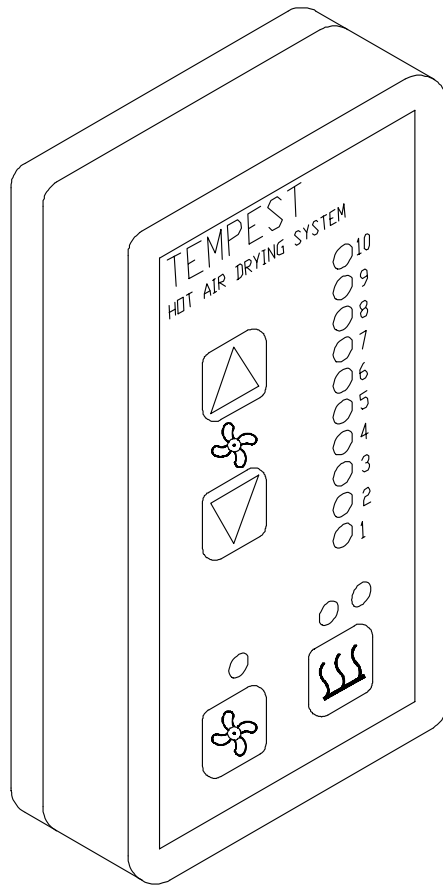


# Tempest<sup>®</sup> Hot Air Drying System

## Installation Instructions

### A.B. Dick 9800/9900 Series



A Pamarco Technologies Inc. Company

## GENERAL INFORMATION

### ATTENTION TEMPEST® DRYER OWNER!

Accel Graphic Systems provides parts and service through its authorized distributors and dealers. Therefore, all requests for parts and service should be directed to your local dealer.

The philosophy of Accel Graphic Systems is to continually improve all of its products. Written notices of changes and improvements are sent to Accel Graphic Systems' Dealers.

If the operating characteristics or the appearance of your product differs from those described in this manual, please contact your local Accel Graphic Systems Dealer for updated information and assistance.

Always update your equipment when improvements are made available, especially those related to safety.

**YOUR AUTHORIZED TEMPEST® DEALER IS:**

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**THE SERIAL NUMBER OF YOUR  
TEMPEST® HOT AIR DRYING SYSTEM IS:**

**CONTROL BOX** \_\_\_\_\_

**FAN UNIT** \_\_\_\_\_

### TECHNICAL ASSISTANCE

For technical assistance during the installation, please contact:

**ACCEL GRAPHIC SYSTEMS**

**11103 Indian Trail**

**Dallas, TX 75229**

**(972) 484-6808**

**FAX (800) 365-6510**

**E-MAIL [accel@dallas.net](mailto:accel@dallas.net)**

**WEB SITE [www.accelgraphicsystems.com](http://www.accelgraphicsystems.com)**

## GENERAL INFORMATION

### ELECTRICAL REQUIREMENTS

220 VAC 50/60 HZ  
20 AMP DEDICATED LINE  
NEMA L620R RECEPTACLE

### IMPORTANT INFORMATION

The use of heat to accelerate drying may require more frequent lubrication and/or use of a high temperature lubricant in the delivery of the press. Please consult your press manufacturer for specific recommendations.

### SAFETY INFORMATION

The Tempest® Dryer contains high voltage and hot surfaces. Never attempt to service or work on the unit unless the power is shut off and the unit is cool.

Visually inspect the thermistors (Barn housed-shaped objects arranged in a honeycombed pattern on the underside of the unit) weekly. If a thermistor is damaged or cracked, do not operate the dryer. Contact Accel immediately for a replacement part.

The fans should be turned on and set at the lowest speed ("0" on the dial) when running spray powder only without heat. This prevents spray powder from accumulating in the thermistors and housings.

### TERMINOLOGY

OPS = Operator's Side  
NOPS = Non Operator's Side

### TOOLS REQUIRED FOR INSTALLATION OF TEMPEST®

1. 5/32" Allen Wrench
2. 7/16" Open End Wrench
3. Power Drill
4. 9/32" Diameter Drill Bit
5. Phillips screwdriver

## GENERAL INFORMATION

### **HOT AIR VS INFRARED: WHAT MAKES TEMPEST® WORK**

Although the technology behind the Tempest® dryer was significant enough to be awarded the GATF Intertech Award, it is by no means new. In fact, thermistors have been in use for many years. They were originally used in motors and other devices as a heat controller and later used in refrigeration to turn compressors on and off. It is only in the last 10 years or so that thermistors have been used as a heater.

Heat is generated by the thermistor because of the difficulty of electricity travelling through it when it is a conductor. The thermistor acts as a conductor until it reaches its set temperature and then it becomes a resistor. A thermistor is basically a coated semiconductor designed to switch from a conductor to a resistor at an established temperature.

When a current is applied to the thermistor it initially uses a large amount of electricity and heats up very quickly until it reaches its maximum set temperature. At this point it should not use any more electricity. However, air that is passed through the holes in the thermistor causes it to cool. This activates the thermistor to start using more power again so that can get back to its set temperature. The thermistor is constantly regenerating itself to stay at a constant temperature. This process is called autostabilization.

Thermistors are also the key element that makes the Tempest® dryer safe. Because the set temperature of the thermistor is lower than the flash point of paper, you can place even the most easily burned substrate (such as tissue paper) on top of the thermistor element without causing a fire. The tissue won't even char, let alone ignite. If you were to do the same with an IR element, a fire could start in a matter of seconds. This is particularly important if a jam occurs in the delivery.

The objective of any drying system is to raise the pile temperature to accelerate the drying of the ink. However, heating the paper too much can aggravate problems such as blocking, setoff, mottle, loss of gloss, and loss of halftone definition. Too much heat can also cause the paper to shrink which can cause register problems in multiple pass work. The Tempest® dryer can keep the pile at a lower temperature than IR and still effectively set the ink film.

## GENERAL INFORMATION

IR dryers use very high temperatures and a fixed amount of electricity. One of the drawbacks of using a very hot heat source is that heat wants to travel from a very high temperature to a very low temperature. In other words, the heat generated from an IR dryer will travel to the press wall and attempt to increase its temperature because it is cooler than the heat produced by the IR dryer. Because the thermistors used in the Tempest® dryer use lower temperatures, the heated air has had time to cool by the time it reaches the wall of the press, reducing the chance of premature wear to press parts.

### **HOW DRYING IS ACCOMPLISHED WITH TEMPEST®**

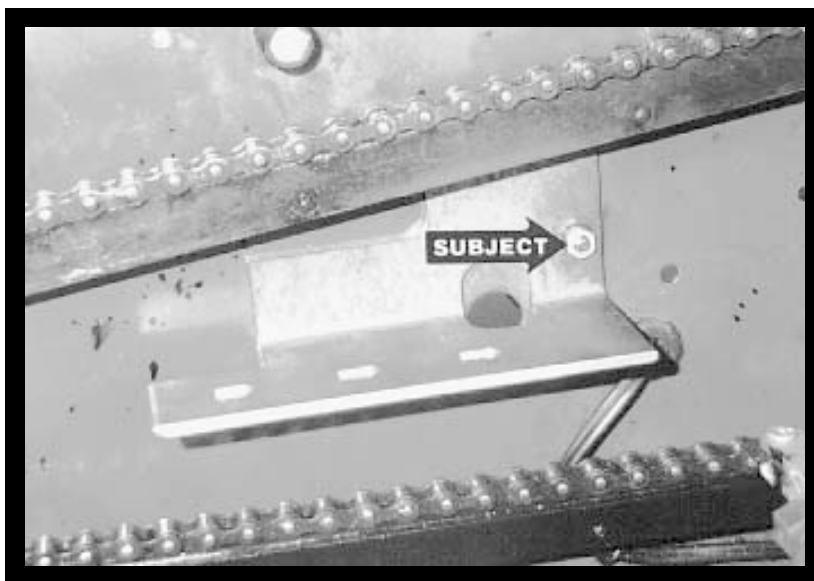
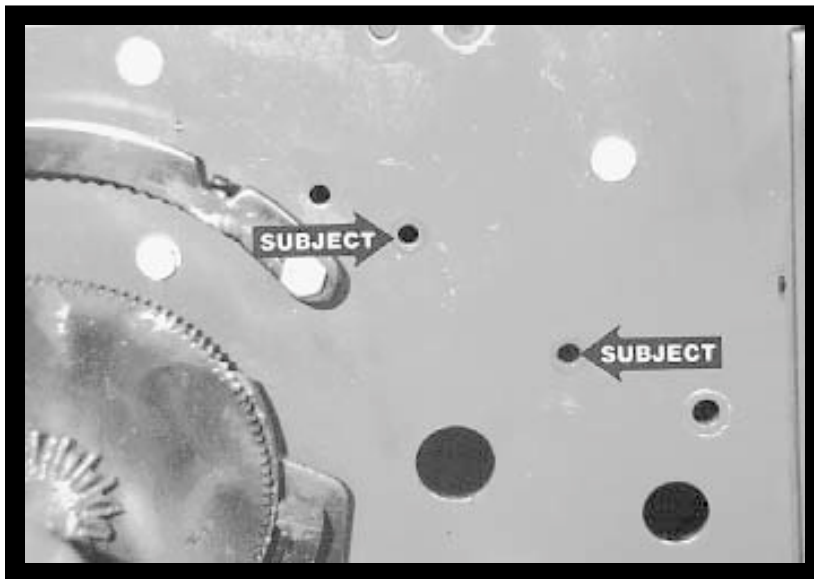
Tempest® "sets" the surface of the ink to prevent set-off from one sheet to another and to minimize the use of powder.

