

Haas Robot Package

OPERATOR'S/SERVICE MANUAL

**Next Generation Control
96-0369
Revision A
April 2022
English
Original Instructions**

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Translation
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Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/introduction.html

Service Manual - Disclaimer

You should not do mechanical or electrical machine repairs or service procedures unless you are qualified and knowledgeable about the processes.

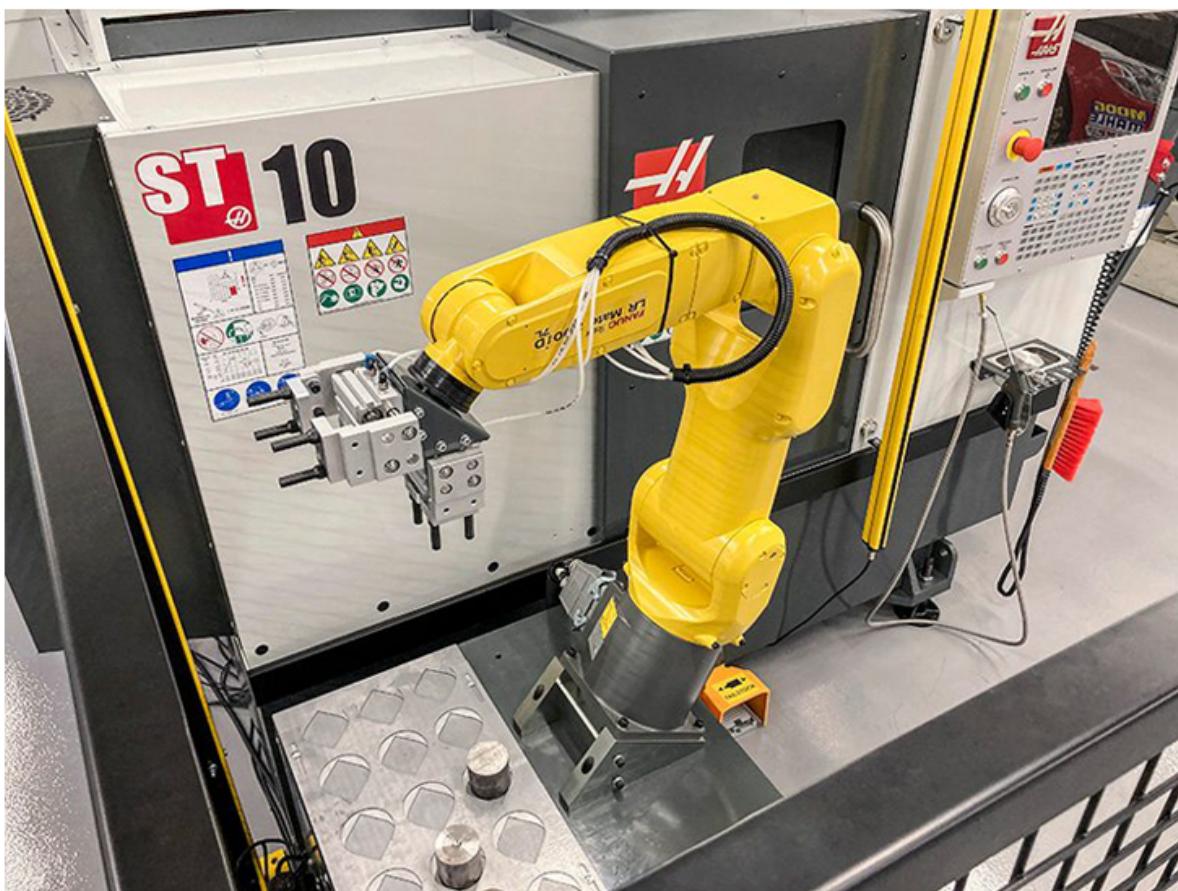
Only authorized personnel with the proper training and certification should do many repair procedures.

WARNING: Some mechanical and electrical service procedures can be extremely dangerous or life-threatening. Know your skill level and abilities.

All information herein is provided as a courtesy for Haas machine owners for reference and illustrative purposes only. Haas Automation cannot be held responsible for repairs you perform. Only those services and repairs that are provided by authorized Haas Factory Outlet distributors are guaranteed.

Only an authorized Haas Factory Outlet distributor should service or repair a Haas machine that is protected by the original factory warranty. Servicing by any other party automatically voids the factory warranty.

Haas Robot Package - Introduction



Use this service manual to install and service the Haas Robot Package on Haas machines.

The Haas designed work cell made up of a CNC machine and a robot has been evaluated for CE compliance. Changes or variations to the Haas cell design should be re-evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Robot is controlled by the CNC it is paired with. It does not respond to any external commands as it could cause hazardous conditions. Do not leave a network connection plugged into the robot controller. No remote control is permitted.

Run Mode

When in Run mode, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.

Setup Mode

Setup Mode

In Set up mode, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The robot program will also be able to be run slowly to prove out the programmed path of the robot.

Note: The max robot speed in setup mode is 7.9 in/sec (200mm/sec).

Robot Motion

Manual motion is only permitted in set up mode and is recommended only with limited speed of motion. High speed is permitted but 500mm clearance for the safety of the operator is required. This requires the set up and verification of DCS/keep out zone(s).

Warning: Startup of automatic motion with someone in the fenced in area is controlled by the operator. The hazardous area is visible from the remote jog pendant outside of the fenced in area surrounding the robot. Verify nobody is in the fenced in area before starting an automatic operation.

Lighting

Level of task lighting required for the robot installation is to be provided by the end user. The robot does not require any lighting. But, light will be required for a user to load or unload parts or to perform maintenance, or service.

Haas Robot - FANUC Dual Check Safety (DCS)

Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

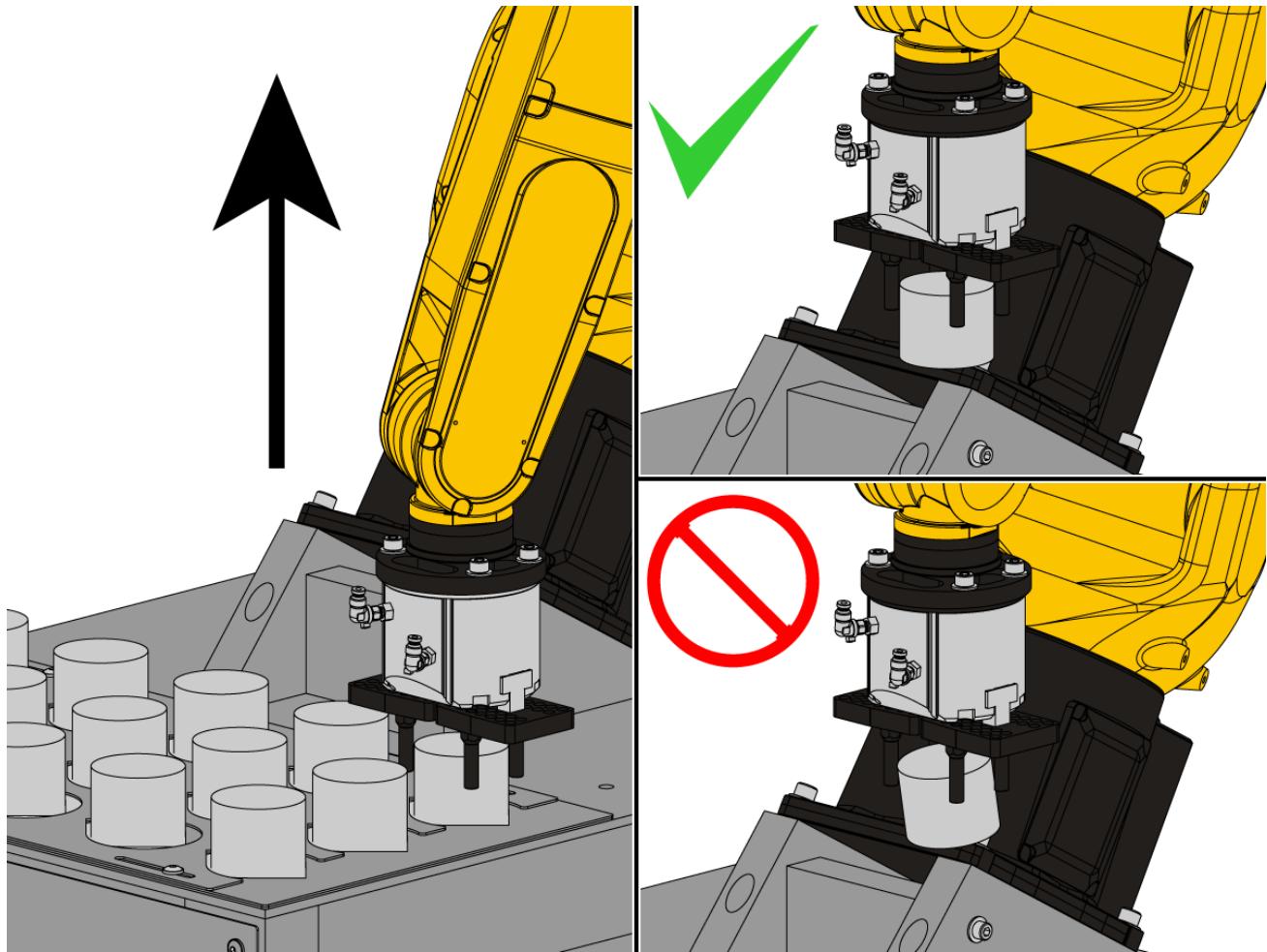
Note: Verify proper setup of the DCS zones at the time of robot installation and every 6 months. It should also be verified after a new job has been set up. Scan the code below with your mobile device to go directly to the procedure.

Operation

Recommendation of PPE including but not limited to gloves to protect from sharp edges and chips, eye glasses for eye protection, steel toed shoes etc. when handling parts or loading/unloading parts for the robot to handle.

Warning: Loss of air pressure may cause the gripper to allow a part being held to slip or be dropped. Users should review grippers that they purchase and determine how they will respond to a loss of power or air pressure, so they know how to minimize any potential hazard.

Robot Work Piece Limits



The operator is responsible for ensuring that the setup and operation of the robot is safe.

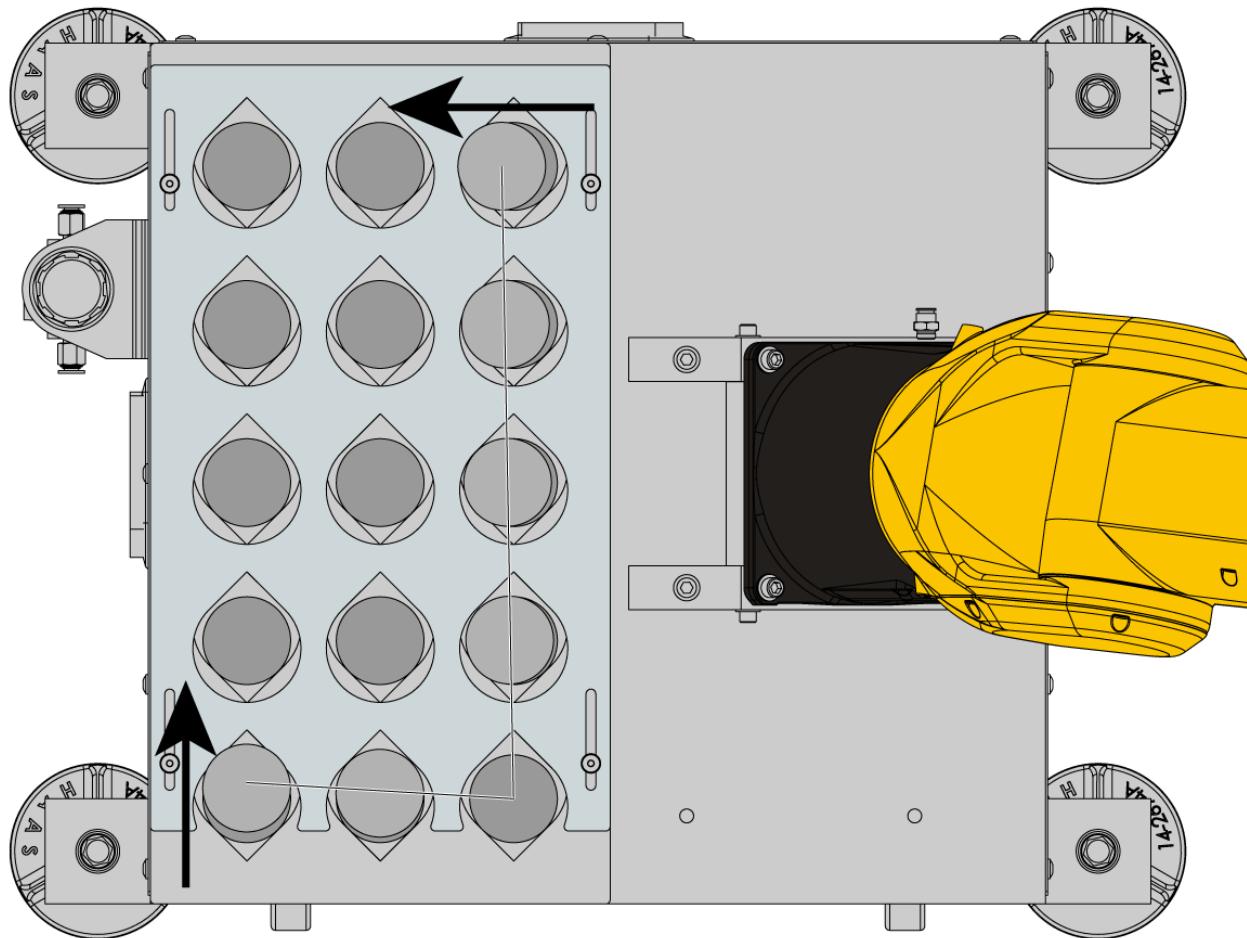
The robot has a maximum payload capacity of 7 kg (15.4 lbs). The weight of the workpiece and grippers must be less than the capacity.

Center the gripper fingers to the part. The part most securely gripped during robot motion. If the part is incorrectly gripped the part may be dropped.

The air regulator controls the gripper grip force. Adjust the regulator to the correct pressure for your setup.

If the speed of the robot is causing the part to be dropped,. Lower the speed or custom gripper fingers will be needed to secure the part.

Part Table Template Layout



The operator is responsible for ensuring that the setup and operation of the robot is safe.

The part table template provides the necessary alignment of the parts. If the parts are misaligned along a row or column, this can cause the gripper to crash into the part.

Center the parts against the edge of the lobes of the part table template to ensure correct alignment.

Handling

Requirement:

Where to Find:

Storage conditions for the individual machines.	<p>Haas Operator's Manuals section 1.1.3, Machine Environmental Limits:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p><u>Fanuc Safety Handbook Section 3.2</u></p> <p><u>FANUC Robot LR Mate 200iD Operator's Manual Section 1.1</u></p>
<p>Dimensions, mass value(s), position of the center(s) of gravity;</p> <p>Indications for handling (e.g. drawings indicating application points for lifting equipment).</p>	<p>See Robot Lifting section:</p> <p><u>Haas Robot Package 1 – Lathe – Installation</u></p> <p><u>Haas Robot Package 1 – Mill – Installation</u></p>

Installation

Requirement:	Where to Find:
Fixing/anchoring and vibration dampening requirements;	<p>See Introduction section:</p> <p><u>Haas Robot Package 1 – Lathe – Installation</u></p> <p><u>Haas Robot Package 1 – Mill – Installation</u></p>
Assembly and mounting conditions;	<p>See Robot Installation section:</p> <p><u>Haas Robot Package 1 – Lathe – Installation</u></p> <p><u>Haas Robot Package 1 – Mill – Installation</u></p>

Space needed for use and maintenance;	See Layout Drawing section: <u>Haas Robot Package-1</u> product page.
Permissible environmental conditions (e.g. temperature, moisture, vibration, electromagnetic radiation);	Haas Operator's Manual section 1.1.3 , Machine Environmental Limits: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u>
Instructions for connecting the robot system to power supplies (particularly about protection against electrical overloading);	See Robot Electrical - Installation section: <u>Haas Robot Package 1 – Lathe – Installation</u> <u>Haas Robot Package 1 – Mill Installation</u>
Advice about waste removal/disposal;	Robot is a parts handing device.
If necessary, recommendations about protective measures which have to be taken by the user; [e.g. additional or interim safeguards (see ISO 12100), safety distances, safety signs and signals];	No additional requirements or signs.

Instructions for how the initial test and examination of the robot system and its guarding system are to be carried out before first use and before being placed into production, including functional testing of reduced speed control.

See **Verification** section:

[Haas Robot Package 1 – Lathe – Installation](#)

[Haas Robot Package 1 – Mill Installation](#)

Initial Start-up Procedures

Requirement:	Where to Find:
<p>Before applying power, verify that:</p> <ul style="list-style-type: none">• the robot has been properly mechanically mounted and is stable;• the electrical connections are correct and the power (i.e. voltage, frequency, interference levels) is within the specified limits;• the proper electrical earth (equalizing potential) is provided;• the safety-related parts of the control system are properly installed;• the other utilities (e.g. water, air, gas) are properly connected and within specified limits;• the peripheral equipment including interlocks is properly connected;• the limiting devices that establish the restricted space (when utilized) are installed;• the appropriate safeguarding means are applied;	<p>See Verification section:</p> <p><u>Haas Robot Package 1 – Lathe – Installation</u></p> <p><u>Haas Robot Package 1 – Mill Installation</u></p>
The physical environment is as specified (e.g. lighting and noise levels, temperature, humidity, atmospheric contaminants);	<p>Haas Operator's Manual section 1.1.3, Machine Environmental Limits:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p>

The proper version of all programs – normal control and safety-related – have been validated and are the versions that are installed (engineering change management);	Requires Software version 100.20.000.1000 as a minimum.
	<u>Haas Robot Package 1 – Lathe – Installation</u>
	<u>Haas Robot Package 1 – Mill – Installation</u>

After applying the power, verify that:

<ul style="list-style-type: none"> • the start, stop and mode selection (including the key lock switches) control devices function as intended; • each axis moves and is restricted as intended; • emergency stop and protective stop (where included) circuits and devices are functional; • it is possible to disconnect and isolate the external power sources; • all safeguards, protective devices, enabling devices, and interlocks function as intended. • all other safeguarding is in place (e.g. barriers, warning devices); • in manual mode, the robot operates properly and can handle the product or workpiece; 	<p>See Verification section:</p> <p><u>Haas Robot Package 1 – Lathe – Installation</u></p> <p><u>Haas Robot Package 1 – Mill – Installation</u></p> <p><u>Haas Robot - Fanuc Dual Check Safety (DSC) - Setup</u></p>
The teach and playback capabilities function correctly;	Fanuc "Teach" and "Playback" Not Available
Environmental conditions are considered for compatibility [e.g. explosion, corrosiveness, humidity, dust, temperature, electromagnetic interference (EMI), radio frequency interference (RFI) and electrostatic discharge (ESD)];	<u>Haas Robot Package-1 product page.</u>
In automatic (normal) operation, the robot operates properly and can perform the intended task at the rated speed and load.	<u>Haas Robot - Quick Start Guide</u>

System Information

Requirement:	Where to Find:

Detailed description of the system, its fittings, its guards and/or protective devices;	<u>Haas Robot Package 1 – Lathe – Installation</u>
Comprehensive range of applications for which the robot system is intended, including prohibited usages, if any, taking into account variations of the original robot system, if appropriate;	<u>Haas Robot Package-1 product page.</u> <u>Fanuc Safety Handbook Section 2.1</u>
Safety requirements specification describing the safety functions performed by the control system and their safety integrity, discrete stopping circuits, safety controllers and safe communications;	Contact your Local Haas Factory Outlet.
Other controller functions, operator panels, teach pendants, enabling devices and awareness indicators;	<u>Haas Robot Package 1 – Lathe – Installation</u> <u>Haas Robot Package 1 – Mill – Installation</u>
Diagrams (layout, control, electrical, hydraulic, pneumatic, etc.);	Interface wiring diagrams see Robot Electrical - Installation section: <u>Haas Robot Package 1 – Lathe – Installation</u> <u>Haas Robot Package 1 – Mill – Installation</u>
Data concerning other hazards, for example, radiation, gases, vapors, dust and vibration generated with reference to the measuring methods used;	Depends on customer's specific application, no flammable or explosive applications permitted, per Haas Operators Manual
Technical documentation about electrical equipment (see IEC 60204 series);	<u>Fanuc Safety Handbook Section 4</u>
Specifications for equipotential bonding requirements (grounding). Electrical ground (equalizing potential) shall be provided in accordance with IEC 60204-1;	<u>Haas Robot Package 1 – Lathe – Installation</u> <u>Haas Robot Package 1 – Mill – Installation</u>

Documents attesting that the robot system complies with mandatory requirements;	<u>Fanuc Safety Handbook</u> Section 2.3 and Section 7. HAAS Declaration of Conformity. See Risk Assessment for HRP1
Modifications made to the protective measures that were originally provided with the component machines;	Haas machine and robot System is sold as a complete cell, changes or modifications are the responsibility of the user/integrator to verify compliance to applicable standards and safety requirements.
End-effector (end of arm tooling) load analysis, behavior in event of energy loss, human intervention considerations, maintenance and intended life;	<u>FANUC Robot LR Mate 200iD Operator's Manual</u> Section 3.4 <u>Haas Robot - Quick Start Guide</u>
Interface requirements to other machines;	N/A Haas provides a complete work cell solution.
Location of dynamic limiting zones;	<u>Haas Robot - Fanuc Dual Check Safety (DSC) - Setup</u> <u>Haas Robot Package-1 Layout Drawing</u> .
Intended life of the system.	Depends on use and application.

Use of the System

Requirement:	Where to Find:
Residual risk, those risks that could not be eliminated by the protective measures taken by the designer;	Haas Operator's Manuals Door Rules - Run/ Setup Mode section: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u>

Particular risks that may be generated by certain applications, by the use of certain fittings, and about specific safeguards that are necessary for such applications;	<u>Haas Robot - Fanuc Dual Check Safety (DSC) - Setup</u>
Reasonably foreseeable misuse and prohibited usages;	Haas Operator's Manuals: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u>
Material flow;	See Layout Drawing section: <u>Haas Robot Package-1 product page.</u>
Intended use; (Parts Loader)	<u>Haas Robot Package-1 product page.</u> <u>Haas Robot Interface</u>
Task zones and associated residual risks (see ISO 11161); Operator tasks, locations and routes to perform the tasks;	Haas Operator's Manuals: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u> <u>Haas Robot - Quick Start Guide</u>
Spans of control of the various control and protective devices (see ISO 11161) (e.g. protective devices, reset of protective devices, enabling devices, emergency stops, control stations, disconnecting means);	N/A Haas CNC Control is the master controller and controls the Fanuc Control, the slave controller.

Description of manual controls (actuators), enabling devices, protective stops;	Haas Operator's Manuals: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u> <u>Haas Robot - Quick Start Guide</u>
Setting and adjustment;	<u>Haas Robot - Quick Start Guide</u>
Modes and means for stopping (especially emergency stop);	Haas Operator's Manuals: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u> <u>Haas Robot Package 1 – Lathe – Installation</u> <u>Haas Robot Package 1 – Mill Installation</u>
Fault identification and location, repair, and re-starting after an intervention;	<u>Haas Robot - Troubleshooting Guide</u> <u>Haas Robot - Quick Start Guide</u>
Personal protective equipment that needs to be used and training required;	Haas Operator's Manuals: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u> <u>Haas Robot - Quick Start Guide</u>
Instructions for any test or examination necessary after change of component parts or addition of optional equipment (both hardware and software) which can affect the safety functions; Service to be performed by the Haas Factory Outlet.	<u>Haas Robot - Troubleshooting Guide</u> <u>Haas Robot - Quick Start Guide</u>

Instructions that disconnected pendants shall be removed from access;	N/A Removing Remote Jog Handle renders the Robot and CNC inoperable.
Instructions for fault and emergency recovery of system equipment;	<p><u>Haas Robot - Troubleshooting Guide</u></p> <p><u>Haas Robot - Quick Start Guide</u></p> <p><u>Fanuc R30IB Plus Maintenance Manual</u> Appendix E.</p>
Training requirements for remote control operations;	n/a no remote control permitted
Storage locations or design of unused cableless pendants to prevent use of an inactive emergency stop;	n/a no cables pendants
Requirements for periodic functional testing of safety-related equipment;	<p>Haas Operator's Manual (Lathe and Mill) Section 1.1.2</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p><u>Haas Robot - Quick Start Guide</u></p>
Guidance on correct selection, preparation, application, and maintenance of process unique expendables.	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p><u>Haas Robot - Quick Start Guide</u></p>

Maintenance

Requirement:	Where to Find:
Nature and frequency of inspections for safety functions;	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p><u>FANUC Robot LR Mate 200iD Operator's Manual</u> Section 7.1 & Appendix A</p>
Instructions relating to maintenance operations which require a definite technical knowledge or particular skills and hence should be carried out exclusively by skilled persons (e.g. maintenance staff, specialists);	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p>(No User Repairs, Contact the Haas Factory Outlet).</p> <p><u>FANUC I/O Unit Model A Connection and Maintenance Manual</u> Section 2</p>
Instructions relating to maintenance operations (e.g. replacement of consumable parts) which do not require specific skills and hence may be carried out by users (e.g. operators);	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p>(No Consumable Parts)</p> <p><u>FANUC Robot LR Mate 200iD Operator's Manual</u> Section 7.1-4, 7.1-74</p>
Drawings and diagrams enabling maintenance personnel to carry out their task rationally (especially fault-finding tasks);	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p>(No Consumable parts)</p> <p><u>FANUC Robot LR Mate 200iD Operator's Manual</u> Section 7</p>

Information to replace safety-related parts (e.g. manufacturer part number, specification of the parts);	<p><u>FANUC Robot LR Mate 200iD Operator's Manual</u> Section 7.3 & Appendix A</p> <p>Haasparts.com or contact your local Haas Factory Outlet.</p>
Contact information for the manufacturer(s) to allow for replacement of parts;	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p>Haasparts.com or contact your local Haas Factory Outlet.</p> <p><u>FANUC Robot LR Mate 200iD Operator's Manual Cover Page</u></p> <p><u>Fanuc Safety Handbook Section 8</u></p> <p>Fanuc Robot LR Mate 200iD Maintenance Manual Appendix A.</p>
Tasks that require energy control and isolation;	n/a, Service performed only by Haas certified service personnel, there are no user serviceable parts or functions beyond maintenance items noted in the Haas Operators Manual
Safe working practice for manual suspension of safeguards.	N/A No Suspension of Safeguards.

Emergency Situations

Requirement:	Where to Find:

Type of fire-fighting equipment to be used;	No flammable materials or coolants permitted. Haas Operator's Manuals: <u>Mill Operator's Manual</u> <u>Lathe Operator's Manual</u>
Warning about possible emission or leakage of harmful substance(s);	N/A
Means to fight their effects (if practicable).	N/A
Information in accordance with ISO 9946;	<u>FANUC Robot LR Mate 200iD Operator's Manual</u>
Information in accordance with Part 1;	<u>FANUC Robot LR Mate 200iD Operator's Manual</u>
Where applicable, information on manual high-speed control using the pendant;	No high speed in set up mode
Instruction on installation of limiting devices, including number, location and degree of adjustment of hard stop capability, including instructions on the number, location and implementation of any non-mechanical limiting devices, and capabilities of dynamic limiting, when included;	<u>Haas Robot - Fanuc Dual Check Safety (DSC) - Setup</u>

<p>Information on the number and operation of enabling devices and instructions for installation of additional devices;</p>	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p><u>Haas Robot - Quick Start Guide</u></p>
<p>Information on the stopping time and distance or angle of the three axes with the greatest displacement and motion;</p>	<p><u>FANUC Robot LR Mate 200iD Operator's Manual</u></p>
<p>The specification for any fluids or lubricants to be used in lubrication, braking, or transmission system internal to the robot;</p>	<p>Haas Operator's Manuals:</p> <p><u>Mill Operator's Manual</u></p> <p><u>Lathe Operator's Manual</u></p> <p><u>Haas Robot - Quick Start Guide</u></p>
<p>Information defining the limits for the range of motion and load capacity, including maximum mass, position of the center of gravity of the workpiece and work holding fixture;</p>	<p>DNE in Haas Docs</p> <p><u>FANUC Robot LR Mate 200iD Operator's Manual</u></p>
<p>Information on relevant standards the robot or robot system meets, including any that have been certified by a third party;</p>	<p><u>FANUC Robot LR Mate 200iD Operator's Manual</u></p>

When applicable, instructions on synchronized motion of robots and special training necessary for the programmers/operators;	<u>FANUC Robot LR Mate 200iD Operator's Manual</u>
Instructions on emergency or abnormal movement of the robot without drive power;	<u>FANUC R-30iB Plus Maintenance Manual</u> Section E, Brake Release Unit
Programmed limits established by the use of safety-rated soft axis and space limiting features;	<u>Haas Robot - Fanuc Dual Check Safety (DSC) - Setup</u>
For robot systems designed for collaborative operation, declaration that the robot is suitable for integration as a collaborative robot, with a reference to 5.11 that identifies the requirements met and type of operations.	N/A No Collaborative Operation.

Marking

Requirement:	Where to Find:
The business name and full address of the manufacturer and, where applicable, his authorized representative,	Robot arm base, front of control box
Designation of the machinery,	Robot arm base, front of control box
Designation of series or type,	Table supporting robot arm
Serial number, if any,	Robot arm base, front of control box
The year of construction, that is the year in which the manufacturing process is completed,	Robot arm base, front of control box

If machinery is designed and constructed for use in a potentially explosive atmosphere, it shall be marked accordingly.

N/A No flammable or explosive parts, coolants or chips noted in operator's manual.

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/hrp---legal-information.html

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Java Powered



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Any further distribution of the Java programs (beyond this appliance/machine) is subject to a legally binding End User License Agreement with Oracle. Any use of the commercial features for production purposes requires a separate license from Oracle.

Limited Warranty Certificate

Haas Automation, Inc.

Covering Haas Automation, Inc. CNC Equipment

Effective September 1, 2010

Haas Automation Inc. (“Haas” or “Manufacturer”) provides a limited warranty on all new mills, turning centers, and rotary machines (collectively, “CNC Machines”) and their components (except those listed below under Limits and Exclusions of Warranty) (“Components”) that are manufactured by Haas and sold by Haas or its authorized distributors as set forth in this Certificate. The warranty set forth in this Certificate is a limited warranty, it is the only warranty by Manufacturer, and is subject to the terms and conditions of this Certificate.

Limited Warranty Coverage

Each CNC Machine and its Components (collectively, “Haas Products”) are warranted by Manufacturer against defects in material and workmanship. This warranty is provided only to an end-user of the CNC Machine (a “Customer”). The period of this limited warranty is one (1) year. The warranty period commences on the date the CNC Machine is installed at the Customer’s facility. Customer may purchase an extension of the warranty period from an authorized Haas distributor (a “Warranty Extension”), any time during the first year of ownership.

Repair or Replacement Only

Manufacturer’s sole liability, and Customer’s exclusive remedy under this warranty, with respect to any and all Haas products, shall be limited to repairing or replacing, at the discretion of the Manufacturer, the defective Haas product.

Disclaimer of Warranty

This warranty is Manufacturer's sole and exclusive warranty, and is in lieu of all other warranties of whatever kind or nature, express or implied, written or oral, including, but not limited to, any implied warranty of merchantability, implied warranty of fitness for a particular purpose, or other warranty of quality or performance or noninfringement. All such other warranties of whatever kind are hereby disclaimed by Manufacturer and waived by Customer.

Limits and Exclusions of Warranty

Components subject to wear during normal use and over time, including, but not limited to, paint, window finish and condition, light bulbs, seals, wipers, gaskets, chip removal system (e.g., augers, chip chutes), belts, filters, door rollers, tool changer fingers, etc., are excluded from this warranty. Manufacturer's specified maintenance procedures must be adhered to and recorded in order to maintain this warranty. This warranty is void if Manufacturer determines that (i) any Haas Product was subjected to mishandling, misuse, abuse, neglect, accident, improper installation, improper maintenance, improper storage, or improper operation or application, including the use of improper coolants or other fluids, (ii) any Haas Product was improperly repaired or serviced by Customer, an unauthorized service technician, or other unauthorized person, (iii) Customer or any person makes or attempts to make any modification to any Haas Product without the prior written authorization of Manufacturer, and/or (iv) any Haas Product was used for any non-commercial use (such as personal or household use). This warranty does not cover damage or defect due to an external influence or matters beyond the reasonable control of Manufacturer, including, but not limited to, theft, vandalism, fire, weather condition (such as rain, flood, wind, lightning, or earthquake), or acts of war or terrorism.

Without limiting the generality of any of the exclusions or limitations described in this Certificate, this warranty does not include any warranty that any Haas Product will meet any person's production specifications or other requirements, or that operation of any Haas Product will be uninterrupted or error-free. Manufacturer assumes no responsibility with respect to the use of any Haas Product by any person, and Manufacturer shall not incur any liability to any person for any failure in design, production, operation, performance, or otherwise of any Haas Product, other than repair or replacement of same as set forth in the warranty above.

Limitation of Liability and Damages

Manufacturer will not be liable to Customer or any other person for any compensatory, incidental, consequential, punitive, special, or other damage or claim, whether in an action in contract, tort, or other legal or equitable theory, arising out of or related to any Haas product, other products or services provided by Manufacturer or an authorized distributor, service technician, or other authorized representative of Manufacturer (collectively, "authorized representative"), or the failure of parts or products made by using any Haas Product, even if Manufacturer or any authorized representative has been advised of the possibility of such

damages, which damage or claim includes, but is not limited to, loss of profits, lost data, lost products, loss of revenue, loss of use, cost of down time, business good will, any damage to equipment, premises, or other property of any person, and any damage that may be caused by a malfunction of any Haas product. All such damages and claims are disclaimed by Manufacturer and waived by Customer. Manufacturer's sole liability, and Customer's exclusive remedy, for damages and claims for any cause whatsoever shall be limited to repair or replacement, at the discretion of Manufacturer, of the defective Haas Product as provided in this warranty.

Customer has accepted the limitations and restrictions set forth in this Certificate, including, but not limited to, the restriction on its right to recover damages, as part of its bargain with Manufacturer or its Authorized Representative. Customer realizes and acknowledges that the price of the Haas Products would be higher if Manufacturer were required to be responsible for damages and claims beyond the scope of this warranty.

Entire Agreement

This Certificate supersedes any and all other agreements, promises, representations, or warranties, either oral or in writing, between the parties or by Manufacturer with respect to subject matter of this Certificate, and contains all of the covenants and agreements between the parties or by Manufacturer with respect to such subject matter. Manufacturer hereby expressly rejects any other agreements, promises, representations, or warranties, either oral or in writing, that are in addition to or inconsistent with any term or condition of this Certificate. No term or condition set forth in this Certificate may be modified or amended, unless by a written agreement signed by both Manufacturer and Customer. Notwithstanding the foregoing, Manufacturer will honor a Warranty Extension only to the extent that it extends the applicable warranty period.

Transferability

This warranty is transferable from the original Customer to another party if the CNC Machine is sold via private sale before the end of the warranty period, provided that written notice thereof is provided to Manufacturer and this warranty is not void at the time of transfer. The transferee of this warranty will be subject to all terms and conditions of this Certificate.

Miscellaneous

This warranty shall be governed by the laws of the State of California without application of rules on conflicts of laws. Any and all disputes arising from this warranty shall be resolved in a court of competent jurisdiction located in Ventura County, Los Angeles County, or Orange County, California. Any term or provision of this Certificate that is invalid or unenforceable

in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof, or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction.

Customer Satisfaction Policy

Dear Haas Customer,

Your complete satisfaction and goodwill are of the utmost importance to both Haas Automation, Inc. and the Haas distributor (HFO) where you purchased your equipment. Normally, your HFO will rapidly resolve any concerns you have about your sales transaction or the operation of your equipment.

However, if your concerns are not resolved to your complete satisfaction, and you have discussed your concerns with a member of the HFO's management, the General Manager, or the HFO's owner directly, please do the following:

Contact Haas Automation's Customer Service Advocate at 805-988-6980. So that we may resolve your concerns as quickly as possible, please have the following information available when you call:

- Your company name, address, and phone number
- The machine model and serial number
- The HFO name, and the name of your latest contact at the HFO
- The nature of your concern

If you wish to write Haas Automation, please use this address:

Haas Automation, Inc. U.S.A.
2800 Sturgis Road
Oxnard CA 93030
Att: Customer Satisfaction Manager
email: customerservice@HaasCNC.com

Once you contact the Haas Automation Customer Service Center, we will make every effort to work directly with you and your HFO to quickly resolve your concerns. At Haas Automation, we know that a good Customer-Distributor-Manufacturer relationship will help ensure continued success for all concerned.

International:

Haas Automation, Europe
Mercuriusstraat 28, B-1930
Zaventem, Belgium
email: customerservice@HaasCNC.com

Haas Automation, Asia
No. 96 Yi Wei Road 67,
Waigaoqiao FTZ
Shanghai 200131 P.R.C.
email: customerservice@HaasCNC.com

Customer Feedback

If you have concerns or questions regarding this Operator's Manual, please contact us on our website, www.HaasCNC.com. Use the "Contact Us" link and send your comments to the Customer Advocate.

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/hrp---safety.html

Safety Notes

CAUTION: Only authorized and trained personnel may operate this equipment. You must always act in accordance with the Operator's manual, safety decals, safety procedures, and instructions for safe machine operation. Untrained personnel present a hazard to themselves and the machine

IMPORTANT: Do not operate this machine until you have read all warnings, cautions, and instructions

CAUTION: The sample programs in this manual have been tested for accuracy, but they are for illustrative purposes only. The programs do not define tools, offsets, or materials. They do not describe workholding or other fixturing. If you choose to run a sample program on your machine, do so in Graphics mode. Always follow safe machining practices when you run an unfamiliar program.

All CNC machines present hazards from rotating cutting tools, belts and pulleys, high voltage electricity, noise, and compressed air. When you use CNC machines and their components, you must always follow basic safety precautions to reduce the risk of personal injury and mechanical damage.

The work area must be adequately illuminated to allow clear view and safe operation of the machine. This includes the operator work area and all areas of the machine that might be accessed during maintenance or cleaning. Adequate illumination is the responsibility of the user.

Cutting tools, workholding, workpiece and coolant are beyond the scope and control of Haas Automation, Inc. Each of these potential hazards associated with it (sharp edges, heavy lifting considerations, chemical composition, etc) and it is the responsibility of the user to take appropriate action (PPE, training, etc).

Cleaning of the machine is required during normal use and prior to maintenance or repair. Optional equipment is available to aid cleaning such as washdown hoses, chip conveyors and chip augers. Safe use of this equipment requires training and might require appropriate PPE and is the responsibility of the user.

This operator's manual is intended as a reference guide and is not to be the sole source of training. Complete operator training is available from the authorized Haas distributor.

Read Before Operating

DANGER: Do not enter the machining area any time the machine is in motion, or at any time that machine motion is possible. Severe injury or death may result. Motion is possible when the power is on and the machine is not in [EMERGENCY STOP].

Basic safety:

- This machine can cause severe bodily injury.
- This machine is automatically controlled and may start at any time.
- Consult your local safety codes and regulations before you operate the machine. Contact your dealer if you have questions about safety issues.
- It is the machine owner's responsibility to make sure that everyone who is involved in installing and operating the machine is fully acquainted with the operation and safety instructions provided with the machine, BEFORE they work with the machine. The ultimate responsibility for safety rests with the machine owner and the individuals who work with the machine.
- Use appropriate eye and ear protection when you operate the machine.
- Use appropriate gloves to remove processed material and to clean the machine.
- Replace windows immediately if they are damaged or severely scratched.
- Keep the side windows locked during operation (if available).

Electrical safety:

- The electrical power must meet the required specifications. Attempting to run the machine from any other source can cause severe damage and will void the warranty.
- The electrical panel should be closed and the key and latches on the control cabinet should be secured at all times, except during installation and service. At those times, only qualified electricians should have access to the panel. When the main circuit breaker is on, there is high voltage throughout the electrical panel (including the circuit boards and logic circuits) and some components operate at high temperatures; therefore, extreme caution is required. Once the machine is installed, the control cabinet must be locked, with the key available only to qualified service personnel.
- Do not reset a circuit breaker until the reason for the fault is investigated and understood. Only Haas-trained service personnel should troubleshoot and repair Haas equipment.
- Do not press [POWER UP] on the control pendant before the machine is fully installed.

Operation Safety:

DANGER: To avoid injury verify that the spindle has stopped turning before opening the doors. In the event of a loss of power the spindle will take much longer to coast to a stop.

- Do not operate the machine unless the doors are closed and the door interlocks are functioning correctly.
- Check for damaged parts and tools before you operate the machine. Any part or tool that is damaged should be properly repaired or replaced by authorized personnel. Do not operate the machine if any component does not appear to be functioning correctly.
- When a program runs, the tool turret can move rapidly at any time.
- Improperly clamped parts machined at high speeds/feeds may be ejected and puncture the enclosure. It is not safe to machine oversized or marginally clamped parts.

CAUTION: Manual or Automatic closing of the enclosure doors is a potential pinch point. With Auto Door, the door may be programmed to close automatically, or by pressing the door open/close button on the operators pendant. Avoid putting hands or appendages in the door while closing either manually or automatically.

Release of person trapped in the machine:

- No person should ever be located inside the machine during operation.
- In the unlikely event that a person is trapped inside the machine the emergency stop button should be immediately be depressed and the person removed.
- If the person is pinched or entangled the machine should be powered off; then the machine axes can be moved by use of a large external force in the direction required to free the person.

Recover from a jam or blockage:

- Of the chip conveyor - Follow the cleaning instructions on the Haas service site (go to www.haascnc.com click on the Service tab). If necessary, close the doors and reverse the conveyor so the jammed part or material is accessible, and remove. Use lifting equipment or get assistance for lifting heavy and awkward parts.
- Of a tool and material/part - Close the doors, press [RESET] to clear any displayed alarms. Jog the axis so the tool and material are clear.
- If the alarms do not reset or you are unable to clear a blockage, contact your Haas Factory Outlet (HFO) for assistance.

Follow these guidelines when you work with the machine:

- Normal operation - Keep the door closed and guards in place (for non-enclosed machines) while the machine operates.
- Part loading and unloading -- An operator opens the door, completes the task, closes the door, and then presses [CYCLE START] (starting automatic motion).
- Machining job set-up -- When set-up is complete, turn the set-up key to lock out set-mode and remove the key.

- Maintenance / Machine Cleaner-- Press [EMERGENCY STOP] or [POWER OFF] on the machine before you enter the enclosure.
- Tool loading or unloading -- A machinist enters the machining area to load or unload tools. Exit the area completely before automatic movement is commanded (for example, [NEXT TOOL] , [TURRET FWD] , [TURRET REV]).

Chuck Safety:

DANGER: Improperly clamped parts or oversized parts may be ejected with deadly force.

- Do not exceed the chuck's rated speed. Higher speeds reduce chuck clamping force.
- Unsupported barstock must not extend outside the drawtube.
- Grease the chuck weekly. Follow the chuck manufacturer's instructions for regular service.
- Chuck jaws must not protrude beyond the diameter of the chuck.
- Do not machine parts larger than the chuck.
- Follow all of the chuck manufacturer's warnings regarding the chuck and workholding procedures.
- Hydraulic pressure must be set correctly to securely hold the work piece without distortion.
- Improperly clamped parts at high velocity may puncture the safety door. You must reduce the spindle speed to protect the operator when performing dangerous operations (e.g. turning oversized or marginally clamped parts).

Periodic inspection of machine safety features:

- Inspect door interlock mechanism for proper fit and function.
- Inspect safety windows and enclosure for damage or leaks.
- Verify all enclosure panels are in place.

Door Safety Interlock inspection:

- Inspect the door interlock, verify the door interlock key is not bent, misaligned, and that all fasteners are installed.
- Inspect the door interlock itself for any signs of obstruction or misalignment.
- Immediately replace any components of the Door Safety Interlock system that do not meet this criteria.

Door Safety Interlock verification:

With the machine in run mode, close the machine door, run the spindle at 100 RPM, pull the door and verify the door does not open.

Machine Enclosure and Safety Glass inspection and testing:

Routine Inspection:

- Visually inspect the enclosure and safety glass for any signs of distortion, breakage or other damage.
- Replace the Lexan windows after 7 years or if they are damaged or severely scratched.
- Keep all safety glass and machine windows clean to allow proper viewing of the machine during operations.
- A daily visual inspection of the machine enclosure to verify all panels are in place should be performed.

Testing of machine enclosure:

No testing of the machine enclosure is necessary.

Safety Decals

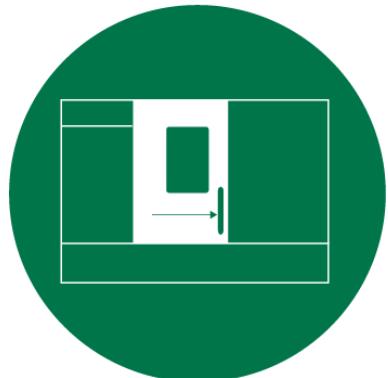
1



2



3



The Haas factory puts decals on your machine to quickly communicate possible hazards. If decals become damaged or worn, or if you need additional decals to emphasize a particular safety point, contact your Haas Factory Outlet (HFO).

NOTE: Never alter or remove any safety decal or symbol.

Be sure to familiarize yourself with the symbols on the safety decals. The symbols are designed to quickly tell you the type of information they give:

- Yellow Triangle - Describes a hazard.
- Red Circle with Slash-Through - Describes a prohibited action.
- Green Circle - Describes a recommended action.
- Black Circle - Gives information about machine or accessory operation.

Example Safety Decal Symbols: [1] Hazard Description, [2] Prohibited Action, [3] Recommended Action.

You may find other decals on your machine, depending on the model and options installed. Be sure to read and understand these decals.

Hazard Symbols - Yellow Triangles

Moving parts can entangle, trap, crush, and cut.

Keep all parts of your body away from machines parts when they move, or whenever motion is possible. Motion is possible when the power is on and the machines is not in **[EMERGENCY STOP]**.



Secure loose clothing, hair, etc.

Remember that automatically controlled devices can start at any time.

Do not extend unsupported bar stock out the rear of the drawtube. Unsupported bar can bend and "whip". A whipping bar can cause severe injury or death.



The Regen is used by the spindle drive to dissipate excess power and will get hot.

Always use care around the Regen.



There are high voltage components on the machine that can cause electrical shock.

Always use care around high voltage components.



There are high voltage components on the machine that can cause electrical shock.

Take care to avoid opening electrical enclosures unless components are de-energized or proper personal protective equipment is worn. Arc flash ratings are on the nameplate.



Machining operations can create hazardous chips, dust, or mist. This is a function of the materials being cut, the metalworking fluid and cutting tools used and the machining speeds/feeds.

It is up to the owner/operator of the machine to determine if personal protective equipment such as safety goggles or a respirators is required and also if a mist extraction system is needed.



Some models have a provision for connecting a mist extraction system. Always read and understand the Safety Data Sheets (SDS) for the workpiece material, the cutting tools, and the metalworking fluid.

Always securely clamp workpieces in the chuck or collet. Properly fasten chuck jaws.



Secure loose clothing, hair, jewelry, etc. Do not wear gloves around rotating machine components. You can be pulled into the machine, resulting in severe injury or death.



Automatic motion is possible when the power is on and the machine is not in **[EMERGENCY STOP]**.

Prohibited Action Symbols - Red Circles with Slash-Through

Do not enter the machine enclosure when the machine is capable of automatic motion.



When you must enter the enclosure to complete tasks, press **[EMERGENCY STOP]** or power off the machine. Put a safety tag on the control pendant to alert other people that you are inside the machine, and that they must not turn on or operate the machine.

Do not machine ceramics.



Do not use chuck jaw extensions. Do not extend chuck jaws beyond the chuck face.



Keep your hands and body away from the area between the tailstock and workholding when automatic motion is possible.



Do not use pure water as coolant. This will cause machine components to rust.

Always use a rust-inhibitive coolant concentrate with water.



Recommended Action Symbols - Green Circles

Keep the machine doors closed.



Always wear safety glasses or goggles when you are near a machine.



Airborne debris can cause eye damage.

Always wear hearing protection when you are near a machine.



Machine noise can exceed 70 dBA.



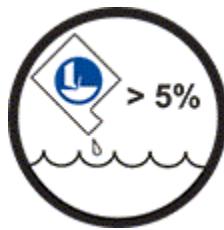
Read and understand the operator's manual and other instructions included with your machine.

Informational Symbols – Black Circles

Maintain the recommended coolant concentration.

A “lean” coolant mixture (less concentrated than recommended) may not effectively prevent machine components from rusting.

A “rich” coolant mixture (more concentrated than recommended) wastes coolant concentrate without further benefit over the recommended concentration.



Other Safety Information

IMPORTANT: You may find other decals on your machine, depending on the model and options installed. Be sure to read and understand these decals.

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/installation.html

Haas Robot Package 1 - VMC - Installation

AD0504

Introduction

This procedure will show you how to install the Haas Robot Arm Package-1.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- 100.20.000.1200 version or higher
- VF-1/2 & VM-2 Built 4-1-2019 and later
- Haas Autodoor (See machine requirements for CAN Auto Door)
- REMOTE JOG HANDLE - XL 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- RJH-XL Robot - Upgrade Kit - This procedure will show you how to upgrade your Robot with the RJH-T assembly to work with RJH-XL assembly.
- I/O board updated to 34-349xB or later
- I/O PCB HINGE DOOR. 93-1000297 I/O DOOR ASSY HINGED

Fixing / Anchoring Requirements

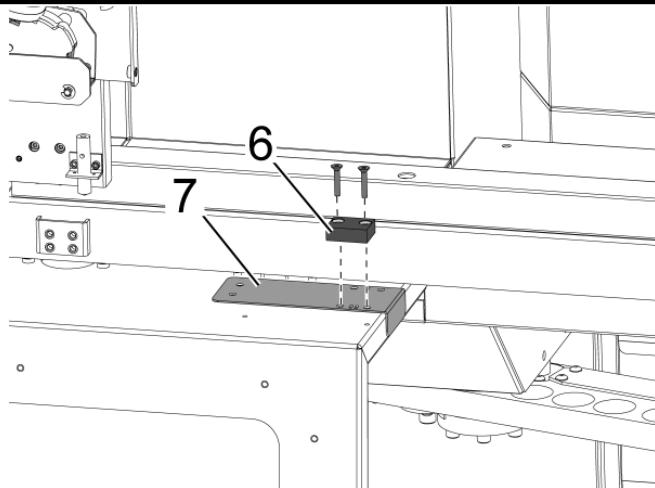
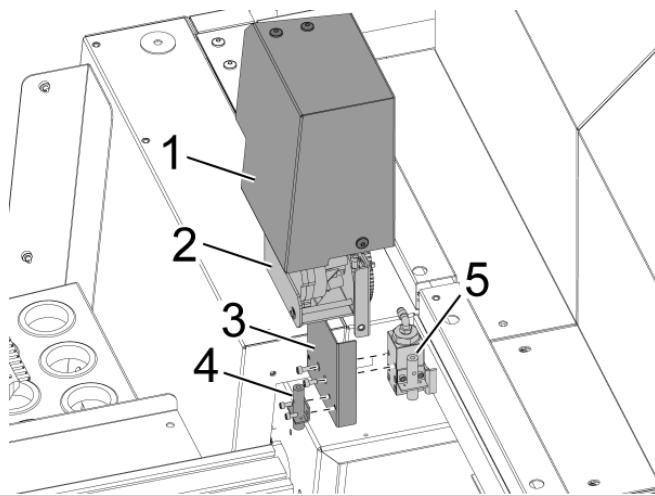
The Haas Robot Package 1 is configured and sold by Haas with a pedestal/table that is sufficiently stable when used according to Haas defined part size and weight limits.

The Haas Robot Package Includes the following Components:

- **30-13007** Robot PKG-1 Fence Kit (fencing with gate to enclose the operators station)
- **32-0911** Gate Interlock
- **32-8581B** Remote E-Stop Assembly (includes holster and 25' foot cable for remote handle jog)
- **32-8580A** HRP-1 Electrical Interface Box Assembly (Includes robot signals and power cables)

Note: The parts above are subject to change and there will be some variation depending on build date.

Mill Setup



1

Complete the following on both sides of the door:

Remove the autodoor motor cover [1] and the autodoor motor assembly [2].

Install the new proximity switch bracket [3] to the existing proximity switch block [5].

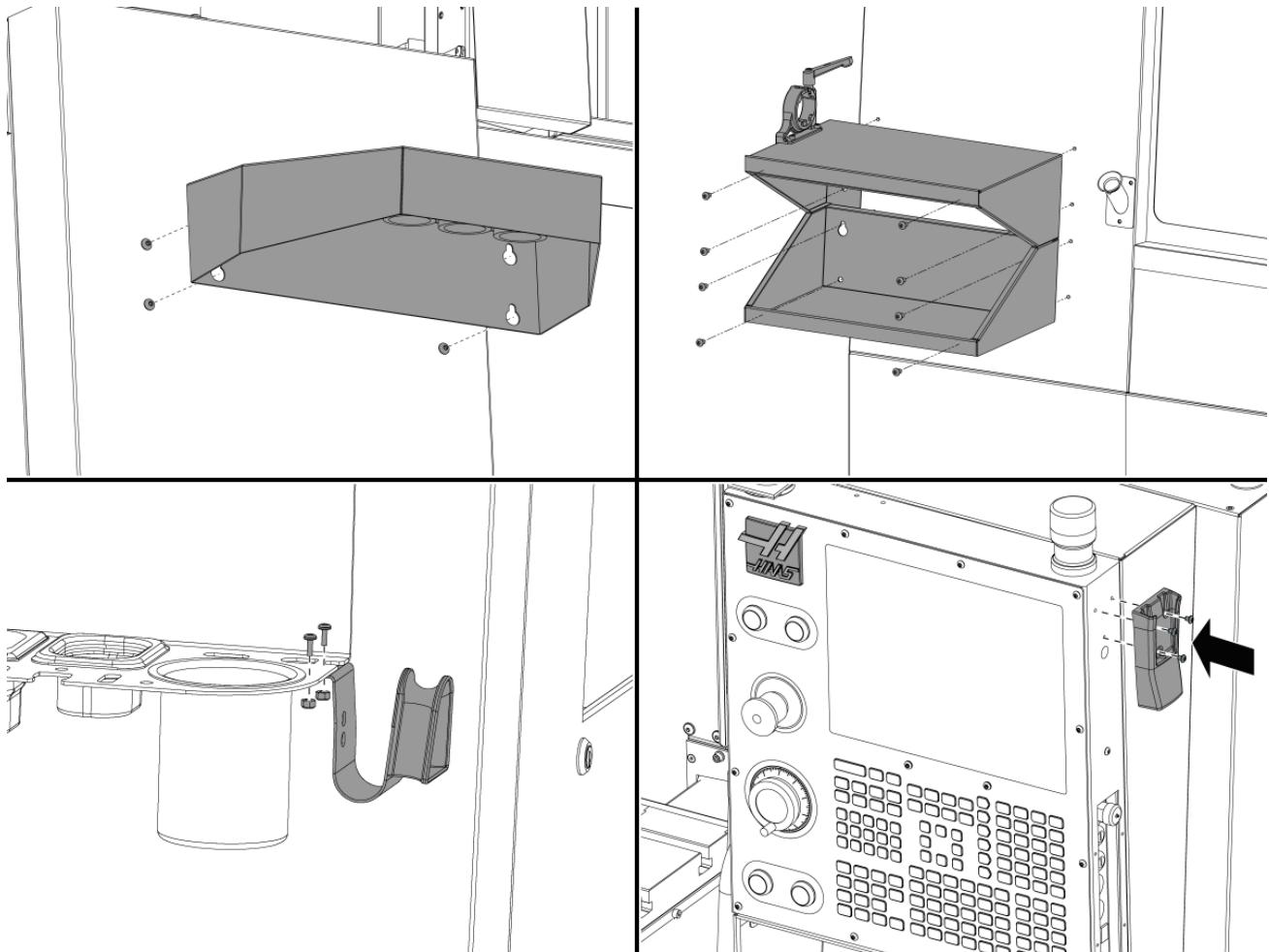
Install the door always open proximity switch [4] to the bracket [3].

Install the drill guide [7] for the door open flag [6] and drill and tap 2x 10-32 holes through the sheet metal of the door.

- Drill size: #21 or 5/32"
- Tap 10-32 NF

Remove the template and install the door open flag with 2x flat head cap screws. Re-install the autodoor motor assembly, bracket, and cover.

Use provided shims to set the height between the proximity switch and the door open flag.

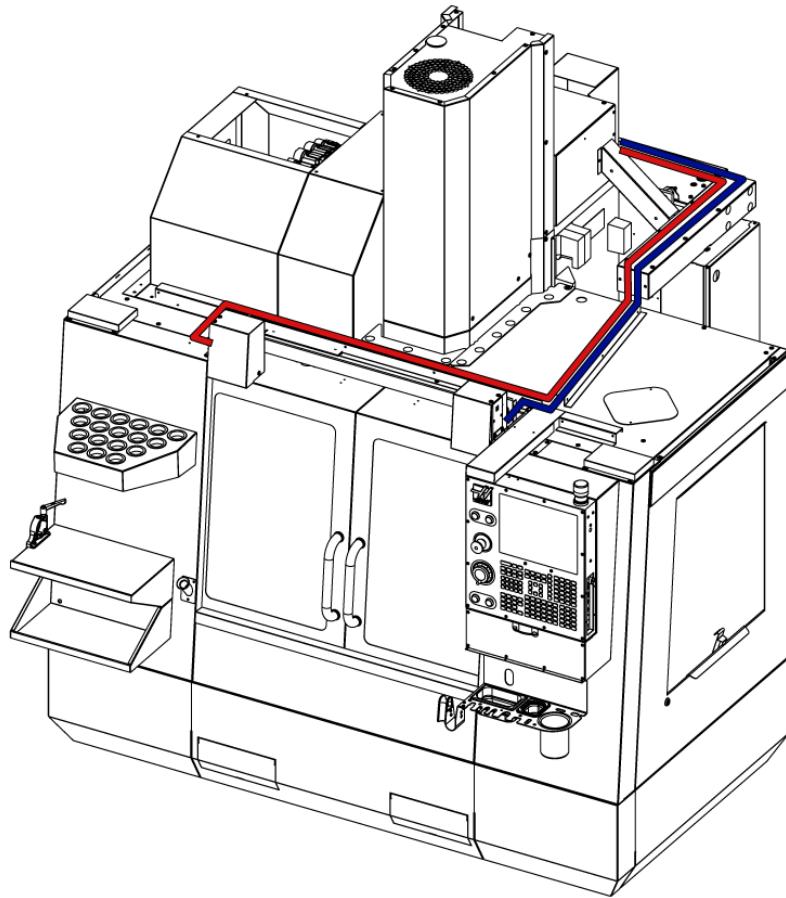


2

Remove the tool tray and tool table from the machine.

Move the air gun hose mount [1] to the opposite side of the tool rack. Drill holes in the tool rack for the 1/4"-20 screws. Use a H (17/64") drill to make clearance holes.

Move the Remote Jog Handle (RJH) to the opposite side of the control pendant and route the cable.



3

Route the door fully open cables into the control cabinet as shown on the picture.

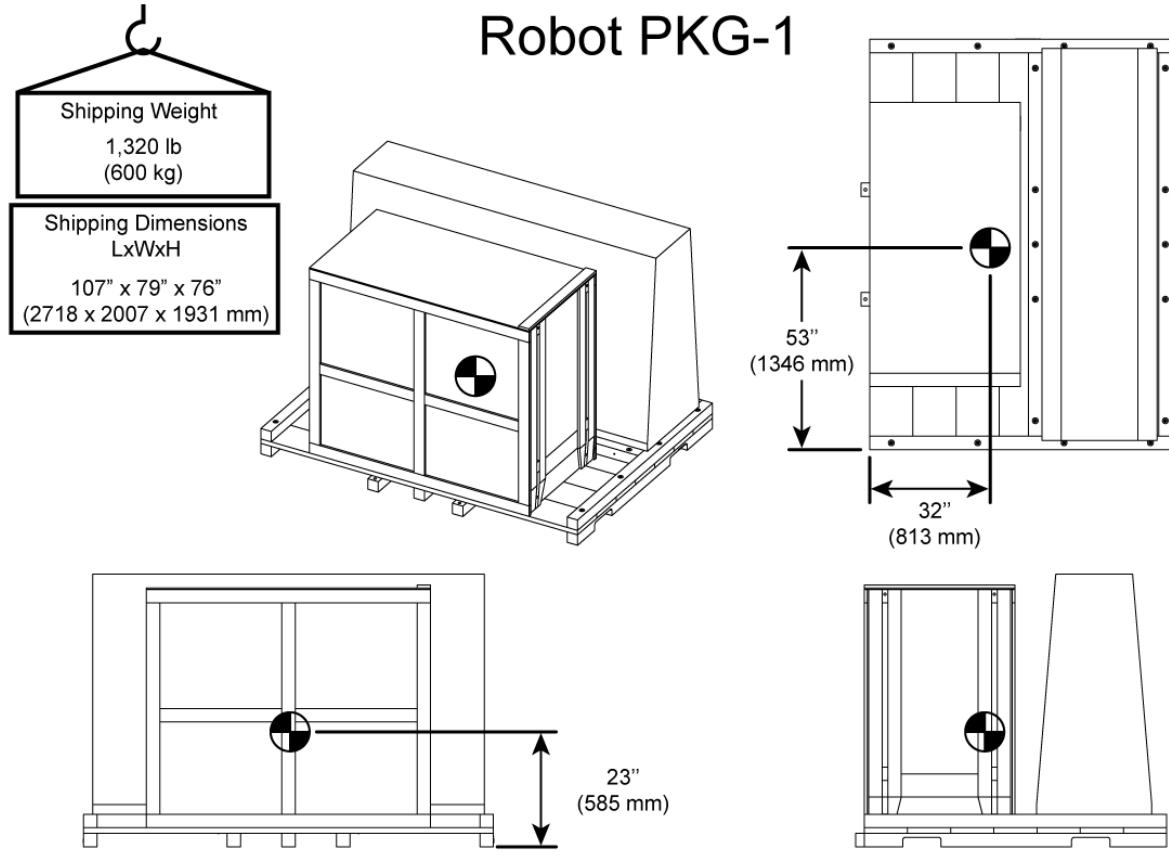
Connect to **32-0807 PROX NO LEFT DOOR FULLY OPEN** to SIO P27.

Connect to **32-0856 PROX NO RIGHT DOOR FULLY OPEN** to SIO P72.

Robot Lifting

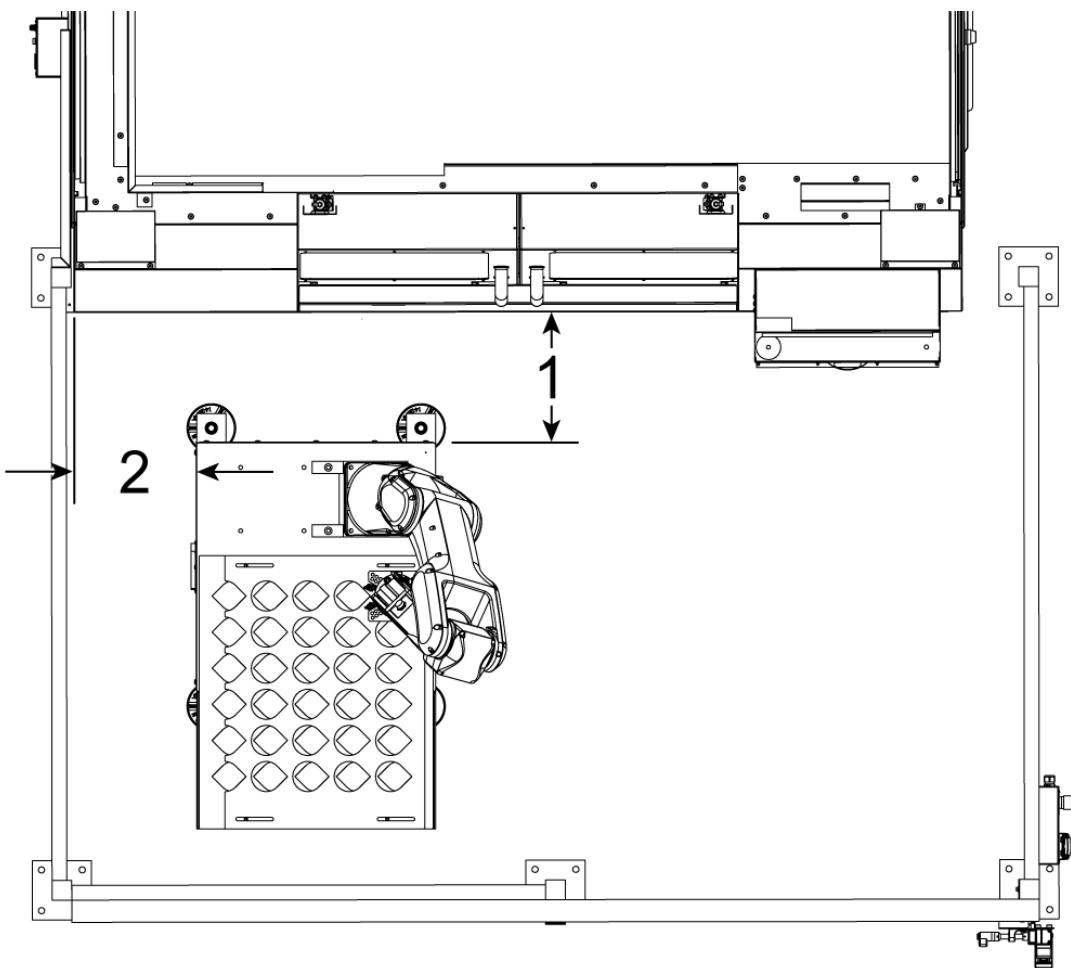
!

Robot PKG-1



Use this information for lifting/moving Robot Package 1.

Robot Installation



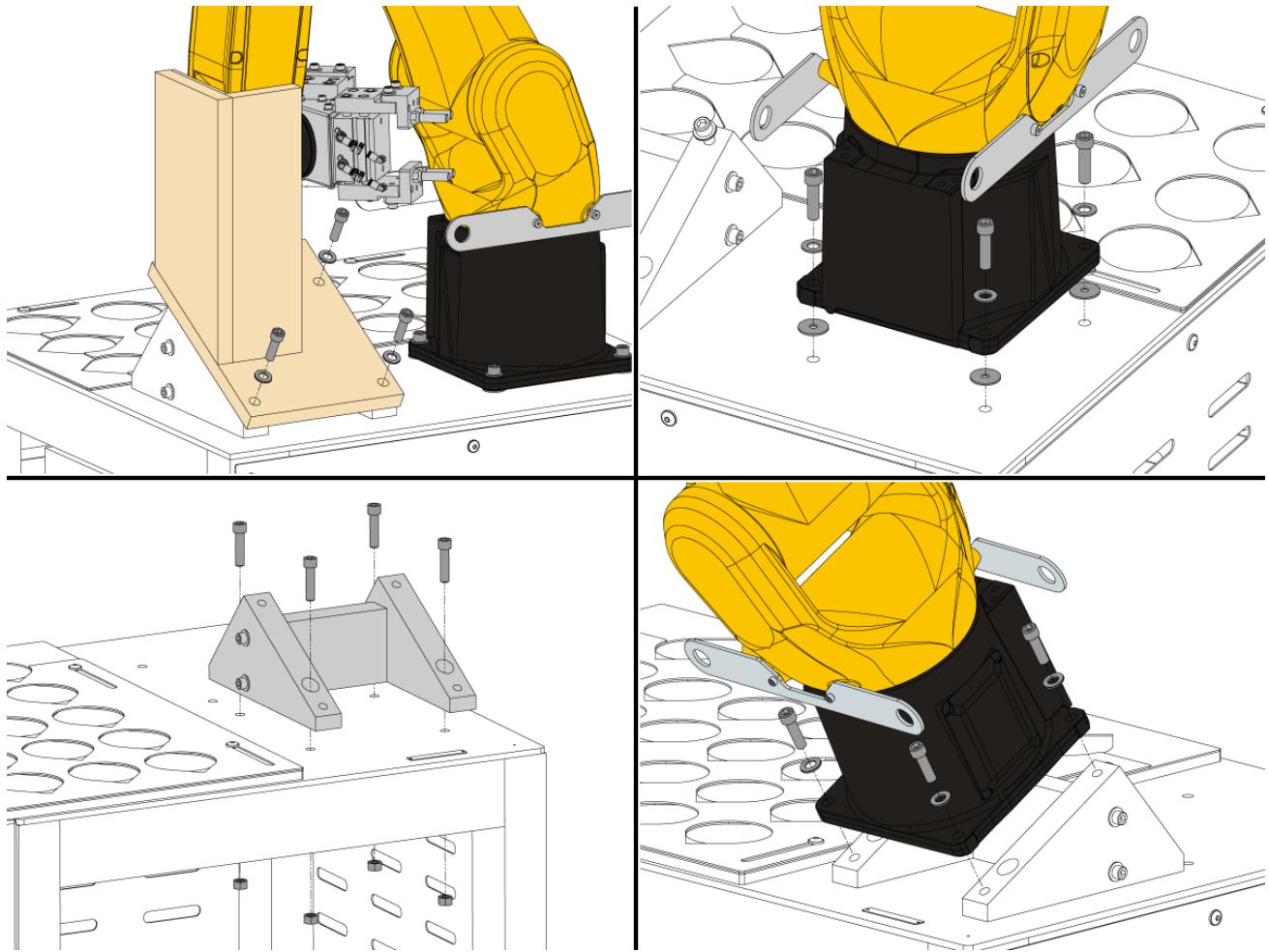
1

The Haas Robot Package 1 is configured and sold by Haas with a pedestal/table that is sufficiently stable when used according to Haas defined part size and weight limits.

Place the robot table against the left front side of the machine. The table should be **1.5 inches**[**1**] from the front of the machine. The table should be **13.5 inches**[**2**] from the left side of the machine. Measure this dimension from the machine skirt to the side panels of the table.

Install the leveling pads and raise the leveling screws until the wheels are off the floor.

Level the table using a bubble level.



2

Remove the robot shipping bracket hardware and slide it off the robot mount away from the arm.

Remove the robot from its shipping location and install the robot to the robot mount with the cable connector to the rear of the stand. Use the hardware that is installed to the robot mount.

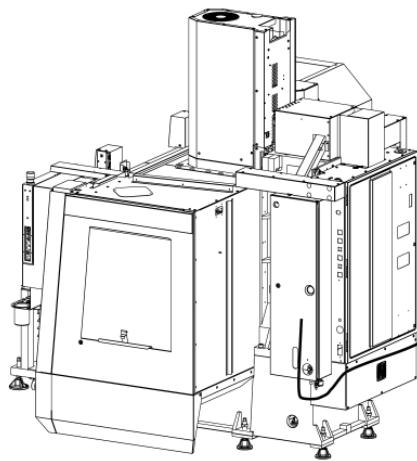
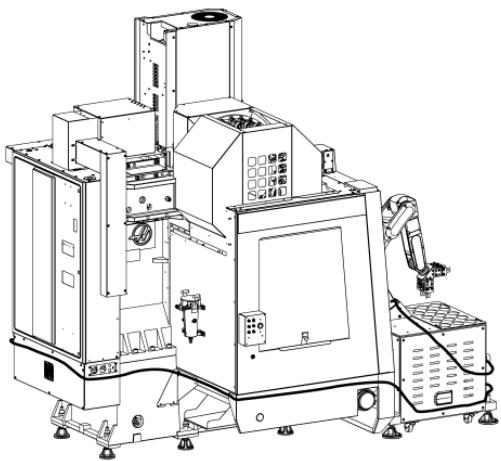
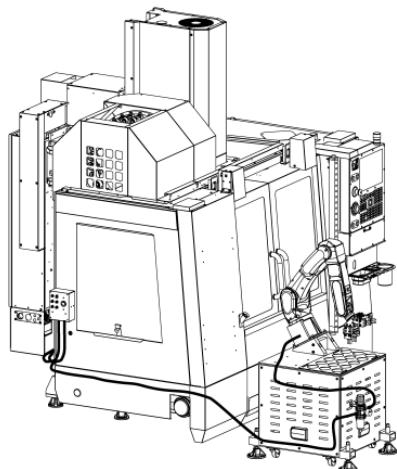
Note: Do not reuse the shipping hardware.

Remove the robot lifting brackets and hardware after installing the robot.



3

Install the robot to the robot mount with the cable connector to the rear of the table.



4

Turn the machine air supply OFF.

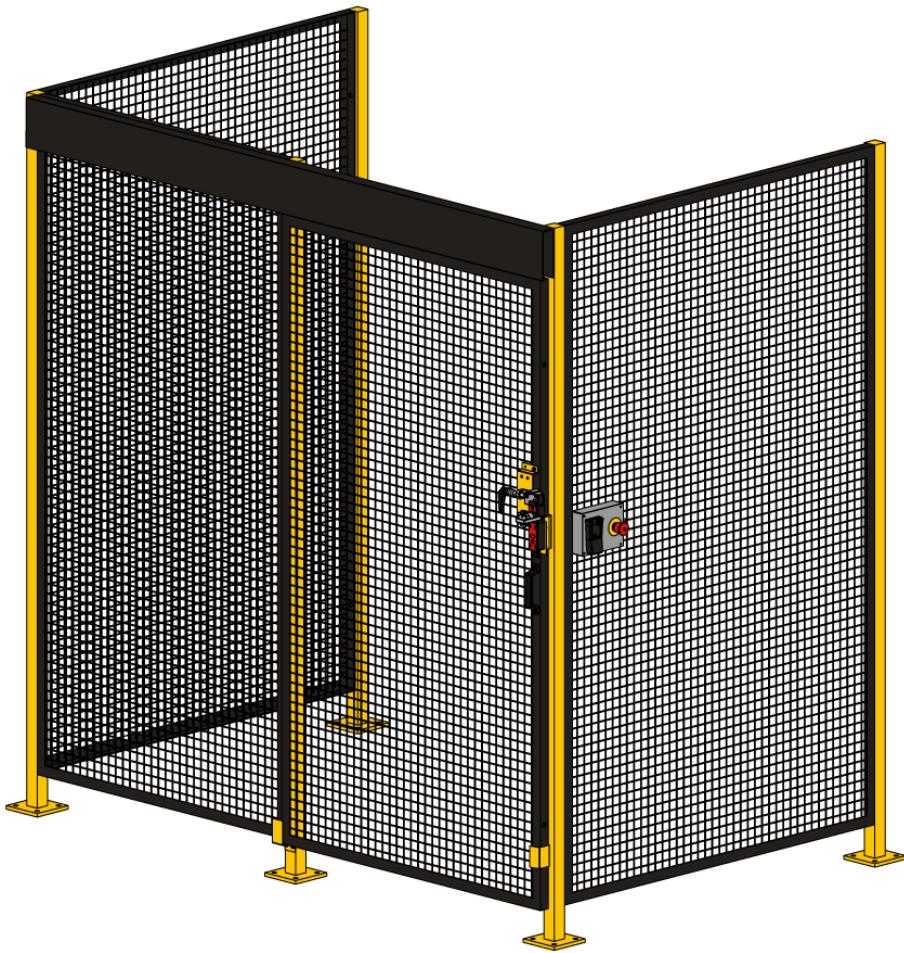
Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports and install the push to connect fitting.

Route the air line from the left side of the regulator along the machine skirt, behind the machine into the CALM cabinet.

Route the air line from the right side of the regulator to the **Air 2 Port** on the robot and install the push to connect fitting.

Turn the machine air supply ON.

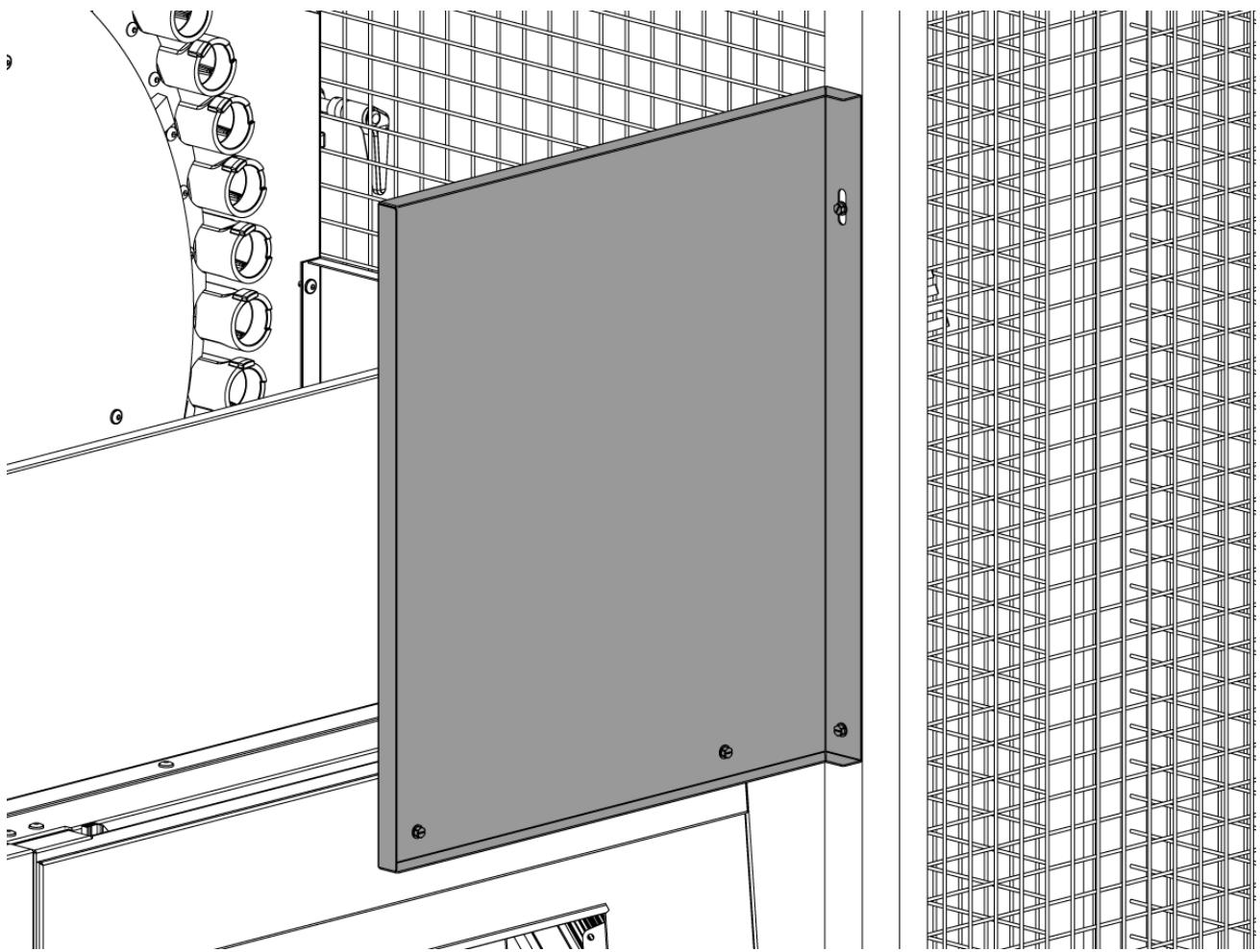
Fence Installation



1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for fence installation.

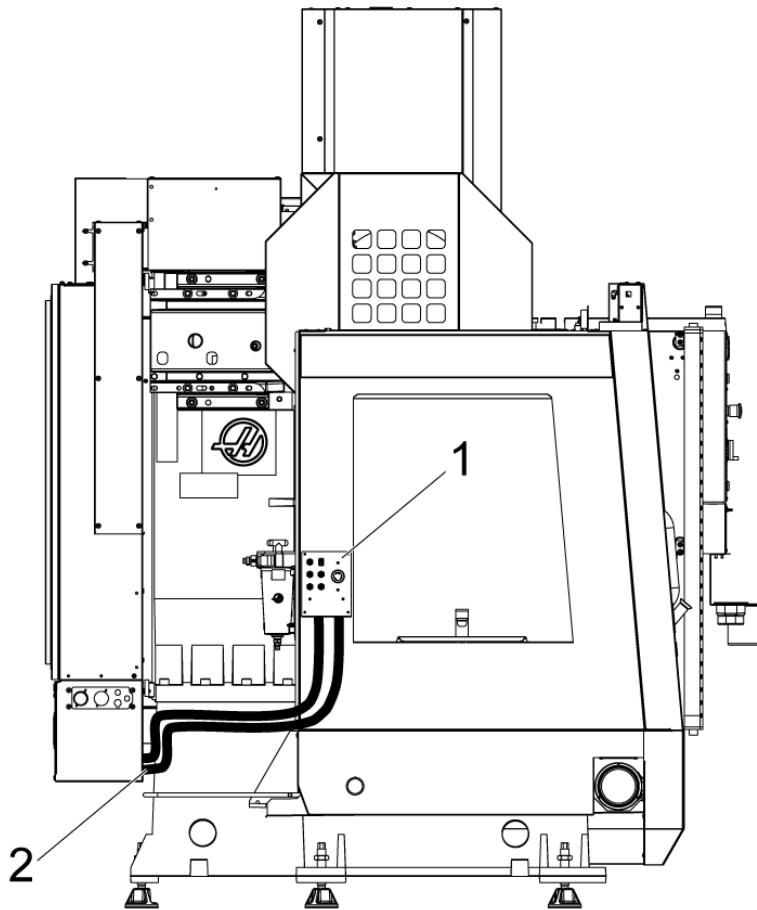
Robot Fence Installation



2

Install the fence panel to the machine and robot fence.

Robot Electrical - Installation



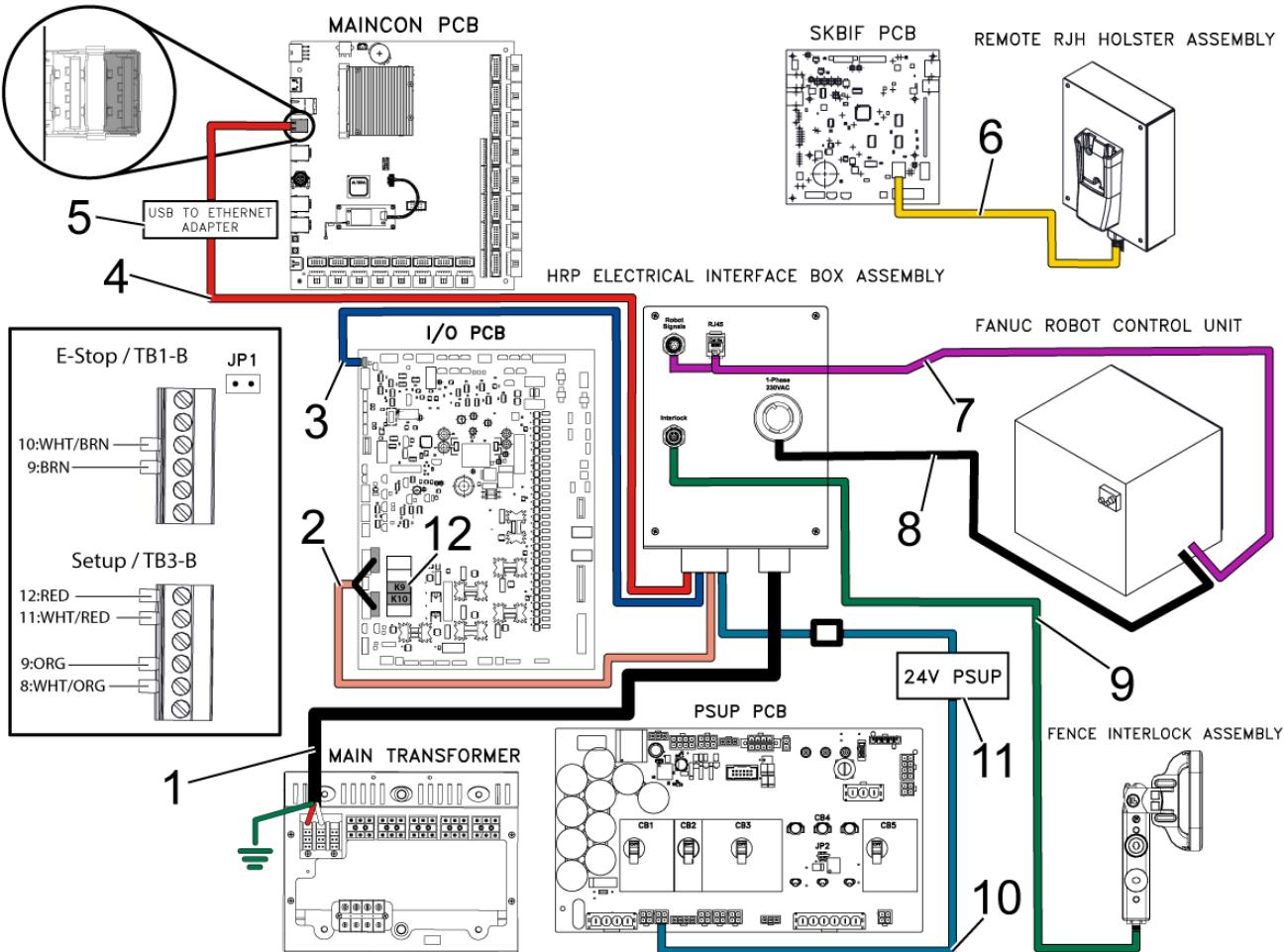
1

VMC Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown in the picture.

Route the Robot interface electrical cables [2] along the enclosure with the magnetic mounts and zipties. Route the cable through the bottom of the electrical cabinet.



Perform the following steps to reconnect the robot to the Haas machine.

Main Transformer

Connect cable [1] P/N **33-8570** to Main Transformer follow the labels to terminals **77** and **78**, connect the ground loop terminal to chassis.

I/O PCB and Maincon PCB

Cable P/N **33-8561C** has multiple connections:

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[2].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [2].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[3]**.

- Connect the **RJ-45** cable [4] to Ethernet to USB adapter [5] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.
- Mount the 24VDC Power Supply[11] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8561C**. Connect cable **33-1910A**[10] to the 24VDC Power Supply[11] and plug into **P3** on the **PSUP PCB**.
- Plug the User Relays into **K9** and **K10**. (see diagram)[12].

Note: If the machine has a **Regen Vector Drive**, unplug cable **33-0634 FILTER OV TO IOPCB P1** from **P1 SIO** and plug it into the connector **FILTER OV FAULT**. If the machine does not have a **Regen Vector Drive**, do not plug anything into the connector **FILTER OV FAULT**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-8550C**[6] from the Remote E-stop box to cable **33-0713** and plug into the SKBIF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [7] **P/N 33-8590A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

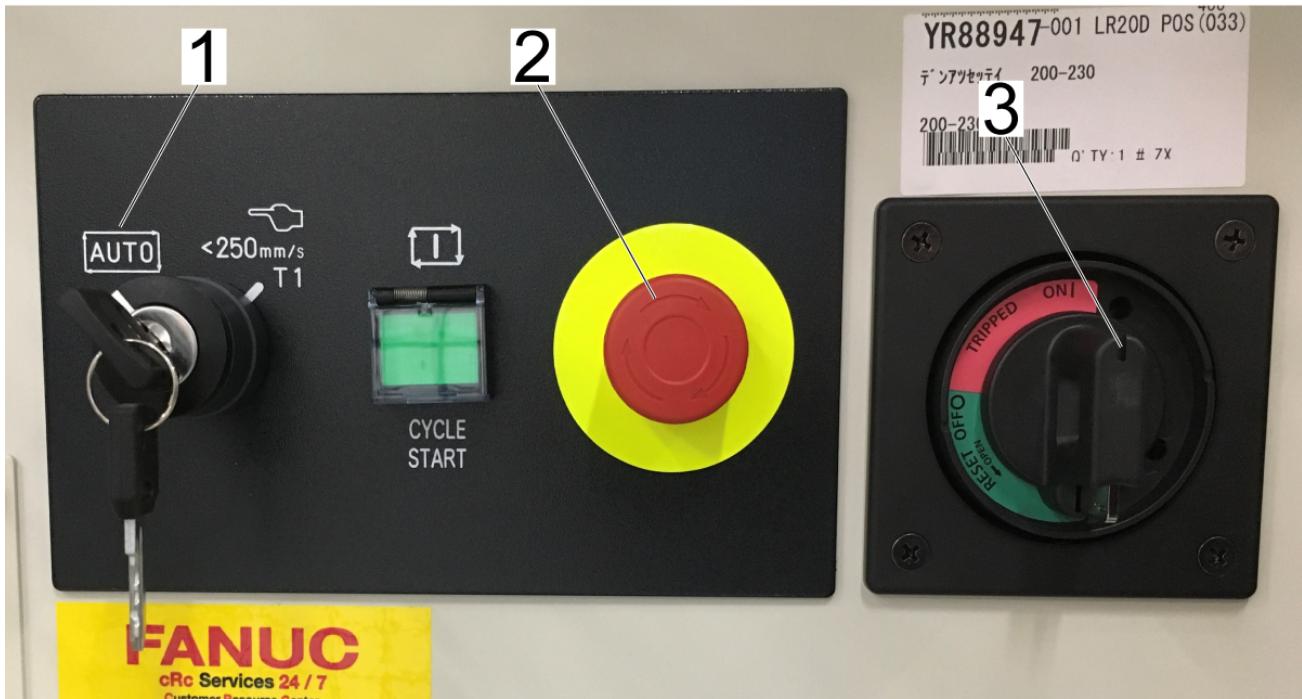
Robot Power

Connect the 230VAC Power Cable [8] **P/N 33-8530** to the Robot Electrical Interface Box.

Fence Interlock

Connect the fence door interlock cable [9] to the electrical interface box.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. Use the key retrieved in previous step and switch to Auto Mode[1].

Make sure the **[E-STOP]** button[2] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[3].

Settings

Settings | Network | User Positions | Alias Codes | **F1** Machine Setup

Group Listings Search **F1** Machine Setup

	Group	Name	Value	Unit
102	Machine Setup	C Axis Diameter	1.0000	IN
336	Machine Setup	Bar Feeder Enable	Off	
340	Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359	Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368	Machine Setup	Live Tooling Type	None	
372	Machine Setup	Parts Loader Type	Robot	
375	Machine Setup	APL Gripper Type	None	
376	Machine Setup	Light Curtain Enable	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413	Machine Setup	Main Spindle Load Type	Low	type
414	Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP [View full text.](#)

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2195 [:] Enable Right Door Fully Open Switch to TRUE**
- **2196 [:] Enable Left Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**

The screenshots show the 'Current Commands' interface for a Haas robot system. The top screenshot is from the 'Jogging' tab, showing a 3D model of a robot arm at a workstation. It displays the current position (X: -0.2606, Y: 14.1384, Z: 6.0865, W: -176.0093, P: -87.2172, R: 86.7410) and a table for setting jogging speed. The table includes columns for Operation, Value, and Units. The 'Maximum jogging Speed' row is highlighted with an orange background, showing a value of 9.8 inch/sec. The bottom screenshot is from the 'Setup' tab, showing a similar 3D model. It displays a 'Connected' message and a table for robot setup parameters. The table includes columns for Operation, Value, and Units. Several rows in the table are highlighted with different colors: Max Robot Speed (blue), Gripper Net Mass (grey), Number of Grippers (blue), Raw Gripper (blue), Clamp Output (grey), Unclamp Output (grey), Clamp Delay (grey), Clamp Type (grey), Finish Gripper (blue), Clamp Output (grey), and Unclamp Output (grey).

3

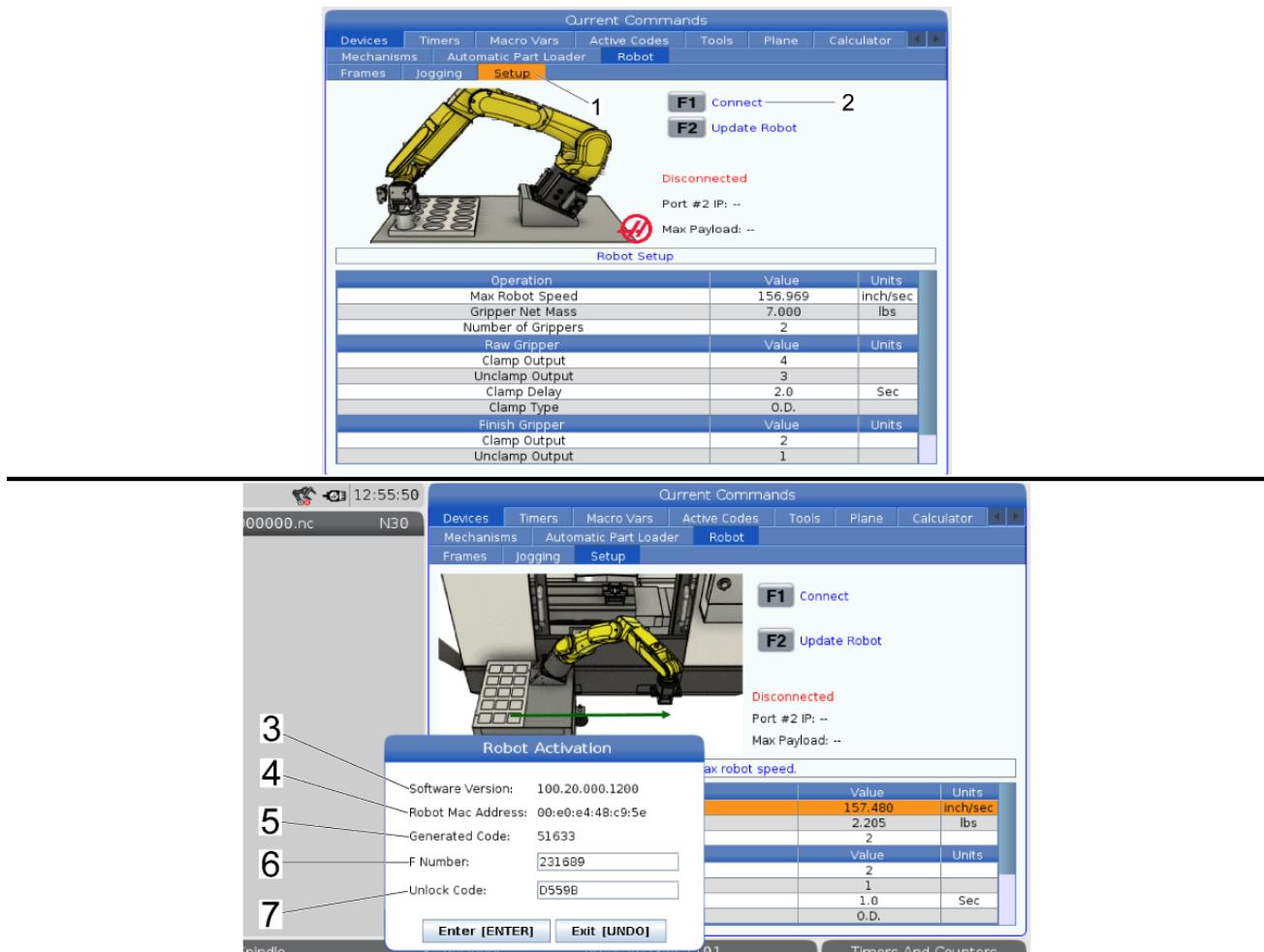
Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to **9.8** inch/sec

Go to the **Setup** tab. Change the following:

- **Max Robot Speed** to **156.969** inch/sec.
- **Gripper Net Mass** to **7.0** lbs.
- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **4**.
- **Raw Gripper Unclamp Output** to **3**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.
- **Finish Gripper Clamp Output** to **2**.
- **Finish Gripper Unclamp Output** to **1**.
- **Finish Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup** tab[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

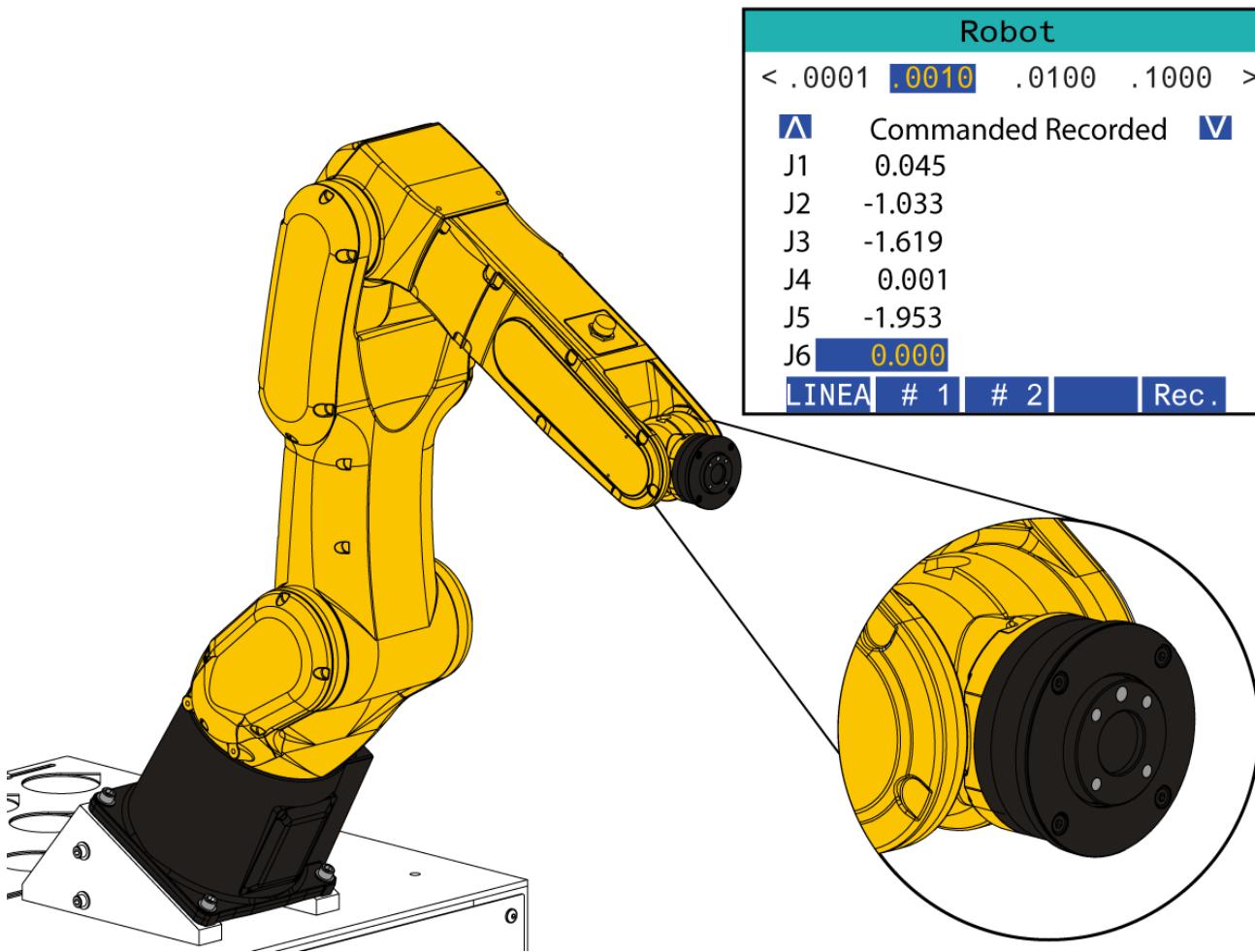
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press **[INSERT]** to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



5

Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

Note: The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed. See Setup/Run mode section below.

On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

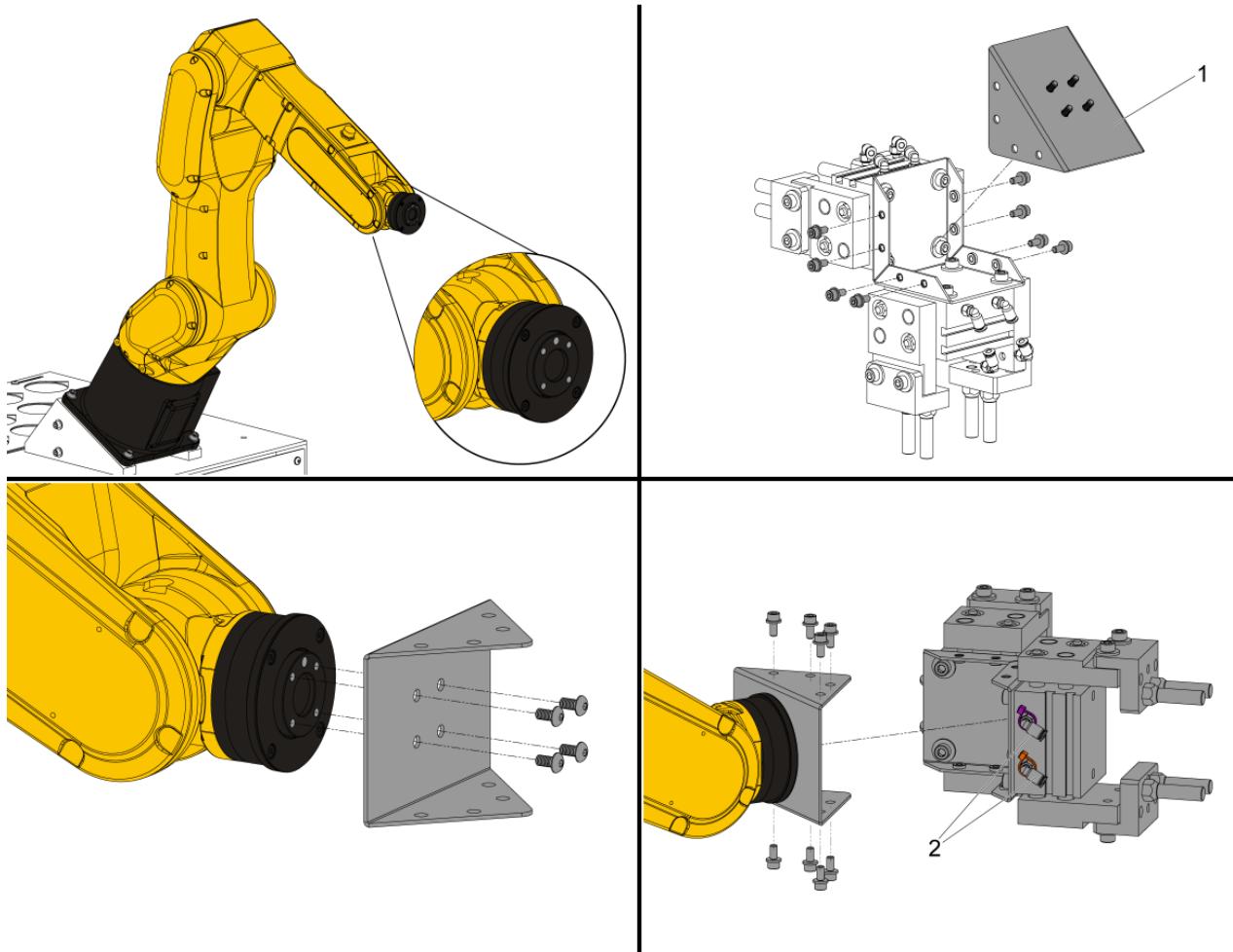
Move the robot to an accessible location to install the grippers.

Jog J6 to 0.0000 position. The location hole should be centered on top.

Note: Press **[Emergency Stop]** before working on the robot.

Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Installation



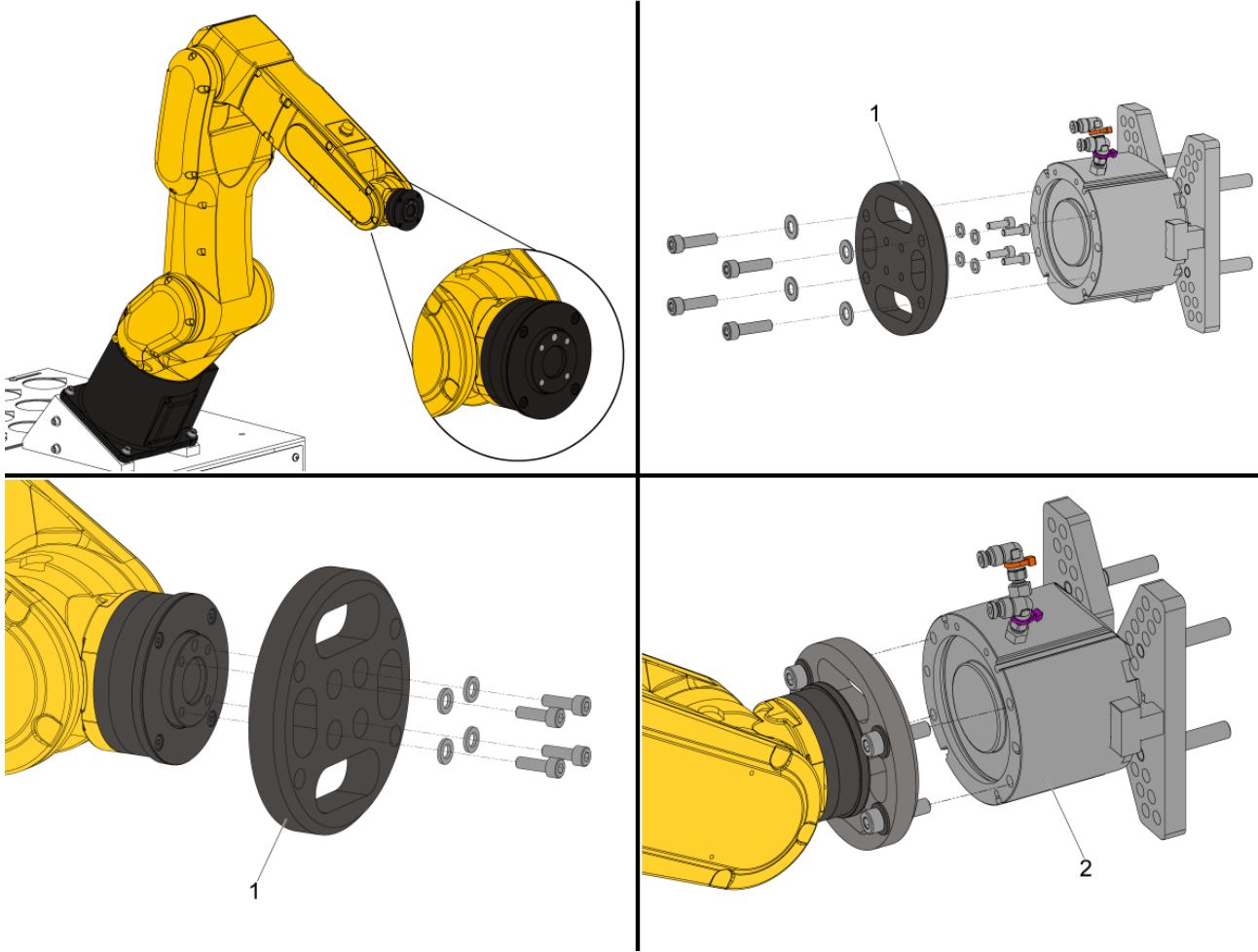
1

The location hole should be centered on top.

If you have the dual action gripper, install it to the end of the robot arm by removing the gripper adapter[1] from the gripper assembly.

Mount the adapter to the end of the robot arm.

Mount the gripper assembly to the gripper adapter with gripper 1 on the left. Gripper 1 should be have orange and purple zip ties[2] on the fittings.



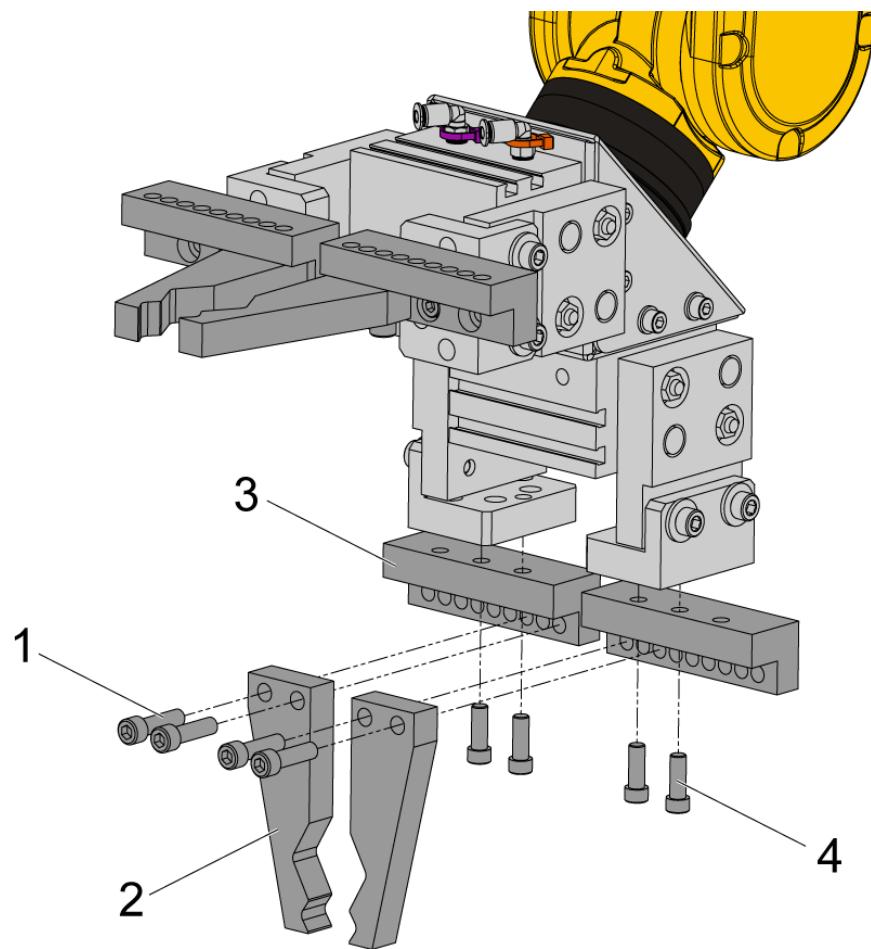
2

The location hole should be centered on top.

