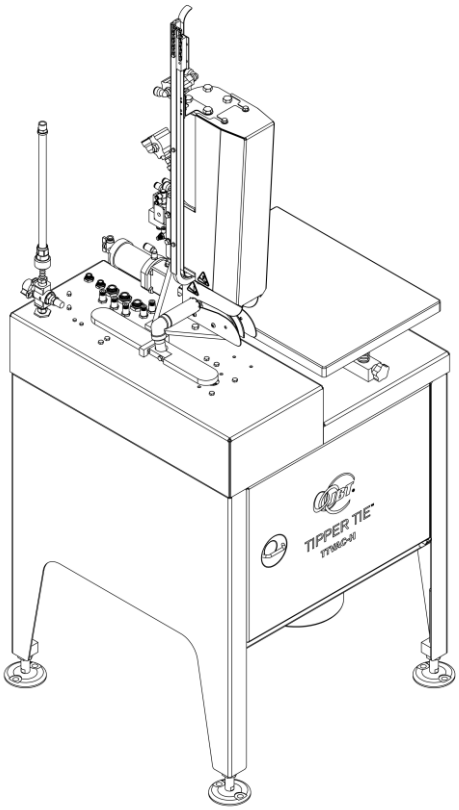
TIPPER TIE™



Model TTVac-H

Clipper Vac

User Manual

Manual Number 80-1486

Revision Number 03

October 2023

Disclaimer of Liability

TIPPER TIE shall not be liable to any person for any defects or damages to persons or property resulting directly or indirectly from: (1) any neglect, misuse or abuse of the equipment, including, but not limited to, improper or inadequate maintenance of the equipment or improper modification or alteration thereto, or (2) any use of the equipment which contravenes any of the instructions set forth in this manual.

Before operating this machine, you must read and understand this manual. Everyone who will operate or maintain this machine must be properly trained. Follow all operating instructions and exercise caution when operating or maintaining this machine. Pay particular attention to Chapter 2, "Safety Instructions".

Preventive Maintenance Requirements

IMPORTANT: For proper machine function and continued satisfaction with your finished product, it is **essential** that your machine be properly maintained. This means that a preventive maintenance (PM) schedule should be established and followed. Attention shall be given at least **once a week** to observing wear of all moving parts, especially in the following areas:

- Die support channel and punch assembly
- Die and die pocket area of the die support
- Clip pusher assembly
- Knife assembly

Operating a machine without following an established PM schedule constitutes neglect and may result in endangering the safety of the operator, degradation of machine function, or inferior product. Read and follow the Lubrication and Maintenance sections of this manual for further information.

NOTE About the Contents of the Manual

The photos and illustrations used throughout this manual are representative of parts installed on similar clippers and may differ slightly from the parts installed on your clipper.

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Table of Contents

Publication History

The publication history summarizes major changes to this document. Each update of this manual is a new revision (Rev) in the first column (for example, Rev 02). An update that applies only to the drawings is listed on the Assembly Drawings PDF as a sub-revision (for example, Rev 02.01, Rev 02.02, etc.).

Revision	Description of changes	Issue date
00	Original draft.	January 11, 2023
01	Updates images. Updated troubleshooting details. Added information about the vacuum nozzle to Chapter 5.3. Added vacuum pump specification details to Chapter 6.2. Minor corrections and updates.	June 26, 2023
02	Added Chapter 2.7, “Residual Risk”. Updated safety details.	August 23, 2023
03	Updated sound emission details. Added hearing protection warning.	October 6, 2023

Terms and Conditions for Use

1. **Quote Validity:** All quotations provided by TIPPER TIE, Inc. (“Supplier”) are subject to these Terms and Conditions of Sale (this “Agreement”) and any purchase order or similar form attached hereto or presented by the Buyer is affirmatively rejected. By submitting an order to Supplier, Buyer agrees to be subject to this Agreement in its entirety. All quotations terminate if not accepted by Buyer within 60 days.

2. **Prices and Taxes:** Prices do not include federal, state or local taxes, including sales, use or excise taxes.

3. **Shipment and Delivery:** Unless otherwise provided in this Agreement, all products are shipped EXW Supplier’s facility, Apex, NC, Incoterms® 2010. Title and risk of loss or damage to the products ordered hereunder (the “Goods”) pass from Supplier to Buyer upon delivery to the first carrier. Buyer grants to Supplier a security interest in the Goods sold to Buyer as security for the due and punctual performance of its payment obligations hereunder, and Buyer agrees to execute such documents to evidence and perfect this security interest.

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5. **Warranties:**

5.1. Supplier warrants that the Goods will conform to the description and specifications set forth herein and will be free from defects in material and workmanship, and Supplier warrants that any services will be performed in a good and workmanlike manner. For Goods that are Clip, Loop and Wire products, this warranty shall survive for a period of 60 days from the date of shipment. For Goods that are Parts, Clippers, and Machines, this warranty shall survive for period of 6 months from the date of shipment. The duration of the warranty for the applicable Good is the “Warranty Period”. If Buyer provides written notice to Supplier during the Warranty Period of a claimed defect and returns the applicable Good to the original shipping point, transportation prepaid, Supplier will, at its option, repair or replace such Good, shipment to Buyer prepaid. The repair or replacement of Goods shall occur within a commercially reasonable period following receipt of a claim and return of the Good. Any repair or replacement of Goods shall not extend the period of warranty, and all items, components, or parts replaced under this warranty shall become the property of Supplier.

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8. **Indemnification:** Each party shall indemnify, defend, and hold harmless the other party from and against any loss, liability, claim or action, to persons, property, or third parties ("Loss") to the extent any such Loss was caused by the indemnifying party or its employees, agents, subcontractors, or affiliates.

9. **Limitation of Liability:** IN NO EVENT, REGARDLESS OF THE FORM OF ACTION, SHALL SUPPLIER BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL LOSSES OR DAMAGES ARISING IN ANY WAY OUT OF THIS AGREEMENT, INCLUDING, BUT NOT LIMITED TO, LOSSES OR DAMAGES ARISING OUT OF CLAIMS FOR LOSS OF USE, BUSINESS, GOODWILL, OR PROFITS, AND CLAIMS ARISING OUT OF THIRD PARTY ACTIONS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGES. Buyer agrees that Supplier's cumulative liability hereunder for damages, based on contract, warranty, tort (including, but not limited to, negligence, warranty, and strict liability), indemnity, contribution, or otherwise, shall not exceed the aggregate sum paid hereunder by Buyer to the date the amount of such liability is determined.

10. **Dispute Resolution and Governing Law:** If this parties cannot resolve a dispute regarding this Agreement through good faith negotiation, it will be resolved in the U.S. District Court for the Eastern District of North Carolina, western division (unless that court does not have jurisdiction to hear the dispute, in which case it will be resolved exclusively in state court in Wake County, North Carolina), and each party irrevocably submits to the sole and exclusive jurisdiction of these courts to hear these disputes. The laws applying to contracts made and fully performed in the State of North Carolina will govern this Agreement. The parties disclaim any application of the United Nations Convention on Contracts for the International Sale of Goods to this Agreement.

11. **General:** No waiver of any breach of this Agreement shall constitute a waiver of any prior or subsequent breach of any similar or dissimilar provision or a modification of the Agreement. This Agreement constitutes the entire agreement between the parties relating to the sale of the Goods and no addition to or modification of any provision of this Agreement shall be binding upon Supplier unless agreed in writing by Supplier. The Agreement is binding upon and will inure to the benefit of the parties and their respective successors and permitted assigns. Buyer may not assign any of its rights or delegate any of its obligations hereunder, in whole or in part, without the prior written consent of Supplier. Buyer shall not export either directly or indirectly any Goods, or any system incorporating Goods, either in contravention of statute or regulation or without first obtaining all required licenses and permits from the United States Department of Commerce and any other relevant agencies or departments of the United States government.

Chapter 1 – Machine Description and Specifications

1.1 Description

The TTVac-H is a vacuum-operated packaging machine. The TTVac-H draws a vacuum and creates a seal using TIPPER TIE clip closure technology. Red meats, processed meats, smoked meats, poultry, cheeses, and cook-in bag products are some of the products the TTVac-H was designed for.

The TTVac-H is a fast and reliable solution for vacuum sealing products.

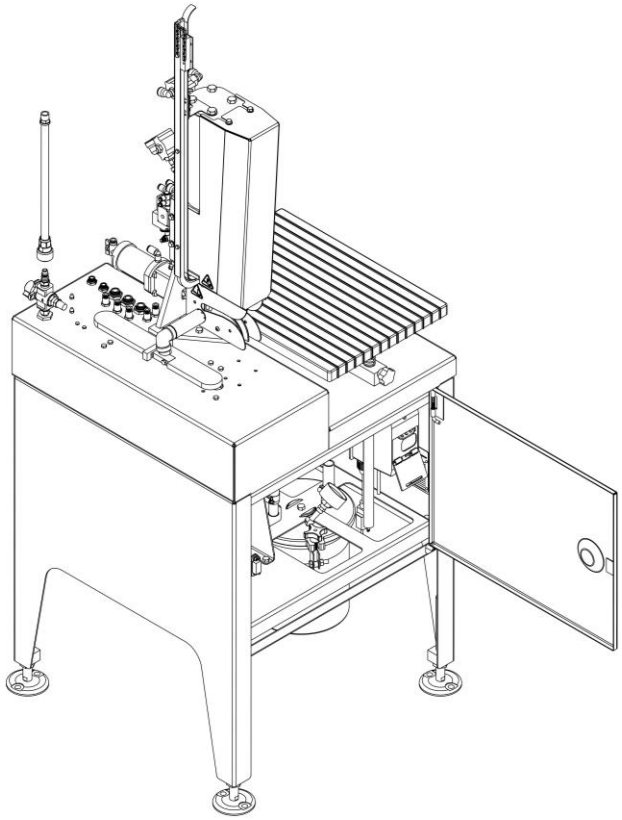


Figure 1: TTVac-H

For each machine cycle, the TTVac-H performs the following functions:

- Draws a vacuum on the package
- Gathers the bag neck
- Applies a secure vacuum tight clip
- Trims excess material from the bag tail

1.2 Options

Optional clippers are available to meet different packaging needs as follows:

- The SZ2100L model clipper uses Z200-series clips
- The SZ4100L model clipper uses Z400-series clips

Refer to Chapter 7, "Clippers", for more details.