Tempest® accelerates the final drying of oil based inks by raising the temperature of the delivery stack.

### **KEY FACTORS TO REMEMBER ABOUT DRYERS FOR SMALL OFFSET PRESSES.**

Do not expect a dryer to "instantly" dry the ink. Only UV inks and coating dry instantly. The technology and hazards of such systems make them cost prohibitive on small offset presses.

Some jobs may require spray powder. Because dryers for small offset presses do not dry ink instantly, powder will be required from time to time. However, you should expect to see a significant decrease in the amount of powder needed on a regular basis.



# INSTALLATION

1

**Disconnect the power to the press before beginning installation.**

**NOTE:** The Tempest Dryer only fits chain delivery A.B. Dick presses with the full size (7" in diameter) delivery wheels. If the press has a 1.5:1 delivery ratio (3.5" diameter delivery wheel) the dryer will not fit.

Remove the OPS and NOPS delivery side covers, and the NOPS lower press cover.

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2

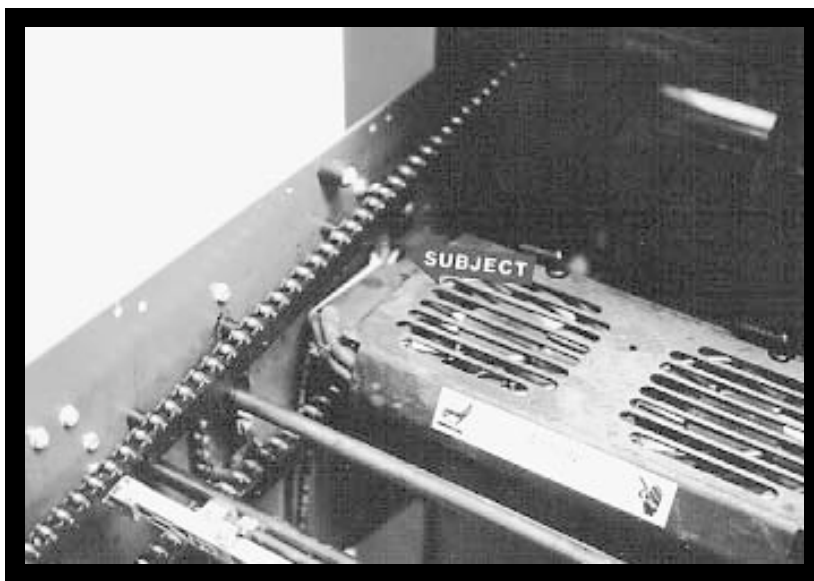
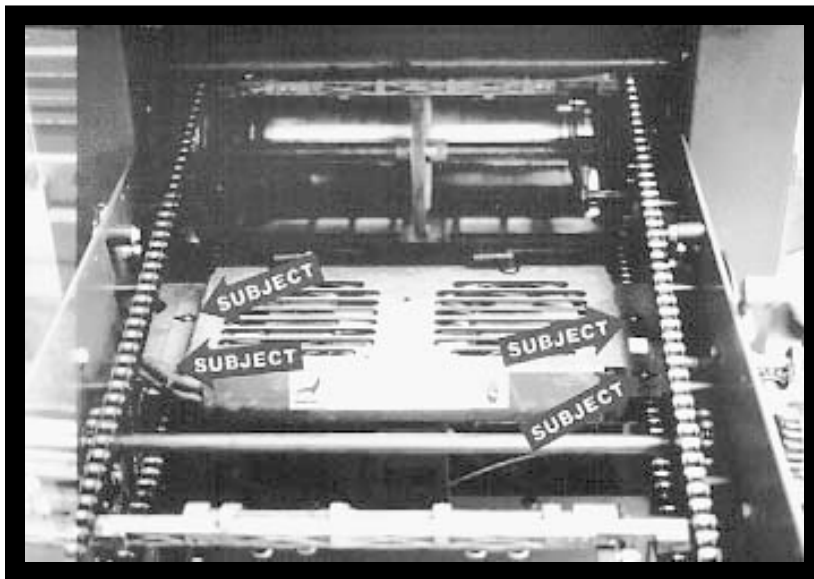
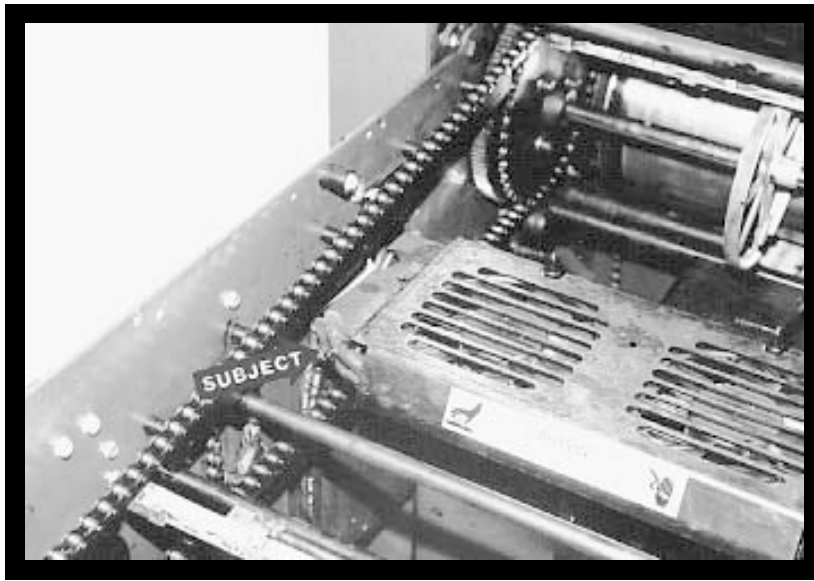
From the outside of the press insert two 10-32 x 5/8 cap head bolts with flat washers through the two holes (subject arrows) in the OPS delivery side frame. Repeat this procedure for the NOPS. On the NOPS the upper hole is also used to secure a microswitch plate. The upper hole on the OPS may or may not already be in the frame. If this hole is not present, then use the mounting bracket to mark and drill a 7/32" diameter hole in the frame.

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3

From the inside of the press install the mounting brackets over the bolts installed in the previous step (NOPS shown in the picture). Secure the brackets to the press with lockwashers and nuts (subject arrow).

7



## INSTALLATION

4

Set dryer on the mounting brackets with the cable exiting the dryer on the NOPS. Insert the cable between the lower chain rail and the side frame (subject arrow). Using the provided zip ties, secure the cable to the press so that it is clear of all moving parts.