If you have the single action gripper, install it to the end of the robot arm by removing the gripper adapter plate[1] from the gripper assembly.

Mount the adapter plate[1] to the end of the robot arm with the large pockets on the top and bottom.

Mount the gripper assembly to the gripper adapter plate.



3

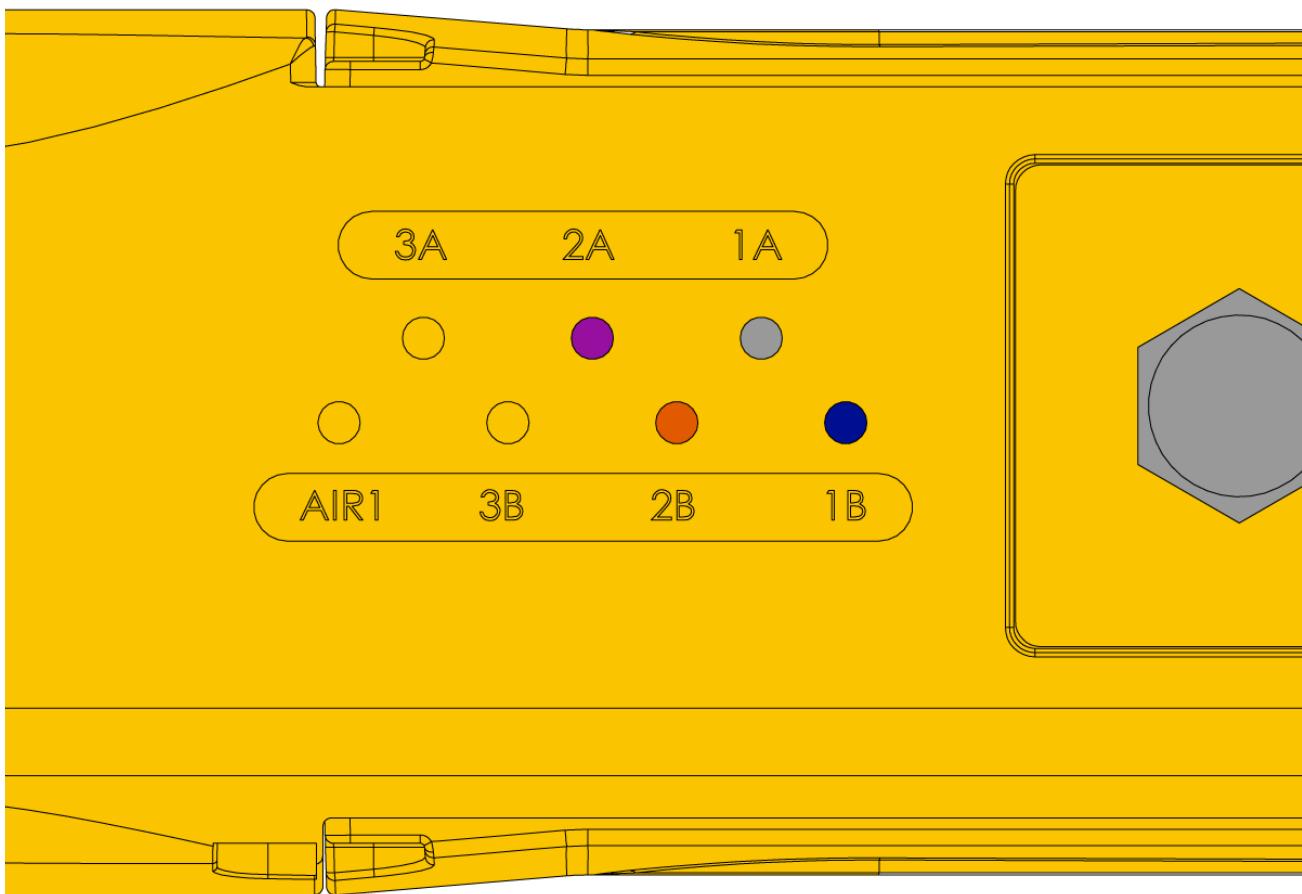
To install the bar gripper fingers, remove the slug gripper plates from the gripper bodies.

Install the Bar Gripper Bolt Plates[3] using the following hardware: 8 x SHCS M6[4]

Torque to 10 ft-lbs.

Install the Bar Gripper Fingers[2] using the following hardware: 8 x SHCS 1/4-20[1]

Torque to 13 ft-lbs.



4

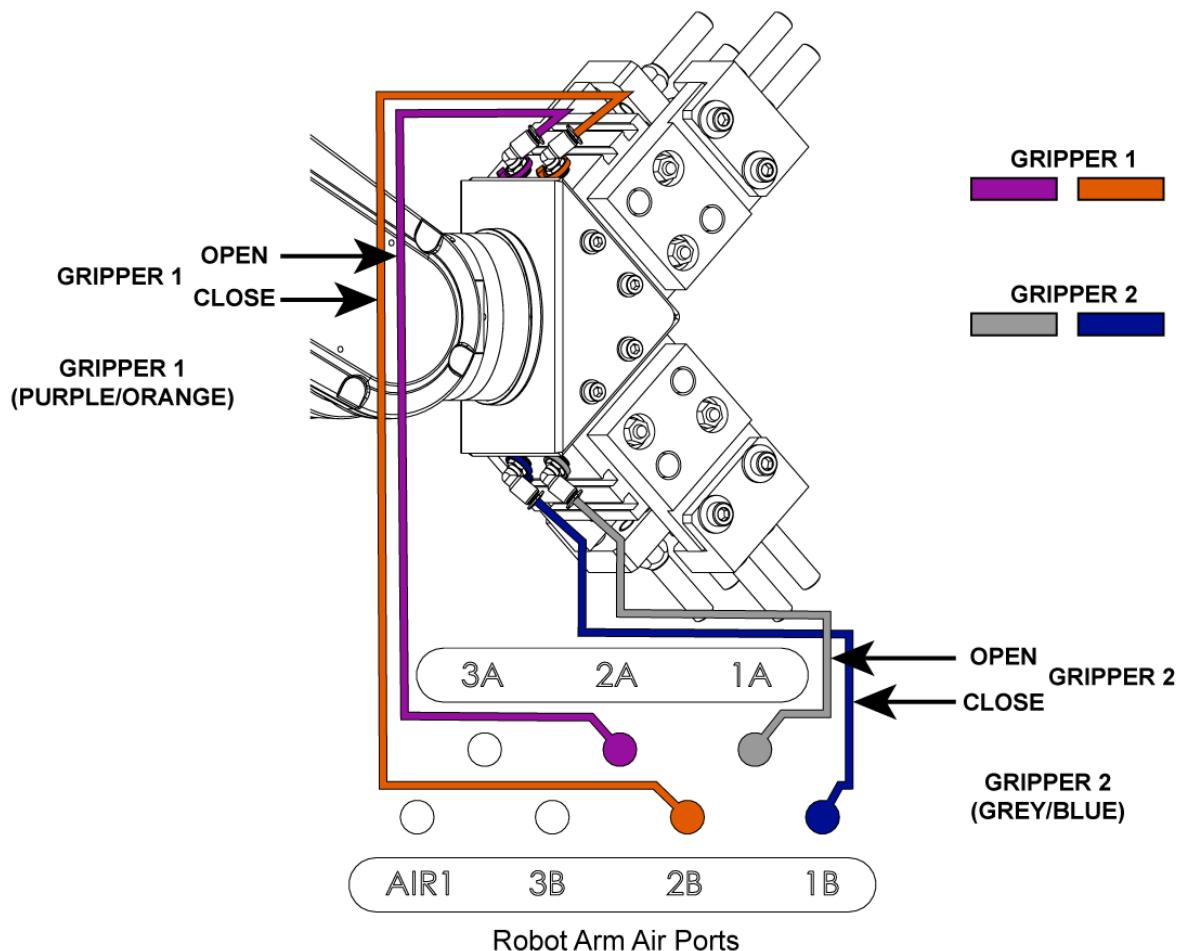
Install the gripper fittings to the robot arm.

Purple → 2A (Open gripper 1)

Orange → 2B (Close gripper 1)

Grey → 1A (Open gripper 2)

Blue → 1B (Close gripper 2)



5

Route the air lines between the robot arm and gripper connecting to the same color coded fittings.

Install conduit to each pair of air lines.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.

Test the operation of the grippers:

- Verify that both grippers clamp and unclamp correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F2]** to clamp/unclamp the **Finish Gripper**.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

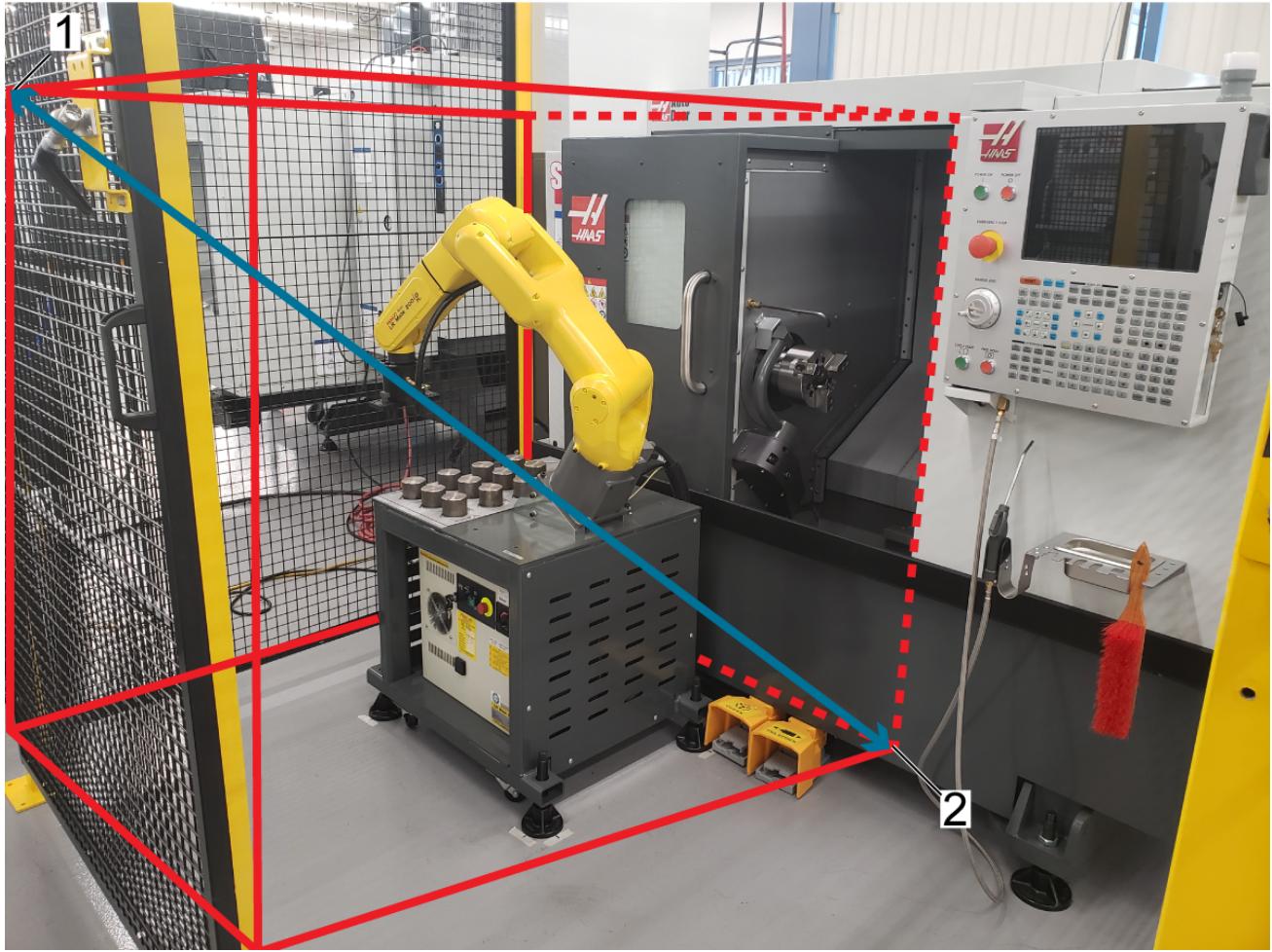
- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

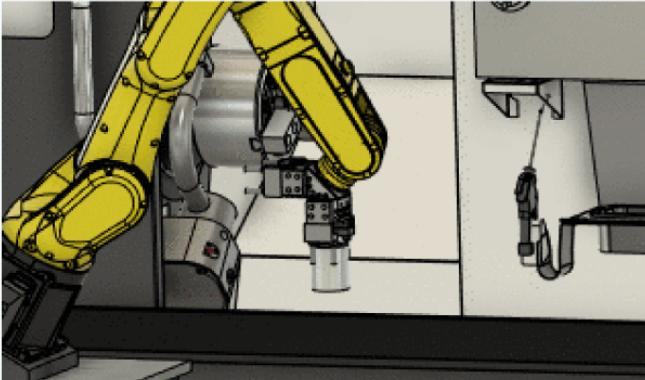
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

FANUC Dual Check Safety (DCS) – Setup

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	< >
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job				



F2 Record Position

F3 Clamp Gripper # 2

F4 Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Dwell	Off	Sec

◀ Previous
Next **▶**

After installing the robot, set up a job following the procedure below.

[Haas Robot - Quick Start Guide](#)

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time		0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	PulseJet Injection Cycle Time		1.000	Sec
370	Miscellaneous	PulseJet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

[View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package 1 - Lathe - Installation

ADo494

Introduction

This procedure will show you how to install the Haas Robot Arm Package-1.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- 100.20.000.1200 version or higher
- ST-10/15/20/25 Reboot Sheet Metal (Flat Face)
- Haas Autodoor (See machine requirements for CAN Auto Door)
- REMOTE JOG HANDLE - XL 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- RJH-XL Robot - Upgrade Kit - This procedure will show you how to upgrade your Robot with the RJH-T assembly to work with RJH-XL assembly.
- I/O board updated to 34-349xB or later
- I/O PCB HINGE DOOR. 93-1000297 I/O DOOR ASSY HINGED

Note: If the machine has the Parts Catcher option installed. The catch tray will interfere with the robot and will need to be removed. A custom sheet metal panel will need to be made to cover and seal the opening.

Fixing / Anchoring Requirements

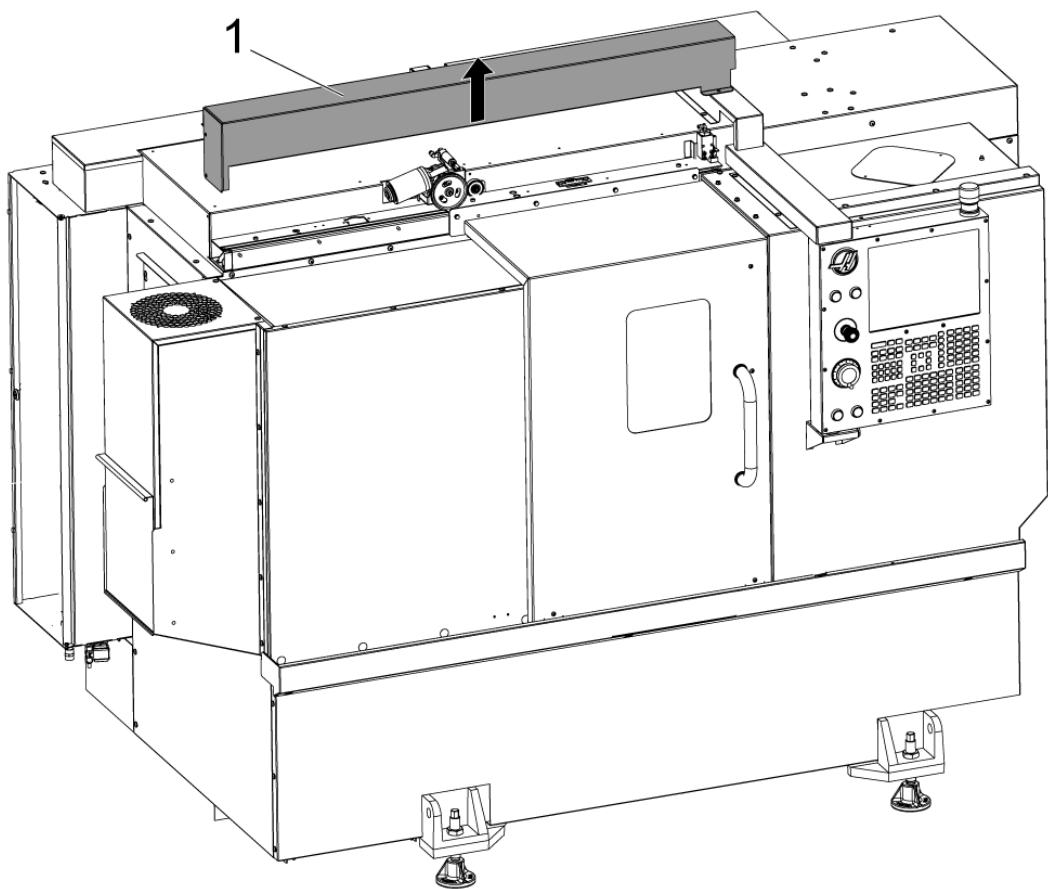
The Haas Robot Package 1 is configured and sold by Haas with a pedestal/table that is sufficiently stable when used according to Haas defined part size and weight limits.

The Haas Robot Package Includes the following Components:

- **30-13007** Robot PKG-1 Fence Kit (fencing with gate to enclose the operators station)
- **32-0911** Gate Interlock
- **32-8581B** Remote E-Stop Assembly (includes holster and 25' foot cable for remote handle jog)
- **32-8580A** HRP-1 Electrical Interface Box Assembly (Includes robot signals and power cables)

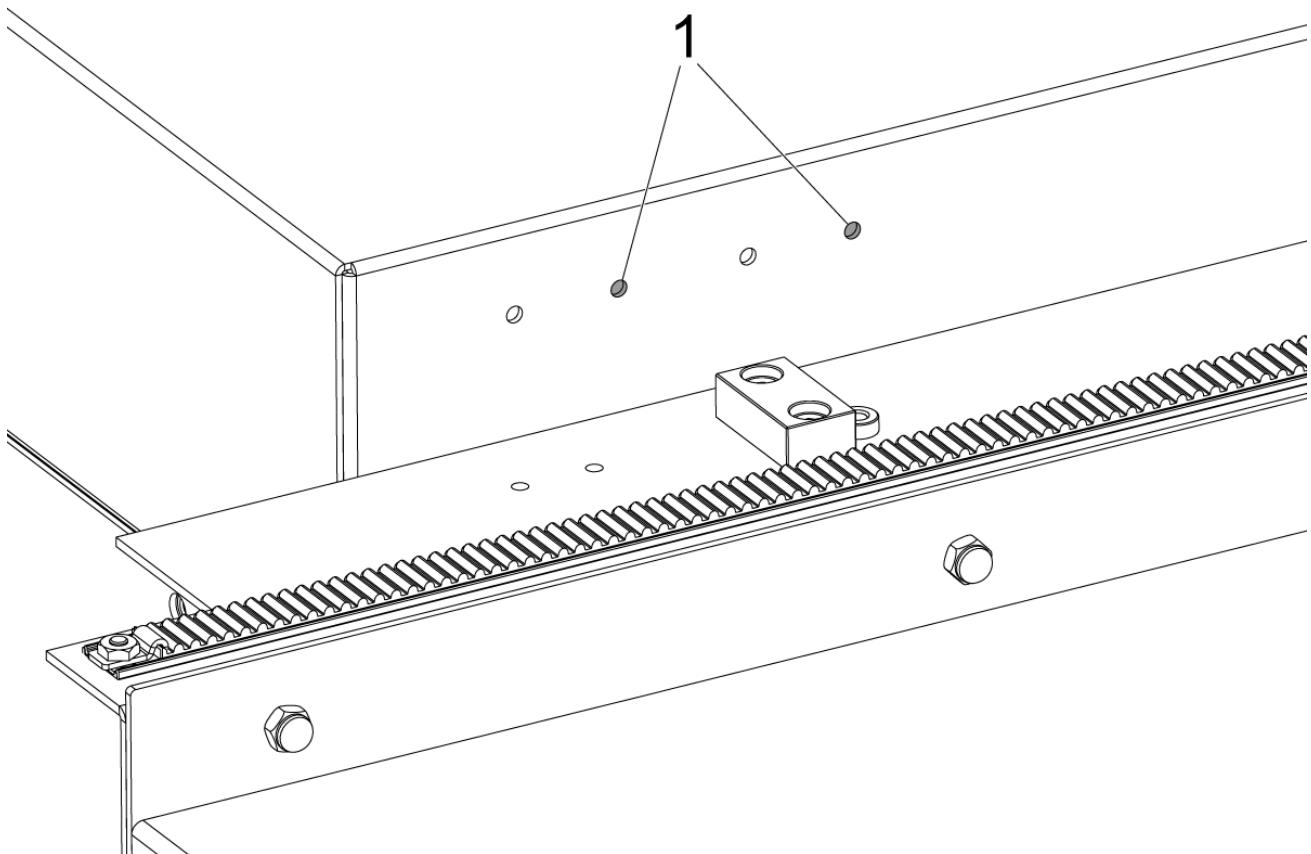
Note: The parts above are subject to change and there will be some variation depending on build date.

Lathe Setup



1

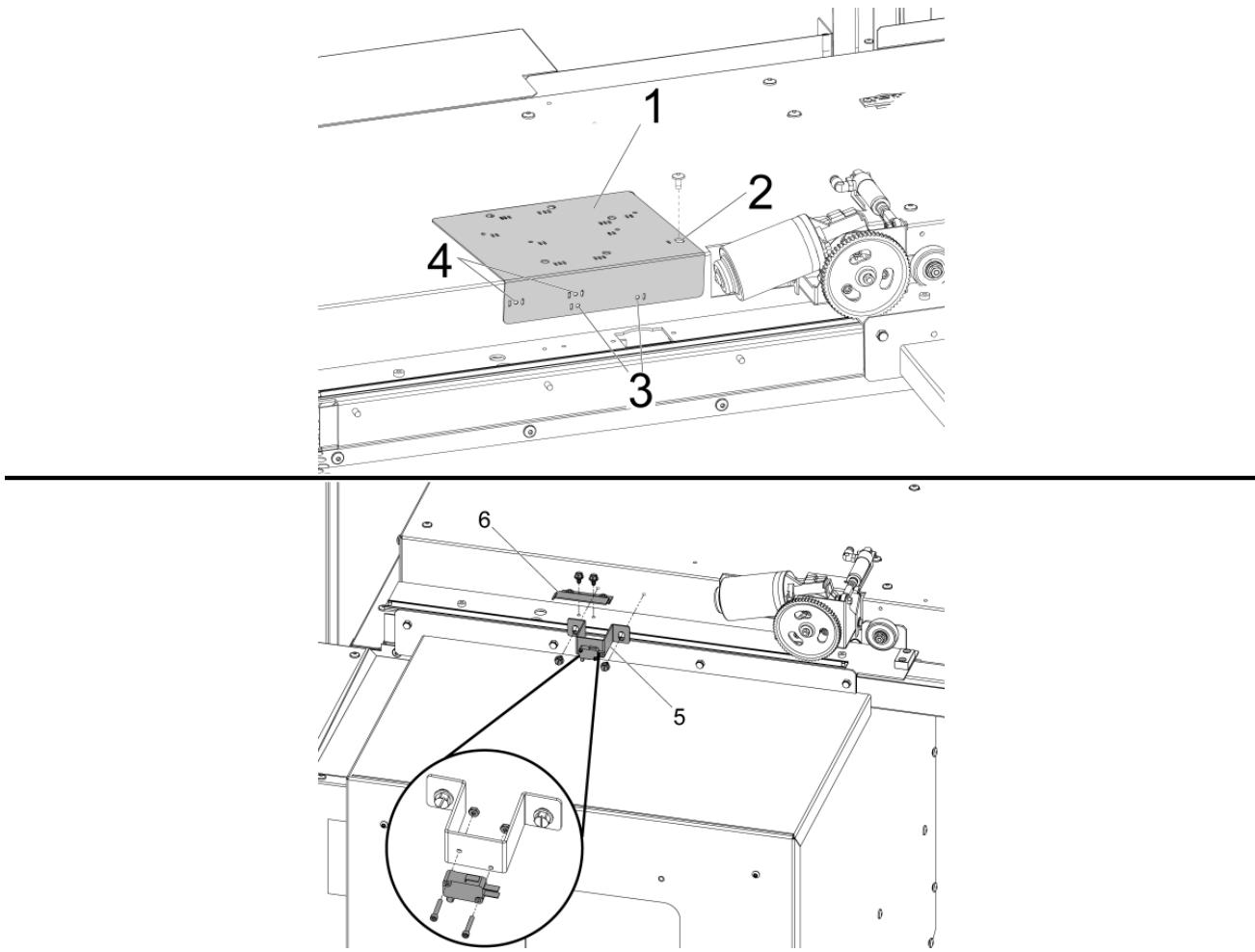
Remove the auto door cover [1].



2

ST-20/25:

For machines with the switch bracket holes on the roof panel. Install the switch bracket to the right pair of holes [1] for **ST-20/25**.



3

For machines without the switch bracket holes on the roof panel. Use the provided drill guide [1] to drill the mounting holes for the DOOR FULLY OPEN status switch.

Align the right most hole on top of the drill guide that is marked with one slot [2] with the autodoor cover mounting hole to the left of the auto door motor and secure it with the BHCS.

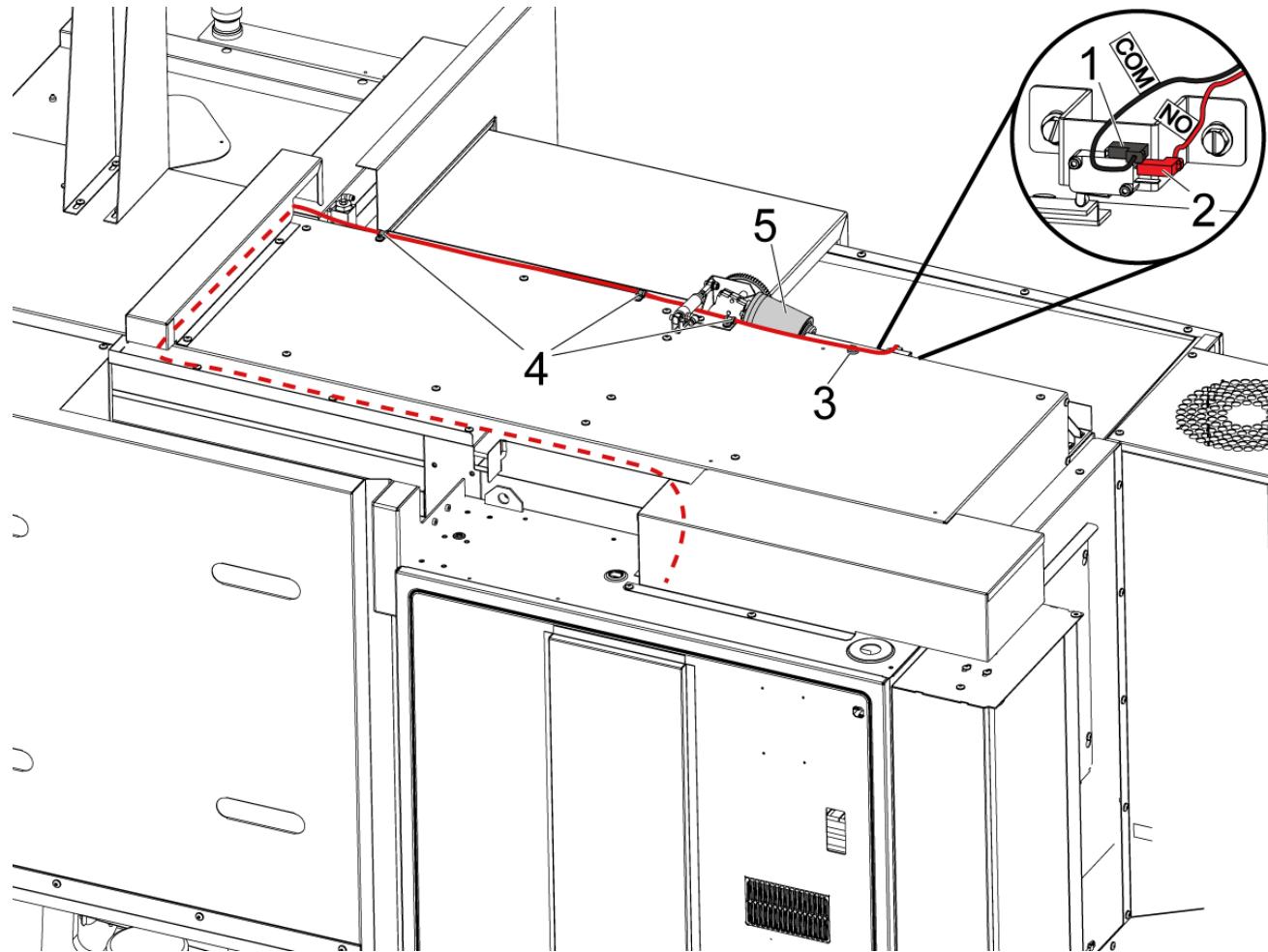
ST-10/15:

Drill the two $\varnothing 3/16"$ (4.7mm) mounting holes through the drill guide holes that are marked with one slot [3].

ST-20/25:

Drill the two $\varnothing 3/16"$ (4.7mm) mounting holes through the drill guide holes that are marked with two slots on both sides [4].

Using the provided self tapping screws, install the DOOR FULLY OPEN switch assembly [5] and the DOOR FULLY OPEN trip flag [6].



4

Connect the DOOR FULLY OPEN switch as labeled:

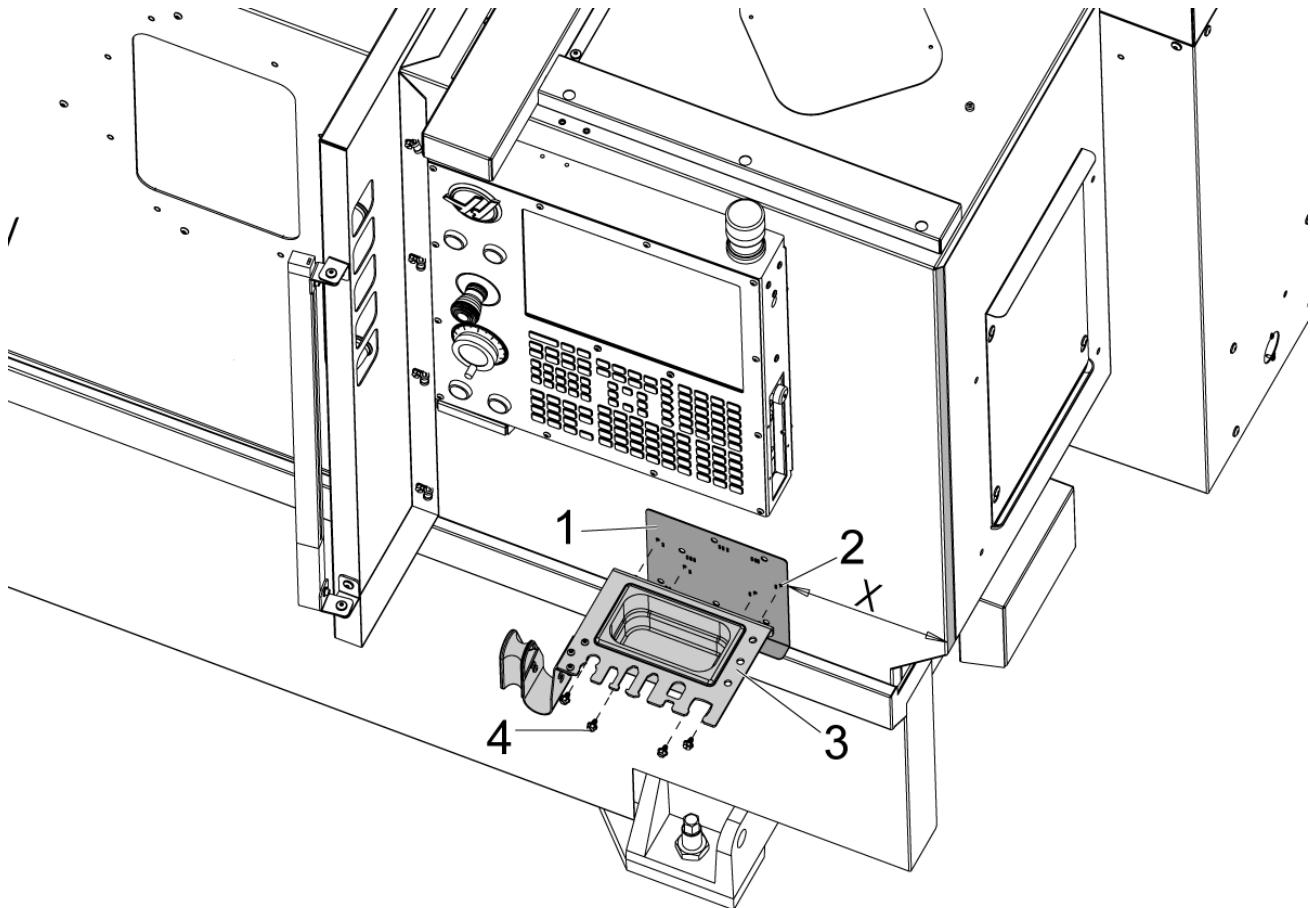
- BLK <COM> to the top terminal [1].
- RED <NO> to the middle terminal [2].

Route the cable into the control cabinet as shown on the picture.

NOTE: Make sure to install the provided magnetic clip [3] and cable clamps [4] to keep the cable clear of the moving autodoor motor [5].

Connect the other end of the cable to the SIO P27 RRI Door Open input.

Install the autodoor cover.



5

Remove the tooling tray bracket that is attached to the bottom of the pendant.

ST-10/15:

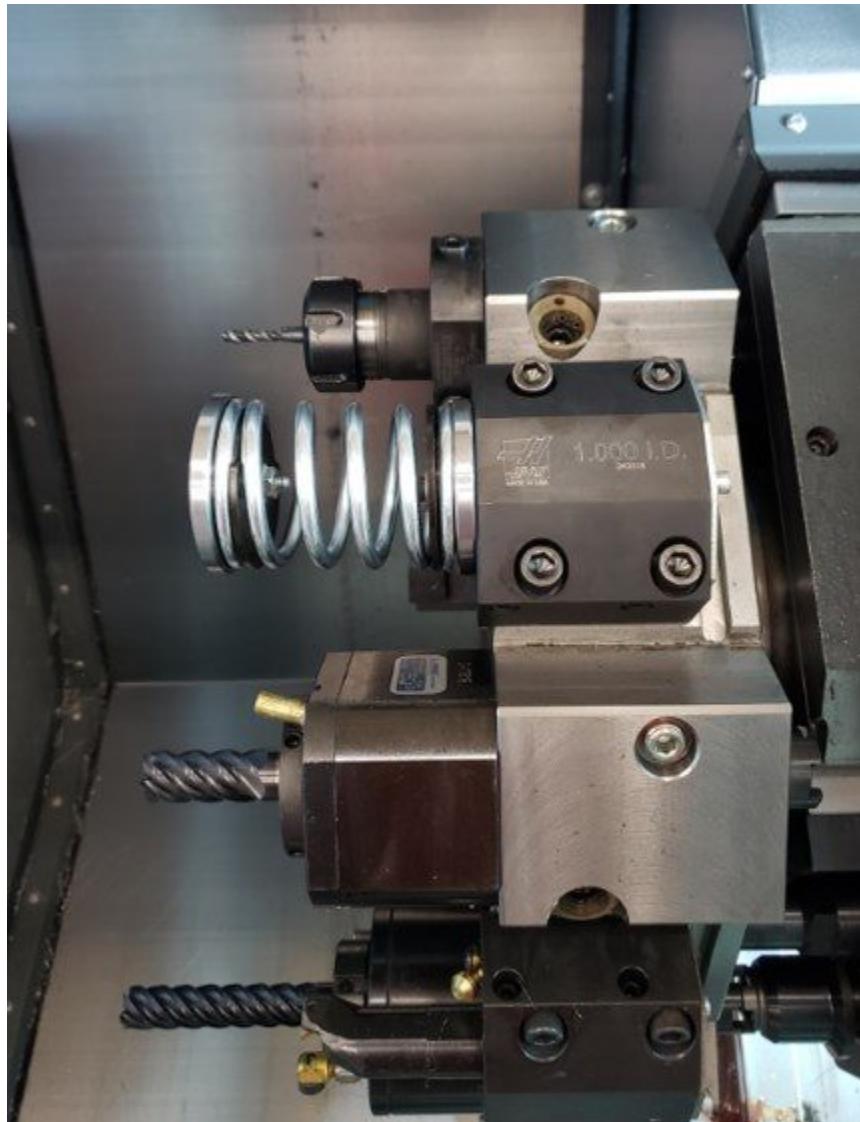
Place the drill guide [1] against the front panel, 8 inches (203mm) away from the right corner of the enclosure.

ST-20/25:

Place the drill guide [1] against the front panel, 17.75 inches (450mm) away from the right corner of the enclosure.

Drill the four \varnothing 3/16" (4.7mm) mounting holes through the drill guide holes [2] that are marked with two slots.

Remove the drill guide and attach the tooling tray [3] to the front panel using four self tapping screws [4].



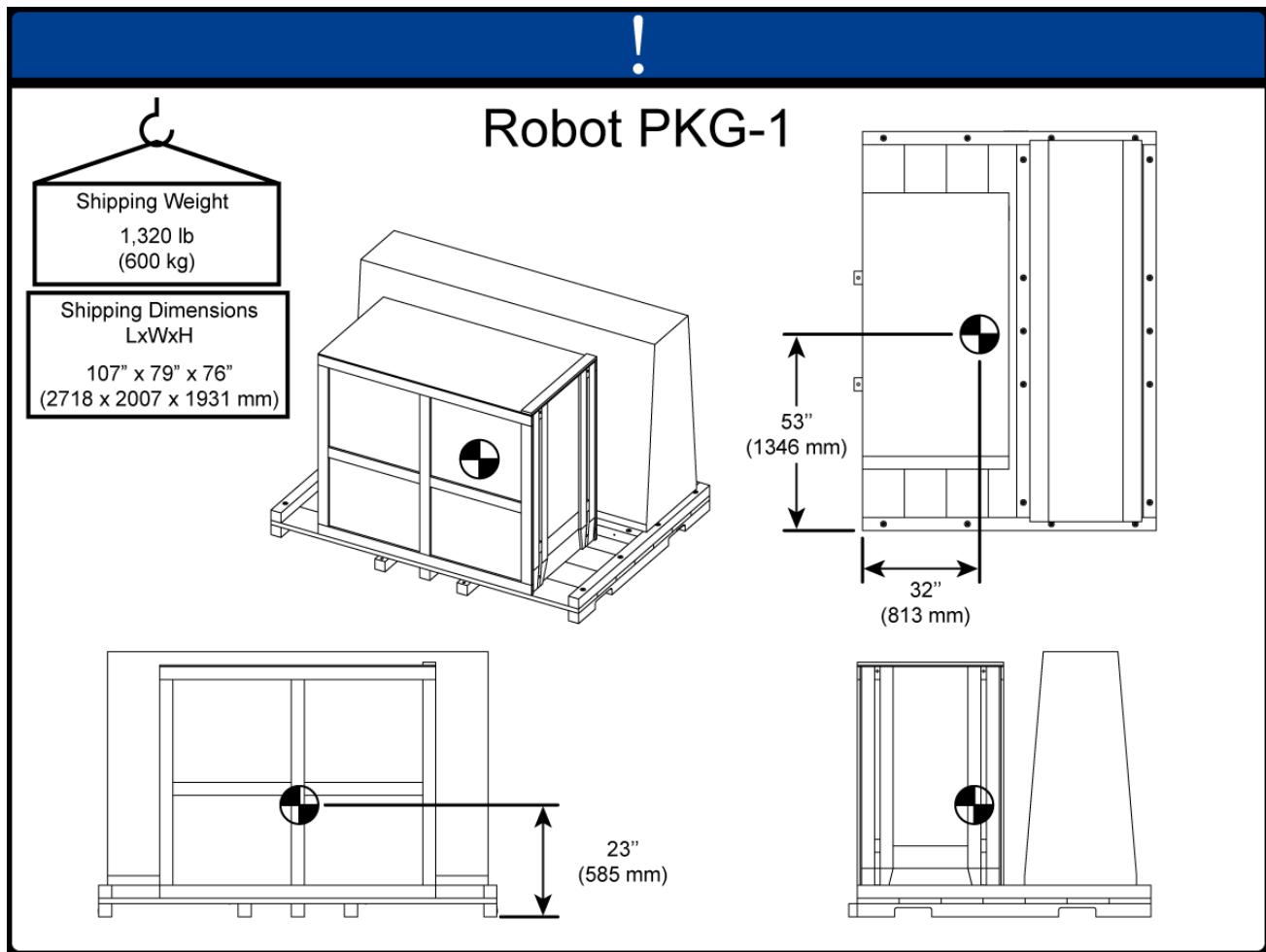
6

- The APL spring pusher is made with a shank to fit either a 25mm or 1" tool holder
- This tool must take up a toolholder on the turret
- If the machine is a ST-10/15 you will need two empty toolholders to allow enough space for the gripper
- Program the following steps to the beginning of any program to make sure the part is properly seated into the chuck:
 - Locate the spring pusher in front of the part
 - Move the Z axis to compress the spring about 0.50 inches or 12.7 mm
 - Open the chuck with a dwell of one second
 - Close the chuck with a dwell of one second
 - Retract the turret to the safest position possible

Note: The Part Number for the spring pusher is:

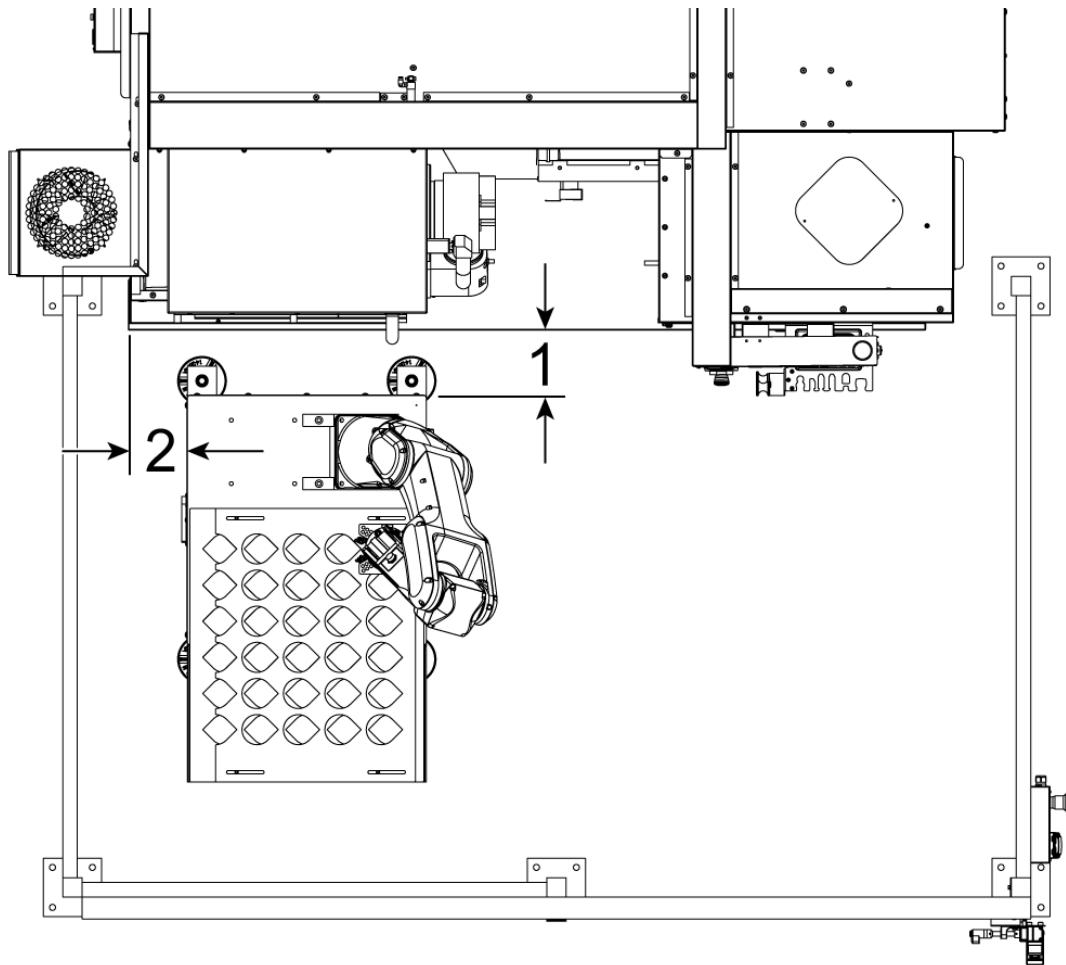
30-12642 SPRING PUSHER APL. The 25mm or 1.0" holder is sold separately.

Robot Lifting



Use this information for lifting/moving Robot Package 1.

Robot Installation



1

Measure these dimensions from the machine skirt to the side panels of the robot table.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

ST-10/15

The table should be **5.0** inches from the front of the machine**[1]**. The table should be **9.0** inches from the left side of the machine**[2]**.

Install the leveling pads and raise the leveling screws until the wheels are off the floor.

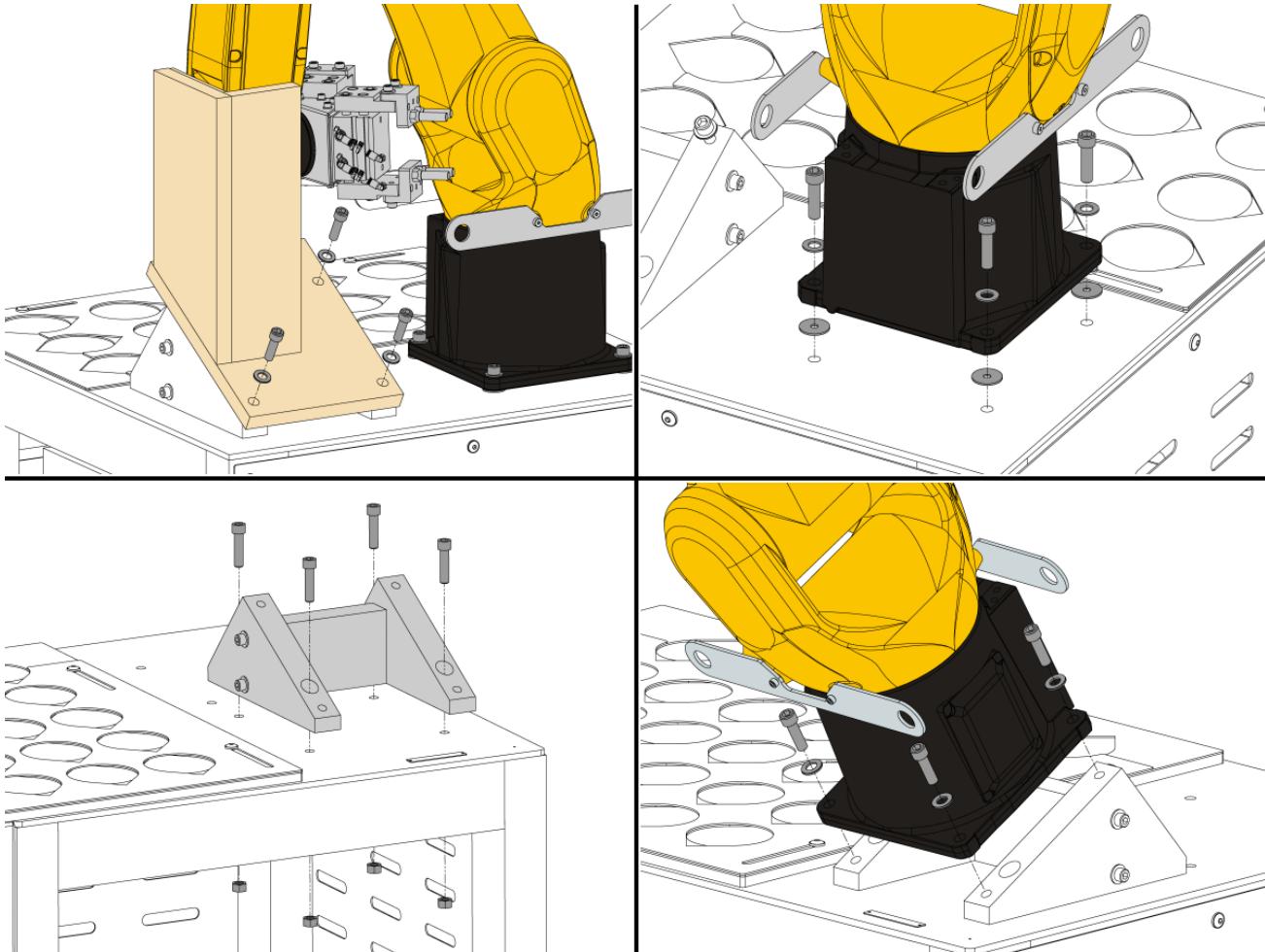
Level the table using a bubble level.

ST-20/25

The table should be **10.5** inches from the front of the machine**[1]**. The table should be **10.0** inches from the left side of the machine**[2]**.

Install the leveling pads and raise the leveling screws until the wheels are off the floor.

Level the table using a bubble level.



2

Remove the robot shipping bracket hardware and slide it off the robot mount away from the arm.

Remove the robot from its shipping location and set aside. Do not reuse the shipping hardware.

Remove the robot mount from its shipping location and install the robot mount to the front of the stand.

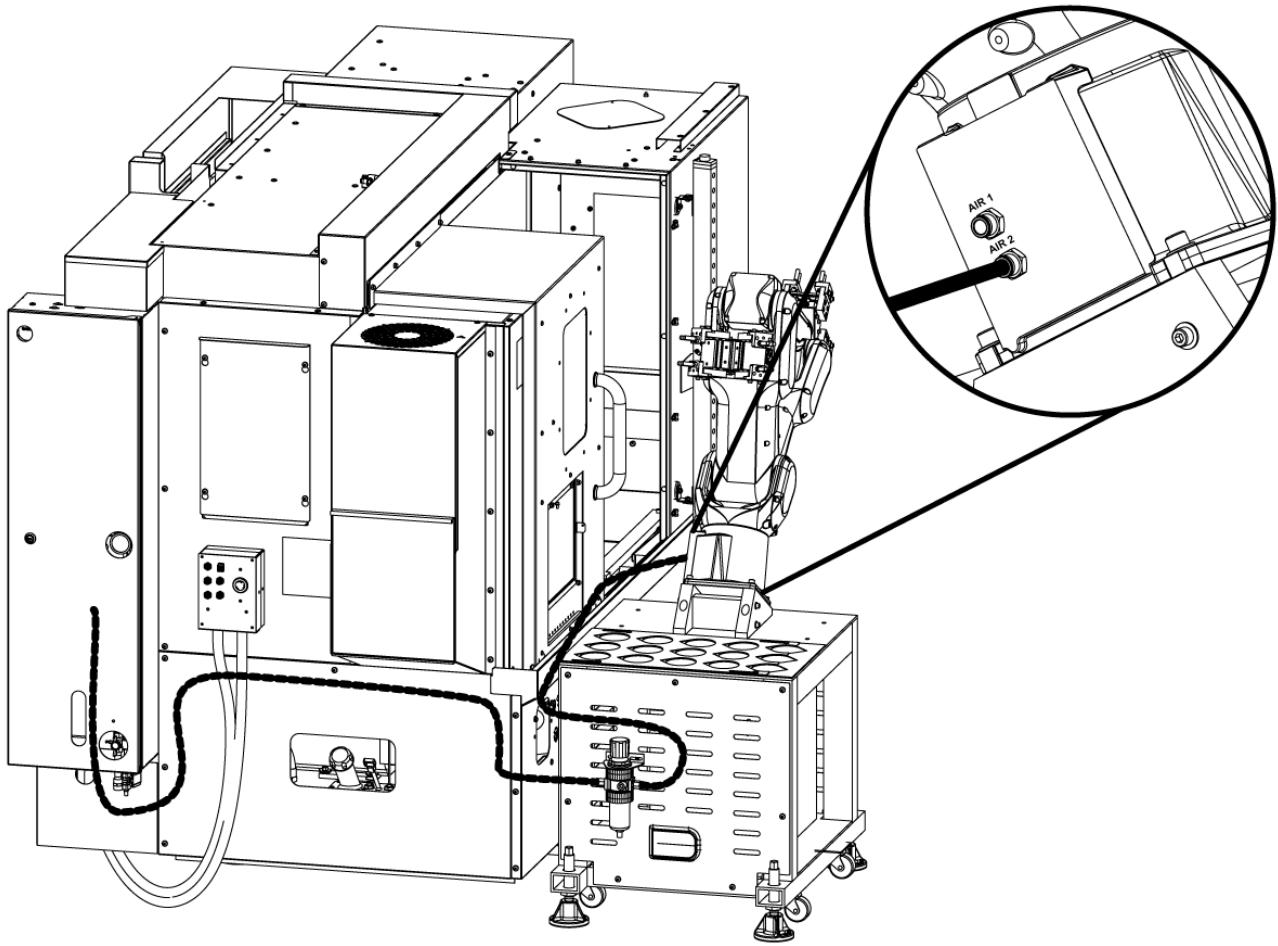
Install the robot to the robot mount with the cable connector to the rear of the table. Use the hardware that is installed to the robot mount.

Remove the robot lift brackets[4] and hardware after installing the robot.



3

Install the robot to the robot mount with the cable connector to the rear of the table.



4

Turn the machine air supply OFF.

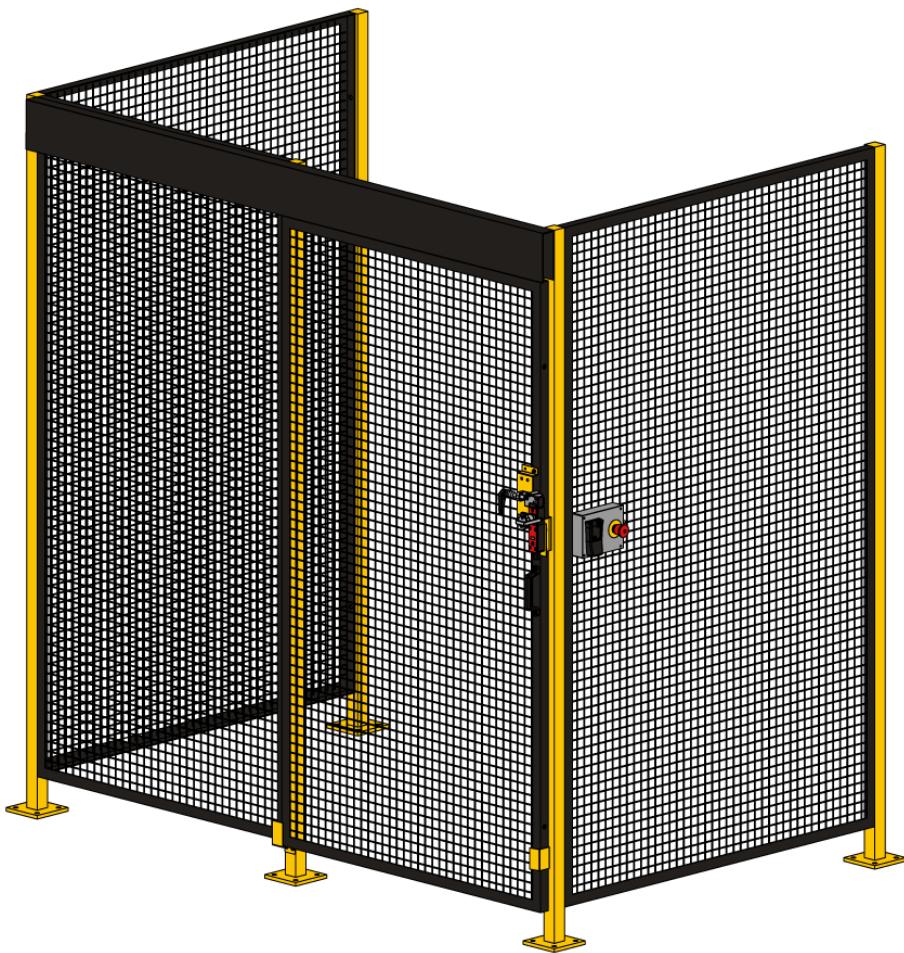
Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports

Route the air line from the left side of the regulator to the CALM cabinet and install the push to connect fitting.

Route the air line from the right side of the regulator to the **Air 2 Port** on the robot and install the push-to-connect fitting.

Turn the machine air supply ON.

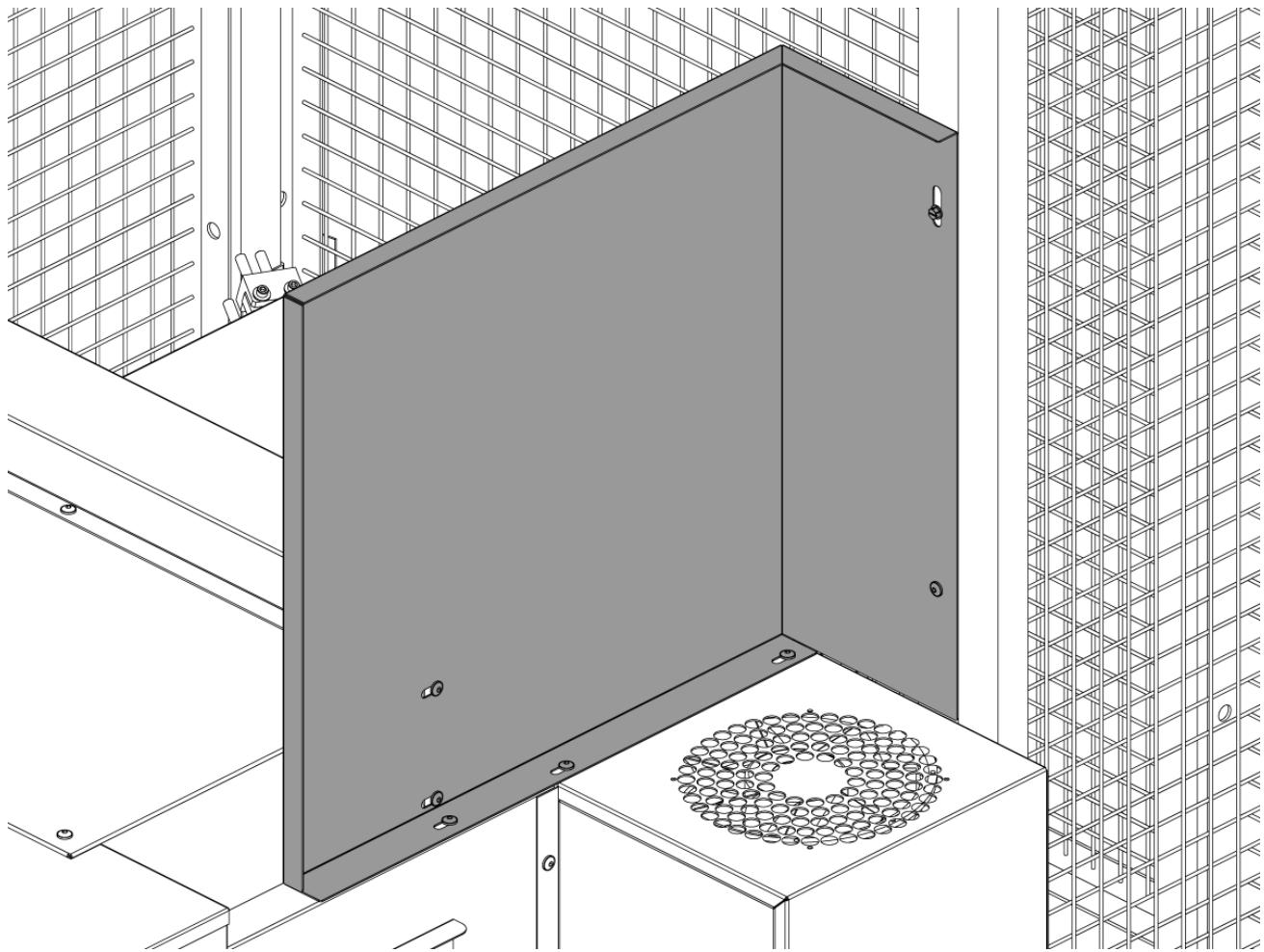
Fence Installation



1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for installation.

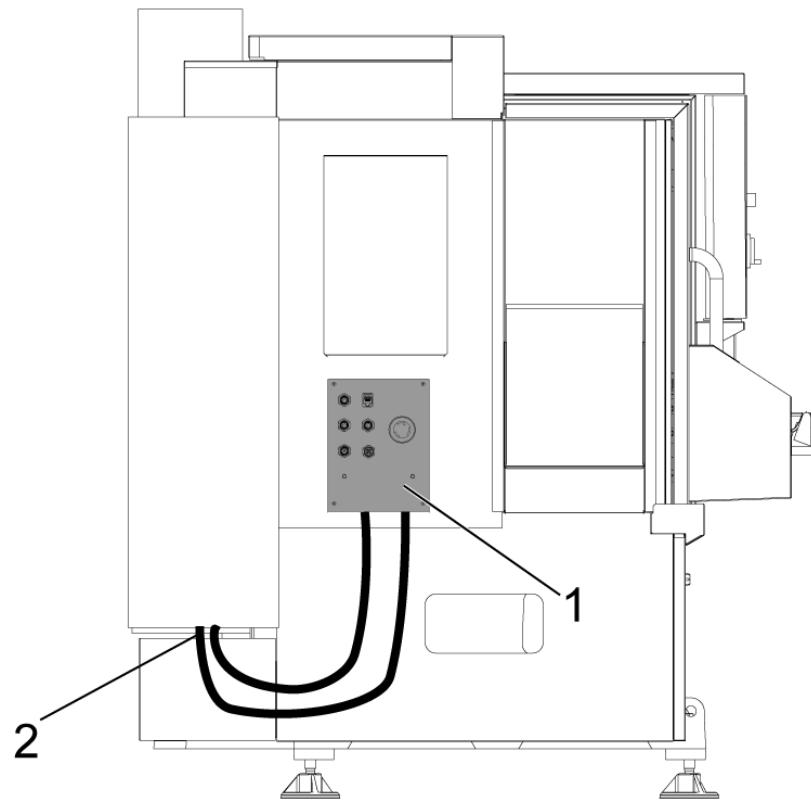
Robot Fence Installation



2

Install the fence panel to the machine and robot fence.

Robot Electrical - Installation



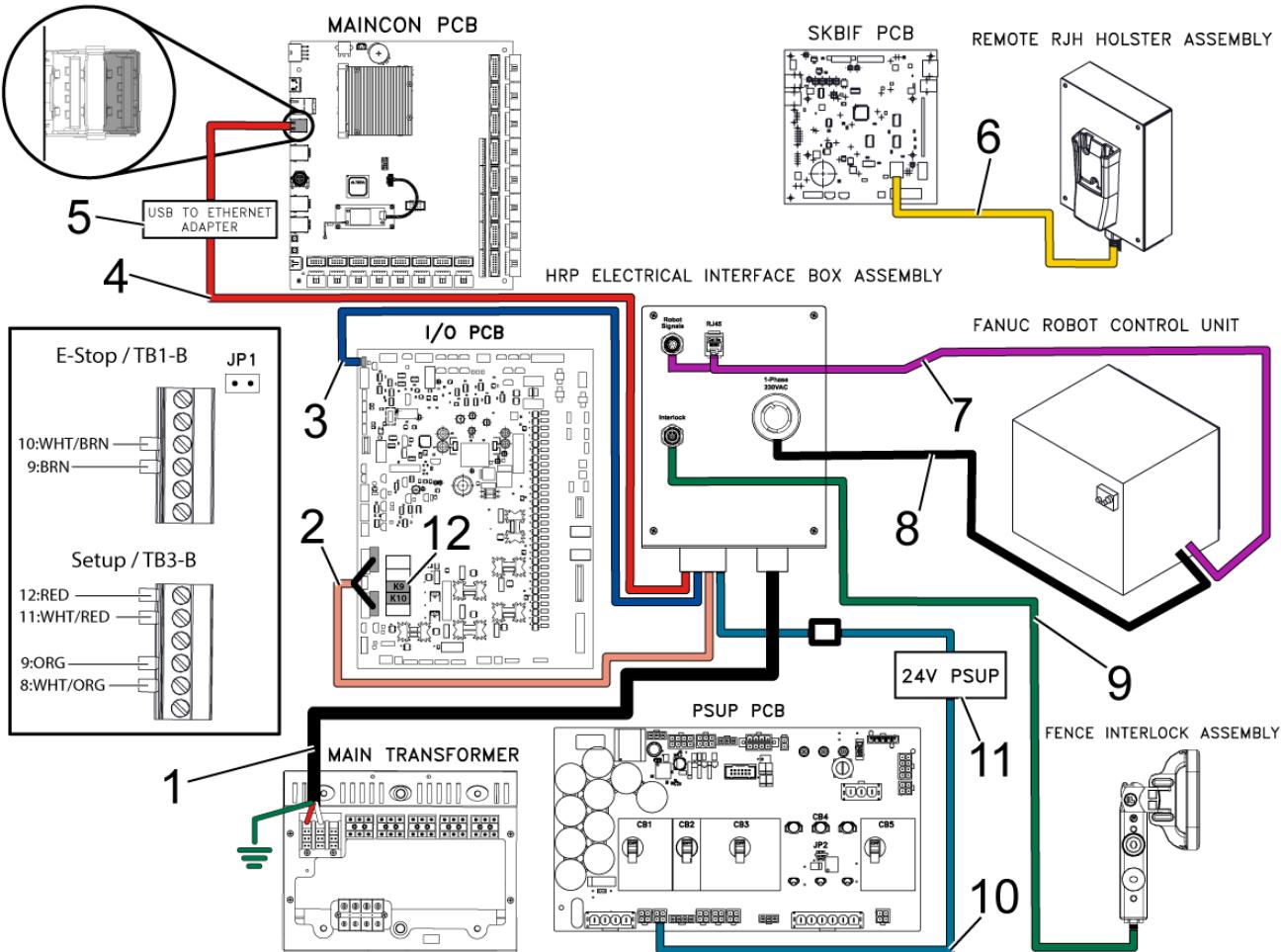
1

ST Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown in the picture.

Route the Robot interface electrical cables [2] through the bottom of the electrical cabinet.



Perform the following steps to reconnect the robot to the Haas machine.

Main Transformer

Connect cable [1] **P/N 33-8570** to Main Transformer follow the labels to terminals **77** and **78**, connect the ground loop terminal to chassis.

I/O PCB and Maincon PCB

Cable **P/N 33-8561C** has multiple connections:

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[2].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [2].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[3]**.
- Connect the **RJ-45** cable [4] to Ethernet to USB adapter [5] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.

- Mount the 24VDC Power Supply[11] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8561C**. Connect cable **33-1910A**[10] to the 24VDC Power Supply[11] and plug into **P3** on the **PSUP PCB**.
- Plug the User Relays into **K9** and **K10**. (see diagram)[12].

Note: If the machine has a **Regen Vector Drive**, unplug cable **33-0634 FILTER OV TO IOPCB P1** from **P1 SIO** and plug it into the connector **FILTER OV FAULT**. If the machine does not have a **Regen Vector Drive**, do not plug anything into the connector **FILTER OV FAULT**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-8550C**[6] from the Remote E-stop box to cable **33-0713** and plug into the SKBIF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [7] **P/N 33-8590A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

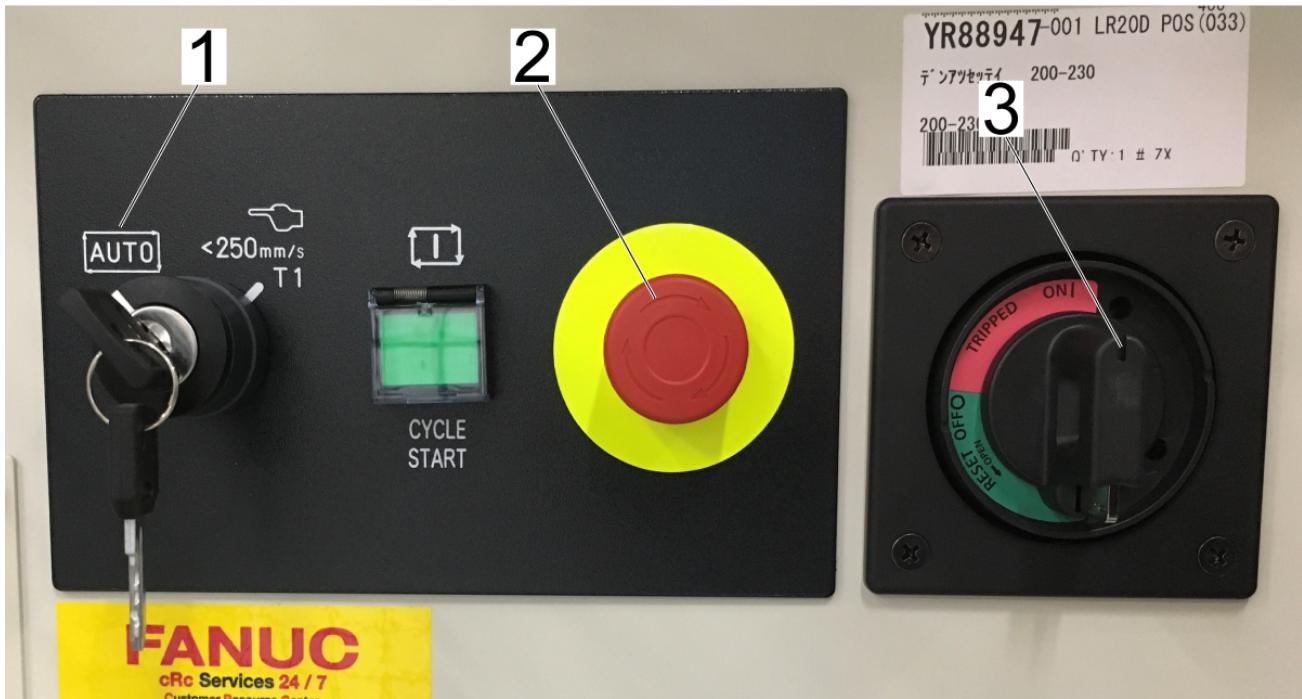
Robot Power

Connect the 230VAC Power Cable [8] **P/N 33-8530** to the Robot Electrical Interface Box.

Fence Interlock

Connect the fence door interlock cable [9] to the electrical interface box.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. Use the key retrieved in previous step and switch to Auto Mode[1].

Make sure the **[E-STOP]** button[2] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[3].

Settings

Settings | Network | User Positions | Alias Codes

Group Listings Search **F1** Machine Setup

Group	Name	Value	Unit
102 Machine Setup	C Axis Diameter	1.0000	IN
336 Machine Setup	Bar Feeder Enable	Off	
340 Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359 Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368 Machine Setup	Live Tooling Type	None	
372 Machine Setup	Parts Loader Type	Robot	
375 Machine Setup	APL Gripper Type	None	
376 Machine Setup	Light Curtain Enable	On	
378 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413 Machine Setup	Main Spindle Load Type	Low	type
414 Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2194 [:] Enable Front Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**

The screenshots show the 'Current Commands' interface in the 'Robot' section of the software. The top screenshot is from the 'Jogging' tab, showing a 3D model of a Haas machine with a robotic arm. A message says '*RJH required to jog the robot'. It displays the 'Current Position' coordinates (X: -0.2606, Y: 14.1384, Z: 6.0865, W: -176.0093, P: -87.2172, R: 86.7410). Below is a table for 'Enter the maximum speed limit for robot jogging':

Operation	Value	Units
Coordinate Type	Cartesian	
Tool Frame	WORLD FRAME	
User Frame	WORLD FRAME	
Maximum jogging Speed	9.8	inch/sec
Single Part Mass	0.000	lbs

A button labeled 'F2 Unclamp Raw Gripper' is visible. The bottom screenshot is from the 'Setup' tab, showing a similar 3D model and a message 'Connected'. It displays a table for 'Robot Setup':

Operation	Value	Units
Max Robot Speed	156.969	inch/sec
Gripper Net Mass	7.000	lbs
Number of Grippers	2	
Raw Gripper	Value	Units
Clamp Output	4	
Unclamp Output	3	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	
Finish Gripper	Value	Units
Clamp Output	2	
Unclamp Output	1	

3

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to **9.8** inch/sec

Go to the **Setup** tab. Change the following:

- **Max Robot Speed** to **156.969** inch/sec.
- **Gripper Net Mass** to **7.0** lbs.
- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **4**.
- **Raw Gripper Unclamp Output** to **3**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.
- **Finish Gripper Clamp Output** to **2**.
- **Finish Gripper Unclamp Output** to **1**.
- **Finish Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup** tab[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

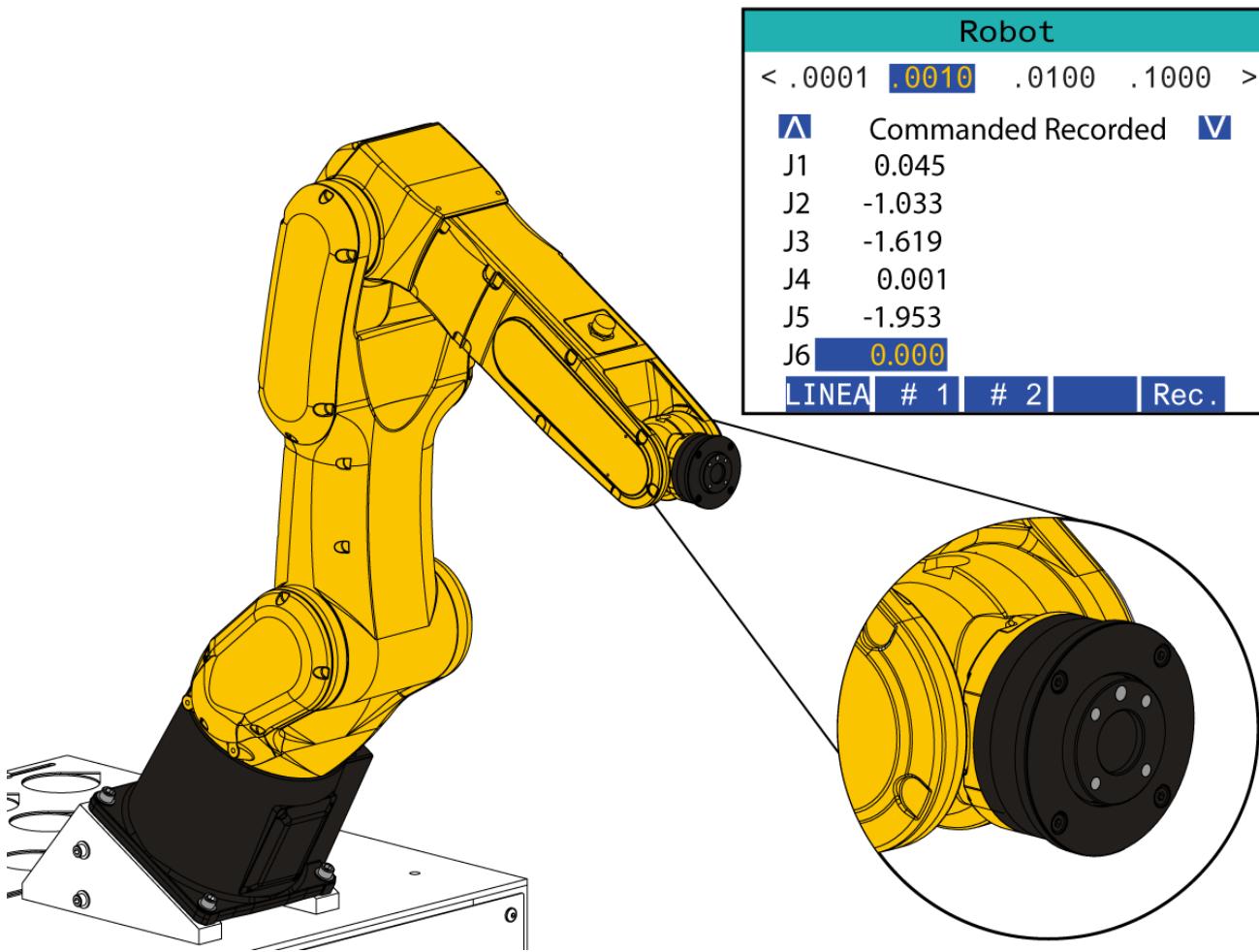
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press **[INSERT]** to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



5

Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

Note: The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed. See Setup/Run mode section below.

On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

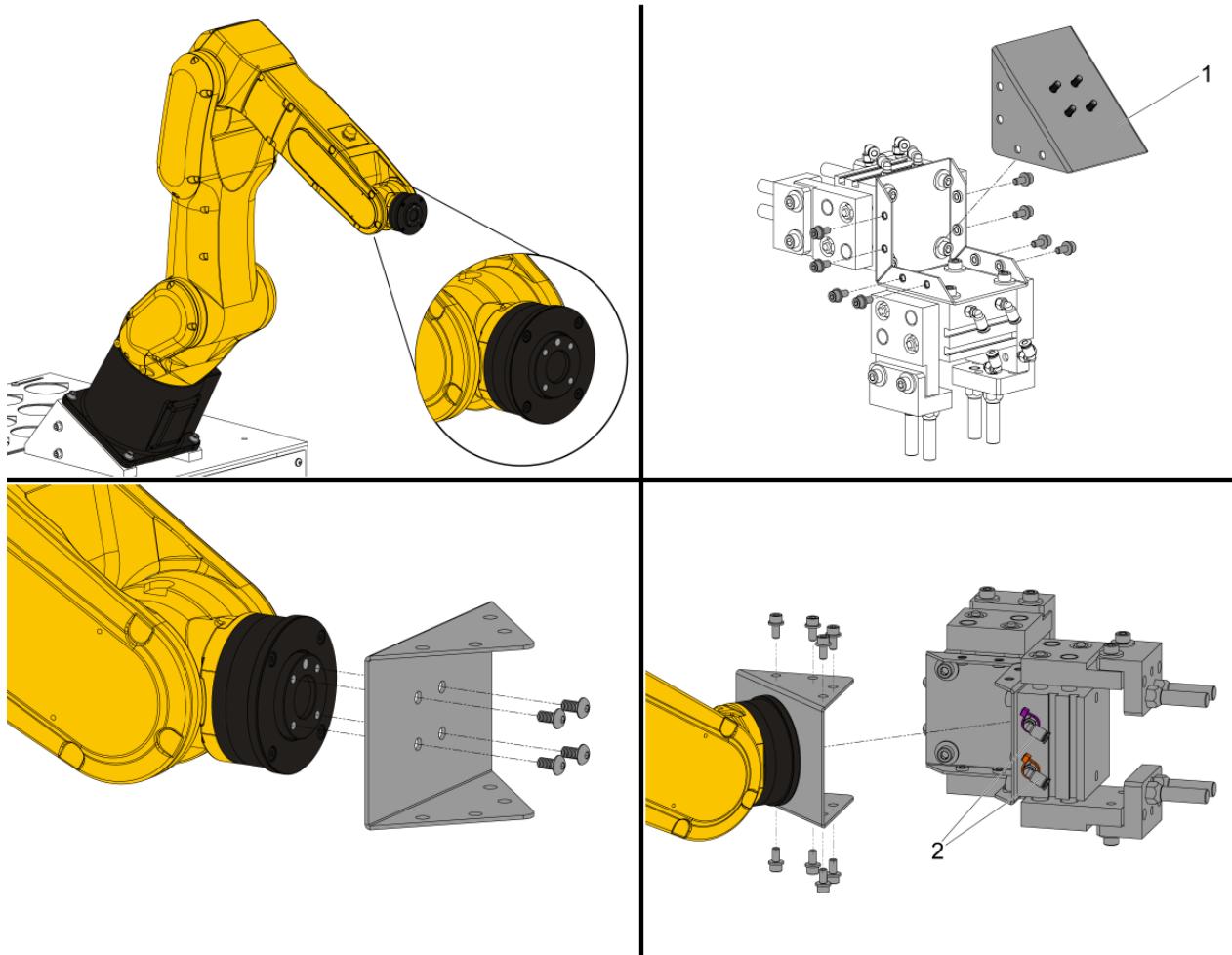
Move the robot to an accessible location to install the grippers.

Jog J6 to 0.0000 position. The location hole should be centered on top.

Note: Press **[Emergency Stop]** before working on the robot.

Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Installation



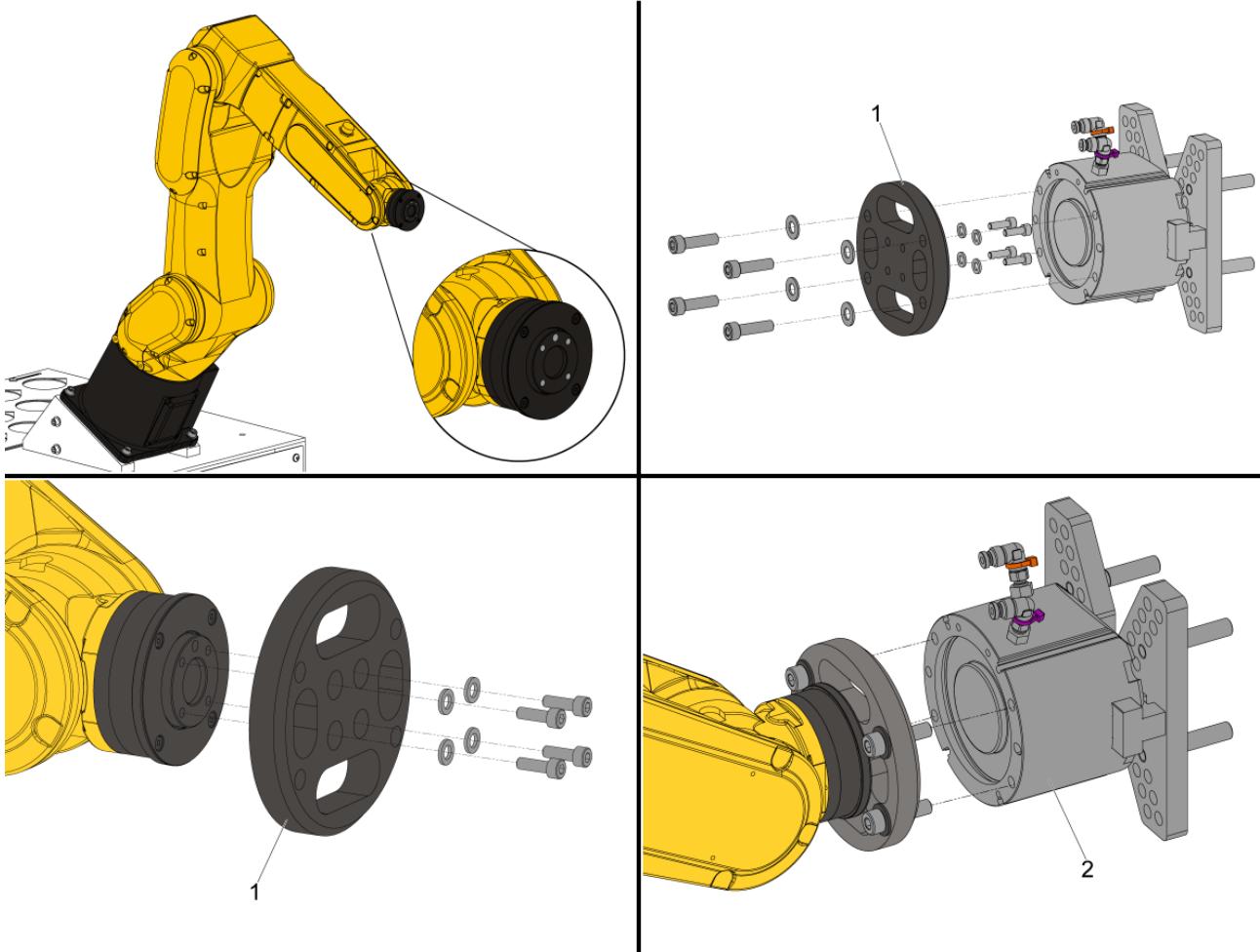
1

The location hole should be centered on top.

If you have the dual action gripper, install it to the end of the robot arm by removing the gripper adapter[1] from the gripper assembly.

Mount the adapter to the end of the robot arm.

Mount the gripper assembly to the gripper adapter with gripper 1 on the left. Gripper 1 should be have orange and purple zip ties[2] on the fittings.



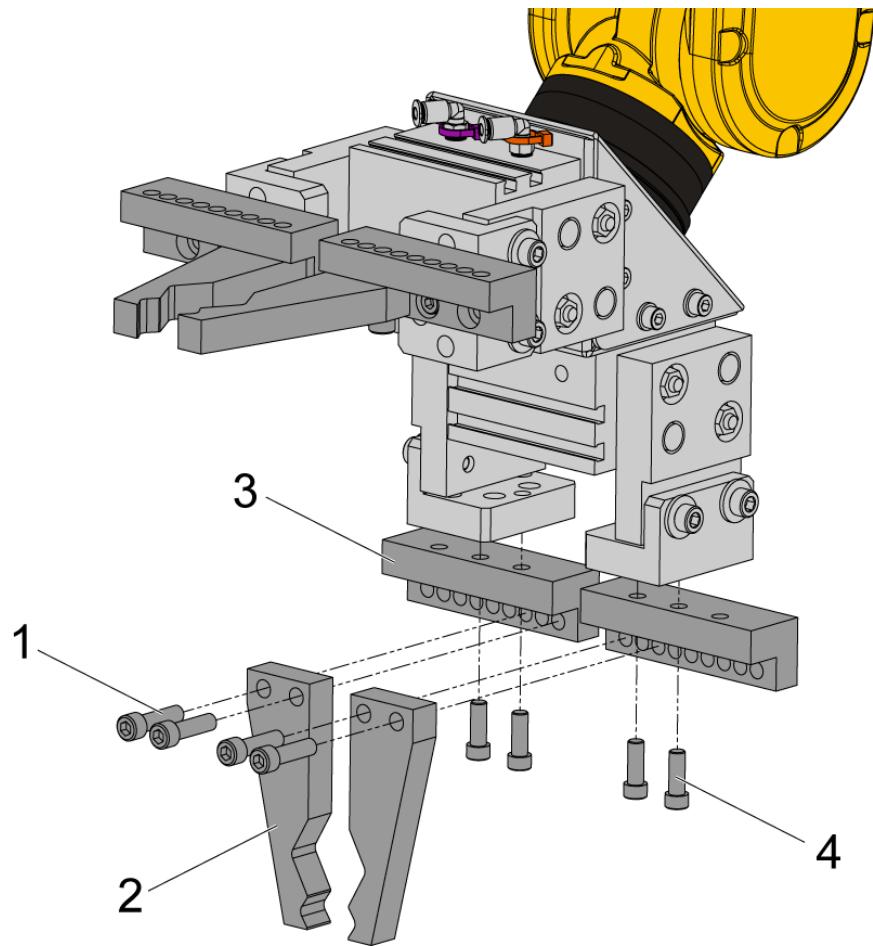
2

The location hole should be centered on top.

If you have the single action gripper, install it to the end of the robot arm by removing the gripper adapter plate[1] from the gripper assembly.

Mount the adapter plate[1] to the end of the robot arm with the large pockets on the top and bottom.

Mount the gripper assembly to the gripper adapter plate.



3

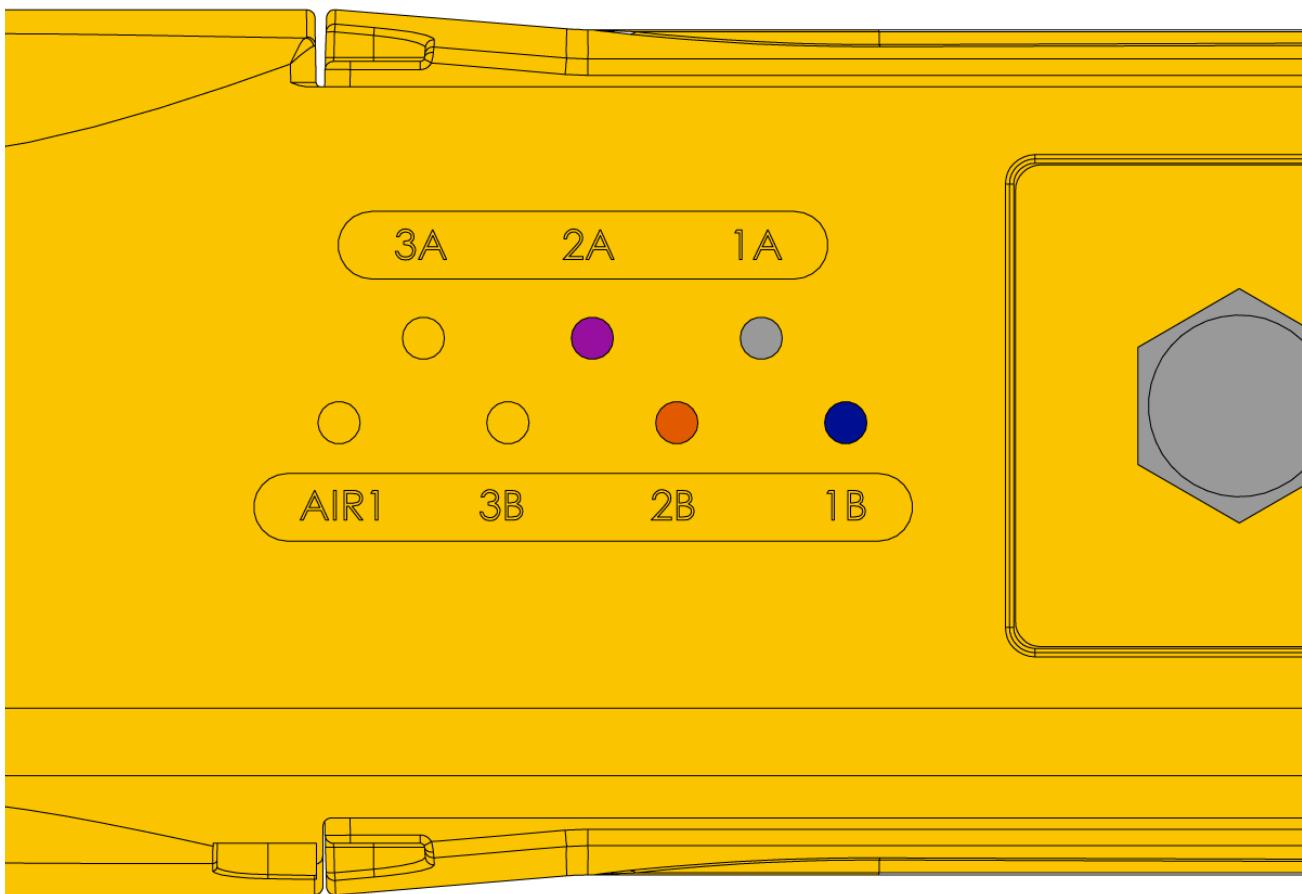
To install the bar gripper fingers, remove the slug gripper plates from the gripper bodies.

Install the Bar Gripper Bolt Plates[3] using the following hardware: 8 x SHCS M6[4]

Torque to 10 ft-lbs.

Install the Bar Gripper Fingers[2] using the following hardware: 8 x SHCS 1/4-20[1]

Torque to 13 ft-lbs.



4

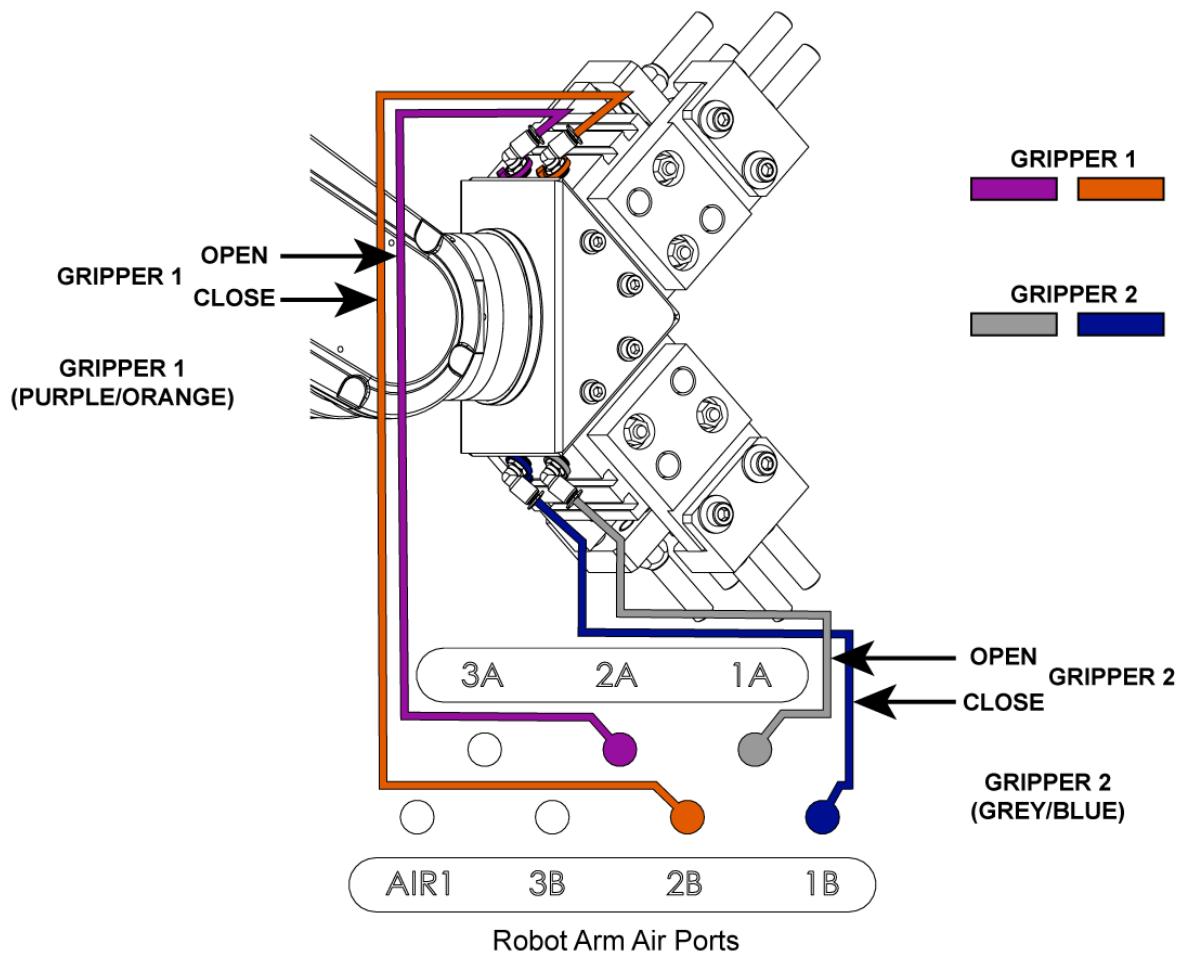
Install the gripper fittings to the robot arm.

Purple → 2A (Open gripper 1)

Orange → 2B (Close gripper 1)

Grey → 1A (Open gripper 2)

Blue → 1B (Close gripper 2)



5

Route the air lines between the robot arm and gripper connecting to the same color coded fittings.

Install conduit to each pair of air lines.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Light Curtain:

Wave your hand accross the light curtain and watch the light curtain icon show on the screen. If the icon does not show, verify wiring, alingment and factory setting: **2191 [694:] LIGHT CUTAIN TYPE** is set to **LC_TYPE_1**.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.

Test the operation of the grippers:

- Verify that both grippers clamp and unclamp correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F2]** to clamp/unclamp the **Finish Gripper**.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

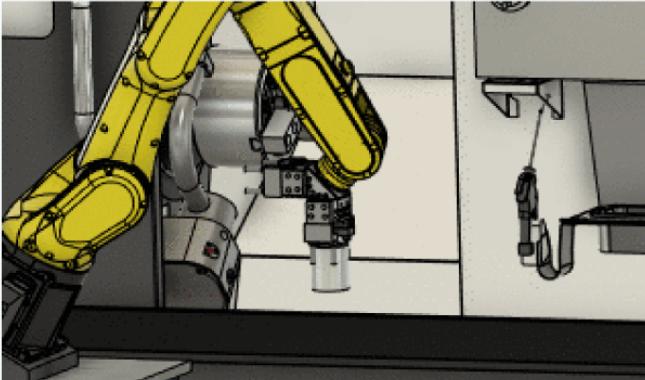
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

[FANUC Dual Check Safety \(DCS\) – Setup](#)

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	< >
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job				



F2 Record Position
F3 Clamp Gripper # 2
F4 Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Dwell	Off	Sec

◀
Previous
Next
▶

After installing the robot, set up a job following the procedure below.

[Haas Robot - Quick Start Guide](#)

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time		0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	PulseJet Injection Cycle Time		1.000	Sec
370	Miscellaneous	PulseJet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

[View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/hrp-2-installation.html

Haas Robot Package 2 - VMC - Installation

The robot will need to be installed according to Fanuc's recommendation. See [HRP-2 Fanuc Manual pdf](#) starting at page 4.

- The wiring to the Haas control is similar to the HRP-3 (see below instructions). Interface box, interlock, and remote e-stop.
- See [HRP-2 Fence Layout](#).
- The robot needs its own power. ([Startup Guide](#))

Introduction

This procedure will show you how to install the Haas Robot Arm Package-2.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- 100.21.000.1110 version or higher
- Built after 1/1/19 or I/O board updated to 34-349xB or later
- VF/VM Reboot Sheet Metal
- Haas Autodoor (See machine requirements for [CAN Auto Door](#))
- [Remote Jog Handle - XL](#) 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- [I/O PCB HINGE DOOR](#) 93-1000297 I/O DOOR ASSY HINGED

Fixing / Anchoring Requirements

The Haas Robot Package 2 needs to be anchored according to Fanuc's recommendation to be sufficiently stable when used according to Haas defined part size and weight limits. See the Robot Anchoring section below.

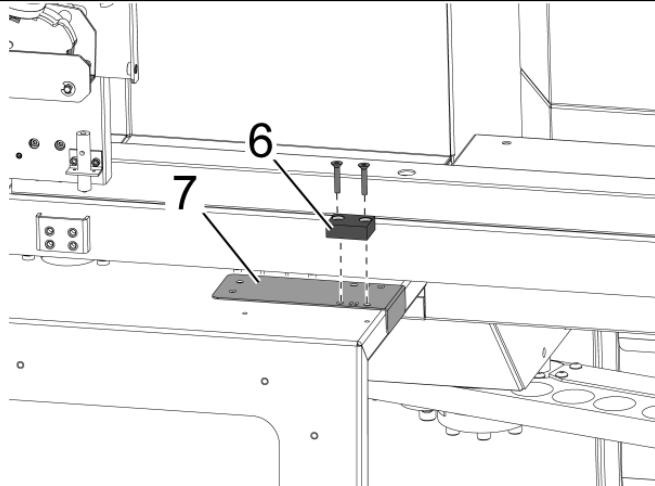
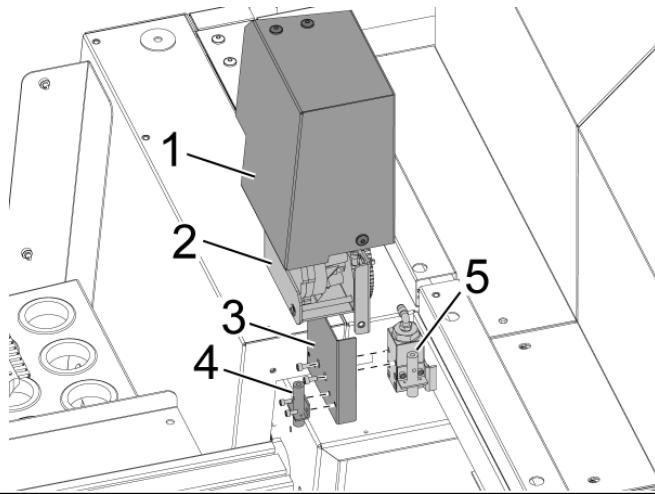
The Haas Robot Package Includes the following Components:

- **30-13008B** Robot PKG-2 Fence Kit (fencing with gate to enclose the operators station)
- **32-0910** Gate Interlock

- **32-8585B** Remote E-Stop Assembly (includes holster and 36' foot cable for remote handle jog)
- **32-8584B** HRP-2 Electrical Interface Box Assembly (Includes robot signals and power cables)

Note: The parts above are subject to change and there will be some variation depending on build date.

Mill Setup



1

Complete the following on both doors:

Remove the autodoor motor cover [1] and the autodoor motor assembly [2].

Install the new proximity switch bracket [3] to the existing proximity switch block [5].

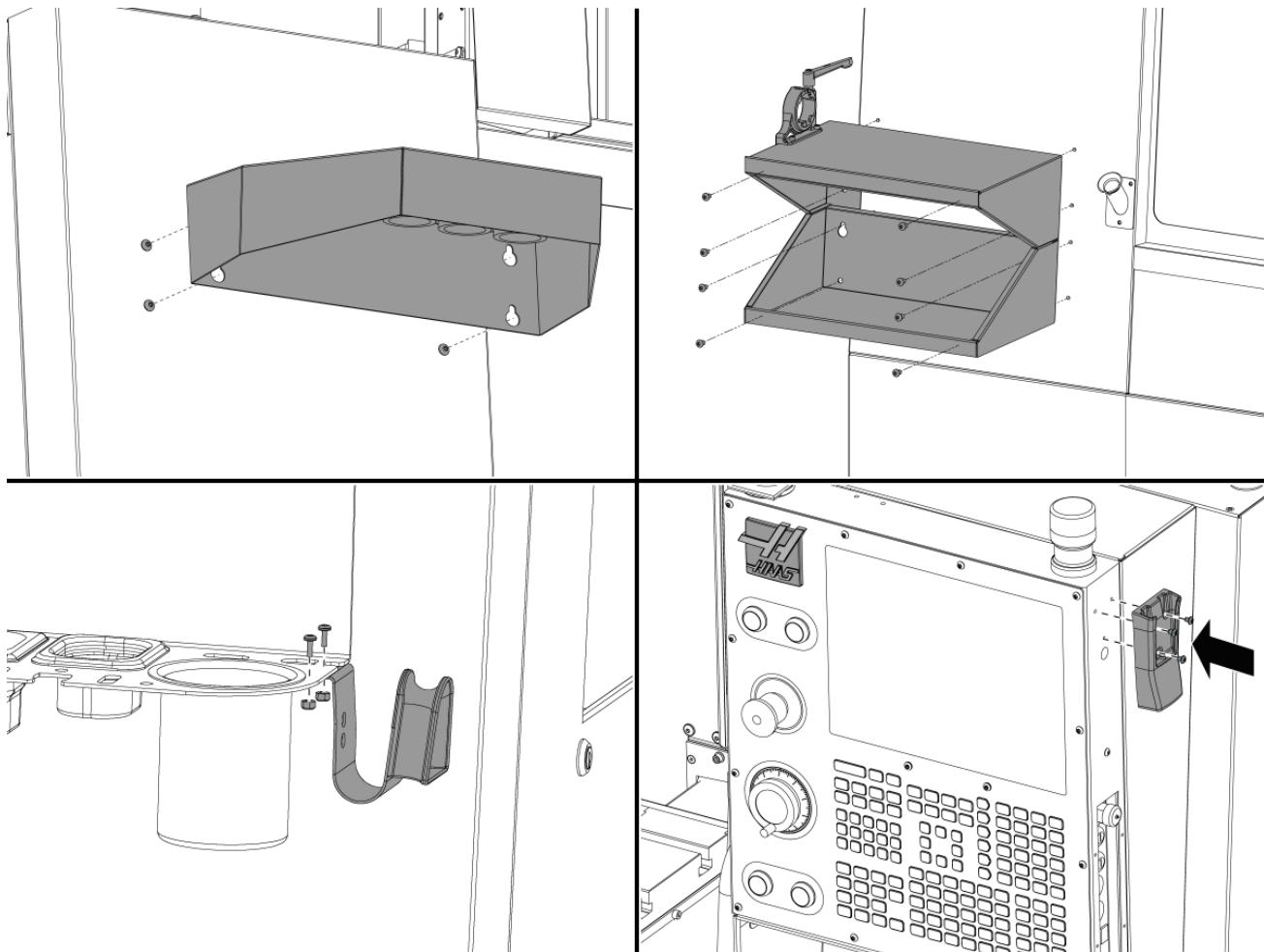
Install the door always open proximity switch [4] to the bracket [3].

Install the drill guide [7] for the door open flag [6] and drill and tap 2x 10-32 holes through the sheet metal of the door.

- Drill size: #21 or 5/32"
- Tap 10-32 NF

Remove the template and install the door open flag with 2x flat head cap screws. Re-install the autodoor motor assembly, bracket, and cover.

Use provided shims to set the height between the proximity switch and the door open flag.

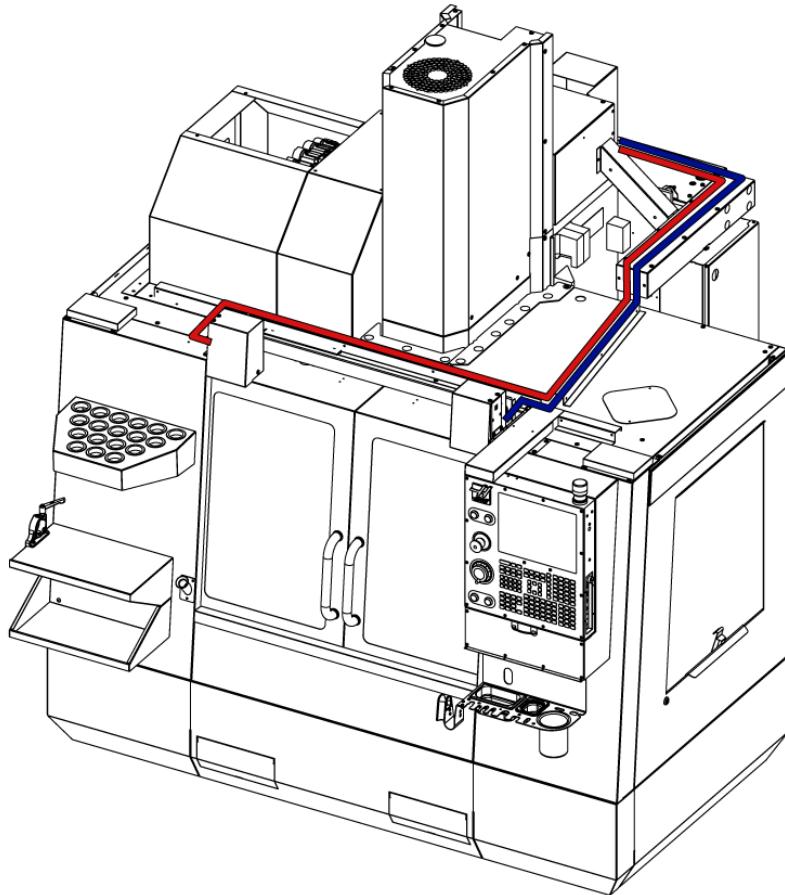


2

Remove the tool tray and tool table from the machine.

Move the air gun hose mount [1] to the opposite side of the tool rack. Drill holes in the tool rack for the 1/4"-20 screws. Use a H (17/64") drill to make clearance holes.

Move the Remote Jog Handle (RJH) to the opposite side of the control pendant and route the cable.