An optional castor kit is also available (see Chapter 12, "Assembly Drawings").

1.3 Name Plate and Specifications

The name plate shows important production data and specifications (see below). The name plate is affixed to the frame of the machine. There are two versions of the machine based on voltage:

A. Low Voltage (110-120 VAC) machine.
B. High Voltage (220-240 VAC) machine

1. Low Voltage (110-120 VAC) Name Plate

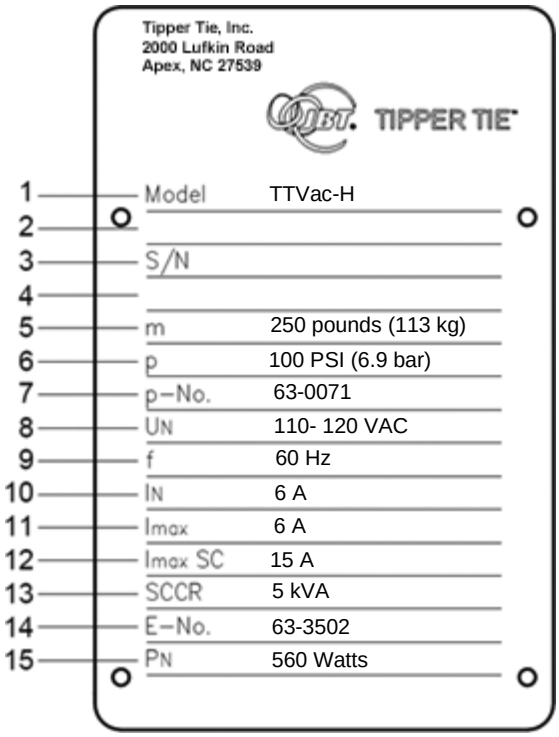


Figure 2: Low Voltage Name Plate

1	Model Name
2	Machine Designation
3	Serial Number
4	Year of Manufacture
5	Machine Weight
6	Max. Permissible Air Pressure
7	Diagram Number of Pneumatic System
8	Rated Voltage and Number of Phases
9	Permissible Grid Frequency
10	Rated Current of Electrical System
11	Current Consumption of Largest Motor
12	Max. Permissible Short-Circuit Current = Max. Permissible Short-Circuit Fuse Rating
13	SCCR: Short Circuit Current Rating
14	Electrical Wiring Diagram Number
15	Power Consumption of Machine (kVa or Watts)

2. High Voltage (220-240 VAC) Name Plate

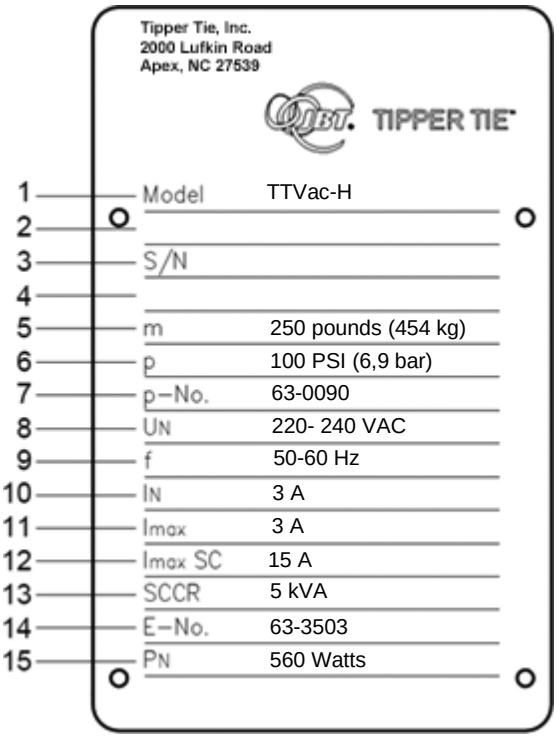


Figure 3: High Voltage Name Plate

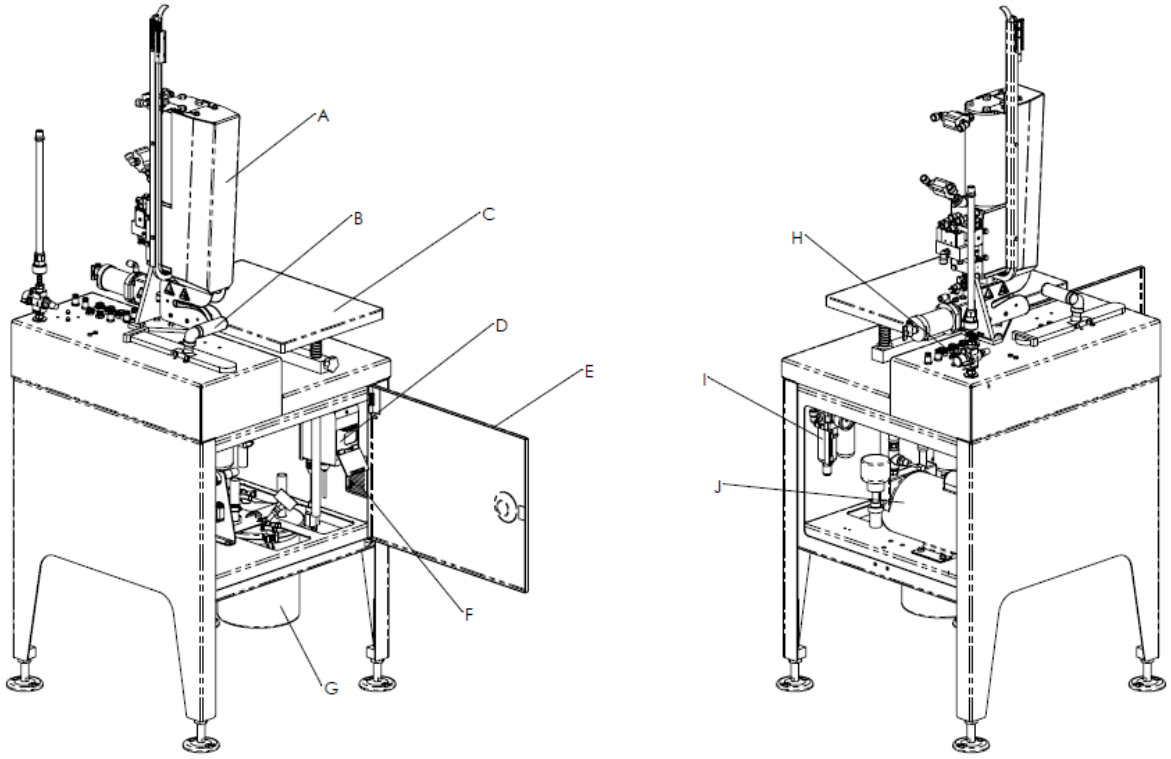
1	Model Name
2	Machine Designation
3	Serial Number
4	Year of Manufacture
5	Machine Weight
6	Max. Permissible Air Pressure
7	Diagram Number of Pneumatic System
8	Rated Voltage and Number of Phases
9	Permissible Grid Frequency
10	Rated Current of Electrical System
11	Current Consumption of Largest Motor
12	Max. Permissible Short-Circuit Current = Max. Permissible Short-Circuit Fuse Rating
13	SCCR: Short Circuit Current Rating
14	Electrical Wiring Diagram Number
15	Power Consumption of Machine (kVa or Watts)

Additional Specifications:

- Air consumption: 12 CFM @ 80 PSI (340 liters @ 5,5 bar) at 20 cycles per minute
- Recommended operating pressure: 80 PSI (5,5 bar)
- Clip type and size:
  Z200-series (SZ2100L clipper) or
  Z400-series (SZ4100L clipper)
- Machine weight: 310 lbs (141 kg)
- Shipping weight: 345 lbs (156.5 kg)

1.4 Machine Layout

The layout of the TTVac-H is shown below.



A	Clipper (SZ2100L or SZ4100L)	**F**	Nameplate
B	Vacuum Nozzle	**G**	Waste Tank
C	Adjustable Table	**H**	Shutoff Valve
D	Vacuum Start/Stop	**I**	Filter/Regulator/Lubricator (FRL) Unit
E	Cabinet Door	**J**	Vacuum Pump

1.5 Machine Dimensions

The dimensions of the TTVac-H are shown in the following illustrations.

