

VERSABUILT ROBOTICS



Mill Automation System Operator's Manual

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Safety Warnings

DANGER: VersaBuilt makes industrial machine tool automation components designed to be operated by trained personnel only. Machine tool automation components may move suddenly and without warning. Serious or fatal crushing injuries can occur from contact with the robot, gripper or vises.

Before deploying VersaBuilt industrial machine tool automation components, a safety risk assessment must be completed in accordance with local, state and/or federal requirements.

VersaBuilt industrial machine tool automation components should only be used by trained operators.

Read and understand the VersaBuilt Mill Automation System Safety Manual before proceeding

Selecting Pneumatic Automatic vs Manual Mode

Section 2

Selecting Automatic vs Manual Mode

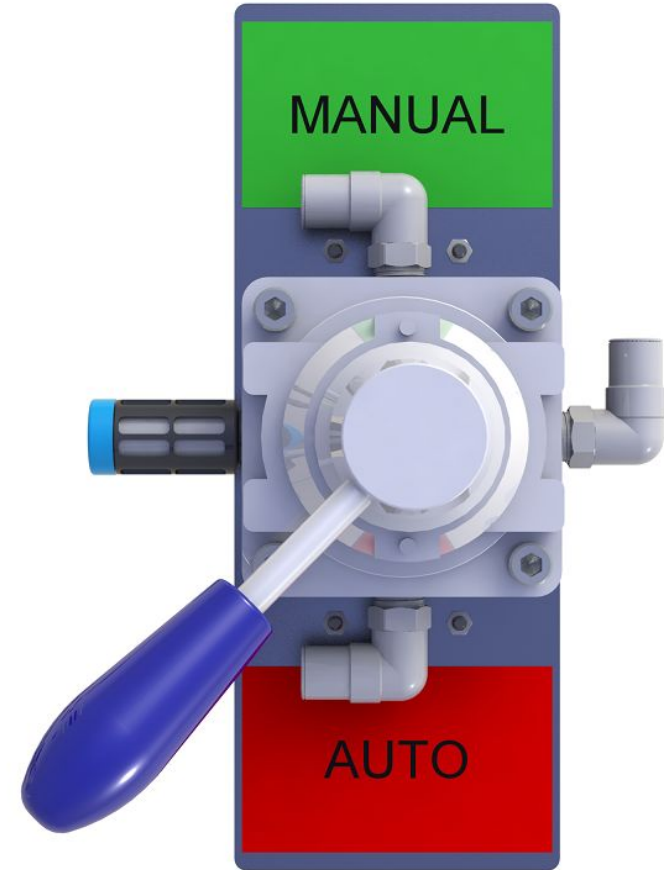
The Mill Automation System has 2 pneumatic modes: Auto and Manual

- Auto mode is for running parts in the CNC with robotic tending
- Manual mode is for running parts in the CNC via hand loading

When the system is in Auto Mode, air to the hand valves on the CNC table is blocked.

When the system is in Manual Mode, air to the VSC Mill Panel is blocked, disabling automatic functionality.

Switching between these 2 modes is done by way of the Diverter Valve and the Vise Hand Valves

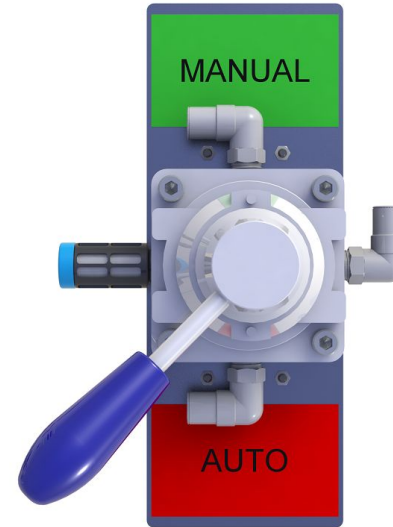


Diverter Valve shown in “Auto-Mode”

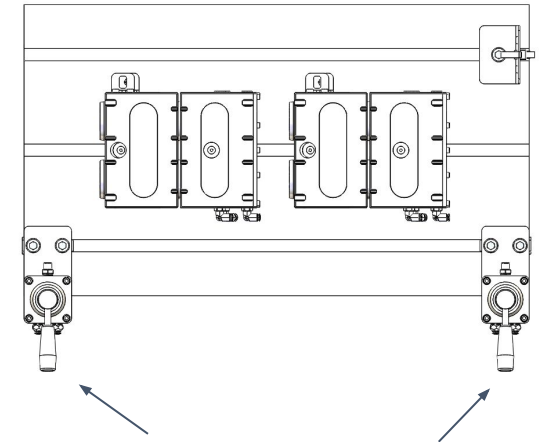
Selecting Pneumatic Automatic vs Manual Mode

Setting Automatic Mode:

1. Be prepared for sudden movement and keep all body parts away from the vises gripper, door opener and/or VersaBlast when moving the Diverter Valve switch
2. Set each Vise Hand Valve to the center position
3. Ensure all persons are clear of the vises, gripper, door opener and VersaBlast
4. Move the Diverter Valve handle to the AUTO position
5. From the VSC Recovery panel, verify the vises are opening and closing correctly



Diverter Valve shown in "Auto-Mode"

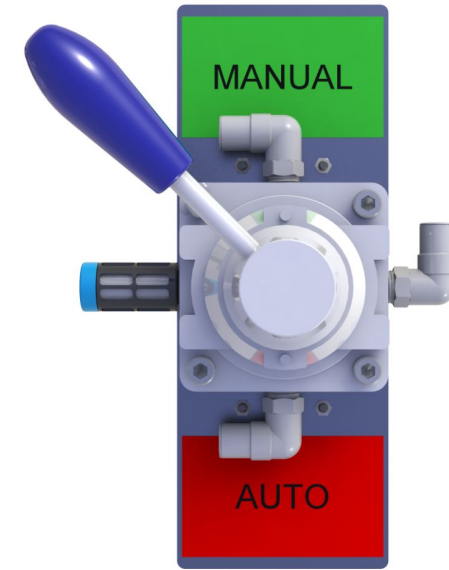


Vise Hand Valves shown in center position

Selecting Pneumatic Automatic vs Manual Mode

Setting Manual Mode:

1. Be prepared for sudden movement of the vises, gripper, door opener and/or VersaBlast
2. Ensure all persons are clear of the vises, gripper, door opener and VersaBlast
3. From the VSC Recovery panel, **press the Float Vises button**
4. Move the Diverter Valve handle to the MANUAL position
5. With ALL body parts clear of each vise, set each Vise Hand Valve away from the center position
6. For systems with Air Boosters, cycle air by opening and closing the vises 3 to 5 times after switching from Auto to Manual and pressing vise float on the recovery screen



Diverter Valve shown in “Manual-Mode”

Note: When MultiGrip OD Jaws are in the Robot Gripper and the diverter valve is shifted to Manual position, the Jaws will SPRING OPEN releasing any clamped material

Accessing VSC Home Screen and Navigation

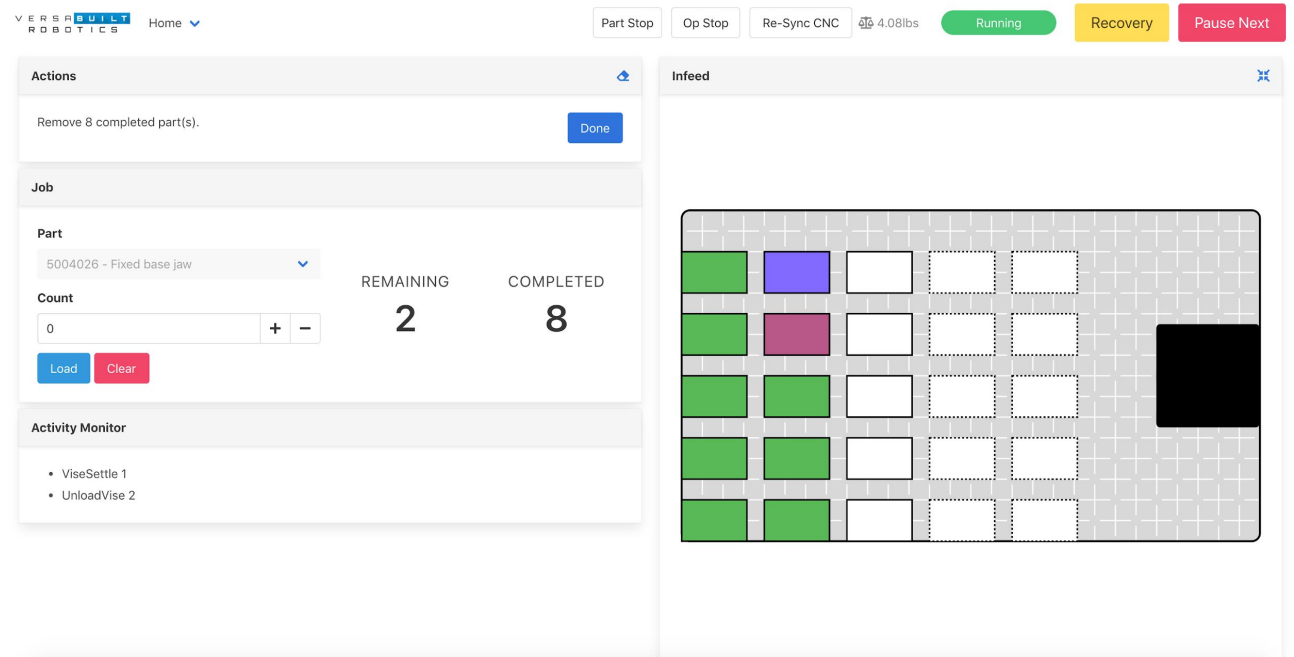
Section 3

Accessing the VersaBuilt System Controller

The VSC can be accessed by any computer, tablet or phone with Wi-Fi or Ethernet using a web browser such as Google Chrome.

VersaBuilt recommends dedicating a laptop computer or a full-sized tablet (10" or greater) such as an iPad.

The VSC can be accessed via a smartphone or small tablet, with some changes to how the user interface is displayed.



Accessing the VersaBuilt System Controller (VSC)

Connecting to the VSC via Ethernet

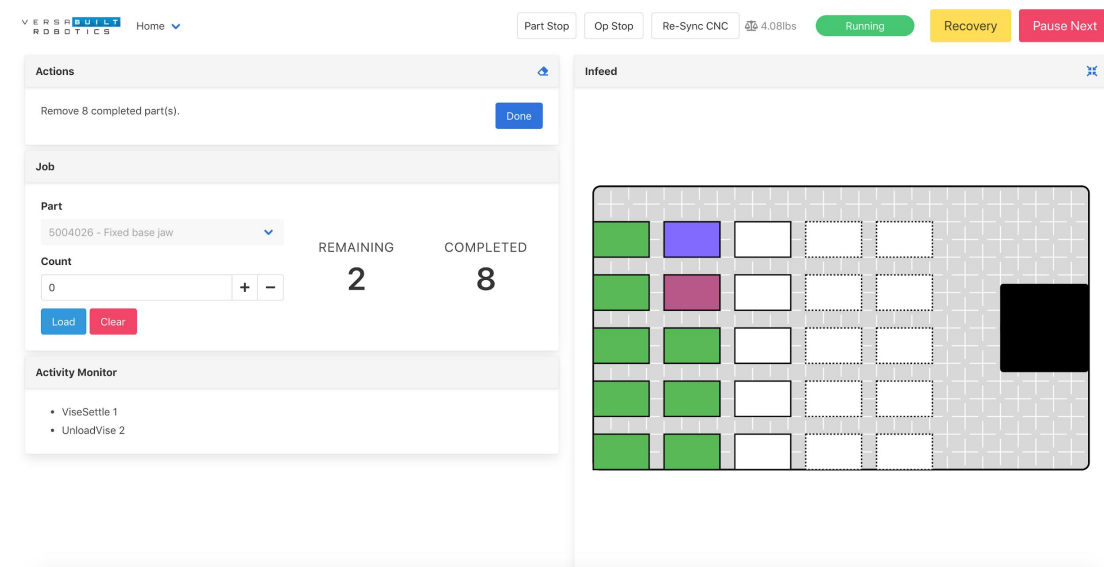
For an Ethernet device such as a laptop, plug the device into an available port on the Ethernet switch the VSC is plugged into. For most computers, the ethernet port will be automatically configured to access the VSC.

Open up a web browser and enter the following into the address bar:

192.168.2.1:9000

The VSC home page should appear. If the VSC home page does not appear, go to the computer's Ethernet settings and configure the Ethernet port for:

DHCP: Obtain an IP Address Automatically



Accessing the VersaBuilt System Controller (VSC)

Connecting to VSC via VSC Wi-Fi Access Point

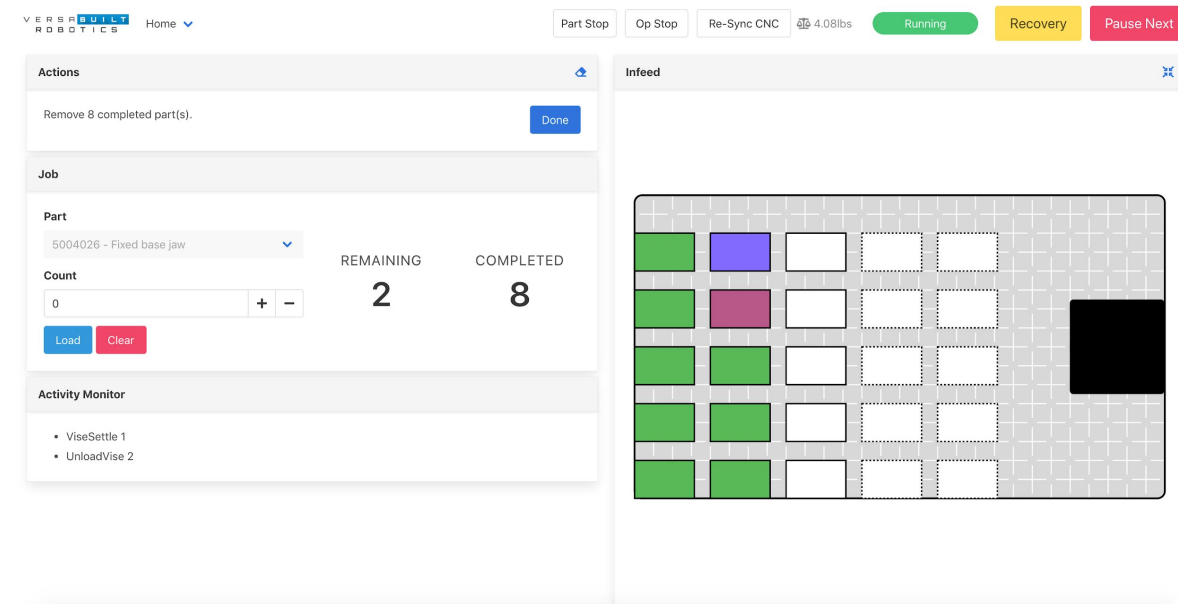
For a Wi-Fi connected device such as an iPad, device network settings will be automatic. Open your device's Wi-Fi settings and search for a network named vscXXXXXX where the XXXXX is the serial number of your VSC (e.g., vsc00125).

