MAS/LAS Installation Checklist: Serial No. VSC_____

Installation steps are:

1.0 Prove-out manual machining
2.0 Power up VSC and Enable Remote Support
3.0 Configure CNC connections
4.0 Setup automation hardware (Robot, Gripper, AutoDoor, etc)
5.0 Test devices with I/O Panel on U/I
6.0 Calibrate
7.0 Configure & Run parts
8.0 Complete user training

Before installation
Customer complete steps 1 & 2

Completion of step 3, validating system communication before installation, allows for any unique CNC features to be resolved before installation

1.00	Prove-out manual machining	Reference Material	Complete
1.01	Uncrate, organize material, access manual ● hard copy of manual included with shipment ● Latest version of manual available via download from VersaBuilt website - https://www.versabuilt.com/resources/	Installation Manual	
1.02	Install Vises **(Mill only)**	Installation Manual *pre-installation activity	
1.03	Install Manual Valves and Pneumatics **(Mill only)**	Installation Manual *pre-installation activity	
1.04	Install VersaBuilt programs on CNC (9000's, 8000's) ● Provided on USB ● Available at https://www.versabuilt.com/resources/ ● Program numbers can be changed if needed	CNC Installation and Programming Manual	
1.05	Prove-out manual machining, making good parts: ● Separate Op1 and Op2 programs (note program end requirements described in the CNC Installation and Programming Manual) ● Note any need for X, Y or Z part positioning required during hand load (Lathe and Mill, if Mill program requires), e.g., tapping down part with a mallet, fully seating lathe part in chuck by hand. ● Edit 8001 CNC wash program for Mill or Lathe setup to wash vises or chucks to be free of chips	Machinist Manual *pre-installation activity CNC Installation and Programming Manual	

2.00	Power up VSC and Enable Remote Support	Reference Material	Complete
2.01	Mount VSC ● within 15 ft of the robot controller (for cable and tubing reach) ● On or next to CNC w/ or w/o provided DIN rail mount ● Under the cart	Installation Manual	
2.02	Connect Ethernet/Communication devices ● VSC to Ethernet Switch ● Switch to Router ● Router to Local Network **if Ethernet drop available* ● Switch to CNC **if CNC has ethernet connection* ● VSC to RS232 port on Legacy CNC's **if CNC has RS232 connection*	Installation Manual CNC Installation and Programming Manual	
2.03	Power Up VSC, Ethernet Switch, and Router ● 110 VAC power connections for VSC and Ethernet Switch ● USB connection on VSC for Router	Installation Manual	
2.04	Connect to user interface (tablet, laptop, monitor/keyboard, phone) ● Wi-Fi ○ Connect to VSC Wi-Fi (vsc00xxx, password: versabuilt) ○ Open U/I with website: 192.168.2.4:9000 ● Ethernet: ○ Connect Ethernet to WAN port ○ Open U/I with website: 192.168.2.4:9000 ● Monitor/Keybaord ○ Remove power from VSC ○ Connect monitor, keyboard and mouse with HDMI and USB connections ○ Power up VSC ○ Monitor will display user interface	CNC Installation and Programming Manual	
2.05	Configure Router to connect to local Wi-Fi or Ethernet drop ● Allows internet access from U/I and remote support from VersaBuilt ● Refer to CNC Installation and Programming Manual to connect to Router software ● Configure to connect to local Wi-Fi (company/shop Wi-Fi or hot spot)	CNC Installation and Programming Manual	
2.06	Enable Remote Support & Connect with VersaBuilt Support ● Go to the About page and enable remote support ● Verify with VersaBuilt that the system is remotely connected ● VersaBuilt to update software and assist with installation, as needed	CNC Installation and Programming Manual	

3.00	Configure CNC connections	Reference Material	Complete
3.01	Verify install VersaBuilt programs on CNC (9000's, 8000's) ● Provided on USB ● Available on https://www.versabuilt.com/resources/	CNC Installation and Programming Manual	
3.02	Edit CNC-specific settings and network settings ● Haas & Fanuc Focus controls = Ethernet or RS232 communication ● Non-Haas, non-Fanuc Focus controls = Standard driver with handshake (Cycle Start, Cycle End)	CNC Installation and Programming Manual	
3.03	Connect CNC cables from VSC to the following:: ● Cycle Start Button ● Chuck Actuation Cable(s) **Lathe Only* ● Pallet Ready Button **if applicable* ● CNC Door interlock **if applicable* ● CNC Cycle End signal **Standard Driver applications (non-Haas, non-Fanuc Focus controls)* *Install with assistance from customer, maintenance manager, tool dealer*	CNC Installation and Programming Manual	
3.04	Verify CNC programs are loaded: ● 8000 - Table Load program (Mill only) ○ Prove-out or edit position before calibration step ● 8001 - CNC wash (table wash, chuck wash) ○ Test that vises/chucks are washed to remove chips *With machinist assistance to edit and test, as needed*	CNC Installation and Programming Manual	

