824 WindowTouch5H*e*

Operation Manual

17-00076 Rev.E.4.2025

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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 WindowTouch-5He 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 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 WindowTouch-5He 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 WindowTouch-5He 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. Developing a consistent method for handling or holding the part (work piece) during fastener insertion will help 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 824 Window Touch -5He

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

824 WindowTouch 5e Machine Matrix			
Voltage	208/240	380/480	575
Amperage	16	9.6	6.1
Hertz	50 or 60	50 or 60	50 or 60
Phase	3	3	3

Noise Measurement Summary	
LEX 8-hour	74 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 with Zn/ZDDP additive
Oil Conductivity:	300 amb/µS or more
ISO Viscosity:	32
Capacity:	22 gallons/83 liters
Max. Operating Pressure:	2,450 psi/169 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:	99 in./2515 mm
Width:	41 in./1041 mm
Depth:	64 in./1626 mm
Weight:	3,000 lb./1361 kg

Illustrations of Safety Notes

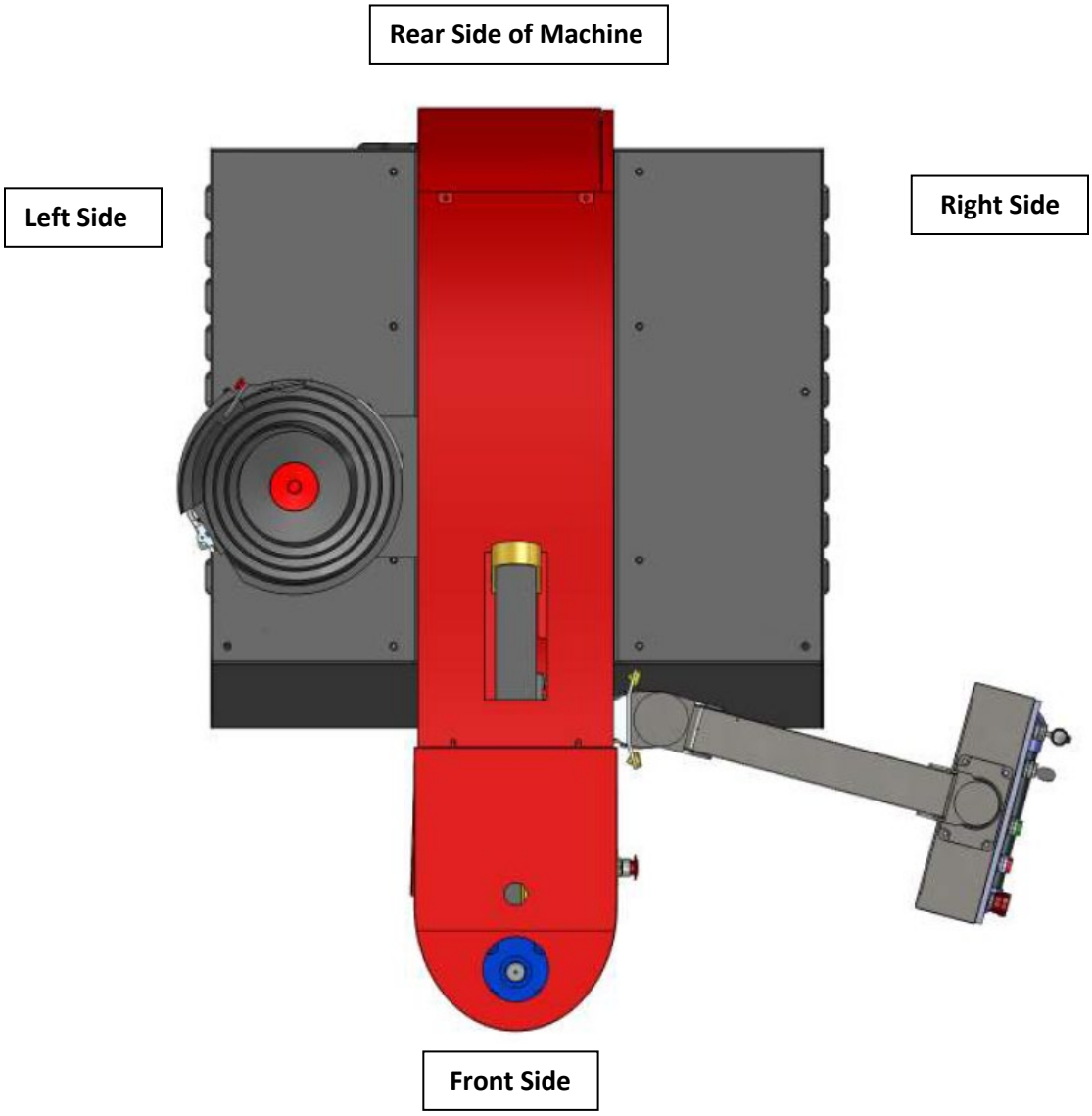
Safety notes are identified by a pictogram and a signal word. The signal word describes the severity of the risk at hand.

	**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 824 Window Touch-5He 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 and facing the work area

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.

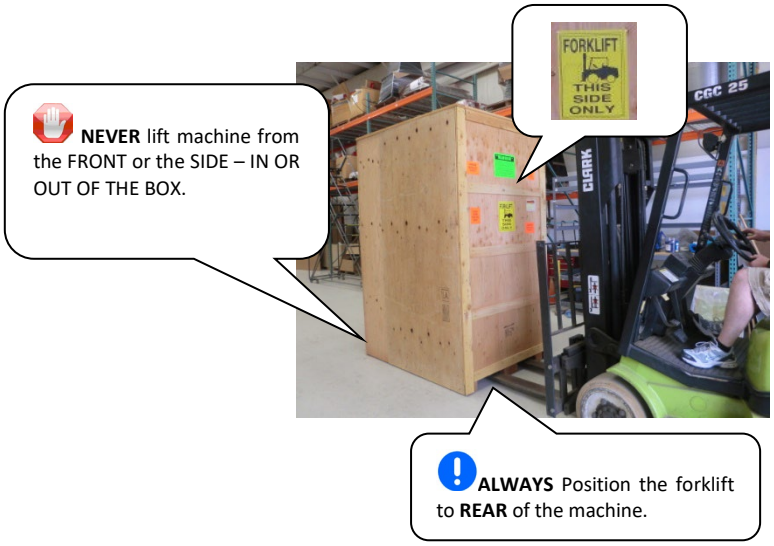
Lubricate the *Upper Tool Holder* with a small amount of lithium (white) grease. Any other lubricant may interfere with the Safety System's operation and will void your machine warrant.

SECTION 2 – INSTALLATION

Handling

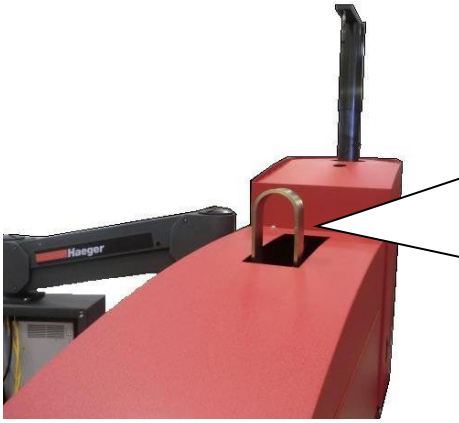
The Haeger Hardware Insertion Machine is designed to provide the operator with a comfortable working height and to allow freedom of movement when positioning work pieces in the tooling area. Because of these features, the machine is **top heavy when unloading**.

- 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.



NEVER lift machine from the FRONT or the SIDE – IN OR OUT OF THE BOX.

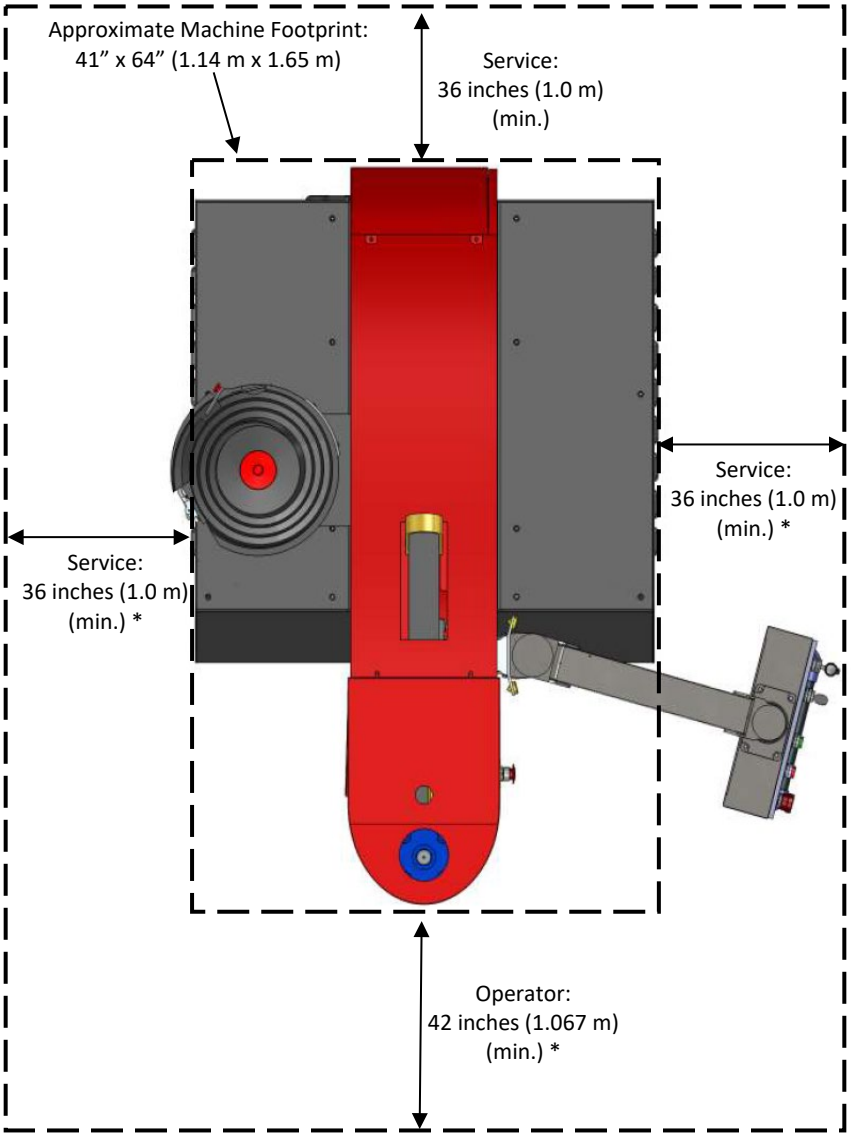
ALWAYS Position the forklift to **REAR** of the machine.

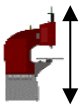


Machine is **HEAVY** in the **REAR** and will tilt back when lifted with lift strap.

Recommended Safe Work Zone

Prior to delivery, it is recommended that an area is laid out which allows operator and maintenance personnel ample space to work or service the machine. The distances shown below are general guidelines. It is the customer's responsibility to adjust this "Safe Work Zone" based on individual needs to optimize operator and service technician safety. Any facility visitors must also be informed of the "SAFE WORK ZONE" around the machine to minimize accidents while the machine is in operation.





Working Height Requirement 103 inches (2616mm) (min)

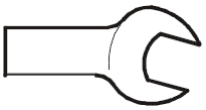
RECOMMENDED MINIMUM SAFE WORK ZONE

***** 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.

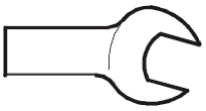
Skid Removal

- 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



Feet: 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 the 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**
824 Window Touch -5He	**3000 lb.**	**1361 kg.**

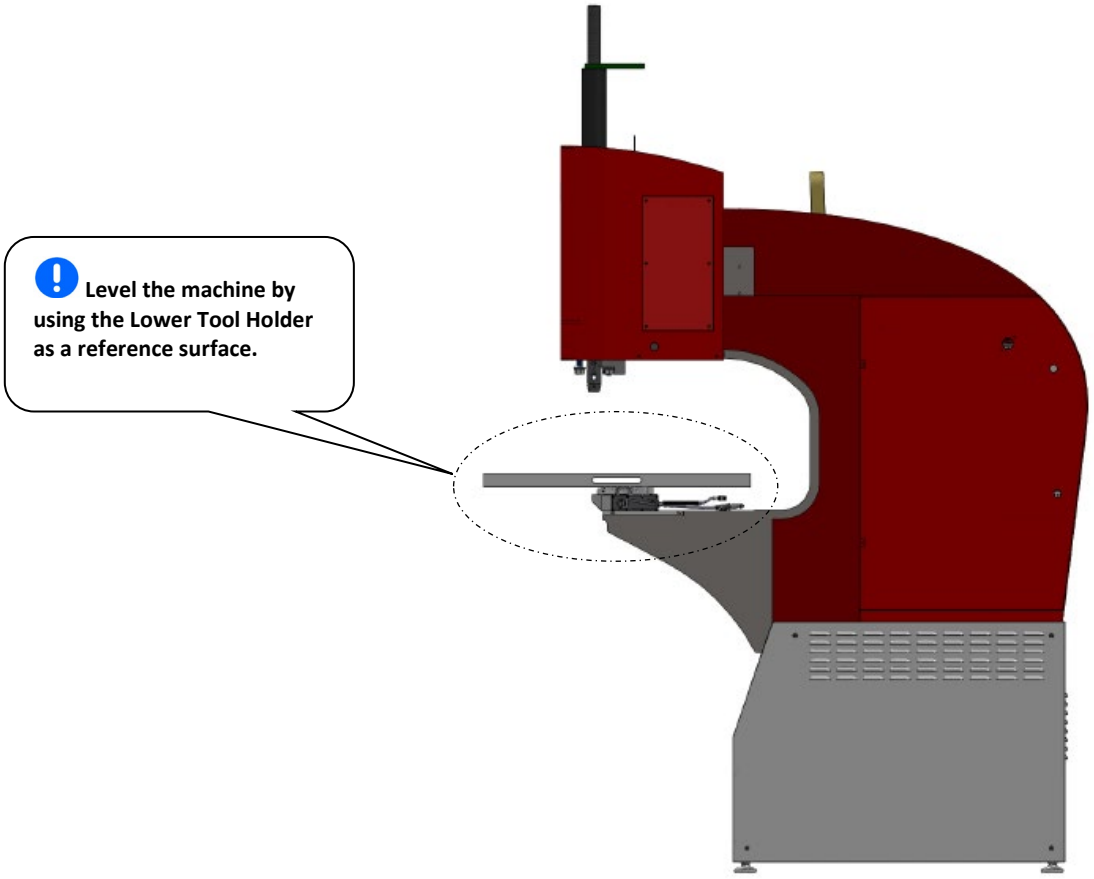
4. Carefully move the machine away from the skids. Lower the machine onto the floor.
5. Using the two open end wrenches, loosen the nut on the foot and remove the plate.
6. Tighten the foot nut until it is flush with the bottom of the machine’s base.

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)

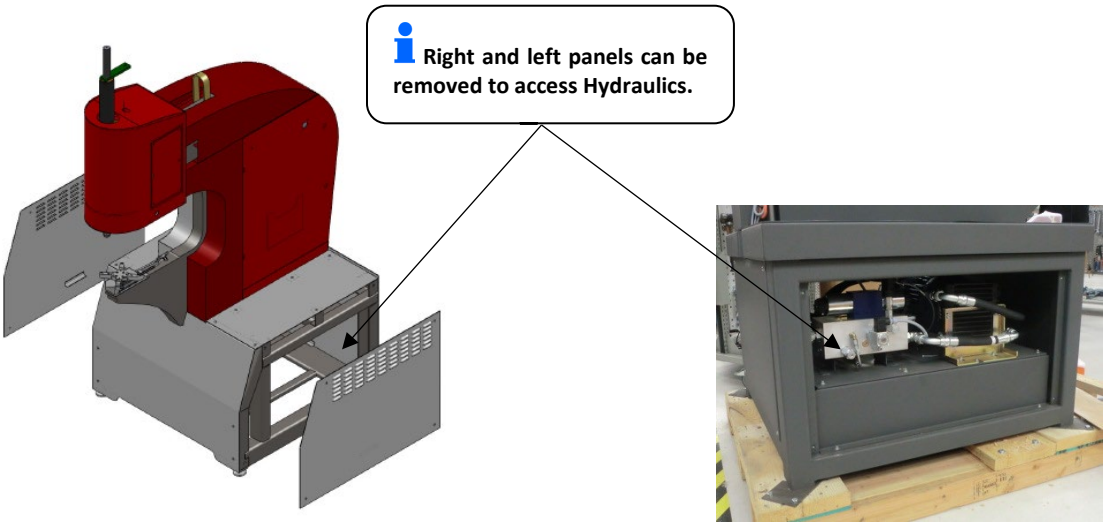
If the machine is equipped with a Modular Auto Feed System (MAS):

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.

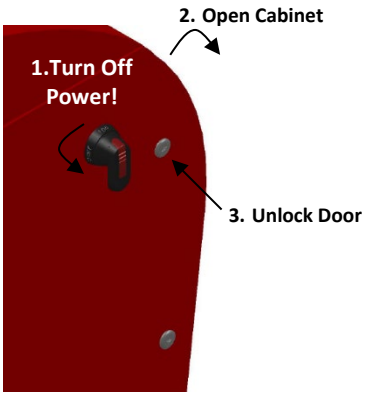
Fill the reservoir of the machine with the amount of hydraulic oil listed below:		
Machine	**Gallons**	**Liters**
824 Window Touch -5e	22	83



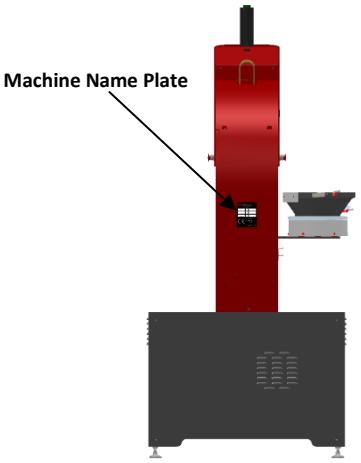
Main Power Setup

- 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, it is recommended to install 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.



Check the voltage on the



Machine Nameplate

Machine Operator Basic Controls

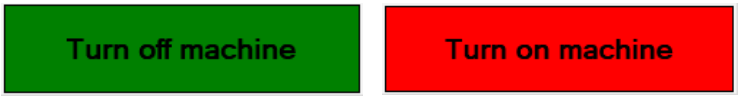
All the operator controls except the foot pedal are through the touch screen interface to the right of the machine. There are E-Stop buttons/Stop buttons are on both right and left sides of the machine.

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

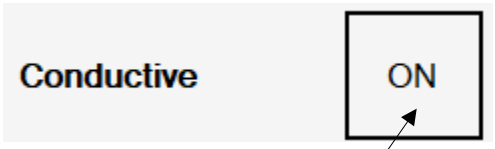
Main Disconnect Switch

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 Motor 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 they are unlatched.

3. 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.

4. 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.
- 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. Turn on the machine.
7. Check the rotating direction of the Motor again.
8. If the motor turned the same direction as the arrow, re-install the Side Panels on the Machine Base. The Motor is now hooked up correctly.
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:

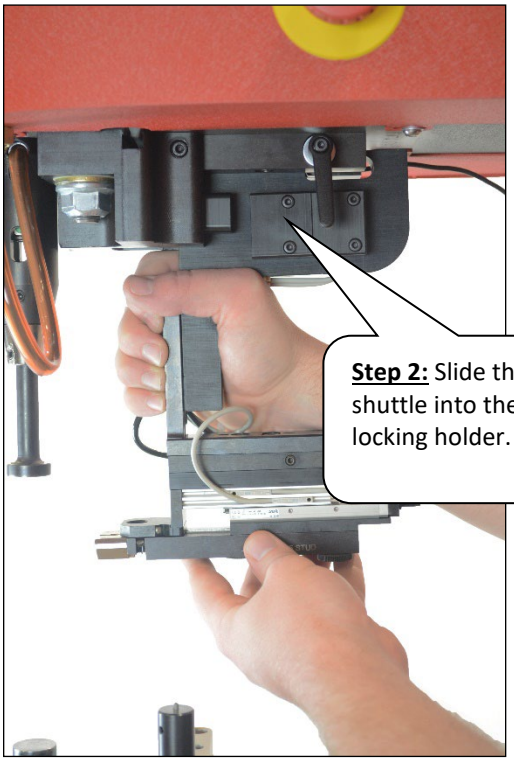
11-00241	Thumb Screw Cap
H-3738	SHCS, M5 x 0.8 x 12mm, Black Oxide

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.

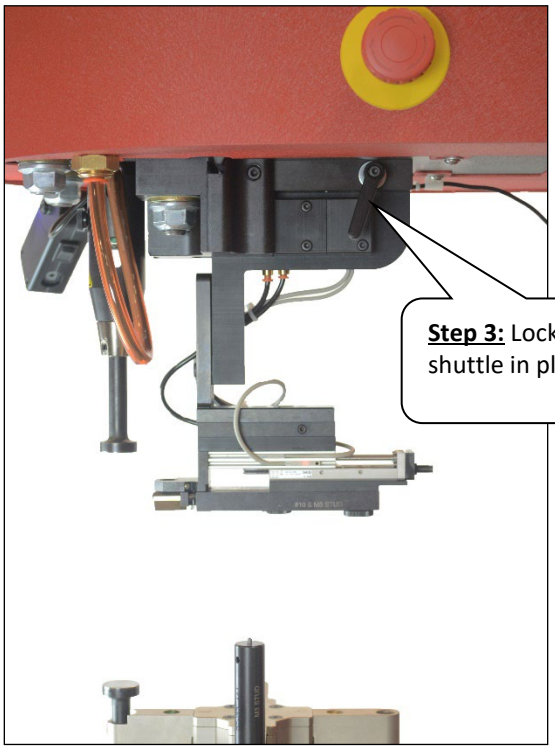
Quick Mount Multi-Shuttle Platform

The Multi-Shuttle Platform is 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.

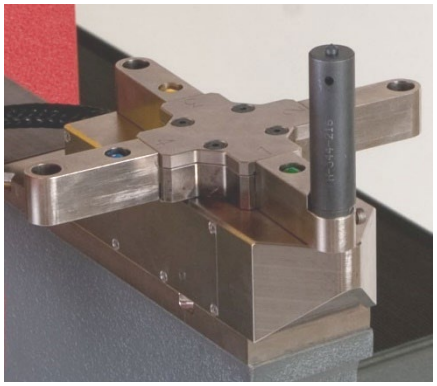


Step 3: Lock multi-shuttle in place.

The Turret Insertion System (TIS)

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

The TIS 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.



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

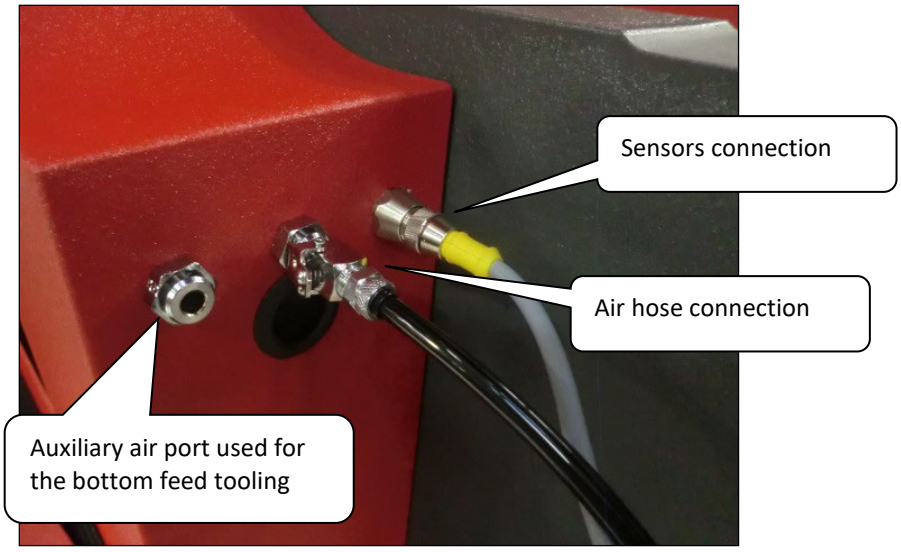
1. Turn the cross turret until the bottom of the TIS arm is exposed.
2. Place the tool/anvil into the TIS arm's tool receptacle.
3. Secure the tool into place by tightening the bolt from below.

Universal Lower Tool Holder H-166-8

The Universal Lower Tool Holder, H-166-8, is a single station lower tool holder that can be used for situations where the TIS's turret arms are in the way of certain workpiece shapes. It is also used for Bottom Auto-Feed Tooling (ABFT).

Switching to the Universal Lower Tool Holder

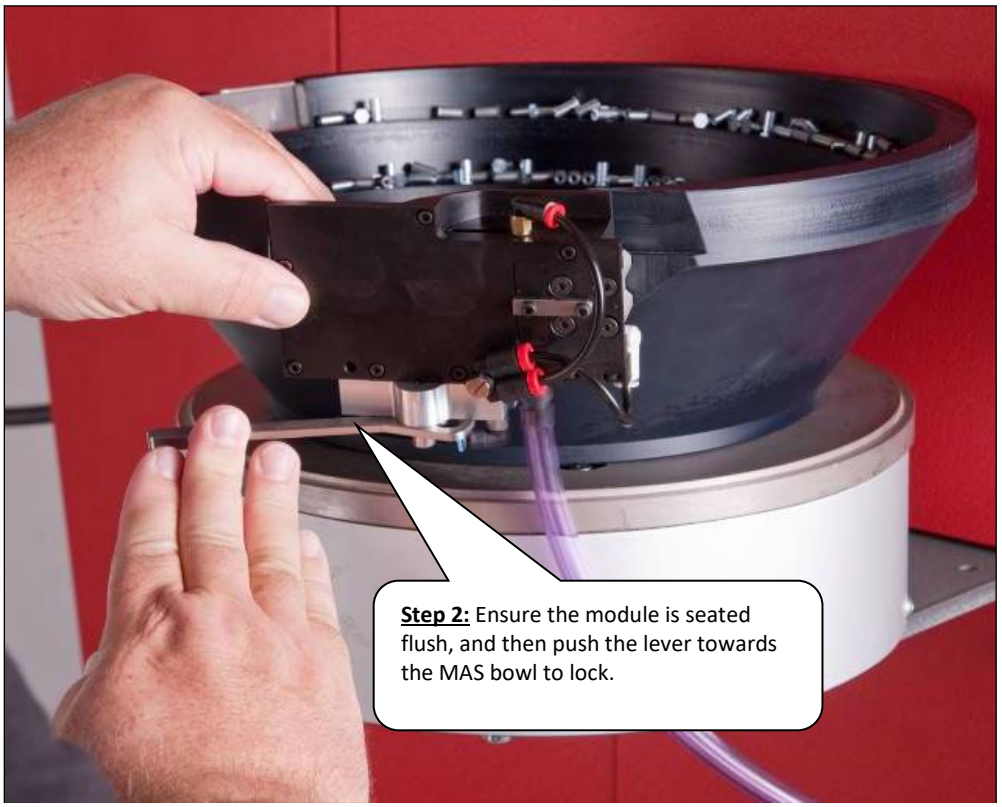
1. Remove the TIS assembly by turning the cross turret to an "×" position to gain access to the M16 X 50 SHCS and loosen the bolt. Be sure to also detach air and sensor connections. Never remove the plate underneath attached to the frame arm—it is essential for re-attaching the TIS later if needed.



2. Place the H-166-8 Lower Tool Holder on the frame arm and turn the M16 locking bolt down without tightening it.
3. Install two flat tools of the same diameter to the Upper Tool Holder and on the H-166-8 Lower Tool Holder. (Tools can be removed/locked-in by loosening/tightening the locking lever to the right of the holder)
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 Lower Tool Holder forward, backward, or sideways. Use the large bolt in the back of the Lower Tool Holder to assist in forward/backward positioning.
6. Once aligned, tighten the M16 bolt to 90 - 120lb-ft.

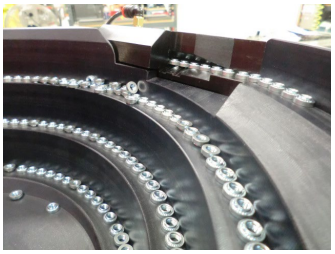
Quick Mount Auto Tooling

Installation and Changeover in Two Easy Steps



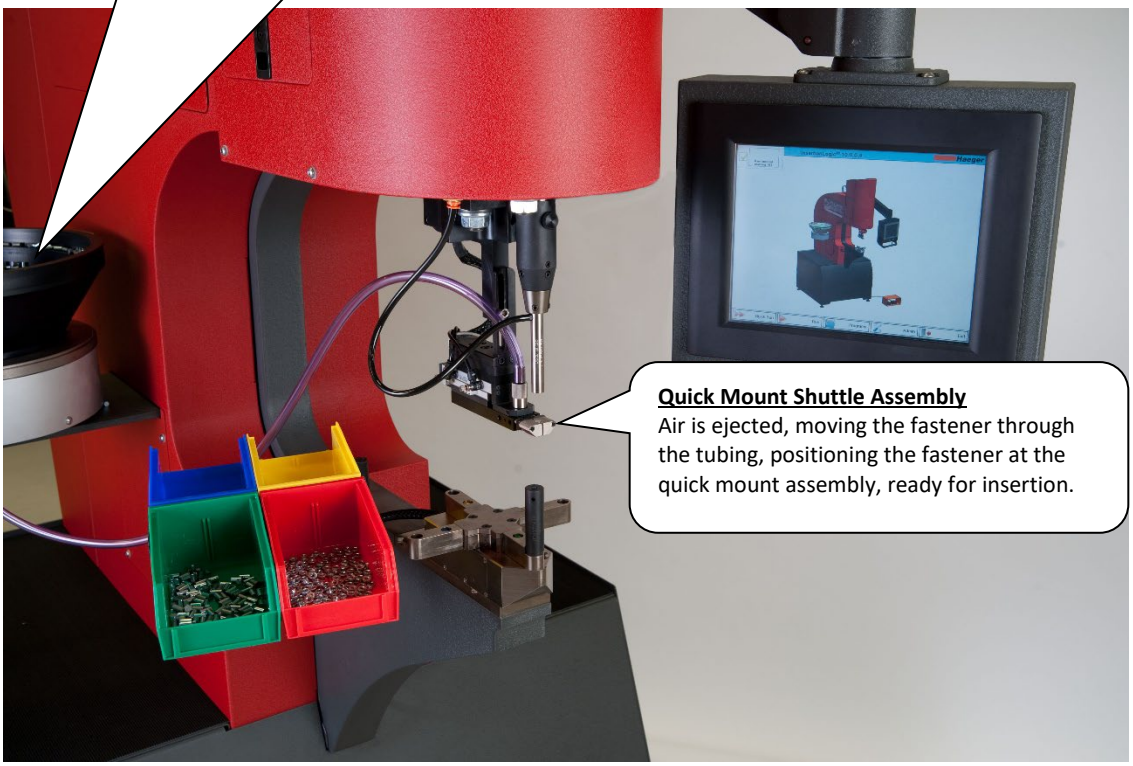
Modular Auto Feed System (MAS 350)

Modular Auto Feed System (MAS): This system allows the operator to run 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.



Quick Mount Shuttle Assembly
Air is ejected, moving the fastener through the tubing, positioning the fastener at the quick mount assembly, ready for insertion.

Quick Startup Procedure

This procedure assumes that you are thoroughly familiar with this machine's basic 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 idle 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

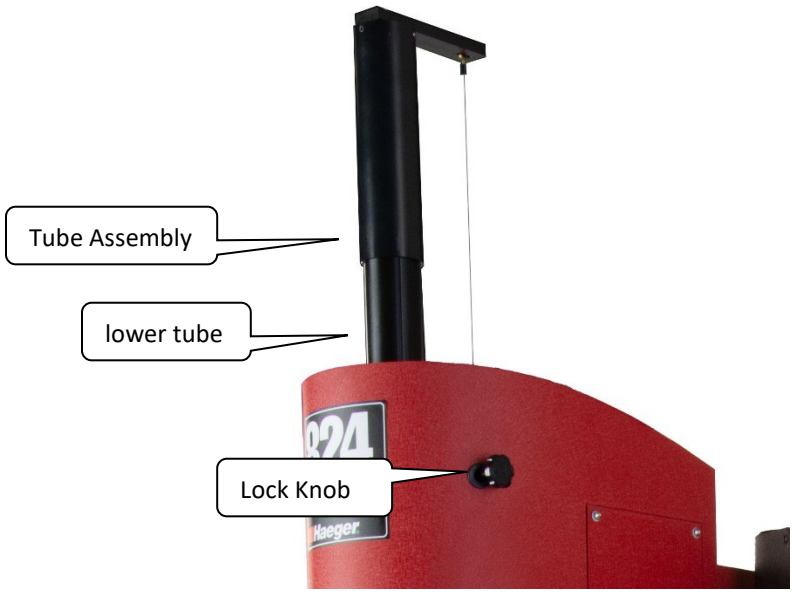
Eye protection must be worn when operating this machine

Positive Stop System Assembly

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.



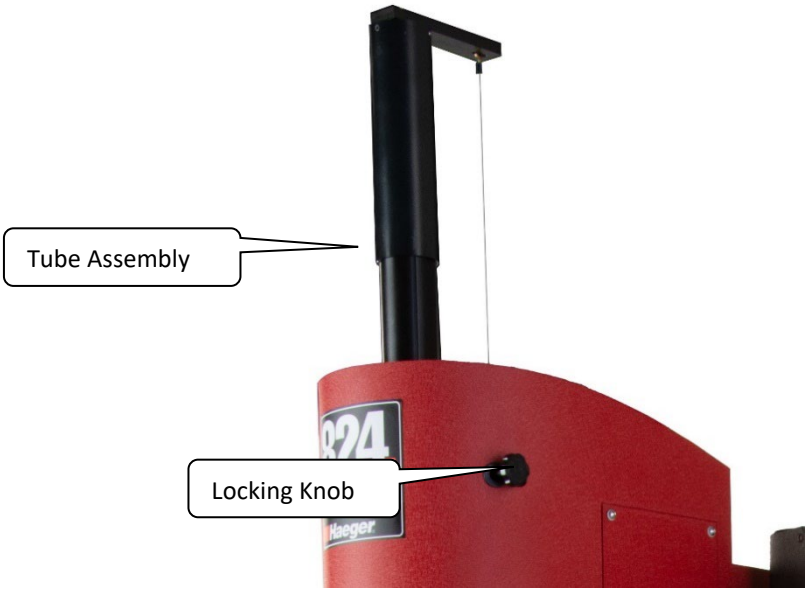
Positive Stop System Setup Procedure

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 pressing 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

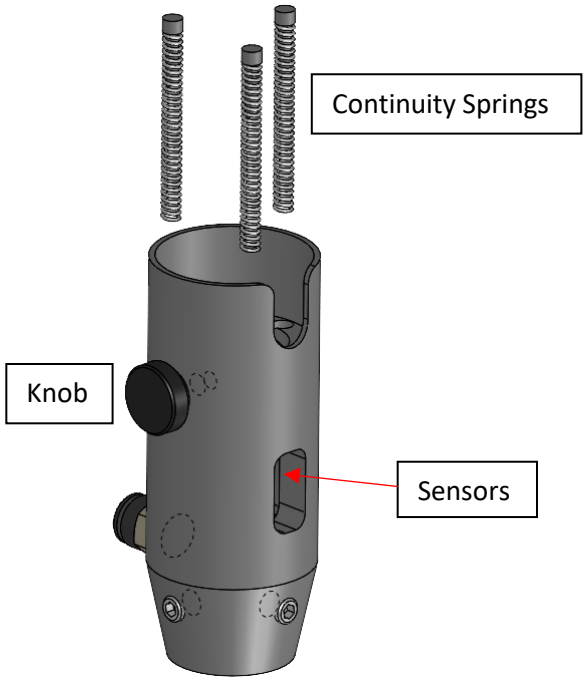
When the Safety System detects a non-conductive material between the Upper and Lower Tools, the Upper Tool's downward motion reverses immediately and returns to its' Up position.

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.



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:

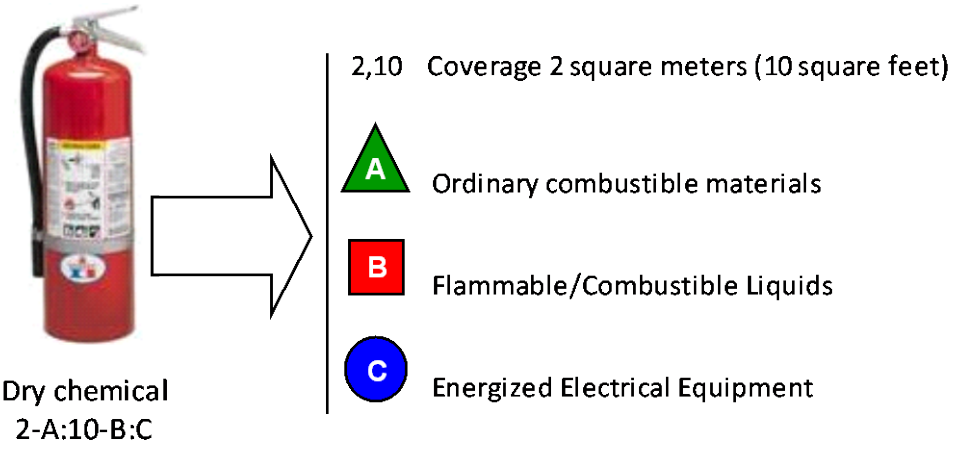
- **THIS TAG & LOCK TO BE REMOVED ONLY BY PERSON SHOWN ON BACK!**
- **DO NOT REMOVE THIS TAG!**

Fire Safety Equipment

Haeger systems do not produce thermal, biological, fire or radiation hazards. However, having a Multi-Class rated fire extinguisher within reasonable distance from the machine and operator(s) is sound safety practice and is recommended. Your fire extinguisher(s) 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. 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

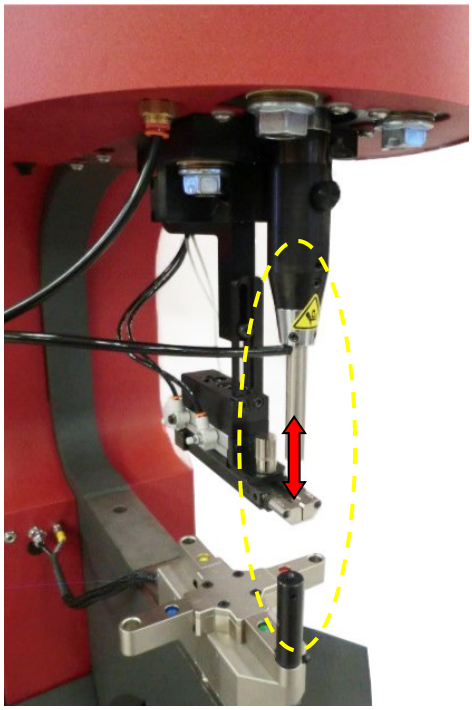
The Haeger safety system ensures up to a certain level of discrimination between human body and workpieces being processed. However, despite this system, safety of those working on or around the machine is still ultimately dependent on appropriate behavior and respect for procedure. Inattention while 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!

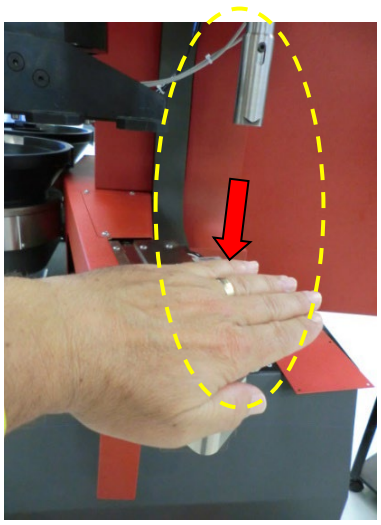
Residual Safety Risks

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 following photos illustrate situations that must be avoided when operating your machine.

