Haeger®
a PennEngineering® Company

618 MSP5e

Operation Manual

17-00074 Rev.D.8.2024

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SECTION 1 - INTRODUCTION

Congratulations!

You are using a genuine Haeger Hardware Insertion Machine - the industry standard for dependable fastener insertion.

Haeger, Inc. is widely recognized as the industry leader in the development and implementation of innovative self-clinching fastener installation technologies. For over thirty years, Haeger engineers have been designing and building flexible systems for installing practically every kind of self-clinching fastener into practically every kind of work piece - creating new technologies to help Haeger owners get just about any job done productively and profitably.

Over the years, Haeger's innovative tooling and patented quick-change automatic fastener feeding systems have revolutionized the way the world's fabricators and manufacturers install hardware.

So, whenever your operation faces an insertion challenge, turn to the manufacturer with the most experience in developing self-clinching fastener insertion solutions. Turn to Haeger.

Haeger Locations Worldwide

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Statement of Foreseen Use

The 618MSP-5e insertion machines are intended for use in an indoor commercial or industrial environment. Factory-authorized training is made available for operators at the time of installation. The Insertion Logic technology and All Haeger machines are designed to operate at voltages ranging between 208-575V and at 50 or 60Hz with no additional power requirements. Haeger systems do not produce thermal, biological, fire or radiation hazards etc. Haeger machines are not intended or designed to be used in hazardous or explosive environments, exposure to outside elements of weather such as freezing, wet, extreme high temperatures or extreme dusty environments. See your local representative or visit http://www.haeger.com for more details.

Safety Information

This manual contains details on safety when using your new machine. Where applicable, cautions and warnings are used throughout this manual to draw your attention to safety precautions. The Haeger Safety System section of this manual explains the safety features built into the machine that minimizes the dangers of pinching or crushing while operating the machine.  It is recommended that in addition the safety details in this Haeger insertion machine manual, all customers, create, implement, and maintain their own individual safety codes, policies, and procedures.

Customer Service

If your machine malfunctions and you are unable to resolve the problem, field service technicians can be dispatched to your site to conduct repairs. Service visits are paid for by the customer, either under a maintenance agreement, by purchase order or prepayment. Time and material rates are charged for any service not covered under a maintenance agreement. Before calling to report a problem, gather as much information about the problem as possible and have it ready to provide to your customer care center. The more information you can provide initially, the more quickly the problem can be corrected.

Responsibilities of the Operator

Before operating the machine, ensure proper training for the machine operator. Haeger provides training during installation, and additional post-install training can be accessed by contacting a Haeger service representative. Operators must be aware of safety guidelines outlined in this manual. Routine maintenance should be performed by trained personnel who are familiar with the machine's internal workings. Daily maintenance is also essential for optimal performance and longevity. If issues arise, call for service promptly. Refer to the "Troubleshooting and Maintenance" sections for further details.

Responsibilities of the Service Technician

Field service technicians must have machine and InsertionLogic® service training. The service technician is responsible for all repairs, upgrading and modification requested by the customer or mandated by the Haeger Service and Support Group. The service technician who installs the machine will also provide training for the operator that covers all the basic skills and safety practices required to operate the machine. Service personnel must be furnished with proper tools for the installation and maintenance of the machine.

Basic Maintenance

The customer is responsible for basic maintenance of the machine, including but not limited to:

- Cleaning the machine regularly to prevent the buildup of dirt and debris.
- Inspecting the machine regularly for signs of wear and tear.
- Repairing or replacing any worn or damaged parts.

Rusting: Rusting is a natural process that can occur on any metal surface. However, it can be accelerated by exposure to moisture, salt, and other corrosive elements. The customer is responsible for taking steps to prevent rusting, such as:

- Storing – installing the machine in a dry, well-ventilated area.
- Applying a rust-preventative coating to rust prone parts if applicable.

If the machine rusts due to the customer's failure to take reasonable steps to prevent rusting, the customer will be responsible for the cost of repairing or replacing the rusted parts.

Quality of Parts & Fasteners

The 618MSP-5e machine is designed and engineered for high volume installation of self-clinching fasteners of all types and sizes. As a rule, the "quality" of parts and fasteners is very important to getting the most out of your Haeger Insertion Machine. The next two paragraphs are general in nature but critical to maximizing productivity, quality, and profit potential.

Fastener Quality Basics: In general, self-clinching fasteners are designed with an annular recess in the shank that allows the softer metal of your part (work piece) to cold form in and around it, and permanently lock the fastener in place. Inspecting the fasteners on a regular basis and verifying they are constructed within design tolerances is very important. With studs and stand-offs, this is especially critical as they increase in length. Discuss with your fastener supplier on dimensional tolerances and force requirements for your application. For the highest quality, PEM® brand fasteners are recommended.

Part Quality Basics: Take special care in inspecting all parts in which the fasteners will be inserted. Verify the holes in the part meet the required specifications and tolerances. In addition, visually inspect each part, looking for burrs and irregularities around each hole. Holes out of tolerance, burrs and irregularities will degrade the fastener's performance and may cause difficulties during the insertion process. We also recommend developing a consistent method of handling or holding the part (work piece) during the insertion process to ensure quality and increase fastener performance long term.

Self-clinching fasteners should be tested to be sure they meet manufacturer's published performance data or specifications specific to the application.

Basic Data Sheet

Your Machine Model 618MSPe

Serial Number:		Year Manufactured:	
Voltage:		Amperes:	
Hertz (Machine):		Hertz (MAS):	
Phase:			

618MSPe Machine Matrix			
Voltage	208/240	380/480	575
Amperage	9	4	3
Hertz	50 or 60	50 or 60	50 or 60
Phase	3	3	3

Noise Measurement Summary	
LEX 8-hour	80 dB (A)
-- Note: The noise exposure level (LEX 8-hour) provided is for the machine running in isolation only. A professional site-specific noise assessment should be conducted to account for potential cumulative noise exposure from other noise sources. --	

Fluids & Pressure	
Hydraulic Oil: *	Hydraulic Oil, ISO 32 Viscosity Grade
ISO Viscosity:	32
Capacity:	10 gallons/38 liters
Max. Operating Pressure:	2,950 psi/203 bar
* Equivalent hydraulic oils may be used. It is the machine owner's responsibility to determine which hydraulic oils in their area are equivalent to ISO 32.	

Dimensions	
Height:	84 in./2,134 mm
Width:	34 in./864 mm
Depth:	45 in./1,092 mm
Weight:	1,600 lb./726 kg

Illustrations of Safety Notes

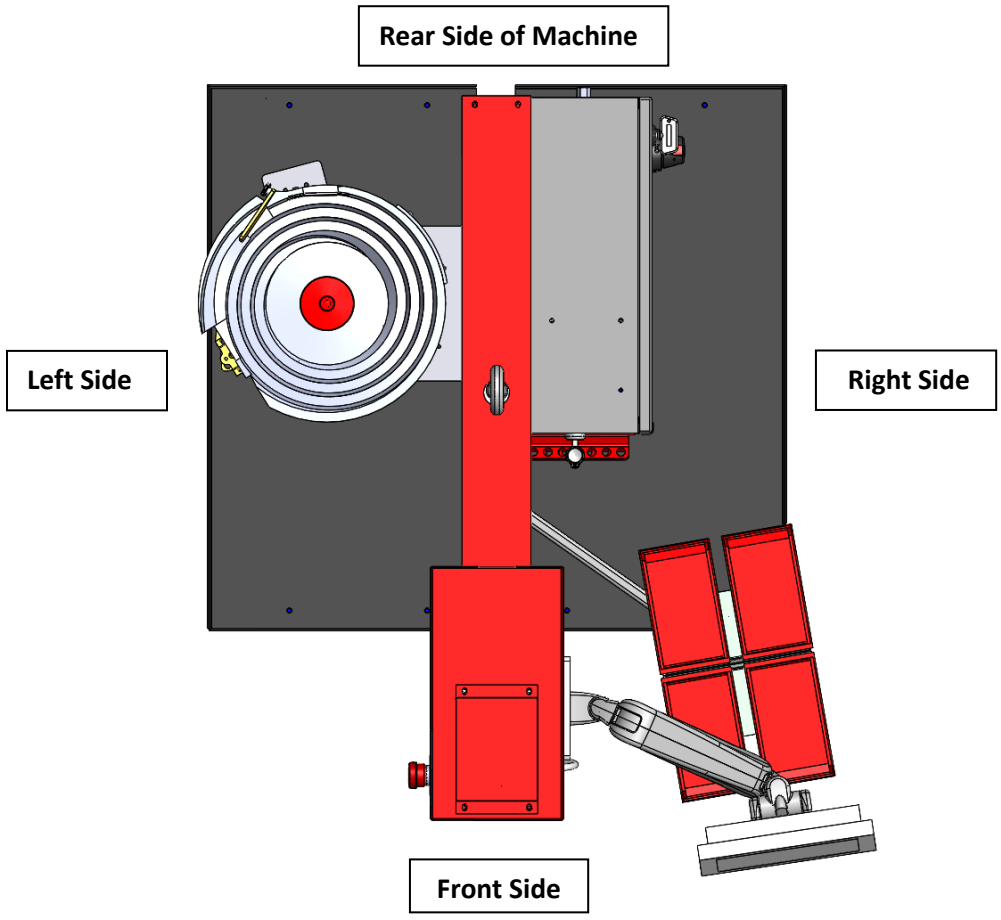
Safety notes are identified by a pictogram and a signal word. The signal word describes the severity of the risk at hand.

	**Warning** possible dangerous situation that could cause minor physical injuries.
	**Risk of electrical voltage** possible dangerous situation that could cause serious physical injuries.
	**Risk of crush injuries** possible dangerous situation that could cause serious physical injuries.
	**Risk of pinching injuries** possible dangerous situation that could cause serious physical injuries.
	**Important** for a special behaviour or activity for the safe handling of the machinery.
	**Application** tips and particularly useful information.
	**Stop!** Contact your Haeger Representative for instructions on how to proceed.
	**Eye protection** must be worn when operating this machine
	**Read First!** Read instructions first before operating this machine. Make sure that you read and understand all the descriptions, instructions and notes contained in this section. Follow all the Warnings and Cautions in this manual. **Your safety and productivity depend on it.**

The Haeger 618MSP-5e was designed to conform to applicable CE, ANSI, OSHA, and CSA safety standards. It is the user's responsibility to understand any specific local safety codes that may require additional guarding and conform to those standards.

Details of Location in the Documentation

All information in these instructions concerning direction and location refer to the workplace of the operator.



In this manual, the use of the terms left and right refers to the machine operator ’s left and right when they are standing in front of the machine, facing the work area between the Upper Tool

Eye protection must be worn when operating this machine

Safety Precautions and Warnings

	**Never**	Operate this Haeger Hardware Insertion Machine without proper instructions. Read and thoroughly understand this manual before attempting to operate this machine.
	**Never**	Tamper with any part of this machine's electrical system unless you are a trained electrician and thoroughly understand this machine's electrical schematic.
	**Never**	Operate this machine while wearing any metal objects (i.e., rings, watches, bracelets, etc.) that may come into contact with the *Upper Tool, Lower Tool* or work piece.
	**Never**	Attempt to test or demonstrate this machine's Safety System by placing any portion of your hand or body between the Upper and Lower tools. Always use the test procedure outlined in Section 4 of this manual.
	**Never**	Exceed the maximum force of 9,000 pounds on the J- Frame and the Square *Tipped Tool Holder*.
	**Never**	Attempt to run any irregular shaped sheet metal part that could contact the *Upper* and *Lower Tools* **before** these tools insert the fastener into the part. This applies to both the *Conductive* and *Non-Conductive Modes* of operation.
	**Never**	Press the *Down Footswitch* a second time in the *Non- Conductive Mode* when your hands are in the area of the tooling.
	**Never**	Operate this Machine without wearing the proper eye protection

Eye protection must be worn when operating this machine

The Safety System's heavy duty electrical cord is very durable; however, caution should be taken when working close to the edge of deep boxes or cans. Operating with the Safety System's electrical cord too close to sharp metal edges may damage the cord.

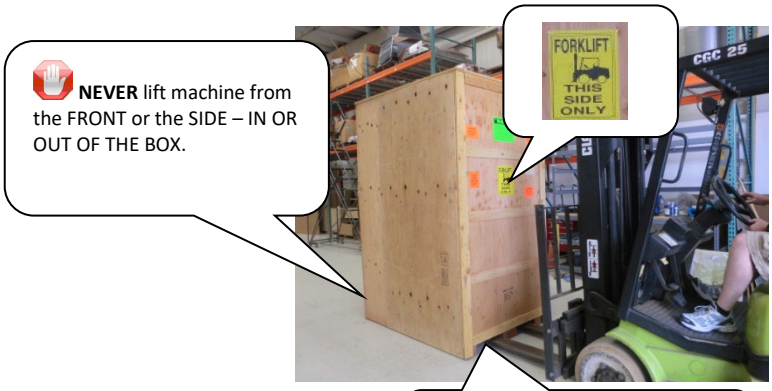
Lubricate the *Upper Tool Holder* with a small amount of lithium (white) grease. Any other lubricant may interfere with the Safety System's operation and will void your machine warrant

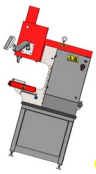
SECTION 2 – INSTALLATION

Handling

The Haeger Hardware Insertion Machine is designed to provide the operator with a comfortable working height and to allow freedom of movement when positioning work pieces in the tooling area. Because of these features, the machine is **top heavy when unloading**.

- Handle with **extreme caution**!
- **Never** attempt to move the machine with a forklift positioned in **front of or on either side** of the machine.
- **Always** position the forklift or pallet truck to the **rear** of the machine when moving the machine with a forklift or pallet truck.

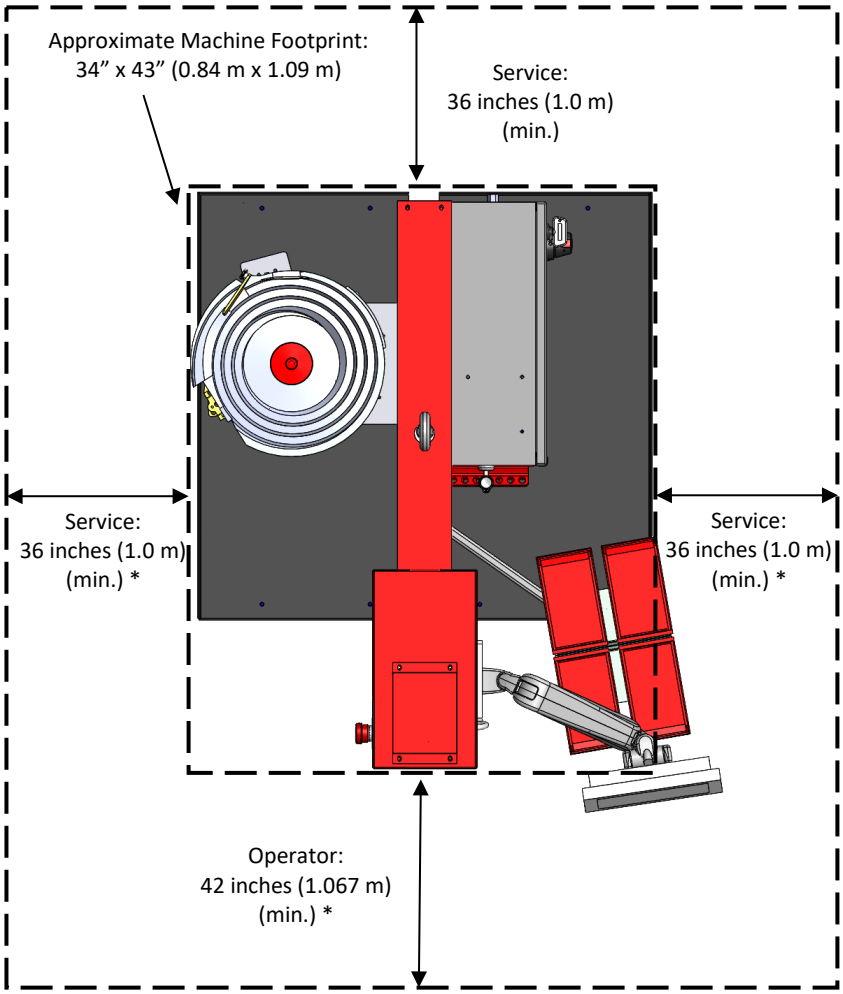




Machine is **HEAVY** in the **REAR** and will tilt back when lifted with lift strap.

Recommended Safe Work Zone

It is recommended that prior to delivery, the customer layout an area in their facility that allows the operator and maintenance personal, ample space to work or service the machine. The distances shown below are recommendations. It is the customer's responsibility to adjust the "Safe Work Zone" based on their own individual needs to optimize operator and service technician safety. We also recommend that the customer and/or operator inform facility visitors of the "SAFE WORK ZONE" around the machine to minimize or eliminate the possibility of accidental bumping of the operator while the machine is in operation.



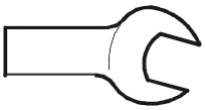
RECOMMENDED MINIMUM SAFE WORK ZONE

***** The overall Safe Work Zone dimensions will vary depending on the size/shape of the part/work piece in production. It is generally recommended to have a 3' (1 m) to 4' (1.22 m) minimum safe zone beyond the operator and work piece to maneuver the part. In addition, the Safe Work Zone must provide ample space for the service technician when servicing.

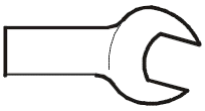
Skid Removal

- The feet are already installed on the machine.
- You will need to lift the machine to remove the skids.
- You will need three different wrenches.

Skid Bolt: 9/16 in./13mm socket — 9/16”/13mm socket wrench



Foot: 7/8 in./22 mm open end wrench — 7/8 in./22 mm



15/16 in./24 mm open end wrench — 15/16 in./24 mm

1. Uncrate the machine.
2. Remove the (8) lag screws that hold the machine base to the shipping skid (2 on each plate) using the socket wrench.
3. Use the strap on the top of the machine frame and an appropriate sling for the weight of this machine and lift it until it clears the skids.

The weight of the Haeger Hardware Insertion Machine and skids are as follows:		
Machine	**Pounds**	**Kilograms**
618MSPe	**1,600 lb.**	**726 kg.**

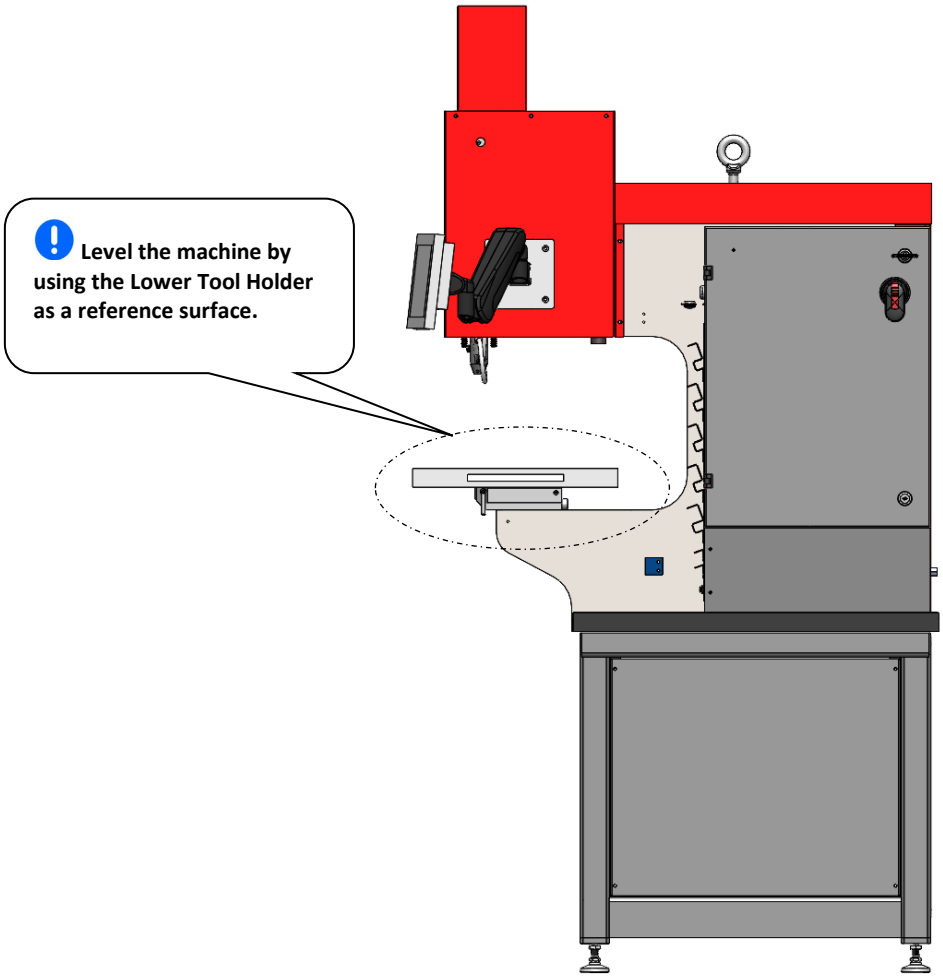
4. Carefully move the machine away from the skids (or move the skids). Lower the machine onto the floor.
5. Uinsg the two open end wrenches loosen the nut on the foot and remove the plate.
6. Tighten the foot nut until it is flush with the bottom of the machine’s base.

Machine Setup

1. Place the machine carefully in your shop. The surface should be flat, level, and hard enough to support the machine's weight, which is detailed in the 'Basic Data' section of this manual. If you're unsure whether the surface can hold the machine's weight, consult a structural engineer. As of the time this manual was published, there are no known requirements to secure or anchor the machine to the surface. However, you should check with your local building code official or a structural engineer in your area to confirm this.

2. Using a 7/8 in/22 mm wrench to adjust the feet, level the machine from front to back and left to right while using the top surface of the Lower Tool Holder as a reference surface (see Figure below). Make sure that all the machine's feet are securely resting on the shop floor.

3. Without changing the height adjustment of the feet, tighten the lock nut on each foot using a 15/16 in./24 mm wrench.



Machine Setup (Continued)

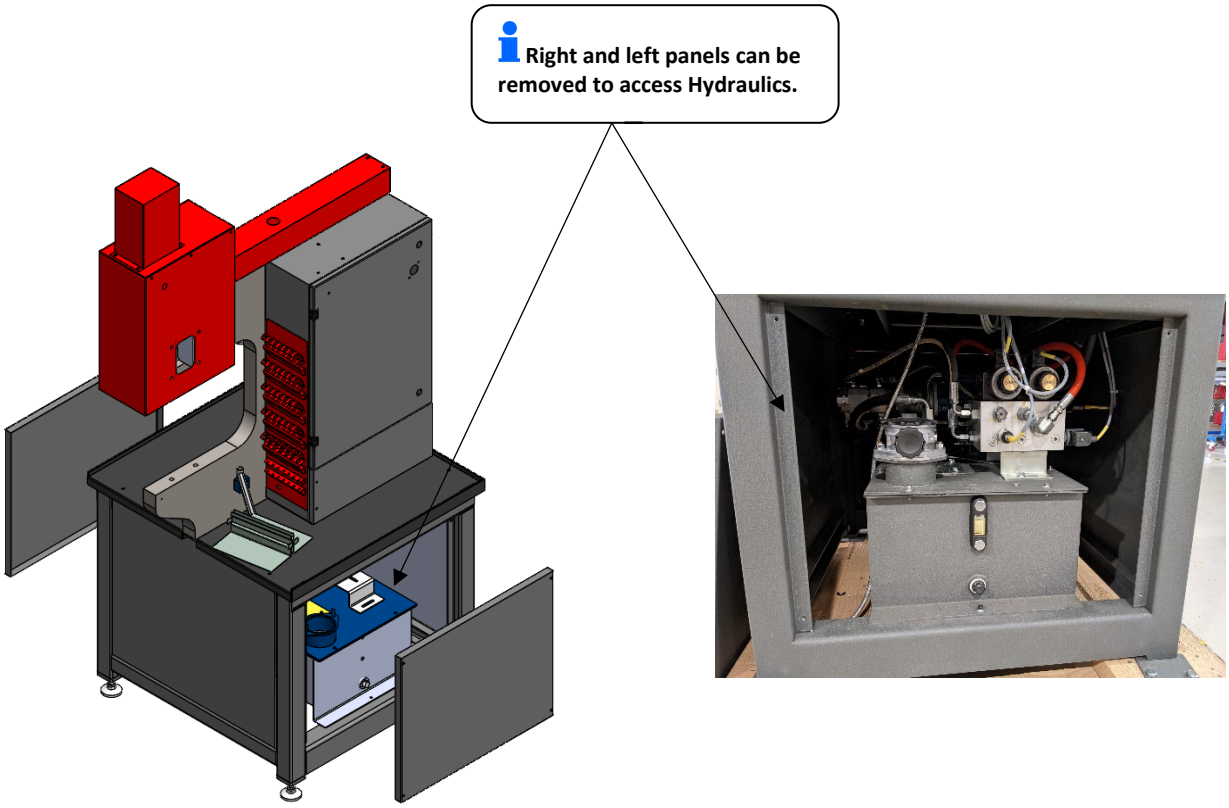
If the machine is equipped with the Productivity Pack:

4. Air must be connected to the machine. Connect airline to the shut-off valve attached to the air regulator located at the back of the machine. Use only an airline that supplies clean, dry air.

Air Flow	Air Pressure
3 ft^3/min - 85 l/min	90 psi/6 Bar

5. If the machine is not yet filled with hydraulic oil, remove the sides of the machine to access reservoir tank. Fill the tank with ISO 32 Viscosity Grade Hydraulic oil. Re-cover the sides with the original panels when finished.

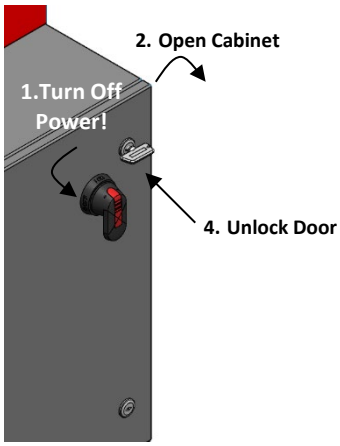
Fill the reservoir of the machine with the amount of hydraulic oil listed below:		
Machine	Gallons	Liters
618MSPe	10	38



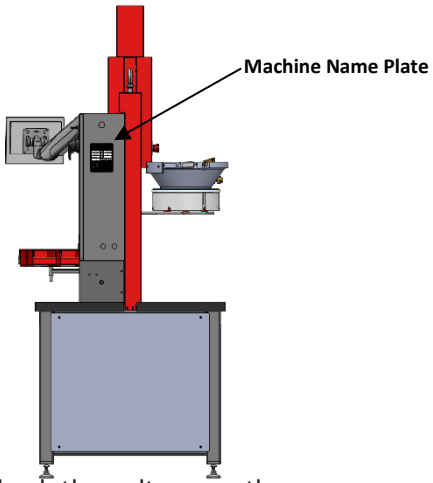
Main Power Setup

- The electrical connections required in this section must be made by a qualified electrician.
- Check to make sure that the electrical power supply for this machine has been disconnected at the supply source before doing any work on the machine's electrical system.

1. Check the voltage on the Machine Nameplate, located on the rear of the machine's Main Electrical Cabinet (see Figure 2.3). **MAKE SURE** the machine's incoming shop voltage is the same as the voltage the machine has been wired for. If the voltages do not match, **STOP!** Contact your Haeger Representative for instructions on how to proceed.
2. Ensure that the machine's electrical power supply has been disconnected at the supply source. Turn the machine's Main Disconnect Switch to the ***Off*** position. Using the special key, open the door of the Main Electrical Control Cabinet (see Figure 2.4).
3. Wire the incoming three phase electrical power to the three connectors on the Main Disconnect Switch terminals labeled L1, L2 and L3. Make sure the machine is properly grounded by connecting the incoming ground wire to the top terminal of the green and yellow terminal block on the right side of the Main Disconnect Switch.
4. After all electrical connections have been properly made, we recommend installing service loops and/or an angle bracket (not included) on the main power cord. Service loops provide a means of securing the main power cord to the electrical cabinet. In addition, it provides strain relief and unnecessary wire chafing.
5. Close and latch the Main Electrical Control Cabinet door using the special key.



Open the door of the Main Electrical Control Cabinet.



Check the voltage on the Machine Nameplate

Machine Operator Basic Controls

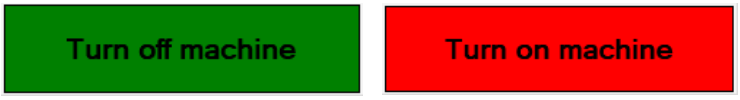
All the operator controls are located on the front and right side of machine front cover, except the foot pedal, this includes the Touch Screen, the E-Stop button/Stop button and Power ON button.

Touch Screen Control Panel

This is the primary interface to the operation control system. It is used for most of the machine's settings and functions. Operators input information via the touch screen, which displays text and graphical data. Selections are made by touching relevant areas on the screen based on the displayed information.

Emergency Stop Push Button (E-Stop)

The **Emergency Stop Push Button** is a red, mushroom-headed, two-position switch. When activated, the emergency stop sequence will immediately commence. Pushed in, the button will latch, turn of machine controls, and shut down the machine's motor. **The machine cannot be restarted** after this. To restart, twist the E-button clockwise, following the arrows on the button. The button will snap out and the machine can be restarted.



Machine Power ON Switch

The on/off switch is a touch button on the touch screen. When the on/off switch is touched, the machine's controls are turned on and the motor starts. The touch button will turn green. When the on/off switch is red, the machine's controls are off and the motor is stopped.

The Footswitch

Switches that are used by the operator to control the ram/cylinder during safe operation.

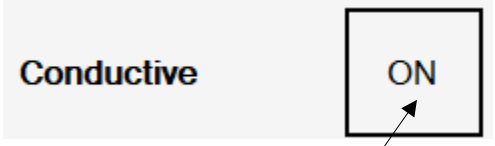
Main Disconnect Switch

This switch controls power for all machine components (including the touch screen). Rotate clockwise to switch ***On*** and counterclockwise to switch ***Off***. Always follow proper power up and power down procedures as described on the touch screen.

Footswitch

The Footswitch is shielded and connected to the Haeger Machine by a heavy-duty cable. It contains both the Down and Up Footswitches.
When the Down Footswitch is depressed, the cylinder ram moves down. Releasing the Down Footswitch will stop the ram. Depressing the Down Footswitch again will recommence downward ram movement.

In **Conductive Mode,** the machine will complete one normal cycle of the insertion process when the Down Footswitch is depressed and held down. Hold the Down Footswitch until the ram starts to move up again.



Conductive/Non-conductive mode toggle button.

Conductive Mode:

- Conductive mode is “ON” by default.
- Conductive mode options can only be accessed by certain user levels. (User password may be required)

In **Non-Conductive Mode**, the machine will lower the ram until contact is made with the work piece then stop. The Down Footswitch must then be released. **Depress the Down Footswitch a second time, to exert force.** The ram will return to its Up position after. Once the upward travel begins, release the Down Footswitch.

When the Up Footswitch is depressed before a press, the ram moves up. Releasing the Up Footswitch will stop ram movement. Upward motion will resume when the Up Footswitch is depressed again.

Make sure you read and understand the Warning and Safety Instructions in the Introduction section of this manual and follow the instructions for testing the Safety System in the Safety System section before attempting to operate this Hardware Insertion Machine.

NEVER depress the Down foot switch a second time in Non- Conductive Mode when your hands are in the tooling area.

Testing Moter Phase (Direction Check)

The Machine Setup must be completed before initiating this test

1. Open Side Panels from machine base so that the Motor is in view. Turn the machine's Main Disconnect Switch to the ON position.

2. Twist the Red Mushroom Button (E-stop button) to be sure it is unlatched.

4. The motor rotation is determined by the frequency controller. Touch the "Turn machine on" button on the touch screen. The button will turn green, and the motor will start.

5. Check if the motor rotates the same direction as the arrow indicator. If it is, the motor is hooked up correctly. Re-install Side Panels

If the motor **did not turn in the same direction as the arrow**, follow to the next series of steps.

Testing Motor Phase (Continued)

- NEVER tamper with any part of this machine's electrical system unless you are a trained electrician and thoroughly understand this machine's electrical schematic.
- Check to make sure that the electrical power supply for this machine has been disconnected at the supply source before doing any work on the machine's electrical system.

Adjusting the Wiring if the Previous Step Failed

1. Disconnect the machine from its electrical power supply at the supply source.
2. After disconnecting the machine from its electrical power supply at the supply source, turn the machine's Main Disconnect Switch to the ***OFF*** position.
3. Using the special Electrical latch key, open the door of the Main Electrical Control Cabinet.
4. Reverse the incoming electrical leads on terminals L2 and L3 of the Main Disconnect Switch (see electrical schematic)
5. Close and latch the door using the special key.
6. Turn the machine's Main Disconnect Switch to the ***ON*** position.
7. Have someone watch the motor in the base of the machine when you turn the machine on. The motor has an orange arrow indicating the correct motor rotation. Press the *On* Button. The green light in the switch will turn on and the machine's motor will start.
8. If the motor turned the same direction as the arrow, install the Side Panels on the Machine Base. The machine is now ready for use.
9. If the motor **did not turn in the same direction as the arrow** contact your Haeger Representative for instructions.

The Upper Tool Holder

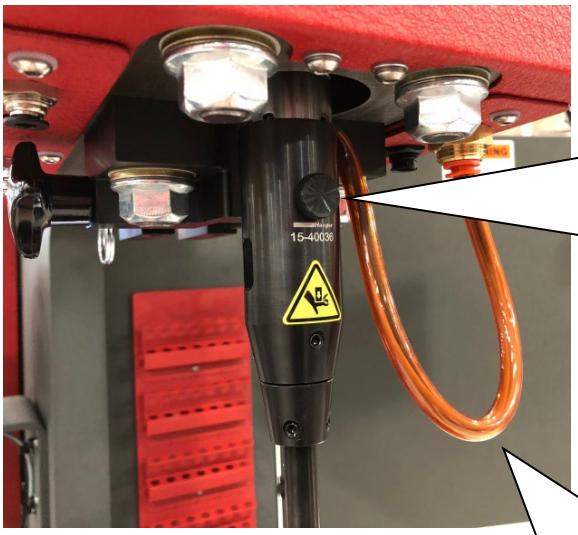
The *Upper Tool Holder* is secured to the machine's cylinder rod by the black serrated knob in the front. This Upper Tool Holder can usually be left on the machine. If it requires removal, do so with care. Continuity springs and guide pins inside the Upper Tool Holder may be easily knocked out during removal. These parts are **very important** components of the Haeger Safety System. If lost, do not operate the machine until they have been replaced.

A Standard Tool Adapter is also installed in the Upper Tool Holder using two M6 x 6 SHSS (Socket Head Set Screw) located in the front and right side of the Upper Tool Holder. This may be removed if needed to fit special larger tools.

When installing any tool or the Standard Tool Adapter, always make sure that it is pushed in as far as possible and is securely held by the set screws.

Steps to Install a Punch (upper tool)

1. Loosen the set screws in the Tool Holder or Tool Adapter.
2. Insert the tool into the Tool Holder or Tool Adapter.
3. Tighten the set screws until the tool is locked securely in place.



Important: Incorrect thumb screws may damage machine parts. If lost, use only Haeger replacement parts.

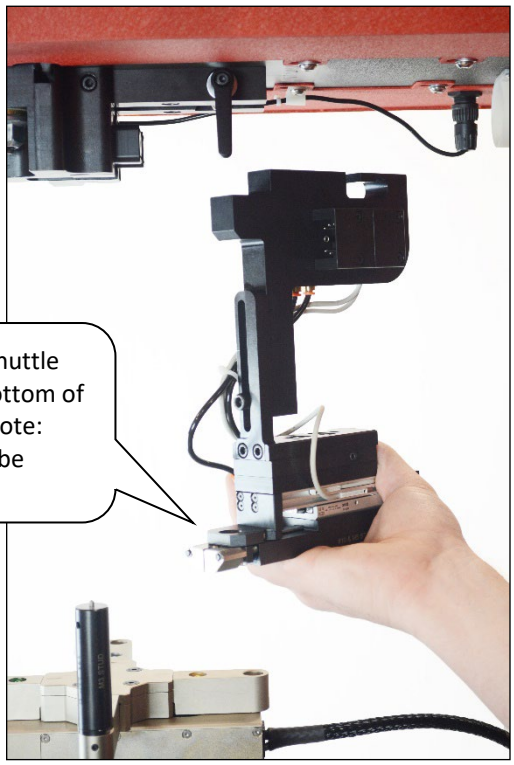
– **Haeger** replacement part numbers:

11-00241	THUMB SCREW CAP
H-3738	SHCS, M5 x 0.8 x 12mm, BLACK OXIDE

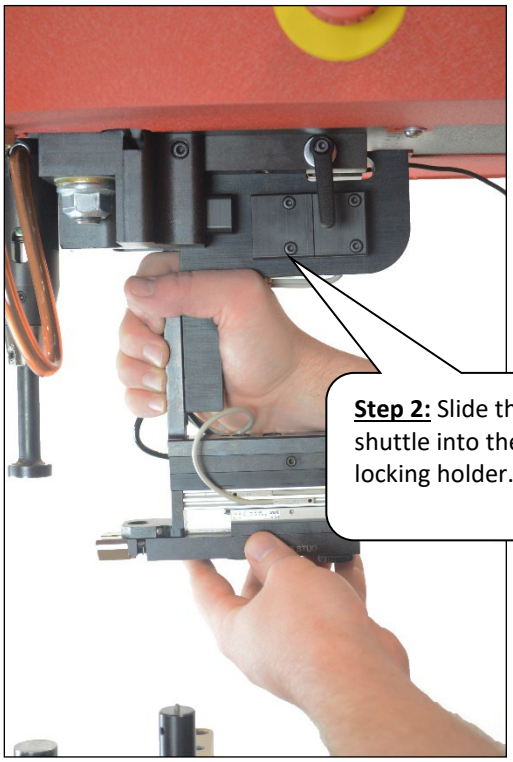
The Safety System's heavy duty electrical cable conduit is very durable; however, caution should be taken when working close to the edge of deep boxes or cans. Operating with the Safety System's electrical tubing too close to sharp metal edges may damage the cord.

Quick Mount Multi-Shuttle Platform

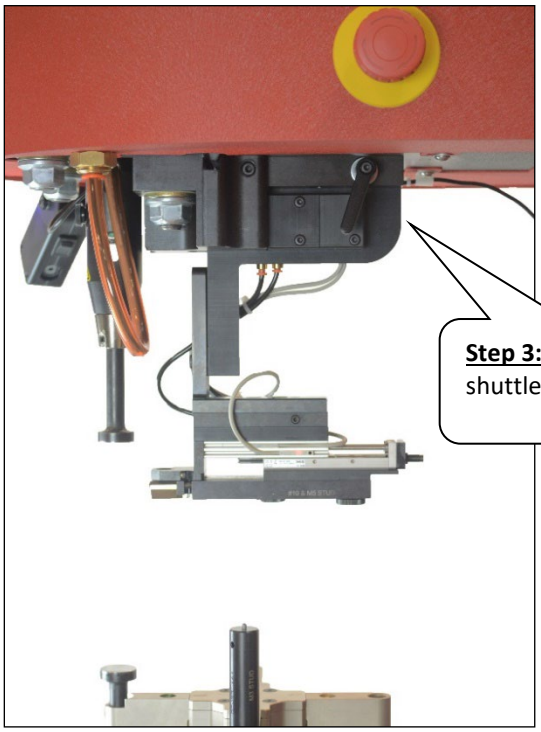
The Multi-Shuttle Platform is available with purchase of the Productivity Pack. This is a 1-piece, single station module for holding shuttle tooling. Integrated electrical/air supply connections on the module allows quick mounting and removal from the machine.



Step 1: Mount shuttle tooling to the bottom of multi-shuttle. (Note: tooling can also be mounted after)



Step 2: Slide the multi-shuttle into the positive locking holder.



Step 3: Lock multi-shuttle in place.

The Turret Insertion System (T.I.S.)

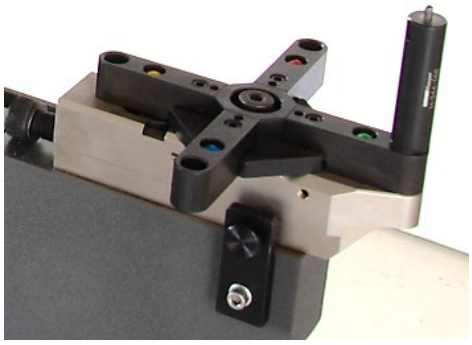
Do not operate the machine without both the Upper and Lower Tools properly locked in place.

The 618MSP-5e machine comes with the Universal Lower Tool Holder that can hold just one anvil tool at a time. A Single Part Handling upgrade package may be purchased to use the TIS-1 on this machine.

Like the Universal Lower Tool Holder, the TIS-1 Lower Tool Holder is secured to the lower arm of the machine's frame by a M16 X 50 SHCS (Socket Head Cap Screw) and aligned by pins on the bottom of the assembly. All standard Haeger anvils fit in the TIS without the need for any adapters.

Switching to the TIS-1

1. Remove the Universal Lower Tool Holder by loosening the M16 X 50 SHCS bolt holding it to the machine frame.
2. Place the TIS-1 on the frame arm and turn the cross turret to an "x" position for access to the M16 X 50 SHCS bolt. Turn the M16 bolt down enough that the cross turret turn over it, but do not tighten.
3. Install two flat tools of the same diameter to the Upper tool Holder and one of the arms of the turret.
4. Bring the upper tool/punch down to just above the lower tool/anvil and press the E-Stop button to lock its position.
5. Visually align the two flat tools by carefully shifting the TIS-1 forward, backward, or sideways. Use the large bolt in the back of the TIS to assist in forward/backward positioning, and the thumb screw adjusters attached to the frame for side-to-side positioning.
6. Once aligned, tighten the M16 bolt to 90 - 120lb-ft.

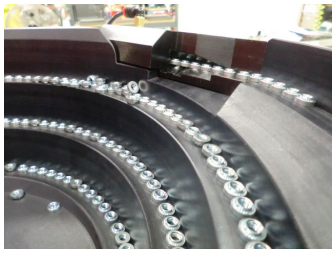


Steps to Install a Lower Tool/Anvil by M5 bolt below.

1. Turn the cross turret until the bottom of the TIS arm is exposed.
2. Place the tool/anvil into the TIS arm's tool receptacle.
3. Secure the tool into place by tightening the bolt from below.

