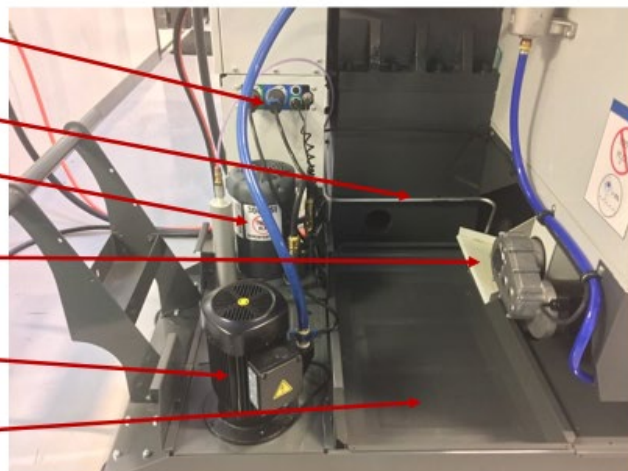
COOLANT PLUG BANK

CASTING DRAIN

HIGH PRESSURE COOLANT PUMP

COOLANT CHUTE

LOW PRESSURE COOLANT PUMP

CHIP TRAY

MAIN PROCESSOR BOARD

AXIS MOTOR AMPLIFIERS

I/O BOARD

LOW VOLTAGE POWER SUPPLY

T5 TRANSFORMER

POWER CARD

MAIN BREAKER

DELTA WYE CONTACTOR

VECTOR DRIVE

TRANSFORMER

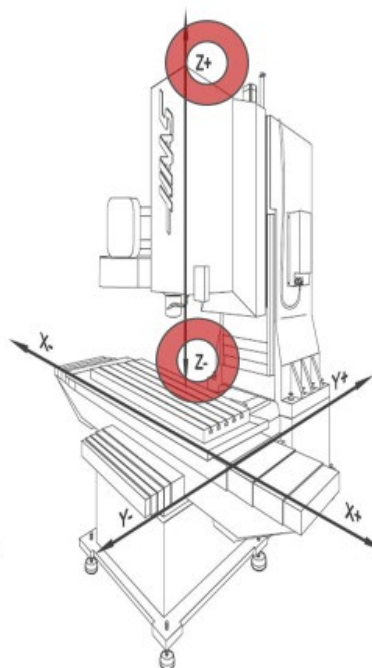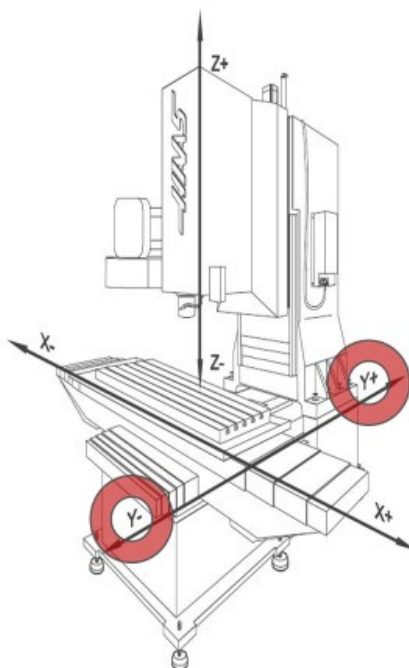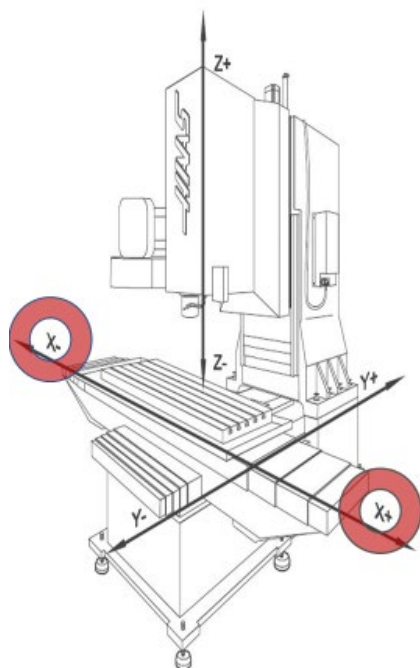# THINGS TO CHECK PERIODICALLY

CHIP TRAP MANIFOLD

AXIS GREASE

SPINDLE LUBRICATION

Machine axis motion

SPINDLE MOTION

Spindle will not run with doors open

Machine Start-Up

Once you press the "POWER ON" button you will be prompted with this screen. Follow the steps as shown:

1) Cycle the Doors – Open and close the doors

2) Turn [EMERGENCY STOP] to the right to release – Release the EMERGENCY STOP button

3) Press [POWER UP] – Press the "POWER UP" button to send the machine to it's zero position

Start Up   09:07:42   Haas Start Up

MEM   SULLY NECK PLATE.nc   N135

```
O02112 (xxxxx);
(Straight Milling Template);
( TOOL 6 );
( SPINDLE 2200 RPM / FEED 10. IPM );
( R PLANE 0.1 / DEPTH -0.495 );
G00 G17 G40 G49 G80 G90;
T6 M06;
G00 G90 G59 X6. Y-12. S2200 M03;
G43 H06 Z0.1 M08;
G01 G90 Z-0.495 F5.;
G01 X-6. Y-12. F10.;
G01 Z2. F5. M09;
G00 G90 G53 Z0 M05;
M01 ( END VPS STRAIGHT MILLING );
(Straight Milling Template);
( TOOL 6 );
( SPINDLE 2200 RPM / FEED 10. IPM );
( R PLANE 0.1 / DEPTH -0.495 );
G00 G17 G40 G49 G80 G90;
T6 M06;
G00 G90 G59 X-6. Y0. S2200 M03;
G43 H06 Z0.1 M08;
G01 G90 Z-0.495 F5.;
G01 X6. Y0. F10.;
G01 Z0.1 F5. M09;
G00 G90 G53 Z0 M05;
M01 ( END VPS STRAIGHT MILLING );
N135 M01 ( END VPS SQUARE POCKET );
```

✓ - Cycle the door.

- Turn [EMERGENCY STOP] to

the right to release.

- Press [POWER UP]

- Press [CYCLE START] to run a program.

Or

- Press [HAND JOG] for manual operation.

CANCEL to continue

Main Spindle			Positions Program G54 G49			Timers And Counters	
STOP	Spindle Speed:	0 RPM	(IN)		Load	This Cycle:	0:00:03
	Spindle Power:	0.0 KW	X	28.4930	0%	Last Cycle:	0:00:03
Overrides	Surface Speed:	0 FPM				Remaining	0:00:00
	Chip Load:	0.000 IPT	Y	2.4980	0%	M30 Counter #1:	321
Feed: 100%	Feed Rate:	0.0000 IPM	Z	0.0000	0%	M30 Counter #2:	321
Spindle: 100%	Active Feed:	0.0000 IPM				Loops Remaining:	0
Rapid: 100%			A	0.000	0%		

Spindle Load(%)   0%

Setup   E-Stop

SUNLK: 107   EMERGENCY STOP

Pendant
OVERVIEW

Active Mode, Network and Time Status bar
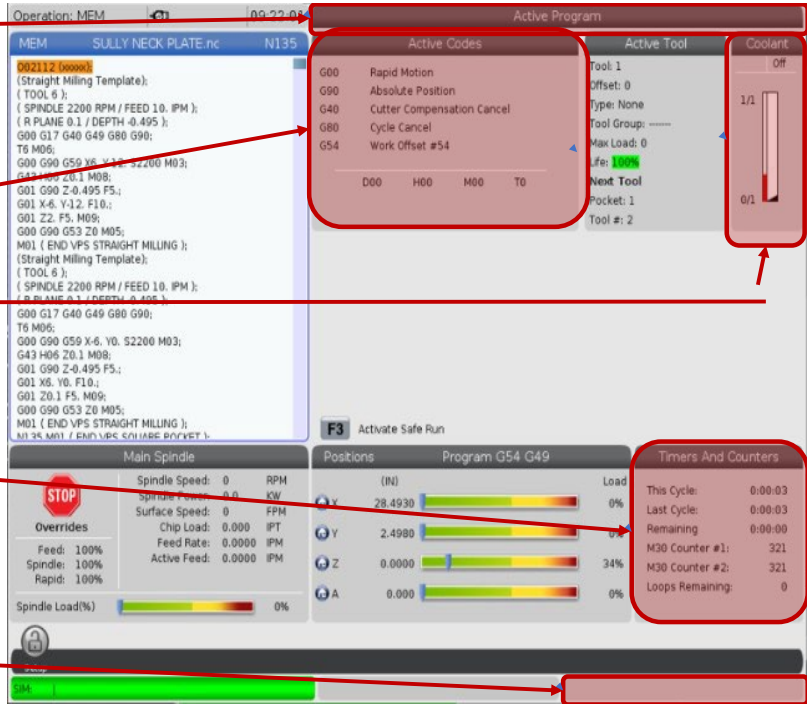
Active Program Display

Spindle Status

Icon Bar

Main Display
(Size varies) Program/Offsets/Current Commands/Settings/Graphics/Editor/VPS/Help

Active Codes

Coolant Level

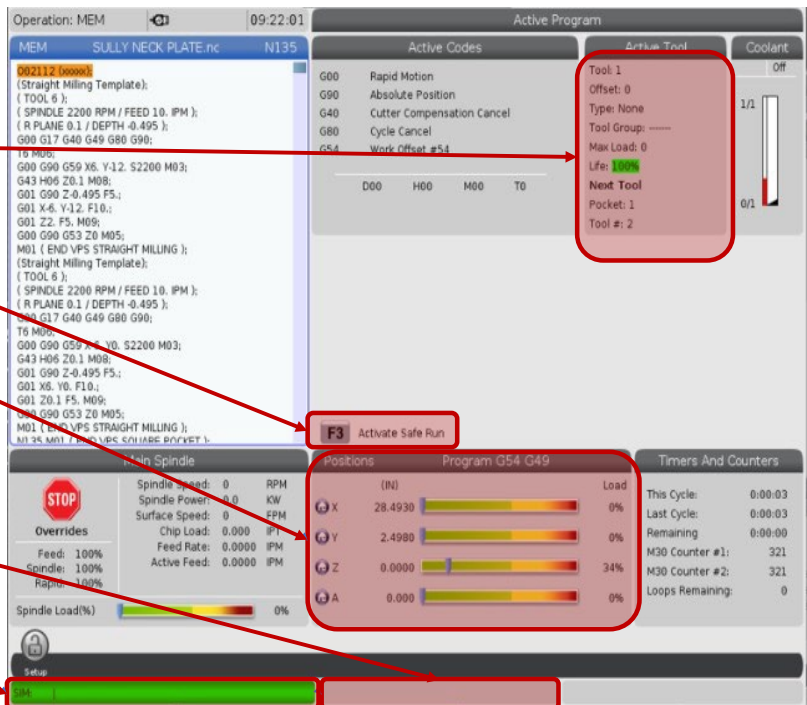Timers, Counters and Advanced Tool Management