Operator Safety Awareness & Residual Risks

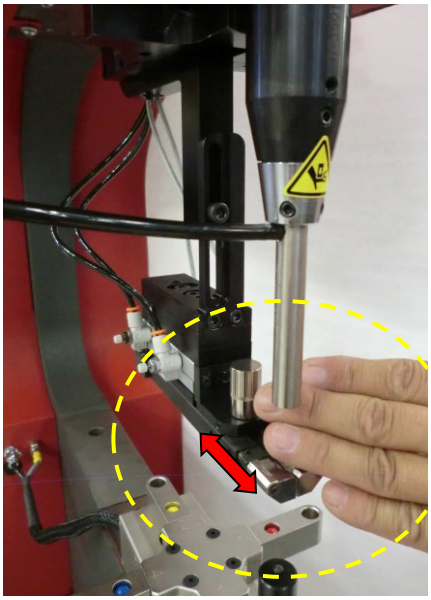




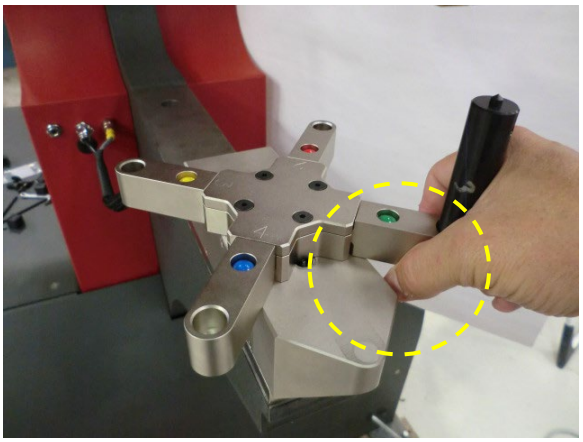
Risk of crushing: A high risk crushing hazard is created between the Punch and Anvil.

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.



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

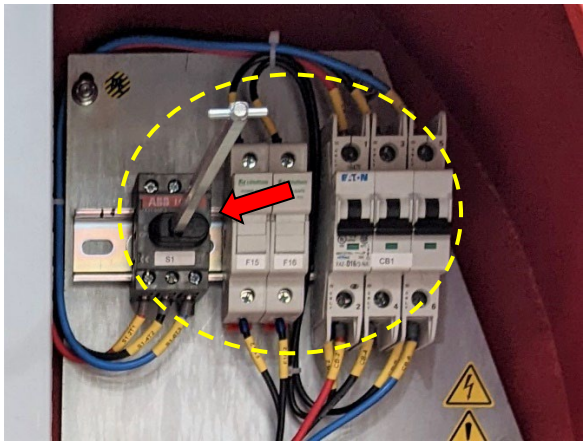


Risk of pinching: A medium risk pinching hazard is created by the TIS when rotating for the next station.

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 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/TPS 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 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 (Cont.)

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)

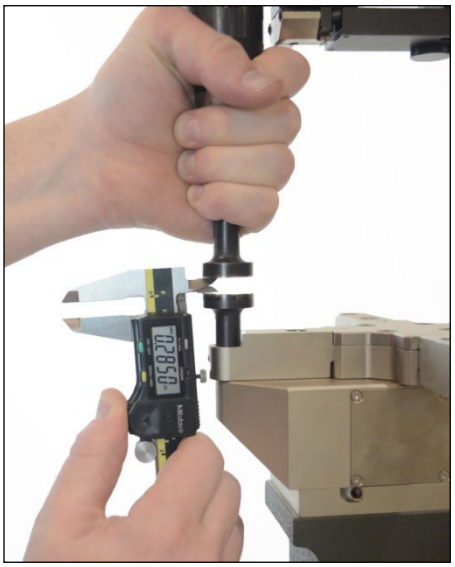
2. Enter any run mode and select a station that tooling has been fully installed on. Tap the "Conductive" toggle button to "off."

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!

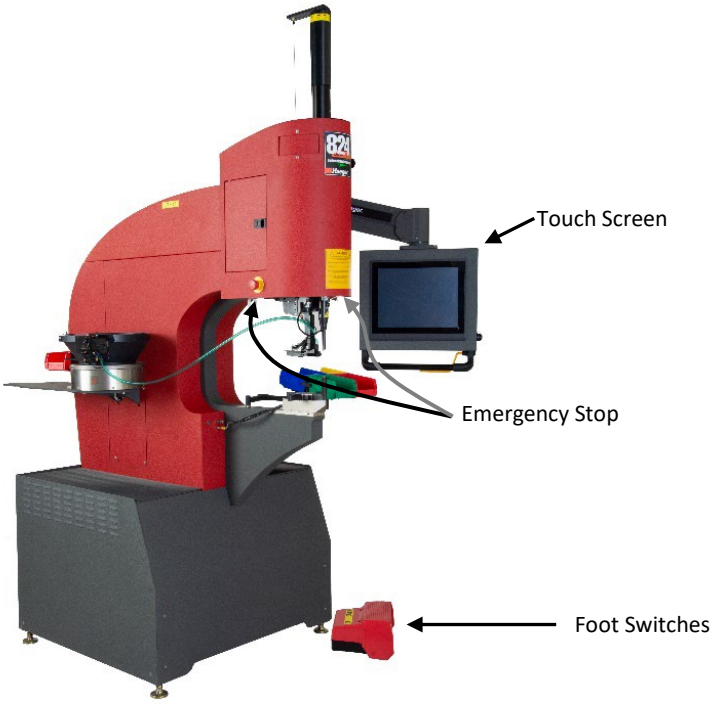
SECTION 4 – TOUCH SCREEN OPERATION (Step by Step Demo)

Window Touch-5He - Introduction

This section provides you, the operator, with all the information that you need to operate the Haeger 824 WindowTouch-5He 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



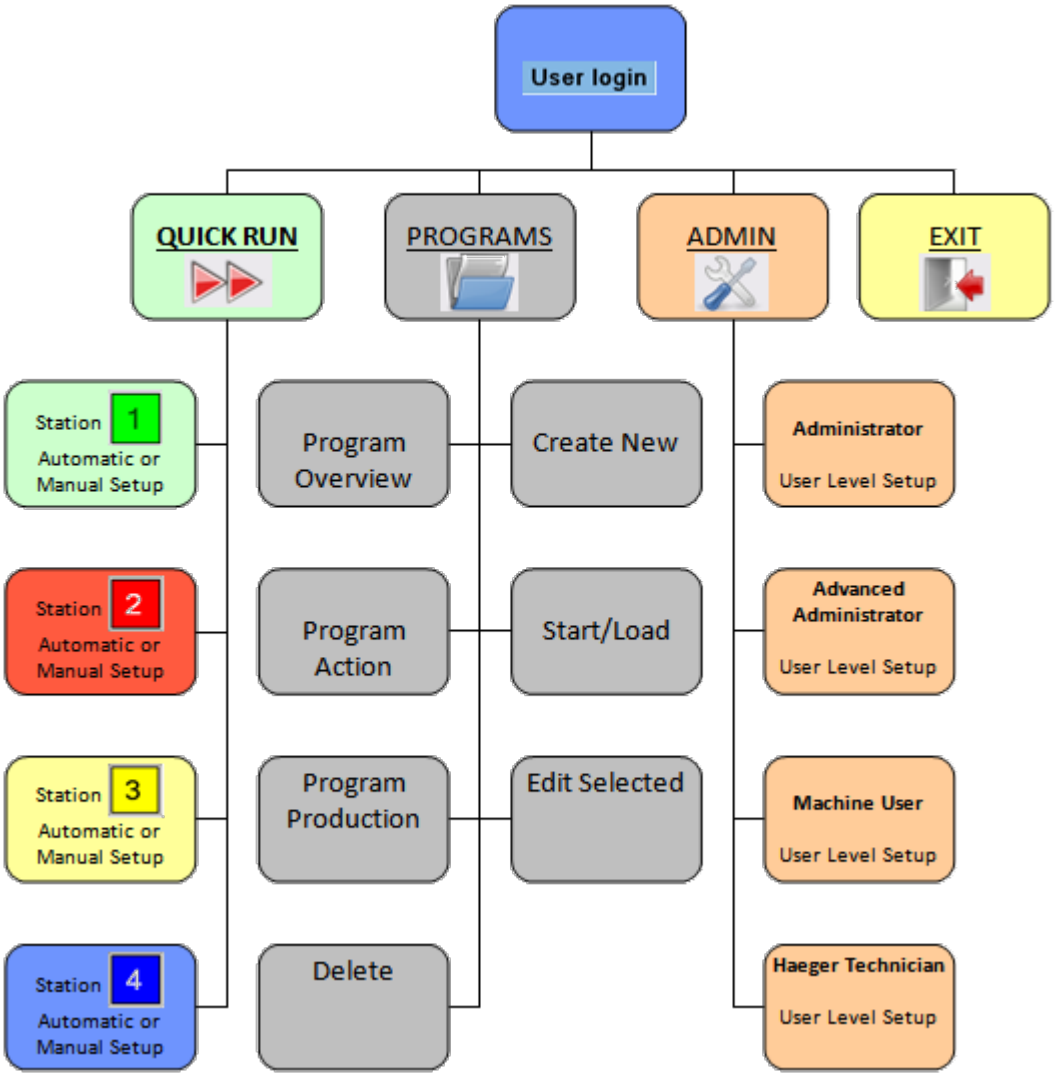
- Read and understand all Warnings and Cautions in this manual and follow the instructions for testing the Safety System in the Safety System section before attempting to operate this machine.

- 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**:

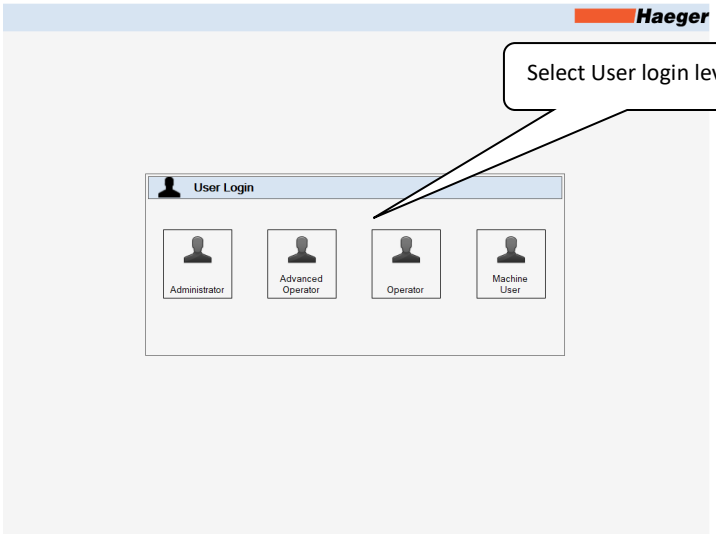
	Administrator	Adv. Operator	Operator	Machine User	Haeger Technician
Main Screen					
Quick Run	Yes	Yes	Yes	--	Yes
Programs	Yes	Yes	Yes	Yes	Yes
Admin	Yes	Yes	Yes	--	Yes
Quick Run					
Setup Stations	Yes	Yes	Yes	--	Yes
Programs					
Filter	Yes	Yes	Yes	Yes	Yes
Select Programs	Yes	Yes	Yes	Yes	Yes
Create 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

Quick Run Step by Step Demo

The 824 WindowTouch-5He Insertion 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. The touch screen is the main method of entering information into the software and controlling the computer.

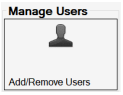
1. Turn on the power by turning the main disconnect switch  to the ON position

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.

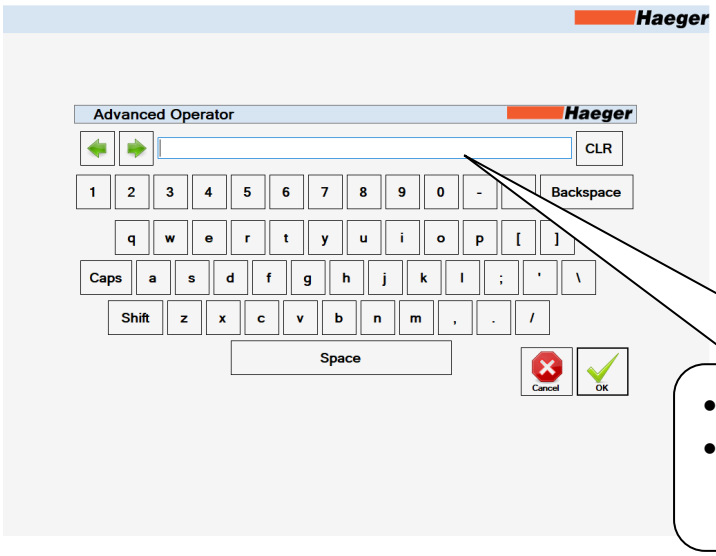
2. 

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

on the main screen.



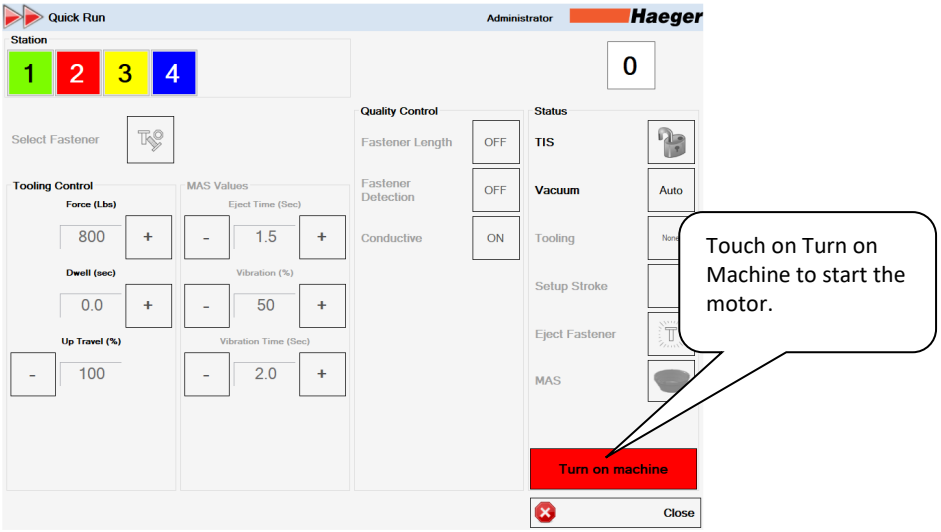
Touch on Manage Users then select user and enter new password.

3. 

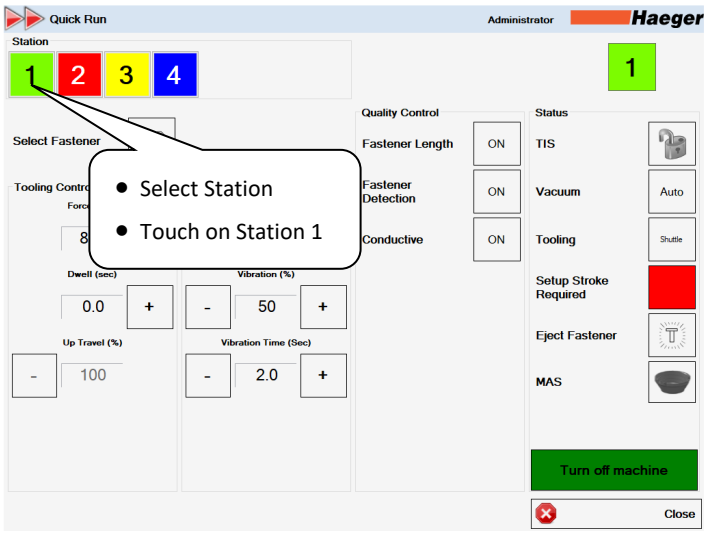
- Enter Password.
- Default password is 1. This password can be changed for each user level.

4.

5.



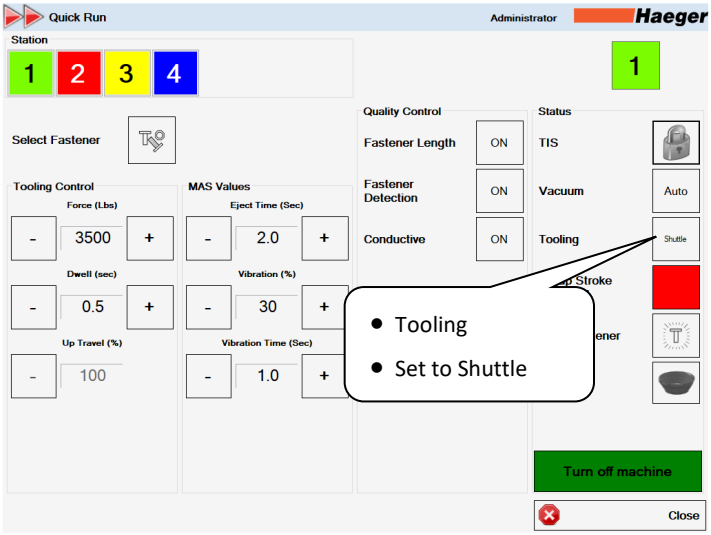
6.



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

Stations 2 3 4 are Manual insertion stations.

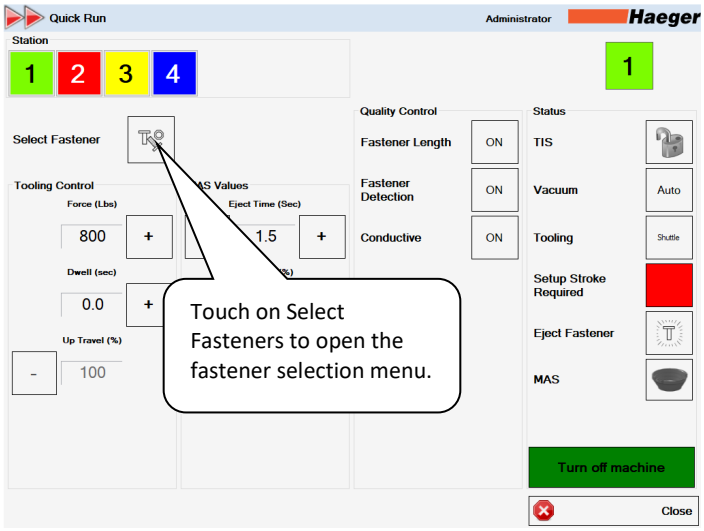
7.



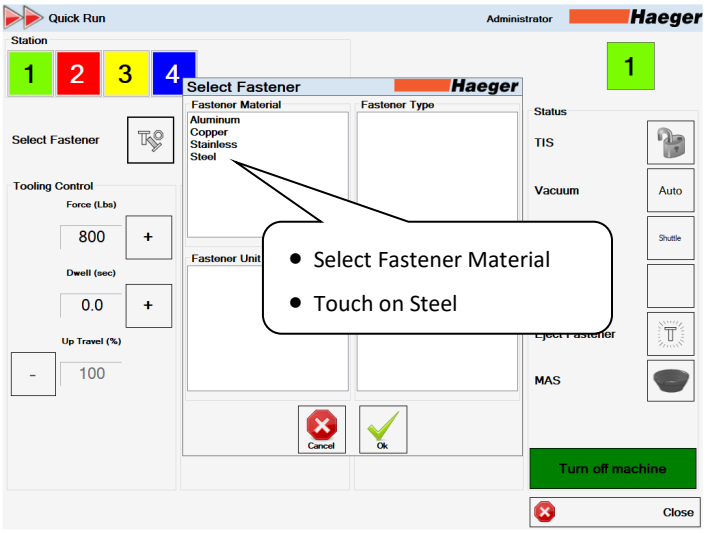
Tooling: This feature allows the operator to select the type of tooling to run in the selected station.

Tooling Options are: Manual, Shuttle, Bottom Feed, and J-frame

8.



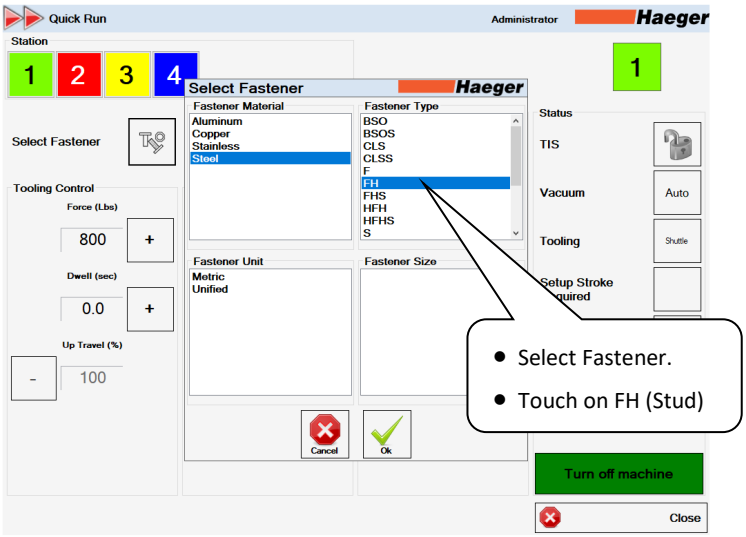
9.



Material:

- Aluminum
- Steel
- Stainless
- Copper

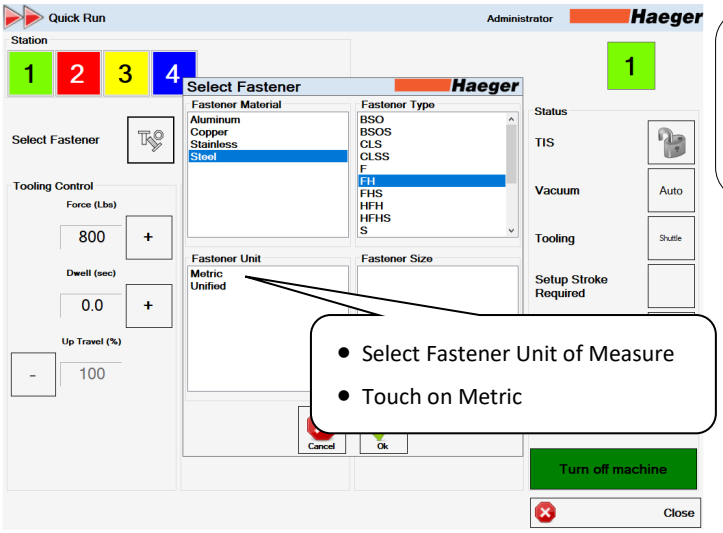
10.



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)

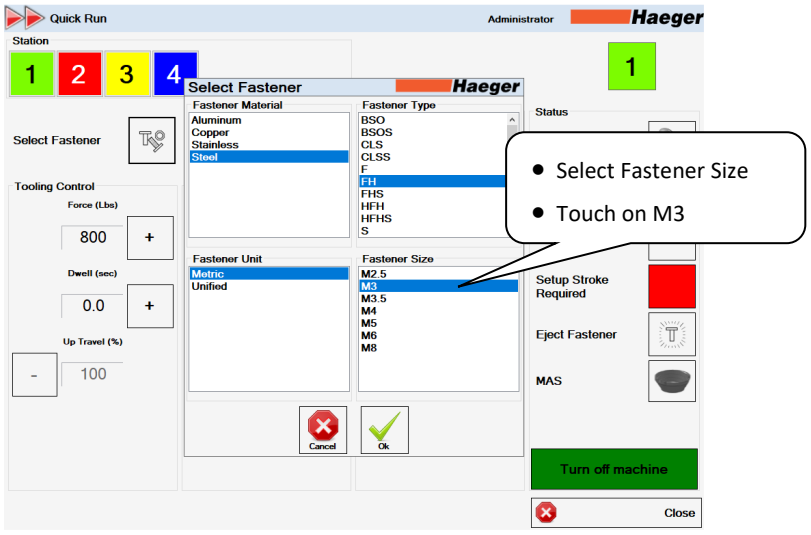
11.



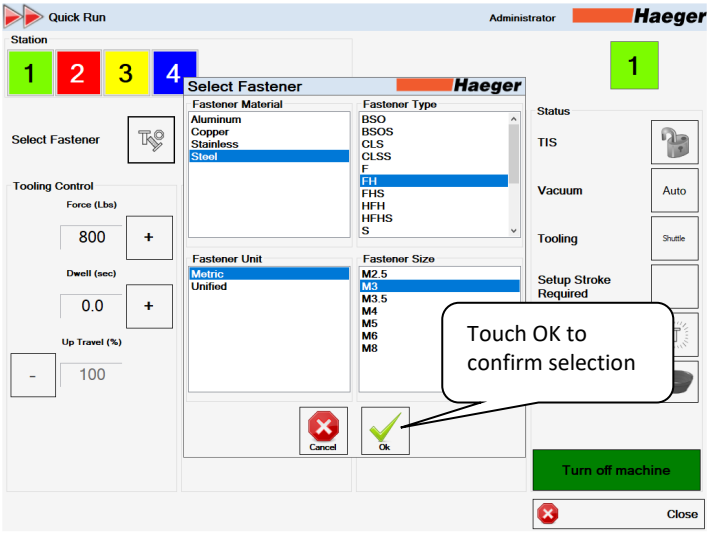
Unit & Size:

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

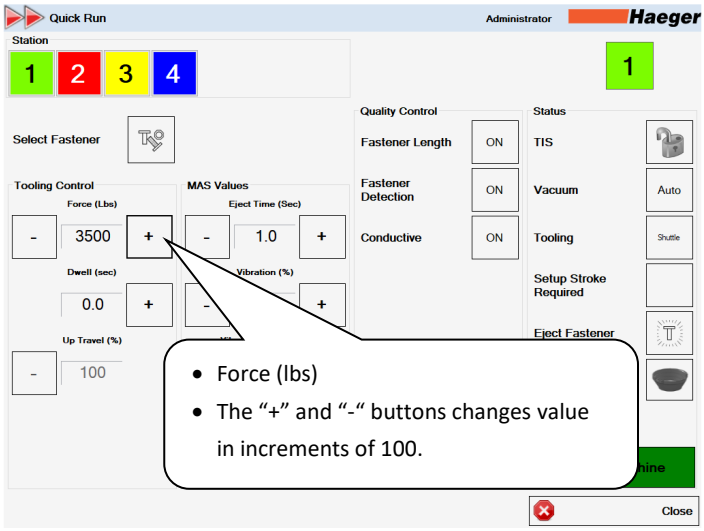
12.



13.



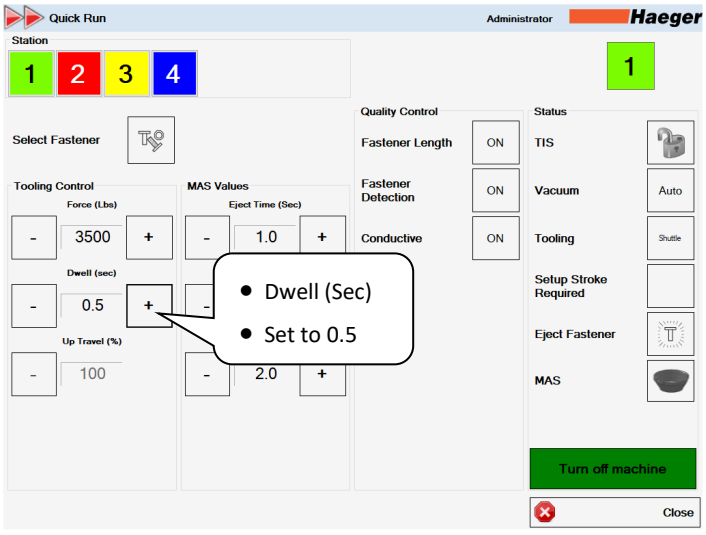
14.



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.

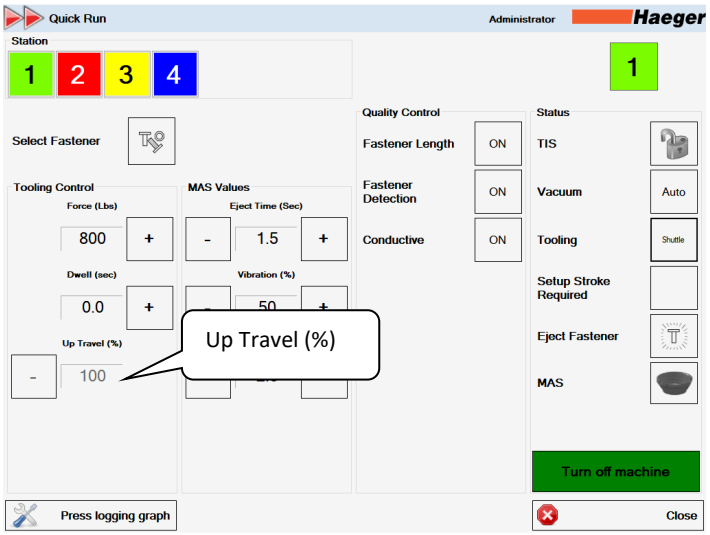
15.



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.

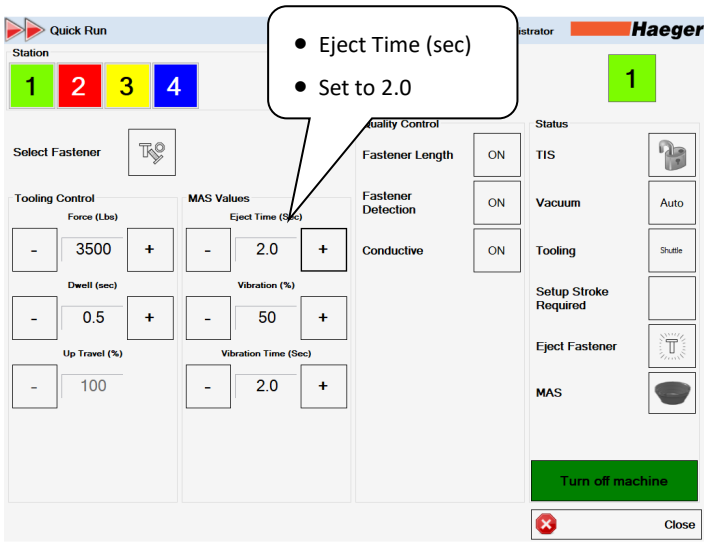
16.



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.

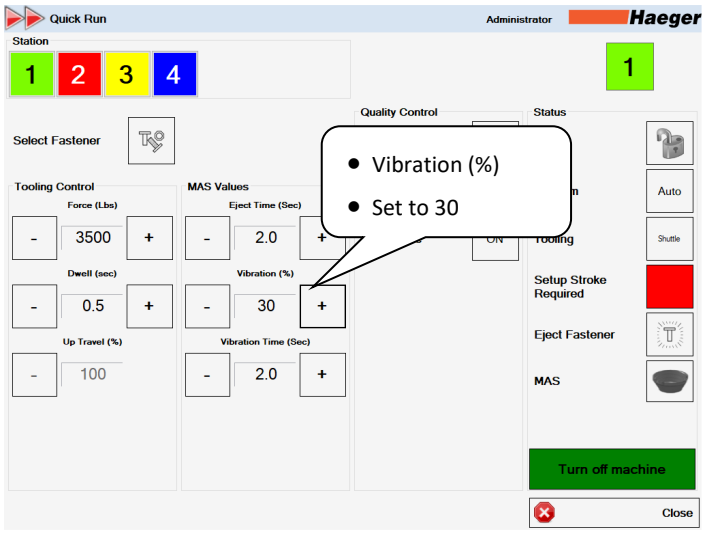
17.



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.

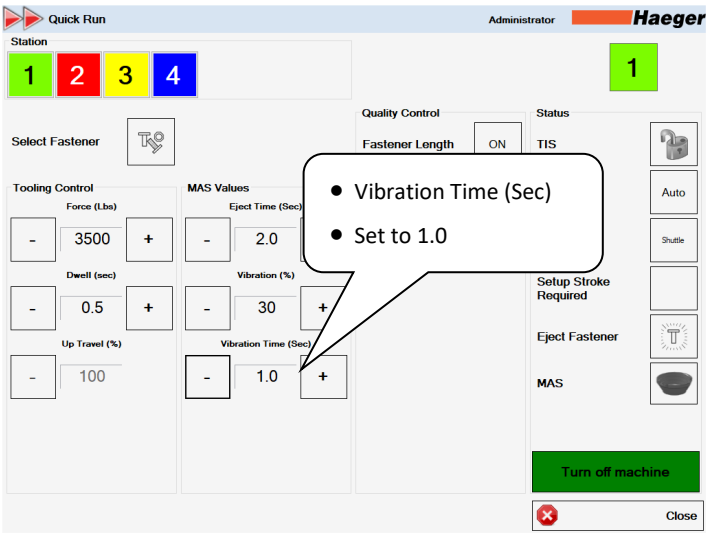


Vibration (%): Vibration controls the MAS 350 bowl vibration speed. This determines how fast the hardware travels up the spiral track to reach the Multi Module.

The 30% 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.

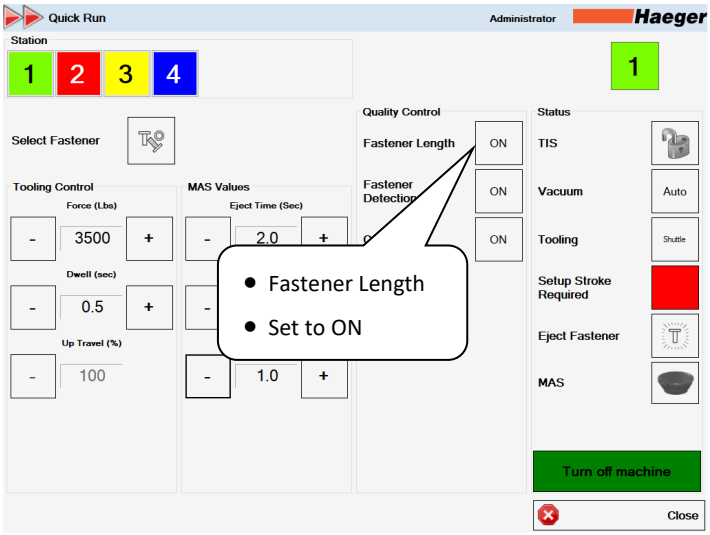
19.



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.

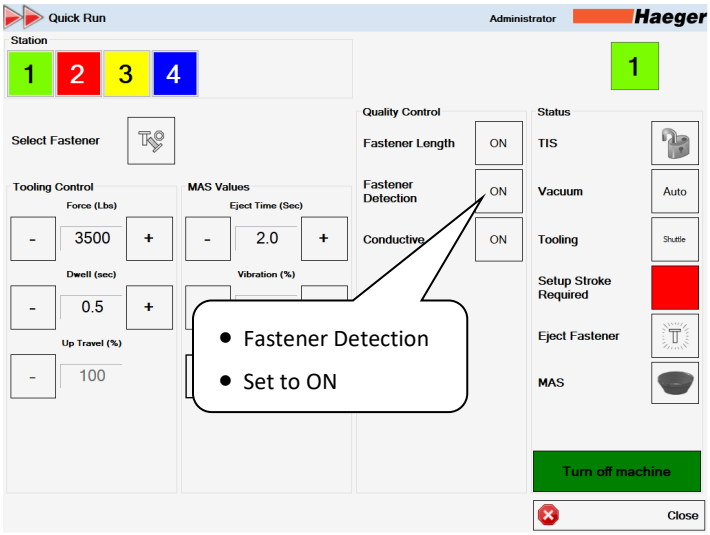


Fastener Length: This will instruct the machine to verify fastener length when contact with the anvil is detected. This can be activated or deactivated by touching the Fastener Length ON/OFF button.

This feature is particularly helpful with the insertion of studs, assuring the correct length is being inserted.

This feature is not active when the "Tooling" selection is set to Manual or Bottom Feed modes.

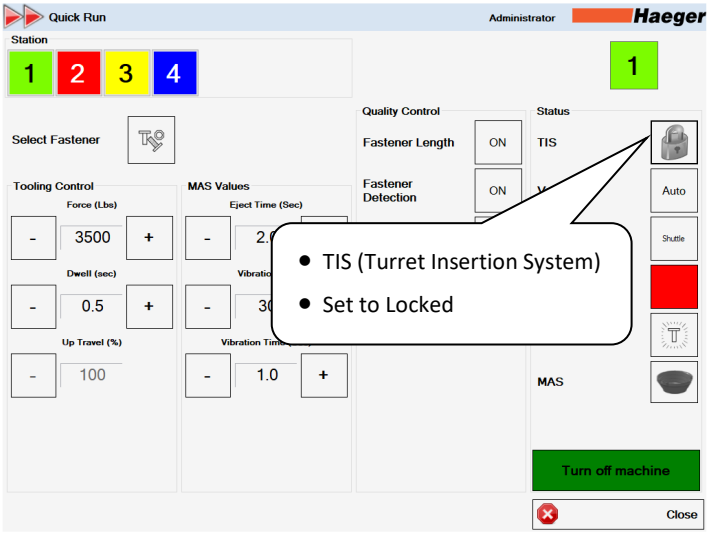
21.



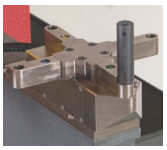
Fastener Detection: This will instruct the machine to perform detection of a fastener at the fastener pickup point of the Shuttle Tooling Jaws. The Fastener Detection can be activated or deactivated by touching the Fastener Length ON/OFF button.

This feature is not active when the "Tooling" selection is set to Manual or Bottom Feed modes.

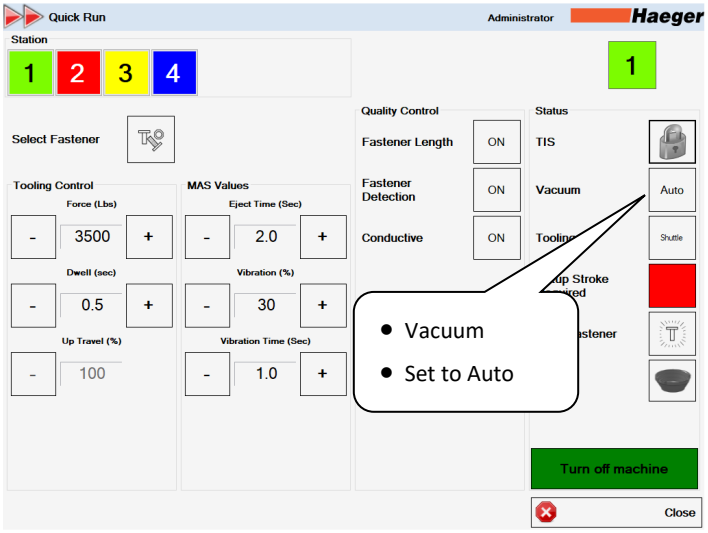
22.



Turret Insertion System (TIS): This feature allows the operator to unlock the TIS allowing it to rotate for the installation of the lower tools.

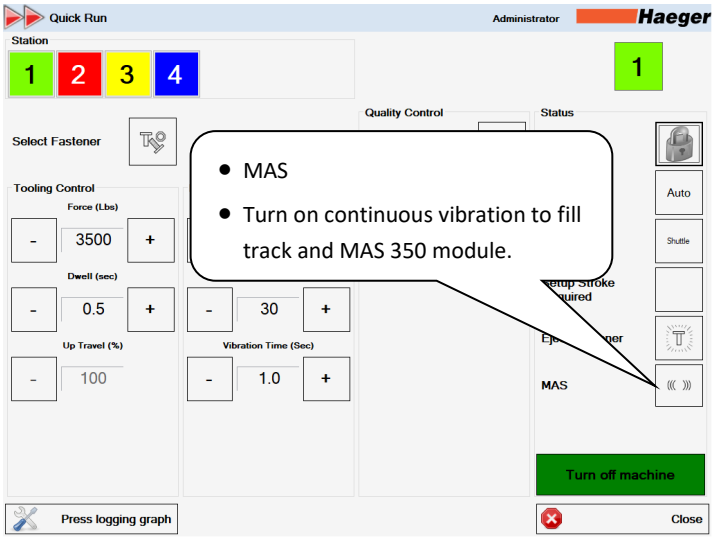


23.



Vacuum: This feature allows the operator to switch the vacuum system ON or OFF on the vacuum punch.

24.

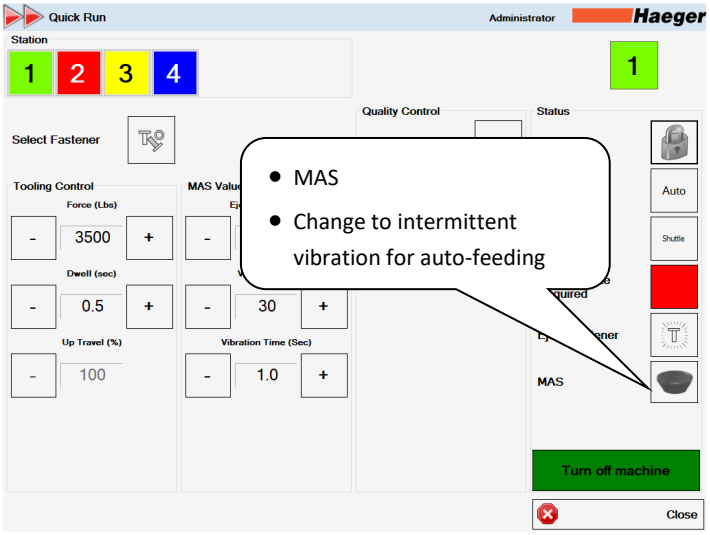


Modular Auto Feed System (MAS): This feature allows the operator to either run the MAS 350 at a continuous vibration or an intermittent vibration.