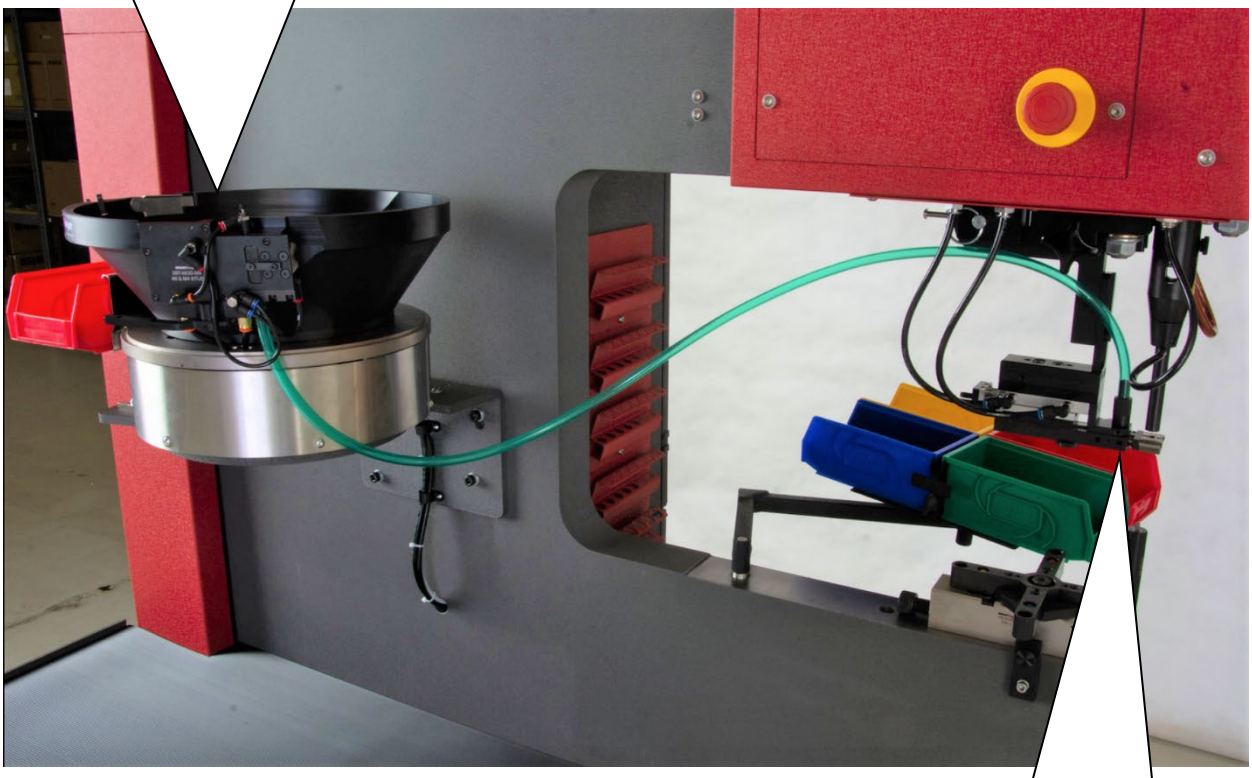
Modular Auto Feed System (MAS 350)

Modular Auto Feed System (MAS): Available with purchase of the Productivity Pack. This system allows for continuous feeding and inserting large volumes of fasteners. The MAS 350 bowl either at a continuous vibration or at intermittent vibration. Continuous vibration is commonly used when emptying the bowl out of hardware for a tool change or for small quantity hardware runs. Intermittent vibration is commonly used for normal high volume insertion applications.



MAS 350 Bowl

- Fasteners vibrate up and around the MAS bowl
- Automatically lining up the fasteners at the doorway of the multi module



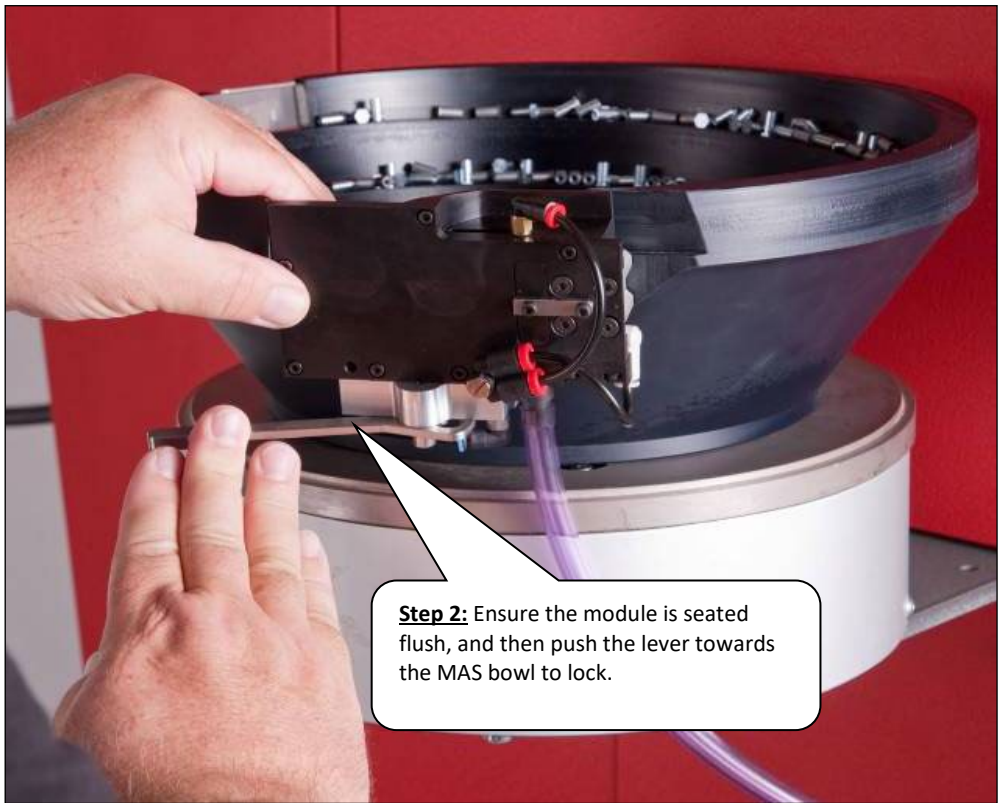
MAS 350 Quick Mount Assembly

- Air is ejected, moving the fastener through the tubing
- Positioning the fastener at the quick mount assembly, ready for insertion

Quick Mount Auto Tooling*

*Available with purchase of Productivity Pack

Installation and Changeover in Two Easy Steps



Quick Setup Procedure

This procedure assumes that you are thoroughly familiar with this machine's controls as described in the first part of this section. If you are **not** familiar with these controls, **STOP.** Return to the beginning of this section and review any controls you are not thoroughly familiar with **before** continuing. If you have any questions, contact your Haeger Representative.

Depending on the ambient shop temperature, you may need to warm up your Haeger Hardware Insertion Machine before beginning any operations. To do this, turn it on and let it run for about ten minutes.

Getting started – Before you turn on the machine

1. Determine the installation force required to properly install the hardware you are going to insert. Refer to the technical specifications provided by the hardware manufacturer for this insertion force.
2. Select the proper tools for this application and install them in the Upper and Lower Tool Holders.
3. For Non-Conductive mode, a user password may be required.

Machine Startup

1. Turn the Main Disconnect Switch to the *ON* position.
2. Enter Quick Run.
3. Start the machine by touching the "Turn on machine" button. The button turns green the motor will start.

Setup Stroke

1. Select type of tooling (manual, shuttle, bottom feed, J-frame) by tap-toggling the tooling button on the right side of the screen.
2. Place workpiece/panel on the anvil/lower tool.
3. Tap on the red Flashing "Setup Stroke" button and follow steps on screen. Keep hands, fingers, any body parts away from the pressing area.
4. After confirming Setup Stroke, check all other settings are correct. Machine is now ready to run the same fasteners on the same material (and material thickness) consecutively.

Experienced personnel must test the Safety System at the beginning of each work shift. See the Safety System Test procedures outlined under Section 3 of this manual.

Never operate this machine while wearing any metal objects such as a watch, bracelets, necklaces, rings, etc. Never leave your foot on or above the Down Footswitch after completing an insertion cycle

Eye protection must be worn when operating this machine

Positive Stop System Assembly (Optional)

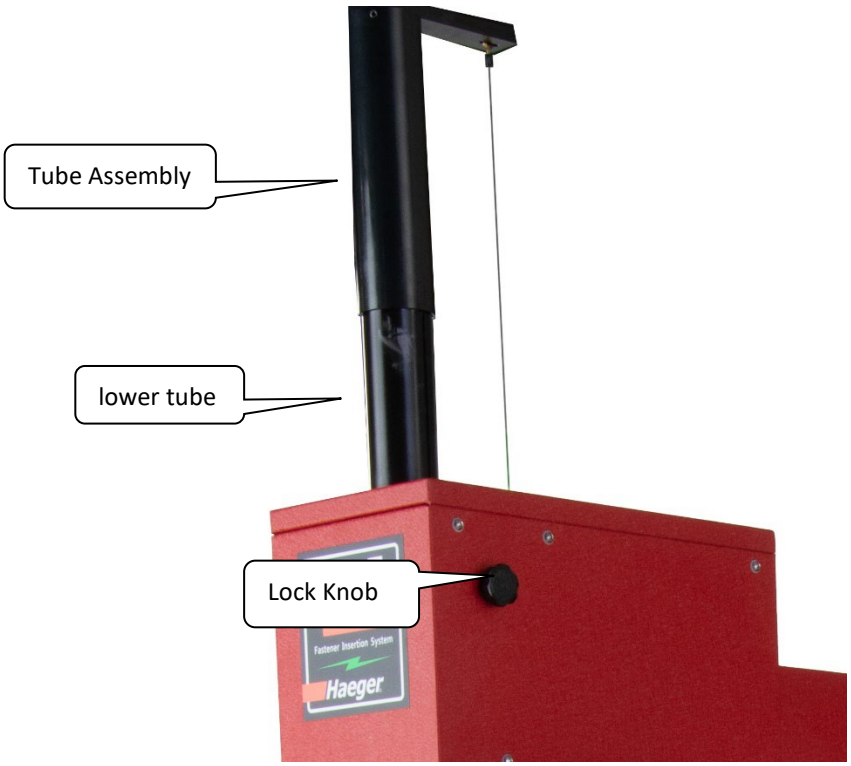
The Positive Stop System is an optional add-on during purchase of the 618MSP-5e machine.

The Positive Stop System provides an easily adjustable method to precisely maintain a stopping point of the machine cylinder. This system is well suited for improving uniformity on delicate work pieces made of softer materials such as aluminum, fiberglass, or composite. It can also be used for inserting small hardware.

When using this system, the stopping point of the machine's stroke is controlled by rotating the lower tube of Positive Stop's Tube Assembly mounted above machine's cylinder.

- Turning the Tube Assembly counterclockwise shortens the machine's stroke (higher stopping point).
- Turning the Tube Assembly clockwise lengthens the machine's stroke (lower stopping point).
- The pitch of the thread on the threaded shaft is 14 threads per inch (25.4mm). One complete revolution of the Tube Assembly will increase or decrease the machine's stroke by 0.07 inches (1.8mm.)
- The stroke of the machine can be adjusted from 0.375 inches (10mm) to 8.5 inches (216mm.) With this range, the Positive Stop System can be used with all Haeger tooling setups, including the J-Frame (J-Frame not applicable on One Touch machines).

The Lock Knob on the right side is used to lock the tube assembly in position once they have been properly set.



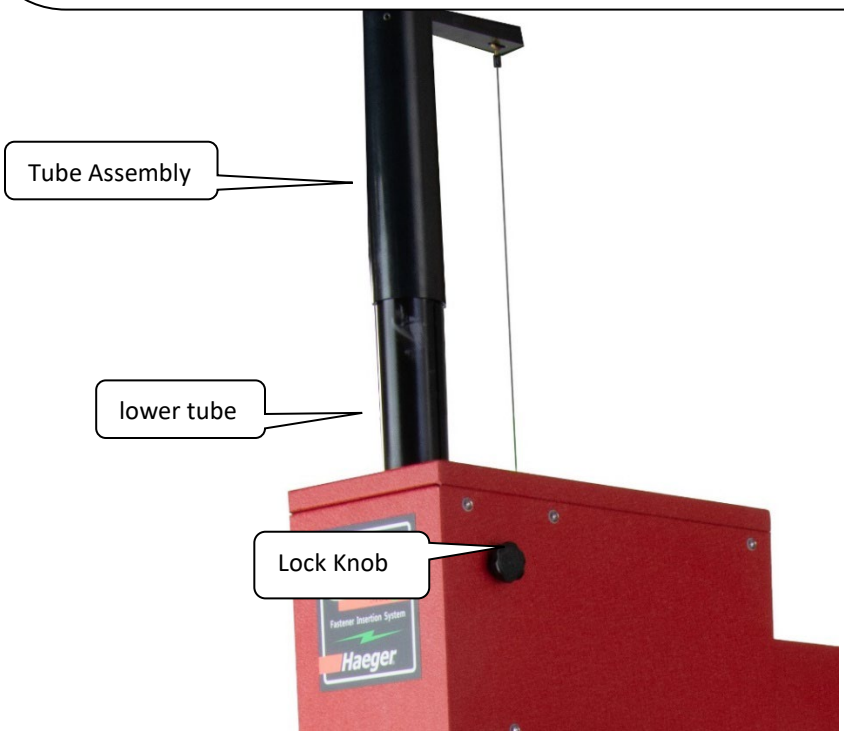
Positive Stop System Setup Procedure

This Setup Procedure can be used for production runs in both Conductive and Non-Conductive Modes.

This setup procedure assumes that you are thoroughly familiar with this machine's operating controls, safety systems, and conductive/non-conductive Modes.

If you are not familiar with the above stated controls and systems, **STOP!** Go to those sections and become familiar with all of them before continuing.

Keep your hands away from the tooling area.



Getting Started:

1. Loosen the Lock Knob.
2. Turn the Tube Assembly clockwise or counterclockwise to a position such that the Punch and Anvil will make contact when the Down Footswitch is depressed.
3. Follow the TPS setup (Setup Stroke) procedure through the touchscreen interface. The installation force may need to be adjusted to a value higher than the fastener's manufacturer specifications later.
4. Set the Conductive mode to "off." (a user password may be required)
5. Raise the Punch (upper tool) to a position where the hardware and work piece can be easily placed in the machine.
6. Place and align the work piece in preparation for an insertion with hardware.
7. Bring the Punch down. The Punch should contact the work piece and stop.

8. Adjust the Positive Stop by turning the Tube Assembly to match the cylinder ram's current position.
9. Raise the Punch to a position where the hardware and work piece can be easily removed.
10. Remove the work piece from the machine.
11. Turn the Tube Assembly clockwise (right) approximately two revolutions.
12. Check your settings. Prepare hardware and workpiece for another insertion.
13. Bring the Punch down until it contacts the workpiece and stops.
14. Depress the Down Footswitch a second time, the machine should install the hardware and stop.
15. Raise the Punch and remove workpiece.
16. Examine the hardware to ensure it has been installed properly.
17. If the hardware was not fully installed, adjust the stop position downwards by turning the Tube Assembly clockwise.
18. If the hardware has been over-installed (inserted too far in or damaged), adjust the stop position upwards by turning the Tube Assembly counterclockwise.

> Tips:
> 1/8 of a revolution will equal 0.01 inches (0.25mm) change in height.
> 1/4 of a revolution will equal 0.02 inches (0.50mm) change in height.

19. Repeat Steps 12 through 18 as necessary until the hardware has been properly installed. Adjustment of installation force may also be needed.
20. Lock the Tube Assembly in position by tightening the Lock Knob.

SECTION 3 – HAEGER SAFETY SYSTEM

Safety Precautions and Warnings

	**Never**	Operate this Haeger Hardware Insertion Machine without proper instructions. Read and thoroughly understand this manual before attempting to operate this machine.
	**Never**	Tamper with any part of this machine's electrical system unless you are a trained electrician and thoroughly understand this machine's electrical schematic.
	**Never**	Operate this machine while wearing any metal objects (i.e., rings, watches, bracelets, etc.) that may come into contact with the *Upper Tool, Lower Tool* or work piece.
	**Never**	Attempt to test or demonstrate this machine's Safety System by placing any portion of your hand or body between the Upper and Lower tools. Always use the test procedure outlined in Section 4 of this manual.
	**Never**	Exceed the maximum force of 9,000 pounds on the J- Frame and the Square *Tipped Tool Holder*.
	**Never**	Attempt to run any irregular shaped sheet metal part that could contact the *Upper* and *Lower Tools* **before** these tools insert the fastener into the part. This applies to both the *Conductive* and *Non-Conductive Modes* of operation.
	**Never**	Press the *Down Footswitch* a second time in the *Non- Conductive Mode* when your hands are in the area of the tooling.
	**Never**	Operate this Machine without wearing the proper eye protection

Eye protection must be worn when operating this machine

The Safety System's heavy duty electrical cable conduit is very durable; however, caution should be taken when working close to the edge of deep boxes or cans. Operating with the Safety System's electrical cord too close to sharp metal edges may damage the cord.

Lubricate the *Upper Tool Holder* with a small amount of lithium (white) grease. Any other lubricant may interfere with the Safety System's operation and will void your machine warranty.

Safety System Description

The Haeger Hardware Insertion Machine is equipped with a unique, reliable *Safety System*.

Conductive Mode

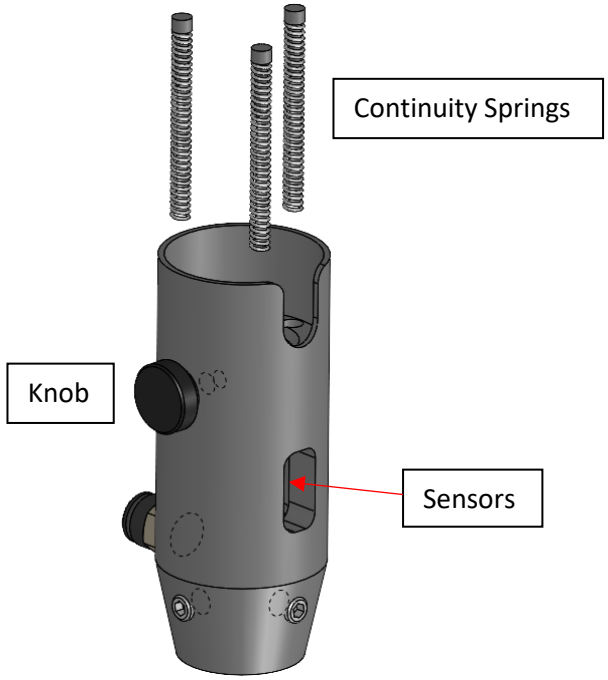
When the Safety System detects a non- conductive material between the Upper and Lower Tools, the Upper Tool's downward motion reverses immediately and returns to its' Up position.

Non-Conductive mode

The Upper Tool's downward motion stops when **any** material is placed between the Upper and Lower Tools. Depressing the Down Footswitch a second time continues the hardware insertion cycle. **This applies the machine's preset downward force regardless of whatever is in between.** The Upper Tool then returns to its Up position.

How the safety system works

In both "Conductive" and "Non-Conductive" modes, the Safety System relies on the Dual Safety Sensors inside the Cylinder Ram Adapter, and position monitoring fulfilled by the TPS. The Upper Tool Holder is held to the Cylinder Rod by a retaining screw and knob. The Upper Tool Holder can move up along the Cylinder Ram Adapter .45 in/11.4 mm. Continuity Springs inside the Upper Tool Holder maintain a light resistive pressure between the Upper Tool Holder and the Ram Adapter.



How the Safety System Works

If the Upper Tool Holder moves up .015 in/0.4 mm to 0.02 in/0.5 mm, the Safety Sensors will be triggered, and the ram will be raised. Should only one of the Sensors be triggered, the ram will be raised.

For the ram to maintain downward motion, the following conditions must be met:

In conductive mode:

- Conductivity detected between the upper and lower tools.
- Within safe position set by the TPS.

In non-conductive mode:

- Foot pedal must be released and pressed a second time.
- Within safe position set by the TPS.

Before each cycle, the state of the two sensors in the ram adapter are monitored by the dedicated Safety Controller. If the Upper Tool Holder is not installed, the system will be triggered.

In addition to the Conductive/Non-conductive safety system, cylinder ram motion is also monitored by the TPS (Tooling Protection System).

- Do not tamper with any part of the Safety System. The Haeger Hardware Insertion Machine will not operate properly if any part of the Safety System is removed or damaged.

- Test the Safety System every day **before** you use the machine. See the Safety System Test procedure in this section of this manual.

Tooling Protection System

The Tooling Protection System (TPS) is intended for protecting the tooling and/or workpiece from damage in the event of wrong length fasteners or unintended obstructions that come in between the workspace. This system works in conjunction with the Safety System. The TPS is programmed during “Setup Stroke” at the beginning of each project.

How the Tooling Protection System works

The TPS detects the position of the ram when the safety sensors are triggered. If this position does not match what was previously programed during TPS setup, the ram will retract without exerting the insertion force.

The TPS is fully adjustable for different length tooling and can be used with all Haeger tooling setups.

Lockout-Tagout

Lockout-Tagout is a safety procedure used to ensure that malfunctioning machines are properly shut off during maintenance or servicing. Before any repair work begins, the machine is isolated from hazardous power sources and rendered inoperative. The procedure involves locking the device or power source and attaching a tag to indicate that it should not be turned on.

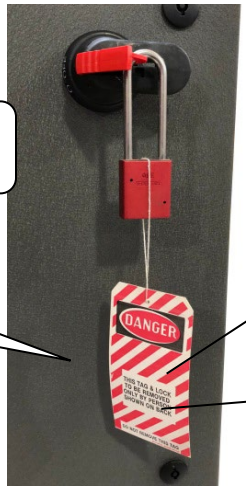
Lockout-Tagout procedure:
Shut off machine and turn off computer from the touch screen if not already off.

- Main Power Switch
- Rotate to OFF Position

Use Finger -- push to expose holes and insert lock

Lockout

Tagout



DANGER:

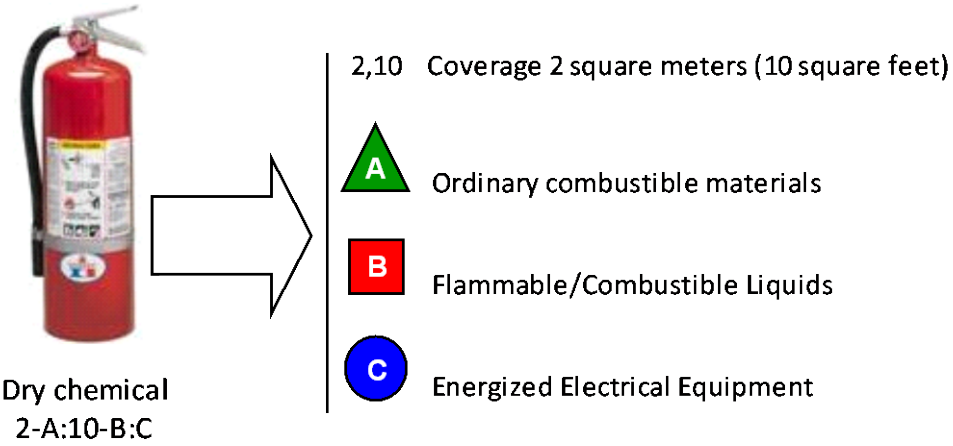
- **THIS TAG & LOCK TO BE REMOVED ONLY BY PERSON SHOWN ON BACK!**
- **DO NOT REMOVE THIS TAG!**

Fire Safety Equipment

Haeger systems do not produce thermal, biological, fire or radiation hazards etc., however if in the event of a fire, having a Multi-Class rated fire extinguisher within a reasonable distance of the machine operator(s) is a sound safety practice and is recommended. Your fire extinguisher (or fire extinguishers) should be able to extinguish fires involving ordinary combustible materials, flammable/combustible liquids and energized electrical equipment.

The following is an example of a fire extinguisher with a Multi-Class rating.

Multi-Class Rated Fire Extinguisher



Fire Safety Note: All fires are grouped into classes, according to the type of materials that are burning. The classes of fire for the UK, Europe, Asia etc., are different to those used in the USA and Australia so remember to always read labels carefully and consult a trained fire professional.

Safety Awareness & Residual Risks

Introduction

This section contains two sets of principles that must be followed to assure maximum safety when operating your Haeger Hardware Insertion Machine. The 1st explains situations and behaviors to avoid in order to prevent injury. The 2nd principle describes residual risks that are inherent of the machine and cannot be removed. Operators and maintenance personnel must be aware of these when working on the machine.

Situations and Actions to Avoid

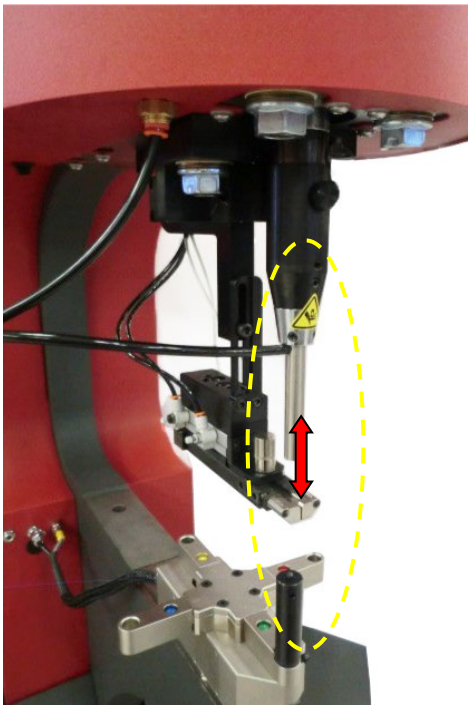
The Haeger safety system ensures up to a certain level of discrimination between human body and workpieces being processed. However, despite this system, safety of those working on or around the machine is still ultimately dependent on appropriate behavior and respect for procedure. Inattention while operating in non-conductive mode can result in serious injury as the machine cannot differentiate between human and workpiece in the second stroke. In conductive mode, contact with a metallic ring on the operator's finger and the tools may mistakenly validate a down stroke. In short, always be alert and aware when working with the machine!

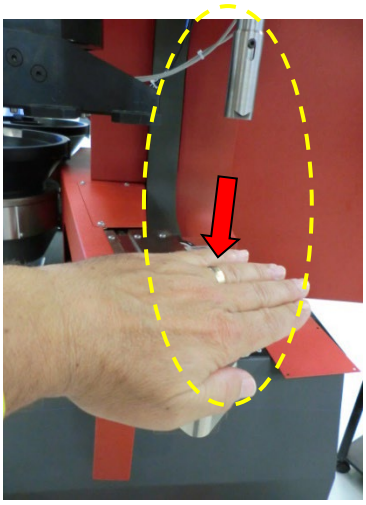
Residual Safety Risks

Your Haeger Hardware Insertion Machine is engineered to minimize safety risks to both operators and maintenance personnel. However, some risk will always remain, as they involve the very nature of the machine's functionality. The following illustrations documents some of these residual hazards. Operators and maintenance personnel should familiarize themselves with the potential risks, to ensure maximum safety.

Attention: The photos in the following table illustrate situations that must be avoided when operating your machine.

Operator Safety Awareness & Residual Risks



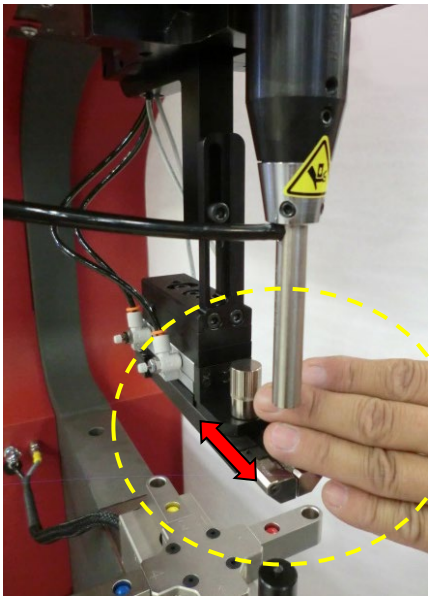


Risk of crushing: A high risk crushing hazard is created between the Punch and Anvil.

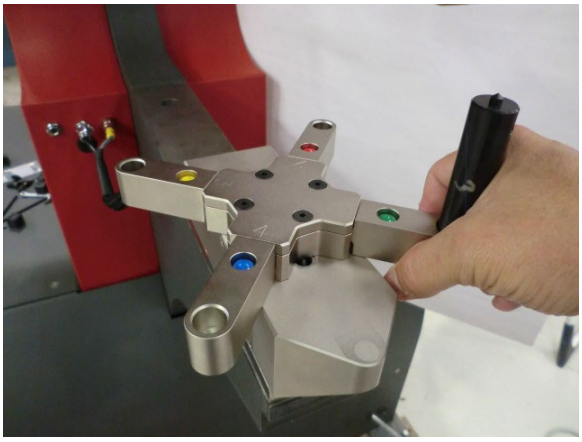
Safety of the operator in ***non-conductive*** operation must remain accessible ***only*** to trained and authorized personnel that are experienced in appropriate machinery operating conduct.

Do not operate this machine while wearing any metal objects (i.e., rings, watches, bracelets, etc.) that may come into contact with the Punch, Anvil, or work piece.

Operator Safety Awareness & Residual Risks (Cont.)

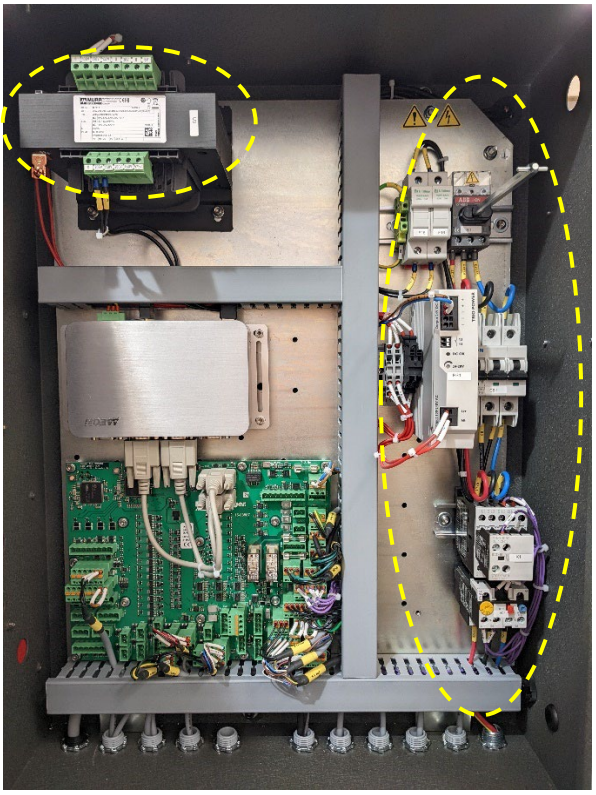


Risk of pinching: A medium risk pinching hazard is created by the Multi-Shuttle moving backward and forward



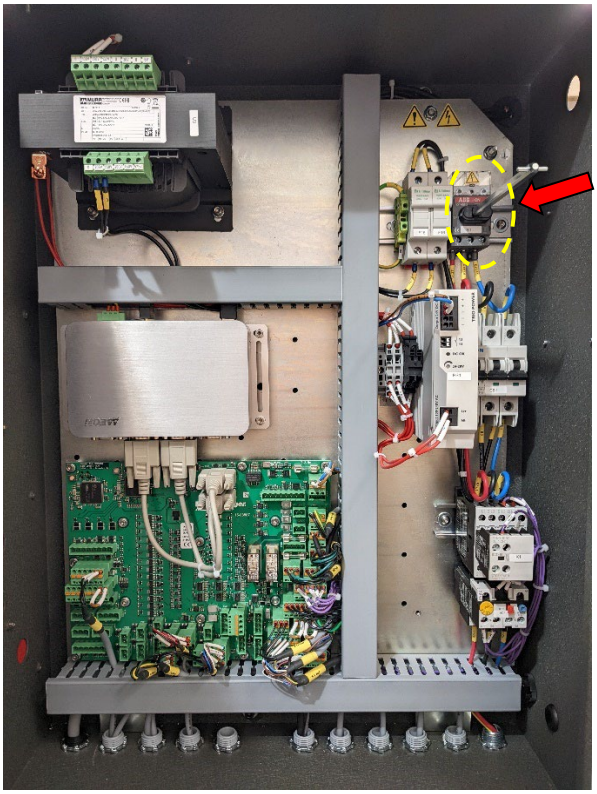
Risk of pinching: A medium risk pinching hazard is created by the TIS when rotating for the next station.

Maintenance Safety Awareness & Residual Risks



Risk of Electrical Shock: A high risk electrical shock while working on the **RIGHT HALF** of the electrical cabinet.

See Section 7 Electrical Cabinet Assembly to identify High and Low voltage components.



High Voltage hazard is **ALWAYS** present in this location, until **INCOMING (MAIN)** power is shut OFF.

Safety System Tests

There are three (3) Safety Tests in total.
Do not skip or ignore any of them!

Depending on the ambient shop temperature, you may need to warm up your Haeger Hardware Insertion Machine before beginning any operations. To do this, turn it on and let it run for about ten minutes.

Step 1: Safety Switch Test Procedure

1. The machine will always prompt this first test upon turning on the Main Disconnect Switch (main power).

2. Enter any run mode.

3. Start the machine by touching the “Turn on machine” button on the touchscreen. The button changes green, and the motor will start. (If the machine doesn’t turn on, check the E-Stop Buttons. Be sure they are unlatched and try again.)

4. Follow prompt on-screen to push the Upper Tool Holder upwards. This tests the safety sensors.

5. Once the prompt disappears to display the touchscreen controls, the sensors system has passed the test, and the next test may be performed.

6. If an error appears on-screen, the sensor system has failed the test. **STOP.** Turn the machine off and disconnect power. Follow Lock-out/Tag-out procedures and consult a Haeger technician for assistance. *Do not operate the machine until repaired.*

Step 2: Conductive Mode Test (Cont.)

Never attempt to test or demonstrate this machine's Safety System by placing any portion of your hand or body between the Upper and Lower tools. Always use the test procedure outlined in this manual.

NEVER Operate this Machine without the proper tooling installed. The following instructions assumes the first Safety Sensor test has been performed and passed.

1. This Safety Test should be performed about once a month along with the monthly Upper Tool Holder maintenance. Begin in any run mode.

2. Conductive mode should be on by default. (Conductivity mode status and toggle button may only be seen by certain user levels)

3. Start set-up by touching the red flashing Setup Stroke button on the right of the screen.

4. Set the stroke by following instructions on screen while keeping hands and other non-conductive material away from the tooling area. This also sets up the TPS system. The setup cycle should:

    a. Instruct lowering the Upper Tool by stepping on the Down Foot Switch.
    b. Instruct a second depression of the Down Foot Switch to press.
    c. Confirm force and completion of cycle.

5. If the above cycle is completed, skip to step 7.

6. If the machine does not complete the above sequence, there is a failure in the machine's control circuit. STOP.  Turn the machine off and disconnect power. Follow Lock-out/Tag-out procedures and consult a Haeger technician for assistance. *Do not operate the machine until repaired.*

Step 2: Conductive Mode Test

7. Place a non-conductive material (paper or cardboard recommended, harder materials may damage tooling if vacuum tip has a protruding pin) above the anvil, making sure the object completely covers the top surface of the Anvil. Keep your hands away from the tooling area. Depress and hold the Down Footswitch. The Punch should move down, contact the non-conductive material and, **without applying the preset force**, retract to the Up position.

8. An error warning should appear on screen. This indicates the Conductive Mode safety system is functioning correctly.

9. If the machine completes a press on the non-conductive material, **the Safety System has failed! STOP.**  Turn the machine off and disconnect power. Follow Lock-out/Tag-out procedures and consult a Haeger technician for assistance. *Do not operate the machine until repaired.*

There are three (3) Safety Tests in total.
Do not skip or ignore any of them!

Step 3: Safety Gap Test

Never attempt to test or demonstrate this machine's Safety System by placing any portion of your hand or body between the Upper and Lower tools. Always use the test procedure outlined in this manual.

NEVER Operate this Machine without the proper tooling installed. The following instructions assumes the first Safety Sensor test has been performed and passed.

1. This test should be performed about once a month along with the monthly Upper Tool Holder maintenance. A higher user level will be required to access Non-conductive Mode. (Password may be required)

2. Enter any run mode and select a station that tooling has been fully installed on. Tap the "Conductive" toggle button to "off."

When operating Non-Conductive Mode, be very careful! **Do not depress the Down Footswitch the second time with any part of your body near the tooling area.**

3. Start set-up by touching the red flashing Setup Stroke button on the right of the screen.

4. Begin by bringing the ram down until the Upper and Lower tools come into contact and stops automatically, but do not depress the Down Footswitch a second time. Press the E-stop button to shut off power and lock the ram in this position.

5. Carefully grasp the Upper Tool Holder and raise it as far as the stopped ram allows. With a calibrated measuring instrument (Digital calipers are best), measure the vertical distance between the flat surfaces of the Punch and Anvil. Do not measure between any protruding pins.

Step 3: Safety Gap Test (Cont.)

- This measurement must be **at least** .060” in. /1.52 mm or more for the safety systems to function properly.
- If this measurement **is less** than .060” in. /1.52 mm, the gap is insufficient and must be addressed. Follow Lock-out/Tag-out procedures and consult a Haeger technician for assistance. *Do not operate the machine until repaired*

There are three (3) Steps in this testing procedure.
Do not skip or ignore any of them!

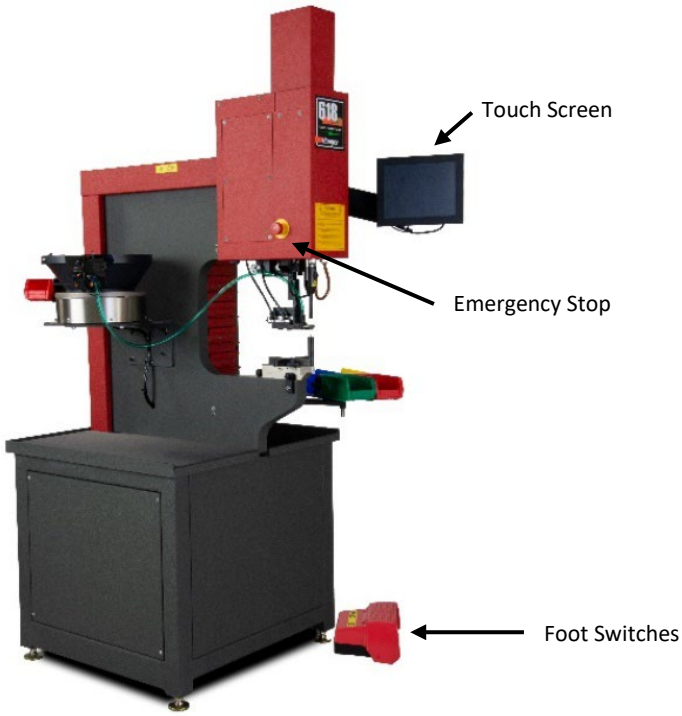
SECTION 4 – TOUCH SCREEN OPERATION (Step by Step Demo)

Introduction

This section provides you, the operator, with all the information that you need to operate the Haeger 824MSP-5e safely and productively.

Make sure that you read and understand all the descriptions, instructions and notes contained in this section. Heed all the Warnings and Cautions in this manual.

Machine Controls



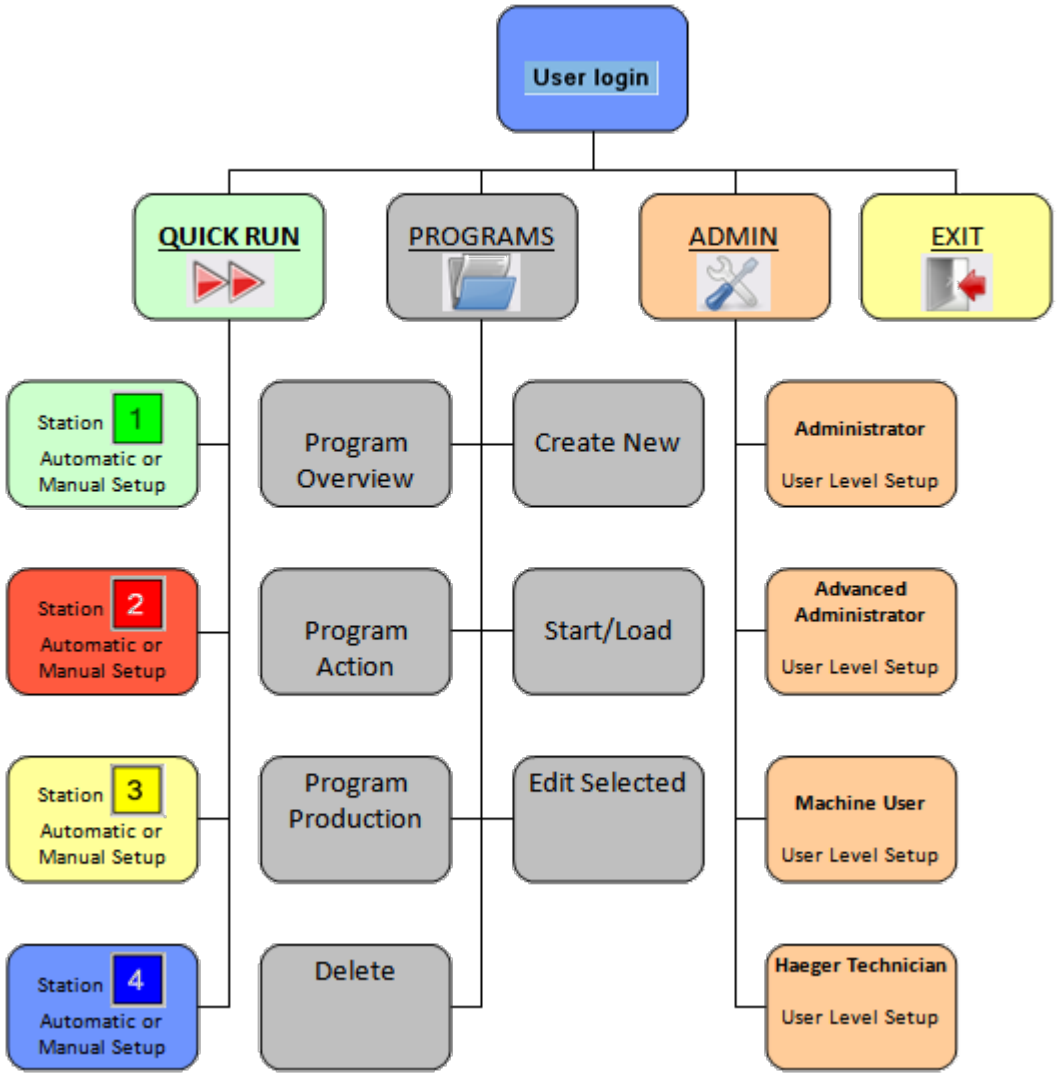
- Read and understand all Warnings and Cautions in this manual and follow the instructions for testing the Safety System in the Safety System section before attempting to operate this machine.

- NEVER wear anything metallic that may encounter the Upper Tool, Lower Tool, or work piece (watches, rings, bracelets, etc.).

- Never leave your foot on or above the Down foot switch after you have completed a cycle of the machine. Keep your feet away from the Down foot switch until your hands are clear of the tooling area and you are ready to move the ram or insert hardware.