Active Alarms

Active Tool

Safe Run Mode

Position Display / Axis Load

System Status Bar

Input Bar

The Haas control looks to have a large amount of buttons.
But when we break them down into groups
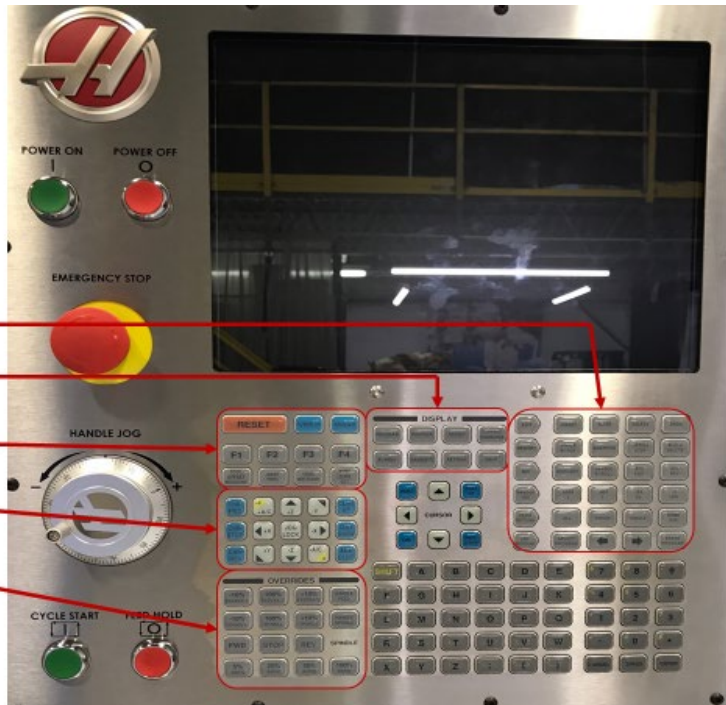
The groups are as follows:

Mode Keys

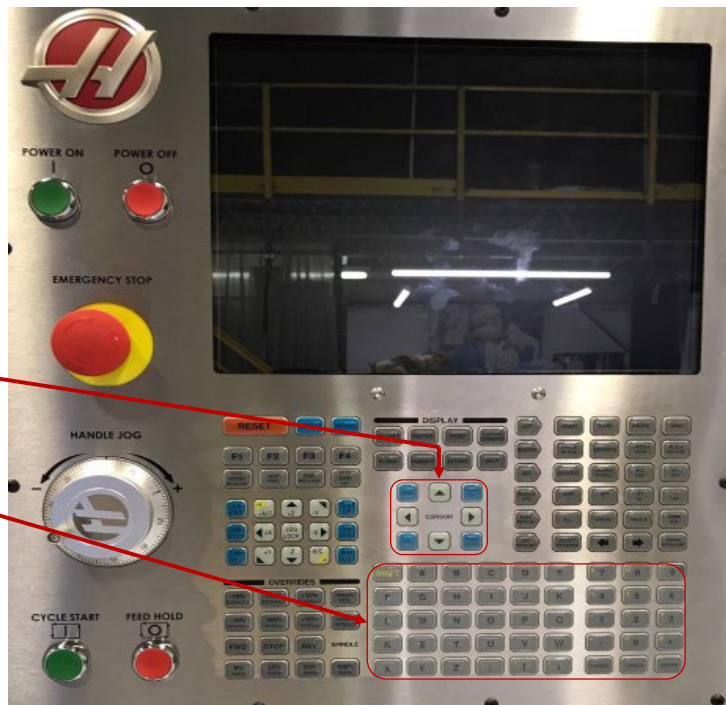Display Keys

Function Keys

Jog Keys

Override Keys

The Haas control looks to have a large amount of buttons.
But when we break them down into groups

The groups are as follows:

Navigation Keys

Alpha-Numeric Keyboard

The Navigation/Cursor Keys

The UP, DOWN, LEFT and RIGHT arrows will toggle around the screen

HOME: Brings the cursor to the top of the page

END: Brings the cursor to the bottom of the page

PAGE UP: Brings the cursor up a page/screen

PAGE DOWN: Brings the cursor down a page/screen

Hint: If you press the mode or display you are currently in, it will bring you straight to the tabs to navigate between the pages of the mode/display

Edit Mode: Let's you edit programs in the Haas advanced editor. You can also access the Visual Programming System (VPS) from the tabbed menu

Insert : Enters text from input line or the clipboard into the program at the cursor position

Alter: Replaces the highlighted text with the text from the input line or clipboard

Delete: Deletes the item the is on, or deletes the selected program block

Undo: Undoes up to the last 40 edit changes and deselects a highlighted block
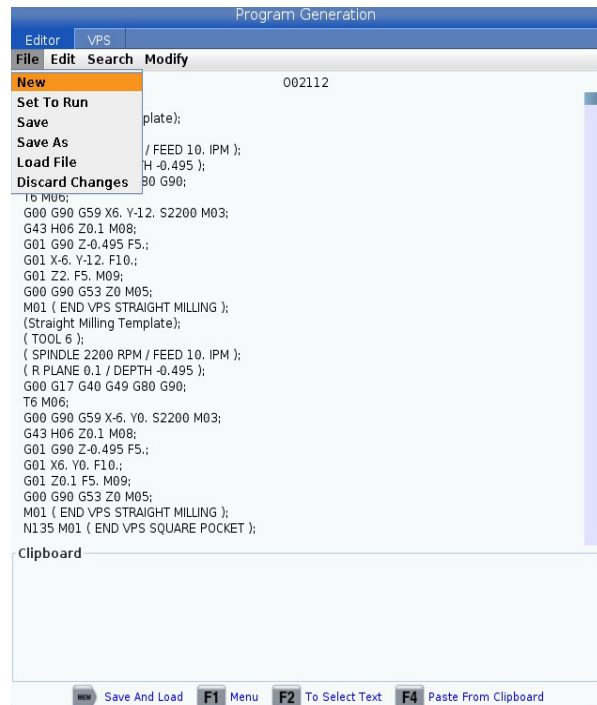

The FILE menu has these options:

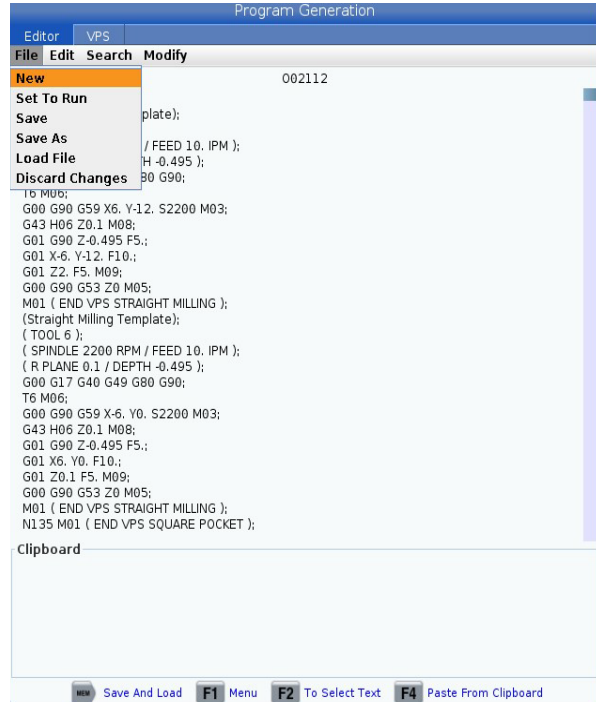NEW: Creates a new program. In the pop-up menu fields, type an O number (required), a filename (optional), and a file title (optional)

The FILE menu has these options:

NEW: Creates a new program. In the pop-up menu fields, type an O number (required), a filename (optional), and a file title (optional)

The EDIT menu has these options:

UNDO: Reverses the last edit operation, up to the last (40) edited operations. You can also press UNDO key to use this function

REDO: Reverses the last undo operation, up to the last (40) undone operations

CUT SELECTION TO CLIPBOARD: Removes the selected lines of code from the program and puts them in the clipboard

COPY SELECTION TO CLIPBOARD: Puts the selected lines of code in the clipboard. This operation does not remove the original selection from the program

PASTE FROM CLIPBOARD: Puts a copy of the clipboard contents below the current line. This does not remove the clipboard contents
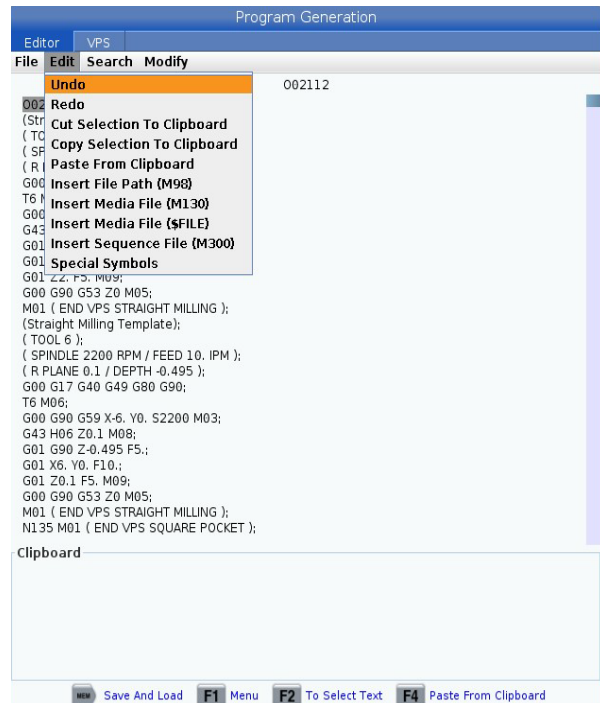
The EDIT menu has these options:

INSERT FILE PATH: Prompts a program selection and will insert a comment of file location

INSERT MEDIA FILE (M130): Inserts a media file into a program. NOTE: A "M00" is required after the "M130" for the machine to stop when the media is loaded

INSERT MEDIA FILE ($FILE): Inserts a comment of where a media file is located
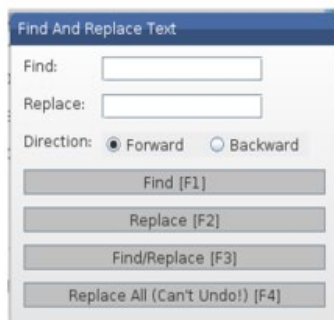
INSERT SEQUENCE FILE (M300): Inserts a call for a robot or APL to use a custom sequence

SPECIAL SYMBOLS: Brings up a list of symbols that aren't already on the keyboard

The SEARCH menu has the following option:

FIND AND REPLACE TEXT: This function lets you quickly find code in the program and optionally replace it

The MODIFY menu has these options:

REMOVE ALL LINE NUMBERS: Automatically removes all N-code line numbers from the program or the selected program blocks

RENUMBER ALL LINES: Automatically adds N-code line numbers to the program or the selected program blocks. Enter the line number you want to start with and the increment to use between line numbers, then press ENTER to continue or press UNDO to cancel and to return to the editor

REVERSE X AND Y: Changes the X address codes in the program to Y address codes, and changes Y address codes to X address codes

`

The MODIFY menu has these options:

REVERSE + AND - SIGNS: Changes positive values for selected address codes to negative, or negative values to positive. Press the letter key for the address codes that you want to reverse to toggle selections in the pop-up menu. Press ENTER to execute the command or CANCEL to return to the editor
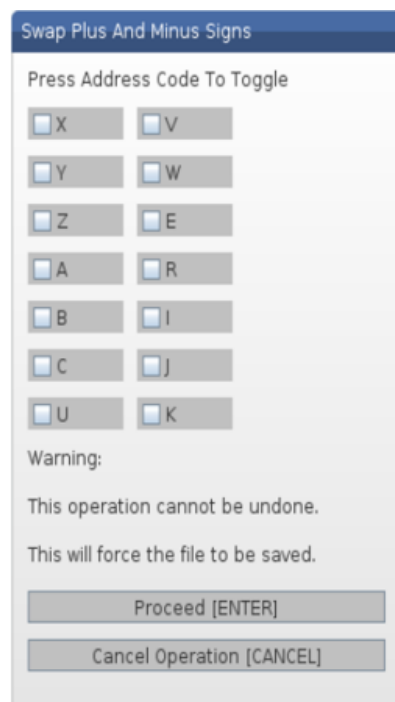
Memory Mode: You run programs in this mode, and the other keys in the MEMORY row control the ways in which the program is run.