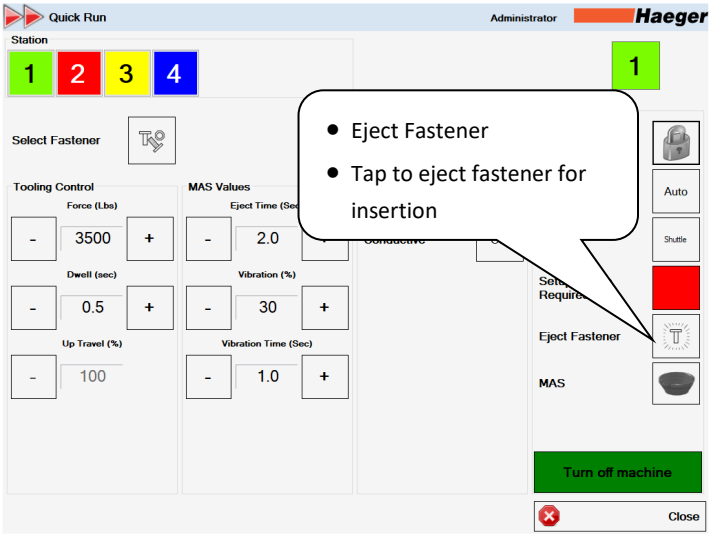
Continuous vibration is used for filling up the track and MAS 350 module or emptying the bowl out of hardware.

Intermittent vibration is used during auto-feeding.

25.

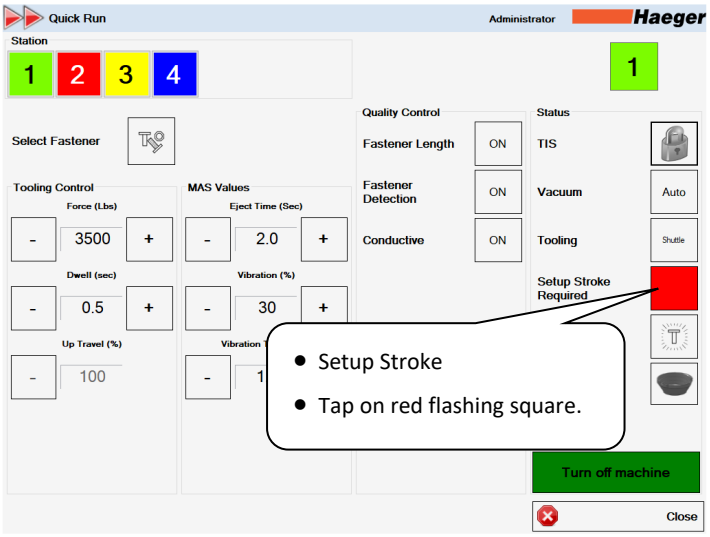


26.



Eject Fastener: This feature allows the operator to eject a fastener from the MAS bowl to the work area.

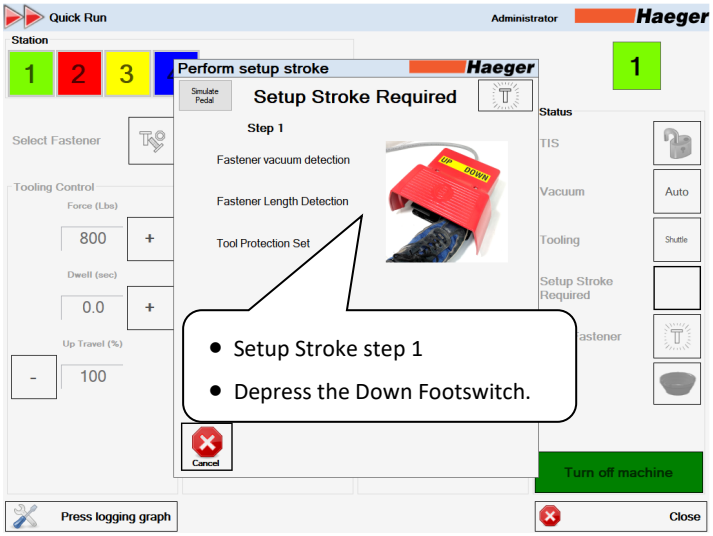
27.



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.

28.



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.

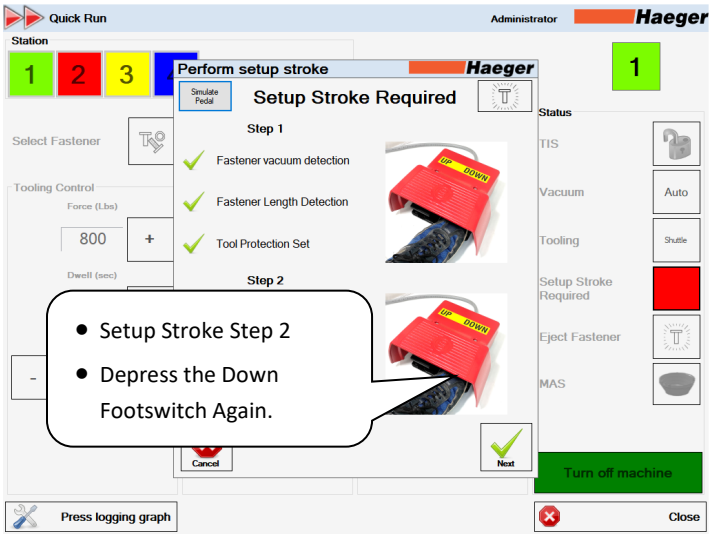
Upper tool in motion

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

Fastener Length and Fastener Detection must be on for Setup Stroke to record values for these features.

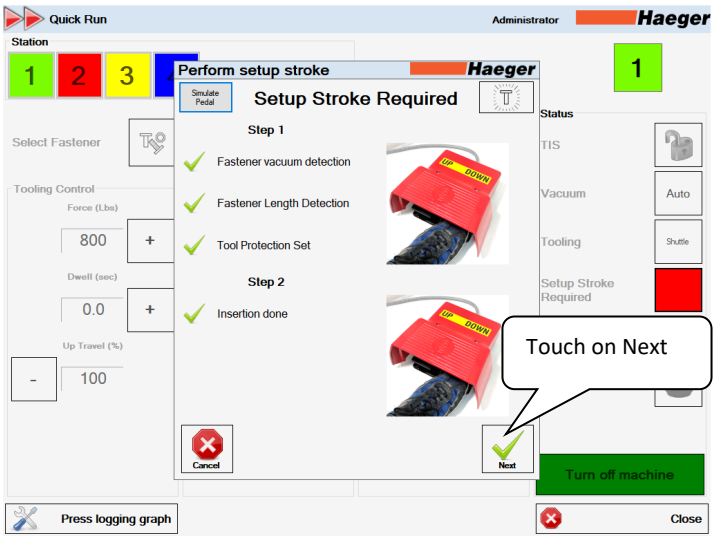
Fastener Length	ON
Fastener Detection	ON

29.

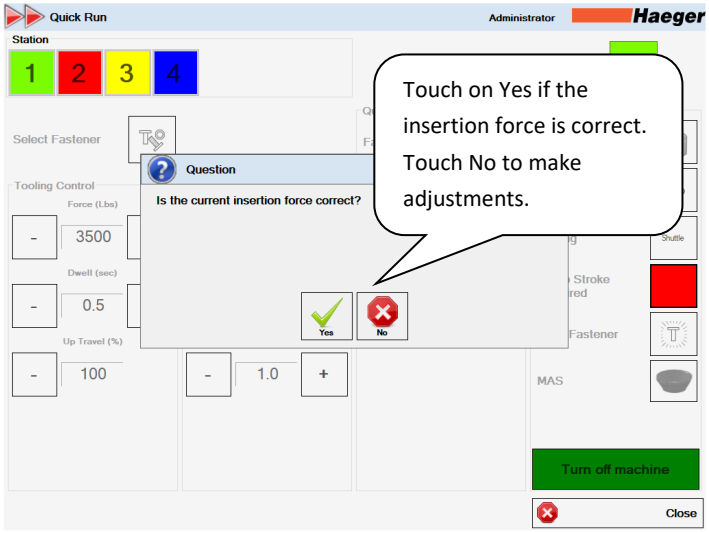


Setup Stroke Step 2 – Station 1: The ram will stop when contact with the anvil and/or workpiece is detected. Depressing the Down again after this will exert insertion force.

30.



31.



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.

32.

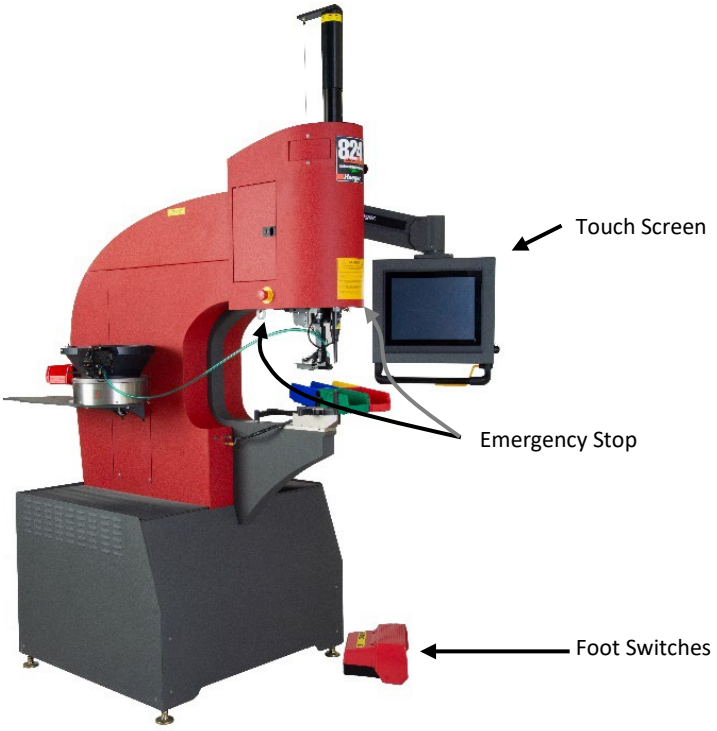
Touch on Close to exit Quick Run when project is completed.

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). Programs can also contain images which illustrate where fasteners are to be inserted.

This section provides you, the operator, with the information that you need to add a  Program and operate the Haeger 824 WindowTouch-5He 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.

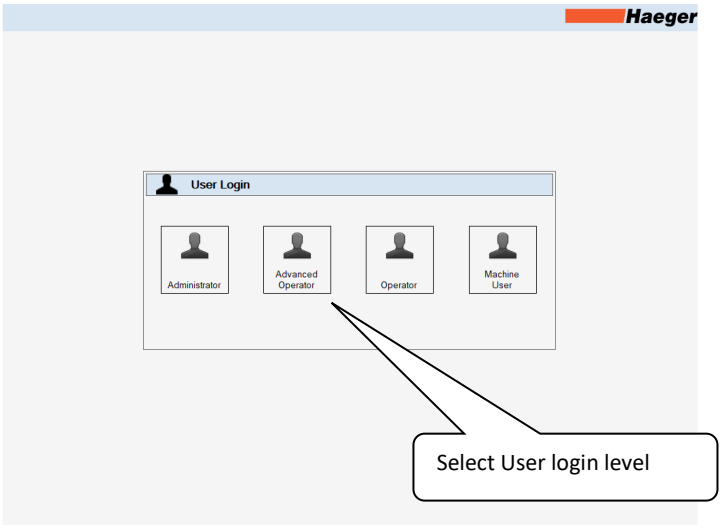
- **NEVER Operate this Machine without wearing the proper eye protection!**

The 824 WindowTouch-5He Insertion 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. The touch screen is the main method of entering information into the software and controlling the computer.

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

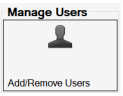
The InsertionLogic banner screen will appear on the computer, signifying that the computer is starting up. Once the system environment is fully started, the Log In screen will be displayed.

2.



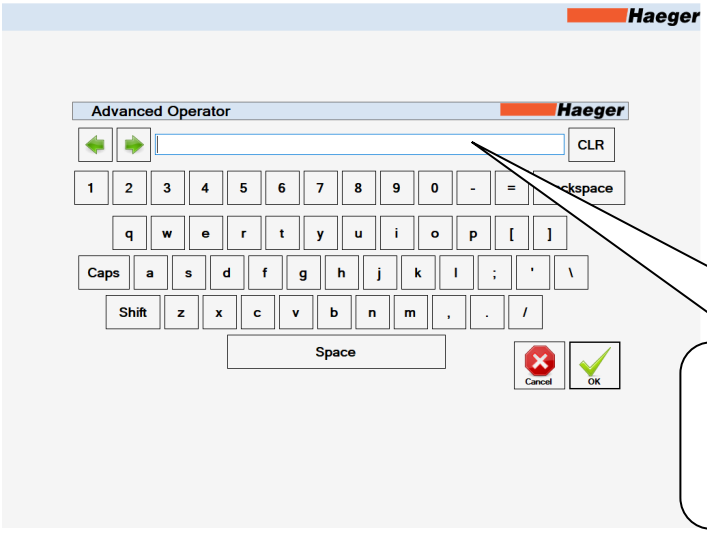
Password:
User passwords can be established by the Administrator during User Setup in the Admin Menu 

on the main screen.

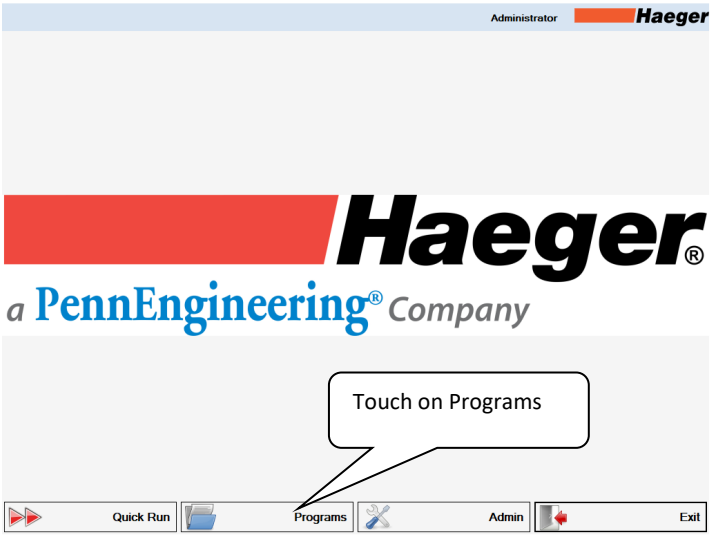
Touch on Manage Users 

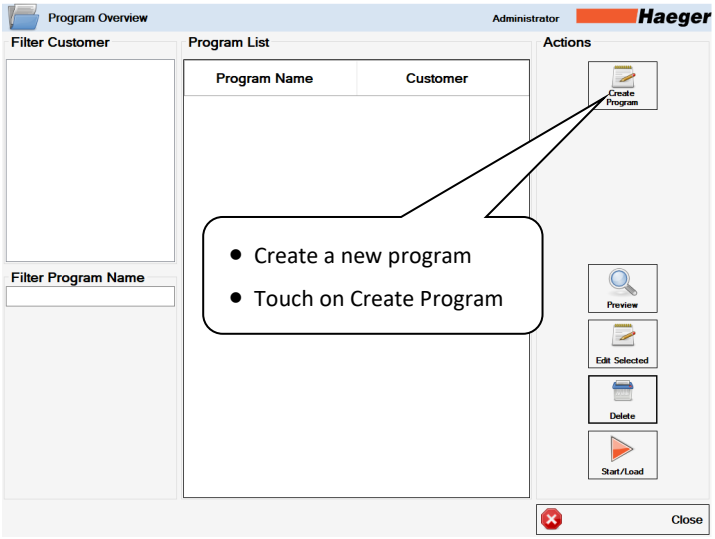
then select user and enter new password.

3.



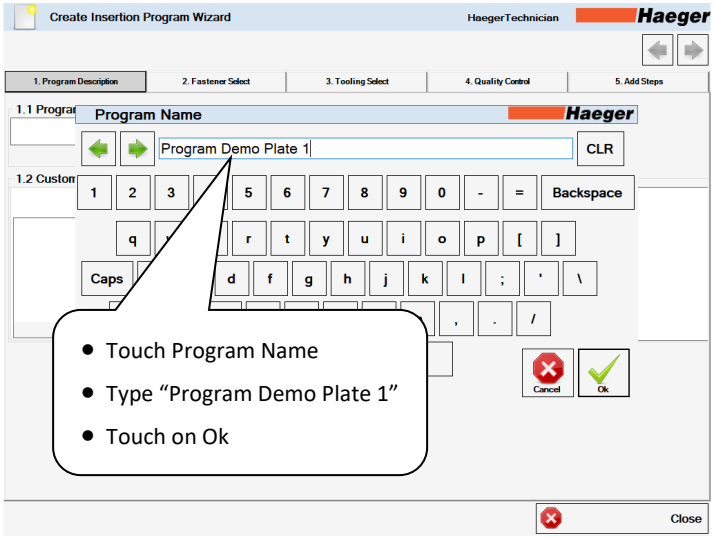
- Enter Password.
- Default password is 1. This password can be changed for each user level.

4. 

5. 

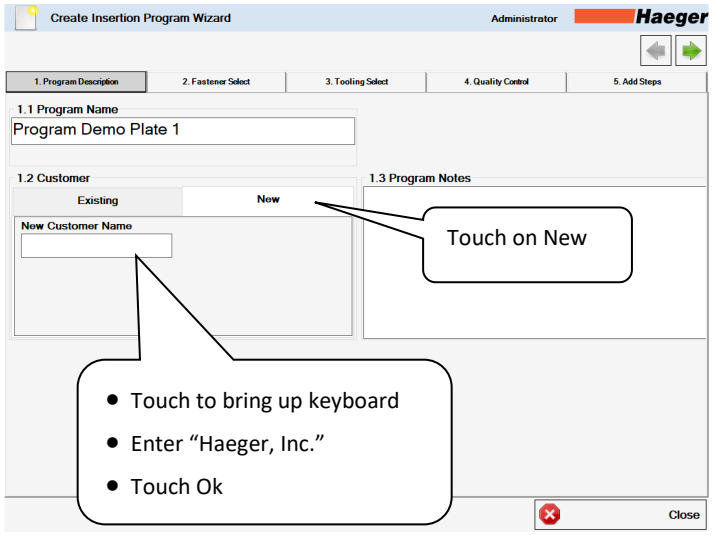
Create New: Begins a new program.

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 "

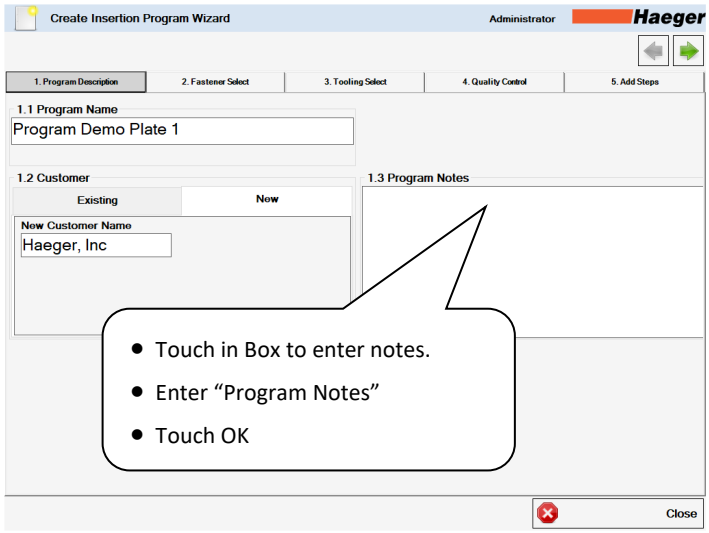
7.



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

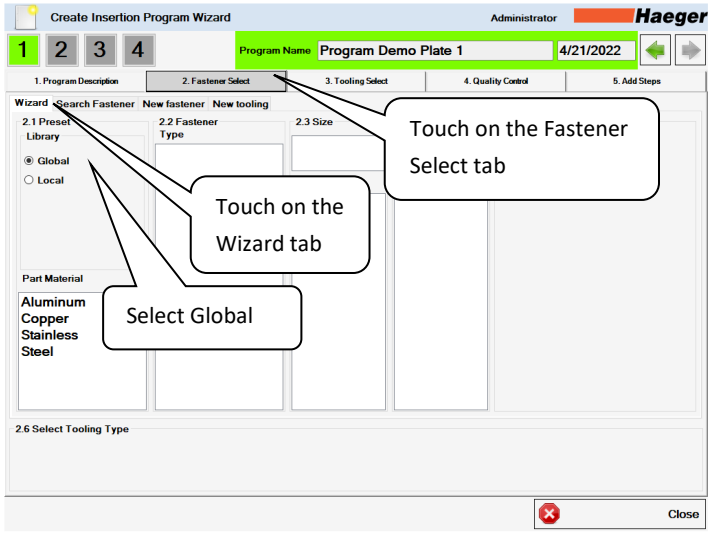
If a customer had been previously entered, choose “Existing” to see the list for selection.

8.



Program Notes: Space for any notes as necessary.

9.

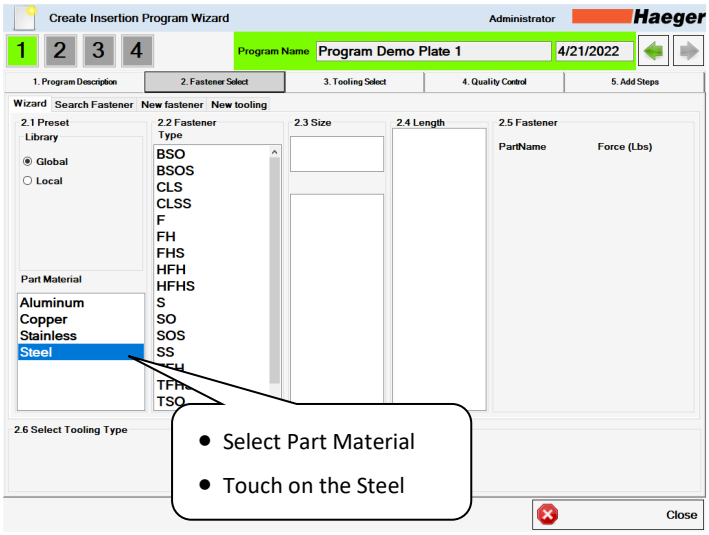


Wizard: Shows fastener library and guide for program setup.
Search Fastener: Search saved fasteners in both Global and Local libraries.
New Fastener: Add new fasteners.

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

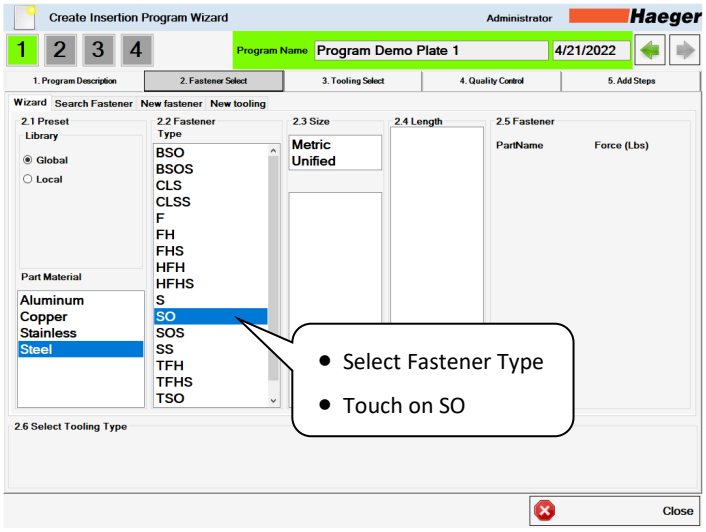
Fastener Library

10.



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

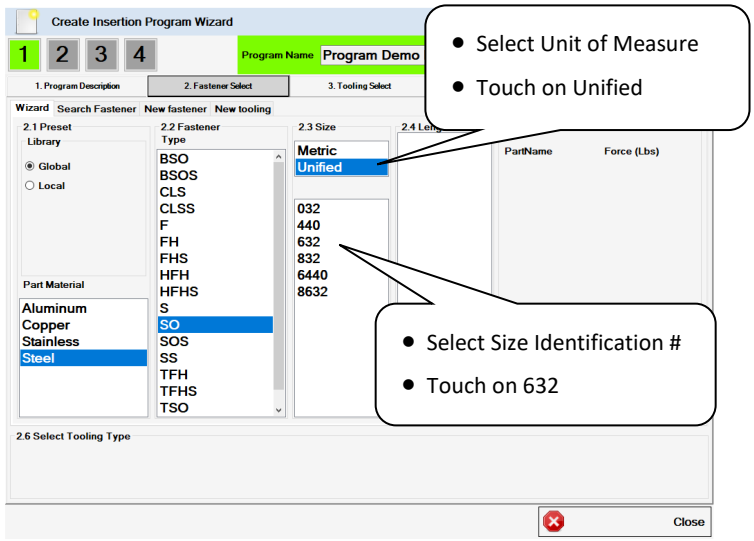
11.



Fastener Type:

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

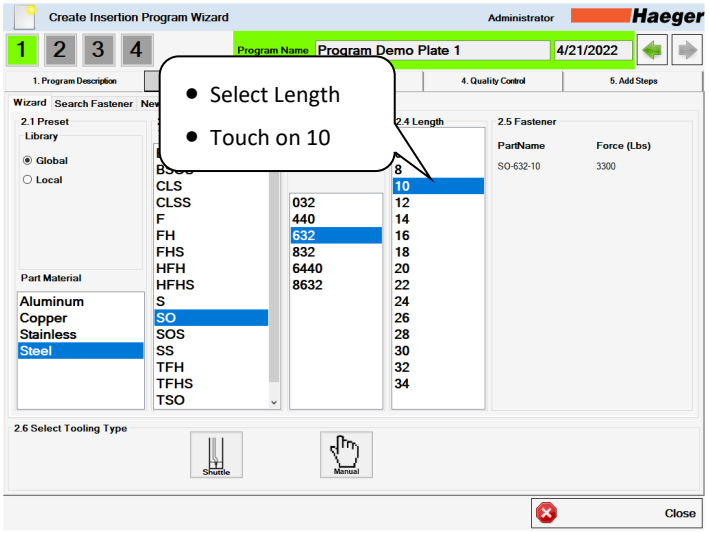
12.



Unit & Size:

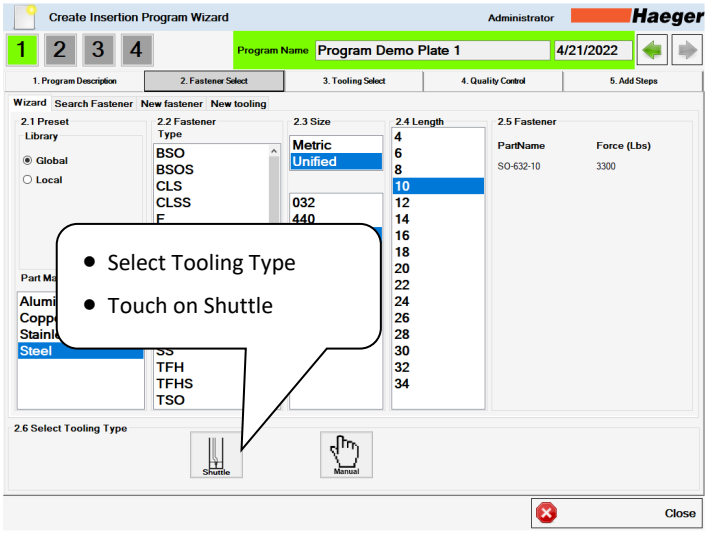
- Metric or Unified
- Size Identification #

13.



Length: Fastener length

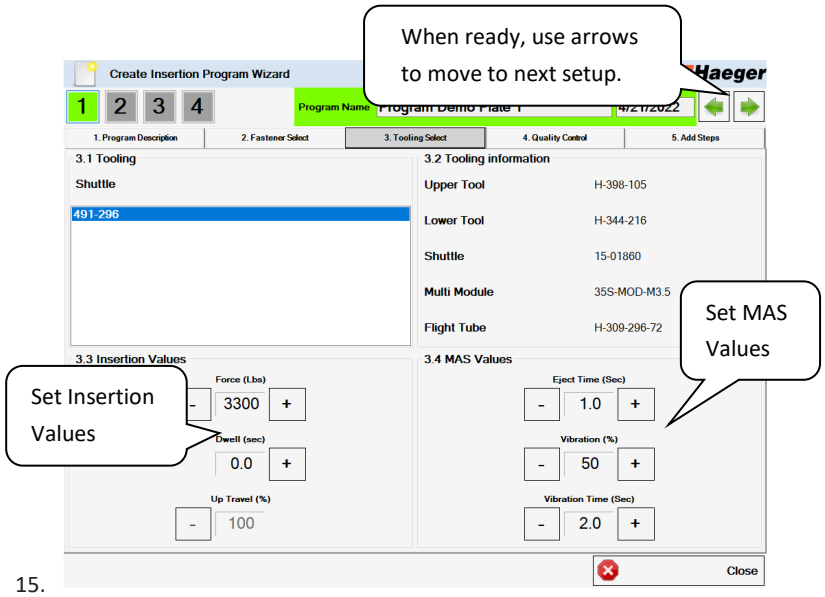
14.



Select Tooling Type:

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

15.



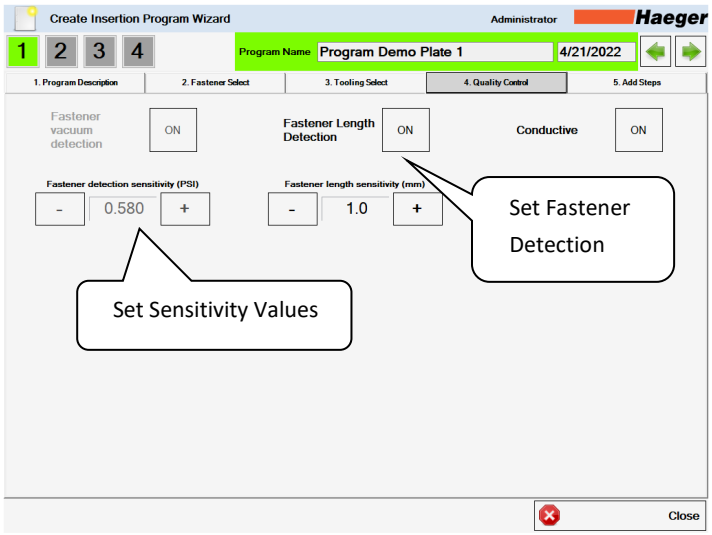
Tooling: Select tooling set for the job.

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

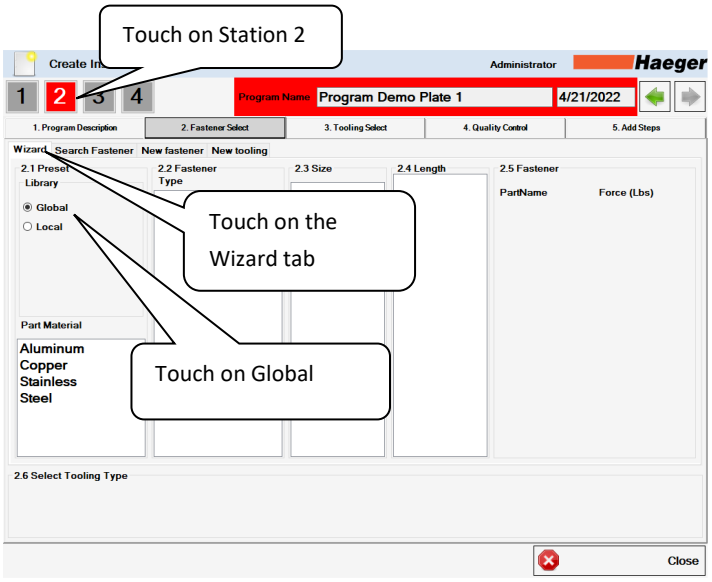
16.



Quality Control:

Sensitivity Values:
TPS Sensitivity Values: Minimum of 0.1, maximum of 1.
Fastener Length Sensitivity: Minimum of 0.1, maximum of 5.
Fastener Detection Sensitivity: Minimum of 0, maximum of 1.813.

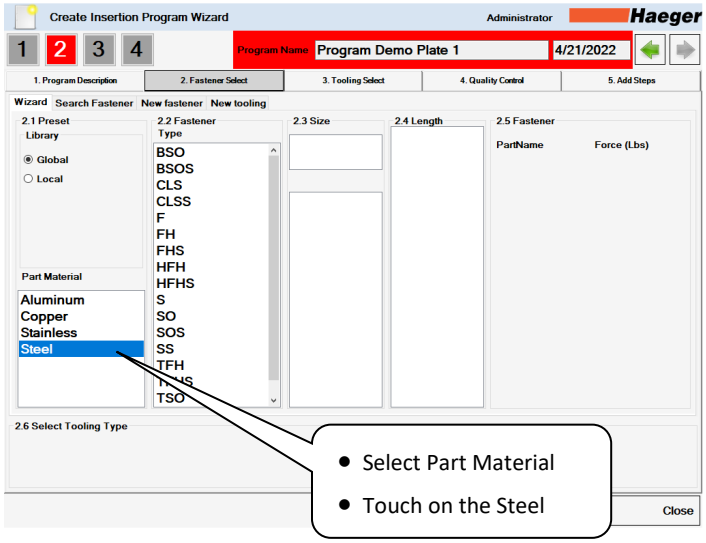
17.



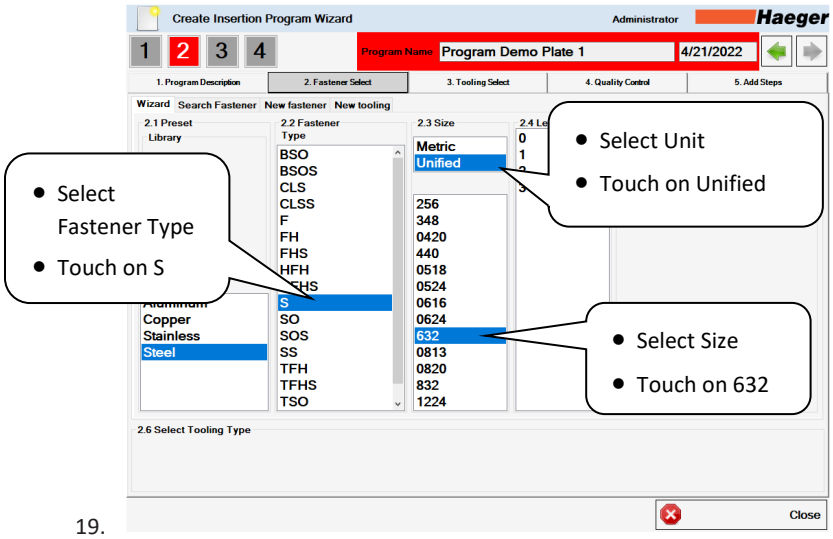
Repeat Wizard to program Station 2

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

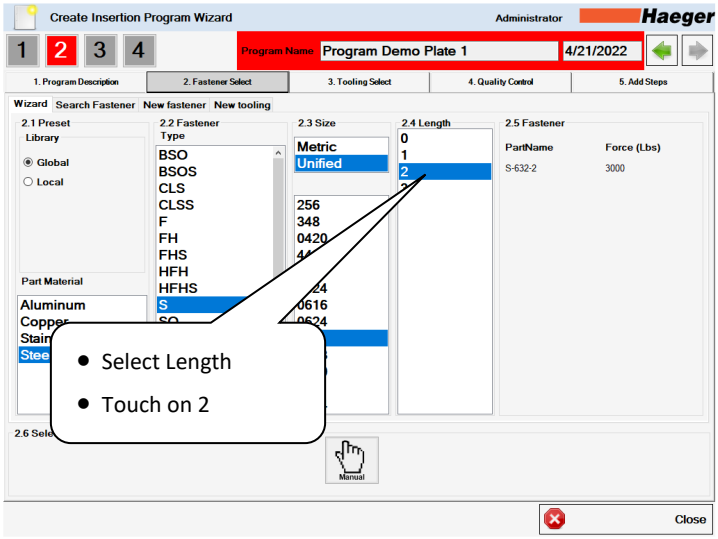
18.



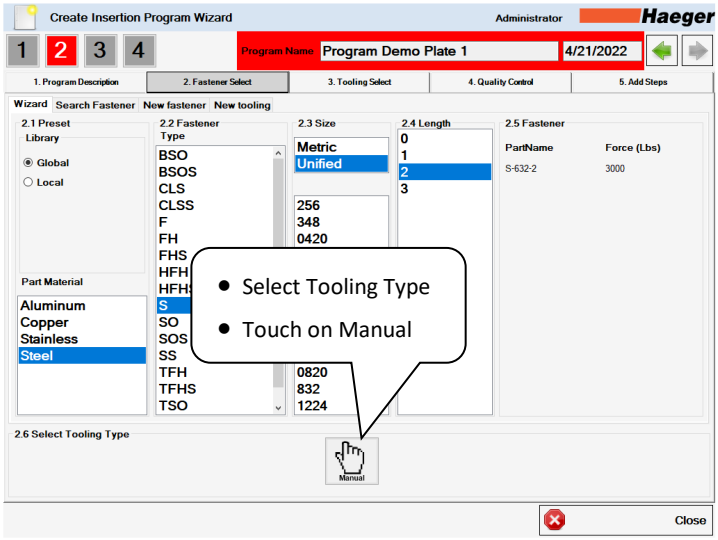
19.



20.



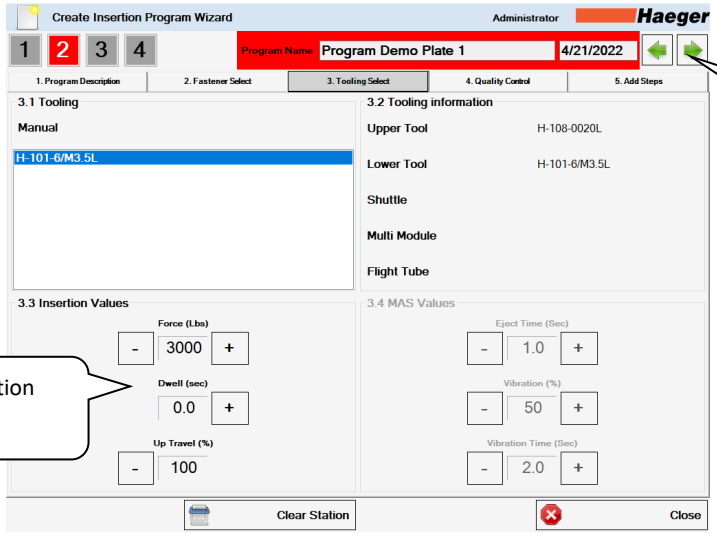
21.



Select Tooling Type:

Stations 2 through 4 are manually operated stations.

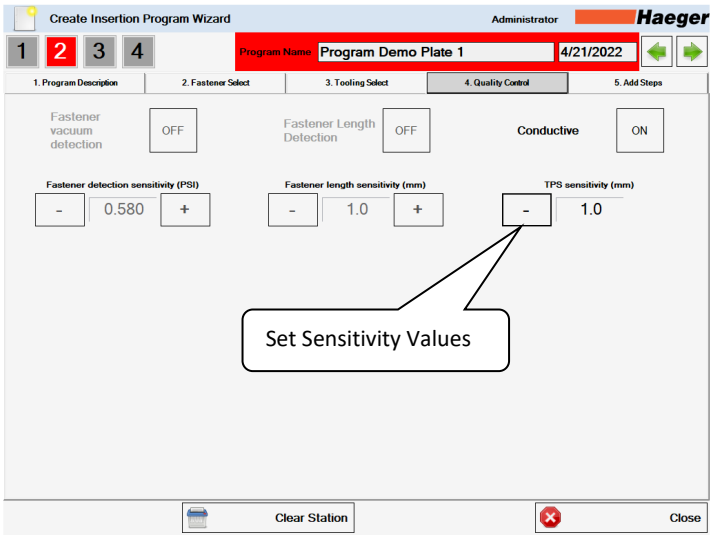
22.



When ready, use arrows to move to next setup.

Set Insertion Values

23.

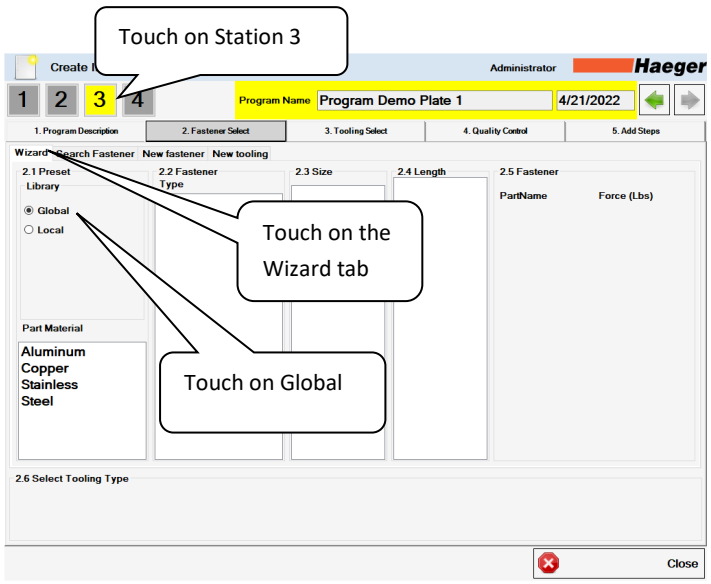


Set Sensitivity Values

TPS Sensitivity Values:
Minimum of 0, maximum of 1.