- **NEVER Operate this Machine without wearing the proper eye protection!**

Touch Screen Hierarchy Overview



User Level Security Access

User level security access, each login account is assigned a security level by the administrator. When the machine is first powered *On* or when operator change occurs, the user security level must be selected to access the Run or Start Production screen. **Access & permissions are as follows**:

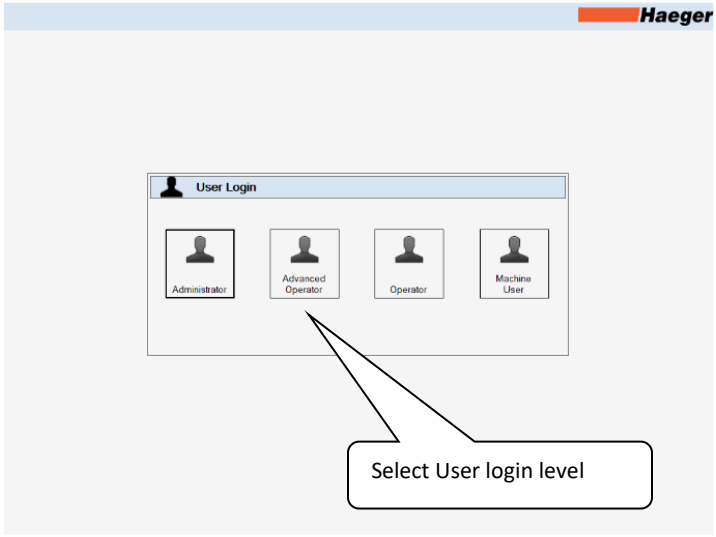
	Advanced Administrator	Administrator	Operator Level	Machine User	Haeger Technician
Main Screen					
Quick Run	Yes	Yes	Yes	--	Yes
Programs	Yes	Yes	Yes	Yes	Yes
Admin	Yes	Yes	Yes	--	Yes
Quick Run					
Setup Stations	Yes	Yes	Yes	--	Yes
Programs					
Filter	Yes	Yes	Yes	Yes	Yes
Select Programs	Yes	Yes	Yes	Yes	Yes
Create New Program	Yes	Yes	--	--	Yes
Edit Loaded Program	Yes	Yes	Yes	--	Yes
Preview Program	Yes	Yes	Yes	Yes	Yes
Start/Load Program	Yes	Yes	Yes	Yes	Yes
Edit Selected Program	Yes	Yes	--	--	Yes
Delete Program	Yes	Yes	--	--	Yes
Admin					
Change User's Password	Yes	Yes	Yes	--	Yes
View/Manage Log Files	Yes	--	--	--	Yes
Change Application Config.	Yes	--	--	--	Yes
Open Touch Screen Config.	Yes	--	--	--	Yes
Machine Diagnostics	Yes	--	--	--	Yes
Add/Remove Users	Yes	--	--	--	Yes
Special Functions	Yes	--	--	--	Yes
Exit					
Shut Down	Yes	Yes	Yes	Yes	Yes
Restart	Yes	Yes	Yes	--	Yes
Logoff	Yes	Yes	Yes	Yes	Yes
Exit App.	Yes	--	--	--	Yes

Quick Run Step by Step Demo

The 618MSP-5e machine is equipped with a computer running InsertionLogic software. This computer controls most of the machine's settings and functions and is equipped with a touch screen. You will use the touch screen to enter information into the computer.

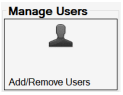
1. Turn on the machine by turning the main disconnect switch  to the ON position

The InsertionLogic banner screen will appear on the computer, signifying that the computer is starting up. Once the system environment is fully started, the Log In screen will be displayed.

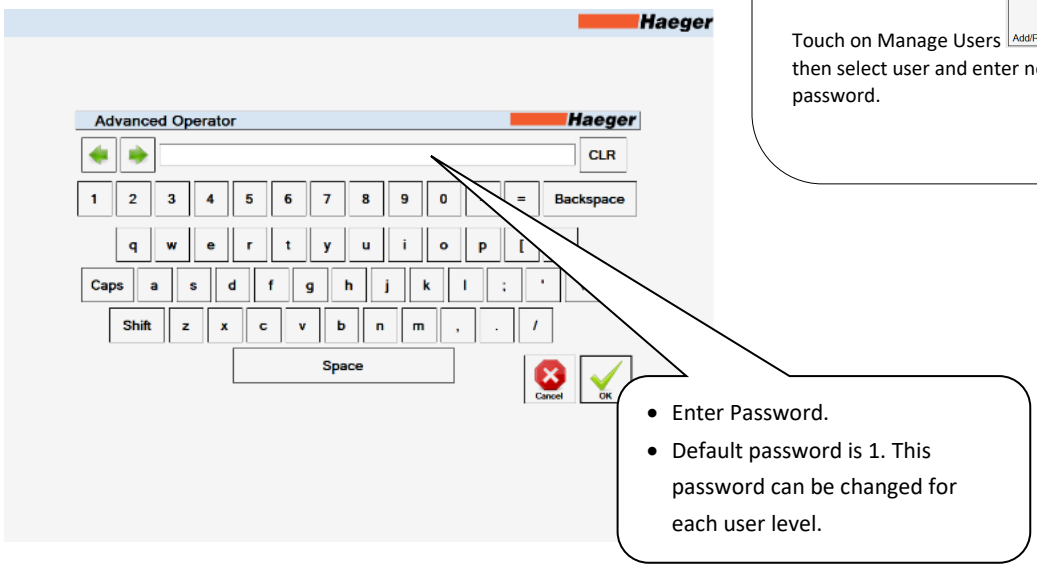
2. 

Password:
User passwords can be established by the Administrator during User Setup in the Admin Menu 

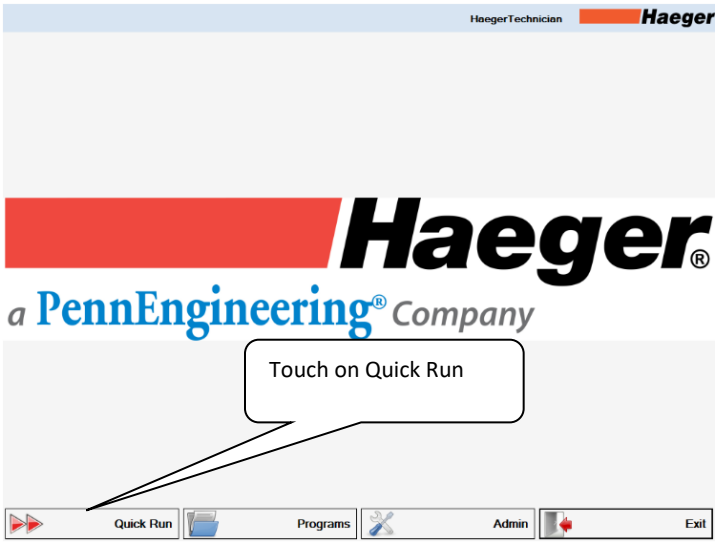
on the main screen.

Touch on Manage Users 

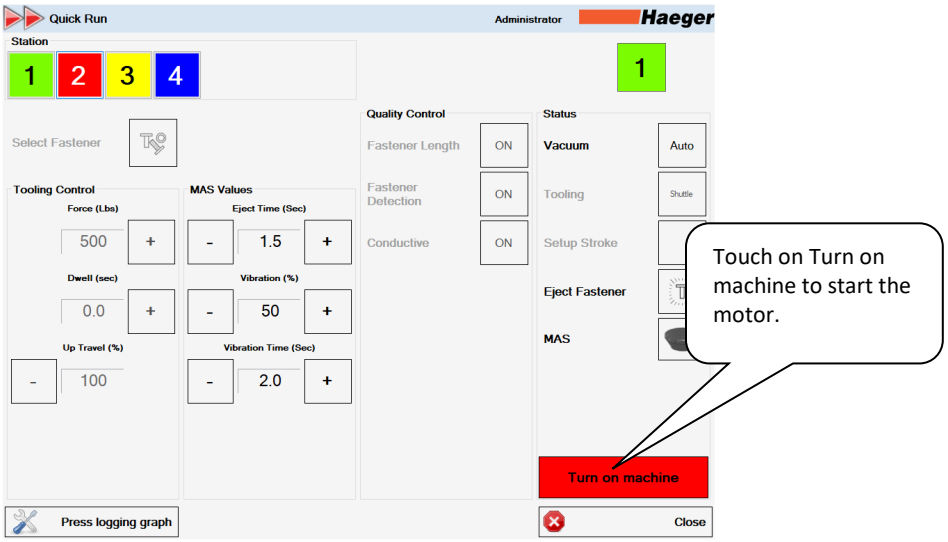
then select user and enter new password.

3. 

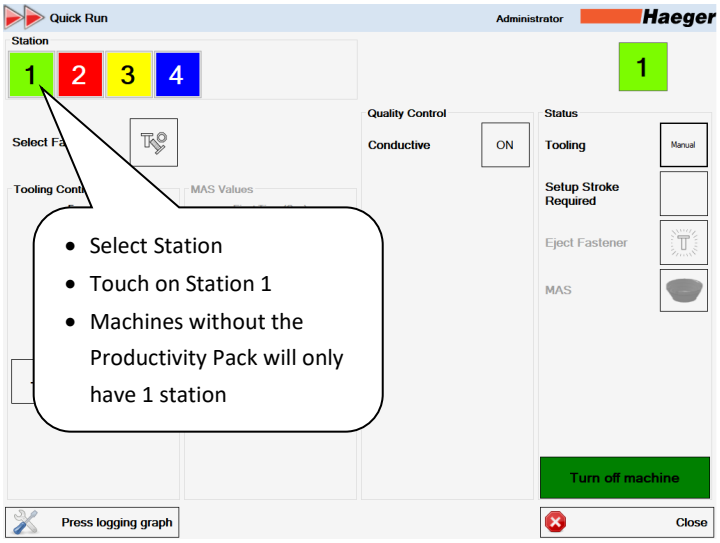
4.



5.



6.

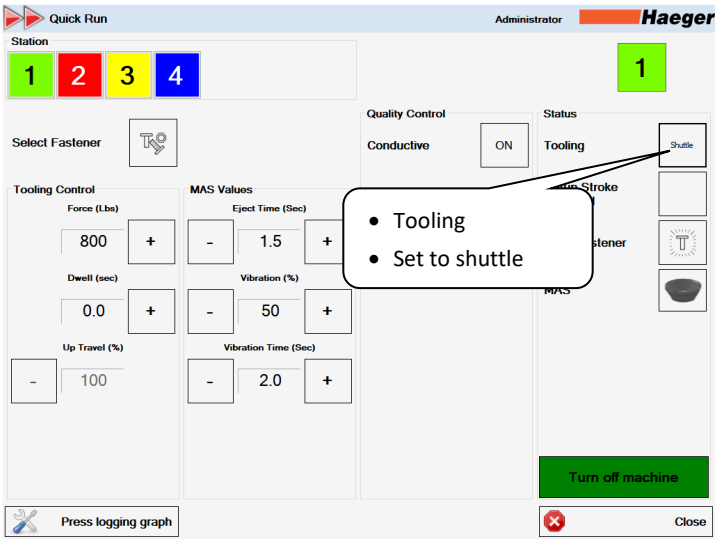


Station: When the Productivity Pack is installed, station 1 is a high volume, Automatic insertion station working in conjunction with Modular Automated Feed System (MAS).

Without the Productivity Pack, station 1 will be manual only and the only available station.

Stations 2 3 4 are available only with the Productivity Pack and are Manual insertion stations.

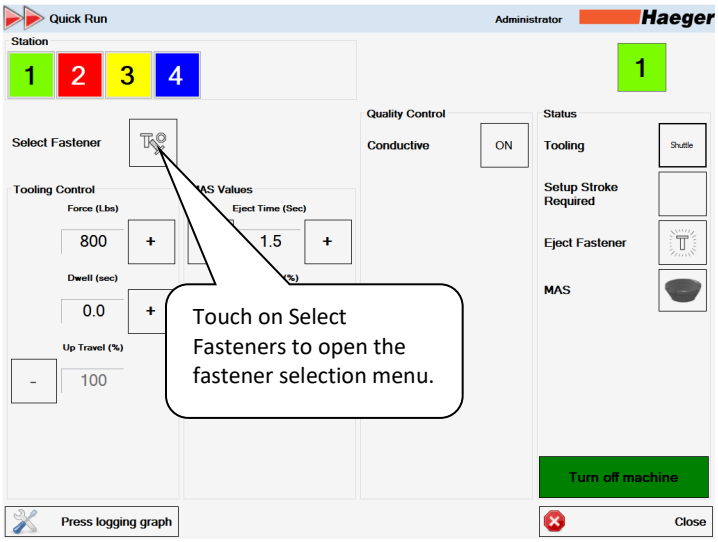
7.



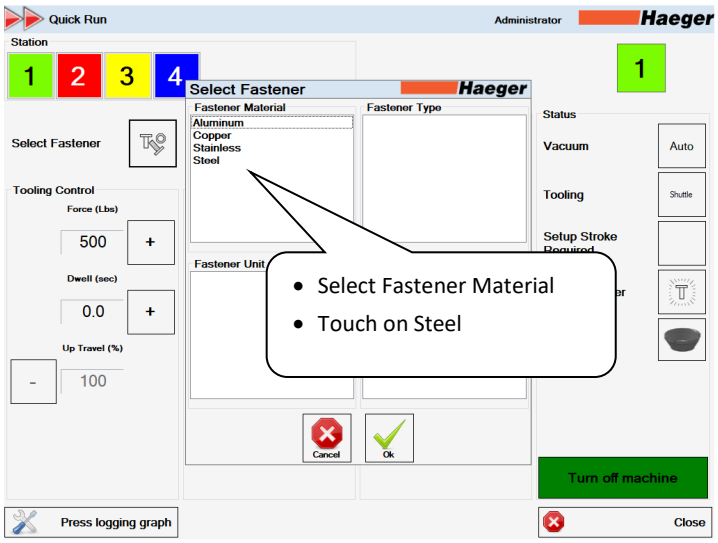
Tooling: This feature allows the operator to select the type of tooling to run in the selected station. This is available with the Productivity Pack. Without, only manual is available.

Tooling Options with Productivity Pack: Manual, Shuttle, Bottom Feed, and J-frame.

8.



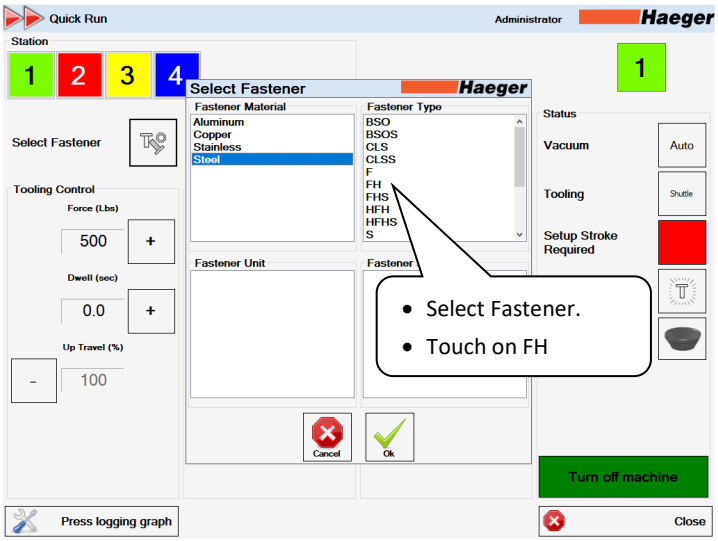
9.



Material:

- Aluminum
- Steel
- Stainless
- Copper

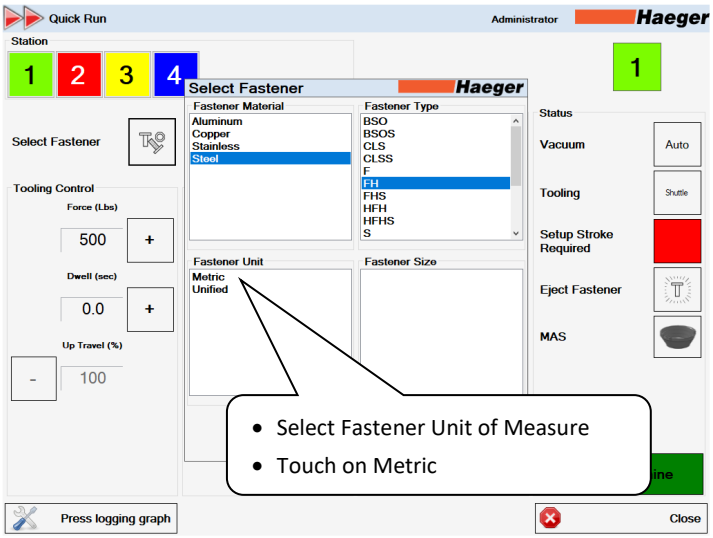
10.



Fastener:

- Blind Standoff (BSO, BSOS, TSO, TSOS)
- Nut (CLS, CLSS, S, SS)
- Flush Nut (F)
- Standoff (SO, SOS)
- Stud (FH, FHS, TFH. TFHS)
- Heavy Duty Stud (HFH, HFHS)

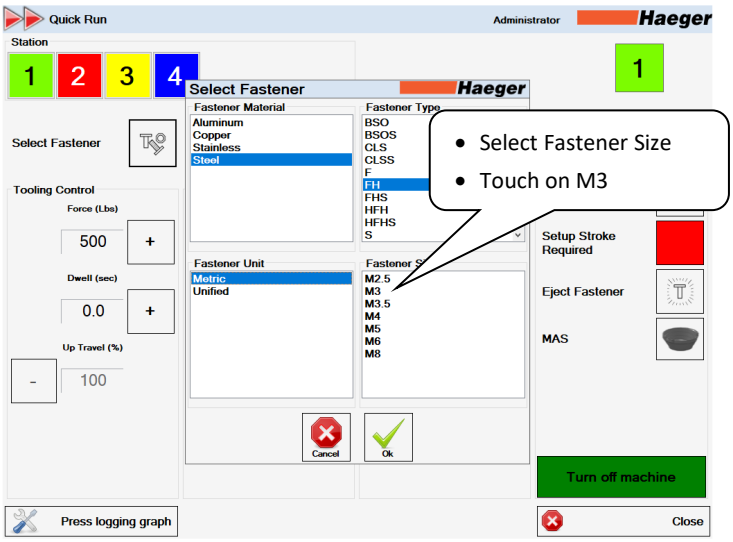
11.



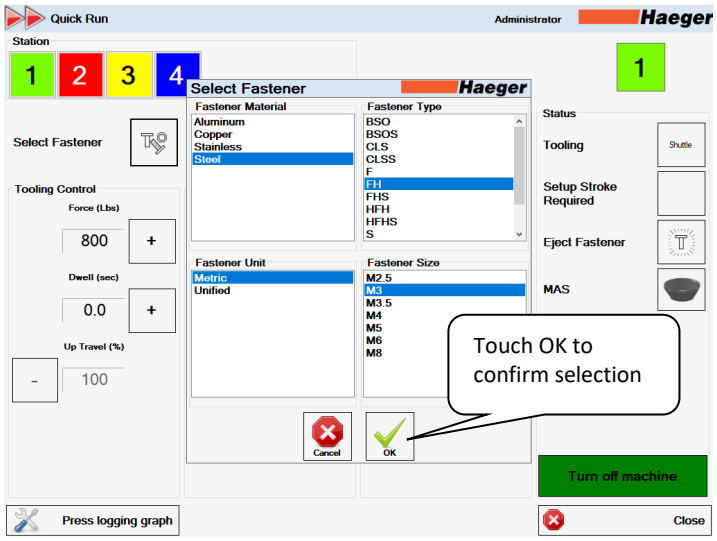
Unit & Size:

- **Metric**
- **Unified**

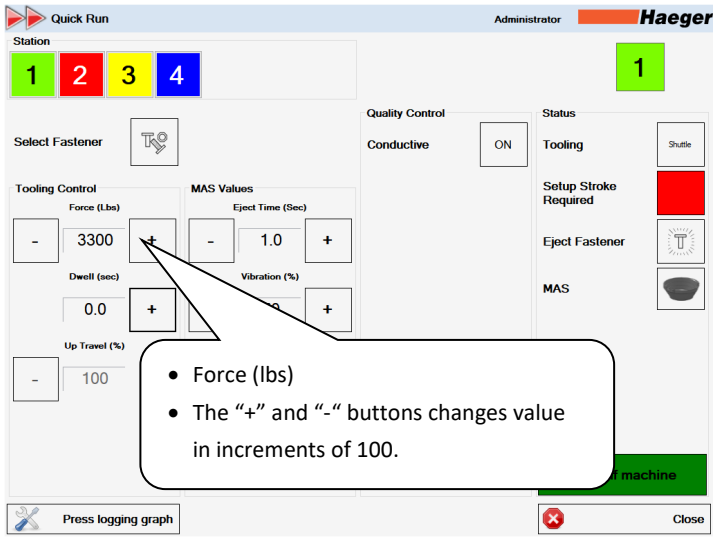
12.



13.



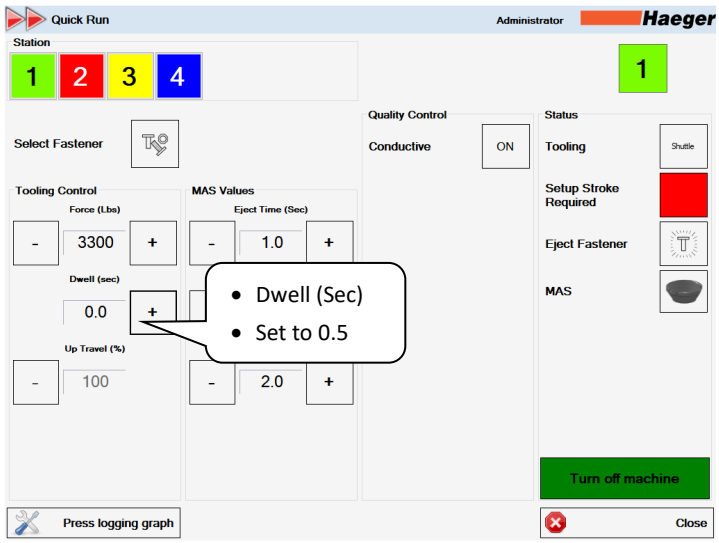
14.



Force (lbs): Is the amount of force that will be applied during the hardware insertion cycle. The force can range from 800 pounds (3.6KN) to 16,000 pounds (71.2 KN). The 3300 lbs value displayed is derived from a manufacturers table of values, however it can be adjusted by touching the + or - symbols. Alternatively, touching the number value itself will bring a up a number keypad for direct input.

Check your fastener’s specifications for the appropriate force to use.

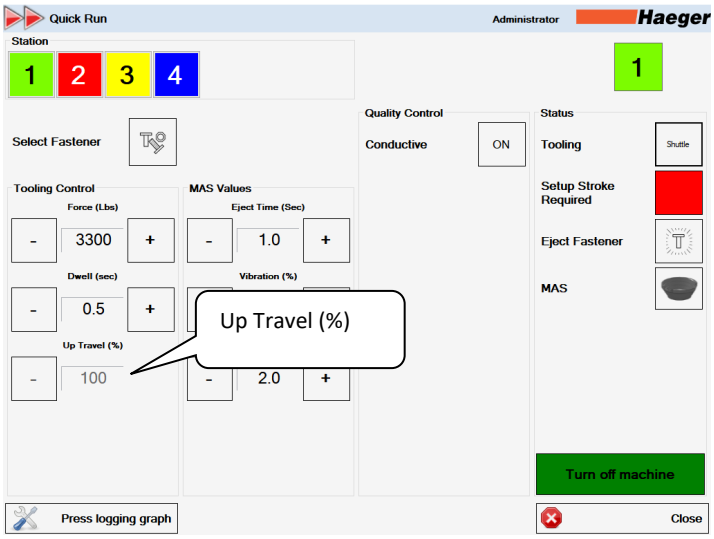
15.



Dwell (Sec): Dwell is the length of time that the insertion force is applied. It can range from 0.0 seconds to 3.0 seconds. Setting the Dwell to 0.0 seconds will immediately return the ram upward after applying insertion force. A Dwell value greater than 0.0 seconds will keep the ram down, applying insertion force for that set amount of time.

An increased Dwell setting should be used when inserting fasteners into materials such as stainless steel.

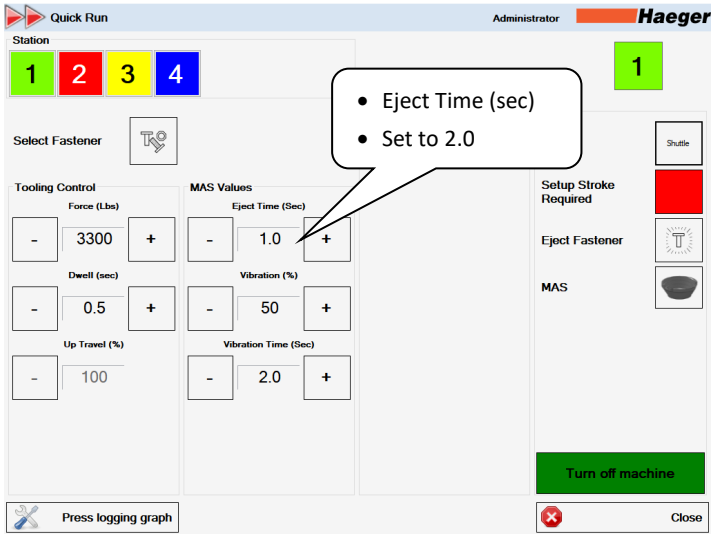
16.



Up Travel (%): The Up Travel value controls the Up Position of the ram. This is the upward position the ram returns to after applying insertion force. The Up value is measured as a percentage of the total cylinder stroke. It will vary depending on the lengths of the Upper and Lower Tools.

An Up Travel value of 0% will return the ram to its minimum height. A value set to 70-100% will return the ram to the highest point possible.

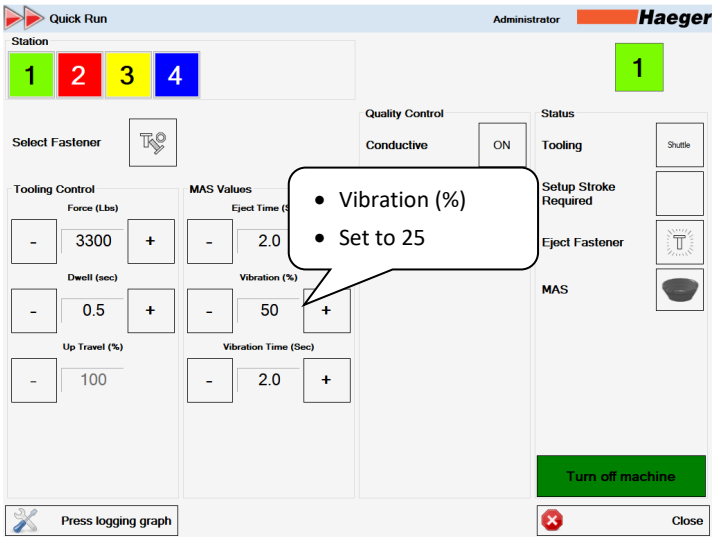
17.



Eject Time (Sec): The Eject Time controls duration of the air blast which sends the fastener from your MAS 350 bowl to the automatic tooling at the work area. Adjust this time as needed for the fastener to properly reach the work area.

Larger, heavier fasteners typically need longer eject times then smaller, lighter fasteners.

18.

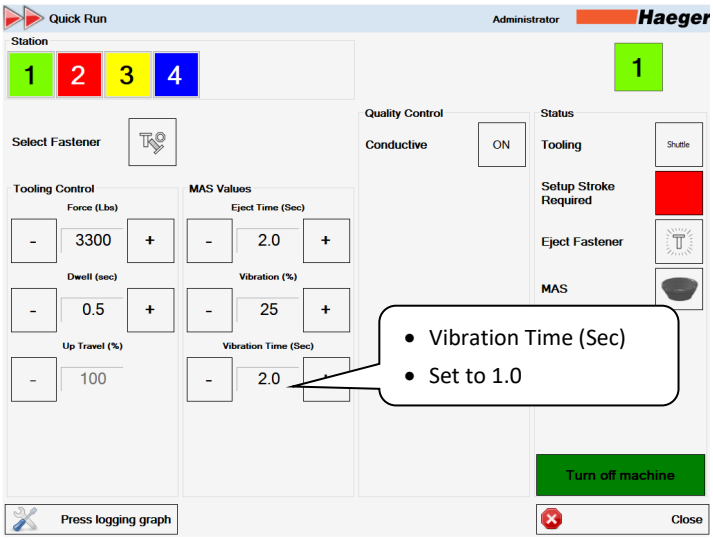


Vibration (%): Vibration controls the MAS 350 bowl vibration speed. This determines how fast the hardware travels up the spiral track to reach the Multi Module.

The 25% value shown is a starting point only. Adjustment may be needed to achieve proper fastener line up to the MAS 350 module.

Keep note of values for programming production runs later.

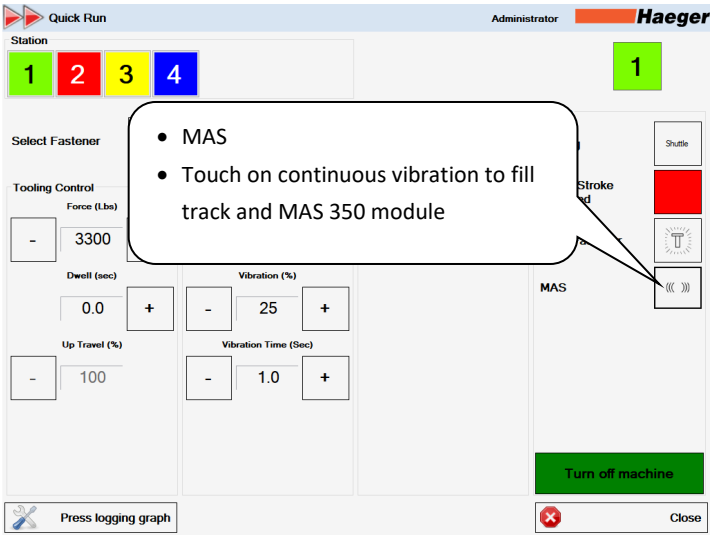
19.



Vibration Time (Sec): Vibration Time controls the duration that the MAS 350 bowl will vibrate after a fastener has been ejected. Adjust the vibration time as needed to keep a full track of hardware.

The 1 (sec) value shown is a starting point only. Keep note of these values for later.

20.

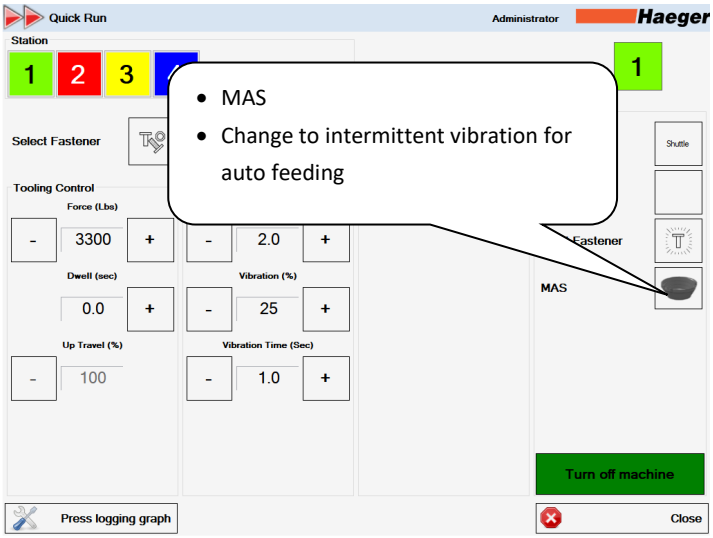


Modular Auto Feed System (MAS): This feature allows the operator to either run the MAS 350 at a continuous vibration or an intermittent vibration.

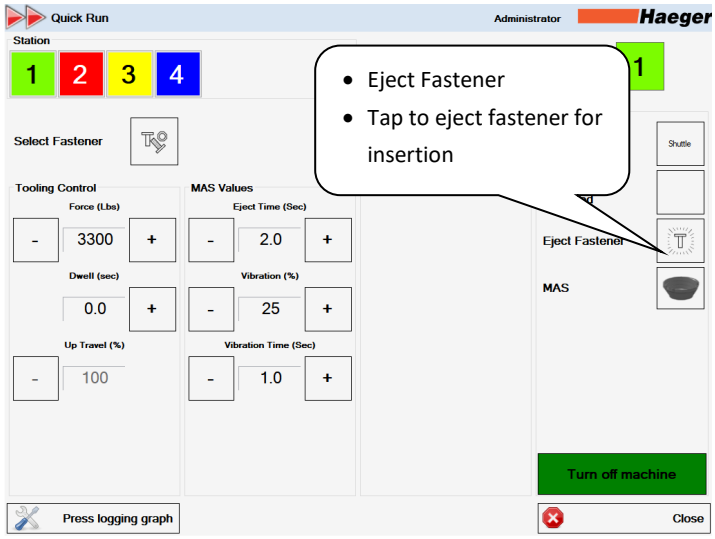
Continuous vibration is used for filling up the track and MAS 350 module or emptying the bowl out of hardware.

Intermittent vibration is used during auto-feeding.

21.

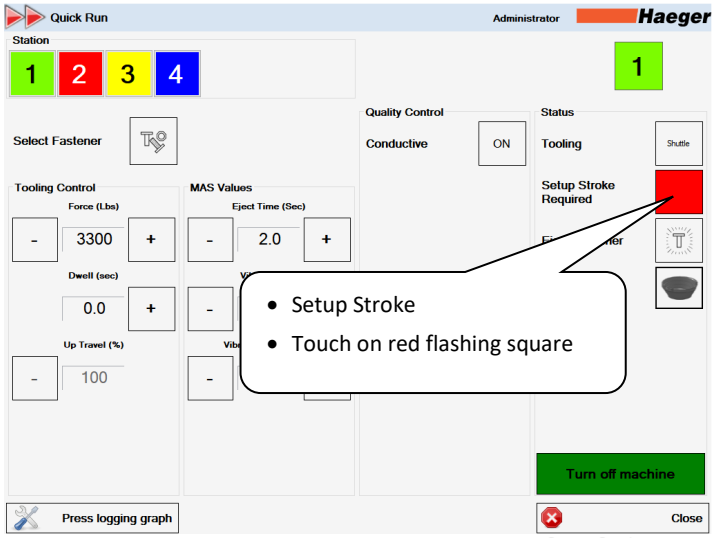


22.



Eject Fastener: This feature allows the operator to eject a fastener from the MAS bowl to the automatic tooling system.

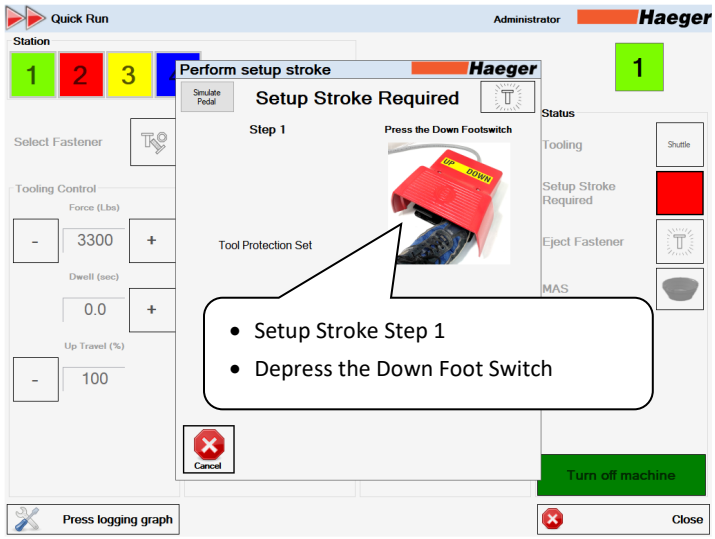
23.



Setup Stroke : This feature sets up and records certain values for each station and project run. This must be completed at the beginning of each Quick Run.

Setup Stroke records the fastener pickup point, fastener length, and insertion point.

24.

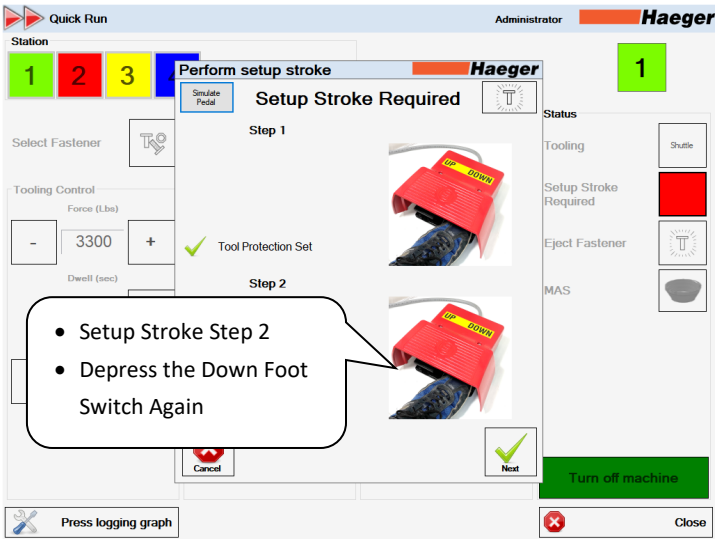


Setup Stroke Step 1 - Station 1: Begins moving ram down slowly as system detects and records fastener pickup point (Fastener Detection) and Fastener Length, and insertion point.

Upper tool in motion

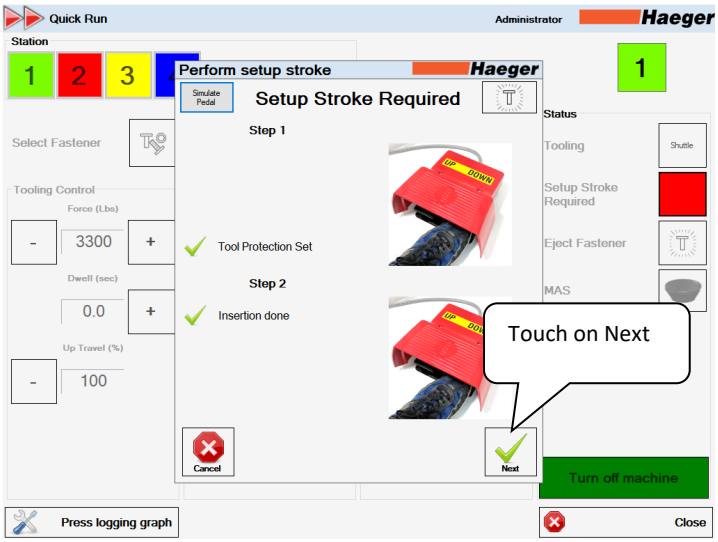
Letting go of the Down Footswitch will stop ram movement. Stepping down on the Down Footswitch again will resume downward motion.

25.

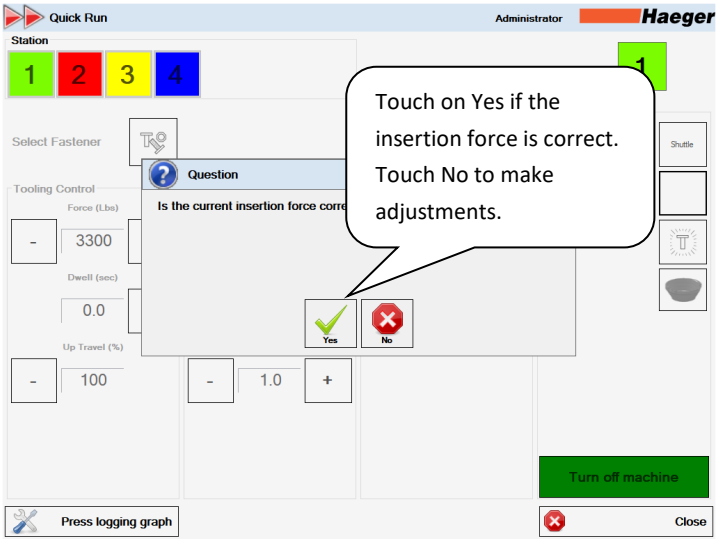


Setup Stroke Step 2 – Station 1:
The ram will stop when contact with the anvil and/or workpiece is detected. Depressing the Down again after this will exert insertion force.

26.



27.



Setup Stroke is now complete for Station 1, and the system is ready for continuous insertions with current tooling.

Repeat for Stations 2 3 4

Stations 2-3 are manual tooling stations.

28.

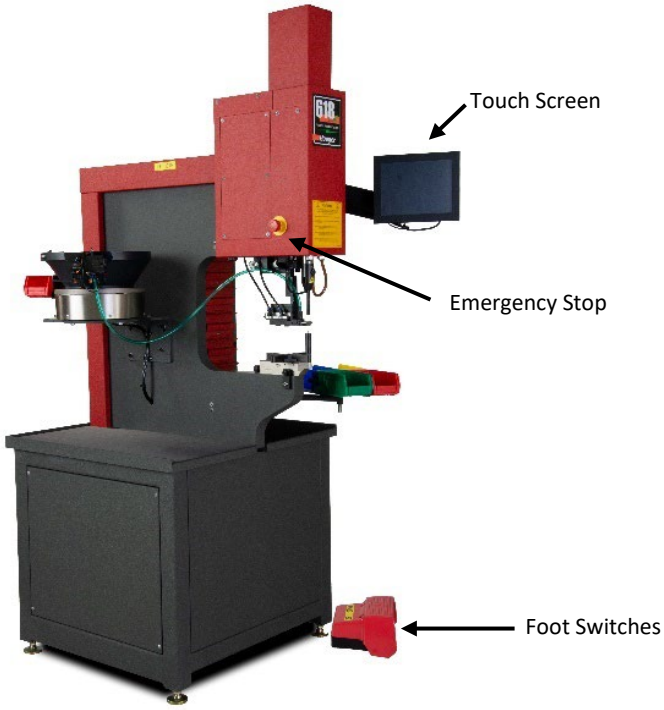
Touch on Close to exit Quick Run when project is completed.

Programs Setup - Step by Step Demo

One of the most useful features of InsertionLogic is the ability to store and retrieve programs. When you save a program, you are saving all the setup values (for instance: Force, Dwell, Up Position, TPS, Fastener Detection, Fastener Length, and Teach sequences).

This section provides you, the operator, with the information that you need to add a  Program and operate the 618MSP-5e machine safely and productively.

Machine Controls



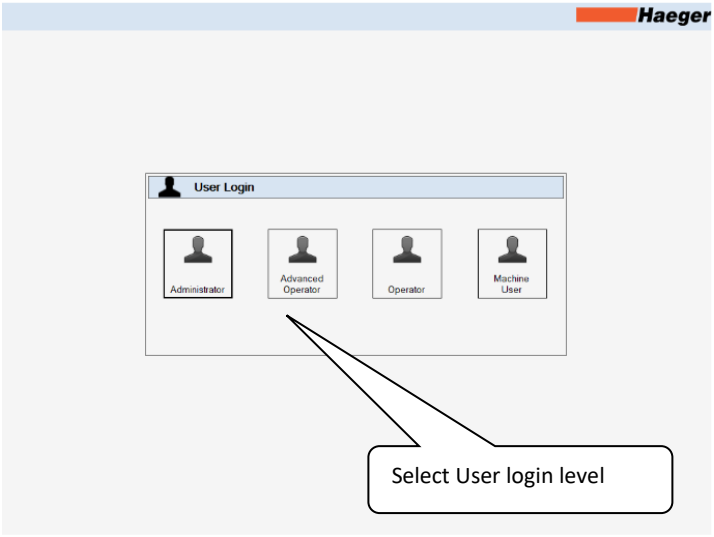
- Read and understand all Warnings and Cautions in this manual and follow the instructions for testing the Safety System in the Safety System section before attempting to operate this machine.

- NEVER wear anything metallic that may encounter the Upper Tool, Lower Tool, or work piece (watches, rings, bracelets, etc.).
- Never leave your foot on or above the Down foot switch after completing a cycle on the machine. Keep your feet away from the Down foot switch until your hands are clear of the tooling area and you are ready to move the ram or insert hardware.

- **NEVER Operate this Machine without wearing the proper eye protection!**

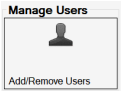
1. Turn on the power by turning the main disconnect switch  to the ON position.

The InsertionLogic banner screen will appear on the computer, signifying that the computer is starting up. Once the system environment is fully started, the Log In screen will be displayed.