Connect to the VSC Access Point, using the password: **versabuilt**

Once connected to the access point, open a web browser and enter the following address:

192.68.4.1:9000

The VSC home page should appear

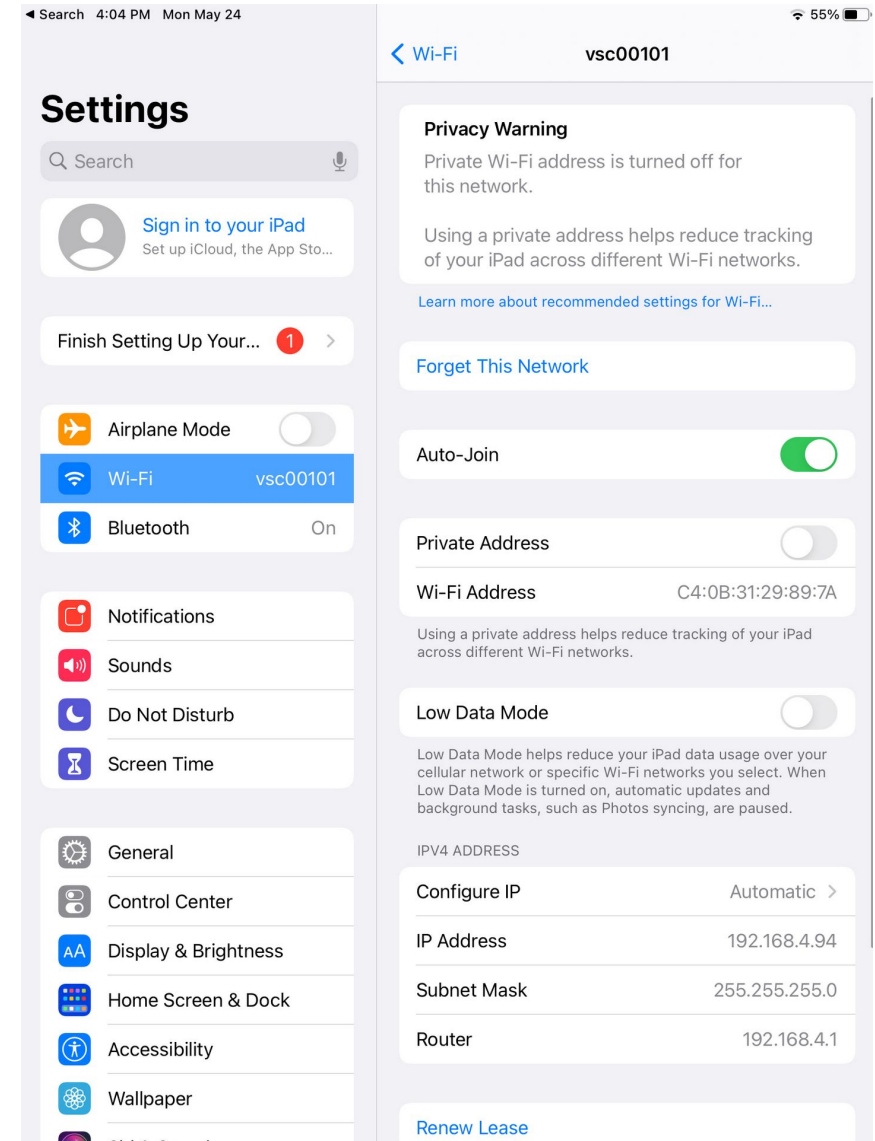


Accessing the VersaBuilt System Controller (VSC)

Configuring Wi-Fi settings for the VSC

Because the VSC does not have an Internet connection, your device may try to automatically connect to another Wi-Fi access point. To prevent this, do two things:

1. Select Auto-Join on the VSC Wi-Fi network
2. If the device has previously connected to any other Wi-Fi network, modify the settings for that Wi-Fi network to “forget” the settings

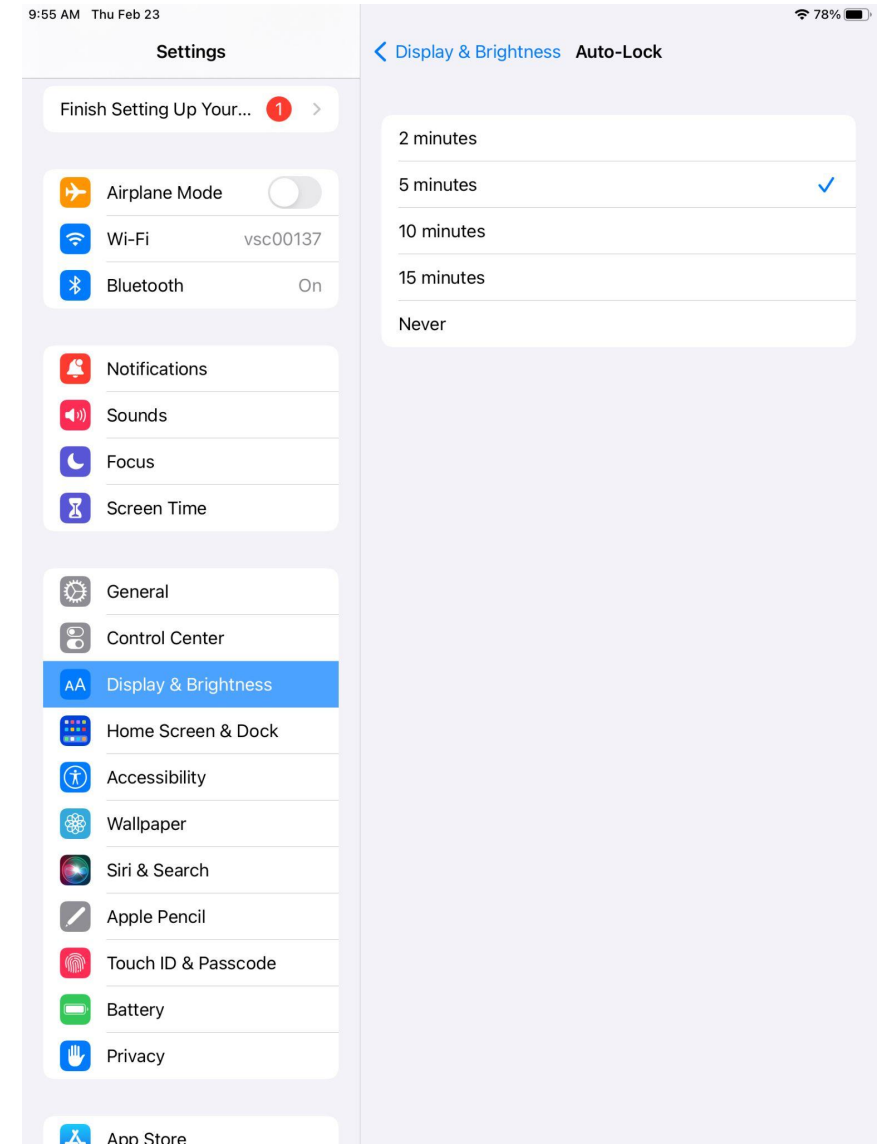


Accessing the VersaBuilt System Controller (VSC)

VersaBuilt Recommends Setting iPad/Tablet Screen Timeout to 5 minutes

If the screen goes to sleep during part configuration, anything entered will be lost. To change this setting Follow these steps:

1. Go to settings
2. Select Display & Brightness
3. Select Auto Lock
4. Select 5 minutes

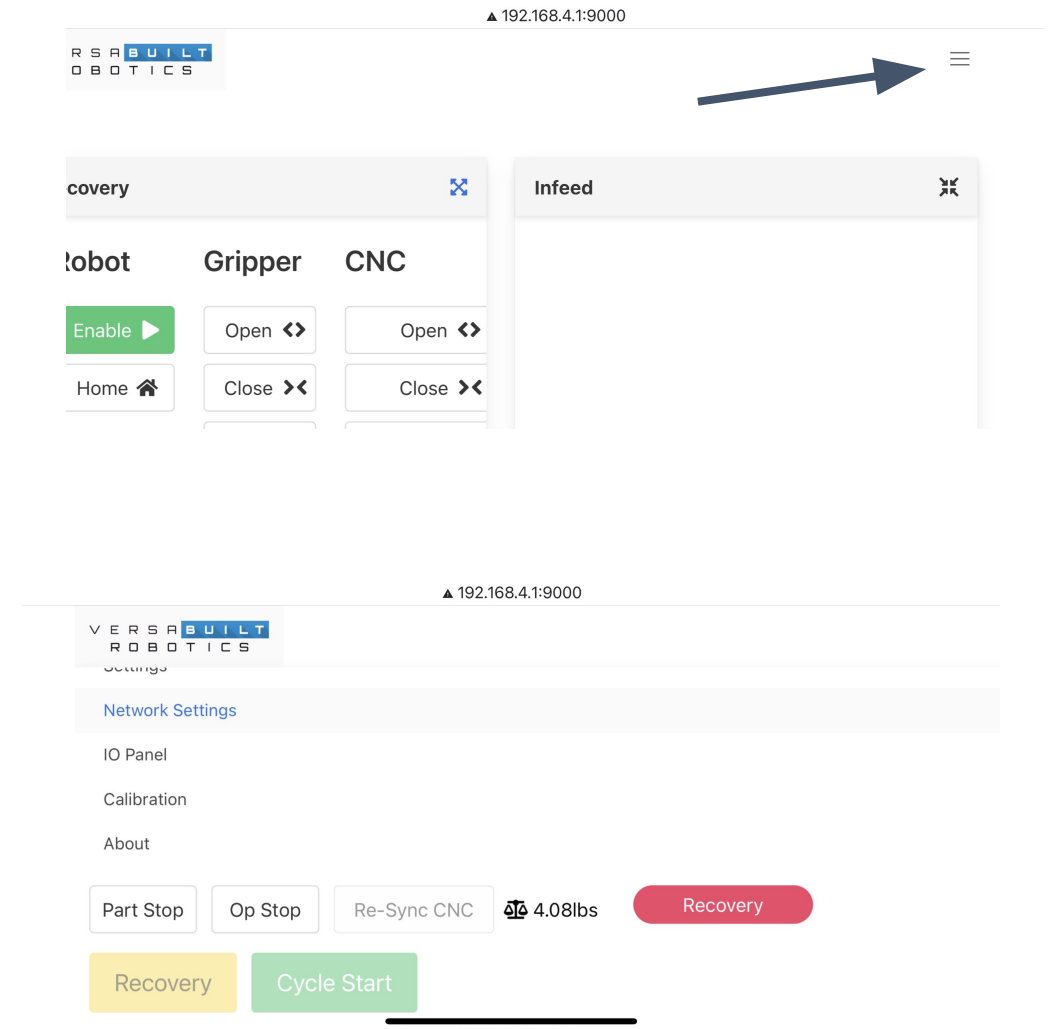


Using the VSC on Smartphones and Small Tablets

When accessing the VSC on smartphones and smaller tablets, the display changes to accommodate the smaller screen.

Page navigation, VSC Status Bar and Cycle control buttons are accessible via the “hamburger” menu in the upper right of the screen on smaller devices.

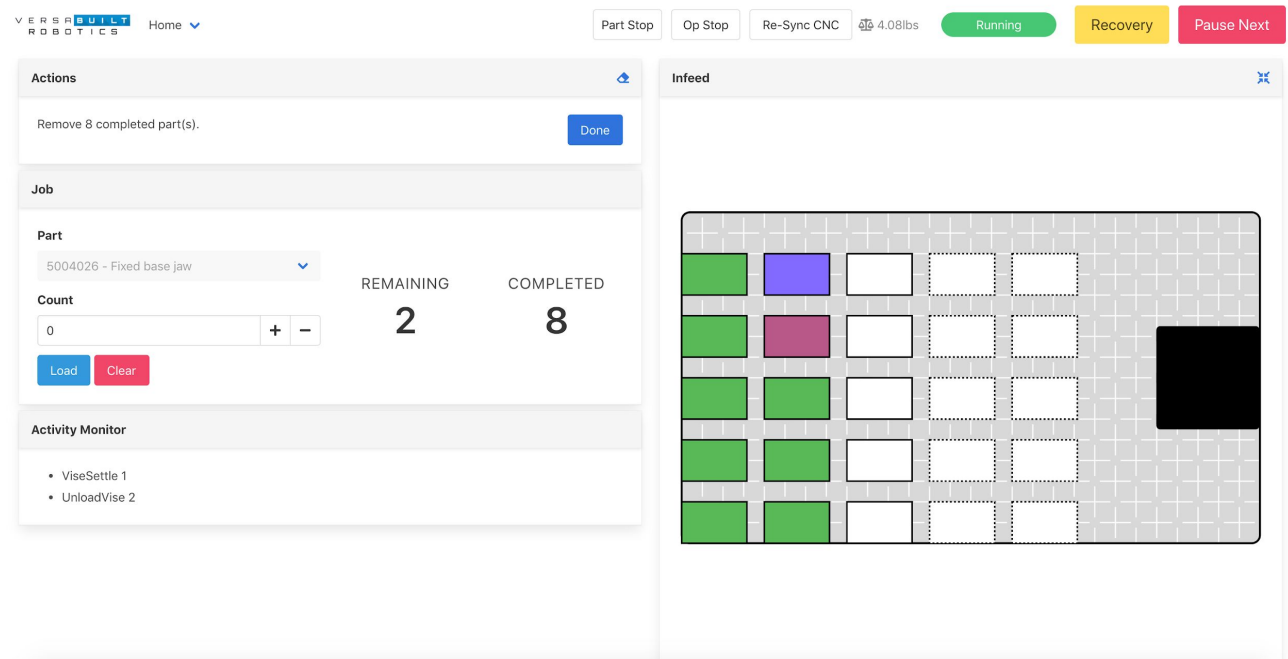
Use your finger to pan the screen to the upper right to access the hamburger menu then use your finger to pan the page to access items in the menu.