5

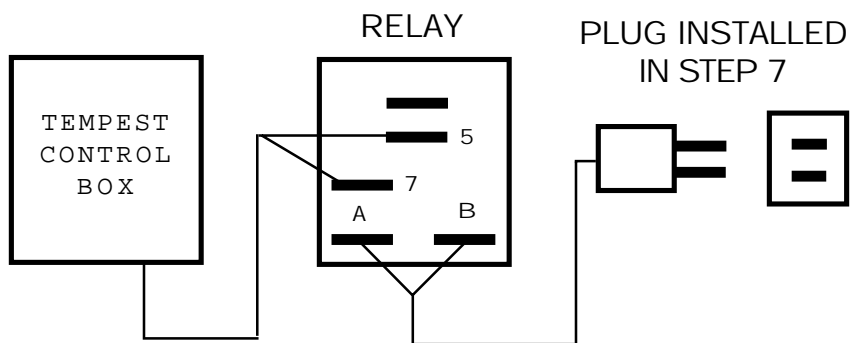
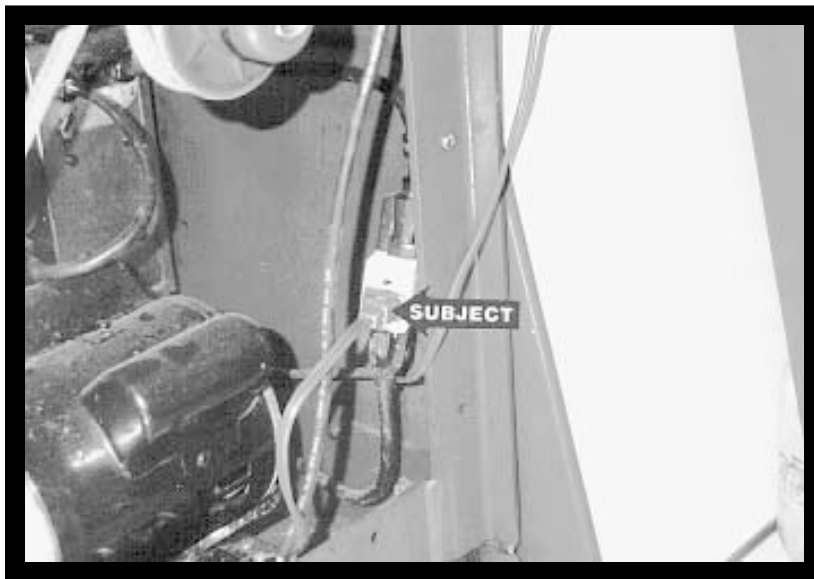
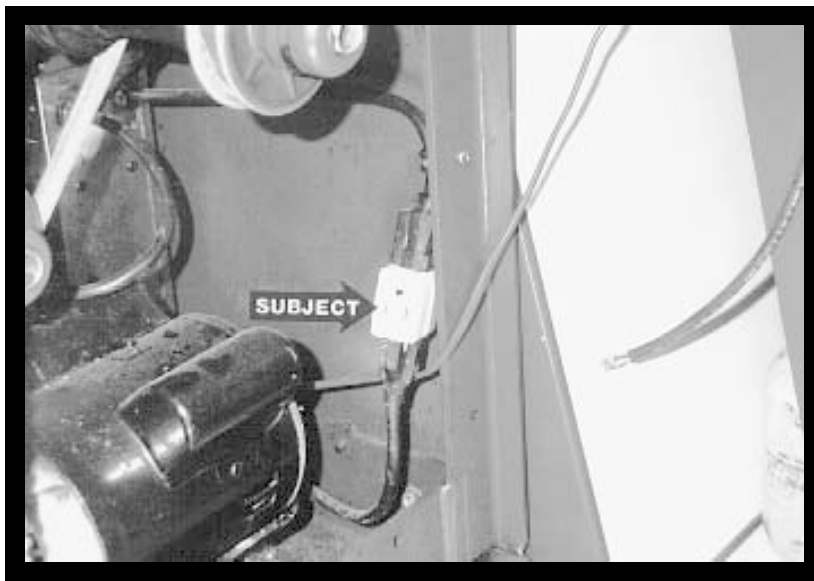
Position the dryer as close to the delivery wheel as possible and secure in place with the provided button head bolts, flat washers and lock nuts (subject arrow).

6

Connect the supplied hose to the barb fittings and route through the NOPS Tempest mounting bracket and delivery side frame (subject arrow). Using the supplied "Y" fitting and reducer, connect the hose to the existing sprayer system. Using the provided zip ties, secure the hose so that it is clear of all moving parts.

**NOTE: If the press is equipped with an Airtech sprayer, you can use the existing spray heads.**

9



## INSTALLATION

**7**

**NOTE: Steps 7, 8, 9, & 10 are for 9810 - 9850 model presses.  
For 9870 and 9900 series models, skip to step #11.**

On the NOPS, near the pump, install the provided cube tap (subject arrow) in the power cord to the air pump.

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**8**

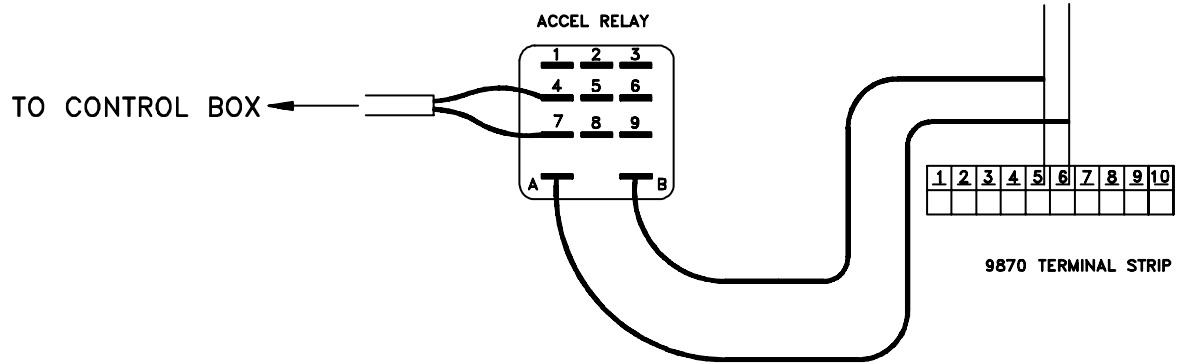
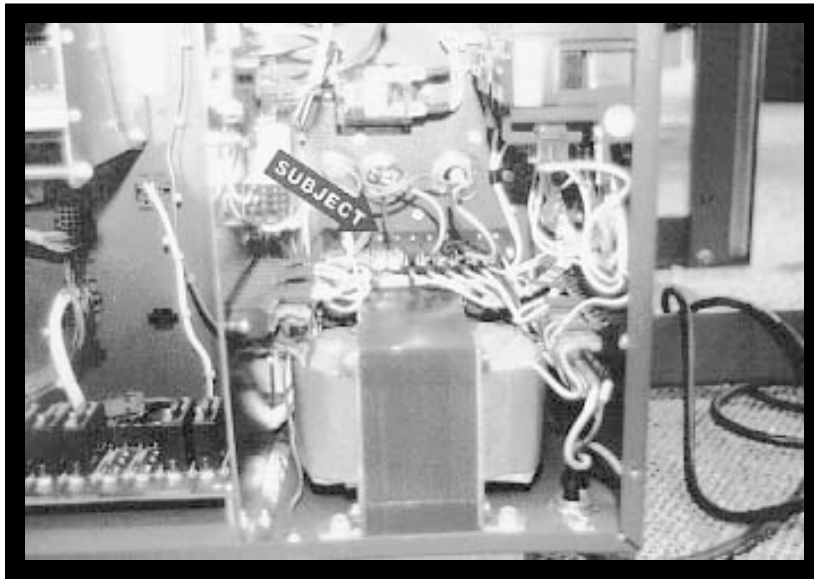
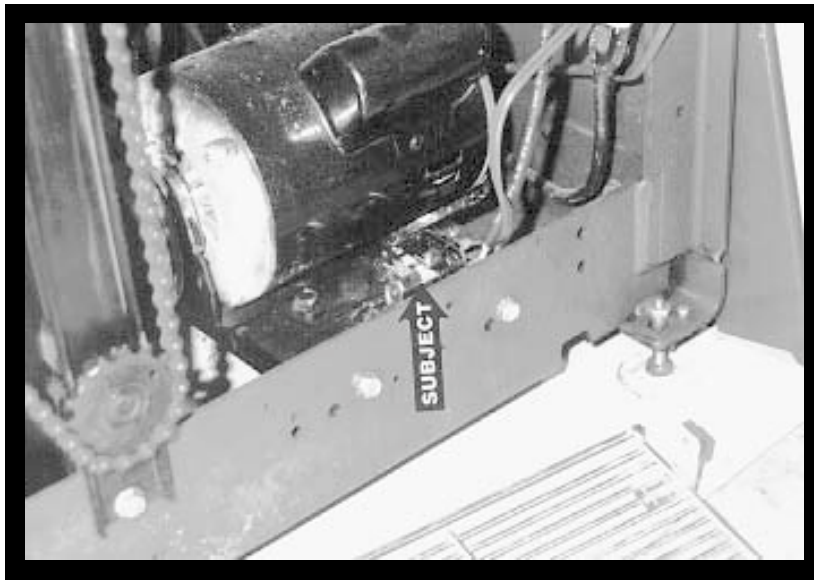
Plug the provided power cord assembly into the cube tap (subject arrow).

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**9**

Connect the ends of the cord installed in the previous step to position A & B on the supplied relay.

**11**



## INSTALLATION

**10**

Using alcohol and a clean rag, clean an area near the pump and secure the relay with the provided two-sided tape. Using the provided zip ties, secure all cables so they are clear of moving parts. Make sure that there is a minimum of 1/2" clearance between the contacts on the relay and any surrounding metal structure of the press.

Skip to step 13.