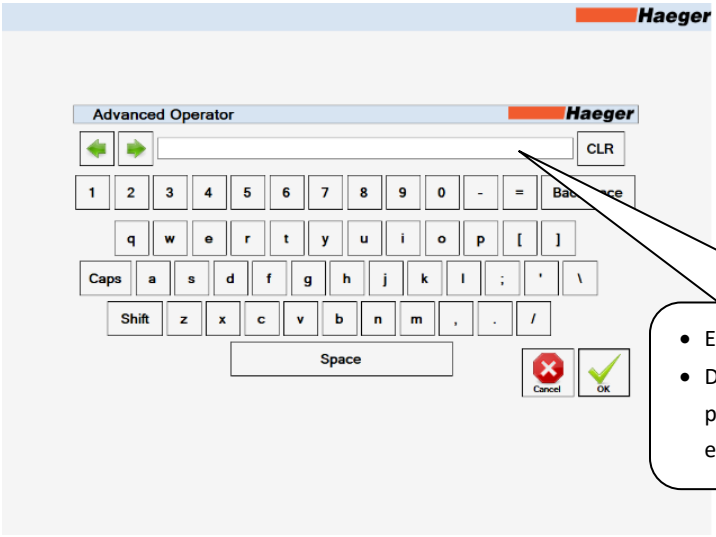
2. 

Password:
User passwords can be established by the Administrator during User Setup in the Admin Menu 

on the main screen.

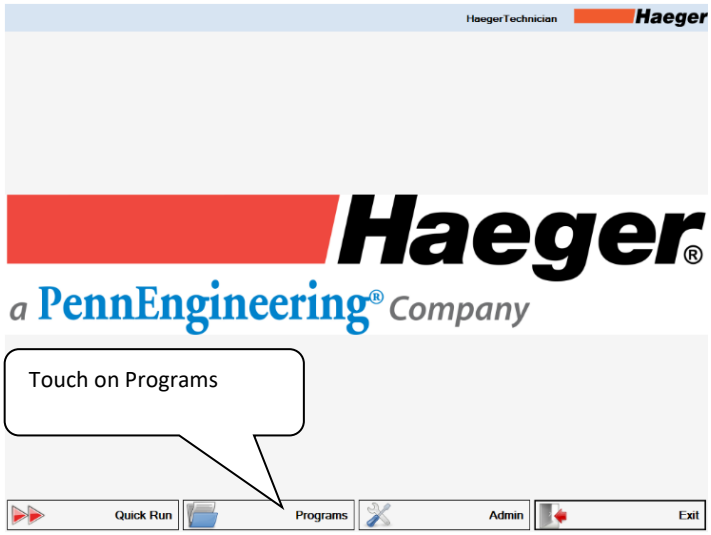
Touch on Manage Users 

then select user and enter new password.

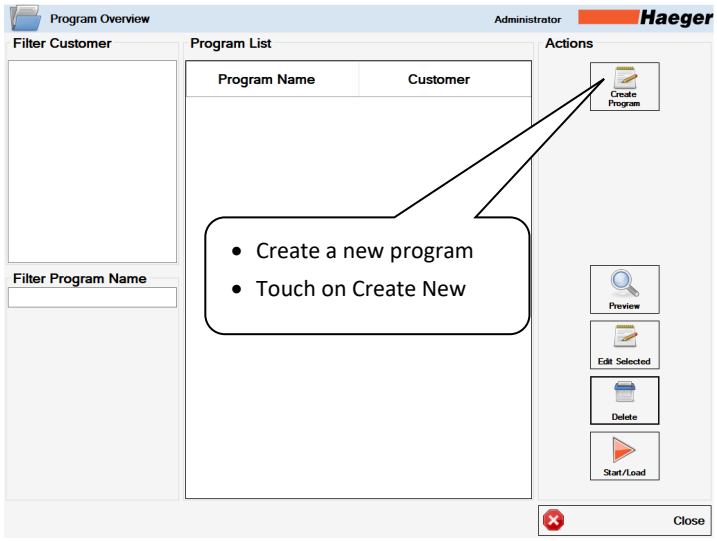
3. 

- Enter Password.
- Default password is 1. This password can be changed for each user level.

4.



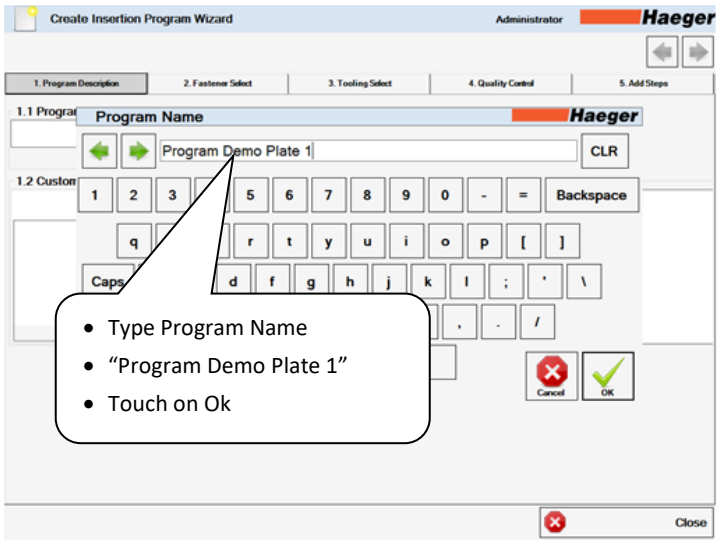
5.



Create New: Begins a new program.

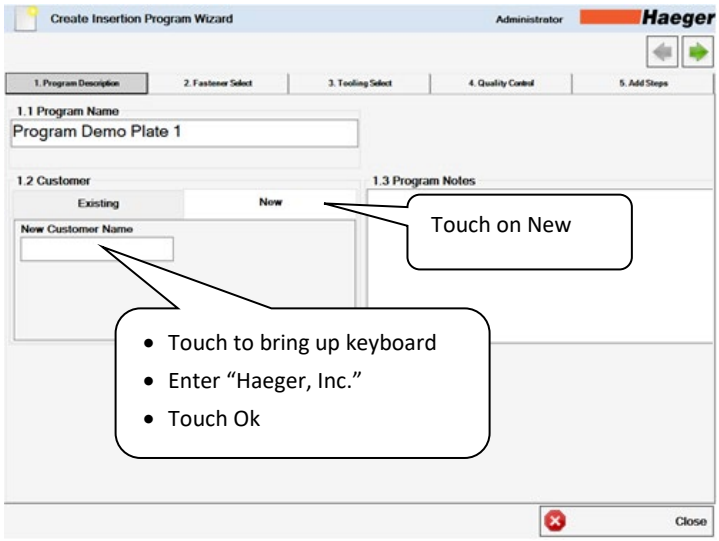
Programs are stored on the machine's hard drive.

6.



Program Name: Name to identify the program for later. For this example, use "Program Demo Plate 1 "

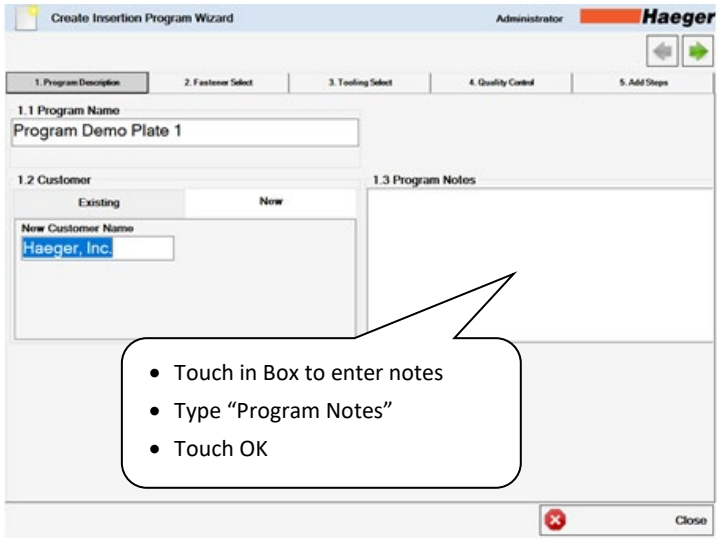
7.



New Customer: Adds a new Customer to the internal database.

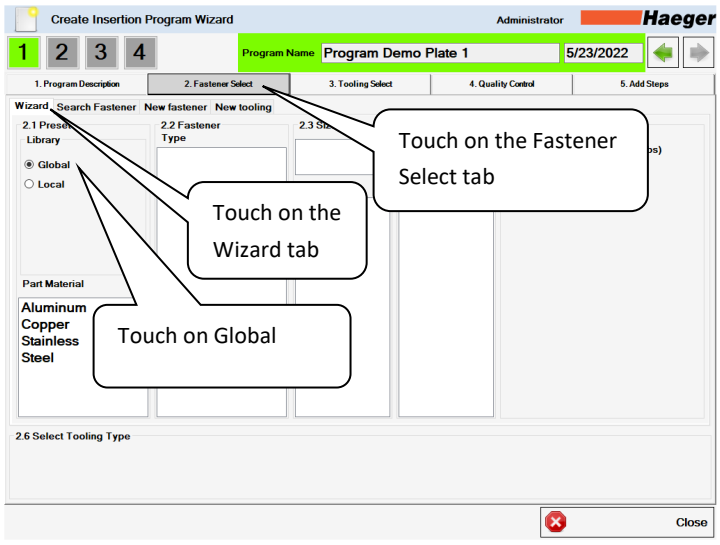
If a customer had been previously entered, choose "Existing" to see the list for selection.

8.



Program Notes: Space for any notes as necessary.

9.

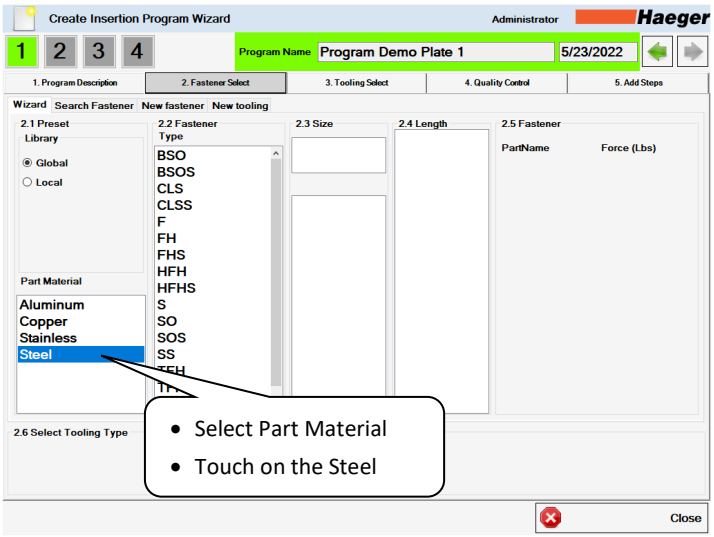


Wizard: Shows fastener library and guide for program setup.
Search Fastener: Search saved fasteners in both Global and Local libraries.
New Fastener: Add new fasteners.

LIBRARY:
Global: Contains Pre-loaded PEM® fasteners.
Local: User added fasteners via the New Fastener tab.

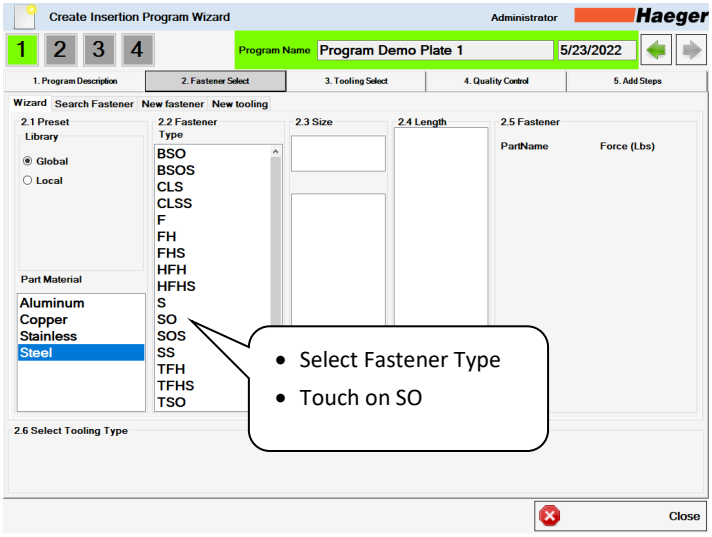
Fastener Library

10.



Part Material: Material of the work piece/panel (Not the fastener).

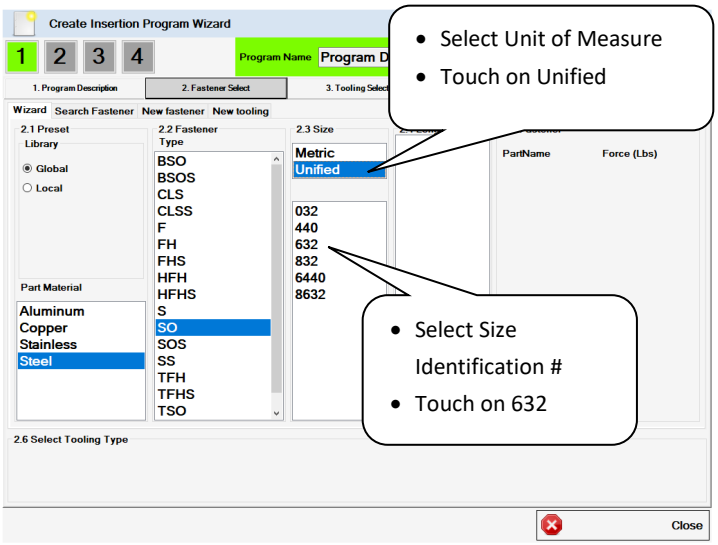
11.



Fastener Type:

- Blind Standoff (ex. BSO)
- Standoff (ex. SO)
- Stud/Pin (ex. FH, HFH)
- Nut (ex. CLS, S)

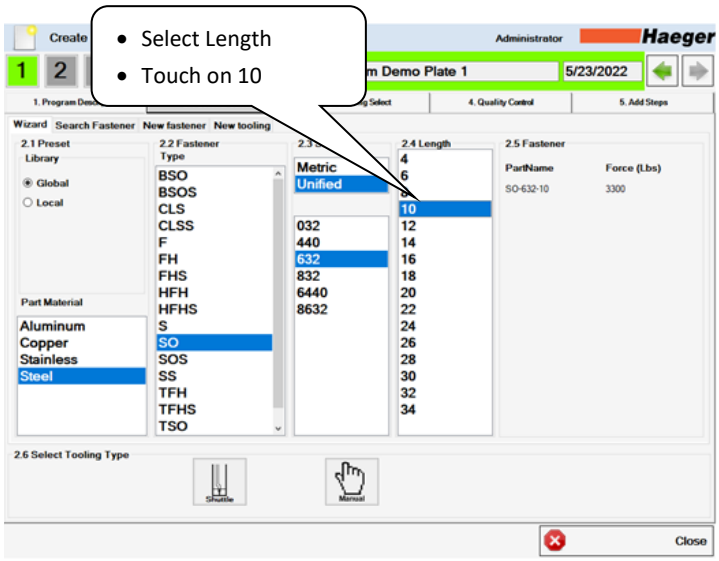
12.



Unit & Size:

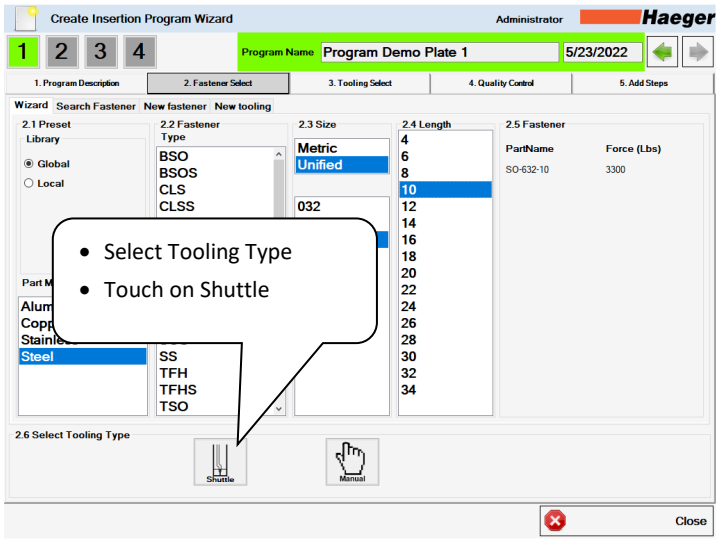
- Metric or Unified
- Size Identification #

13.



Length: Select fastener length

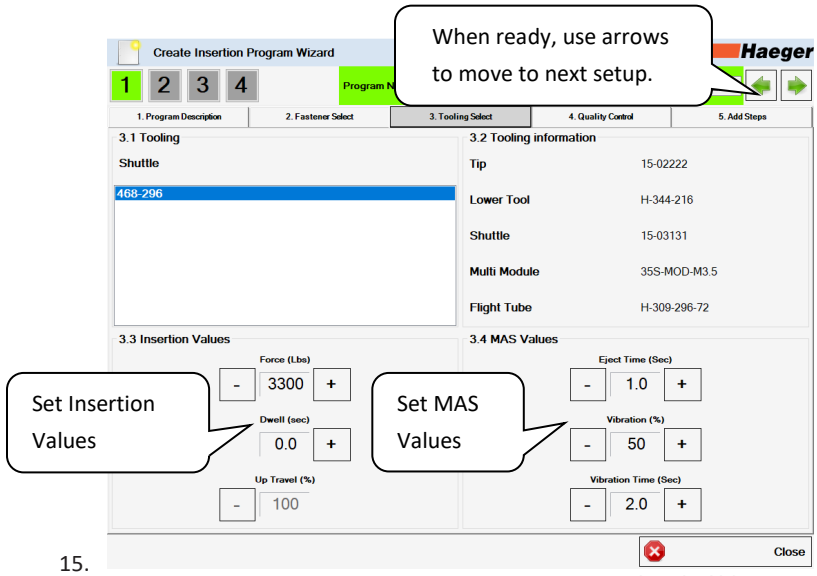
14.



Select Tooling Type:

Shuttle tooling (automatic tooling) is typically setup on station 1 (automatic station).

15.



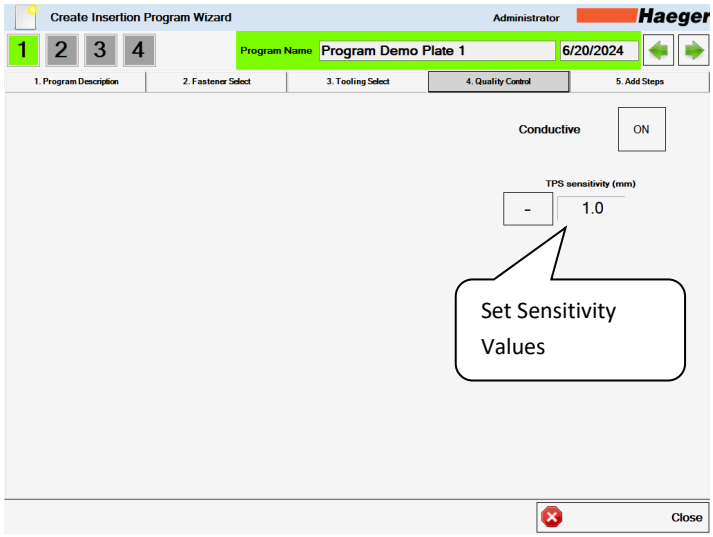
Tooling: Select tooling set for the job.

Tooling Information: Displays pieces of the tooling set.

Insertion Values:
Force: 800 – 16,000
Dwell: 0.00 – 3.0
Up Travel: 0-100

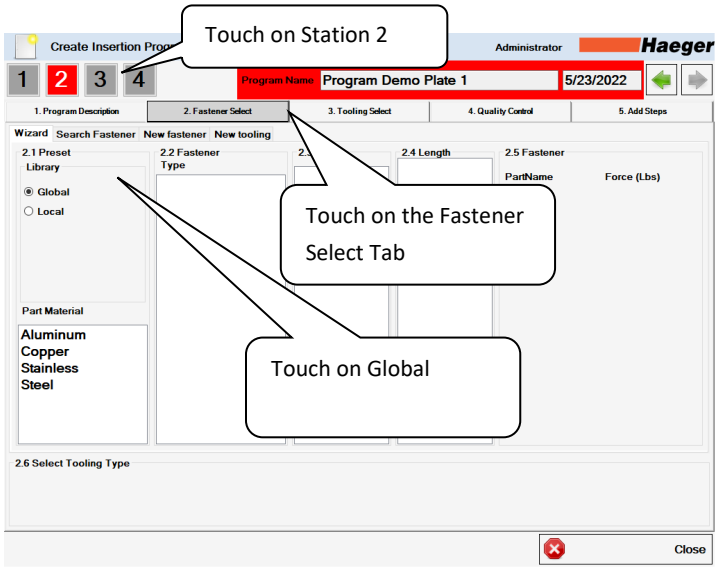
MAS Values:
Eject Time: 0.00-10.0
Vibration Time: 0.0-10.0
Vibration: 0-100

16.



Sensitivity Values:
TPS Sensitivity Values: Minimum of 0, maximum of 40.

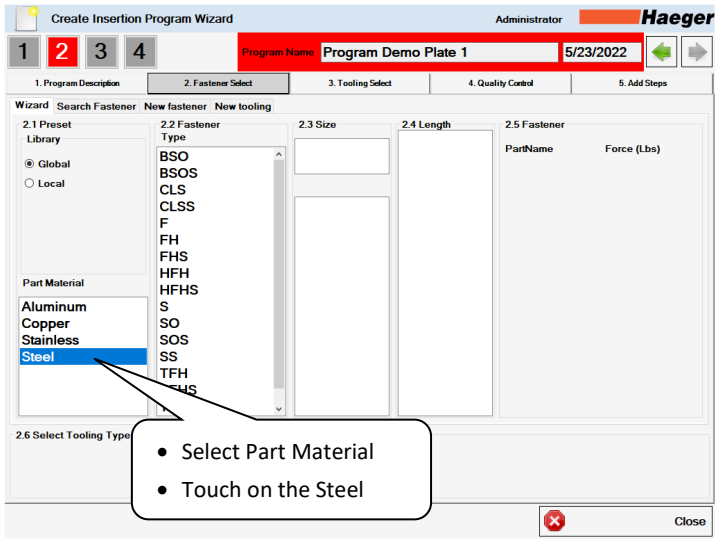
17.



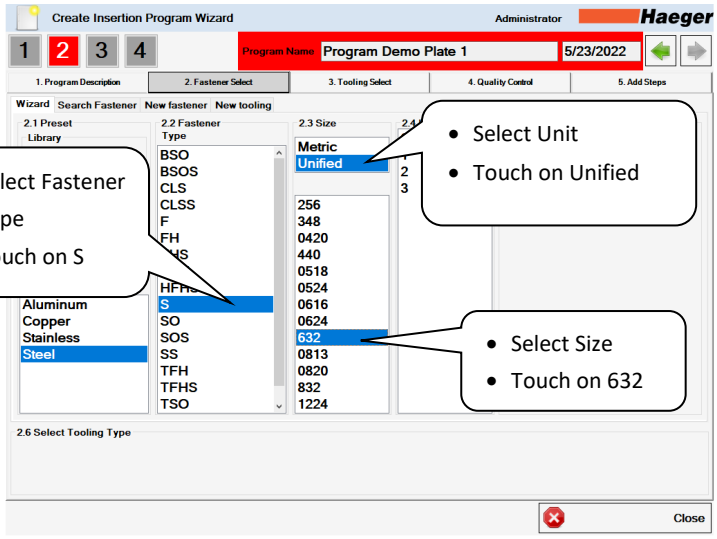
Repeat Wizard to program Station 2

* This time select a Nut: **S-632-2**.

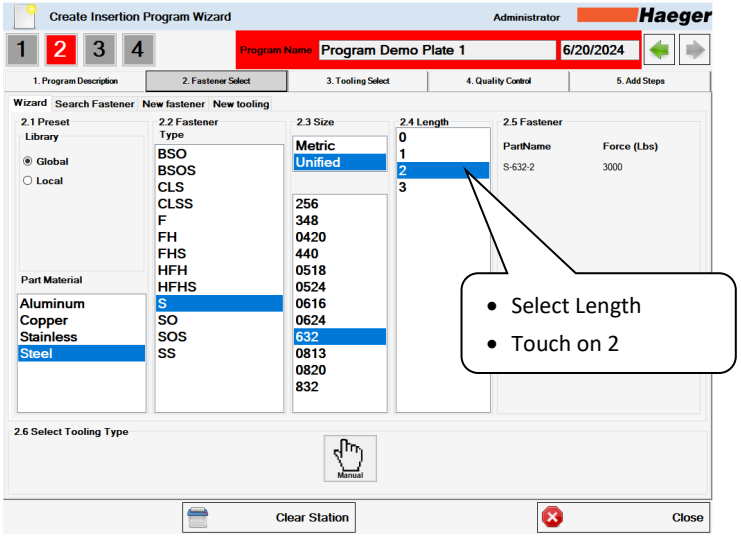
18.



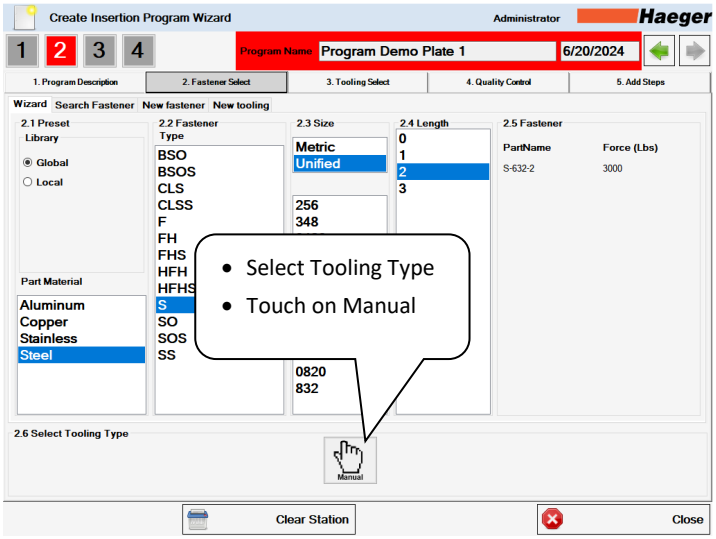
19.



20.



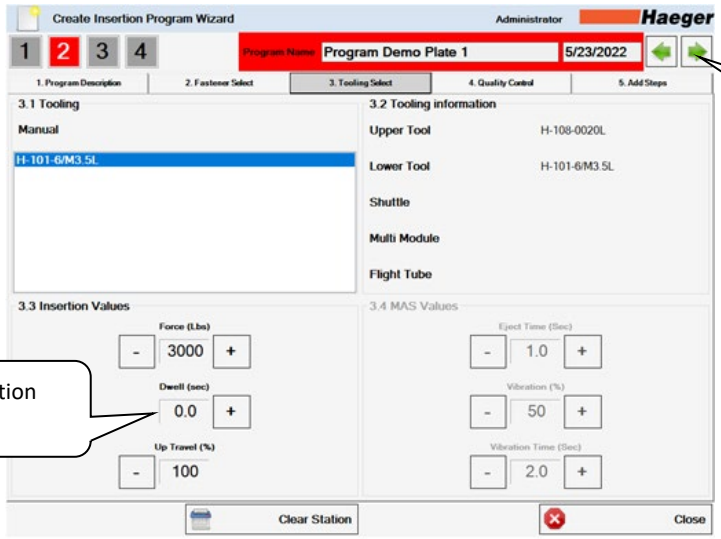
21.



Select Tooling Type:

Stations 2 through 4 are manually operated stations.

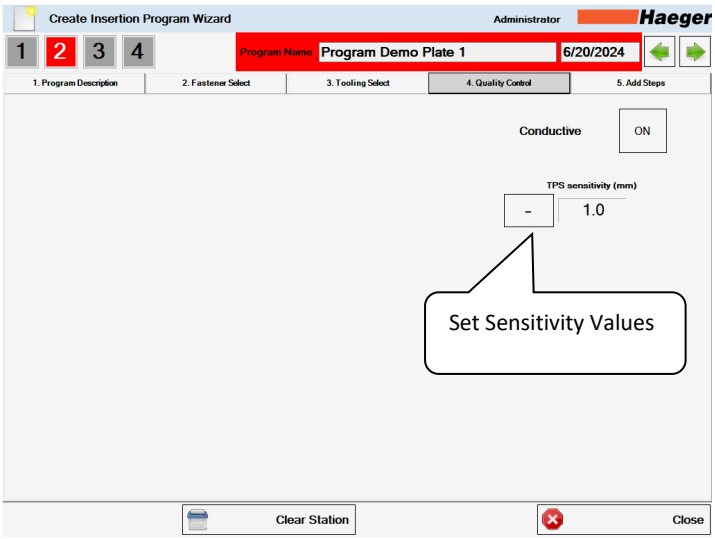
22.



When ready, use arrows to move to next setup.

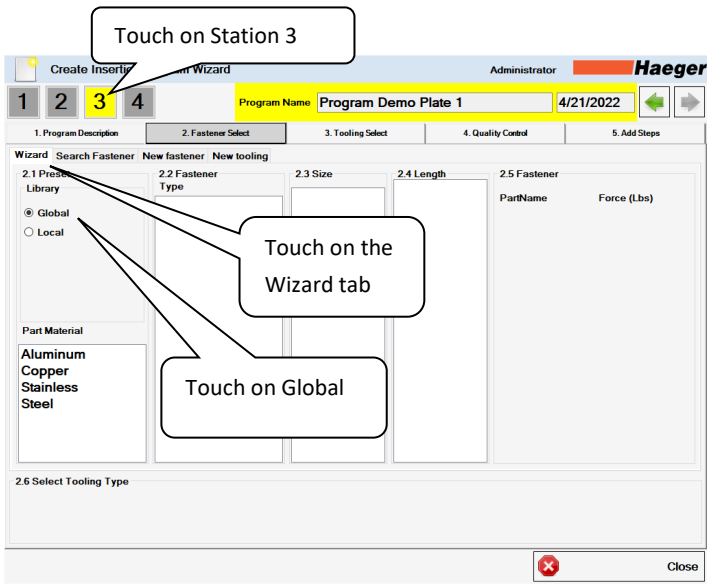
Set Insertion Values

23.



Set Sensitivity Values

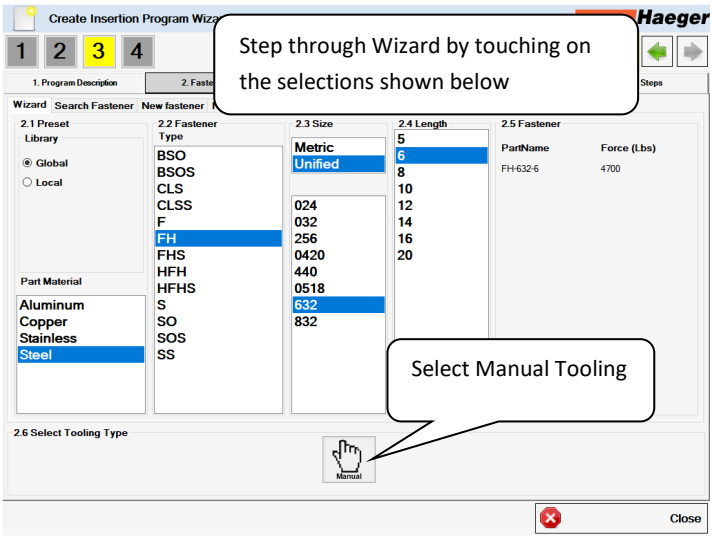
24.



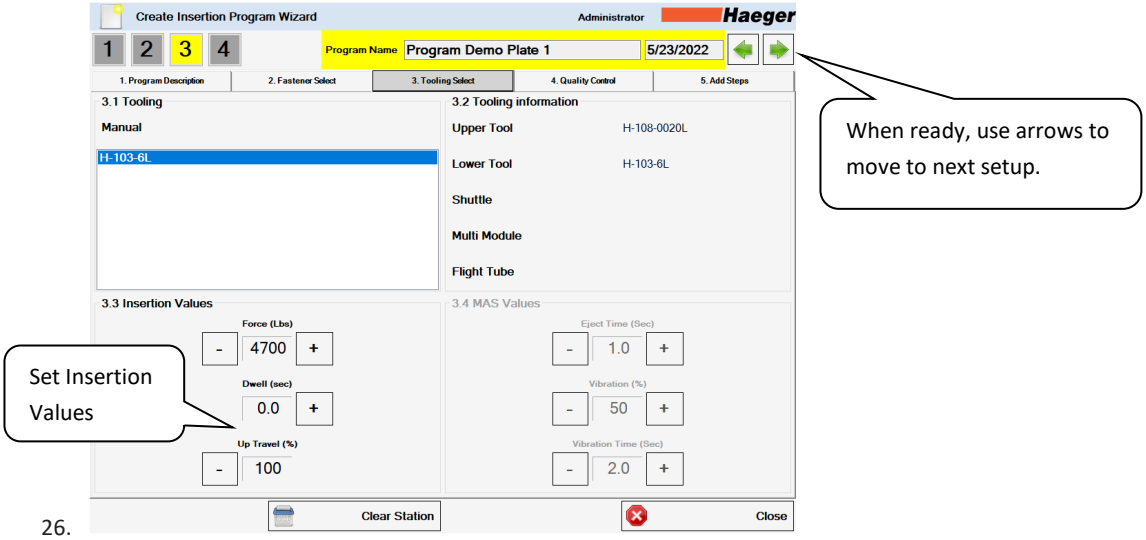
Repeat Wizard to program Station 3

* This time select a Stud **FH-632-6**.

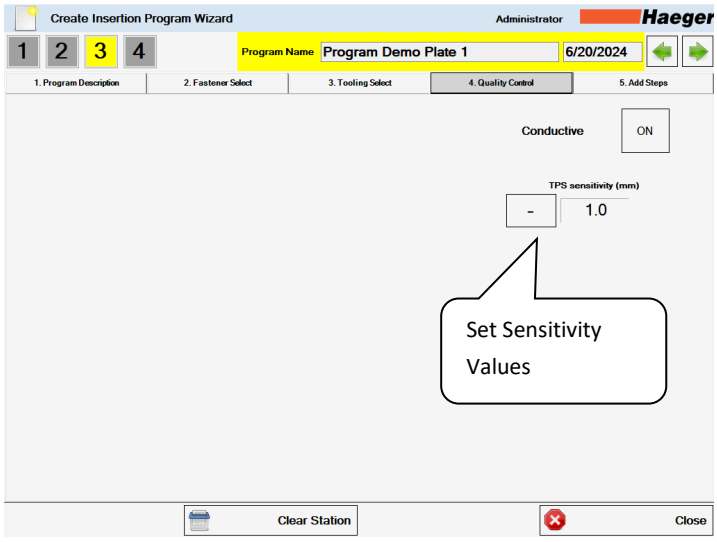
25.


Create Insertion Program Wiza
Haeger
1 2 3 4
Step through Wizard by touching on the selections shown below
1. Program Description
Steps
Wizard
Search Fastener
New fastener
2.1 Preset
Library
Global
Local
Part Material
Aluminum
Copper
Stainless
Steel
2.2 Fastener Type
BSO
BSOS
CLS
CLSS
F
FH
FHS
HFH
HFHS
S
SO
SOS
SS
2.3 Size
Metric
Unified
024
032
256
0420
440
0518
632
832
2.4 Length
5
6
8
10
12
14
16
20
2.5 Fastener
PartName
Force (Lbs)
FH-632-6
4700
Select Manual Tooling
2.6 Select Tooling Type
Manual
Close

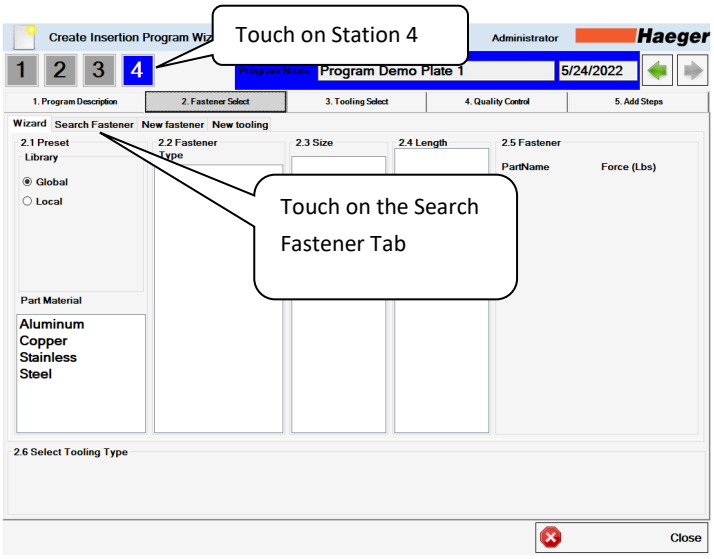
26.


Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
Program Name
Program Demo Plate 1
5/23/2022
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
When ready, use arrows to move to next setup.
3.1 Tooling
Manual
H-103-6L
3.2 Tooling information
Upper Tool
H-108-0020L
Lower Tool
H-103-6L
Shuttle
Multi Module
Flight Tube
Set Insertion Values
3.3 Insertion Values
Force (Lbs)
4700
Dwell (sec)
0.0
Up Travel (%)
100
3.4 MAS Values
Eject Time (Sec)
1.0
Vibration (%)
50
Vibration Time (Sec)
2.0
Clear Station
Close

27.


Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
Program Name
Program Demo Plate 1
6/20/2024
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
Conductive
ON
TPS sensitivity (mm)
1.0
Set Sensitivity Values
Clear Station
Close

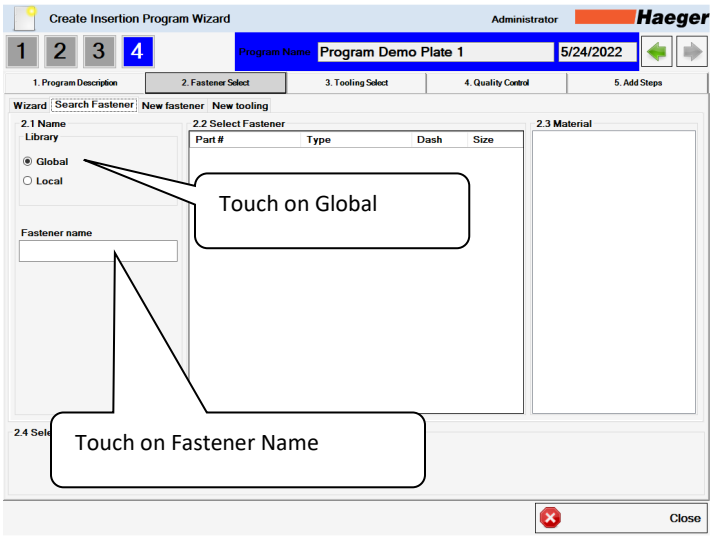
28.



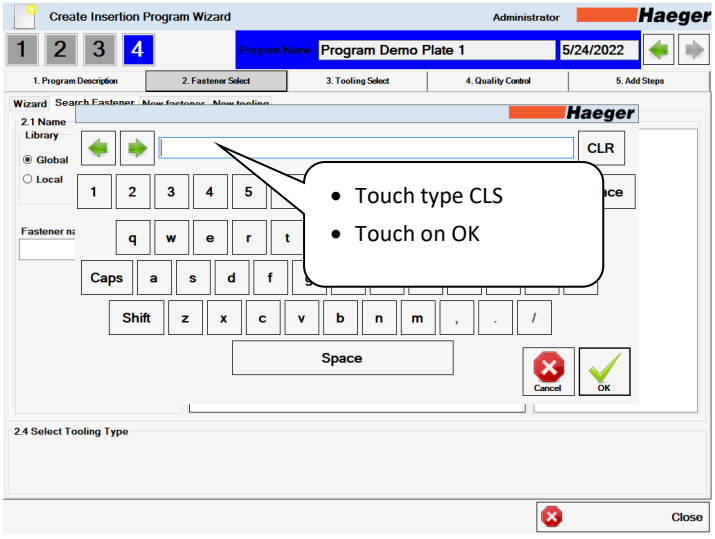
Speed up the programming steps by using Search Fastener in lieu of the wizard to program Station 4.

* This time select a Nut **CLS-M10-1**.

29.

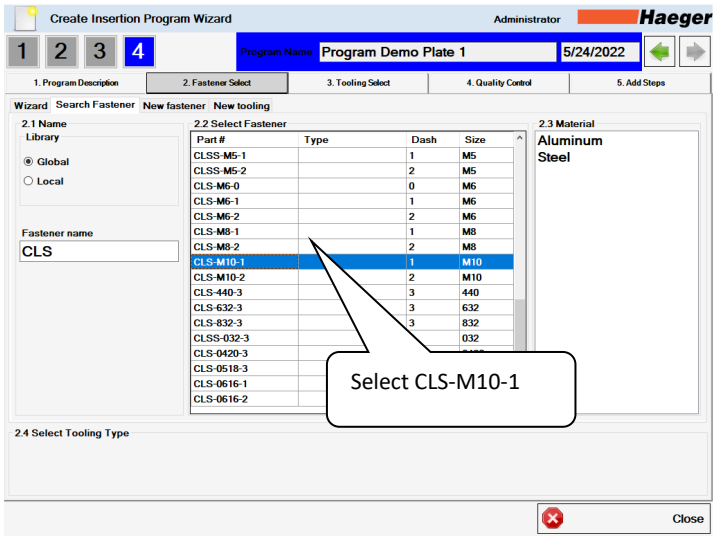


30.

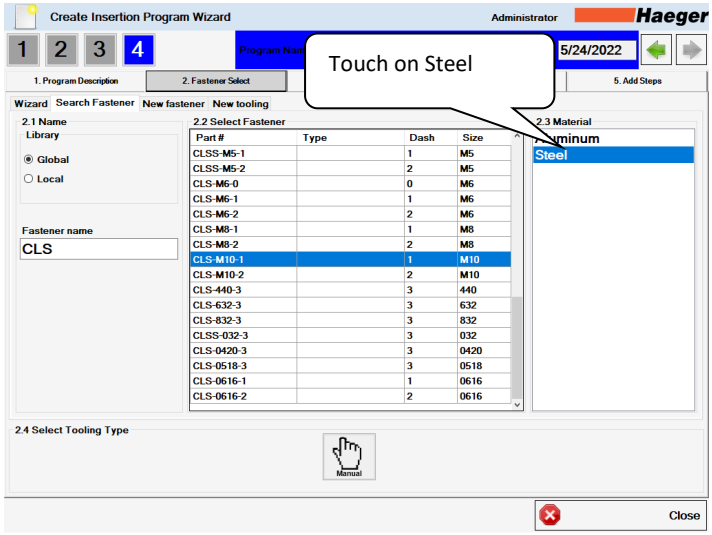


To go directly to the desired fastener, type in the fastener's identification number. (ex. CLS-M10-1)

31.

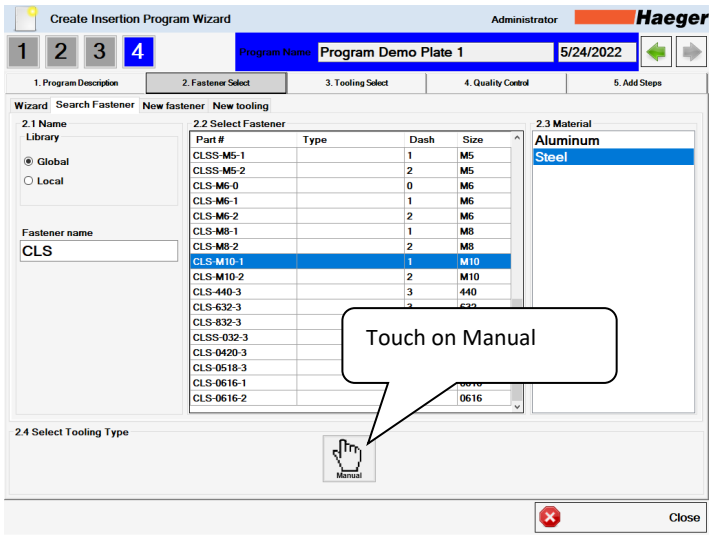


32.