Robot-Specific VSC Configuration

Some robots require a VersaBuilt program to be run on the robot's teach pendant or the robot to be put in a special mode for the VSC to be able to control the robot.

Check the VersaBuilt Robot Installation, Configuration and Operation manual that matches your robot make and model for additional steps required to enable operation with the VSC.



VersaBuilt System Controller Home Screen

VERSABUILT
ROBOTICS

Home ▾

Part Stop

Op Stop

Re-Sync CNC

4.08lbs

Running

Recovery

Pause Next

Actions

Remove 8 completed part(s).

Done

Job

Part

5004026 - Fixed base jaw ▾

Count

0

+

-

REMAINING

2

COMPLETED

8

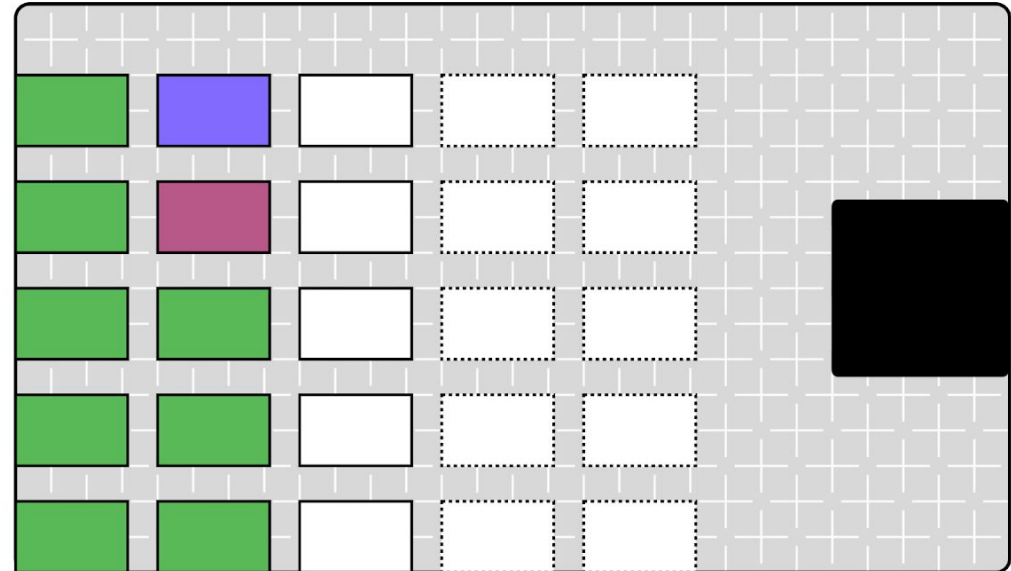
Load

Clear

Activity Monitor

- ViseSettle 1
- UnloadVise 2

Infeed



VSC Status Bar



4.08lbs

Re-Sync CNC

Idle

Cycle Start

Pause Next

Recovery

Navigation - allows navigation between the available VSC Pages

Part Stop will pause after current part is complete, Op Stop will pause after current CNC op

Robot Payload: current payload of the robot, click on the payload to change the payload

Processing Mode - the processing mode of the VSC system; one of Running, Paused, Recovery or Idle


Control Buttons:

- Cycle Start: when Processing Mode is Idle and job is configured, begins processing
- Pause Next: when Processing Mode is Running, pauses robot motion after current motion commands are complete
- Recovery: Enters Recovery Mode

Actions Panel



The Actions Panel displays steps required to exit recovery and/or start a job, such as loading jaws onto vises and moving to a home position.

When finished with the action confirm the action complete by clicking on the  button associated with the action.

Job Panel and Activity Monitor

Job

Part

test part - test part

Count

0

+

-

REMAINING

0

COMPLETED

0

Load

Clear

Activity Monitor

No current activity

The Job Panel allows the operator to select a part configuration and a part count and load a job for processing. Remaining displays how many parts remain and Completed shows how many parts have completed for the current Job.

The Activity Monitor shows what the VSC is currently doing or what step the VSC is waiting to complete before additional processing.

Running Jobs and Aligning Parts in the Visual Infeed System

Section 4

Running a Job on the VSC

VERSABUILT
ROBOTICS

Home ▾

Part Stop

Op Stop

Re-Sync CNC

4.08lbs

Running

Recovery

Pause Next

Actions

Remove 8 completed part(s).

Done

Job

Part

5004026 - Fixed base jaw ▾

Count

0

+

-

REMAINING

2

COMPLETED

8

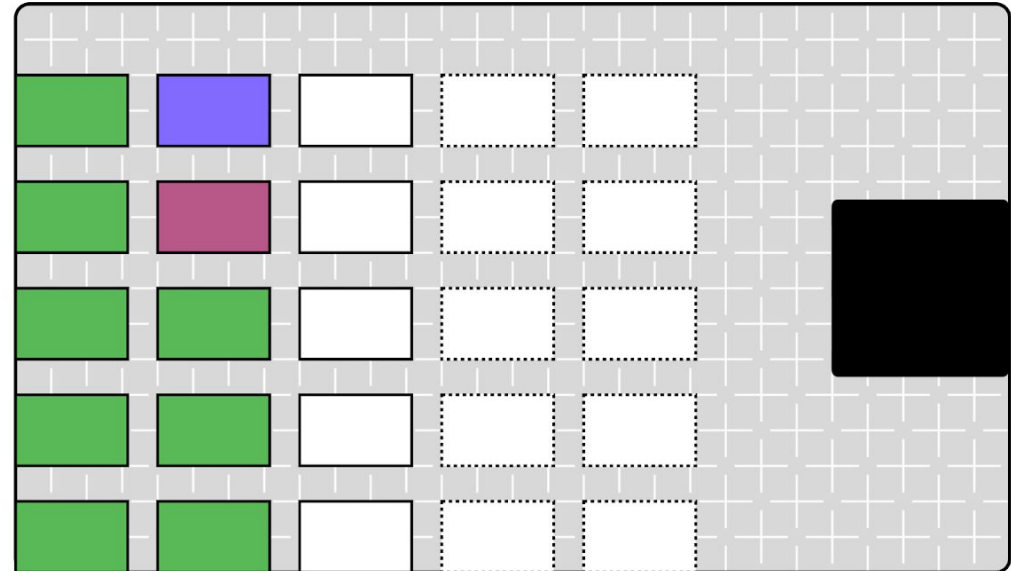
Load

Clear

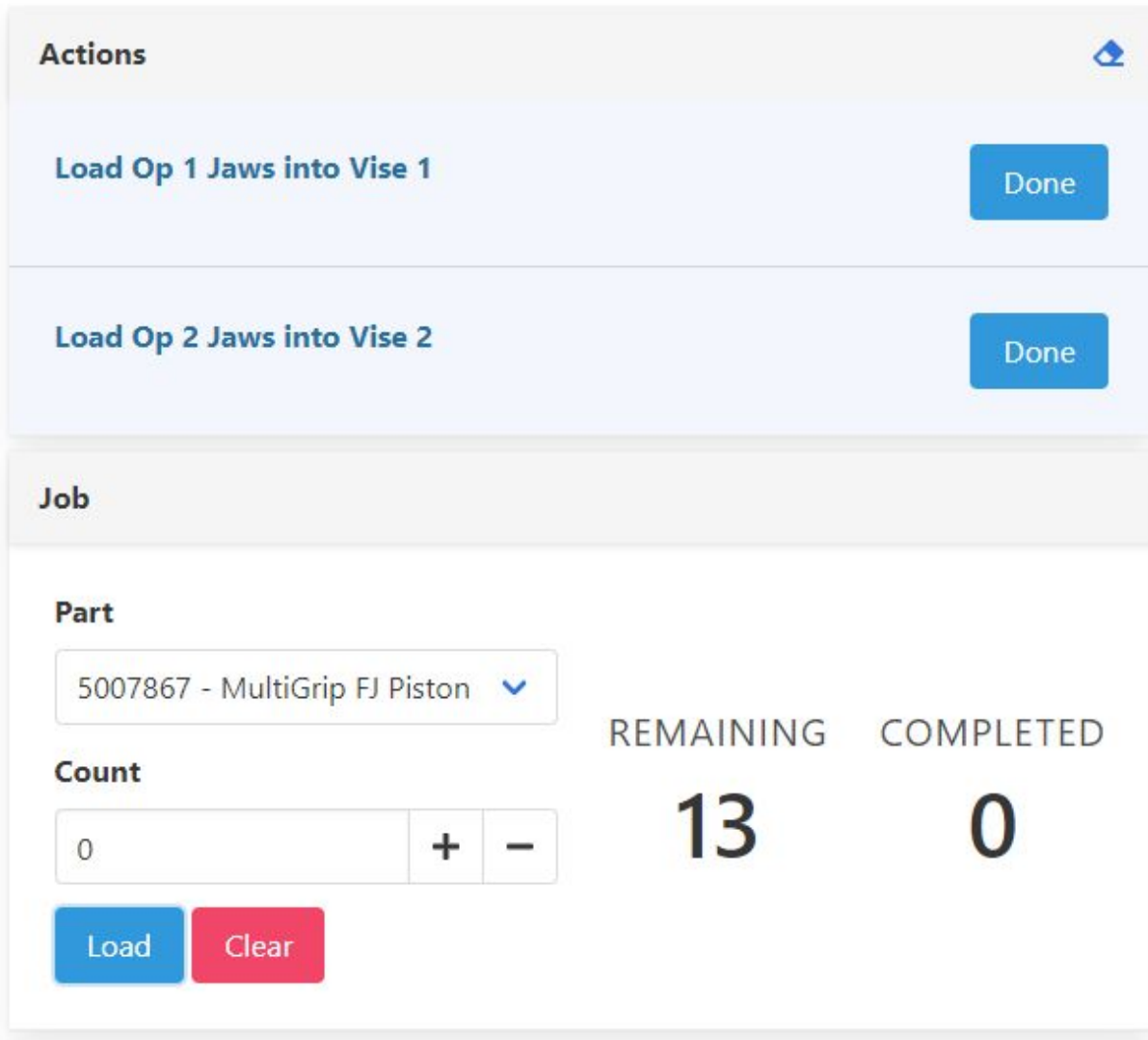
Activity Monitor

- ViseSettle 1
- UnloadVise 2

Infeed



Running a Job on the VSC



The screenshot displays the VSC interface with two main panels: 'Actions' and 'Job'.

Actions Panel: Contains two tasks, each with a 'Done' button.

Task	Action
Load Op 1 Jaws into Vise 1	Done
Load Op 2 Jaws into Vise 2	Done

Job Panel: Contains a 'Part' dropdown menu, a 'Count' input field with increment/decrement buttons, and 'Load' and 'Clear' buttons.

Part: 5007867 - MultiGrip FJ Piston

Count: 0

REMAINING: 13

COMPLETED: 0

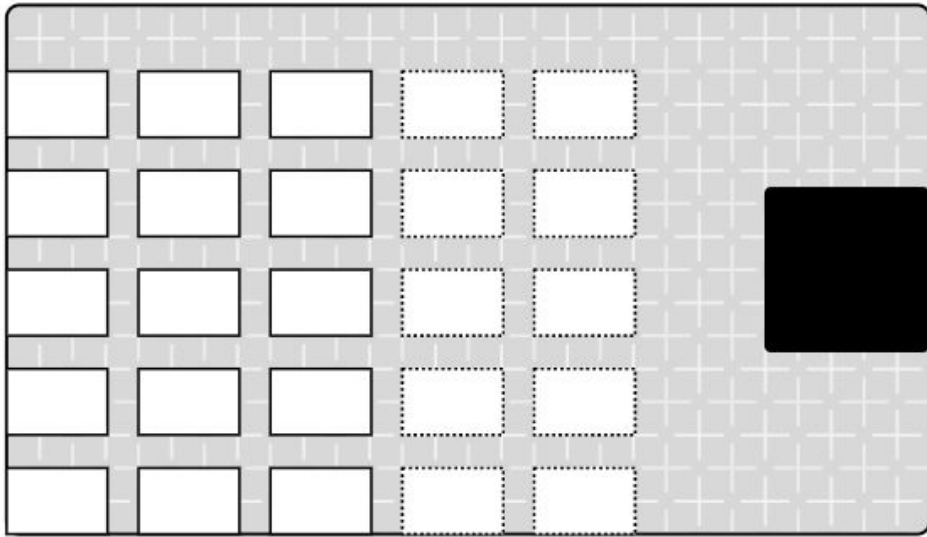
To run a job on the VSC, begin by selecting the Part from the drop-down list in the Job Panel.

The operator will be prompted in the Actions panel to load the jaws into the vises.

Enter a Count of parts to be processed in the job.

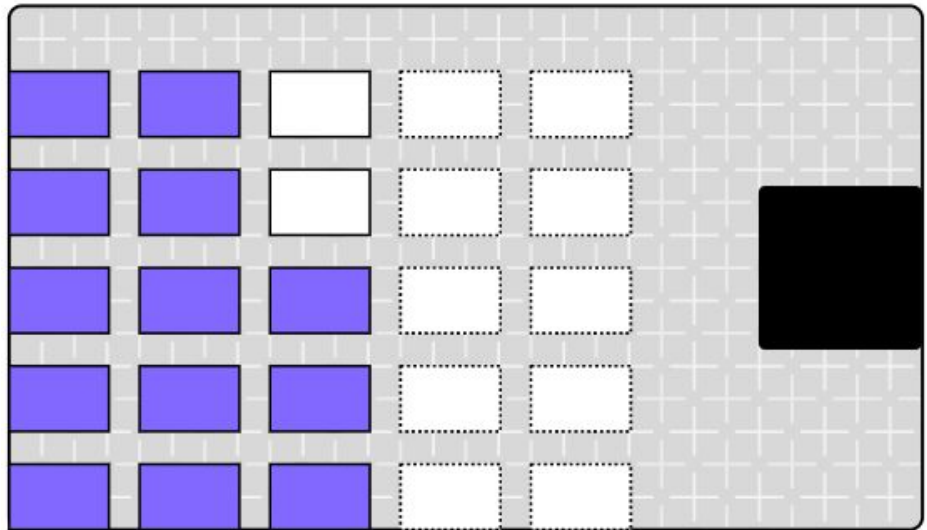
Press the **Load** button to initialize the raw material in the infeed display.