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**11**

**STEPS 11 & 12 are for 9870 and 9900 series model presses only.**

For **9870 presses** remove the cover from the electrical box on the NOPS of the press. Crimp the supplied t-taps to the wires leading from position five & six on the terminal strip (subject arrow) in the lower right corner of the box.

For **9900 series model presses** locate the connector on the back of the electrical cabinet where the pump connects. Crimp the supplied t-tap connectors to the wires on the inside of the cabinet that go to this connector.

---

**12**

Connect the supplied wire leads from the t-taps to positions A & B on the supplied relay. Using alcohol and a clean rag, clean an area in the box and secure the relay with the provided two-sided tape. Make sure that there is a minimum of 1/2" clearance between the contacts on the relay and any surrounding metal structure of the press.

**13**



## INSTALLATION

**13**

Find a suitable location for the main Tempest electrical box on the NOPS of the press. Route the impression signal cable to the relay installed in a previous step.

For **9810-9850 model presses** connect the wires in this cable to positions 5 & 7 on the relay.

For **9870 and 9900 series presses** connect the wires in this cable to positions 4 & 7 on the relay. Also on 9900 series presses you may need to drill a hole in the cabinet to route the cable.

Use the provided tie-wraps to secure the cable as necessary to clear any moving parts of the machine.

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**14**

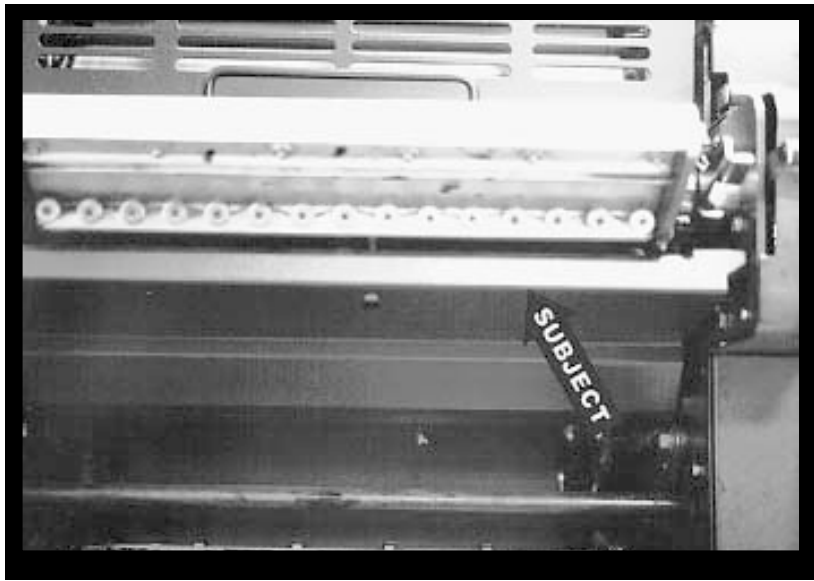
Remove the cover from the control box and insert the dryer cable through the strain relief on the bottom of the control box. Insert the wires into the green connector by matching the numbered tags on the wires to the matching position on the connector. Secure the ground wire to the stud on the inside of the box. Tighten the strain relief. Replace the cover on the control box.

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**15**

Attach the remote control unit to the press where it is convenient to the operator. The magnetic tape on the back of the remote will hold it on the press.

**15**



## INSTALLATION

**16**

Snap the shield (subject arrow) in place as shown.

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**17**

Check to make sure all wires and cables are secure and away from any moving parts in the press. Use supplied zip ties if necessary. Replace all covers and guards.

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**18**

Attach the supplied multiple power cord caution label to the NOPS cover near the press power cord.

**17**

## OPERATION & MAINTENANCE

### HOW DRYING IS ACCELERATED WITH TEMPEST®

Tempest® creates a two-step drying process when used with oil-base inks. These steps are:

1. Skinning the surface of the ink with the initial blast of hot air to prevent set off.
2. Accelerating the final drying process approximately 20° F over the cold stack temperature in the feeder. Heat accelerates the drying process, called oxidation and reduction, of oil-based inks.

In general, dryers including infrared do not work well with rubber or acrylic-based inks. These inks should be avoided when maximum results are desired.

### HOW TEMPEST® WORKS

1. When voltage is applied to the thermistors (triangular shaped objects arranged in a honeycomb pattern), the thermistors begin to heat. (Thermistors are coated semiconductors).
2. Thermistors heat to a predetermined temperature, in this case about 400° F, and remain at that temperature. This is known as autostabilization.
3. The fans blow air down towards and through the thermistors, creating a flow of hot air to the sheet.
4. Drying of the ink occurs in the two-step process as described above.

No dryer totally eliminates the need for spray powder. There may be some jobs, for example, a heavy solid on a high gloss sheet where powder is required. Overall, Tempest® should reduce your spray powder usage significantly, leaving you with a better printed product and cleaner working environment.

### TEMPEST® OPERATION

#### ON/OFF OPERATION

The switch is located on the side of the Tempest® box which provides power to the box. Select 1 for on and 0 for off.

## OPERATION & MAINTENANCE



### NORMAL OPERATION

Pressing the HEAT switch will illuminate both the green and yellow LEDs on the remote control unit. The green LED indicates that the fans (both dryer and exhaust fans if so equipped) are running while the yellow LED indicates that the dryer is armed and the heat will come on automatically when the press goes on impression. When the press does go on impression, the green LED will illuminate indicating that the heat is on. Pressing the heat button again will disarm the heat mode but the fans will continue to run. To turn the unit OFF press the FAN switch at any time.



### FAN ONLY OPERATION

To operate only the fans, press the FAN switch. The green LED will illuminate and the fans will come on (both the dryer and exhaust fans if so equipped). The heat mode of the dryer is not armed and will not come on with impression. To turn the fans OFF press the FAN switch again.



### FAN SPEED CONTROL

To adjust the fan to a higher setting, press the up arrow on the remote control unit. To decrease the fan speed press the down arrow on the remote. The fans will automatically go to the minimum speed setting for a few seconds when the press goes on impression and then they return to the previous setting. This reduction in fan speed allows the dryer to heat up more quickly.

## INITIAL SETTINGS

Try running Tempest® with the fan speed at "4" with the switch on "HEAT." After about 1" of paper is stacked in the delivery, insert the thermometer into the center of the stack. Allow the thermometer to stabilize. It should be approximately 20° F above the initial pile temperature.

If the temperature is below that, **decrease the fan speed** slightly.

If the temperature is above that, **increase the fan speed** slightly.

## OPERATION & MAINTENANCE

### FACTORSTHAT EFFECT DRYING

1. Speed of the press.
2. Amount of ink coverage and color.
3. Type of stock being printed.
4. Initial temperature of paper.

In time and with practice you will learn which settings are best for your particular shop.

### KEYSTO REMEMBER

1. The Tempest® takes about 12 sheets to come up to full power. The dryer remains on as long as paper is being fed. It does not cycle like an infrared dryer.
2. The pile temperature should be approximately 20° F above the initial pile temperature for optimum drying.
3. Use spray powder only when absolutely necessary. A little spray powder goes a long way. Use it sparingly.
4. Inspect the Tempest® weekly.