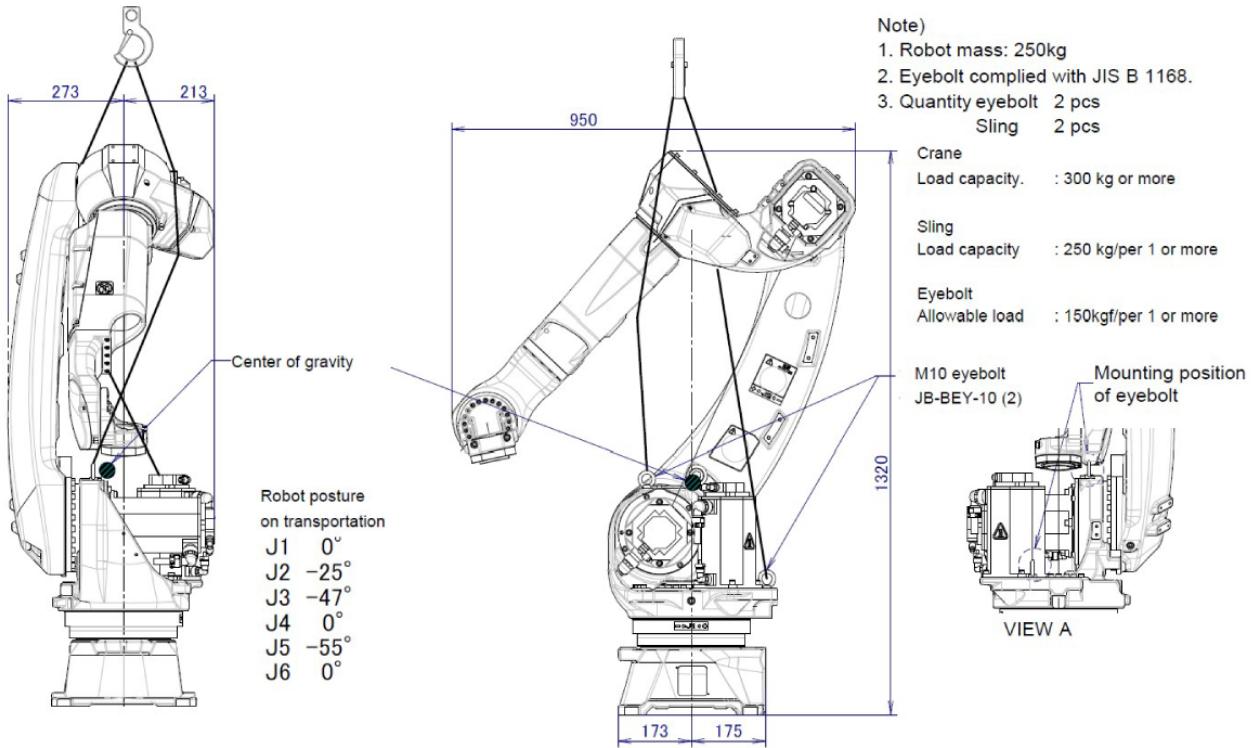
3

Route the door fully open cables into the control cabinet as shown on the picture.

Connect to **32-0807 PROX NO LEFT DOOR FULLY OPEN** to SIO P27.

Connect to **32-0856 PROX NO RIGHT DOOR FULLY OPEN** to SIO P72.

Robot Lifting



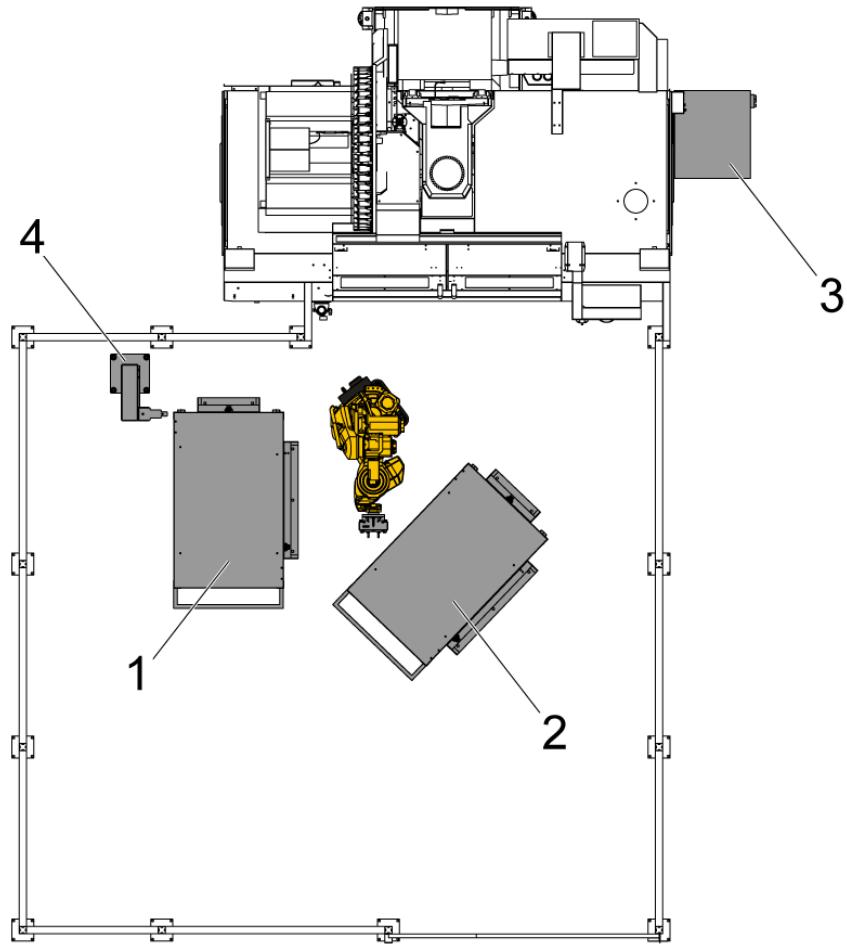
Robot Lifting Requirements

Use this information for lifting/moving Robot Package 2.

The Haas Robot Package 2 needs to be lifted according to Fanuc's recommendation. See the Fanuc Robot M-20iD/25 Mechanical Unit Operator's Manual, **Chapter 1, Section 1 Transportation** starting on page 1 for lifting/moving information.

[HRP-2 Fanuc Robot M-20iD/25 Mechanical Unit Operator's Manual](#)

Robot Installation



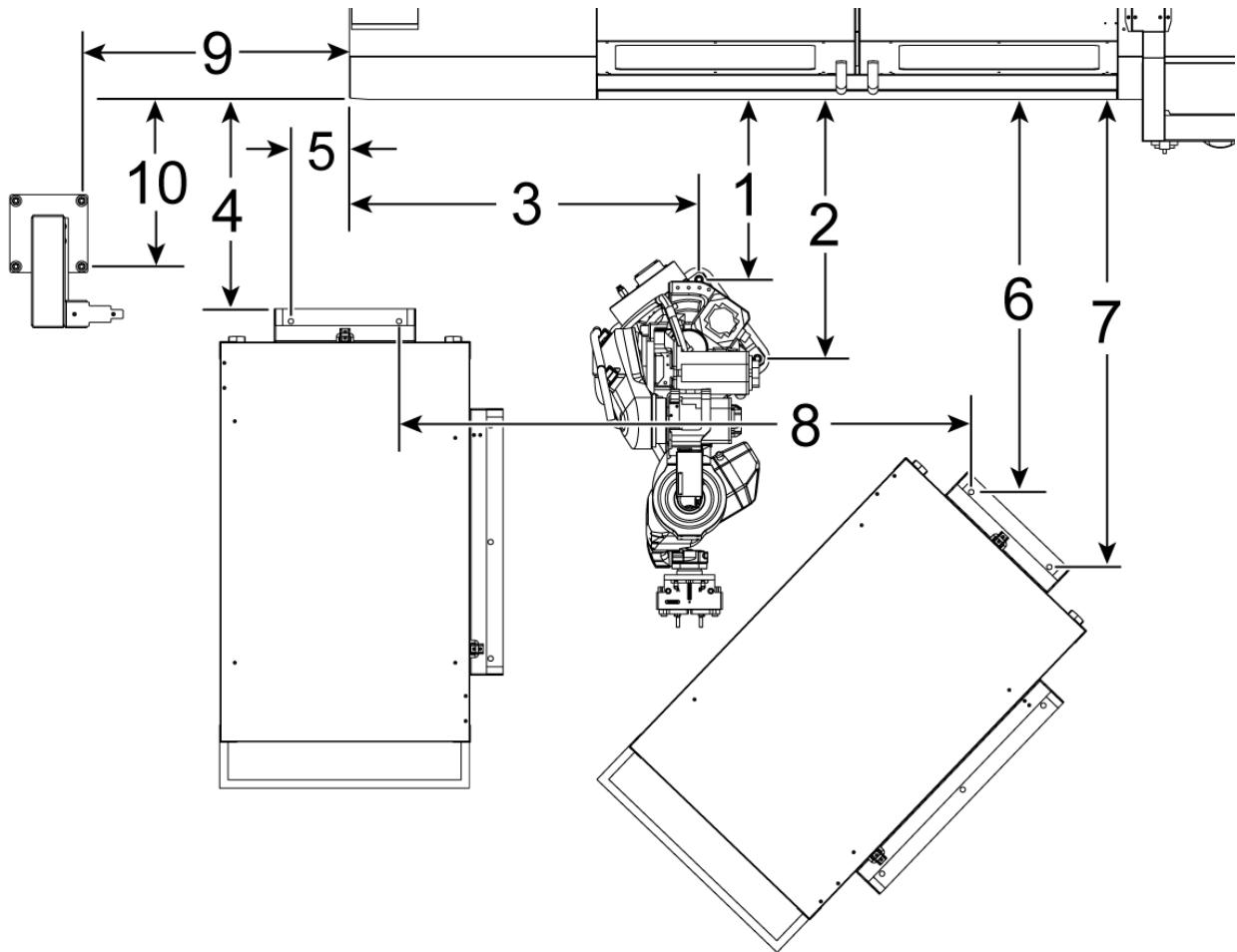
1

Table 1[**1**]

Table 2[**2**] (optional)

Place the Fanuc Control Box on the right side of the machine next to the control panel [**3**].

Part Flip Station [**4**].



2

Robots with a Weldment Base

Measure these dimensions from the machine skirt to the robot mounting holes on the robot stand.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

VF-1/2

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **27.5** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **37.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **25.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **26.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **20.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **53.0** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **62.0** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **31.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **18.0** inches from the front of the machine**[10]**.

VF-3/4

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **23.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **32.5** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **42.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **22.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **1.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **48.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **57.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **14.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **13.5** inches from the front of the machine**[10]**.

VF-5

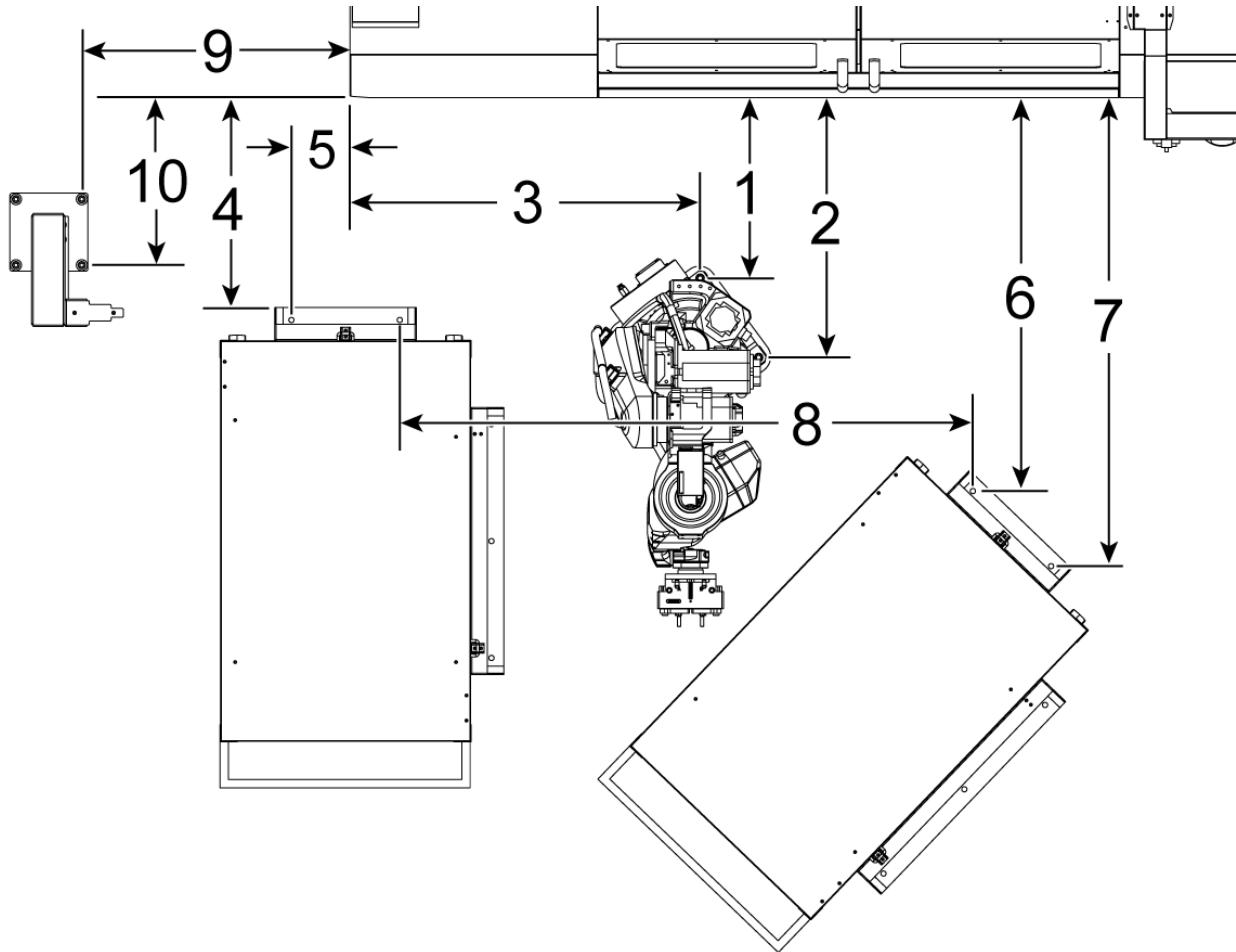
Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **20.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **30.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **49.5** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **19.0** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **14.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **45.0** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should

be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **1.0** inches inside from the left side of the machine**[9]**. The front right anchoring hole should be **8.5** inches from the front of the machine**[10]**.



3

Robots with a Cast Base

Measure these dimensions from the machine skirt to the robot mounting holes on the robot stand.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

VF-1/2

Place the robot stand to the left front side of the machine. The the rear mounting hole of the base should be **24.5** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **37.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **25.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **26.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **20.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **53.0** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **62.0** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **31.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **18.0** inches from the front of the machine**[10]**.

VF-3/4

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **20.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **32.5** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **42.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **22.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **1.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **48.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **57.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **14.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **13.5** inches from the front of the machine**[10]**.

VF-5

Place the robot stand to the left front side of the machine. The the rear right mounting hole of the robot should be **17.0** inches from the front of the machine**[1]**. The the front right mounting hole of the robot should be **30.0** inches from the front of the machine**[2]**. The the rear right mounting hole of the robot should be **49.5** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **19.0** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **14.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **45.0** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

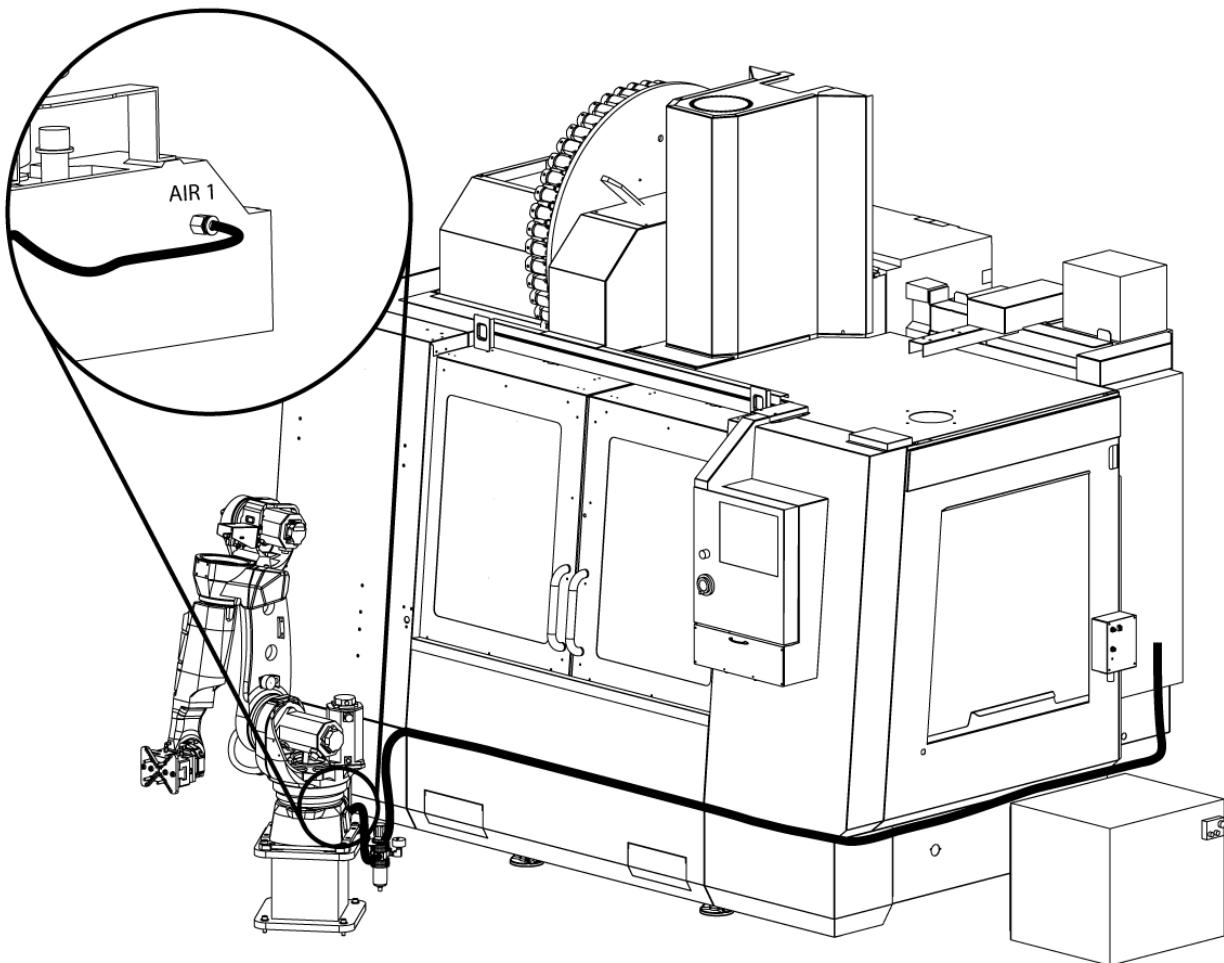
Part Flip Station should be **1.0** inches inside from the left side of the machine**[9]**. The front right anchoring hole should be **8.5** inches from the front of the machine**[10]**.

4

Robot Anchoring Requirements

The Haas Robot Package 2, Part Table, and Part Flip Station needs to be anchored to be sufficiently stable when used according to Haas defined part size and weight limits. See the Anchoring Instructions (Drop-In Expansion) for anchoring information.

[Anchoring Instructions \(Drop-In Expansion\)](#)



5

Turn the machine air supply OFF.

Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports.

The Robot Gripper Air Regulator has magnetic mounts to attach to the robot stand

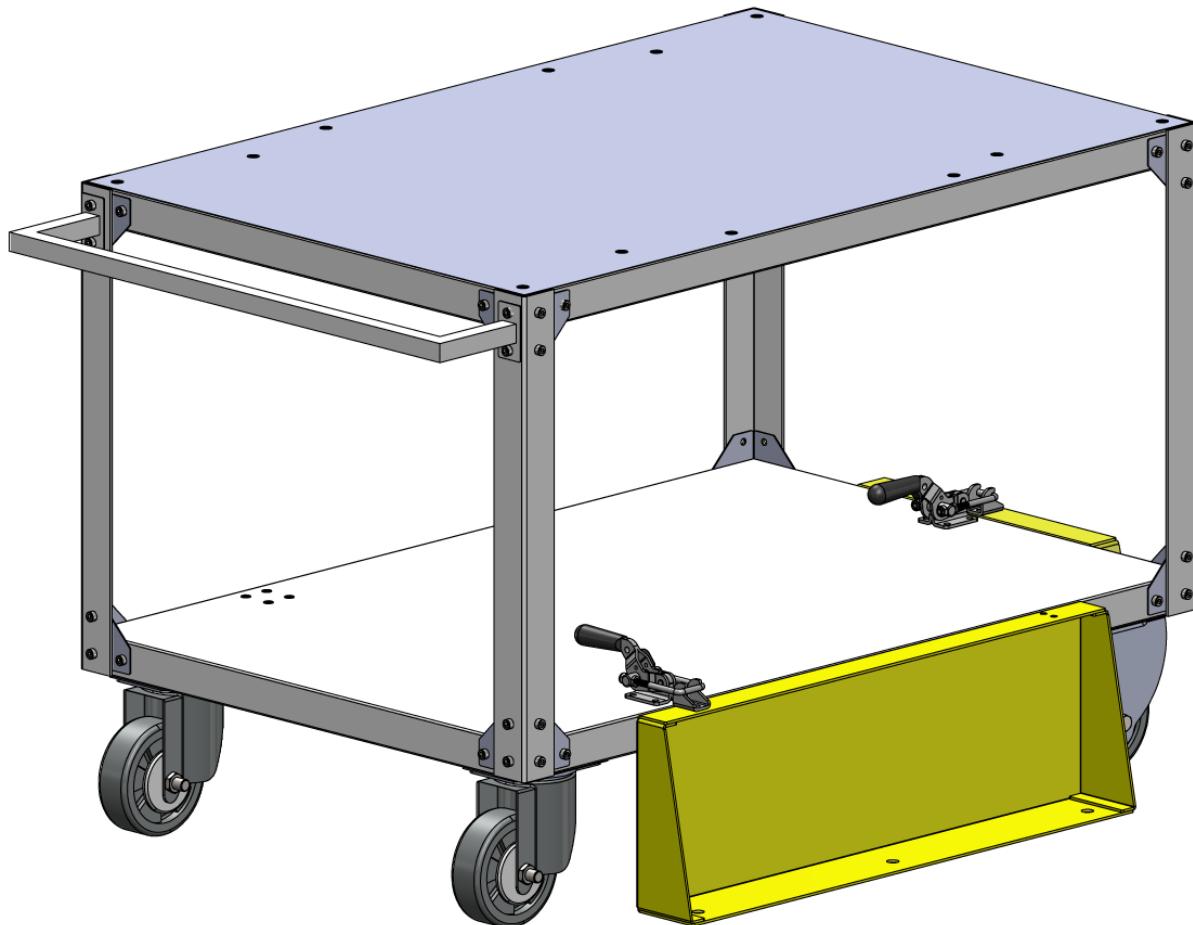
Mount the Robot Gripper Air Regulator to the robot stand.

Route the air line from the left side of the regulator along the front skirt of the machine to the CALM cabinet and install the push to connect fitting.

Route the air line from the right side of the regulator to the **Air 1** port on the robot and install to the push-to-connect fitting.

Turn the machine air supply ON.

Parts Table Assembly

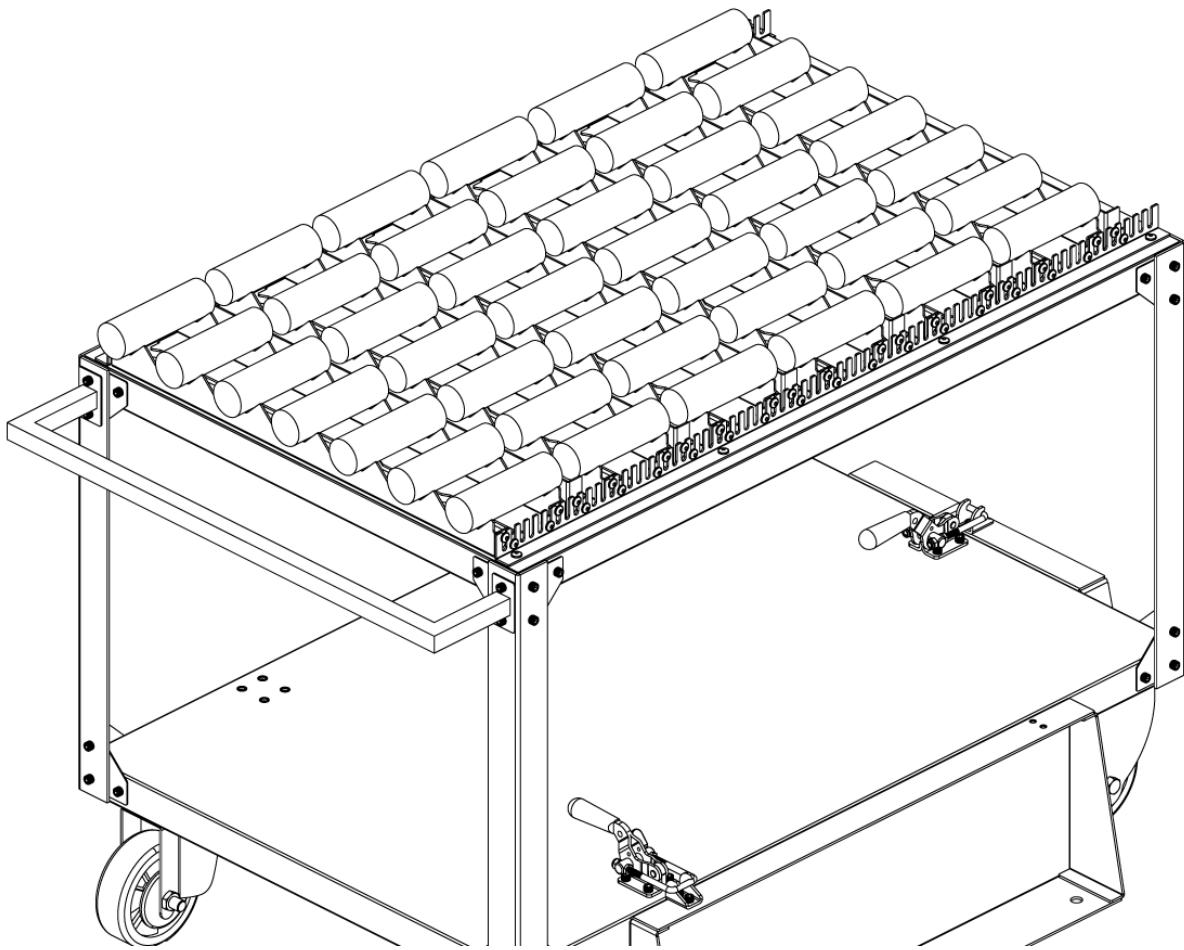


1

The Parts Table needs to be assembled. Follow the procedure below for installation.

[Haas Robot - Parts Table Assembly](#)

Shaft Loading Kit Installation

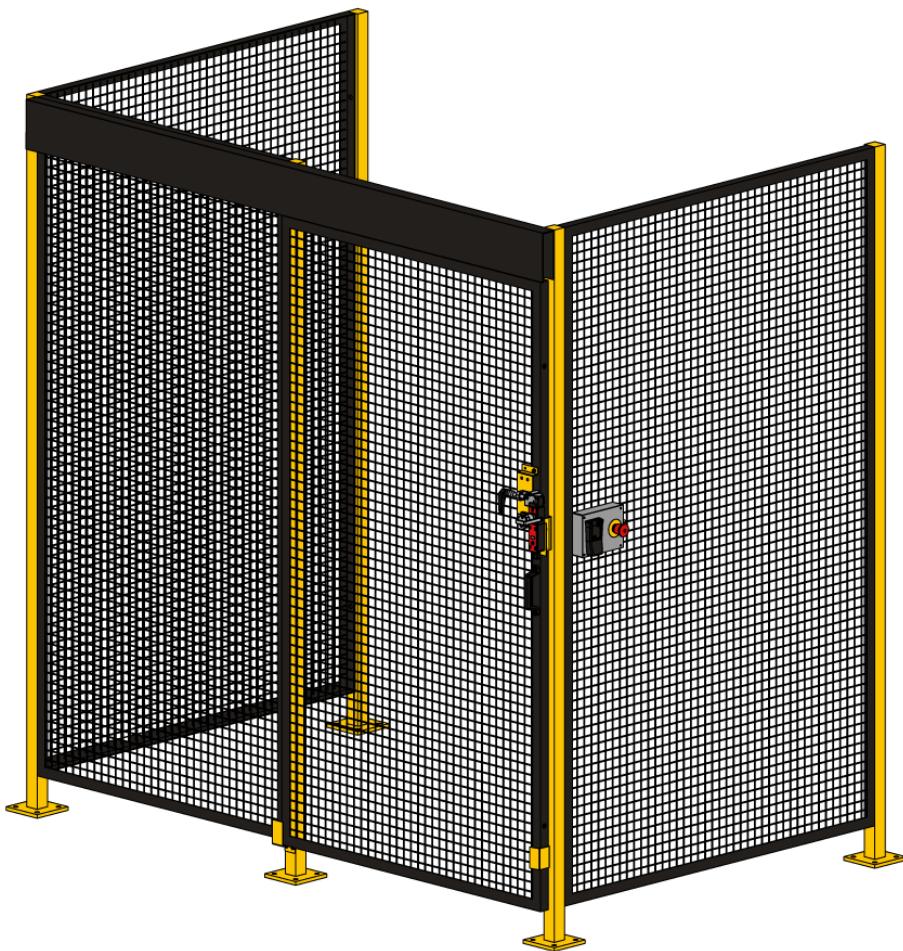


1

To install the HRP-2 Shaft Loading Kit. Follow the procedure below for installation.

[HRP-2 - Shaft Loading Kit - Installation](#)

Fence Installation



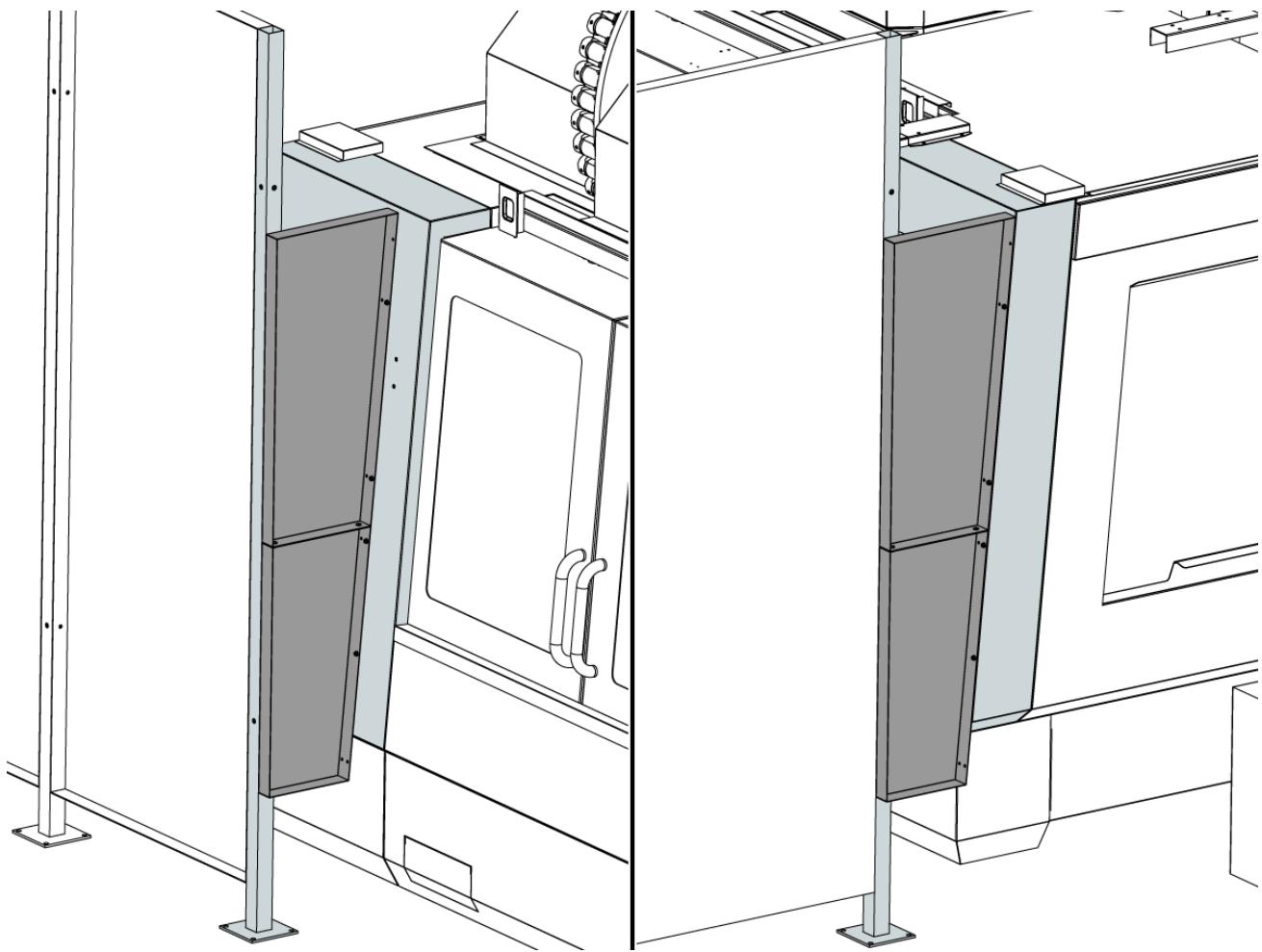
1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for installation.

[Robot Fence Installation](#)

[HRP-2 VMC Fence Layout](#)

Attention: The fence anchors will use a 3/8th drill bit, they are **NOT** the same size as the robot anchors.



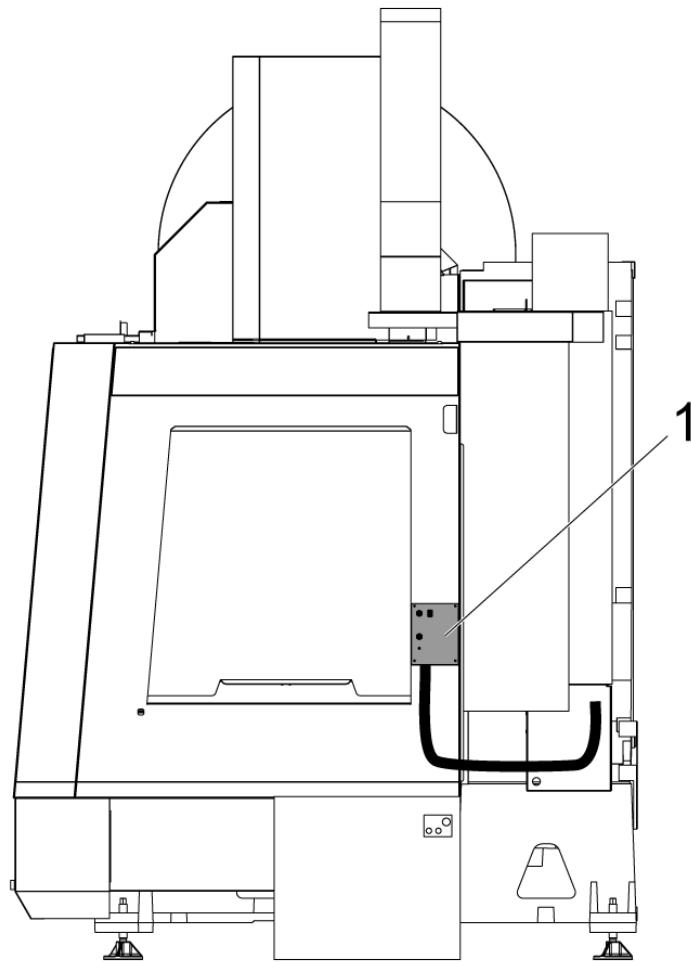
2

Install the fence panels together.

Install the fence panel assembly to the fence post with the self tapping screws. The top of the fence panel assembly should be **22.5** inches from the top of the fence post.

Install the fence panel assembly to the front of the machine with the self tapping screws. The location installed will depend on the machine and fence location

Robot Electrical - Installation



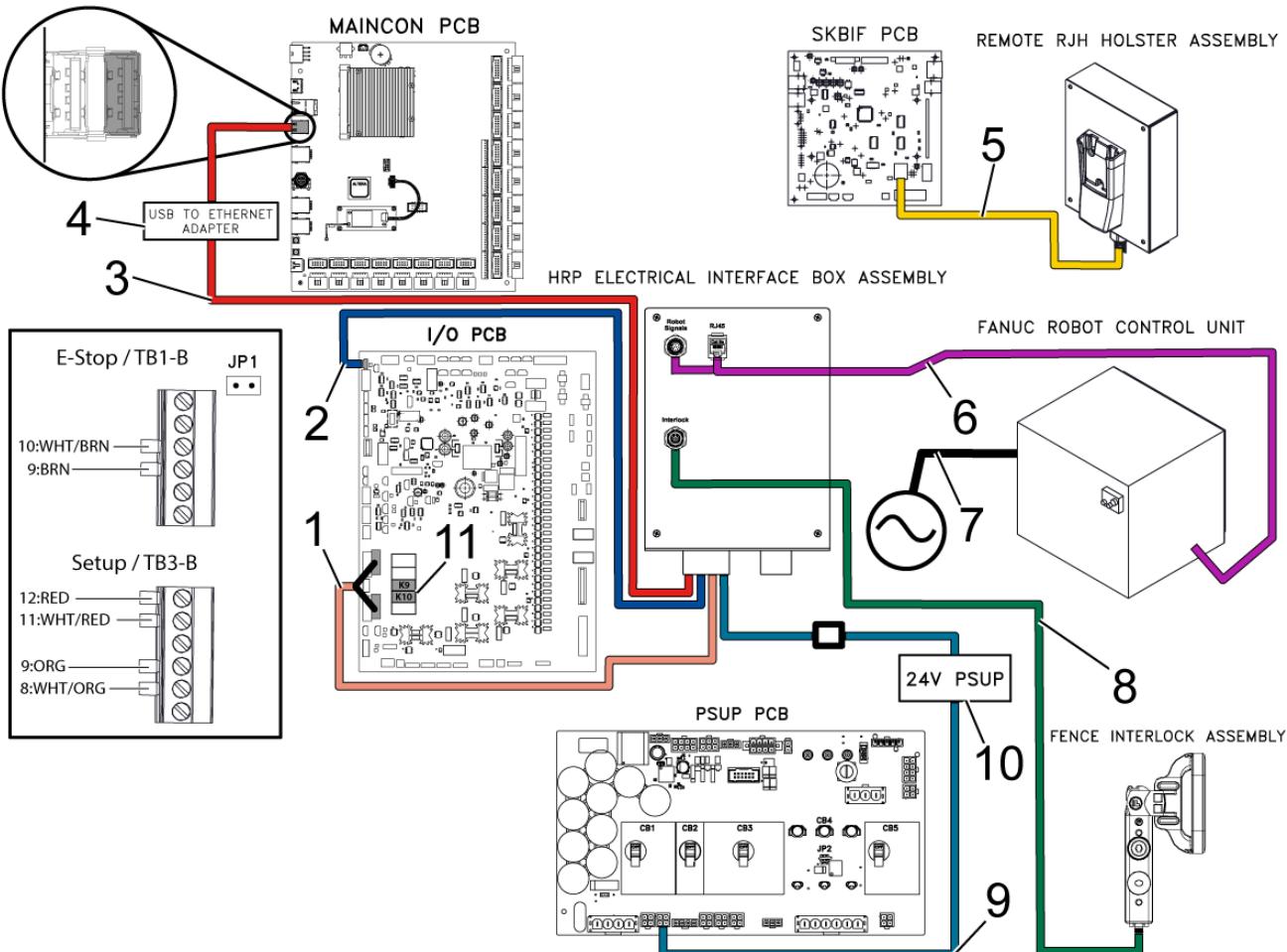
1

VMC Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown in the picture.

Route the Robot interface electrical cables through the bottom of the electrical cabinet.



2

Perform the following steps to connect the robot to the Haas machine.

Robot Power

Requires separate 200-230V 3-Phase, 50/60 Hz, 7.5 kVA (20 Amp) Power Supply[7]. See the Fanuc [Startup Guide](#) for more information.

Note: It is recommended to install a strain relief cable grip to remove stress on the power cable connections and isolate the power cable from the controller cabinet.

Cable P/N **33-8562C** has multiple connections:

I/O PCB

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[1].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [1].
- Plug the User Relays into **K9** and **K10**. (see diagram)[11].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[2]**.

Note: Do not plug anything into the connector **FILTER OV FAULT**.

Maincon PCB

Connect the **RJ-45** cable [3] to Ethernet to USB adapter [4] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.

PSUP PCB

Mount the 24VDC Power Supply[10] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8562C**. Connect cable **33-1910A**[9] to the 24VDC Power Supply[10] and plug into **P3** on the **PSUP PCB**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-8550C**[5] from the Remote E-stop box to cable **33-0713** and plug into the SKBIF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

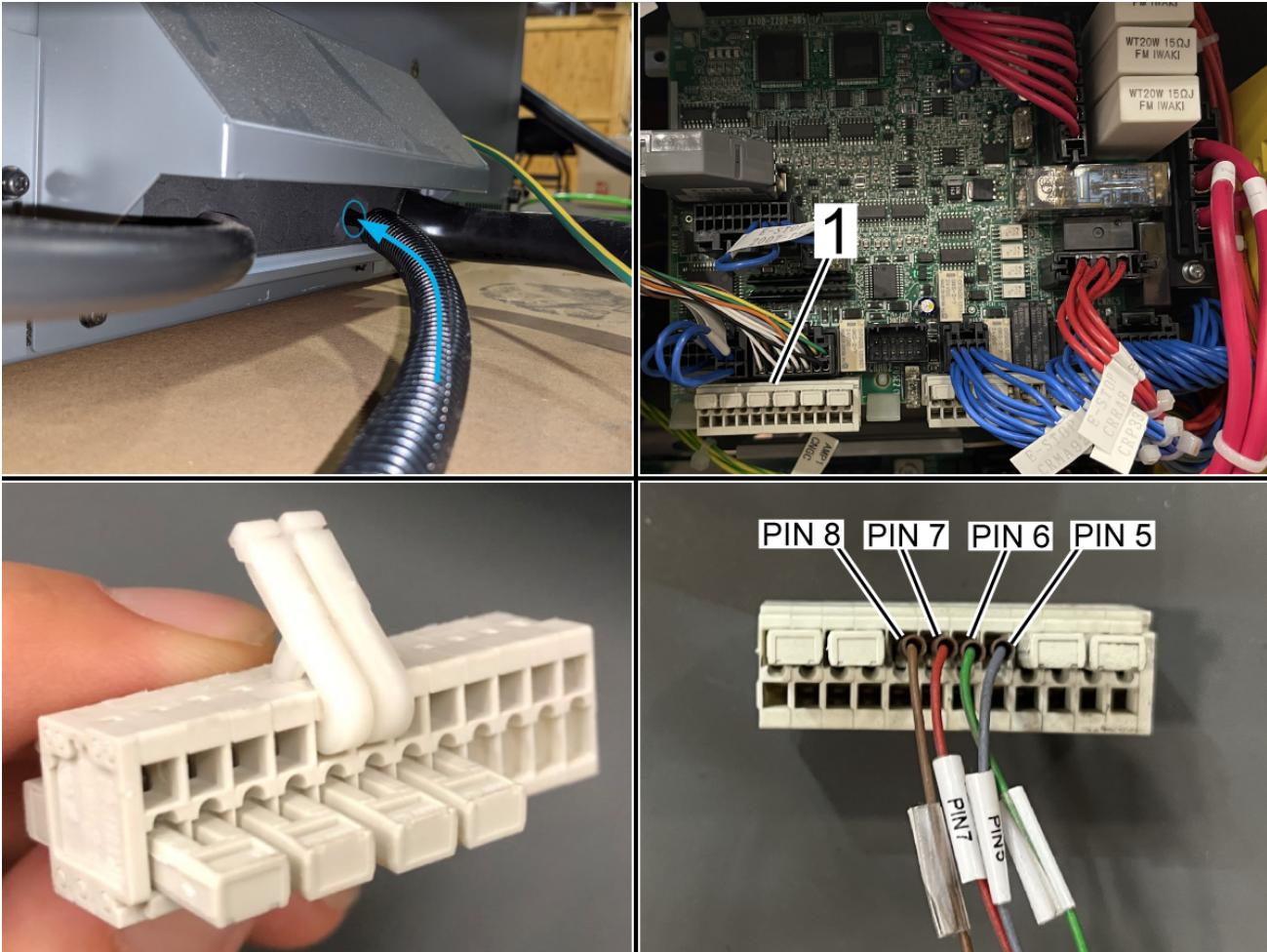
Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [6] **P/N 33-8591A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

Fence Interlock

Connect the fence door interlock cable [8] to the electrical interface box.



3

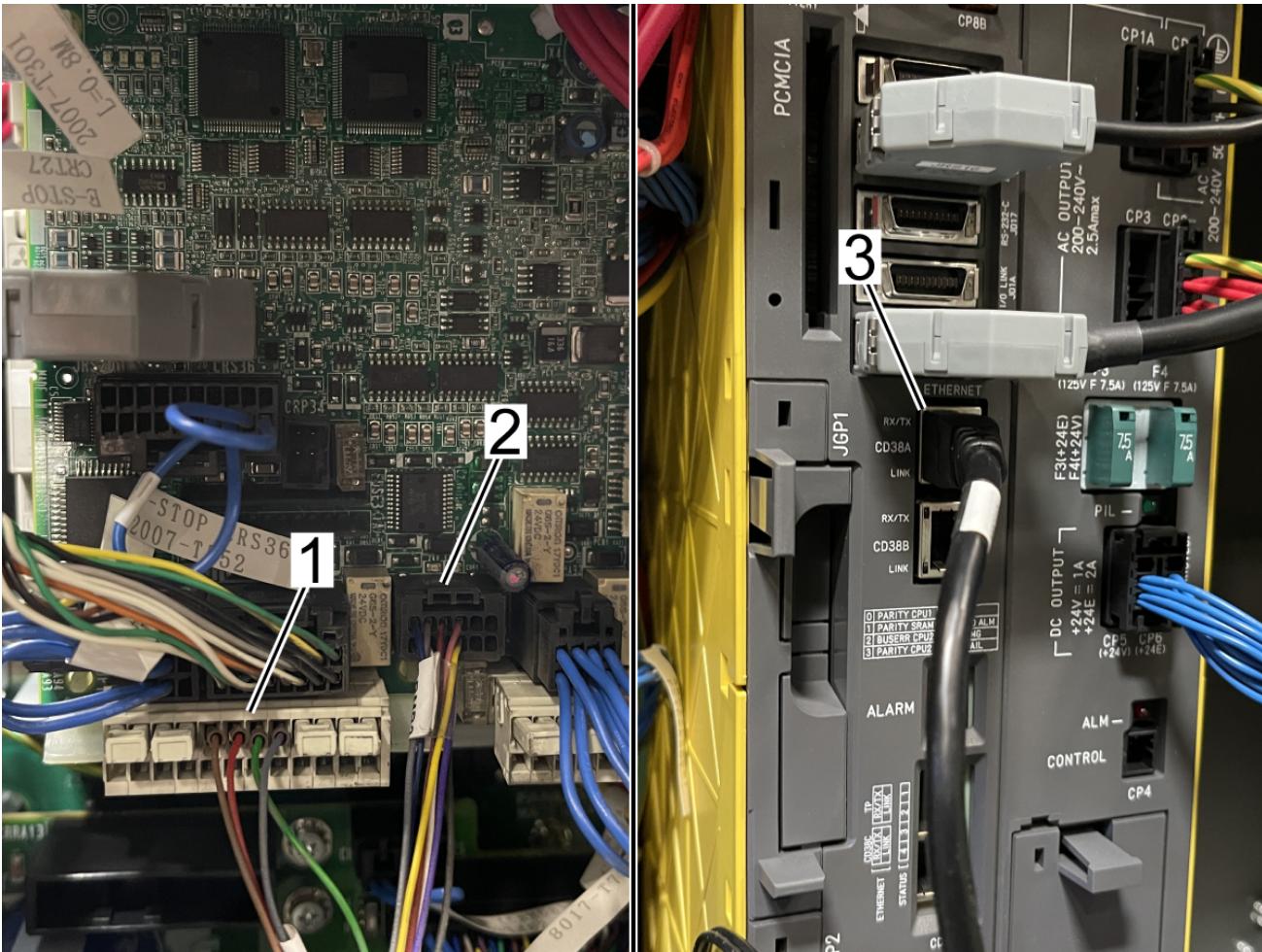
If cable **33-8591A** or **33-8592A** is not installed to the Fanuc Control box, perform the following steps:

Route the cable through the back of the Fanuc Control box.

Remove the connector at TBOP20**[1]** inside the Fanuc Control box.

Remove the jumpers and install the wires in the connector in the following order with the tool included in the Fanuc Install kit.

Note: Both tools need to be used to install the ferrules.



4

Install the cable labeled **TBOP20** to connector **TBOP13[1]**.

Install the cable labeled **CRMB2** to the connector labeled **CRMB2[2]**.

Install the RJ-45 Ethernet cable labeled **ENET CD38A** to the Ethernet Port 1 labeled **CD38A[3]**.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. The key should be set to Auto Mode[2].

Make sure the **[E-STOP]** button[3] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[1].

Settings

Settings | Network | User Positions | Alias Codes | **F1** Machine Setup

Group Listings Search **F1** Machine Setup

	Group	Name	Value	Unit
102	Machine Setup	C Axis Diameter	1.0000	IN
336	Machine Setup	Bar Feeder Enable	Off	
340	Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359	Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368	Machine Setup	Live Tooling Type	None	
372	Machine Setup	Parts Loader Type	Robot	
375	Machine Setup	APL Gripper Type	None	
376	Machine Setup	Light Curtain Enable	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413	Machine Setup	Main Spindle Load Type	Low	type
414	Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2195 [:] Enable Right Door Fully Open Switch to TRUE**
- **2196 [:] Enable Left Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**

The screenshots show the 'Current Commands' interface in the 'Robot' section of the software. The top screenshot is from the 'Jogging' tab, showing a 3D model of a Haas machine with a robotic arm. It displays the current position of the robot and a table for setting the maximum jogging speed. The bottom screenshot is from the 'Setup' tab, showing the same 3D model and a message indicating the robot is connected. It displays a table for various robot setup parameters.

Top Screenshot (Jogging Tab):

Operation	Value	Units
Coordinate Type	Cartesian	
Tool Frame	WORLD FRAME	
User Frame	WORLD FRAME	
Maximum jogging Speed	9.8	inch/sec
Single Part Mass	0.000	lbs

Bottom Screenshot (Setup Tab):

Operation	Value	Units
Max Robot Speed	156.969	Inch/sec
Gripper Net Mass	7.000	lbs
Number of Grippers	2	
Raw Gripper	Value	Units
Clamp Output	4	
Unclamp Output	3	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	
Finish Gripper	Value	Units
Clamp Output	2	
Unclamp Output	1	

3

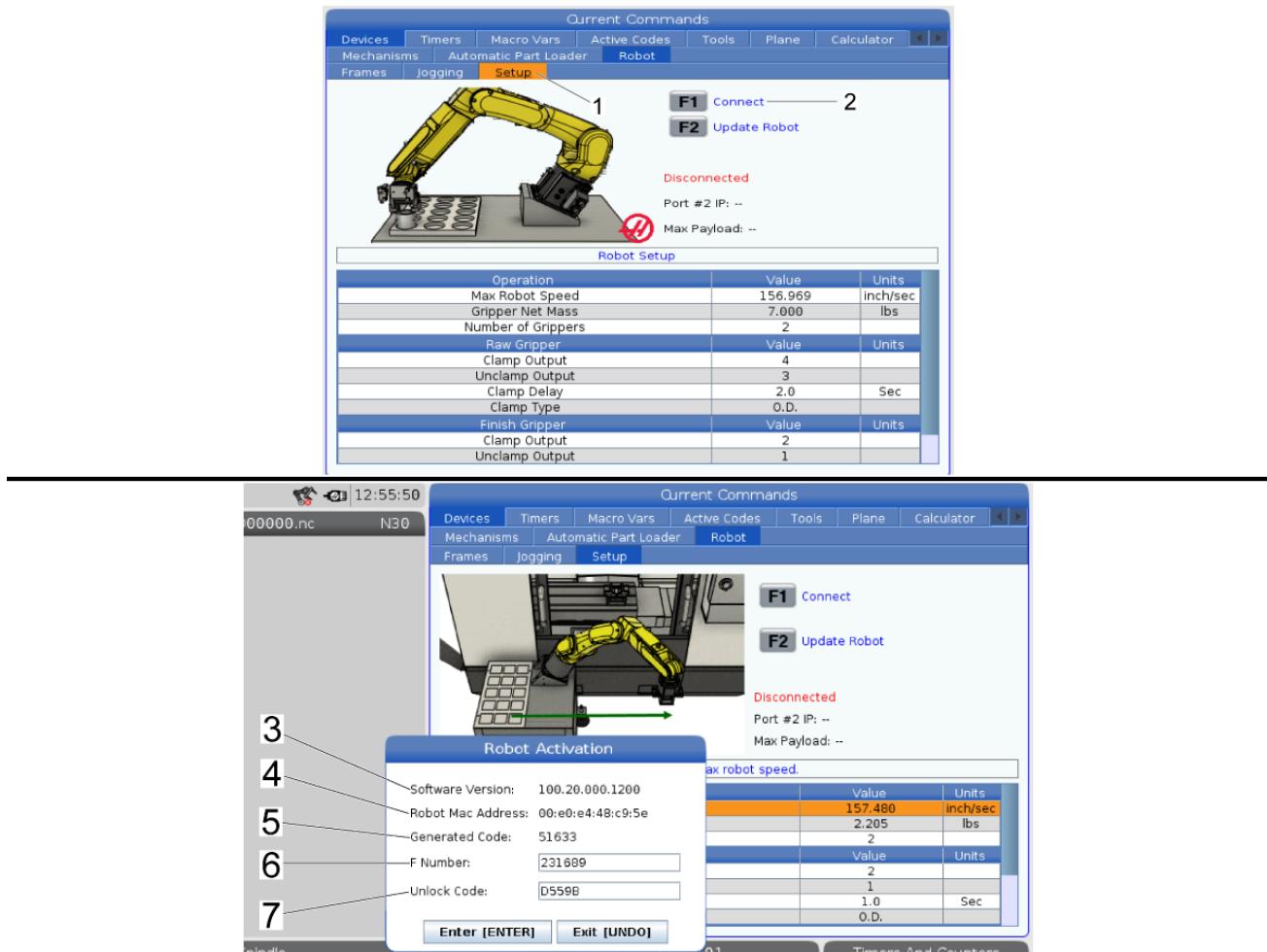
Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to 7.9 in/sec (200 mm/sec).

Go to the **Setup** tab. Change the following:

- **Max Robot Speed** to **78 in/sec (1981 mm/sec)**.
- **Gripper Net Mass** to **7.0 lbs**.
- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **1**.
- **Raw Gripper Unclamp Output** to **2**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup**[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

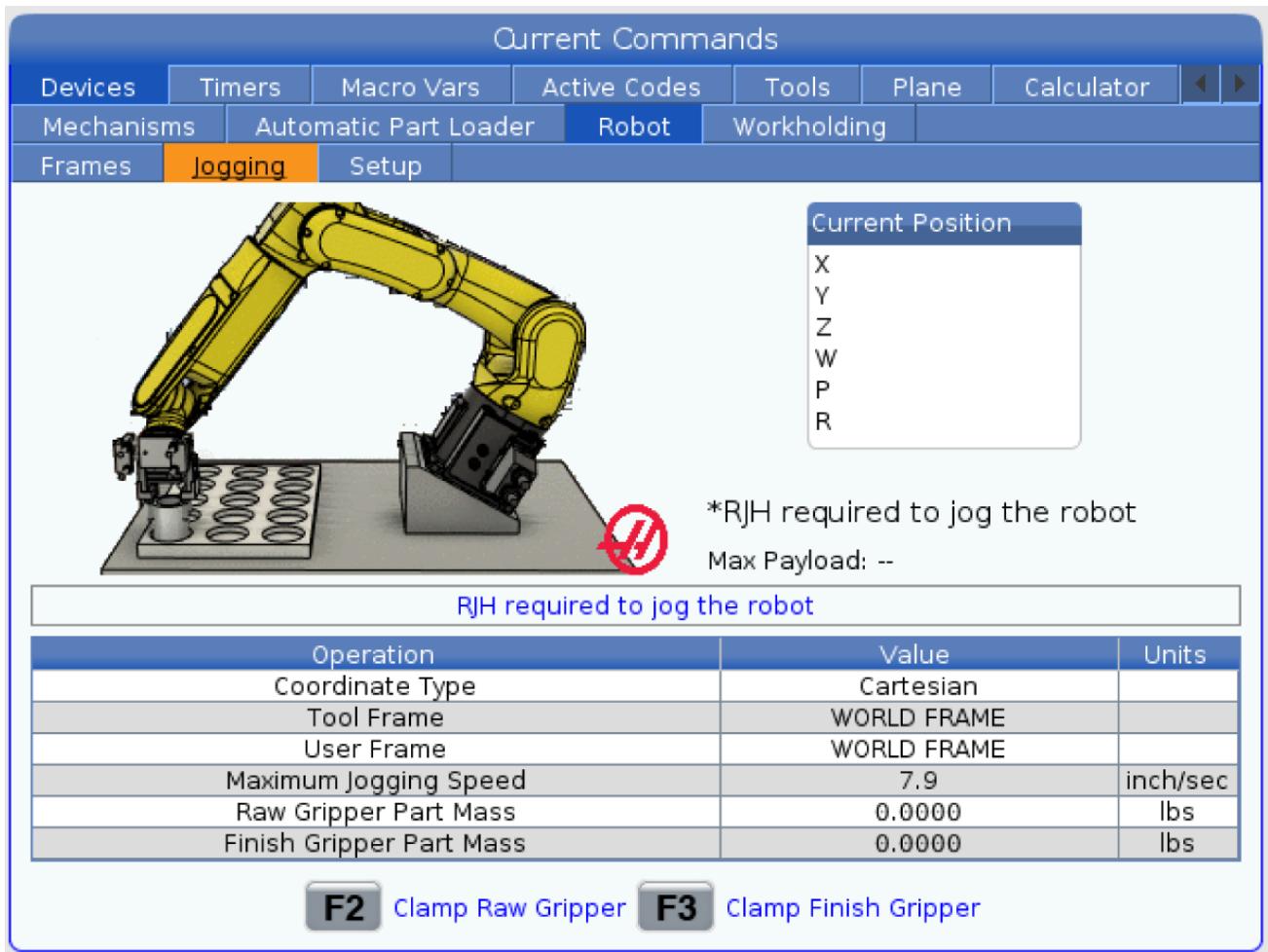
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press [INSERT] to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

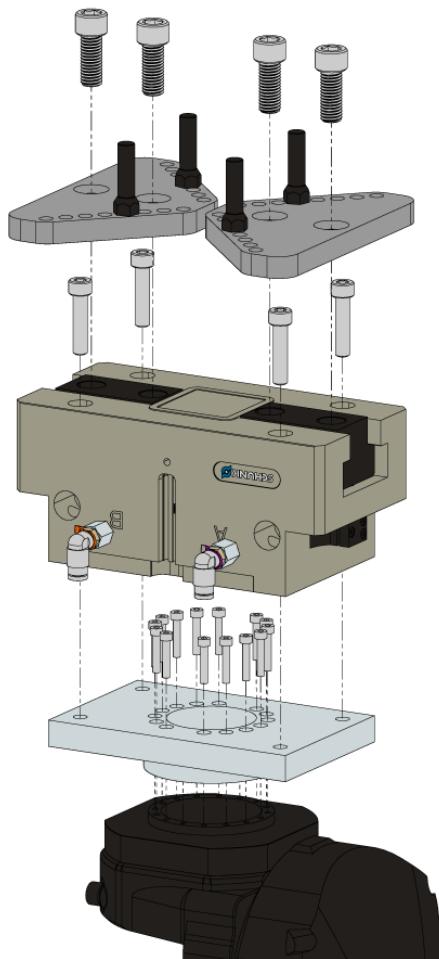
On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

Jog the robot from its shipping position to a safe position.

Note: Press **[Emergency Stop]** before working on the robot.

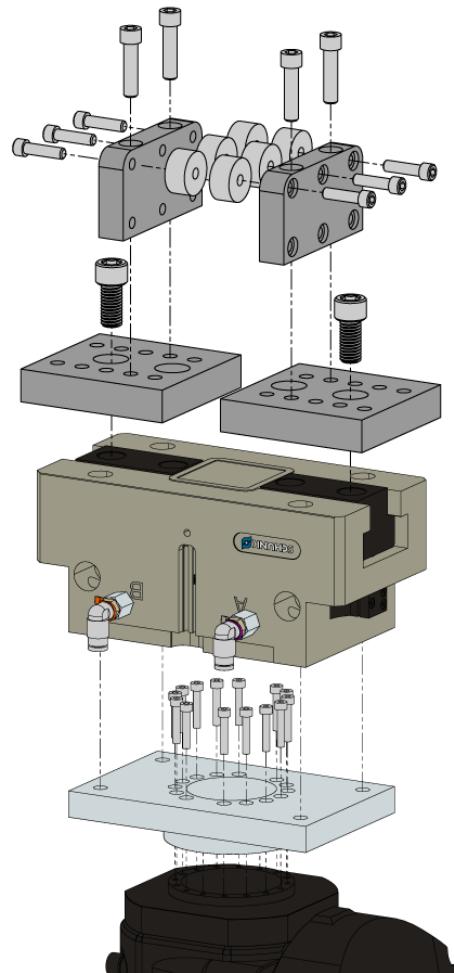
Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Installation



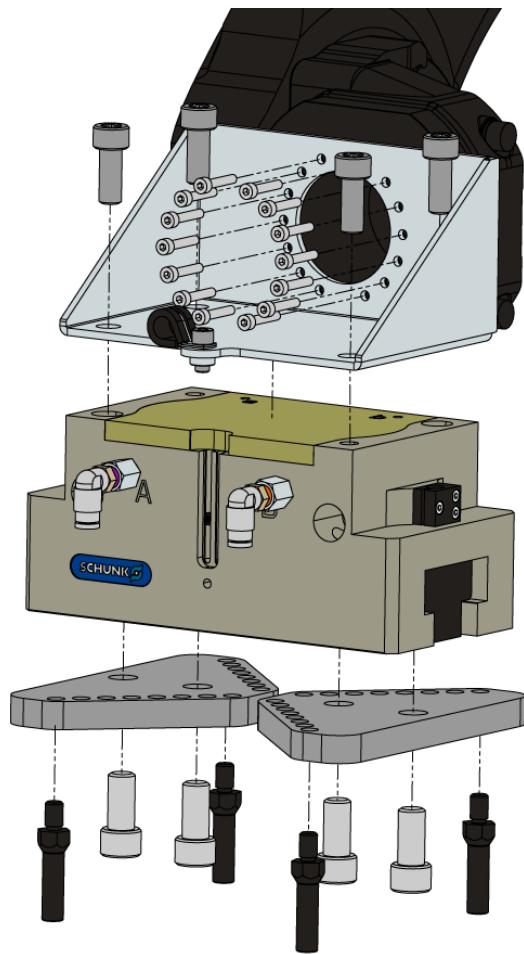
1

Install the gripper to the robot end effector mounting face.



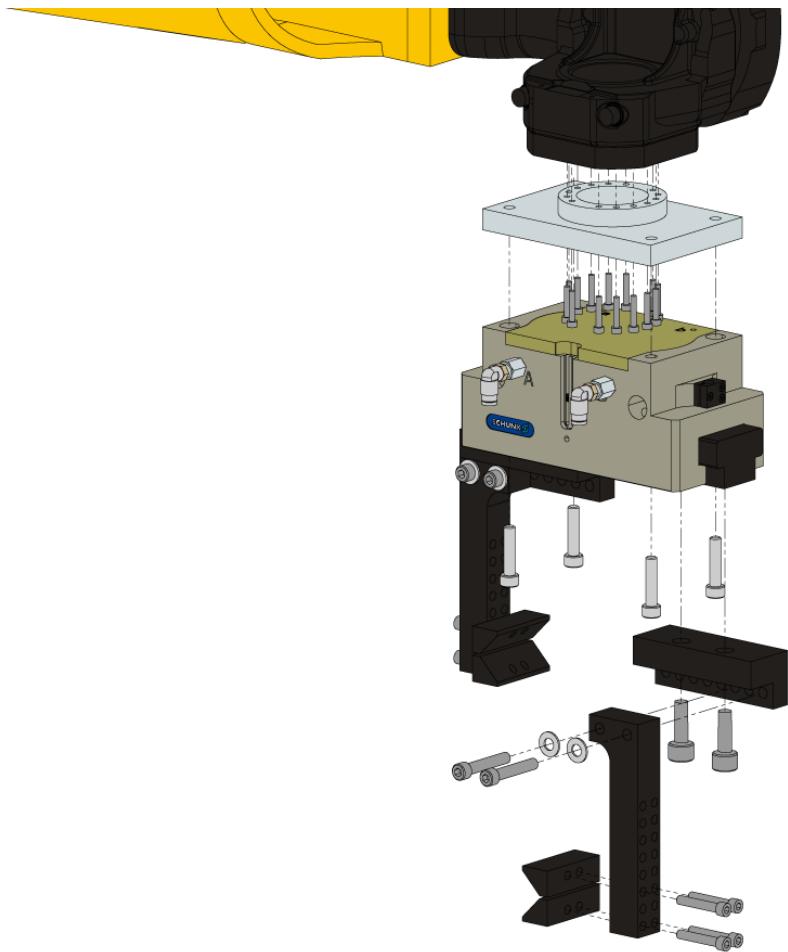
2

Install the gripper to the robot end effector mounting face.



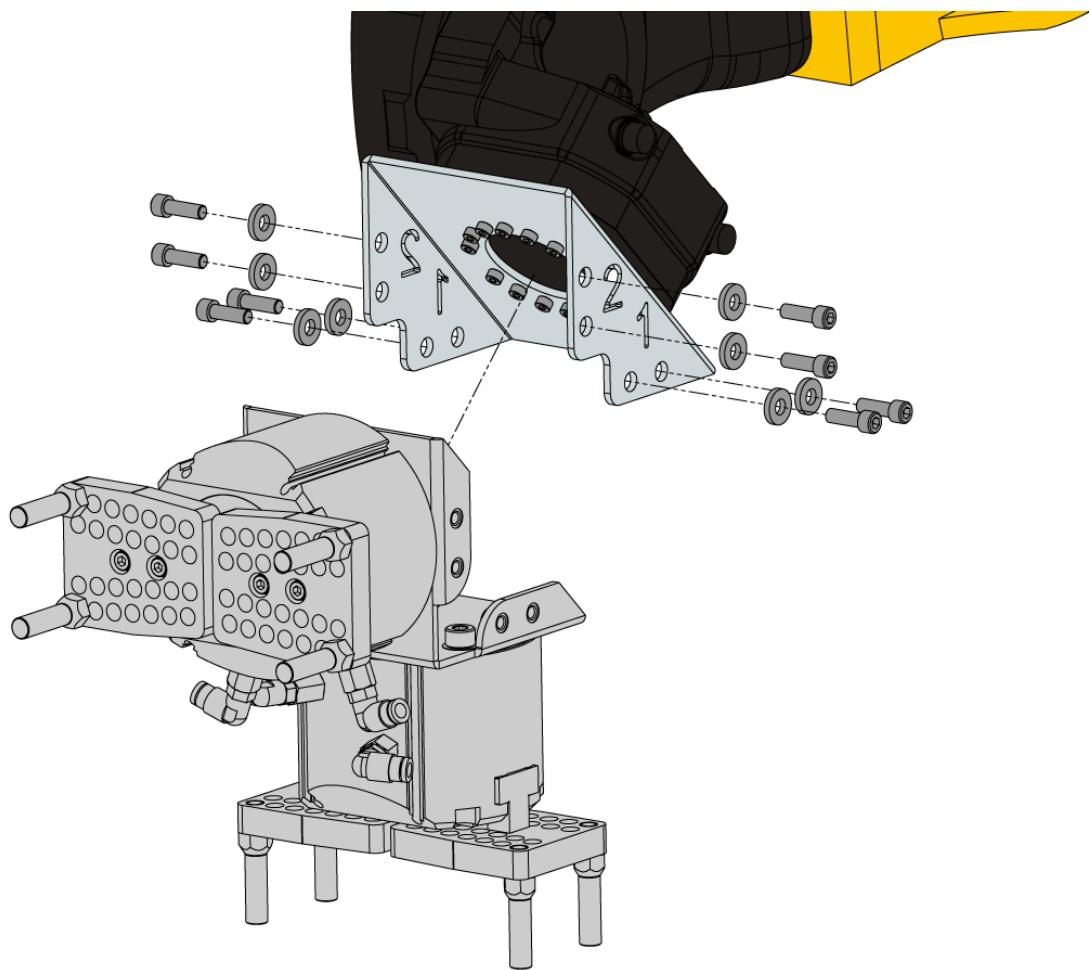
3

Install the gripper to the robot end effector mounting face.



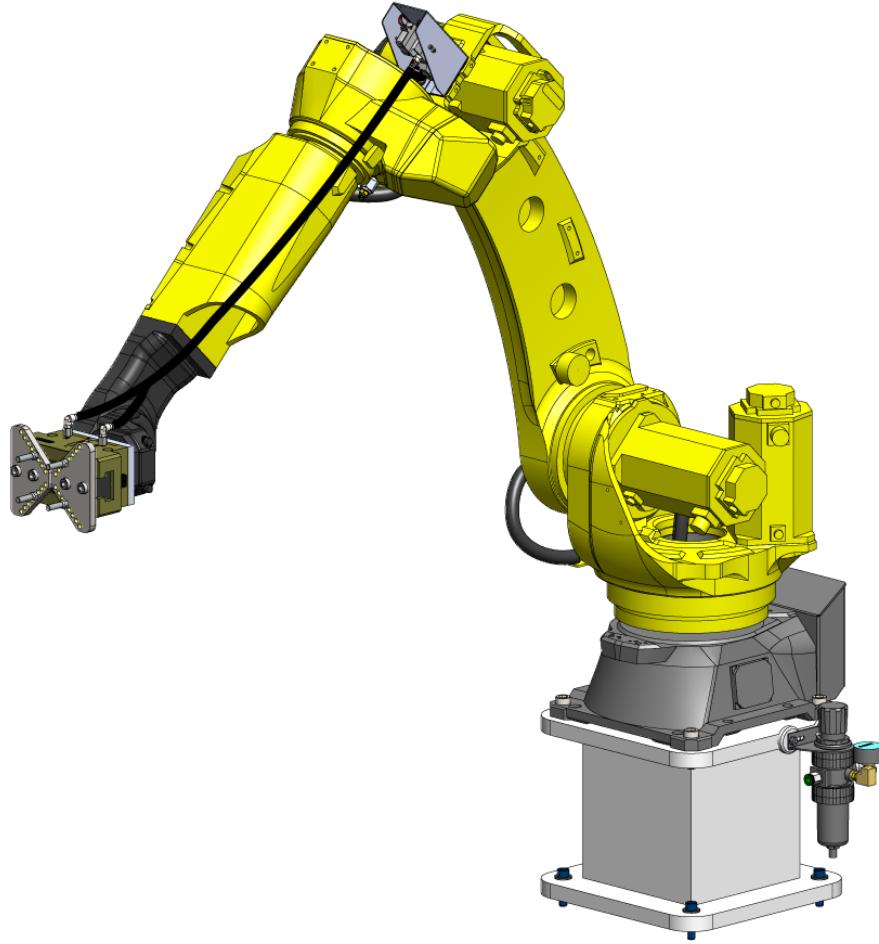
4

Install the shaft gripper assembly to the robot end effector mounting face.



5

See the [HRP-2 Dual Gripper - Installation](#) instructions for install the dual gripper on the HRP-2.



6

Route the air lines between the solenoid on robot arm and the gripper. Connecting the airlines to the corresponding color coded fittings. Install conduit to each pair of air lines.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.
- Check the light curtain/fence icon show on the screen. If the icon does not show, verify wiring, alingment and factory setting: **2191 [694:] LIGHT CUTAIN TYPE** is set to **LC_TYPE_1**.

Test the operation of the grippers:

- Verify the gripper clamps and unclamps correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

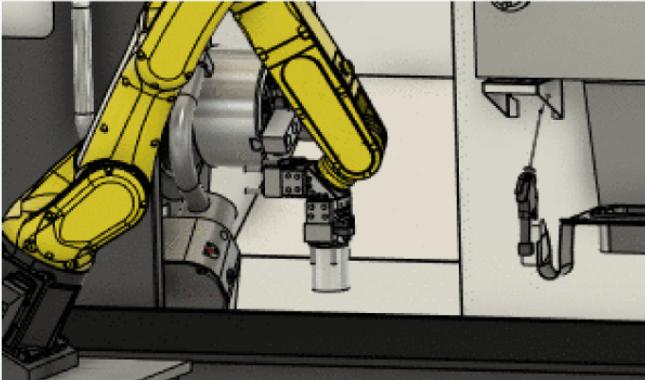
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

FANUC Dual Check Safety (DCS) – Setup

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	< >
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job				



F2 Record Position

F3 Clamp Gripper # 2

F4 Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Dwell	Off	Sec

◀ Previous
Next **▶**

After installing the robot, set up a job following the procedure below.

[Haas Robot - Quick Start Guide](#)

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time		0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	Pulsejet Injection Cycle Time		1.000	Sec
370	Miscellaneous	Pulsejet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP [View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package 2 - Lathe - Installation

The robot will need to be installed according to Fanuc's recommendation. See [HRP-2 Fanuc Manual](#) pdf starting at page 4.

- The wiring to the Haas control is similar to the HRP-3 (see below instructions). Interface box, interlock, and remote e-stop.
- See [HRP-2 Fence Layout](#).
- The robot needs its own power. ([Startup Guide](#))

Introduction

This procedure will show you how to install the Haas Robot Arm Package-2.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- 100.21.000.1110 version or higher
- ST-20/25/20L/25L/30/35/30L/35L Reboot Sheet Metal (Flat Face)
- ST-30L/35L machines must have Right Door Assembly 30-12628B or later. Machines built 10/08/2020 and later. If the machine does not have assembly, upgrade the door assembly with Door Trolley Plate 25-13911B or later.
- Haas Autodoor (See machine requirements for [CAN Auto Door](#))
- [Remote Jog Handle - XL](#) 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- [I/O PCB HINGE DOOR](#) 93-1000297 I/O DOOR ASSY HINGED

Note: If the machine has the Parts Catcher option installed. The catch tray will interfere with the robot and will need to be removed. A custom sheet metal panel will need to be made to cover and seal the opening.

Fixing / Anchoring Requirements

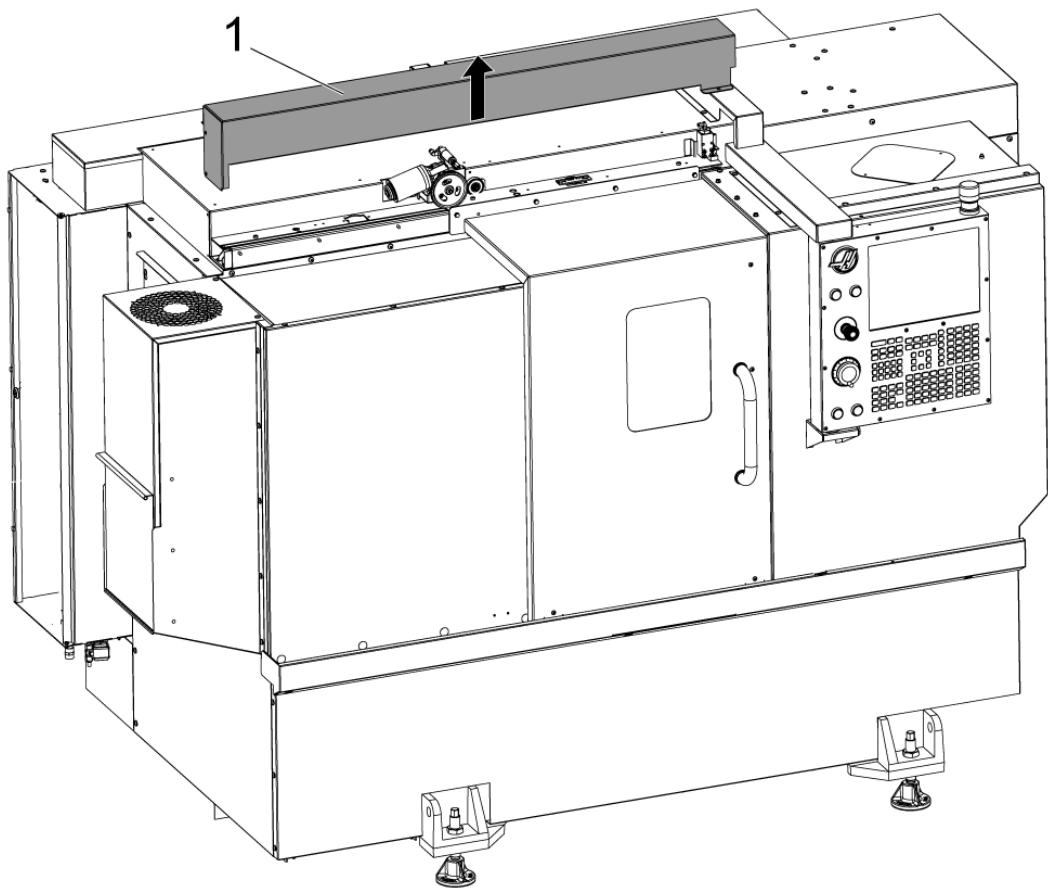
The Haas Robot Package 2 needs to be anchored to be sufficiently stable when used according to Haas defined part size and weight limits. See the Robot Anchoring section below.

The Haas Robot Package Includes the following Components:

- **30-13008B** Robot PKG-2 Fence Kit (fencing with gate to enclose the operators station)
- **32-0910** Gate Interlock
- **32-8585B** Remote E-Stop Assembly (includes holster and 36' foot cable for remote handle jog)
- **32-8584B** HRP-2 Electrical Interface Box Assembly (Includes robot signals and power cables)

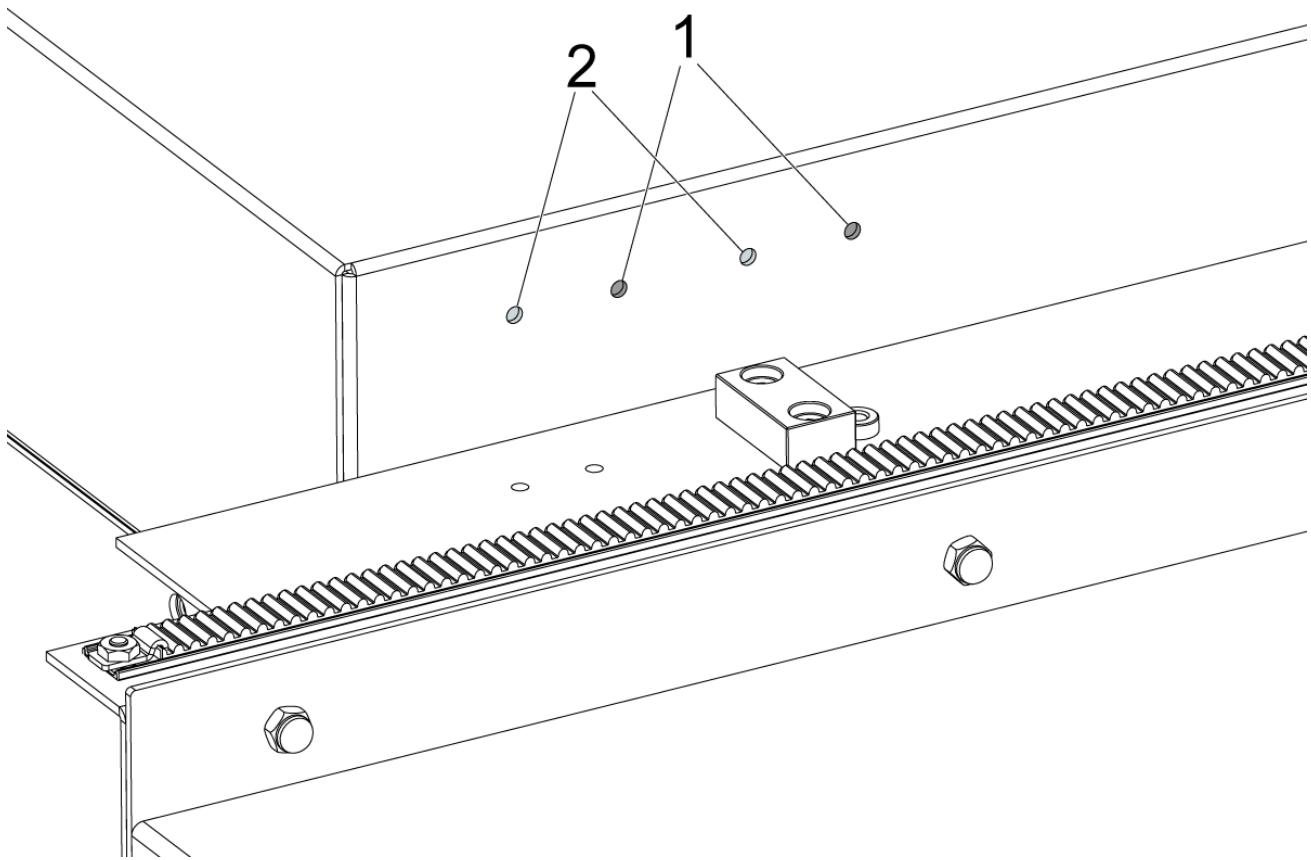
Note: The parts above are subject to change and there will be some variation depending on build date.

Lathe Setup



1

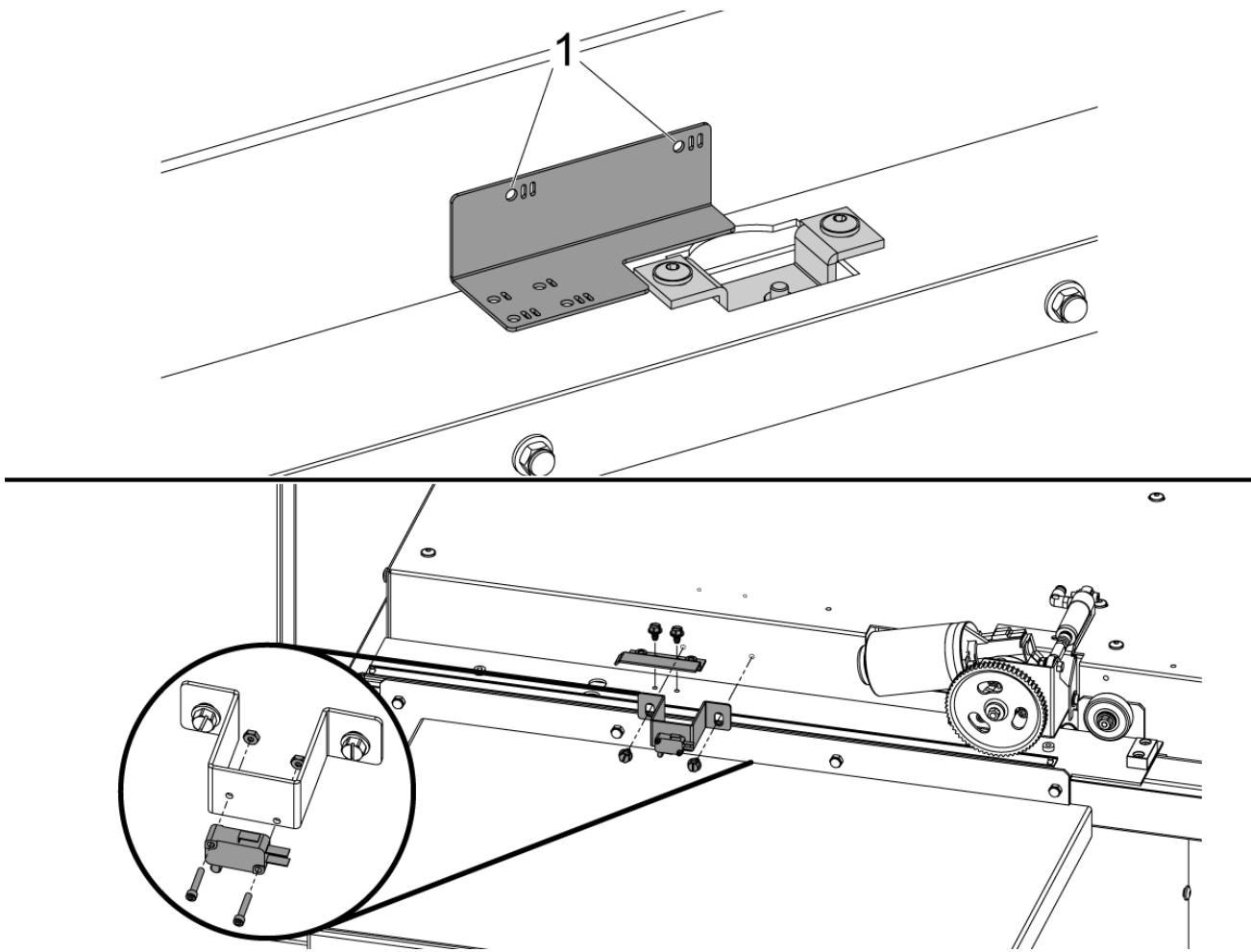
Remove the auto door cover [1].



2

ST-20/25/30/35:

For machines with the switch bracket holes on the roof panel. Install the switch bracket to the right pair of holes**[1]** for **ST-20/25** and the left pair of holes**[2]** for **ST-30/35**.



3

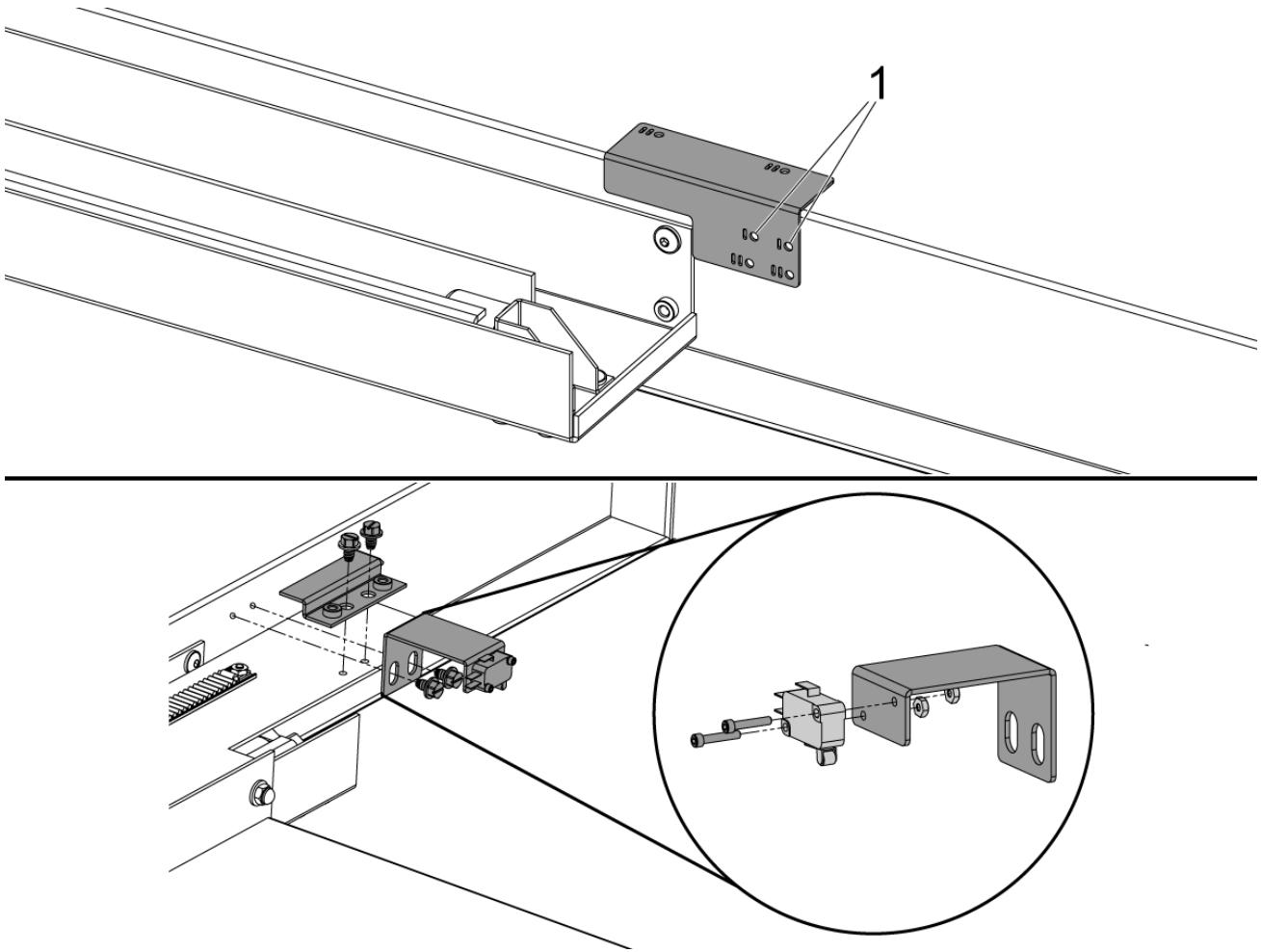
ST-20/25/30/35/30L/35L:

For machines without the switch bracket holes on the roof panel. Use the provided drill guide to drill the mounting holes for the Left Door Fully Open Switch.

With the door fully open, place the drill template against the door roller adjustment plate.

Drill the two Ø3/16" (4.7mm) mounting holes through the drill guide holes that are marked with two slots[1].

Using the provided self tapping screws, install the Door Fully Open Switch assembly and the Door Fully Open Switch Flag.



4

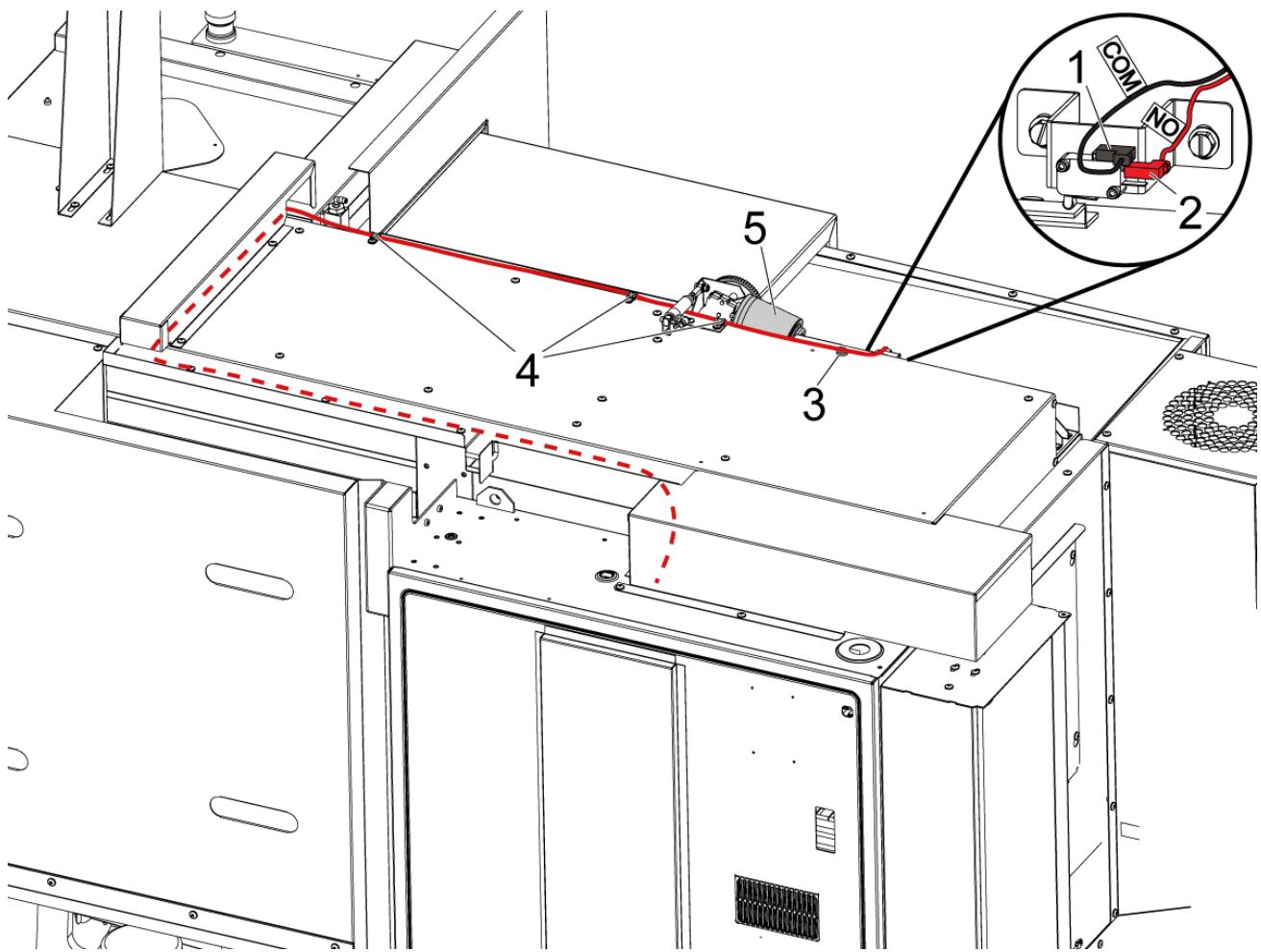
ST-30L/35L:

Use the provided drill guide to drill the mounting holes for the Right Door Fully Open Switch.

Place the drill template on the top enclosure and against the Door Track Mount.

Drill the two Ø3/16" (4.7mm) mounting holes through the drill guide holes that are marked with one slot[1].

Using the provided self tapping screws, install the Door Fully Open Switch assembly and the Door Fully Open Switch Flag.



5

Connect the Door Fully Open Switches as labeled:

- BLK <COM> to the top terminal [1].
- RED <NO> to the middle terminal [2].

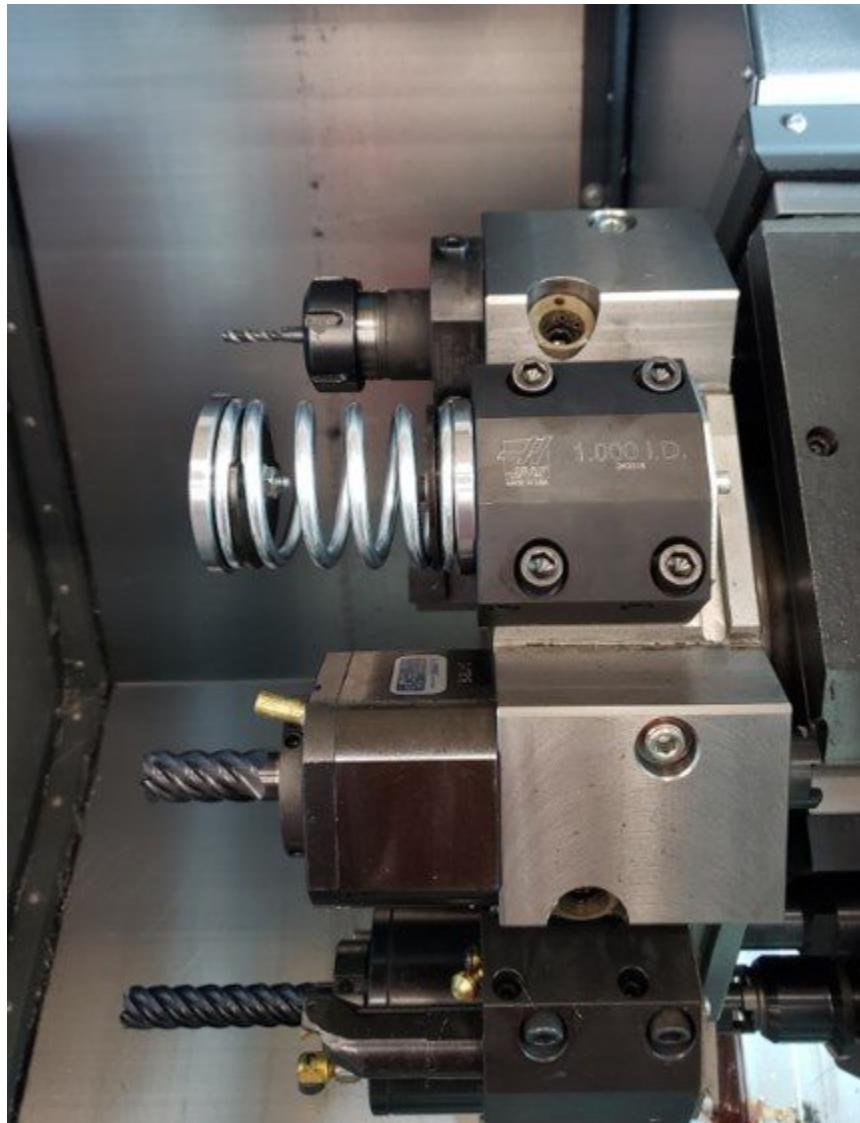
Route the cables into the control cabinet as shown on the picture.

NOTE: Make sure to install the provided magnetic clip [3] and cable clamps [4] to keep the cable clear of the moving autodoor motor [5].

If a single door machine, connect the other end of the cable to the **SIO P27** RRI Door Open input.

If the a dual door machine, connect the left door cable to **SIO P27** RRI Door Open input and the right door cable to **SIO P72** RRI Door Open input.

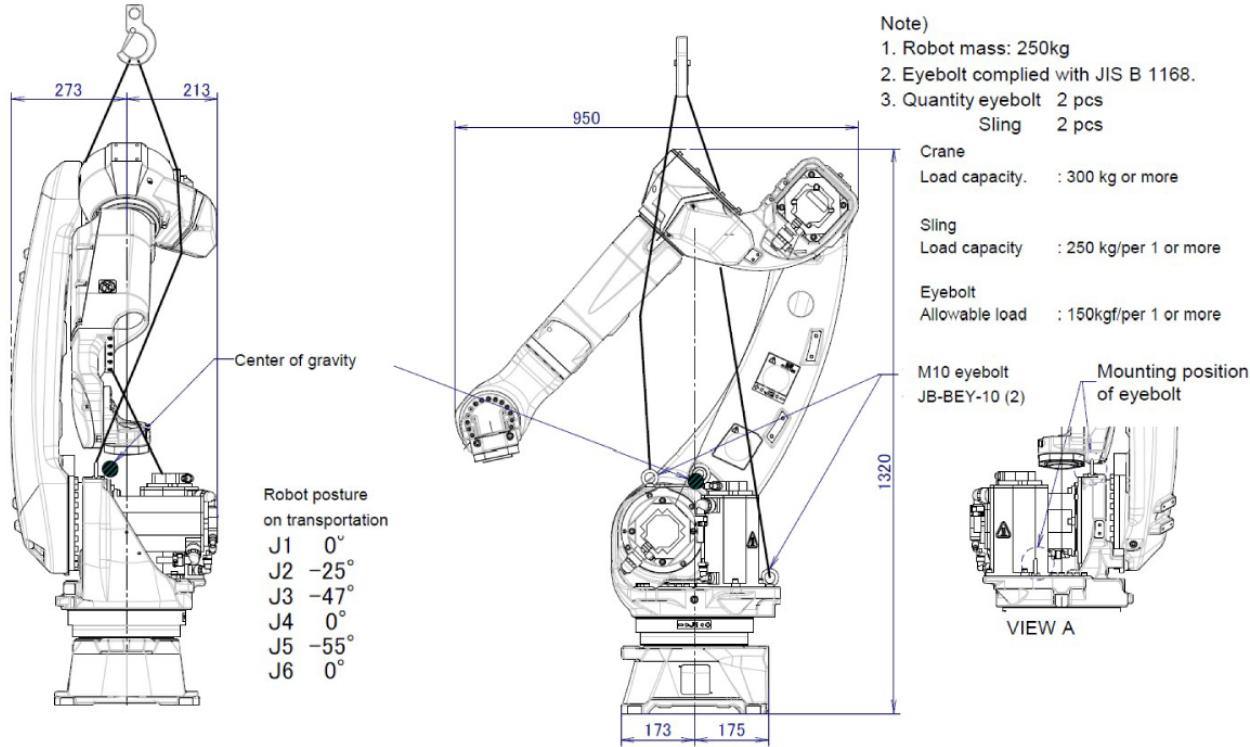
Install the autodoor cover.



6

- The APL spring pusher is made with a shank to fit either a 25mm or 1" tool holder
- This tool must take up a toolholder on the turret
- If the machine is a ST-10/15 you will need two empty toolholders to allow enough space for the gripper
- Program the following steps to the beginning of any program to make sure the part is properly seated into the chuck:
 - Locate the spring pusher in front of the part
 - Move the Z axis to compress the spring about 0.50 inches or 12.7 mm
 - Open the chuck with a dwell of one second
 - Close the chuck with a dwell of one second
 - Retract the turret to the safest position possible

Robot Lifting



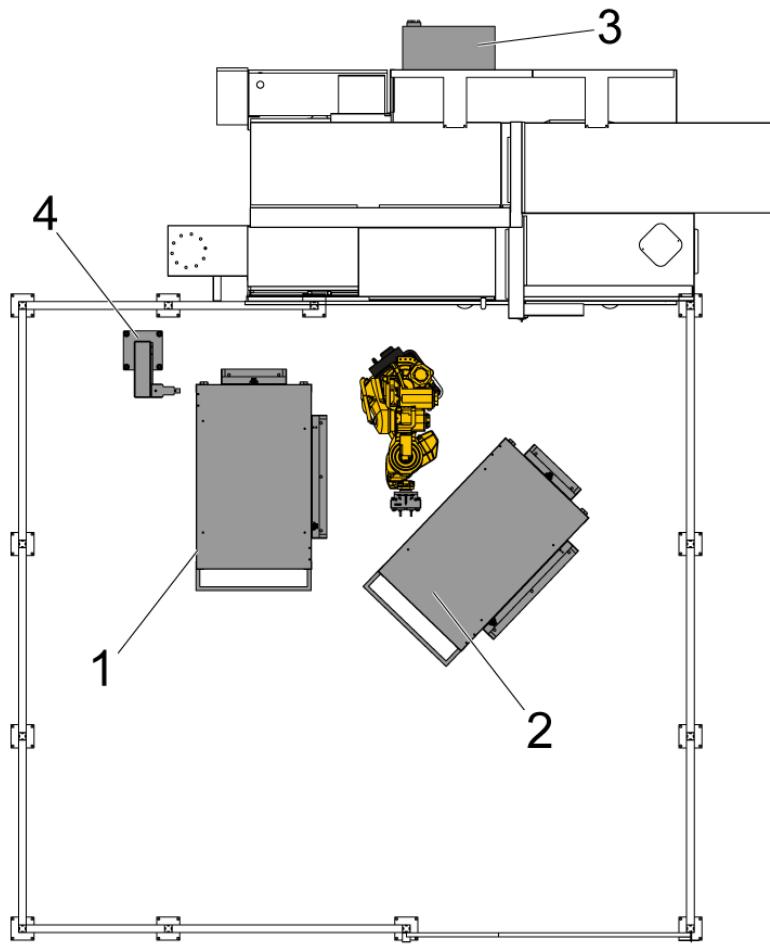
Robot Lifting Requirements

Use this information for lifting/moving Robot Package 2.

The Haas Robot Package 2 needs to be lifted according to Fanuc's recommendation. See the Fanuc Robot M-20iD/25 Mechanical Unit Operator's Manual, **Chapter 1, Section 1 Transportation** starting on page 1 for lifting/moving information.

[HRP-2 Fanuc Robot M-20iD/25 Mechanical Unit Operator's Manual](#)

Robot Installation



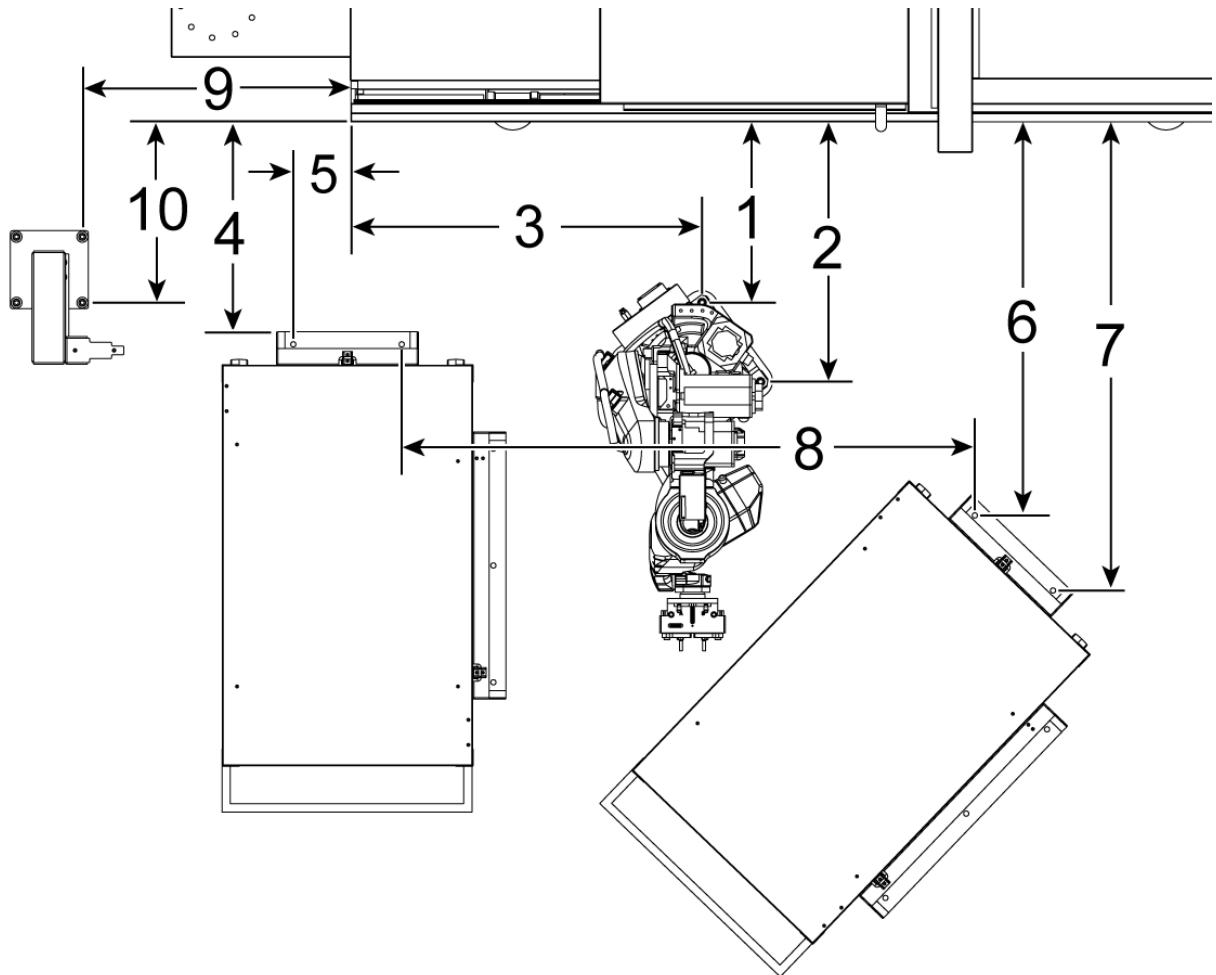
1

Table 1**[1]**

Table 2**[2]** (optional)

Place the Fanuc Control Box behind the machine next to the control panel**[3]**.

Part Flip Station **[4]**.



2

Robots with a Weldment Base

Measure these dimensions from the machine skirt to the robot mounting holes on the robot stand.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

ST-20/25

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **29.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **39.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **24.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.0** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **21.5** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **63.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **24.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **17.5** inches from the front of the machine**[10]**.

ST-20L/25L

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **29.5** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **39.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **39.5** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **5.5** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **55.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **65.0** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **9.0** inches from the left side of the machine**[9]**. The front right anchoring hole should be **18.0** inches from the front of the machine**[10]**.

ST-30/35

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **29.5** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **38.5** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **24.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **21.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **63.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should

be **60.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **24.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **18.0** inches from the front of the machine**[10]**.