Fastener Length Sensitivity and Fastener Detection Sensitivity not applicable for manual tooling.

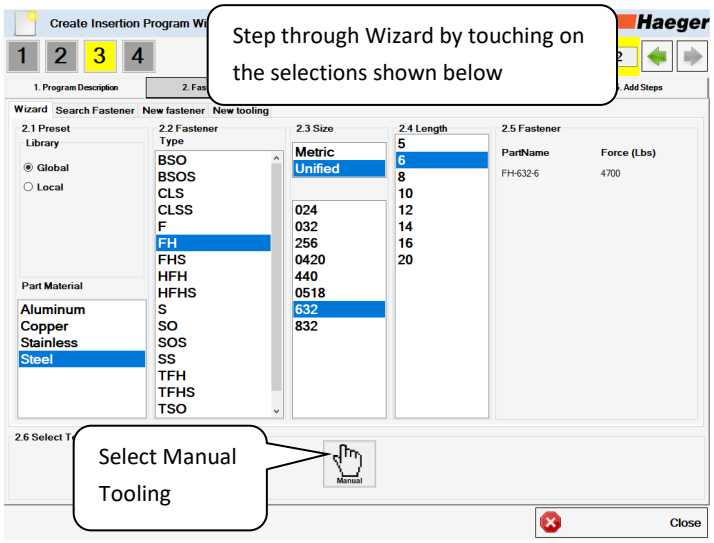
24.



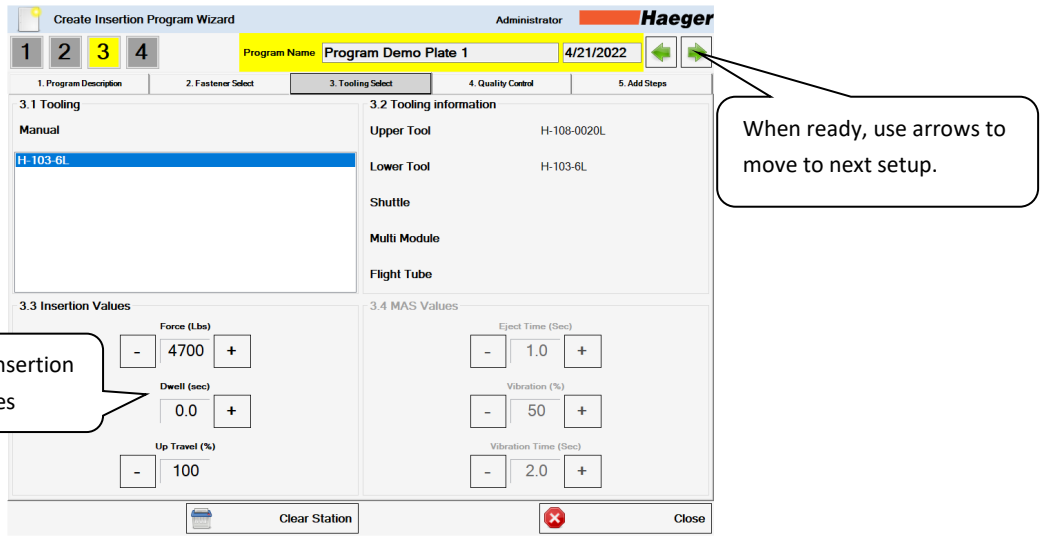
Repeat Wizard to program Station 3

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

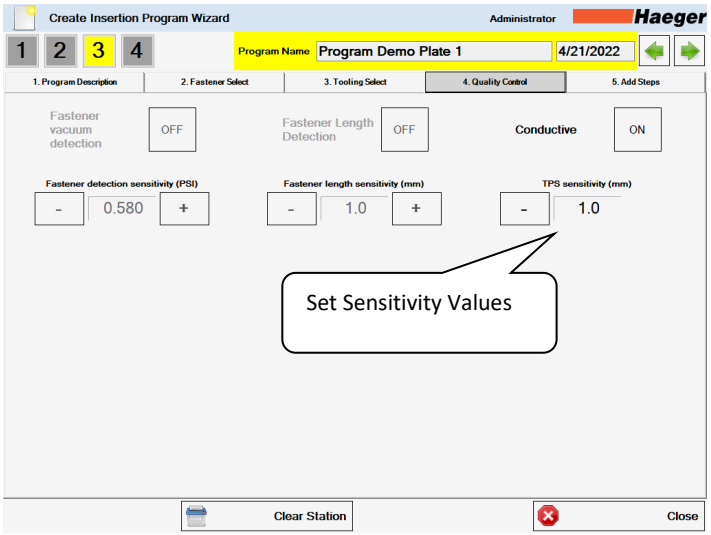
25.


Create Insertion Program Wi
Haeger
1 2 3 4
Step through Wizard by touching on the selections shown below
1. Program Description
Wizard
Search Fastener
New fastener
New tooling
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
TFH
TFHS
TSO
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
Manual
Close

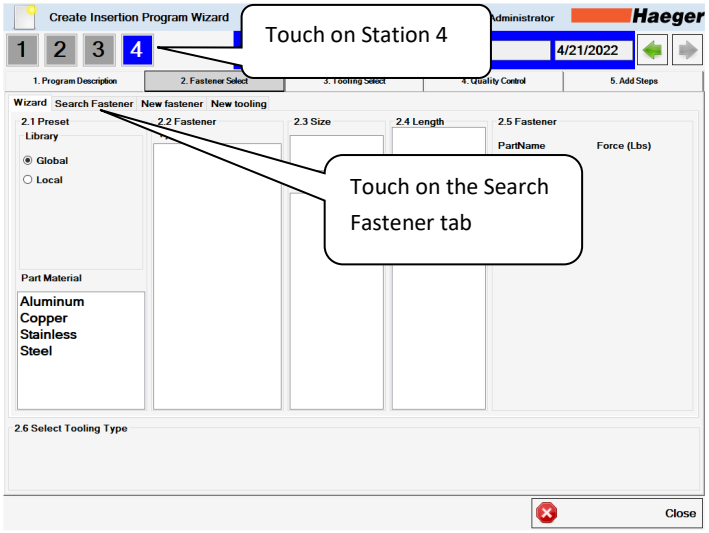
26.


Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
Program Name
Program Demo Plate 1
4/21/2022
When ready, use arrows to move to next setup.
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
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
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
Set Insertion Values
Clear Station
Close

27.


Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
Program Name
Program Demo Plate 1
4/21/2022
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
Fastener vacuum detection
OFF
Fastener Length Detection
OFF
Conductive
ON
Fastener detection sensitivity (PSI)
0.580
Fastener length sensitivity (mm)
1.0
TPS sensitivity (mm)
1.0
Set Sensitivity Values
Clear Station
Close

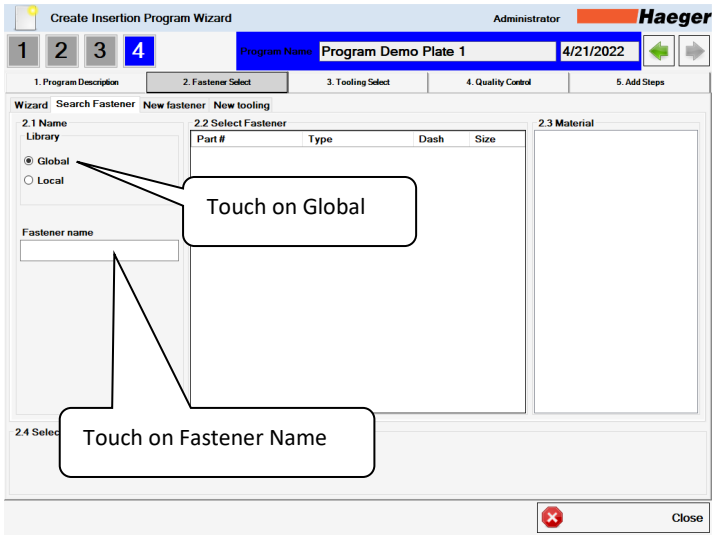
28.



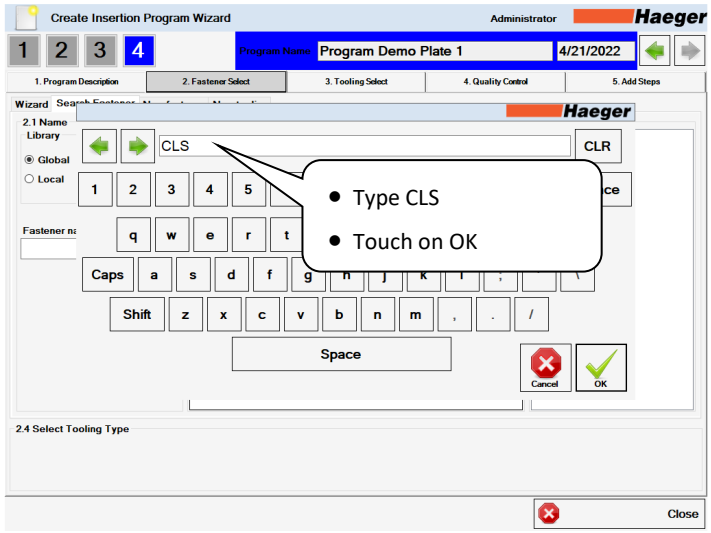
Speed up the programming steps by using Search Fastener in lieu of the wizard to program Station 4.

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

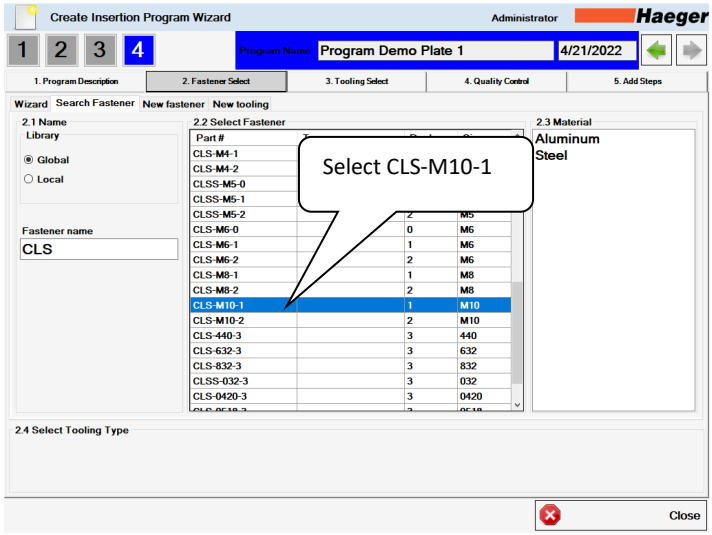
29.

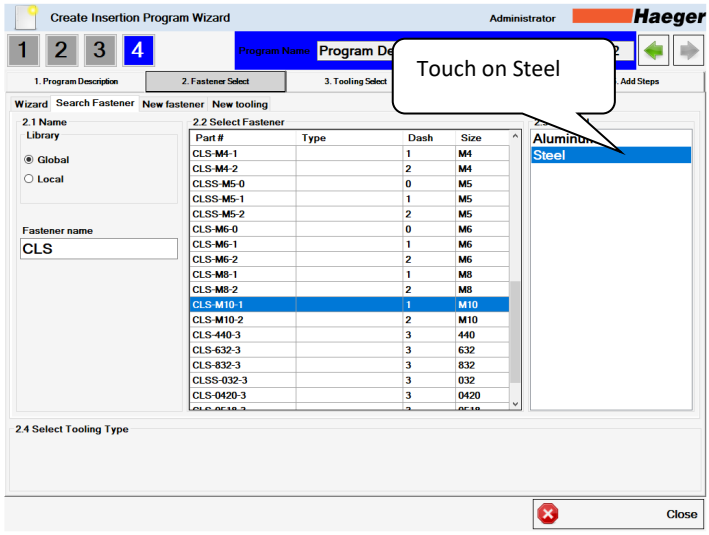


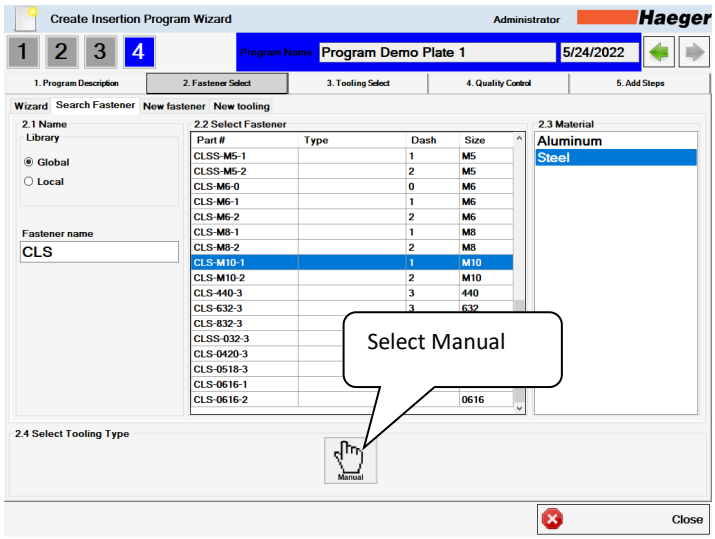
30.



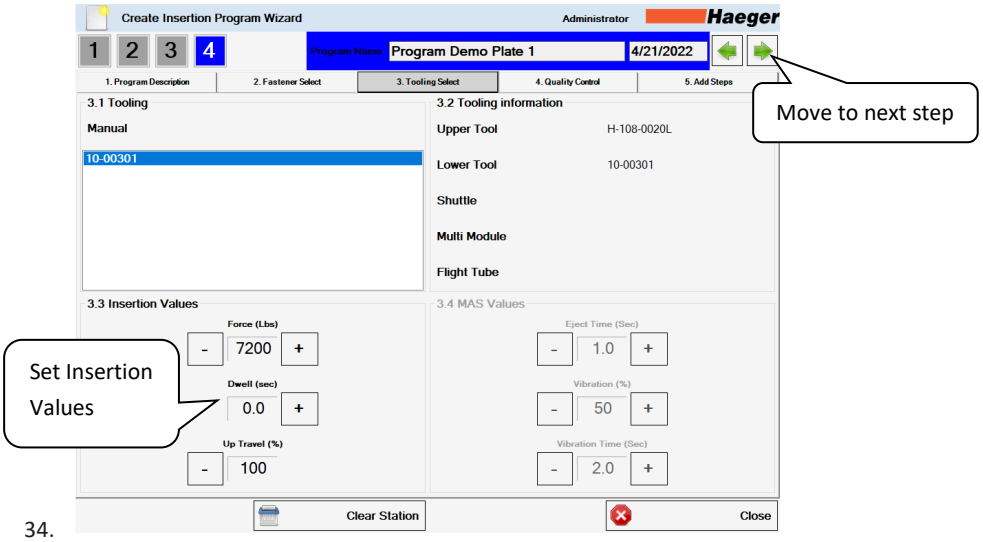
To go directly to the desired fastener, type in the fastener's identification number. (ex. CLS-M10-1)

31. 
Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
Program Name
Program Demo Plate 1
4/21/2022
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
Wizard
Search Fastener
New fastener
New tooling
2.1 Name
Library
Global
Local
Fastener name
CLS
2.2 Select Fastener
Part #
Type
Dash
Size
CLS-M4-1
CLS-M4-2
CLSS-M5-0
CLSS-M5-1
CLSS-M5-2
CLS-M6-0
CLS-M6-1
CLS-M6-2
CLS-M8-1
CLS-M8-2
CLS-M10-1
CLS-M10-2
CLS-440-3
CLS-632-3
CLS-832-3
CLSS-032-3
CLS-0420-3
2.3 Material
Aluminum
Steel
Select CLS-M10-1
2.4 Select Tooling Type
Close

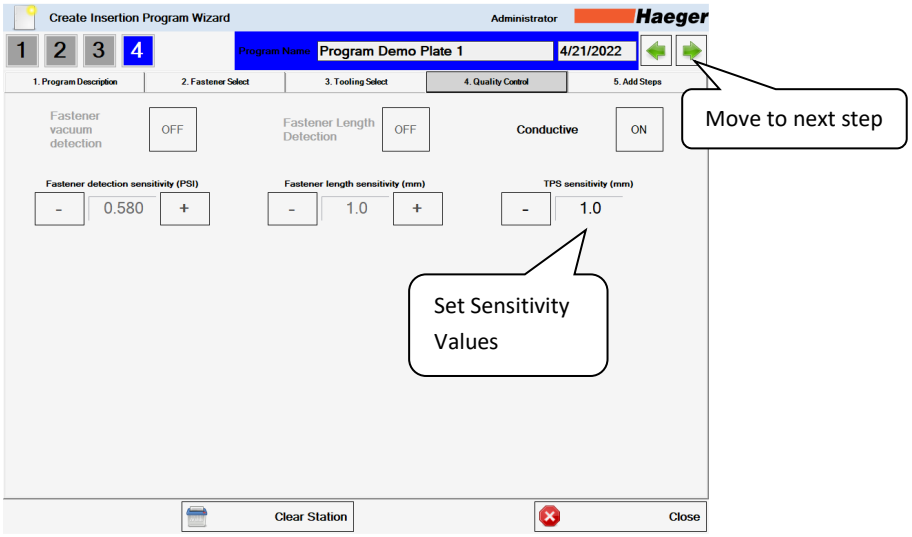
32. 
Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
1. Program Description
2. Fastener Select
3. Tooling Select
Add Steps
Wizard
Search Fastener
New fastener
New tooling
2.1 Name
Library
Global
Local
Fastener name
CLS
2.2 Select Fastener
Part #
Type
Dash
Size
CLS-M4-1
CLS-M4-2
CLSS-M5-0
CLSS-M5-1
CLSS-M5-2
CLS-M6-0
CLS-M6-1
CLS-M6-2
CLS-M8-1
CLS-M8-2
CLS-M10-1
CLS-M10-2
CLS-440-3
CLS-632-3
CLS-832-3
CLSS-032-3
CLS-0420-3
Steel
Touch on Steel
2.4 Select Tooling Type
Close

33. 
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
Wizard
Search Fastener
New fastener
New tooling
2.1 Name
Library
Global
Local
Fastener name
CLS
2.2 Select Fastener
Part #
Type
Dash
Size
CLSS-M5-1
CLSS-M5-2
CLS-M6-0
CLS-M6-1
CLS-M6-2
CLS-M8-1
CLS-M8-2
CLS-M10-1
CLS-M10-2
CLS-440-3
CLS-632-3
CLS-832-3
CLSS-032-3
CLS-0420-3
CLS-0518-3
CLS-0616-1
CLS-0616-2
0616
2.3 Material
Aluminum
Steel
Select Manual
Manual
2.4 Select Tooling Type
Close

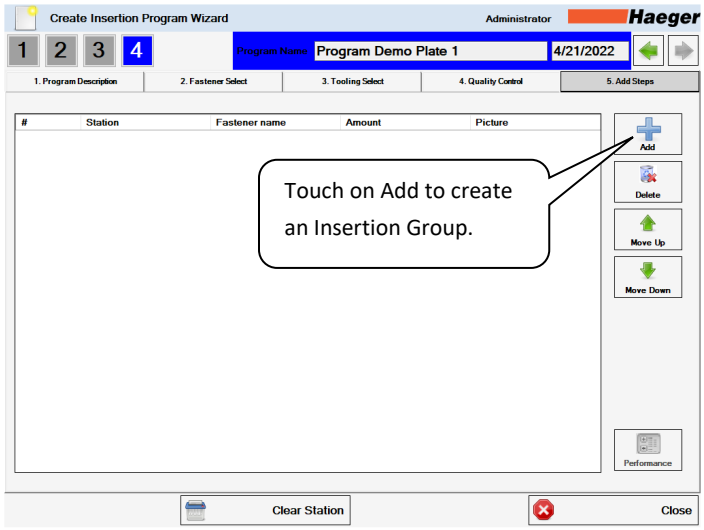
34.



35.



36.

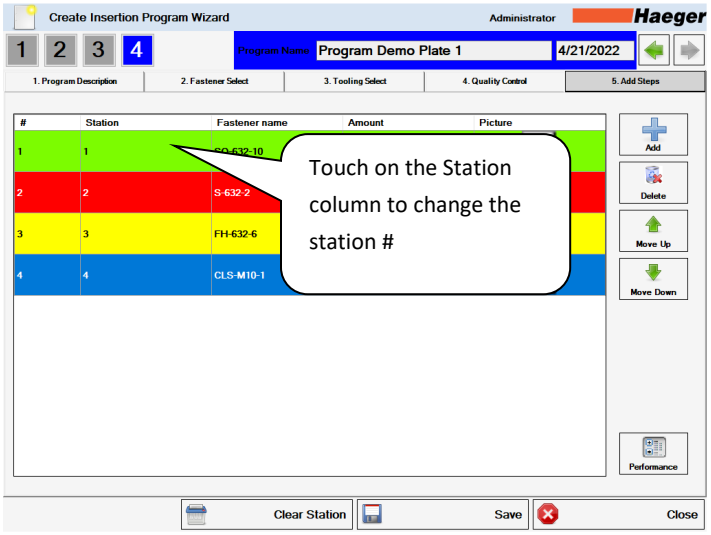


Adding Insertion Groups

For this example, create 4 insertion groups.

Insertion Groups

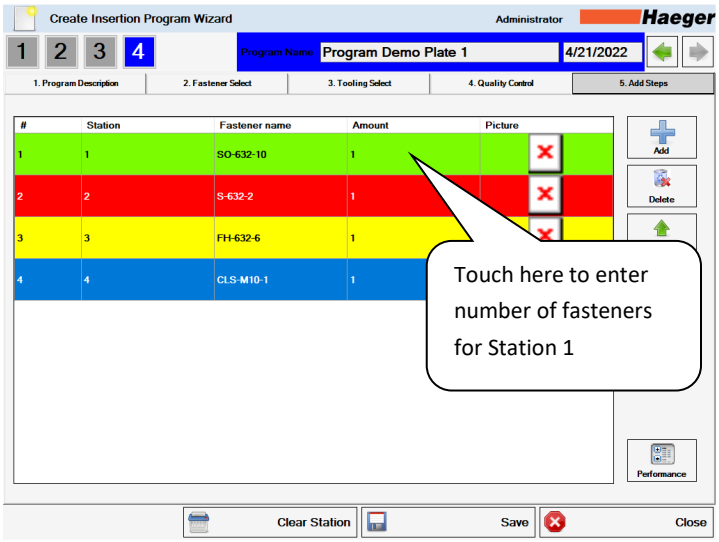
37.



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

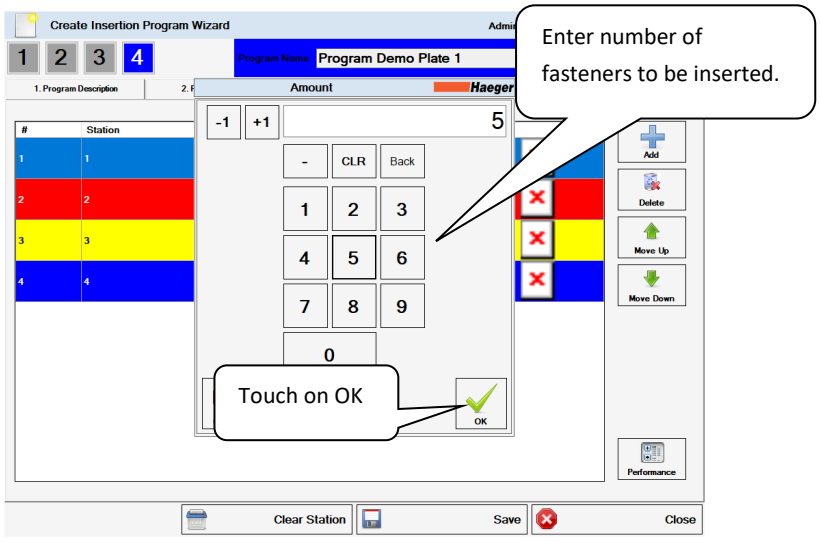
For this example, set the stations in order from 1 to 4.

38.

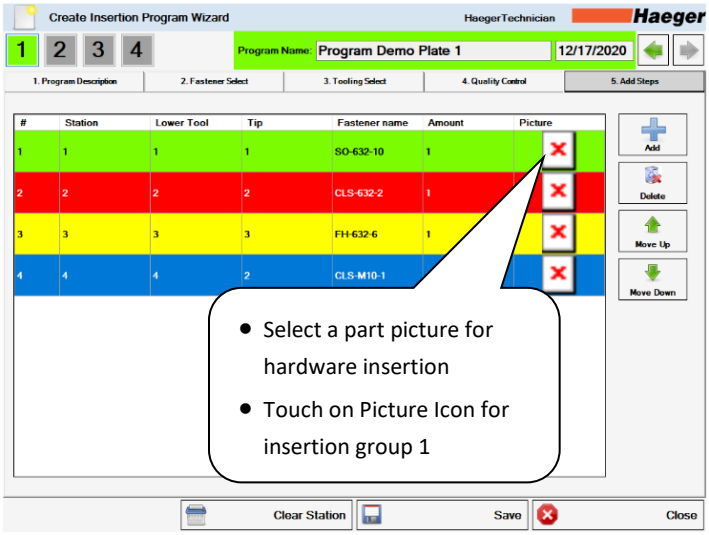


Amount:
This column sets the number of fasteners to be inserted for each insertion group.

39.

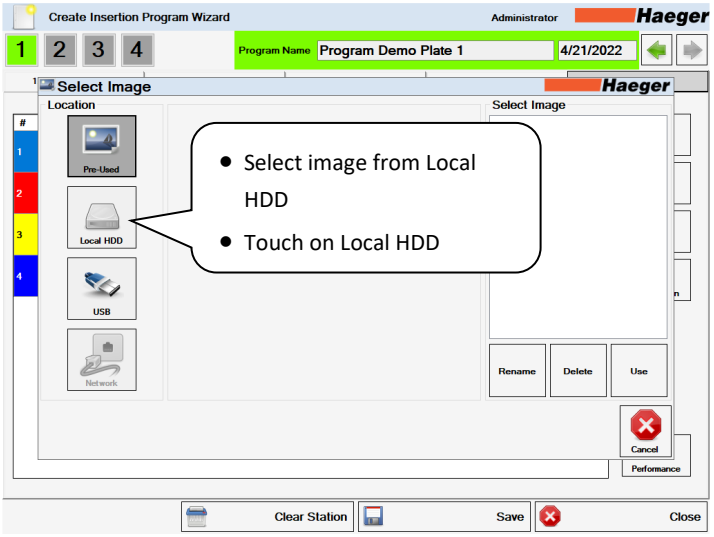


40.



Picture:
This icon associates a part image with the insertion group.

41.

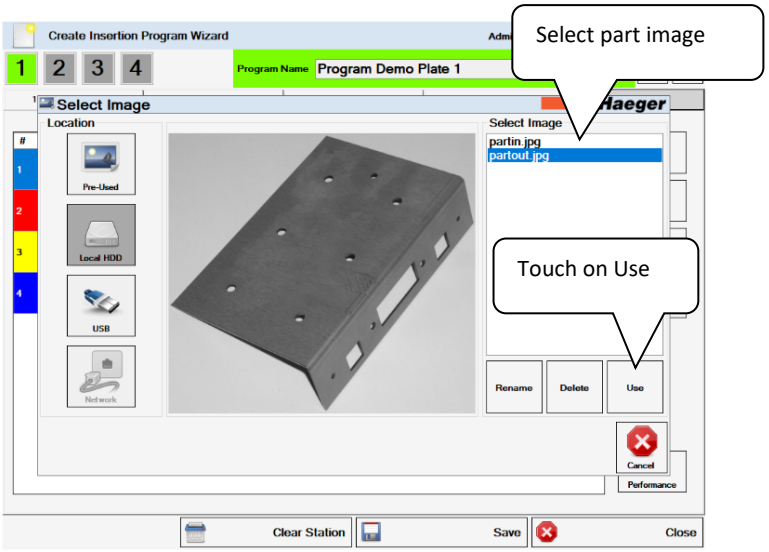


Images can be selected from different locations.

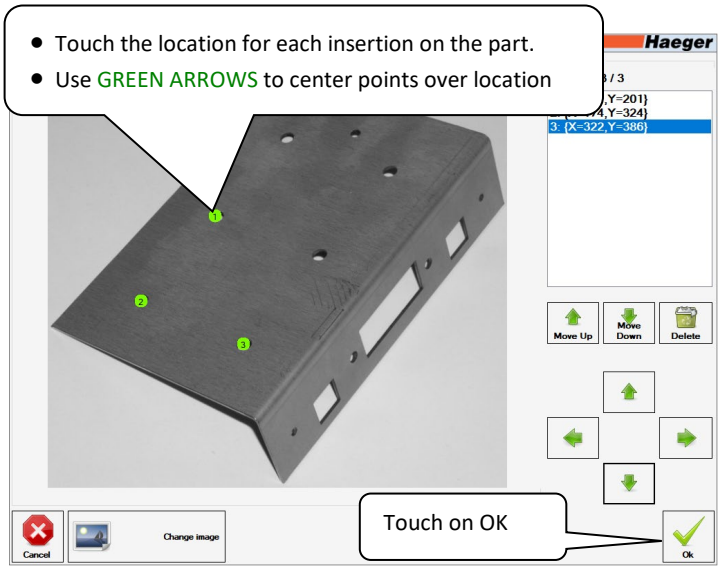
- **USB:** Typically used to pull images from a camera or flash drive.
- **Local HDD:** Images that reside on the machines local hard drive are selected from here.

  For this example, a picture will be taken from the Local HDD.

42.



43.

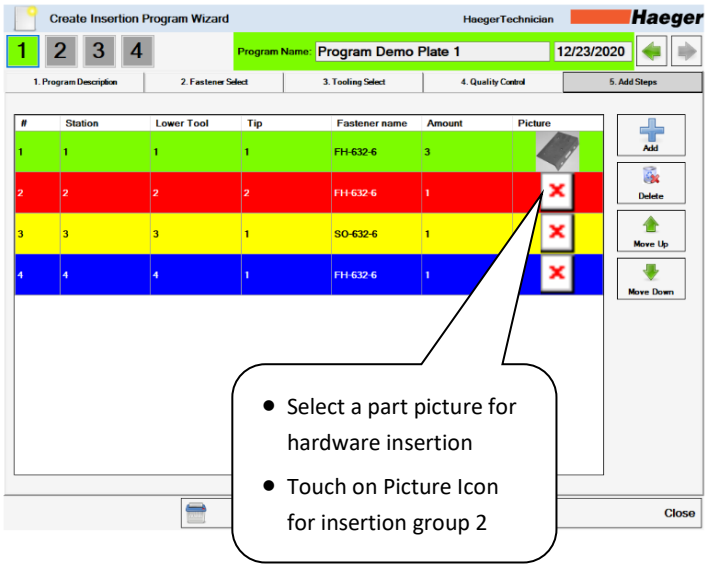


Select Points: Add Insertion Points to the image by tapping the desired location on the image. Use the four direction arrows on screen to fine-tune and center the point.

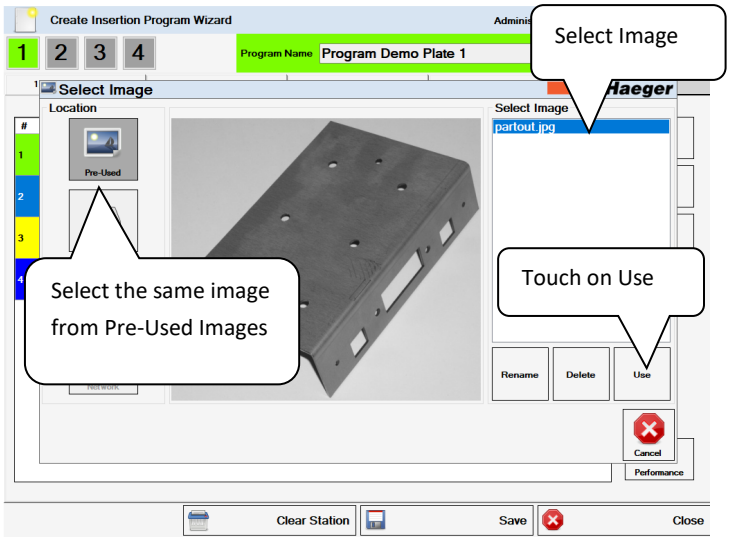
If an image is used for an insertion group, the number of points entered here will override any number previously entered in step 39.

Only the most recent point can be moved using the arrows. For example: if 4 points have been placed, points 1,2, and 3 can no longer be moved unless the points after it is first deleted. (To go back and edit point 2, points 3 and 4 must first be deleted.)

44.

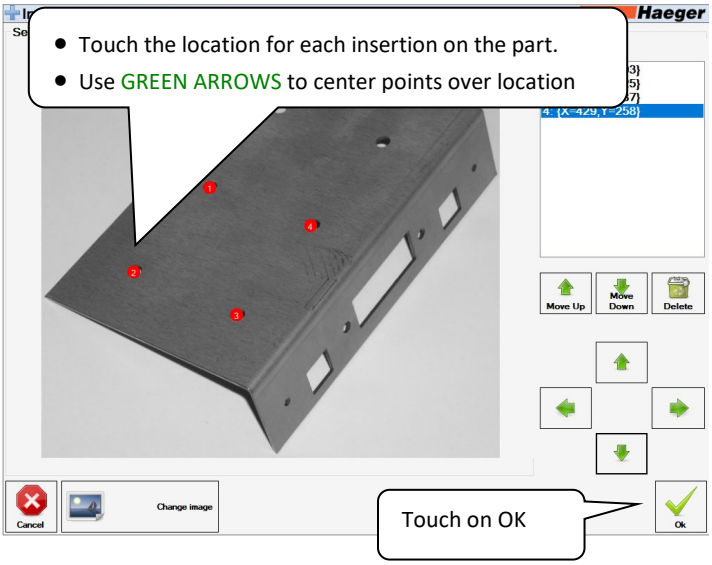


45.



Pre-Used: Saved images previously used.

46.

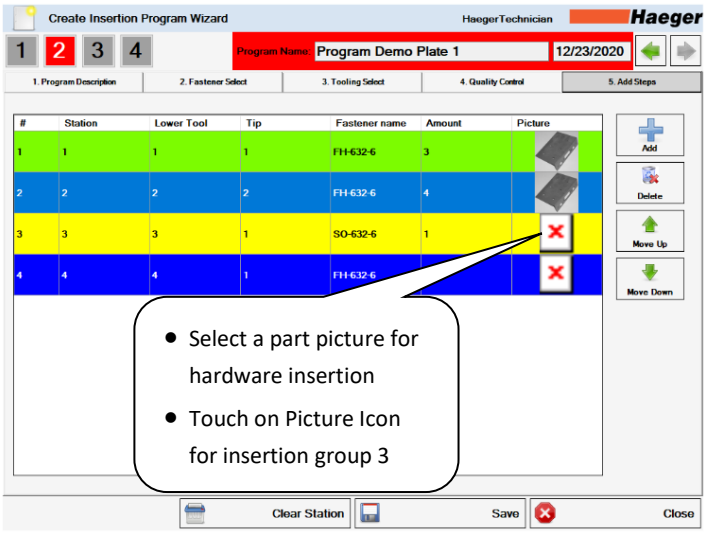


Select Points: Add Insertion Points to the image by tapping the desired location on the image. Use the four direction arrows on screen to fine-tune and center the point.

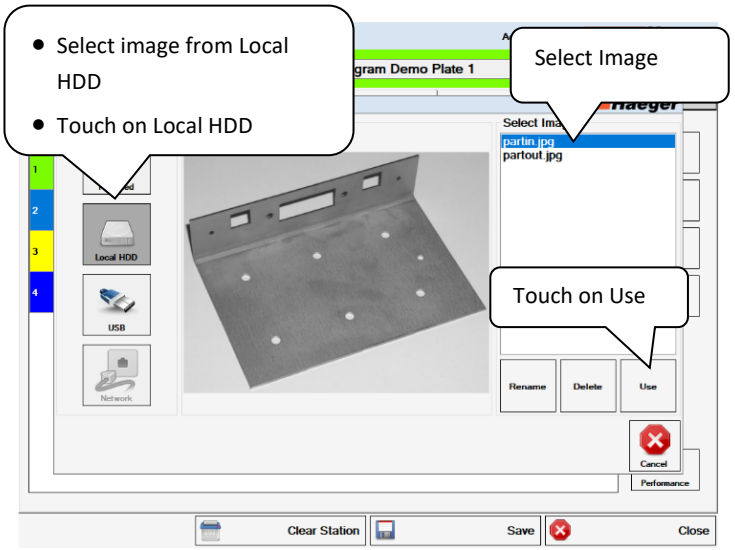
If an image is used for an insertion group, the number of points entered here will override any number previously entered in step 39.

Only the most recent point can be moved using the arrows. For example: if 4 points have been placed, points 1,2, and 3 can no longer be moved unless the points after it is first deleted. (To go back and edit point 2, points 3 and 4 must first be deleted.)

47.

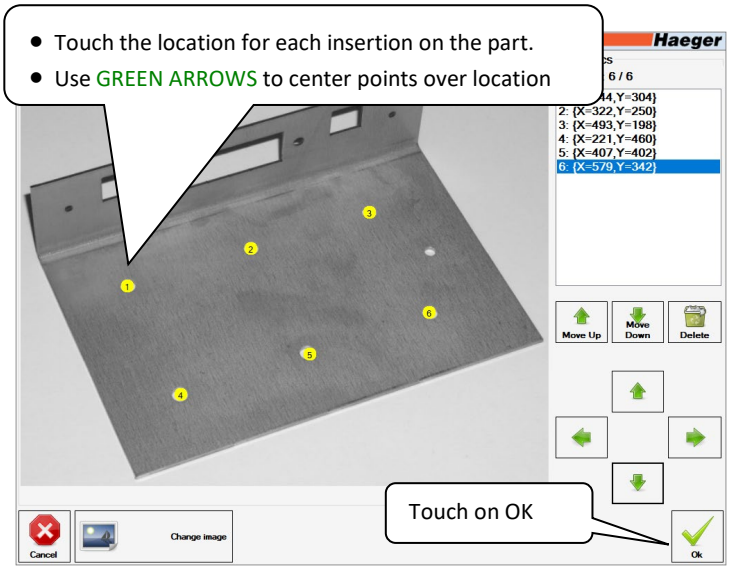


48.



Select Image: A different image with a different view of the part can be selected.

49.

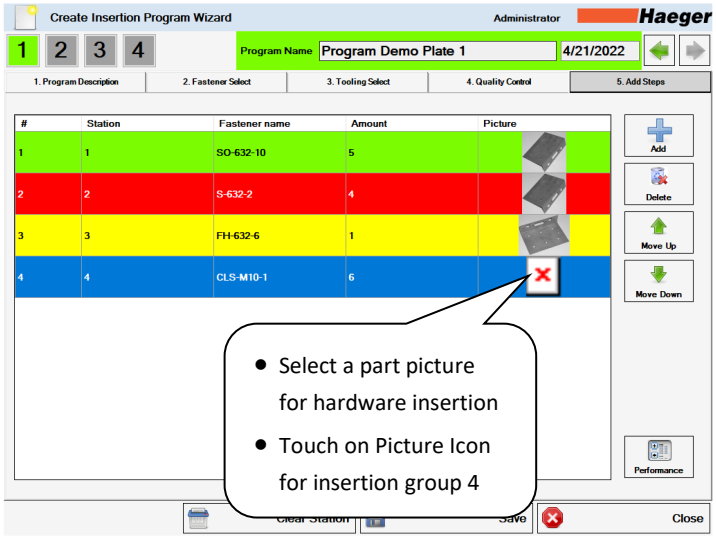


Select Points: Add Insertion Points to the image by tapping the desired location on the image. Use the four direction arrows on screen to fine-tune and center the point.