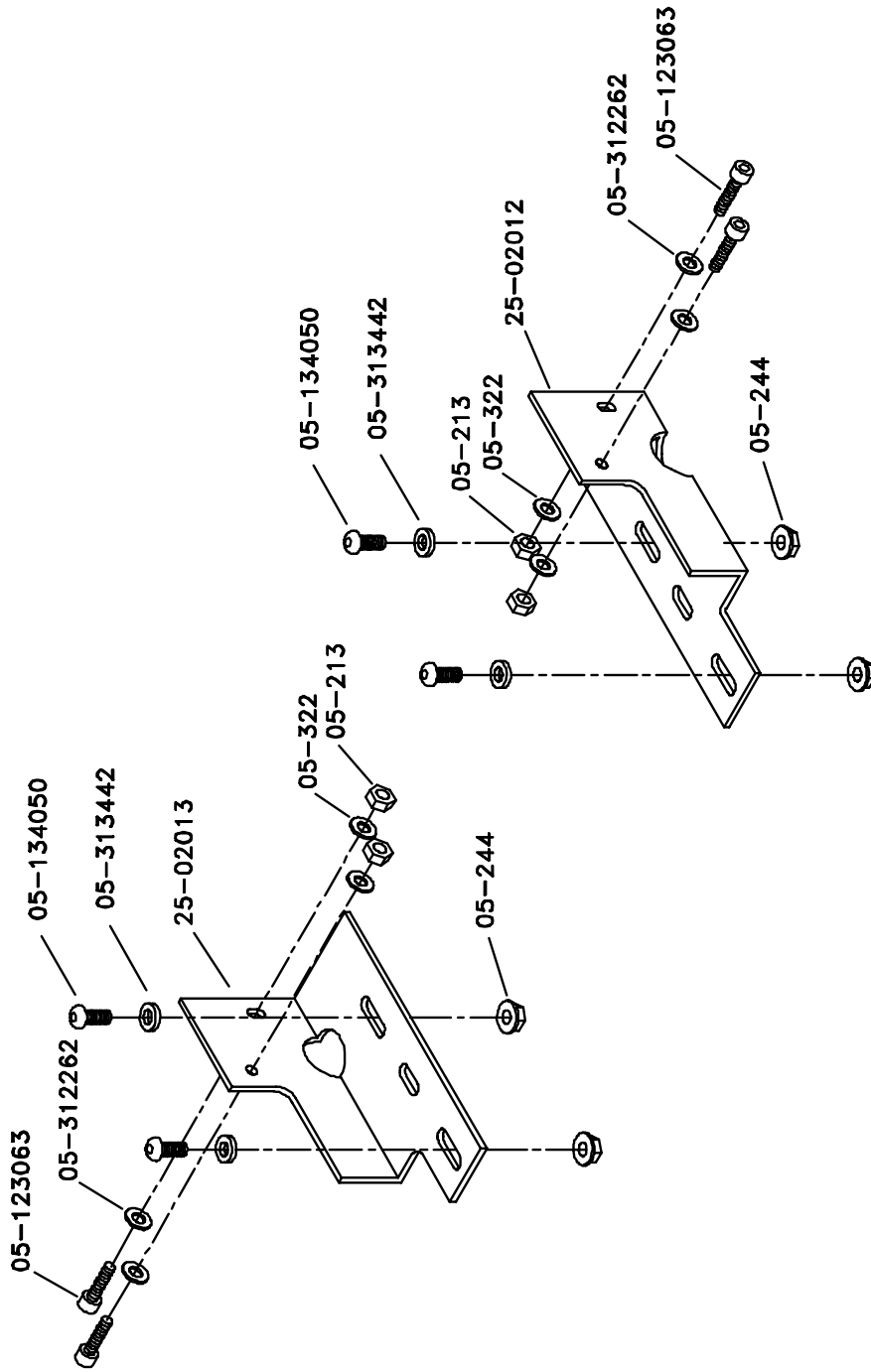
### MAINTENANCE

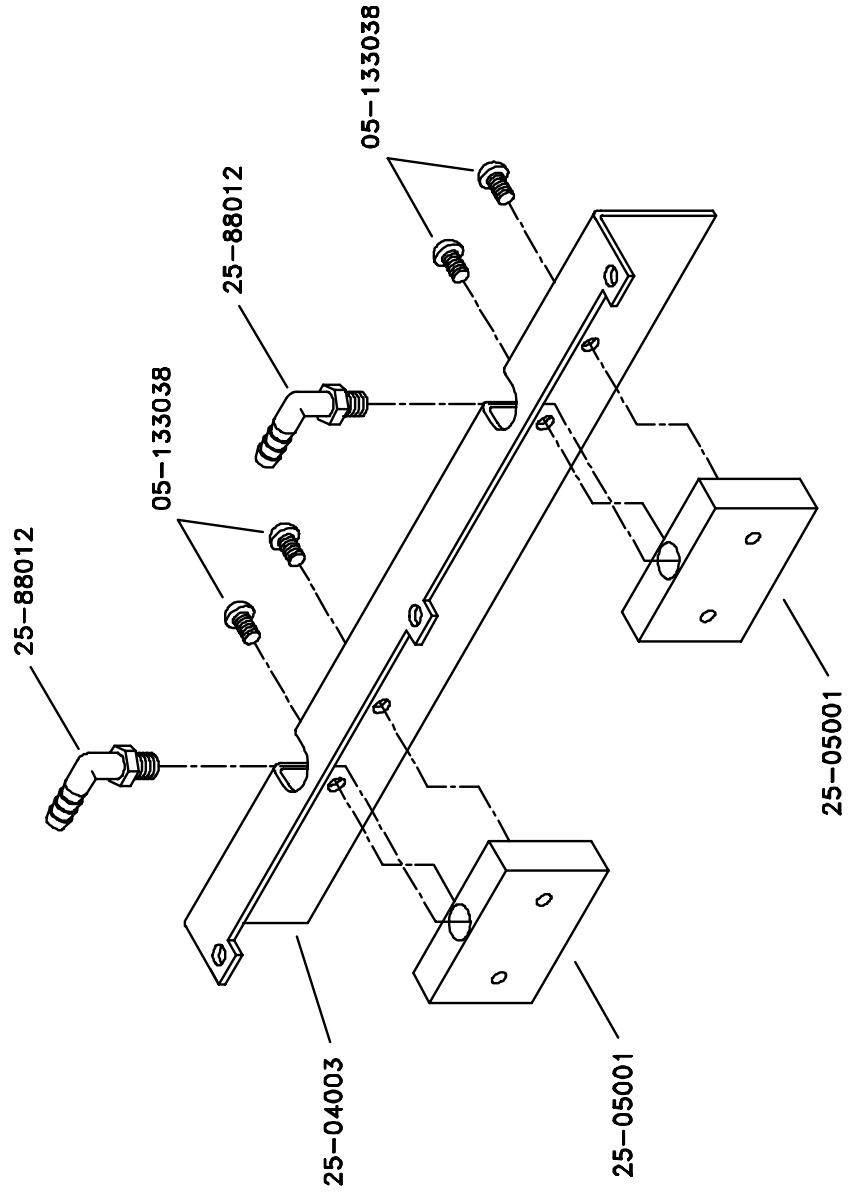
1. Inspect the dryer weekly. If the thermistors are cracked or have been damaged, do not operate the dryer. Call Accel immediately.
2. Never squirt cleaning solvents, water, or any other liquids into the dryer. This may damage electrical components.
3. Any spray powder that accumulates in the dryer should be vacuumed out, not blown out.
4. Make sure all heat shields and guards are in place before operating the dryer or printing press.
5. When solvents are used to clean the rollers or blanket be sure that the solvent does not get in direct contact with the dryer (don't store or use solvents in the surrounding of the dryer).
6. When spraypowder is used in the environment of the dryer the delivery needs to be cleaned weekly to avoid danger of ignition, or make use of ignition free spraypowder. Shut off main power of the press/dryer and sprayer before cleaning the press.