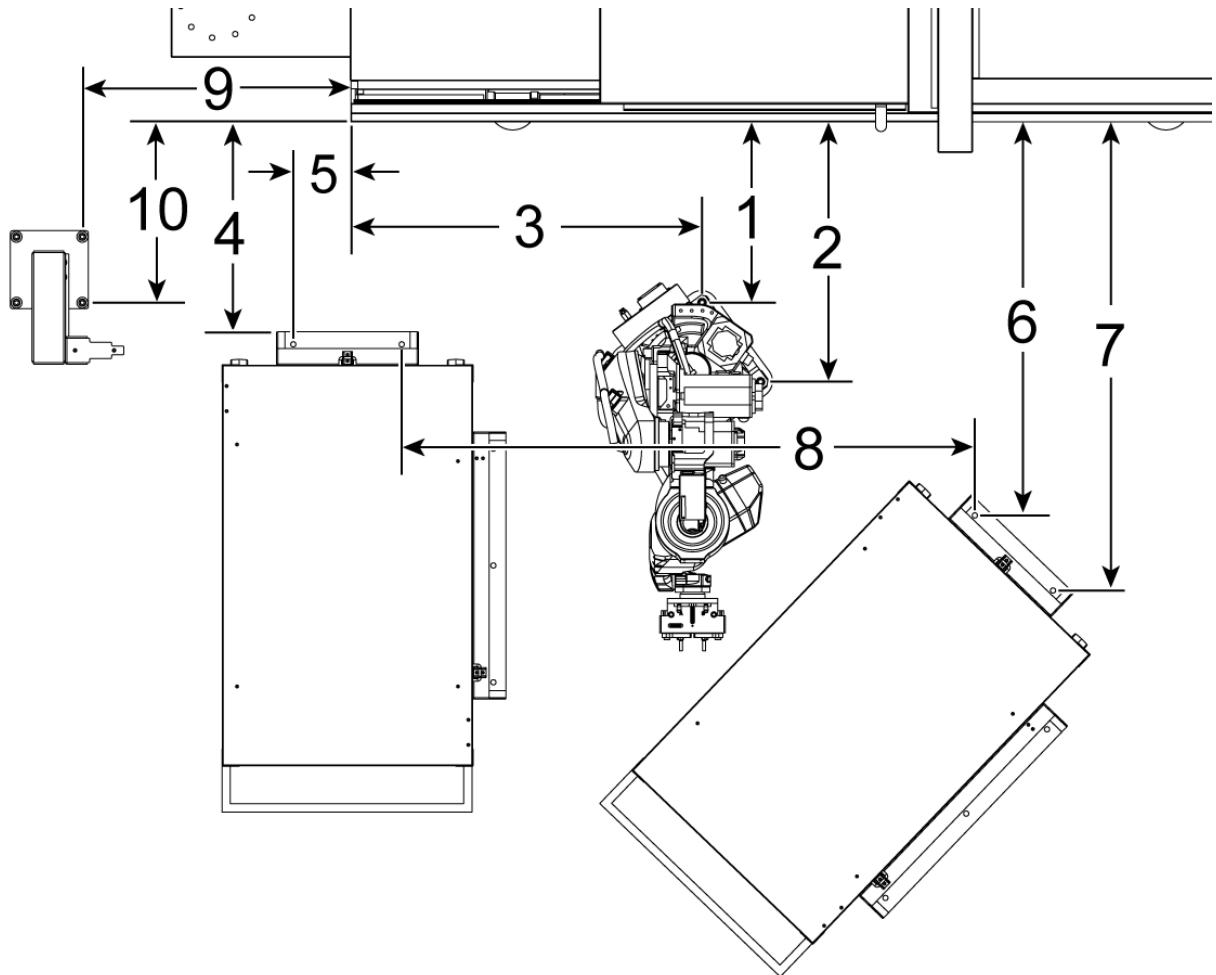
ST-30L/35L

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **29.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **38.5** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **46.5** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **1.5** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **63.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **60.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **2.0** inches from the left side of the machine**[9]**. The front right anchoring hole should be **17.5** inches from the front of the machine**[10]**.



3

Robots with a Cast Base

Measure these dimensions from the machine skirt to the robot mounting holes on the robot stand.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

ST-20/25

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **26.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **39.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **24.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.0** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **21.5** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **63.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **24.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **17.5** inches from the front of the machine**[10]**.

ST-20L/25L

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **26.5** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **39.0** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **39.5** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **5.5** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **55.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **65.0** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **9.0** inches from the left side of the machine**[9]**. The front right anchoring hole should be **18.0** inches from the front of the machine**[10]**.

ST-30/35

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **26.5** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **38.5** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **24.0** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **21.0** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **63.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should

be **60.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

Part Flip Station should be **24.5** inches from the left side of the machine**[9]**. The front right anchoring hole should be **18.0** inches from the front of the machine**[10]**.

ST-30L/35L

Place the robot stand to the left front side of the machine. The the rear mounting hole of the robot should be **26.0** inches from the front of the machine**[1]**. The the right mounting hole of the robot should be **38.5** inches from the front of the machine**[2]**. The the rear mounting hole of the robot should be **46.5** inches from the left side of the machine**[3]**.

Table 1 front table bracket should be **28.5** inches from the front of the machine**[4]**. The left mounting hole of the front table bracket should be **1.5** inches from the left side of the machine**[5]**.

Table 2 left mounting hole of the front table bracket should be **54.5** inches from the front of the machine**[6]**. The right mounting hole of the front table bracket should be **63.5** inches from the front of the machine**[7]**. The left mounting hole of the front table bracket should be **60.0** inches from the right mounting hole of Table 1 front table bracket**[8]**.

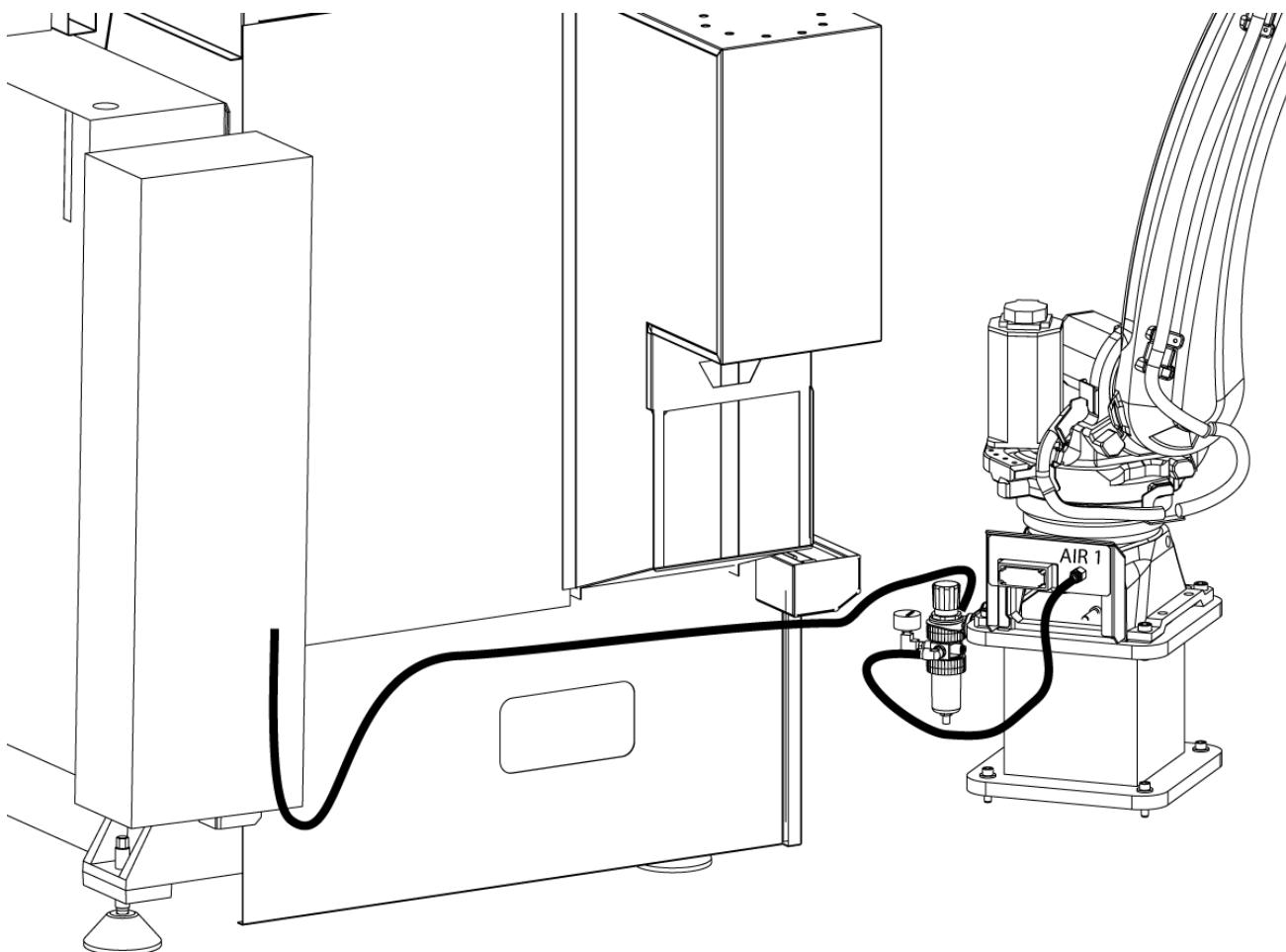
Part Flip Station should be **2.0** inches from the left side of the machine**[9]**. The front right anchoring hole should be **17.5** inches from the front of the machine**[10]**.

4

Robot Anchoring Requirements

The Haas Robot Package 2, Part Table, and Part Flip Station needs to be anchored to be sufficiently stable when used according to Haas defined part size and weight limits. See the Anchoring Instructions (Drop-In Expansion) for anchoring information.

[Anchoring Instructions \(Drop-In Expansion\)](#)



5

Turn the machine air supply OFF.

Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports.

The Robot Gripper Air Regulator has magnetic mounts to attach to the robot stand

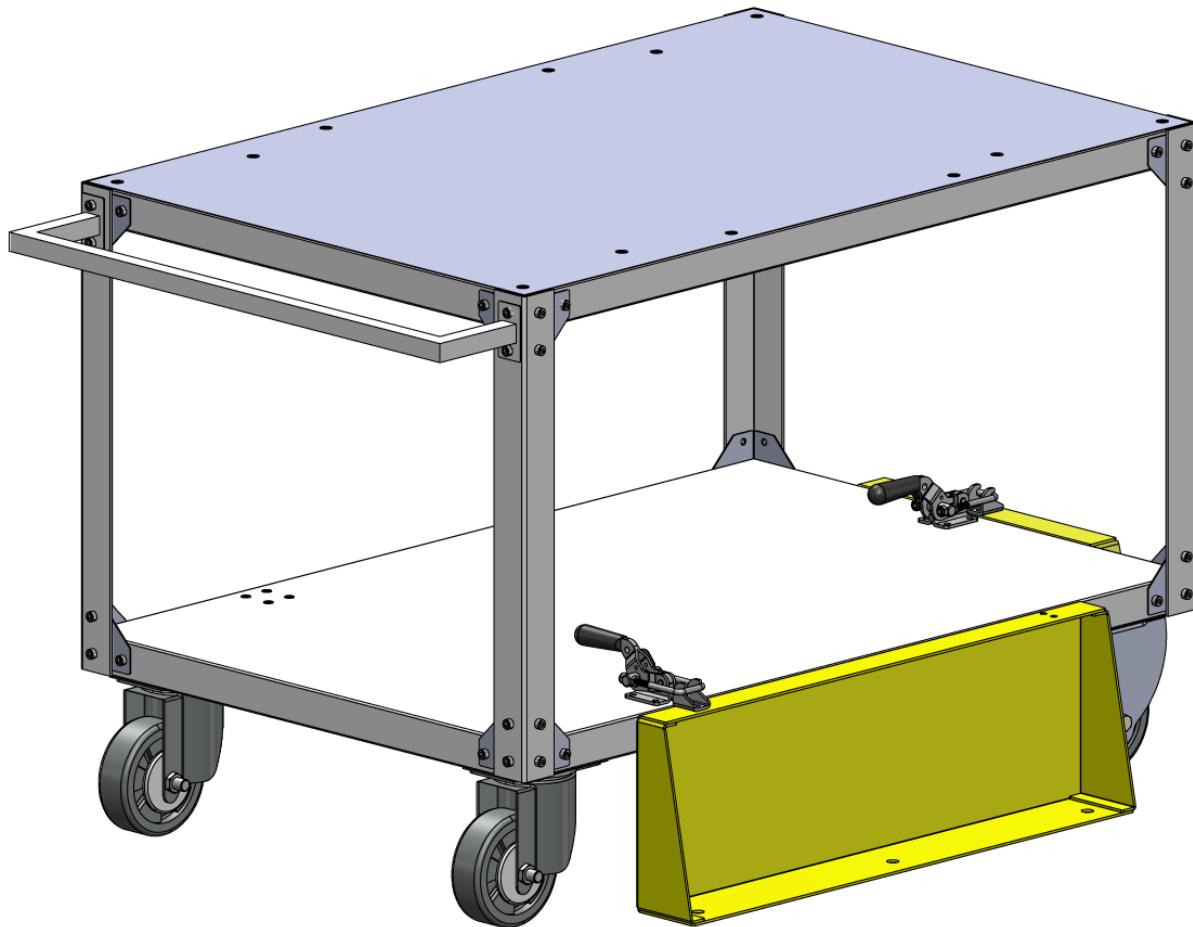
Mount the Robot Gripper Air Regulator to the robot stand.

Route the air line from the left side of the regulator along the front skirt of the machine to the CALM cabinet and install the push to connect fitting.

Route the air line from the right side of the regulator to the **Air 1** port on the robot and install to the push-to-connect fitting.

Turn the machine air supply ON.

Parts Table Assembly

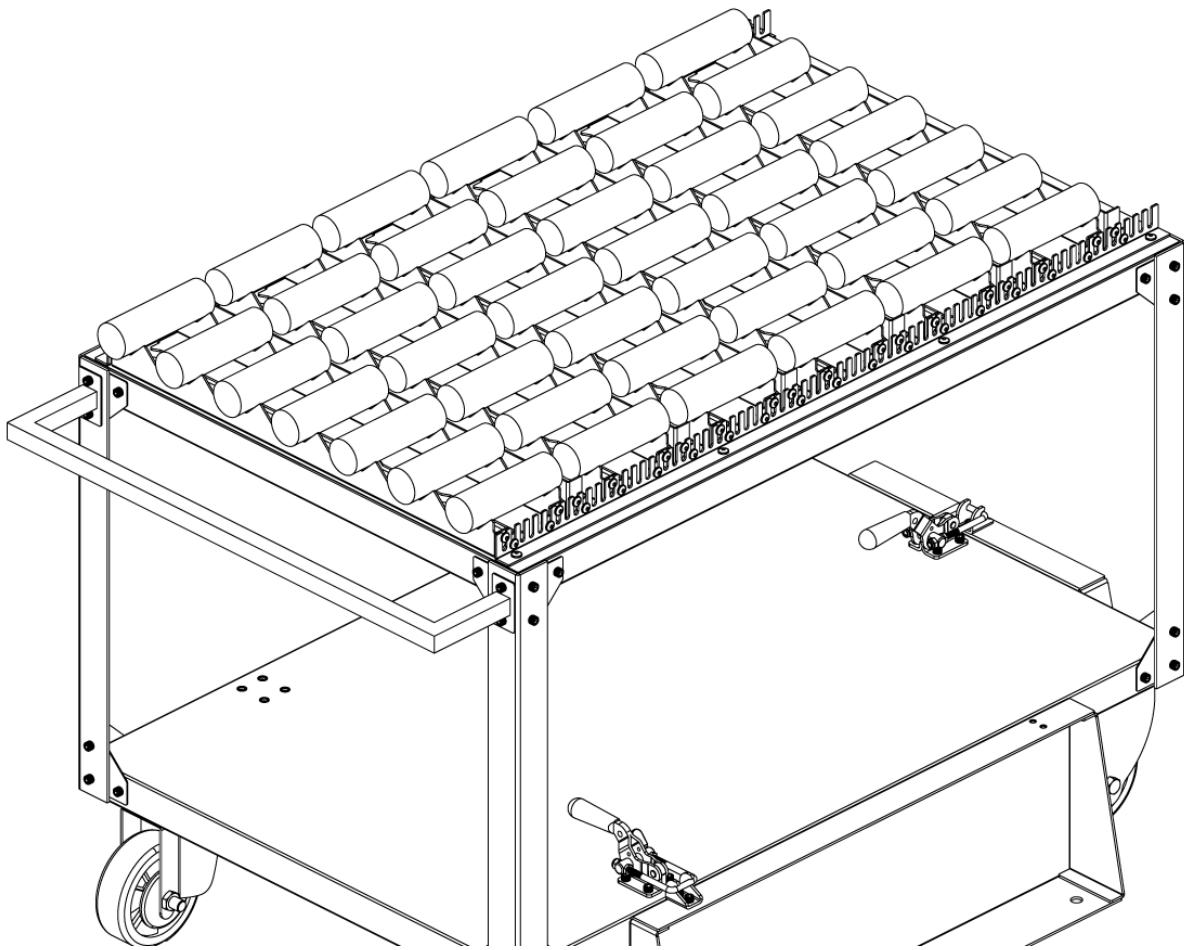


1

The Parts Table needs to be assembled. Follow the procedure below for installation.

[Haas Robot - Parts Table Assembly](#)

Shaft Loading Kit Installation

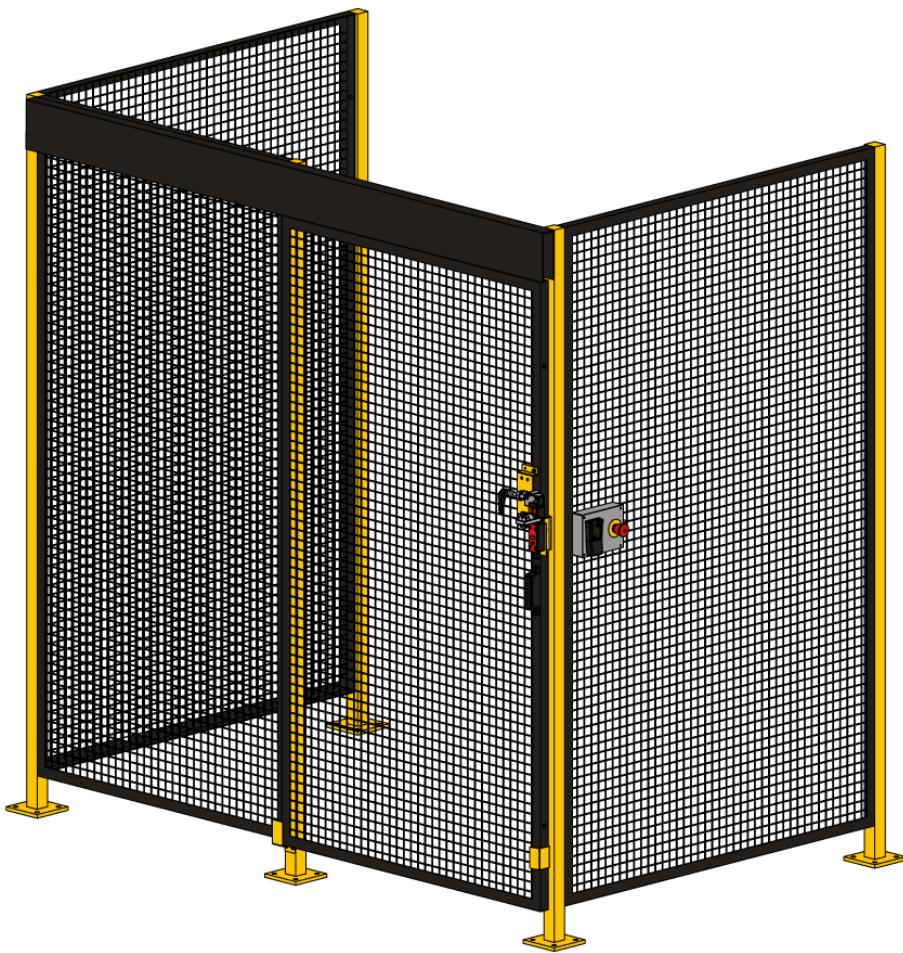


1

To install the HRP-2 Shaft Loading Kit. Follow the procedure below for installation.

[HRP-2 - Shaft Loading Kit - Installation](#)

Fence Installation



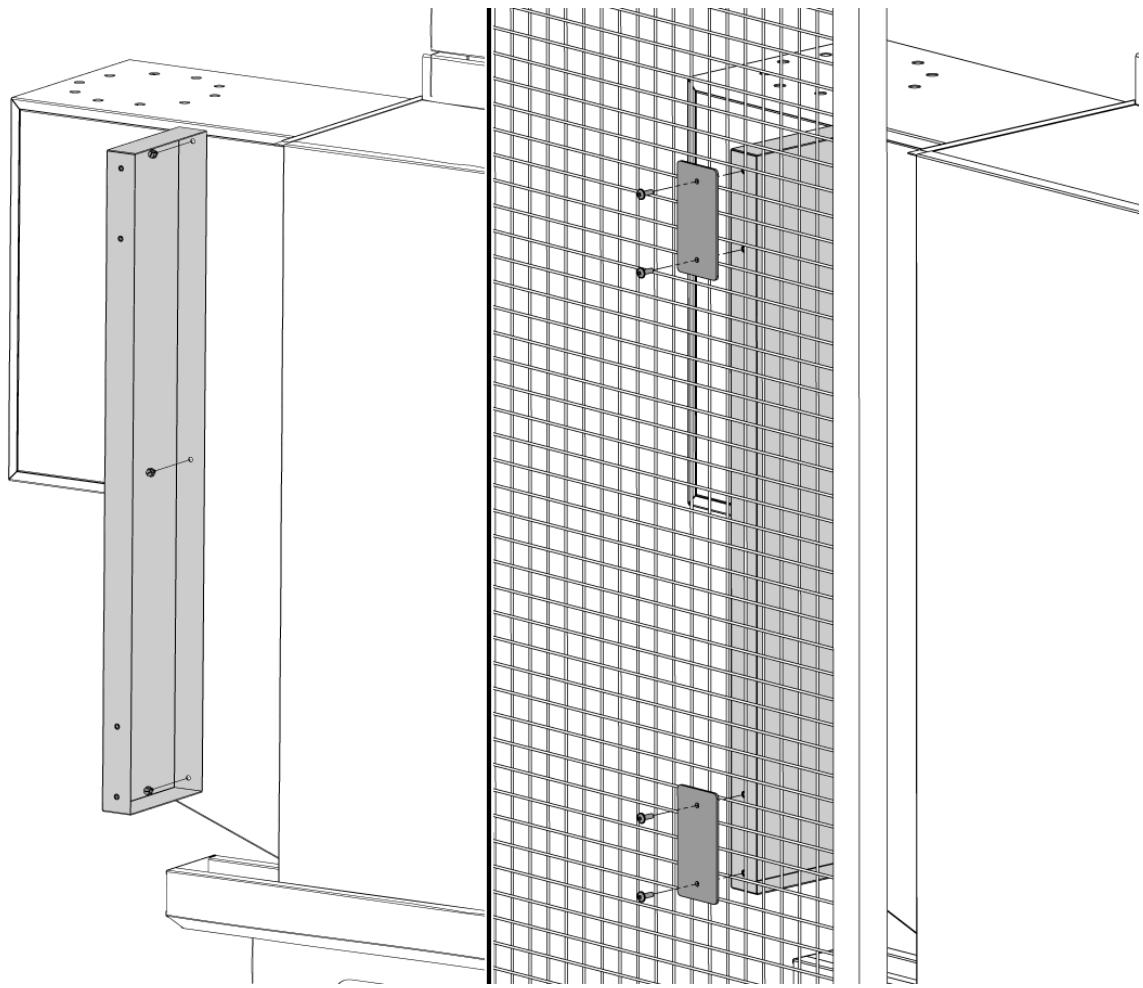
1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for installation.

[Robot Fence Installation](#)

[HRP-2 Lathe Fence Layout](#)

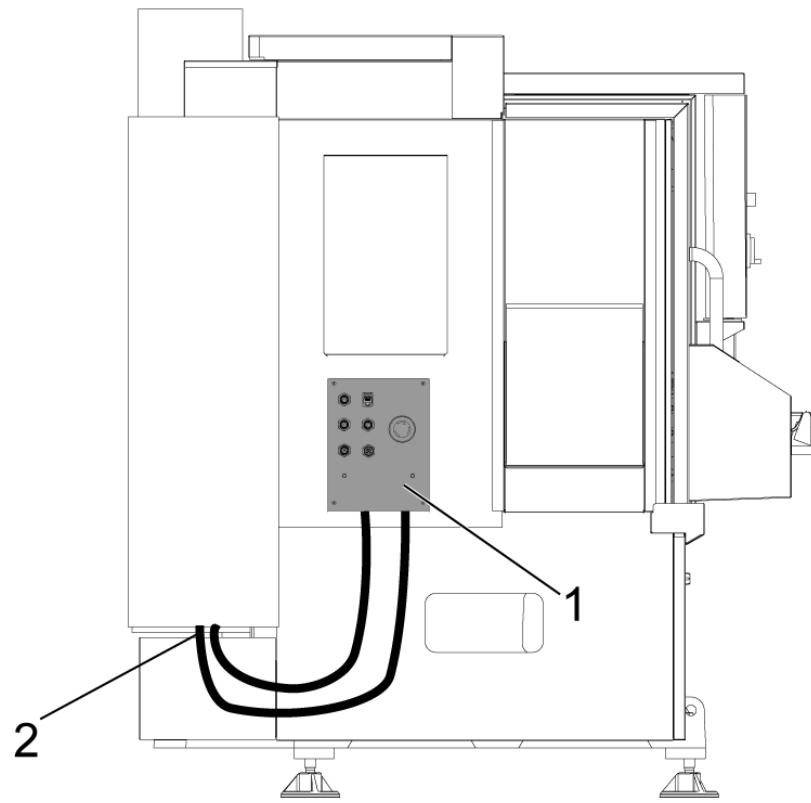
Attention: The fence anchors will use a 3/8th drill bit, they are **NOT** the same size as the robot anchors.



2

Install the fence panel sheet metal to the coolant collector sheet metal and secure the robot fence to the fence panel sheet metal.

Robot Electrical - Installation



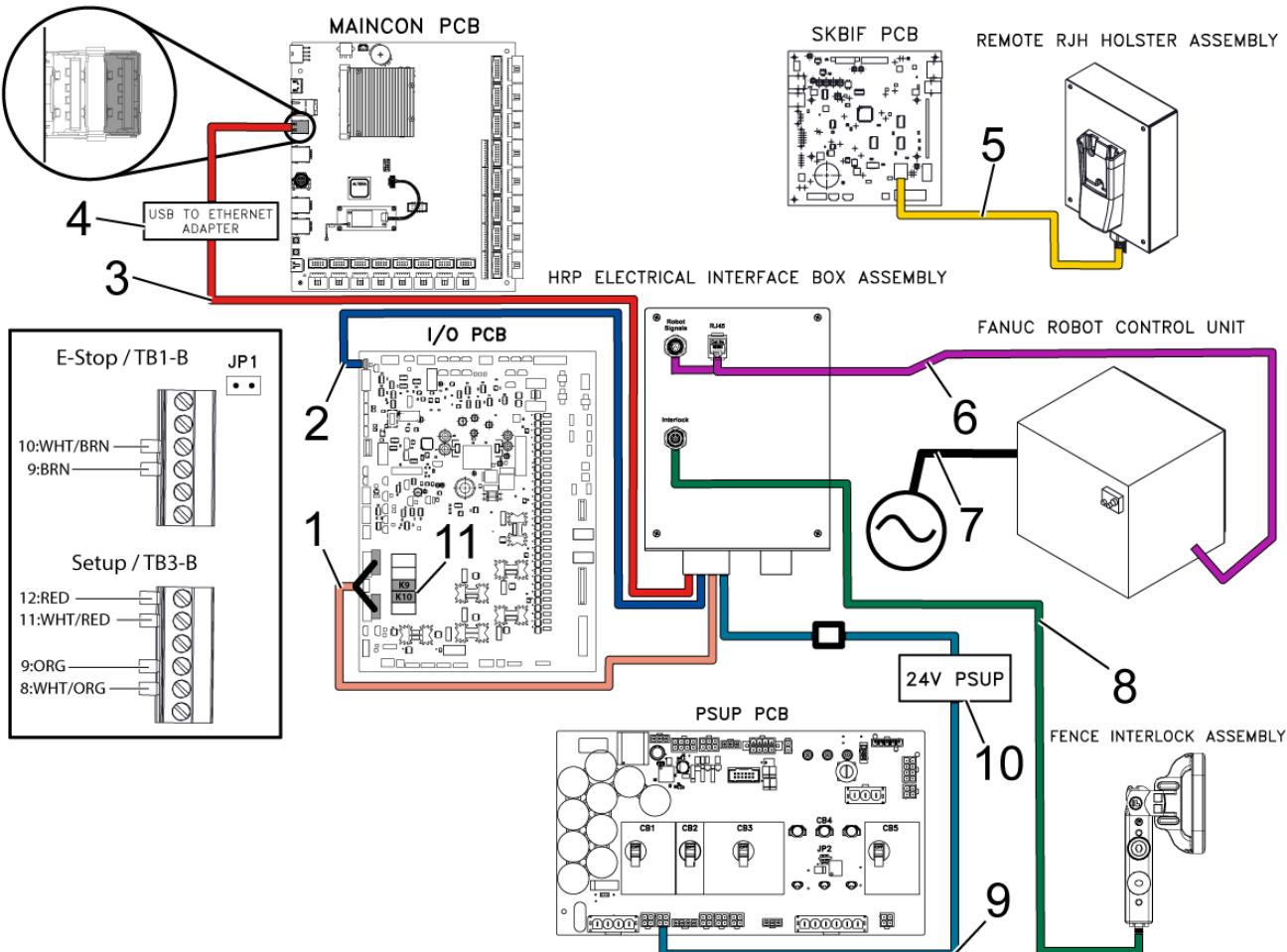
1

ST Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown in the picture.

Route the Robot interface electrical cables [2] through the bottom of the electrical cabinet.



2

Perform the following steps to connect the robot to the Haas machine.

Robot Power

Requires separate 200-230V 3-Phase, 50/60 Hz, 7.5 kVA (20 Amp) Power Supply[7]. See the Fanuc [Startup Guide](#) for more information.

Note: It is recommended to install a strain relief cable grip to remove stress on the power cable connections and isolate the power cable from the controller cabinet.

Cable P/N **33-8562C** has multiple connections:

I/O PCB

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[1].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [1].
- Plug the User Relays into **K9** and **K10**. (see diagram)[11].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[2]**.

Note: Do not plug anything into the connector **FILTER OV FAULT**.

Maincon PCB

Connect the **RJ-45** cable [3] to Ethernet to USB adapter [4] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.

PSUP PCB

Mount the 24VDC Power Supply[10] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8562C**. Connect cable **33-1910A**[9] to the 24VDC Power Supply[10] and plug into **P3** on the **PSUP PCB**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-8550C**[5] from the Remote E-stop box to cable **33-0713** and plug into the SKBIF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

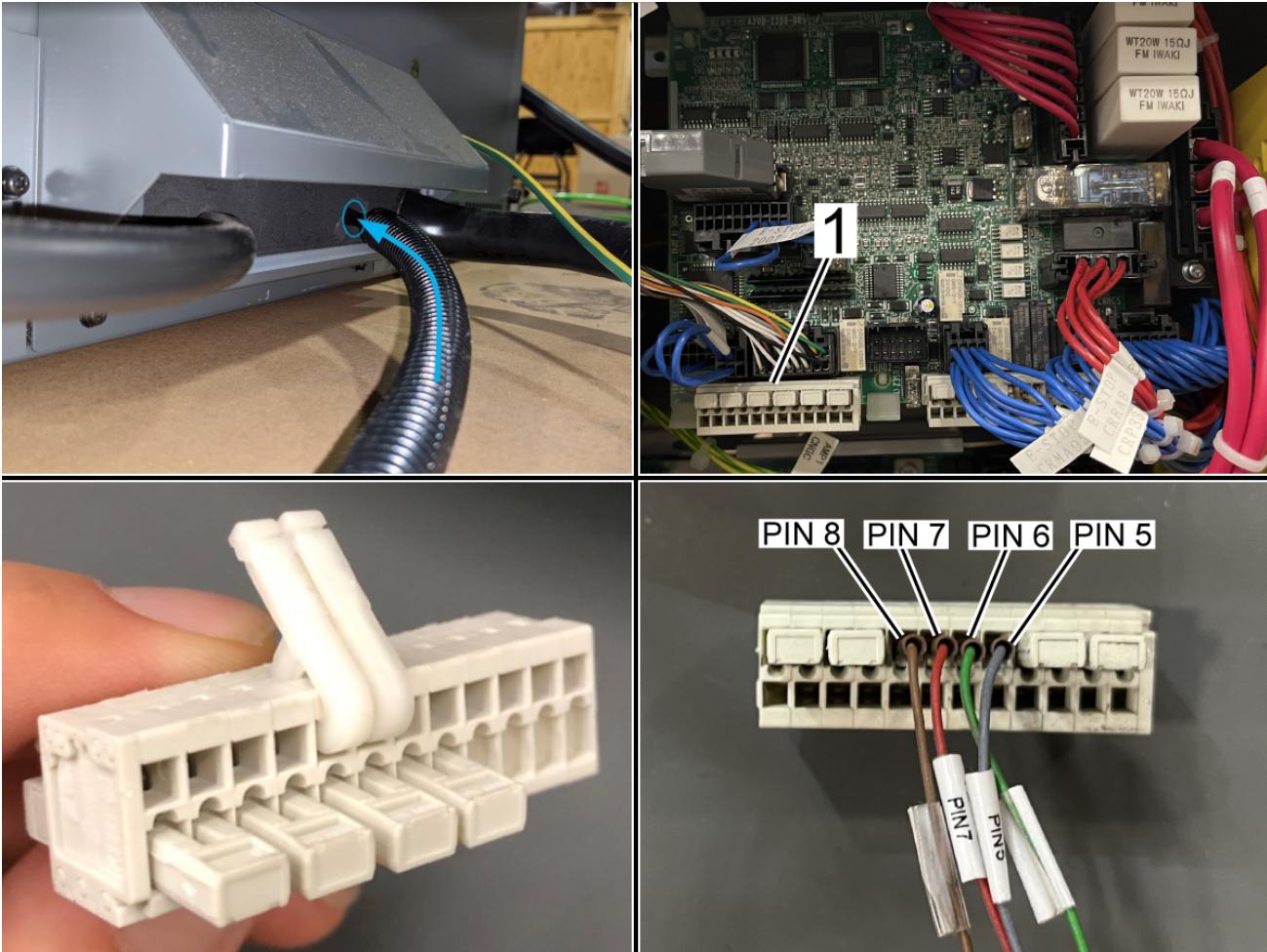
Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [6] **P/N 33-8591A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

Fence Interlock

Connect the fence door interlock cable [8] to the electrical interface box.



3

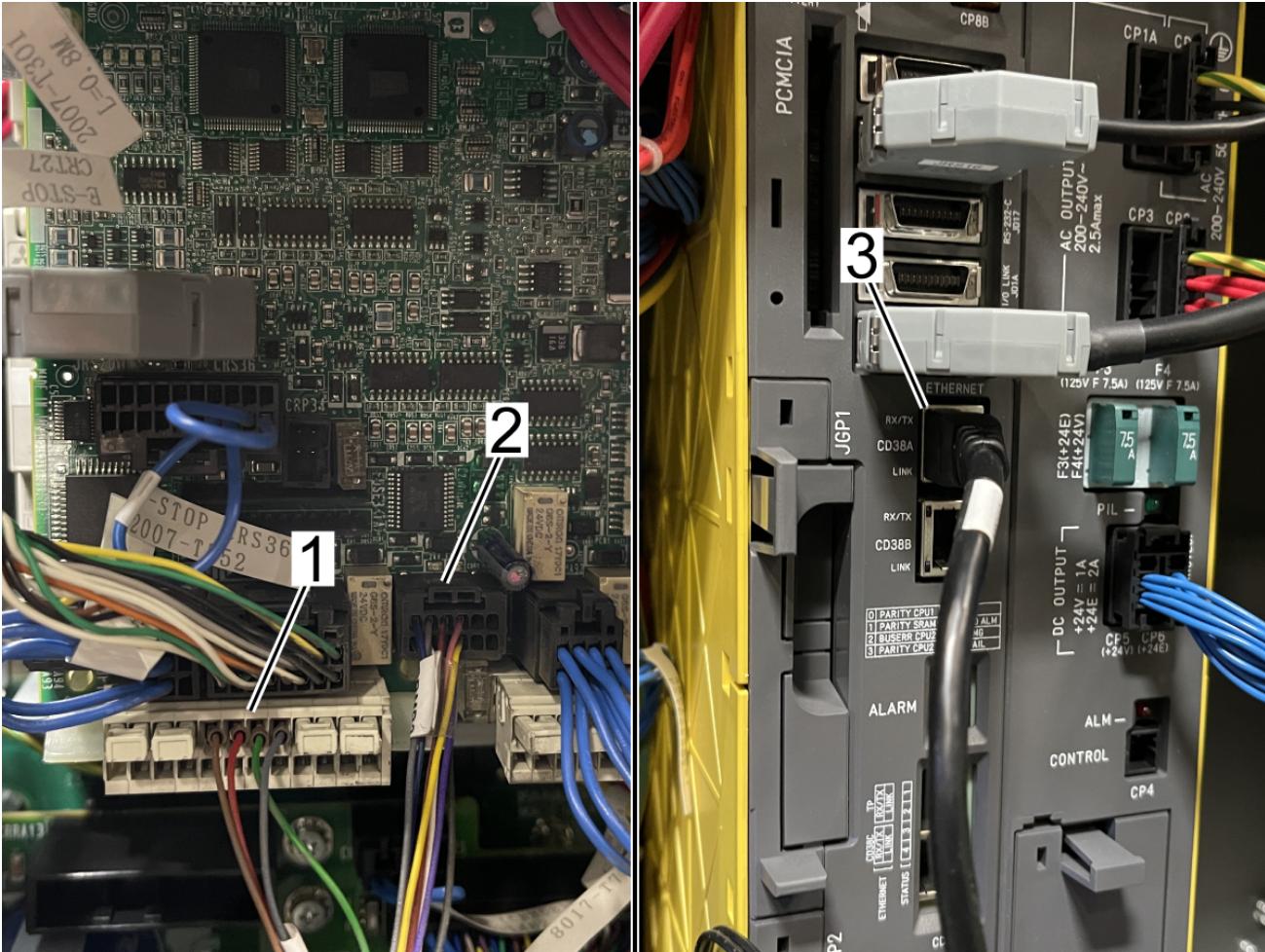
If cable **33-8591A** or **33-8592A** is not installed to the Fanuc Control box, perform the following steps:

Route the cable through the back of the Fanuc Control box.

Remove the connector at TBOP20[1] inside the Fanuc Control box.

Remove the jumpers and install the wires in the connector in the following order with the tool included in the Fanuc Install kit.

Note: Both tools need to be used to install the ferrules.



4

Install the cable labeled **TBOP20** to connector **TBOP13[1]**.

Install the cable labeled **CRMB2** to the connector labeled **CRMB2[2]**.

Install the RJ-45 Ethernet cable labeled **ENET CD38A** to the Ethernet Port 1 labeled **CD38A[3]**.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. The key should be set to Auto Mode[2].

Make sure the **[E-STOP]** button[3] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[1].

Settings

Settings | Network | User Positions | Alias Codes | **F1** Machine Setup

Group Listings Search **F1** Machine Setup

Group	Name	Value	Unit
102 Machine Setup	C Axis Diameter	1.0000	IN
336 Machine Setup	Bar Feeder Enable	Off	
340 Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359 Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368 Machine Setup	Live Tooling Type	None	
372 Machine Setup	Parts Loader Type	Robot	
375 Machine Setup	APL Gripper Type	None	
376 Machine Setup	Light Curtain Enable	On	
378 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413 Machine Setup	Main Spindle Load Type	Low	type
414 Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2194 [:] Enable Front Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**



3

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to 7.9 in/sec (200 mm/sec).

Go to the **Setup** tab. Change the following:

- **Max Robot Speed to 78 in/sec (1981 mm/sec).**
- **Gripper Net Mass to 7.0 lbs.**

- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **1**.
- **Raw Gripper Unclamp Output** to **2**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup** tab[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

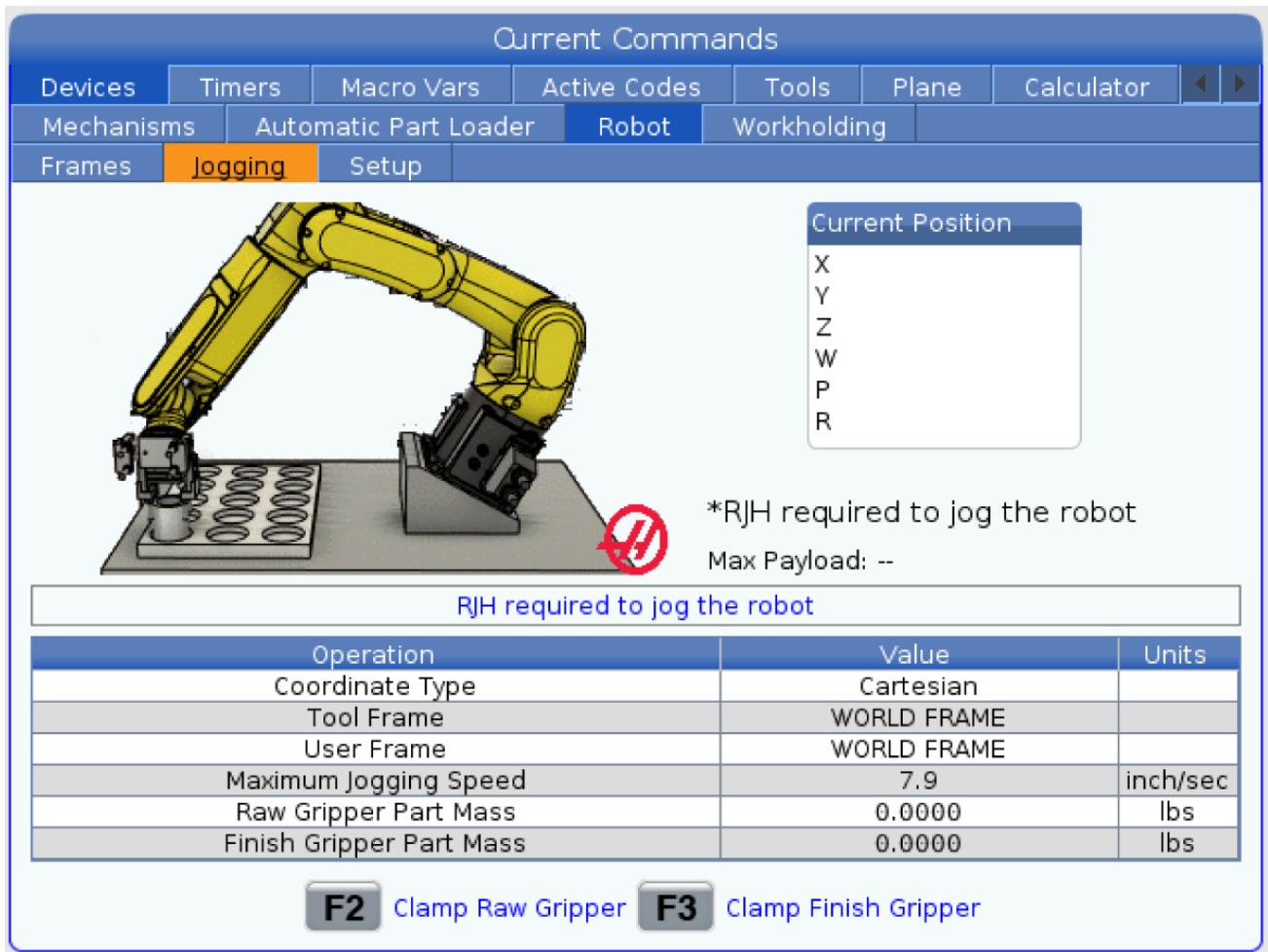
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press [INSERT] to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

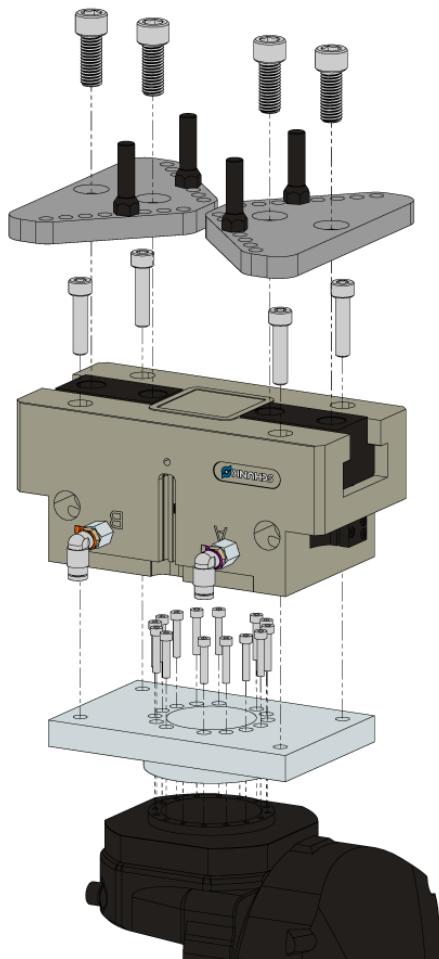
On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

Jog the robot from its shipping position to a safe position.

Note: Press **[Emergency Stop]** before working on the robot.

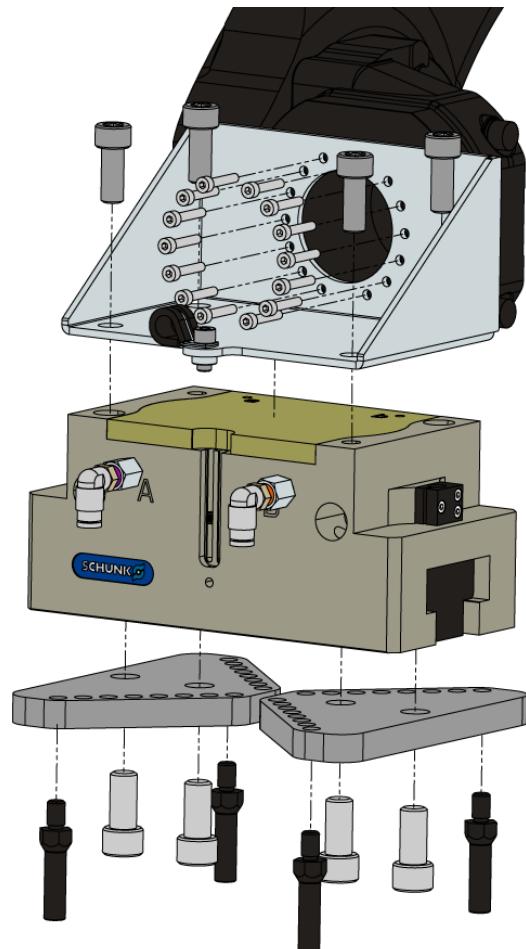
Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Installation



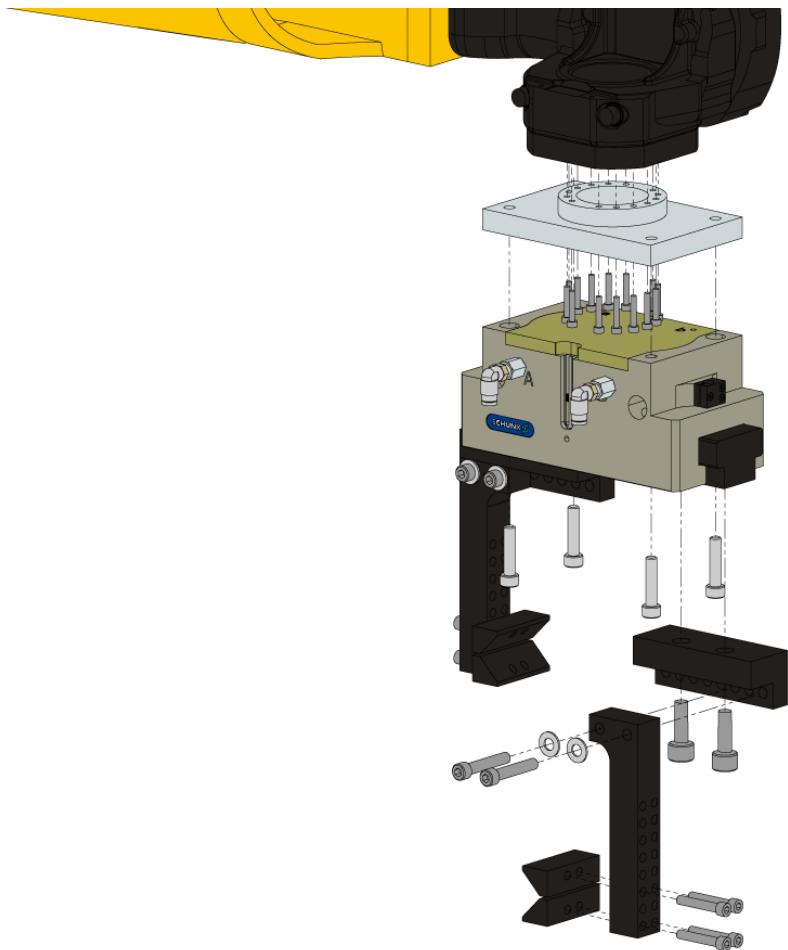
1

Install the gripper to the robot end effector mounting face.



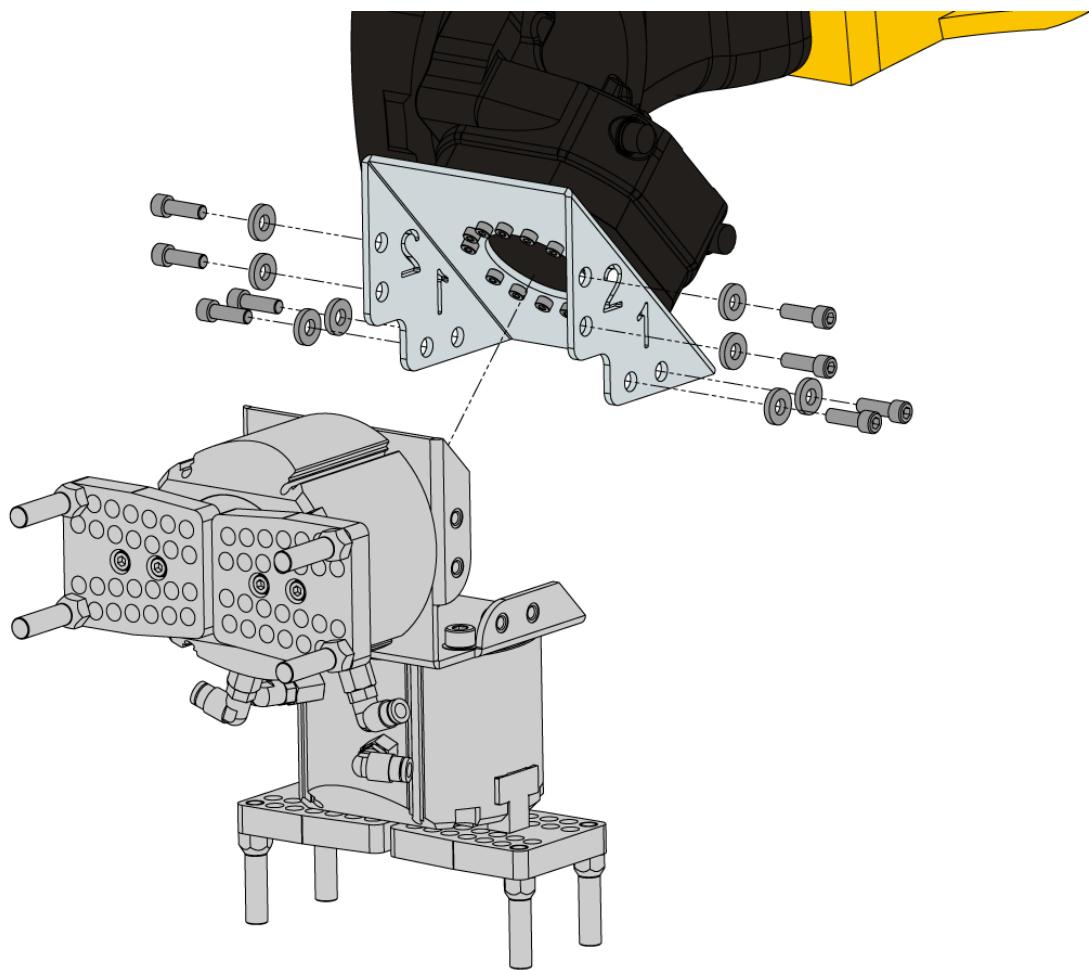
2

Install the gripper to the robot end effector mounting face.



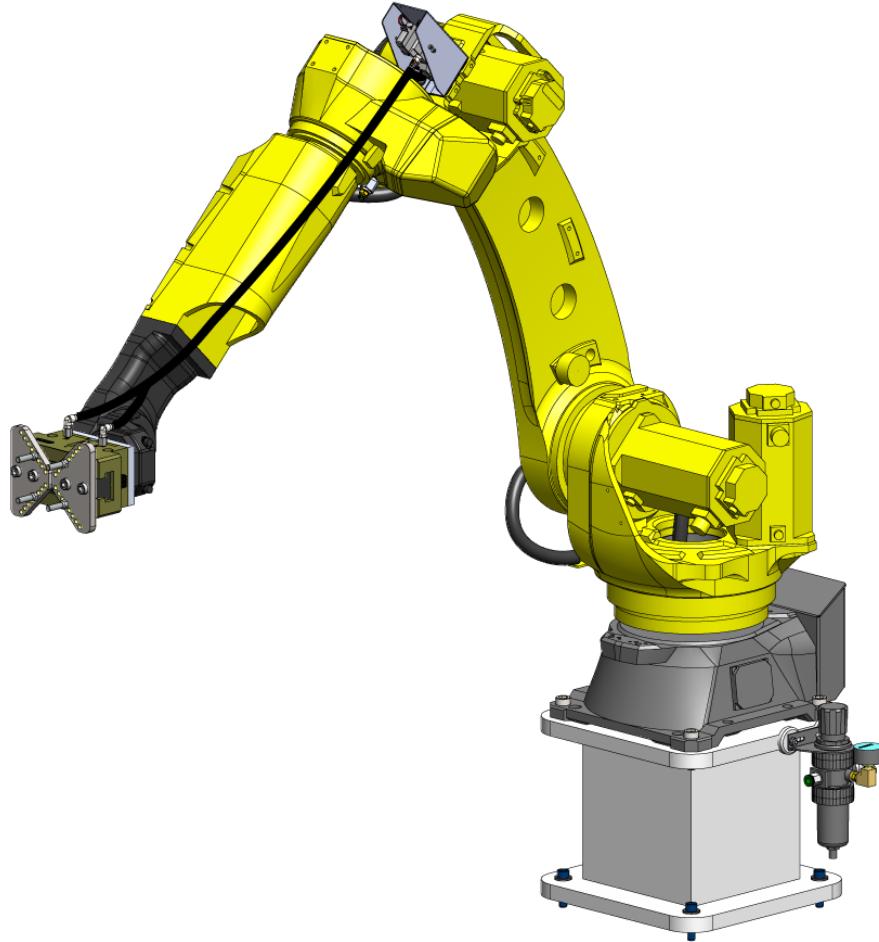
3

Install the shaft gripper assembly to the robot end effector mounting face.



4

See the [HRP-2 Dual Gripper - Installation](#) instructions for install the dual gripper on the HRP-2.



5

Route the air lines between the solenoid on robot arm and the gripper. Connecting the airlines to the corresponding color coded fittings. Install conduit to each pair of air lines.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.
- Check the light curtain/fence icon show on the screen. If the icon does not show, verify wiring, alingment and factory setting: **2191 [694:] LIGHT CUTAIN TYPE** is set to **LC_TYPE_1**.

Test the operation of the grippers:

- Verify the gripper clamps and unclamps correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

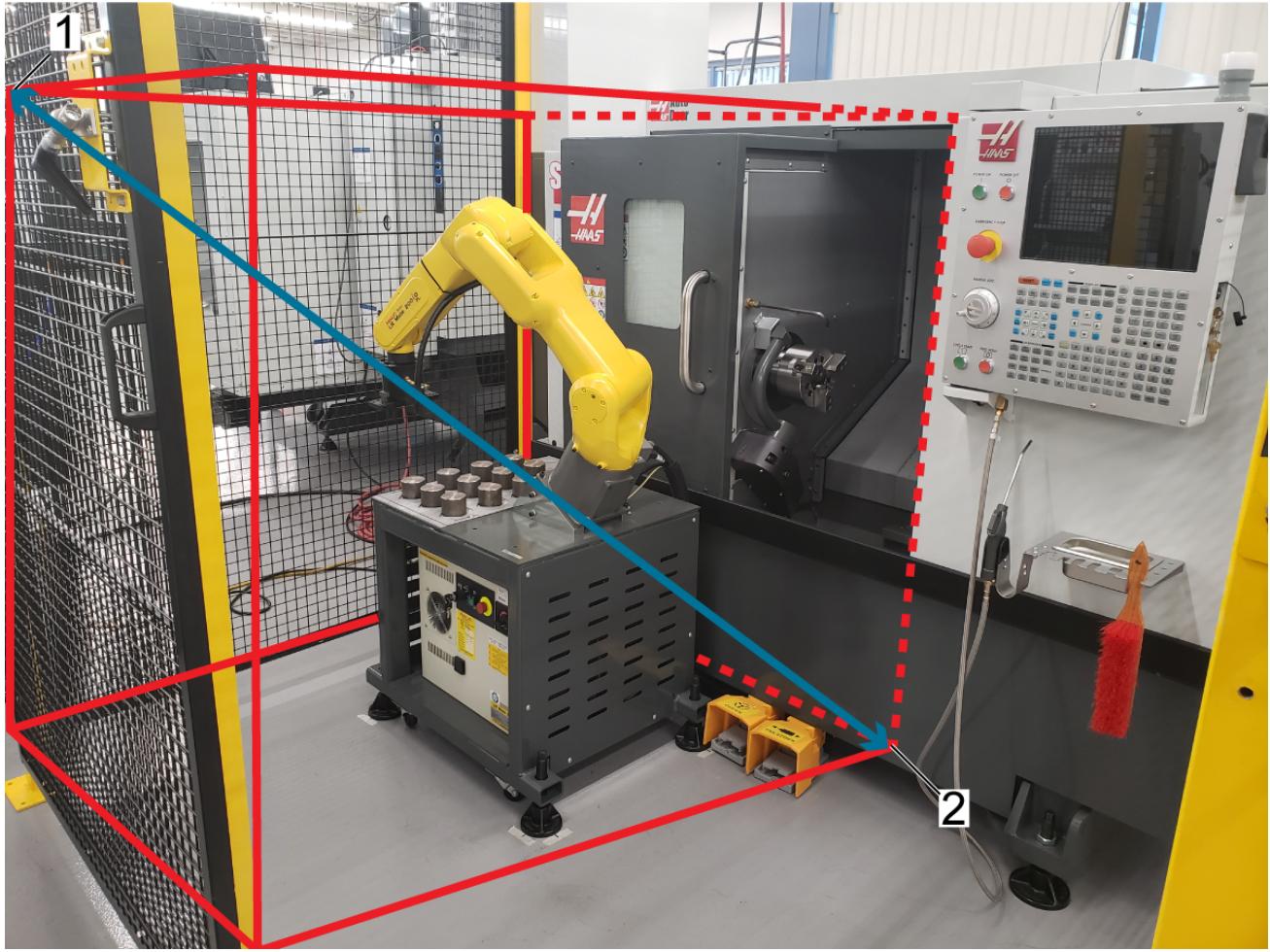
- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

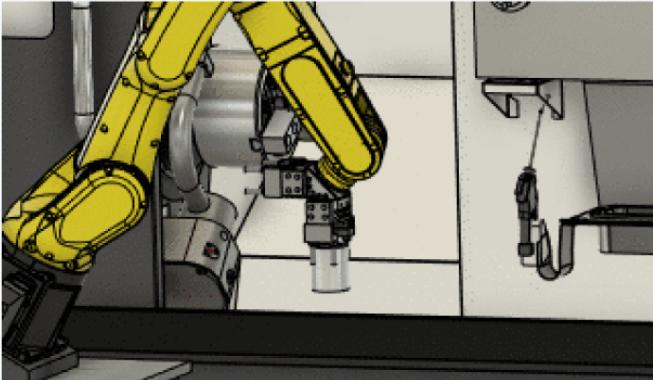
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

FANUC Dual Check Safety (DCS) – Setup

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	< >	
Mechanisms	Automatic Part Loader	Robot						
Template	Load Part	Unload Part	Run Job					



F2 Record Position
F3 Clamp Gripper # 2
F4 Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Purge	Off	Sec

◀ Previous
Next **▶**

After installing the robot, set up a job following the procedure below.

[Haas Robot - Quick Start Guide](#)

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time		0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	PulseJet Injection Cycle Time		1.000	Sec
370	Miscellaneous	PulseJet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package 2 - UMC - Installation

Under Construction

The robot will need to be installed according to Fanuc's recommendation. See [HRP-2 Fanuc Manual pdf](#) starting at page 4.

- The wiring to the Haas control is similar to the HRP-3 (see below instructions). Interface box, interlock, and remote e-stop.

- See **HRP-2 Fence Layout.**
- The robot needs its own power. (**Startup Guide**)

Introduction

This procedure will show you how to install the Haas Robot Arm Package-2.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- **100.21.000.1110** version or higher
- **UMC-500** Built **3/18/2022** and later with Auto Window Option, 90 Degree Control Cabinet, Haas Workholding Ready.
- **UMC-750** Built **4/16/2022** and later with Auto Window Option, 90 Degree Control Cabinet, Haas Workholding Ready.
- **UMC-1000** Built **1/19/2022** and later with Auto Window Option, 90 Degree Control Cabinet, Haas Workholding Ready.
- Remote Jog Handle - XL 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- I/O PCB HINGE DOOR 93-1000297 I/O DOOR ASSY HINGED

Fixing / Anchoring Requirements

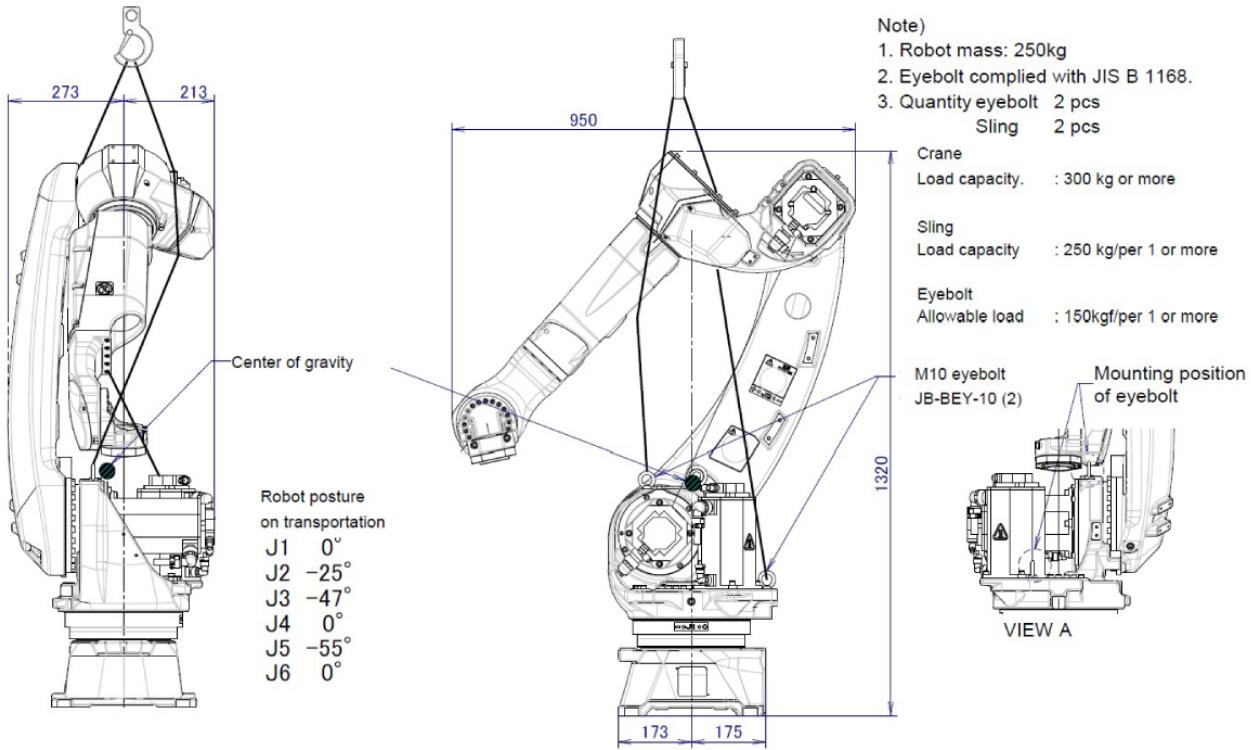
The Haas Robot Package 2 needs to be anchored according to Fanuc's recommendation to be sufficiently stable when used according to Haas defined part size and weight limits. See the Robot Anchoring section below.

The Haas Robot Package Includes the following Components:

- **30-13419** Robot PKG-2 UMC Safety Guard (fencing with gate to enclose the operators station)
- **32-09942** Gate Interlock
- **32-0995** RJH Holster Assembly (includes holster and 36' foot cable for remote handle jog with Emergency Stop)
- **32-8582B** HRP-2 Electrical Interface Box Assembly (Includes robot signals and power cables)

Note: The parts above are subject to change and there will be some variation depending on build date.

Robot Lifting



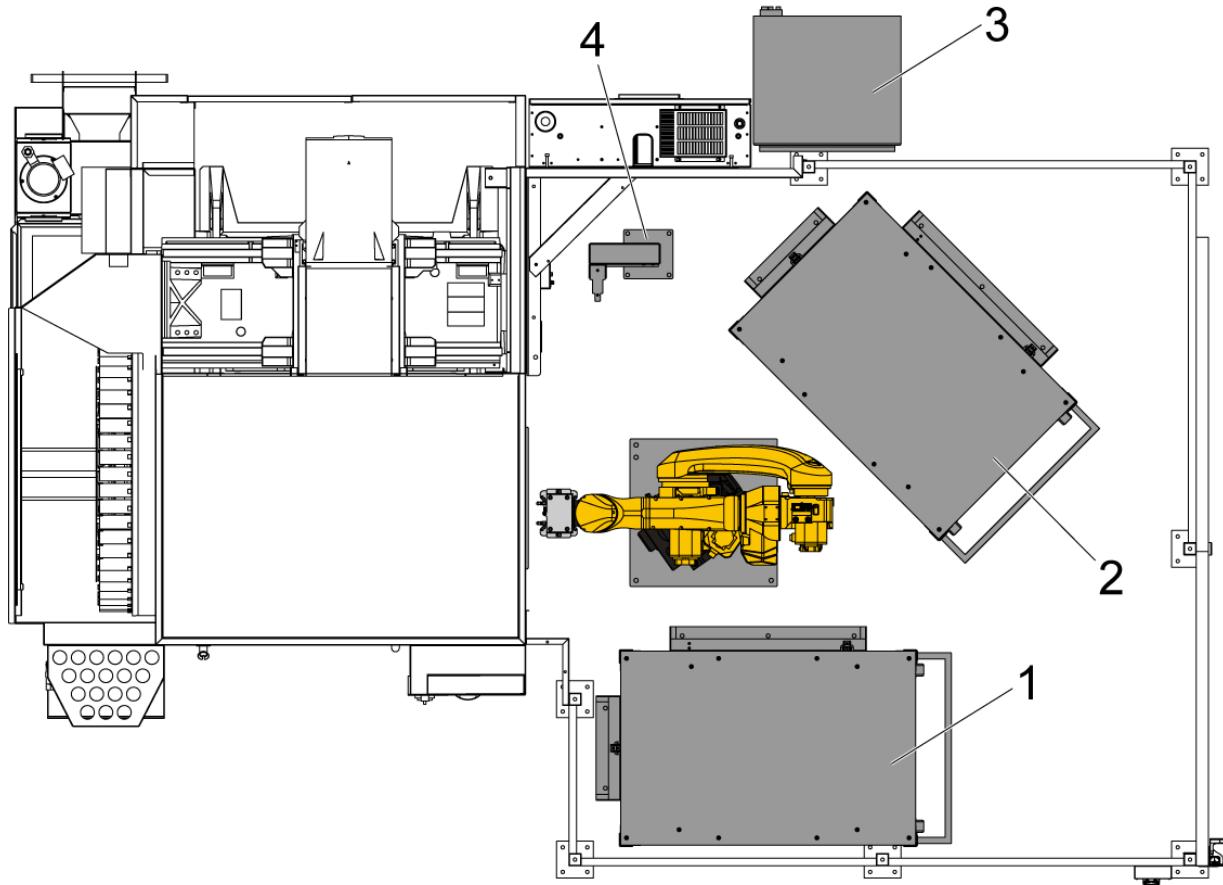
Robot Lifting Requirements

Use this information for lifting/moving Robot Package 2.

The Haas Robot Package 2 needs to be lifted according to Fanuc's recommendation. See the Fanuc Robot M-20iD/25 Mechanical Unit Operator's Manual, **Chapter 1, Section 1 Transportation** starting on page 1 for lifting/moving information.

[HRP-2 Fanuc Robot M-20iD/25 Mechanical Unit Operator's Manual](#)

Robot Installation



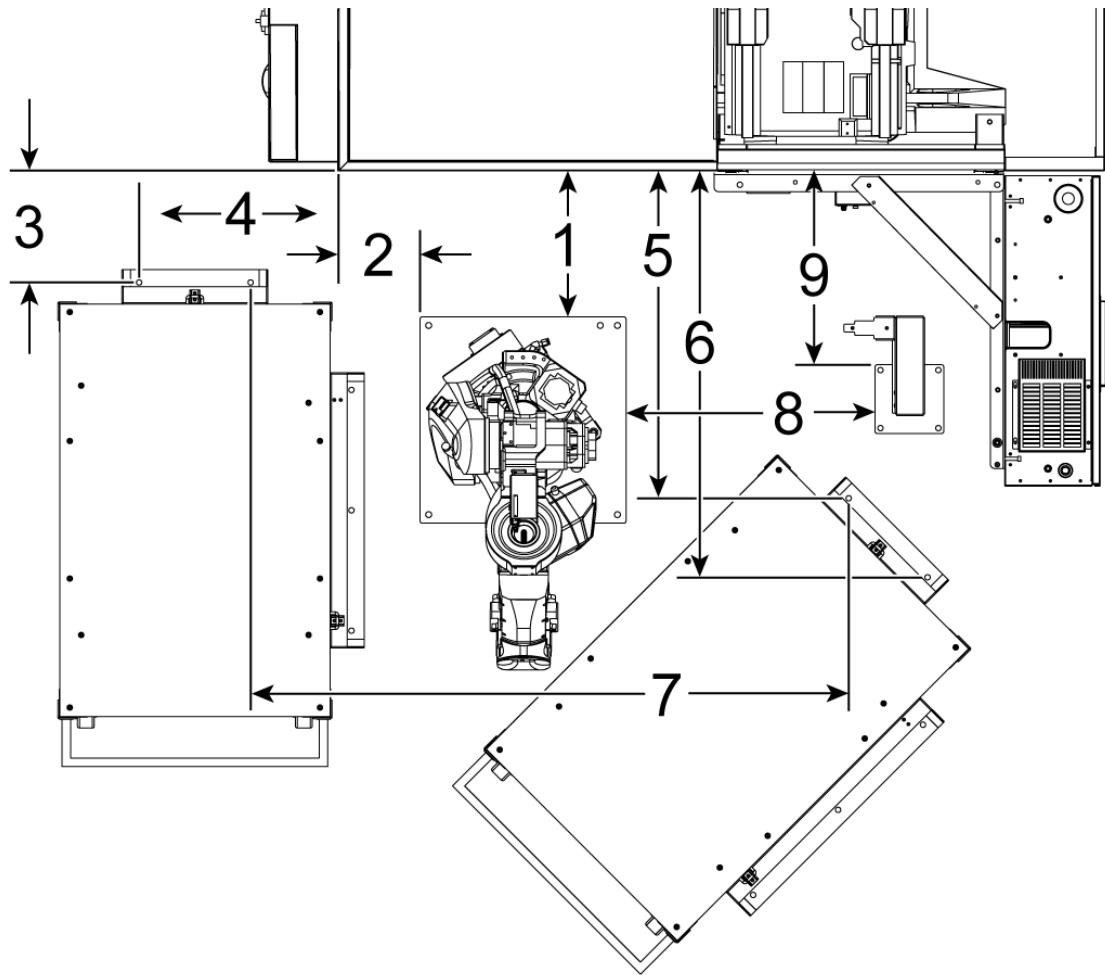
1

Table 1**[1]**

Table 2**[2]** (optional)

Place the Fanuc Control Box on the back side of the machine next to the control panel**[3]**.

Part Flip Station **[4]**.



2

Measure these dimensions from the machine skirt to the edge of the robot base plate.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

UMC-500

Place the robot stand in front of the Auto Side Window. The front of the robot base plate should be **17.0** inches from the side of the machine**[1]**. The left side of the robot base plate should be **9.5** inches from the front of the machine**[2]**.

Table 1 front table bracket should be **13.0** inches from the side of the machine**[3]**. The left mounting hole of the front table bracket should be **22.0** inches from the front of the machine**[4]**.

Table 2 left mounting hole of the front table bracket should be **37.5** inches from the front of the machine**[5]**. The right mounting hole of the front table bracket should be **46.5** inches from the front of the machine**[6]**. The left mounting hole of the front table bracket should be **59.0** inches from the right mounting hole of Table 1 front table bracket**[82]**.

Part Flip Station should be **28.0** inches from the left side of the robot base plate**[8]**. The front right anchoring hole should be **22.0** inches from the side of the machine**[9]**.

UMC-750

Place the robot stand in front of the Auto Side Window. The front of the robot base plate should be **17.0** inches from the side of the machine**[1]**. The left side of the robot base plate should be **14.5** inches from the front of the machine**[2]**.

Table 1 front table bracket should be **17.0** inches from the side of the machine**[3]**. The left mounting hole of the front table bracket should be **13.0** inches from the front of the machine**[4]**.

Table 2 left mounting hole of the front table bracket should be **37.5** inches from the front of the machine**[5]**. The right mounting hole of the front table bracket should be **46.5** inches from the front of the machine**[6]**. The left mounting hole of the front table bracket should be **82.0** inches from the right mounting hole of Table 1 front table bracket**[7]**.

Part Flip Station should be **28.0** inches from the left side of the robot base plate**[8]**. The front right anchoring hole should be **22.0** inches from the side of the machine**[9]**.

UMC-1000

Place the robot stand in front of the Auto Side Window. The front of the robot base plate should be **17.0** inches from the side of the machine**[1]**. The left side of the robot base plate should be **16.5** inches from the front of the machine**[2]**.

Table 1 front table bracket should be **15.0** inches from the side of the machine**[3]**. The left mounting hole of the front table bracket should be **15.0** inches from the front of the machine**[4]**.

Table 2 left mounting hole of the front table bracket should be **37.5** inches from the front of the machine**[5]**. The right mounting hole of the front table bracket should be **46.5** inches from the front of the machine**[6]**. The left mounting hole of the front table bracket should be **80.0** inches from the right mounting hole of Table 1 front table bracket**[7]**.

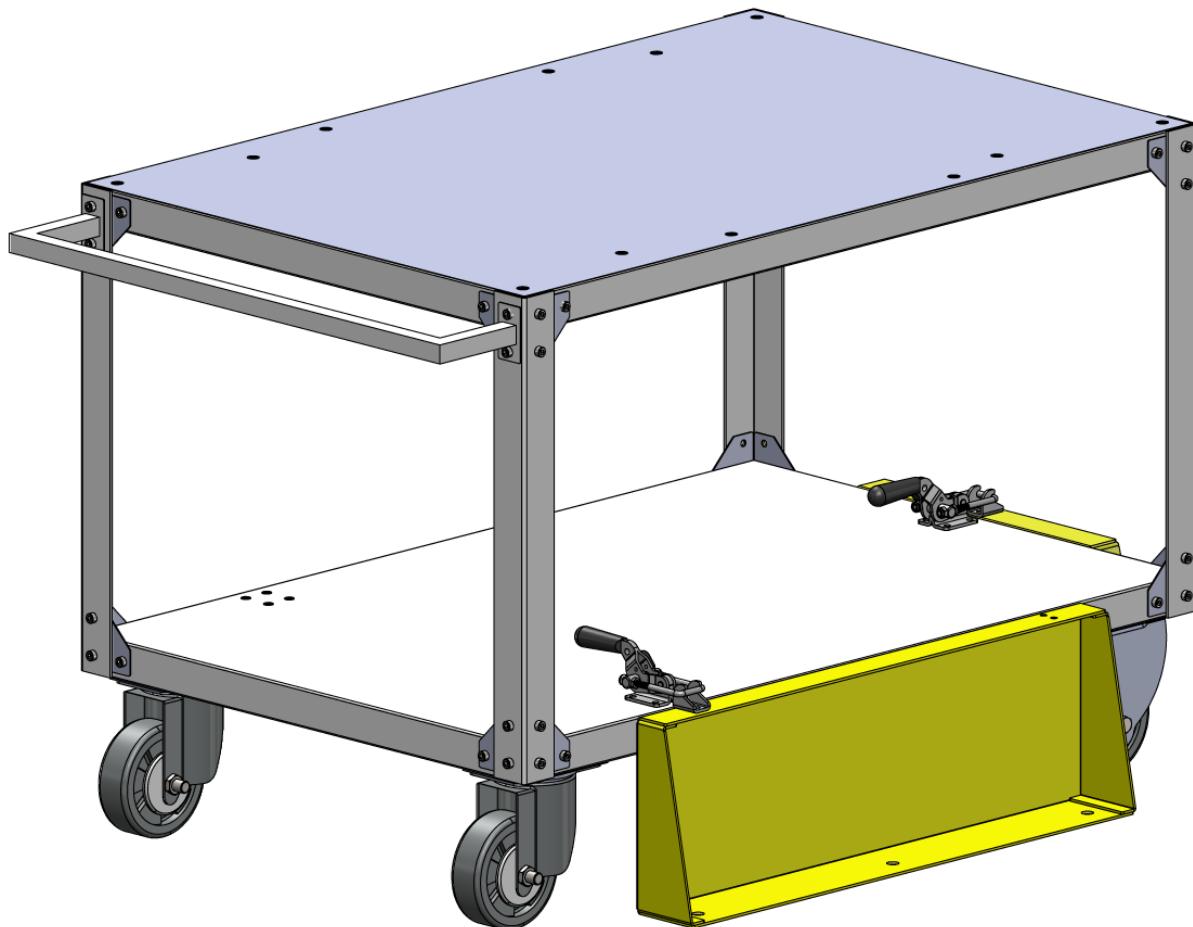
Part Flip Station should be **28.0** inches from the left side of the robot base plate**[8]**. The front right anchoring hole should be **22.0** inches from the side of the machine**[9]**.

Robot Anchoring Requirements

The Haas Robot Package 2 Base Plate, Part Table, Fence, and Part Flip Station needs to be anchored to be sufficiently stable when used according to Haas defined part size and weight limits. See the Anchoring Instructions (Drop-In Expansion) for anchoring information.

[Anchoring Instructions \(Drop-In Expansion\)](#)

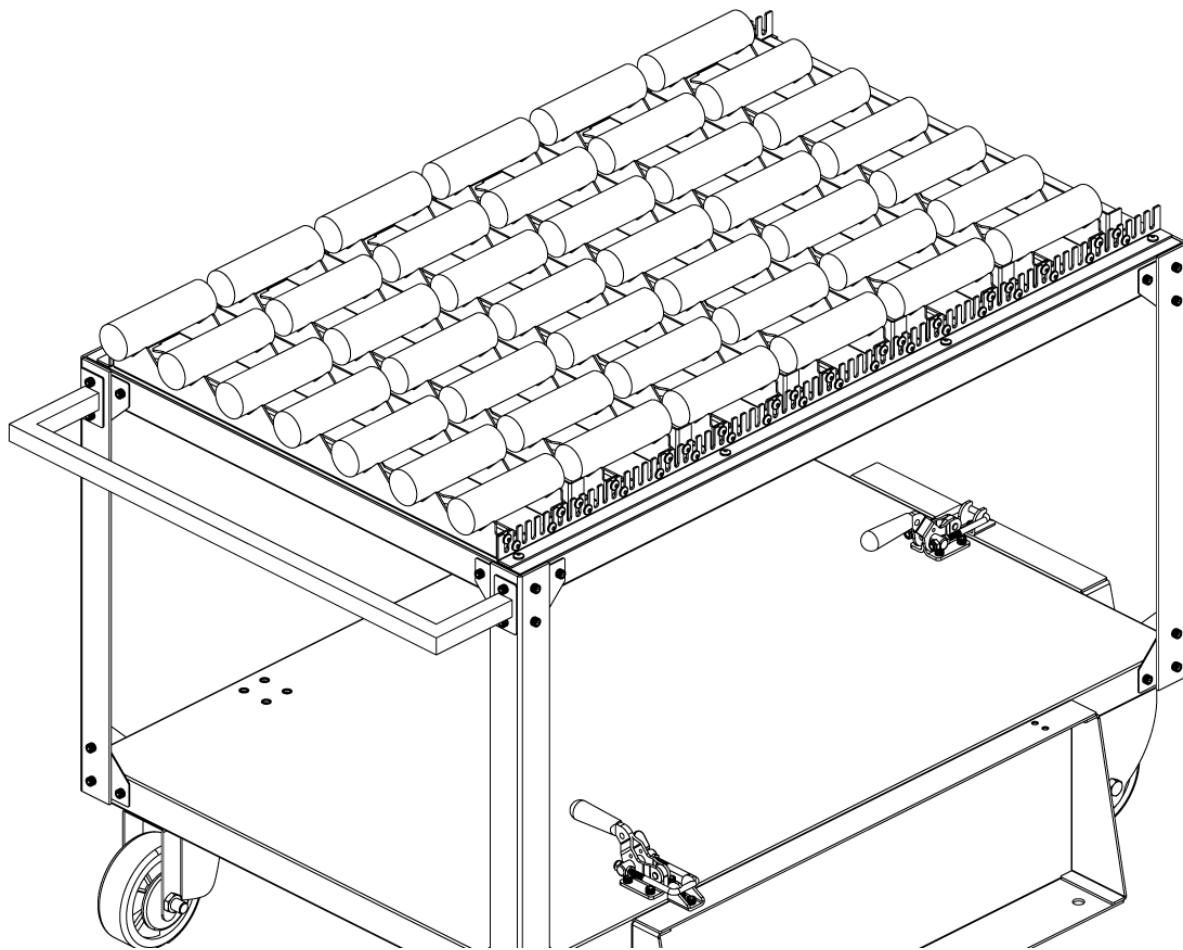
Parts Table Assembly



The Parts Table needs to be assembled. Follow the procedure below for installation.

[Haas Robot - Parts Table Assembly](#)

Shaft Loading Kit Installation

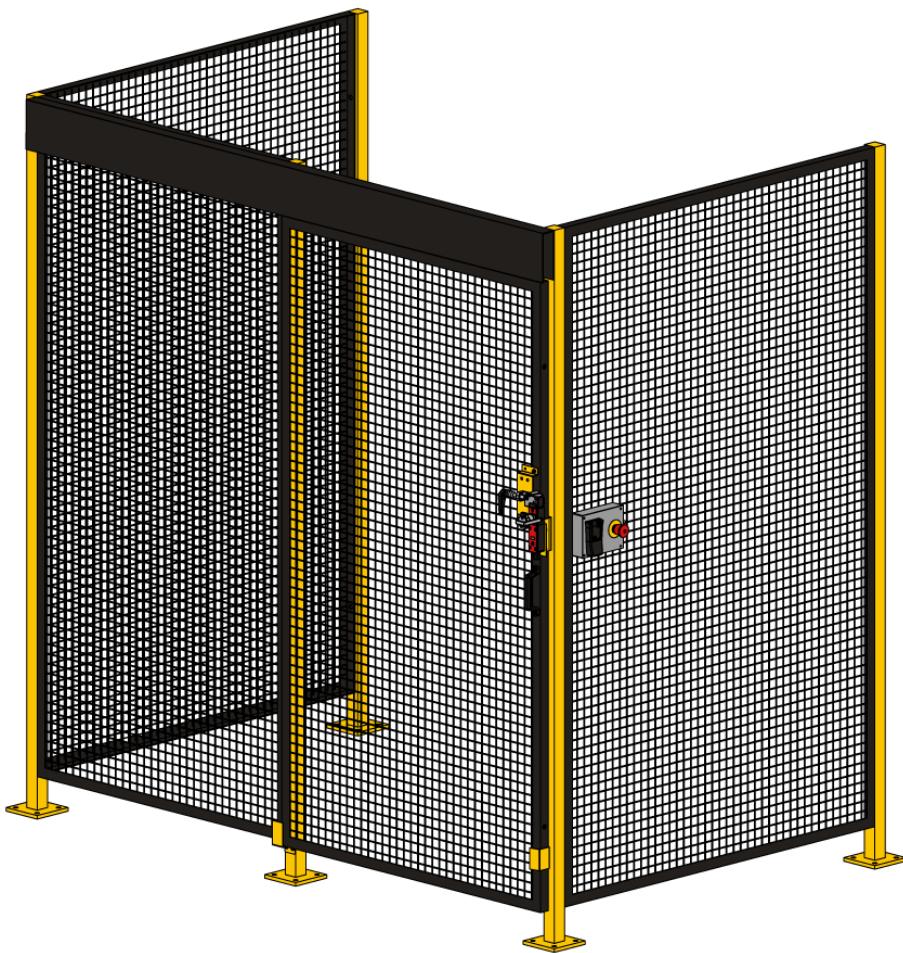


1

To install the HRP-2 Shaft Loading Kit. Follow the procedure below for installation.

[HRP-2 - Shaft Loading Kit - Installation](#)

Fence Installation



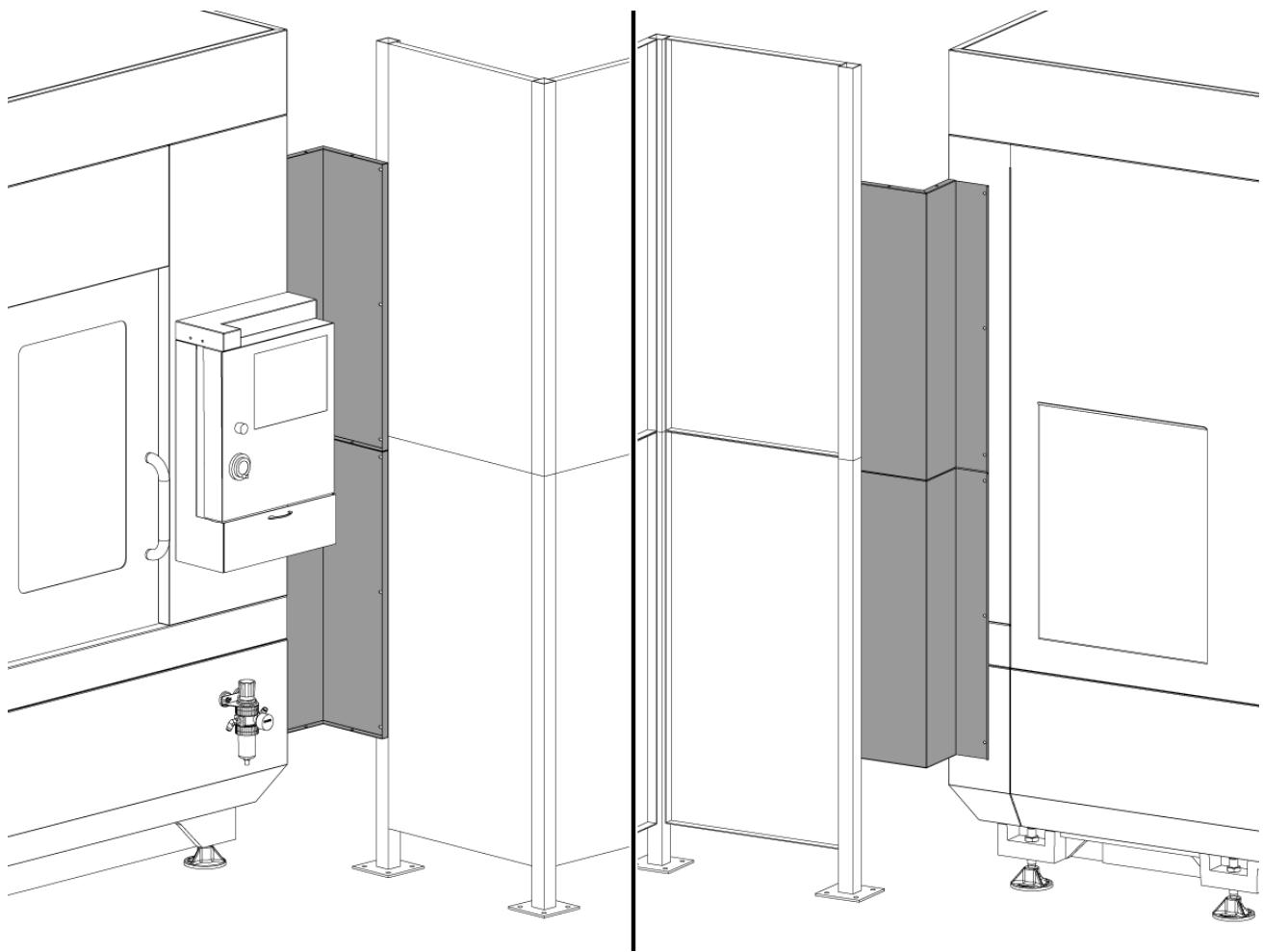
1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for installation.

[Robot Fence Installation](#)

[HRP-2 UMC Fence Layout](#)

Attention: The fence anchors will use a 3/8th drill bit, they are **NOT** the same size as the robot anchors.

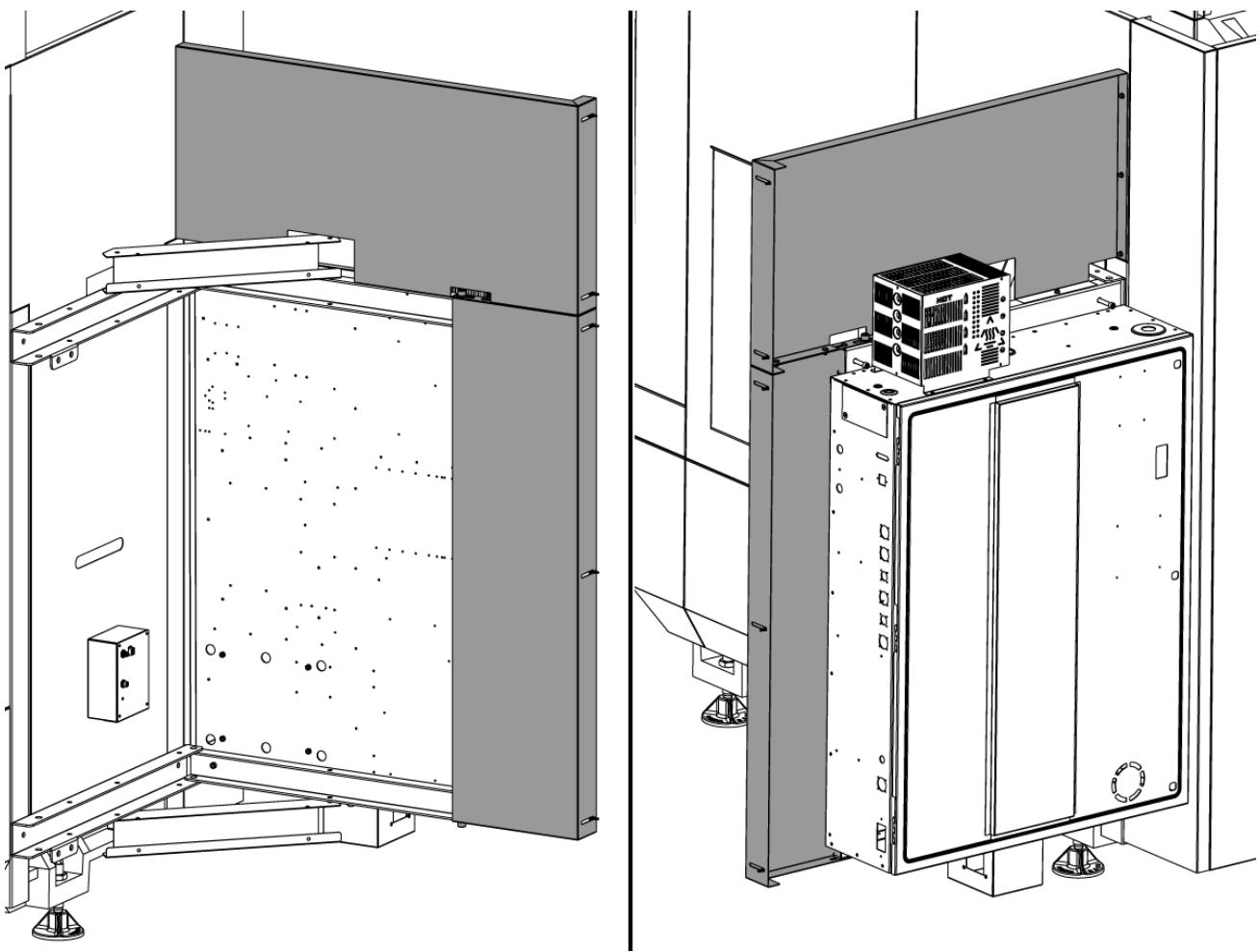


2

Install the machine fence panels together.

Install the fence panel assembly to the fence post with the self tapping screws. The top of the fence panel assembly should be **14.5** inches from the top of the fence post.

Install the fence panel assembly to the side of the machine with the self tapping screws. The location installed will depend on the machine and fence location

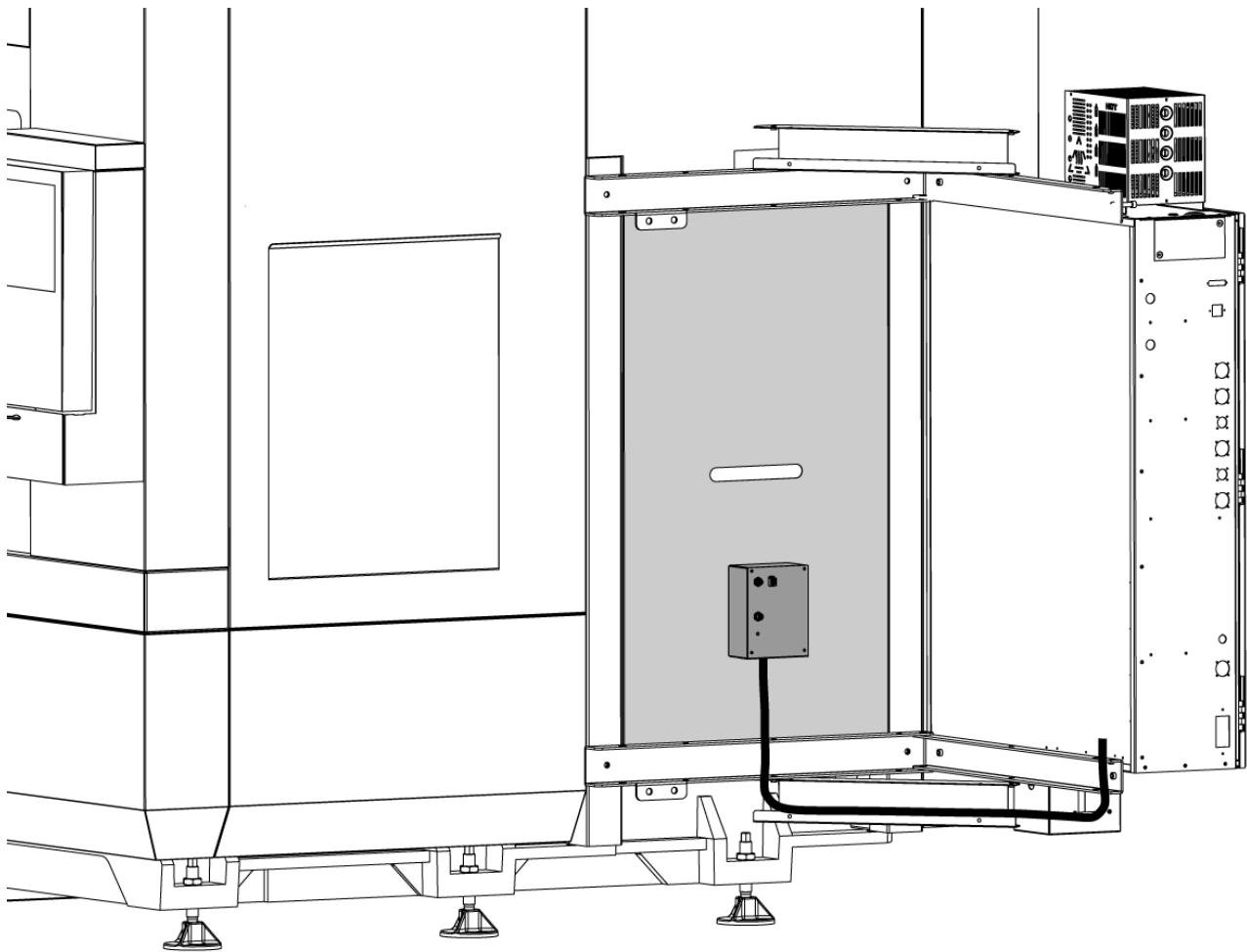


3

Install the control panel fence panels together. Install the fence panel assembly to the 90 degree control panel channel.

Install the fence panel assembly to the fence post and side of the machine with the self tapping screws. The location installed will depend on the machine and fence location

Robot Electrical - Installation



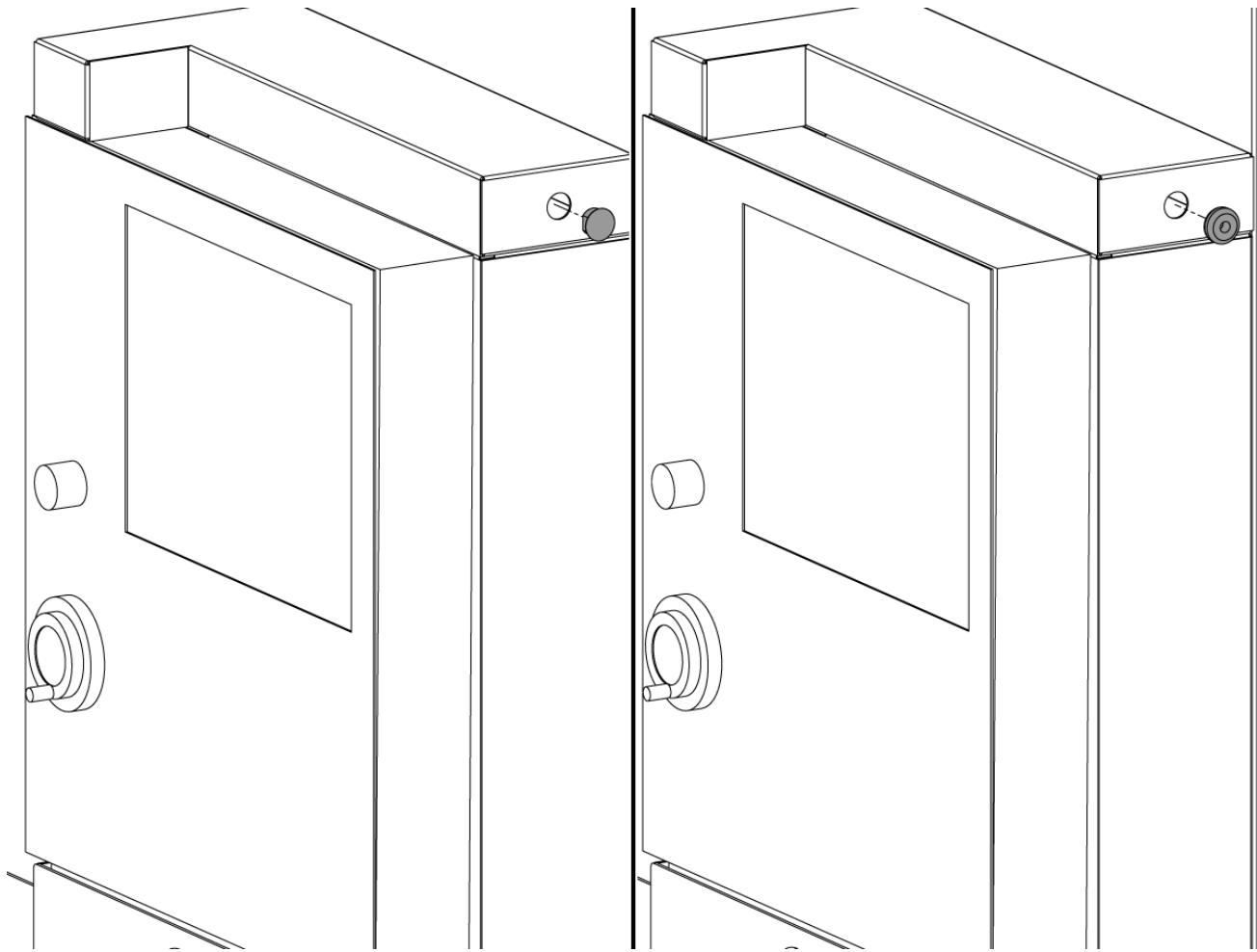
1

UMC Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown.

Route the Robot interface electrical cables through the bottom of the electrical cabinet.

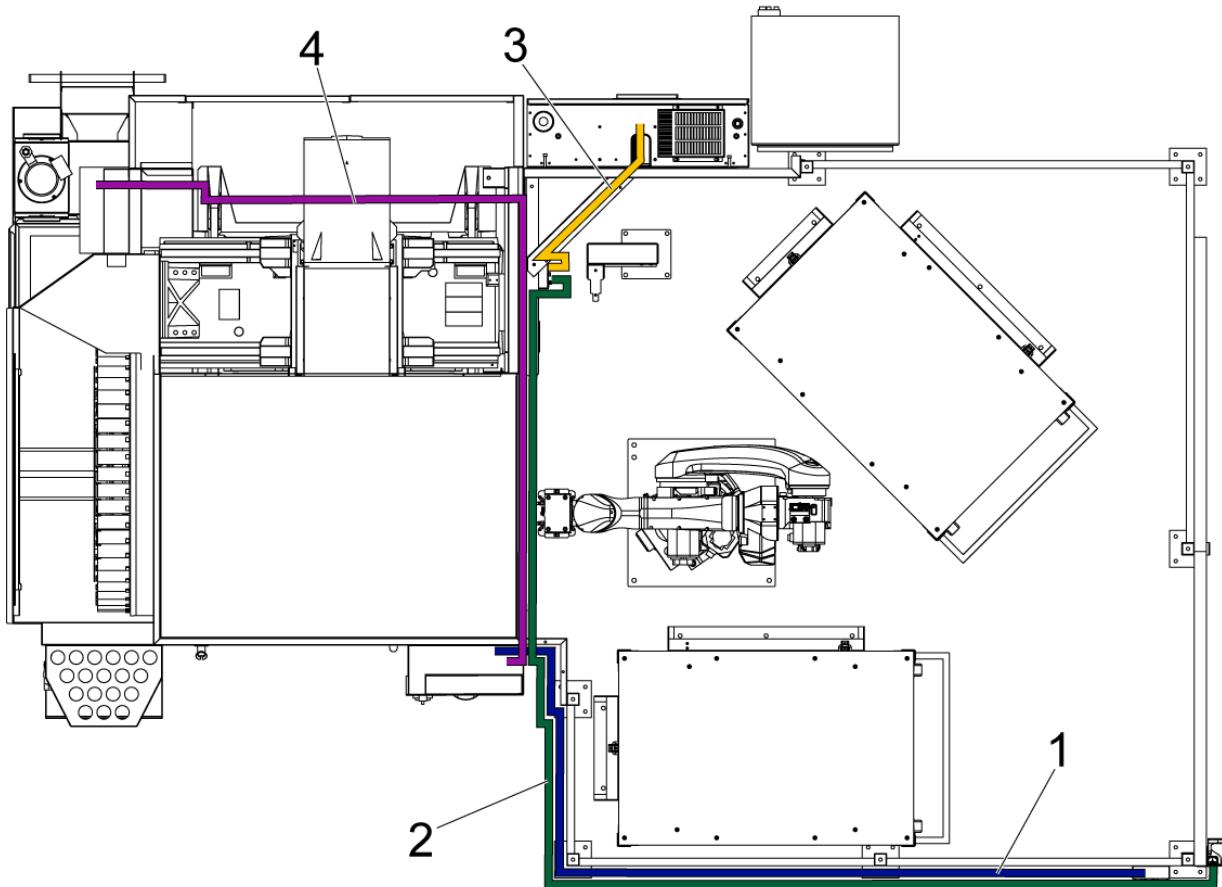


2

Pendant Access Cover

Remove the plug installed on the Pendant Access Cover and install the rubber grommet.

If the Pendant Access Cover does not have the access hole, drill a 0.75" hole in the end of the cover.



3

UMC Robot Electrical & Air Routing

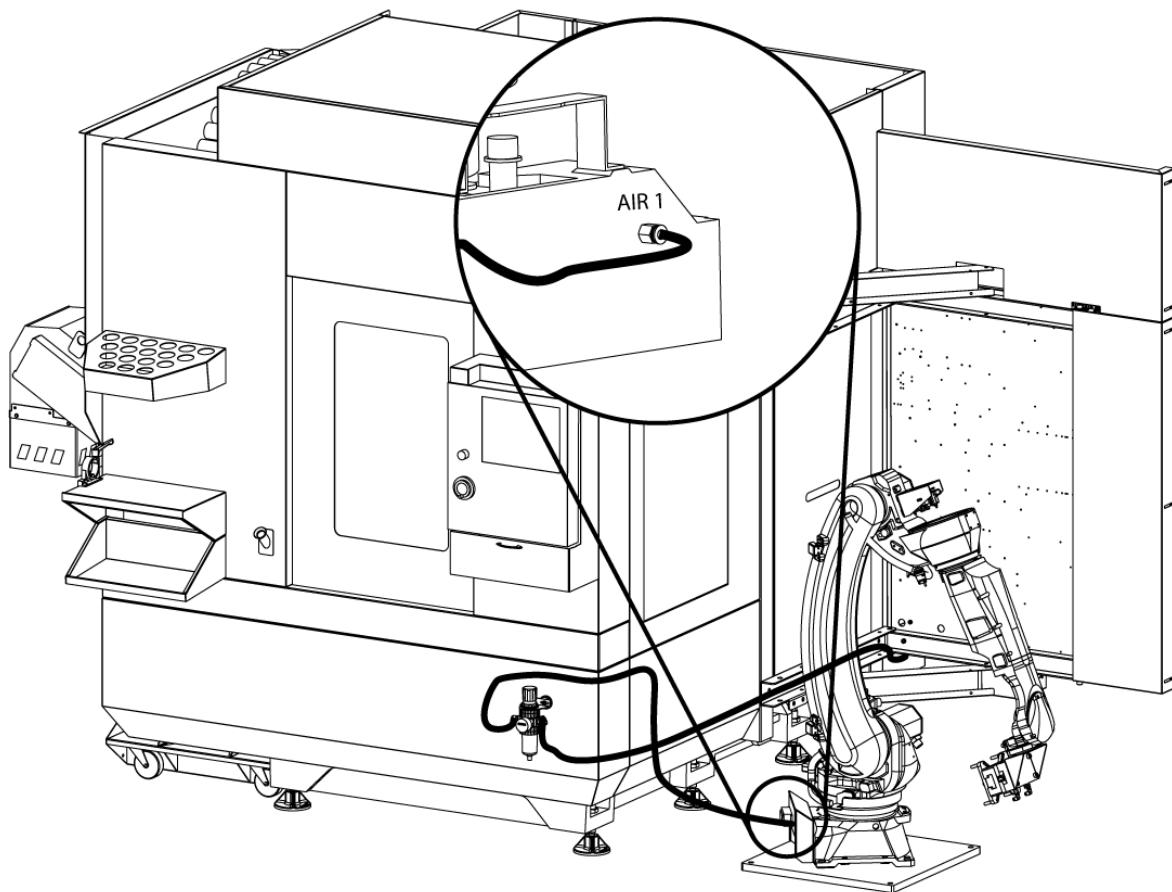
Route cable 33-1134 **[1]** from the RJH Holster along the fence to the Pendant Access Cover grommet to the SKBIF PCB.

Route cable 33-1135 **[2]** from the Interlock along the fence and machine skirt with the magnet mounts to the Electrical Interface Box.

Route cable 33-8561C **[3]** from the Electrical Interface Box along the 90 Degree Control Panel channel to Control Panel.

Route air hose **[4]** from the Air Regulator along the machine skirt to the Calm Cabinet.