Running a Job on the VSC



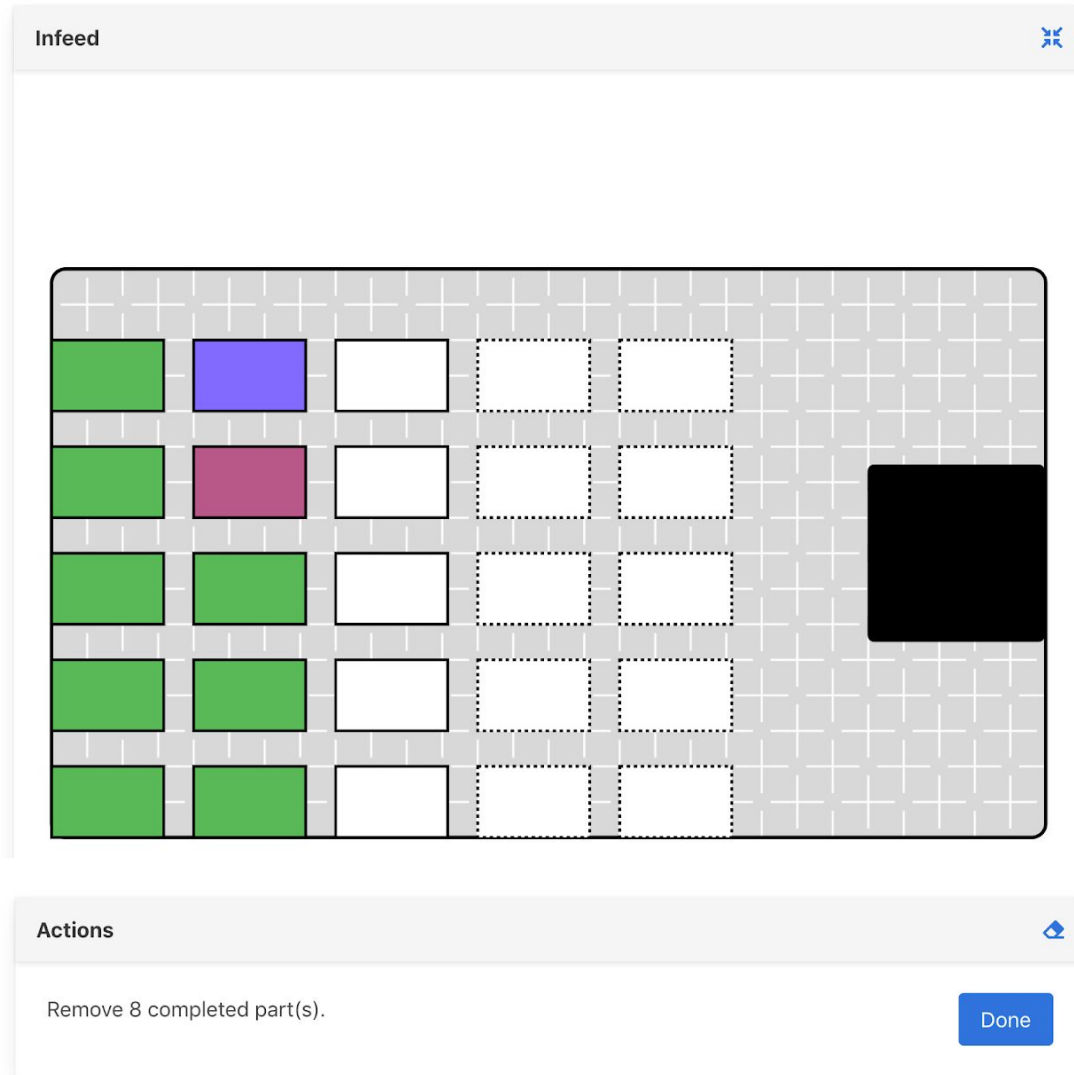
After the Part is selected in the Job panel, the Infeed panel will display an outline of each part in the Visual Infeed showing the alignment of the raw material on the table.

After the Load button is pressed in the Actions panel, the Infeed panel will show the operator where to load the raw material by displaying the allocated parts in purple.



Part locations outlined in a solid line show that parts picked and placed in these locations will have the far end of MultiGrip jaws pointing away from the robot; part locations outlines in a dashed line will have the far end of the MultiGrip jaws pointing towards the robot.

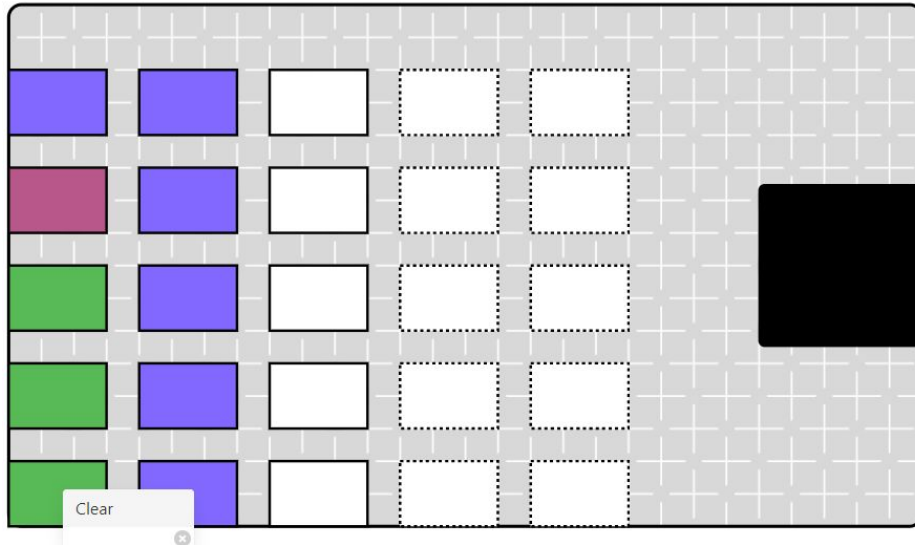
Infeed Panel



Rectangles that are white are unassigned, rectangles that are purple are raw material registered as loaded with the VSC, rectangles that are maroon are currently being processed, rectangles that are green are completed parts.

The Actions Panel will include an action to remove completed (green) parts. Remove the completed parts then press the Done button in the Actions panel and the green rectangles will become white signaling to the VSC that those locations are available to load more raw material.

Infeed Panel - Click Menu

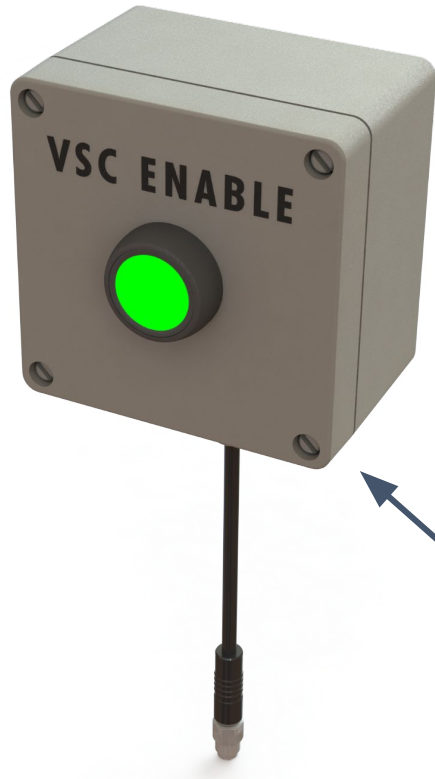


Clicking on a colored slot when not in Recovery mode will bring up a pop-up menu with an option for Clear. If the Clear menu item is selected, the rectangle will turn white signifying to the VSC that raw material is no longer loaded in that location and the part count will reduce by one.



Clicking on a white rectangle will bring up a pop-up menu with an option for **Load**. Clicking on Load will load a single part (turning the rectangle purple) at that location.

Running a Job on the VSC



Before pressing the Cycle Start button on the VSC, the following conditions must be met:

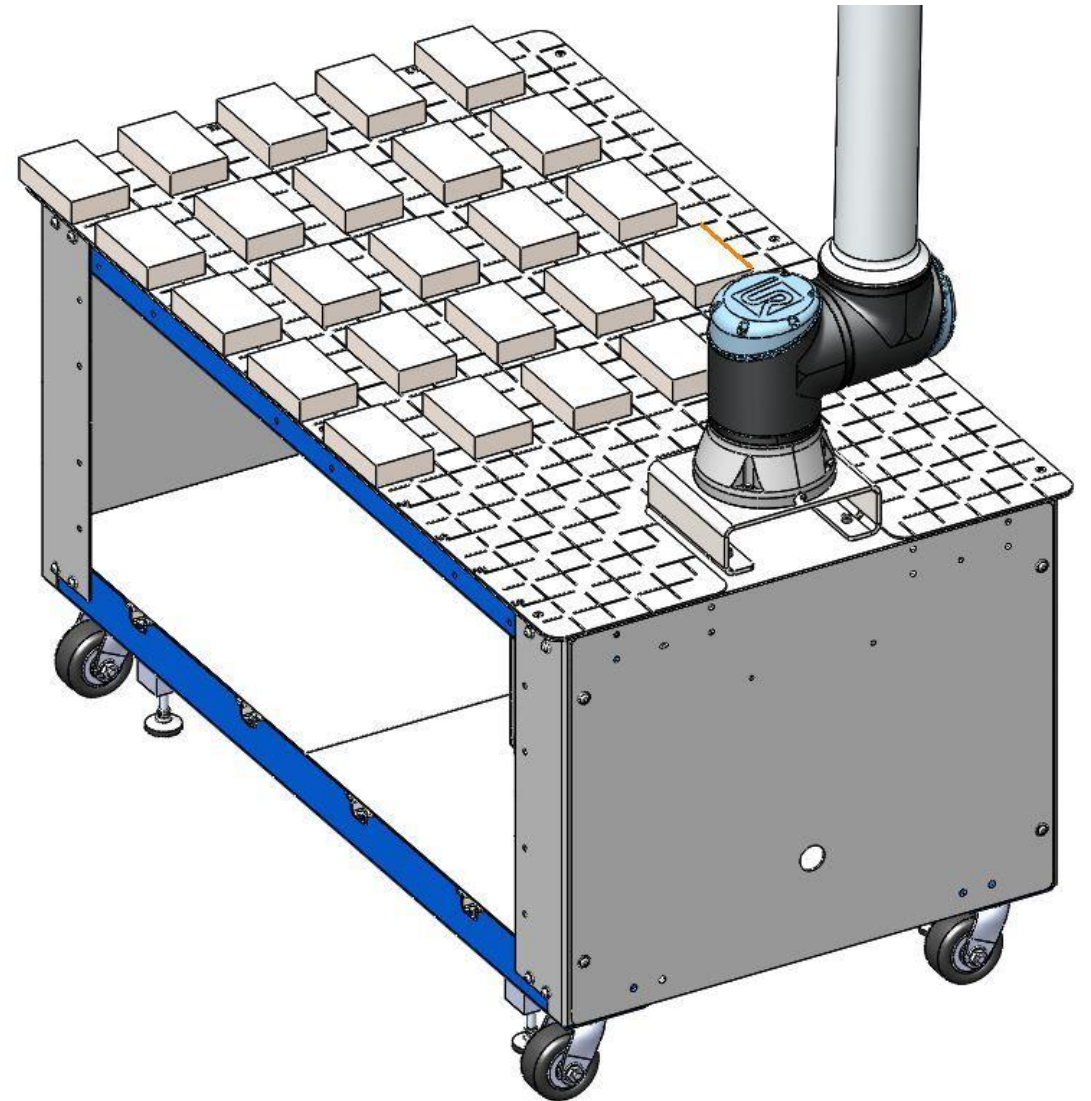
- MultiGrip jaws for the job are loaded in the CNC vises (action panel items acknowledged)
- Raw material loaded and aligned in the Visual Infeed
- CNC in Memory mode and Idle state
- Proper CNC program selected:
 - 9000 program for Haas and Fanuc
 - Correct program selected for Generic/Standard Driver
- Pneumatic diverter valve in the Auto position, vise hand valves in the center position
- VSC Enable button needs to be pushed before pressing VSC Cycle Start button on screen (VSC Enable valid for 3 minutes)

Idle

Aligning Parts Using the Visual Infeed System

The VersaBuilt Visual Infeed System is a grid pattern engraved into the robot's part infeed area.

By following a few simple rules, an operator is able to quickly and accurately place parts in the infeed area while maximizing the total part storage capacity across a wide range of part sizes.