## OPERATION & MAINTENANCE

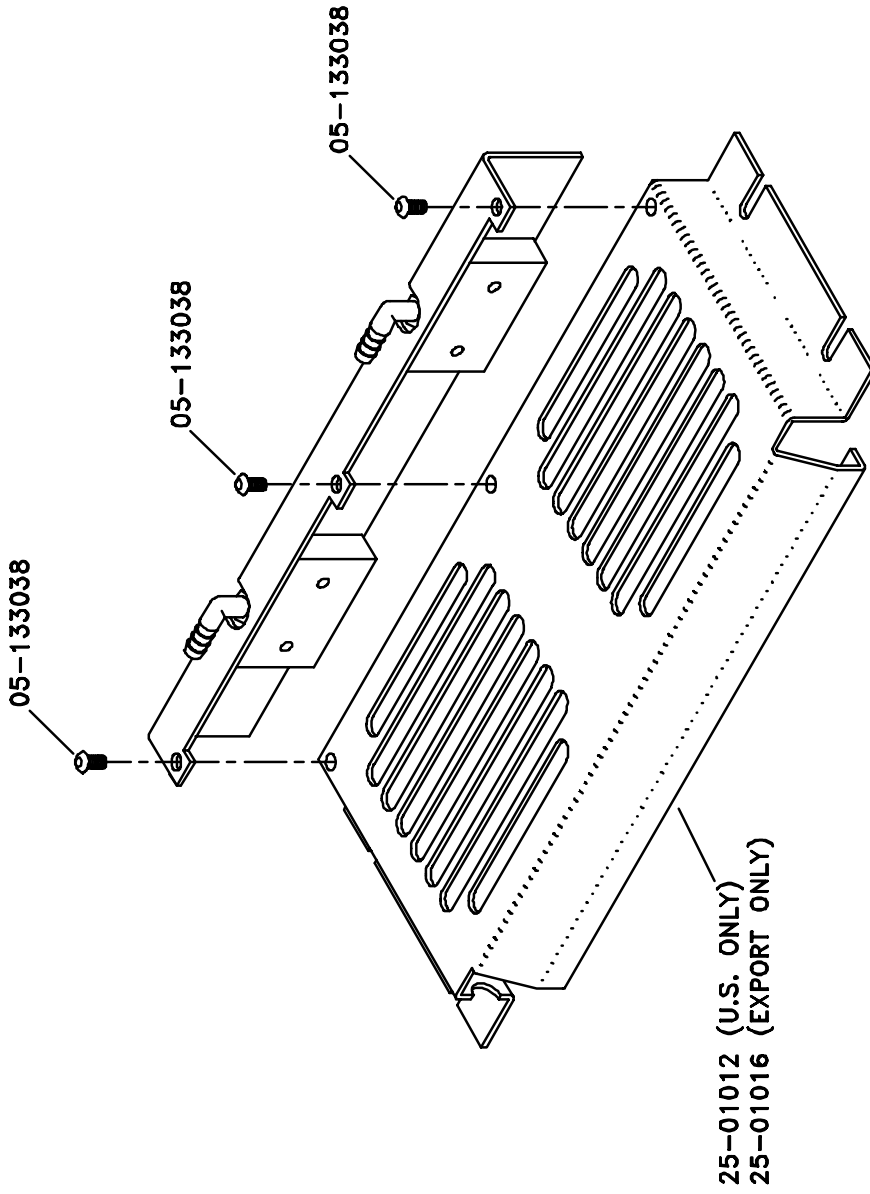
### SAFETY REQUIREMENTS

1. Accel equipment should only be installed by an authorized dealer or distributor.
2. Only use ink or varnish that are explosion safe when used with the Tempest®. (Refer to the MSDS of ink in use)
3. Make sure to visually check the delivery that the cables in use are not causing a dangerous situation while in operation.
4. When a dryer is installed the function of the original safety guards may not be changed in a way that the press or dryer is not reacting in case of an emergency.