Single Block : Toggles single block on or off. When single block is on, the control runs only one program block each time you press CYCLE START

Graphics: Opens Graphics mode

Optional Stop: Toggles optional stop on or off. When optional stop is on, the machine stops when it reaches M01 commands
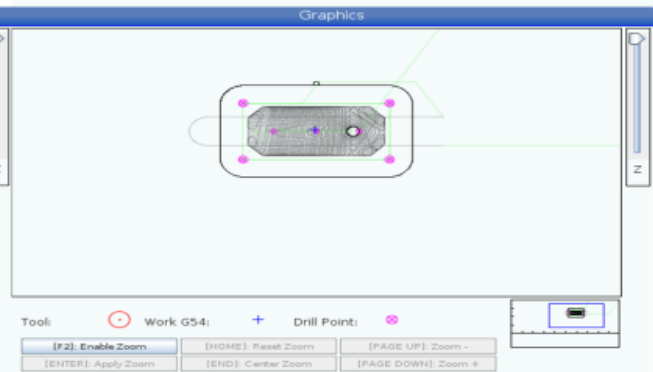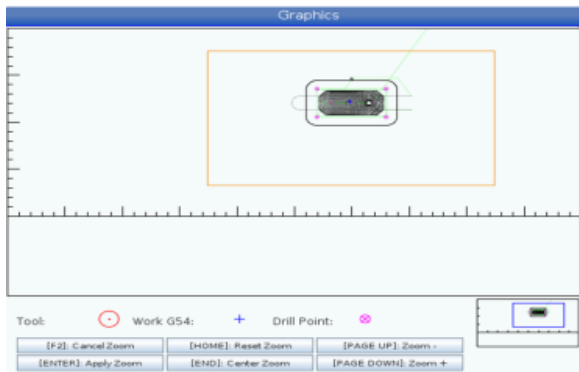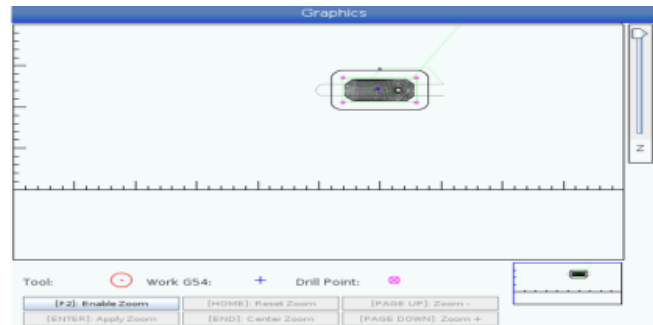
Block Delete: Toggles block delete on or off. The program ignores (does not execute) items with a slash ("/") when this option is on

Graphics: Opens Graphics mode

Pressing "CYCLE START" will run the graphic simulation

Pressing "F2" will zoom in on the boxed area

MDI Mode: In MDI mode, you run unsaved programs or blocks of code entered from the control

Coolant: Turns the coolant on and off

Hand Scroll: Toggles Handle Scroll mode. This lets you use the jog handle to move the cursor in menus while the control is in jog mode

ATC FWD: Rotates the tool carousel to the next tool

ATC REV: Rotates the tool carousel to the previous tool

Handle Jog Mode: Enters machine into manual jog mode to move individual axis around at a specified rate

Each button selects the increment for each click of the jog handle

When the mill is in MM mode the first number is multiplied by ten when jogging the axis (e.g., .0001 becomes 0.001 mm)

The bottom number sets speed
after you press JOG LOCK key and an axis jog key or you
press and hold an axis jog key
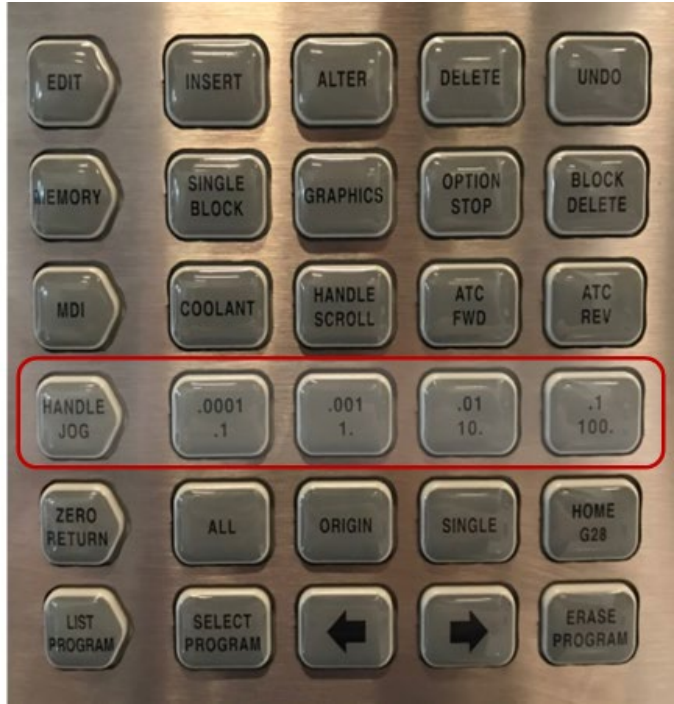
When selecting an axis to move while in handle jog mode, you can do this one of two ways

You can press the axis keys on the pendant you wish to move. It does not matter which direction you press

You can also select the axis by typing the letter designation of the axis you want to move and pressing the handle jog mode key.

Zero Return mode :   In Zero Return mode, you have the ability to send the machine to its home position

All : Returns all axes to machine zero. This is similar to POWER UP, except a tool change does not occur

Origin: Sets selected values to zero in different displays

Single: Returns one axis to machine zero. Press the desired axis letter on the Alpha keyboard and then press SINGLE

Home G28: Returns all axes to zero in rapid motion. HOME G28 key will also home a single axis in the same manner as SINGLE key

⚠️ **CAUTION:**   *Make sure the axis motion paths are clear when you press this key. There is no warning or prompt before axis motion begins.*

List Programs mode : Accesses a tabbed menu to load and save programs

Select Program : Makes the highlighted program the active program

Back arrow : Navigates to the screen you were on before the current one. This key operates like the BACK button on a web browser

Forward arrow: Navigates to the screen you went to after the current screen, if you have used the back arrow. This key operates like the FORWARD button on a web browser

Erase Program: Deletes the selected program in List Program mode. Deletes the entire program in MDI mode

The device manager display becomes active when you press List Programs. It shows the available memory devices in a tabbed menu. These devices can include machine memory, the User Data directory, USB memory devices connected to the control, and files available on the connected network

To select a program to be the active program in Memory

			Size	Last Modified	
		110.	\<DIR>	06-07-2017 12.17	>
		radio1.NC	66 KB	12-01-2016 14:54	
		radioactive...	68 KB	12-01-2016 14:33	
00000	(Setup 1)	Setup_1.nc	17 KB	07-18-2017 14:22	
00001	(Using high fee...	1.nc	142 KB	07-26-2017 15:24	
00002	(DEMO SIDE 1)	demo_side...	235 KB	11-16-2016 12:22	

Edit   [ALTER]

Mark   [ENTER]

Copy   [F2]

Cursor to the program you would like to run in memory mode and press "SELECT PROGRAM"

To copy a file from USB follow the following:

1. Cursor up to the Memory tab

2. Cursor over to USB tab

3. Cursor down to file you would like to load into the control memory and press the F2 button

4. This will put a check in the box next to the programs you would like to copy

List Prog

Memory   User Data   USB

Search (TEXT) [F1], or [F1] to clear.

Current Directory: USB0/

File Name	Size	Last Modified
72817.ATM	12 KB	07-28-2017 07:45
72817.HIS	41 KB	07-28-2017 07:45
72817.IPS	6 KB	07-28-2017 07:45
72817.KEY	161 KB	07-28-2017 07:45
72817.LSC	10 KB	07-28-2017 07:45
72817.OFS	15 KB	07-28-2017 07:45
72817.PAR	15 KB	07-28-2017 07:45
72817.PGM	22 KB	07-28-2017 07:45
72817.SET	2 KB	07-28-2017 07:45
72817.VAR	8 KB	07-28-2017 07:45
Error_080817012240.zip	881 KB	08-08-2017 13:23
O01031.nc	3 KB	07-28-2017 07:43
o00009.txt	228 B	08-07-2017 12:17

New   [INSERT]
Load   [PROG]
Edit   [ALTER]
Mark   [ENTER]
Copy   [F2]
File   [F3]
System   [F4]

File Name:

Folder Has: 13 Items   Disk Space: 7660 MB Free (99%)   Selected Items: 0

Copy To

Select Device

Memory	>
USB0	>
User Data	>
data	>

[Select [ENTER]] [Exit [CANCEL]]

Make sure the cursor on the Copy menu is on Memory tab and press Enter

Copy To

Insert Directory: Memory/

09000	>
B	>
G17	>
T10.	>

[Copy [ENTER]] [Exit [CANCEL]]

Now that you are in the Memory directory, press enter to copy it to the main memory directory

If you wish to copy it to folders in the main directory, you just need to cursor to the one you want and press the right arrow key. This will bring you to that folder to copy the file there
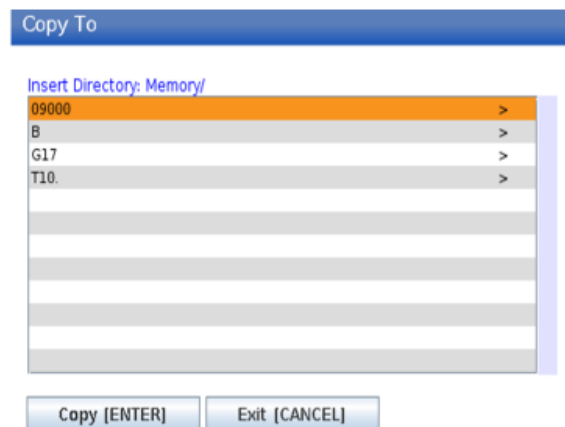
The tabs on the right of the list programs display have a few other functions

If you were to press Insert on the Edit mode line of keys, this will allow you to create a new program file

Create New Program

O Number (number required)

File Name

File comment

Enter [ENTER]   Exit [UNDO]