Aligning Parts Using the Visual Infeed System

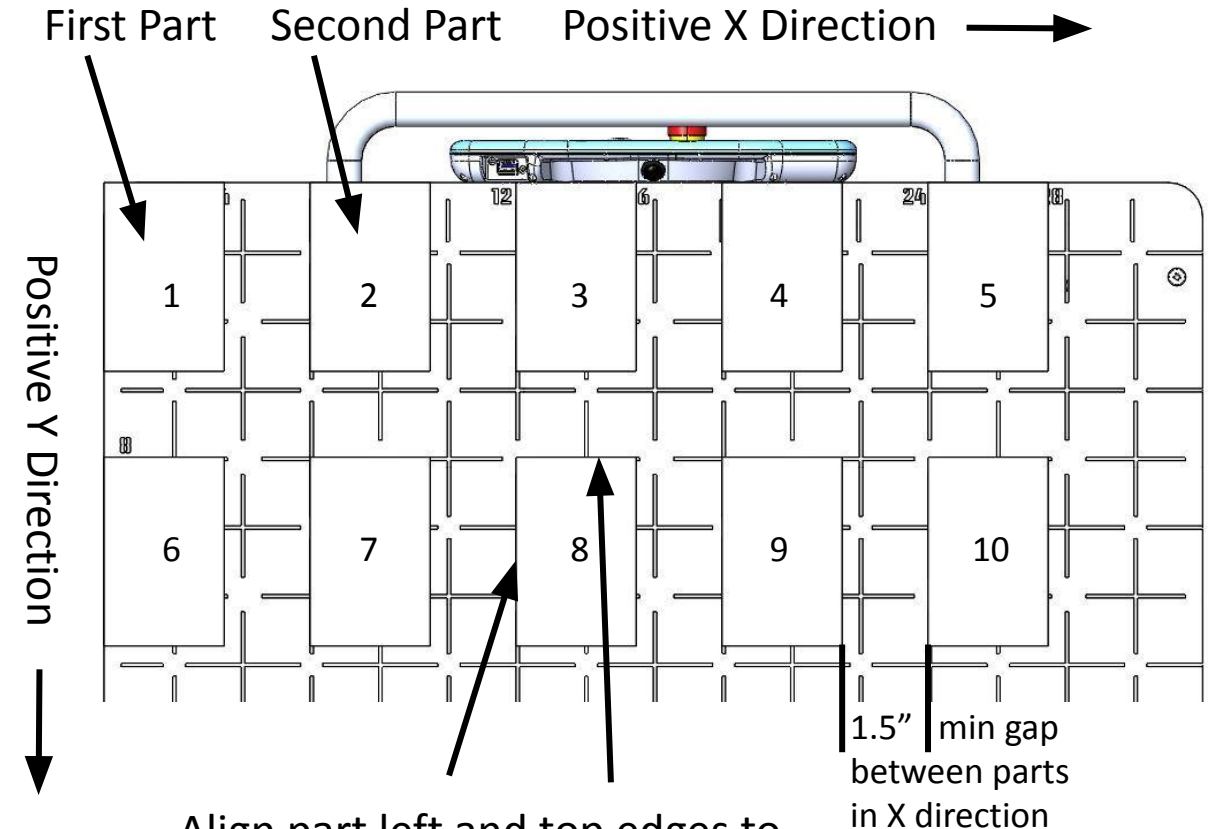
The upper left edge of the grid is the initial index point - the first part will always be located in the upper left corner of the visual grid.

Top and left edge of a part are ***always*** aligned with the grid lines.

Parts are allocated left to right in the positive X direction and then positive Y direction.

At the start of a job, the VB Mill Process program will provide part spacing information to the operator.

The minimum spacing between parts in the X direction is 1.5" and in the Y direction is 0.25".



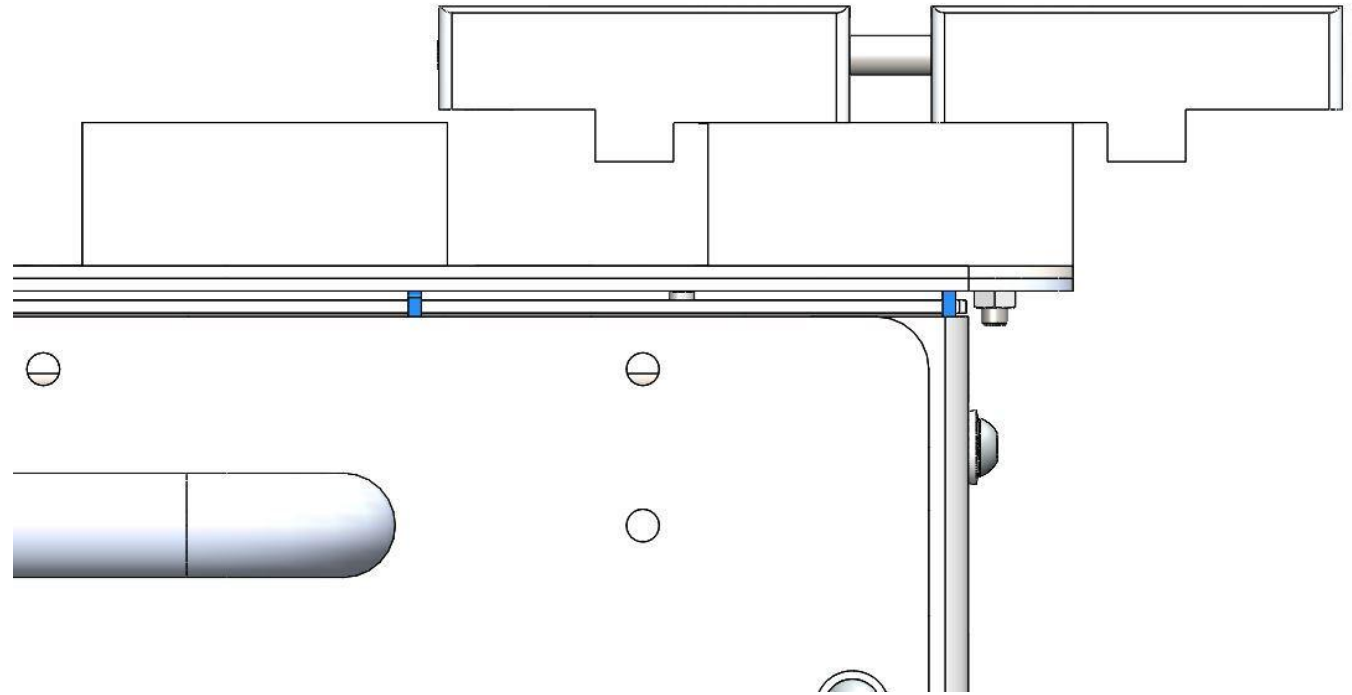
Align part left and top edges to the cart grid lines shown in the Infeed Panel of the VSC

1.5" min gap
between parts
in X direction

Aligning Parts Using the Visual Infeed System

Column spacing allows room for the MultiGrip Jaw pocket sidewall and the maximum opening travel of the MultiGrip Gripper.

The maximum suggested MultiGrip Jaw pocket sidewall is 0.75" - see the Mill Automation Kit - Machinist Manual for more information on MultiGrip Jaw design.



Aligning Parts Using the Visual Infeed System

Infeed X Spacing Chart

Part Width	0 to 0.5"	>0.5" to 2"	>2" to 4"	>4" to 6"	>6" to 8"	>8" to 10"
X Spacing Inches	2"	4"	6"	8"	10"	12"
X Spacing Columns	1	2	3	4	5	6

Aligning Parts Using the Visual Infeed System

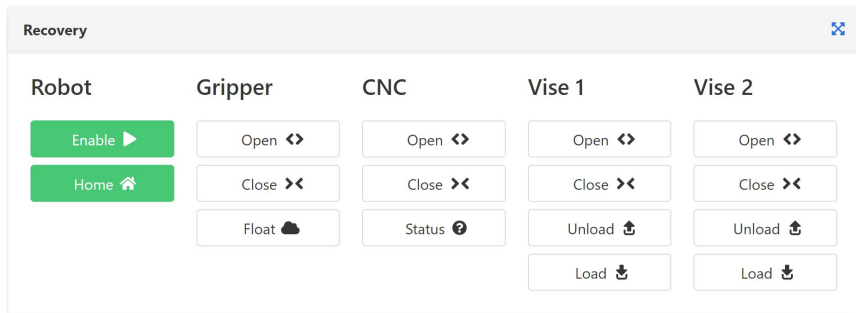
Infeed Y Spacing Chart

Part Length	0" to 1.5"	>1.5" to 3.5"	> 3.5" to 5.5"	> 5.5" to 7.5"	> 7.5" to 9.5"	> 9.5" to 11.5"
Y Spacing Inches	2"	4"	6"	8"	10"	12"
Y Spacing Rows	1	2	3	4	5	6

Recovery Panel

Section 5

Recovery Panel



The Recovery Panel can be accessed at any time by pressing Recovery button in the top right of the screen.

The VSC will enter the Recovery state whenever a processing error is encountered.

When in Recovery with an active job, the Recovery Panel can be used to get the Mill Automation System and CNC in state where the job can be resumed.

When in Recovery without a job active, the Recovery panel can be used to perform individual robot actions useful for validating new part processes.

Before using the Recovery panel functions, the Operator will be prompted to press the Cycle Start button to acknowledge they are physically present and the system is safe to operate.

Recovery Panel

Robot

Enable ▶

Home 🏠

Robot allows the robot to be Enabled for movement, Paused, Reset or Moved to the Home Position

The Home button can be used to get the robot to a safe Home position from almost anywhere (The robot must be at the Home position to exit the Recovery Panel)

Gripper

Open ↔

Close >>

Float ☁

Gripper allows the MultiGrip Gripper to be opened, closed or floated; the Float button removes open or closing pressure from the gripper

CNC

Open ↔

Close >>

Status ?

CNC allows the operator to open or close the CNC Door (for VSC Controlled door openers only) and check the connection status with the CNC (VSC Macro CNC Drivers only)

Home Locations



Table Home Location

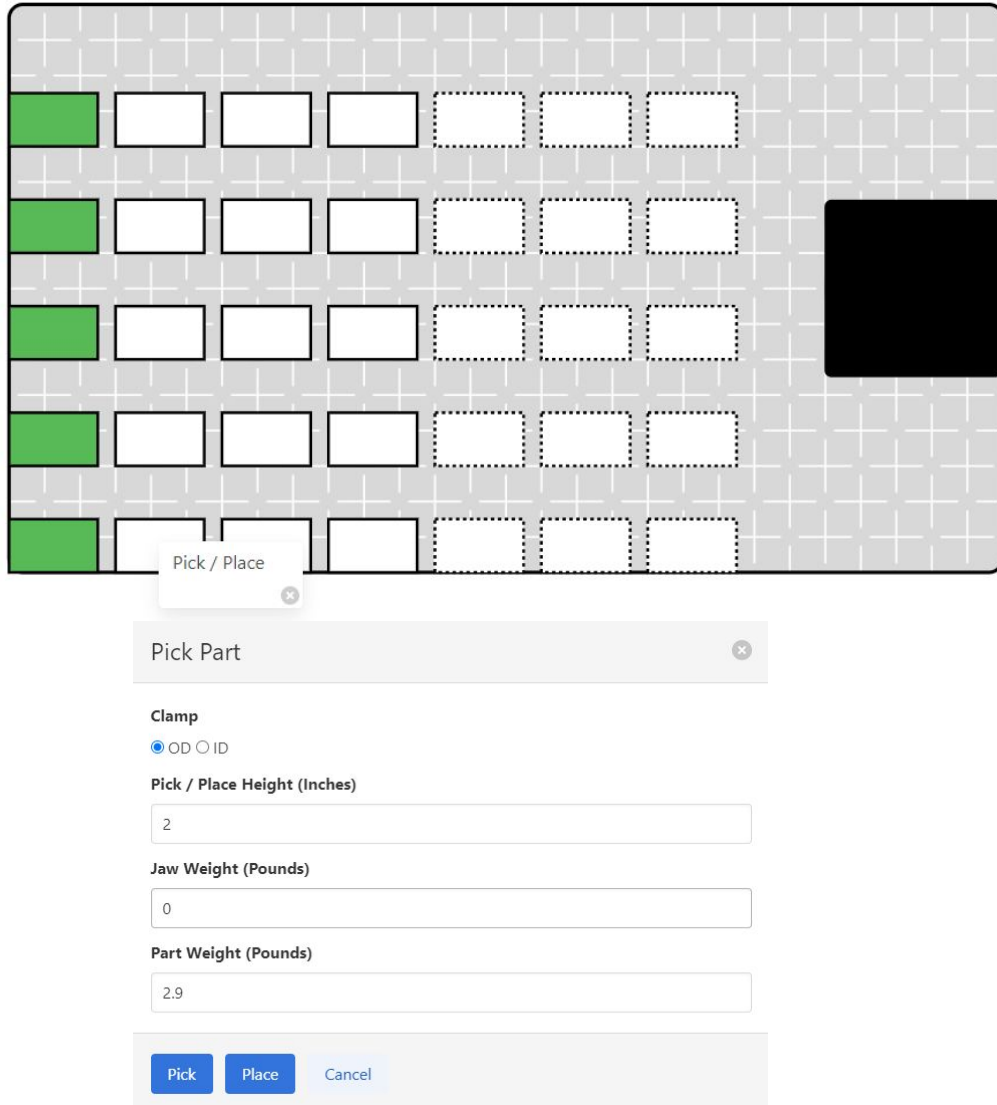
The Mill Automation Kit has pre-defined locations that every operation either starts from, ends at or uses during processing. Before processing can begin, the robot must be in a known home location. If the robot is not at a recognized home location at the start of processing, an error will occur and the system will go into Recovery mode.

Press the Home button in the Recovery Panel to move the robot to its default Home location, **CNC Home Home**. If the robot does not recognize its current location as a Home location, the VSC will prompt the operator to select the Home location the robot is currently nearest to. The robot's first move will be to the Home location selected, from there the robot will know how to get to the Table Home location.

NOTE: Failure to understand which Home location the robot is nearest to could result in the robot colliding with the CNC or other things in its path.

A complete list of all Home locations is provided in Appendix C.

Recovery Infeed Panel - Click Menu



The image shows a graphical user interface for a robot's Recovery Infeed Panel. It features a grid of 35 rectangular buttons arranged in 5 rows and 7 columns. The first column contains five solid green buttons, while the remaining six columns contain white buttons with black dashed borders. A black rectangular button is positioned to the right of the grid. A small 'Pick / Place' pop-up menu is visible over the first white button in the bottom row. Below the grid is a larger 'Pick Part' dialog box. This dialog box includes a 'Clamp' section with radio buttons for 'OD' (selected) and 'ID'. It also has three input fields: 'Pick / Place Height (Inches)' with the value '2', 'Jaw Weight (Pounds)' with the value '0', and 'Part Weight (Pounds)' with the value '2.9'. At the bottom of the dialog are three buttons: 'Pick' (blue), 'Place' (blue), and 'Cancel' (gray).

Pick / Place

Pick Part

Clamp

☒ OD ☐ ID

Pick / Place Height (Inches)

2

Jaw Weight (Pounds)

0

Part Weight (Pounds)

2.9

Pick Place Cancel

While in Recovery mode, clicking on a white rectangle will bring up a pop-up menu with an option to Pick/Place. Selecting Pick/Place will bring up a pop-up window giving an option to test Pick or Place a part at that location in the Infeed.