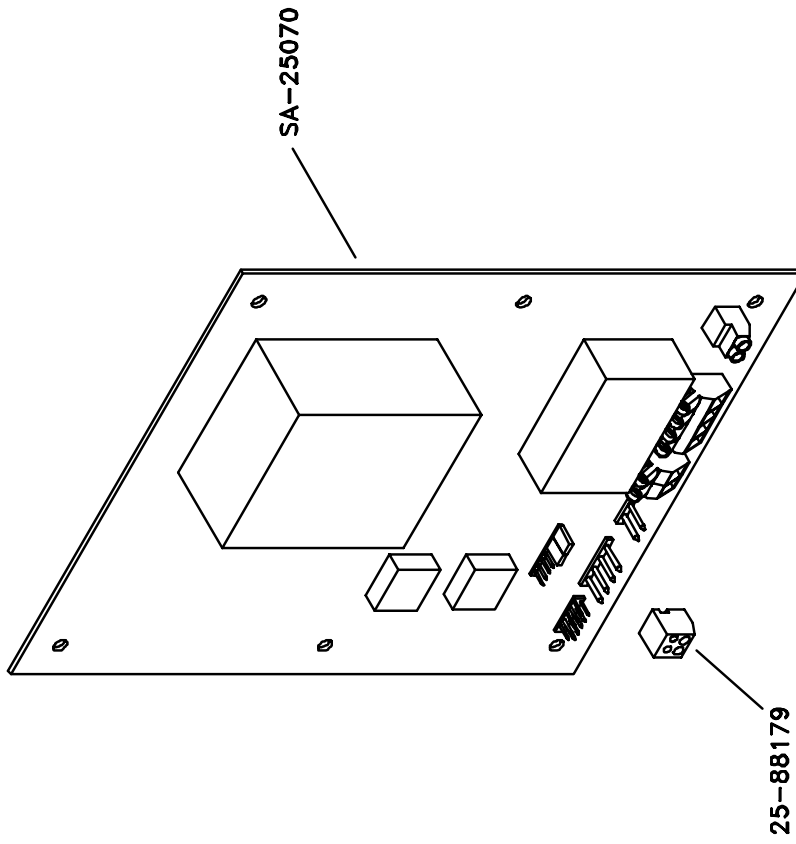




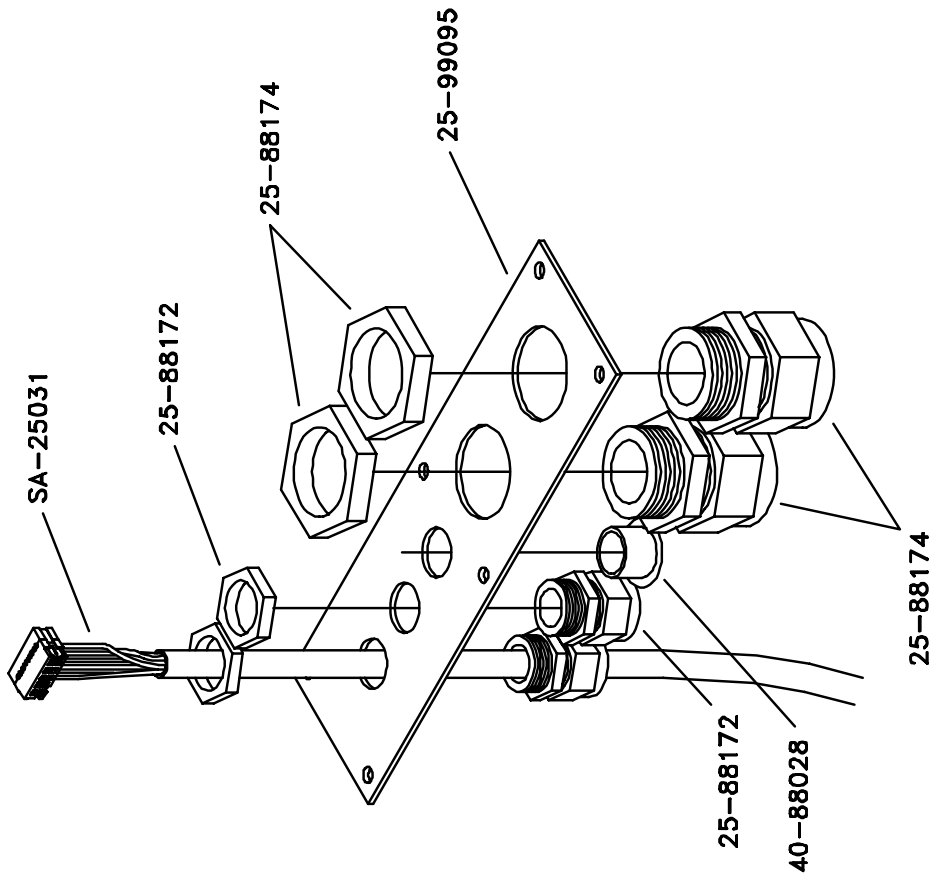
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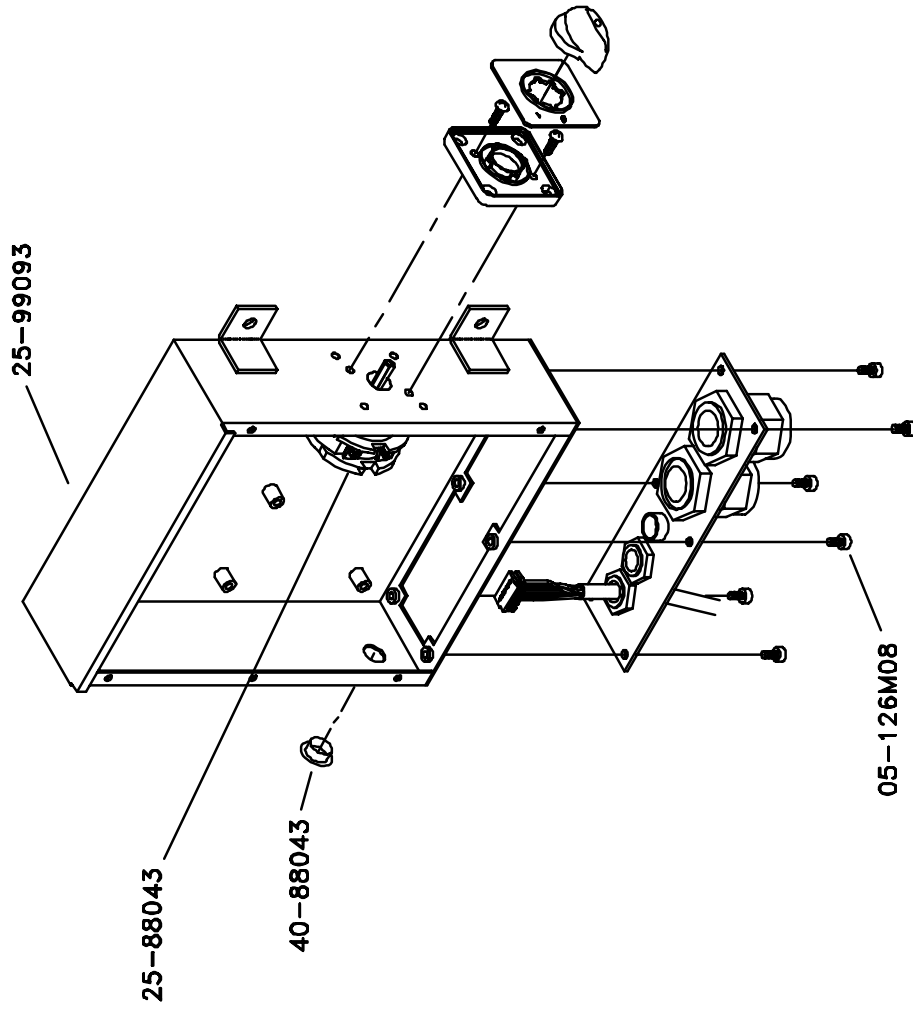
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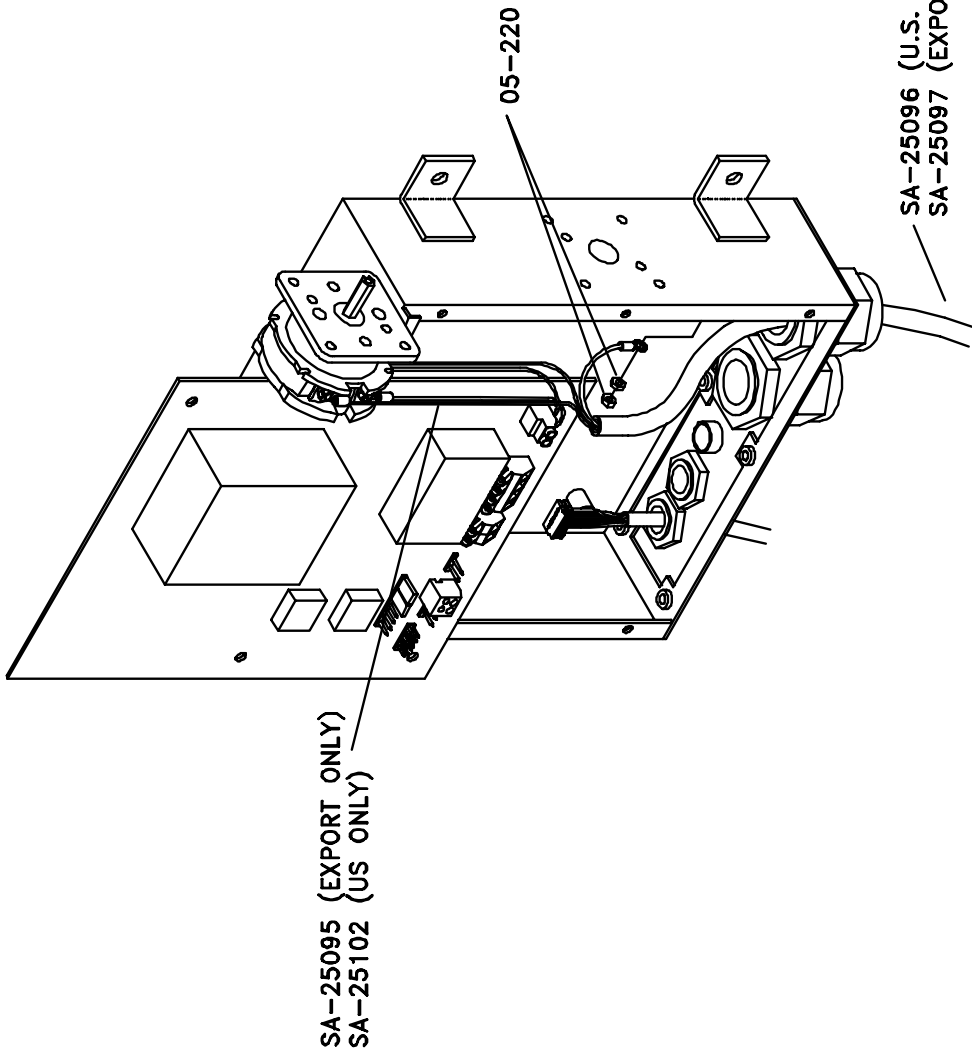
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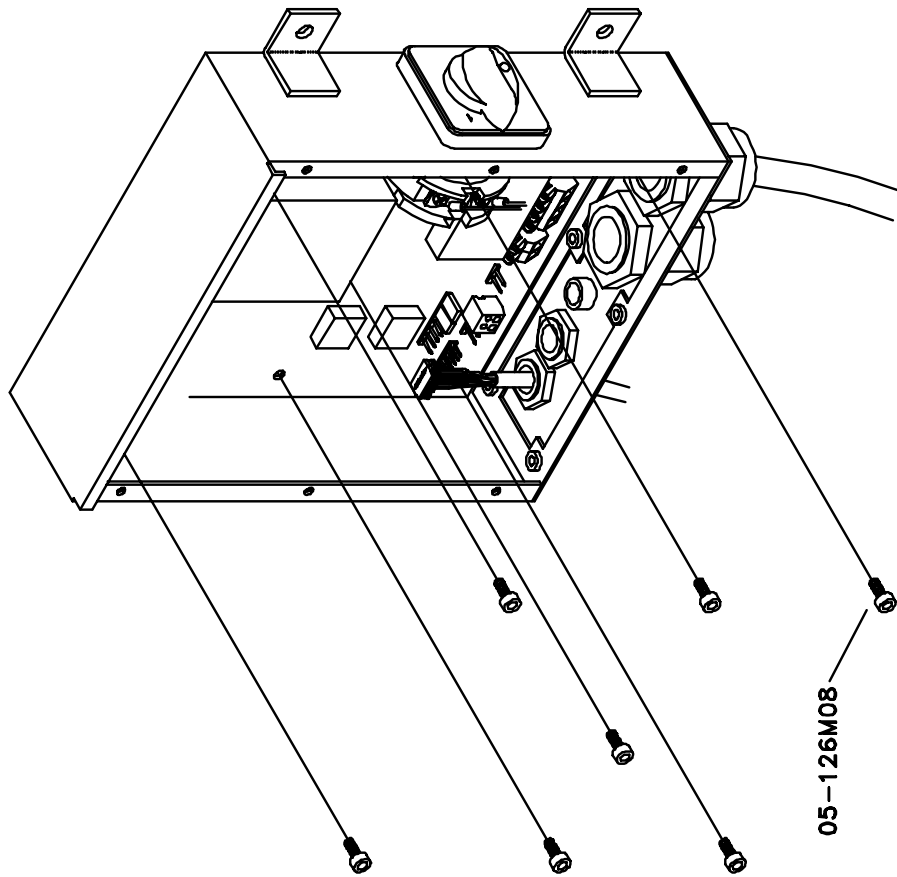