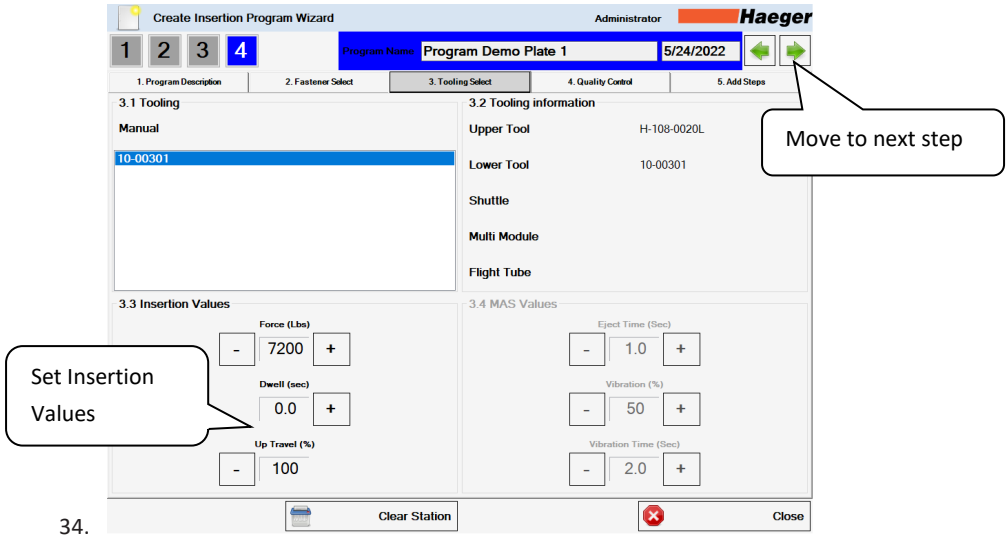


Select Panel Material: Steel

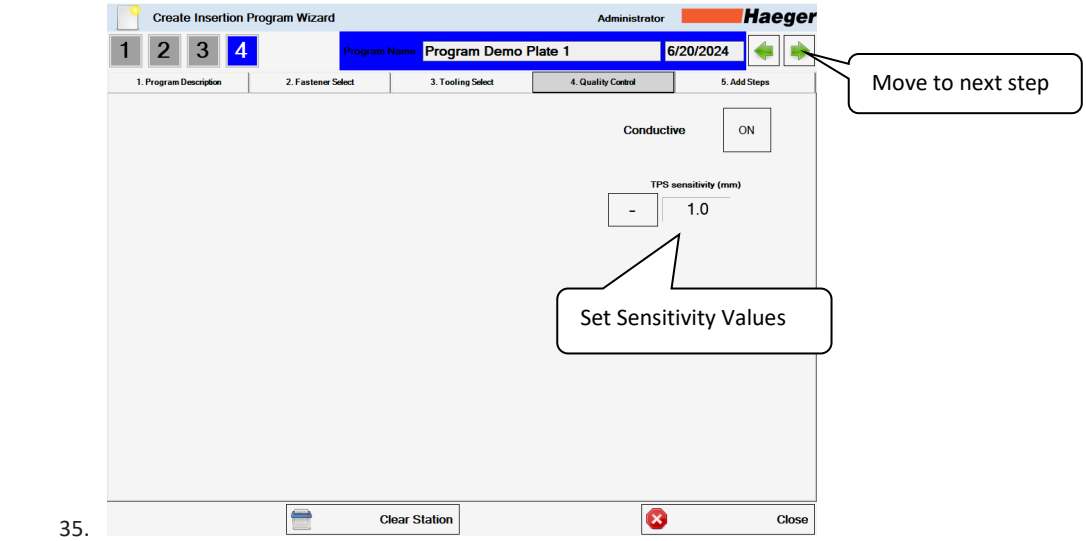
33.



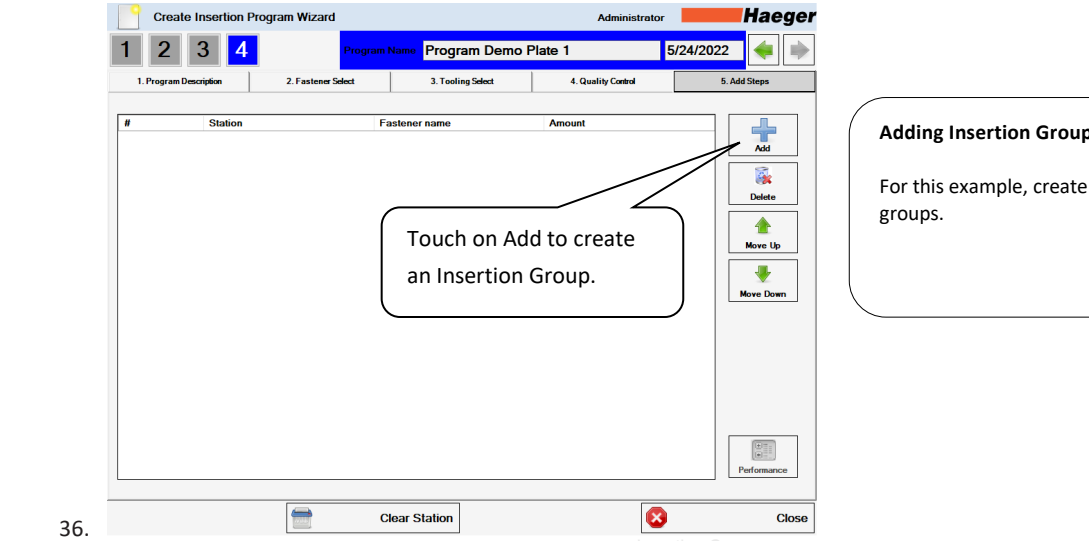
34.



35.



36.

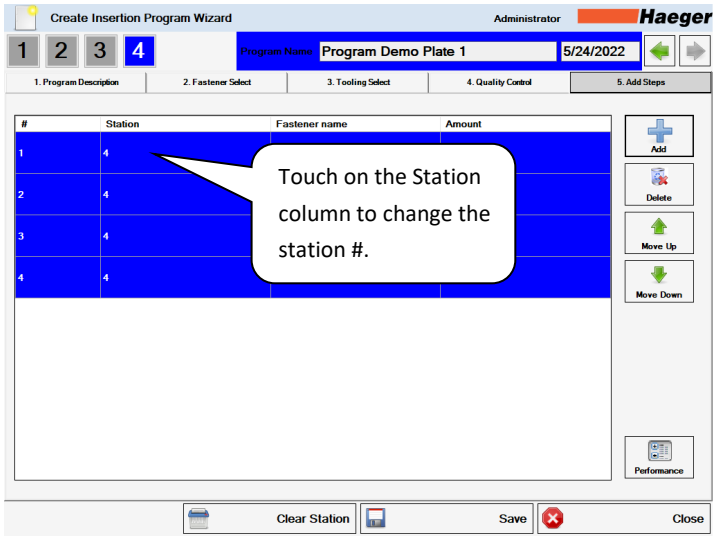


Adding Insertion Groups

For this example, create 4 insertion groups.

Insertion Groups

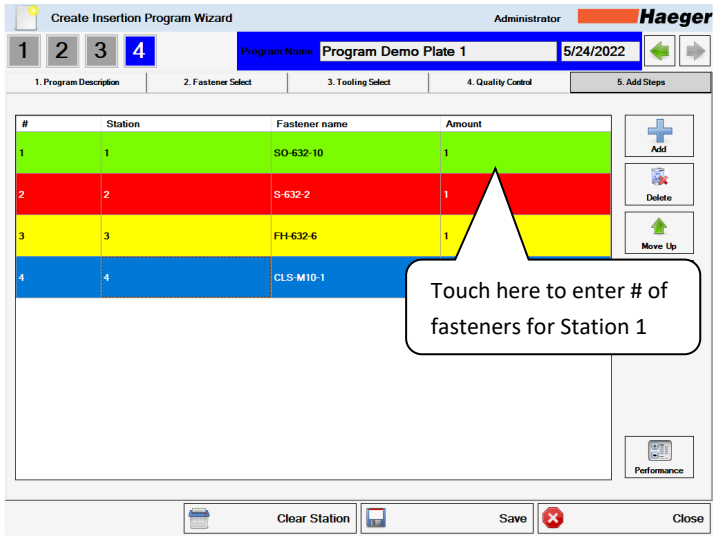
37.



Station Number:
Tapping the Station Column in each row (group) multiple times will toggle through the station numbers.

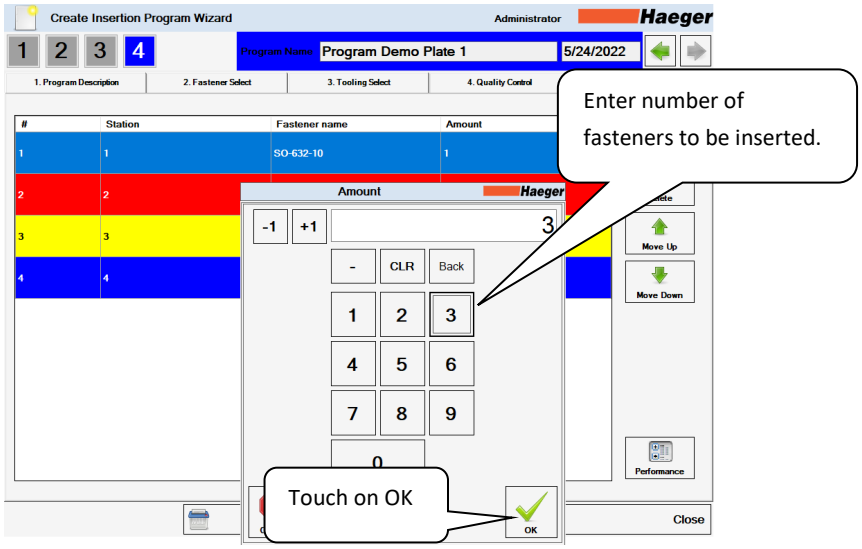
For this example, set the stations in order from 1 to 4.

38.

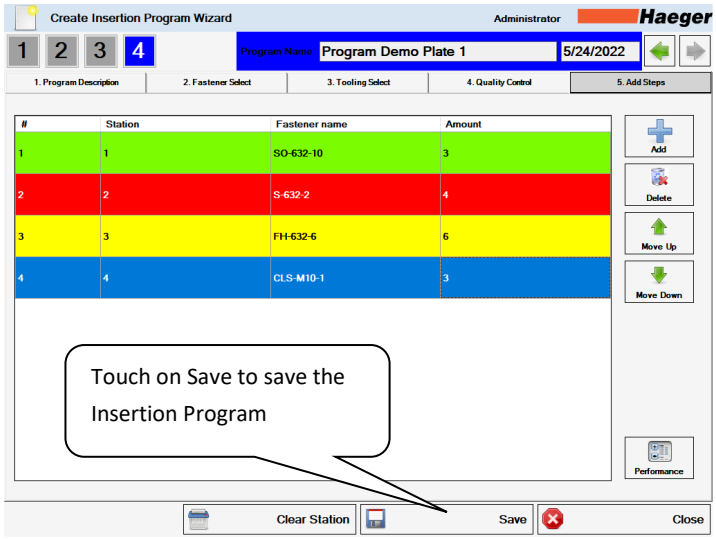


Amount:
This column sets the number of fasteners to be inserted for each insertion group.

39.



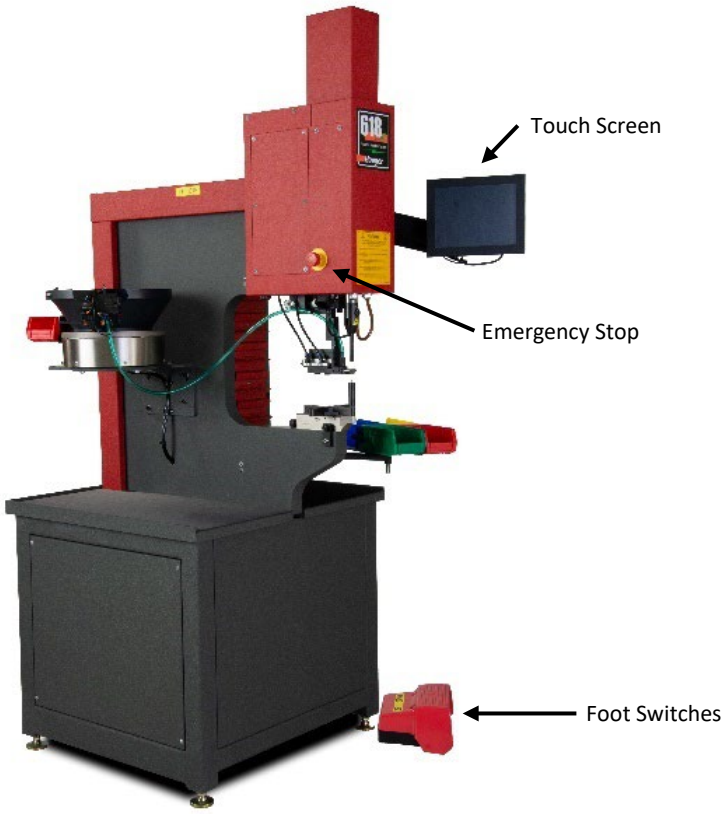
40.


Create Insertion Program Wizard
Administrator
Haeger
1
2
3
4
Program Name
Program Demo Plate 1
5/24/2022
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
#
Station
Fastener name
Amount
1
1
SO-632-10
3
2
2
S-632-2
4
3
3
FH-632-6
6
4
4
CLS-M10-1
3
Add
Delete
Move Up
Move Down
Performance
Touch on Save to save the Insertion Program
Clear Station
Save
Close

Run Program - Step by Step Demo

This section provides you, the operator, with the information that you need to add a Program and operate the machine safely and productively.

Machine Controls



- Read and understand all Warnings and Cautions in this manual and follow the instructions for testing the Safety System in the Safety System section before attempting to operate this machine.

- NEVER wear anything metallic that may encounter the Upper Tool, Lower Tool, or work piece (watches, rings, bracelets, etc.).

- Never leave your foot on or above the Down foot switch after completing a cycle on the machine. Keep your feet away from the Down foot switch until your hands are clear of the tooling area and you are ready to move the ram or insert hardware.

- **NEVER Operate this Machine without wearing the proper eye protection!**

Access Level Reminder:

	Administrator	Advanced Administrator	Operator Level	Machine User	Haeger Technician
Programs					
Filter	Yes	Yes	Yes	Yes	Yes
Select Programs	Yes	Yes	Yes	Yes	Yes
Create New Program	Yes	Yes	--	--	Yes
Edit Loaded Program	Yes	Yes	Yes	--	Yes
Preview Program	Yes	Yes	Yes	Yes	Yes
Start/Load Program	Yes	Yes	Yes	Yes	Yes
Edit Selected Program	Yes	Yes	--	--	Yes
Delete Program	Yes	Yes	--	--	Yes

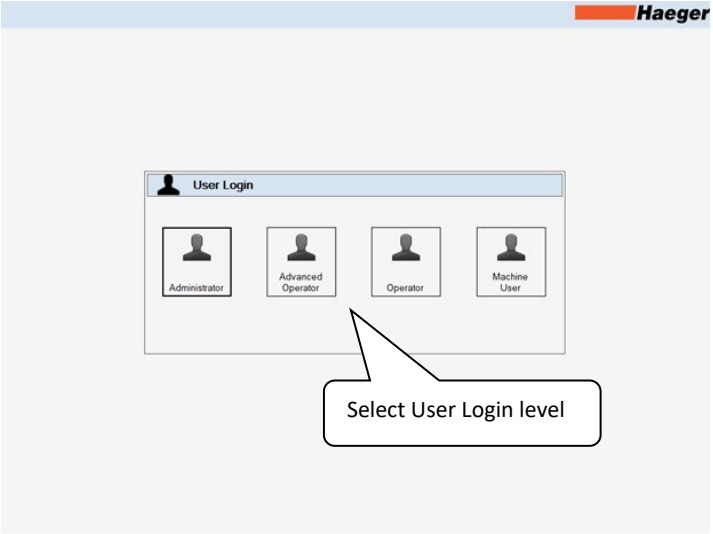
Access Level Reminder:
Machine User does not have access to load a Program. Admin/Operator must load it first – Then the Machine User can run it.

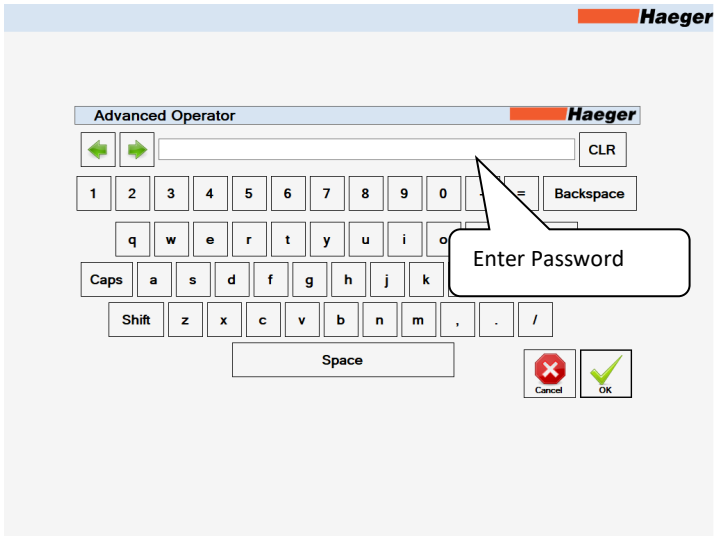
- Administrator/Operator
  - Login, Load Program, Close Program, Logout
- Machine User
  - Login, run previously loaded program

1. Turn on the power by turning the main disconnect switch to the ON position

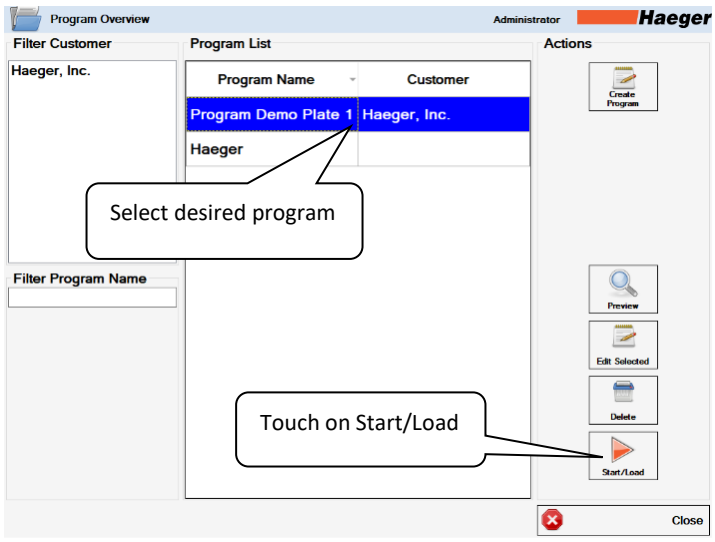
The InsertionLogic banner screen will appear on the computer, signifying that the computer is starting up. Once the system environment is fully started, the Log In screen will be displayed.

2.

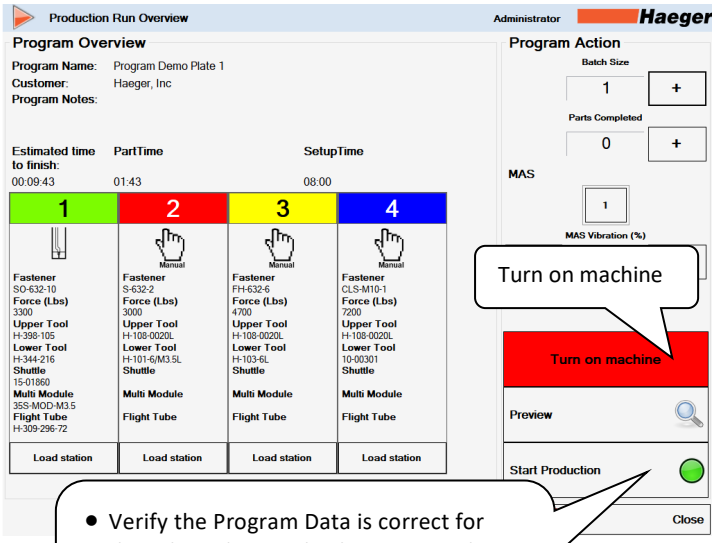


3. 
Haeger
Advanced Operator
Haeger
CLR
1 2 3 4 5 6 7 8 9 0 = Backspace
q w e r t y u i o
Caps a s d f g h j k
Shift z x c v b n m , . /
Space
Cancel
OK
Enter Password

4. 
HaegerTechnician
Haeger
Haeger®
a PennEngineering® Company
Touch on Programs
Quick Run
Programs
Admin
Exit

5. 
Program Overview
Administrator
Haeger
Filter Customer
Haeger, Inc.
Filter Program Name
Program List
Program Name
Customer
Program Demo Plate 1
Haeger, Inc.
Haeger
Actions
Create Program
Preview
Edit Selected
Delete
Start/Load
Close
Select desired program
Touch on Start/Load

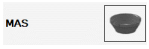
6.



- Verify the Program Data is correct for the selected part. Check correct tooling is installed in the station.
- Touch on Start Production

Production Run Overview

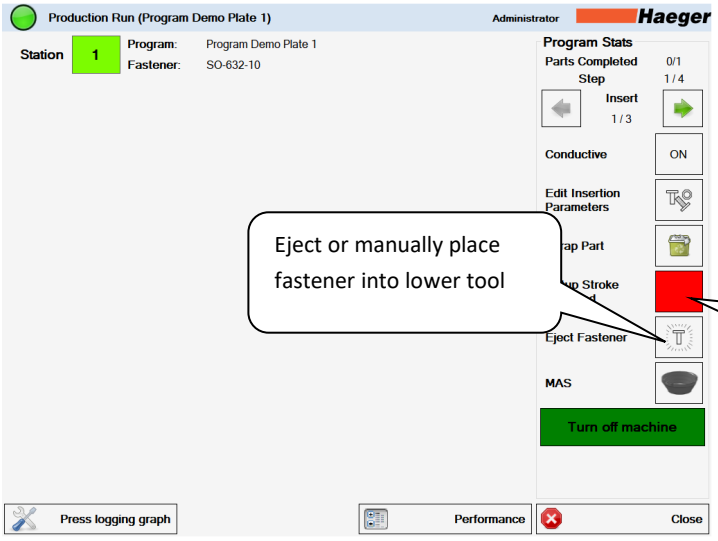
Program Action

- **Batch Size:** Is how many parts you must complete.
  Touch on the value itself, to touch type a new value.
- **MAS Vibration (%):** This feature allows the operator to increase or decrease the vibration intensity of the MAS 350 bowl.
- **MAS:** 

Touch the bowl button to manually vibrate the fasteners up to fill the MAS Module, or to empty the bowl.

Verify the Program selected matches the part for insertion and hardware in Stations 1, 2, 3 & 4.

7.

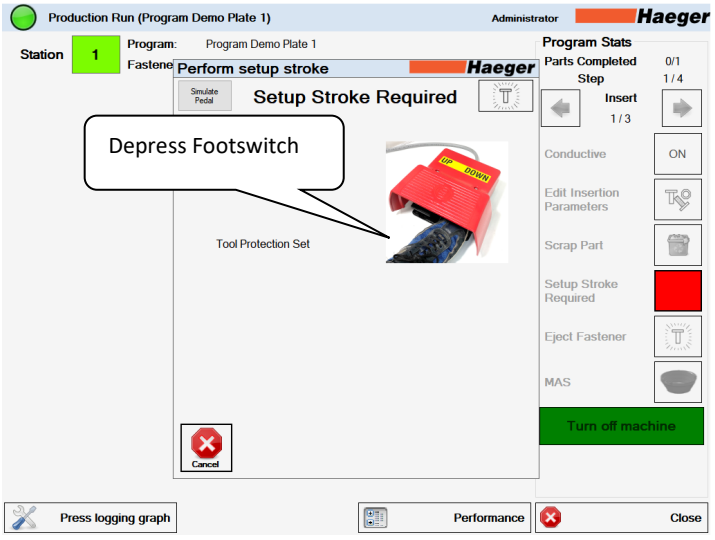


Eject or manually place fastener into lower tool

Touch on the red flashing square to begin setup stroke

Eject Fastener: Available on station 1 only with Productivity Pack. This feature allows the operator to eject a fastener from the MAS bowl to the multi-shuttle and work area.

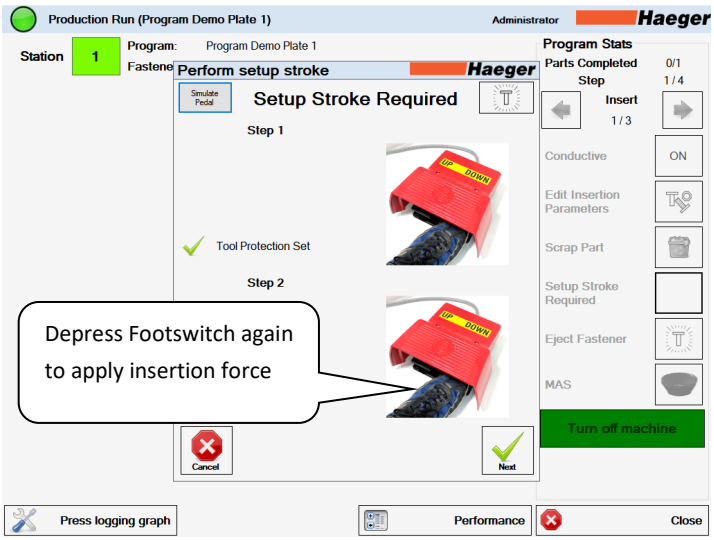
8.



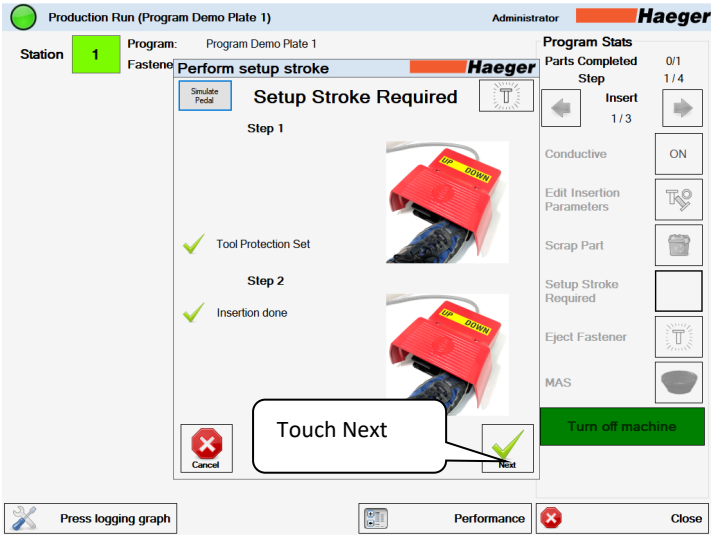
Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.


Upper tool in motion

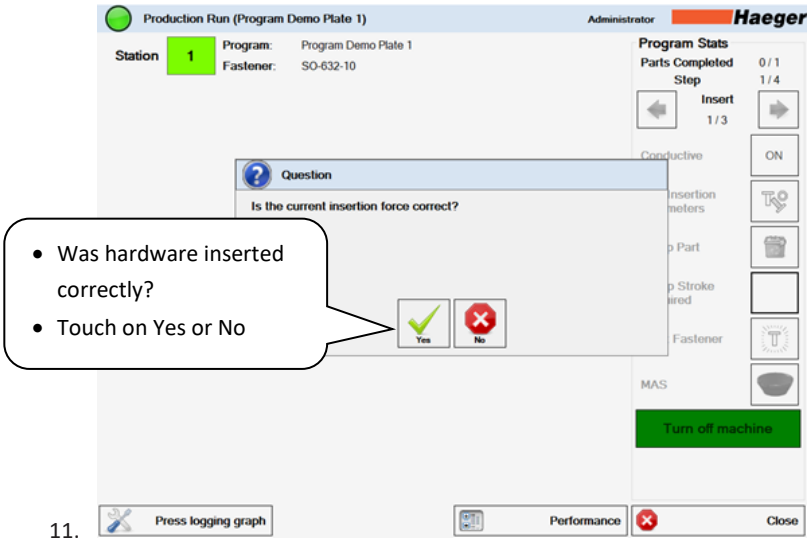
9.



10.



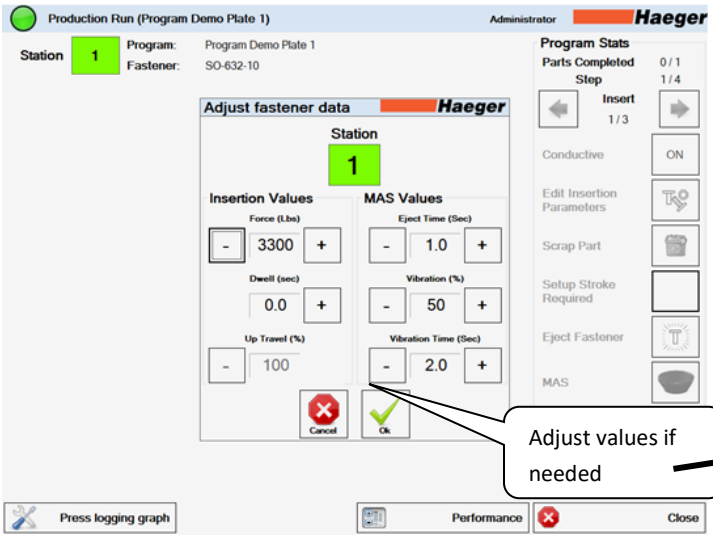
11.



Yes: Insertion was completed successfully and ready to move on to next insertion point

No: Opens the Adjust Fastener Window. Change Insertion and/or MAS values as needed.

12.



ADJUSTING INSERTION VALUES

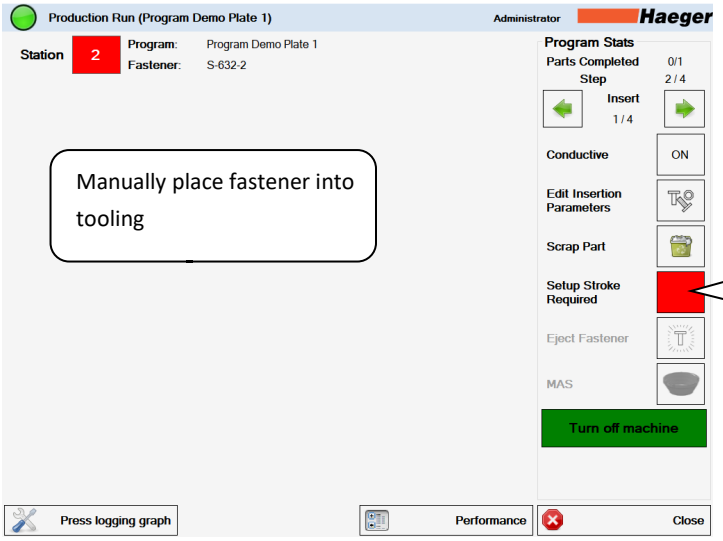
Increase or decrease the value by touching the + or - symbols on either side of the value shown. Or touch on the number value itself, to type in a new value.

Check the fastener's specifications for appropriate force to use.

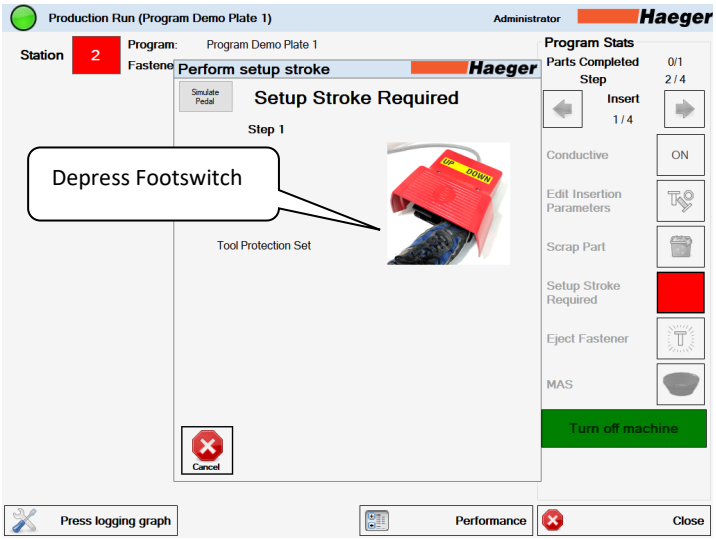
Another setup stroke will be required after adjustments. Repeat steps 9 to 12.

13. Install the rest of Fasteners for Station 1 and manually turn the TIS to the next station (if applicable).

14.

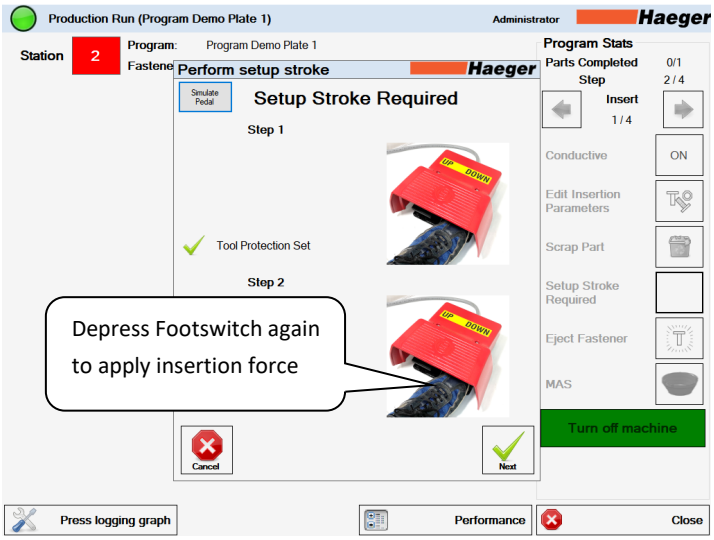


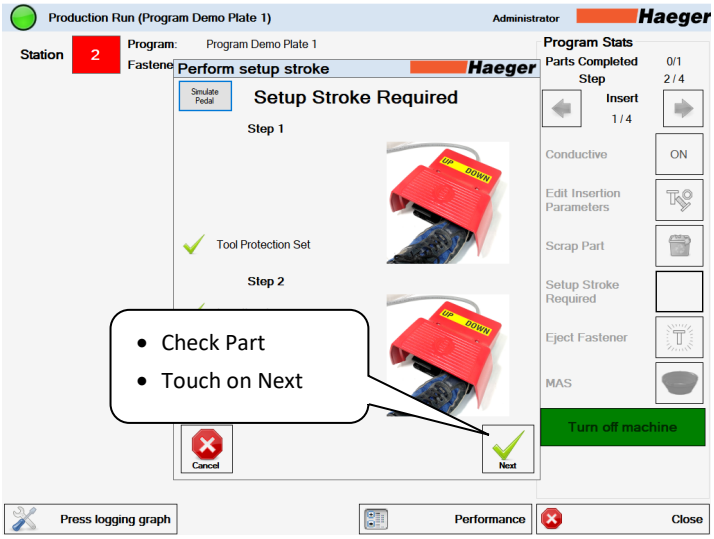
15.

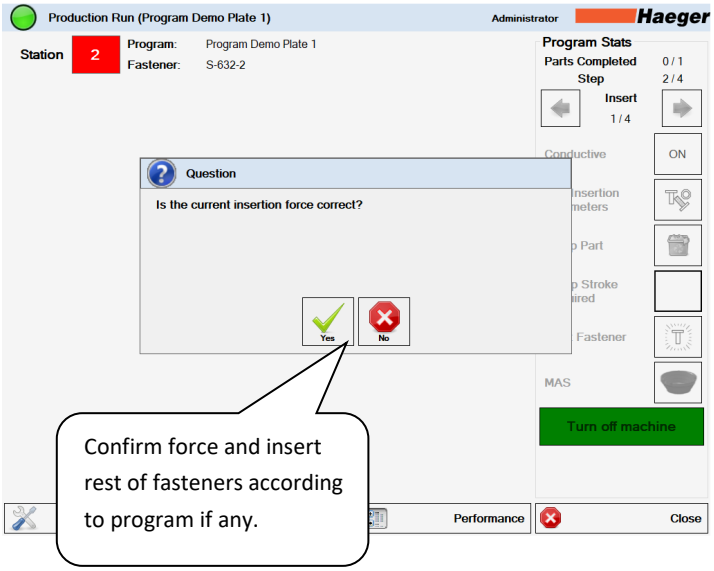


Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.

Upper tool in motion

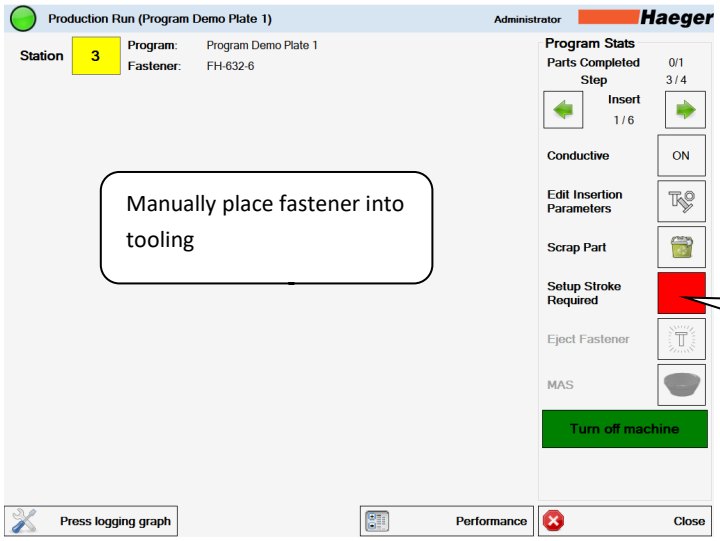
16. 

17. 

18. 

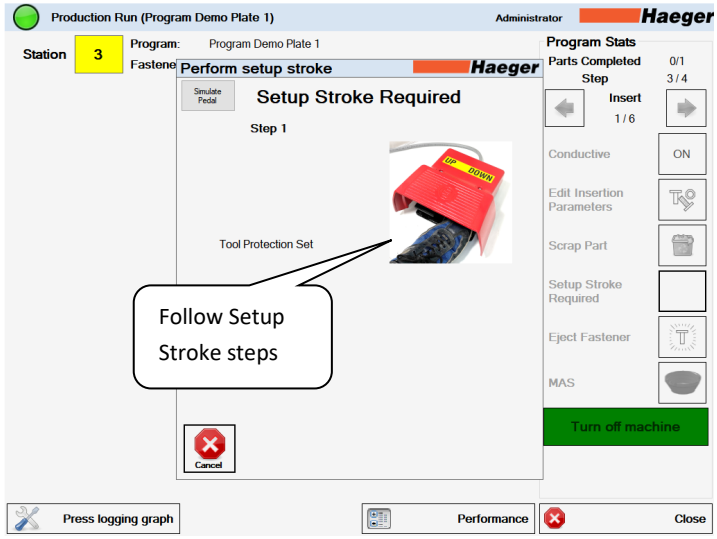
19. Turn the TIS to the next station.

20.



Touch on the red flashing square to begin setup stroke

21.

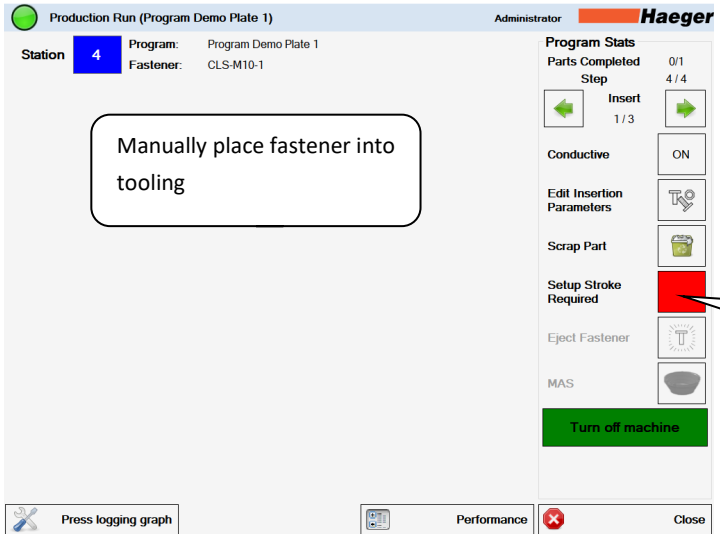


Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.


Upper tool in motion

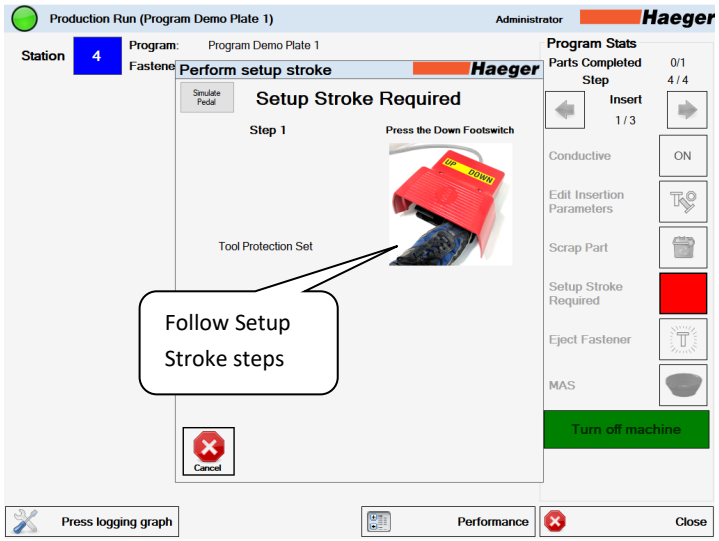
22. Install the rest of Fasteners for Station 3 and turn the TIS to the next station.

23.



Touch on the red flashing square to begin setup stroke

24.

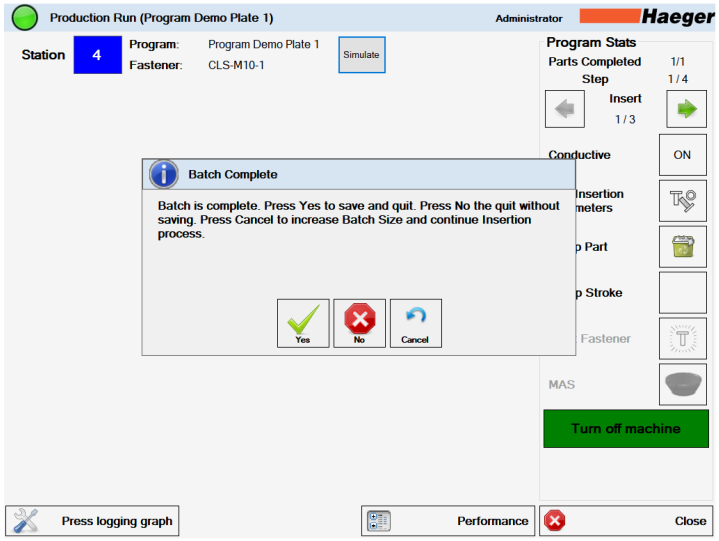


Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.

Upper tool in motion

25. Install the rest of Fasteners for Station 4.

26.



Batch Complete:
Yes: Save insertion data and quit
No: Quit without saving
Cancel: Go back to beginning of program and increase Batch Size

27.

Program Ends and returns to Main Screen

SECTION 5 - OPTIONS

Component	Part #	Description	Picture
Laser – Part Locating Light	15-01801	Provides a highly visible, red-laser indicator to aid in locating the lower tool under larger parts. Increases productivity and decreases operator fatigue.	

SECTION 6 – MACHINE MAINTENANCE

This maintenance schedule is applicable for standard machine shop operating conditions. When operating under severe conditions such as heavy dust and dirt, increase the schedule to reflect such conditions.