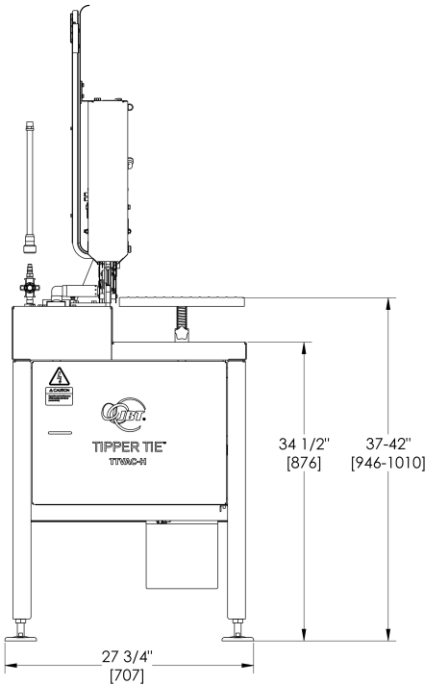


Figure 4: TTVac-H (Front View)

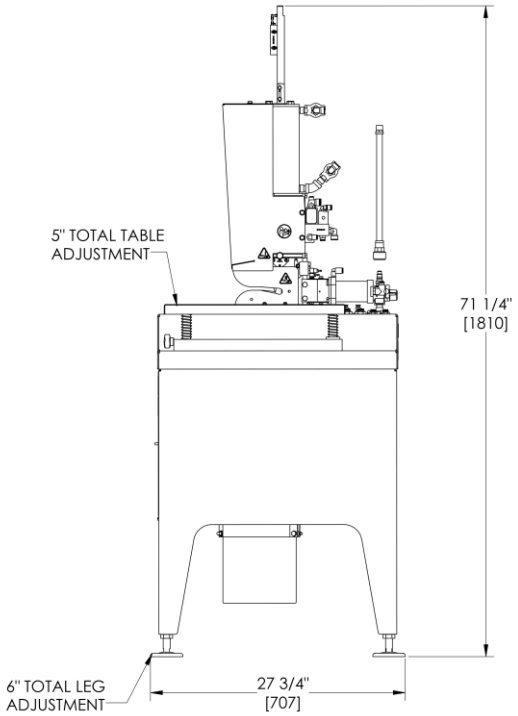


Figure 5: TTVac-H (Side View)

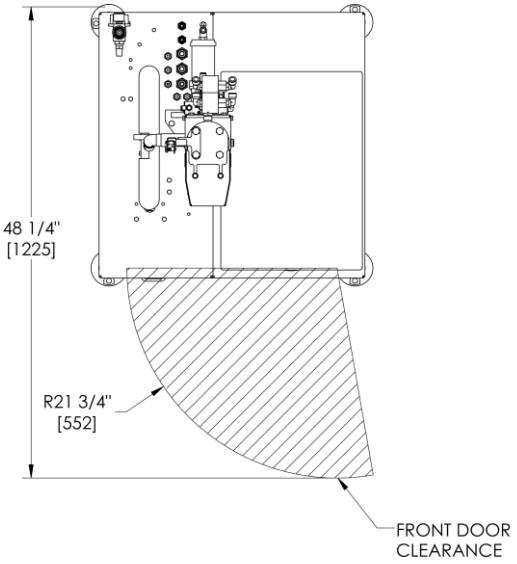


Figure 6: TTVac-H (Aerial View)

Chapter 2 – Safety Instructions

The following sections outline safety instructions for the TTVac-H. Read and understand the contents of the manual before operating the machine. Only qualified personnel shall operate the machine (see Section 2.3, “Qualified Personnel”). Follow all instructions and use caution when operating or maintaining the machine.

2.1 Disclaimer of Liability

TIPPER TIE shall not be liable to any person for any defects or damages to persons or property resulting directly or indirectly from: (1) any neglect, misuse or abuse of the equipment, including, but not limited to, improper or inadequate maintenance of the equipment or improper modification or alteration thereto, or (2) any use of the equipment which contravenes any of the instructions set forth in this manual.

2.2 Safety Symbols

This handbook uses safety symbols to accompany safety instructions. Safety symbols make the reader aware when important safety instructions are provided. Both mandatory symbols and warning symbols are used. The purpose of each safety symbol is described below.

2.2.1 Mandatory Symbols

Mandatory signs indicate steps that are required before completing a task. Mandatory signs are circular with a blue background and white pictogram. This handbook uses four mandatory symbols as shown below.

Symbol	Designation
	Wear ear protection
	Wear eye protection
	Wear protective gloves
	Wear safety footwear

2.2.2 Warning Symbols

Warning signs identify potential hazards that require caution. Warning signs are triangular with a yellow background and black pictogram. This handbook uses six warning symbols as shown below.

Symbol	Designation
	Warning of general danger or property damage
	Warning of electric shock
	Warning of injury from rotating parts
	Warning of injury from pinching
	Warning of injury from sharp objects that may cut
	Warning of injury from high air pressure

2.3 Safety Signs and Symbols

Safety signs attached to the machine must not be removed or modified in any way. Damage or lost safety signs must be replaced *without delay*.

Symbol	Designation
	**Meaning**: Electrically powered components. Risk of injury from electric shock. Do not clean with water. All work on such components must be carried out by qualified electricians. **Position of Sign**: On the door, on the tabletop
	**Meaning**: Operation and maintenance of this machine by trained personnel only **Position of Sign**: On the door
	**Meaning**: Risk of injury from hands being pinched or crushed. Keep hands away from moving parts. **Position of Sign**: On the clipper
	**Meaning**: Risk of injury from sharp objects. Keep hands away from the knife. **Position of Sign**: On the clipper
	**Meaning**: Lock out required. **Position of Sign**: On the tabletop

2.4 Qualified Personnel

Qualified personnel are persons who have been explicitly authorized to perform certain tasks with or on the machine. Operators, maintenance technicians, and cleaning personnel are examples of individuals that perform machine tasks. Qualified personnel must be able to identify potential risks and take necessary safety precautions.

Authorization must be based on qualification, training and experience, and knowledge of relevant safety and accident prevention regulations. Qualified personnel must be authorized by the person responsible for safety of the machine. The parties responsible for machine safety must ensure that all applicable directives, rules, and statutory regulations are strictly adhered to. A copy of the operating manual is accessible to all personnel carrying out work on or with the machine.

2.5 General Precautions

To prevent possible serious injury, it is extremely important that you understand and follow the safety precautions included in this manual. These safety precautions do not claim to be completely exhaustive. If you have any questions, please contact your TIPPER TIE representative. General precautions to follow are:

- Before installing and first operating the machine, this manual must be read and understood. Follow all operating and safety instructions and exercise extreme care.
- Understand the meaning of the safety symbols described in this chapter.
- This machine must be operated only by trained personnel. Training must be repeated at regular intervals.
- This machine must be mounted or installed on a stable, level surface prior to operation.
- Safety devices must be checked each day to ensure proper operation. Safety features should be examined once each year by experts.
- Locate and identify the Emergency Stop valve. Rotate the Emergency Stop valve to stop the machine. Correct and clear obstructions before restarting the machine. Immediately report all malfunctions to the person in charge.
- Do not modify, remove, discard, disable or bypass guards or safety circuits. Do not operate the machine unless the safety circuit is operating correctly. The safety circuit removes power from the air and electricity supplies immediately upon the opening of the guards.
- All guards, protective covers and shields must be in place before operating the machine. Operating this machine with guards, covers and shields removed could result in serious injury. Never operate this machine without its safety devices properly installed and functional.
- Keep hands and fingers clear of the clipper's gate, punch, die and knife areas. Never touch these areas while the machine is in operation or while being moved. Do not allow fingers, hands, jewelry or clothes around moving parts during operation of this machine.
- Before servicing, maintaining or moving the machine, disconnect the air and electrical supply lines. The main air supply line must be disconnected or locked out from the machine at the quick-disconnect before performing any service operation or maintenance.
- Be aware of the danger of electrical shock. Electrical shock is possible when plugging the machine electrical connection into the outlet. Install "lockout devices" on the red electrical and pneumatic lock-out handles when maintenance or repair requires the removal of a guard. The machine's on/off switch is located inside the cabinet.
- When the machine is not in operation and prior to maintenance, disconnect the air supply at the "quick disconnect" on the machine. To prevent unauthorized or accidental operation, rotate the red emergency stop valve clockwise 1/4 turn. Attach a padlock through the holes.
- The maximum working pressure for this machine is 100 PSI (6,9 bar). Air pressure greater than this could cause an explosive rupture in any of the air lines or pneumatic components. Failure to adhere to this caution could result in personal injury or damage to the machine.
- Pay particular attention to the loud sound levels produced by this machine. If applicable, use ear protection.
- Use only original spare parts and accessories.
- If the machine is sold, the manual must be supplied to the new owner.

2.6 Safety Illustrations

The following illustration shows the air pressure shutoff and lock-out valve danger area of the TTVac-H.