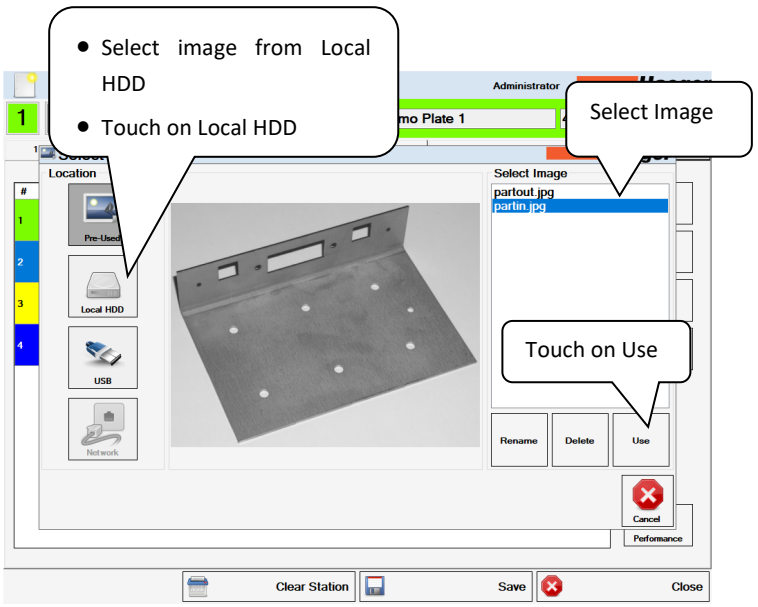
If an image is used for an insertion group, the number of points entered here will override any number previously entered in step 39.

Only the most recent point can be moved using the arrows. For example: if 4 points have been placed, points 1,2, and 3 can no longer be moved unless the points after it is first deleted. (To go back and edit point 2, points 3 and 4 must first be deleted.)

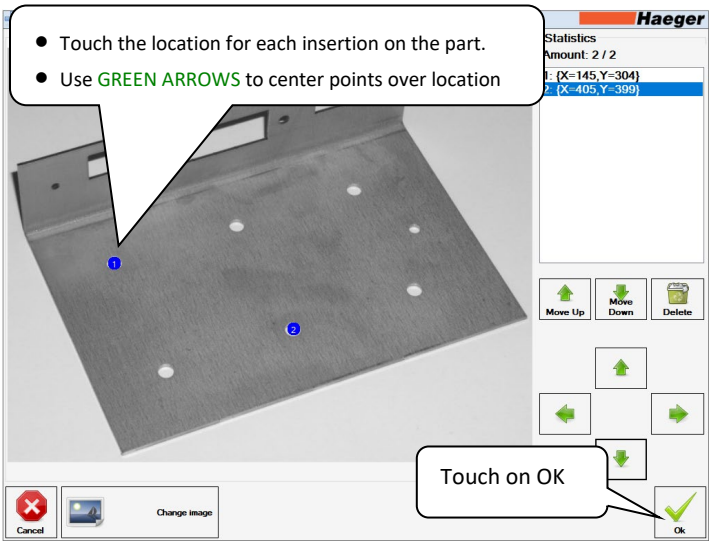
50.



51.



52.

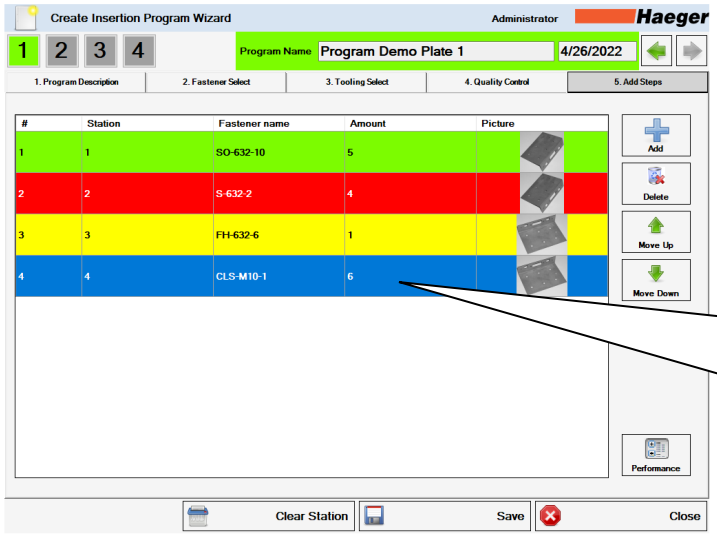


Select Points: Add Insertion Points to the image by tapping the desired location on the image. Use the four direction arrows on screen to fine-tune and center the point.

If an image is used for an insertion group, the number of points entered here will override any number previously entered in step 39.

Only the most recent point can be moved using the arrows. For example: if 4 points have been placed, points 1,2, and 3 can no longer be moved unless the points after it is first deleted. (To go back and edit point 2, points 3 and 4 must first be deleted.)

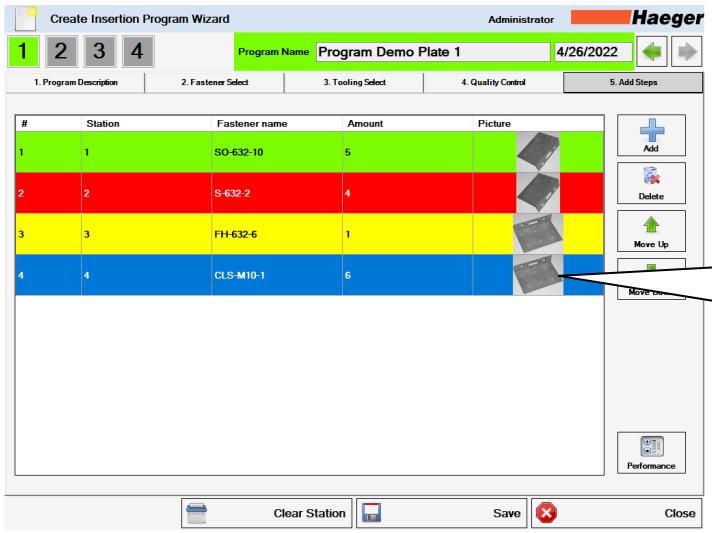
53.



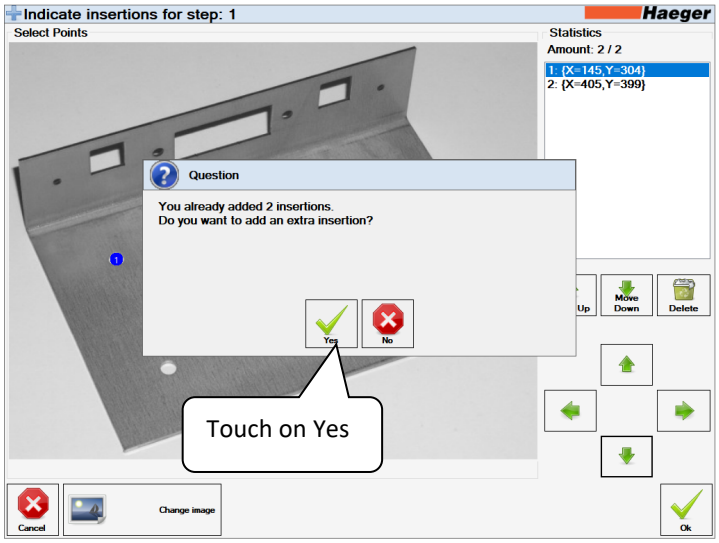
- Review Program
- Check the number of fasteners per insertion group in the “Amount” column.

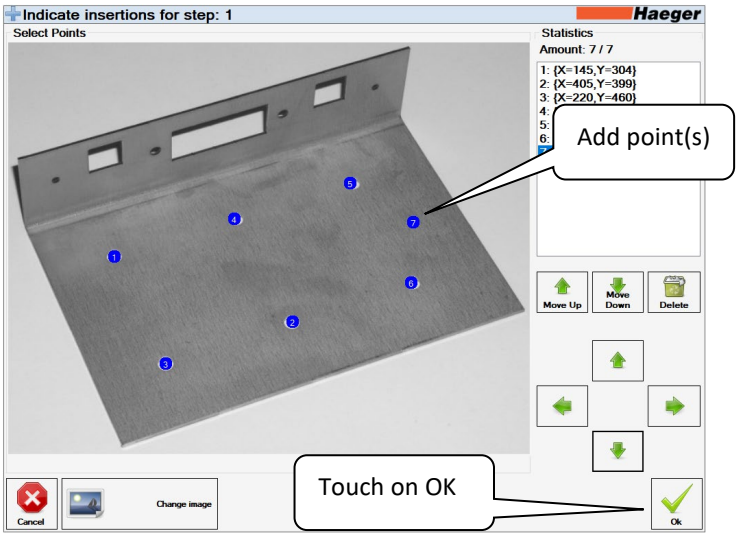
Editing Insertion Groups

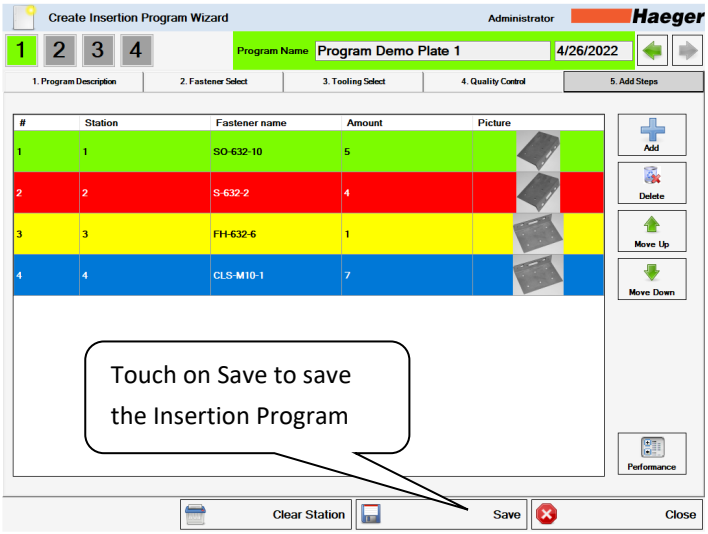
54.



To add fasteners to a group, touch on the picture to re-select image.

55. 
Indicate insertions for step: 1
Haeger
Select Points
Statistics
Amount: 2 / 2
1: {X=145,Y=304}
2: {X=405,Y=399}
Question
You already added 2 insertions.
Do you want to add an extra insertion?
Yes
No
Move Down
Delete
Touch on Yes
Change image
Cancel
Ok

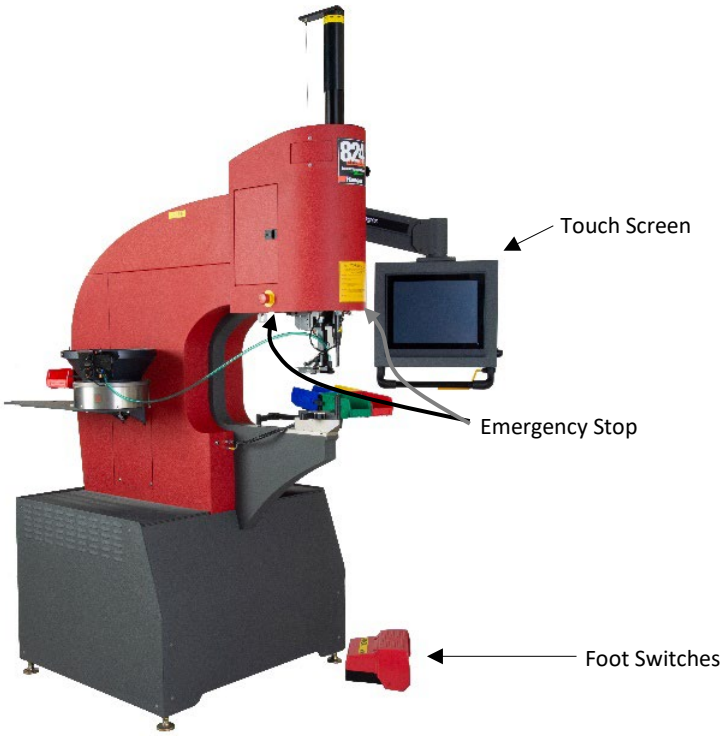
56. 
Indicate insertions for step: 1
Haeger
Select Points
Statistics
Amount: 7 / 7
1: {X=145,Y=304}
2: {X=405,Y=399}
3: {X=220,Y=460}
Add point(s)
Move Up
Move Down
Delete
Touch on OK
Change image
Cancel
Ok

57. 
Create Insertion Program Wizard
Administrator
Haeger
1 2 3 4
Program Name
Program Demo Plate 1
4/26/2022
1. Program Description
2. Fastener Select
3. Tooling Select
4. Quality Control
5. Add Steps
Station Fastener name Amount Picture
1 1 SO-632-10 5
2 2 S-632-2 4
3 3 FH-632-6 1
4 4 CLS-M10-1 7
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 run a Program and operate the Haeger 824 WindowTouch-5He 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 come into contact with 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!**

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

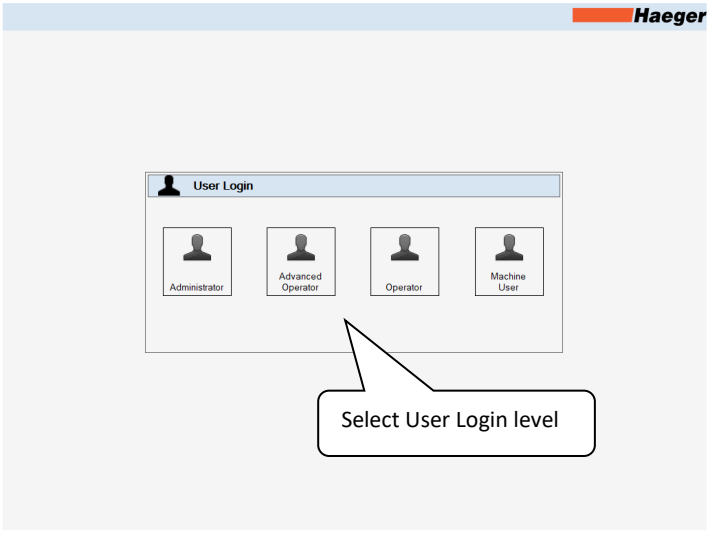
Access Level Reminder:
Machine User does not have access to load a Program. Admin/Operator must load it first – Then the Machine User can run it.

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

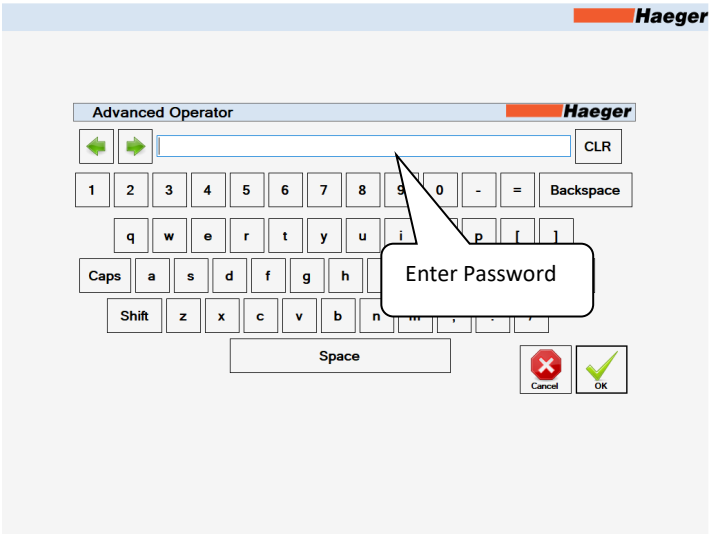
1. Turn on the machine by turning the main disconnect switch to the ON position

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.

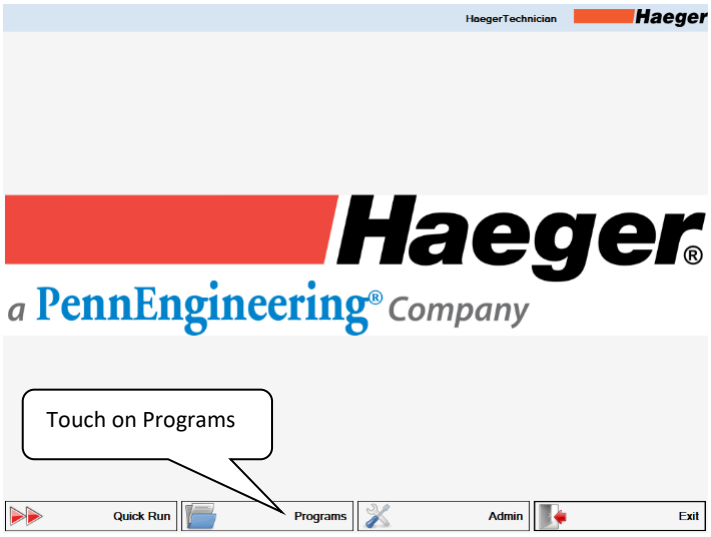
2.



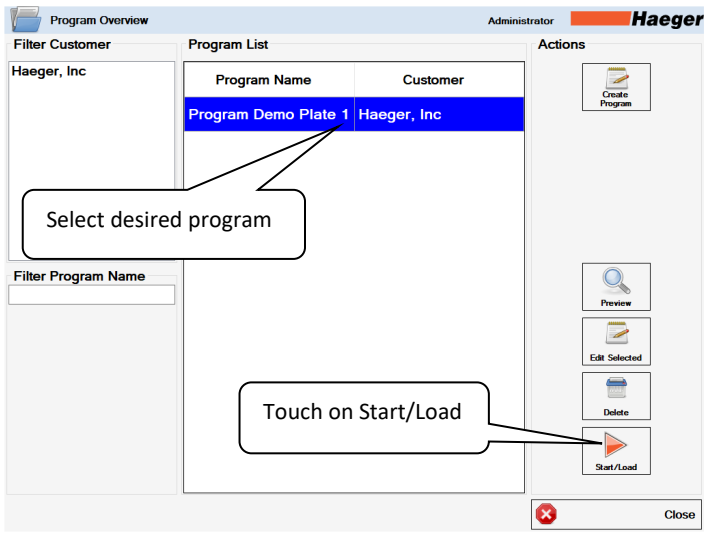
3.


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 p [ ]
Caps a s d f g h
Shift z x c v b n
Space
Cancel
OK
Enter Password

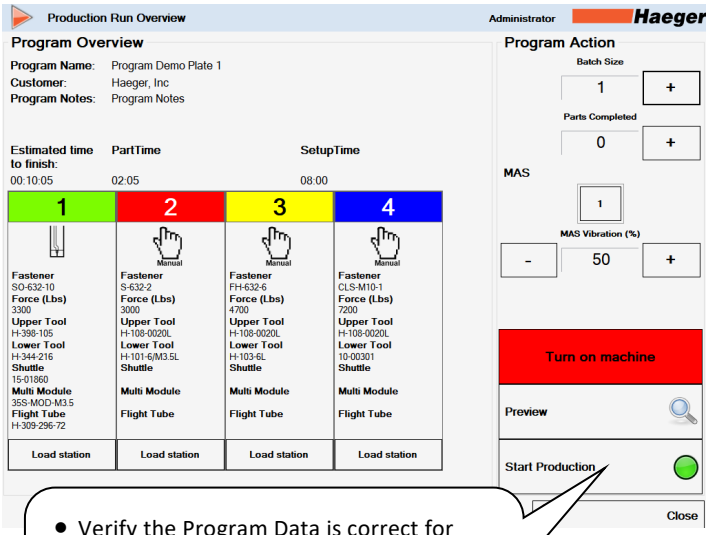
4.


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

5.


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

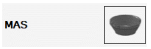
6.



- 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

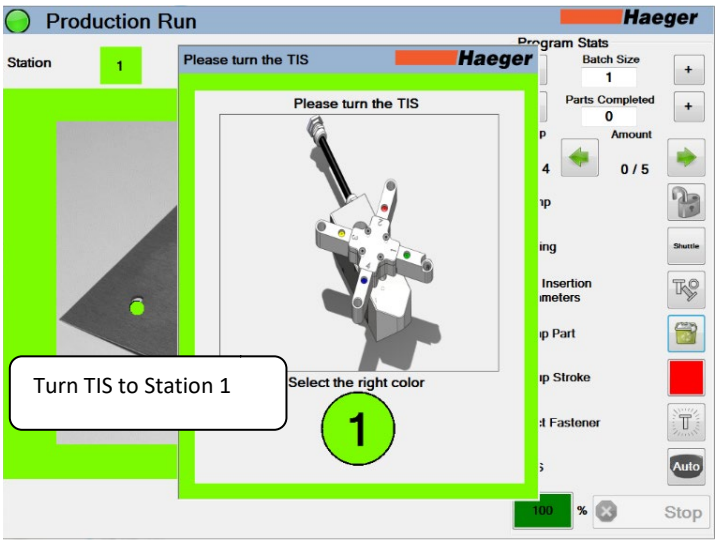
Program Action

- **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.

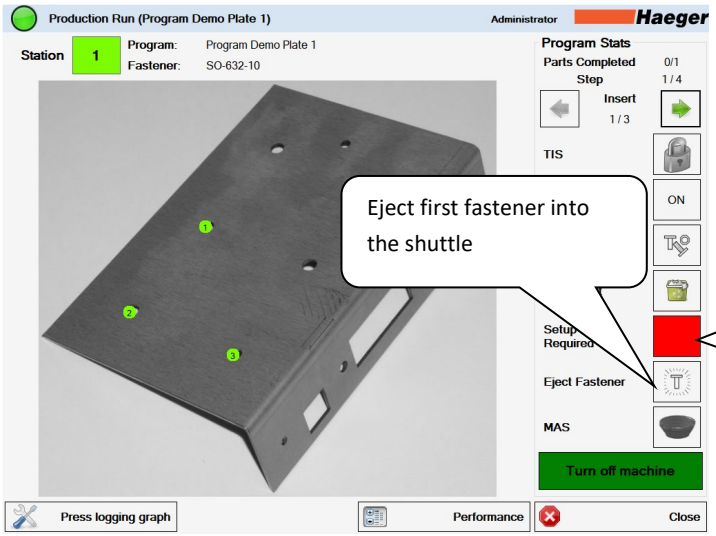
Verify the Program selected matches the part for insertion and hardware in Stations 1, 2, 3 & 4.

7.



TIS is now unlocked, allowing the turret to be turned. When in the correct position is reached, the TIS will automatically lock.

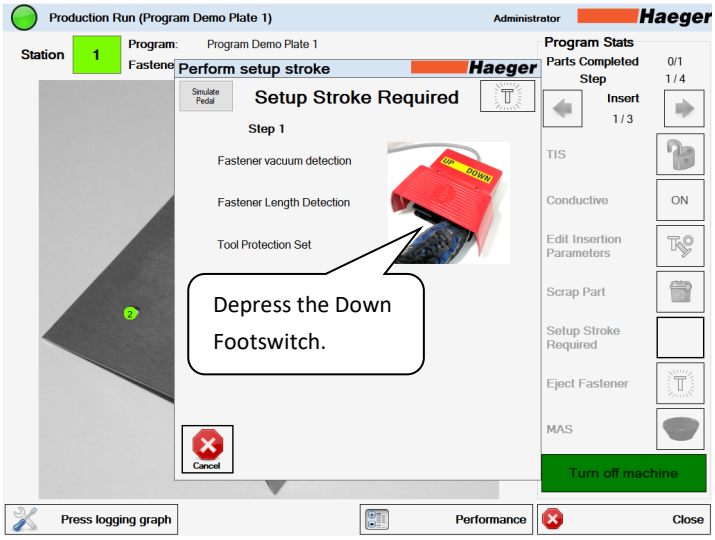
8.



Eject Fastener: This feature allows the operator to eject a fastener from the MAS bowl to the multi-shuttle and work area.

- Station 1 tooling and fastener is in place & ready
- Touch on the red flashing square to begin setup stroke

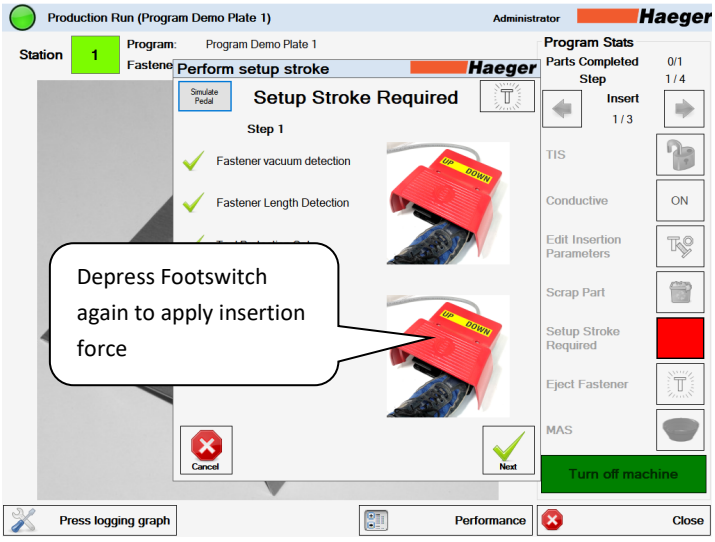
9.



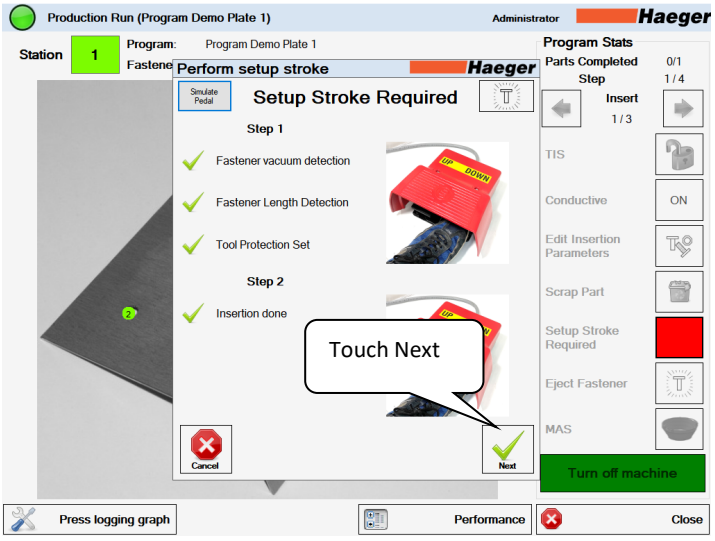
Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.

Upper tool in motion

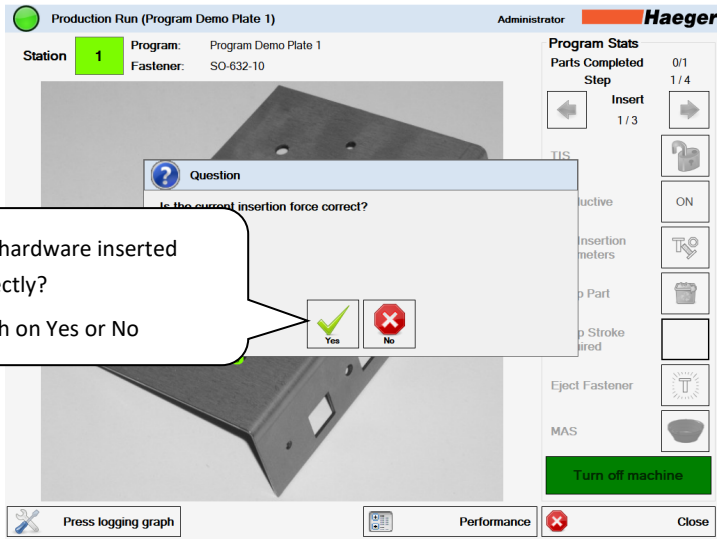
10.



11.



12.

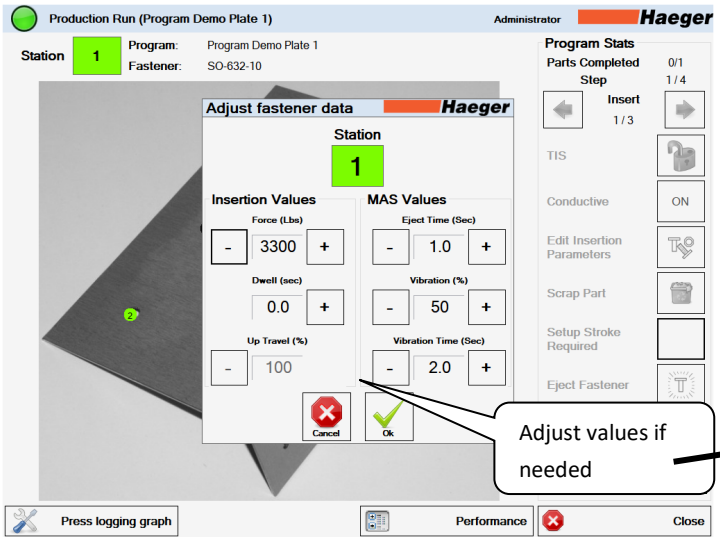


- Was hardware inserted correctly?
- Touch on Yes or No

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.

13.



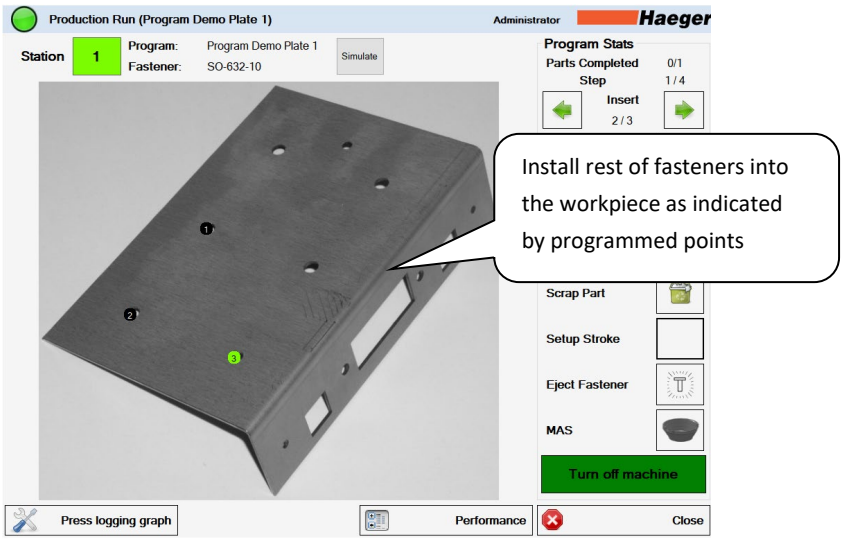
ADJUSTING INSERTION VALUES

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.

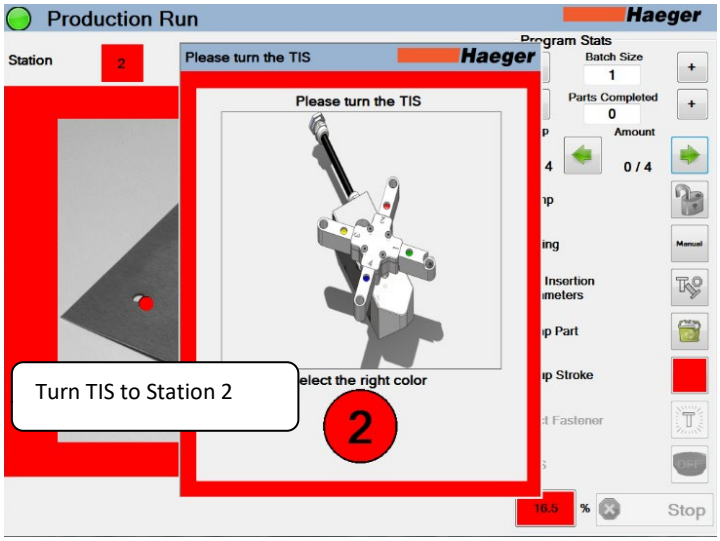
Check the fastener's specifications for appropriate force to use.

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

14.

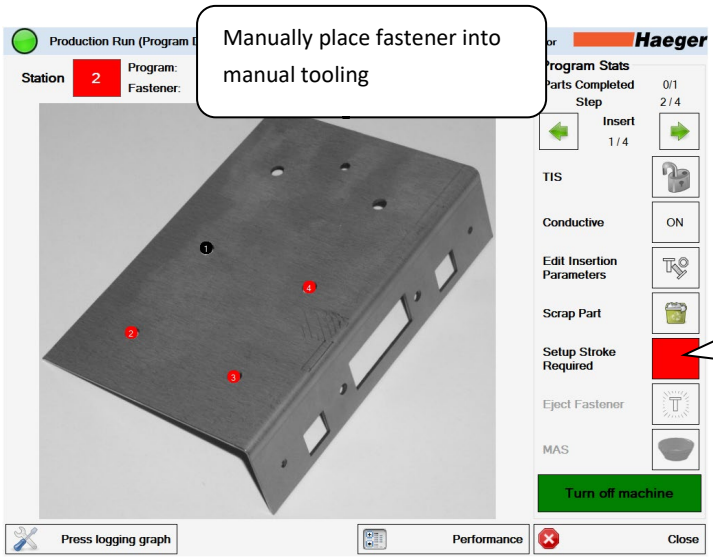


15.



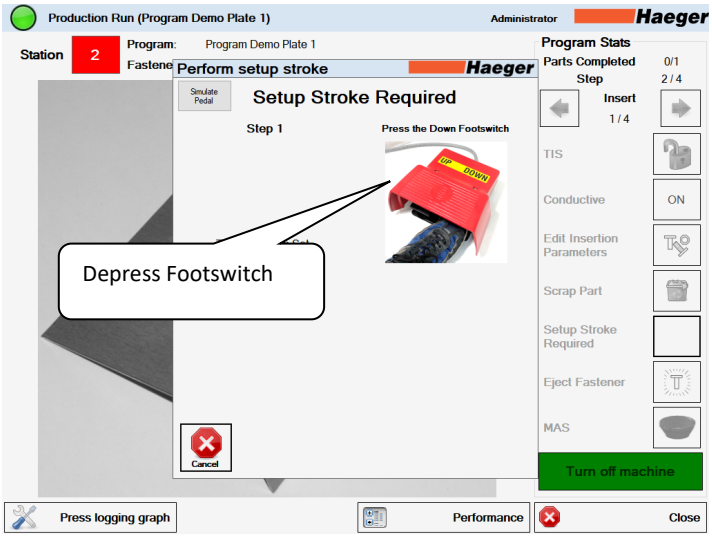
TIS is now unlocked, allowing it to be turned to the next Station. When the correct position is reached, the TIS will automatically lock.

16.



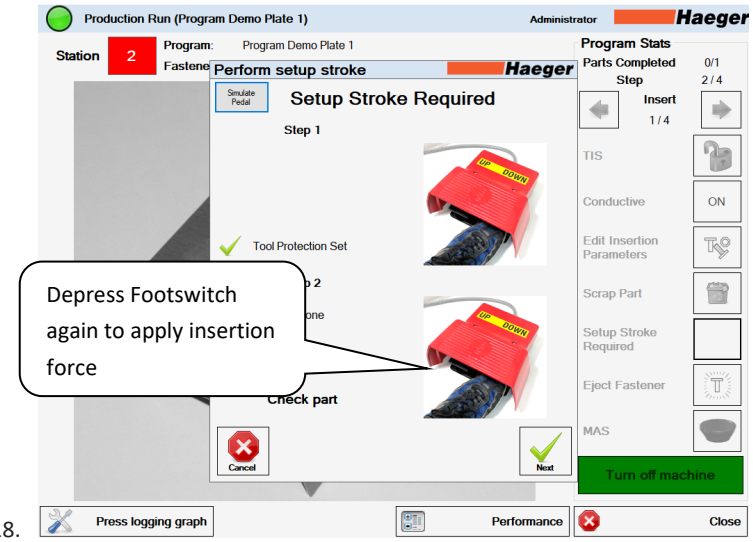
- Station 2 tooling and fastener is in place & ready
- Touch on red flashing square to begin setup stroke

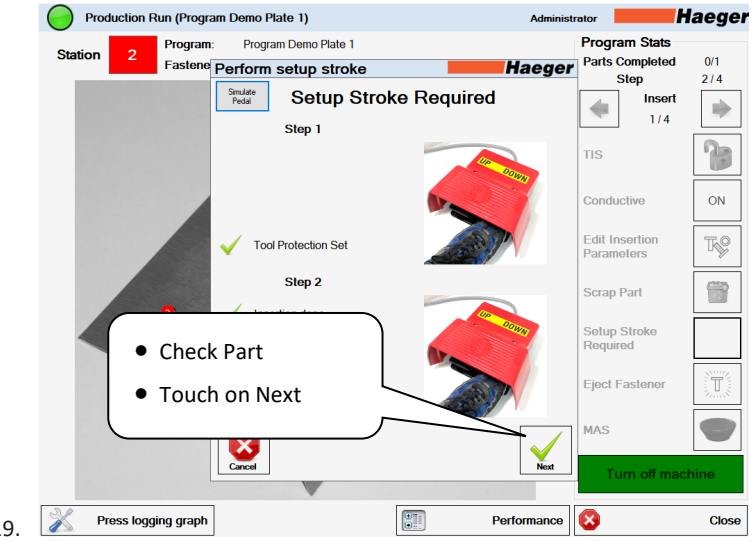
17.

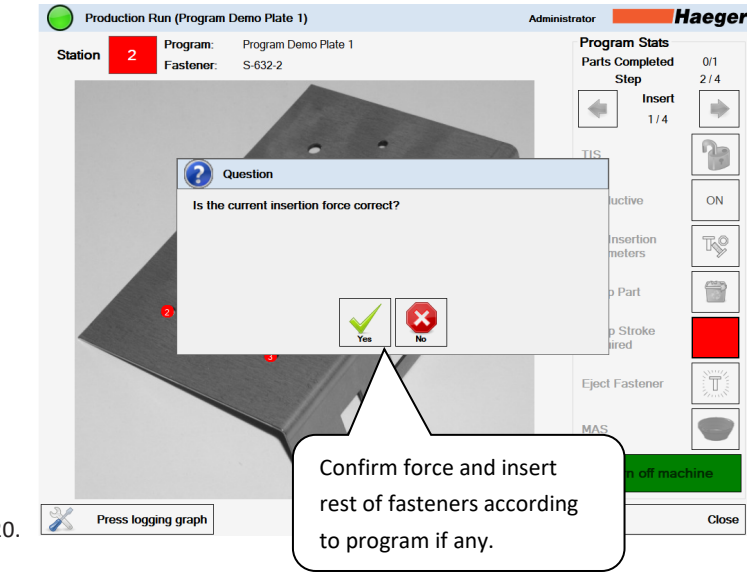


Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.

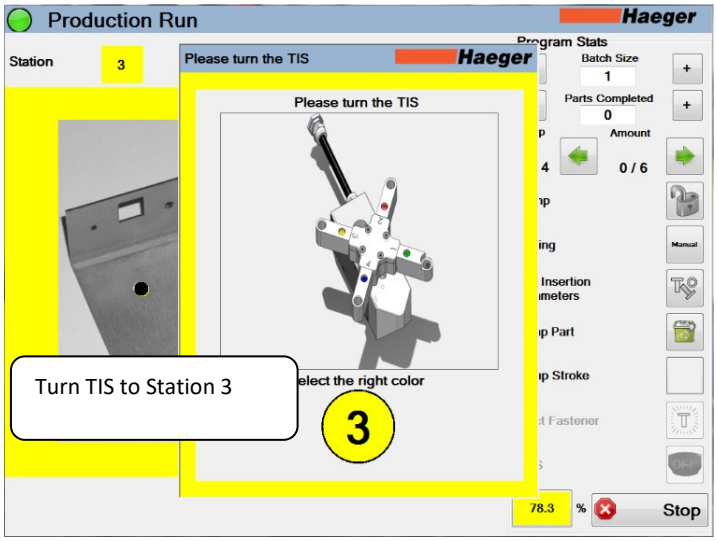
Upper tool in motion

18. 
Production Run (Program Demo Plate 1)
Administrator
Haeger
Station 2
Program: Program Demo Plate 1
Fastener
Perform setup stroke
Haeger
Simulate Pedal
Setup Stroke Required
Step 1
Tool Protection Set
Step 2
Check part
Cancel
Next
Program Stats
Parts Completed 0/1
Step 2 / 4
Insert 1 / 4
TIS
Conductive ON
Edit Insertion Parameters
Scrap Part
Setup Stroke Required
Eject Fastener
MAS
Turn off machine
Press logging graph
Performance
Close
Depress Footswitch again to apply insertion force

19. 
Production Run (Program Demo Plate 1)
Administrator
Haeger
Station 2
Program: Program Demo Plate 1
Fastener
Perform setup stroke
Haeger
Simulate Pedal
Setup Stroke Required
Step 1
Tool Protection Set
Step 2
Cancel
Next
Program Stats
Parts Completed 0/1
Step 2 / 4
Insert 1 / 4
TIS
Conductive ON
Edit Insertion Parameters
Scrap Part
Setup Stroke Required
Eject Fastener
MAS
Turn off machine
Press logging graph
Performance
Close
• Check Part
• Touch on Next

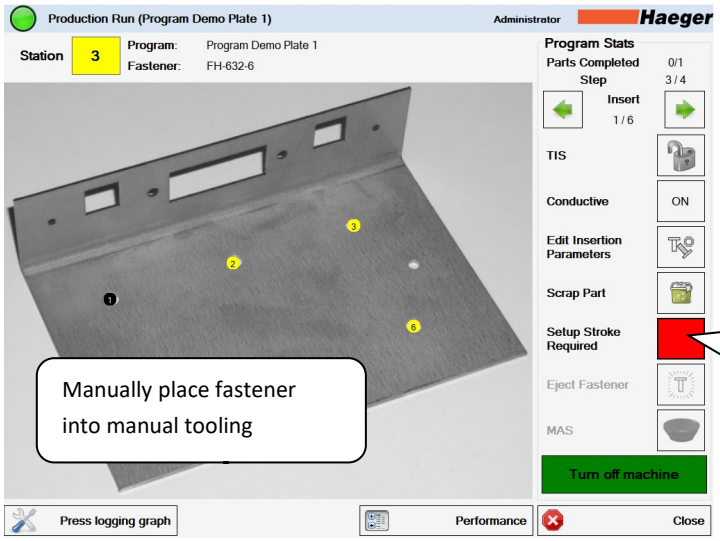
20. 
Production Run (Program Demo Plate 1)
Administrator
Haeger
Station 2
Program: Program Demo Plate 1
Fastener: S-632-2
Question
Is the current insertion force correct?
Yes
No
Program Stats
Parts Completed 0/1
Step 2 / 4
Insert 1 / 4
ON
Eject Fastener
Press logging graph
Close
Confirm force and insert rest of fasteners according to program if any.