If you were to press Alter on the Edit mode line of keys, this will activate the program Edit window with that program in it

If you were to press F3, this will bring down a menu that will allow you to:

Make a directory: Creates a folder to organize programs

Rename a file: Change file name but not the program number

Delete: Deletes a program

Duplicate Program: Copies all the information from the highlighted program into a new program

Select All: Selects all files to be copied or deleted

Clear Selection: Deselects all selected files

Sort By O Numbers: Organizes files from O00000 to O99999

Select all files or clear all file selections:

Show/Hide File Details: Will toggle the file "SIZE" and "LAST MODIFIED" column

Setting 252: Adjust where the machine looks for sub programs (M98)

Setting 262 DPRNT: Changes the out put folder for DPRINT

Get File Path: Outputs a comment of where the highlighted program is located

Special Symbols: Symbols that aren't already on the keyboard
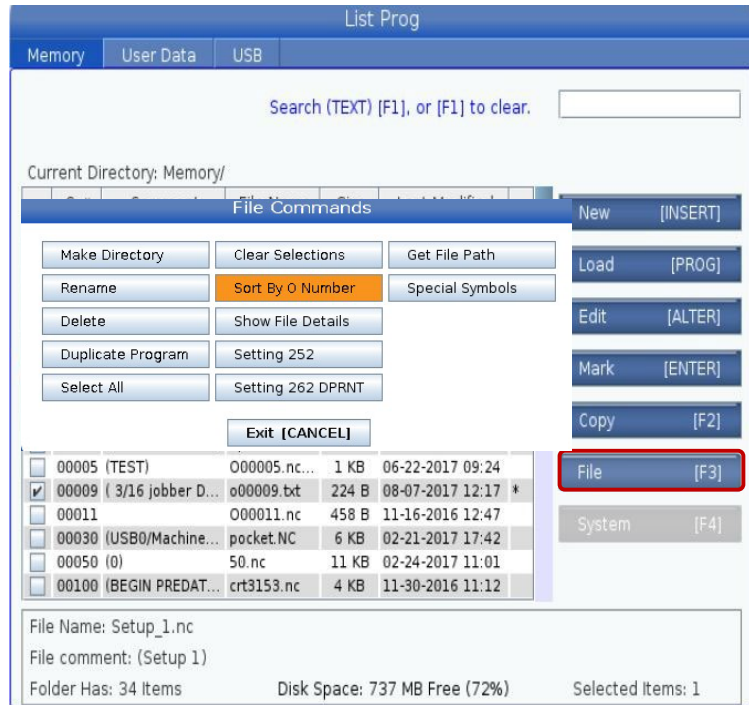
When a USB is in the machine:

Back Up Machine: Creates a back up of the machine so that it can be restored at a later point

Other information on the machine can be saved and loaded into the same machine or other machines

Pressing "SHIFT" then "F3" will create an "ERROR REPORT" as a zip folder on the USB. It will be listed with the machine serial number
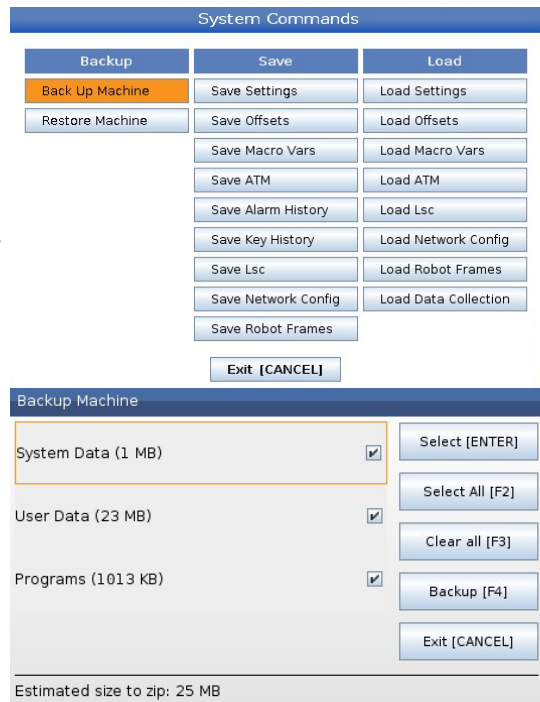
The "PROGRAM" button shows you the active program in the control and shows you where in the program the machine is running at that time


```
MEM            ...ry/X-Y-Z_POS_TEST).nc            N100
O99999 (X-Y-Z POS TEST) ;
;
G80 G00 M09 ;
G53 G90 G00 Z0 M05 ;
M01 ;
;
T40 M06 ;
;
G154 P9 G90 G00 X0 Y0 ;
G43 H40 ;
G65 P9832 ;
G65 P9810 Z1. F100. ;
G65 P9810 Z-0.2 F40. ;
;
(1. Bore);
( PROBE BORE - JOG PROBE TIP INSIDE BORE TO START );
( WORK OFFSET G154.10 );
( BORE SIZE .5 );
( OFFSET SHIFT IN X 0. );
( OFFSET SHIFT IN Y 0. );
G65 P9995 W154.1000 A10.000 D1. E0.0000 H0.0000;
;
#14221= #10188 ;
;
;
G01 Z0.4 F40. ;
G65 P9832 ;
G65 P9810 X0.75 F40. ;
```

The "POSITION" button shows where is the machine's position at that time in up to 4 different position types

Your "Work" position is where the machine is in relation to the active work offset

Pressing the "ALTER" Key allows you to change what axis are being viewed

The "ENTER" Key is used to select/deselect different axis

The "ALTER" Key, when pressed again is used to close the highlighted window

The "ORIGIN" Key is used to reset the selected axis to the default

This can be done in all 4 displays

"Distance To Go" shows the amount of distance the machine has to move to get to its next position

"Machine" Shows the position of the machine in reference to the machine's zero

"Operator" is a "Digital Read Out" that can be zeroed out to get a measurement from a specific location

In "Handle Jog" mode, the "Operator" can set axis to zero and change position

"ALL" shows all 4 of the previous windows along with the work offset

	Positions			
Work	Distance To Go	Machine	Operator	All

Position: (IN)

Axis	Work G54	Axis	Dist To Go
X	0.0000	X	0.0000
Y	0.0000	Y	0.0000
Z	19.8151	Z	0.0000
Axis	Machine	Axis	Operator
X	-25.5013	X	-25.5013
Y	-10.1089	Y	-10.1089
Z	-2.5560	Z	-2.5560

ALTER   To view options.

The "OFFSET" displays tool offsets and
works offsets

The "OFFSET" button will show all the offsets. Here in the "Tool" tab, you can adjust:

Length of Tool in "Length Geometry"

Compensate for the wear of the length in "H(Length) Wear"

The Diameter of the Tool in "Diameter Geometry"

Compensate for the wear of the Diameter in "Diameter Wear"

The amount of cutting edges a tool has is "Flutes" and is used to calculate chip load

Tool Offset	Length Geometry(H)	Length Wear(H)	Diameter Geometry(D)	Diameter Wear(D)	Flutes
1 Spindle	0.	0.	0.	0.	0
2	0.	0.	0.	0.	0
3	0.	0.	0.	0.	0
4	0.	0.	0.	0.	0
5	0.	0.	0.	0.	0
6	-9.3140	0.	0.3120	0.	0
7	-5.6200	0.	0.2500	0.	0
8	0.	0.	0.	0.	0
9	0.	0.	0.	0.	0
10	0.	0.	0.	0.	0
11	0.	0.	0.	0.	0
12	0.	0.	0.	0.	0
13	0.	0.	0.	0.	0
14	0.	0.	0.	0.	0
15	0.	0.	0.	0.	0
16	0.	0.	0.	0.	0
17	0.	0.	0.	0.	0

Active Tool: 1   Coolant Position: 0

Tool Offset Measure   Tool Presetter   Set Value

Add To Value   Work Offset

Using the arrow keys to move to the right. You can find more adjustments for tool offsets including:

"Tool ID" is a user input to identify a tool, generally a vendor ID number

"Description" is where any identifying factors of the tool would be put

"Actual Diameter" is used to calculate chip load and other values while running a program

The type of tool is set in "Tool Type"

The material of the tool is set in "Tool Material"

The "Tool Pocket" can be observed to identify where a tool is located in the machine

The "Category" can be used to adjust the how fast the tool can be changed

When inputting a tool type the bottom window will show up to choose what kind of tool is being used

When inputting a "Tool Material" the bottom window will show up to choose what kind of material the tool is made of

The buttons available in Tool Offsets display are:

"TOOL OFFSET MEASURE": This sets the length of the tool to it's current machine position

"F1" replaces the value with value you entered

"Enter" adds the entered value to the value already in the highlighted offset

"F4" brings you to the work offset page

Offsets

Tool | Work

Active Tool: 40

Tool Offset	Length Geometry	H(Length) Wear	Diameter Geometry	Diameter Wear
1	-2.5560	0.	2.9917	0.
2	4.9105	0.	0.4995	0.
3	4.6374	0.	0.3747	0.
4	0.	0.	0.	0.
5	4.9126	0.	0.4995	0.
6	4.6375	0.	0.3746	0.
7	0.	0.	0.	0.
8	6.0000	0.	0.	0.
9	0.	0.	0.	0.
10	5.0061	0.	0.	0.
11	4.9102	0.	0.	0.
12	4.9338	0.	0.	0.
13	4.9793	0.	0.4995	0.
14	4.8891	0.	0.	0.
15	4.9545	0.	0.	0.
16	0.	0.	0.	0.
17	4.1706	0.	0.1268	0.
18	3.7041	0.	0.	0.

Enter A Value

[TOOL OFFSET MEAS] Tool Offset Measure [F1] Set Value [ENTER] Add To Value [F4] Work Offset

Using the arrow keys to move to the right You can find more adjustments for tool offsets including:

"Approximate Length" is where you input an estimate of what length the tool is from the spindle face to the tip of the tool

"Approximate Diameter' is where you input an estimate of what the tool diameter is

"Edge Measure Height" is set to how far the tool goes down past the stylus when checking the tool diameter

"Tool Tolerance" is the tolerance you have on the tool when running a tool breakage cycle

"Probe Type" is how you want to measure the tool

Offsets

Tool | Work

Active Tool: 1

Tool Offset	Approximate Length	Approximate Diameter	Edge Measure Height	Tool Tolerance	Probe Type
1 Spindle	0.	0.	0.	0.	2-L Non Rot
2	0.	0.	0.	0.	None
3	0.	0.	0.	0.	None
4	0.	0.	0.	0.	None
5	0.	0.	0.	0.	None
6	0.	0.	0.	0.	None
7	0.	0.	0.	0.	None
8	0.	0.	0.	0.	None
9	0.	0.	0.	0.	None
10	0.	0.	0.	0.	None
11	0.	0.	0.	0.	2-L Non Rot
12	0.	0.	0.	0.	None
13	0.	0.	0.	0.	None
14	0.	0.	0.	0.	None
15	0.	0.	0.	0.	None
16	0.	0.	0.	0.	None
17	0.	0.	0.	0.	None
18	0.	0.	0.	0.	None

Enter A Value

[TOOL OFFSET] Automatic Probe Options [F1] Set Value [ENTER] Add To Value [F4] Work Offset

Tool Probe Help

Selected The Type Of Probing To Be Performed:
0 - No tool probing to be performed.
1 - Length probing (Rotating).
2 - Length probing (Non- Rotating).
3 - Length and Diameter probing (Rotating).