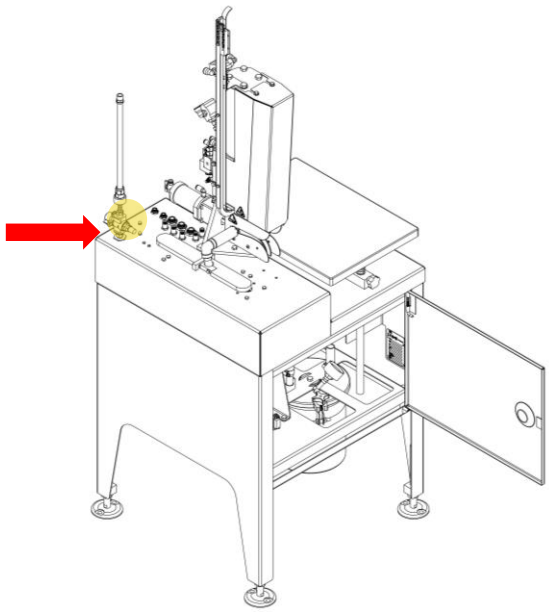


Figure 7: Air Pressure Danger Areas

Warning: If an obstruction jams in the die area, do not cycle the machine until the jam is cleared. Turn off and lock-out the air supply before removing the obstruction.

The following illustration shows the vacuum nozzle danger area of the TTVac-H.

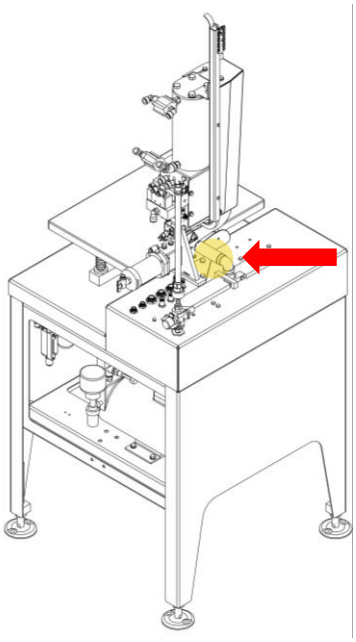


Figure 8: Vacuum Nozzle Danger Areas

2.7 Residual Risk

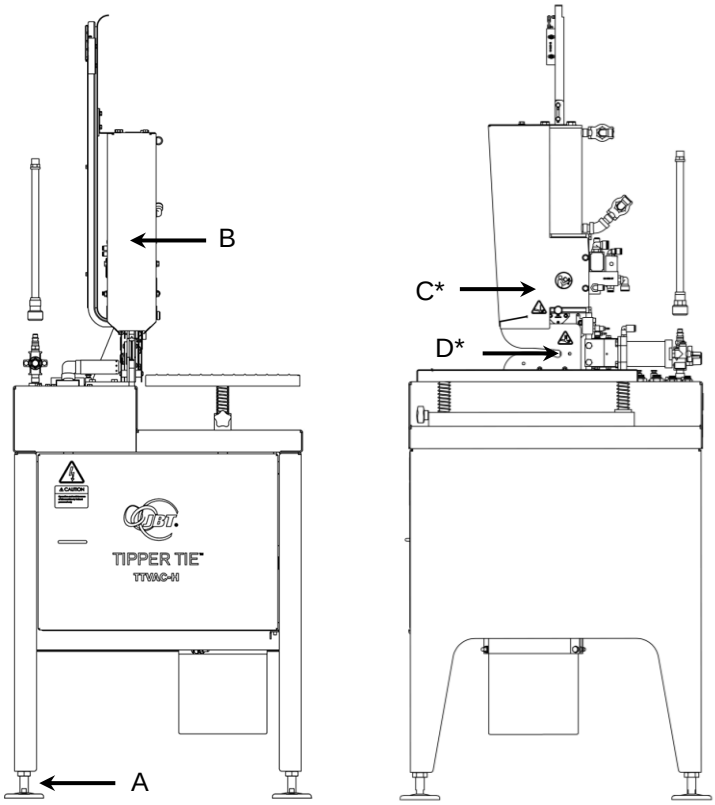
Even though the machine has been designed and manufactured according to the latest state of technology and relevant safety regulations, certain residual risk while operating the machine remains. These risks can be avoided with training and the practice of safely operating the machine.

Whenever there are parts in motion or that move against each other, there is a risk of being pinched or crushed by these parts.

Warning: Making machine adjustments may cause the machine and its components to become unstable. Use caution when performing height adjustments to the nozzle, clipper mount, and feet.

Warning:

Be aware of the potential of injury to hands and fingers when adjusting nozzle components or when loosening and tightening U-bolts on the clipper mount.



A	Feet or Casters
B	Clipper
C*	Crimp Stop
D*	Knife

**refer to drawings*

Component	Risks	Countermeasures
Frame: *Adjusting foot height*	1. There is a risk of injury to body parts due to machine instability when adjustments are made.	• Practice caution • Follow instructions
Clipper: *Clipping and cutting bags*	1. There is a risk of body parts being pinched or crushed when machine adjustments are made. 2. There is a risk of body parts being cut or severed if contacted during operation.	• Practice extreme caution • Do not reach into the machine during operation
Crimp Stop: *Adjusting the crimp*	1. There is a risk of body parts being pinched or crushed when machine adjustments are made.	• Practice caution • Follow instructions
Knife: *Replacing the knife*	1. There is a risk of body parts being cut or severed if contacted during replacement.	• Practice caution • Wear cut-resistant gloves

Note: Instructions for performing adjustments are found in the next chapter (see Chapter 3.4: Adjustments).

2.8 Sound Emission

In compliance with EN ISO 11204:2010, a noise emission test was performed to document the levels of sound emission.

L_{pA} = 79 dB(A)

L_{wA} = 97 dB(A)

Warning: Hearing may be impaired by loud production noise. The maximum sound emission from the machine during operation can vary depending on the types of clips being used but may go beyond 85 dB(A). Personnel must always wear ear protection.

Chapter 3 – Delivery and Setup

3.1 Delivery

Inspect the shipping container and equipment for damages due to shipping and handling.

If damage is found or suspected, contact the shipping agent immediately. The carrier must have an opportunity to inspect the damage to properly verify claims. Therefore, any loss or damage discovered after delivery should be reported to the shipper's agent as soon as possible or within 15 days after receipt of the goods.

In many instances, the original container is not opened and the contents not examined before reshipment to the final destination. Therefore, under current shipping regulations, nine months are allowed for filing claims for loss or damages. The shipping agent or carrier will help you process your claim.

Remember to report all suspected damages immediately. If additional assistance is required, TIPPER TIE will help in settling your claim. However, the first contact must be with the carrier or his agent.

Include the following materials with all correspondence:

- Original bill of lading or a copy
- Vendor invoice or certified copy when claim is based on weight or when valuation of shipment has been improperly described
- Catalog pages or product information
- Original packing slip or receiving reports or a copy of the electronic bill of lading manifest

3.2 Unpacking Equipment

For ease of shipping, some components may have been shipped disassembled. Check the shipping list and loose parts list to ensure that all items have been received. Do not discard packing materials until the machine is assembled and operational. Notify TIPPER TIE immediately if any component is missing or if additional assistance is required.

Read and review the manual before operating equipment. Add all required oils and fluids and make all machine adjustments as instructed before starting the clipper. Failure to do so may result in equipment damage or personal injury and will void the product warranty.

At time of delivery, record the following information and maintain with permanent records.

_____ **Machine serial number**

_____ **Clipper serial number**

For replacement parts, refer to Chapter 11, "Spare Parts List" and Chapter 12, "Assembly Drawings".

3.3 Setup

Warning: This machine must be plugged into a ground fault circuit interrupter (GFCI) receptacle. Failure to do so could cause serious injury or death and could severely damage the machine.

Before operating the machine, check all the air line connections as set at the factory. If lines have become disconnected, reassemble as shown in the appropriate assembly drawing (refer to Chapter 12, "Assembly Drawings").

Use Personal Protective Equipment (PPE) when operating the machine or performing machine tasks.

Assemble the factory air supply to the filter/regulator/lubricator (FRL) assembly by means of the quick-disconnect connector. The quick-disconnect provides a safe means of removing the air supply for maintenance and cleaning. The quick-disconnect must be attached with the check valve half (female) to the supply side of the air circuit.

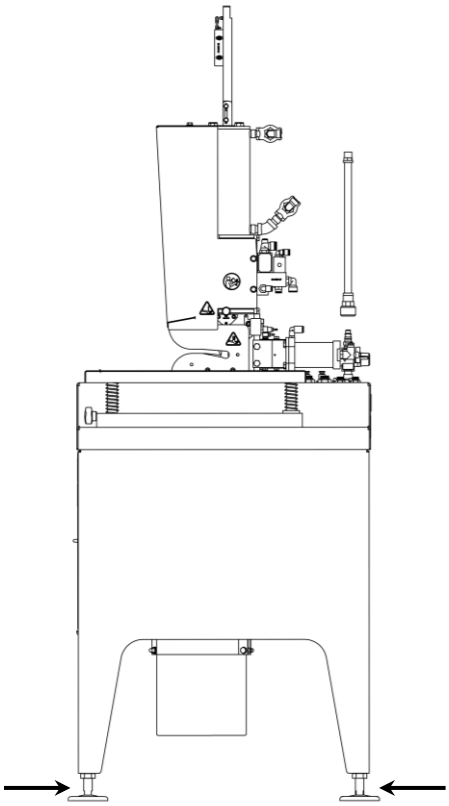
NOTE: This machine must be mounted or installed on a stable, level surface prior to operation.

3.4 Adjustments

3.4.1 Adjusting Foot Height

To adjust foot height:

1. Loosen the jam nut.
2. Adjust the height of the foot.
3. Tighten the jam nut.
4. Repeat on the remaining feet.



Danger: Exercise caution when adjusting the machine feet. When the machine is not level, the risk of injury from instability increases (see Chapter 2.6: Residual Risk for more details).