4.00	Setup automation hardware (Robot, Gripper, AutoDoor, etc)	Reference Material	Complete
4.01	Install Door Opener **if included in order*	VersaDoor Manual	
4.02	Move cart to approximate position in front of CNC	Installation Manual	
4.03	Mount Robot on VersaCart ● Robot on pedestal/mount plate ● Robot cable sticking out over cart end ● Robot controller on the bottom shelf of cart ● Teach pendant mount on the side of the cart, opposite side of robot mount	Robot & Gripper Installation Configuration and Operation	
4.04	Power up Robot	Robot & Gripper Installation Configuration and Operation	
4.05	Setup Robot ● Run the “Put_into_box” program to stand the robot up (or use Free Drive) ● Configure Safety Settings ● Setup default gripper payload ● Configure Robot Network settings	Robot & Gripper Installation Configuration and Operation	
4.06	Install Gripper on Robot ● Move robot with teach pendant, as needed **refer to manual*	Robot & Gripper Installation Configuration and Operation	
4.07	Put Robot in Remote Mode ● Teach pendant, upper right-hand corner	Robot & Gripper Installation Configuration and Operation	
4.08	Power down and remove power connection ● Robot ● VSC	Robot & Gripper Installation Configuration and Operation	
4.09	Install Gripper Valves in the Robot Controller	Installation Manual	
4.10	Position VersaCart with Robot in front of CNC ● Position for optimal reach for all vises or chucks without requiring 2 or more table load positions ● Default positions in manual work for most applications. If needed, a preliminary calibration and pick/place test can be performed before the final positioning of carts can be useful.	Installation Manual	
4.11	Route Tubing **refer to schematics in the installation manual appendix*	Installation Manual	

5.0	Test devices with I/O Panel on U/I	Reference Material	Complete
5.01	Connect power ● Robot ● VSC ● Ethernet Switch ● Router ● VersaWash (if included)	Installation Manual	
5.02	Connect to the VSC user interface	Installation Manual	
5.03	Go to the I/O Panel page & verify the proper function of each device ● Test each Output (actuators, etc.) corresponding to devices in use ● Test each Input (sensors, etc.) corresponding to devices in use *Troubleshoot as needed with the I/O panel and Recovery Panel on the Home page*	Installation Manual	
5.04	Go to the Settings page and verify for customer/CNC setup ● CNC type ● Robot type ● Lathe or Mill ● Number of Vises ● AutoDoor type ● Vise sensors on/off ● Door sensors on/off	Installation Manual	
5.05	Go to the Home page, enter Recovery ● Verify robot will move between Home positions ● Test recovery buttons (e.g., gripper open/close, vise open/close, door open/close) ● Verify tube routing is not restricting robot movements or causing errors	Installation Manual	

6.00	Calibrate	Reference Material	Complete
6.01	Go to the Calibration page on the user interface	Installation Manual	
6.02	Calibrate robot positions **include customer in process for initial training* ● VersaCart ○ 8 positions for MultiGrip with Calibration Jaws ○ 3 positions for DuoGrip ● Lathe Centerlines *Lathe only* ● Vises with Calibration Jaws *MultiGrip or DuoGrip centerline* ● InCNC position ● BinDrop, if applicable	Installation Manual	
6.03	Test calibration ● Moving robot, note if the tube routing on the robot is proper ● Test load and unload of vises, with MultiGrip Jaws or Calibration Jaws **MultiGrip* ● Test VersaWash **if part of automation*	Installation Manual	
7.00	**Configure & Run parts**	**Reference Material**	**Complete**
7.01	Configure 1st Part, with CNC program = 0 for testing *training customer	Machinist Manual	
7.02	Test loading and unloading using dummy configuration ● CNC program = 0 ● Demo Part or Customer part	Machinist Manual	
7.03	Verify that the machining CNC programs end with g-code to communicate with VSC Refer to CNC Installation and Programming Manual ● VSC Macro CNC Driver section for Haas and Fanuc Focus controls ● VSC Standard CNC Driver section for non-Haas, non-Fanuc controls *With machinist assistance to edit and test, as needed*	Machinist Manual CNC Installation and Programming Manual	
7.04	Configure part to machine parts	Machinist Manual	
7.05	Run parts with configuration	Operator Manual	
8.00	**Complete user training**	**Reference Material**	**Complete**
8.01	Refer to https://www.versabuilt.com/resources/ training checklist	Training Checklist	