21.



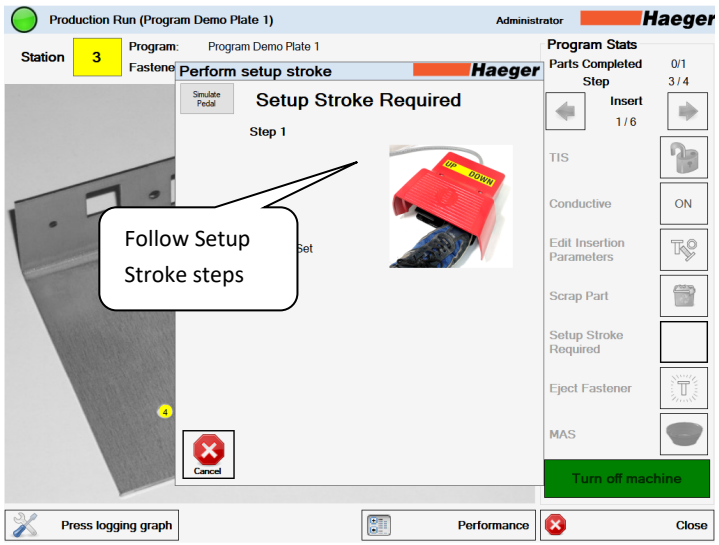
TIS is now unlocked, allowing it to be turned to the next Station. When the correct position is reached, the TIS will automatically lock.

22.



- Station 3 tooling and fastener is in place & ready
- Touch on red flashing square for Setup Stroke

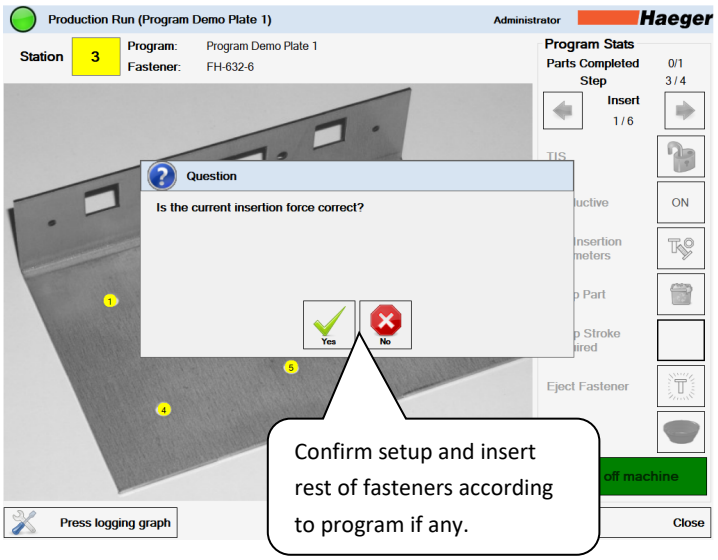
23.



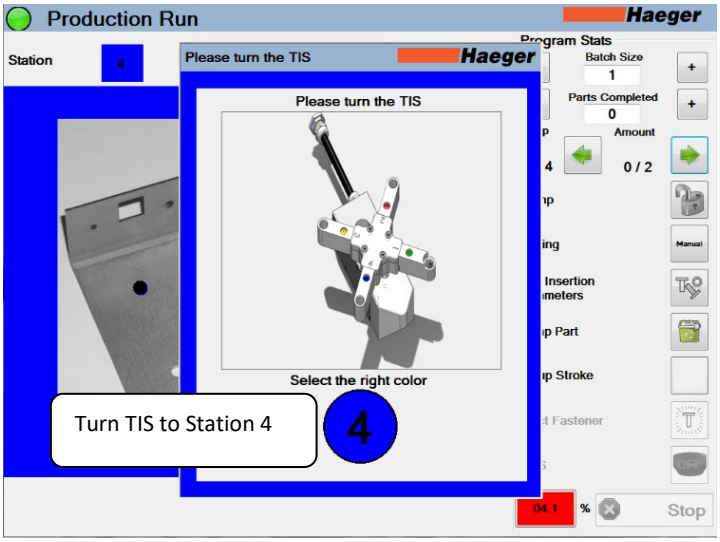
Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.

Upper tool in motion

24.

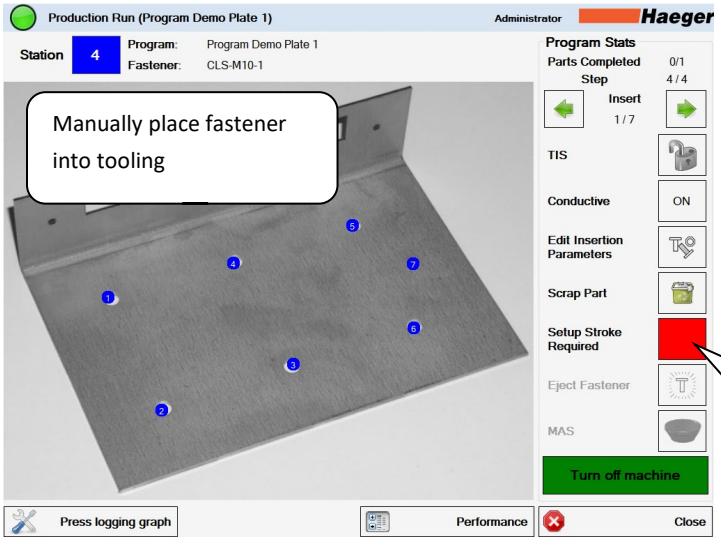


25.



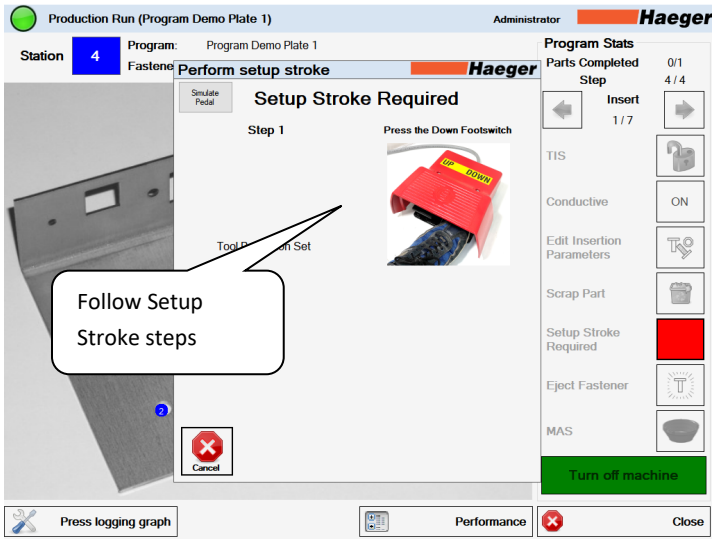
TIS is now unlocked, allowing it to be turned to the next Station. When the correct position is reached, the TIS will automatically lock.

26.



- Station 4 tooling and fastener is in place & ready
- Touch on red square for Setup Stroke

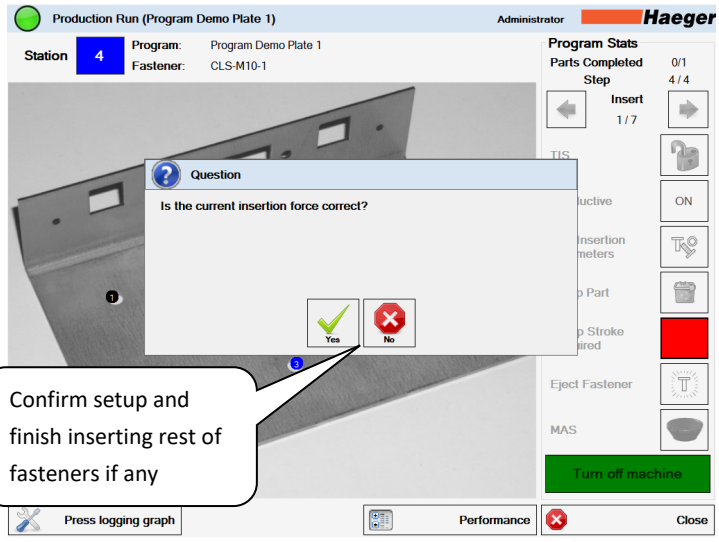
27.



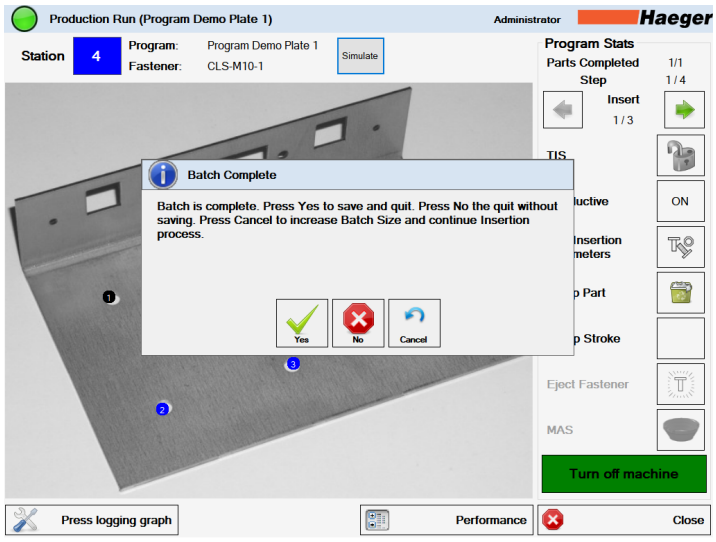
Setup Stroke: This feature sets up and records the fastener pickup point, fastener length, and insertion point. This only needs to be setup the first time for each station when running a program.

Upper tool in motion

28.



29.



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

30. 
HaegerTechnician
Haeger
Haeger®
a PennEngineering® Company
Program Ends and returns to Main Screen
Quick Run
Programs
Admin
Exit

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 using ISO 32 Viscosity Grade Hydraulic oil with Zn/ZDDP additive and oil conductivity of 300 amb/µS or higher. 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
WT-5e	22	83

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 Bowl: 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!

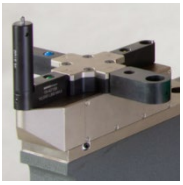
- 1st: Loosen round thumb screw to allow tool holder to slide off.

- 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-3: Care & Maintenance



It is recommended to inspect the TIS-3 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-3!

- 1st: If it is necessary to remove the TIS-3, unplug the air and sensor cables.

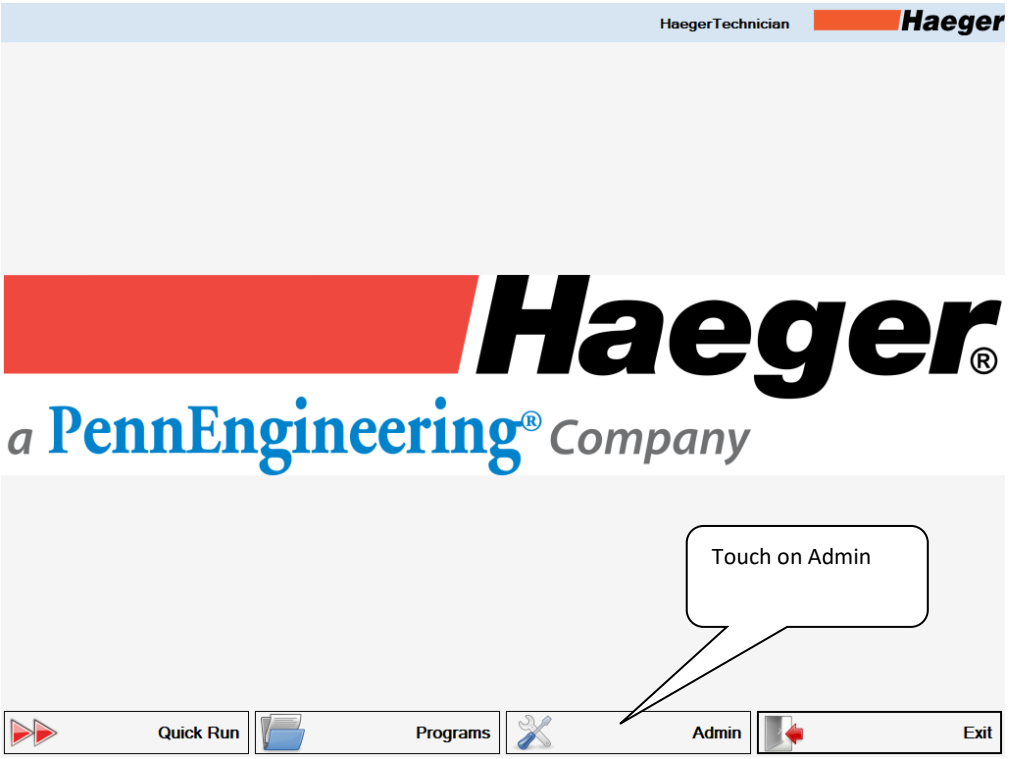
- 2nd: Inspect the Arms, Hub, and Body of the TIS-3.

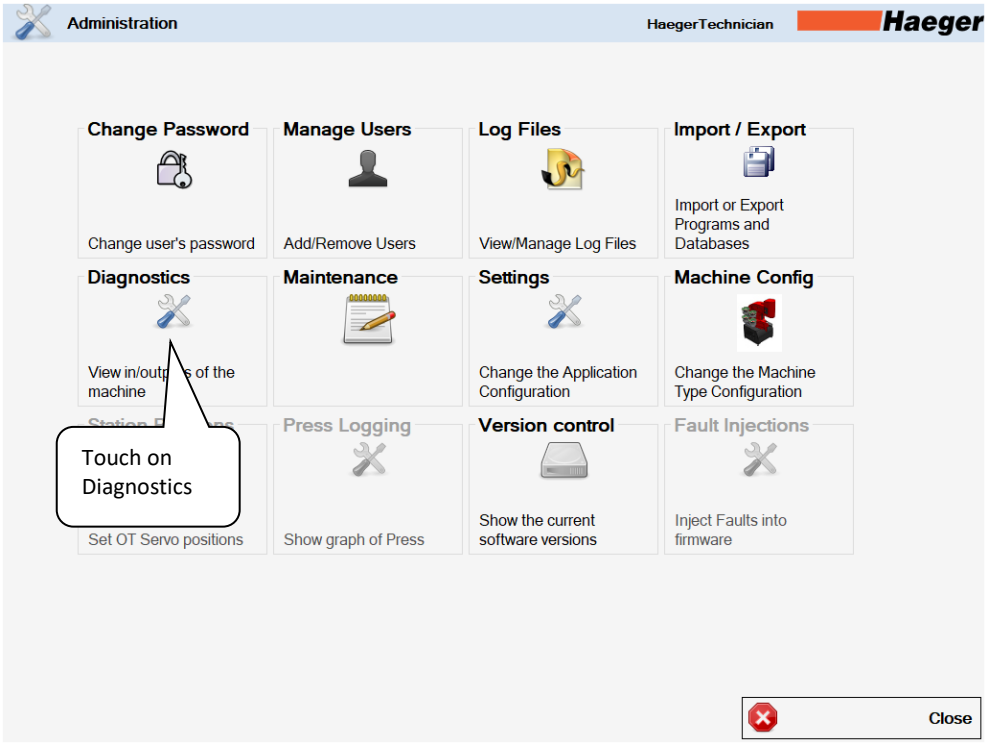
- 3rd: Wipe off all metallic areas with clean dry cloth.
- 4th: Check the Arms for ply, smoothness of rotation, and for gaps between the Arms and the Body.

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



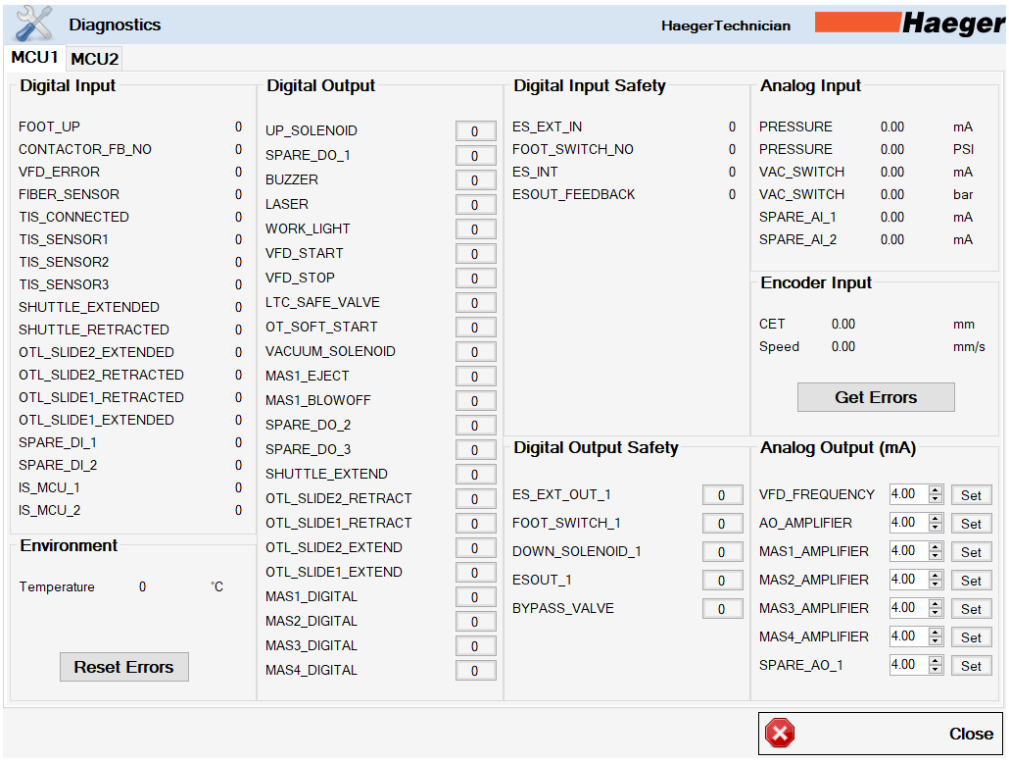


Digital Inputs (DIxx): These are inputs for the PLC from various points on the electrical board. These Inputs determine what Outputs will be turned on at certain times.

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 & 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 which 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 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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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

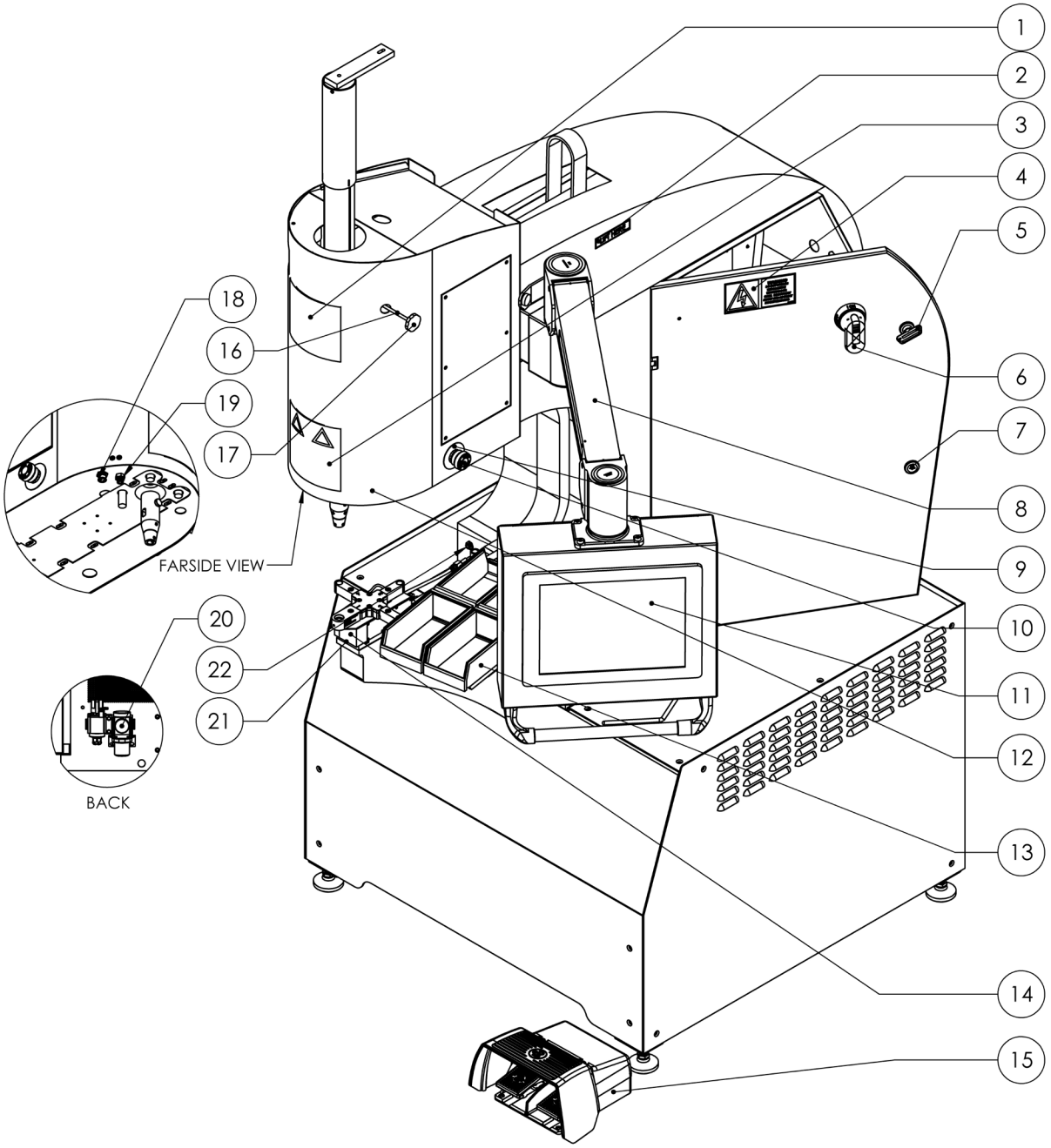
Item Numbers (1)**:** Are depicted with in a circle with an arrow pointing to the specific part or assembly.

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.

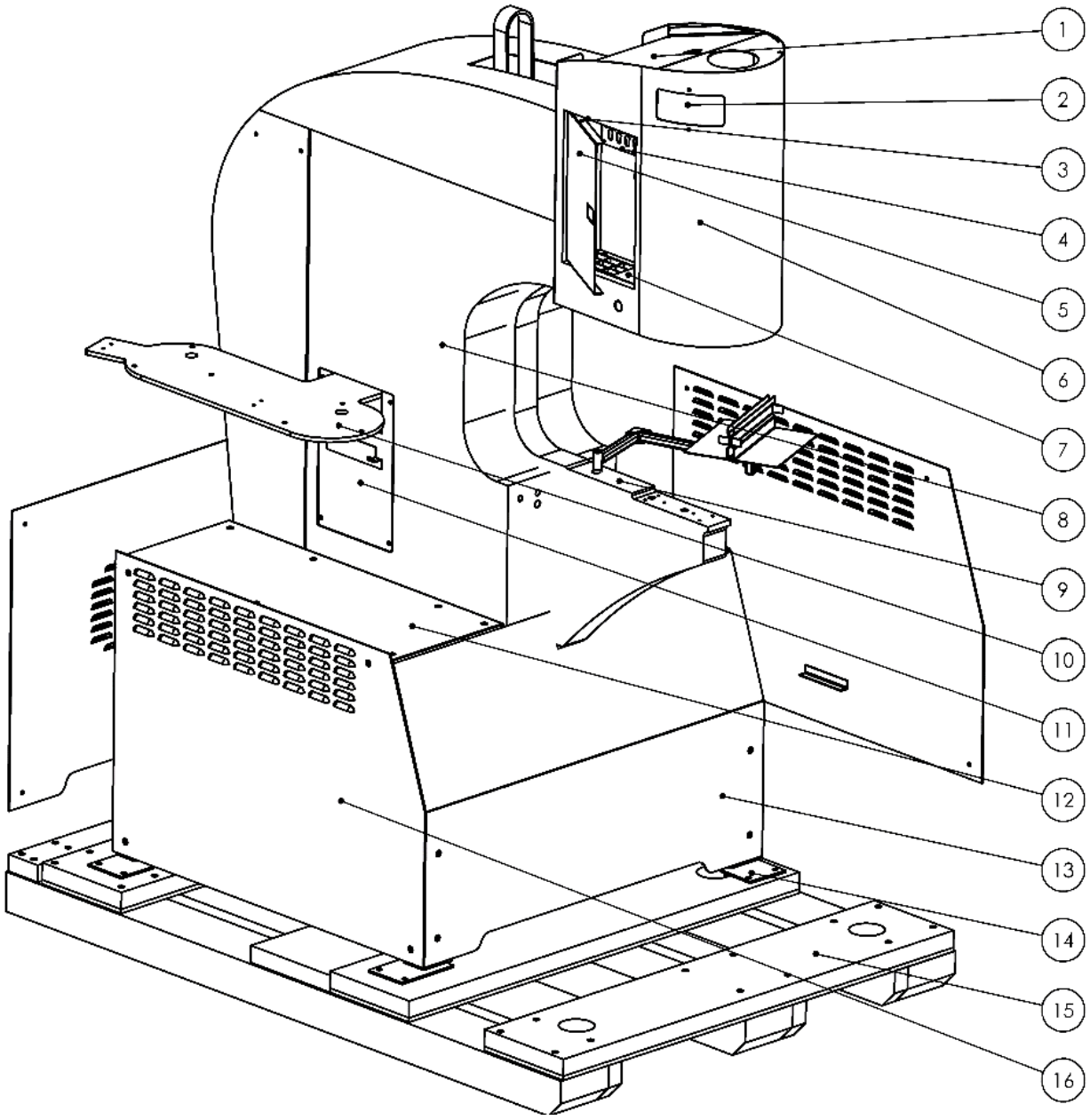
Main Assembly



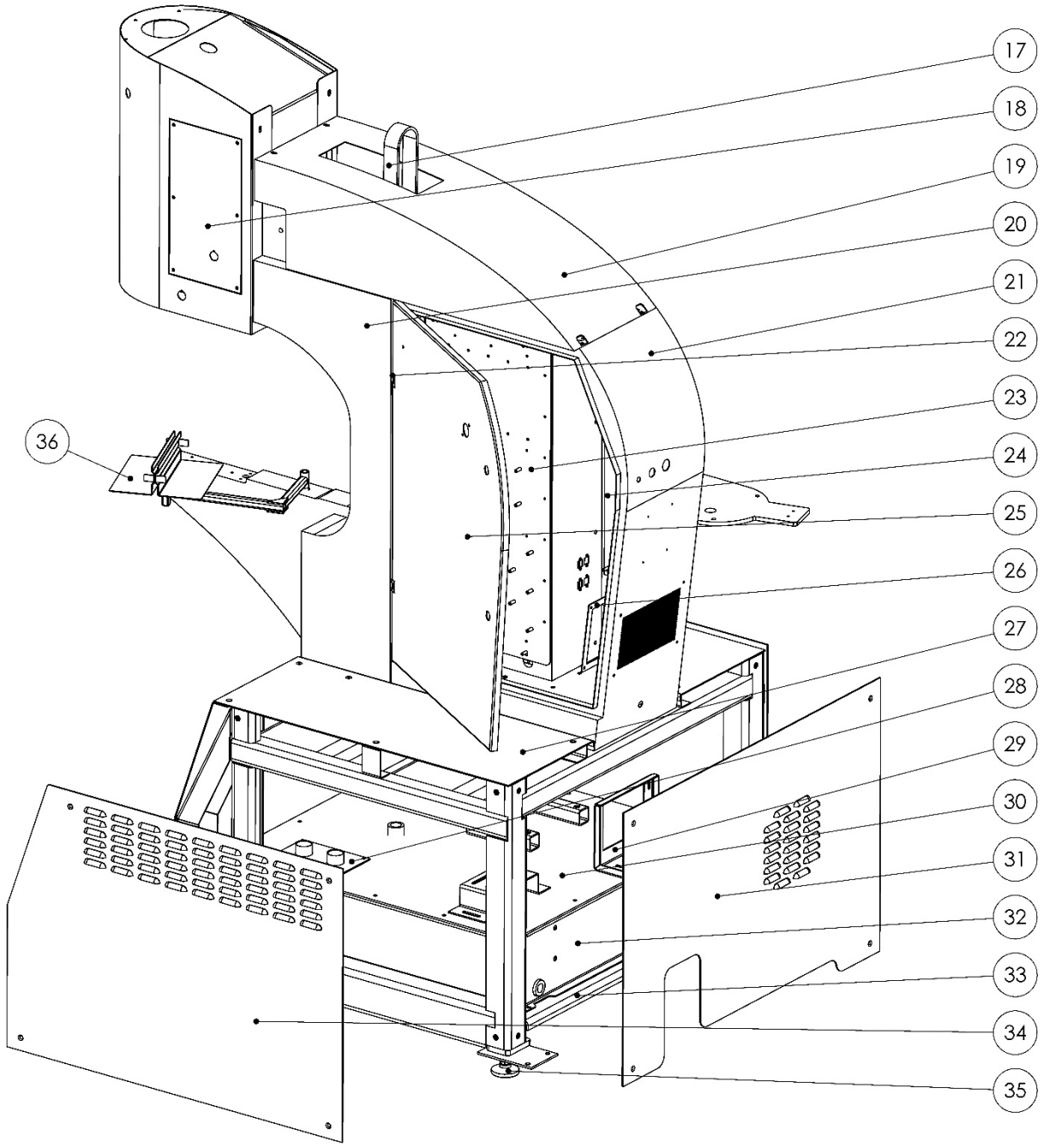
Main Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03969	LABEL, MACHINE LOGO, 6X6, 824WT5e	1
2	11-00515	MACHINE LABEL, "LIFT HERE"	1
3	11-00361	LABEL, HAEGER WARNING	1
4	16-00134	LABEL, ELECTRIC SHOCK WARNING	1
5	11-00233	LATCH KEY- 824	1
6	15-00220	DISCONNECT HANDLE	1
7	11-00232	DOOR LATCH	2
8	15-03955	HMI ARM	1
9	15-03538	LABEL, E-STOP LEGEND, YELLOW BLANK	1
10	15-03067	BUTTON, E-STOP, PUSH	3
11	15-03908	HMI, TOUCH SCREEN, 15”	1
12	15-40035	ASSY, UPP. TOOL HOLDER, SAFETY SENSOR, WT5e	1
13	N/A	SERVICE TRAY ASSEMBLY WITH COLORED BINS	1
14	15-41593	ASSY, TIS-3 QUICK DISCONNECT, WT4e	1
15	15-43006	ASSY, FOOT SWITCH DUAL PEDAL, ALL OT/WT5e, CE	1
16	15-03372	SHCS M6 X 130MM	1
17	H-3869	ROSET KNOB, CET STOP	1
18	15-01901	AIR FITTING, ¼” STRAIGHT (FOR VACUUM)	1
19	15-01269	CONNECTOR, 2 PIN (FOR LASER LIGHT)	1
20	15-03684	AIR REGULATOR, 1/8 NPT PORT, WT, MSPe, OTL	1
21	15-02996	BASE TOOL HOLDER PLATE	1
22	H-2545	BULKHEAD COUPLER 1/4" F. QUICK DISCONNECT	1

Sheet Metal (Pt.1)



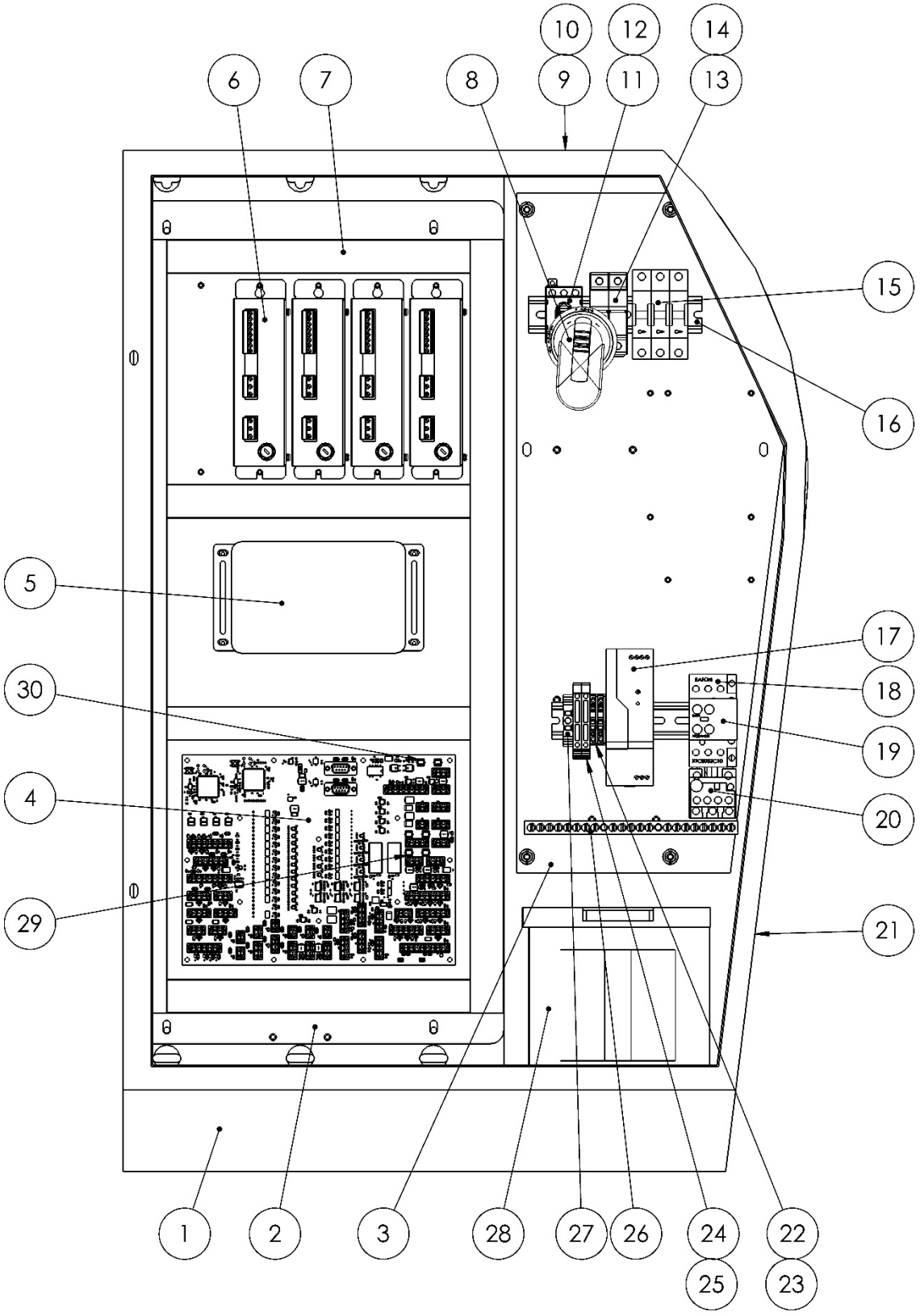
Sheet Metal (Pt.2)



Sheet Metal

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03148	CYLINDER TOP COVER, (-5e) WT/OT	1
2	15-03574	COVER, POSITIVE STOP, WT/OT	1
3	15-03081	CYL. TOOL CABINET DOOR LINKAGE LATCH, WT/OT	1
4	15-02793	ANVIL STOR., TOOLING CABINET CYLINDER, WT (-5)	1
5	15-02795	DOOR, TOOLING CABINET CYLINDER, WT (-5)	1
6	15-02740	FRONT COVER, CYLINDER, WT (-5)	1
7	15-02794	SHUTTLE STOR. TOOLING CABINET CYLINDER, WT (-5)	1
8	15-02737	MAS SIDE COVER, SHEET METAL, WT (-5)	1
9	15-02721	WELDMENT, FRAME, WT (-5)	1
10	15-02872	UPPER DUAL MAS BRACKET, BASE, OT (-5)	1
11	15-02742	MANIFOLD COVER, MAS SIDE, WT (-5)	1
12	15-02727	MOTOR & PUMP TABLE, BASE, WT (-5)	1
13	15-02731	FRONT HYDRAULICS PANEL, BASE, WT (-5)	1
14	15-00076	MACHINE TIE DOWN PLATE	4
15	15-03283	UNIVERSAL PALLET, SHIPPING	1
16	15-02728	MANIFOLD PANEL, BASE, WT (-5)	1
17	15-00030	LIFTING STRAP	1
18	15-03038	MAINTENANCE COVER, CYLINDER PANEL, 824 (-5) OT/WT	1
19	15-02738	TOP COVER, SHEET METAL, WT4e	1
20	15-02736	HYDR. LINES COVER, SHEET METAL, WT / OT (-5)	1
21	15-02734	CABINET, ELECTRICAL, WT (-5)	1
22	10-00059	HINGE, 180 DEGR BLACK W/ ZINC PIN	2
23	15-03961	ELEC PANEL A, LOW VOLTAGE, WT & OT 5HE	1
24	15-02745	ELEC PANEL B, HIGH VOLTAGE, WT/OT -5e)	1
25	15-02735	DOOR, ELECTRICAL, WT/OT (-5)	1
26	15-02743	VENT FILTER MOUNT, ELECTRICAL, WT (-5)	1
27	15-02726	MANIFOLD TABLE, BASE, WT (-5)	1
28	15-00781	ACCESS PLATE	1
29	15-00783	BRKT, RESERVOIR COOLER MOUNT	1
30	15-00782	H.S. RESERVOIR TOP	1
31	15-02730	BACK HYDRAULICS PANEL, BASE, WT (-5)	1
32	15-00784	RESERVOIR WELDMENT	1
33	15-02725	BASE FRAME, WT/OT (-5)	1
34	15-02729	MOTOR & PUMP PANEL, BASE, WT (-5)	1
35	15-01160	LEVELING FOOT M16X2	4
36	N/A	SERVICE TRAY ASSEMBLY	1

Electrical Cabinet



Electrical Cabinet

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-02734	CABINET, ELECTRICAL, WT (-5)	1
2	15-03961	ELECTRICAL PANEL A, LOW VOLTAGE	1
3	15-02745	ELECTRICAL PANEL B, HIGH VOLTAGE	1
4	15-03887	UNIVERSAL CONTROL BOARD, (-5)	1
5	15-03907-1	COMPUTER, BOX PC	1
6	15-03974	CONTROLLER MAS350	0-4
7	10-00019	PANDUIT WIRING DUCT	/FT
8	15-00220	DISCONNECT HANDLE (PISTOL GRIP)	1
9	15-03906	TERMINAL FAN	1
10	15-02792	FAN GUARD	1
11	15-00219	DISCONNECT SWITCH	1
12	15-03092	GUARD, DISCONNECTjde SWITCH	1
13	10-01145	FUSE HOLDER, 600V, 30A, DIN MOUNT	2
14	15-00712	5 AMP MIDGET FUSE KLDR 600V RA	2
15[1]	10-01154	BREAKER, 3 POLE, 16AMP, 440/480 VOLTAGE	3
16	11-00382	DIN RAIL, 35MM	/FT
17	15-01719	POWER SUPPLY 120W 5A 24VDC	2
18[2] 19[2]	15-04006	18A 24VDC CONTACTOR	1
20[3]	SEE CHART BELOW	OVERLOAD RELAY	1
21	15-03350	INTAKE FILTER, WT/OT-5	1
22	16-00092	TERMINAL BLOCK, CLAMPING STYLE	2
23	16-00094	END PLATE, TERM BLOCK CLAMPING STYLE	2
24	11-00368	FUSE BLOCK, 5 X 20MM	2
25	11-00375	4 AMP FUSE, 5 X 20MM	2
26	15-01752	21 TERMINAL EQUIPMENT GROUND BAR	2
27	16-00110	END BRACKET, TERMINAL BLOCK	1
28	15-00178	TRANSFORMER WT/OT (-5)	1
29	N/A	1A FUSE	2
30	N/A	5A FUSE	1
31*	15-03995	HDMI CABLE, 15FT	1
32*	15-03996	USB A-A CABLE, 15FT	1