Coil the extra cable from the Fanuc Control Box to the Robot and zip tie the coil to the magnet mounts to attach to the back of the machine off the ground.



4

Turn the machine air supply OFF.

Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports.

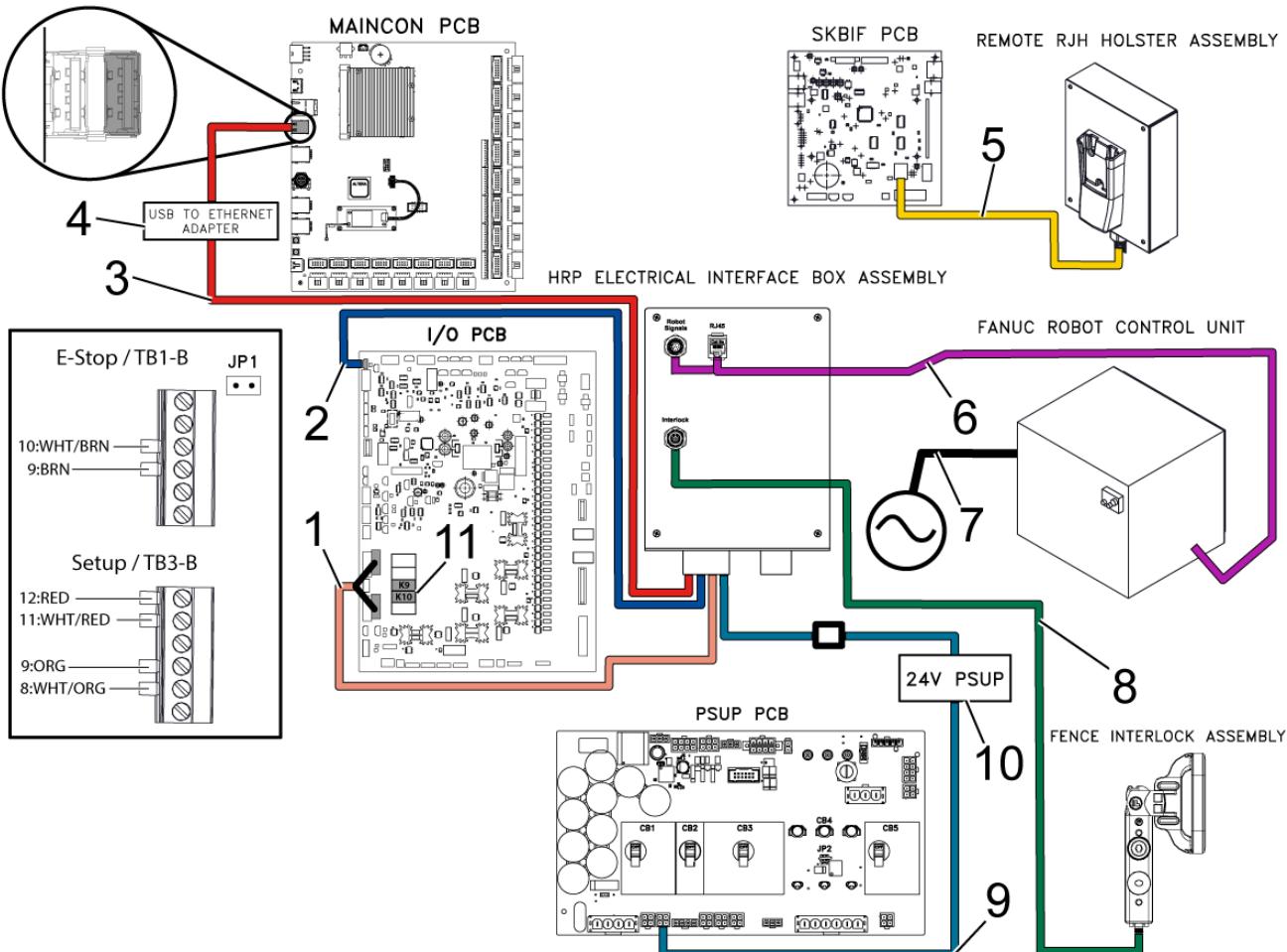
The Robot Gripper Air Regulator has magnetic mounts to attach to the machine sheet metal.

Mount the Robot Gripper Air Regulator to the machine skirt below the pendant.

Route the air line from the right side of the regulator along the side skirt of the machine to the CALM cabinet and install the push to connect fitting.

Route the air line from the left side of the regulator to the **Air 1** port on the robot and install to the push-to-connect fitting.

Turn the machine air supply ON.



5

Perform the following steps to connect the robot to the Haas machine.

Robot Power

Requires separate 200-230V 3-Phase, 50/60 Hz, 7.5 kVA (20 Amp) Power Supply[7]. See the Fanuc [Startup Guide](#) for more information.

Note: It is recommended to install a strain relief cable grip to remove stress on the power cable connections and isolate the power cable from the controller cabinet.

Cable P/N **33-8561C** has multiple connections:

I/O PCB

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[1].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [1].
- Plug the User Relays into **K9** and **K10**. (see diagram)[11].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[2]**.

Note: Do not plug anything into the connector **FILTER OV FAULT**.

Maincon PCB

Connect the **RJ-45** cable [3] to Ethernet to USB adapter [4] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.

PSUP PCB

Mount the 24VDC Power Supply[10] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8561C**. Connect cable **33-1910A**[9] to the 24VDC Power Supply[10] and plug into **P3** on the **PSUP PCB**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-1134**[5] from the Remote E-stop box to cable **33-0713** and plug into the SKIBF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

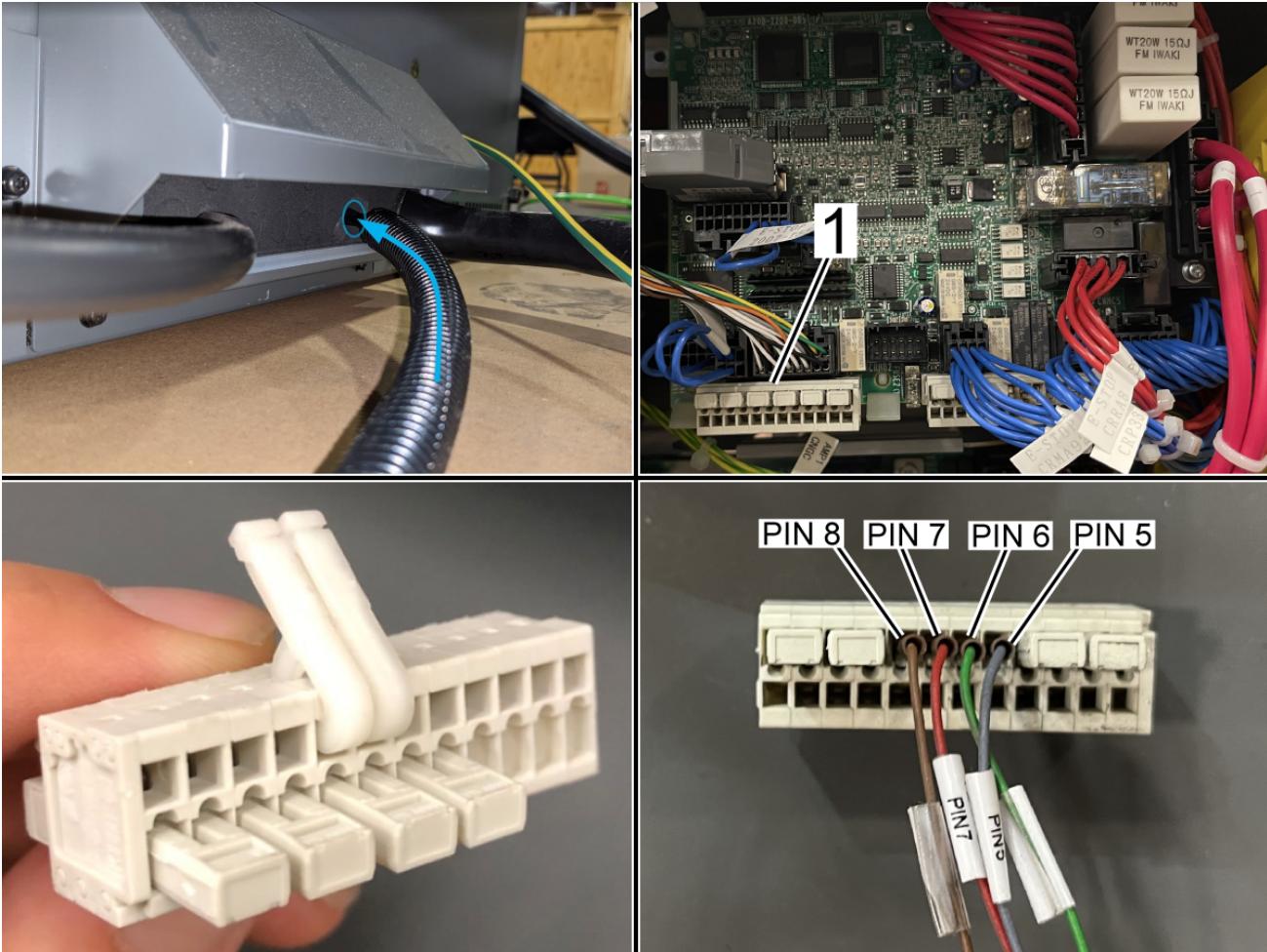
Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [6] **P/N 33-8591A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

Fence Interlock

Connect the fence door interlock cable [8] to the electrical interface box.



3

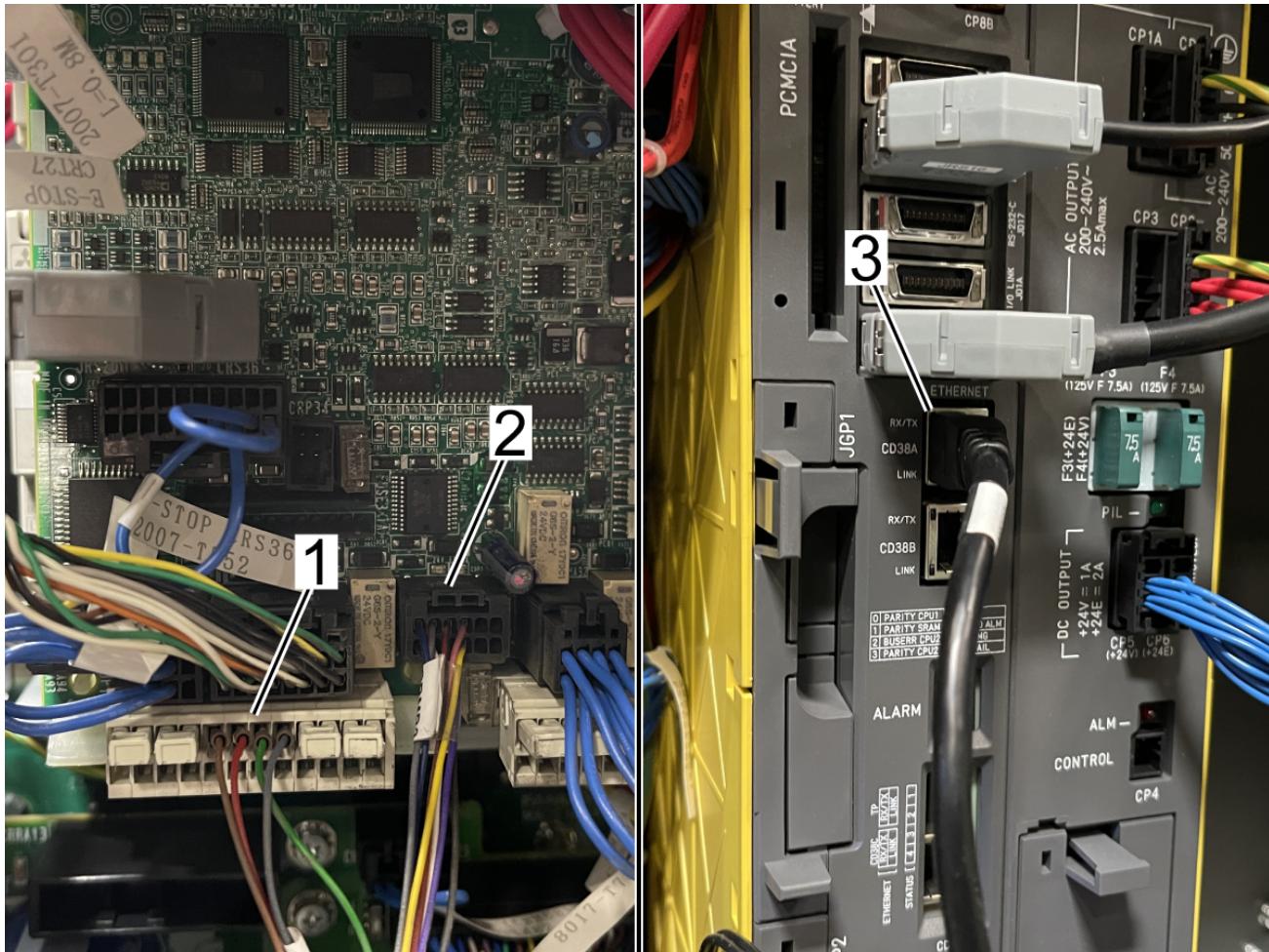
If cable **33-8591A** or **33-8592A** is not installed to the Fanuc Control box, perform the following steps:

Route the cable through the back of the Fanuc Control box.

Remove the connector at TBOP20**[1]** inside the Fanuc Control box.

Remove the jumpers and install the wires in the connector in the following order with the tool included in the Fanuc Install kit.

Note: Both tools need to be used to install the ferrules.



4

Install the cable labeled **TBOP20** to connector **TBOP13[1]**.

Install the cable labeled **CRMB2** to the connector labeled **CRMB2[2]**.

Install the RJ-45 Ethernet cable labeled **ENET CD38A** to the Ethernet Port 1 labeled **CD38A[3]**.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. The key should be set to Auto Mode[2].

Make sure the **[E-STOP]** button[3] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[1].

Settings

Settings | Network | User Positions | Alias Codes | **F1** Machine Setup

Group Listings Search **F1** Machine Setup

Group	Name	Value	Unit
102 Machine Setup	C Axis Diameter	1.0000	IN
336 Machine Setup	Bar Feeder Enable	Off	
340 Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359 Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368 Machine Setup	Live Tooling Type	None	
372 Machine Setup	Parts Loader Type	Robot	
375 Machine Setup	APL Gripper Type	None	
376 Machine Setup	Light Curtain Enable	On	
378 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413 Machine Setup	Main Spindle Load Type	Low	type
414 Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2195 [:] Enable Right Door Fully Open Switch to TRUE**
- **2196 [:] Enable Left Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**

The screenshots show the 'Current Commands' interface in the 'Robot' section of the software. The top screenshot is from the 'Jogging' tab, showing a 3D model of a Haas machine with a robotic arm. It displays the current position of the robot and a table for setting the maximum jogging speed. The bottom screenshot is from the 'Setup' tab, showing the same 3D model and a message indicating the robot is connected. It displays a table for various robot setup parameters.

Top Screenshot (Jogging Tab):

Operation	Value	Units
Coordinate Type	Cartesian	
Tool Frame	WORLD FRAME	
User Frame	WORLD FRAME	
Maximum jogging Speed	9.8	inch/sec
Single Part Mass	0.000	lbs

Bottom Screenshot (Setup Tab):

Operation	Value	Units
Max Robot Speed	156.969	Inch/sec
Gripper Net Mass	7.000	lbs
Number of Grippers	2	
Raw Gripper	Value	Units
Clamp Output	4	
Unclamp Output	3	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	
Finish Gripper	Value	Units
Clamp Output	2	
Unclamp Output	1	

3

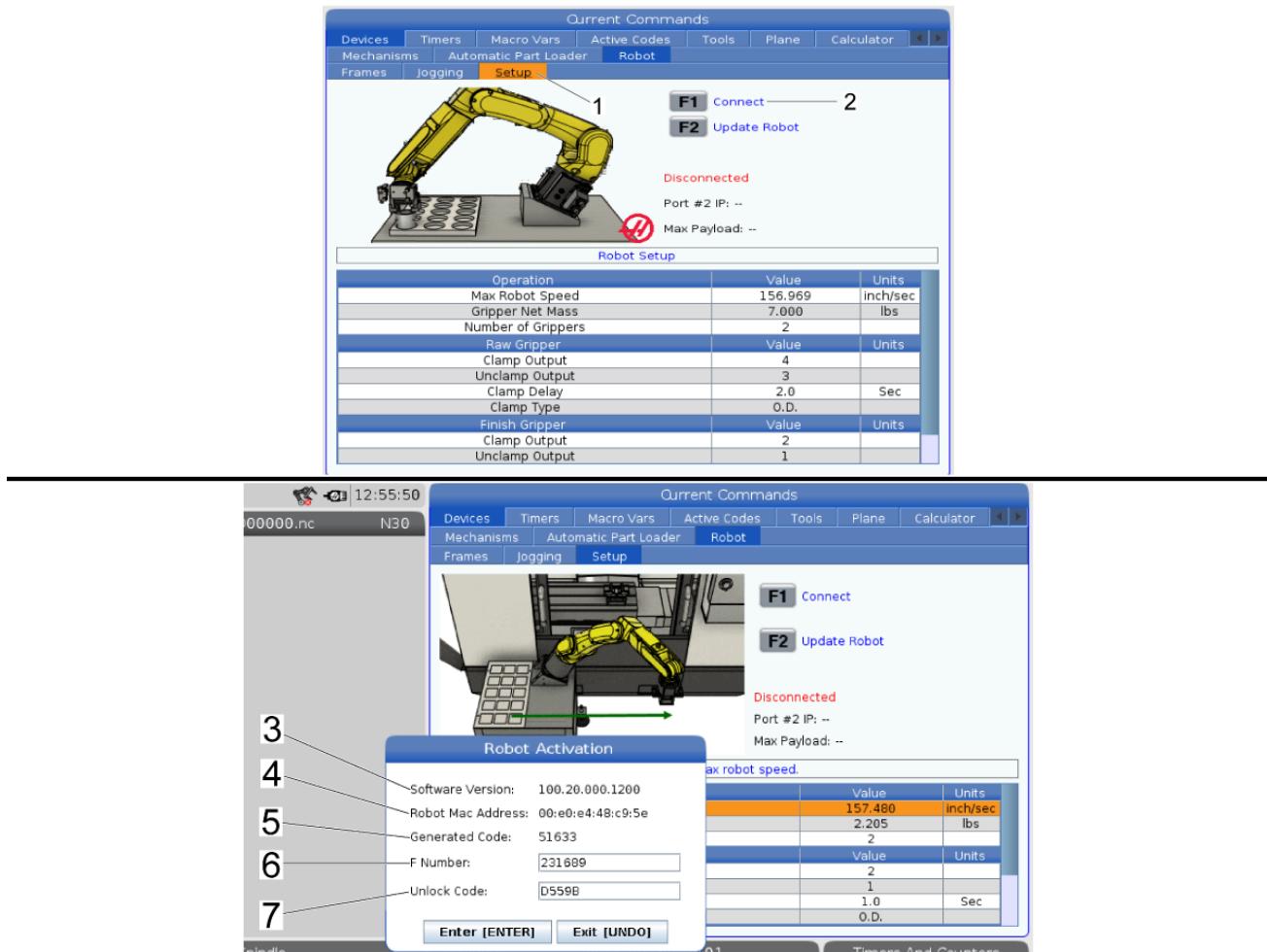
Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to 7.9 in/sec (200 mm/sec).

Go to the **Setup** tab. Change the following:

- **Max Robot Speed** to **78 in/sec (1981 mm/sec)**.
- **Gripper Net Mass** to **7.0 lbs**.
- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **1**.
- **Raw Gripper Unclamp Output** to **2**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup**[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

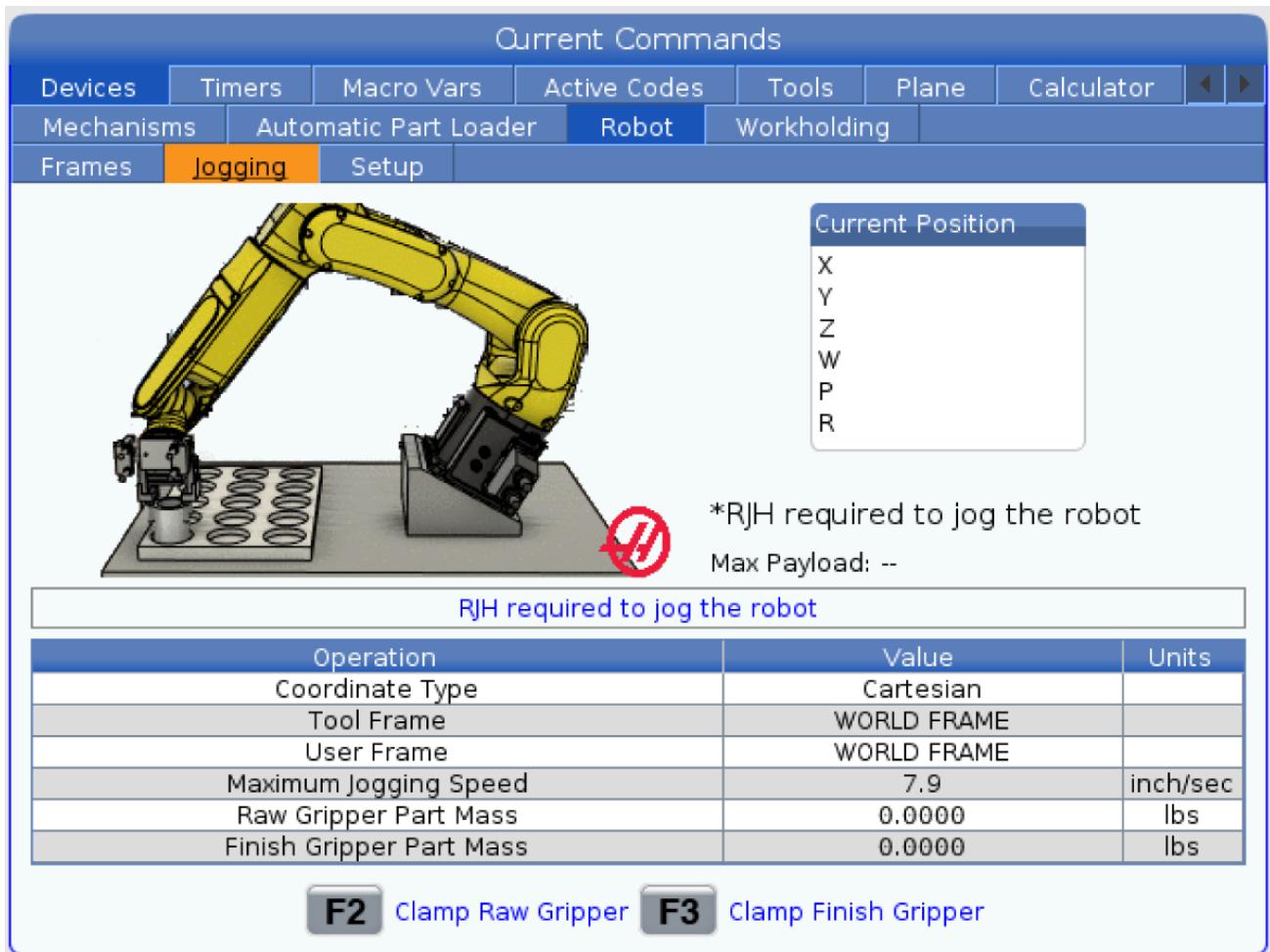
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press [INSERT] to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

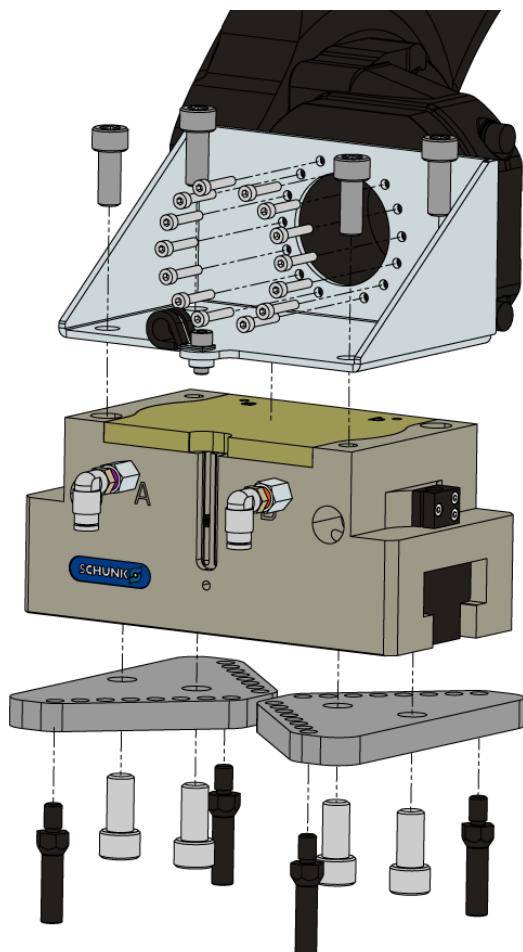
On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

Jog the robot from its shipping position to a safe position.

Note: Press **[Emergency Stop]** before working on the robot.

Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Assembly



1

Install the gripper to the robot end effector mounting face.



2

Route the air lines between the solenoid on robot arm and the gripper. Connecting the airlines to the corresponding color coded fittings. Install conduit to each pair of air lines.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.
- Check the light curtain/fence icon show on the screen. If the icon does not show, verify wiring, alingment and factory setting: **2191 [694:] LIGHT CUTAIN TYPE** is set to **LC_TYPE_1**.

Test the operation of the grippers:

- Verify the gripper clamps and unclamps correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

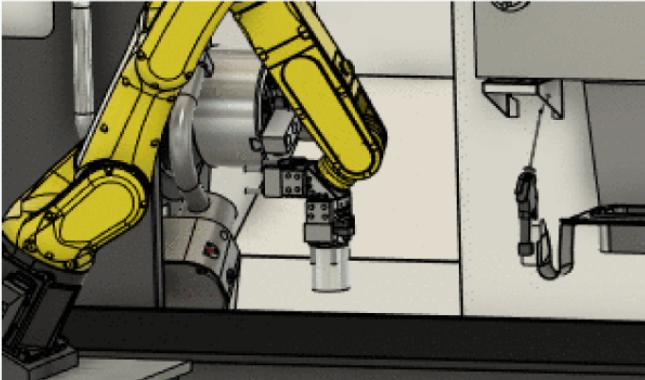
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

[FANUC Dual Check Safety \(DCS\) – Setup](#)

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	< >
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job				



F2 Record Position
F3 Clamp Gripper # 2
F4 Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Dwell	Off	Sec

◀
Previous
Next
▶

After installing the robot, set up a job following the procedure below.

[Haas Robot - Quick Start Guide](#)

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time	>	0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	PulseJet Injection Cycle Time		1.000	Sec
370	Miscellaneous	PulseJet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP [View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/hrp-3---installation.html

Haas Robot Package 3 - VMC - Installation

Under Construction

Introduction

This procedure will show you how to install the Haas Robot Arm Package-3.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- 100.21.000.1110 version or higher
- Built after 1/1/19 or I/O board updated to 34-349xB or later
- VF/VM Reboot Sheet Metal
- Haas Autodoor (See machine requirements for CAN Auto Door)
- Remote Jog Handle - XL 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- I/O PCB HINGE DOOR 93-1000297 I/O DOOR ASSY HINGED

Fixing / Anchoring Requirements

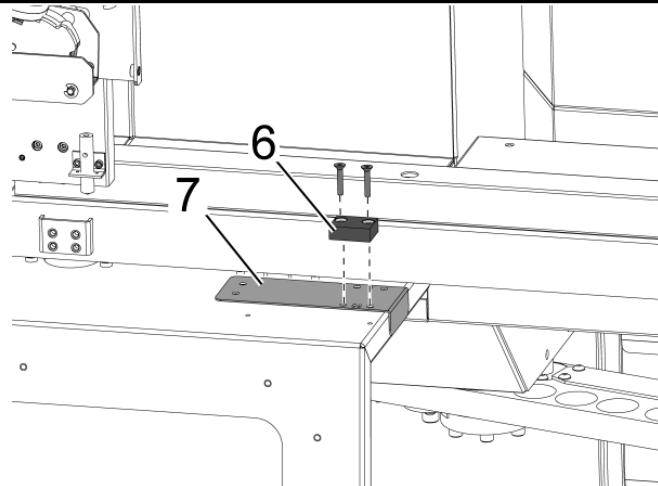
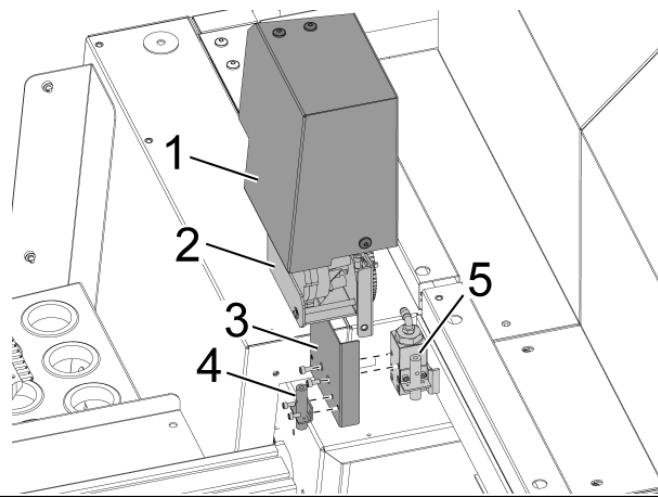
The Haas Robot Package 3 needs to be anchored according to Fanuc's recommendation to be sufficiently stable when used according to Haas defined part size and weight limits. See the Robot Anchoring section below.

The Haas Robot Package Includes the following Components:

- **30-13008** Robot PKG-3 Fence Kit (fencing with gate to enclose the operators station)
- **32-0910** Gate Interlock
- **32-8585B** Remote E-Stop Assembly (includes holster and 36' foot cable for remote handle jog)
- **32-8584B** HRP-3 Electrical Interface Box Assembly (Includes robot signals and power cables)

Note: The parts above are subject to change and there will be some variation depending on build date.

Mill Setup



1

Complete the following on both sides of the door:

Remove the autodoor motor cover [1] and the autodoor motor assembly [2].

Install the new proximity switch bracket [3] to the existing proximity switch block [5].

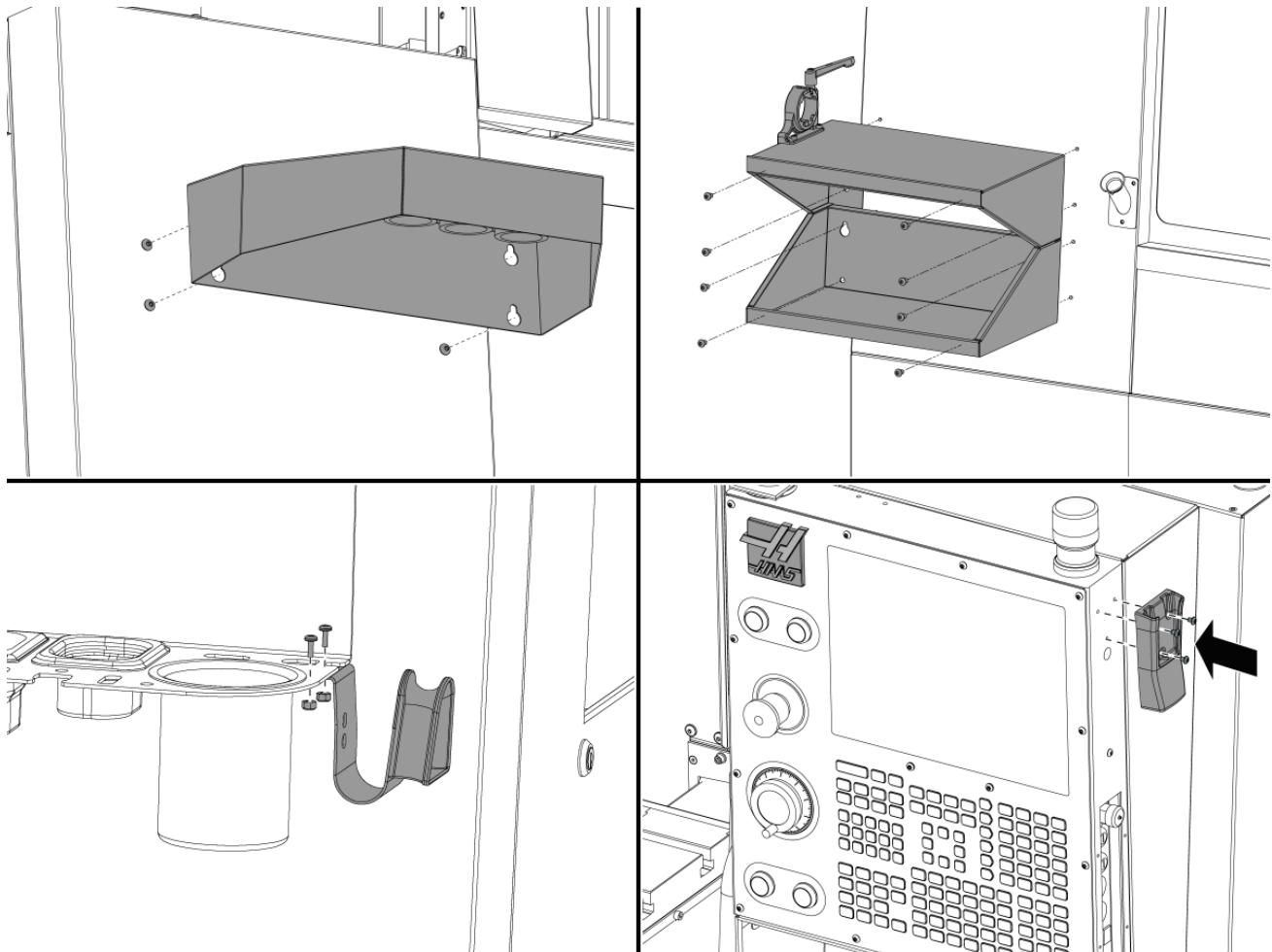
Install the door always open proximity switch [4] to the bracket [3].

Install the drill guide [7] for the door open flag [6] and drill and tap 2x 10-32 holes through the sheet metal of the door.

- Drill size: #21 or 5/32"
- Tap 10-32 NF

Remove the template and install the door open flag with 2x flat head cap screws. Re-install the autodoor motor assembly, bracket, and cover.

Use provided shims to set the height between the proximity switch and the door open flag.

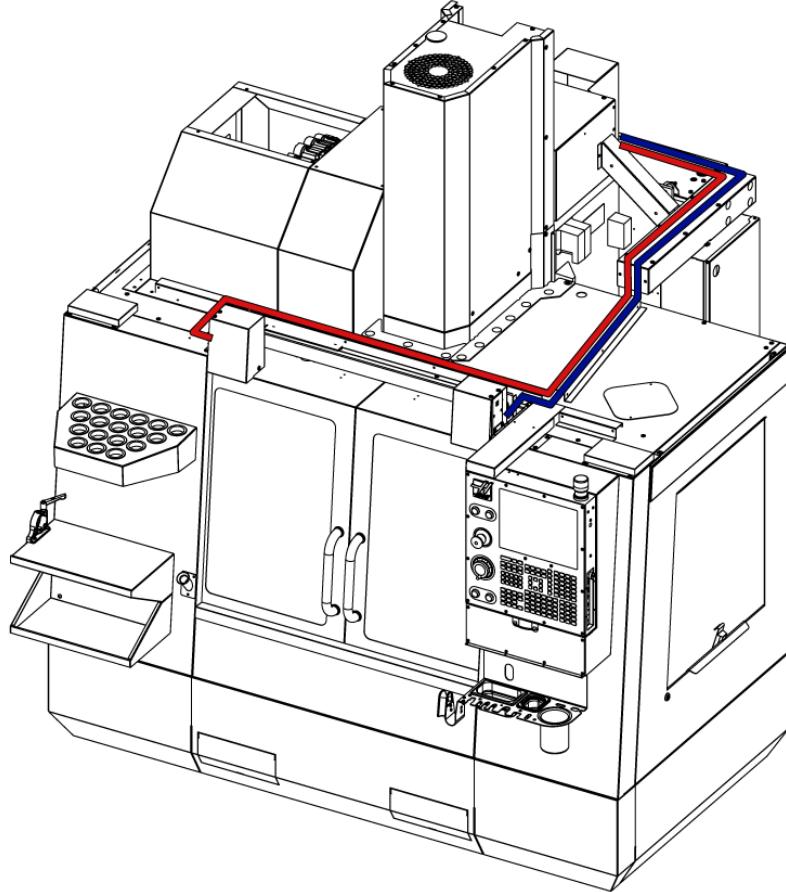


2

Remove the tool tray and tool table from the machine.

Move the air gun hose mount [1] to the opposite side of the tool rack. Drill holes in the tool rack for the 1/4"-20 screws. Use a H (17/64") drill to make clearance holes.

Move the Remote Jog Handle (RJH) to the opposite side of the control pendant and route the cable.



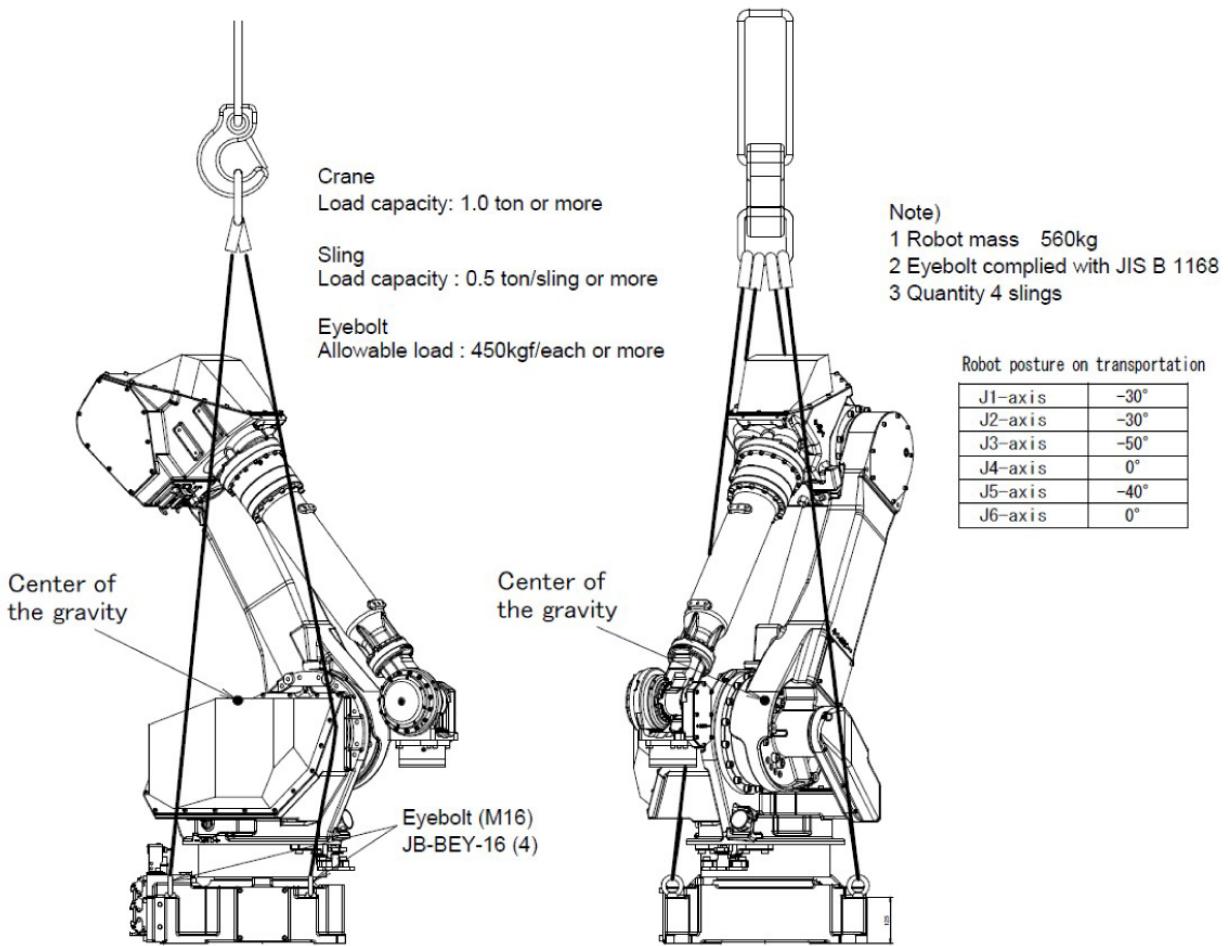
3

Route the door fully open cables into the control cabinet as shown on the picture.

Connect to **32-0807 PROX NO LEFT DOOR FULLY OPEN** to SIO P27.

Connect to **32-0856 PROX NO RIGHT DOOR FULLY OPEN** to SIO P72.

Robot Lifting



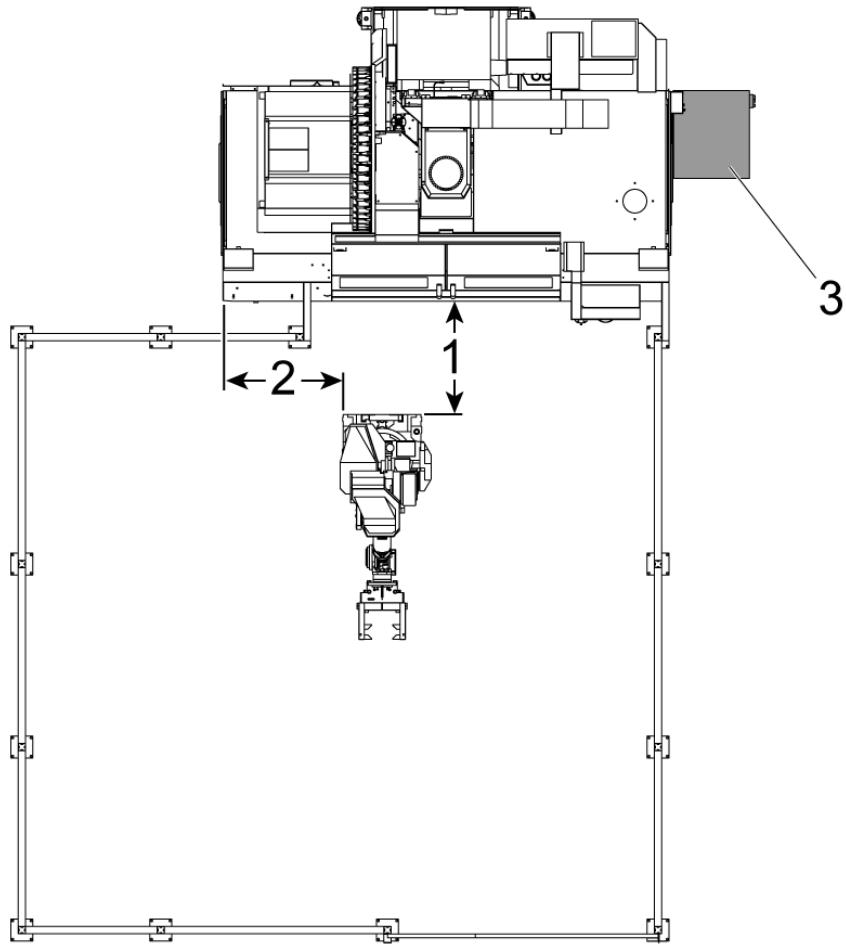
Robot Lifting Requirements

Use this information for lifting/moving Robot Package 3.

The Haas Robot Package 3 needs to be lifted according to Fanuc's recommendation. See the Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual, **Chapter 1, Section 1 Transportation** starting on page 1 for lifting/moving information.

[Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual](#)

Robot Installation



1

Place the Fanuc Control Box on the right side of the machine next to the CALM cabinet**[3]**.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

Measure these dimensions from the machine skirt to the base of the robot.

VF-3/4

Place the robot table against the left front side of the machine. The robot should be **30.0** inches from the front of the machine**[1]**. The left side of the robot should be **25.0** inches from the left side of the machine**[2]**.

VF-5

Place the robot table against the left front side of the machine. The robot should be **30.0** inches from the front of the machine**[1]**. The left side of the robot should be **25.0** inches from the left side of the machine**[2]**.

VF-6/7

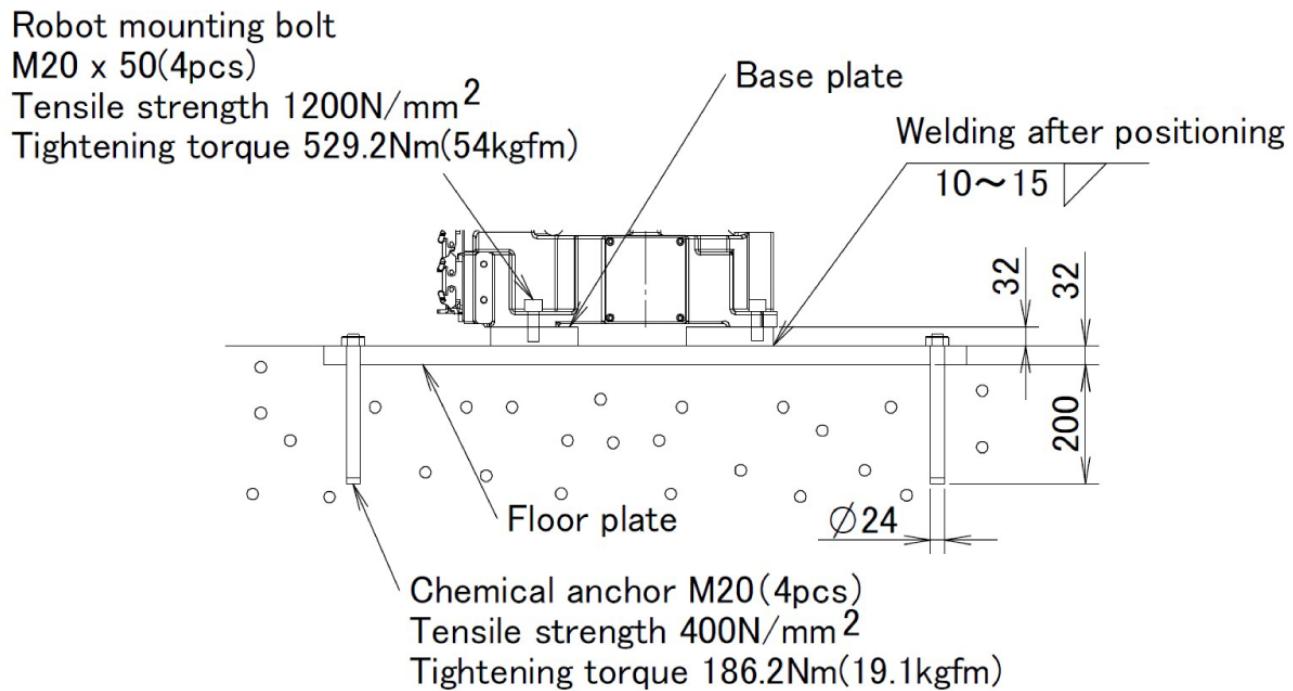
Place the robot table against the left front side of the machine. The robot should be **30.0** inches from the front of the machine**[1]**. The left side of the robot should be **25.0** inches from the left side of the machine**[2]**.

VF-8/9

Place the robot table against the left front side of the machine. The robot should be **20.0** inches from the front of the machine**[1]**. The left side of the robot should be **40.0** inches from the left side of the machine**[2]**.

VF-10/11

Place the robot table against the left front side of the machine. The robot should be **20.0** inches from the front of the machine**[1]**. The left side of the robot should be **100.0** inches from the left side of the machine**[2]**.

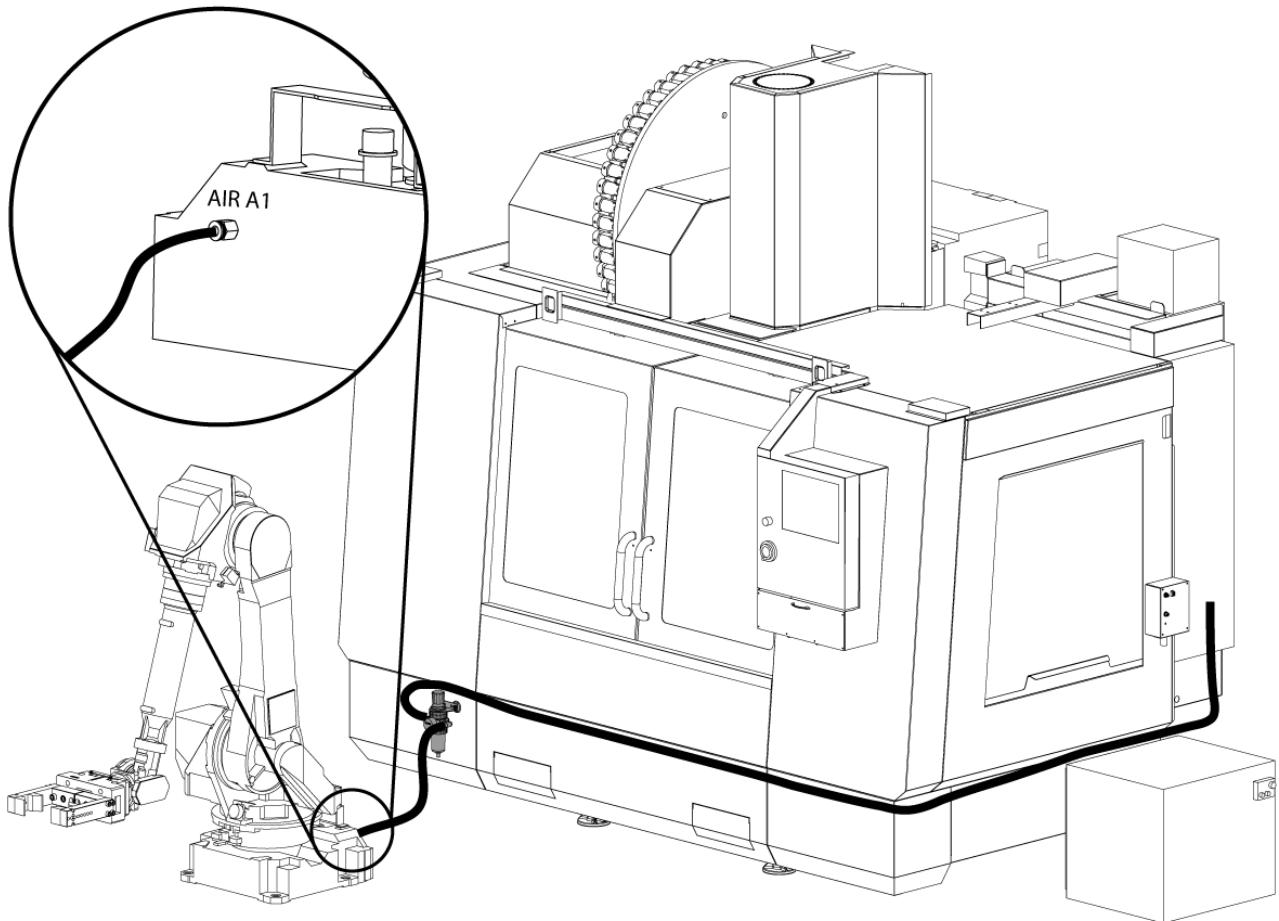


2

Robot Anchoring Requirements

The Haas Robot Package 3 needs to be anchored according to Fanuc's recommendation to be sufficiently stable when used according to Haas defined part size and weight limits. See the Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual, **Chapter 1, Section 2 Installation** starting on page 7 for anchoring information.

[Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual](#)



3

Turn the machine air supply OFF.

Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports.

The Robot Gripper Air Regulator has magnetic mounts to attach to the machine sheet metal.

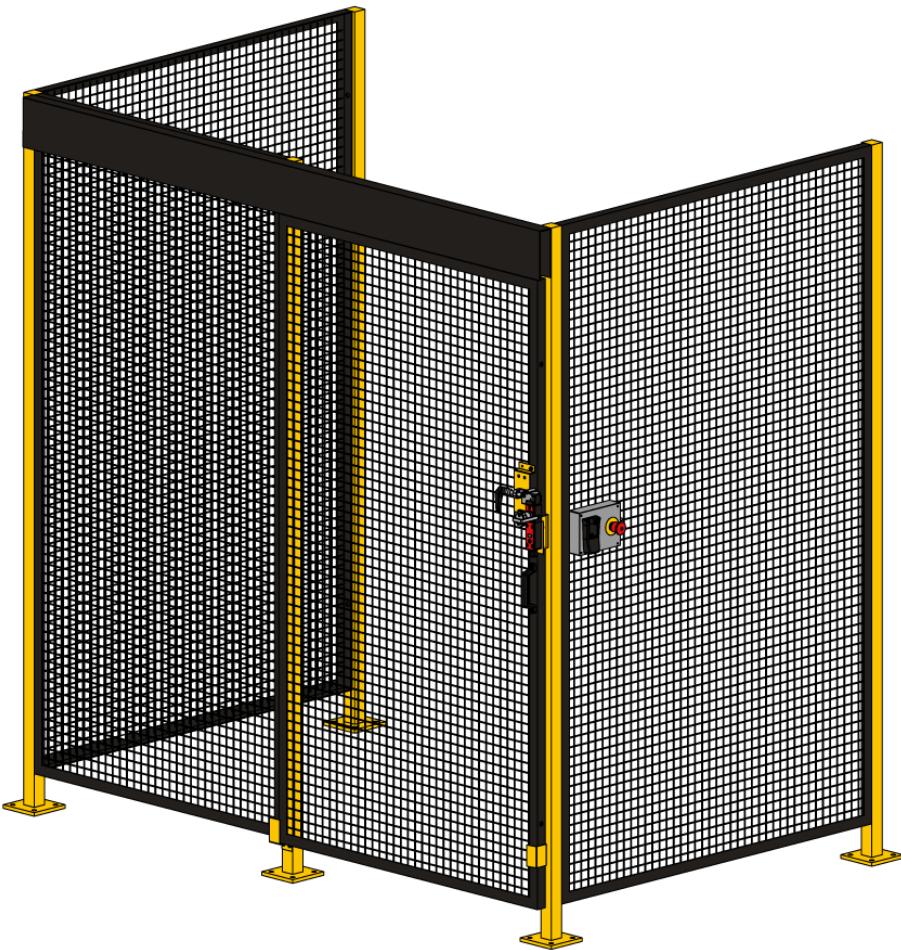
Mount the Robot Gripper Air Regulator to the front skirt of the machine near the robot.

Route the air line from the left side of the regulator along the front skirt of the machine to the CALM cabinet and install the push to connect fitting.

Route the air line from the right side of the regulator to the **Air A1** port on the robot and install to the push-to-connect fitting.

Turn the machine air supply ON.

Fence Installation



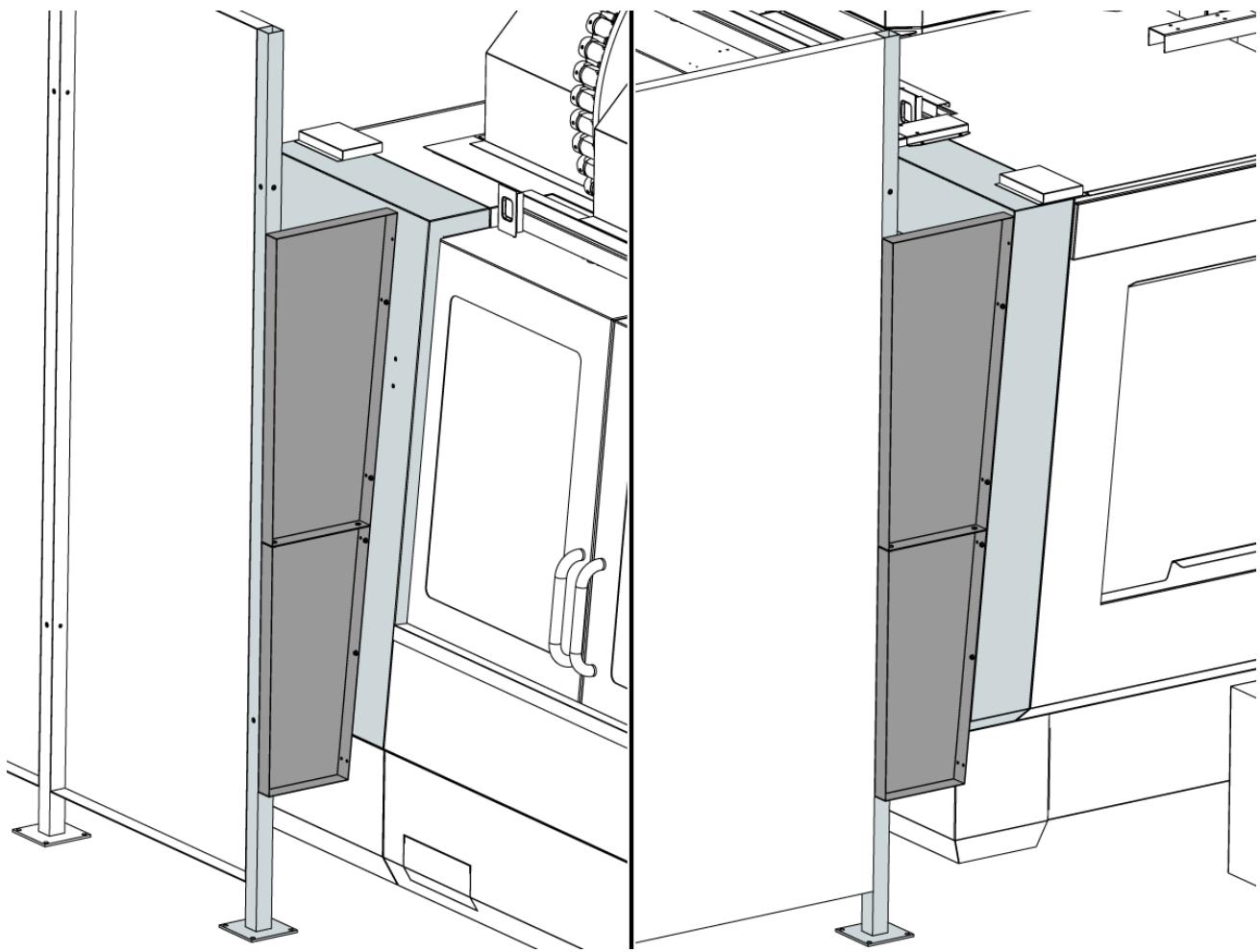
1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for installation.

[Robot Fence Installation](#)

[HRP-3 VMC Fence Layout](#)

Attention: The fence anchors will use a 3/8th drill bit, they are **NOT** the same size as the robot anchors.



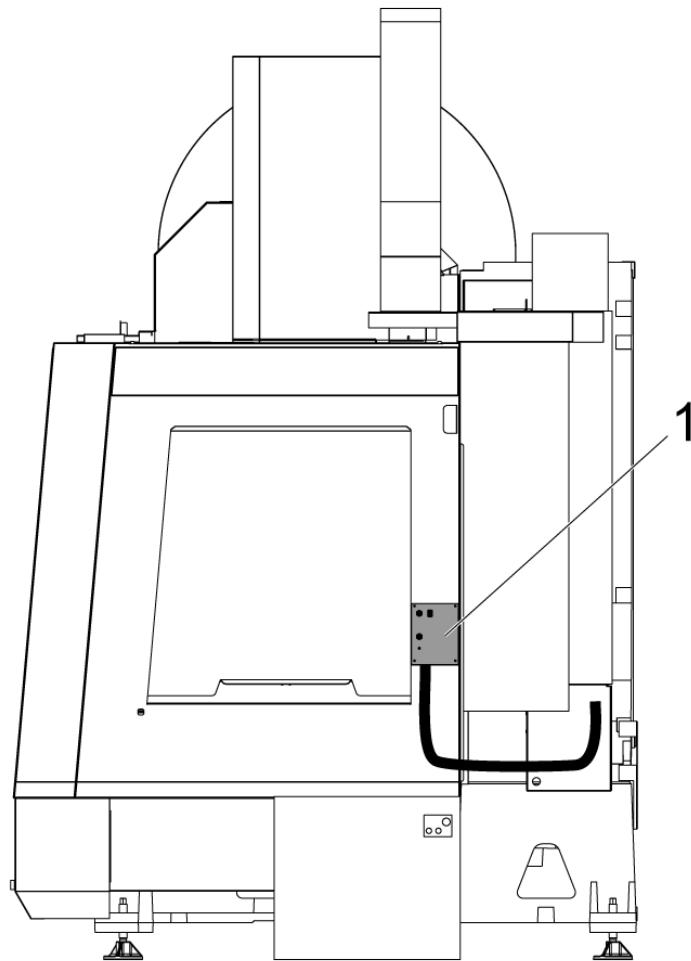
2

Install the fence panels together.

Install the fence panel assembly to the fence post with the self tapping screws. The top of the fence panel assembly should be **22.5** inches from the top of the fence post.

Install the fence panel assembly to the front of the machine with the self tapping screws. The location installed will depend on the machine and fence location

Robot Electrical - Installation



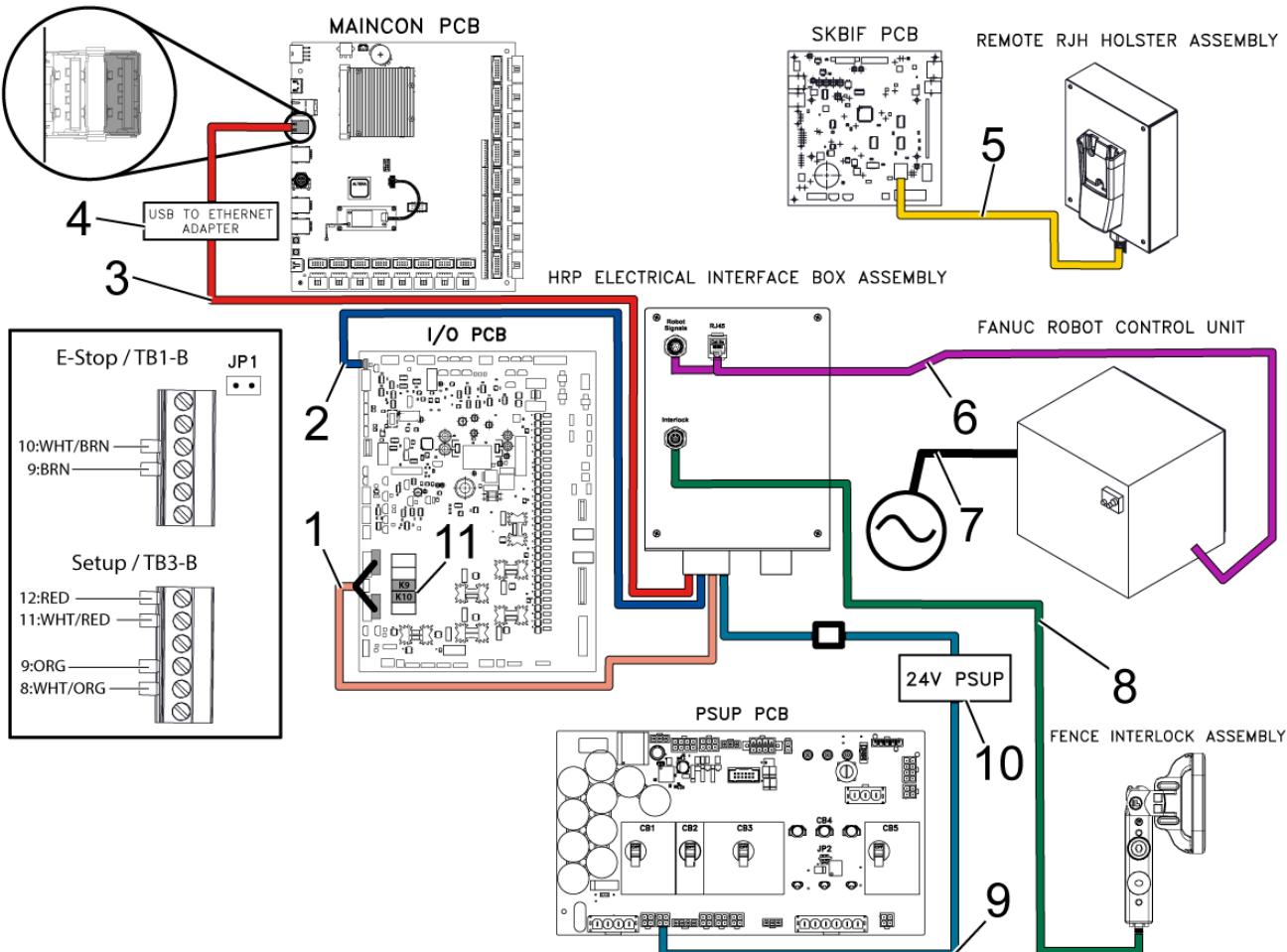
1

VMC Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown in the picture.

Route the Robot interface electrical cables through the bottom of the electrical cabinet.



2

Perform the following steps to connect the robot to the Haas machine.

Robot Power

Requires separate 200-230V 3-Phase, 50/60 Hz, 7.5 kVA (20 Amp) Power Supply[7]. See the Fanuc [Startup Guide](#) for more information.

Note: It is recommended to install a strain relief cable grip to remove stress on the power cable connections and isolate the power cable from the controller cabinet.

Cable P/N **33-8562C** has multiple connections:

I/O PCB

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[1].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [1].
- Plug the User Relays into **K9** and **K10**. (see diagram)[11].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[2]**.

Note: Do not plug anything into the connector **FILTER OV FAULT**.

Maincon PCB

Connect the **RJ-45** cable [3] to Ethernet to USB adapter [4] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.

PSUP PCB

Mount the 24VDC Power Supply[10] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8562C**. Connect cable **33-1910A**[9] to the 24VDC Power Supply[10] and plug into **P3** on the **PSUP PCB**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-8550C**[5] from the Remote E-stop box to cable **33-0713** and plug into the SKBIF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

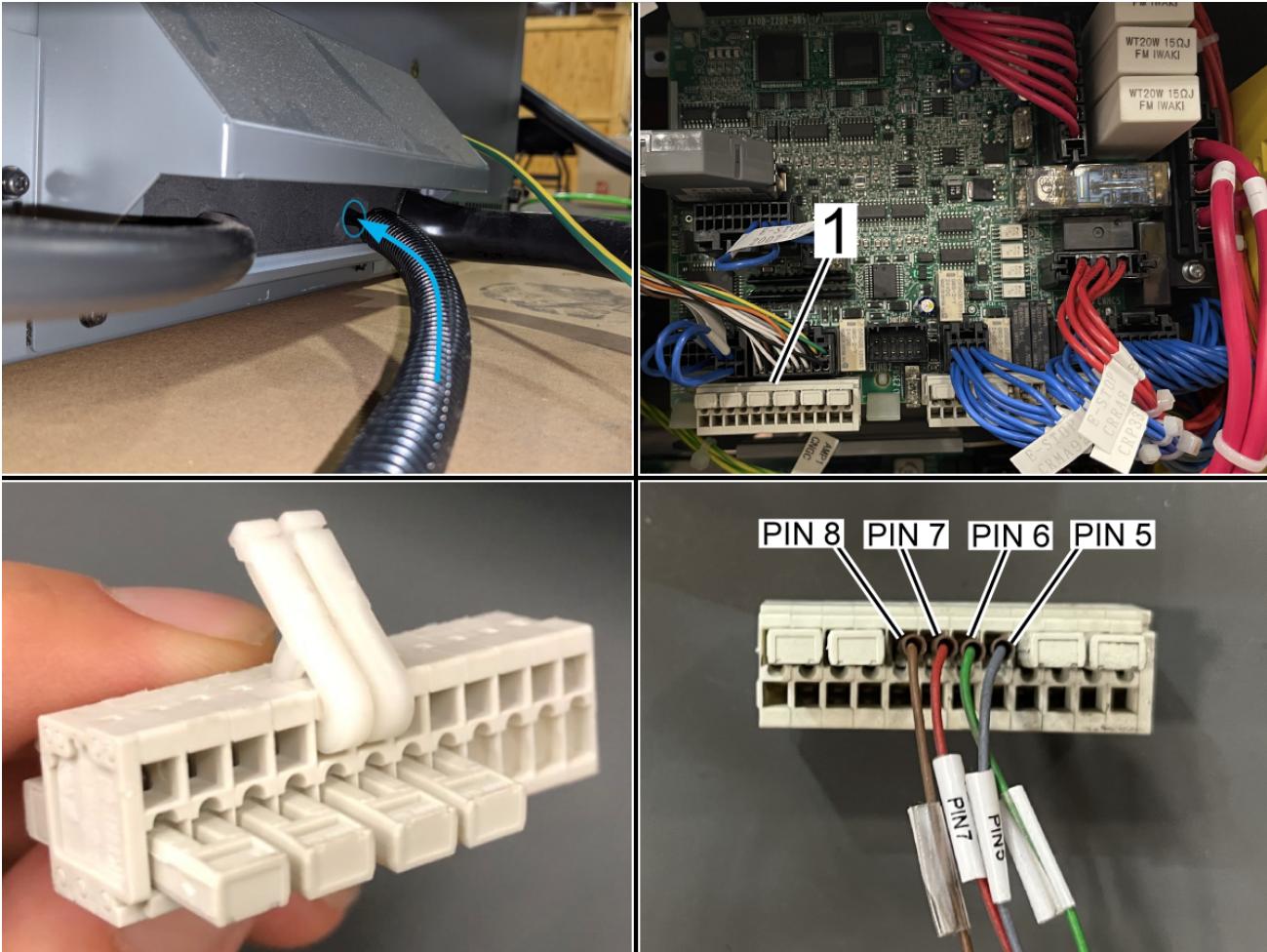
Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [6] **P/N 33-8591A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

Fence Interlock

Connect the fence door interlock cable [8] to the electrical interface box.



3

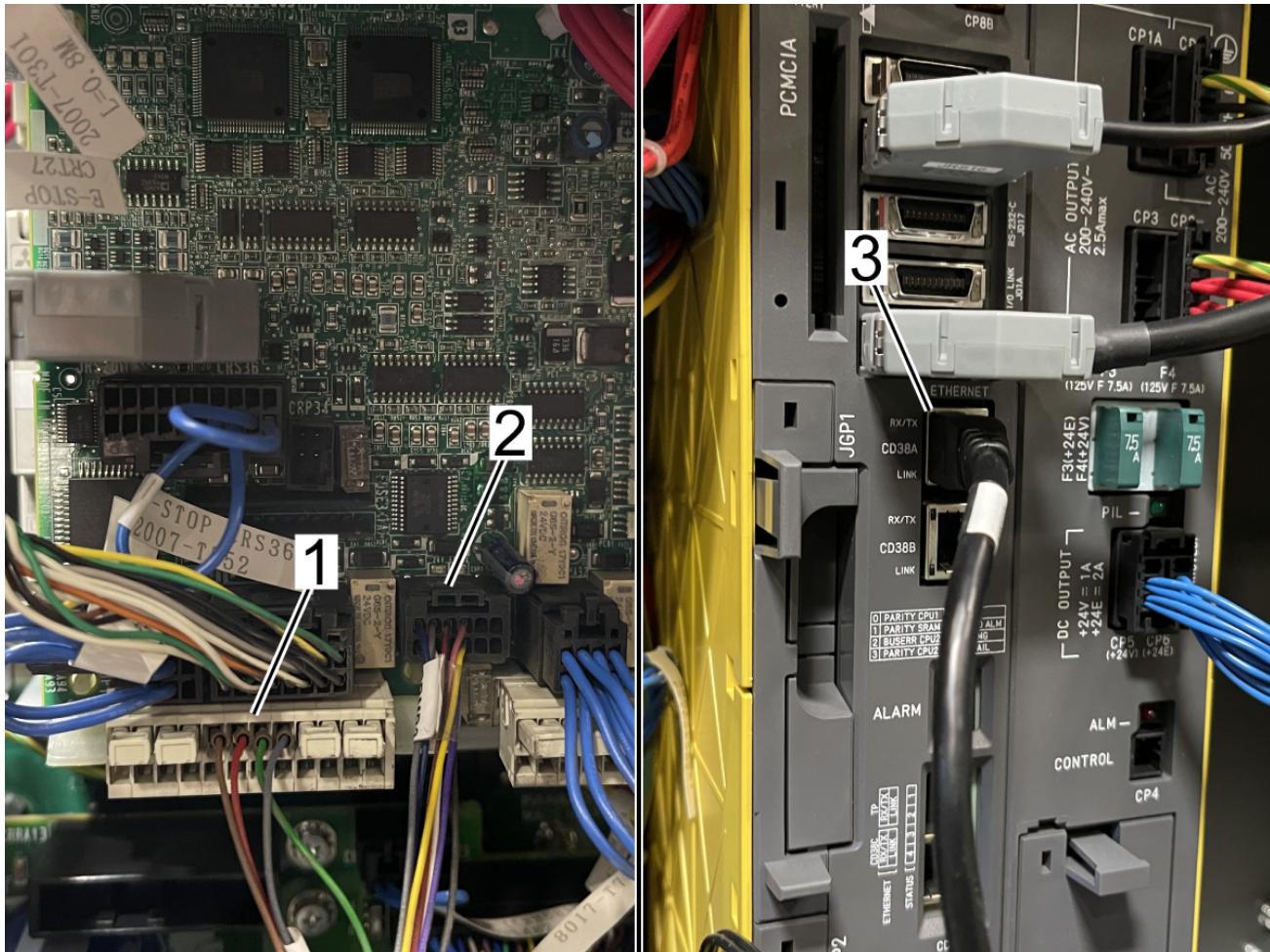
If cable **33-8591A** or **33-8592A** is not installed to the Fanuc Control box, perform the following steps:

Route the cable through the back of the Fanuc Control box.

Remove the connector at TBOP20[1] inside the Fanuc Control box.

Remove the jumpers and install the wires in the connector in the following order with the tool included in the Fanuc Install kit.

Note: Both tools need to be used to install the ferrules.



4

Install the cable labeled **TBOP20** to connector **TBOP13[1]**.

Install the cable labeled **CRMB2** to the connector labeled **CRMB2[2]**.

Install the RJ-45 Ethernet cable labeled **ENET CD38A** to the Ethernet Port 1 labeled **CD38A[3]**.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. The key should be set to Auto Mode[2].

Make sure the **[E-STOP]** button[3] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[1].

Settings

Settings | Network | User Positions | Alias Codes | **F1** Machine Setup

Group Listings Search **F1** Machine Setup

Group	Name	Value	Unit
102 Machine Setup	C Axis Diameter	1.0000	IN
336 Machine Setup	Bar Feeder Enable	Off	
340 Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359 Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368 Machine Setup	Live Tooling Type	None	
372 Machine Setup	Parts Loader Type	Robot	
375 Machine Setup	APL Gripper Type	None	
376 Machine Setup	Light Curtain Enable	On	
378 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413 Machine Setup	Main Spindle Load Type	Low	type
414 Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2195 [:] Enable Right Door Fully Open Switch to TRUE**
- **2196 [:] Enable Left Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**

The screenshots show the 'Current Commands' interface in the 'Robot' section of the software. The top screenshot is from the 'Jogging' tab, and the bottom one is from the 'Setup' tab.

Jogging Tab (Top Screenshot):

- Current Position:**

X	-0.2606
Y	14.1384
Z	6.0865
W	-176.0093
P	-87.2172
R	86.7410

- Enter the maximum speed limit for robot jogging:**

Operation	Value	Units
Coordinate Type	Cartesian	
Tool Frame	WORLD FRAME	
User Frame	WORLD FRAME	
Maximum jogging Speed	9.8	inch/sec
Single Part Mass	0.000	lbs

F2 Unclamp Raw Gripper

Setup Tab (Bottom Screenshot):

 - Robot Setup:**

Operation	Value	Units
Max Robot Speed	156.969	inch/sec
Gripper Net Mass	7.000	lbs
Number of Grippers	2	
Raw Gripper	Value	Units
Clamp Output	4	
Unclamp Output	3	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	
Finish Gripper	Value	Units
Clamp Output	2	
Unclamp Output	1	

3

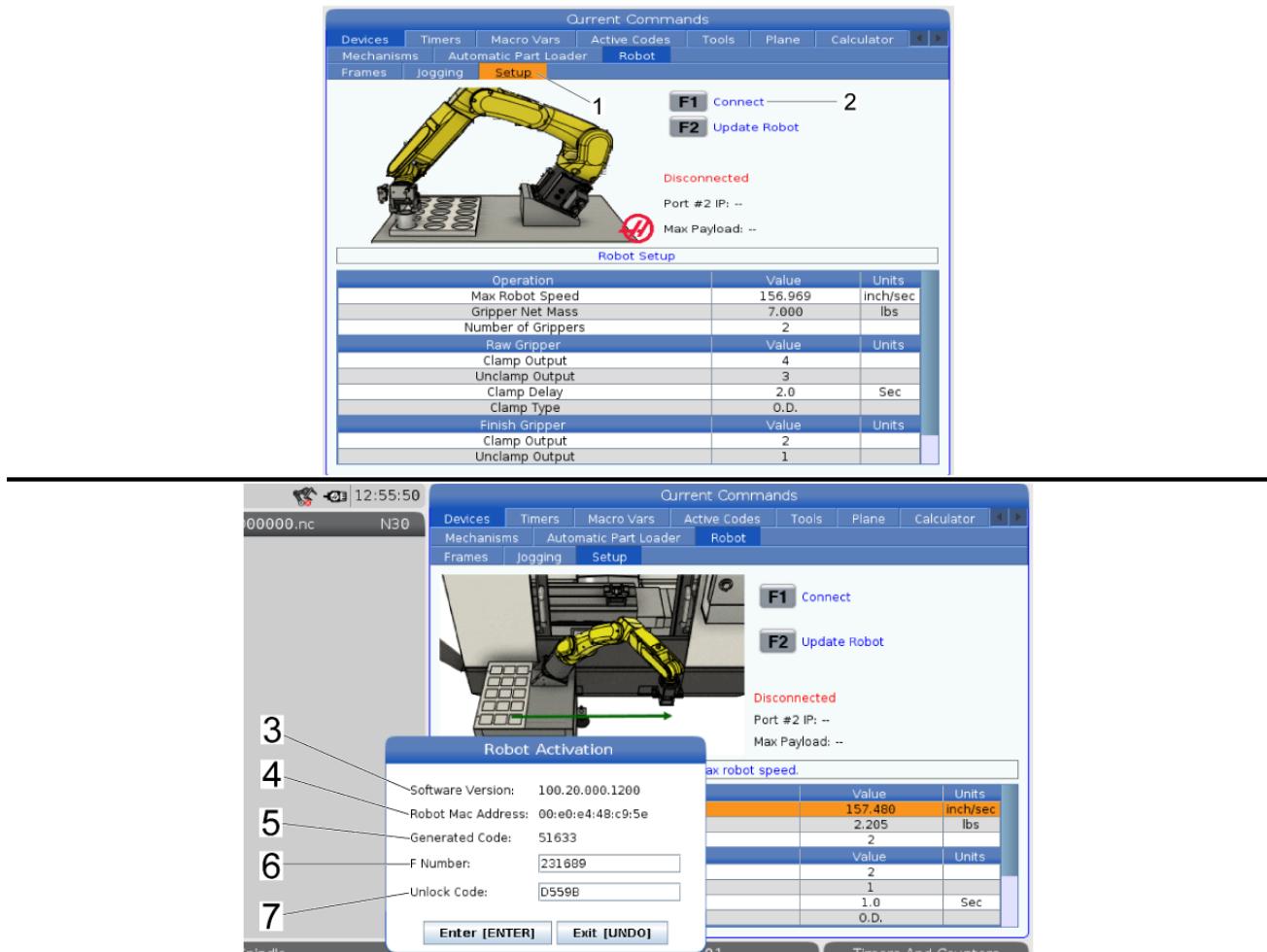
Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to 7.9 in/sec (200 mm/sec).

Go to the **Setup** tab. Change the following:

- **Max Robot Speed** to **157 in/sec (4000 mm/sec)**.
- **Gripper Net Mass** to **7.0 lbs**.
- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **1**.
- **Raw Gripper Unclamp Output** to **2**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup** tab[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

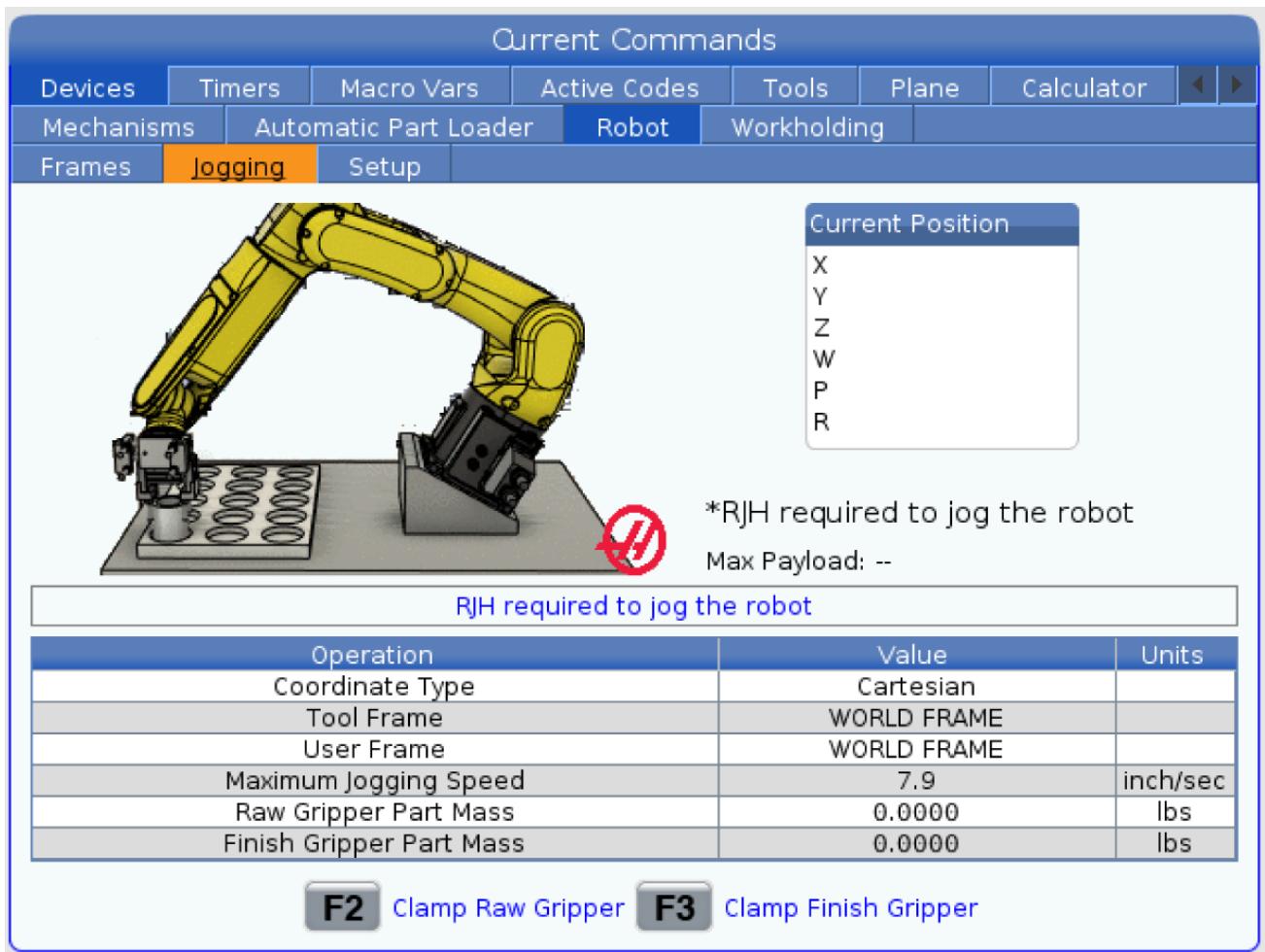
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press [INSERT] to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

Note: The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed. See Setup/Run mode section below.

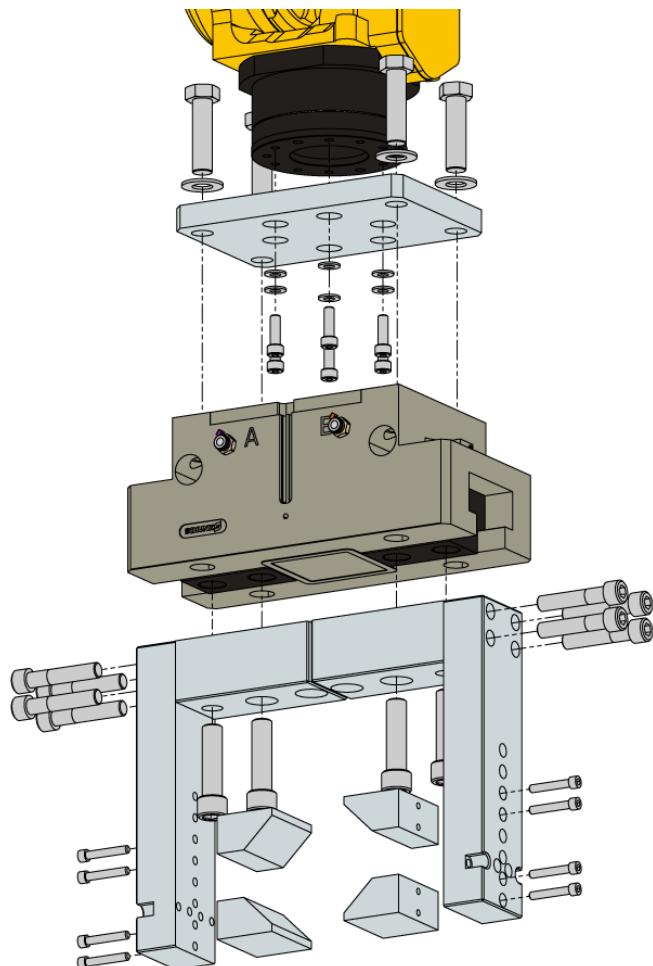
On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

Jog the robot from its shipping position to a safe position.

Note: Press **[Emergency Stop]** before working on the robot.

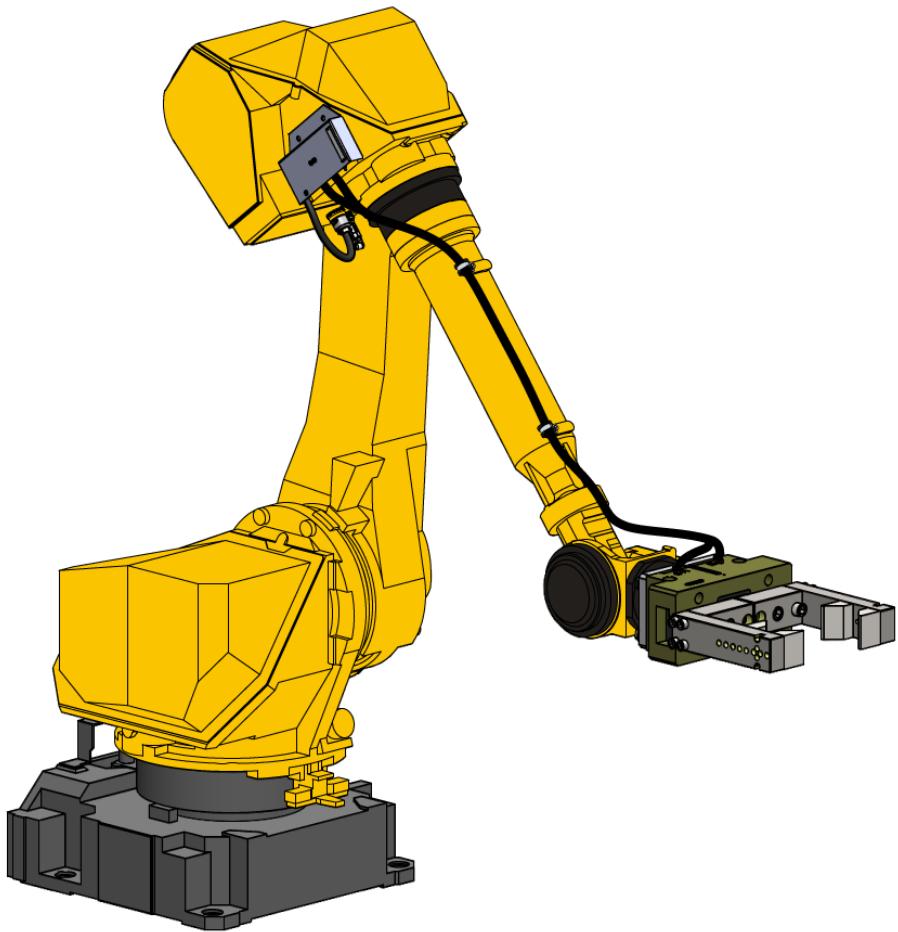
Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Installation



1

Install the gripper to the robot end effector mounting face.



2

Route the air lines between the solenoid on robot arm and the gripper. Connecting the airlines to the corresponding color coded fittings.

Install conduit to each pair of air lines. Use the cable clamps to secure the conduit and airlines on the robot arm.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.
- Check the light curtain/fence icon show on the screen. If the icon does not show, verify wiring, alingment and factory setting: **2191 [694:] LIGHT CUTAIN TYPE** is set to **LC_TYPE_1**.

Test the operation of the grippers:

- Verify the gripper clamps and unclamps correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

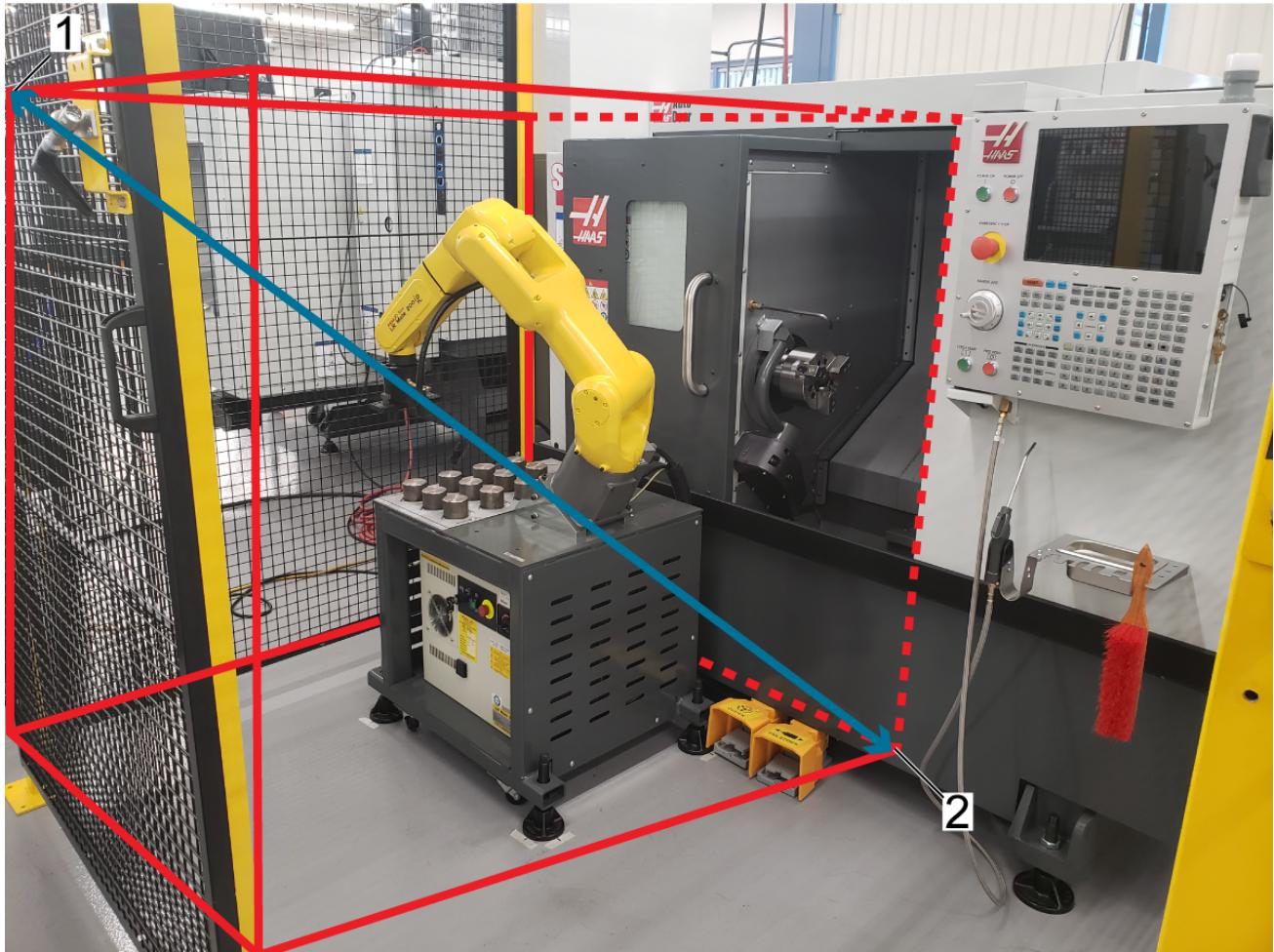
Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.

- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

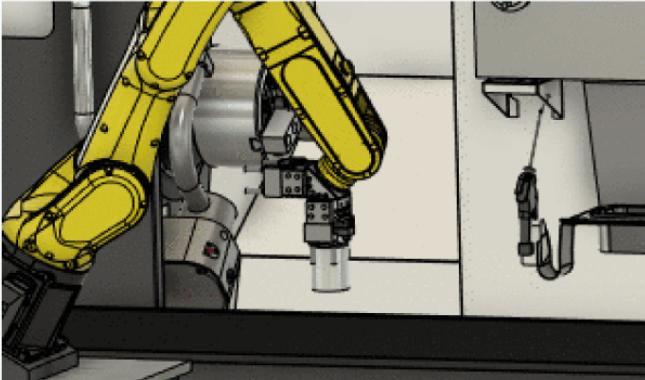
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

FANUC Dual Check Safety (DCS) – Setup

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	◀ ▶
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job				



F2 Record Position
F3 Clamp Gripper # 2
F4 Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Dwell	OFF	Sec

◀ Previous
Next ▶

After installing the robot, set up a job following the procedure below.

Haas Robot - Quick Start Guide

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time		0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	PulseJet Injection Cycle Time		1.000	Sec
370	Miscellaneous	PulseJet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

[View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package 3 - Lathe - Installation

Under Construction

Introduction

This procedure will show you how to install the Haas Robot Arm Package-3.

Note: The Haas designed work cell made up of a CNC machine and a robot have been evaluated for compliance to CE requirements. Changes or variations to the Haas cell design should be evaluated for compliance to the applicable standards and are the responsibility of the user/integrator.

Machine Requirements:

- 100.21.000.1110 version or higher
- ST-20/25/30/35/30L/35L Reboot Sheet Metal (Flat Face)
- ST-30L/35L machines must have Right Door Assembly 30-12628B or later. Machines built 10/08/2020 and later. If the machine does not have assembly, upgrade the door assembly with Door Trolley Plate 25-13911B or later.
- Haas Autodoor (See machine requirements for [CAN Auto Door](#))
- [Remote Jog Handle - XL](#) 93-1000610 REMOTE JOG HANDLE TOUCH LCD (RJH-XL)
- [I/O PCB HINGE DOOR](#) 93-1000297 I/O DOOR ASSY HINGED

Note: If the machine has the Parts Catcher option installed. The catch tray will interfere with the robot and will need to be removed. A custom sheet metal panel will need to be made to cover and seal the opening.

Fixing / Anchoring Requirements

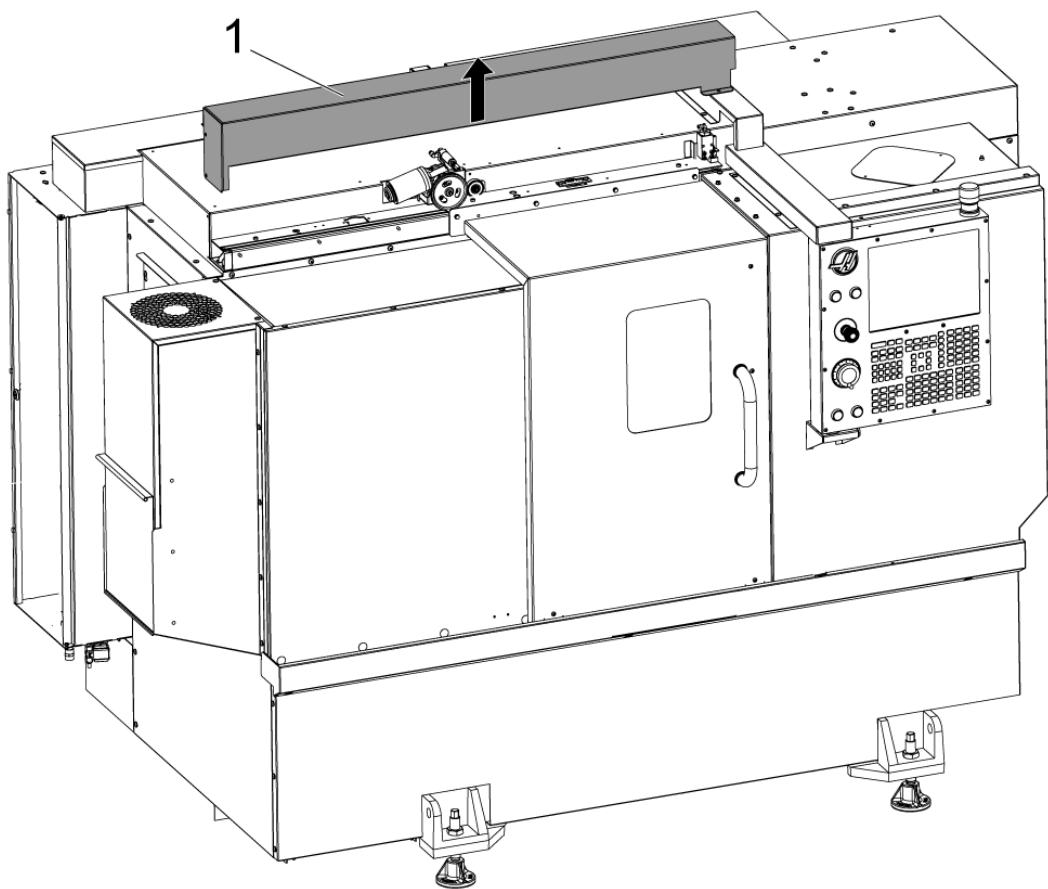
The Haas Robot Package 3 needs to be anchored according to Fanuc's recommendation to be sufficiently stable when used according to Haas defined part size and weight limits. See the Robot Anchoring section below.

The Haas Robot Package Includes the following Components:

- **30-13008** Robot PKG-3 Fence Kit (fencing with gate to enclose the operators station)
- **32-0909** Gate Interlock
- **32-8583A** Remote E-Stop Assembly (includes holster and 50' foot cable for remote handle jog)
- **32-8582A** HRP-3 Electrical Interface Box Assembly (Includes robot signals and power cables)

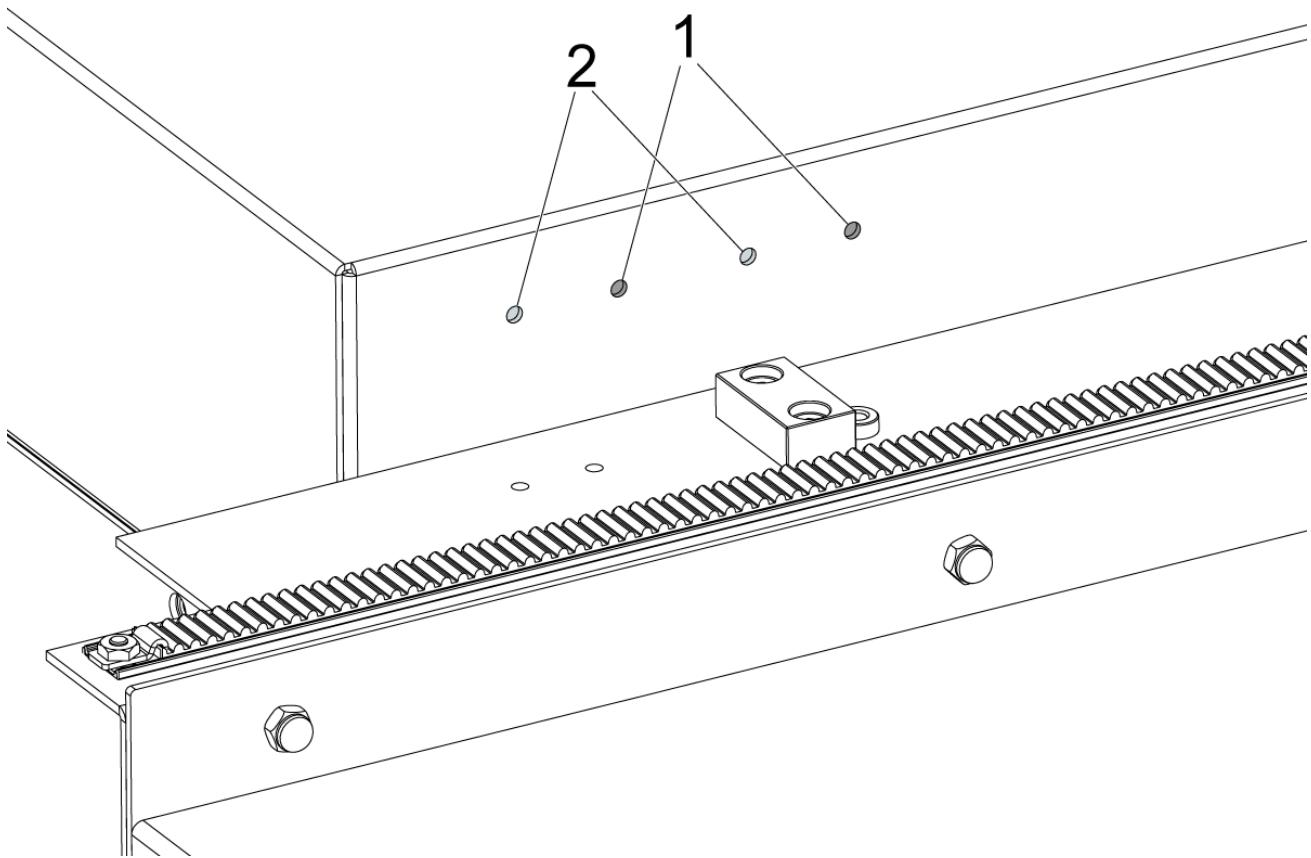
Note: The parts above are subject to change and there will be some variation depending on build date.

Lathe Setup



1

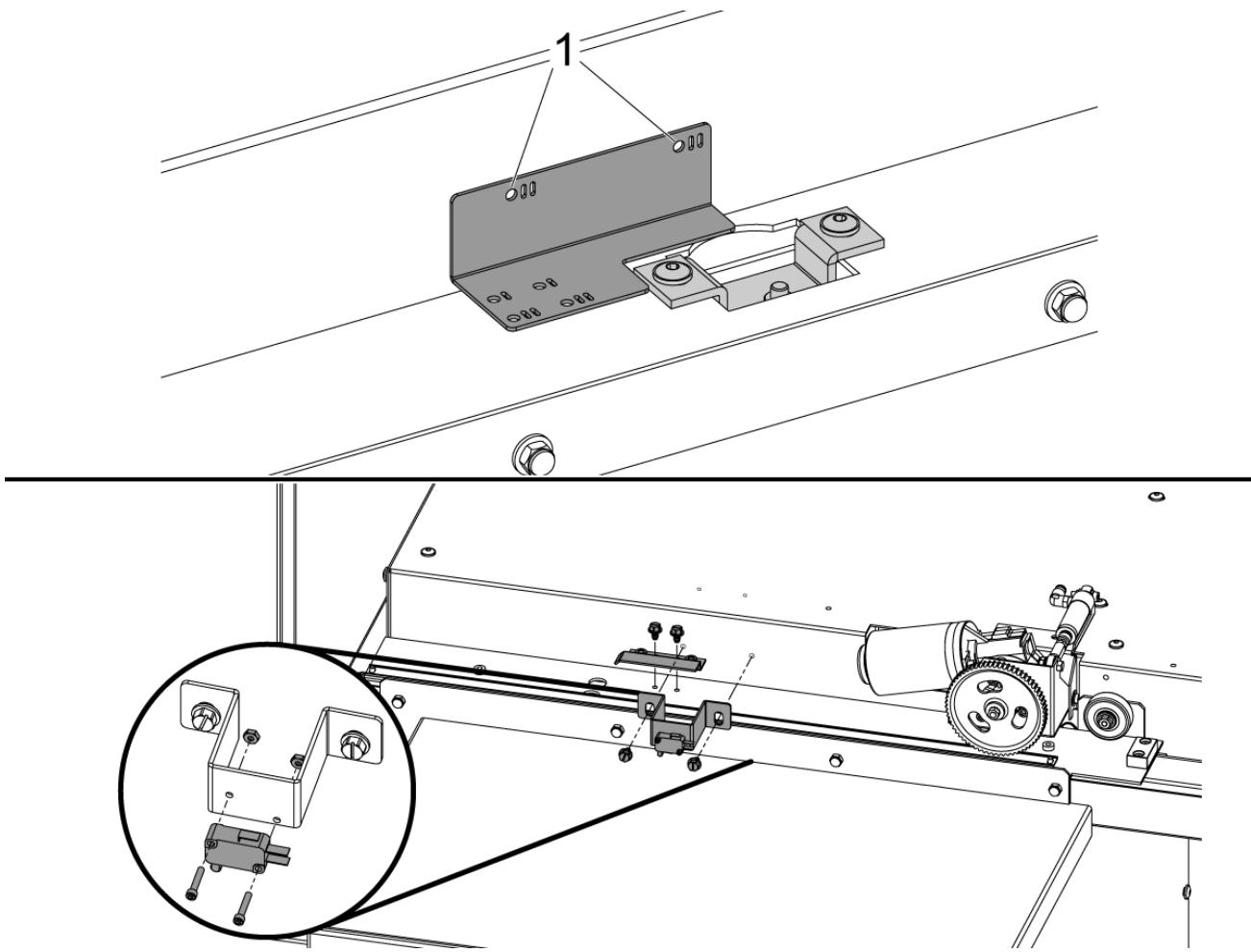
Remove the auto door cover [1].



2

ST-20/25/30/35:

For machines with the switch bracket holes on the roof panel. Install the switch bracket to the right pair of holes**[1]** for **ST-20/25** and the left pair of holes**[2]** for **ST-30/35**.



3

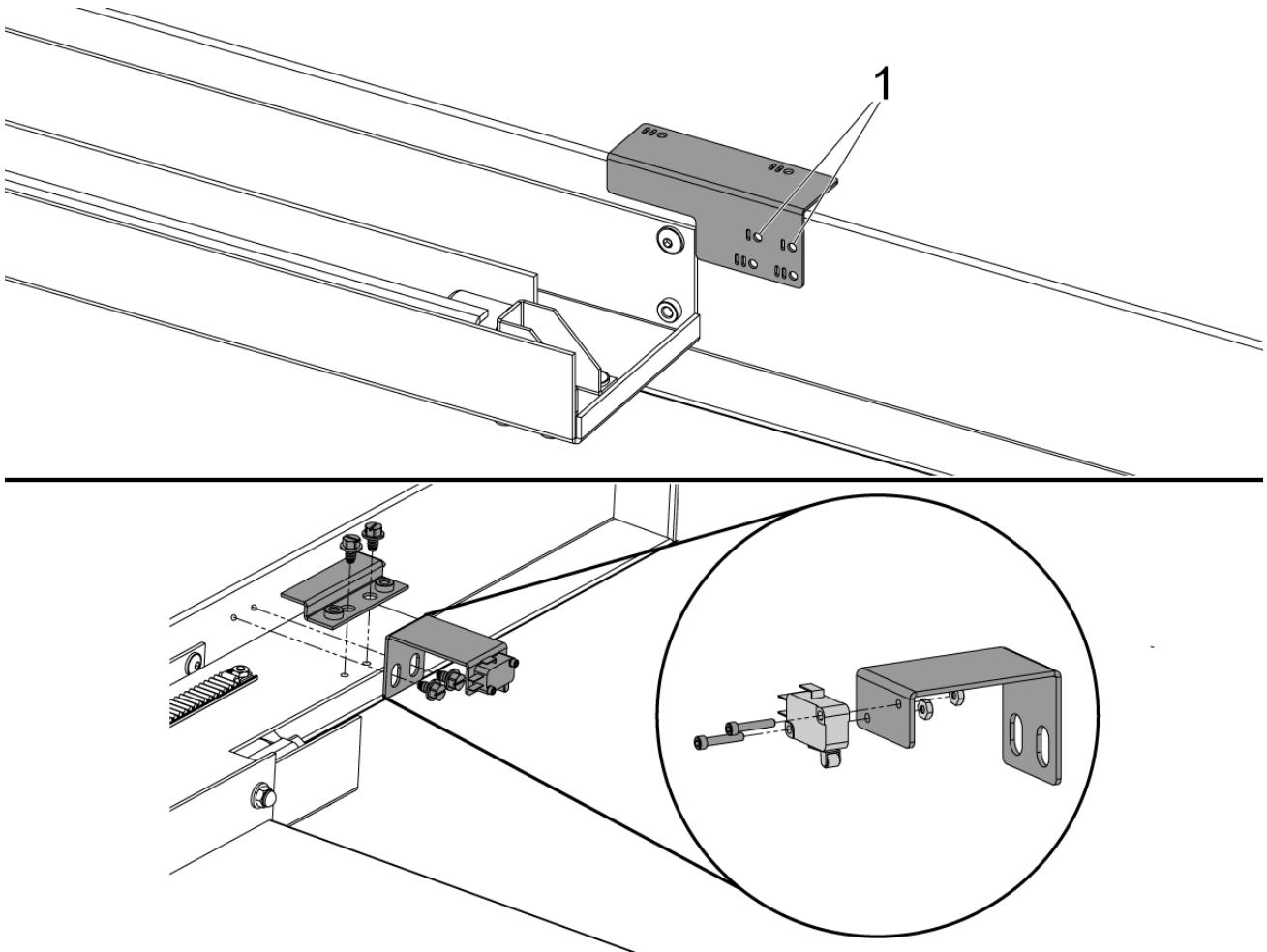
ST-20/25/30/35/30L/35L:

For machines without the switch bracket holes on the roof panel. Use the provided drill guide to drill the mounting holes for the Left Door Fully Open Switch.