[TOOL OFFSET MEAS] Automatic Probing Options.

When probing you have different options:

"0 - No tool probing to be preformed" clears out any type of probing previously there

"1 - Length probing (Rotating)" is used to find the length of a tool and to find the lowest point on a tool that has multiple edges

"2 - Length probing (Non-Rotating)" is used to find the length of the tool when one edge is being measured

"3 - Length and Diameter probing (Rotating)" is used to find the length and diameter of the tool ("Approximate Length", "Approximate Diameter" and "Edge Measure Height" is needed for this)

Once you choose a probing type and hit "TOOL OFFSET MEASURE" you have to choose from the following probing options:

"1: *Probe selected tool." this will allow you to begin probing the current selected tool

"2: *Probe selected tool manually." this will allow you to manually bring the tool to the probe too be measured

"3: *Probe selected tool for breakage/wear." this allows you to re-evaluate a tool that has already been probed

"4: *Probe all tools." this will probe all tools that have been set up with probing option (Besides shell mills)

Automatic Probe Options

* Probe selected tool.

Run in MDI [CYCLE START]	Open Template in VPS [ENTER]	Exit [CANCEL]

Once the way of probing has been selected you will be given the option to:

"Run in MDI" which will allow you to probe the tool in a temporary program

"Open Template in VPS" will allow you to generate a G-code which can be saved to the clipboard or put into MDI

The work offset section of Offsets allows you to input and adjust the zero coordinates of a part in a certain offset

There are 106 offsets available, G54-G59 and G154 P1 - G154 P99

G52 is a global offset that will add any values in this row to all of the other rows. It will be cleared out once a "M30" is reached or a power cycle

G92 will so the same thing as G52 but will ONLY be cleared out if it is done manually

Offsets

G Code	Y Axis	Z Axis	A Axis	C Axis	Work Material
G52	0.	0.	0.	0.	No Material Selected
G54	-5.4037	-13.6200	0.	0.	No Material Selected
G55	-10.0001	-10.0000	0.	0.	No Material Selected
G56	0.	0.	0.	0.	No Material Selected
G57	0.	0.	0.	0.	No Material Selected
G58	0.	0.	0.	0.	No Material Selected
G59	0.	0.	0.	0.	No Material Selected
G154 P1	0.	0.	0.	0.	No Material Selected
G154 P2	0.	0.	0.	0.	No Material Selected
G154 P3	0.	0.	0.	0.	No Material Selected
G154 P4	0.	0.	0.	0.	No Material Selected
G154 P5	0.	0.	0.	0.	No Material Selected
G154 P6	0.	0.	0.	0.	No Material Selected
G154 P7	0.	0.	0.	0.	No Material Selected
G154 P8	0.	0.	0.	0.	No Material Selected
G154 P9	0.	0.	0.	0.	No Material Selected
G154 P10	0.	0.	0.	0.	No Material Selected
G154 P11	0.	0.	0.	0.	No Material Selected

F1 Set Value	F3 Probing Actions	F4 Tool Offsets
Enter A Value	ENTER Add To Value	

"F3" will bring you to the probing options:

Probing is a fast, autonomous, way of finding a part in your machine

Here you can choose from a variety of probing actions based on what needs to be probed

Material can be selected

G Code	Y Axis	Z Axis	A Axis	C Axis	Work Material
G52	0.	0.	0.	0.	No Material Selected
G54	-5.4037	-13.6200	0.	0.	No Material Selected
G55	-10.0001	-10.0000	0.	0.	No Material Selected
G56	0.	0.	0.	0.	No Material Selected
G57	0.	0.	0.	0.	No Material Selected
G58	0.	0.	0.	0.	No Material Selected
G59	0.	0.	0.	0.	No Material Selected
G154 P1	0.	0.	0.	0.	No Material Selected
G154 P2	0.	0.	0.	0.	No Material Selected
G154 P3	0.	0.	0.	0.	No Material Selected
G154 P4	0.	0.	0.	0.	No Material Selected
G154 P5	0.	0.	0.	0.	No Material Selected
G154 P6	0.	0.	0.	0.	No Material Selected
G154 P7	0.	0.	0.	0.	No Material Selected
G154 P8	0.	0.	0.	0.	No Material Selected
G154 P9	0.	0.	0.	0.	No Material Selected
G154 P10	0.	0.	0.	0.	No Material Selected
G154 P11	0.	0.	0.	0.	No Material Selected

F1 Set Value   F3 Probing Actions   F4 Tool Offsets

Enter A Value   ENTER Add To Value

In "Probe Action" you can choose from a variety of probing actions based on what needs to be probed

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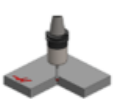In the "Material" section, the stock material can be selected
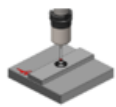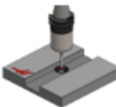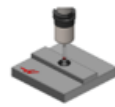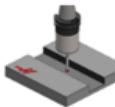
Bore   Boss   Rectangle Pocket   Rectangle Block   Web X Axis   Pocket X Axis   Web Y Axis
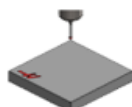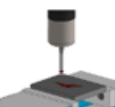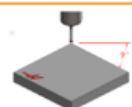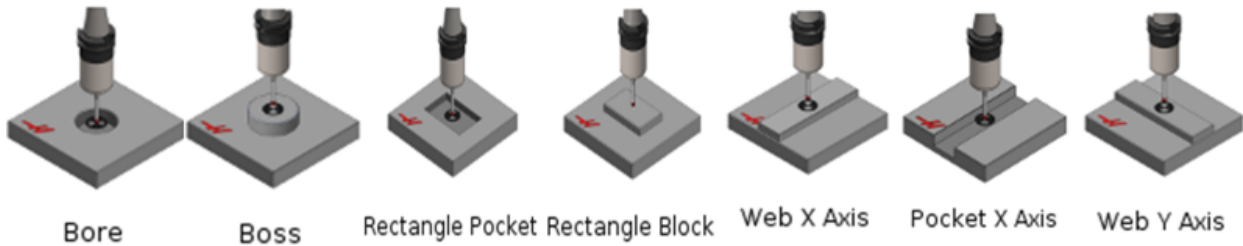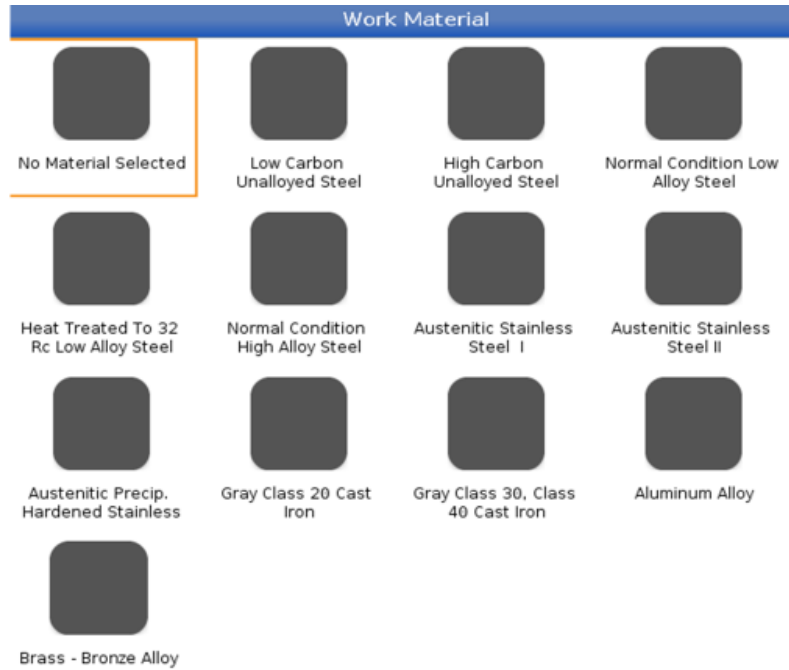
When probing there are many different options:

"Bore" is used the probe to find the center of an inner diameter

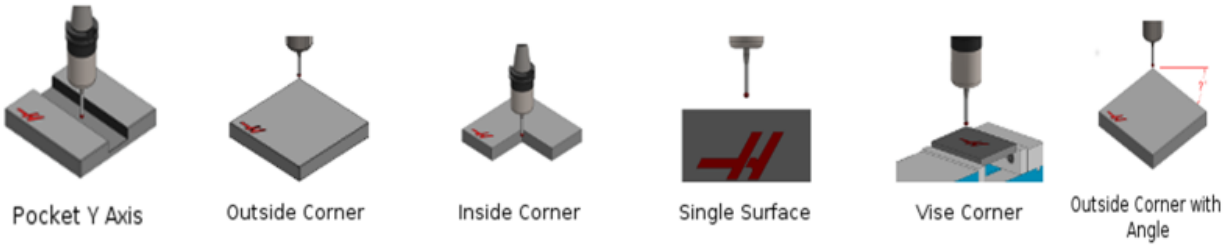"Boss" is used to find the center of an outside diameter

"Rectangle Pocket" is used to find the center of a rectangular pocket

"Rectangle Block" is used to find the center of an extruded rectangle

"Web X Axis" is used to find the center of a block in the X direction

"Pocket X Axis" is used to find the center of pocket in the X direction

"Web Y Axis" is used to find the center of a block in the Y direction

Pocket Y Axis   Outside Corner   Inside Corner   Single Surface   Vise Corner   Outside Corner with Angle

"Pocket Y Axis" is used to find the center of a pocket in the Y direction

"Outside Corner" is used to find the corner of a Block using the outside walls

"Inside Corner" is used to find the inside corner of a block using the adjacent walls

"Single Surface" is used to a surface of a single axis at a time

"Vise Corner" is used to find the top right corner of a block in the X,Y and Z axis

"Outside Corner with Angle" will allow you to measure an angle

Once a "Probe Action" is selected you can hit "Part Zero Set". After the probe should be brought to the approximate center

"WORK_OFFSETS" is where you can check to make sure you are in the correct work offset

"X" is looking to get the approximate length of the part in the X axis

"Y" is looking for the approximate length in the Y axis

"Z" is the distance you want the probe to go down below the part including the distance it is above the top

"I" and "J" are offsets that can be used to adjust where the zero will be set. These should be from the center of the part

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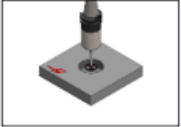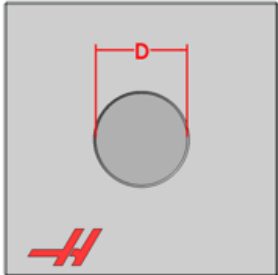
"D" is looking for the diameter of the part

The "Current Commands" display gives you access to multiple control
function tools

When you hit the "Current Commands" gives you access to multiple control function tools "Devices" tab can be used to show:

"Main Spindle Orient" will allow you to orient the spindle

"Main Spindle Brake" will engage and disengage the spindle break

"Tool Release" will release the tool from the spindle

When you hit the "Current Commands" gives you access to multiple control function tools "Timers" tab can be used to show:

The current date and time

The "Power On Time" tells you the total power on time

The "Cycle Start Time" tells you the total cycle start time

Total feed time

The M30 counter

These can be changed with different codes to display information that you need

Current Commands

Timers	Macro Vars	Active Codes	ATM	Tool Table	Calculator	Media

Macro Variables   10400 - 10999 (Global) ▶

(Local) 1 - 33	(Global) 10000 - 10199	(Global) 10200 - 10399

Var	Value	Var	Value	Var	Value
1		10000	0.000000	10200	0.000000
2		10001	0.000000	10201	0.000000
3		10002	0.000000	10202	0.000000
4		10003	0.000000	10203	0.000000
5		10004	0.000000	10204	0.000000
6		10005	0.000000	10205	0.000000
7		10006	0.000000	10206	0.000000
8		10007	0.000000	10207	0.000000
9		10008	0.000000	10208	0.000000
10		10009	0.000000	10209	0.000000
11		10010	0.000000	10210	0.000000
12		10011	0.000000	10211	0.000000
13		10012	0.000000	10212	0.000000
14		10013	0.000000	10213	0.000000

*Legacy 3 digit macros begin at 10000 Range. i.e. Macro 100 will be displayed as 10100.