[1] LE Machine contains 1X (15-00414) BREAKER, 3 POLE 25AMP 208/240V

[2] Items 18 & 19 are 15-00137 & 15-03064 Respectively in machines w/ serial #'S below 8WT50074

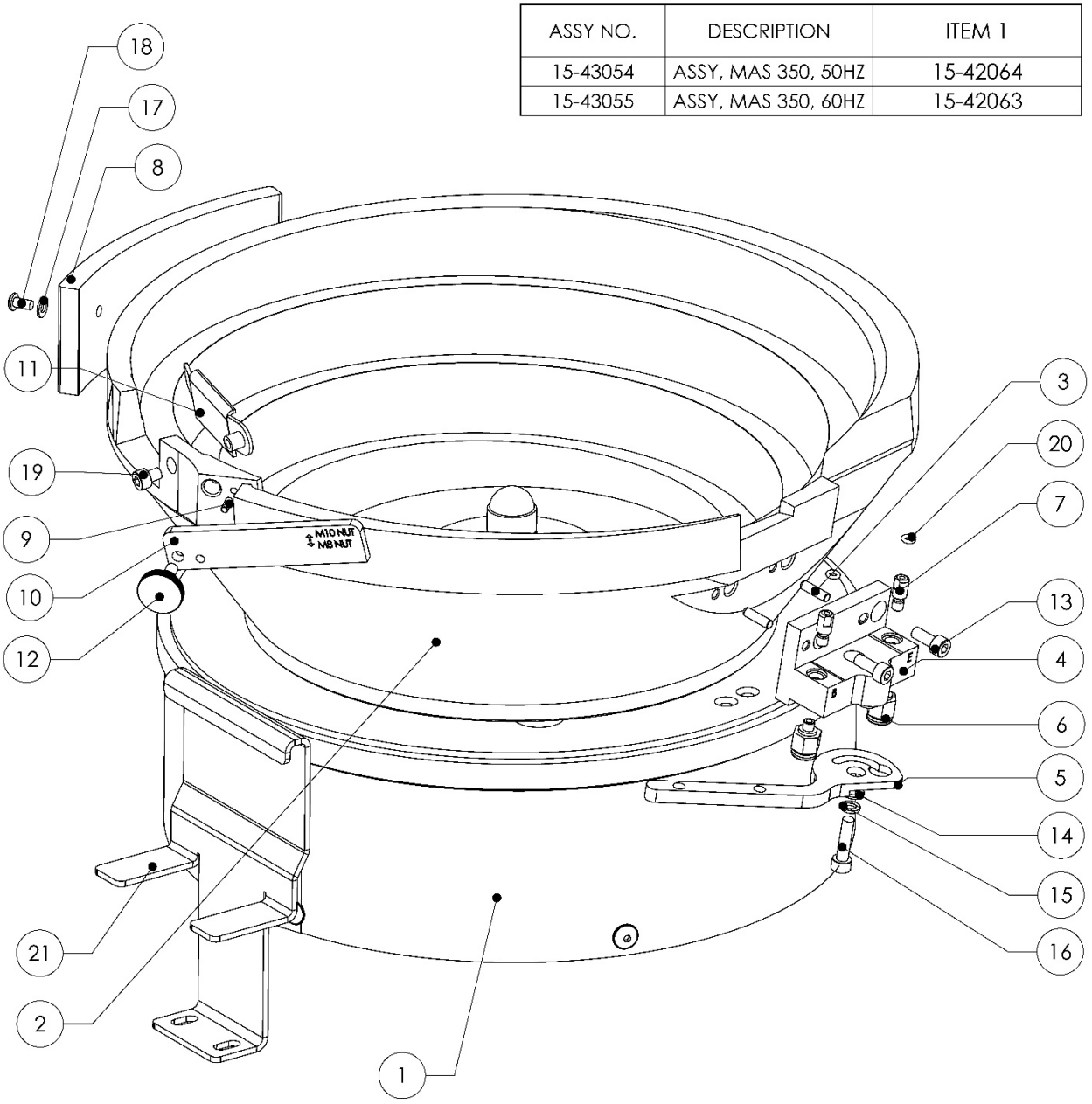
*NOT PICTURED

Electrical Cabinet (continued)

[3] MACHINE W/ SERIAL #'S 8WT50074 OR HIGHER	OVERLOAD	DESCRIPTION	QTY
HE	15-04008	7 TO 10 AMP OVERLOAD RELAY	1
LE	15-04009	16 TO 24 AMP OVERLOAD RELAY	1
[3] MACHINE W/ SERIAL #'S BELOW 8WT50074	OVERLOAD	DESCRIPTION	QTY
HE	10-00670	6.0-8.5AMP OVERLOAD RELAY	1
LE	15-00139	16-24AMP OVERLOAD RELAY	1

MAS 350 Bowl Assembly

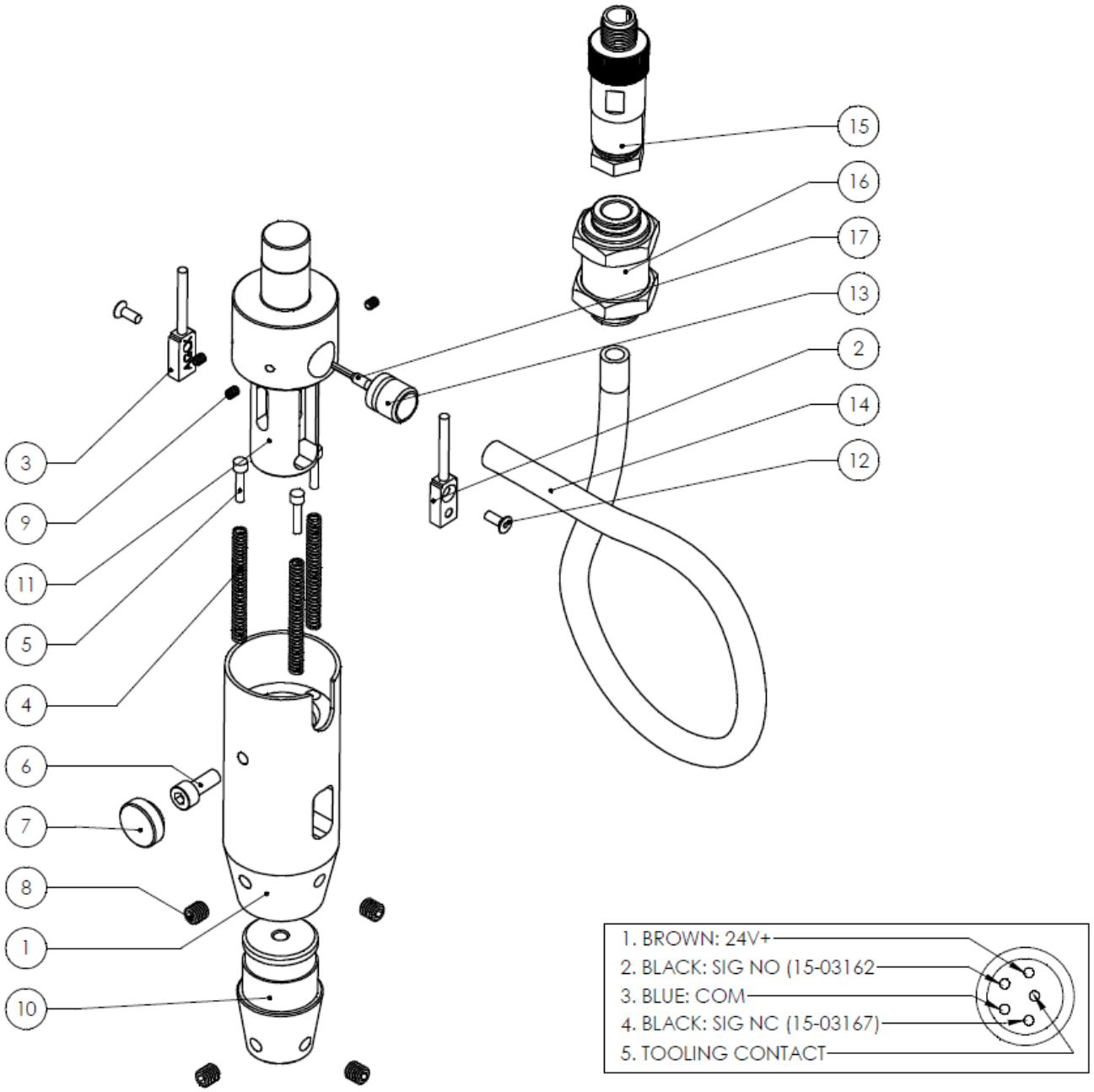
ASSY NO.	DESCRIPTION	ITEM 1
15-43054	ASSY, MAS 350, 50HZ	15-42064
15-43055	ASSY, MAS 350, 60HZ	15-42063



MAS 350 Bowl Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SEE LIST IN FIG.	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

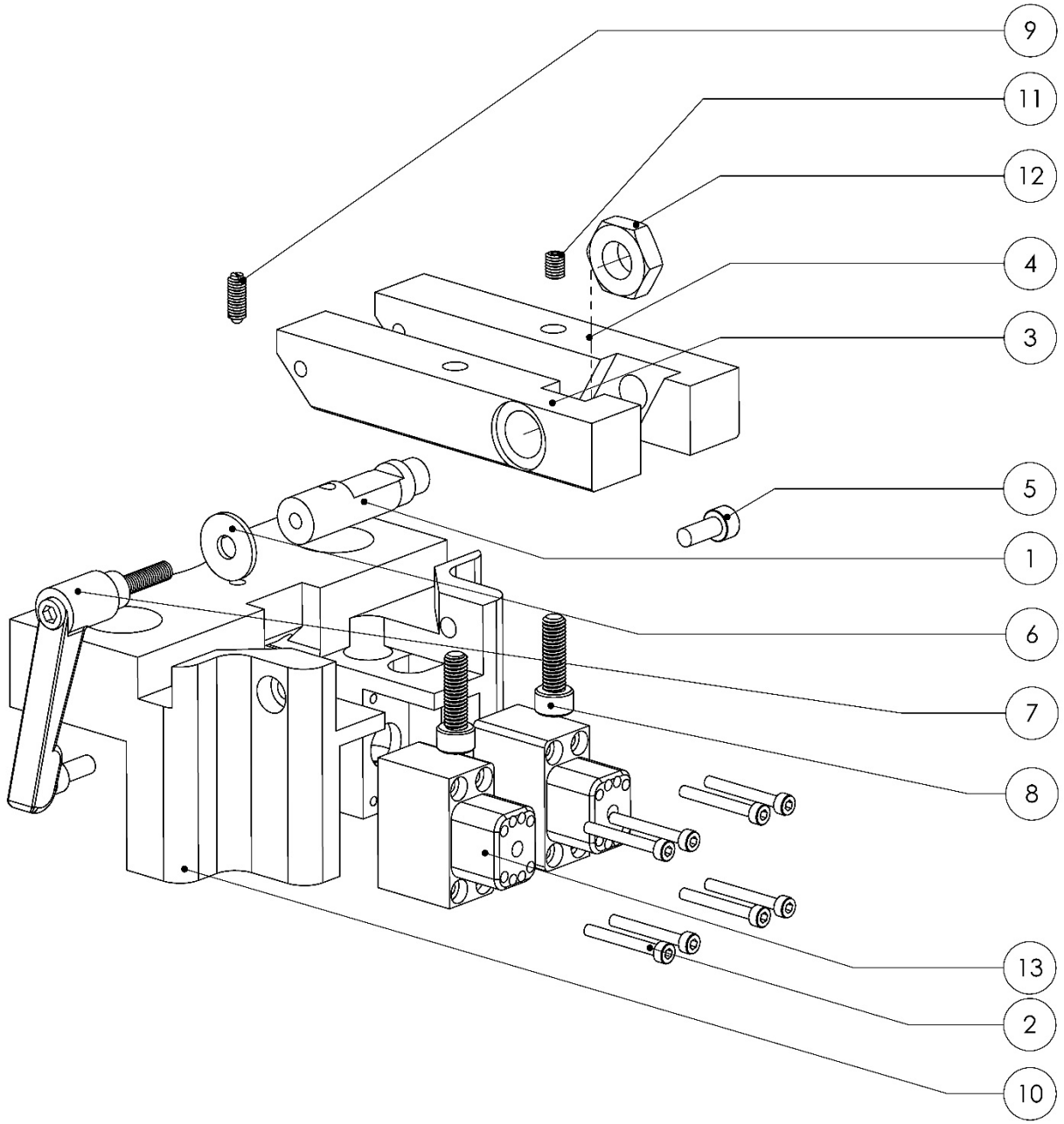
Dual Safety Sensor (15-42360) & Upper Tool Holder (15-40036)



Dual Safety Sensor (15-42360) & Upper Tool Holder (15-40036)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03439	BODY, UPP. TOOL HOLDER, SAFETY SENSOR, WT	1
2	15-03650	SAFETY SENSOR, TURCK, NC	1
3	15-03649	SAFETY SENSOR, TURCK, NO	1
4	15-03206	CONTINUITY SPRING, 1 ¾ “, UNIVERSAL	3
5	11-00016	CONTINUITY GUIDE PIN	3
6	H-3738	SHCS, M5 X 0.8 X 12MM, BLACK OXIDE	1
7	11-00241	THUMB SCREW CAP	1
8	11-00242	SHSS, M6 X 1.0 X 6, BLACK OXIDE	4
9	H-3892	SHSS, M3 X 0.5 X 4MM, BLACK OXIDE	3
10	11-00236	STANDARD TOOL ADAPTER	1
11	15-03647	RAM ADAPTER, SAFETY SENSOR, 2ND GEN	1
12	15-01708	FHCS, M3 X 0.5 X 10MM	2
13	15-03207	BUSHING, 3/8”, AIR	1
14	15-03208	HOSE, 3/8”, AIR	1
15	15-01450	CONNECTOR, 5 PIN MALE	1
16	15-03209	FITTING, 3/8”, BULKHEAD UNION	1
17	10-00765	FERRULE, 18 GA, YELLOW	1

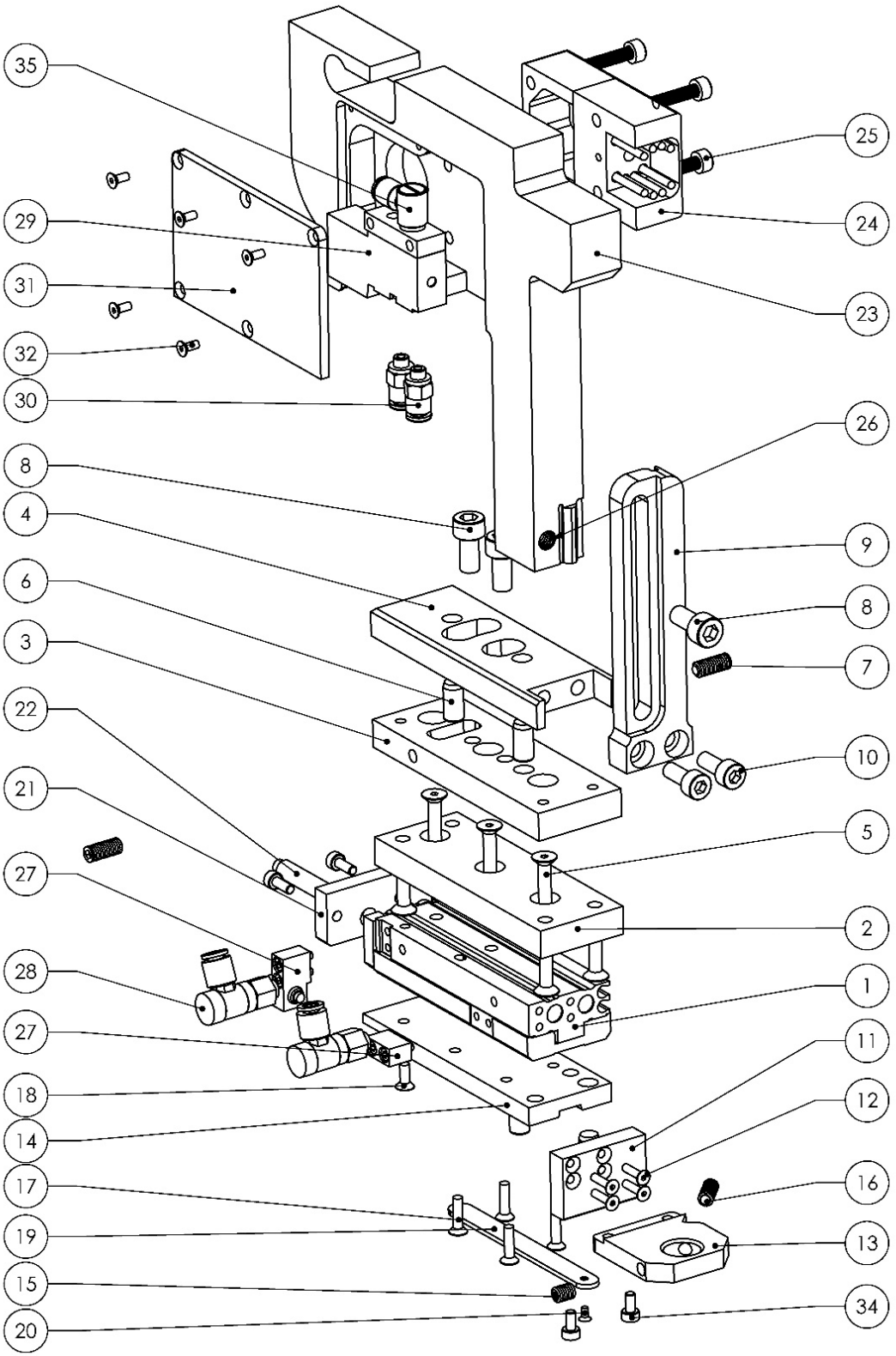
Quick Mount Assembly (15-40026)



Quick Mount Assembly (15-40026)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-02782	LOCKING AXLE, QUICK MOUNT, MULTI-SHUTTTLE, WT (-4)	1
2	15-01674	SHCS, M3 x 0.5 x 25, STEEL, BLACK OXIDE	8
3	15-02784	LEG LOCKING SIDE, QUICK MOUNT UPPER, WT (-4)	1
4	15-02785	LEG POSITION SIDE, QUICK MOUNT UPPER, WT (-4)	1
5	H-3738	SHCS, M5 x 0.8 x 12mm, BLACK OXIDE	2
6	15-01601	M6, WASHER, ZINC PLATED	1
7	11-00042	LEVER, LOCKING	1
8	11-00319	SHCS, M6 x 1.0 x 20mm, STAINLESS	2
9	H-3681	SPRING PLUNGER, M5 STEEL	1
10	15-41871	ASSY, MULTI-SHUTTLE 2, WT (-4)	1
11	15-02786	BODY, QUICK MOUNT UPPER TOOL, WT (-4)	1
12	11-00238	SHSS, M5 x 6, BLACK OXIDE	1
13	15-03079	NUT, HEX, M12 x 1.75, THIN, STAINLESS	1
14	15-41874	CONNECTOR MALE, 1 x AIR & 6 x 24v, WT (-4)	2

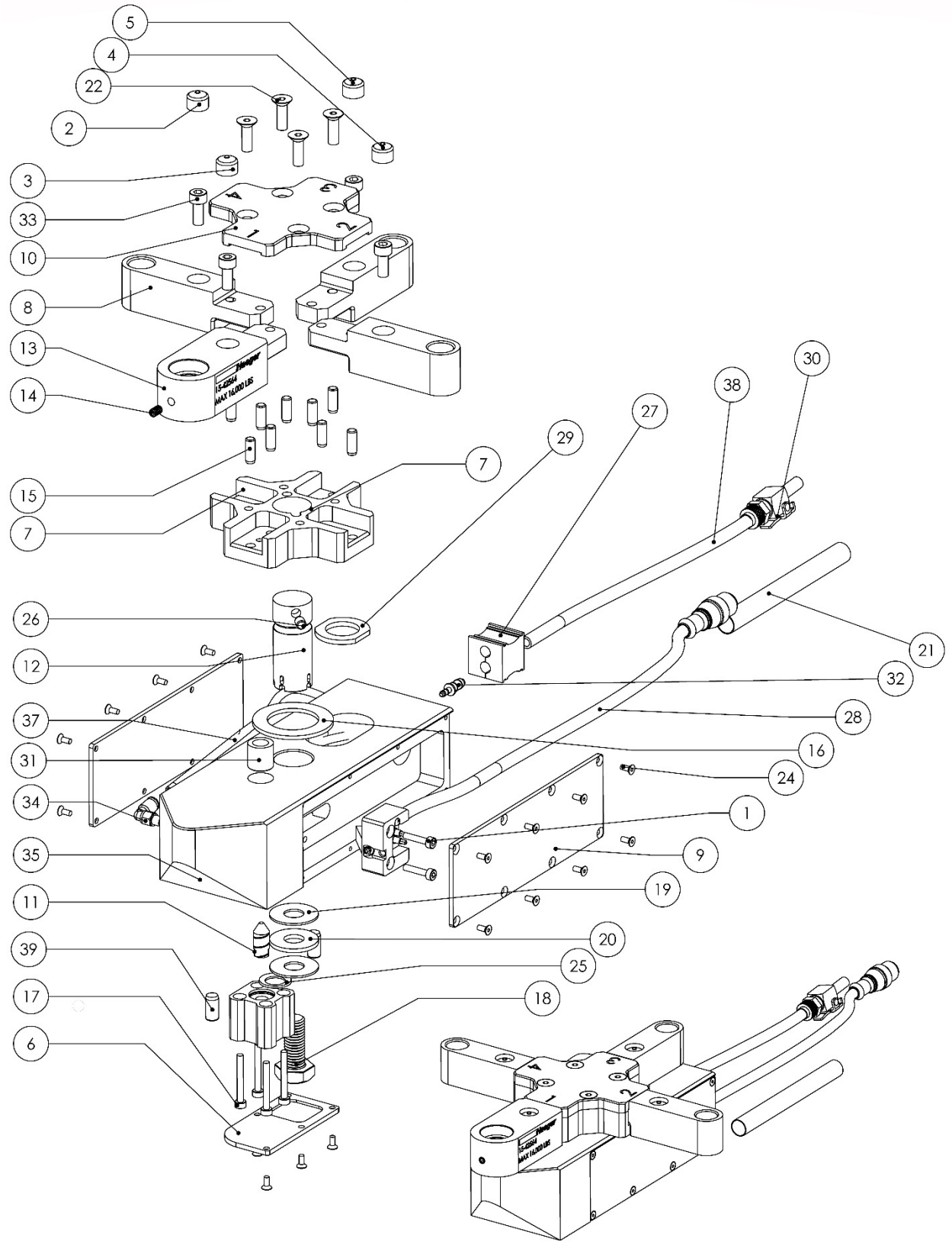
Multi-Shuttle Assembly (15-40027)



Multi-Shuttle Assembly (15-40027)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-01870	SLIDE TABEL, MXS6, MULTI-SHUTTLE	1
2	15-02883	INSULATOR PLATE, MULTI-SHUTTLE	1
3	15-02881	ALIGNMENT PLATE, MULIT-SHUTTLE	1
4	15-02882	MOUNTING PLATE, MULTI-SHUTTLE	1
5	15-00305	FHCS, M4 X 0.7 X 16MM	7
6	15-01754	DOWEL PIN, ¼ " X ½ ", HARDENED STEEL	4
7	H-3871	SHSS, M5 X 0.4 X 12mm, BLACK OXIDE ALLOY STEEL	2
8	H-3815	SHCS, M6 X 1.0 x 12MM	3
9	15-02884	ALIGNMENT TRACK, MULTI-SHUTTLE	1
10	H-3738	SHCS, M5 X 0.8 X 12MM, BLACK OXIDE	2
11	15-01546	TUBE CONNECTOR MOUNT	1
12	15-01974	M2-5 – 0.45 X 10MM STEEL SHFS	4
13	15-01557	MOUNT, TUBE CONNECTOR	1
14	15-01852	MODULAR PLATE, MULTI-SHUTTLE	1
15	11-00238	M5 X 6 SET SCREW	1
16	H-3681	SPRING PLUNGER, M5, STEEL	1
17	15-02057	FHCS, M3 X 0.5 X 10MM	4
18	15-01708	FHCS, M3 X 0.5 X 8MM	2
19	15-01558	LID, TUBE CONNECTOR	1
20	15-01709	FHCS, M2 X 0.4 X 4, BLACK OXIDE	1
21	15-02513	SPRING BLOCK, MULTI-SHUTTLE	1
22	15-01867	SHOCK ABSORBER, MULTI-SHUTTLE	1
23	15-03404	T-BRACKET, MULTI-SHUTTLE	1
24	15-03409	CONNECTOR FEMALE, 1 X AIR & 8X24V, WT	1
25	15-01804	M4 X 18 SHCS	4
26	15-03552	M6 HELICOIL	1
27	15-02048	STOP FOR SLIDE TABLE, MXS-A26	1
28	H-2539	FLOW CONTROL ELBOW, 10-32 X 5/32 METER OUT	2
29	15-03426	VALVE, 4-WAY	1
30	15-00273	¼" TUBE STRAIGHT FITTING	2
31	15-03406	COVER, MANIFOLD, MULTI-SHUTTLE 2	1
32	15-00719	FHSCS M2.5 X 4.5MM	5
33	H-3872	SHCS, M3 X 0.5 X 8MM, BLACK OXIDE	2
34	H-3873	SHCS, M3 X 0.5 X 6MM, BLACK OXIDE	2
35	15-03958	BANJO FITTING, 5/32 TUBE, M5	1

TIS-3 Assembly (15-41593)



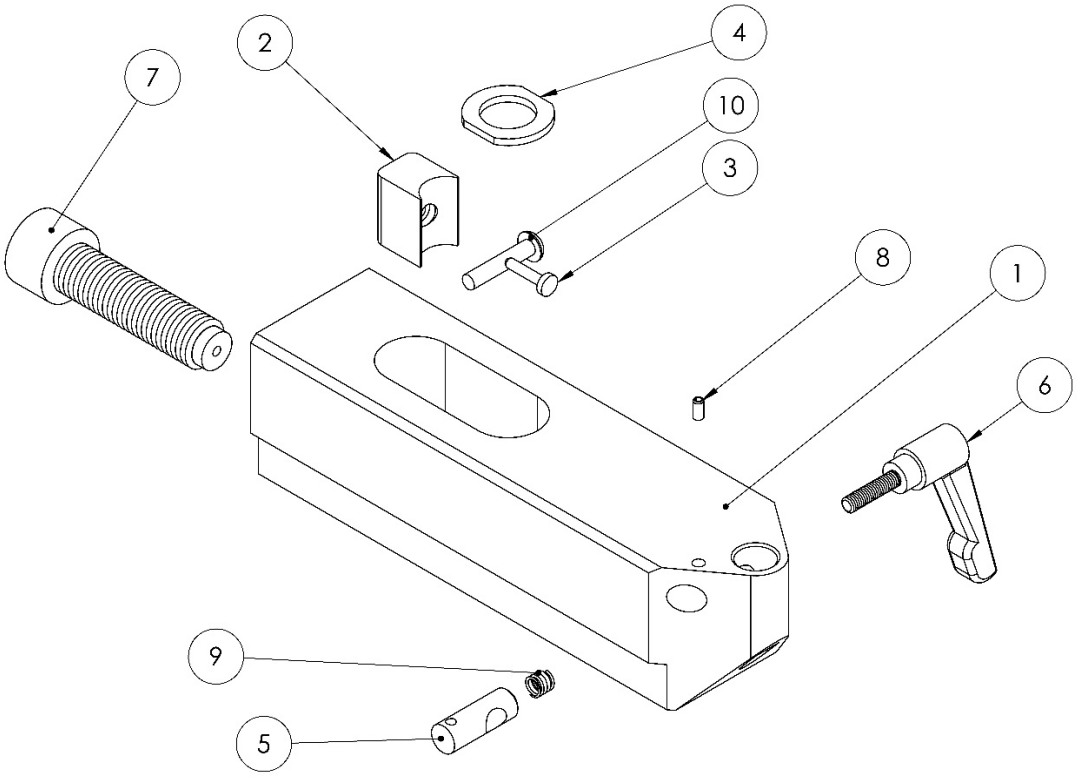
TIS-3 Assembly (15-41593)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-00449	SHCS, M3 X 0.5 X 14MM, STAINLESS	2
2	15-01295	ROUND VINYL CAP BLUE	1
3	15-01296	ROUND VINYL CAP GREEN	1
4	15-01297	ROUND VINYL CAP RED	1
5	15-01298	ROUND VINYL CAP YELLOW	1
6	15-01585	COVER, BASE, TIS-2	1
7	15-01586	ROTATION HUB, TIS-2, -3	1
8	15-01587	LOWER TOOL ARM TIS-2, -3	3
9	15-01588	BASE COVER, ELECTRICAL TIS-2, 3	2
10	15-01589	COVER, TIS-2, -3 LOWER TOOL ARMS	1
11	15-01591	LOCKING PIN, ROTATION, TIS-2, -3	1
12	15-01592	AXLE, TIS-2, -3 ROTATION	1
13	15-03842	HEAVY DUTY TIS-3 AUTO ARM	1
14	15-02277	SHSS, M4 X 0.7 X 6MM	1
15	15-01668	PIN, DOWEL, 3/16" X 1/2", STEEL, HARDENED	8
16	15-01669	NEEDLE BEARING, 1"	1
17	15-01674	SHCS, M3 X 0.5 X 25MM, STEEL, BLACK OXIDE	4
18	15-01675	HHCS, M10 X 1.5 X 25MM, STEEL, ZINC PLATED	1
19	15-01677	BEARING WASHER 10MM	2
20	15-01678	NEEDLE BEARING 10MM	1
21	15-01681	SLEEVING, BRAIDED POLYESTER MESH	1
22	15-01705	FHSCS, M5 X 0.8 X 16MM, STEEL, BLACK OXIDE	4
23	15-02063	PIN, DOWEL, 3/16" X 1/2", PLASTIC, WHITE	1
24	15-02262	FHSCS, M2.5 STAINLESS STEEL	21
25	15-02493	WASHER, SERRATED, M10, STEEL, BLACK OXIDE	1
26	15-02562	PIN, DOWEL, 3/16" X 1/4", STEEL, PLAIN	1
27	15-02681	CABLE STRAIN RELIEF INSERT, MODULAR 2X6MM	1
28	15-02995	SENSOR UNIT, TIS-3, QUICK DISCONNECT, WT4E	1
29	H-169-6	LOWER TOOL WASHER	1
30	H-2535	1/4" QUICK DISCONNECT	1
31	15-03144	PRESS FIT DRILL BUSHING 5/26	1
32	H-2610	1/4" X 5/32" BRASS REDUCER	1
33	H-3738	SHCS, M5 X 0.8 X 12MM, STEEL, BLACK OXIDE	4
34	H-3866	ELBOW, 10-32 X 5/32, PLASTIC	1

TIS-3 Assembly (continued)

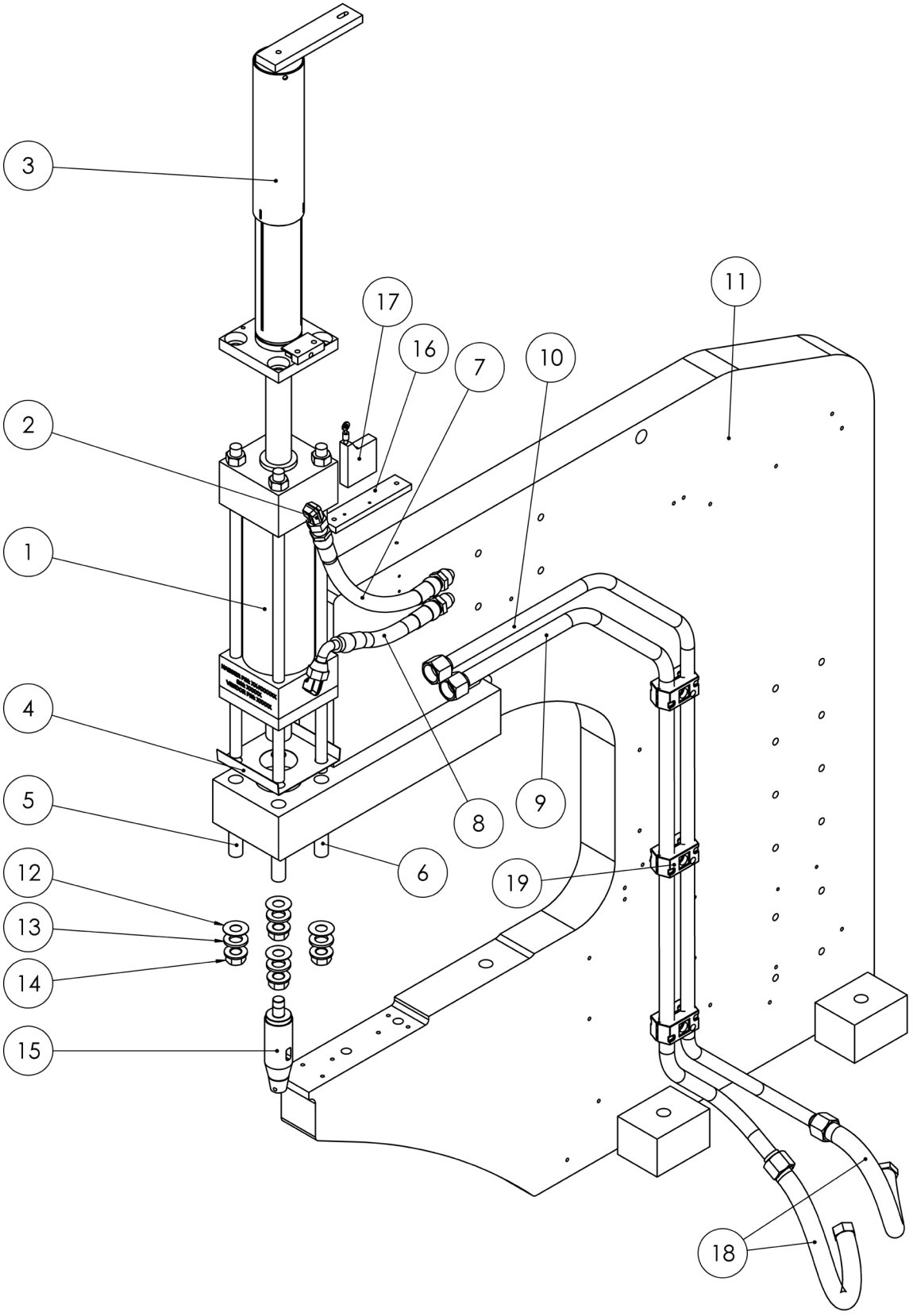
35	15-02997	BASE TOOL HOLDER, TIS-2 QUICK DISCONNECT, WT4E	1
36	15-03031	AIR CYLINDER	1
37	15-00286	TUBING 1/4"	/in
38	15-00285	TUBING 5/32"	/in
39	15-01754	DOWEL PIN, ¼” X ½”, HARDENED STEEL	2

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 25MM, STEEL, BLACK OXIDE	1
11	15-01754	PIN, DOWEL, 1/4" X 1/2", STEEL, HARDENED	2

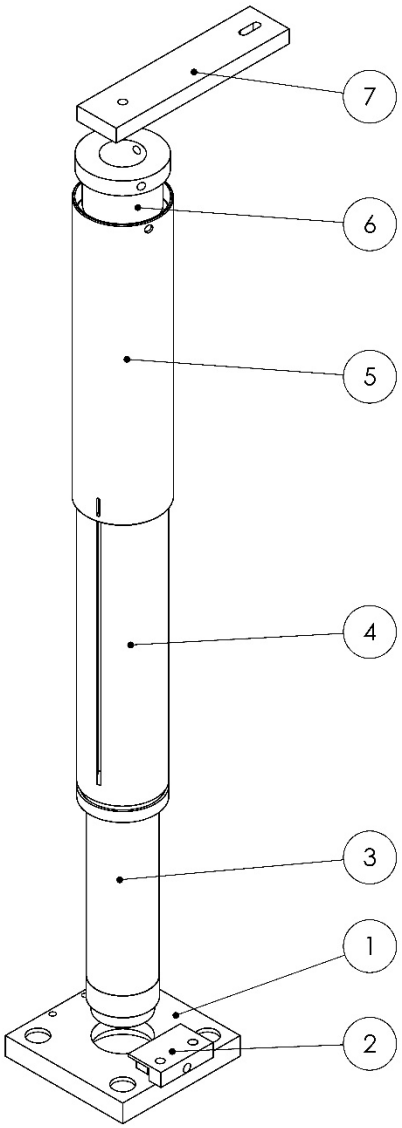
Hydraulic Cylinder Main Assembly



Hydraulic Cylinder Main Assembly

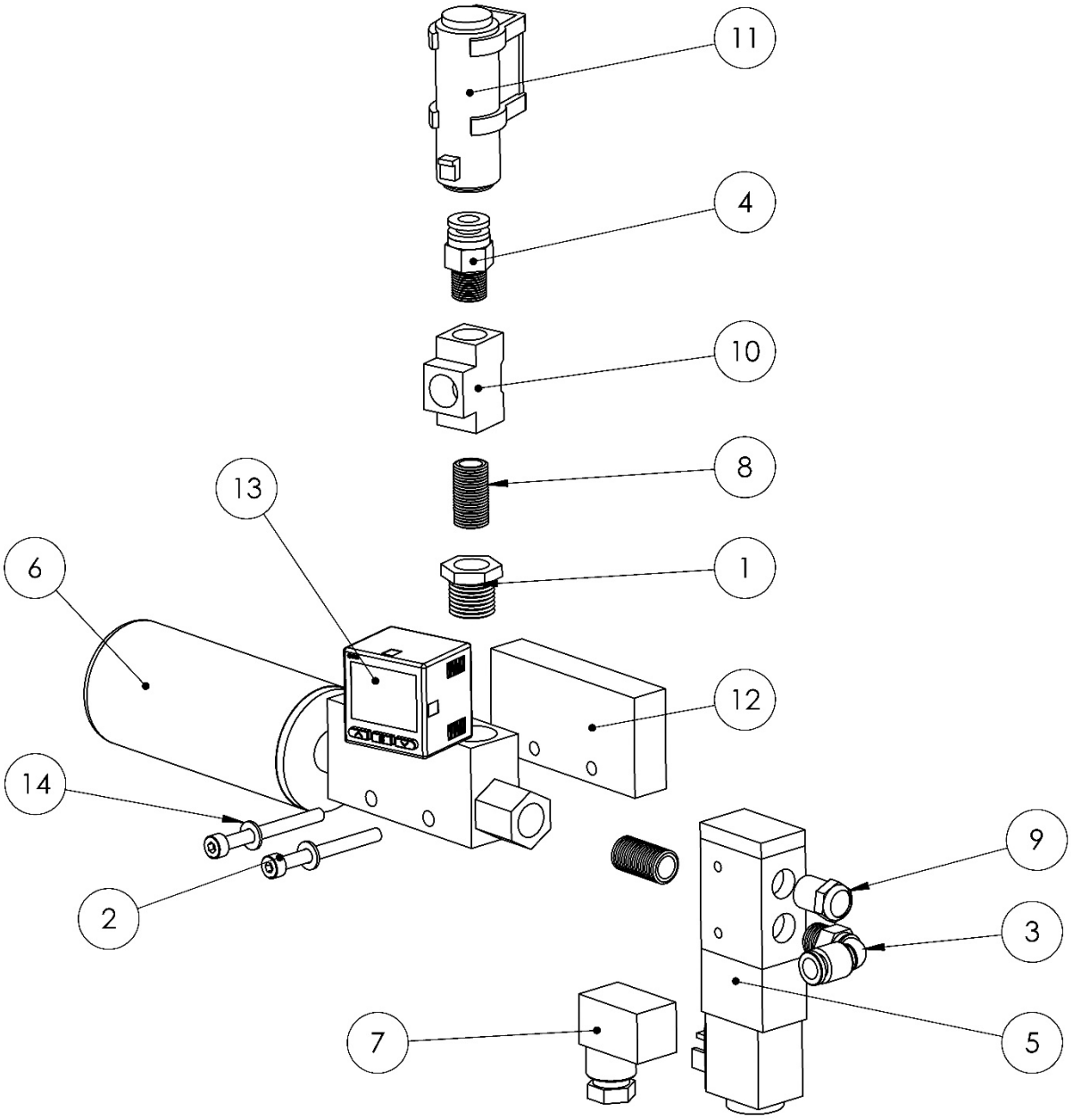
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-02889	HYDRAULIC CYLINDER, 8 TON, WT & OT (-4)	1
2	15-03072	7/16-20 x 1/4-18, 90 DEG ELBOW	2
3	N/A	POSITIVE STOP SYSTEM ASSEMBLY	1
4	11-00271	824 CYL. INSULATION SHOE	1
5	H-3804A	5/8 BOLT INSULATION	2
6	H-3804B	5/8 BOLT INSULATION	2
7	15-03221	PRESSURE HOSE, .5”X 16 ¼”	1
8	15-03222	PRESSURE HOSE, .5”X 10 ¾”	1
9	15-02892	ASSY, HYDRAULIC TUBE, RETRACT	1
10	15-02891	ASSY, HYDRAULIC TUBE, EXTEND	1
11	N/A	MACHINE MAIN FRAME	1
12	H-3803	WASHER, INSULATOR, 5/8”	4
13	H-3802	5/8 HARDENED FLATWAHSER	4
14	H-3801	5/8-18 FLANGE NUT	4
15	N/A	UPPER TOOL HOLDER ASSEMBLY	1
16	15-03861	CET MOUNTING BRACKET	1
17	15-03904	CET, CABLE-ACTUATED SENSOR	1
18	15-01109	HOSE, PRESSURE, 5/8” X 24 ¼”	2
19	15-01164	HOSE CLAMP, 3/4" TWIN	6