With the door fully open, place the drill template against the door roller adjustment plate.

Drill the two Ø3/16" (4.7mm) mounting holes through the drill guide holes that are marked with two slots[1].

Using the provided self tapping screws, install the Door Fully Open Switch assembly and the Door Fully Open Switch Flag.



4

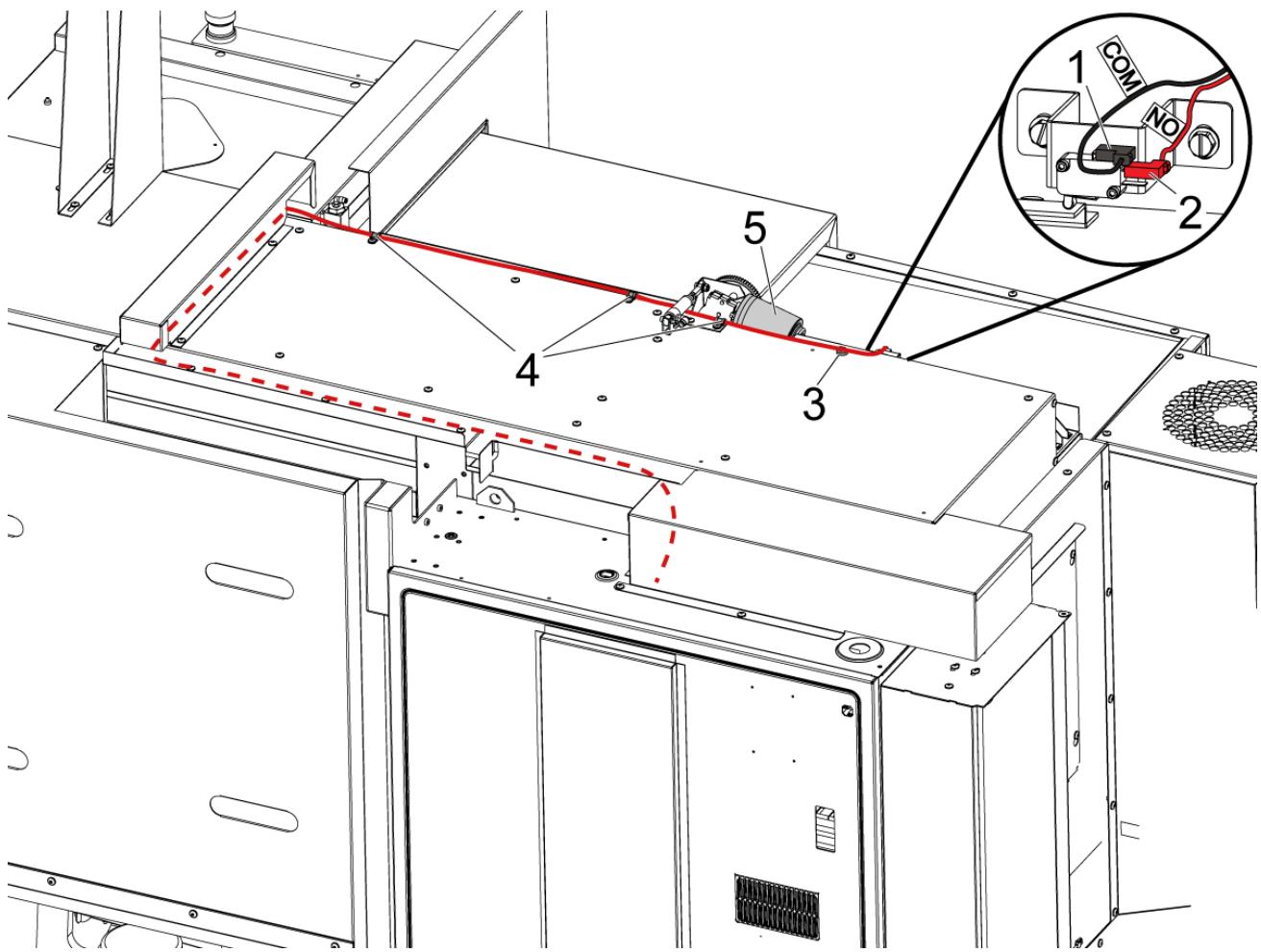
ST-30L/35L:

Use the provided drill guide to drill the mounting holes for the Right Door Fully Open Switch.

Place the drill template on the top enclosure and against the Door Track Mount.

Drill the two Ø3/16" (4.7mm) mounting holes through the drill guide holes that are marked with one slot[1].

Using the provided self tapping screws, install the Door Fully Open Switch assembly and the Door Fully Open Switch Flag.



5

Connect the Door Fully Open Switches as labeled:

- BLK <COM> to the top terminal [1].
- RED <NO> to the middle terminal [2].

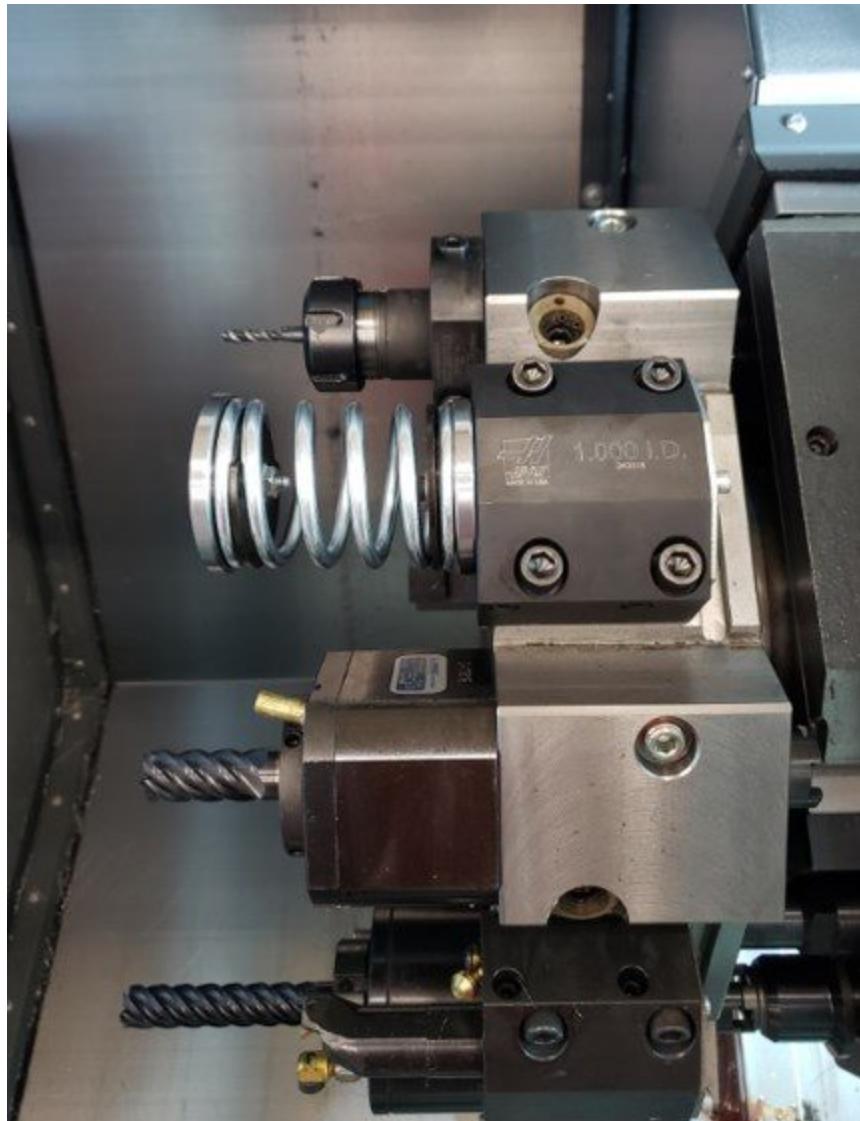
Route the cables into the control cabinet as shown on the picture.

NOTE: Make sure to install the provided magnetic clip [3] and cable clamps [4] to keep the cable clear of the moving autodoor motor [5].

If a single door machine, connect the other end of the cable to the **SIO P27** RRI Door Open input.

If the a dual door machine, connect the left door cable to **SIO P27** RRI Door Open input and the right door cable to **SIO P72** RRI Door Open input.

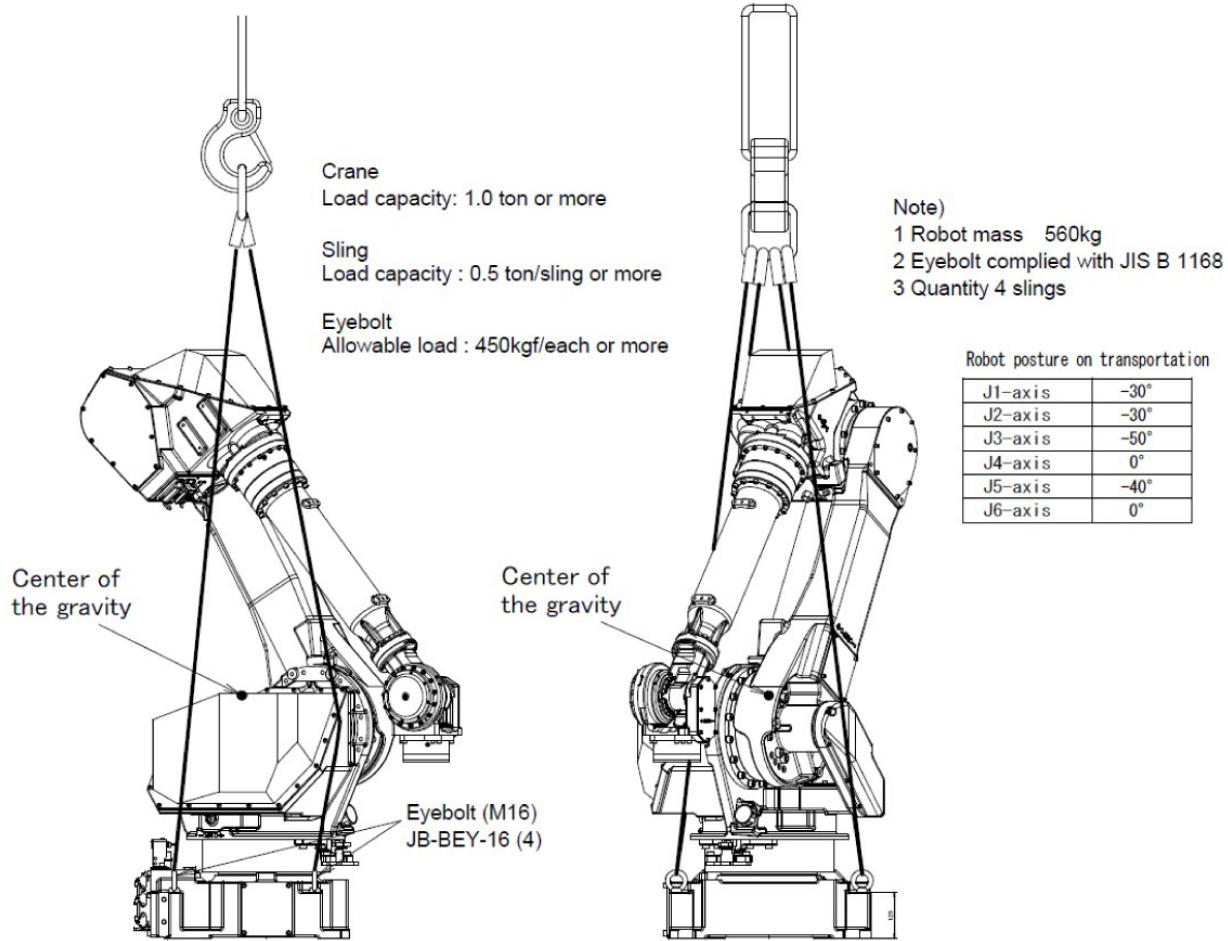
Install the autodoor cover.



6

- The APL spring pusher is made with a shank to fit either a 25mm or 1" tool holder
- This tool must take up a toolholder on the turret
- If the machine is a ST-10/15 you will need two empty toolholders to allow enough space for the gripper
- Program the following steps to the beginning of any program to make sure the part is properly seated into the chuck:
 - Locate the spring pusher in front of the part
 - Move the Z axis to compress the spring about 0.50 inches or 12.7 mm
 - Open the chuck with a dwell of one second
 - Close the chuck with a dwell of one second
 - Retract the turret to the safest position possible

Robot Lifting



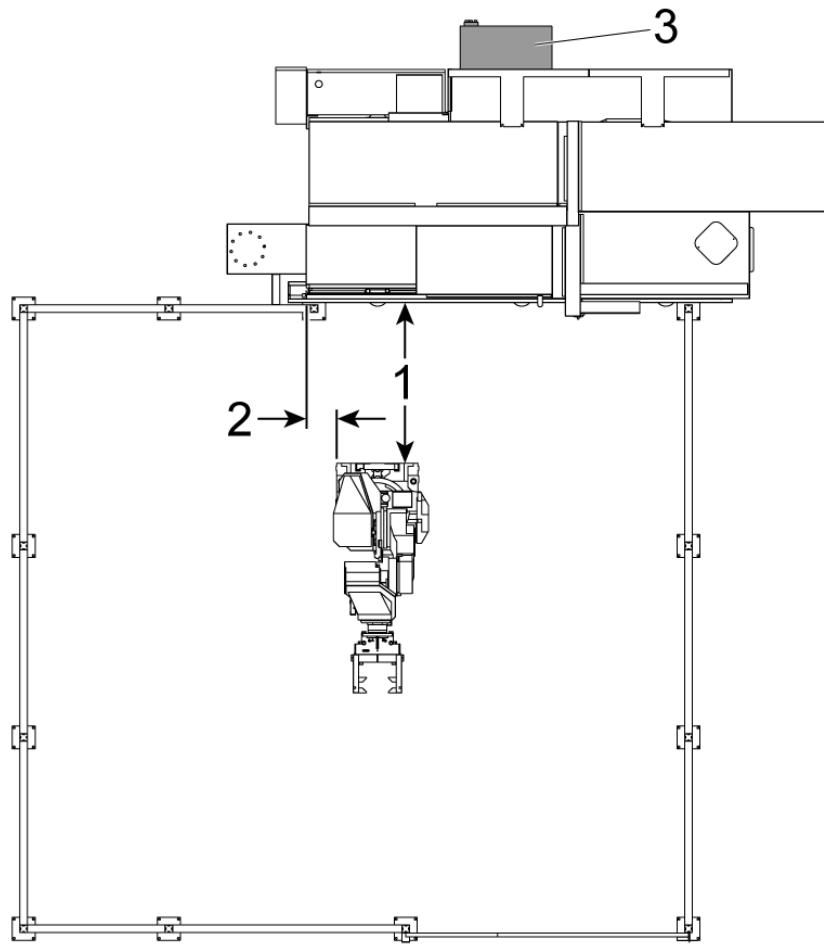
Robot Lifting Requirements

Use this information for lifting/moving Robot Package 3.

The Haas Robot Package 3 needs to be lifted according to Fanuc's recommendation. See the Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual, **Chapter 1, Section 1 Transportation** starting on page 1 for lifting/moving information.

[Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual](#)

Robot Installation



1

Place the Fanuc Control Box behind the machine next to the control panel**[3]**.

Note: The following dimensions are recommended distances. The position may vary depending on the users application.

Measure these dimensions from the machine skirt to the base of the robot.

ST-20/25

Place the robot table against the left front side of the machine. The robot should be **36.5** inches from the front of the machine**[1]**. The left side of the robot should be even with the left side of the machine**[2]**.

ST-30/35

Place the robot table against the left front side of the machine. The robot should be **36** inches from the front of the machine**[1]**. The left side of the robot should be **18** inches from the left side of the machine**[2]**.

ST-30L/35L

Place the robot table against the left front side of the machine. The robot should be **43** inches from the front of the machine**[1]**. The left side of the robot should be **14** inches from the left side of the machine**[2]**.

Robot mounting bolt

M20 x 50(4pcs)

Tensile strength 1200N/mm^2

Tightening torque 529.2Nm(54kgfm)

Base plate

Welding after positioning

10~15

32

32

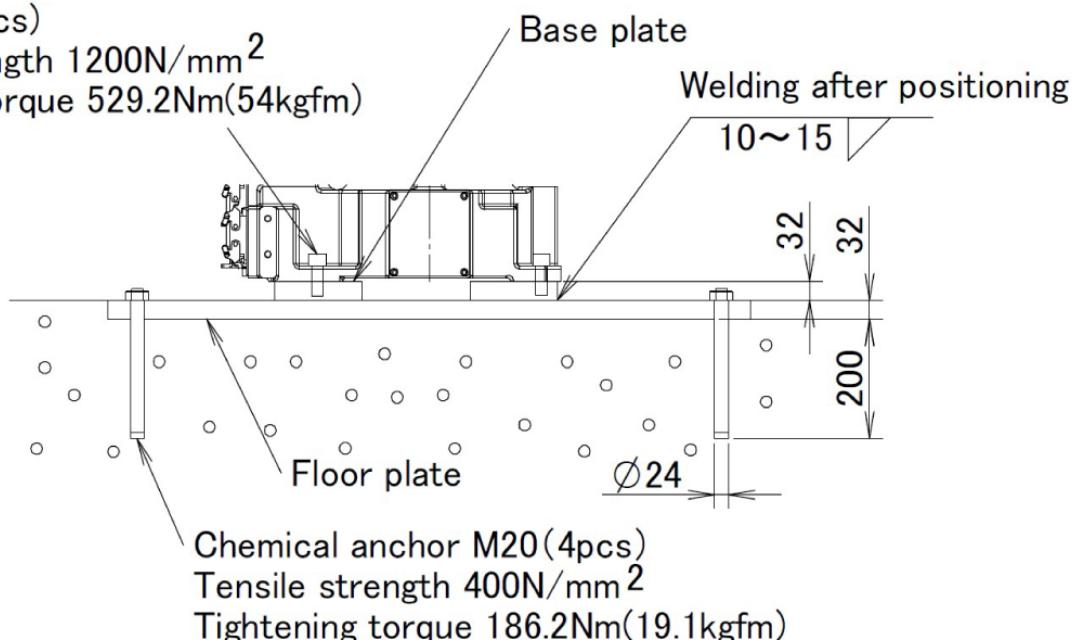
200

Floor plate

Chemical anchor M20(4pcs)

Tensile strength 400N/mm^2

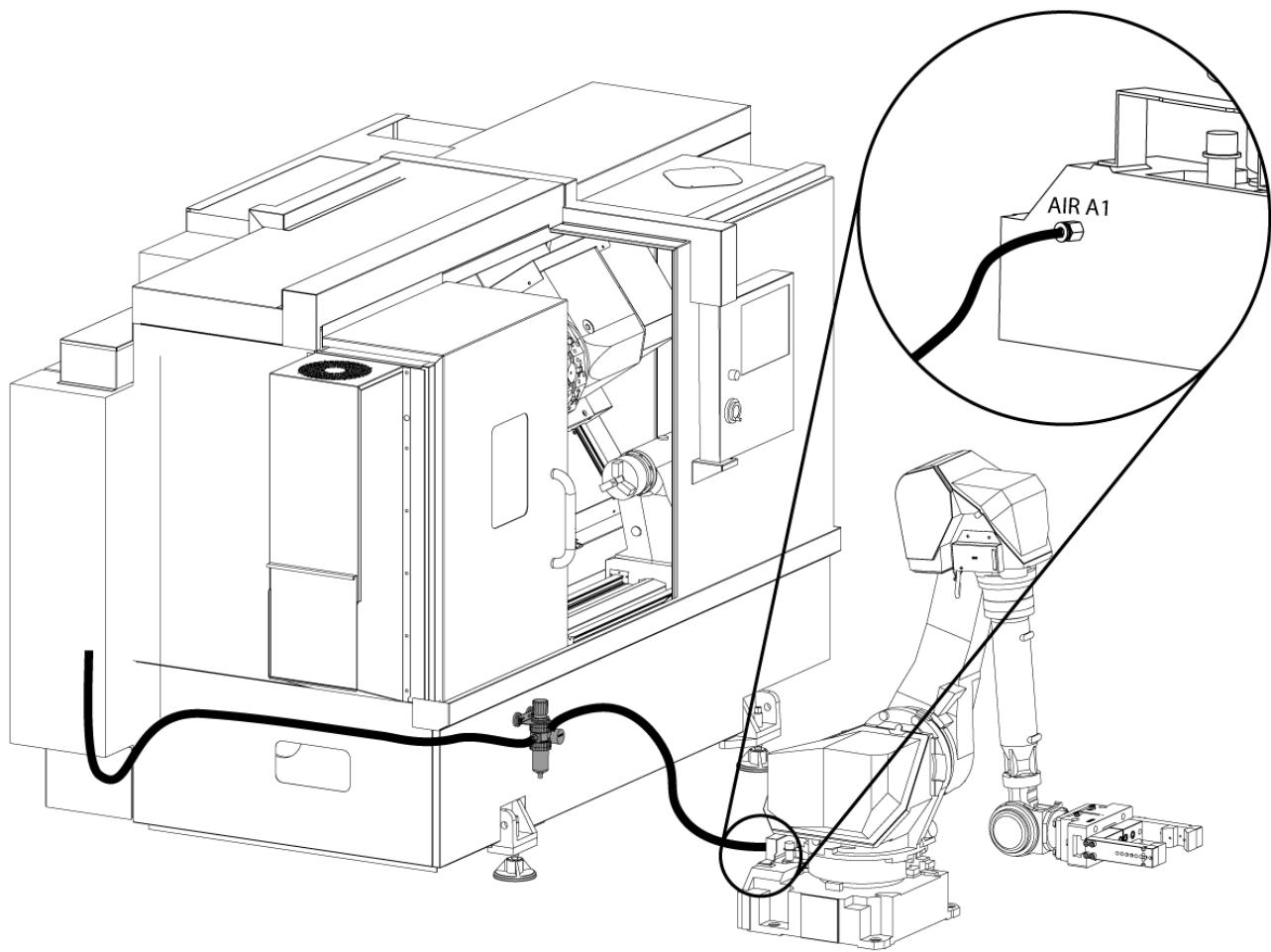
Tightening torque 186.2Nm(19.1kgfm)



2

Robot Anchoring Requirements

The Haas Robot Package 3 needs to be anchored according to Fanuc's recommendation to be sufficiently stable when used according to Haas defined part size and weight limits. See the Fanuc Robot M-710iC/50 Mechanical Unit Operator's Manual, **Chapter 1, Section 2 Installation** starting on page 7 for anchoring information.



3

Turn the machine air supply OFF.

Inside the CALM cabinet, remove a NPT plug from one of the CALM manifold ports.

The Robot Gripper Air Regulator has magnetic mounts to attach to the machine sheet metal.

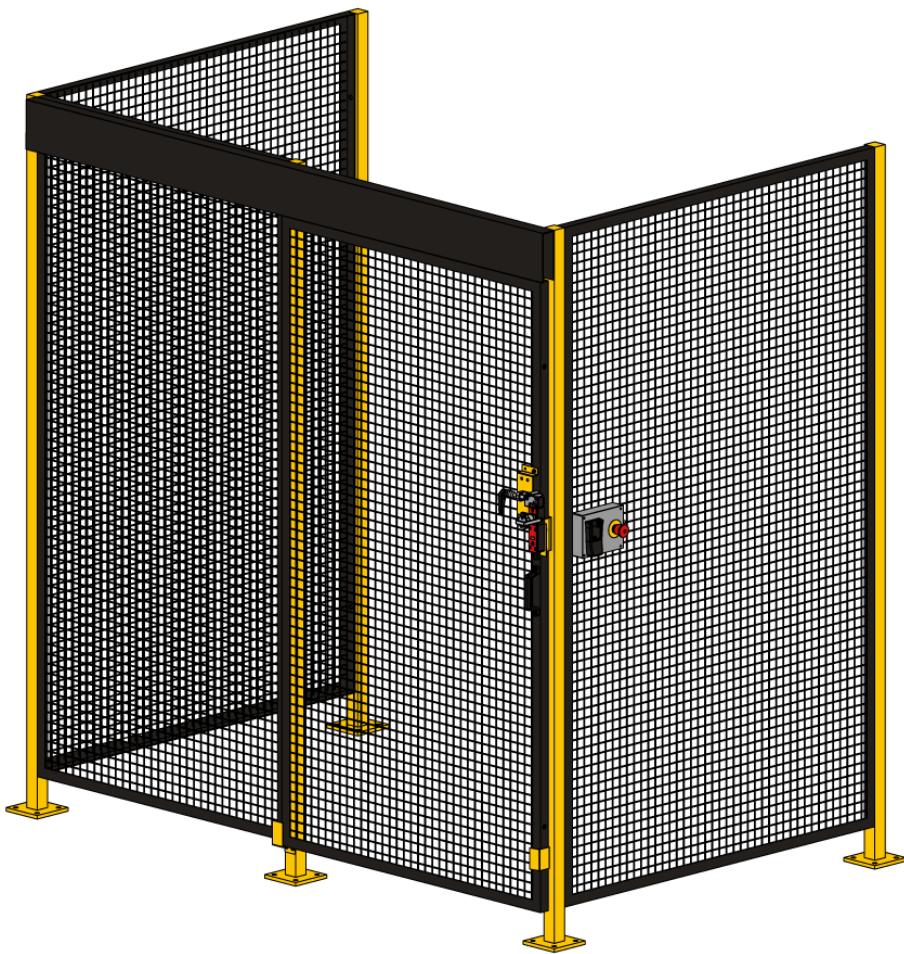
Mount the Robot Gripper Air Regulator to the front skirt of the machine to the right of the HPU.

Route the air line from the left side of the regulator to the CALM cabinet and install the push to connect fitting.

Route the air line from the right side of the regulator to the **Air A1** port on the robot and install to the push-to-connect fitting.

Turn the machine air supply ON.

Fence Installation



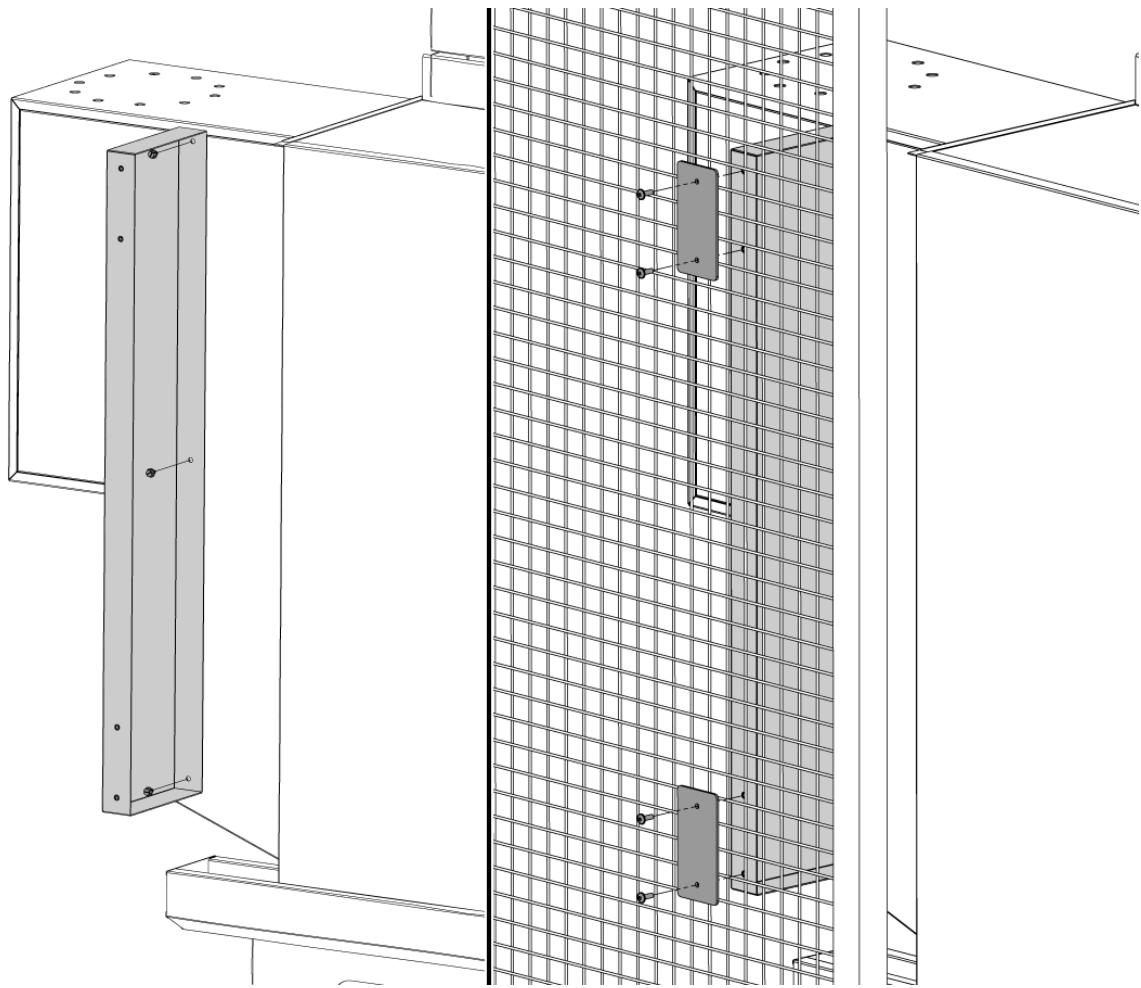
1

The robot fence, door interlock assembly, and Remote E-Stop needs to be installed with the robot and machine. Follow the procedure below for installation.

Robot Fence Installation

HRP-3 Lathe Fence Layout

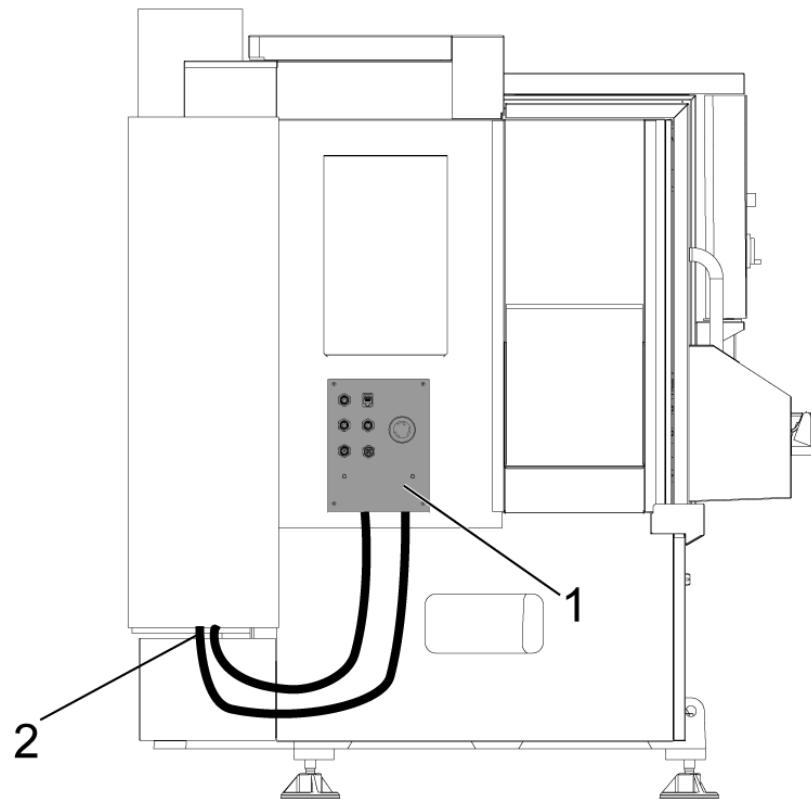
Attention: The fence anchors will use a 3/8th drill bit, they are **NOT** the same size as the robot anchors.



2

Install the fence panel sheet metal to the coolant collector sheet metal and secure the robot fence to the fence panel sheet metal.

Robot Electrical - Installation



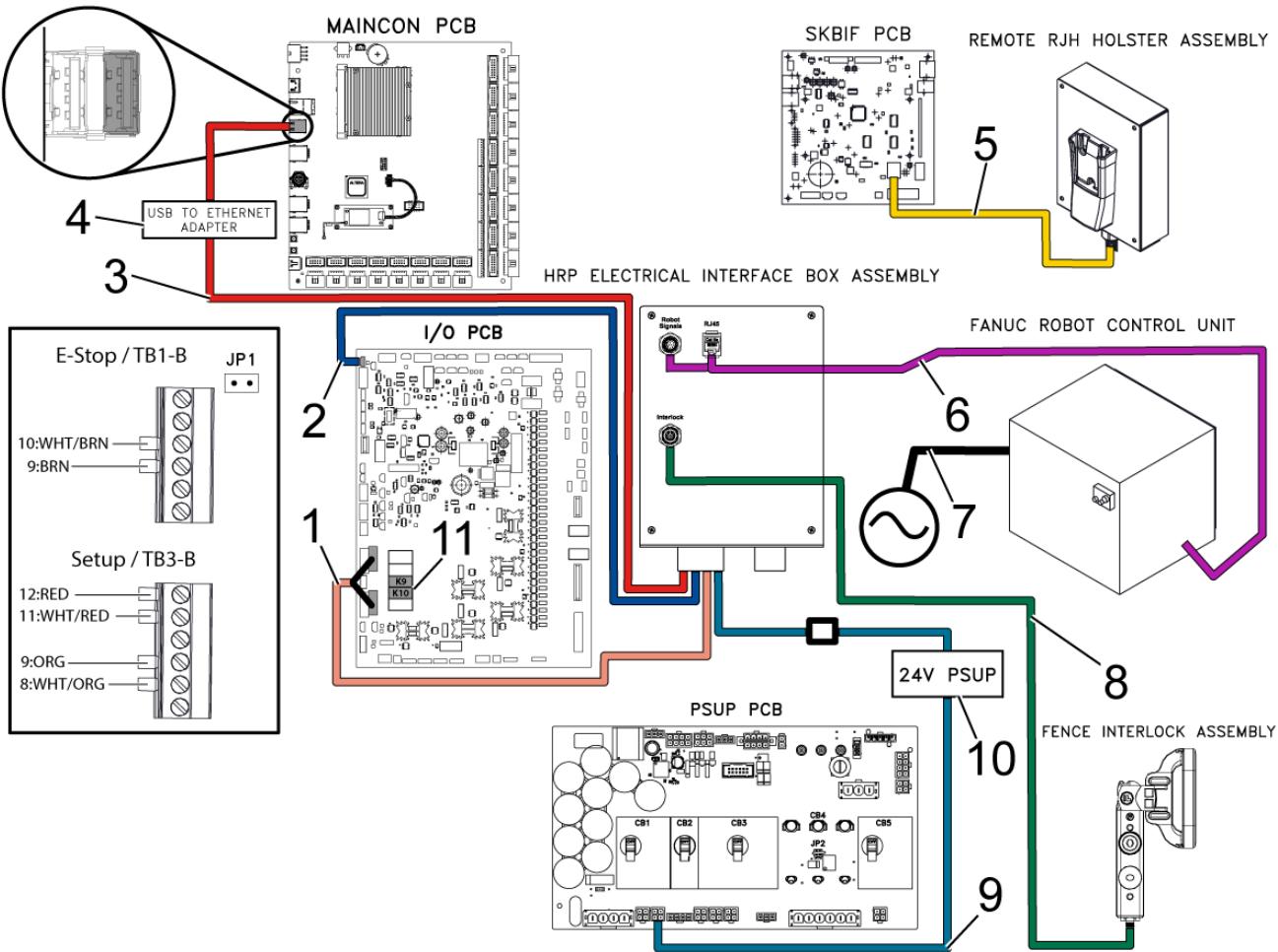
1

ST Robot Interface Mounting Location

The Robot electrical interface box has magnetic mounts to attach to the machine sheet metal.

Mount the Robot electrical interface box [1] as shown in the picture.

Route the Robot interface electrical cables [2] through the bottom of the electrical cabinet.



2

Perform the following steps to connect the robot to the Haas machine.

Robot Power

Requires separate 200-230V 3-Phase, 50/60 Hz, 7.5 kVA (20 Amp) Power Supply[7]. See the Fanuc [Startup Guide](#) for more information.

Note: It is recommended to install a strain relief cable grip to remove stress on the power cable connections and isolate the power cable from the controller cabinet.

Cable P/N **33-8562C** has multiple connections:

I/O PCB

- Connect the E-STOP terminal block connections to SIO PCB **TB-1B** (see diagram)[1].
- Connect the Setup mode terminal block connections to SIO PCB **TB-3B** (see diagram) [1].
- Plug the User Relays into **K9** and **K10**. (see diagram)[11].
- Connect the cable labeled **P1 SIO** to the SIO PCB at **P1[2]**.

Note: Do not plug anything into the connector **FILTER OV FAULT**.

Maincon PCB

Connect the **RJ-45** cable [3] to Ethernet to USB adapter [4] (**P/N 33-0636**). Connect the **USB connector** end to the **Maincon PCB J8** top port (see diagram). Add a ferrite filter **64-1252** to the USB adapter.

PSUP PCB

Mount the 24VDC Power Supply[10] to the left side of the control cabinet and plug into connector labeled **24V PS** on cable **33-8562C**. Connect cable **33-1910A**[9] to the 24VDC Power Supply[10] and plug into **P3** on the **PSUP PCB**.

SKBIF to Remote Jog Handle

- Connect the RJ12 cable **33-8550C**[5] from the Remote E-stop box to cable **33-0713** and plug into the SKBIF PCB **P9**.
- Remove the jumpers **JP2** and **JP3** on the SKBIF from the horizontal position and replace them in the vertical position.
- Plug the RJH-XL cable into the cradle.

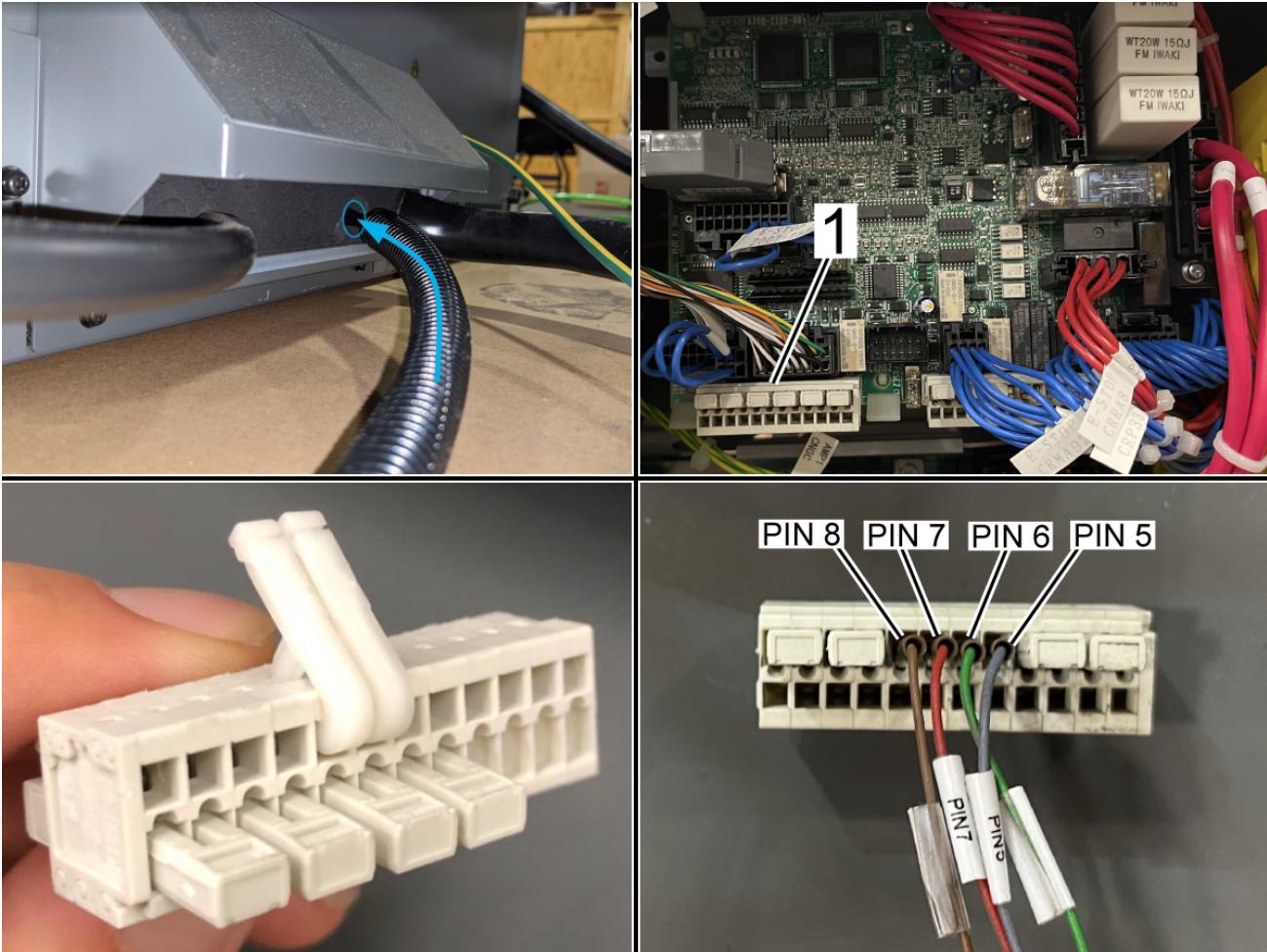
Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers MUST be inserted vertically.

Robot Electrical Box to Robot Control

Connect the Robot Control Signal Cables [6] **P/N 33-8591A** to the Robot Electrical Interface Box. Add a ferrite filter **64-1252** to the RJ-45 cable.

Fence Interlock

Connect the fence door interlock cable [8] to the electrical interface box.



3

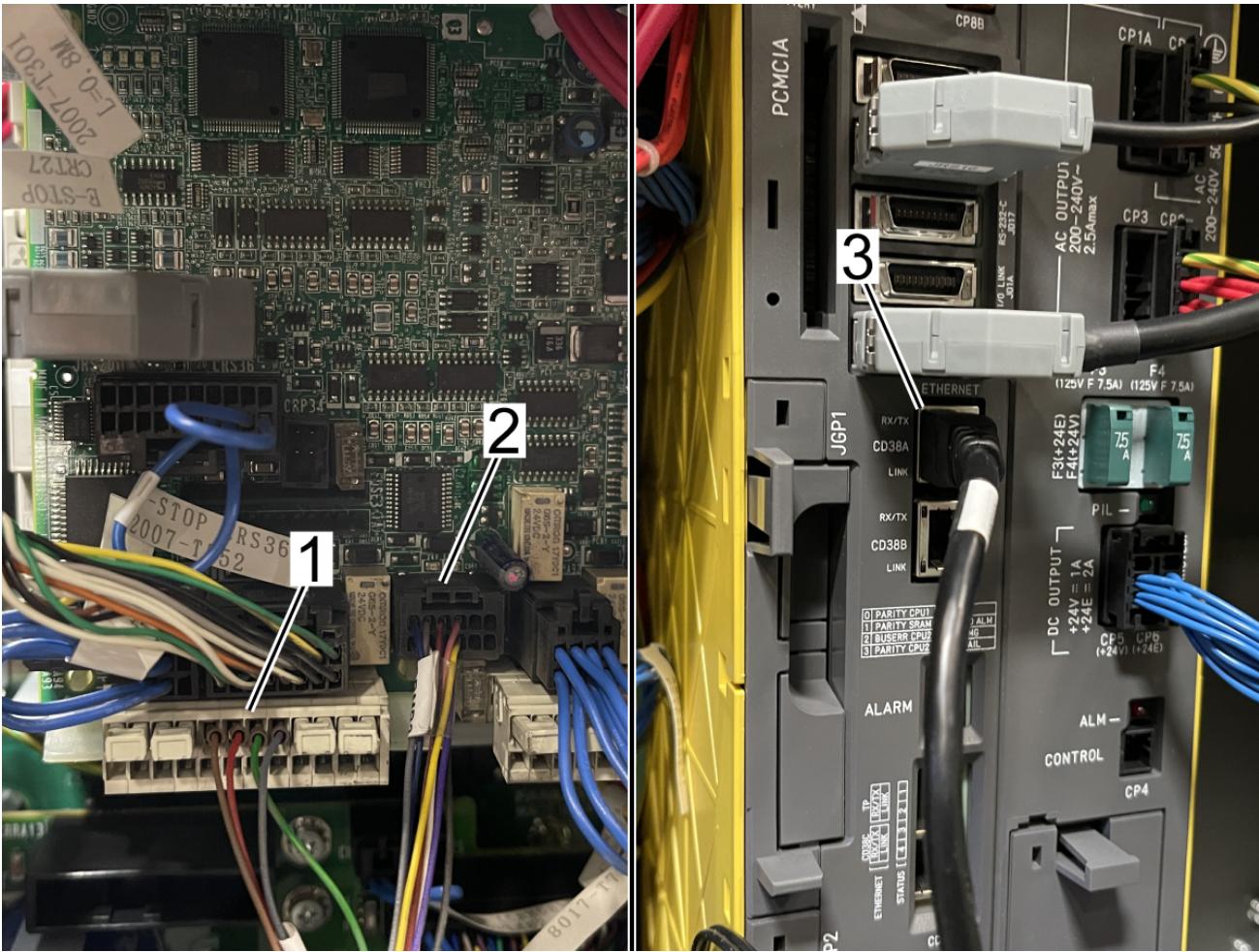
If cable **33-8591A** or **33-8592A** is not installed to the Fanuc Control box, perform the following steps:

Route the cable through the back of the Fanuc Control box.

Remove the connector at TBOP20**[1]** inside the Fanuc Control box.

Remove the jumpers and install the wires in the connector in the following order with the tool included in the Fanuc Install kit.

Note: Both tools need to be used to install the ferrules.



4

Install the cable labeled **TBOP20** to connector **TBOP13[1]**.

Install the cable labeled **CRMB2** to the connector labeled **CRMB2[2]**.

Install the RJ-45 Ethernet cable labeled **ENET CD38A** to the Ethernet Port 1 labeled **CD38A[3]**.

First Power-UP



1

Locate the Mode Switch on the Controller Operator Panel. The key should be set to Auto Mode[2].

Make sure the **[E-STOP]** button[3] is not pressed.

Turn on the Robot Control box by rotating the Breaker clockwise to On[1].

Settings

Settings | Network | User Positions | Alias Codes | **F1** Machine Setup

Group Listings Search **F1** Machine Setup

Group	Name	Value	Unit
102 Machine Setup	C Axis Diameter	1.0000	IN
336 Machine Setup	Bar Feeder Enable	Off	
340 Machine Setup	Chuck Clamp Delay Time	2.000	Sec
359 Machine Setup	SS Chuck Clamp Delay Time	0.000	Sec
368 Machine Setup	Live Tooling Type	None	
372 Machine Setup	Parts Loader Type	Robot	
375 Machine Setup	APL Gripper Type	None	
376 Machine Setup	Light Curtain Enable	On	
378 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
379 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
380 Machine Setup	Safe Zone Calibrated Geometry ...	0.0000	IN
413 Machine Setup	Main Spindle Load Type	Low	type
414 Machine Setup	Sub Spindle Load Type	Low	type

ORIGIN Restore default settings menu.

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP View full text.

2

Turn on the Haas CNC.

Zero Return all Axes.

Insert Service USB key. Go into Service mode.

Go to **Parameters> Factory** tab. Change the following:

- **1278 [1278:] Robot Ready E-Stop Enabled to TRUE**
- **2191 [694:] LIGHT CUTAIN TYPE to LC_TYPE_1**
- **2194 [:] Enable Front Door Fully Open Switch to TRUE**

Note: Machines with Software Version 100.20.000.1010 or higher will need to change the following parameter:

2192 [:] Light Curtain Trigger Threshold to 0

Press **[SETTING]**.

Set the Settings:

- **372 Parts Loader Type to 3: Robot.**
- **376 Light Curtain Enabled to On**



3

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Jogging** tab. Change the following:

Maximum Jogging Speed to 7.9 in/sec (200 mm/sec).

Go to the **Setup** tab. Change the following:

- **Max Robot Speed to 157 in/sec (4000 mm/sec).**
- **Gripper Net Mass to 7.0 lbs.**

- **Number of Grippers** to the number of grippers.
- **Raw Gripper Clamp Output** to **1**.
- **Raw Gripper Unclamp Output** to **2**.
- **Raw Gripper Clamp Delay** to the clamp/unclamp duration in sec.
- **Raw Gripper Clamp Type** to **OD/ID**.



4

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup** tab[1].

Press **[E-Stop]**.

Press **[F1]** to connect the robot[2].

The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine[3], the MAC address of the robot[4], and the Machine Generated Code[5] used for Machine Time Extension on the portal.

To activate the robot, enter the F Number[6] and Unlock Code[7].

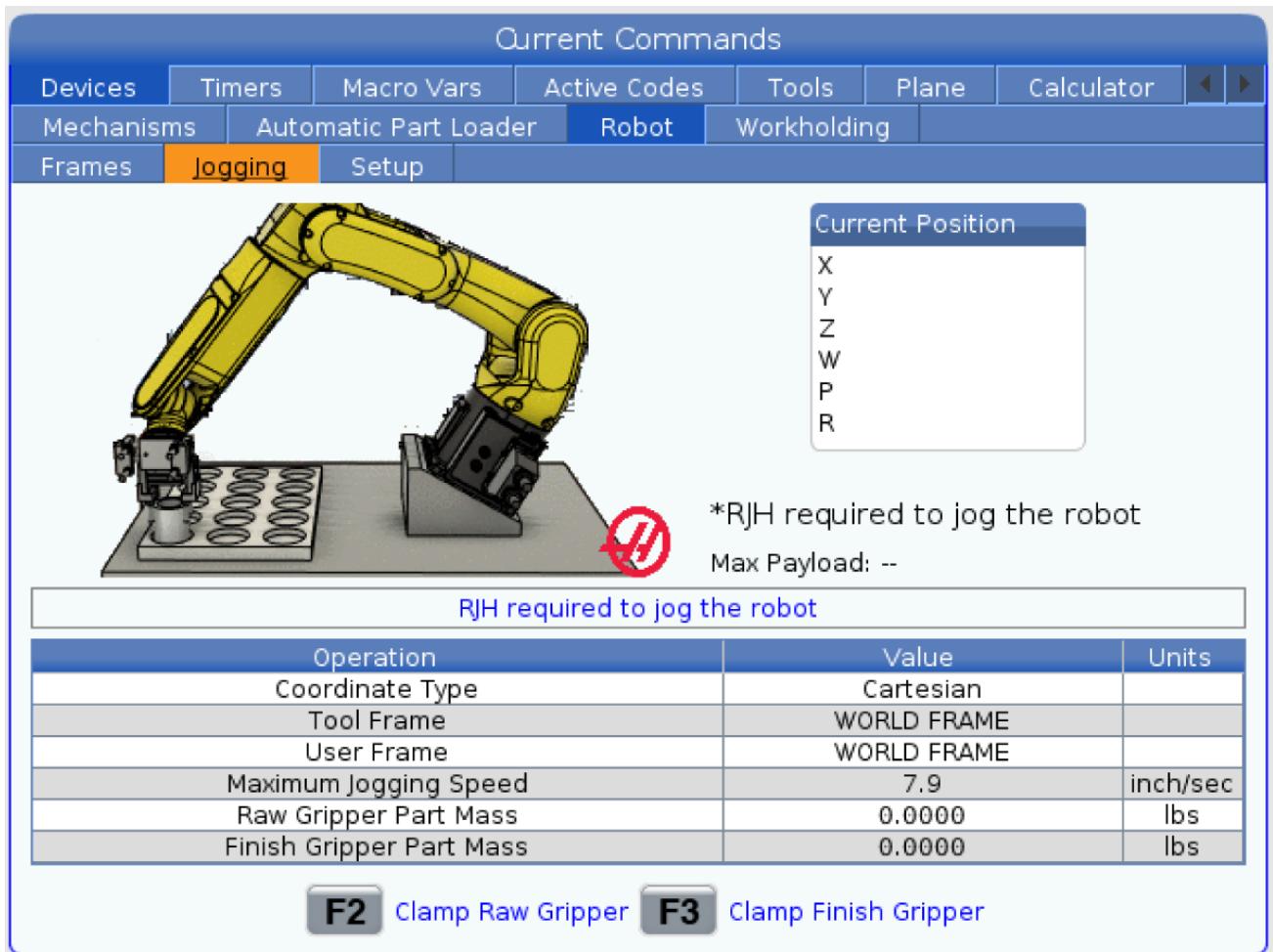
The F Number is found on the robot ID tag that is on the control panel door or on the robot arm.

The Unlock Code is generated after completing the **Robot Installation** on the [Haas Business Center](#).

For Service Activation. In Service Mode, Press [INSERT] to connect the robot. This will be disabled after a Cycle Power.

Note: This step can only be completed by a HFO Service Technician.

Note: The green button on the control box will light up.



5

Press the **[HANDLE JOG]** button.

Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.

Note: The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed. See Setup/Run mode section below.

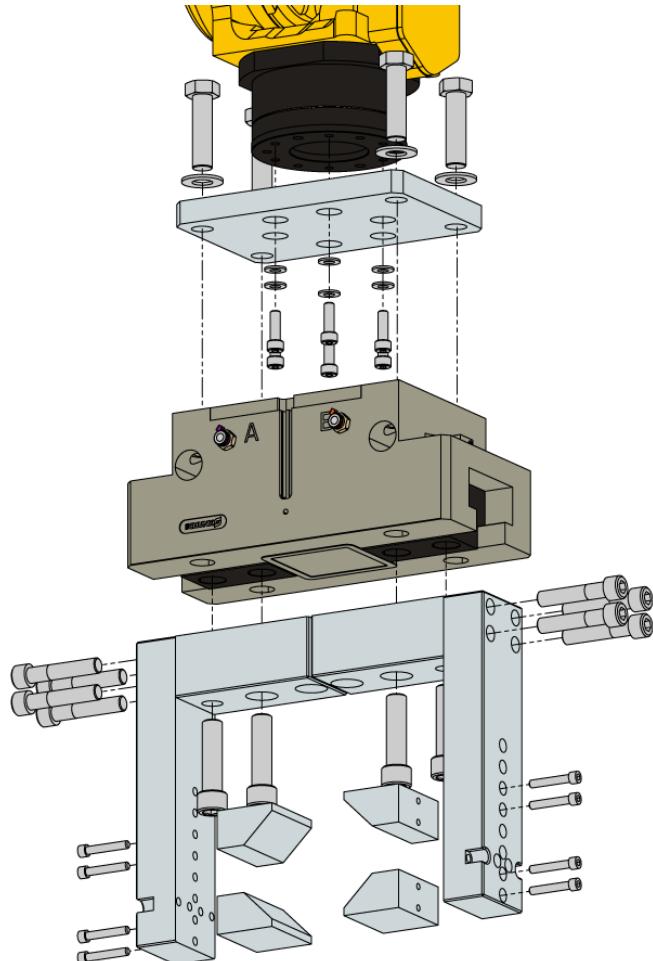
On the Remote Handle Jog Touch press the Joint button to go into the Joints Coordinates.

Jog the robot from its shipping position to a safe position.

Note: Press **[Emergency Stop]** before working on the robot.

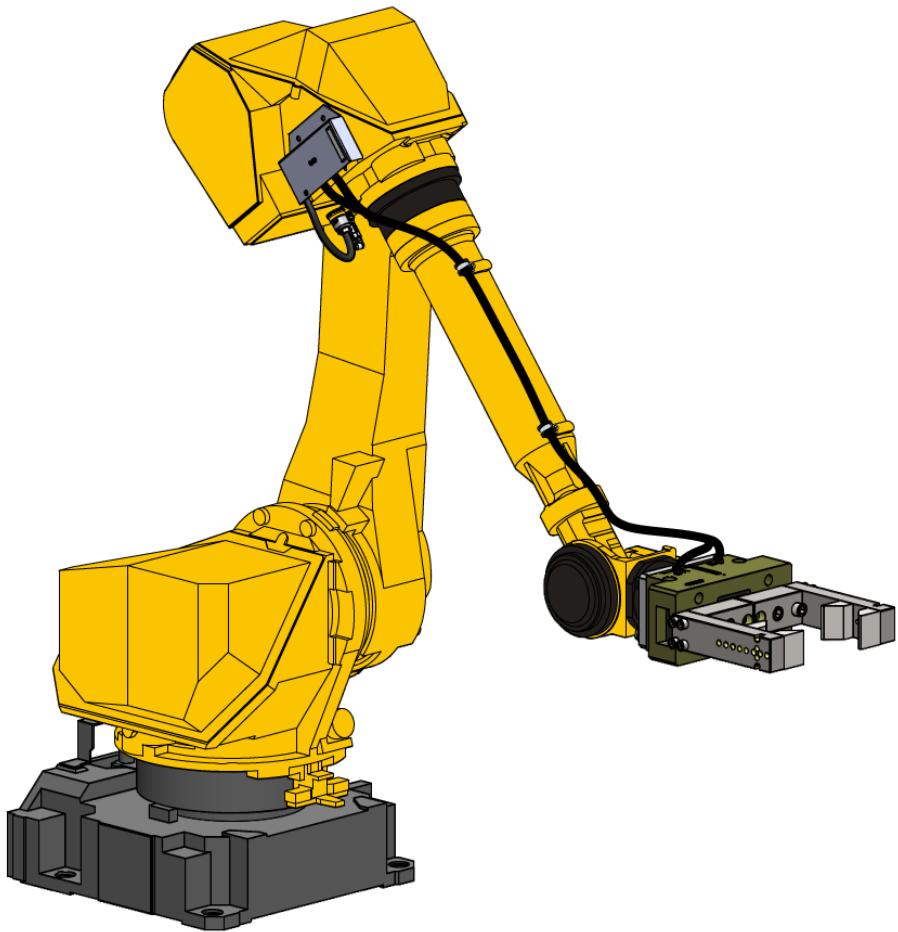
Note: Turn off the machine air by turning the valve in the Air/Lube cabinet and pull the pressure relief valve to release the air in the system.

Gripper Installation



1

Install the gripper to the robot end effector mounting face.



2

Route the air lines between the solenoid on robot arm and the gripper. Connecting the airlines to the corresponding color coded fittings.

Install conduit to each pair of air lines. Use the cable clamps to secure the conduit and airlines on the robot arm.

Note: Turn on the machine air by turning the valve in the CALM cabinet.

Verification

Test the E-stop:

Press the Pendant and External **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Test the Gate Interlock on the Fence:

- With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off.
- On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.
- Remove the key from the interlock. The two red LED lights should turn on and a warning should appear on the Haas pendant for light curtain/fence.
- Check the light curtain/fence icon show on the screen. If the icon does not show, verify wiring, alingment and factory setting: **2191 [694:] LIGHT CUTAIN TYPE** is set to **LC_TYPE_1**.

Test the operation of the grippers:

- Verify the gripper clamps and unclamps correctly.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- Press **[F3]** to clamp/unclamp the **Raw Gripper**.

Test the Remote Jog Handle:

- Undock the Remote Jog Handle
- Press the **[HANDLE JOG]** button.
- Press the **[CURRENT COMMANDS]** and go to **Devices > Robot > Jogging** tab.
- On the Remote Handle Jog press the Joint button to go into the Joints Coordinates.
- Move the robot to a safe location.

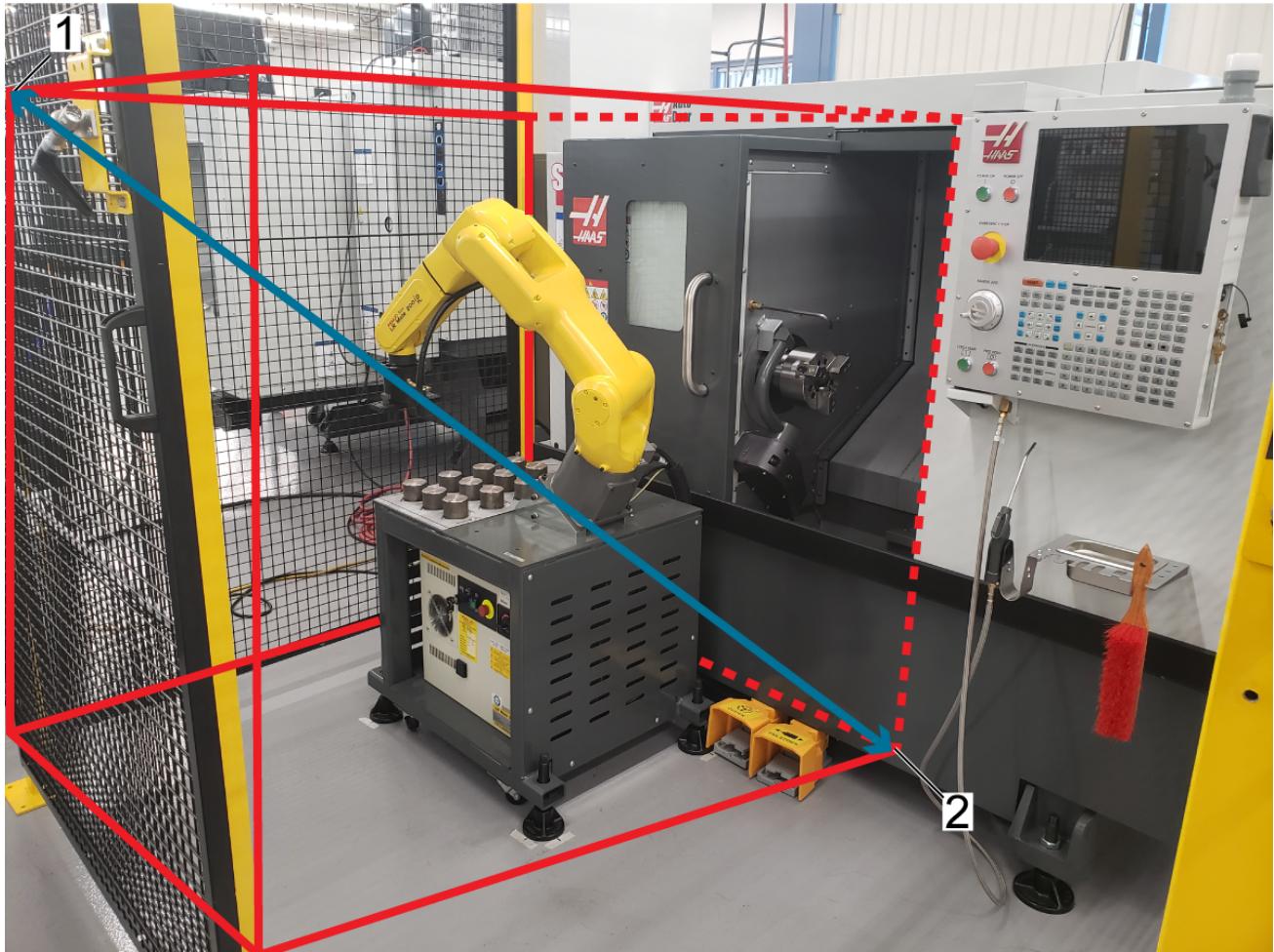
Verify Safe / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.

- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

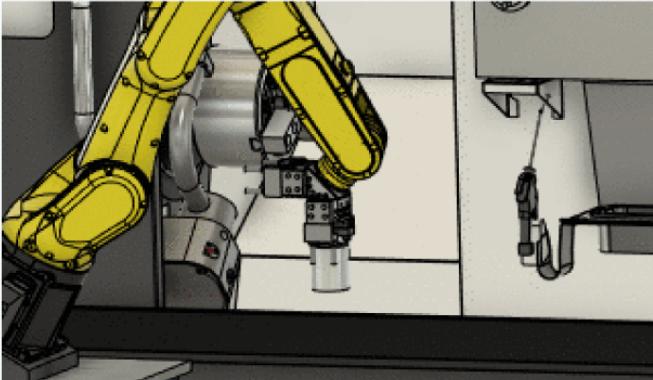
This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

FANUC Dual Check Safety (DCS) – Setup

Haas Robot - Quick Start Guide

Current Commands

Devices	Timers	Macro Vars	Active Codes	ATM	Calculator	Media	◀ ▶
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job				



F2
Record Position

F3
Clamp Gripper # 2

F4
Main Spindle Chuck

Open Gripper #2, jog RAM to spindle centerline and locate part and clamp

Name	Value	Units
Finish Workholding	Main Spindle Chuck	
Chuck Pick Up Location	robotChuckPickUpLocation.XML	
Gripper Swap Location	robotGripperSwapLocation.XML	
Load After Swap	robotLoadAfterSwap.XML	
Unload Part Motion	robotUnloadPartMotion.XML	
Finished Part Drop Off Method	Single Table	
Table Drop Off Location	X:-220.6 Y:413.2 Z:-147.2 W:-135.5 P:-0.7 R:3.3	MM
Air Dwell	OFF	Sec

◀ Previous
Next ▶

After installing the robot, set up a job following the procedure below.

Haas Robot - Quick Start Guide

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time	>	0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	PulseJet Injection Cycle Time		1.000	Sec
370	Miscellaneous	PulseJet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP [View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/fence-installation.html

Haas Robot - Fence Installation

AD0570

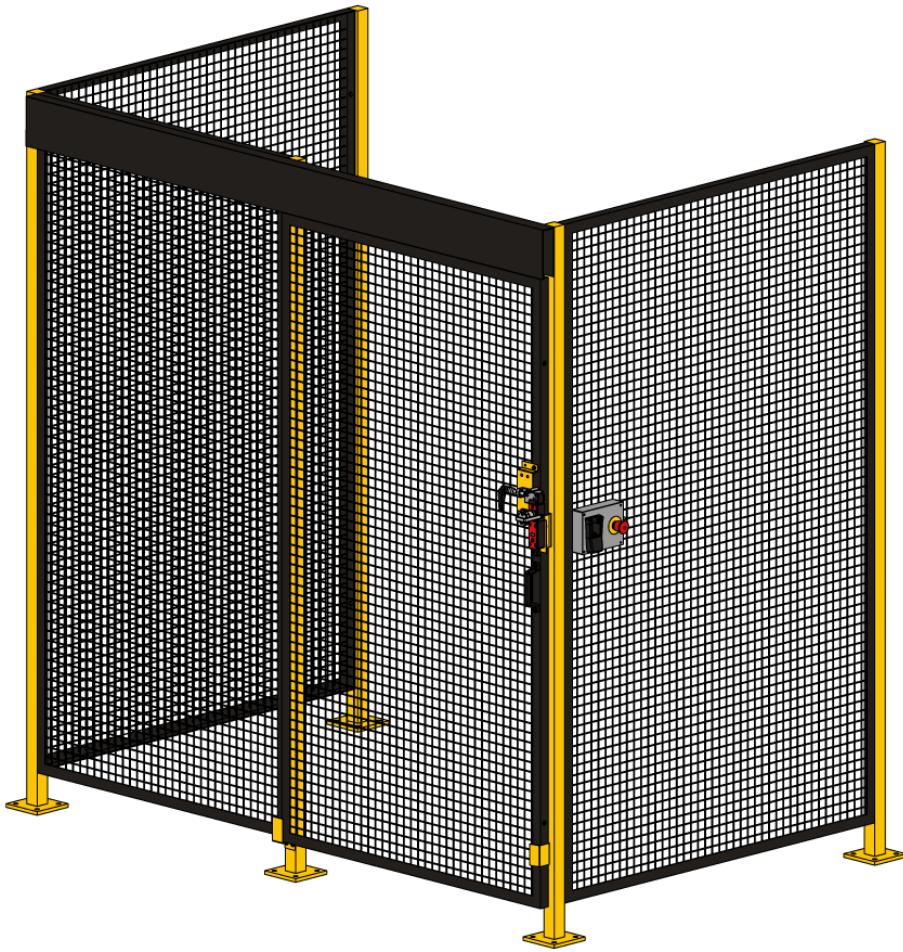
Installation Guide

The following document will show you how to install the:

- Haas Robot Fence
- Haas Robot Decals
- Interlock
- External E-stop (RJH-XL)

This document applies to the following service kit:

93-1000712 FENCE KIT HRP-1 CE

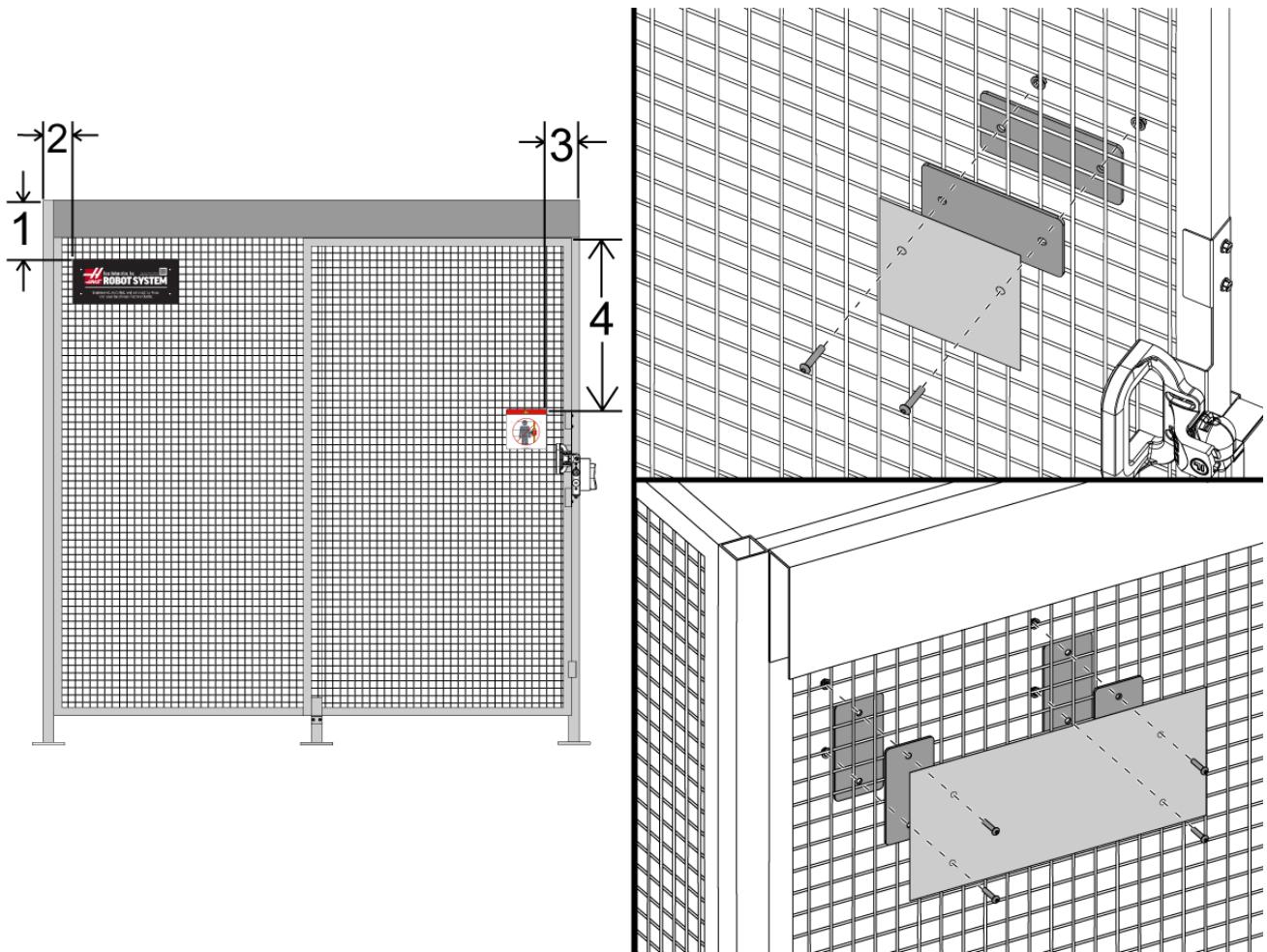


2

Robot Fence Anchoring Requirements

The Haas Robot Fence needs to be anchored to be sufficiently stable when used according to Haas specifications. See the Anchoring Instructions (Drop-In Expansion) for anchoring information.

[Anchoring Instructions \(Drop-In Expansion\)](#)



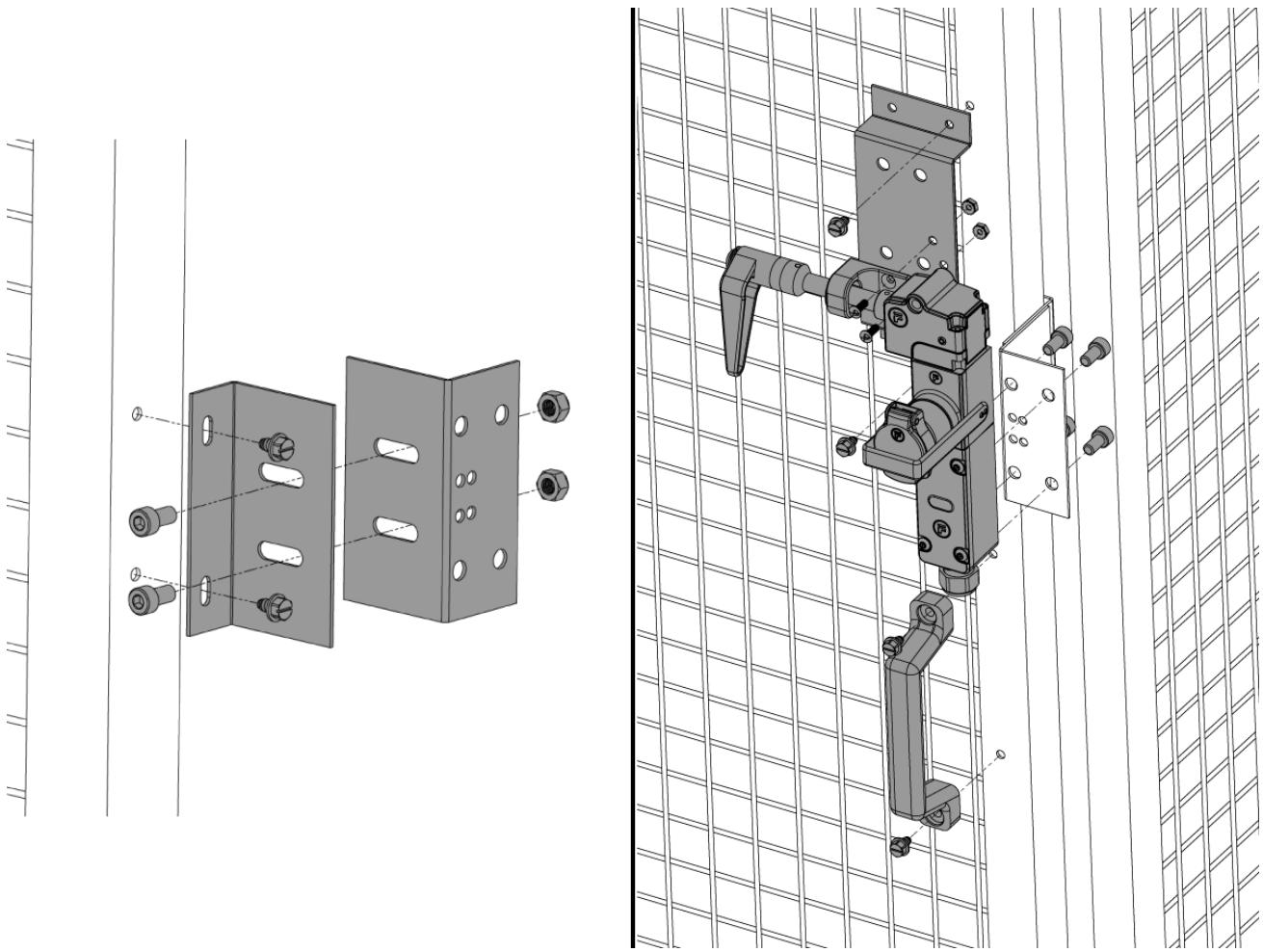
3

Once the fence is assembled, attach the two decal plates using the screws, nuts, and mounting plates as shown.

The Robot decal location is at the top left of the fence, 7.5 inches from the top of the fence [1] and 6 inches from the left side of the fence [2].

The Fence Safety decal location is to the left of the interlock, 4 inches from the right of the fence [3] and 34 inches from the top of the door [4].

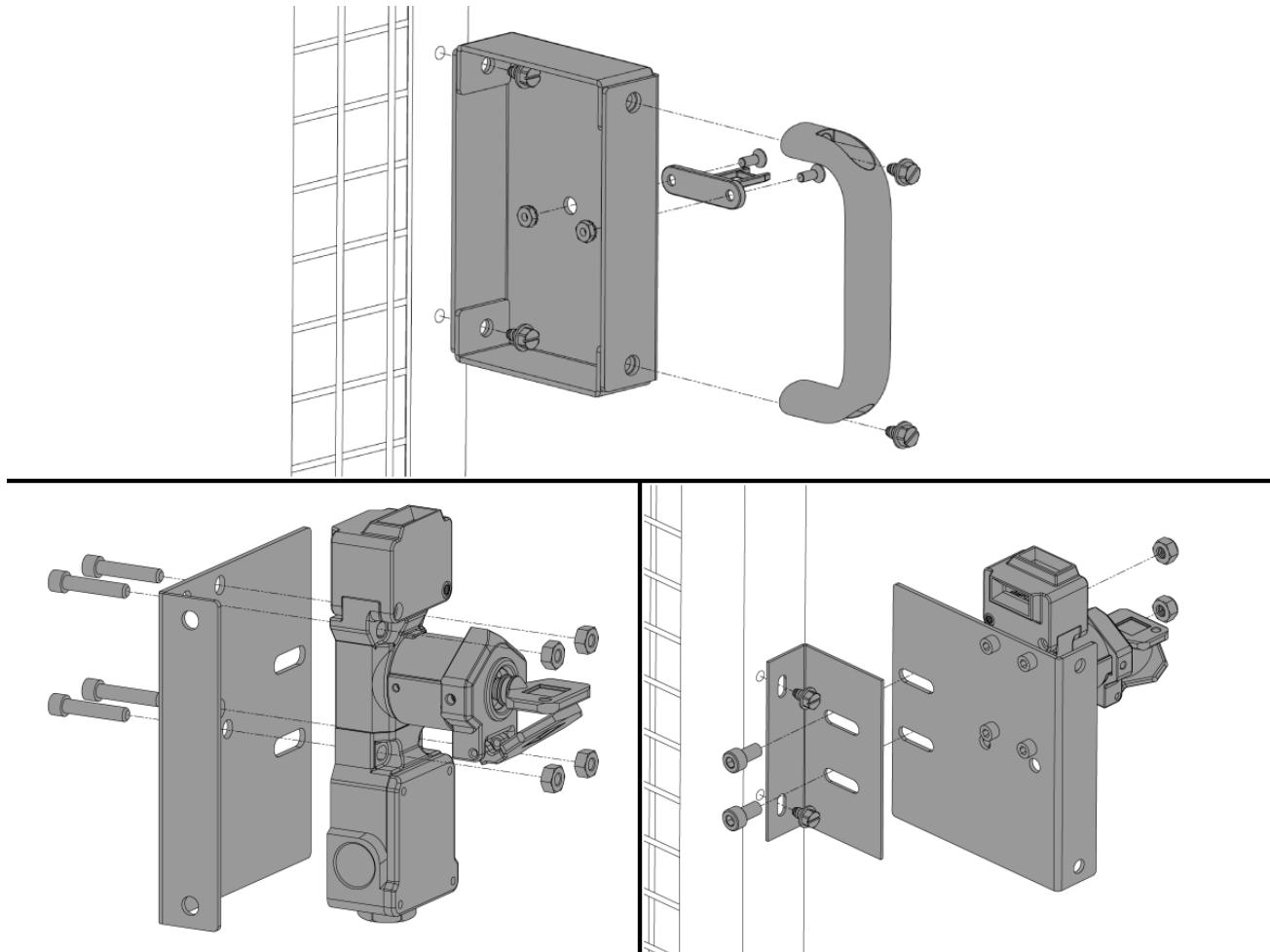
Interlock Installation



Mount the interlock mount to the fence post using self tapping screws.

Mount the interlock to the mount and install the interlock door mount to the fence door.

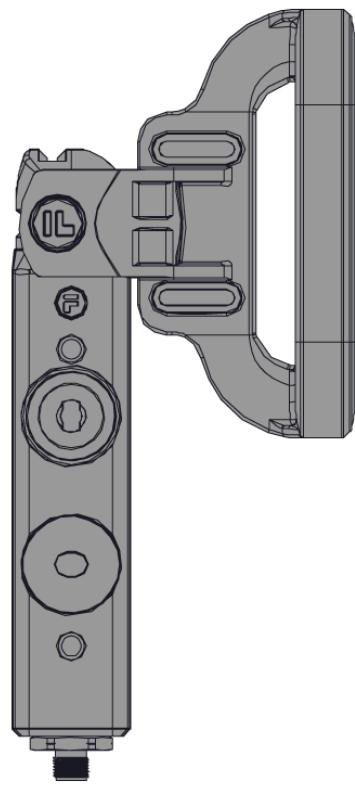
If the fence includes a handle, mount the handle to the door.



Mount the interlock handle bracket, interlock key, and handle to the door.

Mount the interlock to the interlock bracket

Mount the interlock and interlock bracket to the fence post bracket.

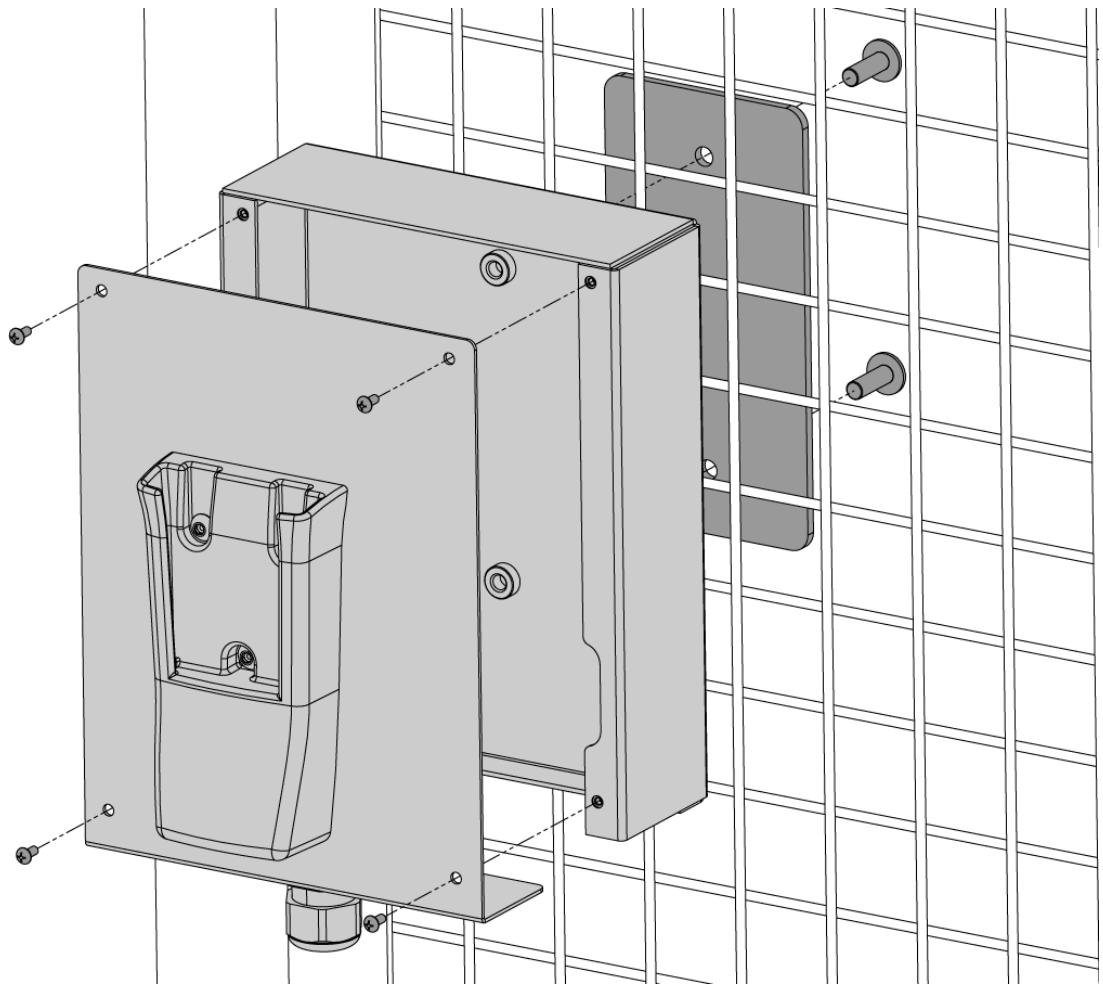


Fortress Interlock 2

Follow the instructions below for the fortress interlock 2.

Fortress Interlock 2

Remote E-Stop Installation



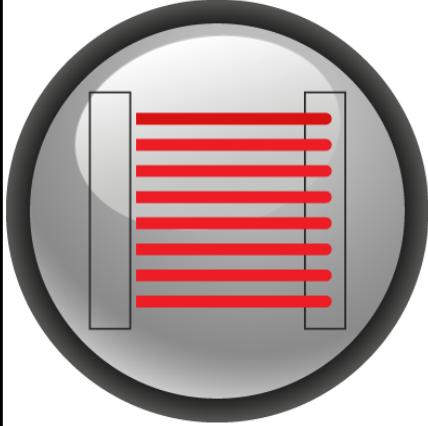
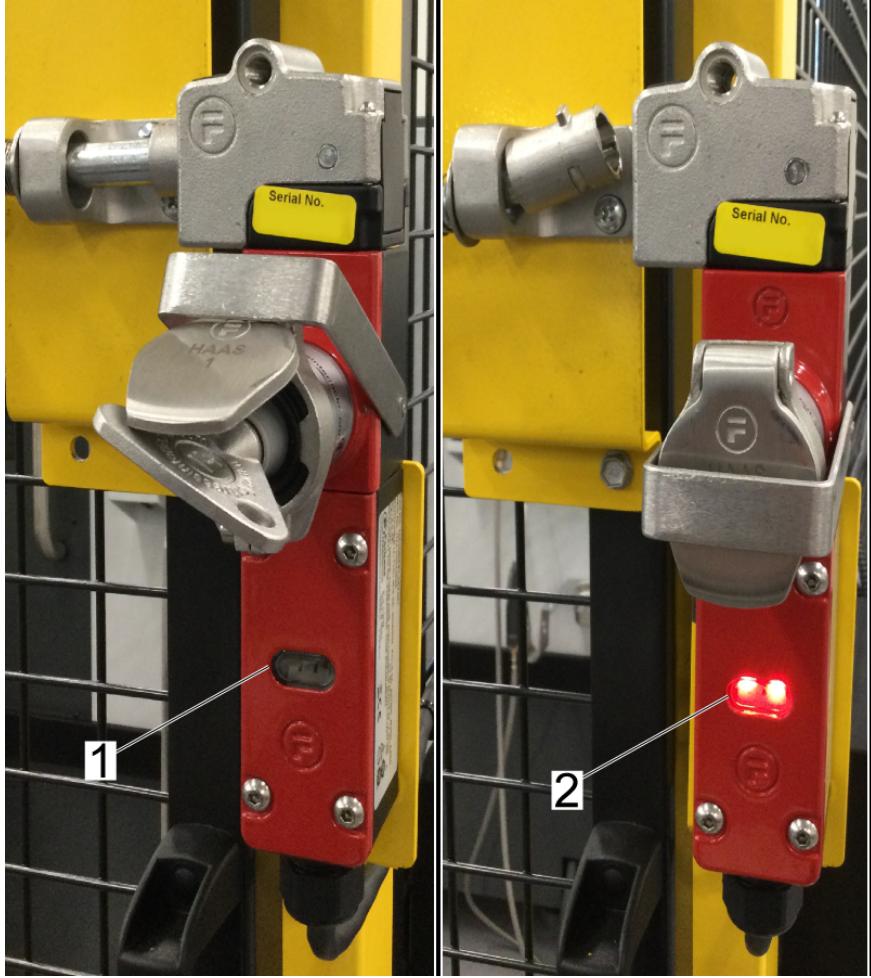
1

Remove the front cover to mount the Remote E-Stop the the fence.

Follow the directions below to install the RJH-XL.

RJH-XL Installation

Interlock Verification



1

With the key inserted in the interlock, the two red LED lights in the front of the interlock should be off [1].

On the Haas pendant, there should not be any E-stop or light curtain/fence alarms or icon triggered.

Remove the key from the interlock. The two red LED lights should turn on [2] and a warning should appear on the Haas pendant for light curtain/fence interlock.

Remote E-Stop Verification



1

Press the Pendant and RJH-XL **E-STOP** buttons and make sure the machine generates **107 EMERGENCY STOP** alarm. If the E-STOP button does not generate a **107 EMERGENCY STOP** alarm verify the wiring. Load the latest configuration files to enable the RJH-XL.

Warning: By not putting the jumpers in the vertical position, E-STOP functionality on the RJH-XL is disabled and the machine is considered unsafe. Jumpers **MUST** be inserted vertically.

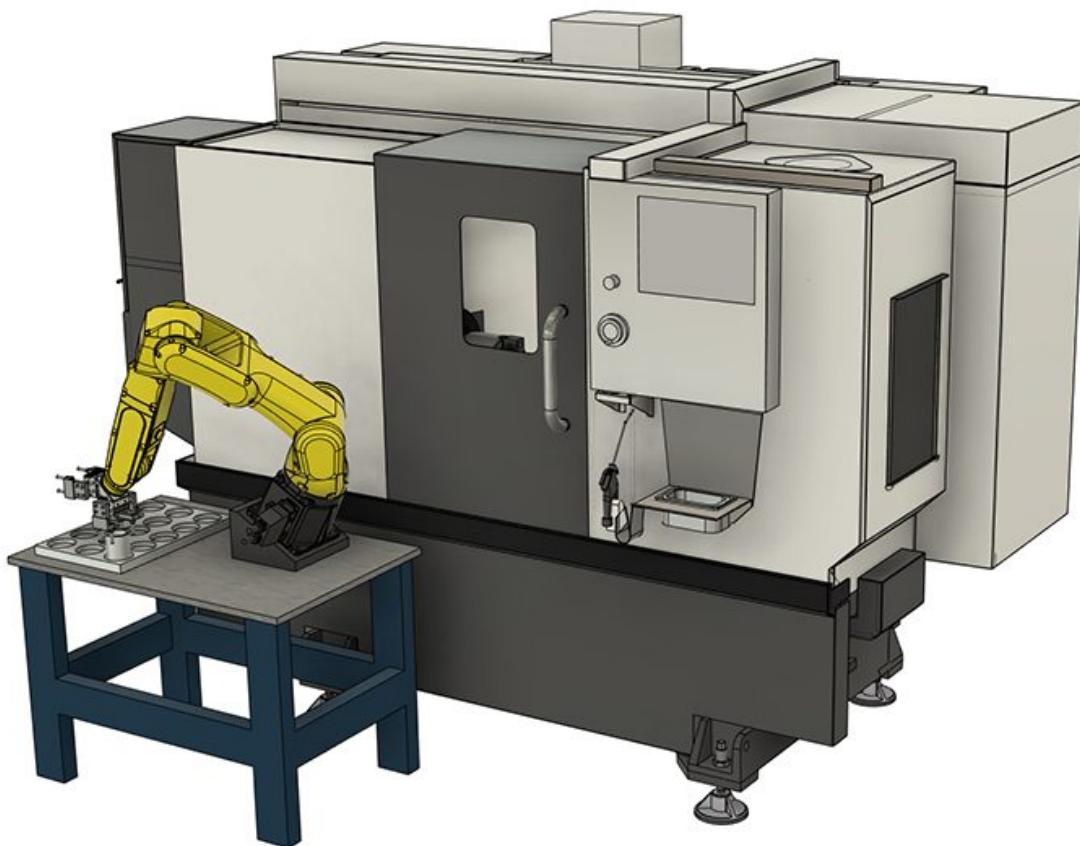
Feedback

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/fanuc-dual-check-safety--dcs--setup.html

Haas Robot – FANUC Dual Check Safety (DCS) – Setup

Introduction



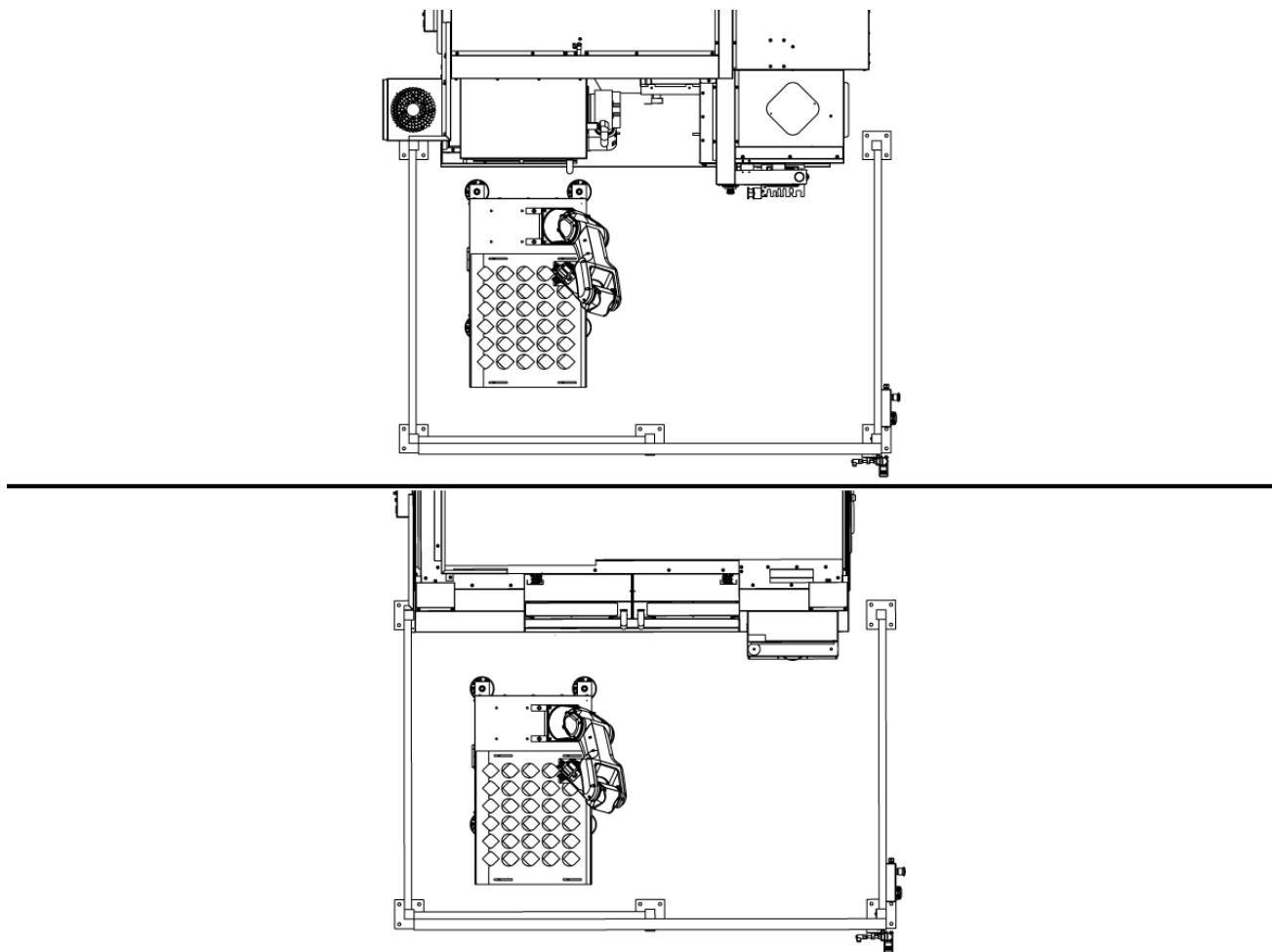
Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

This guide will show how to configure a simple Cartesian Position Check limits for your robot. The Cartesian Position Check Function allows a user to define a work zone and a restricted zone for the robot. If the robot exits a defined work zone then DCS will stop the

robot. If any part of the robot violates a restricted zone, then DCS will stop the robot. The user must jog the robot back to it's work zone, or out of the restricted zone at a reduced speed or the robot will alarm out.

The Robot Package comes pre-configured with Cartesian Speed Check limits for RUN and SETUP mode.

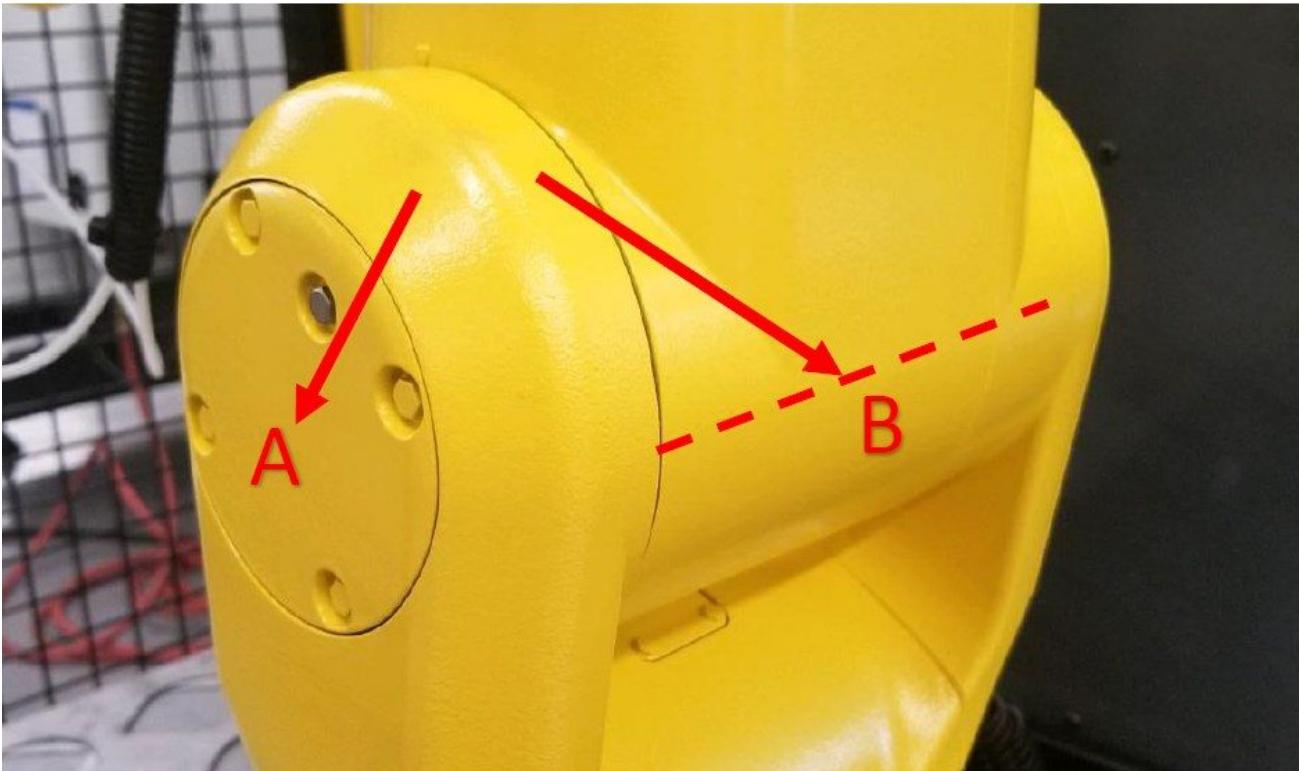
Note: Verify proper setup of the DCS zones at the time of robot installation and every 6 months. It should also be verified after a new job has been set up.



These instructions require that your robot be aligned with your fence.

Note: If the robot was not aligned with the fence, the work zone will be smaller than expected.

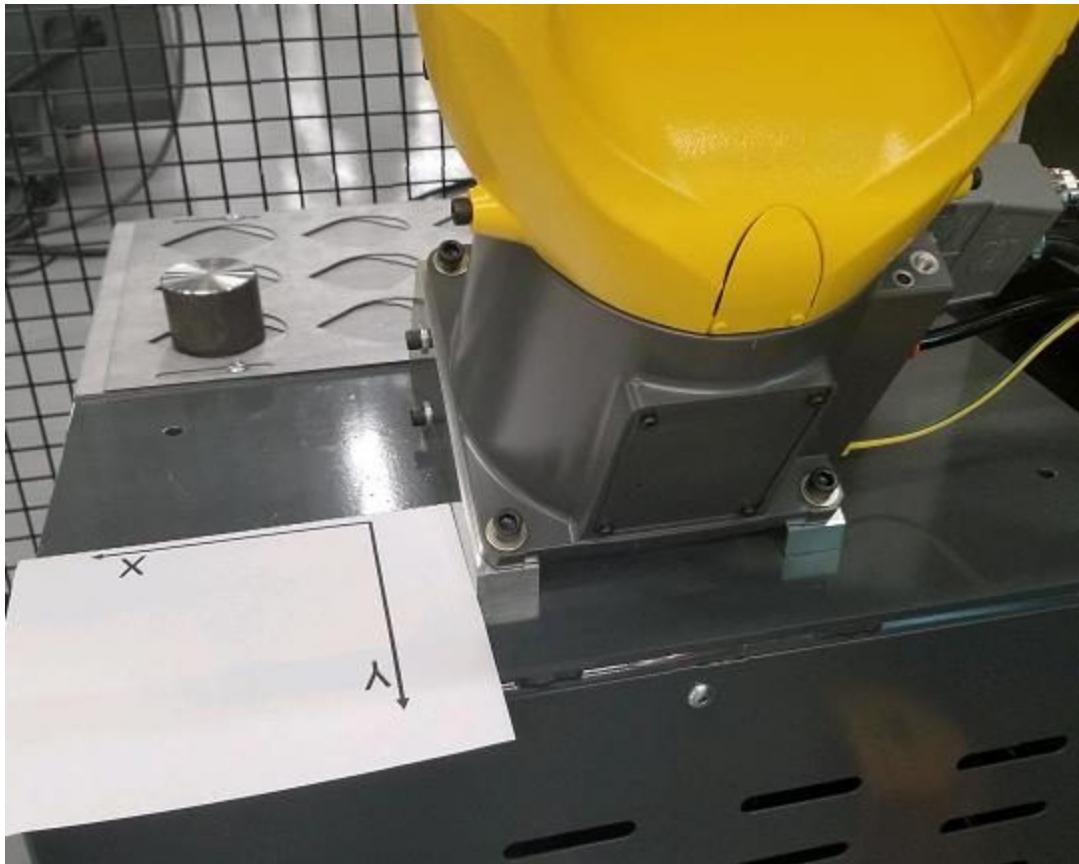
Measuring Safe Zone Size



1

The work zone size will be referenced and measured from the center of J2 axis of the robot. One surface and one edge from J2 we will measure from in order to get the center of J2. If using the flat from surface A, we will add 4.5in or 114mm to our measurements. If using surface B, we will add 2.5in or 63.5mm to our measurements.

Turn on machine and robot, make sure both are connected to each other. Jog the J1 robot axis so that it is at 90, 0 or -90 degrees. Your robot surfaces A and B should now be parallel to the fence and machine door.



2

Cut out the XY coordinate system and place it on your robot table to help visualize where we are taking measurements in relation to the coordinate system.

The coordinate system for your application will depend on how your robot is positioned on the table. The side of the robot base with power cables coming out is the X- direction. The battery cover on the base of the robot is the Y+ direction.

Note: This coordinate system is considered to be the world frame. World frame in this application is rotated along X by -30 degrees because of the way the robot base is mounted on the tilt mount. Later in the steps we will be assigning a user frame for this safe zone that will have a simple 30 degree X rotation which will cancel out the physical tilt of the base.

Align the coordinate system reference with the XY direction of your robot setup.

	Point 1	Point 2
X		
Y		
Z	762*	-1041*

3

Use the table provided to fill in your measurements.

Note: All dimensions will need to be converted to millimeters.

Make sure to measure the distances with the measuring tape parallel to the axis on the coordinate system print out.

Note: There will be one positive and one negative value for X, Y and Z.

*The Z distances can be adjusted for more clearance above and below the robot. This value is measured from the center of J2.



4

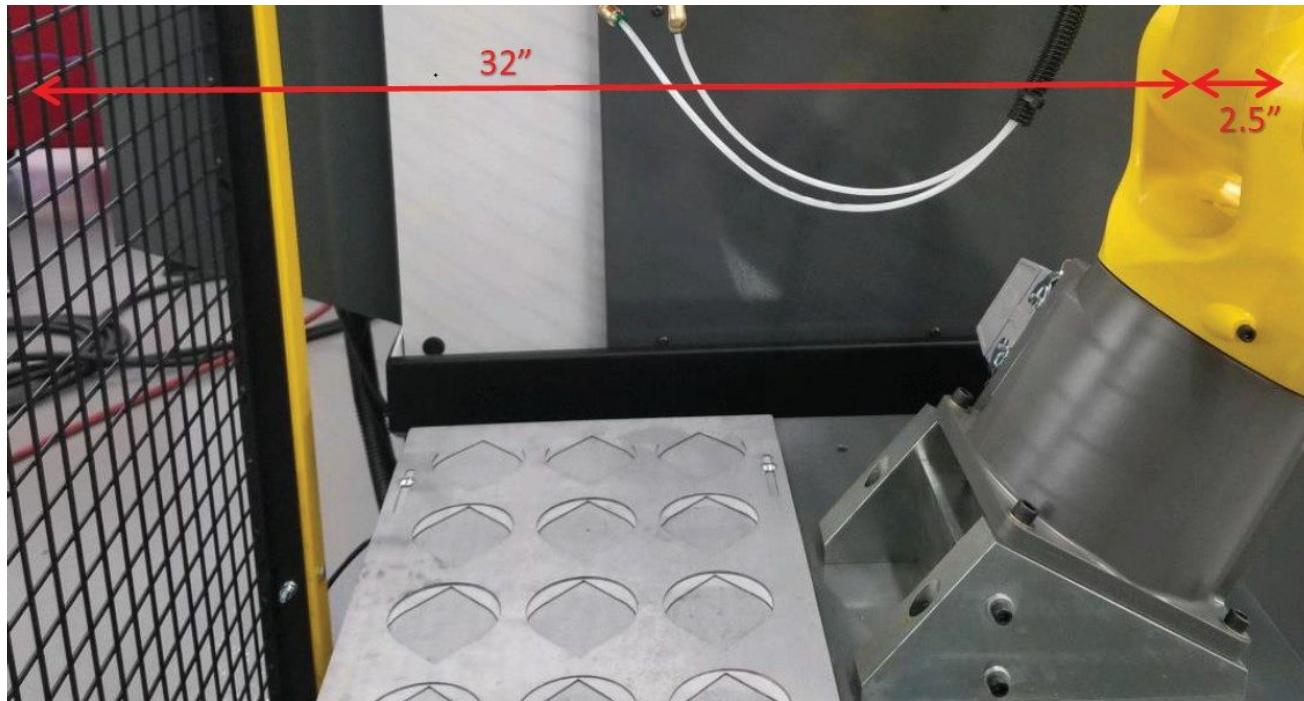
Warning: The following dimensions are an example and should not be used for DCS Setup.

Measure the distance from the center of J2 to the fence on opposite of the machine. This is the positive X-direction when referencing the coordinate system print out.

Example: The distance of the positive X-direction for point 1 is 24.5" this is calculated as:

- The edge of J2 to the center of J2 = +4.5"
- The edge of J2 to the fence = +20.0"

Enter the total distance into the table corresponding to the direction of measurement. The X-axis in the positive direction was measured. The value is entered into the table in the X row and Point 1 column. The dimension will have a positive value.