DO NOT lubricate the Upper Tool Holder with any lubricant other than a small amount of lithium grease (white). ** Other products may interfere with the Safety System.

General Maintenance Schedule

Component	Area	Maintenance	Schedule
Safety System	Upper Ram	Perform safety system check procedures using "Testing the Safety System"	Daily
Upper Tool Holder	Upper Ram	Inspect Continuity Springs and Pins If needed, apply a small amount of lithium grease (white)** between upper tool holder & cylinder rod	Once a month (160 hrs)
Upper Tool Holder warning label	Upper Ram	 Check this label Replace Risk of Crushing label if peeling or damaged	Daily
Vacuum Filter	Cylinder Access	Inspect and dust off with air duster. Replace if needed.	Every 3 Months (520 hrs)
Fan Filters	Electrical Cabinet	Remove filter and blow out filters with clean dry air.	Every 3 Months (520 hrs)
Shuttle Tooling	Shuttle Jaws	Inspect Springs and change out if they appear weak	Every 6 months (1,040 hrs)
Tooling Components	Flight Tubes	Inspect and change out if damaged	Every 6 months (960 hrs)
Hydraulic System Filter	Lower Machine Motor Compartment	Remove and replace cartridge Haeger Part No. 15-00888	Once a year (2080 hrs)
Hydraulic Fluid and Suction Filters	Lower Machine Motor Compartment	Perform fluid analysis. If a change is required, replace oil with ISO 32 Viscosity Grade Hydraulic oil. Suction filters located inside the tank must also be changed. **Contact your local recycling center or governing agency for proper disposal of old hydraulic fluid.**	Once every 2 years (4160 hrs)

Maintenance Schedule (Cont.)

*Hydraulic Fluid

The machine uses Exxon Humble Hydraulic H AW-32. Equivalent ISO 32 Viscosity Grade Hydraulic oils may be used.

** Lithium Grease

Each Haeger machine is shipped with a tube of Lubriplate 630-AA. This is the recommended grease to use for lubricating parts around the machine.

Capacity Chart

Machine	Gallons	Liters
618MSPe	10	38

Troubleshooting

Problem	Source	Solution
Machine has no power.	Disconnect switch is off.	Turn disconnect switch to the On position.
		Open the cabinet and insure the disconnect switch attachment bar is still connected to the switch inside the cabinet.
		Inspect the condition of the disconnect switch handle for any damage and alignment to the attachment bar.
	Incorrect power source.	Inspect to ensure machine is plugged in to the correct power source/plug.
		Using a voltmeter, check the voltage on the disconnect switch inside the electrical cabinet. Correct values are on the identification plate at the back of the machine.
	Circuit breaker tripped.	Using a voltmeter, ensure the power coming into the machine is correct. Correct values are on the identification plate at the back of the machine.
		There may be a fault with either the motor or the transformer. To determine which is at fault, disconnect the three wires from the circuit breaker going to the motor and restore power. If circuit breaker still trips, fault is with the transformer, skip to next step below. If circuit breaker does not trip, inspect wires to motor for damage or loose connections including the ground wire. If no problems found with wiring, motor may need replacement.
		Check wiring to transformer for damage or loose/incorrect connections.
		Check voltage on secondary side of transformer. Should be 110-120 VAC. If not correct, change out transformer.
Touch screen turns on, but machine does not start.	E- Stop buttons pushed.	Rotate Red e-stop buttons clockwise. This will unlatch the buttons and pop out for the start mode.
	Overload relay tripped.	Reset overload relay. If overload relay trips again check to ensure the correct voltage is being supplied to the machine.
		Check wires going to the motor for any signs of damage or loose connections. If no problems found with wiring, motor may need replacement.
	No voltage going to motor.	Check for voltage at overload relay. If no voltage is present on discharge side, change out overload relay. If voltage is present, go to next step.
		Check for loose connections to motor and grounding. If secure, check for voltage at motor. If no voltage is present, inspect wiring for damage. If voltage is present, change out motor.
	Mag Starter shorted.	Manually press the button on the Mag Starter. If the motor does not start, replace Mag Starter. If the motor starts, then go to next step.
	Power Supply Shorted.	Check to ensure 24VDC is coming out of power supply. While the meter is still hooked up, attempt to start the machine and if voltage drops low (1-7VDC) change out power supply.

Problem	Source	Solution
Fastener will not feed.	MAS bowl is empty.	Check to ensure there is enough fasteners in the MAS Bowl.
	MAS module(s) jammed.	Check the MAS module(s) to ensure that there are no fasteners or debris jammed in the fastener tracks.
	Air is not set to 90psi.	Check the air supply is properly set to correct pressure.
	Eject air blast is too weak.	If module utilizes a eject flow-control fitting, check that the valve is opened sufficiently.
	Module slide bar is jammed.	Manually push the slide bar to check that is not binding on anything. If it is not, check that the flow-control fitting to the cylinder (if applicable) is opened sufficiently.
	Fastener is jammed in feed hose.	Check to ensure the feed hose is not kinked and there are no fasteners jammed in hose.
	Eject timer is too short.	Check fastener eject settings are set to sufficient time for fastener to reach the work area.
Nut is feeding upside down.	Feed Hose is not twisted 180deg.	Check to ensure the feed hose is turned 180deg from the MAS module to the shuttle.
Ram will not come down.	Machine is off.	Ensure machine is on and motor is running.
	Top of stroke limit not met.	Ensure ram is at full top of stroke.
	CET not working.	Check to ensure black string is connected to top of ram and that there is no slack. If slack is present, check alignment of CET to top of ram or change out CET unit.
	Hydraulic leak or insufficient fluid in tank.	Ensure there are no hydraulic leaks at hose connections and fittings. Also check to ensure there is enough hydraulic fluid in the tank.
	4-way valve sticking/not working.	Check if the down solenoid lights up when the down footswitch is depressed. If there is no light, verify wiring and power going to up solenoid is correct. If it does light up, manually activate the solenoid, and see if the ram comes down. If the ram comes down, replace the 4way valve.
	No pressure is built.	Check the condition of the proportional amplifier.
Ram will not move up.	Machine is off.	Ensure machine is on and motor is running.
	Top of stroke limit not met.	Ensure ram is at full top of stroke.
	CET not working.	Check to ensure black string is connected to top of ram and that there is no slack. If slack is present, check alignment of CET to top of ram or change out CET unit.
	Hydraulic leak or insufficient fluid in tank.	Ensure there are no hydraulic leaks at hose connections and fittings. Also check to ensure there is enough hydraulic fluid in the tank.
	4-way up solenoid valve not working.	Check if the up-solenoid valve on the 4-way lights up when the up pedal is depressed. If there is no light, verify wiring and power going to up solenoid is correct. If it does light up, manually activate the solenoid. If the ram goes up, replace the 4-way valve.

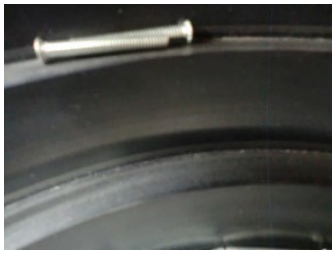
Problem	Source	Solution
	No pressure is built.	Check the condition of the proportional amplifier.
Ram comes down, taps workpiece, and then returns up.	Running non-conductive material while in conductive.	Ensure that you are in the right mode for the material you are running.
	Tooling or workpiece is dirty.	Check the condition of the tooling and the workpiece. Dirty tools and workpieces may interfere with conductivity.
	Continuity Springs and pins worn out.	Check the condition of the Continuity springs and pins. Also check to ensure the upper tool holder is not binding on the shaft.
	Safety switch not working.	Check the condition of the safety switch. Bring the ram down to mid-stroke and lift up the upper tool holder. If the ram does not return up, then inspect the safety switch system for damage.
	Continuity pins and spring worn causing incorrect set point.	Check the springs and pins in the upper tool holder for damage or collapsed springs.
		If no physical problems can be found, reload the software and this will reset default values.
	No pressure is built.	Check the condition of the proportional amplifier.
Oil filter is leaking at seal.	Filter is dirty.	Change out filter
	Check valve in filter has stretched apart.	Remove filter housing, inspect condition of check valve. If damaged replace housing.

Weekly Care & Maintenance

This maintenance schedule is applicable for standard machine shop operating conditions. When operating in severe conditions such as heavy dust or dirt or running 24 hours, increase the schedule to reflect such conditions.

(MAS 350): Care & Maintenance

- Dirt, grease, debris builds up over time in the bowl.
- Avoid pouring/dumping bottom of the batch into the bowl where most debris are settled. Lift and sift before placing into bowl.



- 1st: Remove all fasteners from bowl.
- 2nd: Use dry compressed air to blow out debris.
- **Eye protection** must be worn.
- 3rd: Wipe bowl clean with dry cloth.
- If dirt, grease is present, use acetone with gloves and a clean cloth to wipe off build up.
- Read all warnings on cleaning solution container & follow recommendations for safe handling and storage.

DO NOT use rubbing alcohol, WD-40, diesel, gas, etc., to clean MAS 350 composite bowls!

Flight Tube: Care & Maintenance

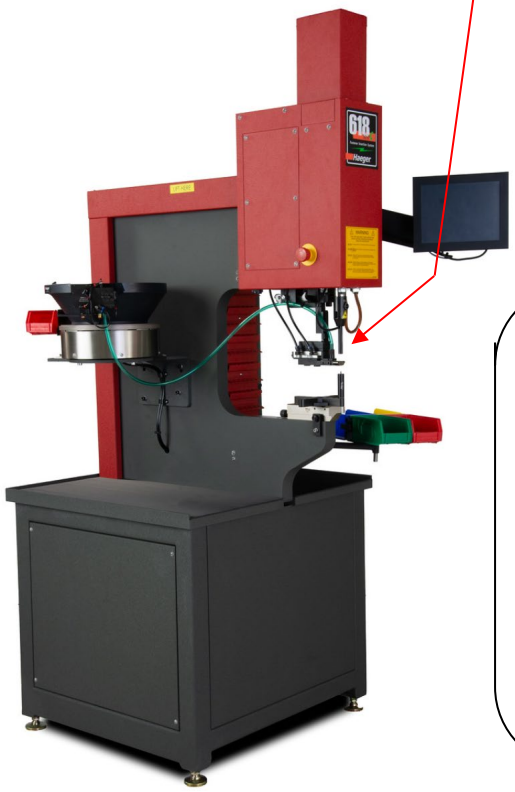
- Dirt, grease, debris builds up over time in the tubes.
- It is recommended to blow out flight tube after each tool change.

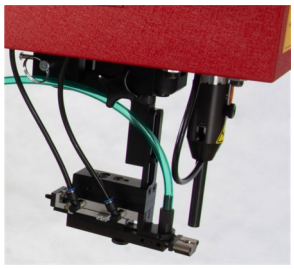
- 1st: Detach tube(s) from MAS 350 Module and upper tool changer.
- 2nd: Use dry compressed air to blow out debris.
- **Eye protection** must be worn.
- 3rd: Rinse inside of tube with denatured alcohol and air dry.
- Read all warnings on cleaning solution container & follow recommendations for safe handling and storage.

DO NOT use rubbing alcohol, WD-40, diesel, gas, etc., to rinse out inside of flight tubes!
DO NOT use Silicone Spray as a lubricant on this machine.

Multi-Shuttle: Care & Maintenance

It is recommended to dust out the multi shuttle weekly or more depending on usage.





- Use dry compressed air to blow out debris.
- **Eye protection** must be worn.

DO NOT use rubbing alcohol, WD-40, diesel, gas, etc., to clean shuttle slides!

If necessary, denatured alcohol can be applied to a clean cloth to remove dirt and grease.

Upper Tool Holder: Care & Maintenance

It is recommended to inspect the upper tool holder and its contacts weekly or more frequently based on usage.

- **DO NOT use** Silicone Spray to lubricate inside of holder.
- **If necessary,** denatured alcohol can be applied to a clean cloth to remove dirt and grease.

DO NOT use rubbing alcohol, WD-40, diesel, gas, etc., to clean contacts or any part of the holder!

- 1st: Loosen round thumb screw to allow tool holder to slide off.

- 2nd: Inspect springs and contacts and wipe off with clean dry cloth.

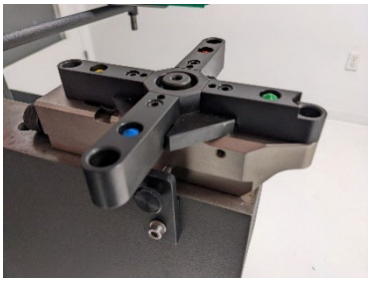
- 3rd: Wipe off all metallic areas with clean dry cloth.

- 4th: Wipe inside of tool holder with clean dry cloth.
- 5th: Apply a **Thin Film** of white lithium grease between ram adapter and upper tool holder.
- 6th: Re-install springs with metal contactors in body of tool holder, slide body over sensor and tighten thumb screw.

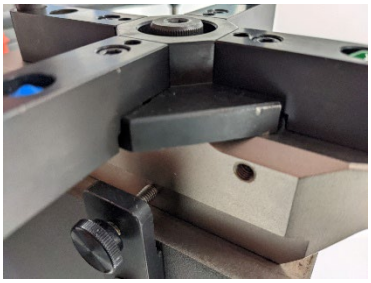
TIS-1: Care & Maintenance

It is recommended to inspect the TIS-1 and its contacts weekly or more frequently based on usage.

DO NOT use rubbing alcohol, WD-40, diesel, gas, etc., to clean contacts or any part of the TIS-1!



- 1st: Inspect the Arms, Hub, and Body of the TIS-1.
- 2nd: Wipe off all metallic areas with clean dry cloth.

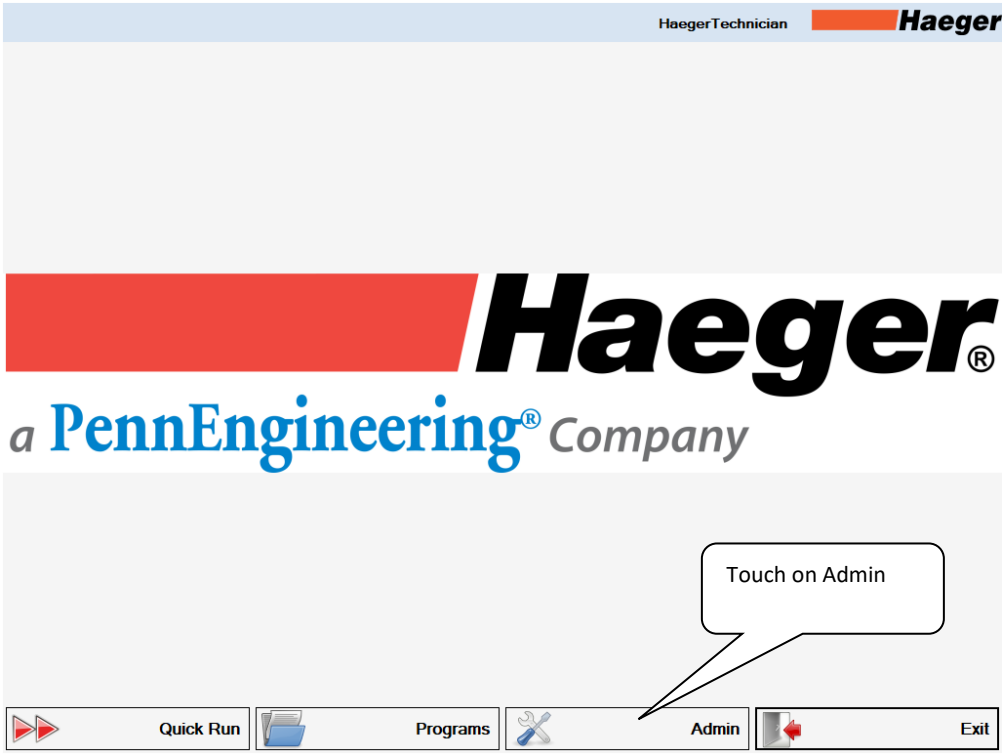


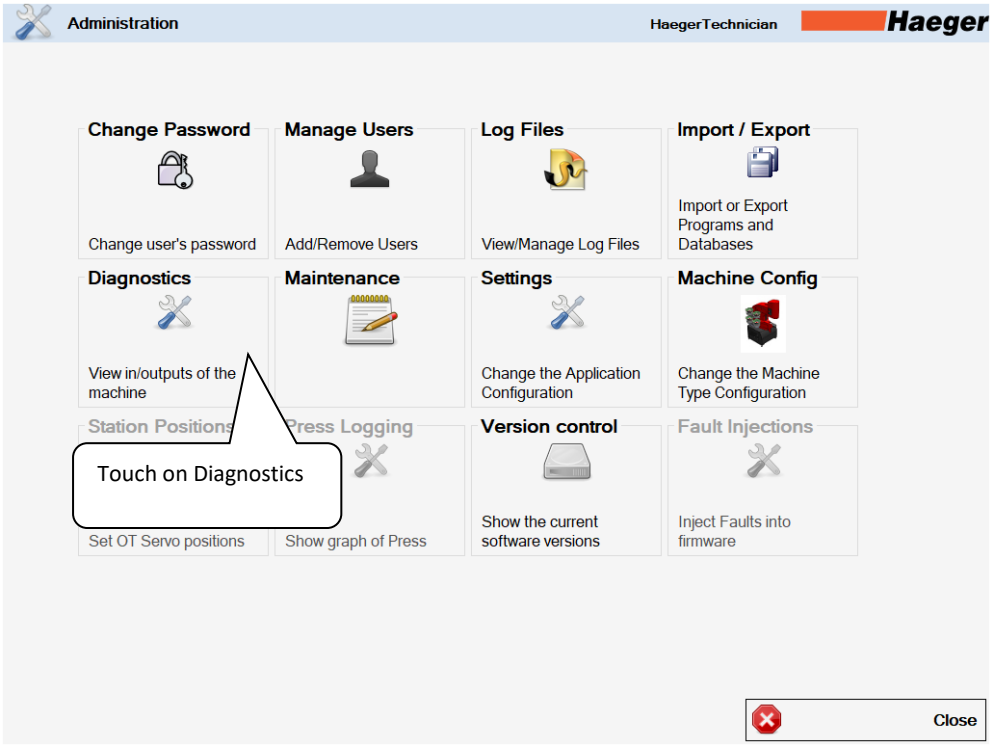
- 3rd: Check the Arms for ply, smoothness of rotation, and for gaps between the ARMs and the Body.

DO NOT use Silicone Spray as a lubricant on this machine.

If necessary, denatured alcohol can be applied to a clean cloth to remove dirt and grease.

Diagnostics: From Main Screen



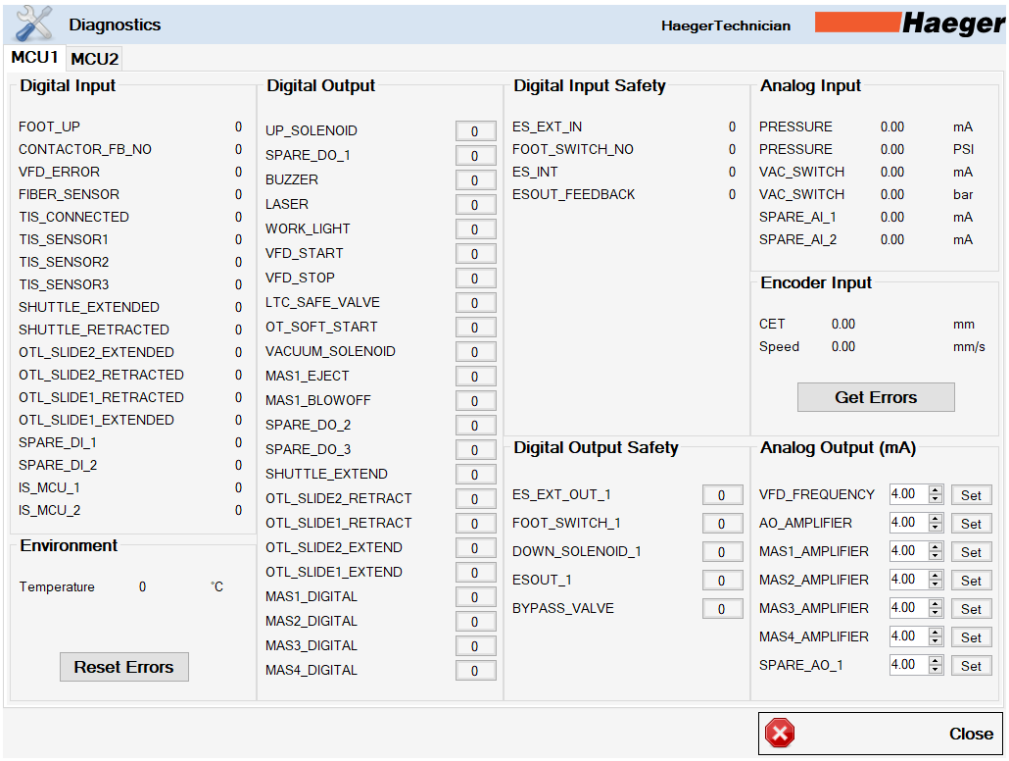


Digital Inputs (DIxx): These are inputs for the PLC from various points on the electrical board. These Inputs determine what Outputs will be turned on at certain times.

Digital Outputs (DOxx): These are Outputs from the PLC to various points on the board to control Relays, Air Cylinders, Modular Auto Feed (MAS), and other functions.

Analog Inputs (AIxx): These are inputs for the PLC from various sensors in the electrical board, such as the Ram Pressure, Ram Position and Vacuum Sensor.

Analog Outputs (AOxx): These are Outputs from the PLC to various points on the board to control the Ram Force and the MAS Vibration



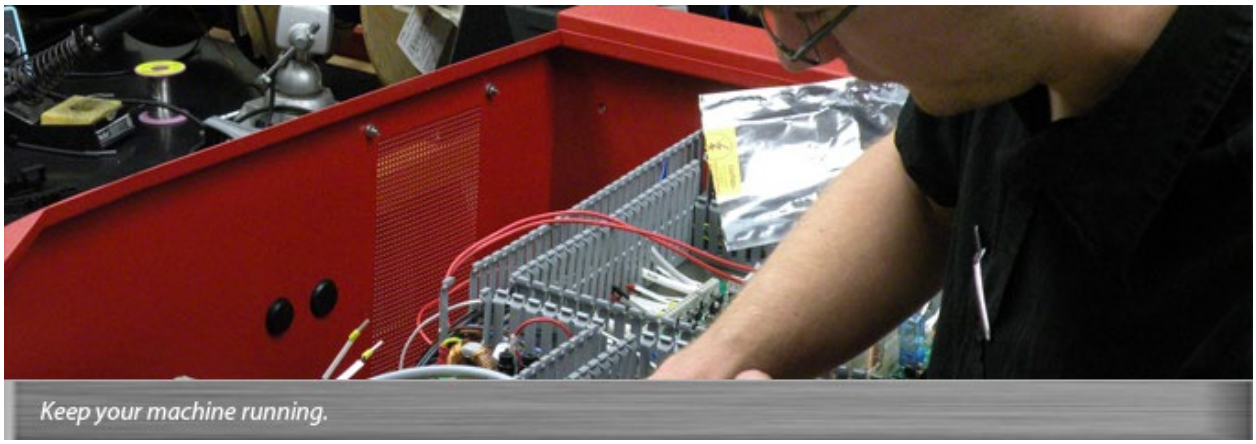
Schematics and Diagrams

Schematics and Diagrams are customized to accurately depict your machine and will not be bound in this operation manual. They will be delivered separately on large format paper in an effort make them legible and easy to read.

Typical Drawing List:

- ***Hydraulics Schematic***
- Pneumatic Schematic
- Electrical System
- Safety System

Customer Service



Haeger is proud of its reputation for providing you with first-class support. Our mission is to offer you cutting edge technology machines that will provide your organization with world-class performance and value. Contact us today.

A service tech will contact you within 24 hours

To save time, please be prepared to give your area Haeger Representative the following information:

1. **Your name**
2. **Your company's name, location, and telephone number**
3. **The Model Number of your Haeger machine**
4. **The Serial Number of your Haeger machine**
5. **A very detailed description of the problem**
6. **What steps you have already taken to resolve your problem**
1. **How the machine responded to each of the steps**

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Email: service-cn@haeger.com

Limited Warranty

1. EXCLUSIVE WARRANTY: This warranty is exclusive and in lieu of all other express or implied warranties including, without limitation, the implied warranties or merchantability and fitness for a particular purpose.

2. EFFECTIVE DATE: The warranty period starts from the date of installation by Distributor or Haeger Factory Technician, or from date of receipt if self-installed by the customer.

3. PRODUCTS: As to products, any defects in materials will be corrected without charge for parts or labor for a period of one year from warranty effective date. Products include the Haeger Insertion Machine, Modular Auto Feed System (MAS), and Factory Installed Accessories.

4. TOOLING: As to tooling, any defects in materials or workmanship will be corrected without charge for labor or parts for a period of one year from the date of receipt. Tooling includes all Automatic Tooling, all Standard Manual Tooling, and all Special Manufactured Tooling.

5. PROCEDURE: You, the customer must notify Haeger, Incorporated promptly of any breach of this Limited Warranty by calling or writing to:

Haeger Inc.	***Haeger Europe***	***Haeger China***
50459 Central Industrial Dr. Shelby Township, MI 48315 USA Toll Free: (800) 878-4343 Phone: (209) 848-4000 Emails: sales@haeger.com service@haeger.com	Mervue Business Park Tuam Road, Galway H91 AHW0, Ireland Phone: +353 91 747100 Emails: europesales@haeger.com europeservice@haeger.com	99 Mid Chenfeng Road Kunshan, Jiangsu Province PRC Phone: +86 512 57269310 Email: service-cn@haeger.com

   Haeger, Incorporated, at its option, may elect to replace or repair the machine or part of the machine either in the field or may direct you to ship it to back, freight prepaid.

6. LIMITATIONS: Haeger, Incorporated, will not be liable in any event for incidental or consequential damages or for failure due to wear and tear, abuse, improper operation or maintenance, repair or modification by personnel not authorized by Haeger, Incorporated or other circumstances beyond the control of Haeger, Incorporated.

SECTION 7 – PARTS LIST

Description

The **Parts** in this section of the manual are listed by **Item Number**, **Part Number**, **Description** and **Quantity**.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	XX-XXXXX	XXXXXXXXXX	X

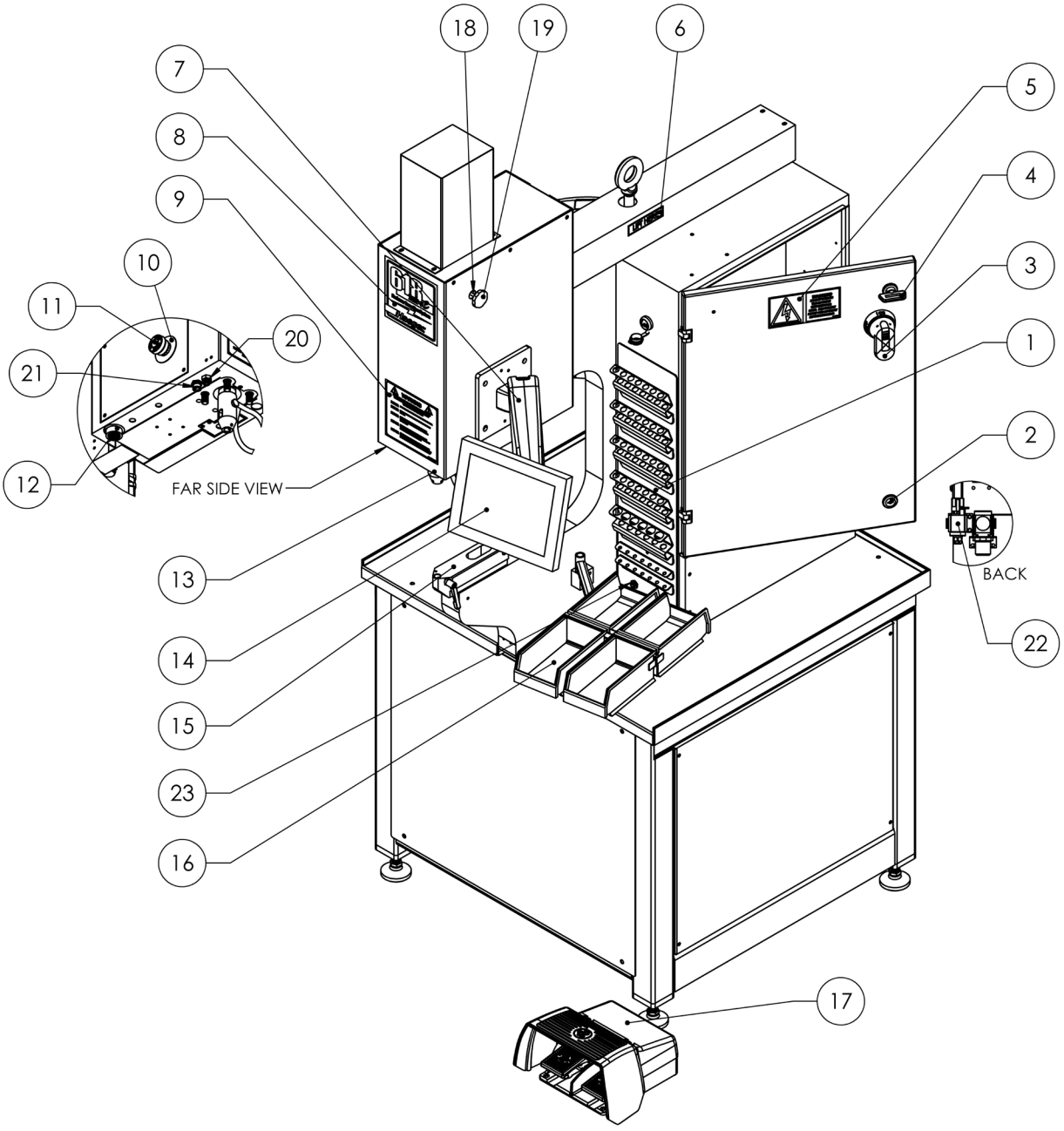
Item Numbers (1)**:** Are depicted with in a circle with an arrow pointing to the specific part or assembly.

Part Number: Identifies a specific item in Haeger's inventory.

Description: This is Haeger's brief description of the part.

Quantity: This represents the total quantity of the part which is used in the complete assembly. When ordering parts, it may not always be necessary to order the number of parts listed. Order only the quantity that is required to make the repairs.

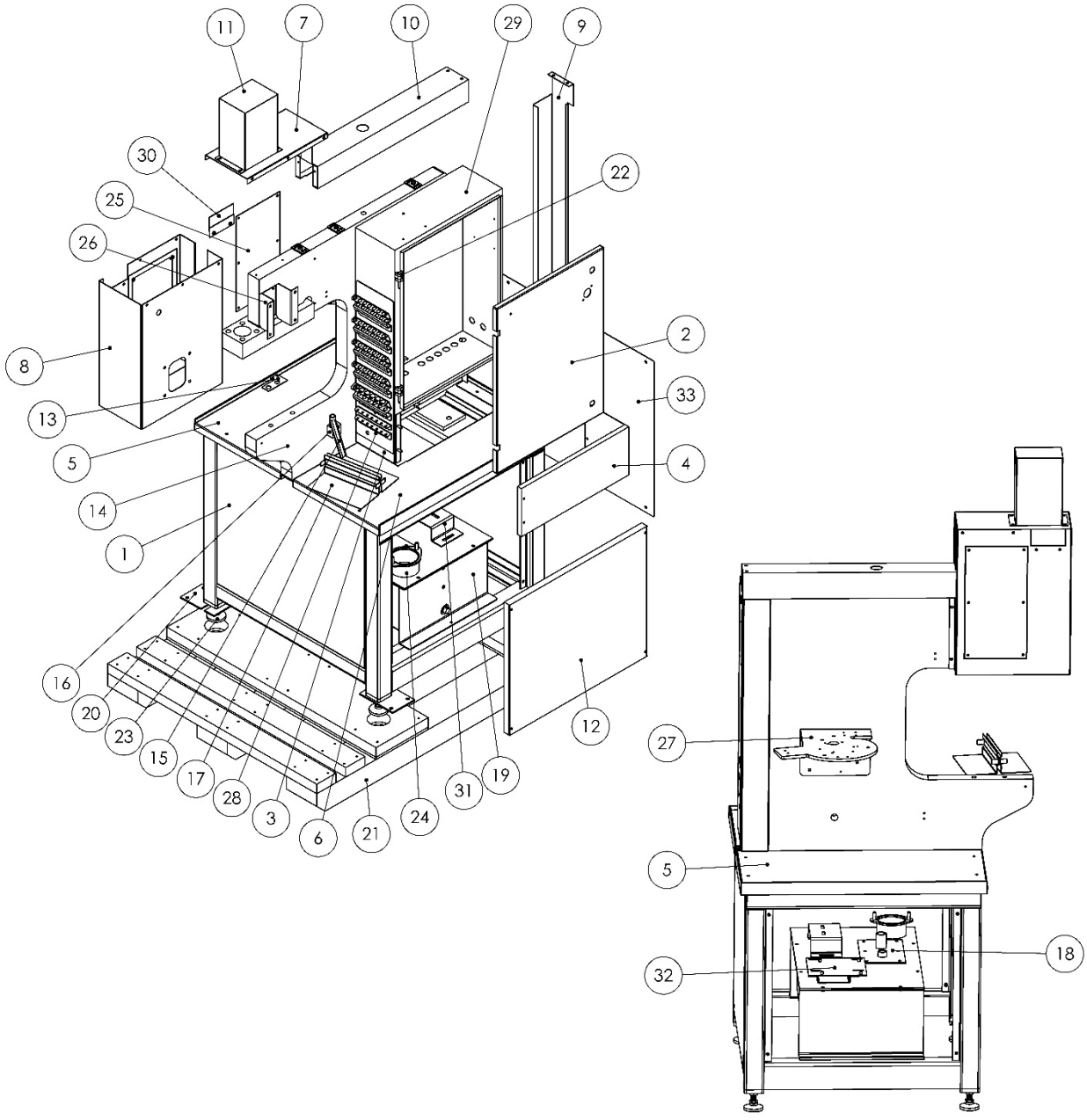
Main Assembly



Main Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-01421	TOOL RACK, 618 & 824	1
2	11-00232	DOOR LATCH	2
3	15-00220	DISCONNECT HANDLE	1
4	11-00233	LATCH KEY- 824	1
5	16-00134	LABEL, ELECTRIC SHOCK WARNING	1
6	11-00515	MACHINE LABEL, "LIFT HERE"	1
7	10-01505	ARM, TOUCH SCREEN, MSP-5	1
8	10-01107	LABEL, MACHINE LOGO, 618MSPE	1
9	11-00361-EN	LABEL, HAEGER WARNING, ENGLISH	1
10	15-03538	LABEL, E-STOP LEGEND, YELLOW BLANK	1
11	15-03067	BUTTON, E-STOP, PUSH	1
12	H-1071	ELECTRICAL, BUZZER	1
13	15-40185	ASSY, UPPER TOOL HOLDER, 618MSPe	3
14	10-01506	TOUCHSCREEN, 10”, MSP-5	1
15	H-166-8	STANDARD LOWER TOOL HOLDER	1
16	N/A	SERVICE TRAY ASSEMBLY WITH COLORED BINS	1
17	15-43006	FOOT SWITCH DUAL PEDAL	1
18	15-00369	SHCS M6 X 90MM	1
19	H-3869	ROSET KNOB, CET STOP	1
20	15-01901	AIR FITTING, ¼” STRAIGHT (FOR VACUUM)	1
21	15-01269	CONNECTOR, 2 PIN (FOR LASER LIGHT)	1
22	15-03684	AIR REGULATOR, 1/8 NPT PORT, WT, MSPe, OTL	1
23	H-2545	BULKHEAD COUPLER 1/4" F. QUICK DISCONNECT	1

Sheet Metal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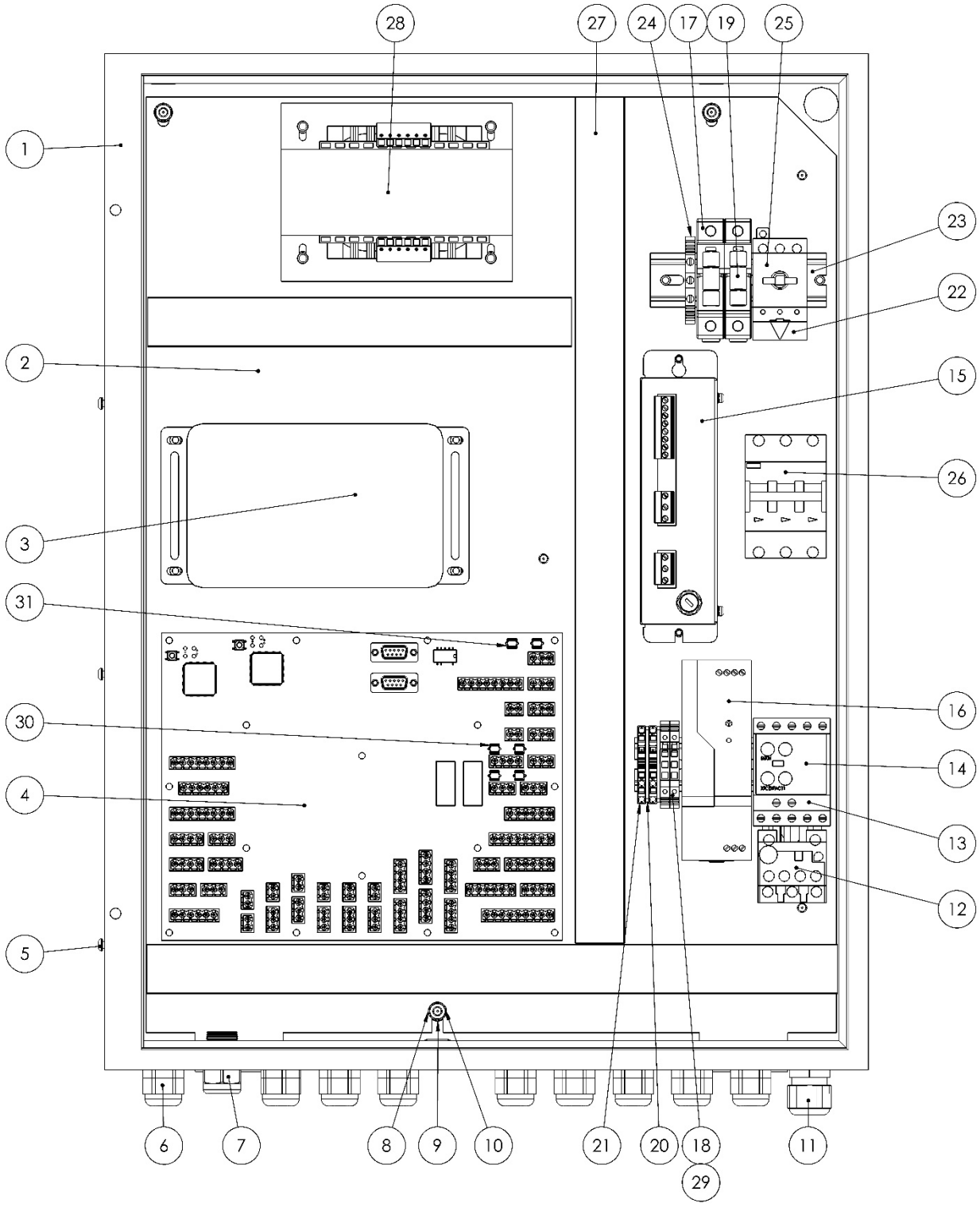
Sheet Metal

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-00113	618 BASE FRAME	1
2	10-00936	ELECTRICAL CABINET DOOR	1
3	10-00036	618 HYDRAULIC CABINET	1
4	10-00048	618 HYDRAULIC CABINET DOOR	1
5	10-00024	618 TOP LEFT BASE PANEL	1
6	10-00025	618 TOP RIGHT BASE PANEL	1
7	10-01452	TOP CYLINDER COVER, 618MSPe	1
8	10-01453	CYLINDER COVER, 618MSPe	1
9	10-00032	618 BACK COVER	1
10	10-00030	618 TOP COVER	1
11	10-01455	CET CABLE COVER, 618MSPe	1
12	10-00124	618 LEFT & RIGHT BASE PANEL	2
13	10-01042	STRAIN RELIEF ACCESS COVER, 618MSPe-5	1
14	10-00125	WELDMENT, 618 MAIN FRAME	1
15	10-00152	618 TOOL TRAY ARM	1
16	10-00153	618 TOOL TRAY BAR MTG. BRACKET	1
17	15-01299	WELDMENT, TIS BIN BRACKET	1
18	10-01243	SUCTION ACCESS PLATE	1
19	10-01260	RESERVOIR WELDMENT, 618	1
20	15-00076	MACHINE TIE DOWN PLATE	4
21	15-03284	SHIPPING PALLET	1
22	10-00059	HINGE, 180 DEGR BLACK W/ ZINC PIN	1
23	15-01160	LEVELING FOOT M16X2	4
24	10-01414	618 RESERVOIR TOP	1
25	10-01043	MAINTENANCE COVER, CYLINDER PANEL	1
26	10-01457	HMI BRACKET, FORMED, 618MSPE	1
27	10-01456	UNIVERSAL MAS BRACKET, MSPE	1
28	10-01421	TOOL RACK, 618 & 824	1
29	10-01232	CABINET, ELECTRICAL, 618	1
30	10-01454	COVER CRANK ASSEMBLY, MSPE	1
31	10-01420	MANIFOLD BRACKET, 618	1
32	10-01419	MOTOR MOUNT ADAPTER, 618	1
33	10-01473	BACK COVER, 618 BASE FRAME	1

Electrical Cabinet



Electrical Cabinet

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-01232	Cabinet, Electrical, 618	1
2	10-01507	ELECTRICAL PANEL, 618MSPe-5	1
3	15-03907-1	INDUSTRIAL COMPUTER, BOX PC	1
4	15-03887	UNIVERSAL CONTROL BOARD -5	1
5	H-3879	BHCS, M4 X 0.7 X 10MM	1
6	10-00166	½ NPT STRAIN RELIEF	9
7	15-00183	½ NPT STRAIN RELIEF FEED THROUGH	1
8	15-01393	LOCK WASHER, M6	3
9	10-00434	618 ELECTRICAL PANEL SPACER	3
10	11-00300	HEXT NUT, M6	3
11	H-1028	LIQUITITE FLEX CONNECTOR 3/8”	1
12[1]	SEE CHART BELOW	OVERLOAD RELAY	1
13[2] 14[2]	15-04006	18A 24VDC CONTACTOR	1
15	15-03974	CONTROLLER, MAS BOWL FEEDER	1
16	15-01719	POWER SUPPLY 120W 5A 24VDC	1
17	10-01145	FUSE HOLDER 600V 30A DIN MOUNT	2
18	11-00368	5 X 20MM FUSE BLOCK	2
19	15-02981	FUSE, 2.25 AMP, CLASS CC	2
20	16-00094	END PLATE, TERM BLOCK, CLAMP S	2
21	15-03092	GUARD, DISCONNECT SWITCH	1
23	11-00382	DIN RAIL, 35MM	/FT
24	11-00371	GROUND TERMINAL BLOCK	1
25	15-00219	DISCONNECT SWITCH	1
26[3]	10-01153	BREAKER, 3 POLE 8AMP, 440/480V	1
27	10-00019	PANDUIT WIRING DUCT	/FT
28	10-00891	LOW VOLTAGE TRANSFORMER	1
29	11-00376	5 X 20MM 2AMP FUSE	1
30	N/A	1A FUSE	2
31	N/A	5A FUSE	1
32*	15-03995	HDMI CABLE, 15FT	1
33*	15-02585	USB A-B CABLE, 15FT	1