To begin, the robot must be at a known Home location (see Appendix C) and the jaws (jaws and part for Place) must be held by the Robot. Enter the Pick/Place Height, Jaw Weight and Part Weight then press the Pick or Place button as desired.

Recovery Panel - Vise

Vise

Open <>

Close ><

Unload 

Load 

Vise Open button opens the vise

Vise Close button closes the vise

Unload button uses the robot to unload MultiGrip Jaws from the vise and move to a home position

Load button uses the robot to load MultiGrip Jaws from the vise and move to a home position.

Recovery Panel - Vise Unload

Vise 1 Unload ✕

Part Weight (Pounds)

Jaw Weight (Pounds)

Unload Type
☒ Jaws ☐ Part

Vise Clamp
☒ OD ☐ ID

☐ Dump Coolant

☐ Run Wash / Table Load Program

Clicking on the **Unload** button will pop up the Vise Unload panel.

Enter the jaw and part parameters to load the vise. The vise must be holding the jaws or the jaws and a part before starting the Vise Unload.

If **Unload Type** Jaws is selected, the robot will unload the jaws from the vise. If **Unload Type** Part is selected, the robot will invert the jaws over the vise and unload the part the jaws stored on the vise; the vise must be holding the jaws and part needed to unload the part before starting the Part Unload.

Recovery Panel - Vise Load

Vise 1 Load

Part Weight (Pounds)

0

Jaws

☐ Custom Jaw Weight

Load Type

☒ Jaws ☐ Part

Vise Clamp

☒ OD ☐ ID

☐ Run Wash / Table Load Program

Load

Test Load

Cancel

Clicking on the **Load** button under each Vise in the Recovery Panel will pop up the Vise Load panel.

Enter the jaw and part parameters to load the vise. The robot must be holding the jaws or the jaws and a part before starting the Vise Load.

If **Load Type** Jaws is selected, the robot will load the jaws into the vise. If **Load Type** Part is selected, the robot will invert the jaws over the vise and load the part into the vise; the vise must be holding the jaws needed to load the part before starting the Part Load.

Test Load can be used to verify the calibration of the system and that the robot is able to properly place the jaws before clamping.

Recovery Panel - Vise Load - Test Load

Vise 1 Load ✕

Part Weight (Pounds)

Jaws

☐ Custom Jaw Weight

Load Type

☒ Jaws ☐ Part

Vise Clamp

☒ OD ☐ ID

☐ Run Wash / Table Load Program

Load

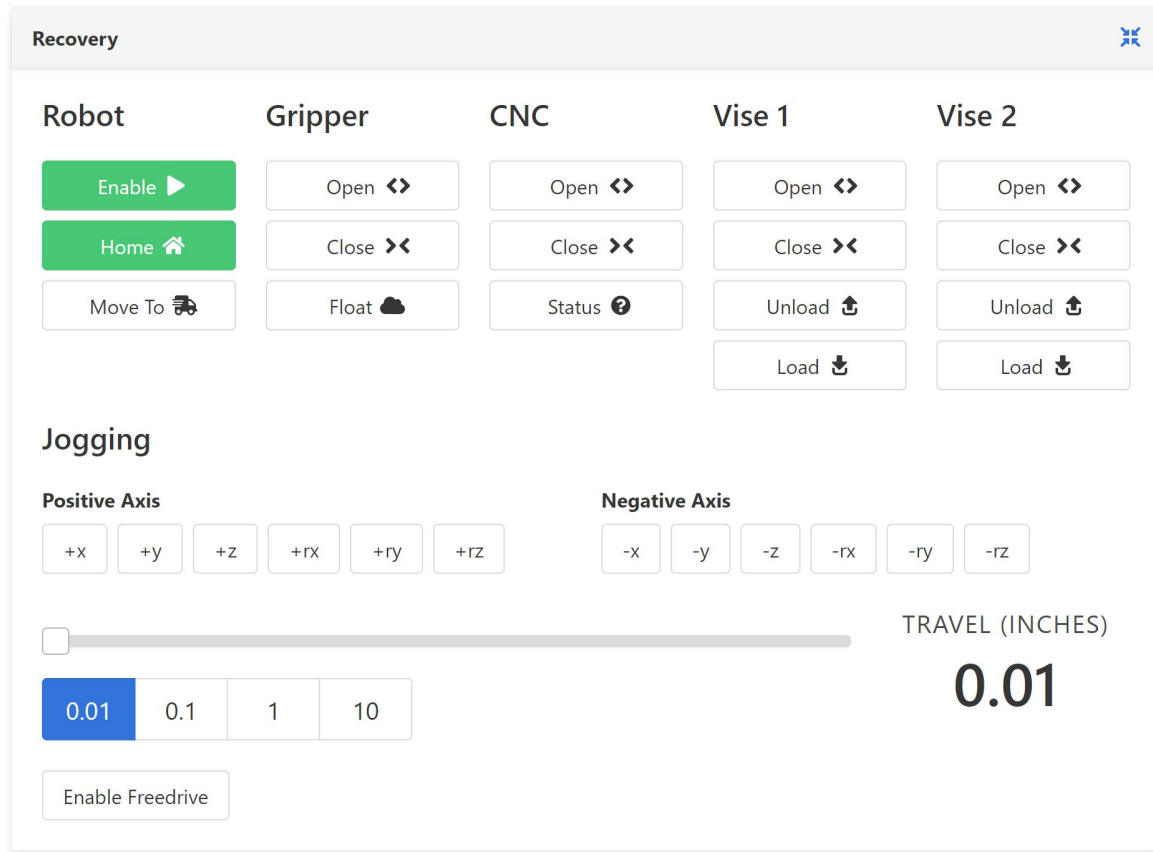
Test Load

Cancel

Test Load can be used to verify the calibration of the Mill Automation Kit relative to the CNC and that the robot is able to properly place the jaws. The Test Load function performs Load Vise function up until the vise clamp function. After the Test Load function is executed and the proper position of the jaws is verified, the **Test Load Return** button will appear. Pressing the Test Load Return button will move the robot out of the vise while remaining ahold of the jaws.

Note: If the robot is not able to properly locate the Jaws before clamping, damage may occur to the jaws when the vise is clamped.

Extended Recovery Panel



Extended Functions can be accessed in the Recovery Panel by pressing the blue 4 arrows button in the upper right of the Recovery Panel.

The **Move To** button allows user to select a specific robot home position to move to.

The Extended Recovery Panel also adds Robot Motion Jogging commands and the ability to put the robot into Freedrive mode.

Extended Recovery Panel - Move Home

Move Home

Nearest Starting Home

Table Home Pallet

Destination Home

Move Home

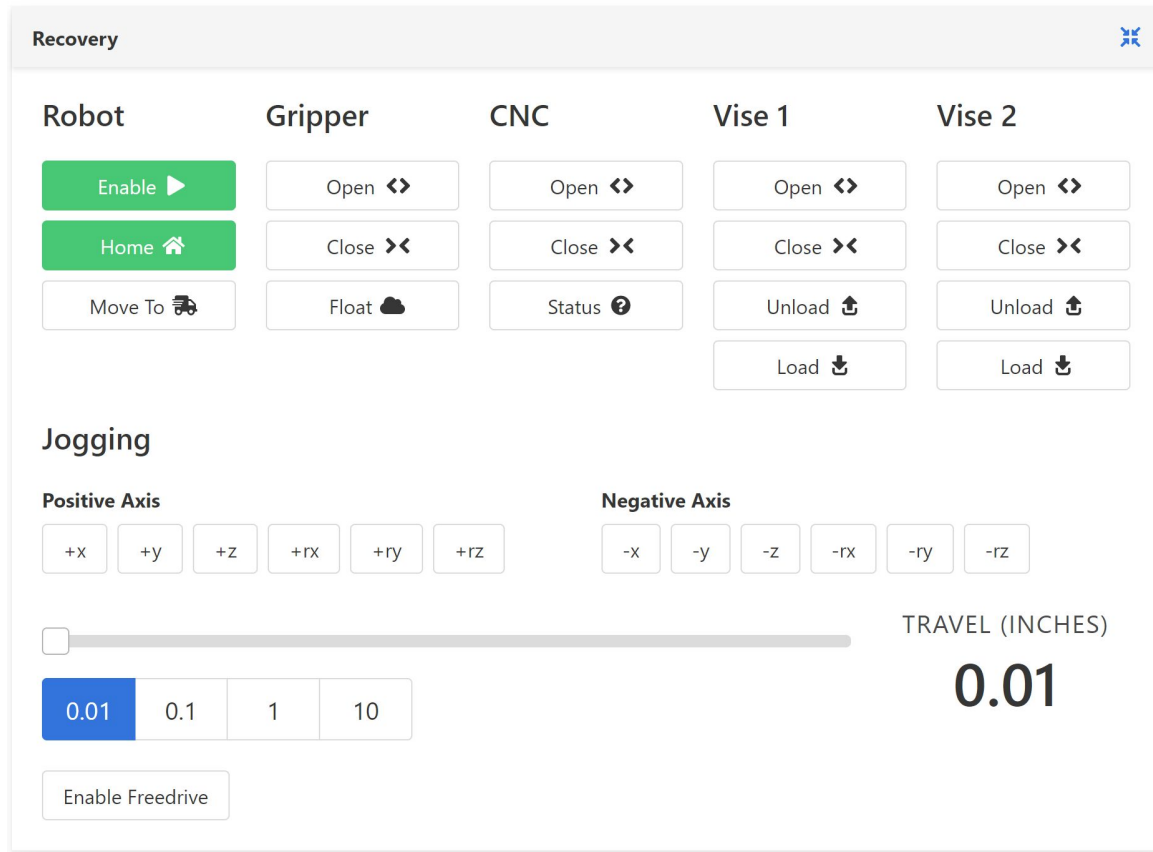
Cancel

Clicking on the Move To  button allows user to select robot home positions to move to.

The Nearest Starting Home is where the robot will begin its motion to. The Destination Home is where the robot will finish its motion path.

Refer to Appendix C Home Locations for more information about how to identify what Home Location the robot is nearest to.

Extended Recovery Panel - Jogging



The movement scale adjusts how far the robot moves in inches (or millimeters) or degrees; always start with movements of 1mm (1deg) or less until you are confident in the direction and distance of motion.

+xyz and -xyz create linear motion relative to the MultiGrip jaws from the current position.

+rxryrz and -rxryrz rotate the MultiGrip jaws from the current position.

Extended Recovery Panel - Enable Freedrive

Freedrive

☐ Jaws

☒ Jaws and Part

☐ Empty Gripper

Part Weight (Pounds)

3

Jaws

Universal OP1 Jaws

☐ Custom Jaw Weight

Enable Freedrive

When **Enable Freedrive** is selected, a popup window will appear allowing the user to set the payload. Select what the robot is holding (Jaws, Jaws and Part or Empty Gripper) and set the remaining fields to properly set the robot payload.

How Freedrive is ended is robot specific. Refer to the Robot Installation, Configuration and Operation manual that matches your make and model for more information about using Freedrive.

Recovering from CNC Processing Errors

VERSABUILT
ROBOTICS

Home ▾

Part Stop

Op Stop

Re-Sync CNC

4.08lbs

Idle

Recovery

Cycle Start

Recovery

Robot

Enable ▶

Home 🏠

Gripper

Open ↔

Close ⇨⇩

Float ☁

CNC

Open ↔

Close ⇨⇩

Manual Mode 🖱

Status ⓘ

Vise 1

Open ↔

Close ⇨⇩

Unload 📦

Load 📦

Vise 2

Open ↔

Close ⇨⇩

Unload 📦

Load 📦

CNC Processing Errors: Part is Bad

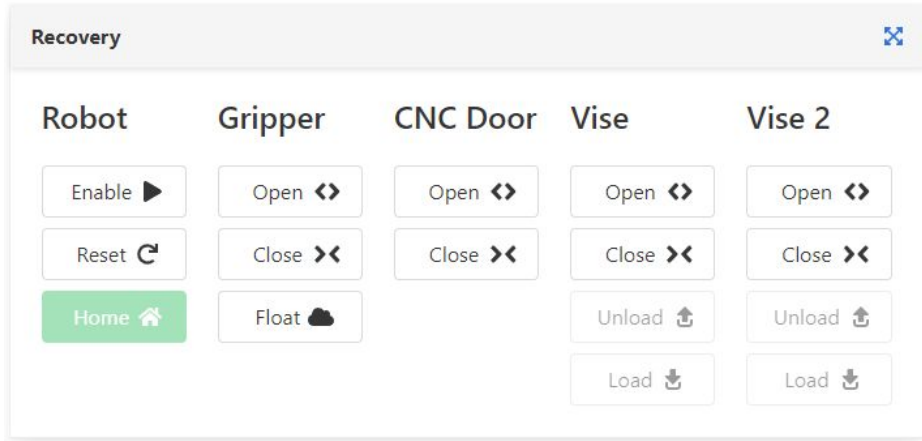
If an error occurs during the CNC machining cycle and the part cannot be successfully completed, the VSC will need to be put into Recovery mode and the MultiGrip jaws and robot will need to be reset similar to the start of the job.

Start by pressing the Recovery Button. Move the robot to Home using the Home button in the Recovery panel.

Clean off the vises with compressed air and remove any parts held in the vises. If the robot is holding jaws, remove the jaws and return the jaws to the appropriate vise.

When all steps are complete, end Recovery mode, and press the VSC Cycle Start button to continue.

Recovering from Robot Processing Errors



Robot processing errors most commonly occur if the robot collides with something or the robot actual payload differs significantly from the programmed payload. This can occur if the robot fails to pick a part or drops a relatively heavy part. When a robot processing error occurs, the VSC will go into Recovery mode automatically.

The first step is to reset the robot so it is ready to accept commands again from the VSC. Resetting the robot is robot model specific. Refer to the Robot Installation and Operation Manual that matches the robot used in your Mill Automation System.

When the robot is reset, move the robot to Home using the Home button in the Recovery panel. Clean off the vises with compressed air and remove any parts held in the vises. If the robot is holding jaws, remove the jaws and return the jaws to the appropriate vise.