3.4.2 Adjusting the Crimp Stop

To adjust the crimp stop:

1. Through the opening on the clipper guarding, loosen the crimp stop set screw.
2. Adjust the crimp stop up or down.
3. Tighten the crimp stop set screw.

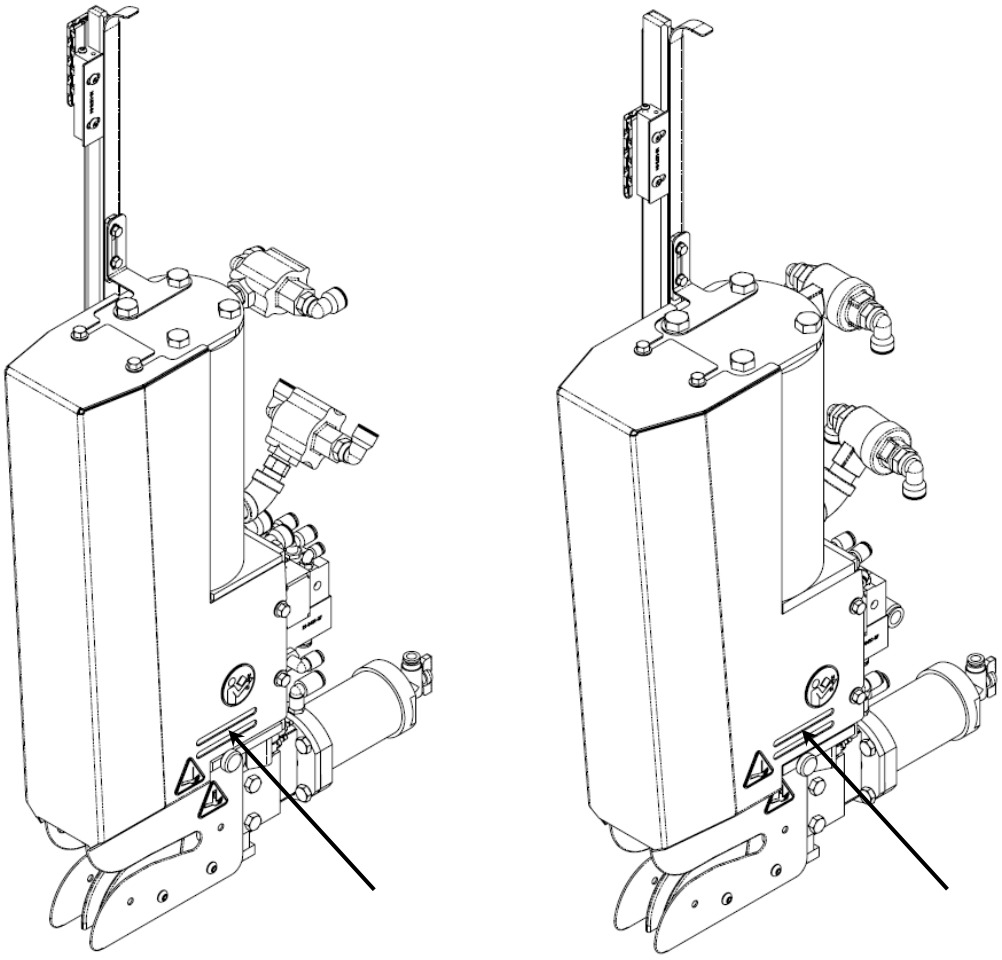
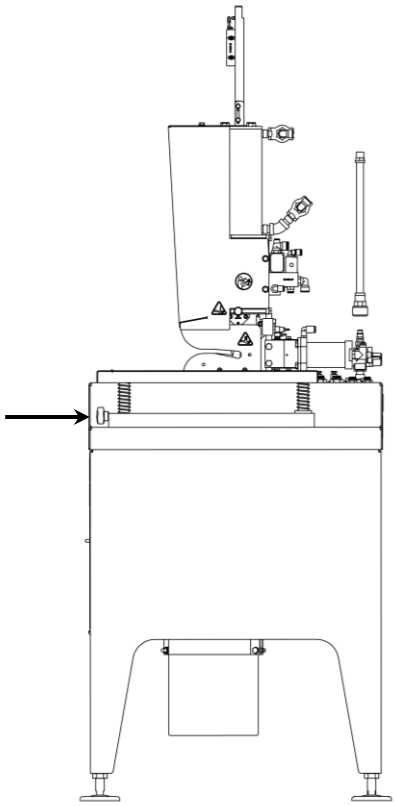


Figure 9: Crimp Stop (SZ2100L and SZ4100L)

3.4.3 Adjusting Table Height

To adjust the height of the table:

1. Loosen the adjusting screw
2. Push the table up or down to the desired height.
3. Tighten the adjusting screw.



Chapter 4 – Air Connections, Lubrication and Adjustments

4.1 Air Supply Connection

The air supply is connected to the model TTVac-H via the quick-disconnect connector. The recommended operating air pressure is 80-100 PSI (5,5-6,9 bar).

Warning: Do not set air pressure above 100 PSI (6,9 bar). Air pressure greater than this could cause an explosive rupture in any of the air lines or pneumatic components. Failure to adhere to this warning could result in injury or severe damage to the machine.

4.2 Filter/Regulator/Lubricator Assembly

Before operating the machine, check the air line connections as set at the factory. If lines have become disconnected, reassemble as shown in the pneumatic schematic (see Chapter 12, "Assembly Drawings").

The filter/regulator/lubricator (FRL) assembly treats and regulates the incoming air. The FRL assembly is located inside the cabinet, under the quick-disconnect and red lock-out valve, which are mounted on the outside top surface of the machine. The cabinet doors can be easily opened and removed for servicing. Always close the cabinet doors before operating.

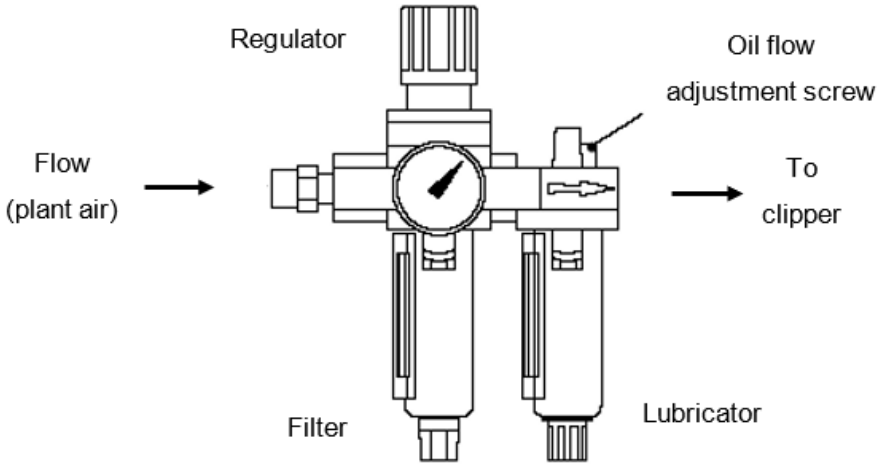


Figure 10: Filter/Regulator/Lubricator (FRL)

The operating air pressure can be regulated from the air regulator module. To regulate the air pressure:

1. Pull the locking-type adjustment knob away from the body of the regulator until the orange band is visible:
   - Rotate the knob *clockwise* to increase the air pressure.
   - Rotate the knob *counterclockwise* to decrease the air pressure.
2. When the adjustment is complete, push the knob back to the body of the regulator.
   NOTE: The recommended air pressure setting is 80 PSI (5,5 bar).

The clipper operating pressure is 43.5-87 PSI (3-6 bar).

4.3 Lubrication and Adjustment

Lubricator oil flow is adjusted by turning the front needle valve:

- Turn the needle valve *counterclockwise* to increase the oil drop rate
- Turn the needle valve *clockwise* to decrease the oil flow

Warning: Do not attempt to add oil to the lubricator while the system is pressurized. Disconnect and lock-out the air supply and purge pressure from the system before removing the fill plug.

Before refilling the lubricator:

1. Shut down and depressurize the system.
2. Slowly remove the fill plug. Fill to 1/4 inch from the top of the bowl using the recommended oil.
   NOTE: The recommended lubrication is ISO VG32.

Change filter elements after one year of service or when the air pressure drops to 1 kg/cm sq. [1.03 bar (15 PSI)].

Caution: Do not use polycarbonate bowls on the FRL. Polycarbonate bowls may fail if exposed to synthetic oils, thinner solvents, trichlorethylene, kerosene, and other aromatic hydrocarbons. Metal bowls are recommended.

Chapter 5 – Machine Operating Instructions

5.1 Vacuum Pump Setup

For ease of shipping, the vacuum pump may not be full and may require additional oil. After unpacking the machine, check the oil sight glass for the correct oil level and replenish as necessary.

5.2 Preparation

To prepare for machine operation:

1. Check all air connections.

   NOTE: If air connections have become disconnected, reassemble as shown in the pneumatic schematic (see Chapter 12, "Assembly Drawings").
2. Check the vacuum pump for proper oil level (refer to Section 6.3, "Vacuum Pump Lubrication System").
3. Adjust incoming air to the recommended pressure of 80 (5,5 bar).

   NOTE: Do not set air pressure above 100 PSI (6,9 bar).
4. Check for any air leakage.