Positive Stop System Assembly



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-00116	POSITIVE STOP BASE PLATE	1
2	15-00115	POSITIVE STOP CLAMP PLATE	1
3	15-00117	POSITIVE STOP INNER TUBE	1
4	15-00683	ASSY, POSTIVE STOP SLOTTED TUBE	1
5	15-00119	POSITIVE STOP OUTER TUBE	1
6	15-00120	NUT, POSITVE STOP, 824+, WT & OT (-3)	1
7	15-00046	CET CONNECTING BAR	1

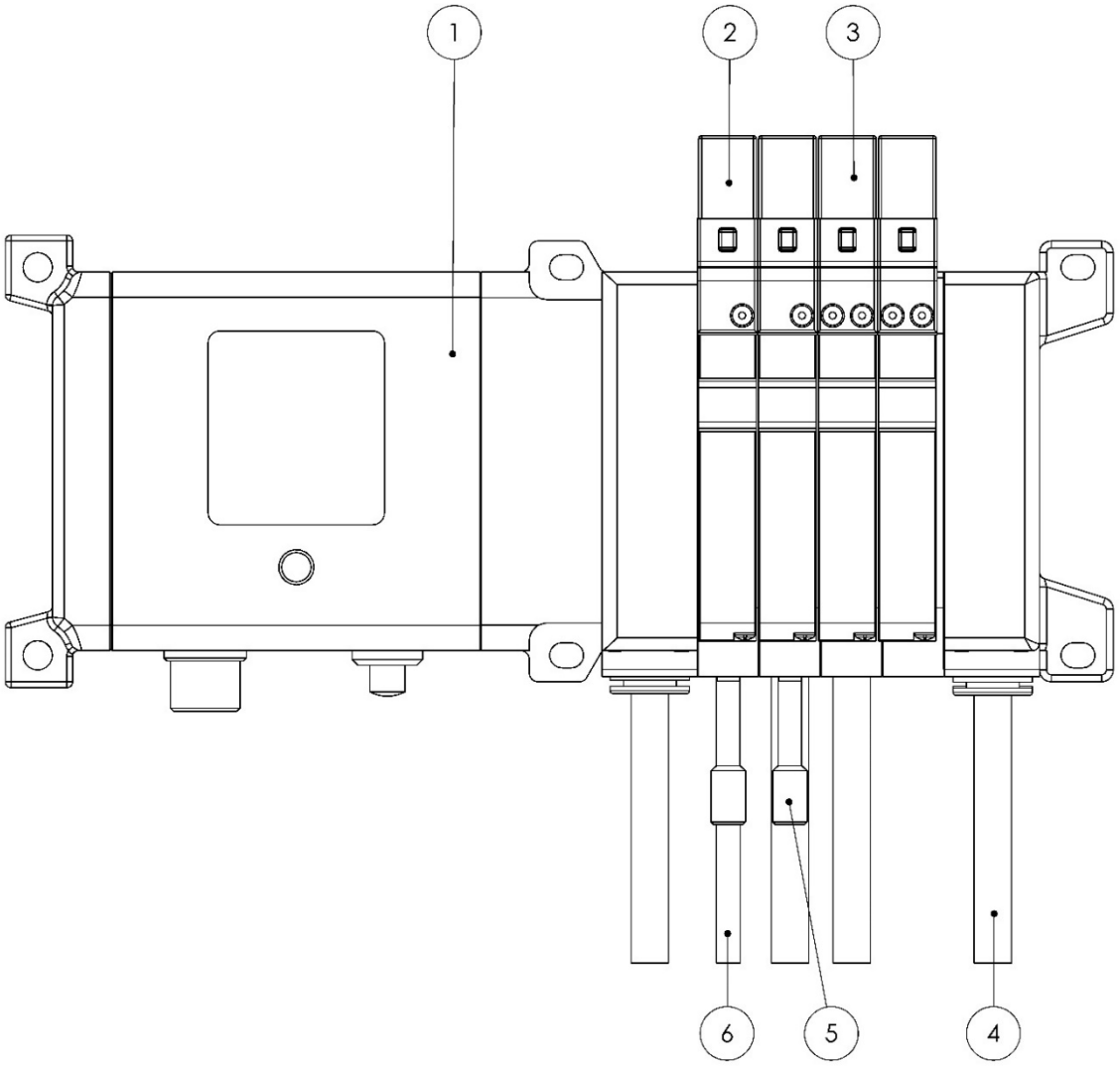
Vacuum Generator Assembly (15-43004)



Vacuum Generator Assembly (15-43004)

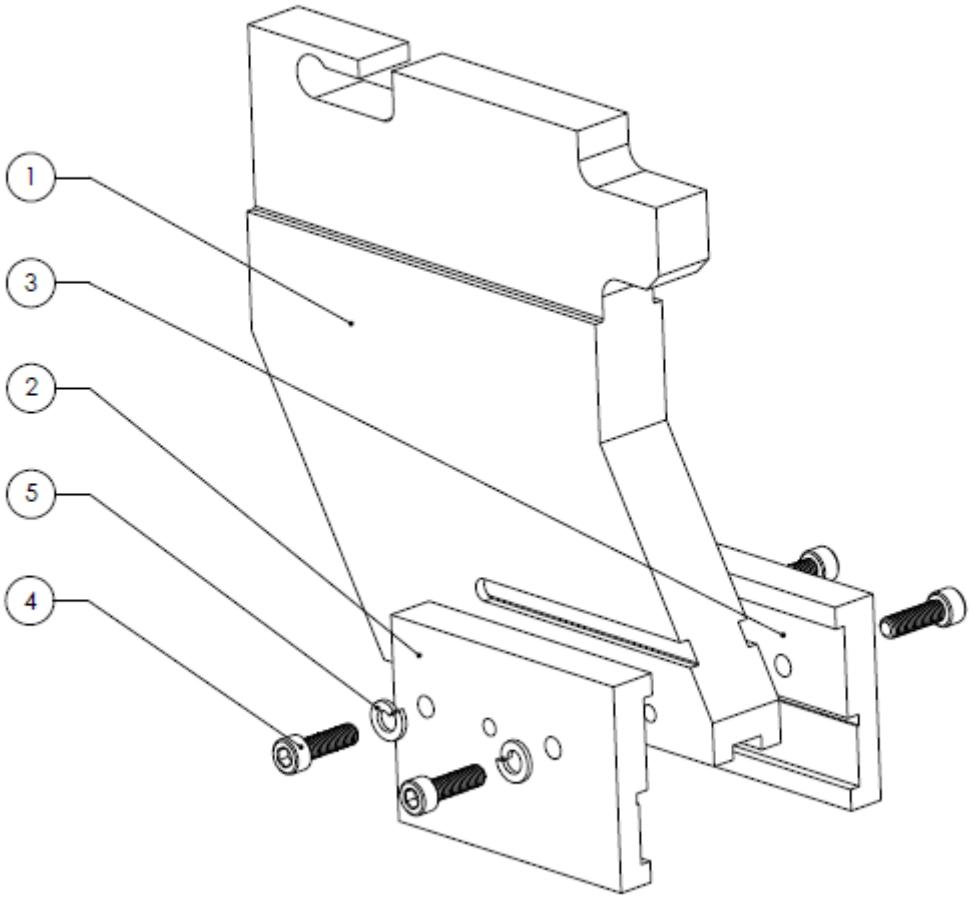
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-01325	FITTING: BUSHING BRASS 1/4 MALE NPT X 18 FEMALE NPT	1
2	15-03661	SHCS, M4 X 0.7 X 40MM	2
3	H-5020	SWIVEL ELBOW, 90 DEG, 1/8 NPT X 1/4 TUBE	1
4	14-00638	AIR FITTINGS	1
5	11-00587	24V SOLENOID VALVE	1
6	11-00589	VACUUM GENERATOR	1
7	11-00590	SOLENOID CONNECTOR	1
8	10-00209	1/8" BRAS CL. NIPPLE	2
9	10-00210	BRASS BREATHER, 1/8"	1
10	10-00211	1/8" BRASS TEE	1
11	15-03703	AIR FILTER, VACUUM GENERATOR, WT/OT-4E & MSPE	1
12	15-03611	ADAPTER, VACUUM GENERATOR	1
13	15-03912	VACUUM TRANSDUCER, 4-20mA	1
14	H-3899	FLAT WASHER, M4, STEEL	2

Air Manifold Assembly (15-03901)



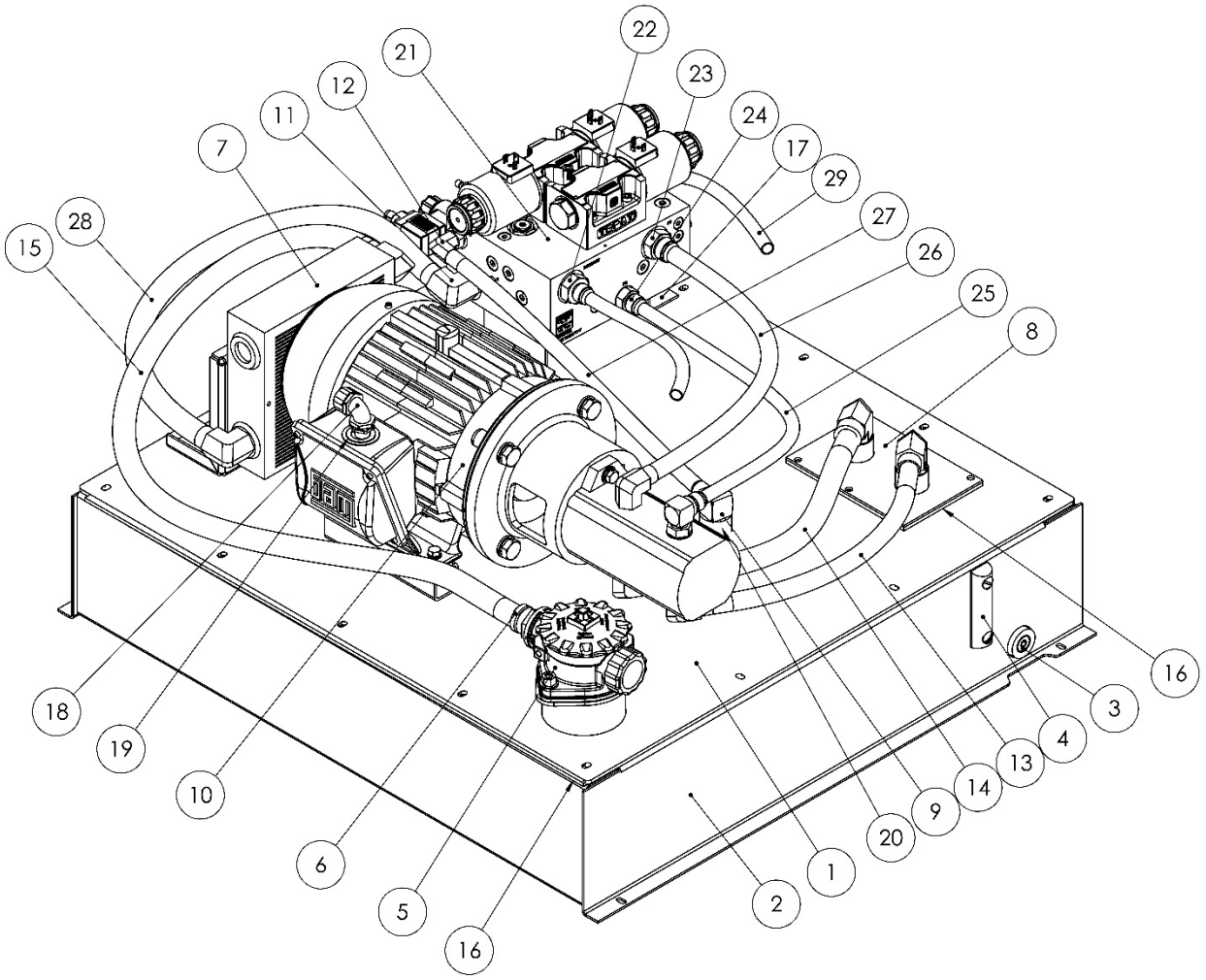
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03901	AIR MANIFOLD (FULL ASSEMBLY)	-
2	15-03371	VALVE, DUAL 3/2, PNEUMATIC	2
3	15-02857	VALVE, 3-POSITION SINGLE, PNEUMATIC	2
4	15-00285	1/4” DIA. AIR LINE	/FT
5	15-00552	5/32” FITTING PLUG	2
6	15-00286	5/32” DIA. AIR LINE	/FT

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



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-03255	J-FRAME, BOTTOM FEED TOOL, WT	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

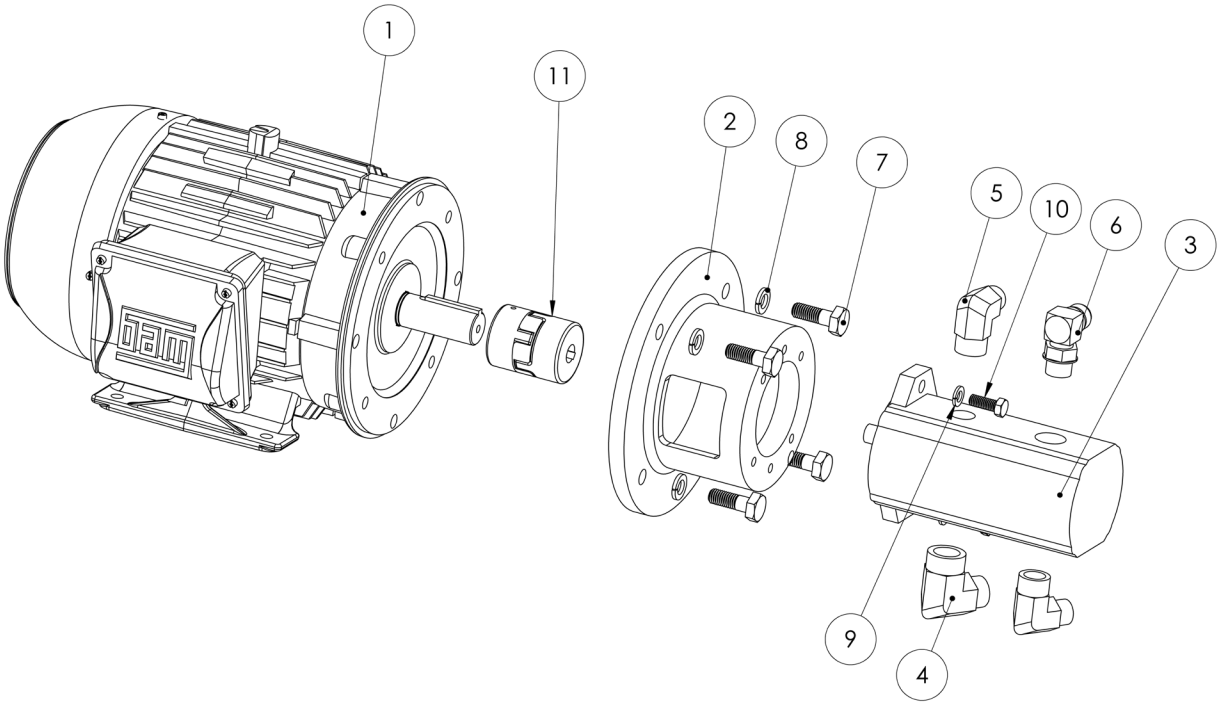
Hydraulic Reservoir Assembly



Hydraulic Reservoir Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-00782	H.S. RESERVOIR TOP	1
2	15-00784	RESERVOIR WELDMENT	1
3	15-02166	DRAIN PLUG, O-RING BOSS ½ “	1
4	15-00226	LEVEL GAUGE W/O THERMOMETER	1
5	15-00758	RETURN FILTER ASSEMBLY	1
6	15-01183	FITTING, STRAIGHT, 3/4" MALE 3	1
7	N/A	824 HYDRAULIC COOLER ASSEMBLY	1
8	N/A	HYDRAULIC SUCTION FILTER ASSEMBLY	1
9	15-01185	FITTING, MJ-MP 90 8-12	1
10	N/A	824 HYDRAULIC MOTOR & PUMP ASSEMBLY	1
11	15-01147	FITTING, MB-MJ 90 12-12 MALE BOSS TO MALE JIC	1
12	15-03822	FITTING, MB-MJ 8-8 90 MALE BOSS TO MALE JIC	1
13	15-01103	HOSE SUCTION, ¾” X 16.50” LONG	1
14	15-01102	HOSE SUCTION, 1” X 16.50” LONG	1
15	15-01114	HOSE, COOLER TO TANK, ¾ “X 37.00” LONG	1
16	10-00087	RUBBER SEAL 3/16 X 1 BLACK	-
17	10-01420	MANIFOLD BRCKT, UNIVERSAL	1
18	H-1029	3/8" LT 1/2" PIPE EL	1
19	15-01468	WASHER, REDUCER, 1" X 1/2", ST	1
20	15-03847	FITTING, PIPE NIPPLE ¾” X 4”	1
21	15-03913	XP1 SO-BLOCK HAEGER 5HP 824 MA	1
22	15-00066	STRAIGHT FITTING, 5/8” JIC-SAE 12	2
23	15-01152	STRAIGHT FITTING, ¾” MALE 37, JIC TO ¾” MALE	1
24	15-03973	FITTING, MB-MJ 8-10 MALE BOSS TO MALE JIC	1
25	15-01158	HOSE PRESSURE, 5/8“X 32.25” LONG	1
26	15-01108	HOSE PRESSURE, ¾ “X 30.75” LONG	1
27	15-01106	HOSE SUCTION, ½” X 16.50” LONG	1
28	15-01107	HOSE, COOLER TO MANIFOLD, ¾ “X 13.75” LONG	1
29	15-01109	HOSE PRESSURE .625" X 24.25"	2

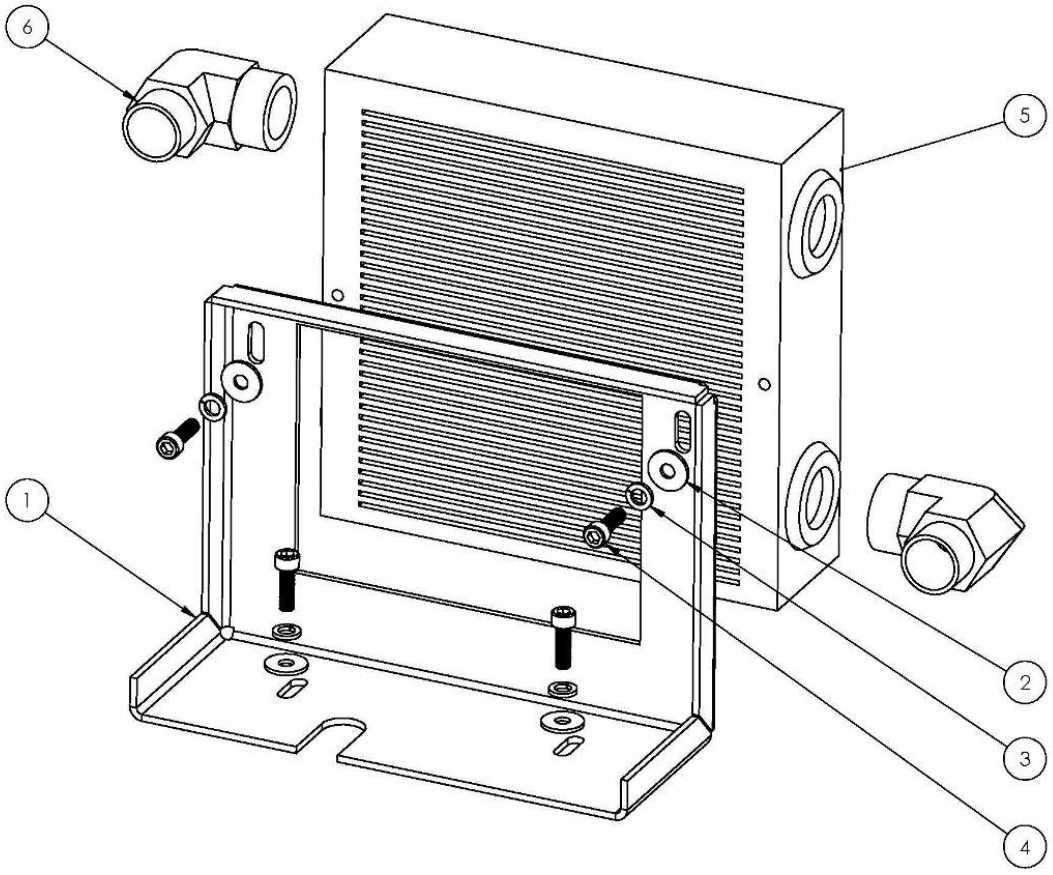
Motor Pump Assembly



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1[1]	15-00077	MOTOR, 5 HP, 1800 RPM, 50/60 HZ, 208/440 V	1
2	15-01124	COUPLER 8.5 "A" PUMP / 4.75 LONG	1
3	15-01123	PUMP 824 HS	1
4	15-01143	FITTING, 90 ELBOW, 16 MALE 37 JIC O-RING	1
5	15-01142	FITTING, 90 ELBOW, 12 MALE 37, JIC TO MAILE O-RING	2
6	15-00062	FITTING, 5/8XJICX5/8 O-RING 90DEG	1
7	N/A	HEX HEAD, ½-13 X 1-1/2 BLACK	4
8	N/A	LOCK WASHER 1/2”	4
9	N/A	LOCK WASHER 3/8”	2
10	N/A	HEX HEAD, 3.8”-16 X 1”	2
11	15-04058	MOTOR COUPLERS	1

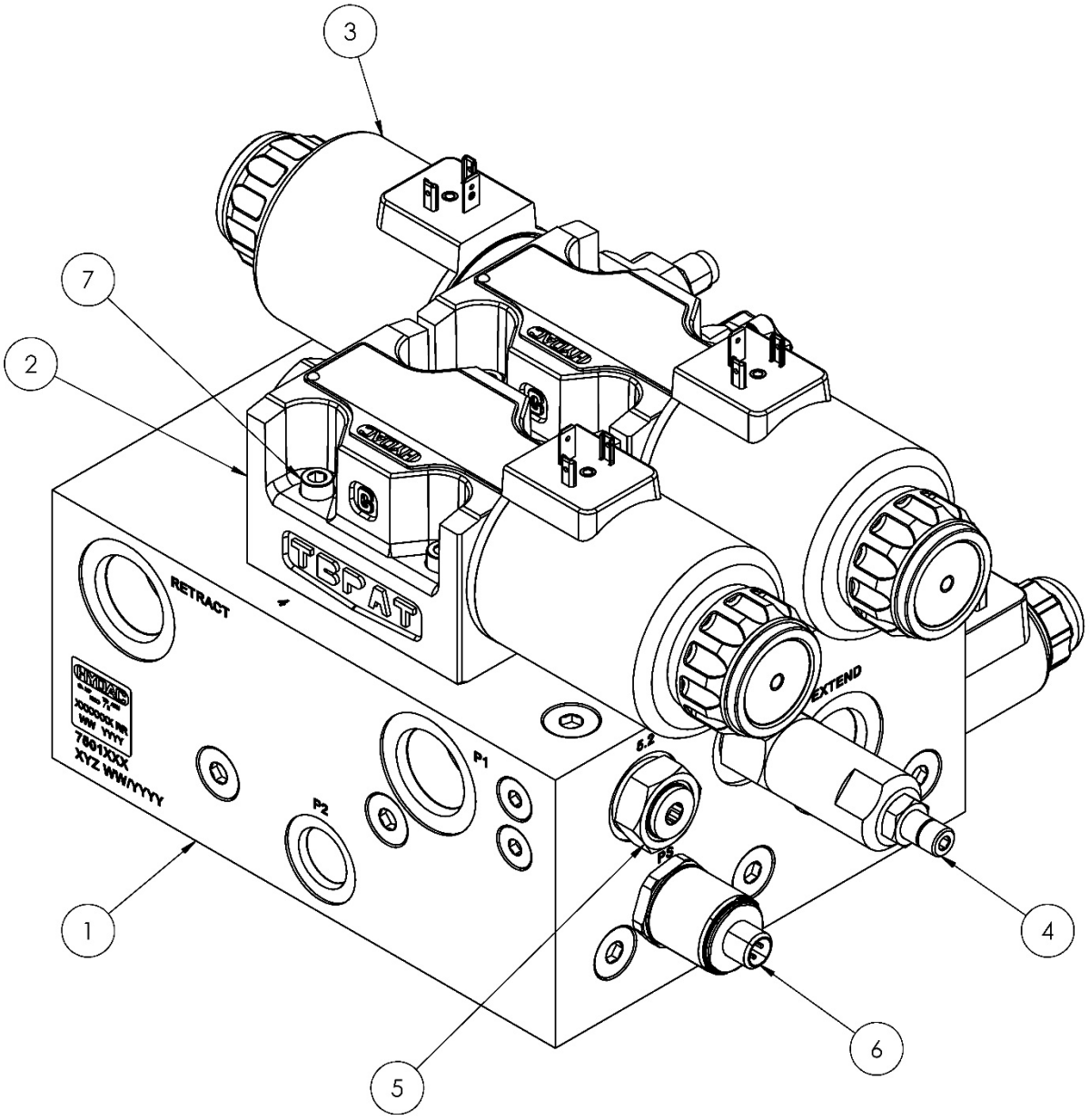
[1] For 575 Model machines, use part # 15-00394 (MOTOR, 5 HP, 575 V) -- in lieu of the MOTOR5 HP, 208/440 V shown above.

Hydraulic Cooler Assembly

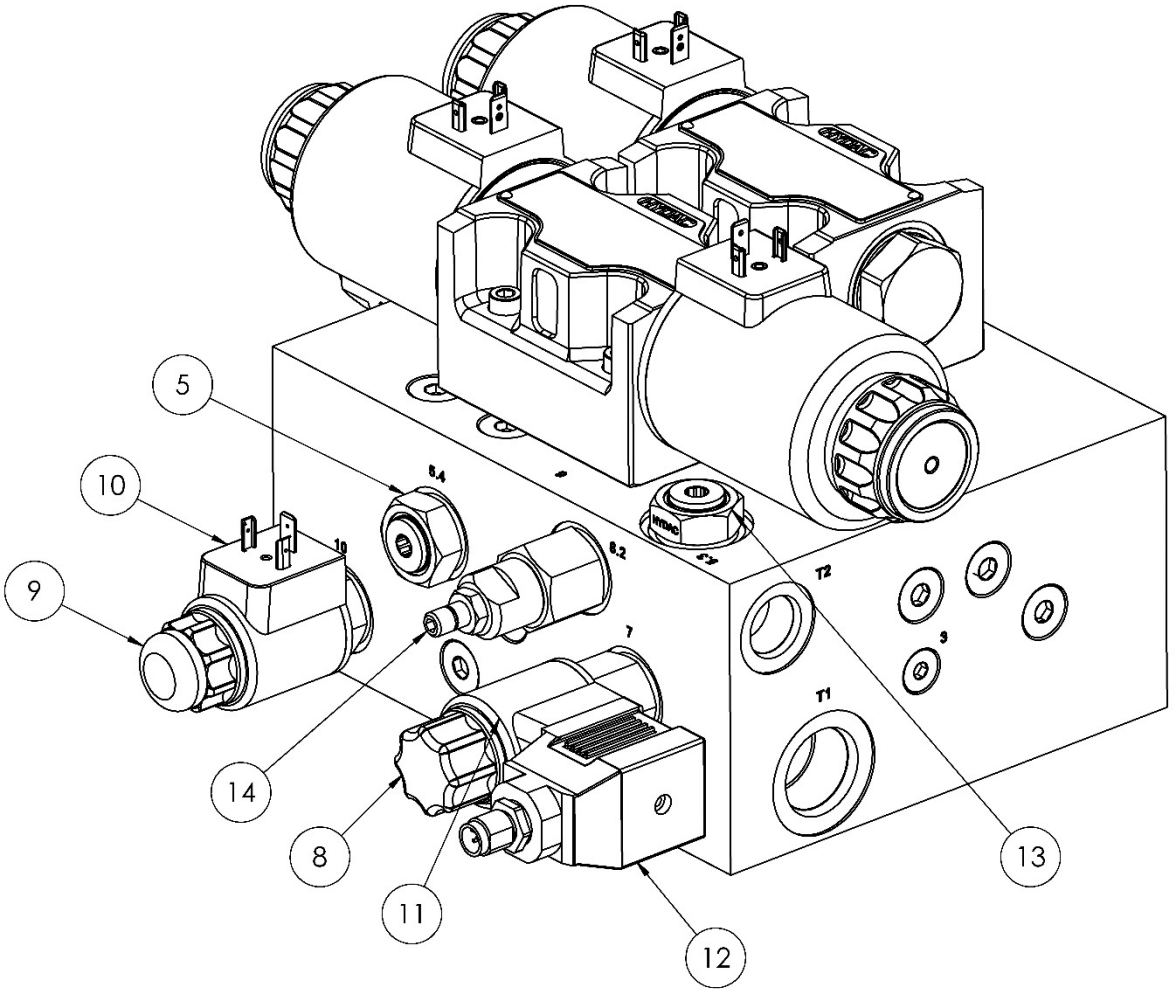


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-00783	BRKT, RESERVOIR COOLER MOUNT	1
2	15-01601	M6, WASHER, ZINC PLATED	4
3	15-01393	LOCK WASHER, M6, DIN127 ZINC	4
4	11-00319	SHCS, M6 x 1.0 x 20MM, STAINLESS	4
5	15-01132	COOLER, 824 H/S ECO 4	1
6	15-01147	MB-MJ 90 12-12 MALE BOSS TO MALE JIC 90	2

Hydraulic Manifold Assembly (15-03913)



Hydraulic Manifold Assembly (15-03913)

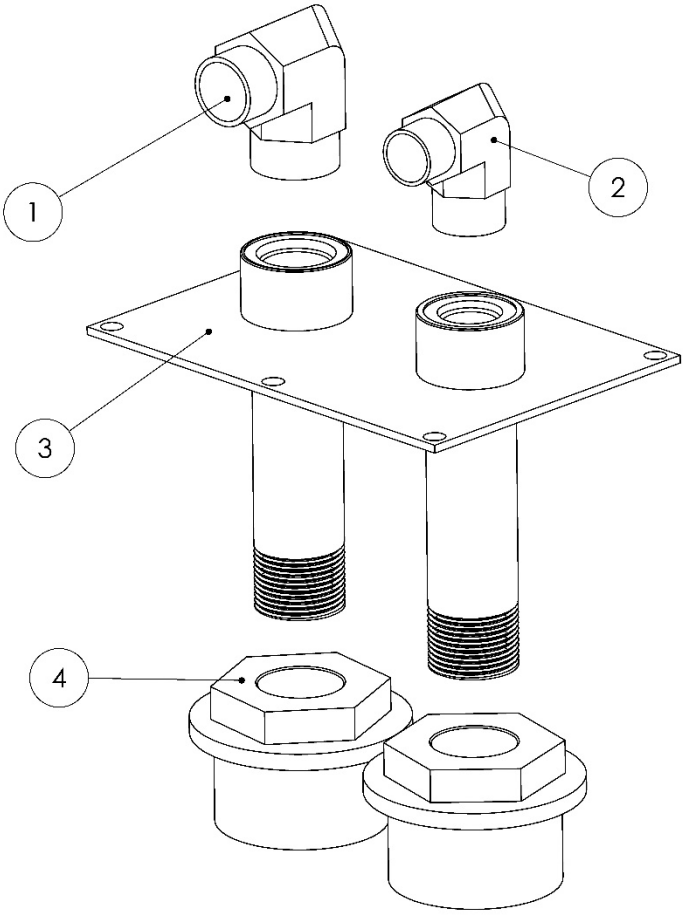


Hydraulic Manifold Assembly (15-03913)

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

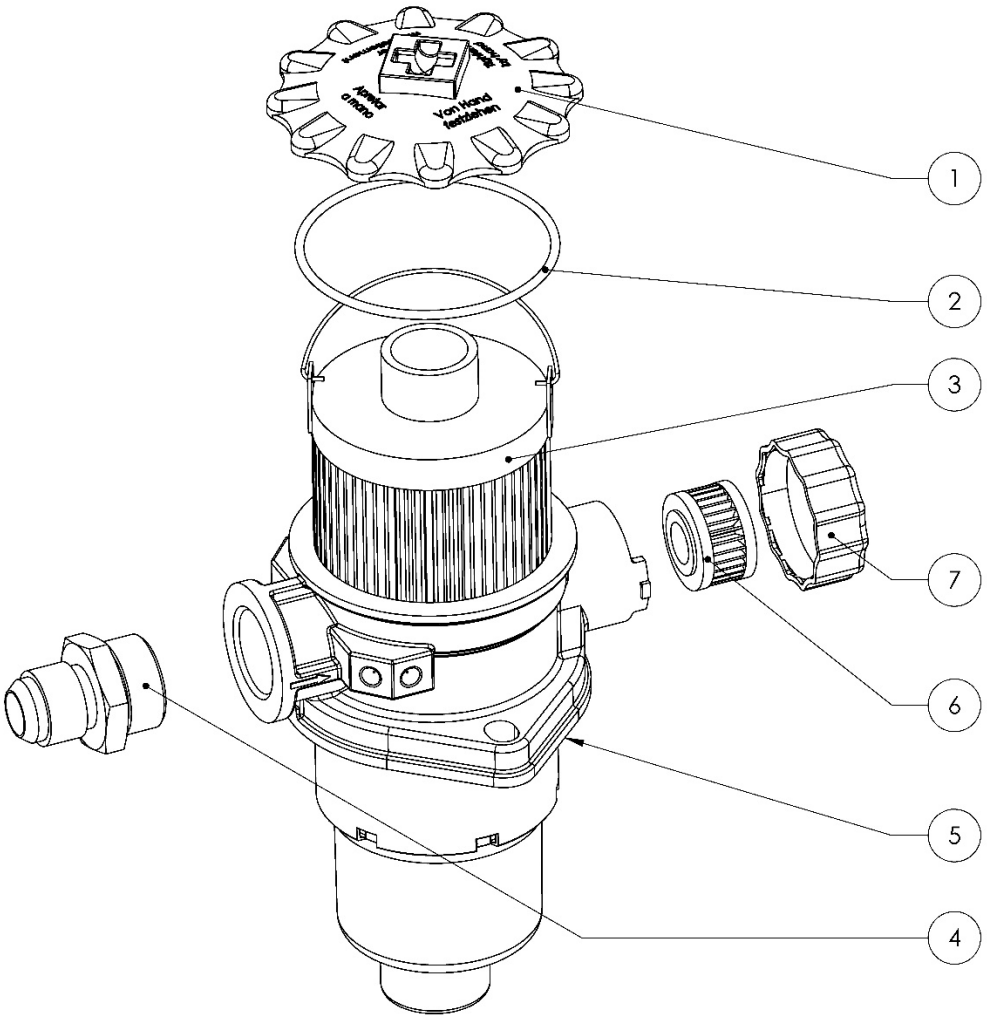
*NOT PICTURED

Hydraulic Suction Filter Assembly



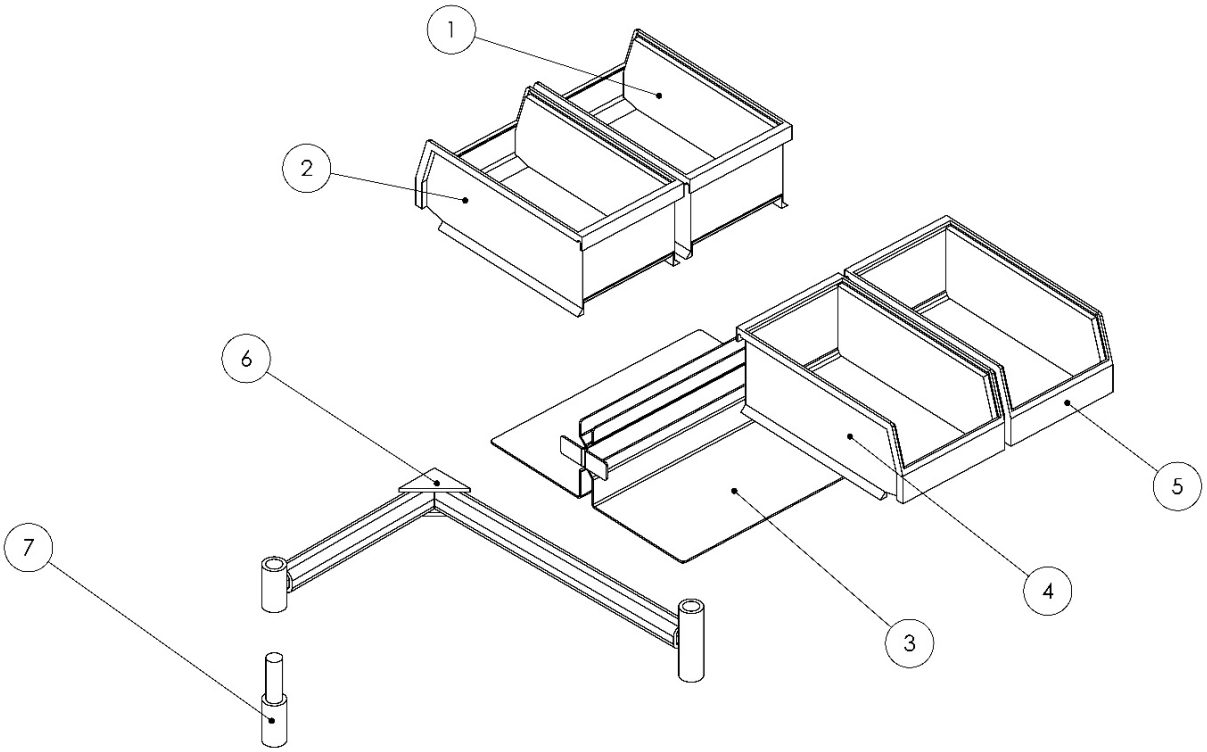
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-01180	FITTING JIC MB-MJ 16-12	1
2	15-01163	FITTING JIC MB-MJ 16-16	1
3	15-02720	SUCTION ACCESS PLATE	1
4	15-01131	SUCTION FILTER 1” NUT STYLE	2
5	15-00781-1	1” X 4” PIPE NIPPLE	2

Return Filter Assembly (15-00758)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15-02715	CAP, FILTER ASSEMBLY RETURN	1
2	15-02714	RING, FILTER ASSEMBLY RETURN CAP	1
3	15-00888	HYDRAULIC FILTER ELEMENT	1
4	15-01183	FITTING MB-MJ 16-12	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	15-01294	PART BIN 7 X 4 YELLOW	1
2	15-01291	PART BIN 7 X 4 DARK BLUE	1
3	15-01299	PARTS TRAY HOLDER	1
4	15-01292	PART BIN 7 X 4 MEDIUM GREEN	1
5	15-01293	PART BIN 7 X 4 RED	1
6	11-00179	SERVICE TRAY ARM	1
7	11-00184	SERVICE TRAY POST	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.