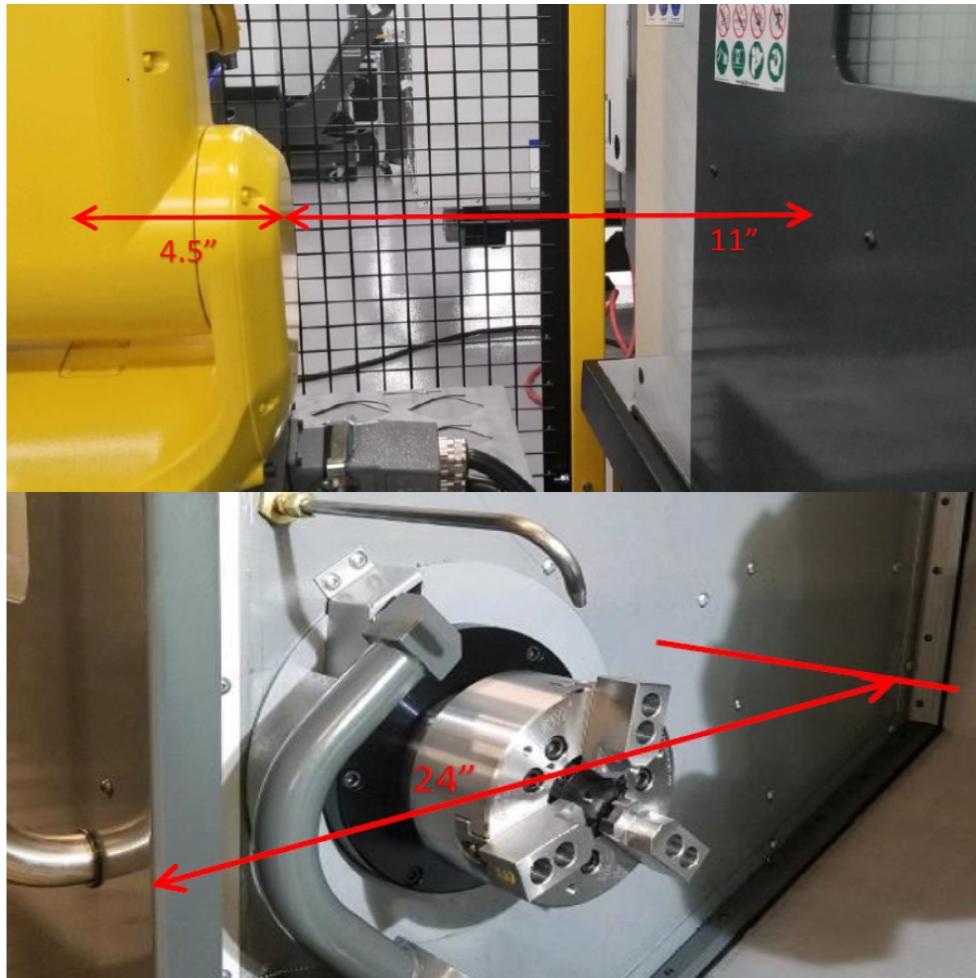
5

Measure the distance from the center of J2 axis to the fence. This is the negative Y-direction when referencing the coordinate system print out.

Example: The distance of the negative Y-direction for point 1 is -34.5", this is calculated as:

- The edge of J2 to the center of J2 = -2.5"
- The edge of J2 to the fence = -32.0"

Enter the total distance into the table corresponding to the direction of measurement. The Y-axis in the negative direction was measured. The value is entered into the table in the Y row and Point 1 column. The dimension will have a negative value.



6

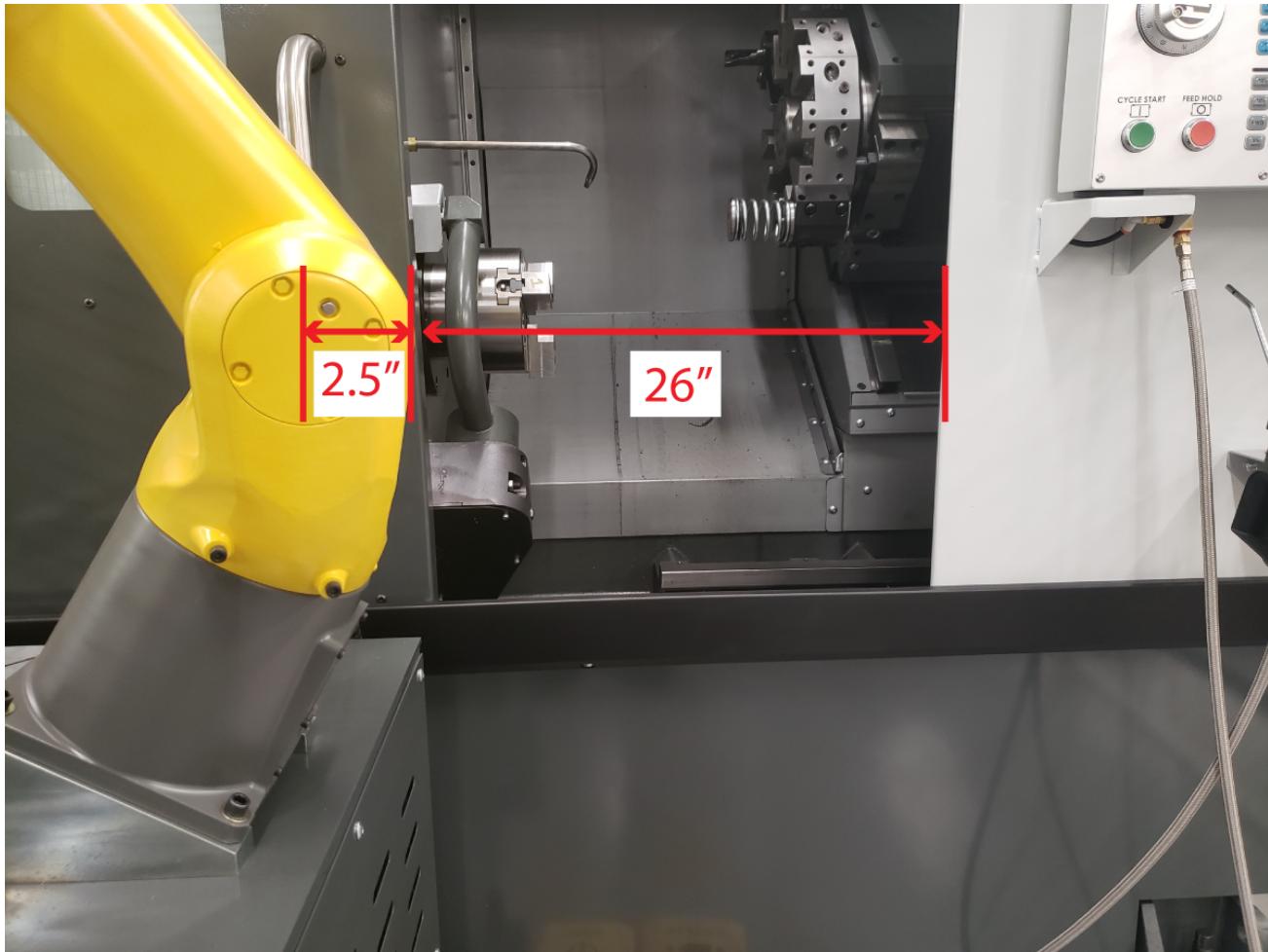
Measure the distance from the center of J2 to the inside of the machine past the workholding. This is the negative X-direction when referencing the coordinate system print out.

Example: The distance of the negative X-direction for point 2 is -39.5" this is calculated as:

- The edge of J2 to the center of J2 = -4.5"
- The edge of J2 to the face of the closed door = -11.0"
- The face of the open door to past the workholding = -24.0"

Enter the total distance into the table corresponding to the direction of measurement. The X-axis in the negative direction was measured. The value is entered into the table in the X row and Point 2 column. The dimension will have a negative value.

Note: If this safe zone measurement is incorrectly calculated. The safe zone may be placed too close to work holding. This value can be adjusted to add more work space inside the machine.



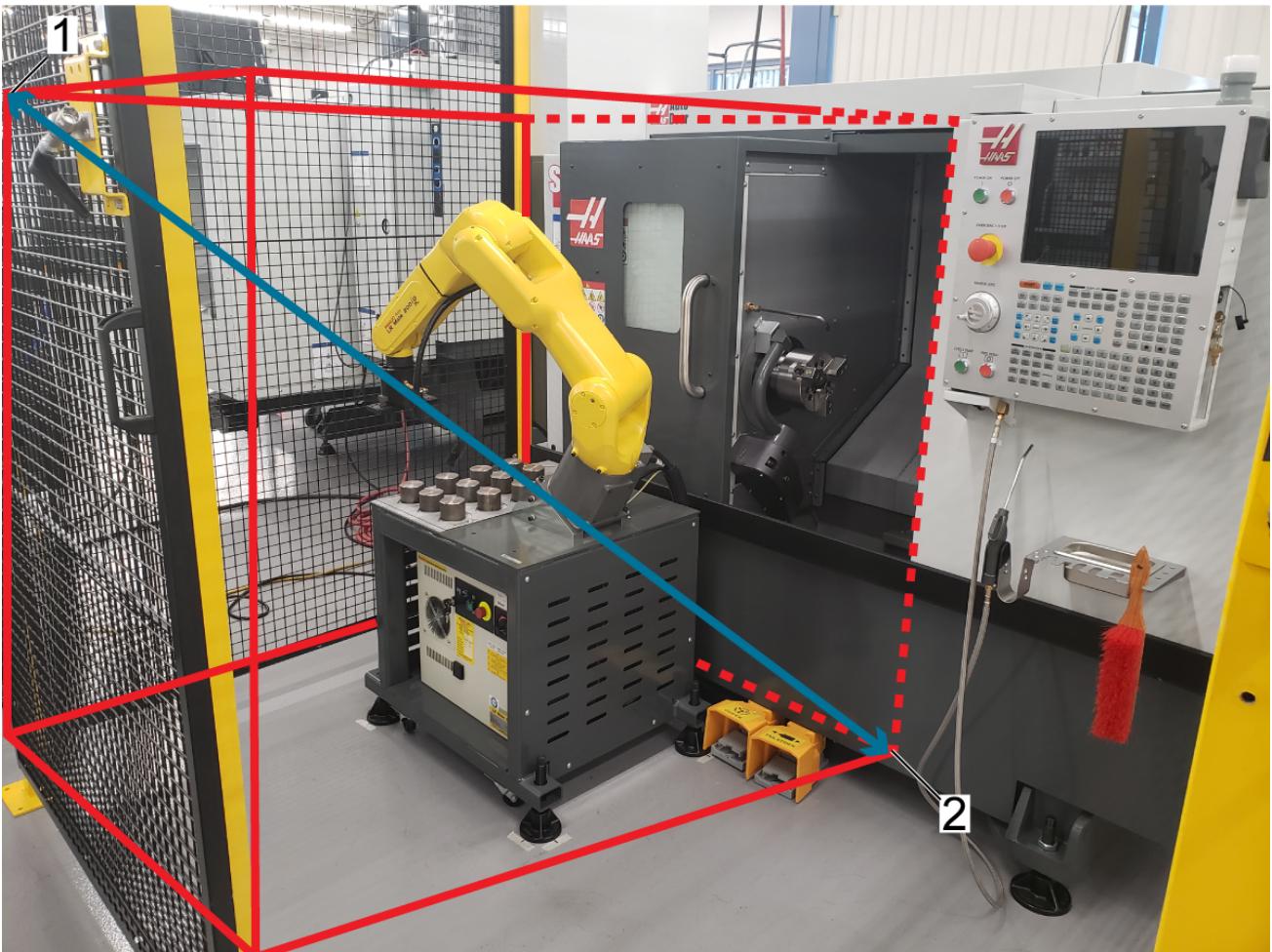
7

Measure the distance from the center of J2 axis to the edge of the door opening. This is the positive Y-direction when referencing the coordinate system print out.

Example: The distance of the positive Y-direction for point 2 is 28.5", this is calculated as:

- The edge of J2 to the center of J2 = 2.5"
- The edge of J2 to the edge of the door opening = 26.0"

Enter the total distance into the table corresponding to the direction of measurement. In the case above, the Y+ axis was measured, so the value would go into point 2 with a positive value.

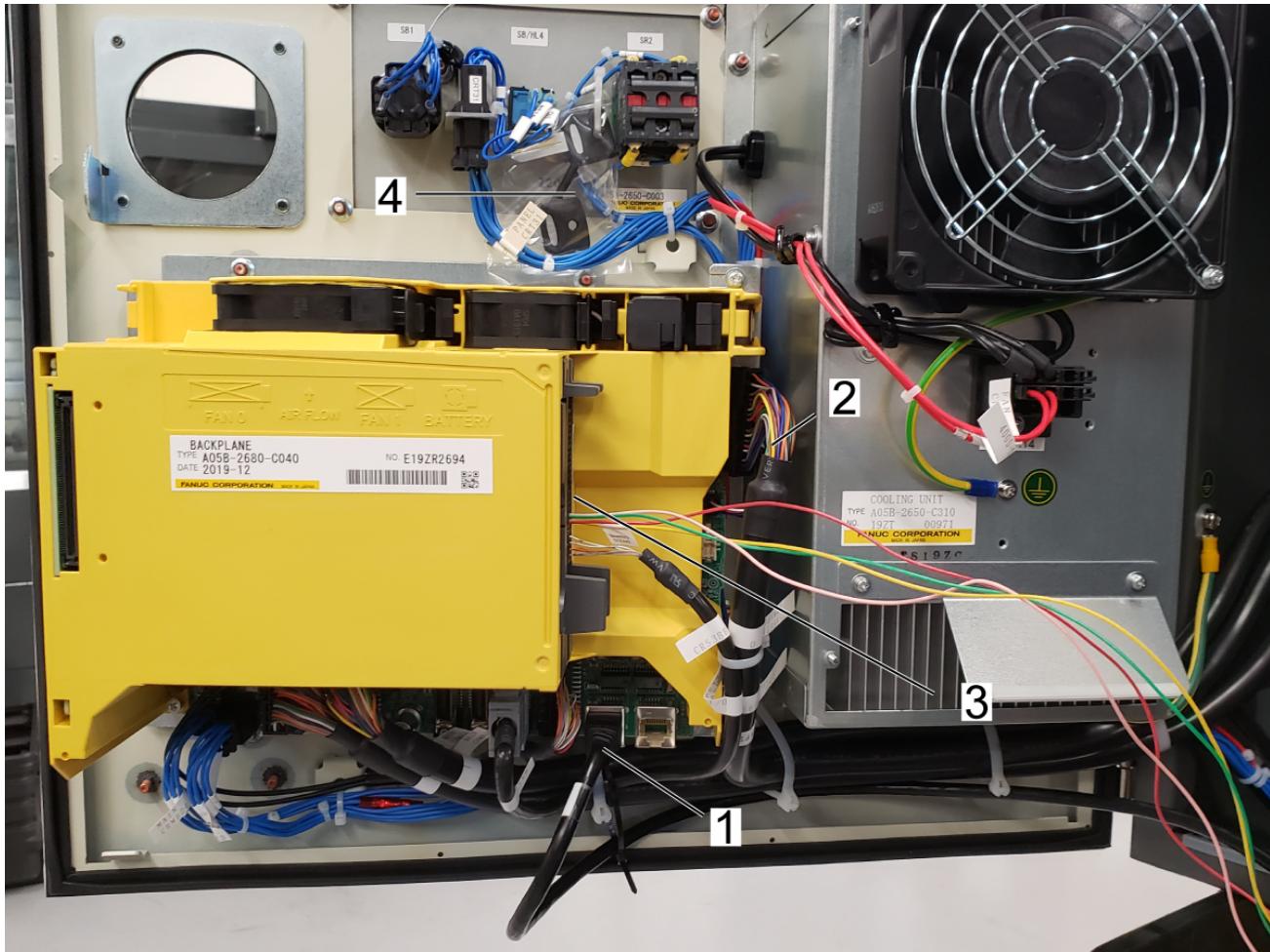


8

The Z value for each point is in the table. If more ceiling work envelope is needed, the positive Z distance can be increased. If more floor work envelope is needed, the negative Z distance can be increased.

After taking measurements, double check values. The values are creating a box around the robot that is referenced from the center of J2.

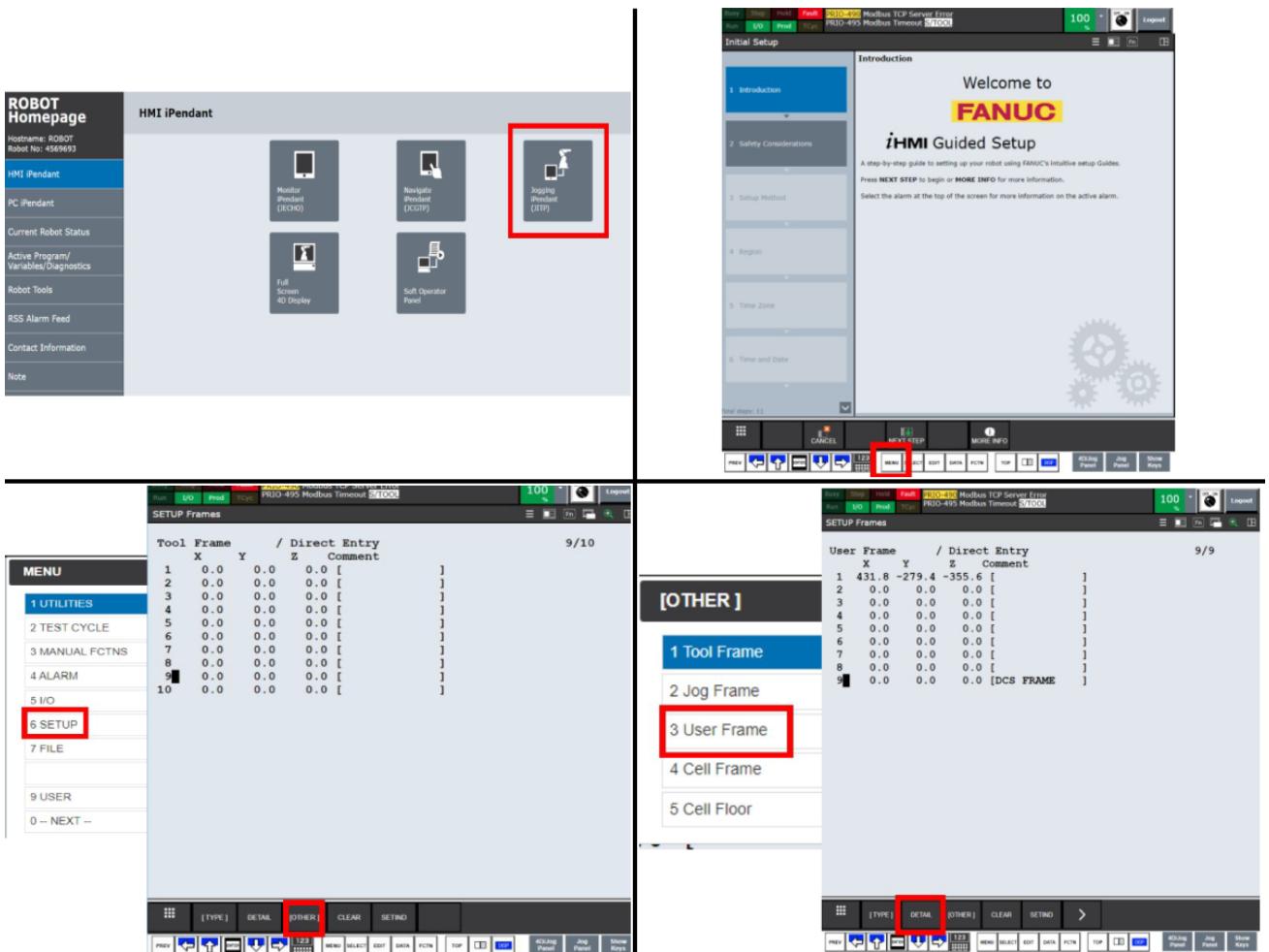
DCS User Frame Setup



1

To setup a DCS User Frame, a computer with internet access will need to be connected to the Robot Control Box with a RJ-45 cable. Open the front door of your robot controller and unplug the RJ-45 cable from Port 1 [1]. Plug in a new RJ-45 cable that is connected to a computer that has internet access. Follow the video above to setup the adapter settings on your computer to match the robot IP address.

Note: When finished setting up the DCS User frame, disconnect the RJ-45 cable from the computer and robot and plug the RJ-45 back into the Port 1.



2

Login to the HMI Jogging Pendant from your web browser.

Navigate to the User Frame Setup view.

Click on Frame 9 then click DETAIL.

SETUP Frames

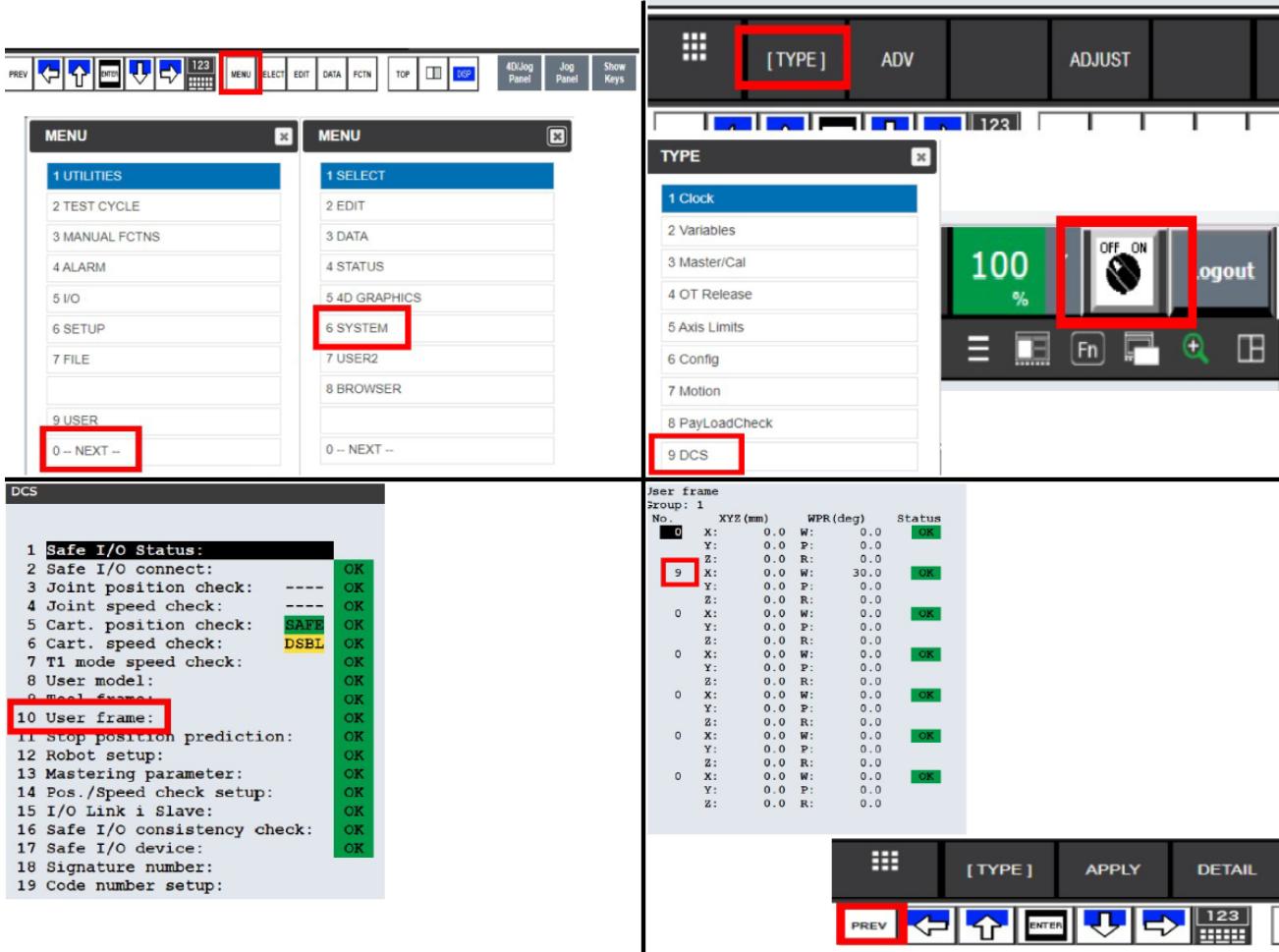
User Frame	Direct Entry
Frame Number:	9
1 Comment:	DCS FRAME
2 X:	0.000
3 Y:	0.000
4 Z:	0.000
5 W:	30.000
6 P:	0.000
7 R:	0.000
Configuration:	N D B, 0, 0, 0

3

For Robot Package 1 Only

Select W and enter the value of 30.0 then hit enter on your keyboard.

This is where we are adding a 30 degree X rotation to the world frame to cancel out the tilt of the robot base.



4

Navigate to DCS Menu.

Enable the pendant by hitting the ON/OFF button on the top right.

Enter user frame section (10).

Select the second zero in the list under No. column and press 9. Confirmation question will show at the bottom, press YES. Change that value to 9 after confirmation.

You should see W populate with the same value from step 2.

Go back to DCS menu.

DCS Cartesian Position Check Setup

DCS

```

1 Safe I/O Status: OK
2 Safe I/O connect: OK
3 Joint position check: ----
4 Joint speed check: ----
5 Cart. position check: SAFE OK
6 Cart. speed check: DSBL OK
7 T1 mode speed check: OK
8 User model: OK
9 Tool frame: OK
10 User frame: OK
11 Stop position prediction: OK
12 Robot setup: OK
13 Mastering parameter: OK
14 Pos./Speed check setup: OK
15 I/O Link 1 Slave: OK
16 Safe I/O consistency check: OK
17 Safe I/O device: OK
18 Signature number: OK
19 Code number setup: OK

```

Cartesian position check

```

No. 1 Status: SAFE
1 Comment: [Work Envelope]
2 Enable/Disable: ENABLE
3 Method: Working zone(Diagonal)
4 Group: 1
5 Target model 1: Robot model
6 Target model 2: User model 1
7 Target model 3: DISABLE
8 Base frame: User Frame : 9
Position(mm):
    Current Point 1 Point 2
9 X 316.3 784.0 -840.0
10 Y -585.8 -882.0 540.0
11 Z -15.2 762.0 -1041.0
12 Stop type: Speed check(1)
13 Speed check: <DETAIL>
14 Disabling input: ---[ 0: ]
15 Use Stop Position Prediction: Yes

```

Cartesian position check

```

Process time factor (Max.1000): 246
No. G M Status Comment
1 ENABLE 1 WD SAFE [Work Envelope]
2 ENABLE 1 MC SAFE
3 DISABL 1 WD ----
4 DISABL 1 WD ----
5 DISABL 1 WD ----
6 DISABL 1 WD ----
7 DISABL 1 WD ----
8 DISABL 1 WD ----
9 DISABL 1 WD ----
10 DISABL 1 WD ----
11 DISABL 1 WD ----
12 DISABL 1 WD ----
13 DISABL 1 WD ----
14 DISABL 1 WD ----
15 DISABL 1 WD ----
16 DISABL 1 WD ----
17 DISABL 1 WD ----
18 DISABL 1 WD ----
19 DISABL 1 WD ----
20 DISABL 1 WD ----
21 DISABL 1 WD ----

```

Cartesian position check

```

No. 1 Status: SAFE
1 Comment: [Work Envelope]
2 Enable/Disable: ENABLE
3 Method: Working zone(Diagonal)
4 Group: 1
5 Target model 1: Robot model
6 Target model 2: User model 1
7 Target model 3: DISABLE
8 Base frame: User Frame : 9
Position(mm):
    Current Point 1 Point 2
9 X 316.3 784.0 -840.0
10 Y -585.8 -882.0 540.0
11 Z -15.2 762.0 -1041.0
12 Stop type: Speed check(1)
13 Speed check: <DETAIL>
14 Disabling input: ---[ 0: ]
15 Use Stop Position Prediction: Yes

```

[TYPE] PREV NEXT [CHOICE] UNDO >

[TYPE] PREV NEXT RECORD UNDO >

1

Go into Cart. Position Check (5).

Go into No. 1.

Enable the position check No. 1 by selecting then pressing [CHOICE] at the bottom.

Change the Method type to Work Zone (Diagonal) by clicking the row then selecting [CHOICE] at the bottom.

Target Model 1 should say Robot Model, Target model 2 and 3 should be disabled.

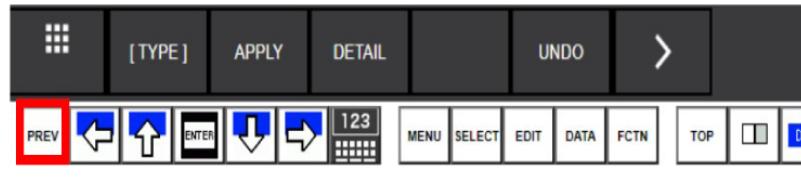
Set Base Frame: User Frame: to 9 by selecting then entering 9.

Cartesian position check		
No. 1	Status: SAFE	
1 Comment: [Work Envelope]]	
2 Enable/Disable:	ENABLE	
3 Method: Working zone(Diagonal)		
4 Group:	1	
5 Target model 1:	Robot model	
6 Target model 2:	User model 1	
7 Target model 3:	DISABLE	
8 Base frame:	User Frame : 9	
Position(mm):		
Current	Point 1	Point 2
9 X	316.3	784.0 -840.0
10 Y	-585.8	-882.0 540.0
11 Z	-15.2	762.0 -1041.0
12 Stop type:	Speed check(1)	
13 Speed check:	<DETAIL>	
14 Disabling input:	---[0:]	
15 Use Stop Position Prediction:	Yes	

Cartesian position check		
No. 1	Status: SAFE	
1 Comment: [Work Envelope]]	
2 Enable/Disable:	ENABLE	
3 Method: Working zone(Diagonal)		
4 Group:	1	
5 Target model 1:	Robot model	
6 Target model 2:	User model 1	
7 Target model 3:	DISABLE	
8 Base frame:	User Frame : 9	
Position(mm):		
Current	Point 1	Point 2
9 X	316.3	784.0 -840.0
10 Y	-585.8	-882.0 540.0
11 Z	-15.2	762.0 -1041.0
12 Stop type:	Speed check(1)	
13 Speed check:	<DETAIL>	
14 Disabling input:	---[0:]	
15 Use Stop Position Prediction:	Yes	

Cartesian position check		
No. 1	Status: SAFE	
1 Comment: [Work Envelope]]	
2 Enable/Disable:	ENABLE	
3 Method: Working zone(Diagonal)		
4 Group:	1	
5 Target model 1:	Robot model	
6 Target model 2:	User model 1	
7 Target model 3:	DISABLE	
8 Base frame:	User Frame : 9	
Position(mm):		
Current	Point 1	Point 2
9 X	316.3	784.0 -840.0
10 Y	-585.8	-882.0 540.0
11 Z	-15.2	762.0 -1041.0
12 Stop type:	Speed check(1)	
13 Speed check:	<DETAIL>	
14 Disabling input:	---[0:]	
15 Use Stop Position Prediction:	Yes	

Speed check detail		
No. 1	Status: CHGD	
1 Speed control:	DISABLE	
Limit(mm/s) / DSBL input / OVR Lim		
2 Limit 1:	20.0 /	---[0] / 100 %
3 Limit 2:	250.0 /	---[0] / 100 %
4 Limit 3:	250.0 /	---[0] / 100 %
5 Limit 4:	250.0 /	---[0] / 100 %
6 Delay time:	0 msec	
7 Permissible distance(mm):	0.0	



2

In Point 1 and 2, enter in the values that were recorded from earlier in the guide. This is where we define the two points for the work space diagonal box.

For Stop Type, click the row then select [CHOICE] at the bottom and change to Speed Check(1).

Make sure Stop Prediction is Yes.

Click on <DETAIL> under Speed Check then hit ENTER on your keyboard.

Set Limit 1 to 20.0, Delay Time to 0, and Permissible distance to 0.0, Speed Control to DISABLE.

Press PREV 3 times to get back to the Main DCS screen.

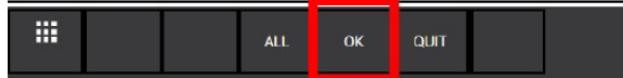
1 Safe I/O Status:	OK
2 Safe I/O connect:	OK
3 Joint position check:	OK
4 Joint speed check:	OK
5 Cart. position check:	SAFE CHGD
6 Cart. speed check:	SAFE
7 T1 mode speed check:	OK
8 User model:	OK
9 Tool frame:	OK
10 User frame:	CHGD
11 Stop position prediction:	OK
12 Robot setup:	OK
13 Mastering parameter:	OK
14 Pos./Speed check setup:	OK
15 I/O Link i Slave:	OK
16 Safe I/O consistency check:	OK
17 Safe I/o device:	OK
18 Signature number:	



Code number (master) : ----

```
Verify (diff) 1/113
# Number: 4569693
VERSION : LR HandlingTool
$VERSION: V9.3063 4/10/2020
DATE: 25-JUN-20 08:21
DCS Version: V4.2.11
```

```
--- Cartesian Position Check -----
Process time factor (Max.1000): 240
No.      G M Status      Comment
1 ENABLE 1 WD CHGD [Work Envelope ]
2 ENABLE 1 MC SAFE [ ]
3 DISABLE 1 WD ---- [ ]
4 DISABLE 1 WD ---- [ ]
5 DISABLE 1 WD ---- [ ]
6 DISABLE 1 WD ---- [ ]
7 DISABLE 1 WD ---- [ ]
8 DISABLE 1 WD ---- [ ]
9 DISABLE 1 WD ---- [ ]
```



3

Now we will apply the all the changes we made in the DCS menu. Any DCS section that was changed since last APPLY will show a RED CHGD next to it. Press APPLY at the bottom.

Enter 1111 for the Master Code.

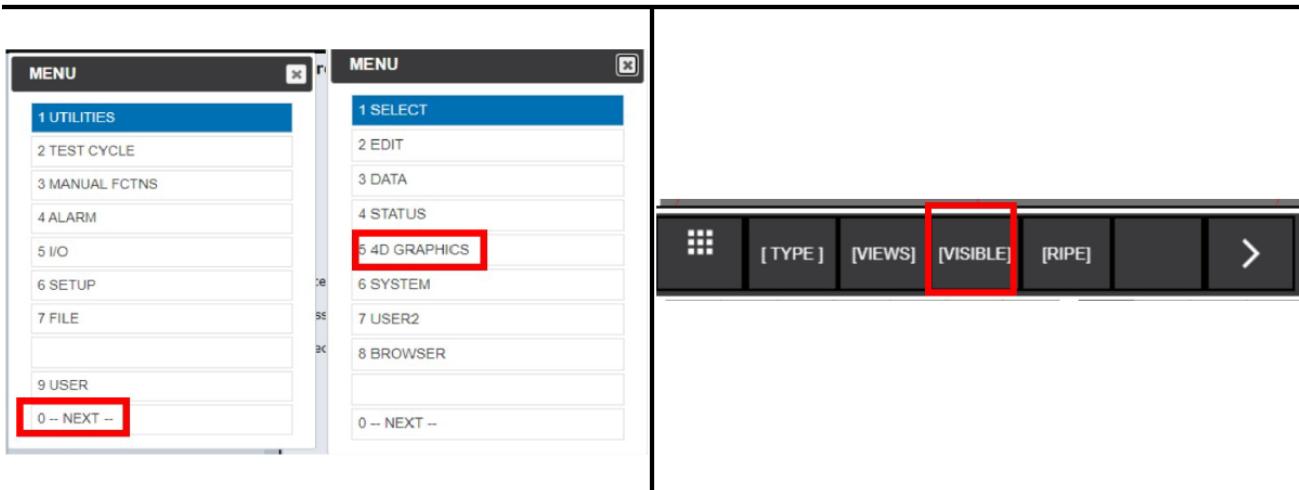
This will take you to another menu that will show you the changes made in the DCS menu since last apply. Press OK if all changes are correct.

Close the HMI Pendant Window.

Cycle power on the robot controller by turning the power switch OFF, waiting 5 seconds then back ON.

Setup is complete. There is now a work zone setup around the robot. If any part of the robot leaves the work zone at a speed greater than 20mm/s, it will alarm. If this alarm is triggered, it is possible to reset the alarm and jog back into the zone at a rate less than 20mm/s. The next section covers how to visualize the zone that was just created.

DCS Cartesian Position Visualization



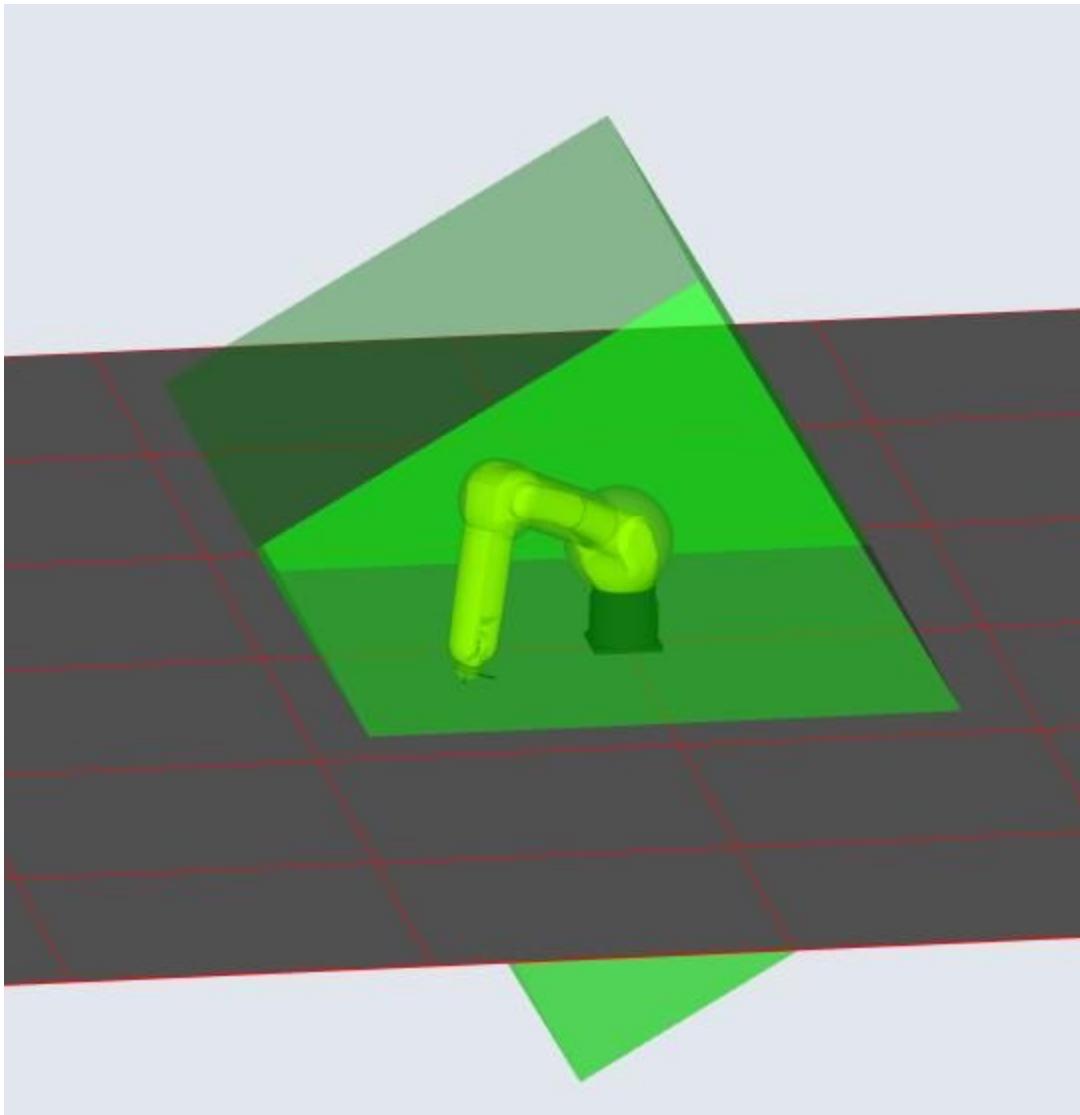
1

With the Work Zone setup, we want a way to visualize the zone in relation to the robot.

Access the Jogging HMI Pendant and navigate to MENU > NEXT > 4D Graphics.

You will see the robot virtually on the HMI pendant along with its current orientation.

To see the DCS zone, click on [VISIBLE] at the bottom bar, if it is not there, press the > arrow on the bar.



2

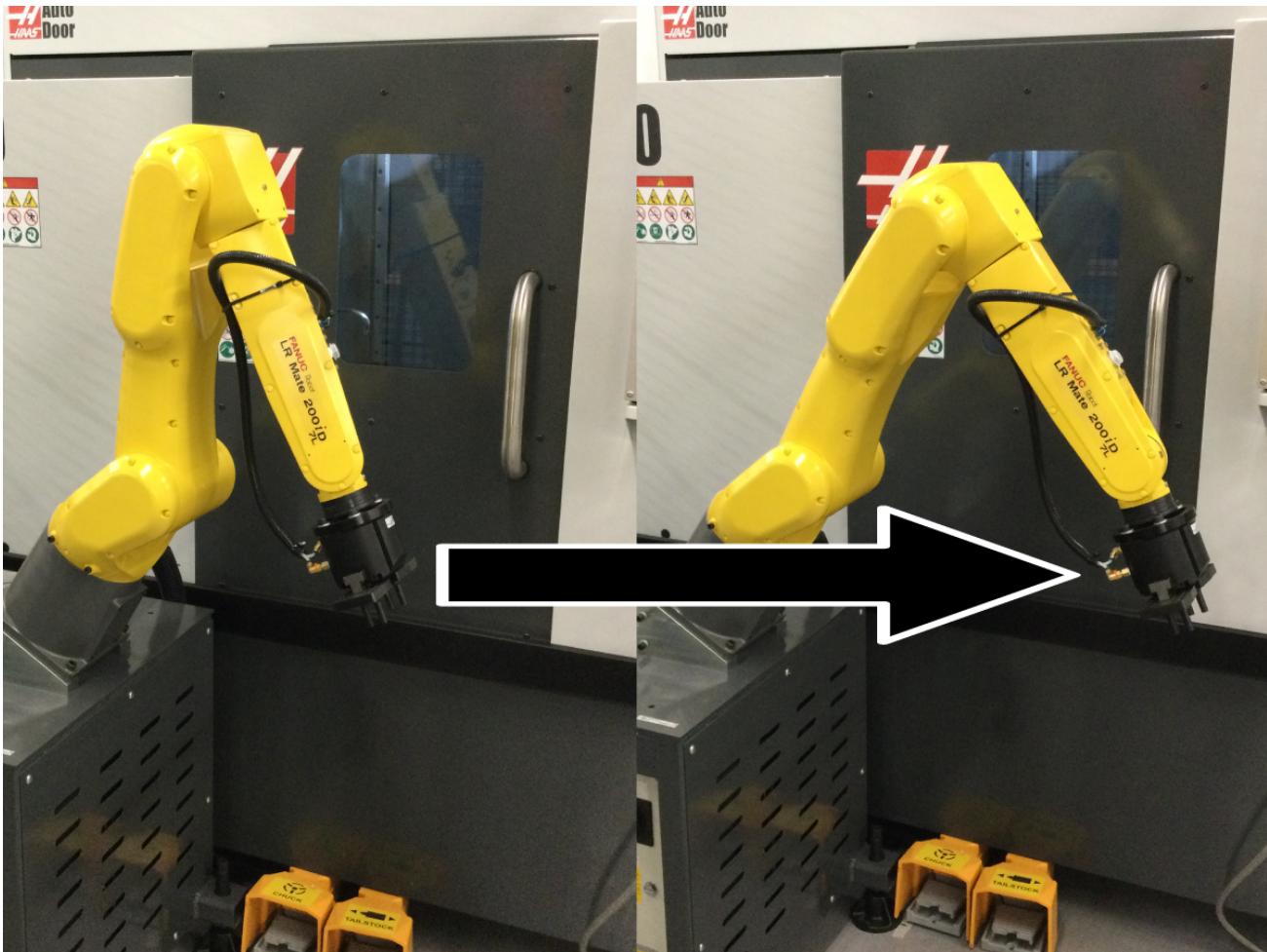
A new menu will display in the top left of the 4D display. Click on 4D DCS Display, it will turn a shade of blue to signify that it is ON. You will see a box appear if your DCS zone is enabled and setup.

Verify that the work zone that appears is surrounding your robot. If the zone is a shade of red, that means a part of the robot is outside of the zone. If the zone is green that means your robot is within the zone.

This display will update in real time, you can have this open on your laptop/computer while you jog the robot with the HAAS machine.

This zone can be modified with the Point 1 and Point 2 XYZ positions from step. It is OK if the zone is angled in the 4D display, because the robot base is angled in real world (in our application).

DCS Cartesian Position Verification



1

Note: When finished setting up the DCS User frame, disconnect the RJ-45 cable from the computer and robot and plug the RJ-45 back into the Port 1.

Verify the DCS zone by jogging the robot in the positive Y-direction to a safe location out of the DCS zone and check if the machine alarms.

If it does, jog back into the DCS zone.

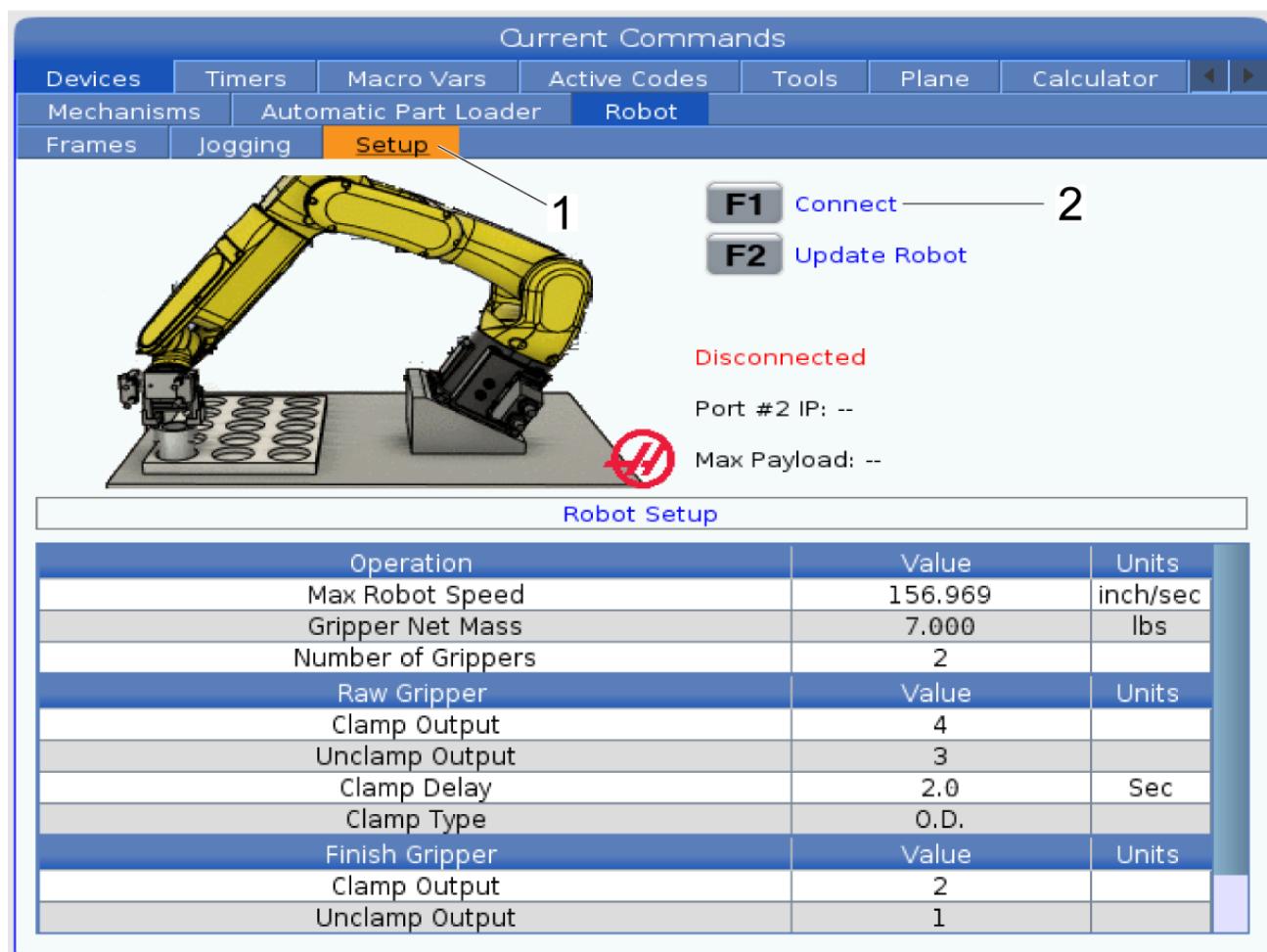
Note: To jog back into the DCS zone without alarming the machine, lower the jogging feedrate.

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/operation.html

Haas Robot - Quick Start Guide

Introduction



This procedure will help you set up a job with your Haas Robot.

Follow the First Power Up section in the Haas Robot Installation Guide to connect the robot to your Haas machine.

Note: If the machine is Cycle Powered before saving a job, the template info may be lost.

[Haas Robot Package-1 - Installation - VMC](#)

[Haas Robot Package-1 - Installation - Lathe](#)

General Safety Notes

Operation Safety:

- Check for damaged grippers every time a new job is run.
- In the event of a power loss the grippers will remain in the clamp position.
- In the event of air loss, the grippers will temporary remain in the clamp position. It is necessary to remedy the situation as overtime the air in the system will bleed off and may cause the part to fall.

Periodic inspection of machine safety features:

Inspect fence door interlock mechanism for proper fit and function. To check the interlock operation refer to the Haas Robot Installation Guides.

Setup / Run Mode Operation

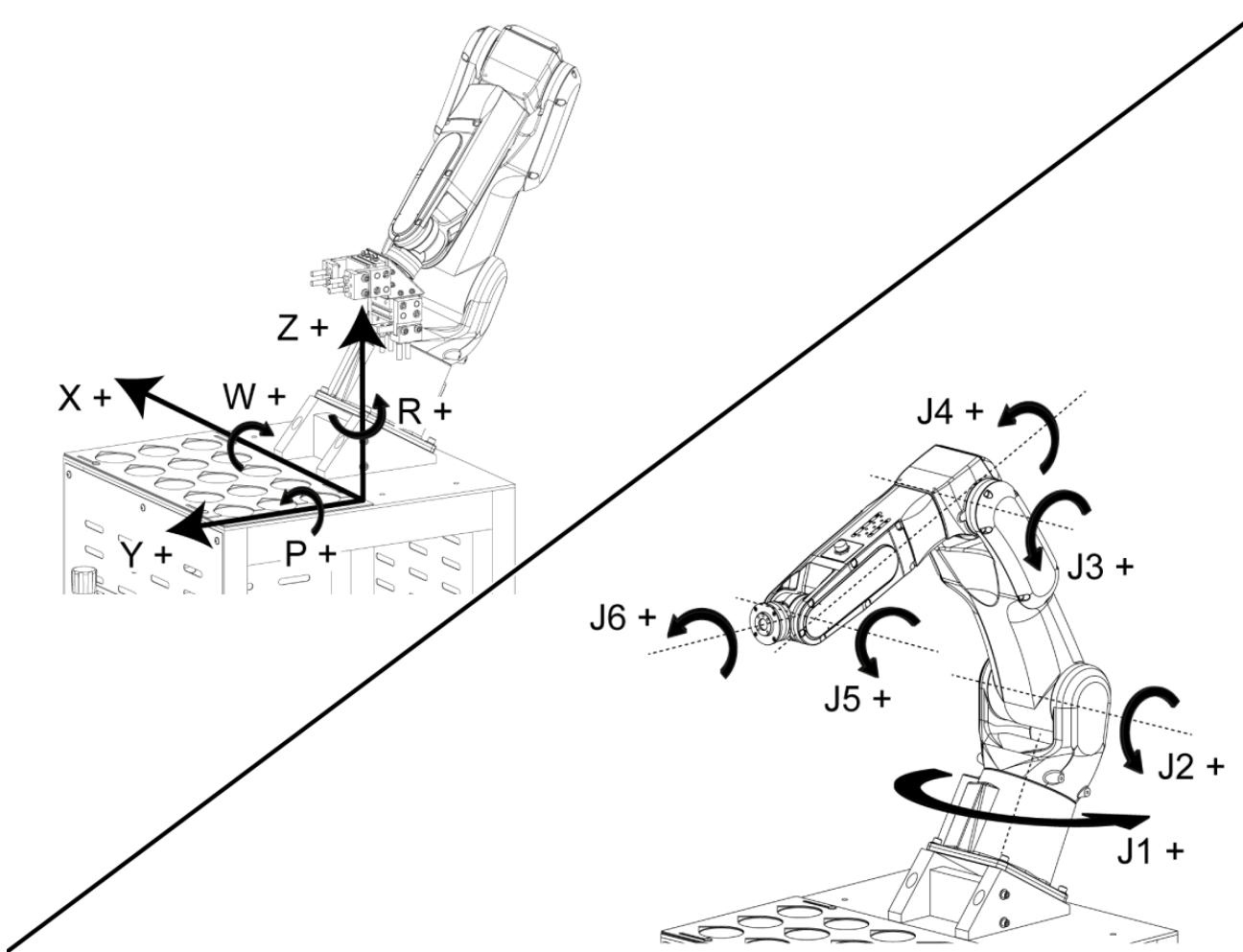
All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

[Haas Robot Package-1 - Installation - VMC](#)

[Haas Robot Package-1 - Installation - Lathe](#)

Setup



1

Before setting up a robot job you will need to create a user frame. The user frame will be off the parts table. This will set our X, Y, and Z axes.

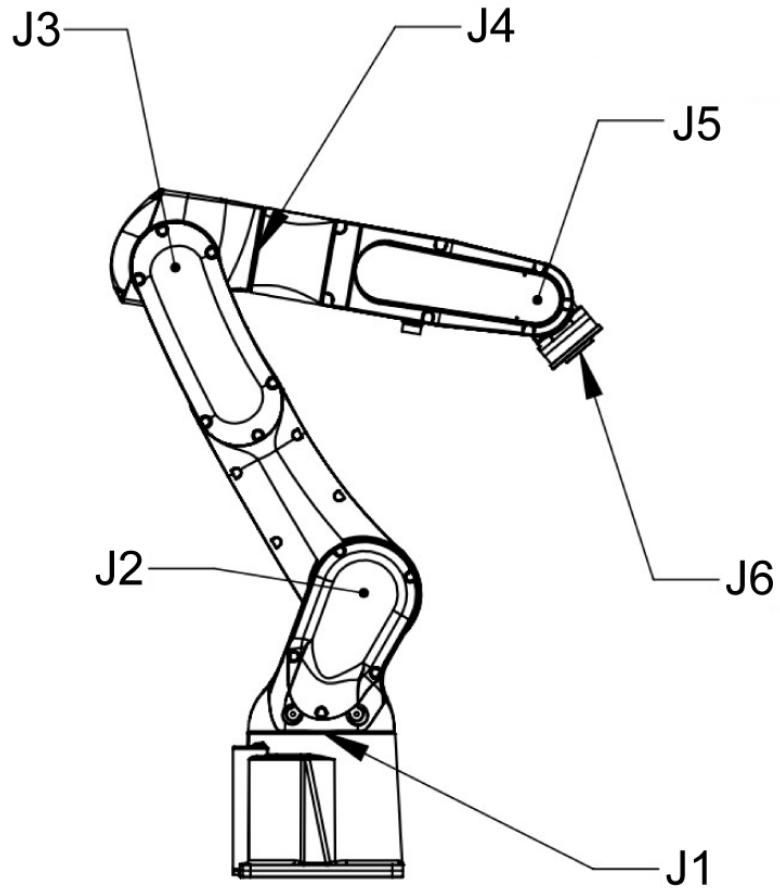
There are two coordinate types to jog the robot in. These are Cartesian and Joint.

The Cartesian coordinate system consists of:

- X, Y, and Z are linear axes.
- W rotates about the X axis.
- P rotates about the Y axis.
- R rotates about the Z axis.

The Joint coordinate system consists of:

J1, J2, J3, J4, J5, and J6.



2

Robot Joint Travel Limits

J1 (+/-170°)

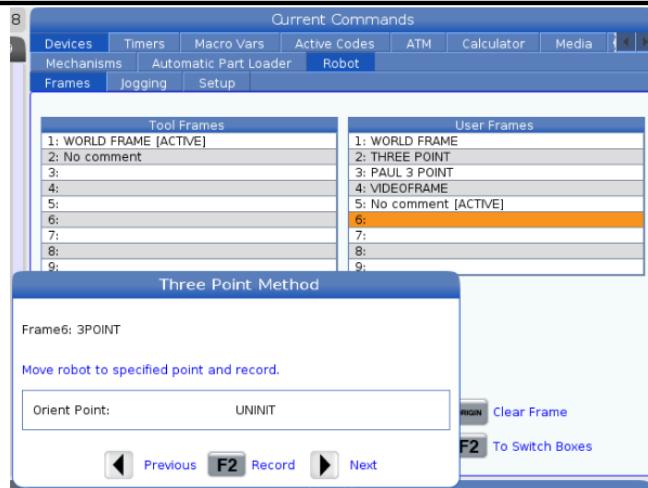
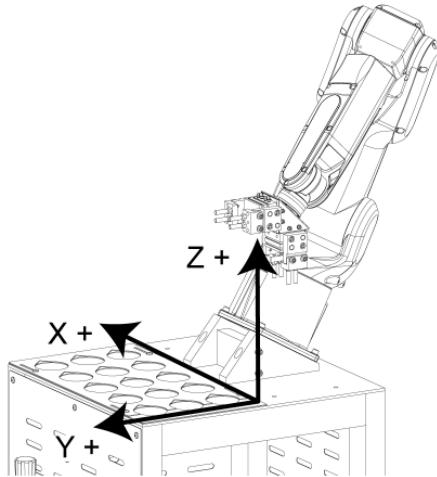
J2 (+/-122.5°)

J3 (+/-215°)

J4 (+/-190°)

J5 (+/-125°)

J6 (+/-360°)



3

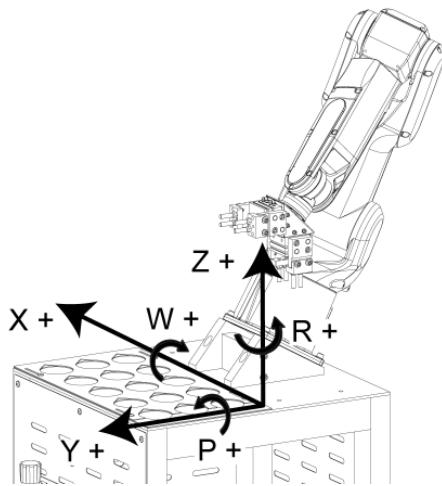
The Three Point Method is used to set our User Frame. Navigate to **Current Commands** > **Devices** > **Robot** > **Frames** and to the User Frames window. Press **[F2]** to switch boxes.

Press **[INSERT]** for the Three Point Method. Then enter a name for the User Frame and press **[F2]** to record.

Direct Entry

User Frame 2	
Comment:	<input type="text" value="JOB 1"/>
X	<input type="text" value="0.0"/>
Y	<input type="text" value="0.0"/>
Z	<input type="text" value="0.0"/>
W	<input type="text" value="-30.0"/>
P	<input type="text" value="0.0"/>
R	<input type="text" value="180.0"/>

Enter [ENTER] **Exit [UNDO]**



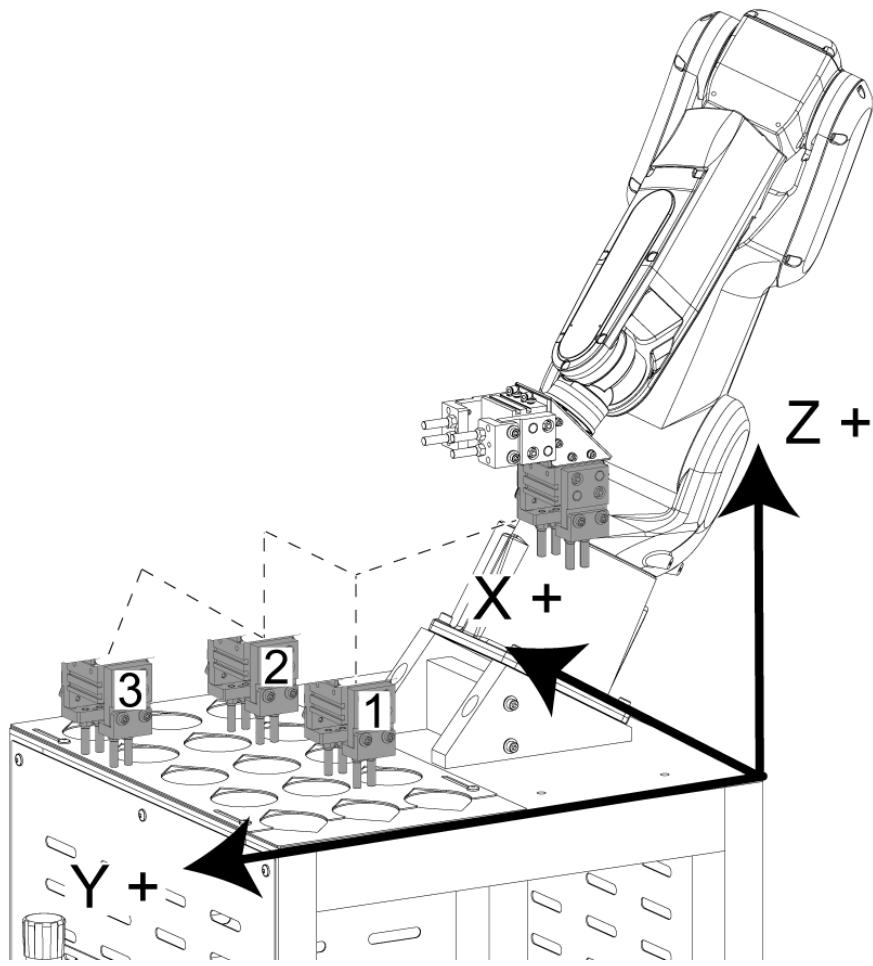
4

The Direct Entry Method can also be used to set our User Frame. Navigate to **Current Commands > Devices > Robot > Frames** and to the User Frames window. Press **[F2]** to switch boxes.

Press **[ENTER]** for the Direct Entry Method. To set the User Frame off of the robot stand. Enter a name for the User Frame and add the following values:

- X = 0.0
- Y = 0.0
- Z = 0.0
- W = -30.0
- P = 0.0
- R = 180.0

This will rotate the robot about Y 30 degrees and Z 180 degrees. The robot will jog with the Z direction perpendicular to the table. Press **[ENTER]** to record.



5

The first point you will record is the orient point. This will be set with gripper 1's fingers pointing down and on the table. Jog the robot to this location. Check to make sure all 4 grippers are flat on the table with a piece of paper like touching off a tool on a part. Once our orient point[1] is set, press **[F2]** to record.

The next point is the X Direction point. Record the Z position on the RJH when in Cartesian Position. Jog the robot up in the Z direction so the gripper fingers clear the table when jogging in the X direction. Jog the robot in the X direction and back to the recorded Z position. The fingers should be touching the table, use the piece of paper to set the grippers back on the table. Record the X direction point[2] by pressing **[F2]**.

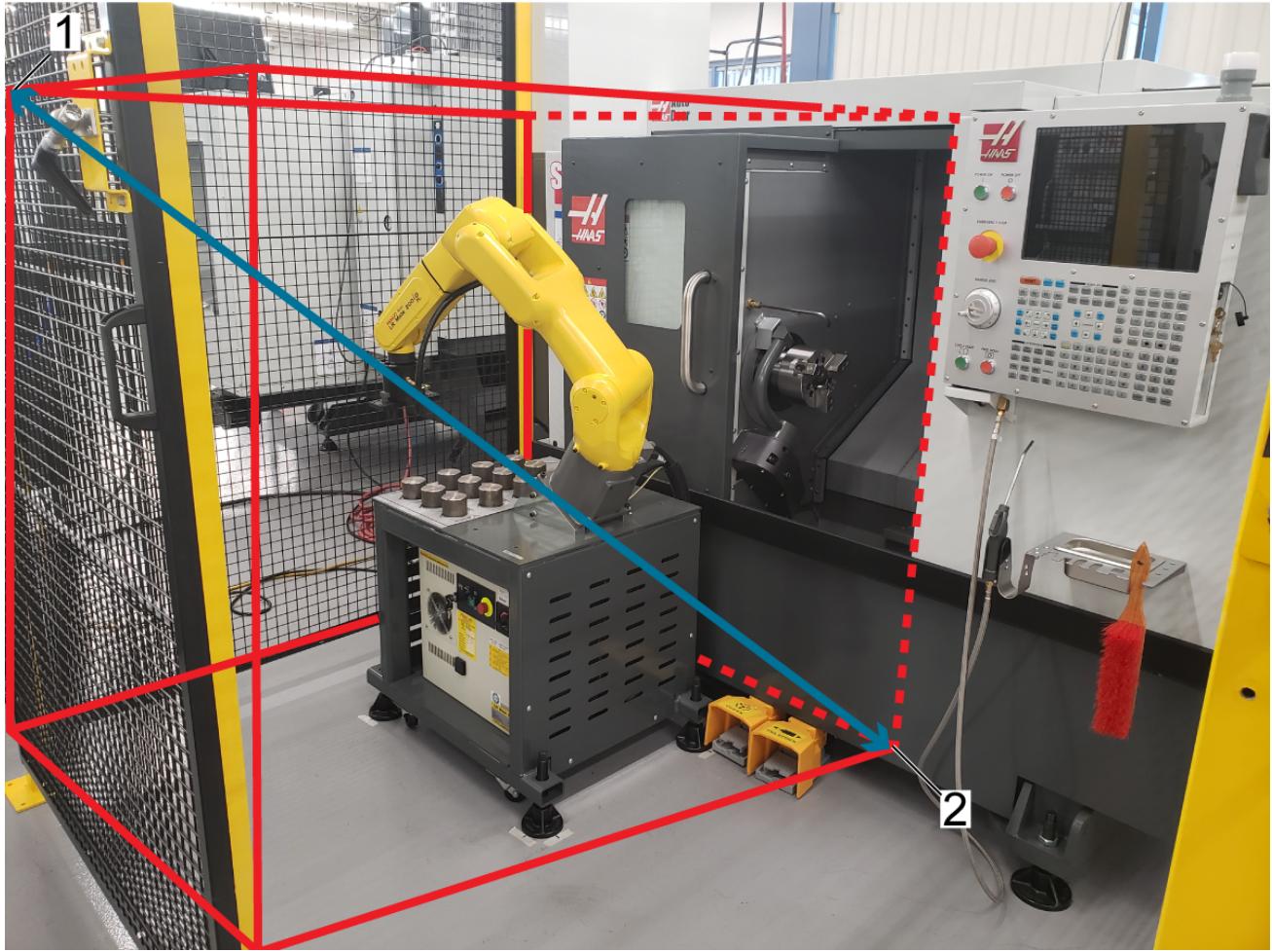
Jog the robot in the Y direction. Because the robot is mounted at a 30 degree angle, the Y-direction will travel up away from the table. Jog down in the Z direction back to the table and use the piece of paper to touch off the gripper fingers. Record the Y direction point[3] by pressing **[F2]**.



6

Press **[Insert]** to create the User Frame. Navigate to the Jogging tab and select the User Frame that was created to make it active.

FANUC Dual Check Safety (DCS) – Setup



Each Haas Robot is provided with FANUC's DCS System. This allows the user to define speed and positional limits to the robot. If the robot goes outside of these limits, DCS will stop the robot and remove power to the motors.

This procedure will show you how to set up a Fanuc Dual Check Safety (DCS) zone.

FANUC Dual Check Safety (DCS) – Setup

Setup

Current Commands

Robot

Enter max robot speed.

Operation	Value	Units
Max Robot Speed	156.969	inch/sec
Gripper Net Mass	7.000	lbs
Number of Grippers	2	
Raw Gripper	Value	Units
Clamp Output	4	
Unclamp Output	3	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	
Finish Gripper	Value	Units
Clamp Output	2	
Unclamp Output	1	

Current Commands

Robot

(0) for OD or (1) for ID

Operation	Value	Units
Gripper Net Mass	7.000	lbs
Number of Grippers	2	
Raw Gripper	Value	Units
Clamp Output	4	
Unclamp Output	3	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	
Finish Gripper	Value	Units
Clamp Output	2	
Unclamp Output	1	
Clamp Delay	2.0	Sec
Clamp Type	O.D.	

1

Operation

Max Robot Speed – This setting specifies the maximum robot speed when the machine is in Run Mode.

Enter the speed in the correct units (in/sec or mm/sec) to run the job. This setting can be adjusted up or down if the program requires.

Note: The maximum Robot speed in **Run Mode** is **157 in/sec (4000 mm/sec)**. The maximum Robot speed in **Setup Mode** is **7.9 in/sec (200 mm/sec)**.

- **Gripper Net Mass** – Enter the net mass of the gripper.
- **Number of Grippers** - Enter the number of grippers.

Raw Gripper

- **Clamp Output** - Select the output to clamp gripper 1.
- **Unclamp Output** - Select the output to unclamp gripper 1.
- **Clamp Delay** - Enter the number of seconds to delay after gripper 1 has been commanded to clamp or unclamp.
- **Clamp Type** - Enter **1** for OD or **2** for ID clamping.

Finish Gripper

- **Clamp Output** - Select the output to clamp gripper 2.
- **Unclamp Output** - Select the output to unclamp gripper 2.
- **Clamp Delay** - Enter the number of seconds to delay after gripper 2 has been commanded to clamp or unclamp.
- **Clamp Type** - Enter **1** for OD or **2** for ID clamping.

Disable the Robot

Settings

Settings Network User Positions Alias Codes

Group Listings Search **F1**

	Group	Name		Value	Unit
359	Machine Setup	SS Chuck Clamp Delay Time		0.000	Sec
368	Machine Setup	Live Tooling Type	>	None	
369	Miscellaneous	Pulsejet Injection Cycle Time		1.000	Sec
370	Miscellaneous	Pulsejet Single Squirt Count		1	
372	Machine Setup	Parts Loader Type	>	None	
375	Machine Setup	APL Gripper Type	>	None	
376	Machine Setup	Light Curtain Enable	>	Off	
377	Miscellaneous	Negative Work Offsets	>	On	
378	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
379	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
380	Machine Setup	Safe Zone Calibrated Geometry ...		0.0000	IN
382	General	Disable Pallet Changer	>	None	
409	Program	Coolant Pressure	>	Medium	
410	None	Safe Tool Change Location R		0.0000	IN

ORIGIN [Restore default settings menu.](#)

372 - Parts Loader Type

This setting turns on the Automatic Parts Loader (APL) in [CURRENT COMMANDS] under the Devices tab. Use this page to set up the APL. DANGER If you turn this

HELP [View full text.](#)

To disable the robot to run the machine in stand-alone mode. Press **[SETTING]**. Change the following Settings:

- **372 Parts Loader Type** to **0: None**
- **376 Light Curtain Enabled** to **Off**

General Safety Notes

Operation Safety:

- Check for damaged grippers every time a new job is run.
- In the event of a power loss the grippers will remain in the clamp position.
- In the event of air loss, the grippers will temporary remain in the clamp position. It is necessary to remedy the situation as overtime the air in the system will bleed off and may cause the part to fall.

Periodic inspection of machine safety features:

Inspect fence door interlock mechanism for proper fit and function. To check the interlock operation refer to the Haas Robot Installation Guides.

Setup / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

Simple Template



1

Sequence Type – Enter 0 for Simple Template or 1 for Custom Sequence. See the Custom Sequence Section for more information.

Raw Stock Pickup Method – Enter 0 for Table Grid or 1 for Single Point.

Finished Part Drop Off Method – Enter 0 for Single Table, 1 for Dual Table, or 2 for Single Point.

Number of Stacked Parts – Enter the number of stacked parts per pocket. Maximum 3 parts.

Note: If using the stacked part feature of two or three parts and the Raw Stock Pickup Method and Finished Part Drop Off Method are both single table. The first part location must be empty.

Number of Rows – Enter the number of rows you want to use on the table.

Numbers of Columns – Enter the number of columns you want to use on the table.

2

Number of Rows – Enter the number of rows you want to use on the table.

Numbers of Columns – Enter the number of columns you want to use on the table.

Distance Between Rows – Enter the incremental distance between the rows.

Distance Between Columns – Enter the incremental distance between the columns.

Raw Stock Height – Enter the height of the raw stock.

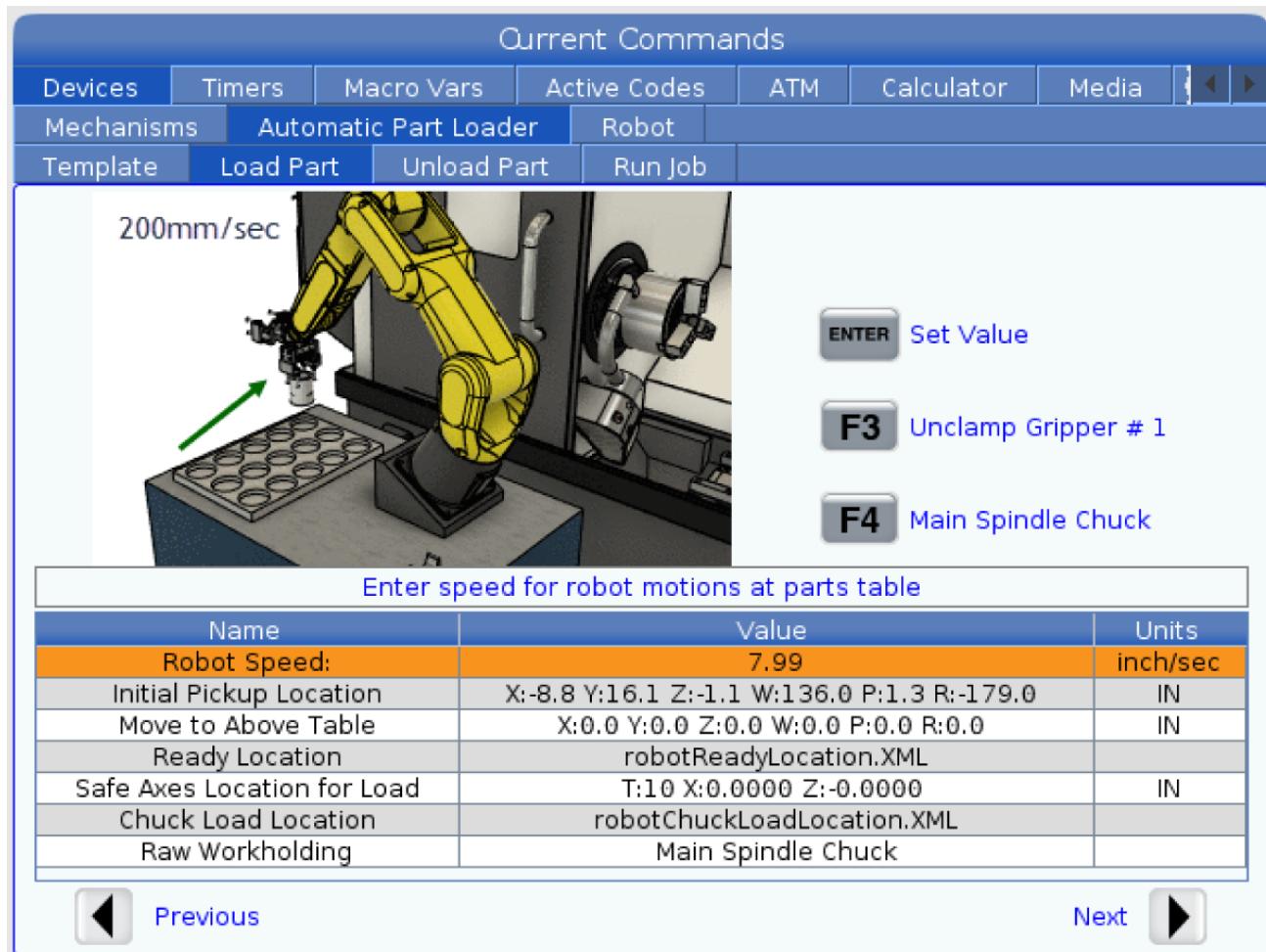
Finished Part Height – Enter the height of the finished part.

Part Flip – Enable part flip for two operation jobs.

Raw Stock Mass – Enter the mass of the raw stock.

Finished Part Mass – Enter the mass of the finished part.

Load Part - Simple Template



1

Note: For the next setup operations the following commands are available:

Press **[TURRET FWD]** OR **[TURRET REV]** to index the tool changer. This will be used when setting the Safe Axes Location for Load position

Press **[F2]** to set the reference position. This records the current robot position.

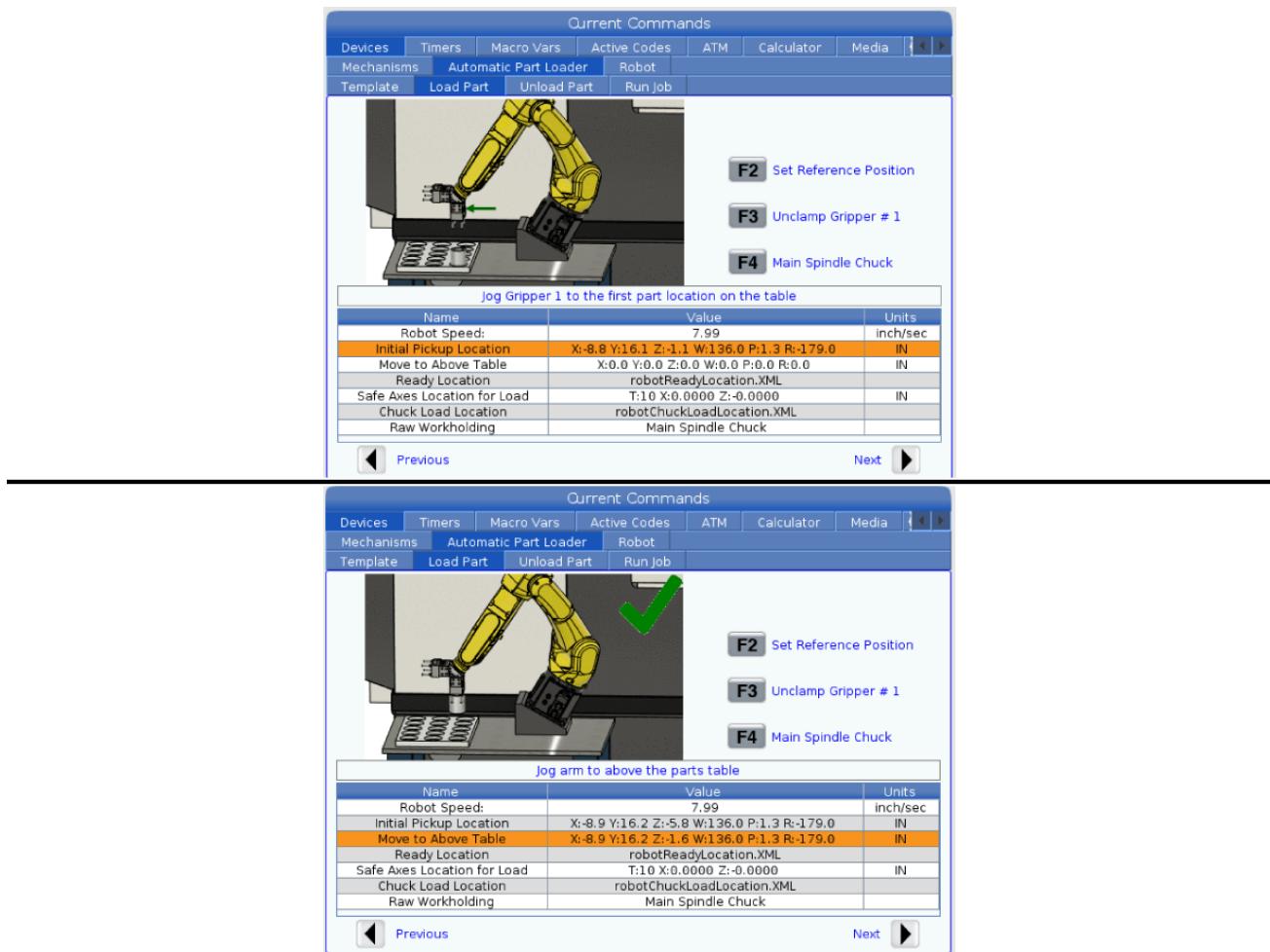
Press **[F3]** to clamp/unclamp the gripper. In the Load Part tab gripper 1 is clamped or unclamped. In the Unload Part tab gripper 2 is actuated.

Press **[F4]** to clamp/unclamp the main spindle chuck.

Robot Speed – Enter the speed for the robot motions at the parts table. Start at a slow speed during setup and after verifying that the job runs correctly, update the speed to the desired cycle time.

- Slow 1 in/s

- Medium 3 in/s
- Fast 6 in/s

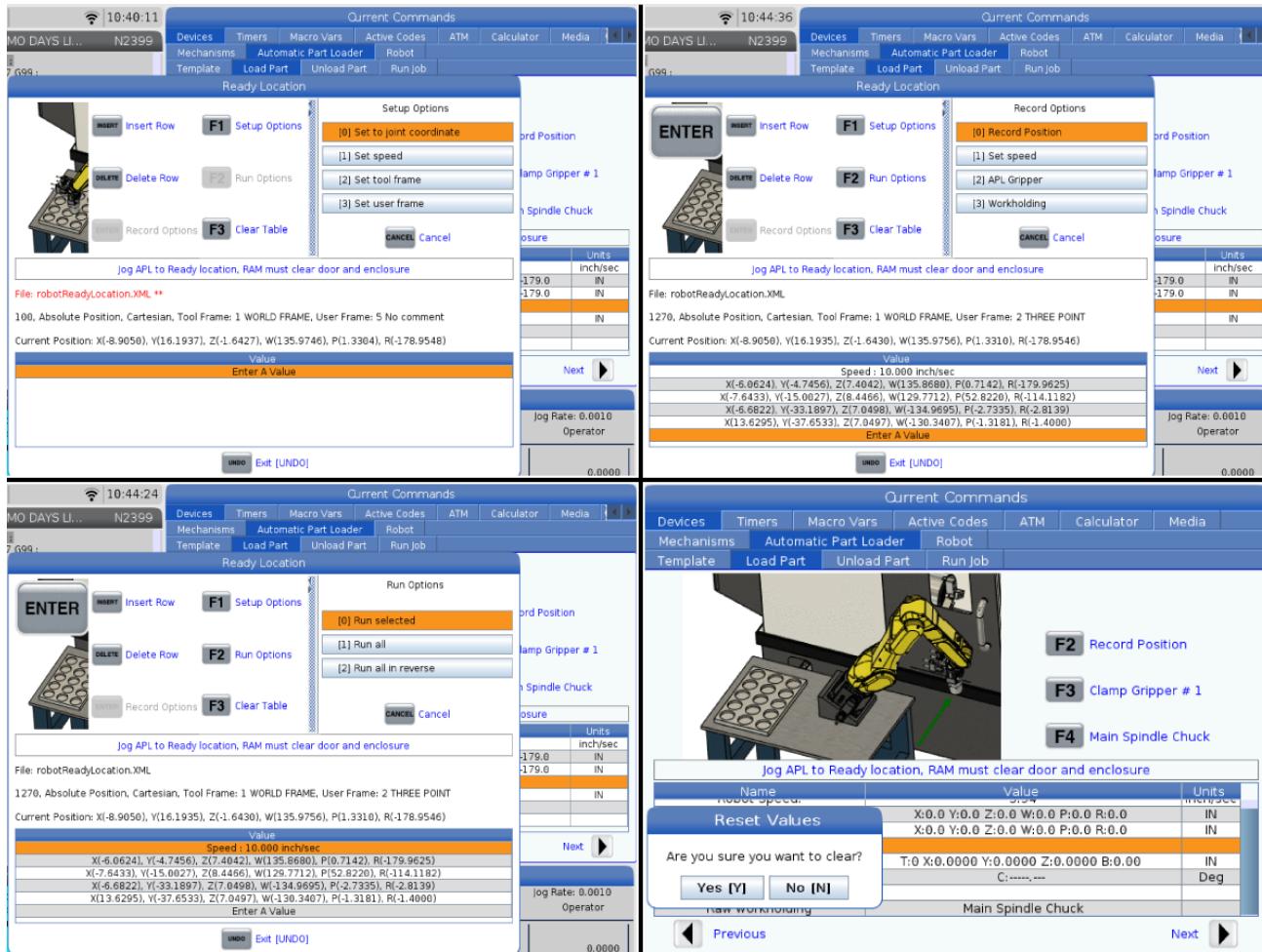


2

Initial Pickup Location – Jog gripper 1 to the first part location on the parts table. Clamp the part by pressing [F3] and then press [F2] to record the reference position.

Tips & Tricks: Pick up the part and realign the part to the first part location on the template and record that position. This will better align the gripper to the part and table.

Move to Above Table – Jog the robot in the Z direction to clear all the parts on the table and press [F2] to record the reference position. This location is also the Recovery Position.



3

Ready Location – Create a motion file that moves the robot from the Above Table Location to the Ready Location. It should be outside the door, with gripper 1 rotated to place the part in the chuck.

Press **[ENTER]** to create a motion file and press **[F1]** for Setup Options.

- Press **[1]** to set coordinates to Joint.
- Press **[2]** to set the speed.
- Press **[3]** to set Tool Frame to 1 World Frame.
- Press **[4]** to set User Frame to the User Frame created from the Three Point Method.

Jog the robot from the Above Table Location to outside the door while rotating gripper 1. Record positions along the path to create a smooth motion.

Tips & Tricks: Set the first point for this motion file to be away from the Above Table Location in the X & Y direction.

Press **[ENTER]** for Record Options. This creates an action in your motion File.

- Press **[0]** to record a position.
- Press **[1]** to set the speed of a motion.
- Press **[2]** to set the gripper state.
- Press **[3]** to set the workholding state.

Note: The robot template will open/close the grippers and workholding. Inserting a gripper state or workholding state is only for advanced jobs that use part flip.

Press **[F2]** for Run Options.

- Press **[0]** to run the selected position.
- Press **[1]** to run all positions in the motions file.
- Press **[2]** to run all positions in reverse.

Press **[F3]** for Run Options.

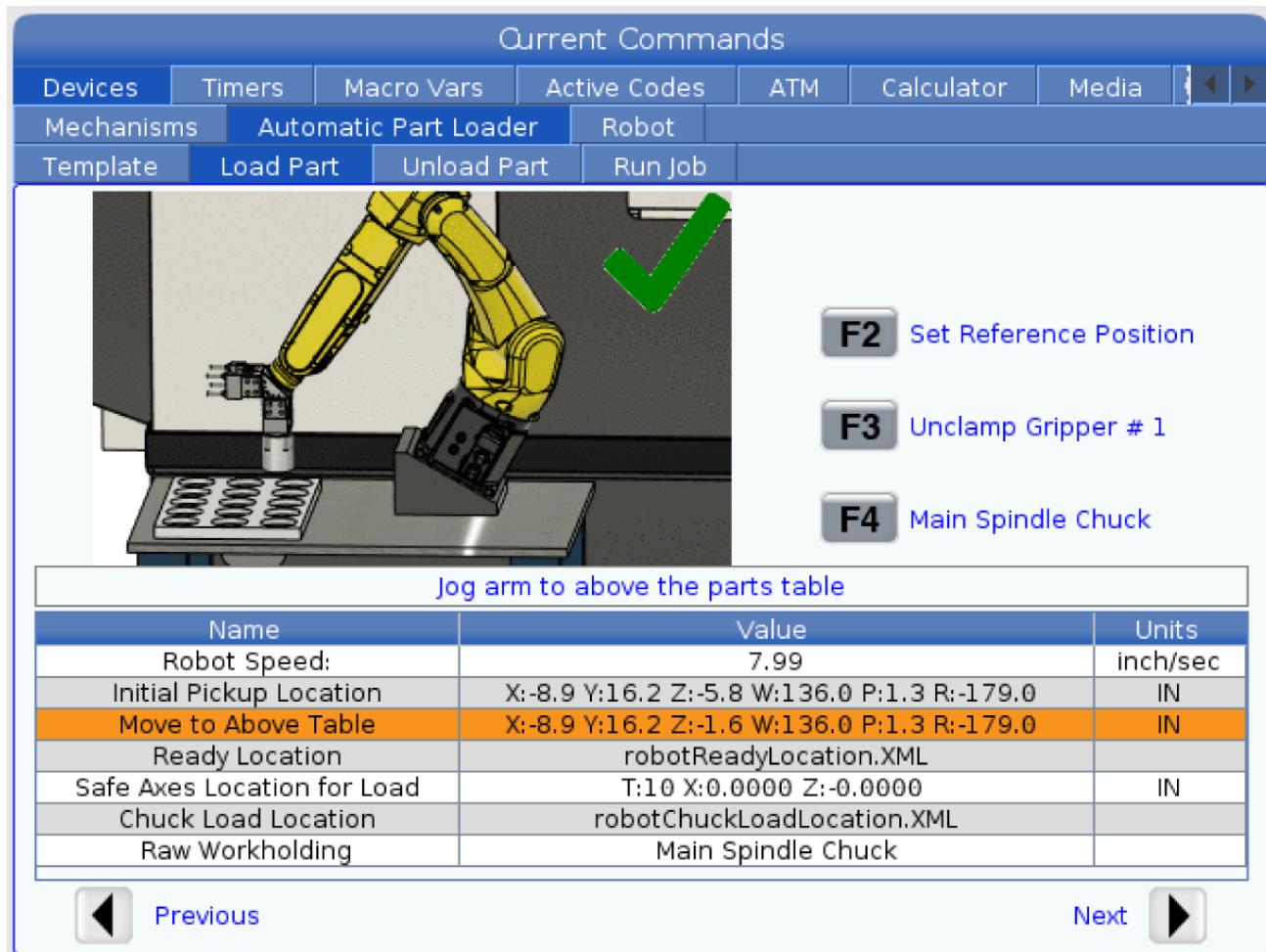
- Press **[1]** to create a new file.
- Press **[2]** to save the file.
- Press **[3]** to load a file.

If you need to clear the motion file, press **[F3]** to clear table. Press **[Y]** to reset values and **[N]** to cancel.

After confirming the motions, press **[UNDO]** to exit and save the motion file.

Tips & Tricks: As you move the arm towards the door, check and make sure you aren't over-winding any of the joints by checking their position on the RJH. You can see switch between moving in Joint mode and Cartesian mode by pressing Linear in the lower left corner of the RJH.

Tips & Tricks: At least one of the points in the Ready Location motion file should be recorded in Joint mode and the last position in the Ready Location motion file needs to be recorded in Cartesian mode.



5

Safe Axes Location for Load – Jog the internal axes to ensure the Tool Changer, tools, and B-Axis are clear when loading parts. Press **[F2]** to record the reference position.

C Axis Orient Position – This field is used to set the chuck orientation when loading a part. Follow the on screen instructions to set the values.

Chuck Load Location – Create a motion file that moves the robot from the Ready Location to the Chuck Load Location.

Tips & Tricks: The first location recorded in the motion file should be the last location in the Ready Location motion file. Outside the door, with gripper 1 rotated to place the part in the chuck.

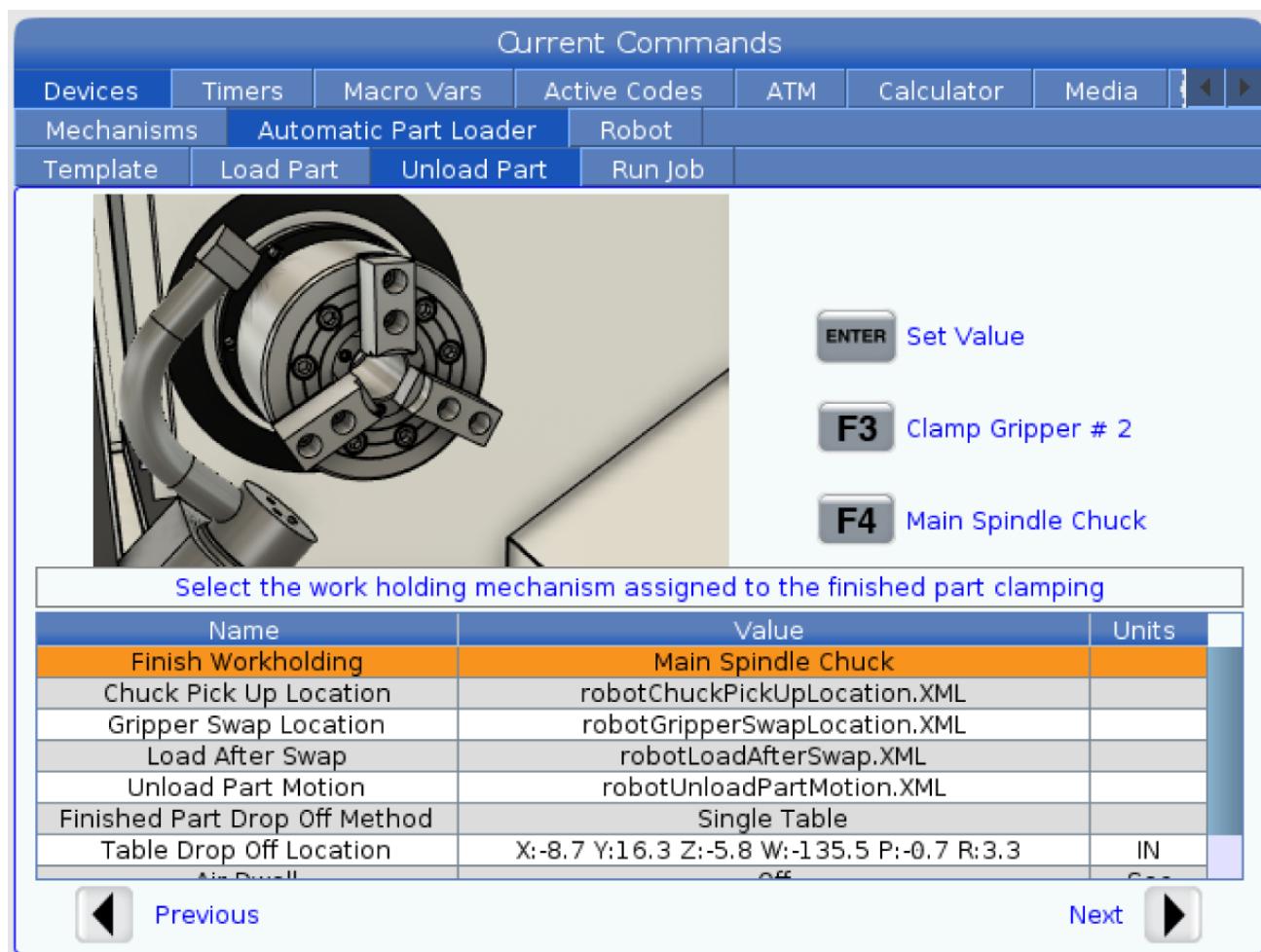
6

Jog the robot from the Ready Location to spindle centerline. With the workholding unclamped, jog gripper 1 along spindle centerline towards the chuck. The part should be centered in the jaws and against the back of the jaws. Clamp the chuck and check for movement of the part. Adjust to center the part to the workholding.

Tips & Tricks: After centering the part and clamping the workholding record the last position. Then unclamp the workholding and jog the part out in the Y direction out of the workholding and record and insert that position before the last recorded position.

Raw Workholding – Select the workholding mechanism to clamp the raw part.

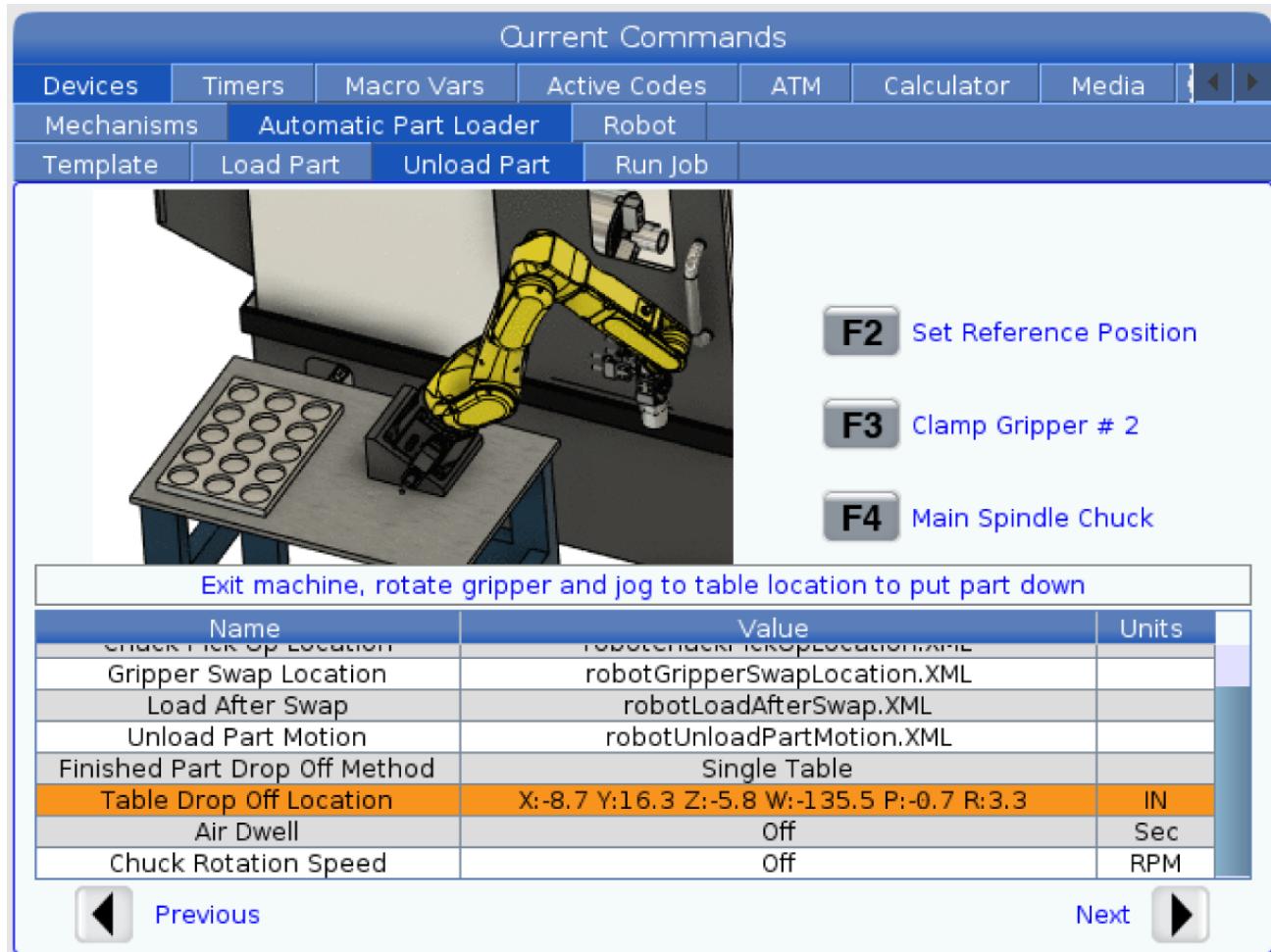
Unload Part - Simple Template



1

Finish Workholding – Select the workholding mechanism to clamp the finished part.

Chuck Pick Up Location – Create a motion file that moves the robot from the Ready Location to the Chuck Pick Up Location. With gripper 2 unclamped, jog and rotate gripper 2 to spindle centerline and locate and clamp the part. When clamping gripper 2, check for movement of the robot and adjust to center the gripper to the part.



2

Gripper Swap Location – Create a motion file that moves the robot from the Chuck Pick Up Location to the Gripper Swap Location. Jog the robot along spindle centerline away from the chuck and rotate the gripper so gripper 1 is aligned to spindle centerline.

Load After Swap – Create a motion file that moves the robot from Gripper Swap Location to the Chuck Load Location. With the workholding unclamped, jog gripper 1 along spindle centerline towards the chuck. The part should be centered in the jaws and against the back of the jaws. Clamp the chuck and check for movement of the part. Adjust to center the part to the workholding.

Unload Part Motion – Create a motion file that moves the robot from Chuck Load to the Ready Location. With gripper 1 unclamped, Jog the robot along spindle centerline away from the workholding and outside the door to the Ready Location.

Finished Part Drop Off Method – Select the method for dropping off the finished part. Enter 1 for Single Table, 2 for Symmetric Dual Table, and 3 for Single Point.

Table Drop Off Location – Move the robot from the Ready Location to the first part location on the table. Place the part 0.0625" above the table, press **[F3]** to unclamp gripper 2. Press **[F2]** to record the reference position.

Air Dwell – Enter the number of seconds to turn on Air Blast after the part has been removed.

Chuck Rotation Speed – Enter the spindle speed at which the spindle will rotate during Air Blast.

Run Job - Simple Template



1

The Run Job tab allows you to load/run and save a job. It also shows the current Robot mode status and current job running. The file name will be red if the job is not saved and black if saved.

Press **[F3]** to save the job, type in the desired job name and select the file location. To save the job to the same file location after editing press **[INSERT]** two times.

Press **[F4]** to load a job.

Press **[F2]** to create a new job.

Press **[INSERT]** to turn APL Mode On/Off.

Press **[UNDO]** to move robot to Safe Position. This location is the Move to Above Table location recorded on the Load Part tab. If this position is not recorded, this feature is not available.

Warning: Do not use this feature if the robot is not in a safe position to move from its current position to the Above Table location.

2

Current Part – This field can be updated so that the sequence will start at the specified point.

Next Part – The counter shows the next part.

Completed Part – The counter shows the amount of completed parts. This field can be reset by pressing **[ORIGIN]**.

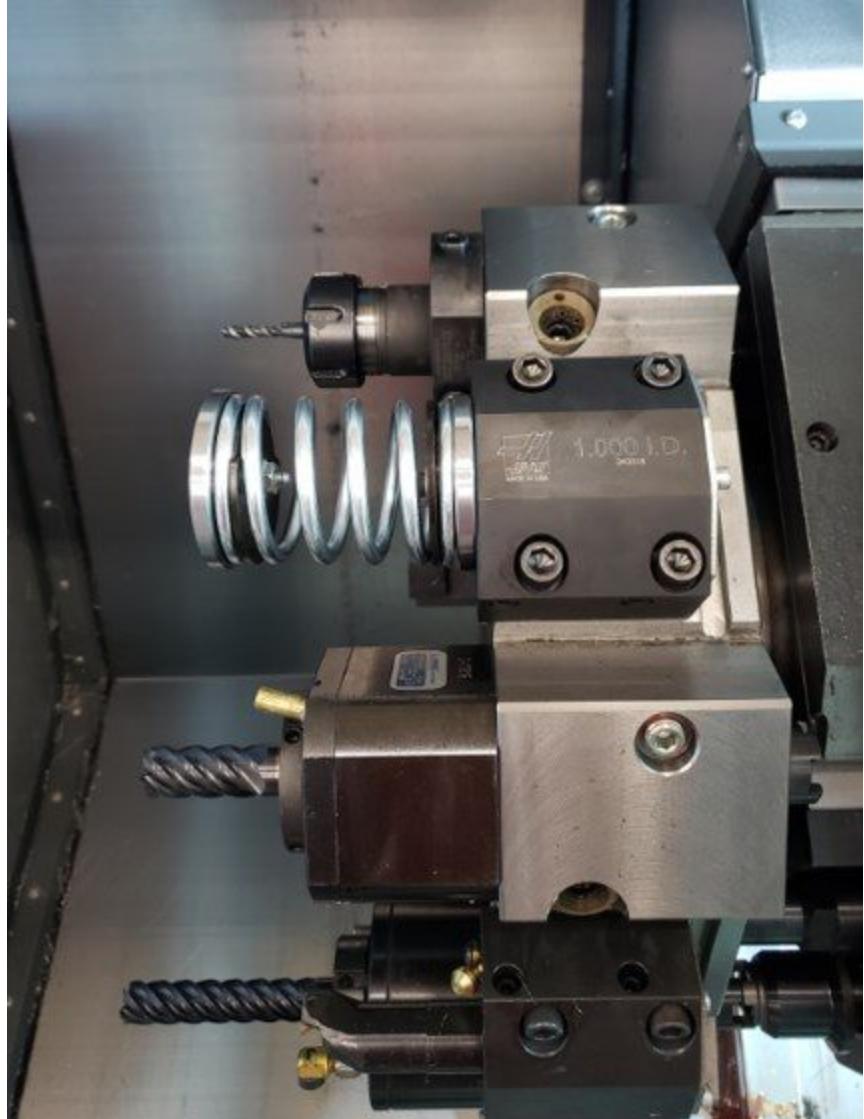
Total Parts – This field can be changed. The sequence will run until total parts equals completed parts. This would allow the running of a partial table.

Rapid Override – This shows the current rapid override status.

Current State – This shows the current APL state.

Part Flip: If Part Flip is enabled, the programs need to be selected for OP 1 and OP 2.

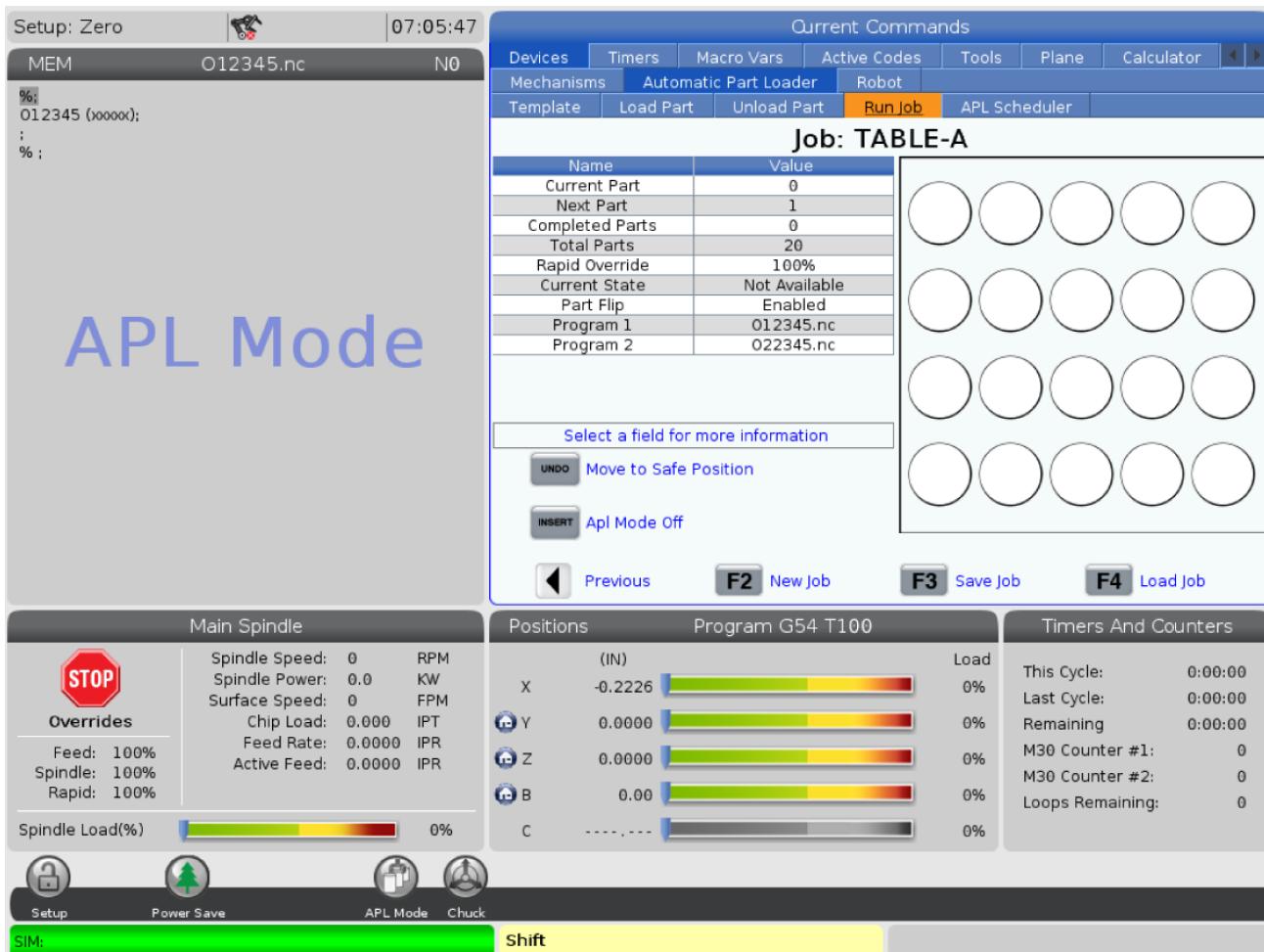
Program: - Dedicated program to be executed with this job. (Optional if Part Flip is not enabled for the current job.)