   NOTE: If leakage is present, correct before continuing.
5. Load the clips.
6. Push clips down the rails.
7. Place the clip weight on top of the clips.
8. Check for proper clip feeding and for any obstructions at the punch, knife, and die areas on the clipper.

Danger: While operating the machine, never place fingers or hands near or through the slot in the clipping area or around the gate area.

5.3 Vacuum Nozzle Operation

To operate the vacuum nozzle:

1. Place product onto the product table.
2. Place the neck of the product to be sealed around the vacuum nozzle.
3. Move the vacuum tube nozzle assembly forward.

   NOTE: Moving the nozzle initiates the activating lever to open the ball valve. The nozzle assembly starts to draw a vacuum on the package, preparing it for clipping and sealing.
4. Continue to move the nozzle assembly forward until the end of the stroke is reached (vacuum continues to be drawn on the package).
5. As the product moves forward with the nozzle, the bag tail slides into the clipper gate assembly.

   NOTE: The product must hit the product trigger within 0.5 seconds of the nozzle assembly moving to the end of the stroke. The clip will not release unless this occurs.
6. At the maximum forward stroke, the clipper gate valve under the cabinet is activated, which starts the clipper cycle.

5.4 Clipper Operation

The clipping sequence is as follows:

1. Push product into the throat of the die support.
2. The punch trigger valve activates.
3. The punch assembly starts moving downward.
4. The punch takes a clip from the rail.
5. At the bottom of the stroke, the clip forms onto the product in the die.
6. At the end of the punch stroke, the cutoff knife extends.
7. The cutoff knife cuts the excess bag tail.
8. The trigger valve resets the system and the knife and punch retract.
9. Remove the product from the clipper.
10. The machine is ready for another cycle.

When the gate valve is closed, the gate cylinder pressurizes, closing the front gate

Warning: If a clip or other obstruction jams in the die area, do not cycle the machine until the jam is cleared. Turn off and lock-out the air supply before removing the obstruction to avoid damaging the clipper.

Chapter 6 – Vacuum Pump

6.1 Description

The TIPPER TIE TTVac-H uses a GAST 3/4 HP single-stage rotary vacuum pump. Electrical connections should be made by qualified electricians in accordance with local and national codes.

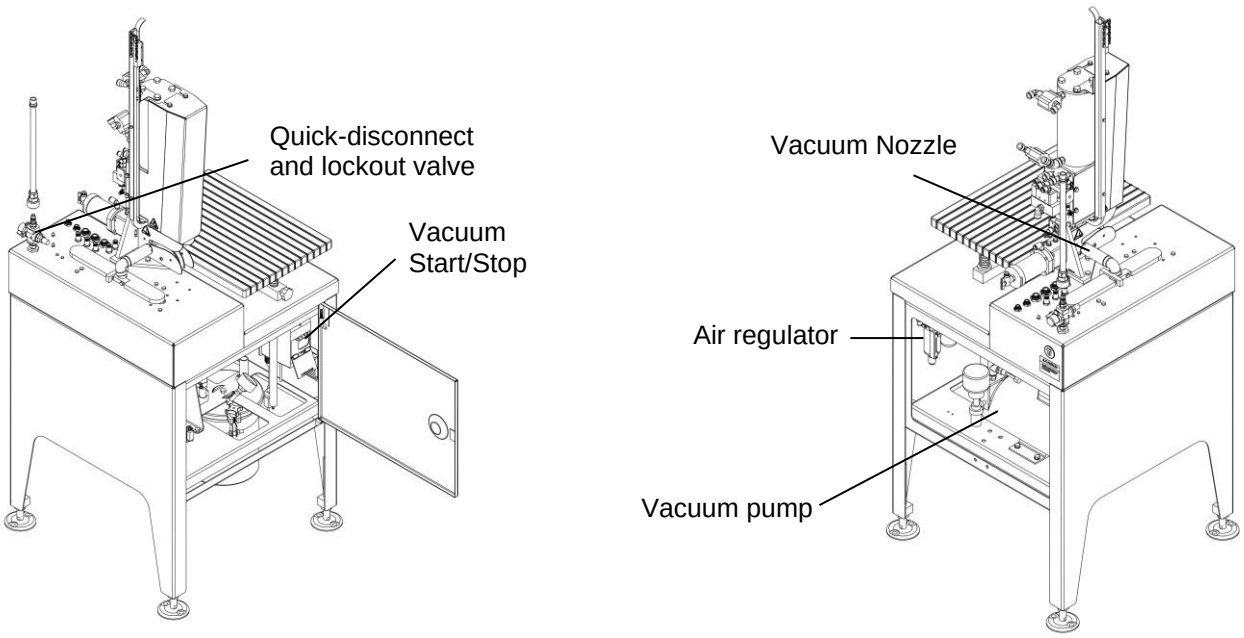


Figure 11: Vacuum Pump System

6.2 Vacuum Pump Electrical Specifications

The electrical specifications of the 3/4 HP GAST model 0823 vacuum pump are as follows:

Frequency: 60 Hz

	Low Voltage	***High Voltage***
Voltage	100-115 Vac	208-230 Vac
Current	9.05 A	4.6 A
Phase	1	
HP/Kw	.75/.37	
Speed	1725 RPM	

Frequency: 50 Hz

	Low Voltage	***High Voltage***
Voltage	100-110 Vac	220-240 Vac
Current	8.3 A	4.8 A
Phase	1	
HP/Kw	.75/.37	
Speed	1425 RPM	

6.3 Vacuum Pump Lubrication System

The pump uses a constant level oiler. The lubrication rate is determined by the temperature, the vacuum or pressure at which the pump is operating, and the siphon jar oil level (determined by the vertical position of the tube in the jar).

Before operating the machine, check the vacuum pump for operating oils. To replenish:

1. Pull the reservoir upward out of the adjusting sleeve and turn it over.
2. Add oil through the tube.
3. When the upper reservoir is filled, replace it through the adjusting sleeve and firmly seat it against the top of the sleeve.
4. Fold the oil wick in half with the two ends submerged in the oil at the bottom of the jar.
5. Insert the folded center of the wick into the connector approximately 3/8” (9,5 mm) past the two breather holes in the connector.
   NOTE: The folded center of the wick should not touch the feed hold leading to the pump. Both the breather holes and the feed hole must be unrestricted.
6. For normal lubrication, adjust the lower end of the tube 1/4” (6,35 mm) from the bottom of the oil jar.
7. To reposition the tube, loosen the locknut.
8. Adjust the sleeve up or down.
9. Lock the new position with the locknut.
10. Upon starting the vacuum pump, check for vacuum leaks around hose connections.

Lubricator oil flow is adjusted by shifting the reservoir tube toward or away from the bottom of the oil jar.

- For faster lubrication, raise the reservoir tube away from the bottom of the oil jar.
- For slower lubrication, lower the reservoir tube toward the bottom of the oil jar.

NOTE: Refer to the GAST Operation and Maintenance technical manual for additional information and a troubleshooting guide.

6.4 Oil Type

The recommended oil type is GAST AD220 SAE #10 oil. A 10-weight high detergent automotive engine oil can also be used as an equivalent. In high ambient temperature locations, a 20-weight oil may also be used.

6.5 Motor

If the motor fails to start or slows down under load:

1. Shut off and unplug the motor.
2. Check that the supply voltage agrees with the motor post termination and the motor data nameplate.
3. Examine the plug and the switch.
4. If the motor is extremely cold, bring it to room temperature before starting.

6.6 Flushing

Most pump troubles can be corrected by flushing rather than disassembling the pump. A noisy or inefficient pump is frequently caused by a vane that is stuck in the rotor slot due to excessive oiling or foreign material in the unit.

Wear eye protection when flushing the vacuum pump. Flush the unit in a well-ventilated area. Keep your face away from the exhaust port.

Follow these steps to flush the pump:

1. Remove inlet and outlet accessories.
2. Slowly add several teaspoons of solvent at the intake while the unit is running.
   NOTE: The recommended solvent is, GAST flushing solvent part number AH255).
3. Place the unit on its side with the outlet facing downward so the solvent will work its way out of the pump.
4. After the solvent is removed, place the pump upright.
5. Add a few drops of oil at the intake and attach the accessories.

Warning: Do not use gasoline, kerosene or any other type of flammable liquid for flushing. Personal injury and equipment damage will result.

6.7 Disassembly

If flushing the vacuum pump does not resolve the issue, disassembling the pump should eliminate the foreign material.

Caution: Do not remove the rotor or loosen any of the electric motor through-bolts.

Follow these steps to disassemble the pump:

1. Remove the end plate and the four vanes.
2. Wash the vanes, end plate and pump chamber with the recommended solvent.
3. Dry the unit and re-lubricate lightly.

If the pump fails to produce the proper vacuum or pressure, the top clearance between the rotor body may have increased. A metallic clanging could mean the rotor and the body are touching.