This displays the local and global macro variables available on the control

Current Commands

Timers	Macro Vars	Active Codes	ATM	Tool Table	Calculator	Media

G-Codes	Address Codes		DHMT Codes		Speeds & Feeds	
G00	N	0	D	00	Programmed Feed Rate	0.
G17	X	0.	H	00	Actual Feed Rate	0.
G90	Y	0.	M	00	Programmed Spindle Speed	0.
G94	Z	0.	T	00	Commanded Spindle Speed	0.
G20	I	0.			Actual Spindle Speed	0.
G40	J	0.				
G49	K	0.				
G80	P	0				
G98	Q	0.				
G50	R	0.				
G54	O	000000				
G64	A	0.				
G69	B	0.				
G255	C	0.				
	U	0.				
	V	0.				
	W	0.				
	E	0.				

The "Active Codes" display the codes that are currently being used by the machine

The "TOOLS" tab has extra information regarding the machine tooling

The "Tool Table" tab in the allows you to input information about your tools:

In the "Category" section, the weight of the tool controls how fast a tool can be changed. Also, the tool can be set to large to make sure clear the pockets on either side of the tool

In the "Tool" section, the tool number can be changed based on what pocket it is in

"Tool Usage" will give information on the tools being used in a program. This information will be cleared out when the machine reaches a M99, M199 or M299

The "ATM" (Advanced Tool Manager)allows operator to set up redundant tools that will expire based on tool usage parameters setup by the operator

When tool life expires for one tool in the group the control will automatically grab the next available tool in the group

Current Commands

| Devices | Timers | Macro Vars | Active Codes | Tools | Plane | Calculator | ◀ ▶ |

Tool Table | Tool Usage | ATM

F4 To Switch Boxes   Allowed Limits   Active Tool: 1

Group	Expired Count	Tool Order	Holes Limit	Usage Limit	Life Warn %	Expired Action	Feed
All	-	-	-	-	-	-	-
Expired	0	-	-	-	-	-	-
No Group	-	-	-	-	-	-	-
Add Group	-	-	-	-	-	-	-

Tool Data For Group: All

Tool	Pocket	Life	Holes Count	Usage Count	Usage Limit	H-Code	D
1	0	100%	0	1	0	0	0
2	1	100%	0	0	0	0	0
3	2	100%	0	0	0	0	0
4	3	100%	0	0	0	0	0

INSERT Add Group

Current Commands

| Timers | Macro Vars | Active Codes | ATM | Tool Table | Calculator | Media |

Standard | Milling | Tapping

The "Calculator" tab can be used to do many different calculations including:

Calculations on a basic scientific calculator

7	8	9	+ [D]	+/- [E]	MS [S]
4	5	6	- [J]	sqrt [K]	MR [R]
1	2	3	* [P]	% [Q]	MC [C]
(	0	)	/ [V]		
Clear [ORIGIN]		.		Enter	

F2 Switch Entry To Input Line

INSERT To append to INPUT line.

ALTER To replace INPUT line.

ORIGIN Reset Calculators

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The "Calculator" tab can be used to do many different calculations including:

Milling speeds and feeds

The "Calculator" tab can be used to do many different calculations including:

Calculations required for properly tapping

The "F2" button can be used to switch between a line being enter and calculated

"INSERT" can be used to add to highlighted value

The "ALTER" button can be used to replace the number that has been put in

The "Delete" button will clear the current line

The "ORIGIN" button will clear all current inputs

"F3" can be used to copy The value from the "Standard Calculator" and paste it into the selected line

"F4" will copy and paste the selected line into the "Standard Calculator"

The "Media" tab is used to display the Media Player

The "ALARMS" button can used to find any alarms
and messages that the machines has

In the "Active Alarms" tab can be used to see any alarms that your machine currently has, along with a brief description of the alarm

The "Messages" tab can be used to leave notes and information in the machine. The notes will be saved when the machine is turned off

"Alarm History" tells you all of the previous alarms

"Alarm Viewer" is used to see all of the alarms that can appear

Alarms And Messages				
Active Alarms	Messages	Alarm History	Alarm Viewer	Key History

SPACE	2017/06/19 13:13:50
A	2017/06/19 13:13:50
L	2017/06/19 13:13:51
L	2017/06/19 13:13:52
E	2017/06/19 13:13:53
N	2017/06/19 13:13:54
D	2017/06/19 13:13:55
A	2017/06/19 13:13:56
L	2017/06/19 13:13:57
E	2017/06/19 13:13:57
VK_SHIFT	2017/06/19 13:13:59
!	2017/06/19 13:14:01
VK_SHIFT RELEASED	2017/06/19 13:14:01
VK_RIGHT	2017/06/19 13:15:45
VK_UP	2017/06/19 13:15:46
VK_UP	2017/06/19 13:15:47
VK_RIGHT	2017/06/19 13:15:48
VK_RIGHT	2017/06/19 13:16:43
VK_RIGHT	2017/06/19 13:17:38

"Key History" logs all user key strokes

The "Diagnostic" button can be used to show the information needed to make sure the machine is running correctly
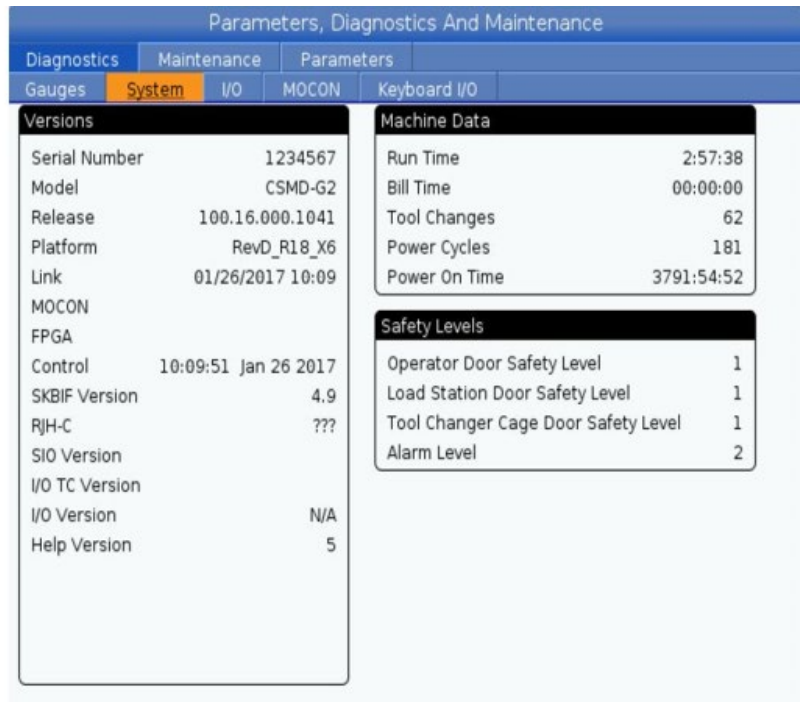
The "Diagnostic" button can be used to show the information needed to make sure the machine is running correctly:

in the "Diagnostics" tab you can see various pieces of information about the machine:

The "Gauges" tab shows various information about the machine's current state
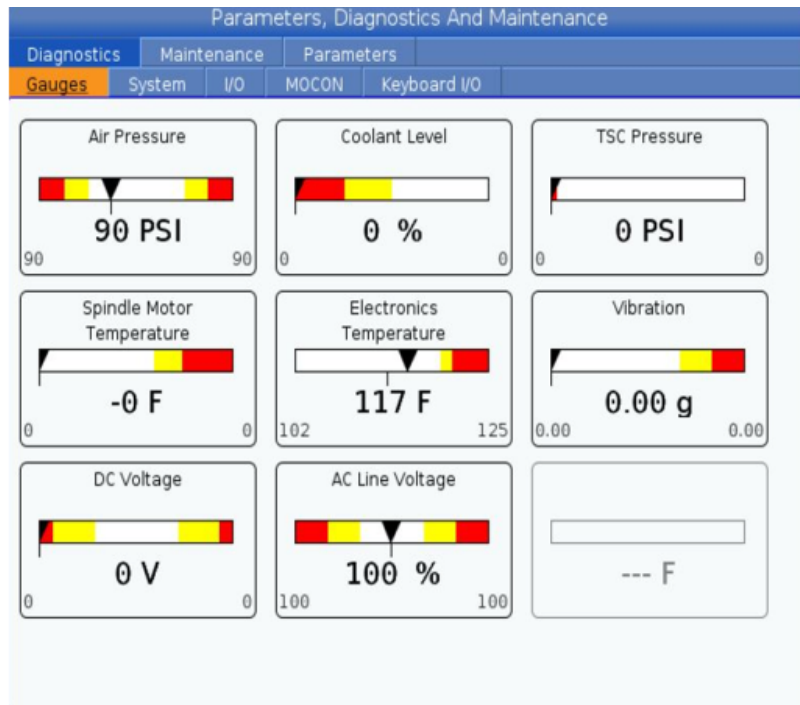
The "System" tab gives you information about the machine's configuration

"I/O", "MOCON" and "Keyboard I/O" are used to display to see if components are working properly on the control

The "Maintenance" tab shows the information about the machine's lubrication system and coolant information

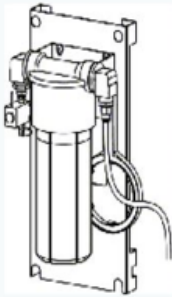The "Lube" tab allows you to test the that the lubrication system is working properly using "F2" and "F3"

Diagnostics | Maintenance | Parameters

Lube | Coolant Refill
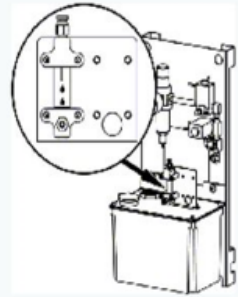
Coolant Refill Settings	Value	Units
Coolant Refill	Off	
Estimated Coolant Use Per Hour	1.0	Gal
Coolant Concentrate	5	%
Time Between Refills	5.0	Hrs
Maximum Coolant From Remaining Concentrate	500	Gal
Supply Water Rate	2.0	Gal/Min
Concentrate Adjustment	0	%

Coolant Level

0 %

0   0

F3 Add 5 gallons of coolant   F4 Concentrate tank refilled

The "Coolant Refill" tab is used to input information regarding coolant refill settings

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Parameters, Diagnostics And Maintenance

Diagnostics | Maintenance | Parameters

Features | Compensation | Activation

Search (TEXT) [F1], or [F1] to clear.