[2] Items 13 & 14 are 10-00766 & 15-03064 respectively in machines w/ serial #’S below 6MSPE5100

[3] LE machine contains 1X (10-01154) BREAKER, 3POLE 16AMP, 208/240V

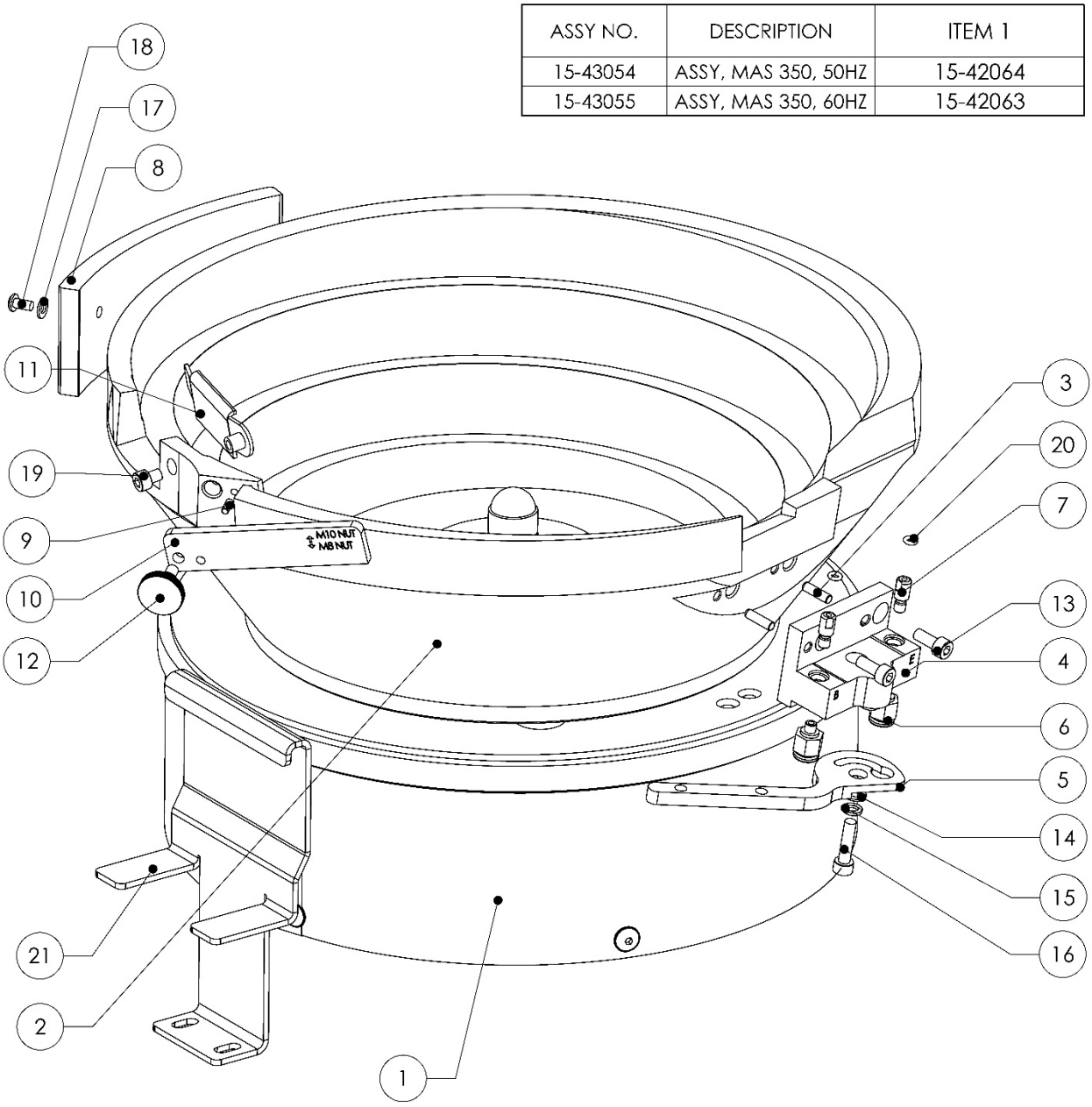
*NOT PICTURED

Electrical Cabinet (continued)

[1] MACHINES W/ SERIAL #'S 6MSPE5100 OR HIGHER	OVERLOAD	DESCRIPTION	QTY
HE	15-04007	2.5 TO 4 AMP OVERLOAD RELAY	1
LE	15-04008	7 TO 10 AMP OVERLOAD RELAY	1
[1]MACHINES W/ SERIAL #'S BELOW 6MSPE5100	OVERLOAD	DESCRIPTION	QTY
HE	10-00669	3.5-5 AMP OVERLOAD RELAY	1
LE	11-00325	7.5-11 AMP OVERLOAD RELAY	1

MAS 350 Bowl Assembly

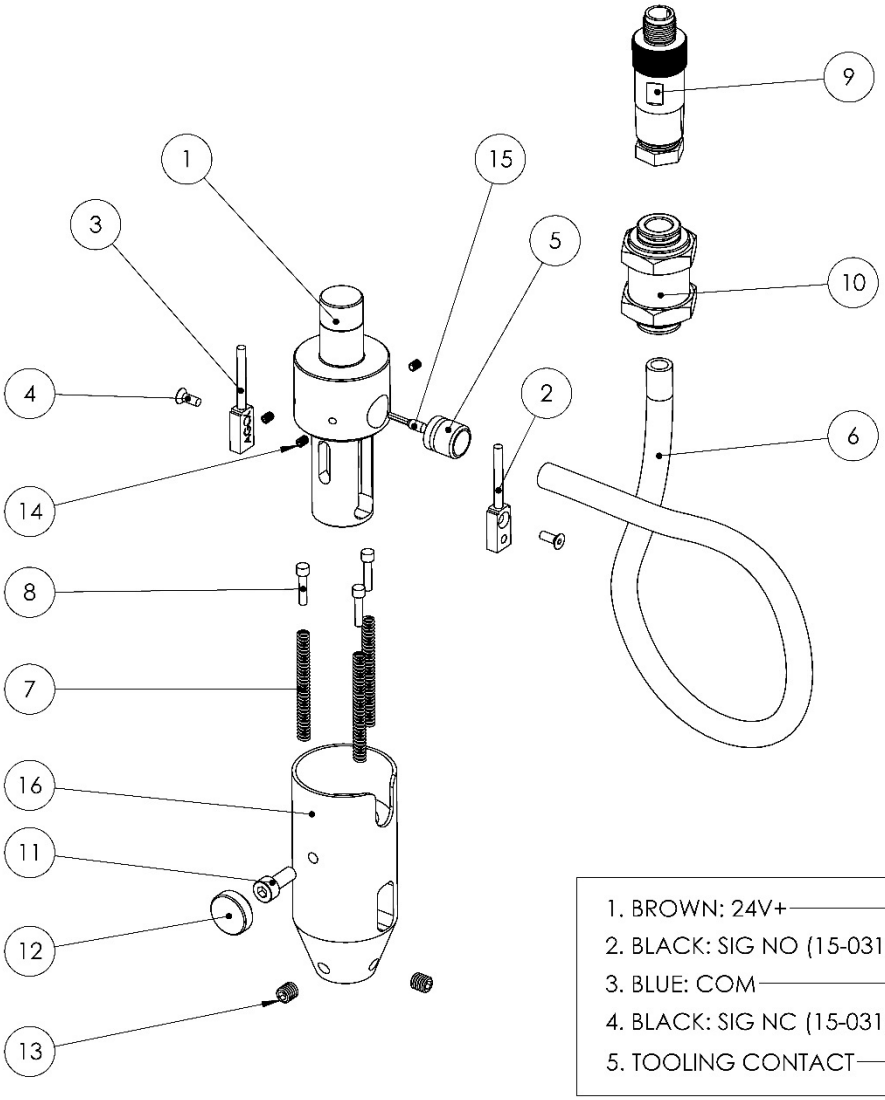
ASSY NO.	DESCRIPTION	ITEM 1
15-43054	ASSY, MAS 350, 50HZ	15-42064
15-43055	ASSY, MAS 350, 60HZ	15-42063

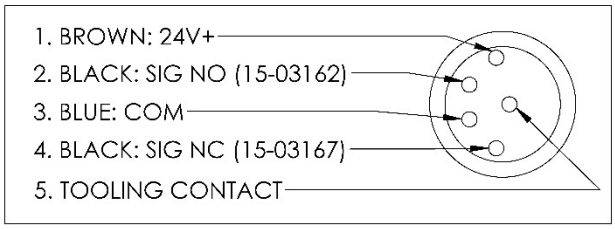


MAS 350 Bowl Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SEE LIST	DRIVE & BOWL, MAS 350	1
2	15-03685	BOWL ONLY, MAS 350	1
3	15-00858	DOWEL PIN, 4MM X 14MM, HARDENED STEEL	2
4	15-03739	BLOCK, MAS 350 MOUNTING	1
5	15-02924	LEVER, LOCKING, MAS 350	1
6	15-03957	1/4” TUBE STRAIGHT FITTING	2
7	15-03735	MAS 350 MOUNT BLOCK PIN	2
8	15-02921	WEIGHT, COUNTER, MAS 350	1
9	15-00857	DOWEL PIN, 3MM X 8MM	1
10	15-02922	WIPER, M8, M10 NUT, MAS 350	1
11	15-02914	DOOR, GATE, MAS 350	1
12	15-03039	SCREW, M5X0.8 X 10MM, THUMB W/SHOULDER, STAINLESS	1
13	H-3738	SHCS, M5 X 0.8 X 12MM, BLACK OXIDE	2
14	11-00495	FLAT WASHER, M5, STEEL	1
15	15-01392	LOCK WASHER, M5, STEEL, ZINC PLATED	1
16	15-00484	SHCS, M5 X 0.8 X 20MM, STAINLESS STEEL	2
17	H-3899	FLAT WASHER, M4, STEEL	2
18	H-3745	BHCS, M4 X 0.7 X 8MM, STAINLESS STEEL	2
19	15-02427	SHCS, M5 X 0.8 X 6MM, STEEL, BLACK	1
20	H-3711	O-RING, 5/16” X 1/16”	2
21	H-3343	EXIT TRAY BRACKET WELDMENT	1

Dual Safety Sensor (15-42360) & Upper Tool Holder (15-40185)

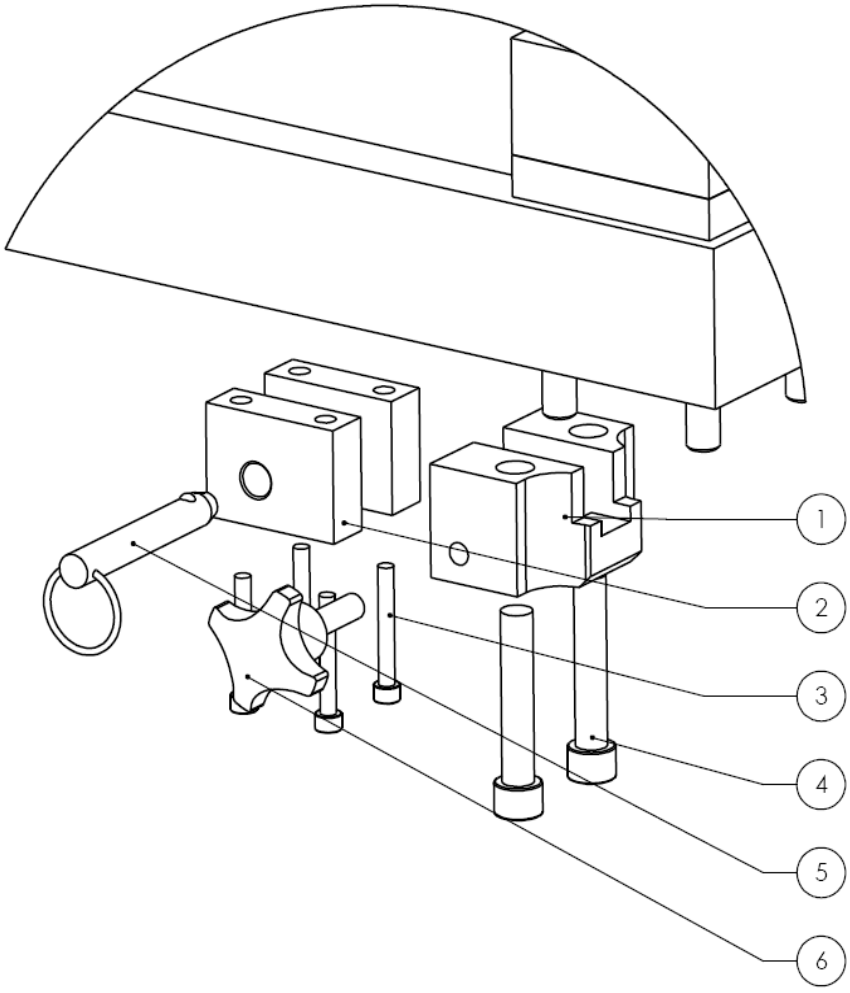




Dual Safety Sensor (15-042360) & Upper Tool Holder (15-40185)

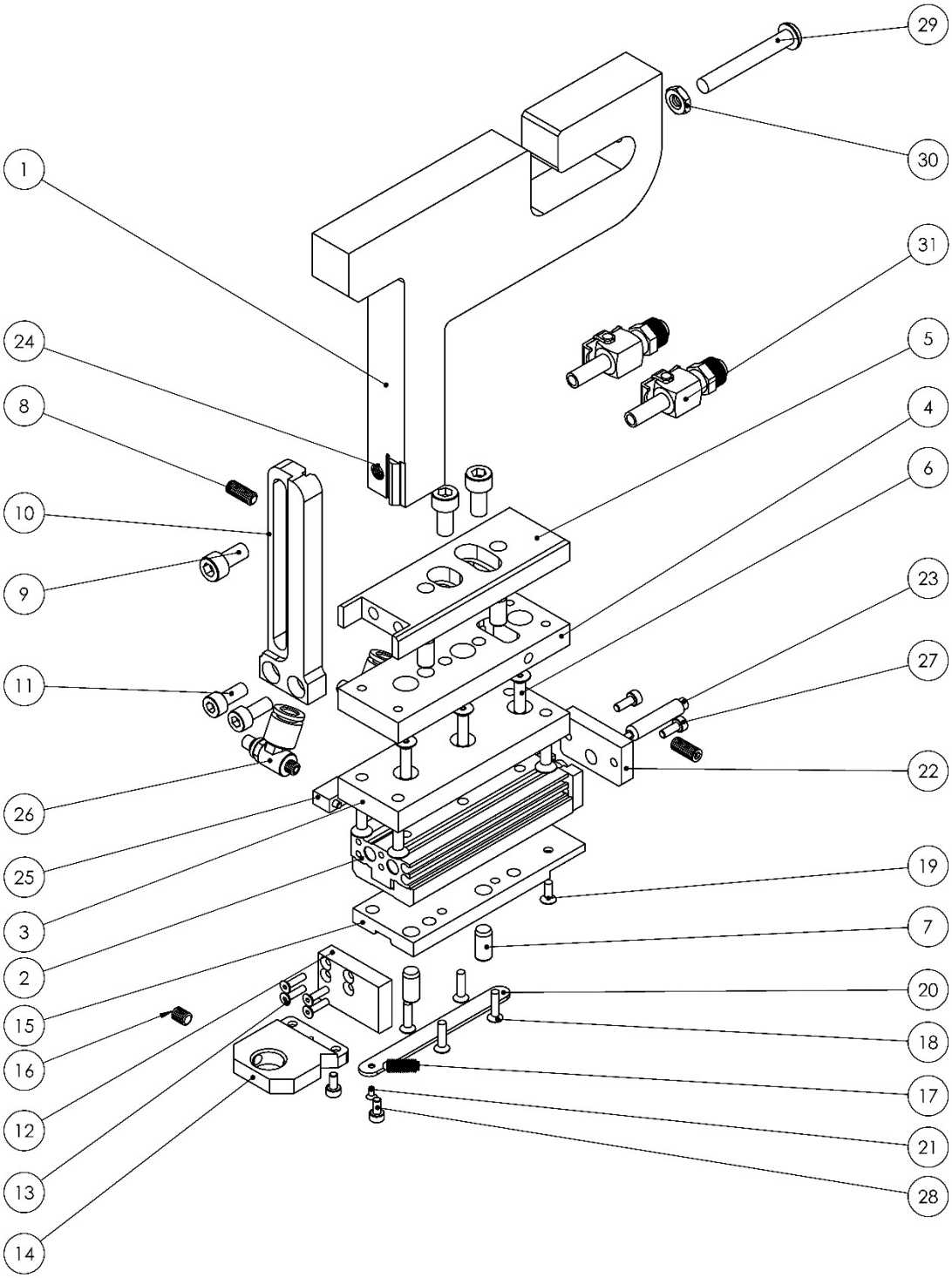
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03647	RAM ADAPTER, SAFETY SENSOR	1
2	15-03650	SAFETY SENSOR, NC	1
3	15-03649	SAFETY SENSOR, NO	1
4	15-01708	FHCS, M3 X 0.5 X 10MM	1
5	15-03207	BUSHING, 3/8 ID X ½" OD	1
6	15-03208	AIR HOSE, 3/8"	/FT
7	15-03206	CONTINUITY SPRING 1 ¾"	3
8	11-00016	CONTINUITY GUIDE PIN	3
9	15-01450	CONNECTOR, 5 PIN, MALE	1
10	15-03209	FITTING, 3/8" BULKHEAD UNION	1
11	H-3738	SHCS, M5 X 0.8 X 12MM	1
12	11-00241	THUMB SCREW CAP	1
13	11-00242	SHSS, M6 X 1.0 X 6MM	2
14	H-3892	SHSS, M3 X 0.5 X 4MM	3
15	10-00765	FERRULE, 18 GA, YELLOW	1
16	15-03664	BODY, UPPER TOOL HOLDER, 618MSPe	1

Quick Mount Assembly



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-00003	618/618xl Front J-Frame Mtg. Bracket	1
2	10-00002	618/618xl Rear J-Frame Mtg. Block	2
3	10-01180	SHCS, M6 x 1.0 x 45mm, Stainless Steel	4
4	10-01325	SHCS, M12 x 1.75 x 65mm	2
5	11-00581	Quick Release Pin 1/2 X 2 1/2"	1
6	11-00580	M10 x 35mm Star Knob	1

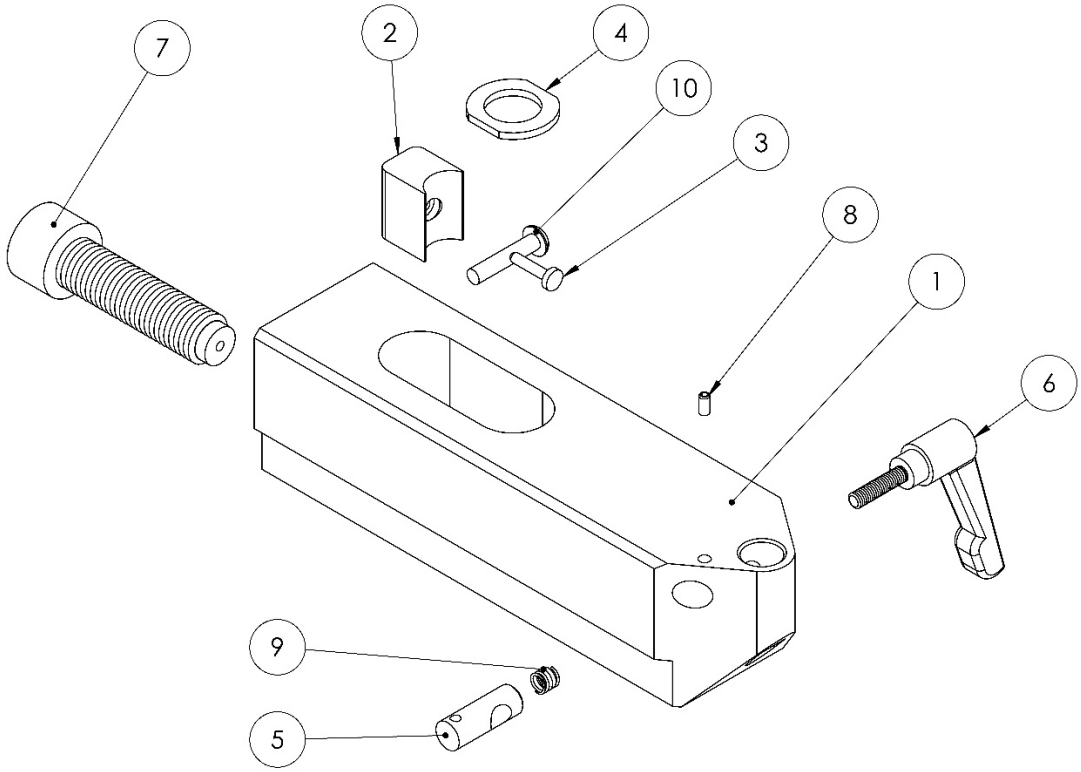
Multi-Shuttle Assembly (15-03624)



Multi-Shuttle Assembly (15-03624)

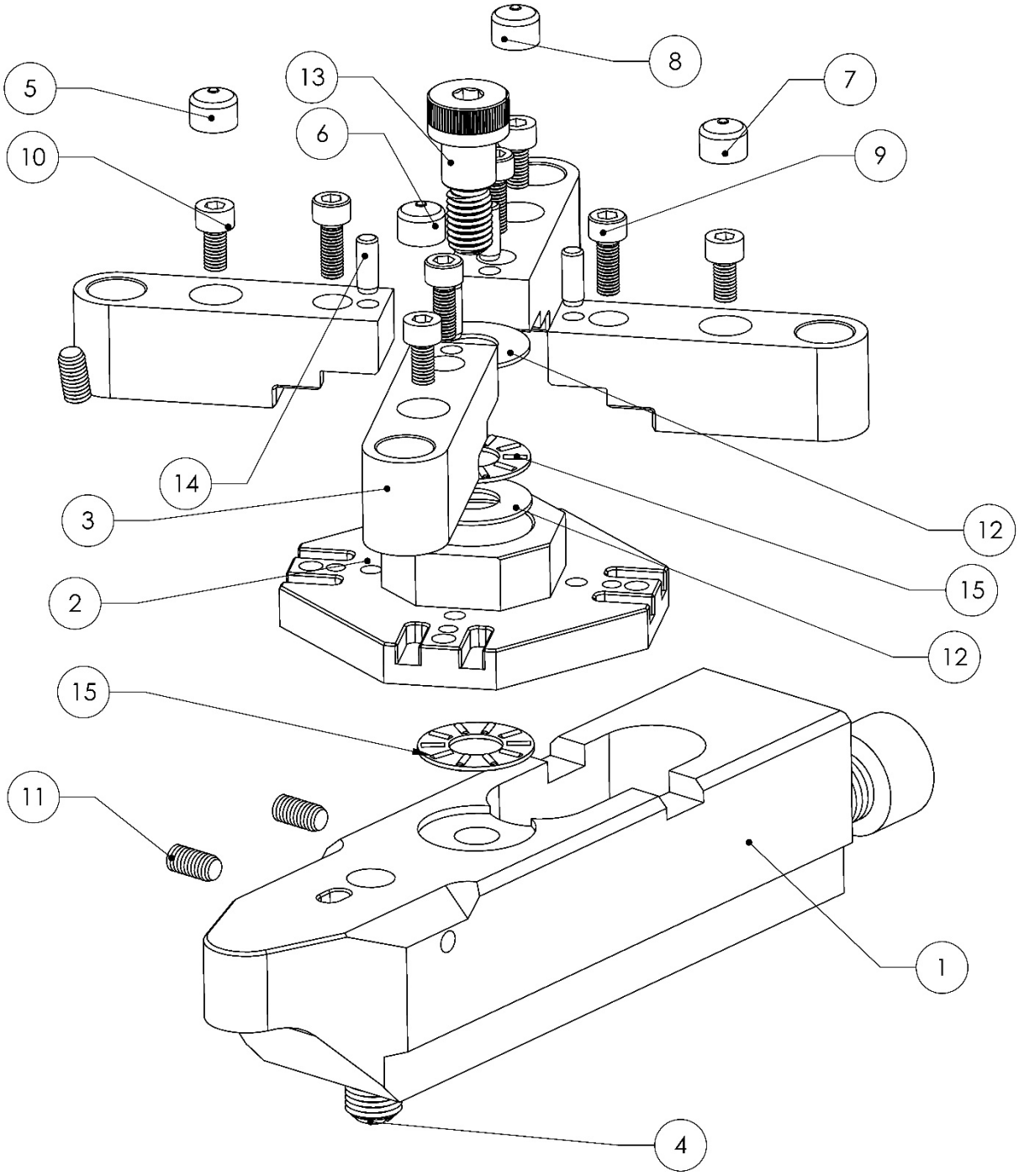
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03623	T-BRACKET, MSP, MULTISHUTTLE	1
2	15-01870	SLIDE TABEL, MXS6, MULTI-SHUTTLE	1
3	15-02883	INSULATOR PLATE, MULTI-SHUTTLE	1
4	15-02881	ALIGNMENT PLATE, MULIT-SHUTTLE	1
5	15-02882	MOUNTING PLATE, MULTI-SHUTTLE	1
6	15-00305	FHC, M4 X 0.7 X 16MM	4
7	15-01754	DOWEL PIN, ¼ " X ½ ", HARDENED STEEL	4
8	H-3871	SHSS, M5 X 0.4 X 12MM, BLACK OXIDE ALLOY STEEL	2
9	H-3815	SHCS, M6 X 1.0 X 12MM	3
10	15-02884	ALIGNMENT TRACK, MULTI-SHUTTLE	1
11	H-3738	SHCS, M5 X 0.8 X 12MM, BLACK OXIDE	2
12	15-01546	TUBE CONNECTOR MOUNT	1
13	15-01974	M2.5 X 0.45 X 10MM STEEL SHFS	4
14	15-01557	MOUNT, TUBE CONNECTOR	1
15	15-01852	MODULAR PLATE, MULTI-SHUTTLE	1
16	11-00238	SHSS, M5 X 6MM, BLACK OXIDE	1
17	H-3681	SPRING PLUNGER, M5, STEEL	1
18	15-02057	FHCS, M3 X 0.5 X 10MM	6
19	15-01708	FHCS, M3 X 0.5 X 8MM	2
20	15-01558	LID, TUBE CONNECTOR	1
21	15-01709	FHCS, M2 X 0.4 X 4, BLACK OXIDE	1
22	15-02513	SPRING BLOCK, MULTI-SHUTTLE	1
23	15-01867	SHOCK ABSORBER, MULTI-SHUTTLE	1
24	15-03552	M6 HELICOIL	1
25	15-02048	STOP FOR SLIDE TABLE	1
26	15-01172	FLOW CONTROL ELBOW, 10-32 X ¼, METER OUT	2
27	H-3872	SHCS, M3 X 0.5 X 8MM, BLACK OXIDE	2
28	H-3873	SCHS, M3 X 0.5 X 6MM, BLACK OXIDE	8
29	15-00898	BHSCS, M6 X 1.0 X 45MM	1
30	11-00300	HEX NUT, M6	1
31	H-2535	QUICK DISCONNECT, ¼"	2

Standard Lower Tool Holder (H-166-8)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	H-166-9	BODY, COMMON LOWER TOOL HOLDER	1
2	H-169-4	Shoe For Lower Tool Holder	1
3	H-169-5	Pin For Lower Tool Holder	1
4	H-169-6	Lower Tool Washer	1
5	11-00041	Lock Cylinder	1
6	11-00042	Black Locking Lever SERVICE ONLY	1
7	11-00191	SHCS, M16 Modified	1
8	11-00199	Pin, Spring, Slotted, 1/8" x 1/4", Steel, Zinc Plated	1
9	11-00212	Lock Cylinder Spring Music Wire	1
10	H-3731	BHSCS, M5 x 0.8 x 25mm, Steel, Black Oxide	1
11	15-01754	Pin, Dowel, 1/4" x 1/2", Steel, Hardened	2

TIS-1 Assembly (15-01300)

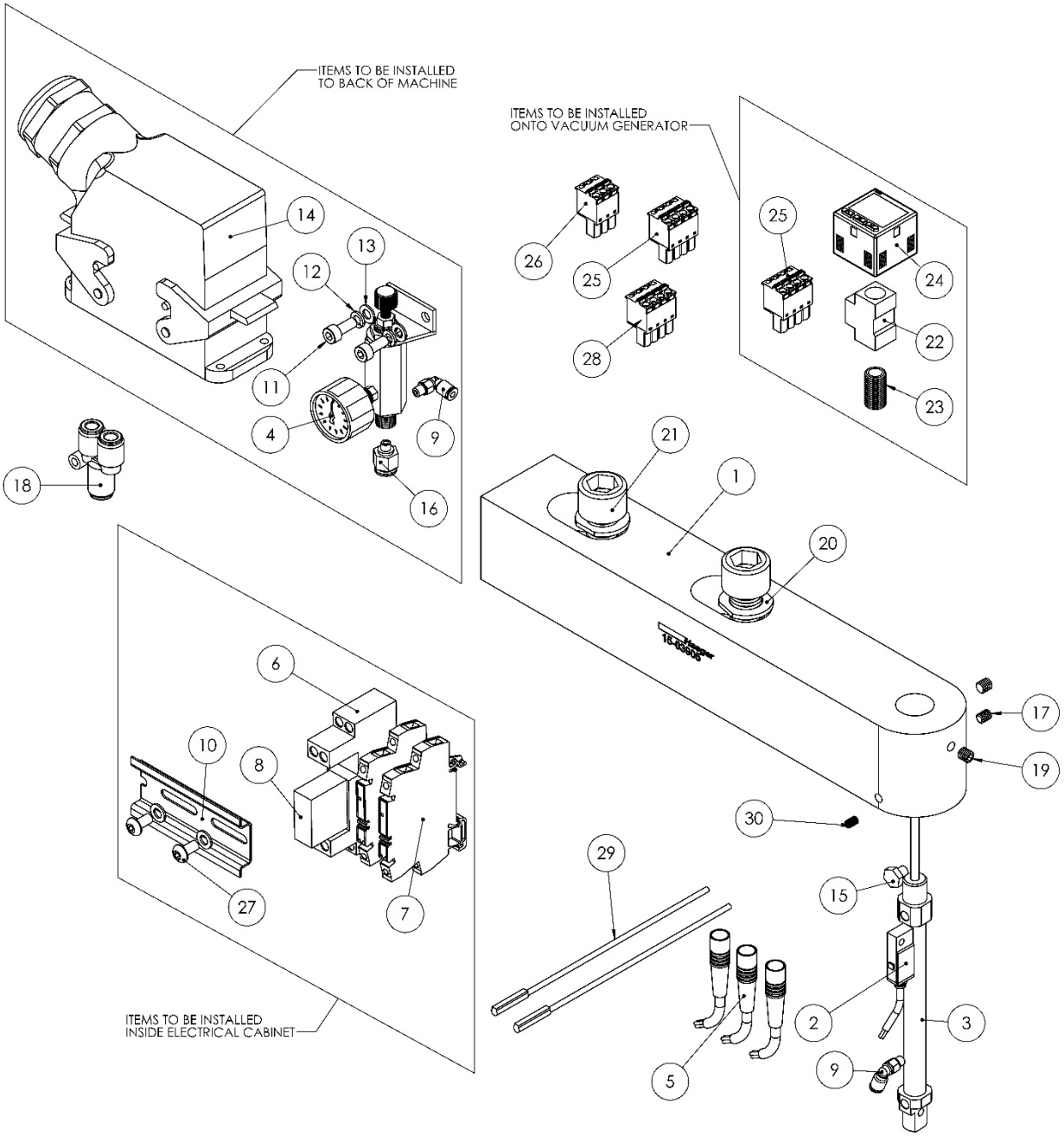


TIS-1 Assembly (15-01300)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-01307	TIS Lower Tool Holder Assembly	1
2	15-01287	TIS-1, Center Hub	1
3	15-01288	TIS -1, Lower Tool Arm	4
4	15-01306	SPRING PLUNGER 1/2-20	1
5	15-01296	ROUND VINYL CAP GREEN	1
6	15-01297	ROUND VINYL CAP RED	1
7	15-01298	ROUND VINYL CAP YELLOW	1
8	15-01295	ROUND VINYL CAP BLUE	1
9	15-00450	SHCS, M5 X 0.8 X 14MM	4
10	15-00482	SHCS, M5 X 0.8 X 10MM	4
11	H-3717	SHSS, M6 X 1.0 X 10MM	3
12	15-03700	THRUST WASHER, 12MM	2
13	15-01304	SHOULDER SCREW, M10, 16MM	2
14	15-01310	DOWEL PIN, 3/16” X 1/2”	4
15	15-03699	NEEDLE THRUST ROLLER BEARING, 12MM	2

Robot Ready Kit (10-40034)

(For Use in Robot Equipped Machines Only)

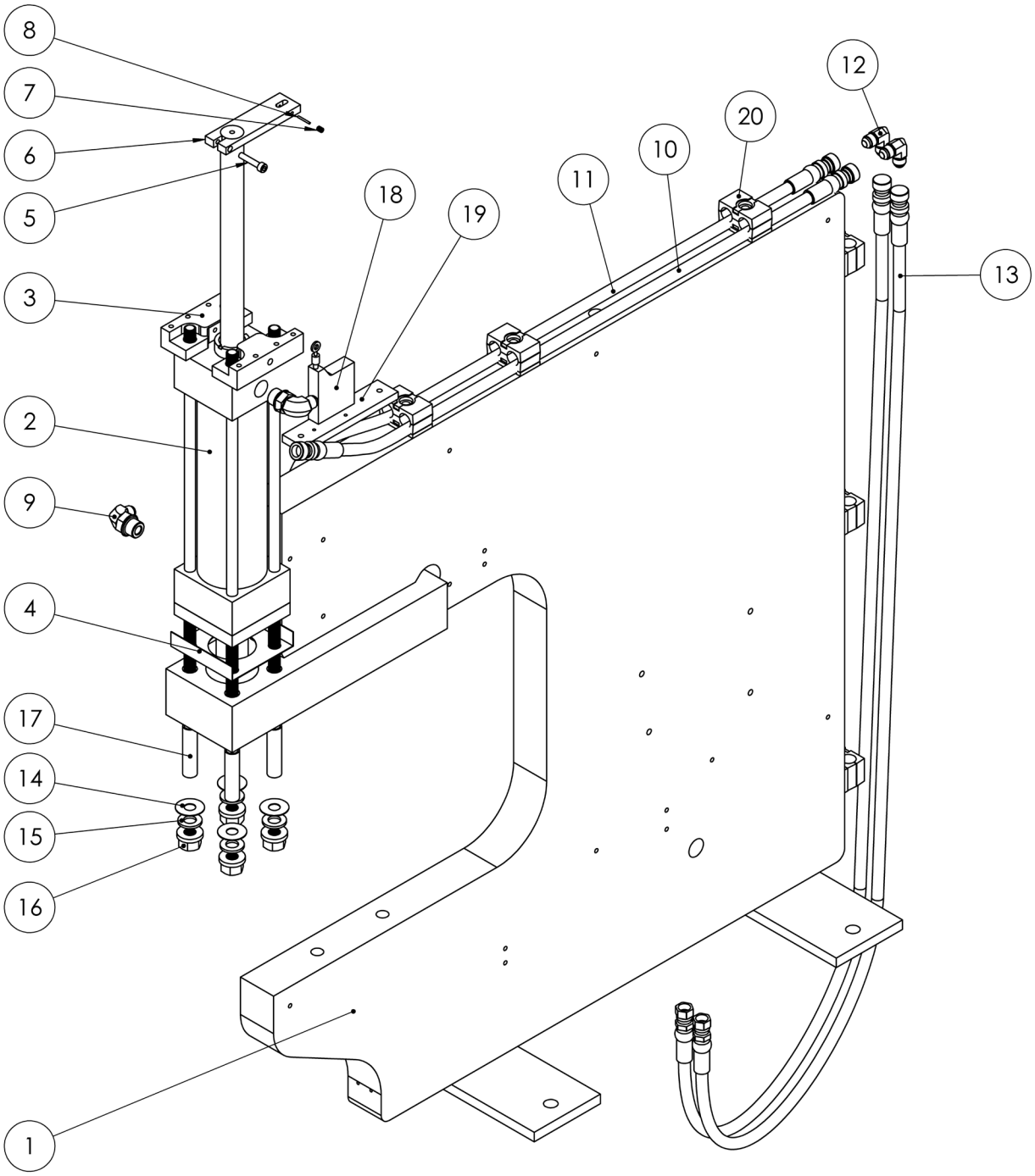


Robot Ready Kit (10-40034)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-01892	BODY, LOWER TOOL HOLDER, ROBOT	1
2	15-00270	AUTO SWITCH	2
3	15-01890	AIR CYLINDER FOR LOWR TOOL MIC	1
4	15-02414	AIR REG, LOW PRESSURE 0.2 MPA	1
5	15-00536	PICO CONNECTOR, 3 PIN FEMALE W/ 4 METER CABLE	3
6	10-00215[1]	RELAY SOCKET	1
7	15-01389	RELAY, SOLID STATE, ROBOT OPTOCOUPLER	2
8	10-00217[2]	24V RELAY FOR VACUUM GENERATOR	1
9	H-3866	ELBOW, #10 X 5/32, PLASTIC	2
10	11-00382	35MM DIN RAIL	/IN
11	H-3738	SHCS M5-0.8 X 12 LG	2
12	H-3545	WASHER, LOCK, #10, STEEL, ZINC	2
13	11-00495	WASHER, FLAT, M5, STEEL, ZINC	2
14	15-01080	16 PIN HARTING PLUG SET	1
15	15-03438	BREATHER VENT, 10-32, UNF MALE, 3/8 HEIGHT	1
16	15-03957	AIR FITTING 1/4” STRAIGHT	1
17	11-00238	SSS M5-0.8 X 6 LG	1
18	15-00275	FITTING, "Y", 1/4"	1
19	11-00242	SSS M6-1.0 X 6 LG	2
20	H-169-6	WASHER, LOWER TOOL HOLDER	2
21	H-3740-2	SHCS M16-2.0 X 50 LG, MODIFIED	2
22	10-00211	1/8" BRASS TEE	1
23	10-00209	1/8" BRASS CL. NIPPLE 112A-2	1
24	15-03912	VACUUM TRANSDUCER, 4-20M A	1
25	15-03295	CONNECTOR, 4 PIN, PCB	2
26	15-03294	CONNECTOR, 3 PIN, PCB	1
27	15-00483	BHCS, M5 X 0.8 X 10MM	2
28	15-03296	CONNECTOR, 6 PIN, PCB	1
29	15-00269	SWITCH, AIR CYLINDER AUTO, SMC	2
30	15-02277	SHSS, M4 X 6MM	1
31	15-00286*	AIR TUBE, BLACK 425B, 5/32"	/FT
32	15-01480*	FERRULE, 22AWG TURQUOISE	4
33	15-00285*	AIR TUBE, BLACK 95A, 1/4" X .1	/FT
34	15-01877*	PATCH CORD ETHERNET 3’	2

*NOT PICTURED
European regions: [1] use 15-01058, [2] use 15-01060

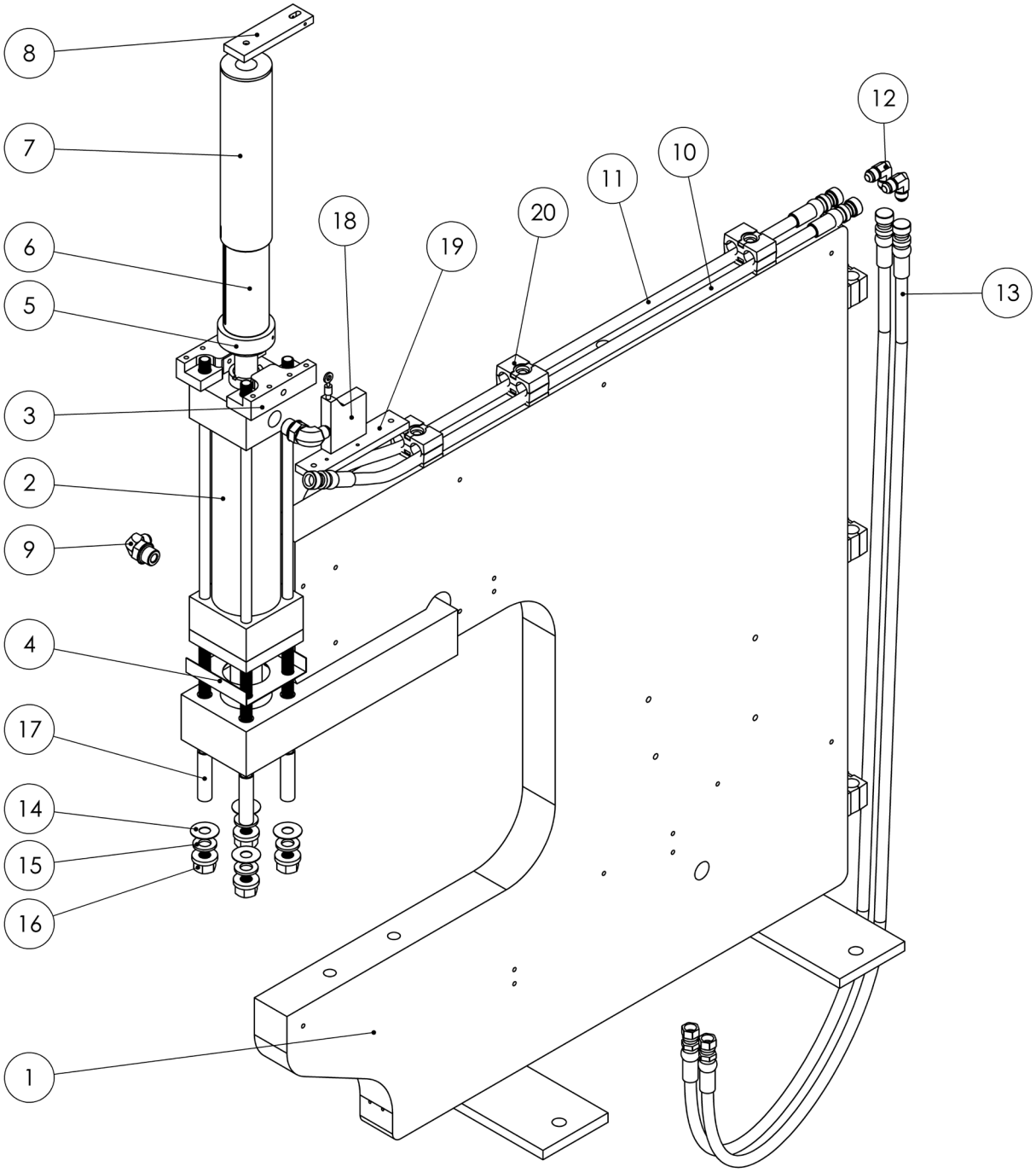
Hydraulic Cylinder Assembly



Hydraulic Cylinder Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-00125	618 MAIN FRAME	1
2	10-00119	HYDRAULIC CYLINDER, 619MSPe	1
3	10-01458	POSITIVE STOP HOLD DOWN, 618MSPe	1
4	10-00021	618 CYLINDER INSULATION SHOE	1
5	15-01697	SHCS, M6 X 30MM	1
6	10-01427	CET CONNECTING BAR, 618	1
7	11-00238	SHSS, M5 X 6MM	1
8	15-00391	DOWEL PIN, 2MM X 18MM	1
9	10-00138	FITTING, ½ ORING X 3/8, 90 DEG. ELBOW	1
10	10-00149	HOSE, 3/8” X 37” 100R8	1
11	10-00150	HOSE, 3/8” 39.25” 100R8	1
12	10-00137	FITTING, 90 DEG. UNION ELBOW 3/8”	2
13	10-00146	HOSE, RETURN 3/8” X 60” 100R8	2
14	H-3506	CYLINDER MOUNT INSULATION WASHER	4
15	H-3505	½” HARDENED FLAT WASHER	4
16	H-3602	½-20 FLANGE LOCK NUT, OVAL LOCK	4
17	H-3509	½” CYLINDER BOLT INSULATOR	/IN
18	15-03904	CET, UNIVERSAL, BCG WIRE DRAW, 20mA	1
19	15-03861	UNIVERSAL CET BRACKET	1
20	10-00519	HOSE CLAMPS	6