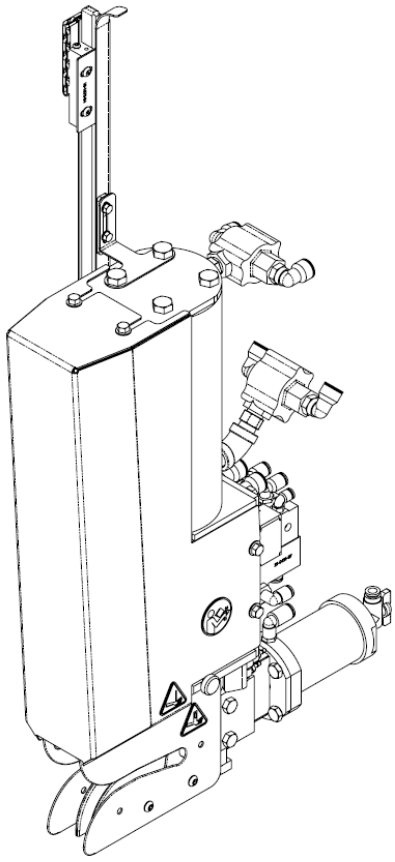
To resolve:

1. Remove the end plate, loosen the body bolts, and set the top clearance at .004 inch.
   NOTE: This can be done by tapping *lightly* with a miniature hammer on the pump body (either on the top or the bottom, depending on whether the clearance is too large or too small).

The rotor should be turning as you are setting the clearance so that all points on the circumference of the rotor will clear the body. For the end clearance, the total for both sides of the rotor may vary from .0025 to .0035 inch.

Chapter 7 – Clippers

7.1 SZ2100L



The SZ2100L clipper is designed to provide one-step closing for a variety of food and non-food products. Beef, poultry, processed meats and cheeses, as well as a wide assortment of non-food products are some examples.

The TIPPER TIE Model SZ2100L clipper mounts on to the TTVac-H Clipper Vac. The SZ2100L is designed to help the operator apply a secure seal on a variety of packaging materials.

The SZ2100L uses a power-driven cut-off knife for smooth bag tail trimming. The adjustable crimp controls allow the operator to adjust the tightness of the clip.

For each clipper cycle, the machine performs the following functions:

- Draw a vacuum on the package
- Gather the neck of the bag
- Apply a secure vacuum-tight clip
- Trim excess bag tail from the product

The SZ2100L clipper is designed to operate with TIPPER TIE Z200 series stick clips. Clip size is determined by product or closure size.

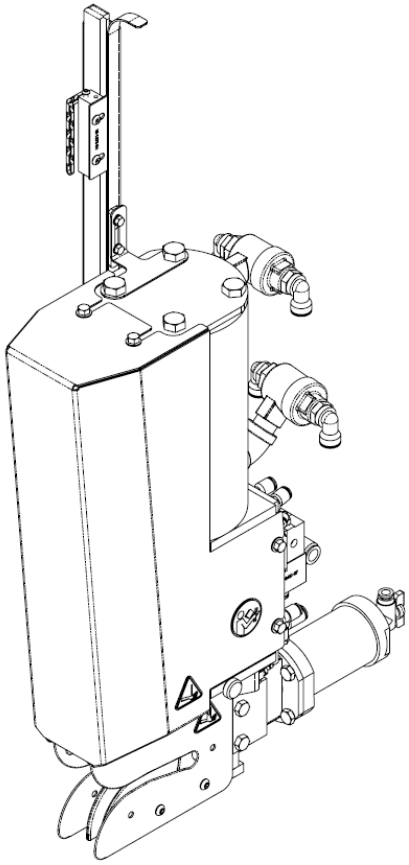
A TIPPER TIE representative can assist in determining the correct clip for your application.

7.1.1 Specifications

Specifications for the SZ2100L clipper are included here.

Air Consumption	6.2 cubic feet (175,6 liters) per minute at 20 cycles per minute
Recommended Air Pressure	55 PSI (3,8 bar)
Maximum Air Pressure	100 PSI (6,9 bar)
Clip Rail Capacity	3 clip sticks (234 clips)
Clip Type	Z201 clips cover barrier bags (3 mil) 6-12” (152-305 mm) flat width Z211 clips cover barrier bags (3 mil) 7-16” (178-406 mm) flat width
Machine Weight	42 pounds (19,05 Kg)
Shipping Weight	47 pounds (21,30 Kg)

7.2 SZ4100L



The SZ4100L clipper is designed to provide one-step closing for a variety of food and non-food products. Beef, poultry, processed meats and cheeses, as well as a wide assortment of non-food products are some examples.

The TIPPER TIE Model SZ4100L clipper mounts on the TTVac-H Clipper Vac. The SZ4100L is designed to help the operator apply a secure seal on a variety of packaging materials.

The clipper uses a power-driven cut-off knife for smooth bag tail trimming. The adjustable crimp control allows the operator to adjust the tightness of the clip.

For each clipper cycle, the machine performs the following functions:

- Draw a vacuum on the package
- Gather the neck of the bag
- Apply a secure vacuum-tight clip
- Trim excess bag tail from the product

The SZ4100L clipper is designed to operate with TIPPER TIE Z400 series stick clips.

A TIPPER TIE representative can assist in determining the correct clip for your application.

7.2.1 Specifications

Specifications for the SZ4100L clipper are included here.

Air Consumption	6.2 cubic feet (175,6 liters) per minute at 20 cycles per minute
Recommended Air Pressure	55 PSI (3,8 bar)
Maximum Air Pressure	100 PSI (6,9 bar)
Clip Rail Capacity	3 clip sticks (234 clips)
Clip Type	Z401 clips cover barrier bags (3 mil) 8-18” (203-457mm) flat width Z410 clips cover barrier bags (3 mil) 8-18” (203-457mm) flat width Z411 clips cover barrier bags (3 mil) 10-23” (254-584mm) flat width
Machine Weight	42 pounds (19,05 Kg)
Shipping Weight	47 pounds (21,30 Kg)

Chapter 8 – Cleaning Procedures

8.1 Cleaning Overview

After the machine has been used or serviced, it must be cleaned to remove all food or other residue from the food contact zone – the tabletop, the vacuum nozzle, the clipper's punch, die, gate, and knife, and all other contact surfaces. Check machine surfaces and surrounding workstations for contamination. All surfaces must be cleaned using current recommended materials and procedures.

Warning: Before cleaning the machine, disconnect the vacuum pump power, depressurize the vacuum pump, and disconnect and lockout the air supply.

8.2 Cleaning Precautions

Follow these precautions when cleaning the machine.

The clipper's cutoff knife is very sharp. Before servicing the knife, disconnect the incoming air from the machine. Be very careful when working with the knife assembly. Protective gloves must be worn.

Always protect electrical connections, motors and air lines from water and cleaning fluids.

NOTE: Using caustic sanitizer solutions may adversely affect the finish of many machine components.

8.3 Cleaning Procedures

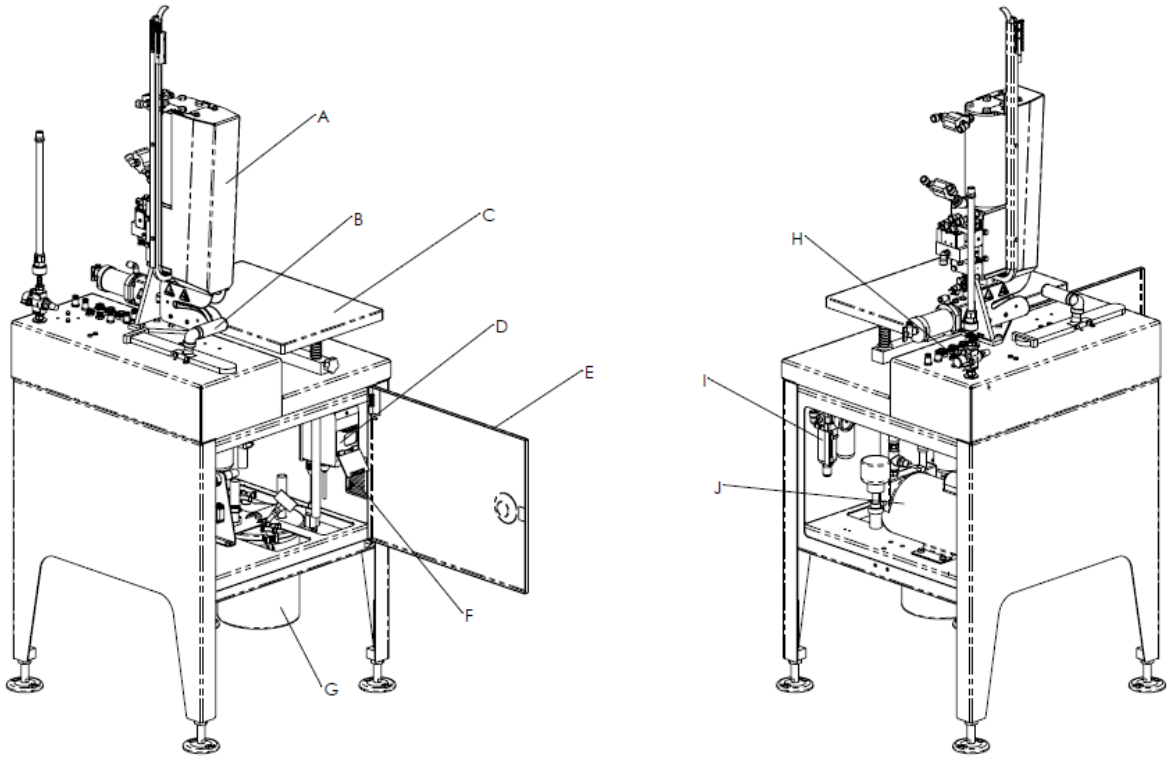
Follow these procedures to clean the machine.