Feature	Status	Date:
☑ Machine	Purchased	Acquired 05-11-16
☑ Macros	Purchased	Acquired 06-19-17
☑ Rotation And Scaling	Purchased	Acquired 06-19-17
☑ Rigid Tapping	Purchased	Acquired 06-19-17
☑ TCPC and DWO	Purchased	Acquired 06-19-17
☑ M19 Spindle Orient	Purchased	Acquired 06-19-17
☑ High Speed Machining	Purchased	Acquired 06-19-17
☑ VPS Editing	Purchased	Acquired 06-19-17
☑ Media Display	Purchased	Acquired 06-19-17
☑ Fourth Axis	Purchased	Acquired 06-19-17
☑ Fifth Axis	Purchased	Acquired 06-19-17
☑ Custom Rotaries	Purchased	Acquired 06-19-17
☑ Max Memory: 1GB	Purchased	Acquired 06-19-17
☑ Wireless Networking	Purchased	Acquired 06-19-17
☑ Compensation Tables	Purchased	Acquired 06-19-17
☑ Through Spindle Coolant	Purchased	Acquired 06-19-17
☑ Max Spindle Speed: 15000 RPM	Purchased	Acquired 06-19-17

*Tryout time is only updated while Feature is enabled.

ENTER Turn On/Off Feature   F4 Purchase Feature With Entered Activation Code.

The "Parameters" tab additional features on the machine, allows you to adjust the different axis, and displays the machine information for activation

The "Features" tab allows you to turn on and off different features of the machine and allows you to unlock purchased features

Parameters, Diagnostics And Maintenance

Diagnostics	Maintenance	**Parameters**
Features	**Compensation**	Activation

X | Y | Z | A

X Axis Lead Screw Compensation

NO.	Position	Correction(MM)
1	-0.000	0.0000
2	-2.000	Empty
3	-4.000	Empty
4	-6.000	Empty
5	-8.000	Empty
6	-10.000	Empty
7	-12.000	Empty
8	-14.000	Empty
9	-16.000	Empty
10	-18.000	Empty
11	-20.000	Empty
12	-22.000	Empty
13	-24.000	Empty
14	-26.000	Empty
15	-28.000	Empty
16	-30.000	Empty

F1 10.0 MM / 0.5 Inch Increments

F2 25.0 MM / 1.0 Inch Increments

F3 50.0 MM / 2.0 Inch Increments

F4 100.0 MM / 4.0 Inch Increments

ALTER Change Dimensions (MM/IN)

ORIGIN Clear Table Values

DELETE Delete Value

"Compensation" allows you to adjust the X,Y and Z compensation based on position

Parameters, Diagnostics And Maintenance

Diagnostics	Maintenance	**Parameters**
Features	Compensation	**Activation**

Machine Was Unlocked Successfully

Call Your Haas Factory Outlet

Serial Number:	1234567
Mac Address:	00:C0:08:88:50:A0
Software Version:	100.16.000.1041
Bill Time:	00:00:00
Machine Generated Code:	93673

ENTER Activate Machine With Entered Code

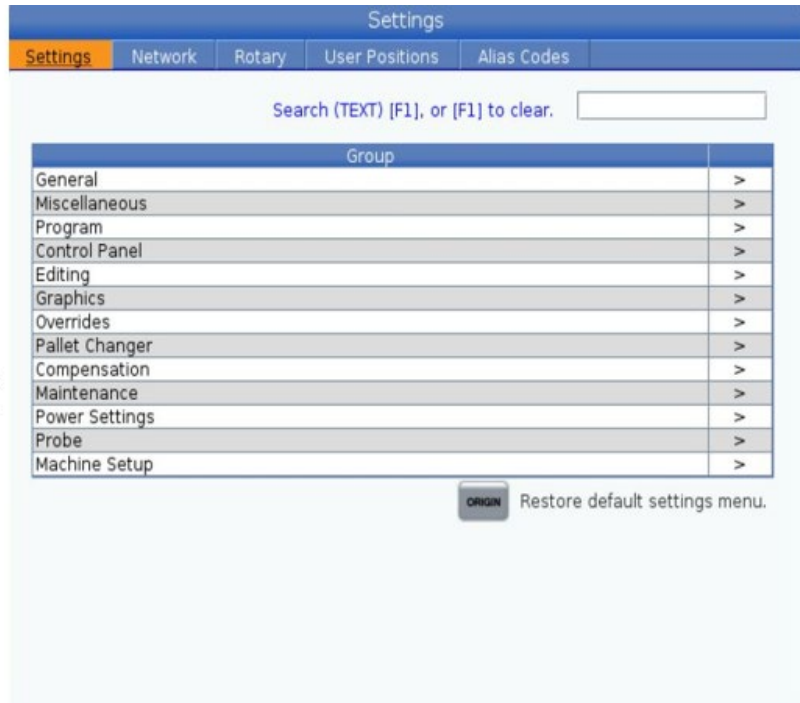"Activation" gives you information about the machine's software and remaining time until an activation code will be needed

The "Setting" button is used to adjust different settings, connecting your machine to the internet, set-up rotaries and user positions

The "Setting" button allows you to adjust the various settings in the machine

The "Settings tab" allows you to adjust and override different functions of the machine

The "Network" tab gives you information about the machine's connection to a network

To connect your machine to the internet:

Go to "Wired Connection for connecting your machine using an Ethernet cable by turning on "Wired Network Enabled" and "Obtain Address Automatically" then pressing "F4"

Go to "Wireless Connection" for connecting your machine with an antenna. Press "F2" in order to search for your WiFi network then input your network's password
• Passwords are case sensitive and may require you to use the shift key for lower case n letters
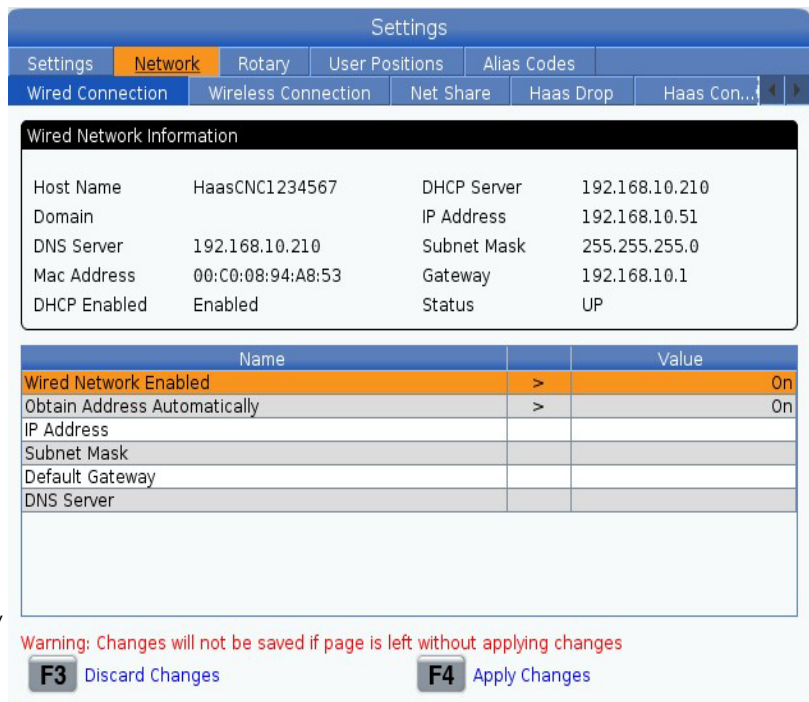
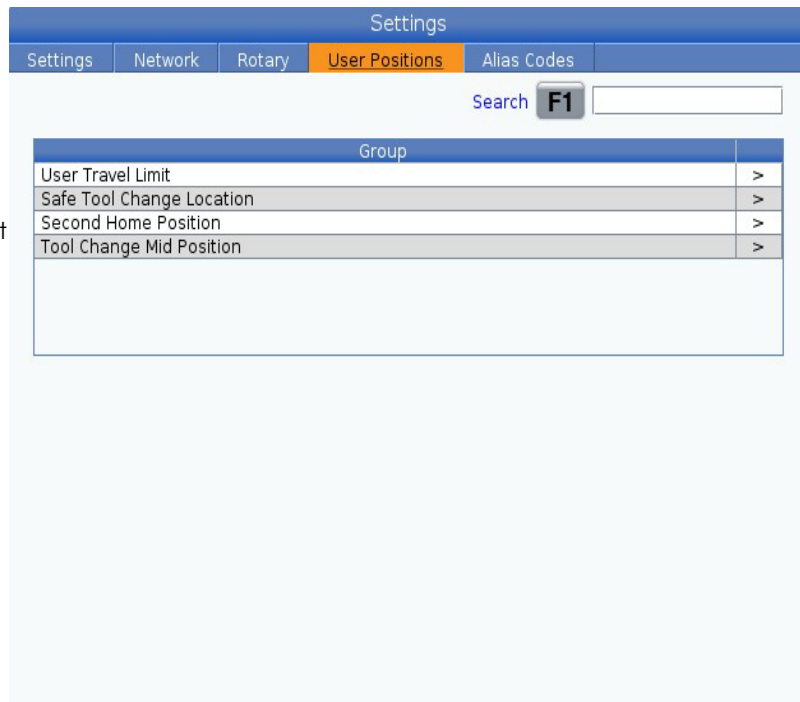The "Rotary" tab is used to activate and configure rotary files and set up
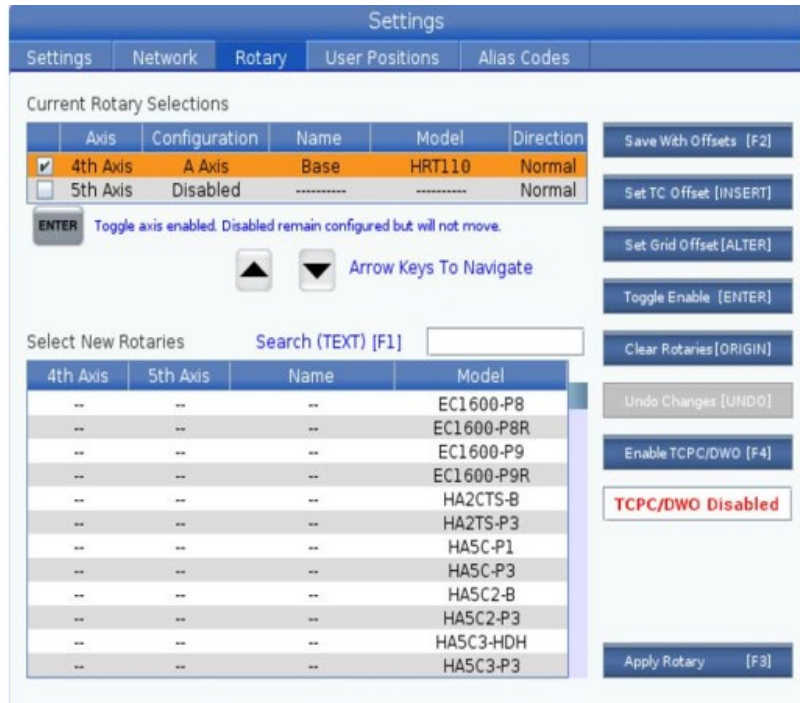
"User Position" allows you to define positions in the machine