When all steps are complete, end Recovery mode, and press the VSC Cycle Start button to continue.

IO Panel, Calibration and About Page

Section 6

IO Panel

The VSC IO Panel Page is a dashboard displaying all inputs and outputs configured in the VersaBuilt System Controller.

The dashboard displays high and low settings with buttons to toggle high and low for testing and troubleshooting purposes.

The IO Panel is used to verify the installation and to troubleshoot problems.

- Outputs send signals to devices (Open Chuck, Close Door, etc)
 - Send High - Turns on the signal
 - Send Low - Turns off the signal
- Inputs receive signals from devices (sensors, cycle end from CNC, VSC Enable button, etc.)
 - Off - no signal is received from device
 - On - signal has been received from device

IO Panel - Output Signals

Output Dashboard					
Address	Controls				
WISE_1_OPEN	Send Low	Send High	CHUCK_1_OPEN	Send Low	Send High
WISE_1_CLOSE	Send Low	Send High	CHUCK_1_TOGGLE	Send Low	Send High
WISE_2_OPEN	Send Low	Send High	CHUCK_1_CLOSE	Send Low	Send High
WISE_2_CLOSE	Send Low	Send High	CHUCK_2_OPEN	Send Low	Send High
WISE_3_OPEN	Send Low	Send High	CHUCK_2_TOGGLE	Send Low	Send High
WISE_3_CLOSE	Send Low	Send High	CHUCK_2_CLOSE	Send Low	Send High
GRIPPER_2_OPEN	Send Low	Send High	DOOR_OPEN	Send Low	Send High
GRIPPER_2_CLOSE	Send Low	Send High	DOOR_CLOSE	Send Low	Send High
WISE_4_OPEN	Send Low	Send High	VERSABLAST	Send Low	Send High
WISE_4_CLOSE	Send Low	Send High	WASH_TANK	Send Low	Send High
			CYCLE_START	Send Low	Send High
			GRIPPER_OPEN	Send Low	Send High
			GRIPPER_CLOSE	Send Low	Send High

IO Panel - Input Signals

Input Dashboard	
Address	Value (Polled every second)
WISE_1_SENSOR	Off
WISE_2_SENSOR	Off
WISE_3_SENSOR	Off
WISE_4_SENSOR	Off
DOOR_OPEN_SENSOR	Off
DOOR_CLOSE_SENSOR	Off
DOUBLE_DOOR_OPEN_SENSOR	Off
DOUBLE_DOOR_CLOSE_SENSOR	Off
VSC_ENABLE	Off
DOOR_OPEN_BUTTON	Off
DOOR_CLOSE_BUTTON	Off
CYCLE_COMPLETE	Off

VSC Calibration Page

UR Calibration

Utility Functions

Robot Warmup

Warmup

Freedrive

Enable Freedrive

Run Table Load

Table Load

Calibrate Table

Quadrant-1	Move To 1	Capture 1	Return Home
Quadrant-2	Move To 2	Capture 2	Return Home
Quadrant-3	Move To 3	Capture 3	Return Home
Quadrant-4	Move To 4	Capture 4	Return Home
Quadrant-5	Move To 5	Capture 5	Return Home
Quadrant-6	Move To 6	Capture 6	Return Home
Quadrant-7	Move To 7	Capture 7	Return Home
Quadrant-8	Move To 8	Capture 8	Return Home

The VSC Calibration Page is used to calibrate the Robot Infeed, in-CNC position, VersaBlast position, and Vises.

Pressing the **Warmup** button will cause the Robot to move over the VersaCart table to warmup the robot joints. If the robot hasn't been used for more than an hour or the robot is below 60F, VersaBuilt recommends running the warmup cycle several times to ensure that the robot will be accurate.

The VSC Calibration page use is documented in the Mill Automation System Installation Manual.

VSC About Page


System Information

Serial Number	vsc00101
Software Version	1.0.0

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Support

Manuals & Training Videos	https://www.versabuilt.com/resources.html
Support Phone Number	1-208-906-0814
Remote Support	<div><div>Enable</div><div>Disable</div></div>

Restart VSC 

The System Information Panel includes the serial number of the Mill Automation System and the software version

The Support Panel includes information about manuals and training videos, VersaBuilt's support telephone number an option to Enable or Disable remote support over the Internet for a VersaBuilt technical support representative and a button to Restart the VSC.

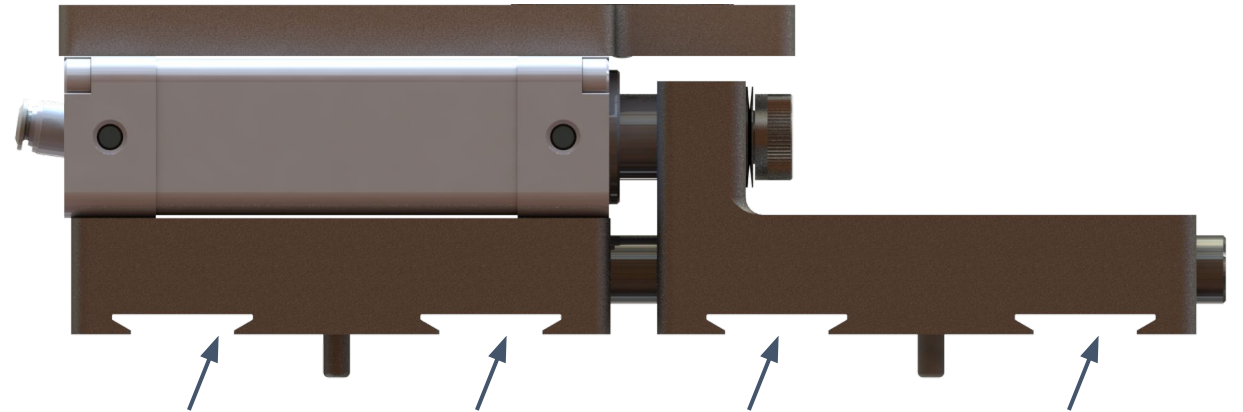
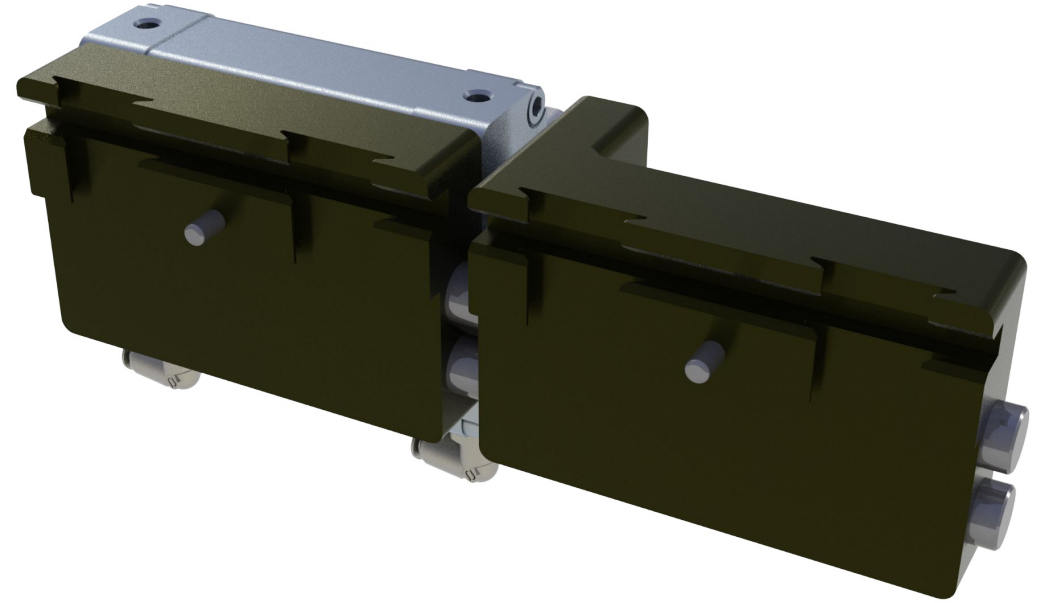
Cleaning and Maintenance

Section 7

Cleaning and Maintenance

Daily Maintenance:

- Clear any chips in the dovetail features on the Gripper Fingers
- Use pick or equivalent tool

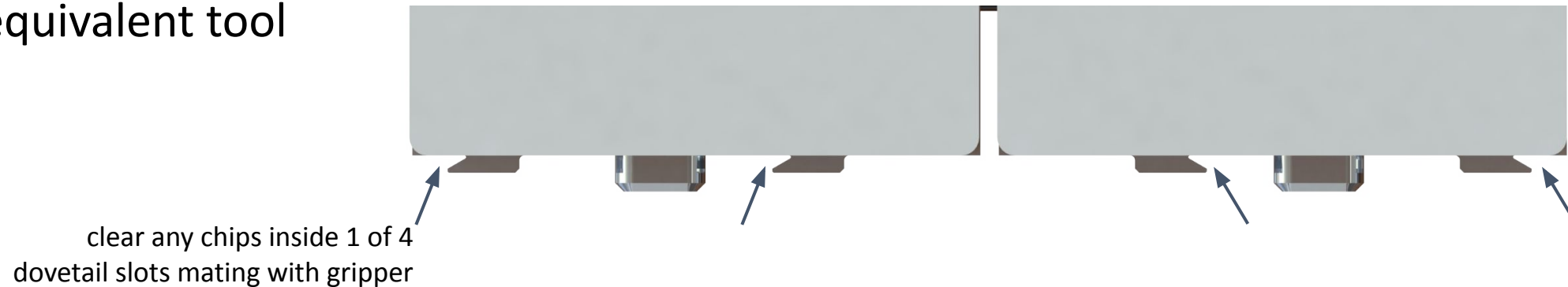
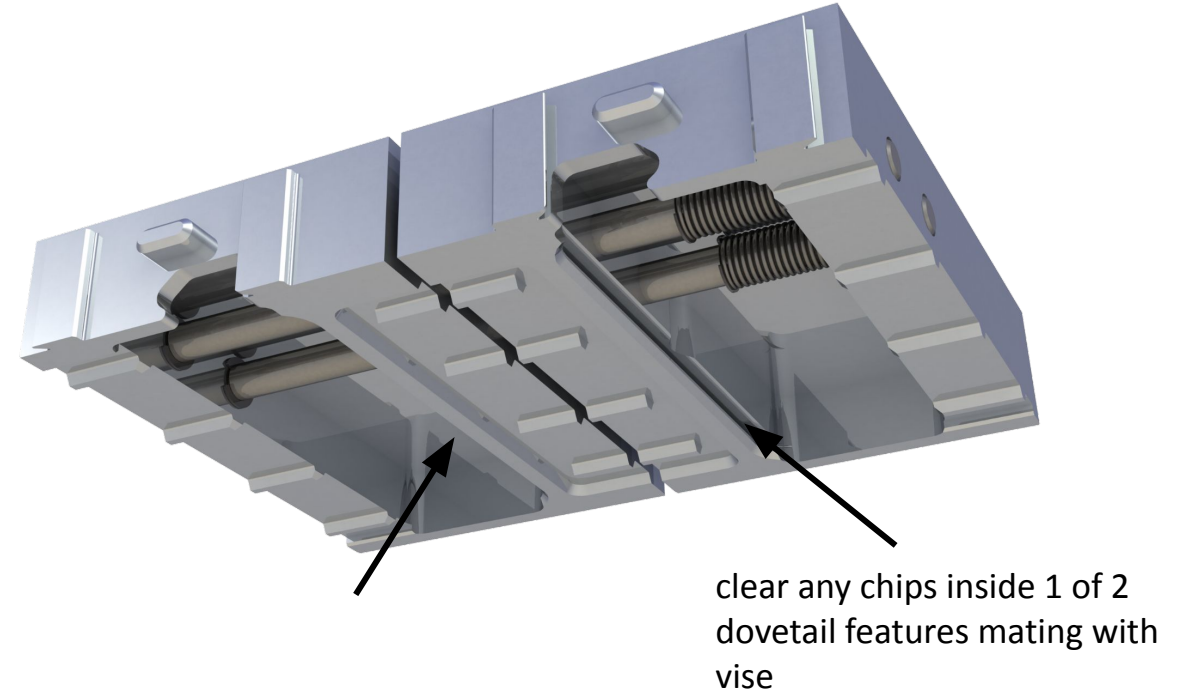


clear any chips inside 1 of 4 dovetail
slots mating with MultiGrip Jaws

Cleaning and Maintenance

Daily Maintenance:

- Clear any chips in the dovetail features on MultiGrip Jaws
- Dovetail features are located on underside of the jaws and on the front face of the jaws
- Use pick or equivalent tool



Cleaning and Maintenance

Daily Maintenance:

- Lightly dampen a cloth with warm, soapy water
- Wipe down the robot, gripper and the VersaCart
- Use a clean dry cloth to remove any remaining soapy water



Cleaning and Maintenance

Weekly Maintenance:

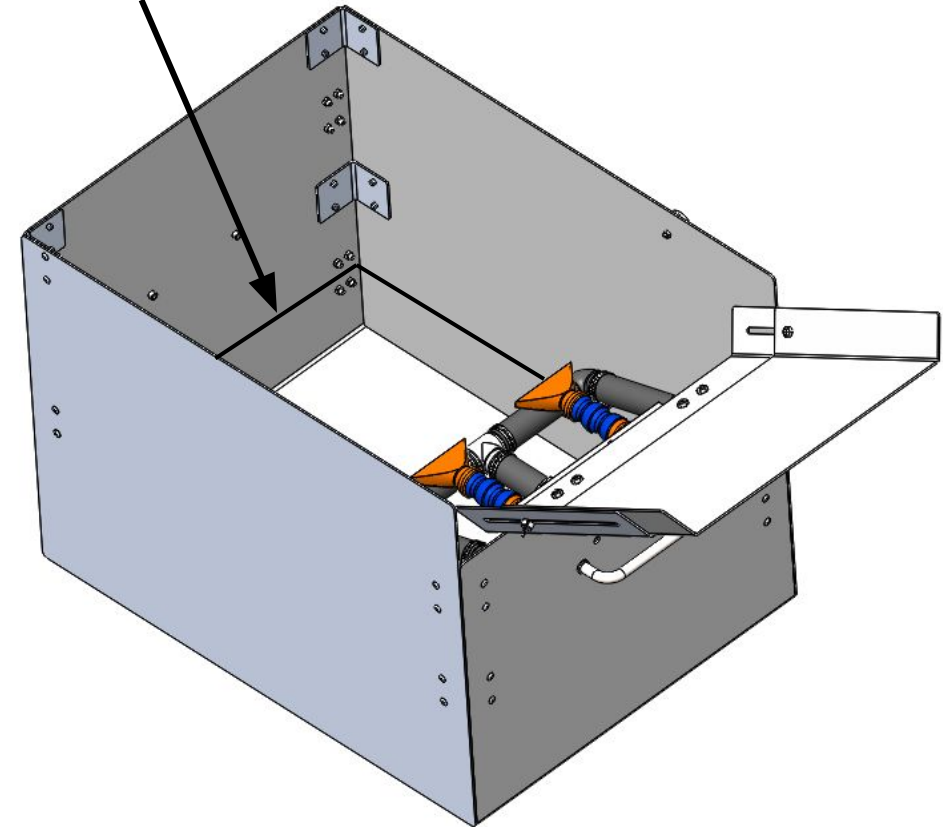
- Remove the Visual Infeed top by removing the M6 flat head screws that hold it in place
- Lightly dampen a cloth with warm, soapy water
- Wipe down the VersaCart table top
- Use a clean dry cloth to remove any remaining soapy water
- Wash the Visual Infeed using running water or a pressure washer
- Once dry, re-install Visual Infeed top onto VersaCart



VersaWash Maintenance

- Clean once per day, during daily use
- Remove water, chips, debris with shop-vac
- Monitor pump filter (600 micron filter bag), clean as needed. Replace as needed (McMaster-Carr #2514K28)
- Refill with 5 Gallons
- Add Dawn Soap or antibacterial agent to keep clean

Approximate Fill
Line



Cleaning and Maintenance - Robot



Refer to the included robot-specific Installation, Configuration and Operation manual for tips on maintenance specific to your robot type.