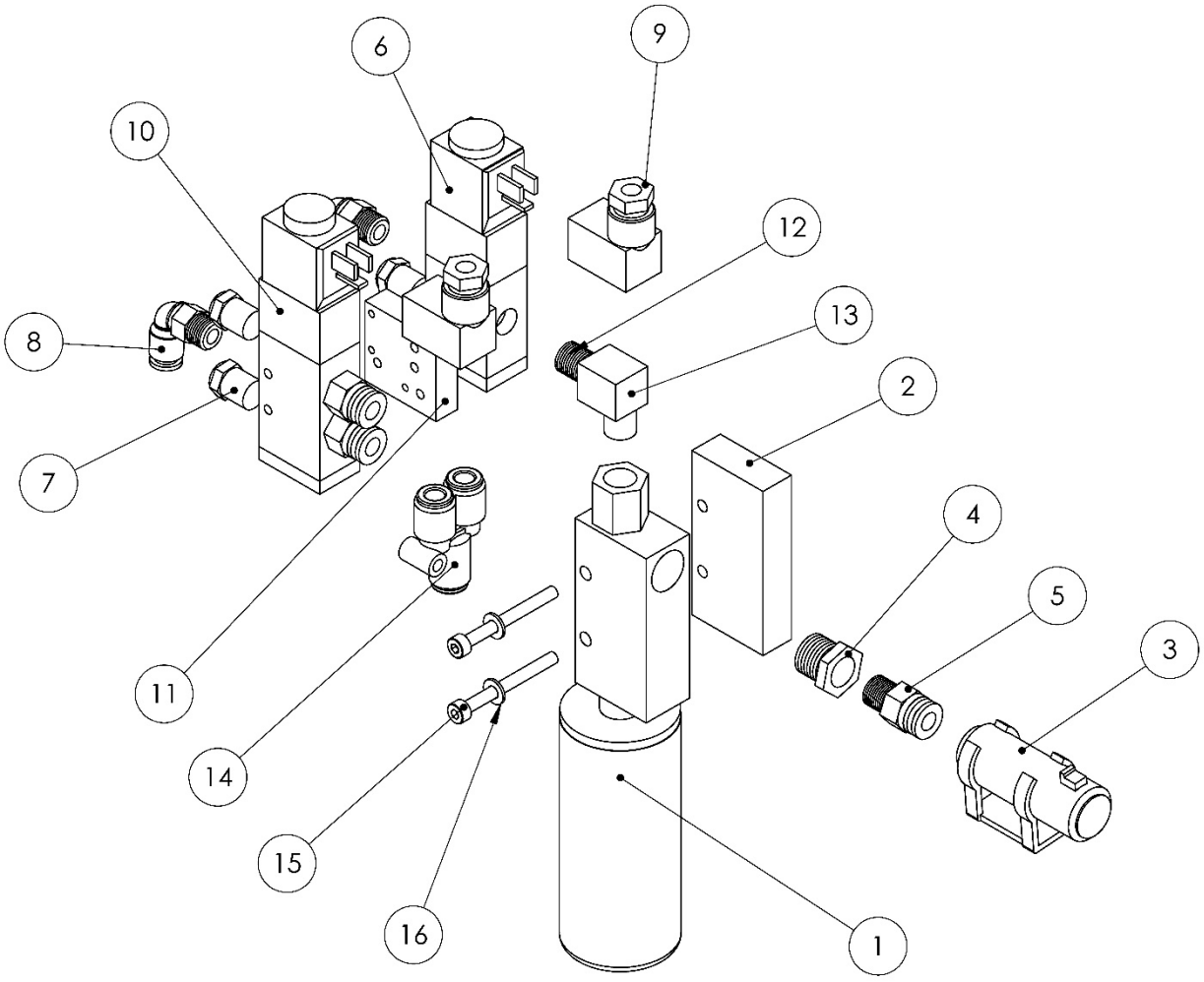
Hydraulic Cylinder with Positive Stop Assembly



Hydraulic Cylinder with Positive Stop Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-00125	618 MAIN FRAME	1
2	10-01070	HYDRAULIC CYLINDER, POSITIVE STOP, 618MSPe	1
3	10-01458	POSITIVE STOP HOLD DOWN, 618MSPe	1
4	10-00021	618 CYLINDER INSULATION SHOE	1
5	10-01459	CRANK ASSEMBLY ADAPTER, 618MSPe	1
6	10-00750	ROTATING LOWER STOP TUBE	1
7	10-00749	KEYED NUT TUBE WELDMENT	1
8	10-01429	CET CONNECTING BAR, 618	1
9	10-00138	FITTING, ½ ORING X 3/8, 90 DEG. ELBOW	1
10	10-00149	HOSE, 3/8” X 37” 100R8	1
11	10-00150	HOSE, 3/8” 39.25” 100R8	1
12	10-00137	FITTING, 90 DEG. UNION ELBOW 3/8”	2
13	10-00146	HOSE, RETURN 3/8” X 60” 100R8	2
14	H-3506	CYLINDER MOUNT INSULATION WASHER	4
15	H-3505	½” HARDENED FLAT WASHER	4
16	H-3602	½-20 FLANGE LOCK NUT, OVAL LOCK	4
17	H-3509	½” CYLINDER BOLT INSULATOR	/IN
18	15-03904	CET, UNIVERSAL, BCG WIRE DRAW, 0 TO 10V	1
19	15-03861	UNIVERSAL CET BRACKET	1
20	10-00519	HOSE CLAMPS	6

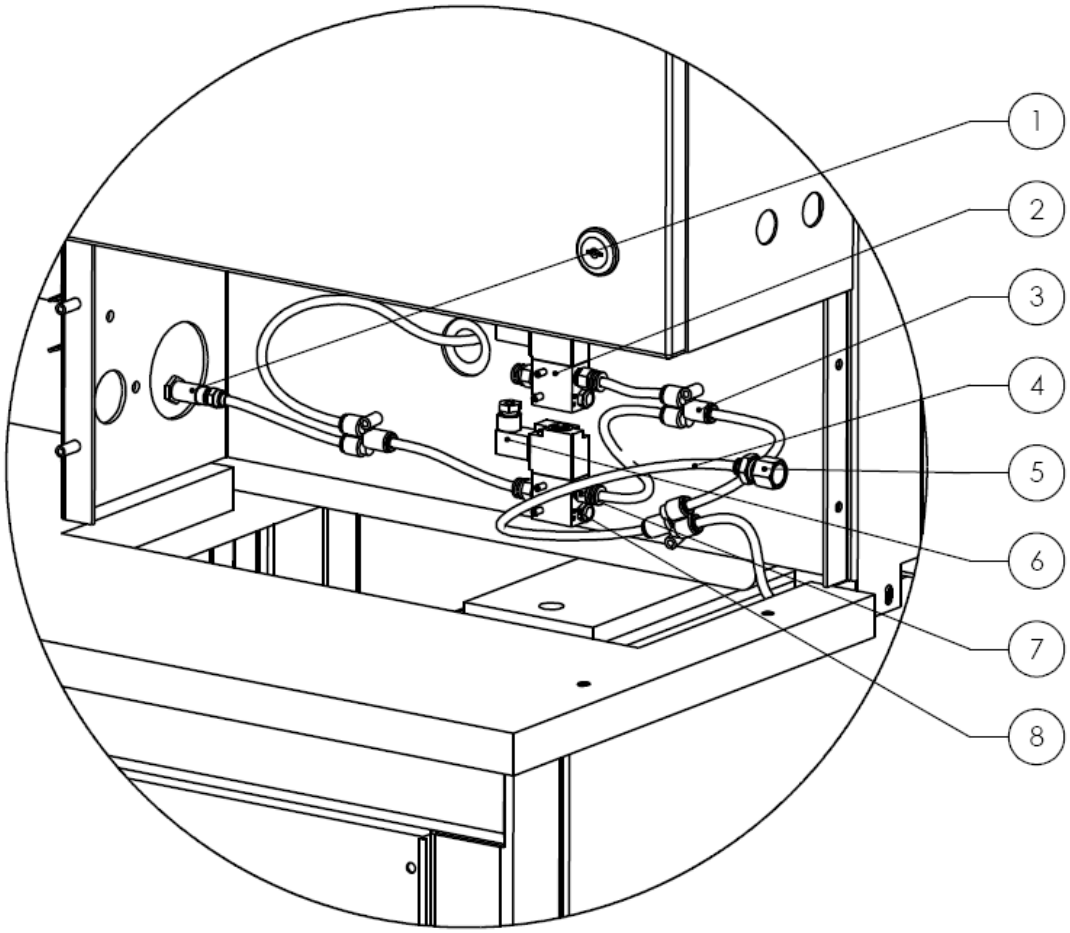
Vacuum Generator Assembly (15-43056)



Vacuum Generator Assembly (15-43056)

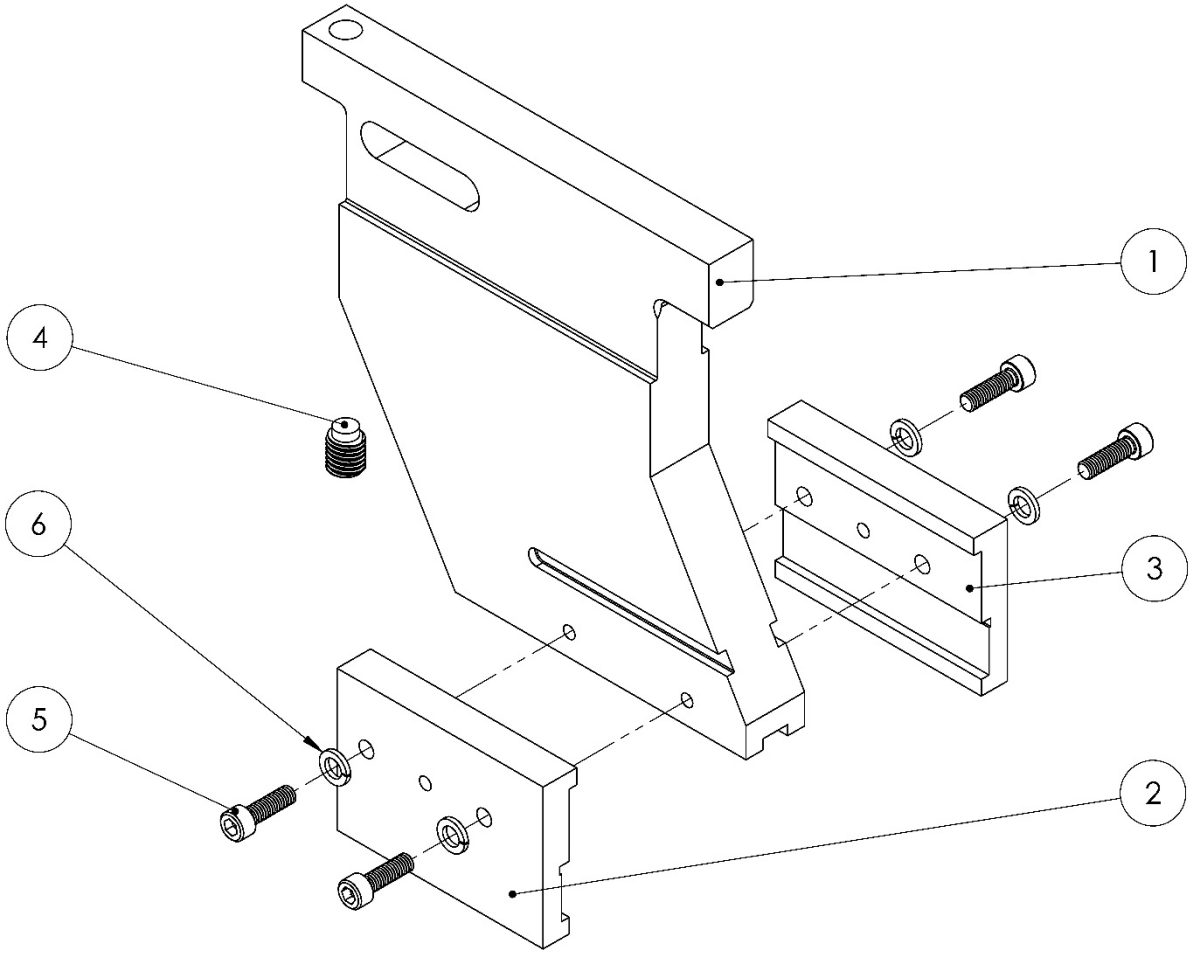
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	11-00589	VACUUM GENERATOR	1
2	15-03611	ADAPTER, VACUUM GENERATOR, MSPe	1
3	15-03703	AIR FILTER, VACUUM GENERATOR, WT/OT-4E & MSPE	1
4	15-01325	FITTING: BUSHING BRASS 1/4 MALE NPT X 18 FEMALE NPT	1
5	14-00638	AIR FITTINGS	3
6	11-00587	24V SOLENOID VALVE	1
7	10-00210	BRASS BREATHER, 1/8"	3
8	H-5020	SWIVEL ELBOW, 90 DEG, 1/8 NPT X 1/4 TUBE	2
9	11-00590	SOLENOID CONNECTOR	2
10	15-03612	4 WAY VALVE, 24V, PNEUMATIC	1
11	15-03606	ADAPTER, 3-WAY TO 4 WAY VALVE, VAC. GEN.	1
12	10-00209	1/8" BRAS CL. NIPPLE	1
13	H-5021	STREET ELBOW, 1/8” NPT FEMALE TO 1/8 NPT FEMALE	1
14	15-00275	FITTING ¼” Y, AIR	1
15	15-03661	SHCS, M4 X 0.7 X 40MM	2
16	H-3899	FLAT WASHER, M4, STEEL	2

Air Supply



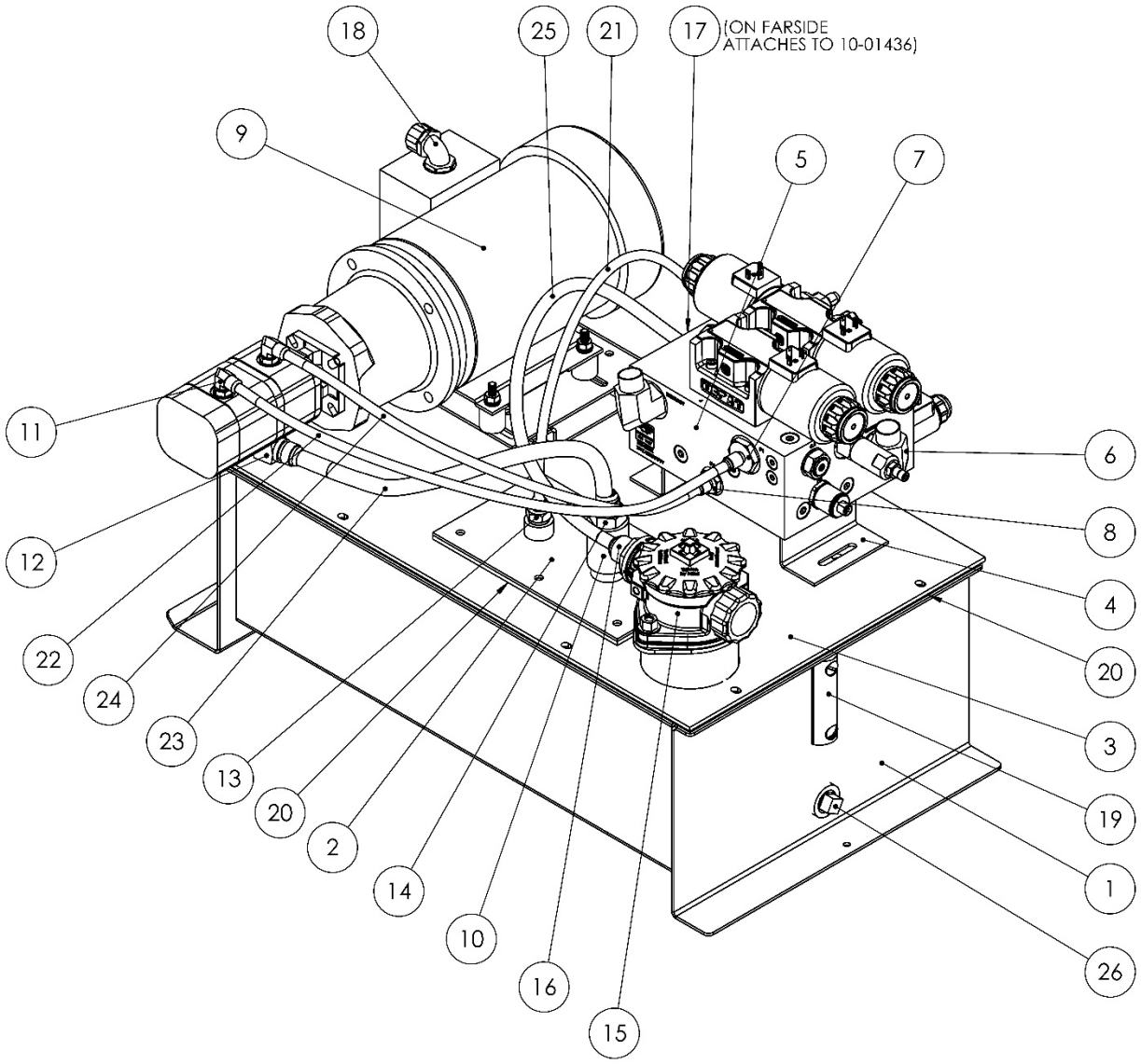
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	H-2545	BULKHEAD, FEMALE QUICK DISCONNECT, 1/4"	1
2	11-00587	24V SOLENOID VALVE	2
3	15-00275	FITTING, 1/4" Y, AIR	3
4	15-00285	AIR TUBE, 1/4" DIA	/FT
5	15-01893	FITTING, BULKHEAD 1/4 TUBE X 1/4 NPT	1
6	11-00590	SOLENOID CONNECTOR	2
7	14-00638	AIR FITTINGS	4
8	10-00210	BRASS BREATHER, 1/8"	2

J-Frame, ABFT Assembly Option (15-41870)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	H-172-2	J-FRAME BODY, BOTTOM FEED TOOL	1
2	H-172-3	CLAMP PLATE, LEFT HAND	1
3	H-172-4	CLAMP PLATE, RIGHT HAND	1
5	11-00319	SHCS, M6 X 1.0 X 20MM, STAINLESS	4
6	15-01393	LOCK WASHER, M6, DIN 127, ZINC	4

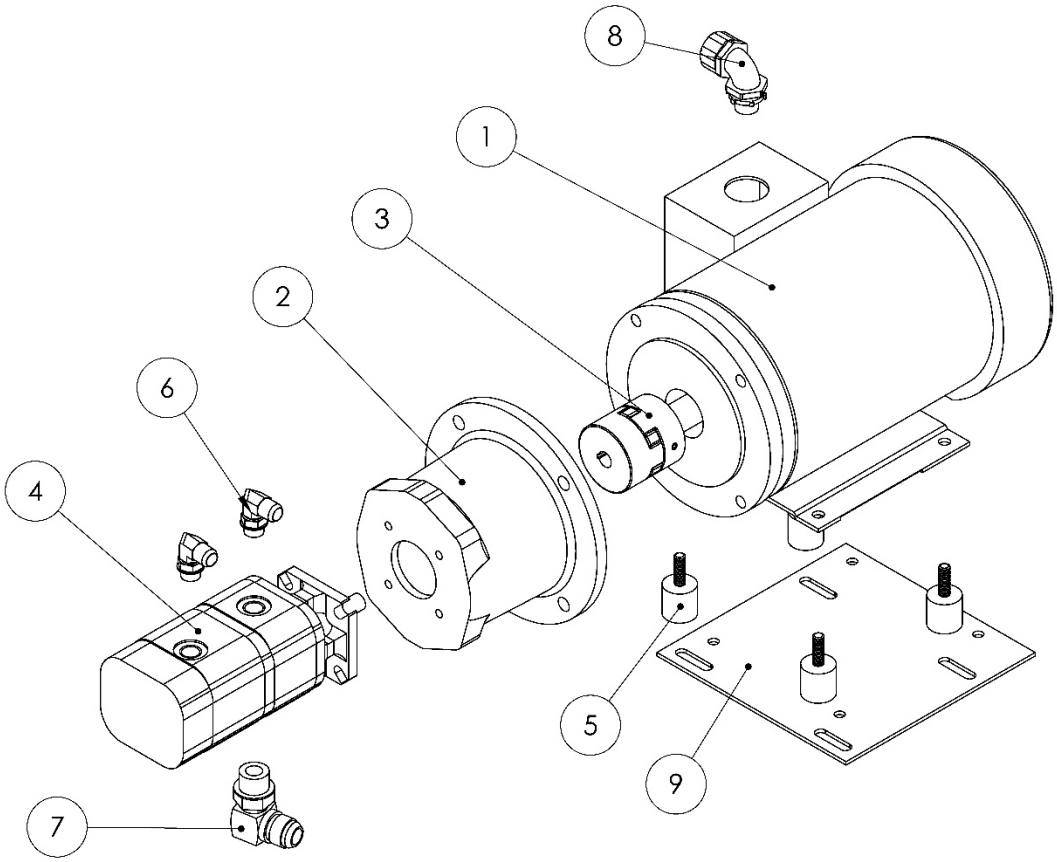
Hydraulic Reservoir Assembly



Hydraulic Reservoir Assembly

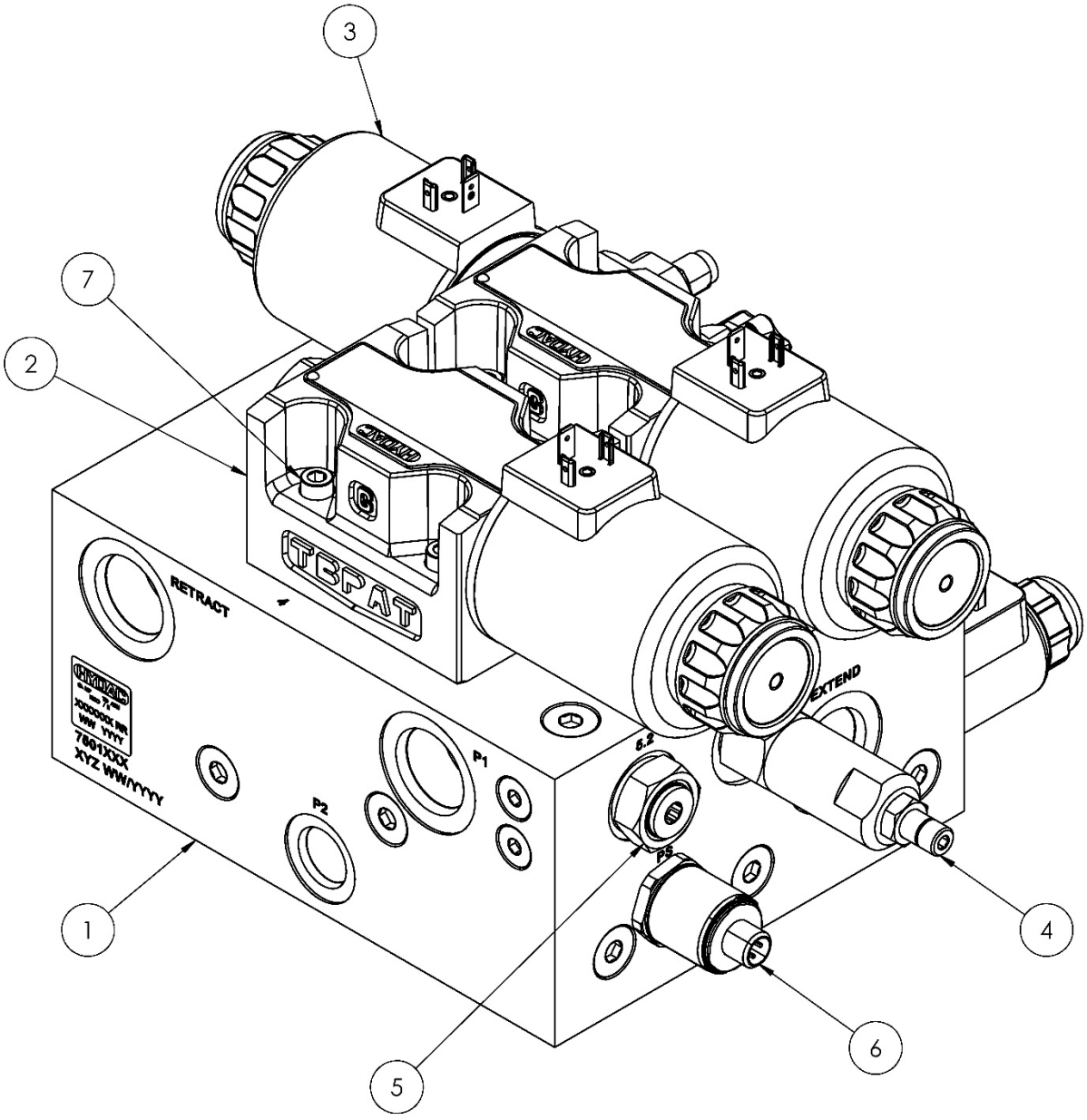
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-01260	RESEVOIR WELDMENT 618MSPe	1
2	N/A	SUCTION ACCESS ASSEMBLY	1
3	10-01414	RESEVOIR TOP 618MSPe	1
4	10-01420	MANIFOLD BRACKET	1
5	15-03913	HYDRAULIC MANIFOLD ASSEMBLY	1
6	10-01424	FITTING, MB-MJ90-12-6	2
7	10-01422	FITTING, MB-MJ-12-6	1
8	16-00071	FITTING, MB-MJ-8-6	2
9	N/A	MOTOR PUMP ASSEMBLY	1
10	10-01245	FITTING 1” PIPE COUPLING	1
11	15-00058	STRAIGHT FITTING, O-RING, MB-M	2
12	15-00062	ELBOW FITTING, O-RING, 5/8	1
13	10-01257	FITTING, MP-MJ-8-6	1
14	10-01426	FITTING, MJ-MP-10-16	1
15	15-00758	RETURN FILTER ASSEMBLY	1
16	15-02144	FITTING, MB-MJ-16-10	1
17	10-01425	FITTING, MB-MJ-12-8	1
18	H-1029	3/8" LT 1/2" PIPE EL	1
19	15-00226	LEVEL GAUGE	1
20	10-00087	RUBBER SEAL, 3/16 X 1	-
21	10-01432	HOSE, RETURN 3/8” X 18.5” 6FJ-6FJ90	1
22	10-01433	HOSE, PRESSURE 3/8” X 24” 6FJ-6FJ90	1
23	10-01435	HOSE, SUCTION 5/8” X 16.5” 10FJ-10FJ90	1
24	10-01434	HOSE, PRESSURE 3/8” X 19.5” 6FJ-6FJ90	1
25	10-01436	HOSE, RETURN ½” X 22.5” 8FJ90-10FJ	1
26	N/A	.75 PIPE PLUG, SQUARE HEAD	1

Motor Pump Assembly

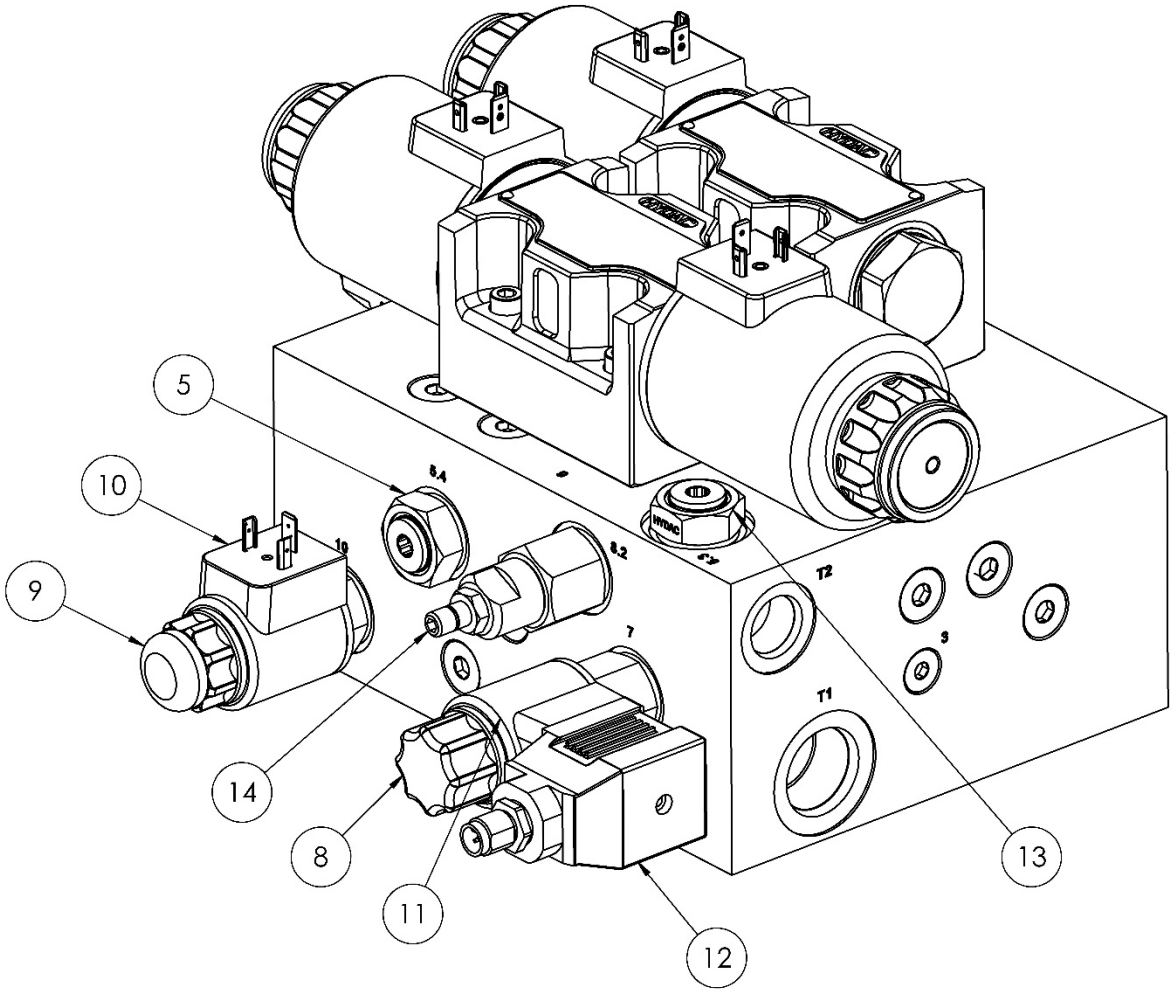


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-01445	MOTOR, 2HP	1
2	10-00022	MOTOR PUMP ADAPTER	1
3	10-00023	SPIDER COUPLING	1
4	10-01229	PUMP, HYDRAULIC 618	1
5	15-00079	MOTOR STOCK MOUNTS M8 X 1	4
6	15-00058	FITTING, MB-MJ90 6-6	2
7	15-00062	FITTING, 5/8XJICX5/8 O-RING 90	1
8	H-1029	3/8” TO ½” PIPE ELBOW	1
9	10-01419	MOTOR MOUNT ADAPTER, 618	1

Hydraulic Manifold Assembly (15-03913)



Hydraulic Manifold Assembly (15-03913)

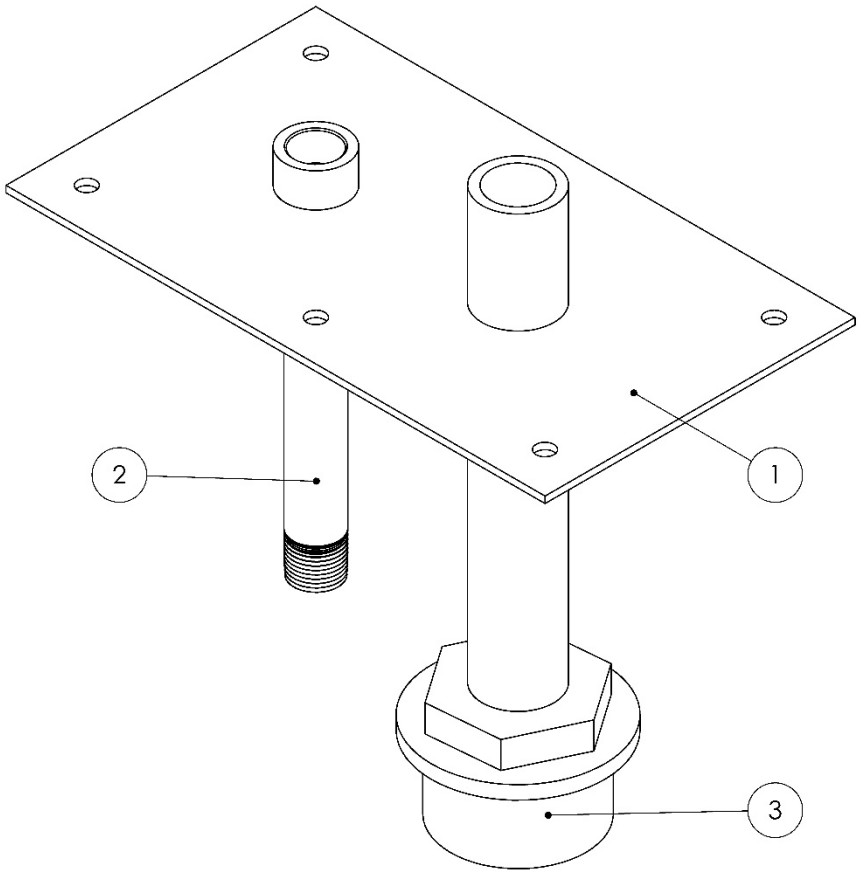


Hydraulic Manifold Assembly (15-03913)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	N/A	MANIFOLD BLOCK	1
2	15-04003	VALVE, 4/2, 4WE, 10 GA 4-WAY 2 POSITION	1
3	15-04004	VALVE, 4/3, 4WE 10 L 4-WAY 3 POSITION	1
4	15-01398	COUNTER BALACE VALVE	1
5	15-03778	CHECK VALVE, 5PSI, FC10-2	2
6	15-04002	PRESSURE TRANSDUCER, 0-5000PSI, 4-20MA	1
7	15-01197	SHCS, M6 X 40MM, STEEL, BLACK OXIDE	4
8	15-03782	PROPORTIONAL RELIEF VALVE, 0-3300 PSI, FC10-2	1
9	15-03787	BYPASS VALVE, DIRECTIONAL POPPET, N/O 2-WAY, FC10-	1
10	15-03781	COIL, BYPASS, DIRECTIONAL POPPET	1
11	15-03788	COIL, PROPORTIONAL RELIEF VALVE	1
12	15-03914	PLUG AMPLIFIER, PROP RELIEF VALVE, 4-20mA	1
13	15-03779	CHECK VALVE, 30PSI, FC10-2	1
14	15-03783	PRESSURE RELIEF VALVE, 0-3300 PSI, FC10-2	1
15*	15-00882	O-RING, 12.42X1.78, 4-WAY VALVE	10

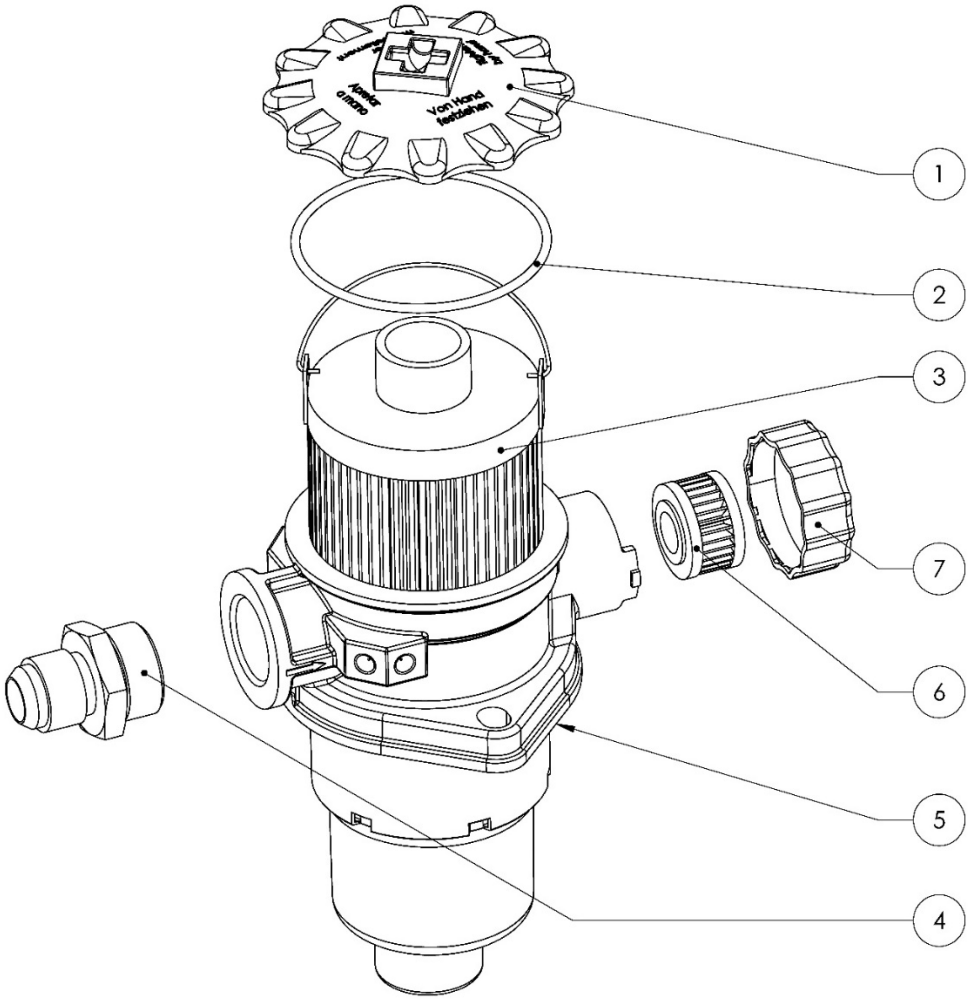
*NOT PICTURED

Hydraulic Suction Filter Assembly



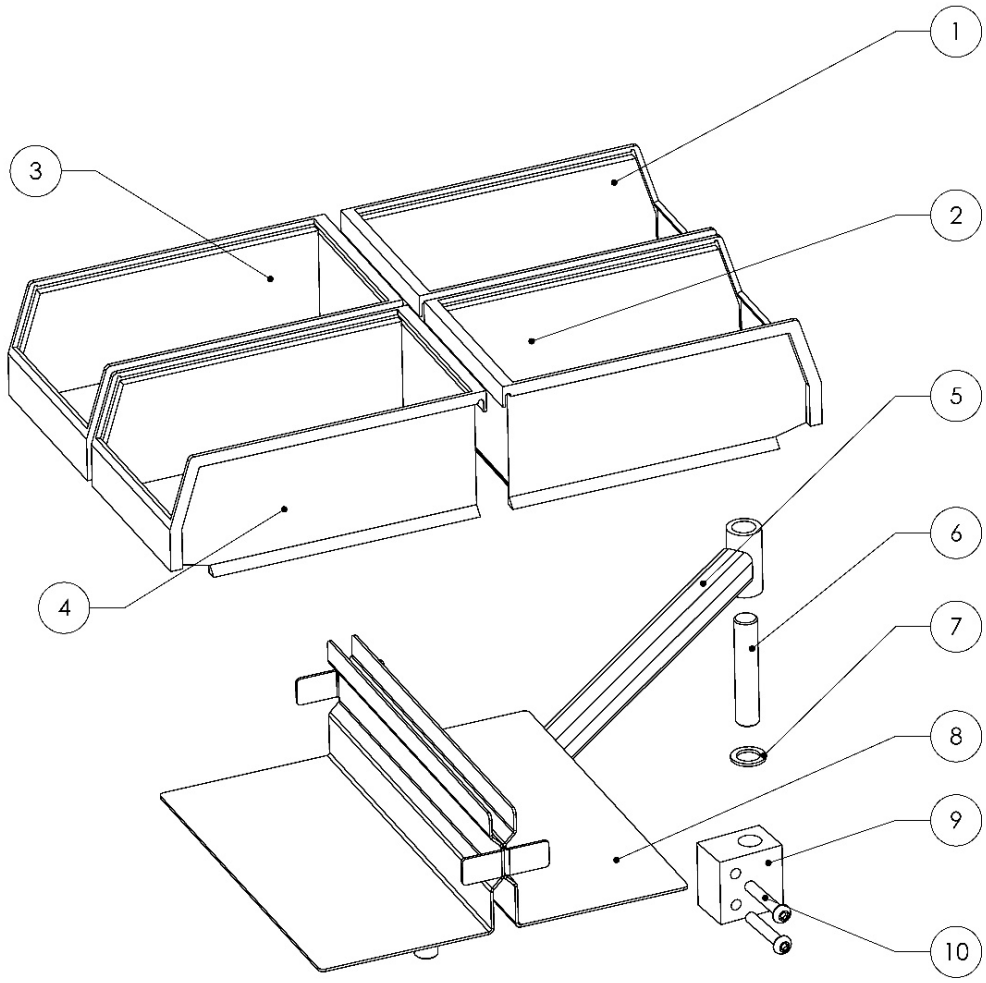
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10-01243	SUCTION ACCESS PLATE	1
2	10-01256	FITTING, PIPE NIPPLE ½” X 6”	1
3	15-01131	STRAINER, 1” NUT STYLE	1

Return Filter Assembly (15-00758)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-02715	Cap, Filter Assy Return, 618+ & 824	1
2	15-02714	Ring, Filter Assy Return Cap, 618+ & 824	1
3	15-00888	HYDAC FILTER ELEMENT	1
4	15-01183	FITTING, Straight, 3/4" Male 37, JIC to 1" Male O-ring	1
5	15-02537	FLANGE GASKET, FILTER RETURN ASSEMBLY	1
6	15-02629	BREATHER ELEMENT, FILTER RETURN ASSEMBLY	1
7	15-00212	BREATHER CAP	1

Service Tray Assembly



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-01291	PART BIN 7 X 4 BLUE	1
2	15-01294	PART BIN 7 X 4 YELLOW	2
3	15-01292	PART BIN 7 X 4 GREEN	1
4	15-01293	PART BIN 7 X 4 RED	1
5	10-00152	618 TOOL TRAY ARM	1
6	10-00159	DOWEL PIN, ½ X 2-1/2	1
7	10-00160	BEARING, THRUST	1
8	15-01299	PARTS TRAY HOLDER	1
9	10-00153	618 TOOL TRAY BAR MOUNTING BRACKET	1
10	11-00192	SHCS, M6 X 1.0 X 35MM	1

SECTION 8 – DECOMMISSIONING YOUR MACHINE

The decommissioning of a Haeger machine is a rare occurrence as older models themselves become relocated or sold to other facilities around the world. In the event a machine component requires replacement, we recommend recycling the old. Most countries have recycling programs for such components like computers, petroleum-based fluids, metals and so on. Contact your local governing agency or recycling center for details on proper containment and/or disposal of the machine or used components.

Contact Haeger customer service department when your machine is no longer in use.