User Travel Limit: Allows users to set soft limits for how far the machine can travel. This will affect where the machine when move manually or in a program

Second Home Position: Sets the location for the "Second Home Position" button option

Tool Change Mid Position: Sets a location for the machine to go to anytime a tool change is done

"Alias Codes" are user defined codes that can be used to reference a program from a sub program

In the "Network" tab there is a "Wired Connection" tab that:

" Wired Network Enabled" activates and deactivates the wired networking

"Obtain Address Automatically" retrieves IP address and other networking information if the network server is capable

"IP Address" is the machine's TCP/IP on the network

"Subnet Mask" is your network administrator assigns the subnet mask value for machines
with a static TCP/IP address

"Default Gateway" is the address for your machine to access the network

"DNS Server" is the Domain Name Server

In the "Network" tab there is a "Wireless Connection" tab that:

To connect it is required to know the (if you do not have a Dynamic Host Configuration Protocol [DHCP]):
IP address
Subnet Mask address
Default Gateway address
DNS server address

Also, you will need your SSID and password to connect

"F2" can be used to search for available networks

"INSERT" can be used to enter a network in manually
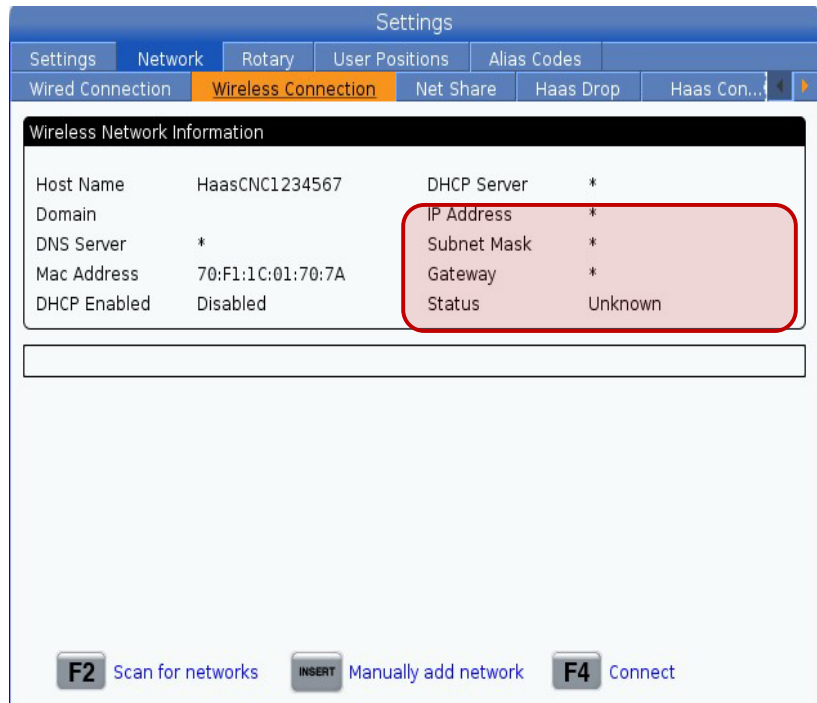
In the "Net Share" tab allows you to connect to computers to send and receive files

"Cnc Network Name" is the name of the machine which is defaulted to "HAASMachine" but can be changed

"Domain/Workgroup Name" is the name of the owner/company

"Remote Net Share Enabled" when "On" the machine shows its content in the shared folder. This feature allows the machine to connect to a server

"Local Net Share Enabled" when "On" allows machine to access the User Data directory to computers on the network
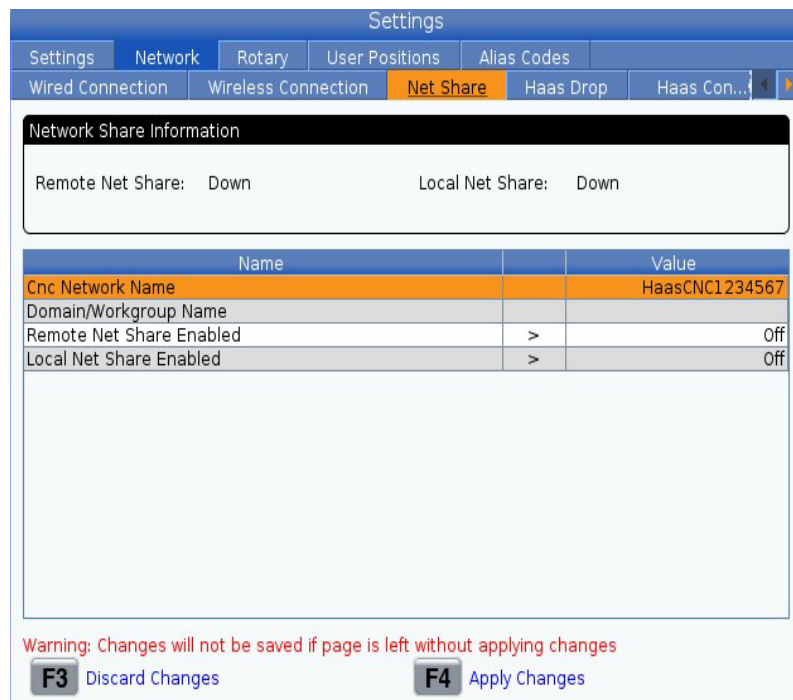
"HAAS Drop" allows users to wirelessly drop files on to the machine using the HAASDrop app

"HAAS Connect" is a web-based application that allows you to access your machine's status from a mobile phone or computer

To use this service, you must set up an account at myhaascnc.com, add users and machines, and designate the alerts you want to receive

"Remote Display" allows to the machine control screen to be viewed from devices connected to the same internet network. You will have to:

1) Download the VNC Viewer app
2) Turn the setting on
3) Create a password for the connection
4) In VNC Viewer you will have to search for the machine IP address (Displayed in the Wireless/Wired Connection tab)

Settings

| Settings | Network | Rotary | User Positions | Alias Codes | |
| Wireless Connection | | Net Share | Haas Drop | Haas Connect | Remote Display ◄ ► |

Remote Display Status

Remote Display: Up

Name		Value
Remote Display	>	On
Remote Display Password		************

Warning: Changes will not be saved if page is left without applying changes

F3 Discard Changes   **F4** Connect

The "HELP" button can be used when further assistance is needed with machine functions, commands or programming in the printed manual
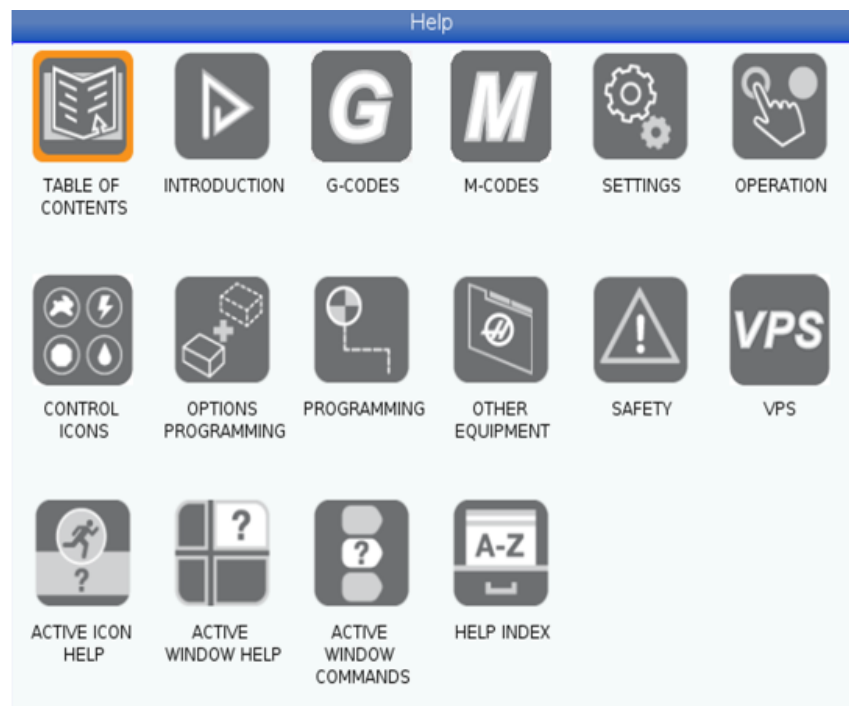
OVERRIDE KEYS

While running a program you can:

Adjust the feed rate of the machine by increments of 10%

The feed rate can be reset straight to 100%

The feed rate can be controlled by the "Handle Jog" wheel a percent at a time

The same can be done with the Spindle Speed

The direction of the spindle can also be changed

The rapid movement can be decreased to different increments

JOG KEYS

The "CHIP FWD", "CHIP STOP" and "CHIP REV" control the Chip Auger/Conveyor

The "CLNT UP" and "CLNT DOWN" control the Programable Coolant nozzle position

The "AUX CLNT" enable/disables the Through-Spindle Coolant system

Function Keys

The "RESET" Button is used to clear alarms, clear input text, stop the machine if its running a program and bring a program to the top of the page

The "POWER UP" button brings all of the machine's axis to zero

The "RECOVER" puts the tool changer into recovery mode

The F1 to F4 button are used to show different functions. They are different depending on the page you are on

"TOOL OFFSET MEASURE" records the length of the tool during the part set up

"NEXT TOOL" selects the next tool from the tool changer only after "TOOL OFFSET MEASURE" has been pressed

"TOOL RELEASE" release the tool from the spindle

"PART ZERO SET" records the machine's coordinate offsets during part setup

15 Easy Steps for Preventive Maintenance on Your HAAS VMC

1. Clean chips from tool changer (50 hours of running)

2. Clean chips from way covers and bottom pan (50 hours of running)

3. Grease pull studs (50 hours of running)

4. Clean and lubricate the spindle taper (50 hours of running)

5. Inspect the tool changer cambox oil level (200 hours of running)

6. Inspect the axes grease reservoir lubrication tank level (200 hours of running)

7. Inspect way covers and lubricate (200 hours of running)

8. Clean vector drive air vents and filters (200 hours powered on)

9. Inspect the oil levels of the gearbox (200 hours powered on)

10. Clean coolant filter, replace coolant and clean coolant tank (1200 hours powered on)

11. Inspect hoses for cracking (1200 hours powered on)

12. Check probe batteries and calibration (1200 hours powered on)

13. Grease tool changer cams (2400 hours of running)

14. Replace and clean oil, oil filter and oil tanks (2400 hours of running)

15. Replace gearbox oil (2400 hours powered on)

(201)327-5215
service@alledalemachinery.com
www.HFOAllendale.com

All maintenance intervals are recommended but can vary based on use.

<u>Resources</u>

[Haas Automation, Inc YouTube Channel](#)

[HAASCNC.com](#)

[HAAS Online Certification Program](#)