1. Turn off the factory air.
2. Use the quick-disconnect to purge air pressure from the machine.
3. Remove guards and protective covers to expose all surfaces for cleaning.
4. Clean all surfaces according to current food safety rules.
5. While cleaning, inspect for worn or damaged components that may need to be replaced.
6. After cleaning, apply a light food-grade mineral oil to all food contact surfaces.

   NOTE: The FRL assembly lubricates the machine's internal moving parts.
7. After cleaning and lubricating, check the guards and protective covers for safe operation.
8. Inspect all safety components.
9. Check for and tighten all loose connections, bolts, nuts, and screws before machine operation.
10. Check for and remove burrs around the die pockets of the clipper assembly.

8.4 Cleaning the Vacuum System

The vacuum system, like the outer surfaces of the machine, should be cleaned and purged daily. The vacuum system and waste storage tank must be cleaned using USDA-approved cleaning solutions.



Follow these procedures to properly clean the system:

1. Turn the vacuum system on (**D**).
2. Move the vacuum nozzle (**B**) forward until vacuum is applied.
3. Place a plastic bag containing approved cleaning solution on the vacuum nozzle (**B**).
4. Flush out the vacuum system with clear potable water to remove all cleaning solution residues.
   NOTE: Observe the cautions and procedures in Chapter 6, "Vacuum Pump".

Before attempting to remove the waste tank, ensure the vacuum is completely depressurized:

1. Disconnect the air supply to the machine (**H**).
2. Turn off power to the vacuum pump (**J**).
3. Push the vacuum nozzle (**B**) to the maximum forward position.
4. Check the air gauge to ensure it reads zero vacuum.

Continue with the cleaning procedure after the vacuum is depressurized.

1. Remove the waste tank (**G**).
2. Drain and clean the waste tank (**G**) by flushing with clear potable water.
3. Allow the waste tank and vacuum system to air dry.
4. Leave the waste tank unattached until the machine is ready to be used again.

NOTE: When reattaching the waste storage tank and before using machine, always check the gasket seal, vacuum lines, and vacuum nozzle for leakage.

Chapter 9 – Maintenance Guide

9.1 General Guidelines

For proper machine function and continued satisfaction with your finished product, it is **essential** that your machine be properly maintained. This means that a preventive maintenance (PM) schedule should be established and followed. Attention shall be given at least **once a week** to observing wear of all moving parts, especially in the following areas:

- Die support channel and punch assembly
- Die and die pocket area of the die support
- Clip pusher assembly
- Knife assembly

Warning: Operating a machine without following an established PM schedule constitutes neglect and may result in endangering the safety of the operator, degradation of machine function, and inferior product.

To help you track scheduled periodic maintenance as well as unscheduled service, a maintenance log has been included in Chapter 12, “Appendix”.

NOTE: Make copies of the sample (or design your own form) and use the log to record all service and maintenance activities. In addition to fulfilling the PM requirement, the log will help you to identify and isolate adverse maintenance trends.

For replacement parts, refer to Chapter 10, “Spare Parts Lists“ and Chapter 11, “Assembly Drawings”.

9.2 Maintenance Precautions

After performing any service or maintenance, before you return the machine to operation, always check for and tighten any loose screws, bolts and nuts, connectors, and hoses. Inspect the machine’s safety components. Closely follow all safety warnings and NOTEs to avoid serious injury and potential damage to the machine.

Warning: If a clip or other obstruction jams in the die area, do not cycle the machine until the jam is cleared. Turn off and lock-out the air supply and then remove the obstruction to avoid damaging the clipper.

Warning: Do not attempt to add oil to the FRL lubricator while the machine is under pressure. Disconnect the air supply at the quick disconnect, which will purge the air pressure from the system. Lock-out the air supply.

Caution: Carefully and frequently inspect the clipper for worn parts. Always replace worn parts as necessary. Protective gloves should be worn.

9.3 Daily Maintenance Checklist

Prior to any maintenance or repair, use the following lock-out and tag-out procedures:

Disconnect the main power and electrical supplies. Attach power and electrical lockout devices.

Tag-out the machine before beginning any maintenance work.

Attempt to cycle the machine to ensure it is properly disabled. Follow all safety precautions in this manual.

Check the following items each day:

___ Check for loose screws.

___ Check the oil level in the lubricator.

___ Check the air filter.

___ Check the knife for signs of chipping.

___ Check the end of the punch for burrs.

___ Check guards for safe functioning.

___ Check for and tighten all loose connections and screws before returning machine to operation.

___ Check for and remove any burrs around die pockets.

After any maintenance has been performed, before you return the machine to operation:

- Check for and tighten all loose connections and screws
- Check for and remove any burrs around die pockets and voider gates, and
- Inspect all safety components for proper operation

For replacement parts, refer to Chapter 10, “Spare Parts Lists“ and Chapter 11, “Assembly Drawings”.

9.3.1 Replacing the Knife Blade

To replace the knife blade:

1. Lock out and tag out the machine.
2. Remove the bolts from the knife cylinder.
3. Carefully slide the knife out.
4. Replace the knife.
5. Reinstall the bolts.

Chapter 10 – Troubleshooting Guide

If you are having trouble with your Model TTVac-H machine, before you call for assistance, try to resolve the problem through the following troubleshooting steps. Find your problem from the list of symptoms in the left column, then try each of the solutions in the right column until the problem is resolved.

Symptom	Solution
Clipper has no power	1. Air connection may be loose. Check all air connections.
	2. Regulator may be turned off. Check the regulator unit.
	3. Water may be in the system. Drain and change the filter.
Machine is slow	1. Water may be in the system. Drain and change the filter.
	2. Muffler may be clogged. Replace the muffler.
	3. Pressure to the clipper is low. Check the pressure setting and increase if necessary.
	4. Air lines are pinched. Replace the air lines.
	5. Cylinder is stuck. First check for pinched air lines and check the air pressure. If cylinder is still stuck, disconnect air lines and check for broken or worn parts. Replace bad parts or air cylinder.
Punch does not retract	1. Punch extend valve may fail to reset. Replace punch valve.
	2. Punch movement restricted by debris in clip channel or clip window. Remove debris and confirm that punch is free to move in clip channel.

Symptom	Solution
Knife does not cut	1. Check knife for nicks. Sharpen or replace as needed.
	2. Air lines are pinched. Replace the air lines.
Malformed clips	1. Punch or die may be damaged. Replace as necessary.
	2. Air pressure may be too low or too high. Check air pressure and adjust if necessary.
Clips are loose and seal poorly	1. Check crimp control and adjust if needed.
	2. Air pressure is too low. Check air pressure and adjust if necessary.
	3. Punch and die may be worn. Check for wear on punch and die and replace if needed.
No vacuum, poor vacuum, or does not shut off	1. Vacuum pump turned off. Turn vacuum pump on.
	2. Vacuum pump low on lubricating oil. Check and refill if necessary.
	3. Vacuum lines disconnected or loose. Check and tighten as needed.
	4. Check ball valve and nozzle assembly for proper operation.
	5. Check electrical connections for vacuum starter.

Chapter 11 – Spare Parts List

When ordering replacement or spare parts, always include the following information:

- Machine model number and date of purchase
- Identifying part number that is stamped on the part
- Part number from spare parts list or from assembly drawing

Listed items can be ordered individually. Recommended quantities are provided below.

Recommended Spare Parts:

Part number	Description	Quantity
21-0259	Valve	1
21-0223	Gate Valve	1
24-0108	Filter element	1

Loose Parts List:

Part Number	Description	Quantity
24-9930	White oil (ISO VG32 equivalent)	1
24-0108	GAST AD220 SAE #10 Oil	1
28-4636	3/8” Air Supply Hose	1
80-1486	TTVac-H User Manual	1

To obtain part numbers, refer to the parts listed on the assembly drawings in the Parts Catalog.

Chapter 12 – Assembly Drawings

Machine Assembly

TTVac-H	TTVac-H Assembly
00-6059	TTVac Frame Assembly
00-6784	TTVac-H Vacuum Nozzle Assembly
00-0805	Shut-Off Valve Assembly
43-1368	Intake Filter Assembly
43-1369	Exhaust Muffler Assembly
00-5810	TTVac Waste Tank Assembly
00-7782	3/4 HP Vacuum Pump Assembly 100 VAC
00-3506	On/Off Switch Assembly, Eaton 8-12 A
00-7783	3/4 HP Vacuum Pump Assembly 200 VAC
00-3505	On/Off Switch Assembly, Eaton 4-6.3 A
00-4136	Pump – Vacuum 3/4 HP Parts List
00-4153	Waste Tank Sub-Assembly
00-4512	Product Table
00-6785	FRL Assembly
00-5873	Clipper Vacuum “H” Nozzle Assembly
00-5969	Clipper Trigger Valve Assembly
28-4636	3/8” Air Supply Hose

Schematics

63-0071	Pneumatic Schematic (Low Voltage 110-120 VAC)
63-0090	Pneumatic Schematic (High Voltage 220-240 VAC)
63-2003	CVW Vacuum Schematic

Options

Caster Option

00-0898	Caster Assembly Kit

Gasflush Option

55-0664	TTVac-H Gasflush Kit

Chapter 13 – Maintenance Log

Make copies of this maintenance log (or design your own) and use the log to record all preventive maintenance and unscheduled service activities. Use the log to identify and isolate adverse trends.

Date	Technician	Maintenance Performed

Chapter 14 – Index of Figures