Appendices

Hand Loading and Unloading MultiGrip OD Jaws

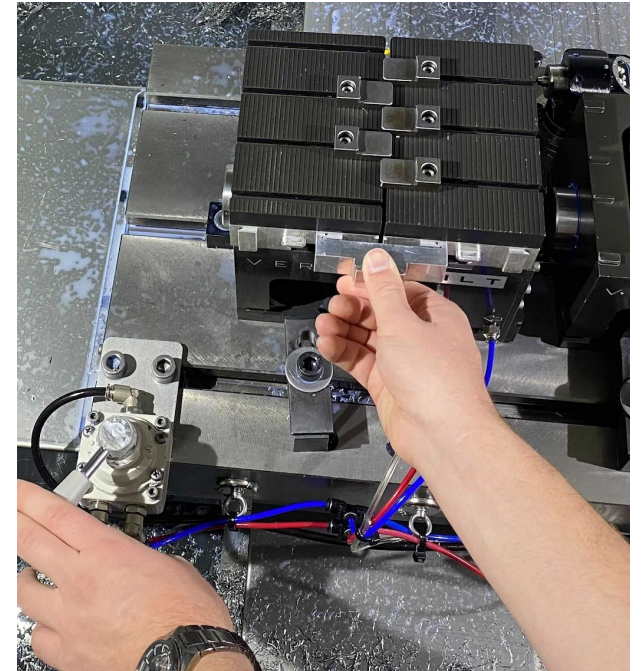
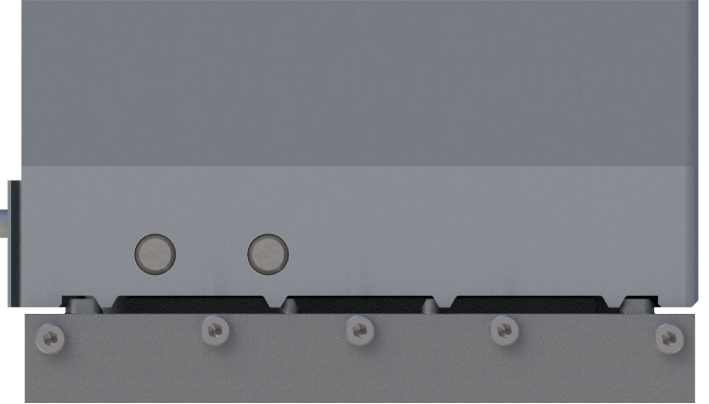


To Load MultiGrip OD Jaws

- Set the Pneumatics to Manual Mode
- Open the the vise using the Vise Hand Valves
- Lay the jaws on the VersaCart as shown and push down on the right jaw while simultaneously sliding the Jaw Loading Tool over the gripper dovetails as shown
- Place jaws on vise; ensure jaws are aligned properly with the serrations of the vise
- While holding the Jaw Loading Tool with one hand, close the vise with the other hand; remove Jaw Loading Tool

To Unload MultiGrip OD Jaws:

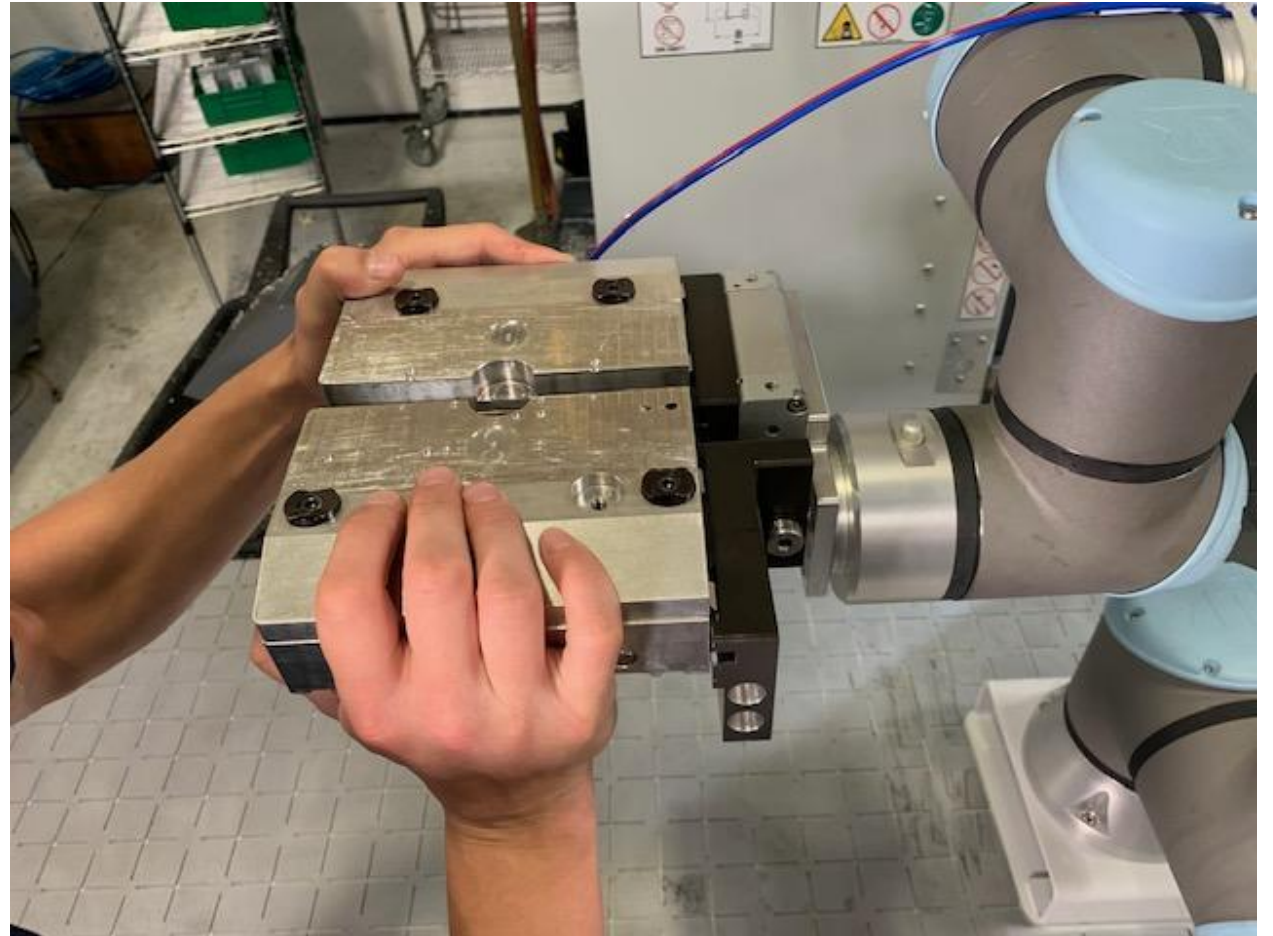
- Close the vise using the Vise Hand Valves
- Slide and hold the Jaw Loading Tool over the gripper dovetails
- Open the vise using the Vise Hand Valves
- Remove the jaws from the vise



Hand Loading and Unloading MultiGrip Jaws

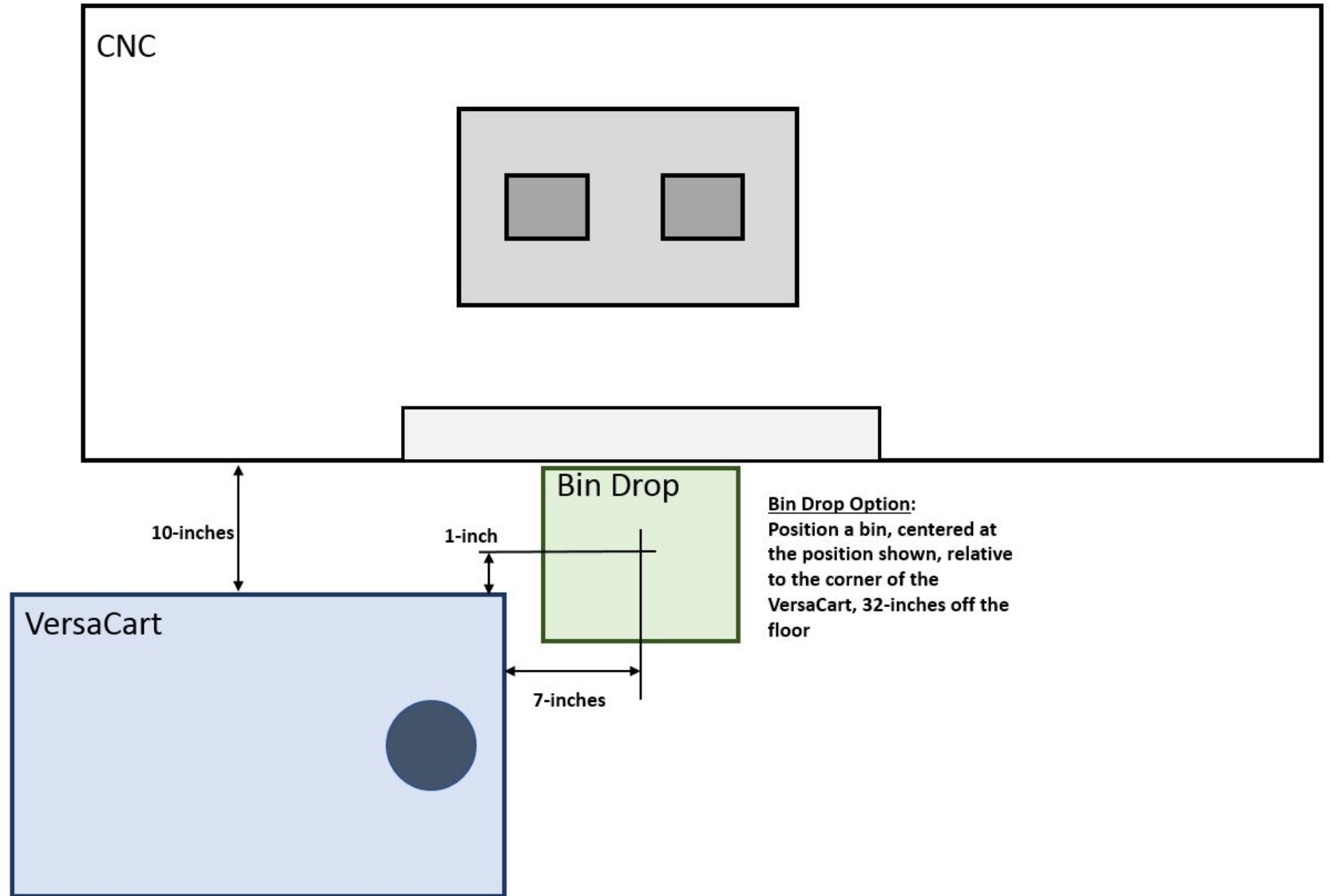
Removing MultiGrip Jaws from the Gripper:

- Unclamp the gripper by going to the Recovery panel on the VersaBuilt System Controller (VSC) and selecting Open under Gripper
- For OD jaws, push the jaws together until the dovetail feature on the jaw can clear the dovetail feature and the jaws can be pulled away from the gripper
- For ID jaws, pull the jaws apart until the dovetail feature on the jaw can clear the dovetail feature and the jaws can be pulled away from the gripper



Bin Drop Option

- Place bucket or bin at location shown
- Bin drop location can be reprogrammed to other locations, if needed
- Protect parts with foam, water or other means to cushion the part drop



Home Positions

Move Home

Nearest Starting Home

Bin Drop

Destination Home

VersaBlast

Move Home

Cancel

In Recovery, when selecting the Move Home button, the system needs to know approximately where the robot is currently located and optionally where the robot is going.

There are 5 primary home positions:

- Table Home
- CNC Home
- InCNC Home
- Bin Drop
- VersaBlast

The following pages illustrate these home positions for reference

Default Table Home Position

Robot is oriented above
table



CNC Home Position (Default Home Location)

Robot is facing CNC, but
not inside CNC



Default In CNC Home Position

Robot is inside CNC,
above vises



Default VersaBlast Position

Robot is inside CNC, oriented to clean bottom or top of jaws with VersaBlast



Default Bin Drop Position

Robot is above Bin Drop location, outside CNC, with gripper flipped to drop parts



VERSABUILT ROBOTICS