3

The first part of the machining program must be an operation to seat the SLUG properly on the Jaws shoulder or stop. The Haas supplied spring plunger can be used or any custom made tool. The Plunger like any tool must have it's own tool offset and station on the turret.

- Approach part in rapid motion and stop approximately 0.25" (6 mm) from the part.
- Feed in and push plunger against the part until spring has compressed 1/2" (12 mm).
- Open and Close the chuck using M11 and M10 for part to seat.
- Retract away from the part in Rapid motion and proceed with machining process



4

After setting up the Job press **[INSERT]** to turn on APL Mode.

Note: When the machine is in APL Mode the control will load the next part when the machine executes an M299 code. When not running in APL mode the M299 takes the place of an M30 or M99 at the end of a program.

More information on programming can be found in the [Operator's Manual](#).

Press **CYCLE START** to start your program.

APL Scheduler

Current Commands

Devices	Timers	Macro Vars	Active Codes	Tools	Plane	Calculator	◀ ▶
Mechanisms	Automatic Part Loader		Robot				
Template	Load Part	Unload Part	Run Job	APL Scheduler			

Job Number	Order	Status	Parts Count	Job Name		
1	0	Completed	20	TABLE-A		
2	1	Scheduled	0	* TABLE-B		
3	2	Scheduled	0	TABLE-C		
4	0	Unscheduled	0			

Program Path: User Data/My Robot/TABLE-B/022345.nc
 Prog Comment:

<input type="button" value="ENTER"/> Select Job <input type="button" value="F2"/> Schedule	<input type="button" value="ALTER"/> Load Job <input type="button" value="F3"/> Add Row	<input type="button" value="INSERT"/> Scheduler Mode On <input type="button" value="DELETE"/> Delete Row
---	--	---

The APL scheduler tab allows the user to schedule Robot Jobs.

Note: Turn Setting **131** to **OFF** to run scheduled jobs.

Job Number: Specifies the job number. Press **[ENTER]** to create a Program Comment for the Job.

Order: Specifies the order of the jobs. This can be edited to change the order of the scheduled jobs. Press **[ENTER]** to set the job order.

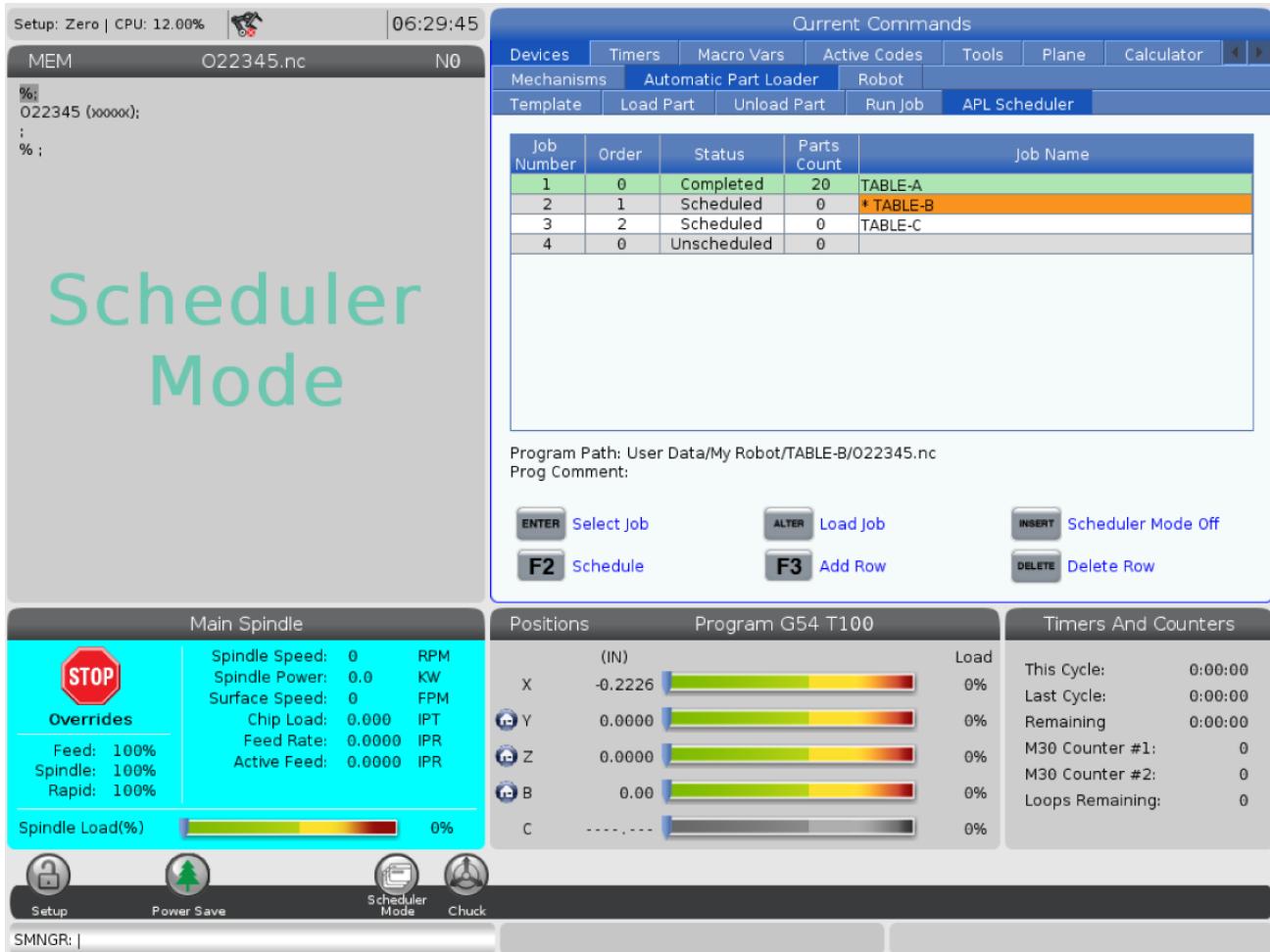
Status: Specifies if the job is Unscheduled, Scheduled, or Completed. Press **[ENTER]** to show the Job Status options.

Parts Count: Specifies how many parts the current scheduled job has run. Press **[ENTER]** to set the part count.

Job Name: This allows the user to select the Robot Job XML. Press **[ENTER]** to select the Robot Job.

Program Path: Displays the program path that is selected for the job. The program is selected in the Run Job tab.

Prog Comment: Displays the Program Comment entered by the user.



[ENTER] Varies on the current column. See previous section for column info.

[ALTER] Load Job. Loads the highlighted job into the Run Job tab.

[INSERT] Scheduler Mode On/Off. This turns the Scheduler Mode On or Off. This must be set to On to run a Job Schedule. Follows the same rules as APL Mode.

[F2] Schedule. Schedules the highlighted job.

[F3] Add Row. Adds a new Job Number to the APL scheduler.

[DELETE] Delete Row. Deletes the highlighted job. Scheduled jobs cannot be deleted.

Note: The robot will move to the Ready Location of the current job before moving to the next job in the APL Scheduler. Make sure the Ready Location for all jobs will be a safe location and there are no obstructions.

General Safety Notes

Operation Safety:

- Check for damaged grippers every time a new job is run.
- In the event of a power loss the grippers will remain in the clamp position.
- In the event of air loss, the grippers will temporary remain in the clamp position. It is necessary to remedy the situation as overtime the air in the system will bleed off and may cause the part to fall.

Periodic inspection of machine safety features:

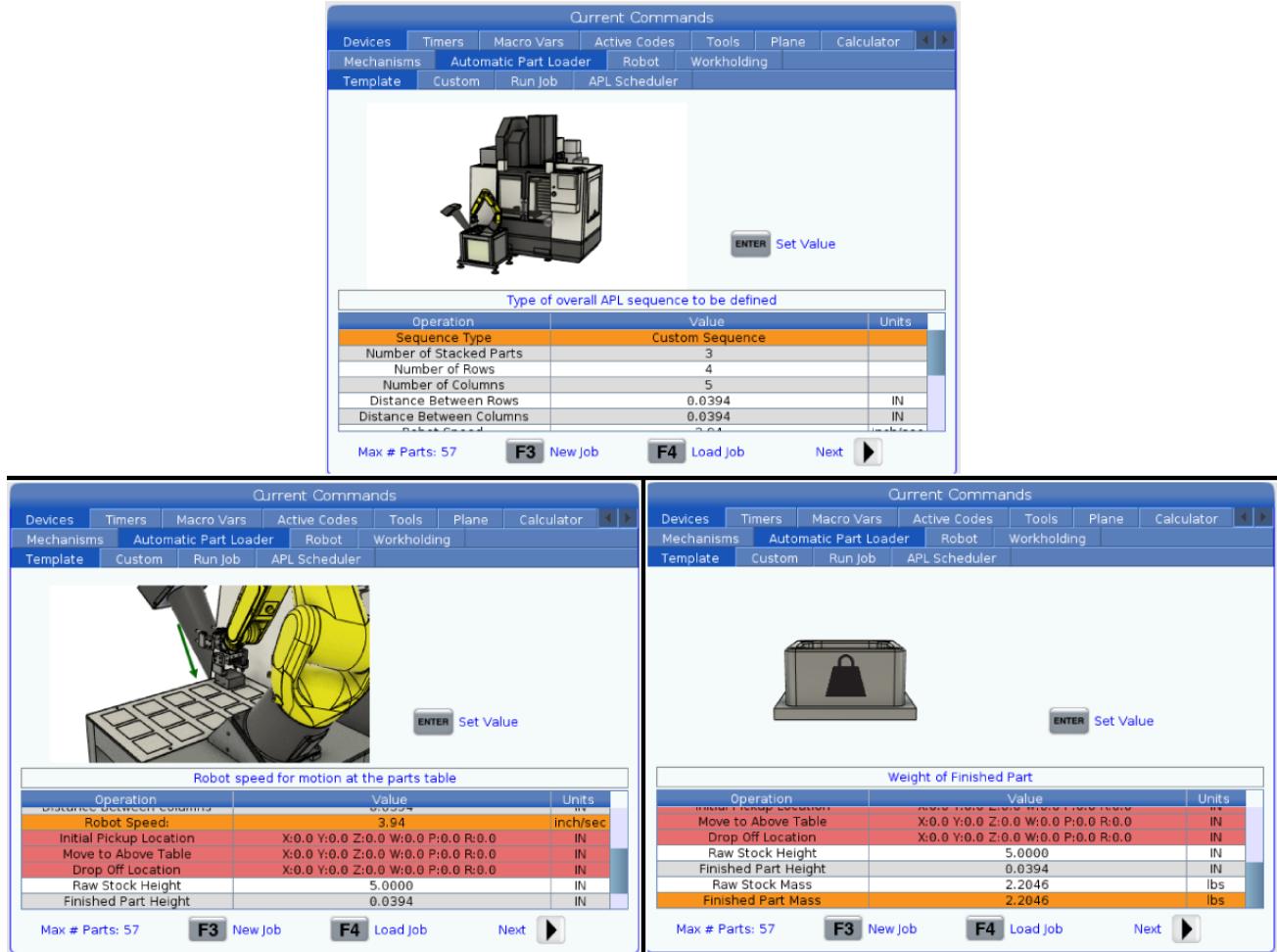
Inspect fence door interlock mechanism for proper fit and function. To check the interlock operation refer to the Haas Robot Installation Guides.

Setup / Run Mode Operation

All Haas CNC machines are equipped with a key switch on the side of the control pendant to lock and unlock setup mode. The robot will have the following behaviors depending on what mode is selected.

- When the Haas control is in Run mode, mode 1, unlocking the interlock and opening up the gate stops all motion, and no motion can be started until it is closed and locked.
- When the Haas control is in Set up mode, mode 2, speed limited motion such as jogging an axis of the robot can be performed in order to program a robot's path of motion, pick up position, set a robot's tool center point, (an offset), load and pick up parts from the spindle or part holder in the machine, etc. The programmed path will also be able to be run slowly to prove out the programmed path of the robot. The robot in setup mode can only be handle jogged while the **F2** button the RJH is pressed.

Template - Custom Sequence



Sequence Type – Enter 0 for Simple Template or 1 for Custom Sequence.

Number of Stacked Parts – Enter the number of stacked parts per pocket. Maximum 3 parts.

Note: If using the stacked part feature of two or three parts and the Raw Stock Pickup Method and Finished Part Drop Off Method are both single table. The first part location must be empty.

Number of Rows – Enter the number of rows you want to use on the table.

Numbers of Columns – Enter the number of columns you want to use on the table.

Distance Between Rows – Enter the incremental distance between the rows.

Distance Between Columns – Enter the incremental distance between the columns.

Robot Speed – Enter the robot speed for motion at the parts table.

Initial Pickup Location – Jog gripper 1 to the first part location on the parts table. Clamp the part and then press **[F2]** to record the reference position.

Tips & Tricks: Pick up the part and realign the part to the first part location on the template and record that position. This will better align the gripper to the part and table.

Move to Above Table – Jog the robot in the Z direction to clear all the parts on the table and press **[F2]** to record the reference position. This location is also the Recovery Position.

Table Drop Off Location – Move the robot from the Ready Location to the first part location on the table. Place the part 0.0625" above the table, unclamp gripper 2. Press **[F2]** to record the reference position.

Raw Stock Height – Enter the height of the raw stock.

Finished Part Height – Enter the height of the finished part.

Raw Stock Mass – Enter the mass of the raw stock.

Finished Part Mass – Enter the mass of the finished part.

Custom - Custom Sequence

Current Commands

Devices	Timers	Macro Vars	Active Codes	Tools	Plane	Calculator		
Mechanisms	Automatic Part Loader		Robot	Workholding				
Template	Custom	Run Job	APL Scheduler					

File: /CUSTOM/CustomSequenceSet.SQC

Alias Codes	Description	File
1	FIRST PART PICKUP	FPP.XML
2	MOVE TO READY	MTR.XML
3	LOAD PART INTO CHUCK	LPIC.XML
4	UNLOAD FINISHED PART	UFP.XML
5	DROP OFF PART	DOP.XML
	< New / Load >	

Custom

	Insert Row		Delete Row		Rename		Clear Table
	Load / Alias		F2 Recorder		F3 Save All		F4 Load All

1

The Custom tab allows the user to create a set of user defined sequences. Each row is a sequence with an Alias Code, Description of the sequence, and File name.

The sequence is called in the program with M300 Pn. The P code number corresponds to the Alias Code in the current Custom Sequence.

File: Displays the Custom Sequence path that is currently loaded. If the File path is red, it is edited and not saved. The file type is **.SQC**.

[INSERT] Inserts a row above the highlighted sequence.

[DELETE] Deletes the highlighted sequence.

[ALTER] Renames a Custom Sequence.

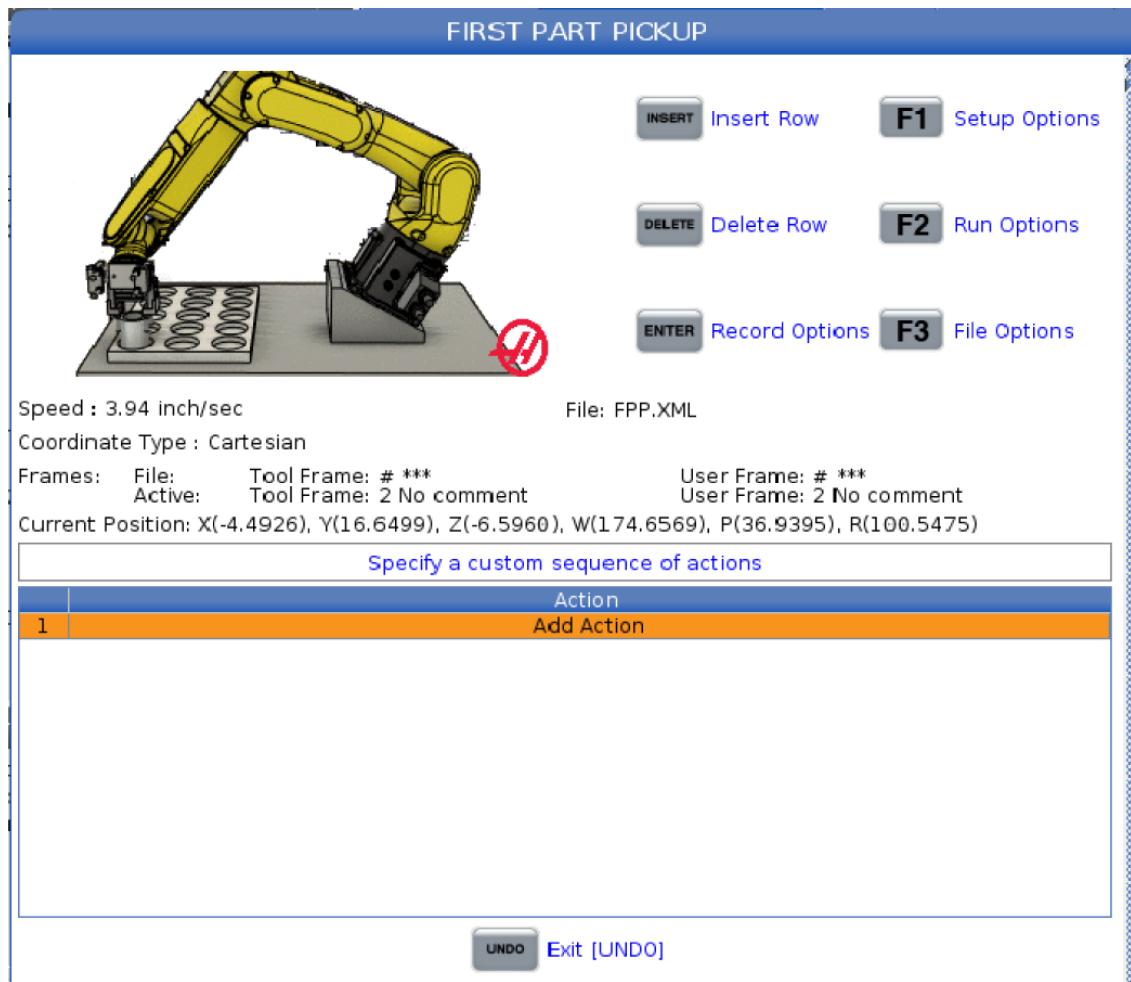
[ORIGIN] Clears the Custom Sequence table.

[ENTER] Load a saved motion file.

[F2] Opens the Recorder window. See Custom Recorder step below.

[F3] Saves the Custom Sequence and the created Sequence files.

[F4] Load a saved Custom Sequence.



2

Press **[F2]** to open the Custom Recorder window, this allows the user to create a custom motion file.

[INSERT] Insert a new row.

[DELETE] Delete the current highlighted row.

[ENTER] Record Options.

- Press **[1]** to Record Position.
- Press **[2]** to set speed.
- Press **[3]** to set the Gripper State.
- Press **[4]** to set Workholding State
- Press **[5]** to command the Air Blast.
- Press **[6]** to command the Auto Door state.
- Press **[7]** to set the Main/Sub Spindle Orient.
- Press **[8]** to set a Machine Dwell or Robot Dwell.
- Press **[9]** to set the state of the robot Pickup or Dropoff. This is used to increment the part counter.
- Press **[10]** to Increment Part Indices.

3

[F1] Setup Options.

- Press **[1]** to set coordinates to Joint.
- Press **[2]** to set the speed.
- Press **[3]** to set Tool Frame to 1 World Frame.
- Press **[4]** to set User Frame to the User Frame created from the Three Point Method.

[F2] for Run Options.

- Press **[0]** to run the selected position.
- Press **[1]** to run all positions in the motions file.
- Press **[2]** to run all positions in reverse.

[F3] for Run Options.

- Press **[1]** to create a new file.
- Press **[2]** to save the file.
- Press **[3]** to load a file.

Run Job - Custom Sequence



1

The Run Job tab allows you to load/run and save a job. It also shows the current Robot mode status and current job running. The file name will be red if the job is not saved and black if saved.

Press **[F3]** to save the job, type in the desired job name and select the file location. To save the job to the same file location after editing press **[INSERT]** two times.

Press **[F4]** to load a job.

Press **[F2]** to create a new job.

Press **[INSERT]** to turn APL Mode On/Off.

Press **[UNDO]** to move robot to Safe Position. This location is the Move to Above Table location recorded on the Load Part tab. If this position is not recorded, this feature is not available.

Warning: Do not use this feature if the robot is not in a safe position to move from its current position to the Above Table location.

2

Current Part – This field can be updated so that the sequence will start at the specified point.

Next Part – The counter shows the next part.

Completed Parts – The counter shows the amount of completed parts. This field can be reset by pressing **[ORIGIN]**.

Total Parts – This field can be changed. The sequence will run until total parts equals completed parts. This would allow the running of a partial table.

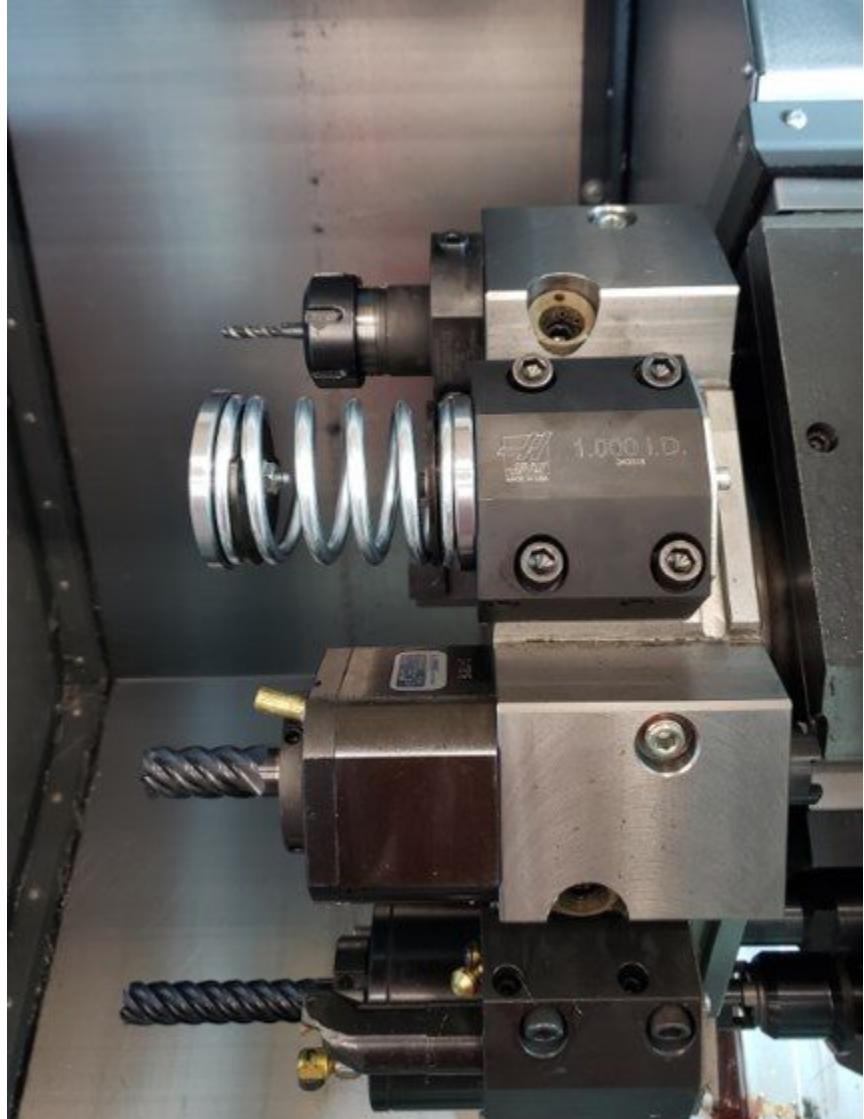
Rapid Override – This shows the current rapid override status.

Current State – This shows the current APL state.

Program: - Dedicated program to be executed with this job. (Optional if Part Flip is not enabled for the current job.)

Pre Run Sequence: - Optional step executed before this job if it is ran in APL scheduler. It can be used to prepare and position APL/Robot for execution.

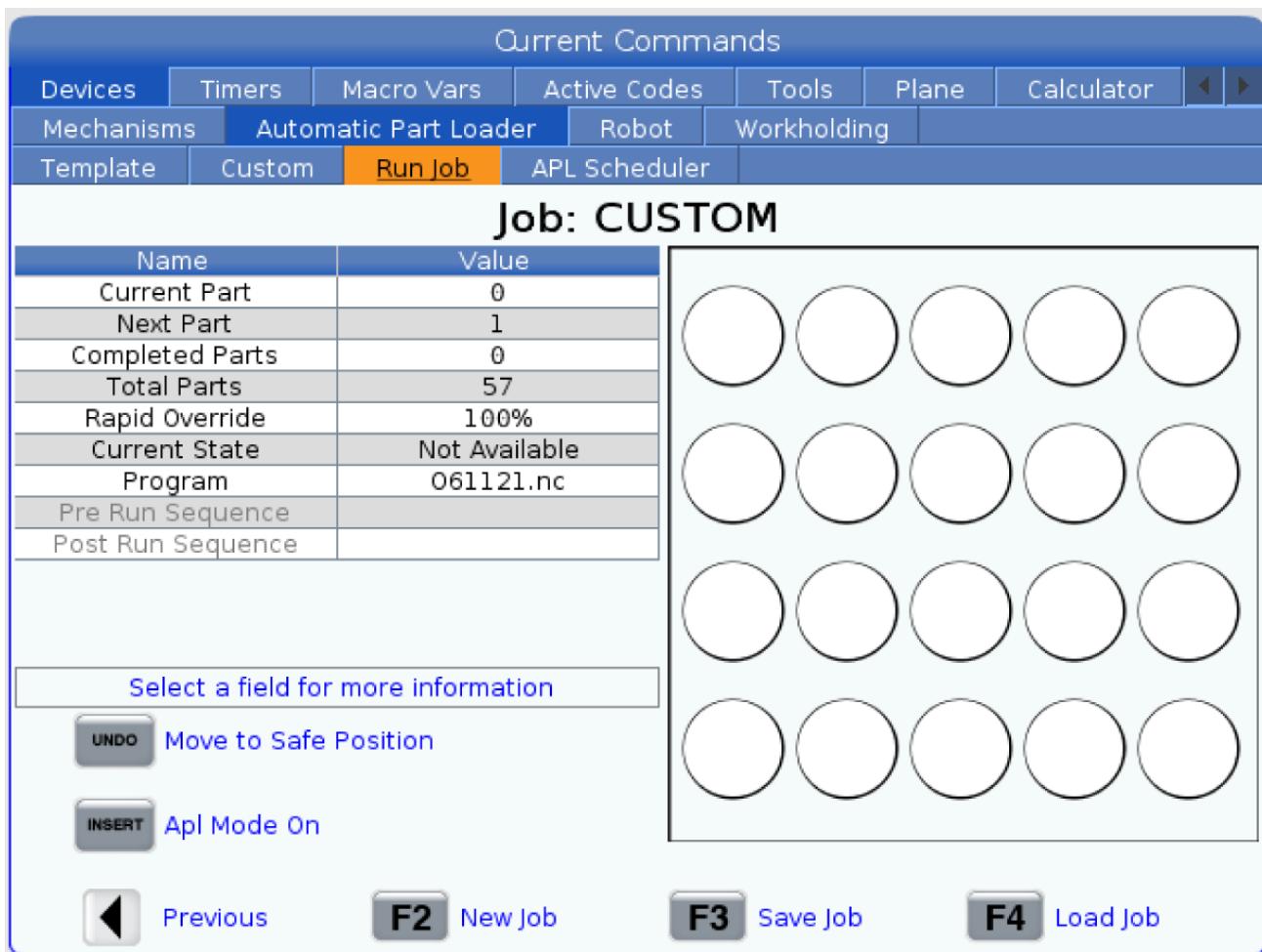
Post Run Sequence: - Optional step executed at the end of this job if it is ran in APL scheduler. It can be used to move APL/Robot to a safe position between jobs.



3

The first part of the machining program must be an operation to seat the SLUG properly on the Jaws shoulder or stop. The Haas supplied spring plunger can be used or any custom made tool. The Plunger like any tool must have it's own tool offset and station on the turret.

- Approach part in rapid motion and stop approximately 0.25" (6 mm) from the part.
- Feed in and push plunger against the part until spring has compressed 1/2" (12 mm).
- Open and Close the chuck using M11 and M10 for part to seat.
- Retract away from the part in Rapid motion and proceed with machining process



4

After setting up the Job press **[INSERT]** to turn on APL Mode.

Note: When the machine is in APL Mode the control will load the next part when the machine executes an M299 code. When not running in APL mode the M299 takes the place of an M30 or M99 at the end of a program.

More information on programming can be found in the [Operator's Manual](#).

Press **CYCLE START** to start your program.

Example Custom Sequence

%
O61121 (CUSTOM PROGRAM);
(#62715 = Current Part);
(#62719 = Max Part Number);
(P1 = FIRST PART PICKUP);
(P2 = MOVE TO READY);
(P3 = LOAD PART INTO CHUCK);
(P4 = UNLOAD THE FINISHED PART);
(P5 = DROPOFF PART);
;
M97 P10 (CALL ROBOT LOAD PROGRAM);
M98 P111 (PART PROGRAM);
M97 P20 (CALL ROBOT UNLOAD PROGRAM);
;
M99;
;
N10 (ROBOT LOAD PROGRAM);
M300 P1 (FIRST PART PICKUP);
M300 P2 (MOVE TO READY);
;
T4 Goo Y-1. Z-2. (MOVES INTERNAL AXES TO SAFE LOCATIONS);
;
Go4 P5. (DOOR OPEN);
;
M300 P3 (LOAD PART INTO CHUCK);
M300 P3 Ro (BACK TO READY);
;
Go4 P3. (DOOR CLOSE);
;
M99;
;
N20 (ROBOT UNLOAD PROGRAM);
T4 Goo Y-1. Z-2. (MOVES INTERNAL AXES TO SAFE LOCATIONS);
;
Go4 P2. (DOOR OPEN);
;
M300 P4 (UNLOAD THE FINISHED PART);
;
M300 P4 Ro (BACK TO READY);
;
N200;
Go4 P2. (DOOR CLOSE);

```
;  
N210;  
M300 P2 R0 (MOVE TO DROPOFF TABLE);  
M300 P5 (DROPOFF PART);  
;  
G04 P5.;  
;  
N215;  
G103 P1 (LIMIT LOOKAHEAD FOR MACRO ASSIGNMENTS);  
IF [ #62715 GT #62719 ] GOTO50;  
(FETCH AND TAKE NEXT PART TO READY);  
G103;  
M99;  
;  
N50;  
M299;  
;  
%
```

1

This is an example of Custom Sequence of a robot with a single gripper.

The door open/close and workholding open/close is commanded in the sequence files.

M300 Pn Ro Plays the Sequence in reverse.

M300 Pn Qo Plays the sequence in the background to the program.

Custom Sequence Tips and Tricks

1. Make sure you are in Cartesian coordinates when jogging the robot. This will make it easier to jog the robot since it moves multiple joints at the same time.
 - a. To switch: **Robot > Jogging > Coordinate Type > Cartesian**
2. When recording robot positions, jog one axis then record the position. Do not move multiple axis and record, otherwise you may crash the robot when running the full sequence.
 - a. The robot will take the shortest path from point A to point B, so if you move multiple axes you risk the robot running into itself, the machine, or getting a jogging limit

alarm.

- b.** When recording positions, make sure you start from the last commanded position.

3. The part of the program that will machine the part should be in a separate program. Run it as a sub-program AFTER you move the robot away from the machine and close the door.

- a.** This is to keep M300 calls separate from a program that is designed to machine parts.

4. Separate the custom job into multiple sequences. Do not try to create one motion sequence that will run the entire job.

5. After completing a motion sequence, run the full file to get an idea of what the motion will look like.

- a.** Make sure you start from the end position of the last motion sequence that will be ran.

6. If you get a jogging limit robot alarm, you will need to re-record the sequence that is causing the alarm.

- a.** The path the robot is taking from point A to point B is exceeding one or more of the joint limits.

APL Scheduler

Current Commands

Devices	Timers	Macro Vars	Active Codes	Tools	Plane	Calculator	◀ ▶
Mechanisms		Automatic Part Loader		Robot			
Template		Load Part		Unload Part		Run Job	APL Scheduler
Job Number	Order	Status	Parts Count	Job Name			
1	0	Completed	20	TABLE-A			
2	1	Scheduled	0	* TABLE-B			
3	2	Scheduled	0	TABLE-C			
4	0	Unscheduled	0				

Program Path: User Data/My Robot/TABLE-B/022345.nc
 Prog Comment:

<input type="button" value="ENTER"/> Select Job	<input type="button" value="ALTER"/> Load Job	<input type="button" value="INSERT"/> Scheduler Mode On
<input type="button" value="F2"/> Schedule	<input type="button" value="F3"/> Add Row	<input type="button" value="DELETE"/> Delete Row

The APL scheduler tab allows the user to schedule Robot Jobs.

Note: Turn Setting **131** to **OFF** to run scheduled jobs.

Job Number: Specifies the job number. Press **[ENTER]** to create a Program Comment for the Job.

Order: Specifies the order of the jobs. This can be edited to change the order of the scheduled jobs. Press **[ENTER]** to set the job order.

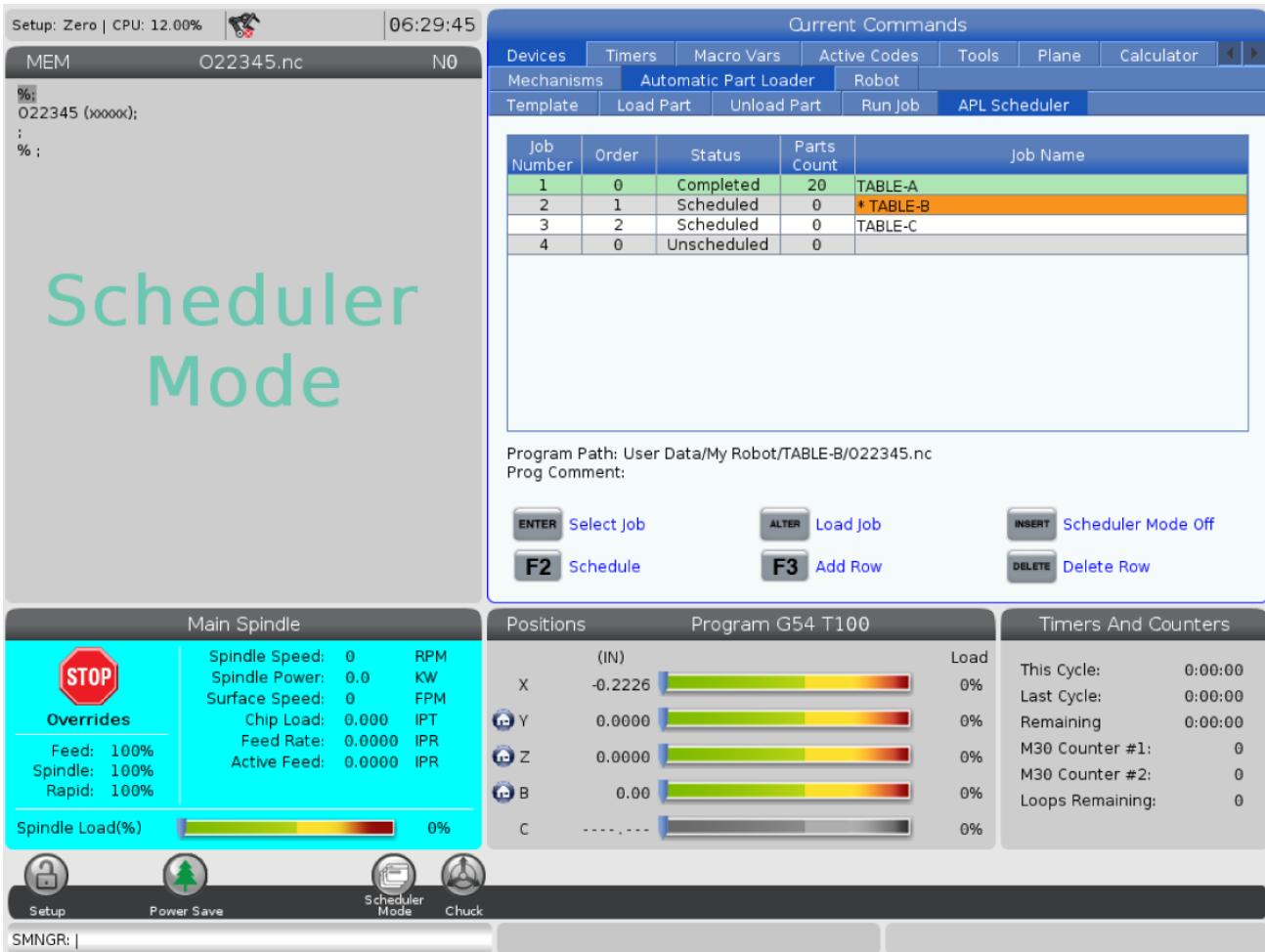
Status: Specifies if the job is Unscheduled, Scheduled, or Completed. Press **[ENTER]** to show the Job Status options.

Parts Count: Specifies how many parts the current scheduled job has run. Press **[ENTER]** to set the part count.

Job Name: This allows the user to select the Robot Job XML. Press **[ENTER]** to select the Robot Job.

Program Path: Displays the program path that is selected for the job. The program is selected in the Run Job tab.

Prog Comment: Displays the Program Comment entered by the user.



[ENTER] Varies on the current column. See previous section for column info.

[ALTER] Load Job. Loads the highlighted job into the Run Job tab.

[INSERT] Scheduler Mode On/Off. This turns the Scheduler Mode On or Off. This must be set to On to run a Job Schedule. Follows the same rules as APL Mode.

[F2] Schedule. Schedules the highlighted job.

[F3] Add Row. Adds a new Job Number to the APL scheduler.

[DELETE] Delete Row. Deletes the highlighted job. Scheduled jobs cannot be deleted.

10 - HRP - Maintenance

 haascnc.com/service/online-manuals/haas-robot-package-1/hrp---maintenance.html

Haas Robot Package - Maintenance Schedule

This page shows the recommended maintenance intervals.

Maintenance

Maintenance Item	Interval
Inspect the grippers fingers for wear.	Every 6 Months or a new job is setup
Inspect the gripper airlines and fittings for wear or damage.	Every 6 Months or a new job is setup
Inspect the air regulator and airline for wear or damage.	Every 6 Months or a new job is setup

Battery Maintenance

Note: First battery replacement time shoud start from build date because batteries are factory installed.

Robot Operation	Robot Batteries	Controller Battery
Stored or Powered Down	Power on and inspect the batteries every 7 months	Replace every 4 years
Active application	Replace once every year	Replace every 4 years

Software Download

Activations

- Haas Control Keys
- Machine Hardware Update
- Machine Installation
- Machine Options
- Machine Software Update
- Machine Time Extension
- NGC - Configuration Simulator
- NGC - Configuration
- Option Codes
- Parameter Files Search
- Robot Installation
- Robot Showroom

Applications / Training

- Demos on the Web
- Documents
- Weekly Training Presentations

Parts Ordering

- Combined Orders Release
- Consignment Consumption
- End Customer Maintenance
- Haas Approved Warranty Request
- Parts Documents
- Service Part Ordering
- Service Parts Pricing
- Stock Ordering

Utilities

- Bill of Materials
- Consignment Parts
- Documents and Software
- Haas Parts Open Orders
- Haas Parts
- Legacy BOM
- Let the Factory Know
- Machine Information
- Open Consignment Consumption
- Open Service Parts Orders
- RMA Status
- Rotary Repair Request
- Service Parts Pricing
- Service Parts RMA Change Request
- Service Parts RMA Request
- USR Review

Work Orders

Work Orders

hbc.haascnc.com/documents-and-software

Quick Links

- ATP Reports
- HAAS Service Guide
- Service Part Ordering

1

Log on to the hbc.haascnc.com

Note: Only Haas Certified Service technicians can log into this site.

Note: Make sure you have pop up blocker deactivated.

Select the Service tab [1].

Select Documents and Software [2].

Select Control Software [3].

Select Next Generation Control.

Select Robot Software.

Select the file **RobotScriptsx-xx.zip** to download the software file.

Name	Date modified	Type	Size
HaasKey.txt	11/23/2020 10:48 ...	Text Document	1 KB
RobotScripts1-15	12/11/2020 1:19 PM	File folder	

2

Download and add the file to your USB memory device. This must be a service key.

Update Robot Software



1

Insert the USB device to the control. The USB memory device must contain these items:

- Your HaasKey.txt file
- RobotScriptsx-xx.zip

Note: Make sure machine is in Service Mode. (DEBUG mode).

Press **[CURRENT COMMANDS]**.

Go to **Devices>Robot>Setup** tab.

Press **[E-Stop]**.

Press **[F1]** to connect the robot[1].

When connected the robot icon[2] will have a green check mark.

Press the **[Emergency Stop]** and press **[F2]** to update the robot.

Press **[Y]** to load the the robot software.

Navigate to the USBo and select the **RobotScriptsx-xx.zip** and press **[Enter]**.

A pop-up Update Robot will display:

Applying update, please wait.

A message **Robot Update Verified** will also be displayed.



2

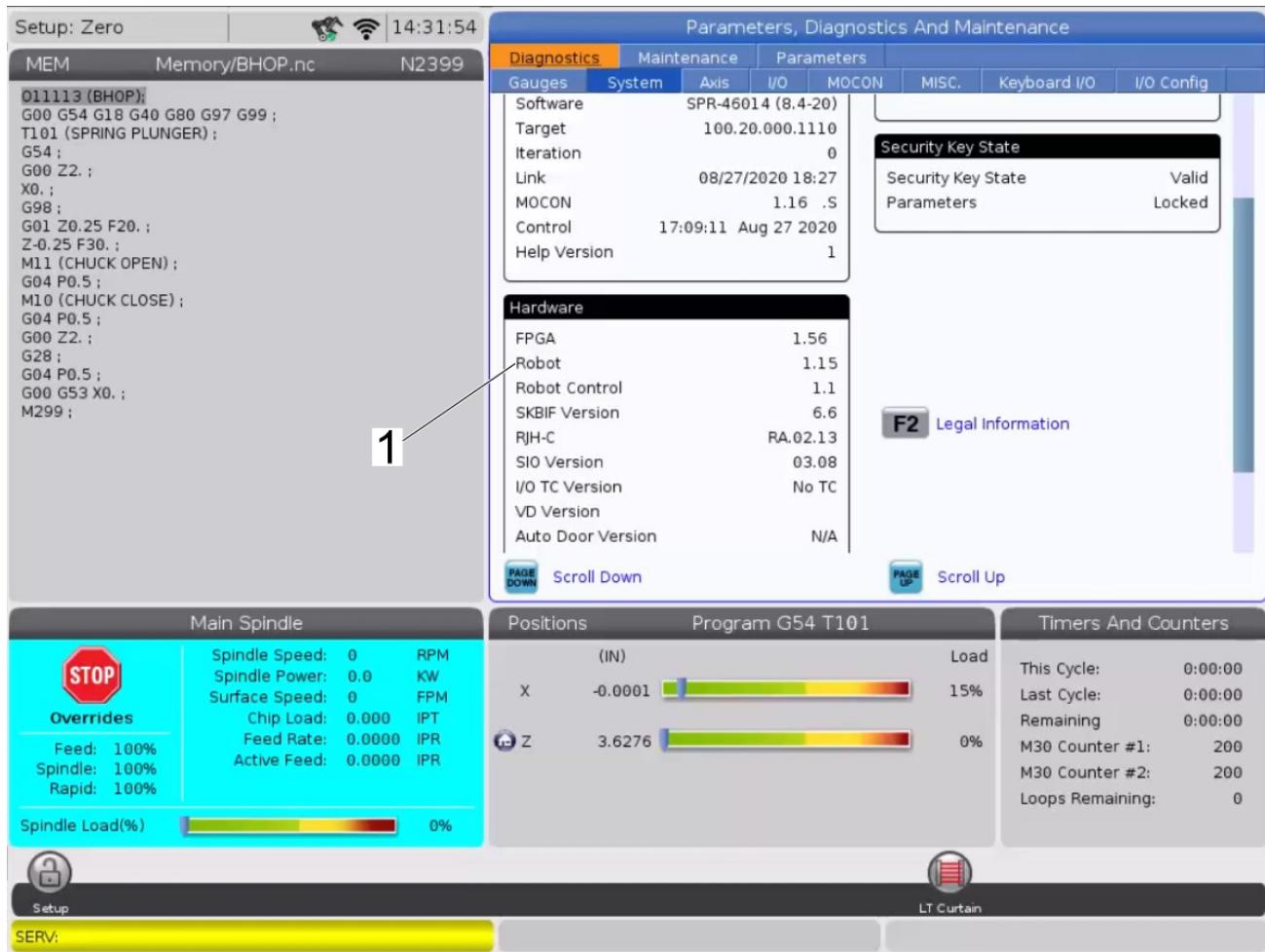
When complete the Update Robot pop-up will display:

Update Complete

Power cycle robot to complete update.

If you try to reset alarms an alarm **9158 ROBOT POWER CYCLE REQUIRED** will generate.

Power cycle the robot and reconnect to the robot.



Haas Robot Package - Battery Replacement

Under Construction

Haas Robot Package - Battery Replacement

Introduction

This procedure outlines how to replace the batteries in the robot arm.

Recommendations:

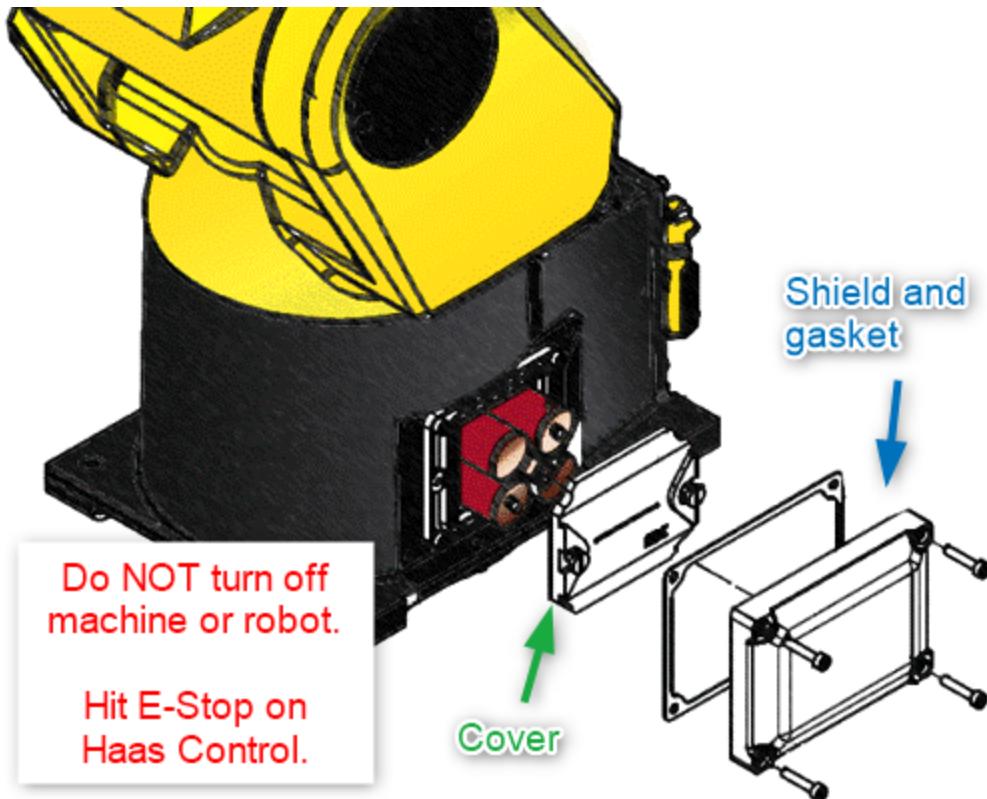
- Batteries should be changed once a year
- When changing the batteries, hit E-Stop on the Haas control to prevent unexpected robot motion

Note: DO NOT turn off the robot or the Haas machine when changing the batteries.

Tools Required:

- Flathead screwdriver
- 3.00 mm allen key
- 4 high-quality C batteries, industrial batteries are recommended.

Replacement



Hit the E-Stop on the Haas control to prevent unexpected robot motion.

Use a 3 mm allen key to remove the hardware from the battery shield and take off the battery shield and gasket.

Note: The battery shield may need to be pried off using a flathead screwdriver.

Remove the compartment cover using a flathead screwdriver. Replace the batteries. Take note of the direction each battery is before removing the old batteries.

Put the compartment cover and battery shield back on, make sure the battery cover is secure tightly.

Haas Robot Package - Quick Mastering

Under Construction

Introduction

This procedure outlines how to quick master the robot if the batteries have completely died.

Requirements:

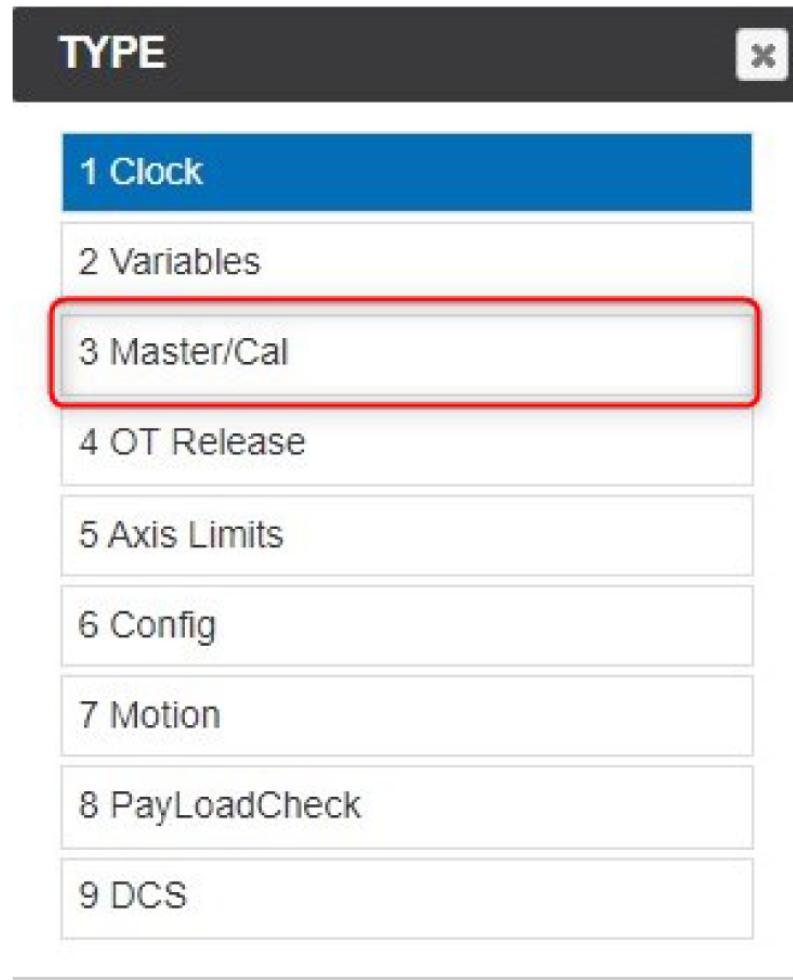
- Replace the batteries using the Battery Replacement procedure.
- A laptop is needed to connect to the virtual teach pendent.

Only perform this procedure if the batteries have completely died or if the batteries were removed AND the robot or machine was turned off.

Quick Mastering

1

Follow this video to connect to the virtual teach pendent on a laptop.



2

Go into the Navigate iPendent to check Master/Cal is enabled.

Click *MENU>NEXT>SYSTEM>Master/Cal*, it will pop-up in the list on the screen as shown.

Skip this step if Master/Cal is already enabled.

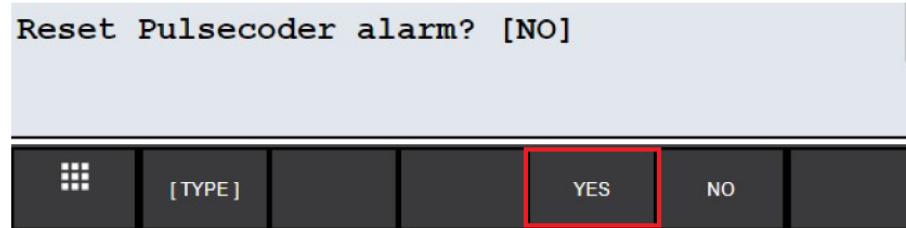
If it is not enabled, follow these steps:

- Go to the System Variables screen: *MENU>NEXT>SYSTEM>Variables*
- Scroll down to \$MASTER_ENB
- Set \$MASTER_ENB to 1 by pressing 1 and pressing enter

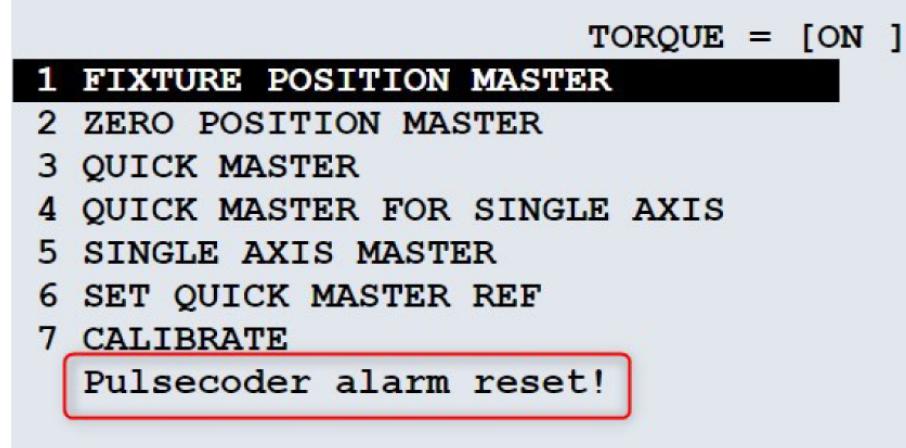
1



2



3



3

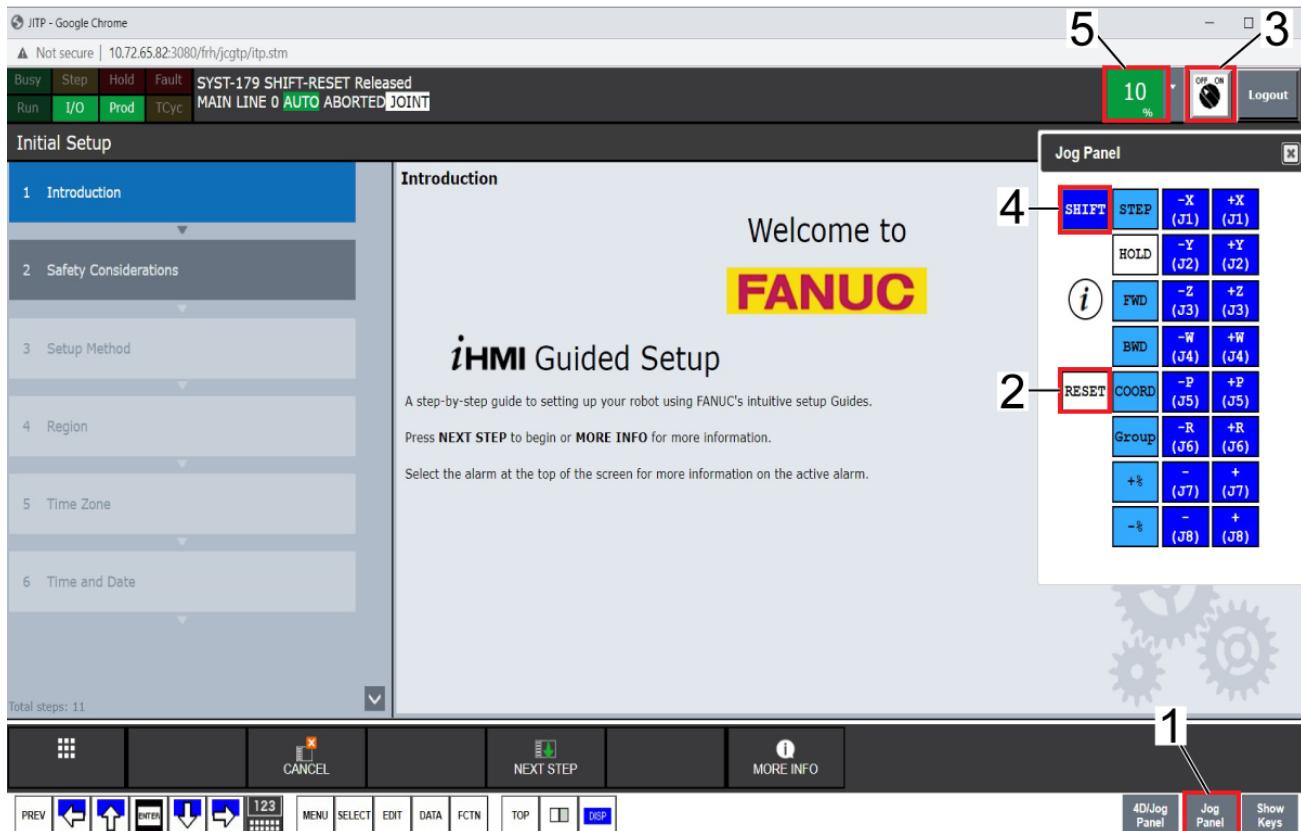
Reset Pulsecoder Alarm

Go to the Master/Cal screen: *MENU>NEXT>SYSTEM>Master/Cal*

Click RES_PCA [1], the pendent will display a message asking if you want to reset pulsecoder alarms.

Click Yes [2], a message will appear as shown that says 'Pulsecoder alarm reset!' [3]

After the pulsecoder alarm has been reset, cycle power on the robot. **DO NOT** cycle power on the machine.



4

Re-establish pulse for each axis

When axes lose power, the pulse on each axis needs to be re-established. This is done by jogging each joint at least 10-20 degrees in each direction.

Follow these steps to do this:

- Enter the Jogging iPendant from the Robot Homepage.
- Click the Jog Panel button [1] to open the Jog Panel, make sure the E-Stop on the machine is released.
- Click Reset [2] to reset all faults
- Click the switch [3] to turn it on
- Click Shift [4] and then jog the joints

Note: If an alarm pops up while jogging, reset the alarm and lower the jogging rate [5] until the arm is able to be jogged again. This will happen once the arm has left the DCS zone and it will need to be jogged at a slower rate.

1

SYSTEM Variables		5/31
\$DMR_GRP[1]		
1 \$MASTER_DONE	FALSE	
2 \$OT_MINUS	[9] of BOOLEAN	
3 \$OT_PLUS	[9] of BOOLEAN	
4 \$MASTER_COUN	[9] of INTEGER	
5 \$REF_DONE	FALSE	
6 \$REF_POS	[9] of REAL	
7 \$REF_COUNT	[9] of INTEGER	
8 \$BKLSH_SIGN	[9] of BOOLEAN	
9 \$EACHMST_DON	[9] of INTEGER	
10 \$SPC_COUNT	[9] of INTEGER	
11 \$SPC_MOVE	[9] of BOOLEAN	
12 \$ADAPT_INER	[9] of SHORT	
13 \$ADAPT_FRIC	[9] of SHORT	
14 \$ADAPT_COL_P	[9] of SHORT	

2

\$DMR_GRP[1].\$REF_POS		
1	[1]	0.000
2	[2]	0.000
3	[3]	0.000
4	[4]	0.000
5	[5]	0.000
6	[6]	0.000
7	[7]	0.000
8	[8]	0.000
9	[9]	0.000

5

Copy Master Count to Reference Count & Checking the Zero Reference Position

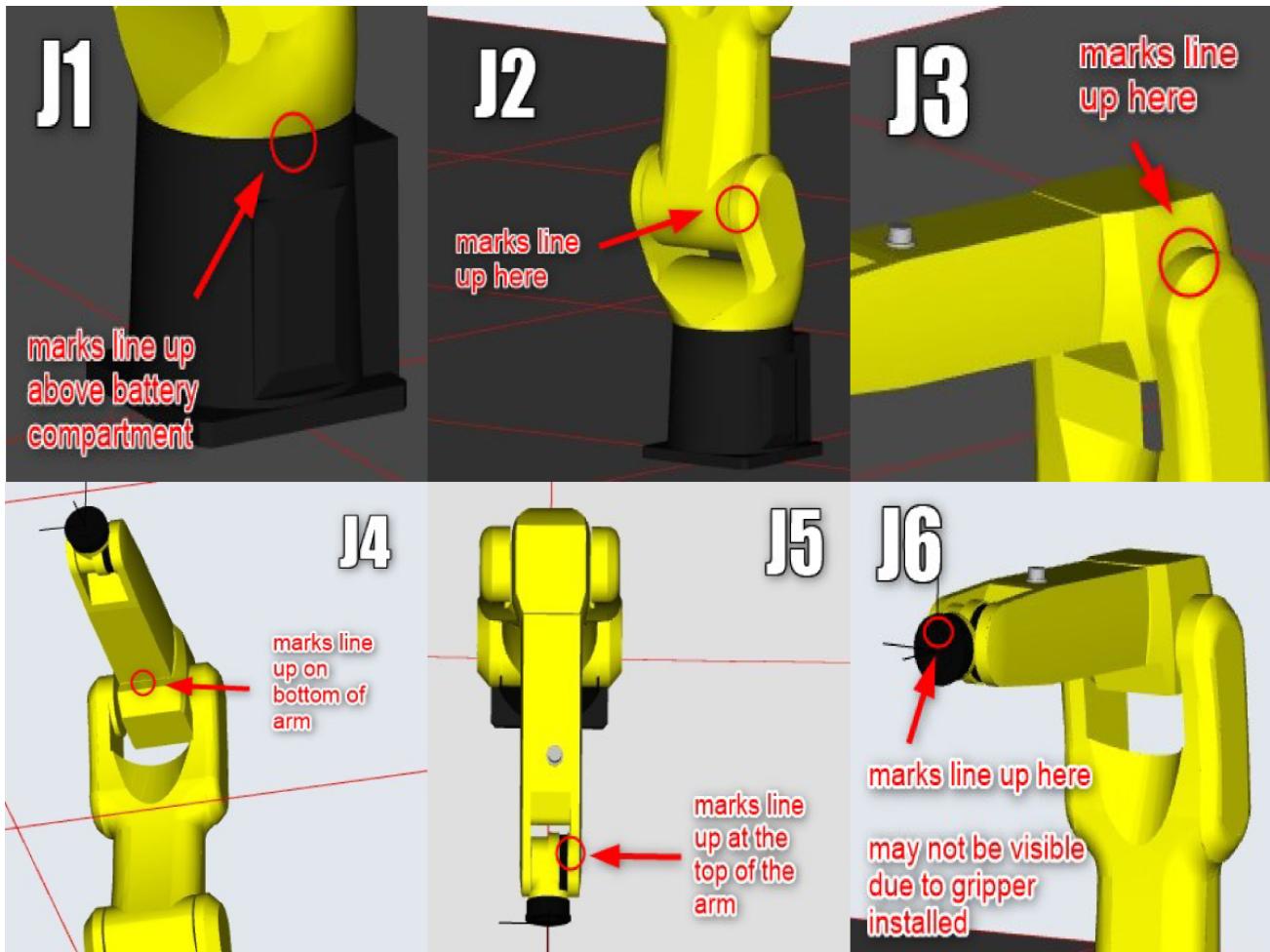
Go back to the Navigate iPendant.

Copy the Master Count values to the Reference Count values by doing the following:

- Go to the System Variables screen: *MENU>NEXT>SYSTEM>TYPE>Variables*
- Scroll down to \$DMR_GRP (should be number 199) and once it is highlighted, hit ENTER twice and the variables shown in [1] should be on the screen.
- Scroll to \$MASTER_COUNT and click DETAIL when it is highlighted. Take note of these values.

- Press PREV to go back to the variable list and then go into the \$REF_COUNT by pressing DETAIL when it is highlighted. Copy the values from the \$MASTER_COUNT by typing them in and pressing enter to change the values.
- Press PREV to go back to the variable list and set \$REF_DONE to TRUE

While still inside \$DMR_GRP[1] System Variables, go to \$REF_POS and make sure the axis values are set to a value of 0 as shown in [2].



6

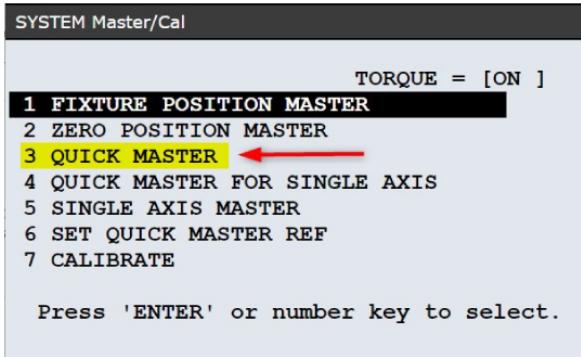
Line Up Witness Marks

Go back to the Jogging iPendant, open the Jog Panel and turn on the switch.

Jog each joint so that the witness marks line up, use the image shown to locate the positions of the witness marks on HRP-1.

Note: The witness marks on Joint 6 may not be visable, remove the gripper and make sure the dowel pin hole is positioned upward.

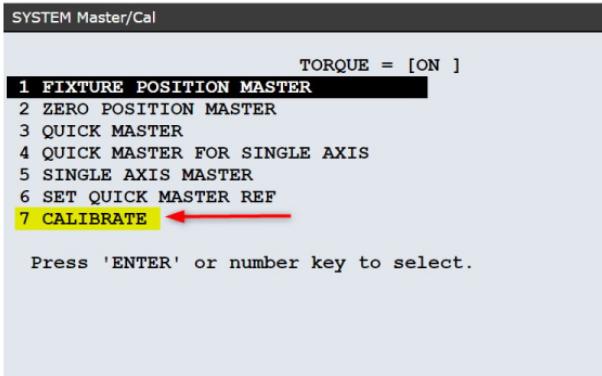
1



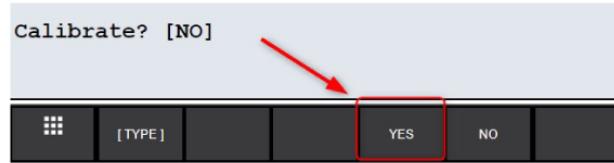
2



3



4



7

Quick Master and Calibrate

After lining up the witness marks, the robot is at its zero position.

Go to Master/Cal screen: *MENU>NEXT>SYSTEM>Master/Cal*

Note: if Master/Cal is not showing up, go back to step 2 to enable it again.

Scroll to QUICK MASTER and press ENTER to select [1].

A message will appear asking if you want to quick master, click YES [2].

A message will appear saying that the Robot has been mastered.

While still in Mast/Cal mode, scroll to CALIBRATE and press ENTER [3].

Click YES when the screen asks if you want to calibrate [4].

A message will display saying that the robot has been calibrated, then press DONE.

8

Apply DCS Parameters

After quick mastering and calibrating, the robot will be in a faulted state until you apply DCS parameters.

Go into the Jogging iPending mode.

Go to the DCS menu: *MENU>NEXT>SYSTEM>DCS*

Scroll down to option 13 - Mastering parameters.

Click APPLY to apply the changes and press OK.

Enter 1111 for the Master Code.

Cycle power on the robot.

Haas Robot Package - Replacement Fuse Kits

Under Construction

93-3378

Fanuc Part Number	Quantity
A60L-0001-0175/0.3A	1
A60L-0001-0175/3.2A	1
A60L-0001-0290/LM10C	1
A60L-0001-0290/LM20C	1

93-3379

Fanuc Part Number	Quantity
A60L-0001-0290/LM05C	1
A60L-0001-0290/LM10	1
A60L-0001-0290/LM32C	1

Haas Robot Package - Operator's/Service Manual

 haascnc.com/service/online-manuals/haas-robot-package-1/troubleshooting.html

Introduction

This document will show you how to troubleshoot your Haas Robot Package. If you do not find the alarm or symptom on this document please generate and error report (SHIFT + F3) and contact the service department.

Robot and Haas Communication Alarms

These alarms and symptoms can happen when the machine and the robot are not communicating.

Alarm / Symptom	Possible Cause	Corrective Action
9147 Robot Protocol Version Mismatch	Connecting to a robot that has been power cycled may cause a Version Mismatch. This causes all robot functions to be locked until the alarm is cleared.	Release the E-Stop and press RESET to clear the alarm. Then press the E-Stop and press F1 to connect the robot
9160 ROBOT EMERGENCY STOP	The Robot Emergency Stop button was pressed either from the robot control box or the remote pendant. Or robot estop chain is broken.	Please release the Robot Emergency Stop button(s) and press reset to proceed. Verify all robot estops are released. Verify estop wiring (including external estop inputs) to robot are intact and correctly wired.
The Robot won't Connect to the CNC	The wiring from the interface to the Haas Control is not correct.	Make sure you have connected the terminal connectors on TB-1B in the correct order. Refer to the Robot Installation Procedure, Electrical section.

	<p>The robot is not unlocked and activated.</p> <p>The first time connecting a robot to a machine, a Robot Activation window will pop-up. This pop-up shows the Software Version of the machine, the MAC address of the robot, and the Machine Generated Code used for Machine Time Extension on the portal.</p> <p>Note: Go to the Robot MAC Address section to find the MAC address using a laptop.</p>
	<p>The CNC software is outdated.</p> <p>Make sure the software is 100.20.000.1200 or higher. Refer to the Robot Installation Procedure machine requirements section.</p>
	<p>The Robot IP address and the CNC are mismatched.</p> <p>If the Robot Software is 1.11 or lower. Upgrade the Robot control to 1.15 or higher. Contact your HFO for more information. See Robot IP Address section for more info.</p>
	<p>The arm moved during power off.</p> <p>Connect & Calibrate Haas Robot using the video below.</p>

Robot Command Failed Alarms

These alarms are generated when the robot fails to execute a command. A sub-alarm number indicates faults ID and is provided by FANUC robot.

Alarm / Symptom	Possible Cause	Corrective Action
9156.050 Robot Command Failure SRVO-050 Collision Detect Alarm	Jogging the robot in setup mode and the center of rotation of J6 is in line with the center of rotation of J4. Then rotating W or P, will cause J4 axis to attempt to rotate at a very fast speed. This singularity point is called the wrist singularity.	Press RESET to clear the alarm. Do not jog the robot through this singularity point.
	The robot motion file does not have enough points producing a non-smooth motion.	Add more points to the motion file smoothing out the robot motion.

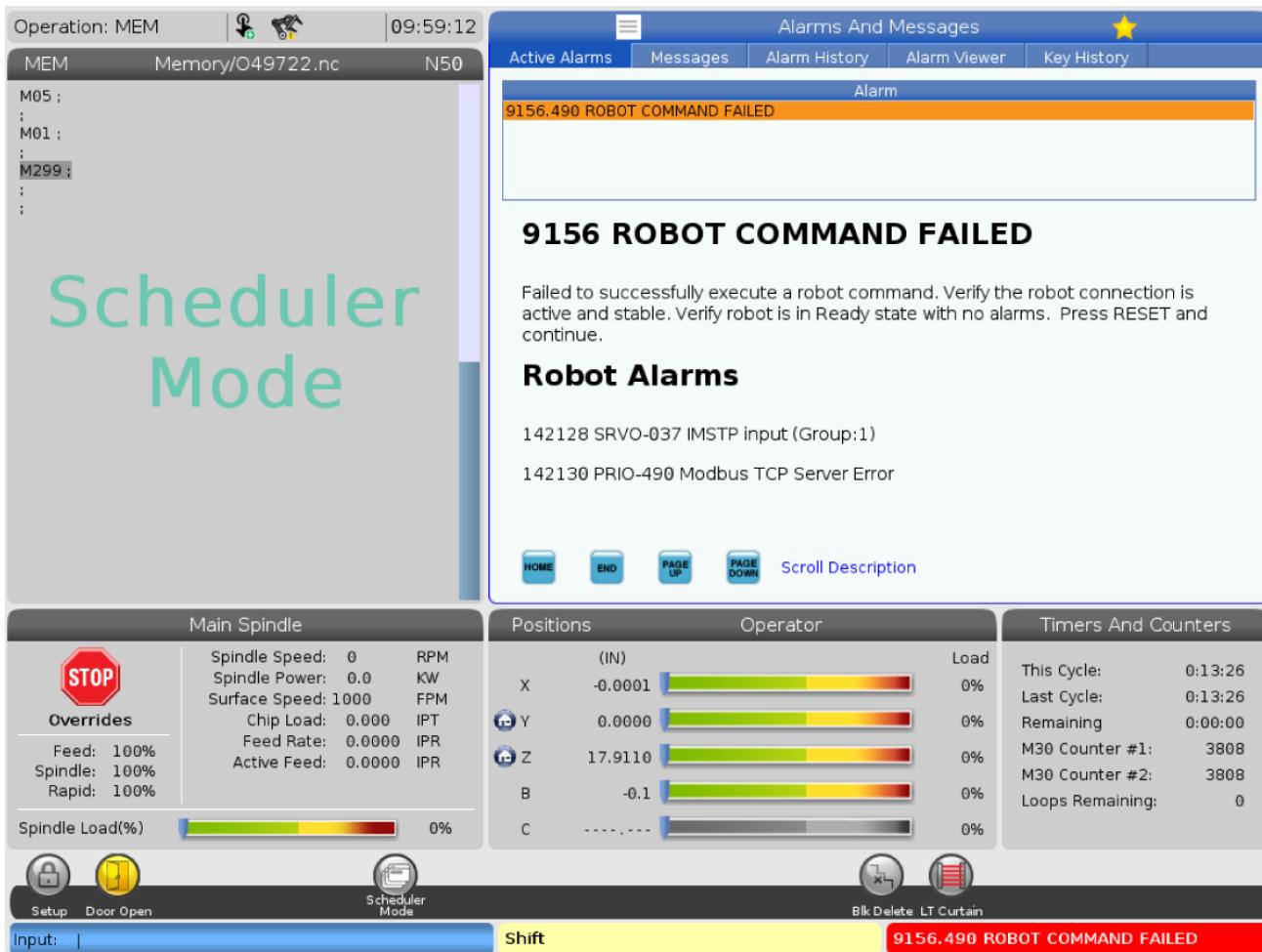
9156.406 SRVO-406 DCS SSO SVOFF input 1,1	The K9 and K10 Relays on I/O PCB are not installed.	Make sure you have the K9 and K10 relays installed on the I/O PCB. Refer to the Robot Installation Procedure, Electrical section.
9156.406 SRVO-406 DCS SSO SVOFF input 1,1	The fence is open in Run Mode.	Make sure the interlock is working and that machine is receiving the interlock input signal.
	The TB-3B wiring is damaged or miswired.	Check the wiring for the TB-3B connector. Compare the wiring of the connector to the wiring diagram.
9156.037 SRVO-037 IMSTP input (Group:1)	The TB-3B wiring is damaged or miswired.	Check the wiring for the TB-3B connector. Compare the wiring of the connector to the wiring diagram.
9156.062 ROBOT COMMAND FAILED SRVO-062 BZAL alarm	The batteries in the robot arm have died.	Follow the HRP - Battery Replacement procedure to replace the batteries and follow the HRP - Quick Mastering procedure to remaster the robot.
9156.378 FANUC ROBOT ALARM - SFDI12 Status abnormal or 9156.378 FANUC ROBOT ALARM - SFDI22 Status abnormal	The K9 and K10 Relays on I/O PCB are not installed.	Make sure you have the K9 and K10 relays installed on the I/O PCB. Refer to the Robot Installation Procedure, Electrical section.
9156.490 PRIO-490 Modbus TCP Server Error	Interference or faulty RJ-45 Ethernet cable.	Depending on the Robot build date the cables were not built with ferrite filters installed. Install ferrite filters PN: 64-1252 to both RJ-45 Communication cables at the electrical interface box and to the USB to Ethernet Adapter at the Main Processor PCB. See the Ferrrite Filter section below. If the alarm continues, test the cables refer to Network Cable Tester Tool procedure.

Fanuc Robot Alarms

These alarms are generated when the robot is at fault state. A sub-alarm number indicates faults ID and is provided by FANUC robot.

Alarm / Symptom	Possible Cause	Corrective Action
9150.378 FANUC ROBOT ALARM - SFDI12 Status abnormal or	The K9 and K10 Relays on I/O PCB are not installed.	Make sure you have the K9 and K10 relays installed on the I/O PCB. Refer to the Robot Installation Procedure, Electrical section.
9150.378 FANUC ROBOT ALARM - SFDI22 Status abnormal		
9150.403 FANUC ROBOT ALARM - SRVO-403 DCS Cart. speed limit	The DCS Zone was not setup or not setup correctly.	Check the DCS setup and make sure it is setup or setup correctly.
	The motion exceeds the speed limit set by the Cartesian Speed Check.	Decrease the robot speed.
9150.488 FANUC ROBOT ALARM - SRVO-488 DCS CPC Speed Limit	This alarm is generated when the robot has a <u>DCS Cartesian Position Check Zone</u> setup with a speed limit and the robot is jogged outside the work zone above the speed limit.	Lower the feed rate and jog back into the DCS Cartesian Position Check Zone. Verify the work zone is setup correctly by checking the <u>4D DCS Display</u> .
9152.x Robot Hit Joint Limit or robot does not jog	Jogging the robot in setup mode and the center of rotation of J6 is in line with the center of rotation of J4. Then rotating W or P, will cause J4 axis to attempt to rotate at a very fast speed, traveling past the travel limit. This singularity point is called the wrist singularity. The Joint Position will be greater than the Robot Joint Travel Limit. The Sub-Code of the alarm represents the joint number.	Connect to the robot using the Remote Pendant through the web interface. Clear the alarm and jog the robot joint away from the travel limit. Reconnect to the Haas control.

Haas Robot - Active Alarms



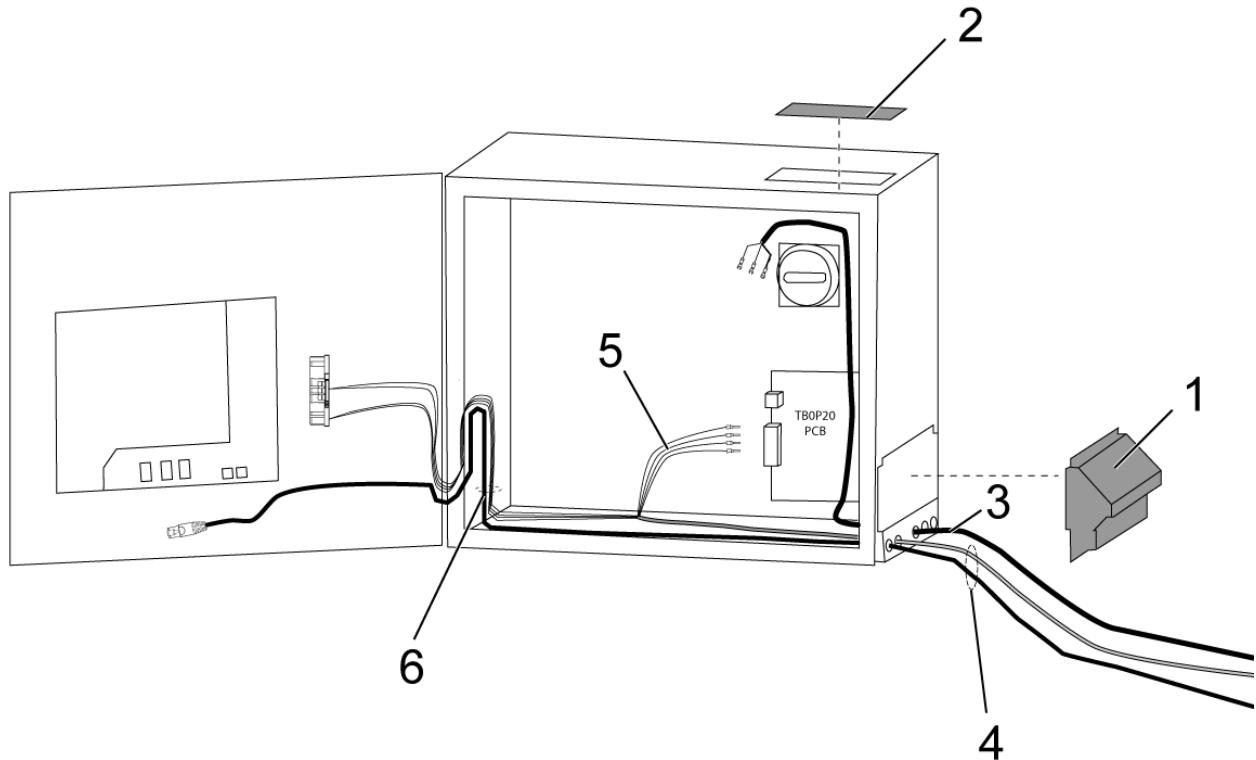
More than one Fanuc alarm may be present if the machine generates an alarm. Navigate to the Active Alarms tab to view all active Fanuc alarms.

Connect & Jog Haas Robot

If alarm **9152.x** Robot Hit Joint Limit is generated follow the video below. Connect to the robot using the Remote Pendant through the web interface. Clear the alarm and jog the robot joint away from the travel limit. Reconnect to the Haas control.

Connect & Calibrate Haas Robot

Robot Control Wiring



1

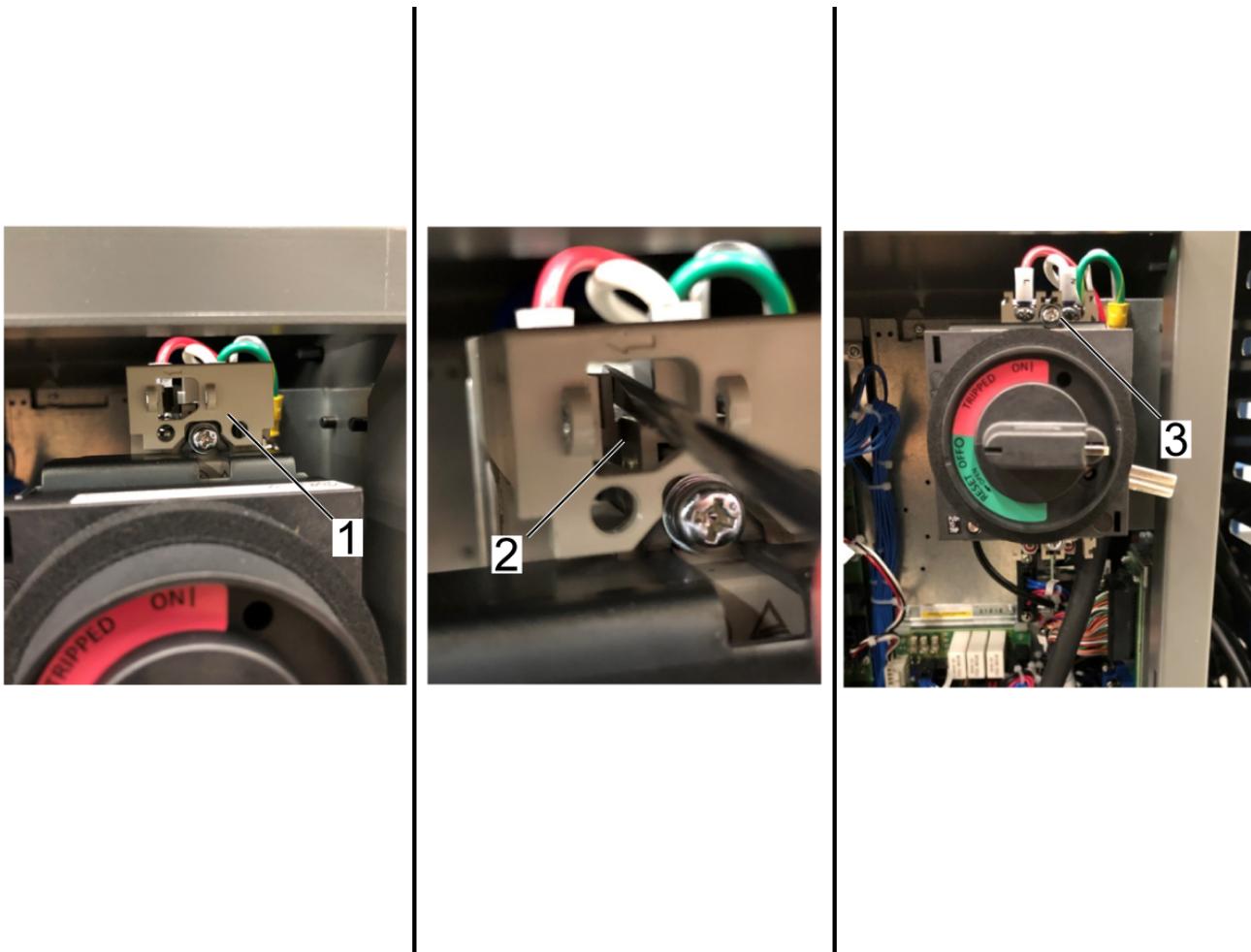
Robot Control Box

- Open the Robot Controller door by using a straight head screwdriver to turn the latch counter-clockwise, then turn the breaker counter-clockwise past its off position.
- Remove the cable cover [1] from the robot control box
- Remove the top cover [2]. This will make the installation of the power cable easier.
- Feed the **230VAC Power cable P/N 33-5830** [3] as shown.
- Feed the **Robot Control Signal cables P/N 33-8590** [4] as shown.

Note: Make sure the Robot Control signal cables **P/N 33-8590** are as far away from the power cable as possible.

- Pull enough slack on the cable with ferrules [5] to reach the **TBoP20 PCB**, you will add connector to these wires in step 7.

- Route the **RJ45** cable and the cable with the large connector from cable **P/N 33-8590** together [6] as shown.



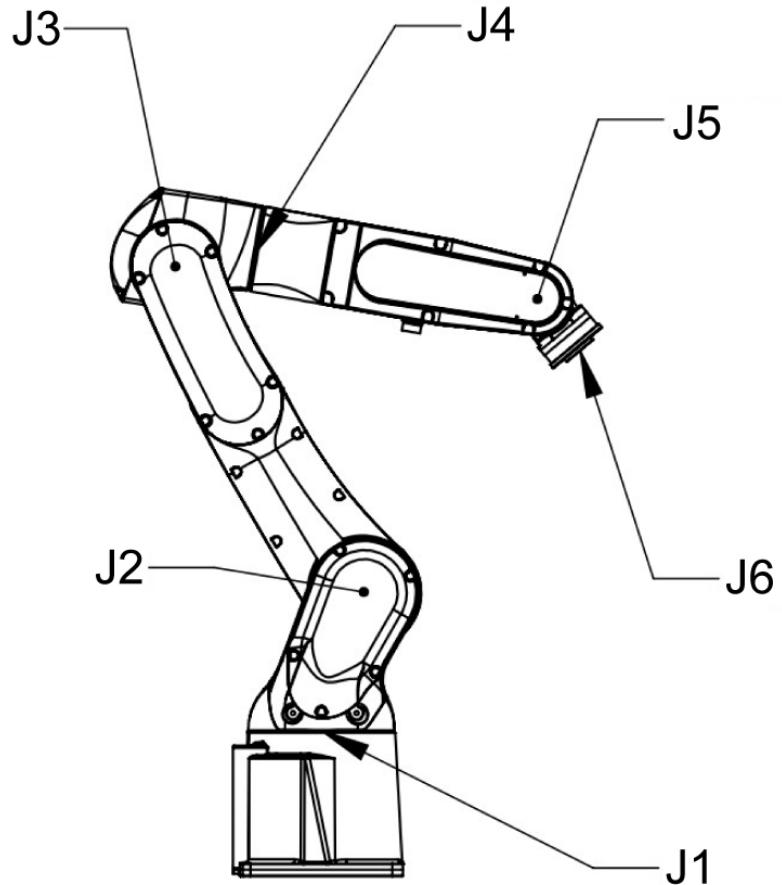
2

To connect the power cable, remove the plastic cover from above the Breaker. To remove cover, insert a straight-head screwdriver into the opening, and push the tab to the left allowing the cover to slide forward.

Connect the cables to L to 1 and N to 3. Connect the ground to the plate to the right of the Breaker.

After the power cable is connected, reinsert the plastic cover.

Robot Joint Travel Limits



Robot Joint Travel Limits

J1 (+/-170°)

J2 (+/-122.5°)

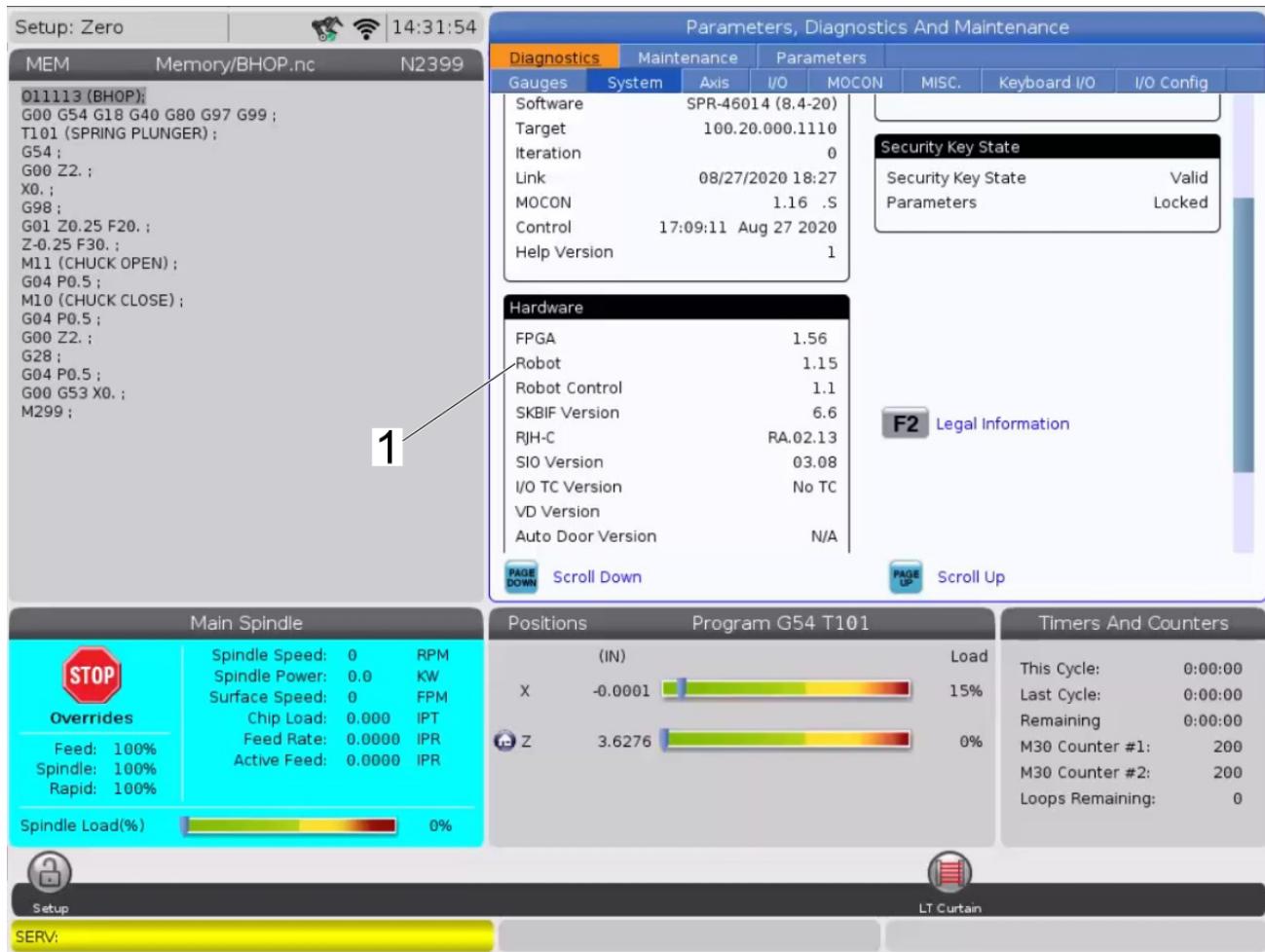
J3 (+/-215°)

J4 (+/-190°)

J5 (+/-125°)

J6 (+/-360°)

Robot IP Address



Depending on the Robot build date. The IP address of the robot control may be different than the IP address in the Haas control. If the Robot Software is **1.11** or lower. Update the [Robot Software](#) to **1.15** or higher and verify the following parameters values are set correctly:

2262 Robot IP Address to 10.72.65.82

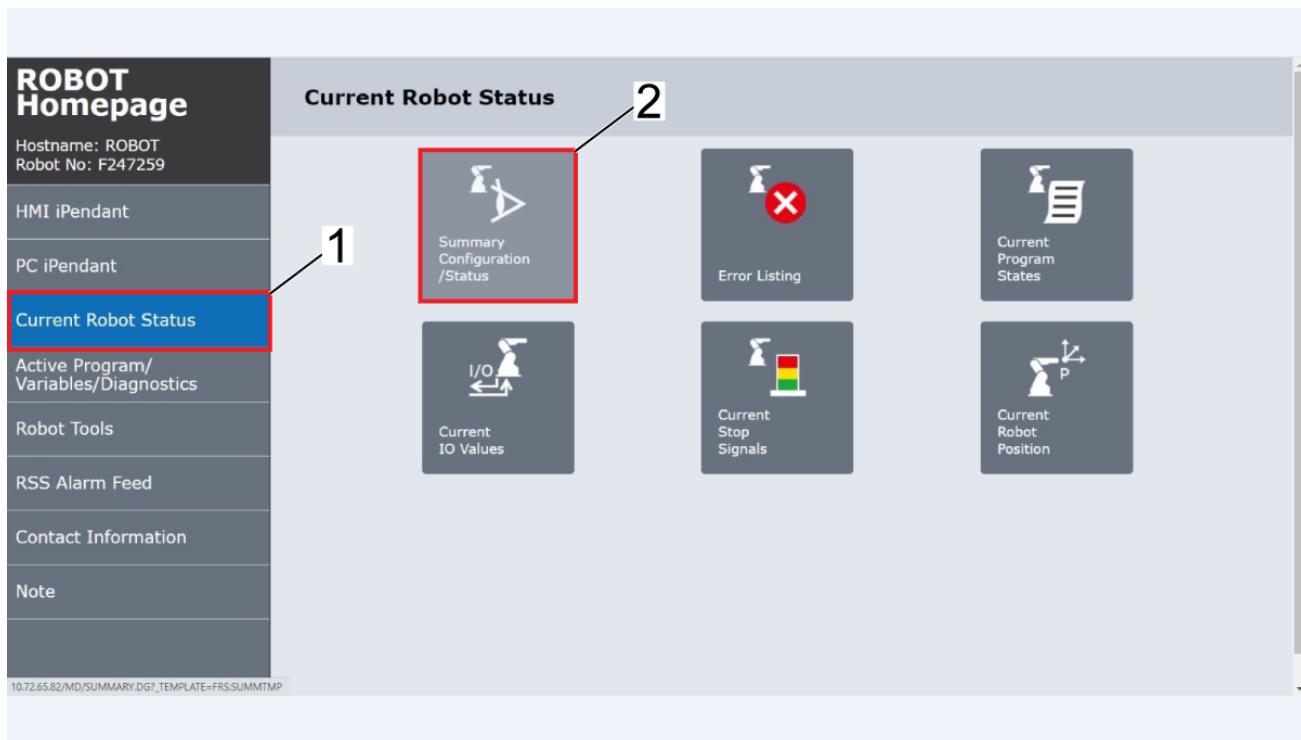
2263 Aux IP Address to 10.72.65.77

Recheck the connection.

Robot MAC Address

1

Follow this video to connect a laptop to the robot.



2

Once connected to the robot on the laptop, select Current Robot Status **[1]** from the menu on the left.

Then click Summary Configuration/Status **[2]**.

FANUC

[Version Info](#)
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Version Information

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F Number: F247259
VERSION : LR HandlingTool
\$VERSION: V9.3063 4/10/2020
DATE: 14-SEP-21 00:02

VERSION INFORMATION::
SOFTWARE: ID:
LR HandlingTool 7DF3/06
S/W Serial No. : 16790820
Controller ID : 7357666
Robot No. : F247259
Manufacturing ID :
LR Mate 200iD/7L, LR Handling
LR Mate 200iD/7L V9.30P/06
Servo Code : V09.00
Cart. Mot. Parameter: V3.00
JNT. Mot. Parameter : V3.00
DCS : V4.2.11
Stop pattern : A

Ethernet Configuration Information

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ETHERNET CONFIGURATION::

\$HOSTNAME :ROBOT
TMT_ROUTER :ROUTER
TMI_ETHERAD :00:e0:e4:70:44:e2

3

At this point the F number **[1]**, if needed, can be found on this page.

Click the Ethernet Config Info link **[2]** and the MAC address can be found on this page at **[3]**.

Fanuc Memory Device (MD) Backup

1

To create a Memory Device (MD) backup of the robot. Connect to the Fanuc Control with a laptop and iPendant. See Connect & Jog Robot video above.

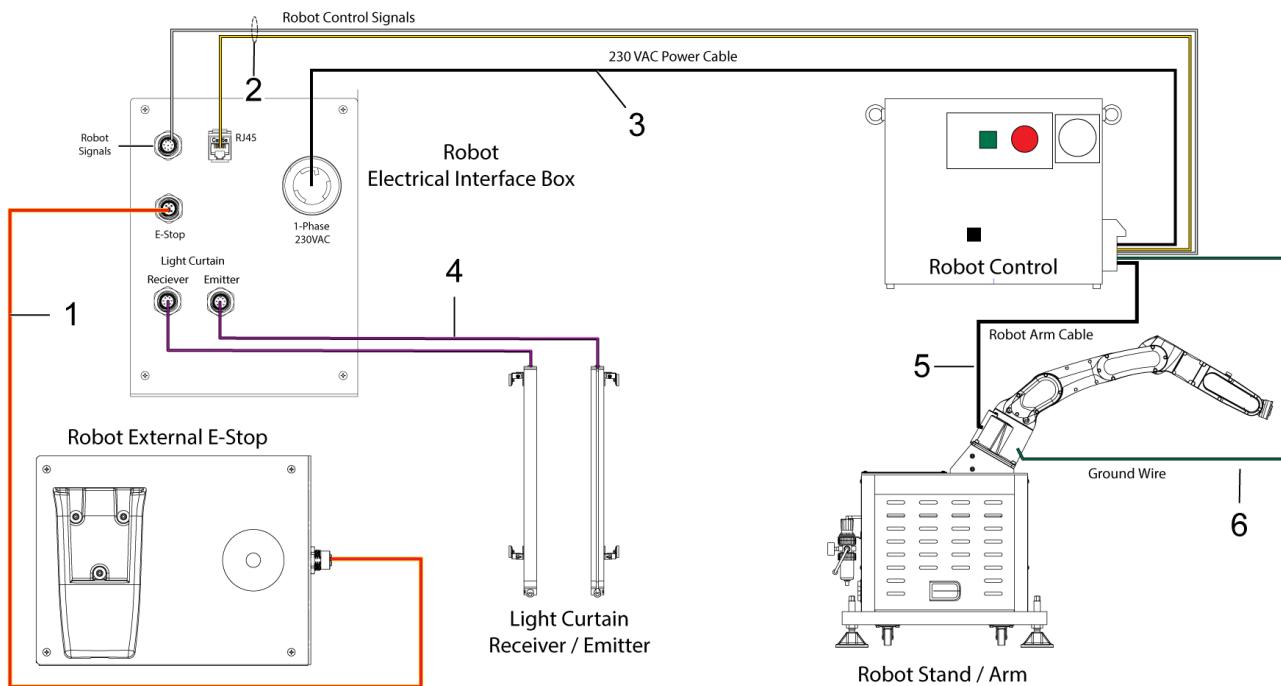
Navigate to the Navigate pendant.

2

Set the default device to the device you want. The two options are UT1: for the Fanuc Teach Pendant or UD1: for the USB port on the front of the Fanuc Control Box.

- Press MENU and then File.
- Press F1, [TYPE]. Select File.
- Press F5, [UTIL]. Select Set Device.
- Navigate to the Device you want to save the backup to, UT1: or UD1:.
- Press F4, [BACKUP]. If you do not see [BACKUP], press FCTN and select RESTORE/BACKUP.
- Select All of Above and press ENTER.
- It will prompt you select the backup operation you want to perform. Press F4 and then YES to back up the current file.
- The backup process will take a few minutes to complete.

Robot With Light Curtain



Robot Electrical Box to Robot Control

- Connect the E-STOP cable [1] **P/N 33-8550** from Robot Electrical Interface Box to the Robot External E-stop Box (see diagram).
- Connect the Robot Control Signal Cables [2] **P/N 33-8590A** to the Robot Electrical Interface Box.

Robot Power

Connect the 230VAC Power Cable [3] **P/N 33-8530** to the Robot Electrical Interface Box.

Light Curtain

Connect the Light Curtain cables [4] to the Receiver/ Emitter connections at the Robot Electrical Interface box.

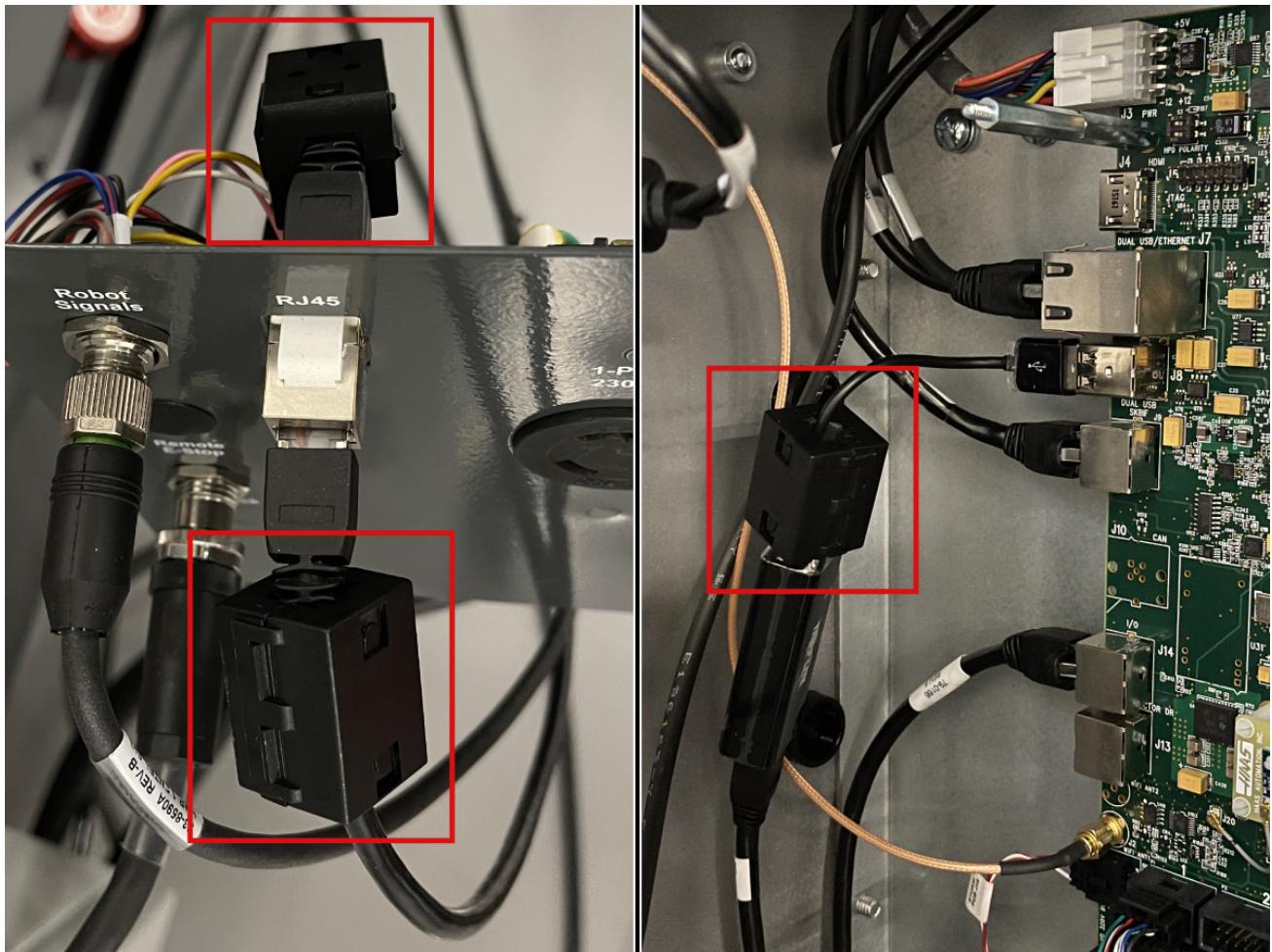
Robot Arm

Connect the Robot Control Cable [5] to the Robot Arm.

Ground Wire

Connect the Ground Wire [6] from the Chassis of the Robot Control to the Robot mount.

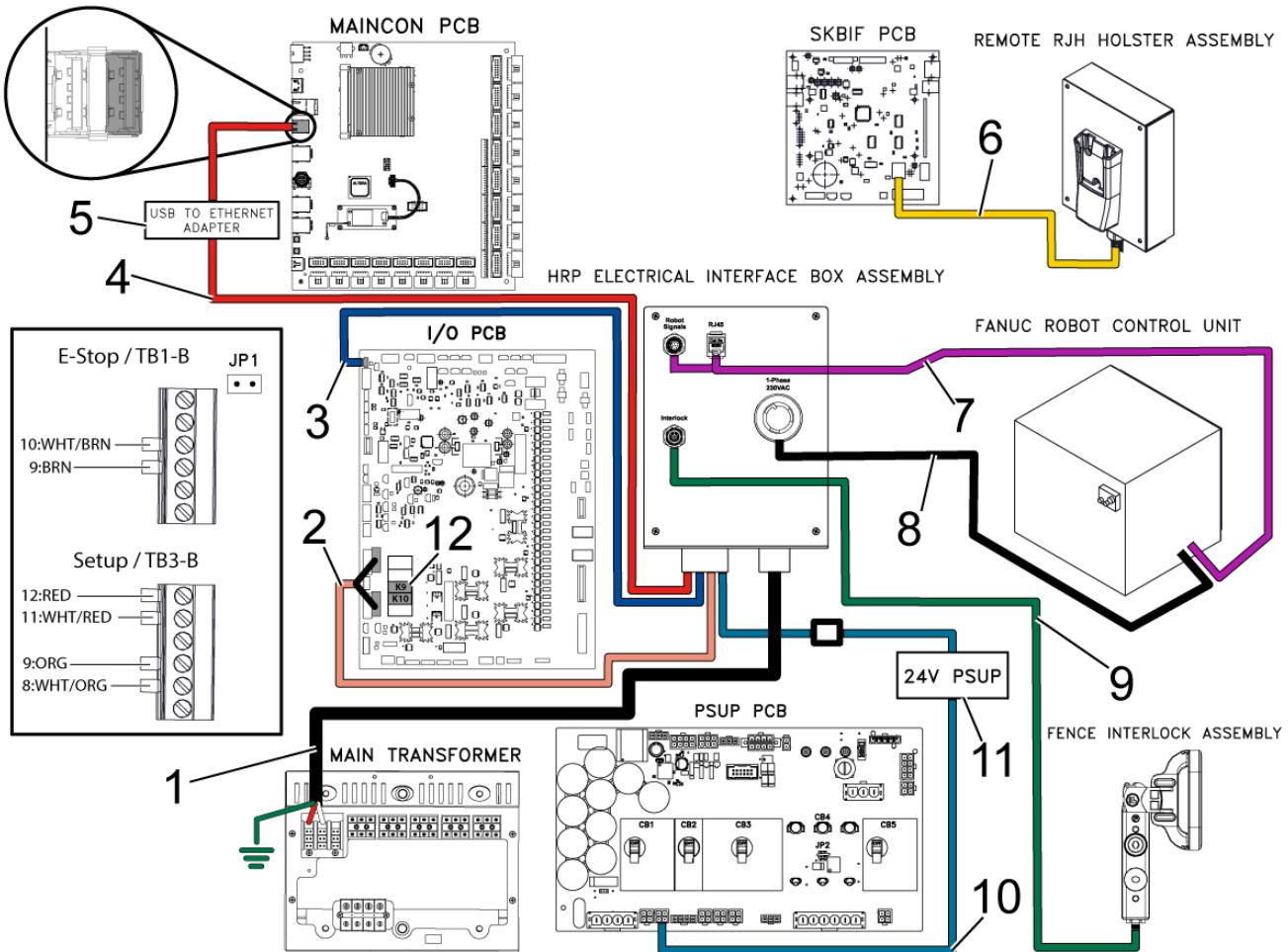
Ferrite Filter Installation



Depending on the Robot build date the cables were not built with ferrite filters installed. Install ferrite filters PN: **64-1252** to both RJ-45 Communication cables at the electrical interface box and to the USB to Ethernet Adapter at the Main Processor PCB.

Electrical Diagrams

HRP-1 Wiring Diagram



HRP-2/3 Wiring Diagram