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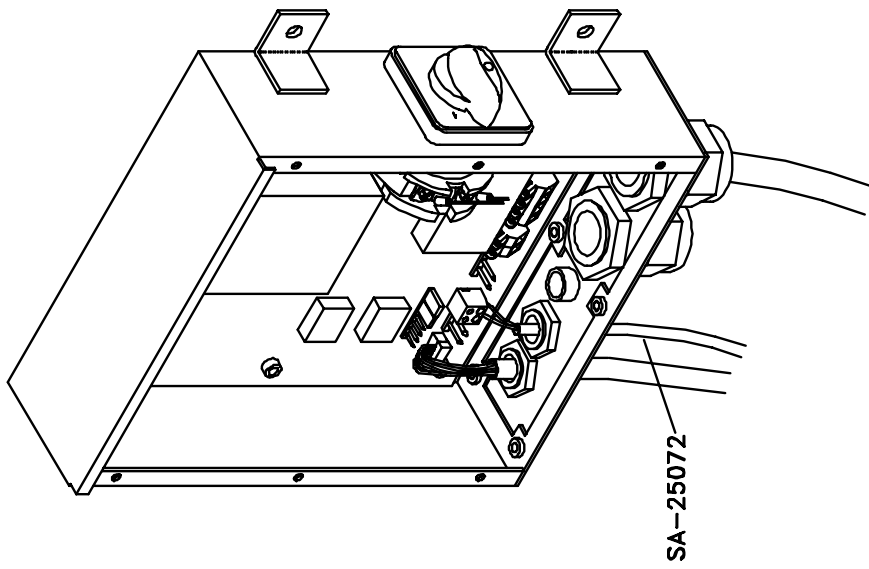
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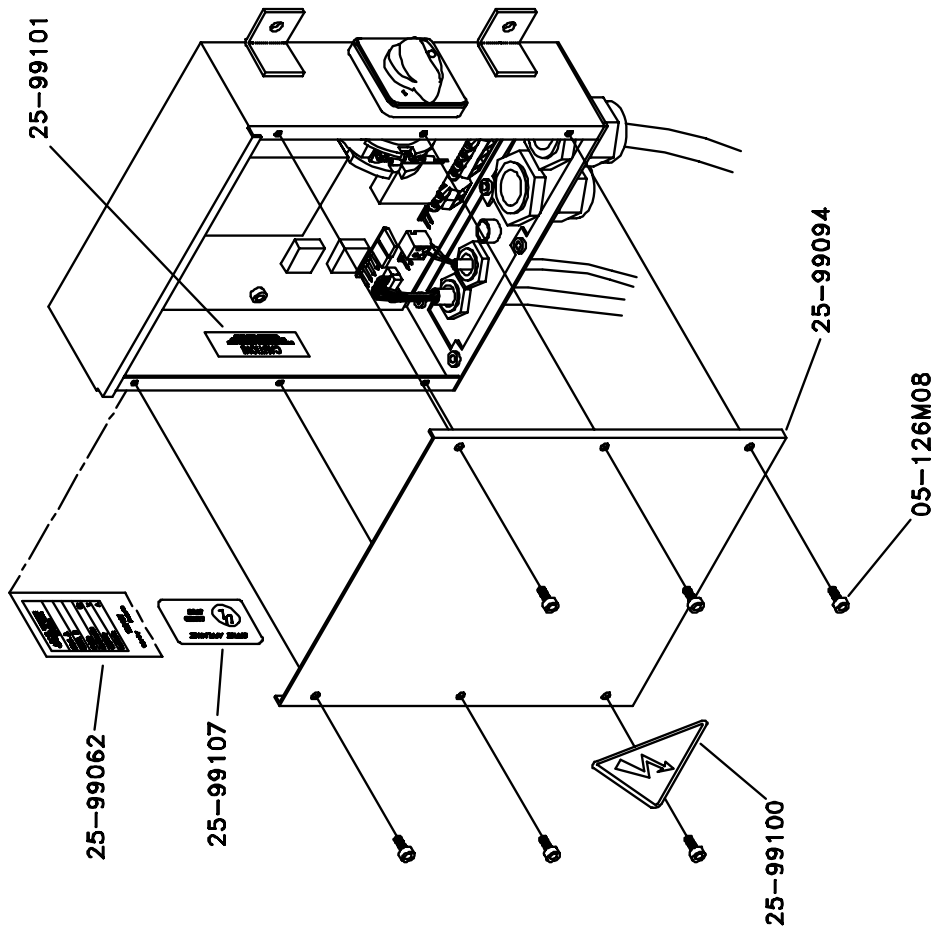
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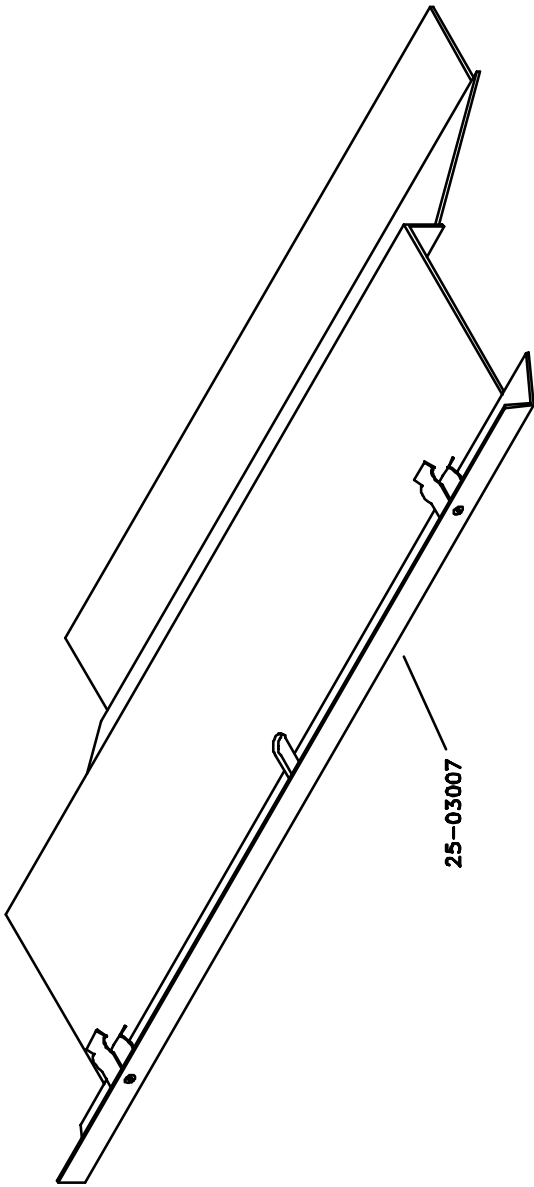
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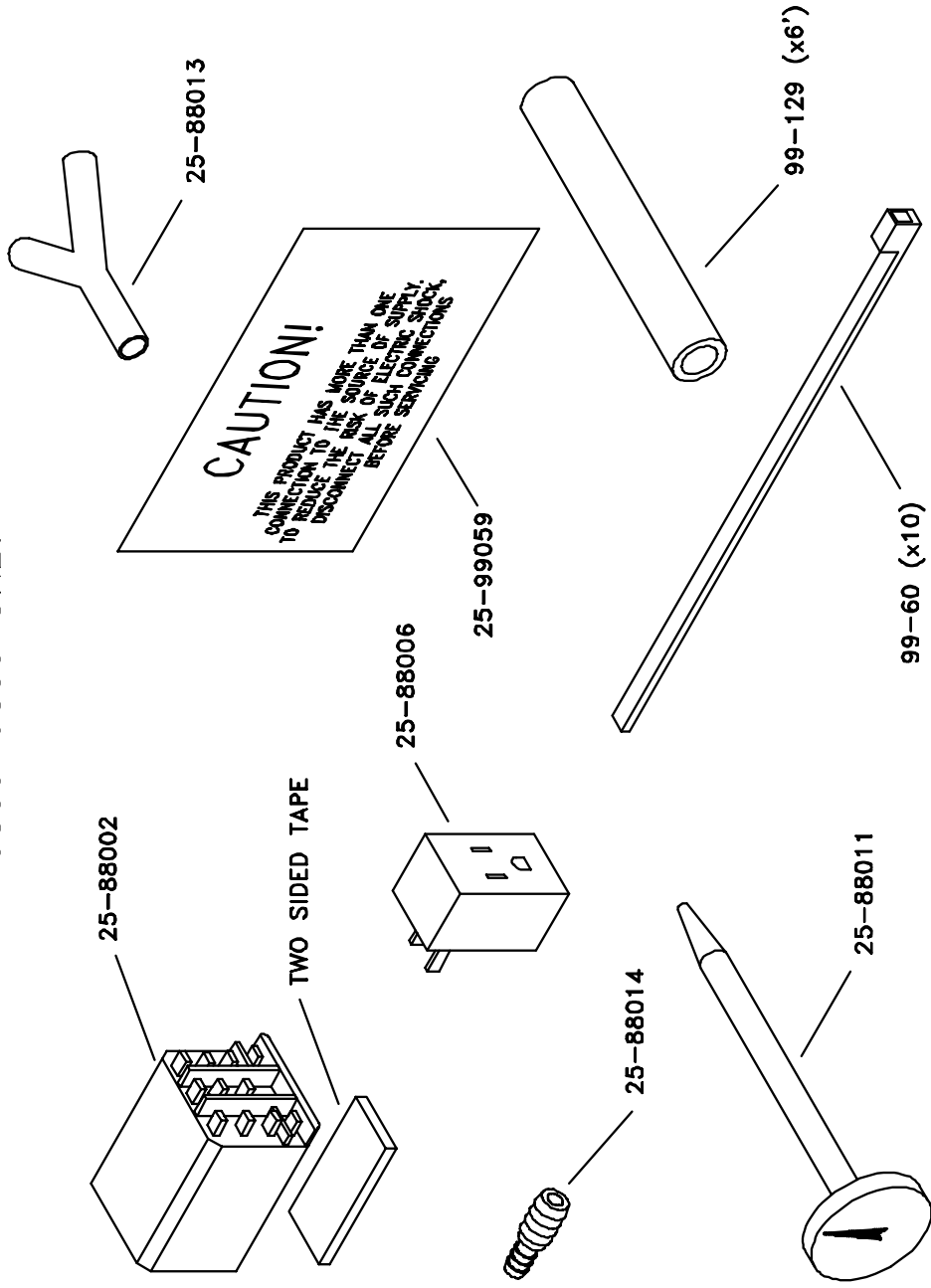


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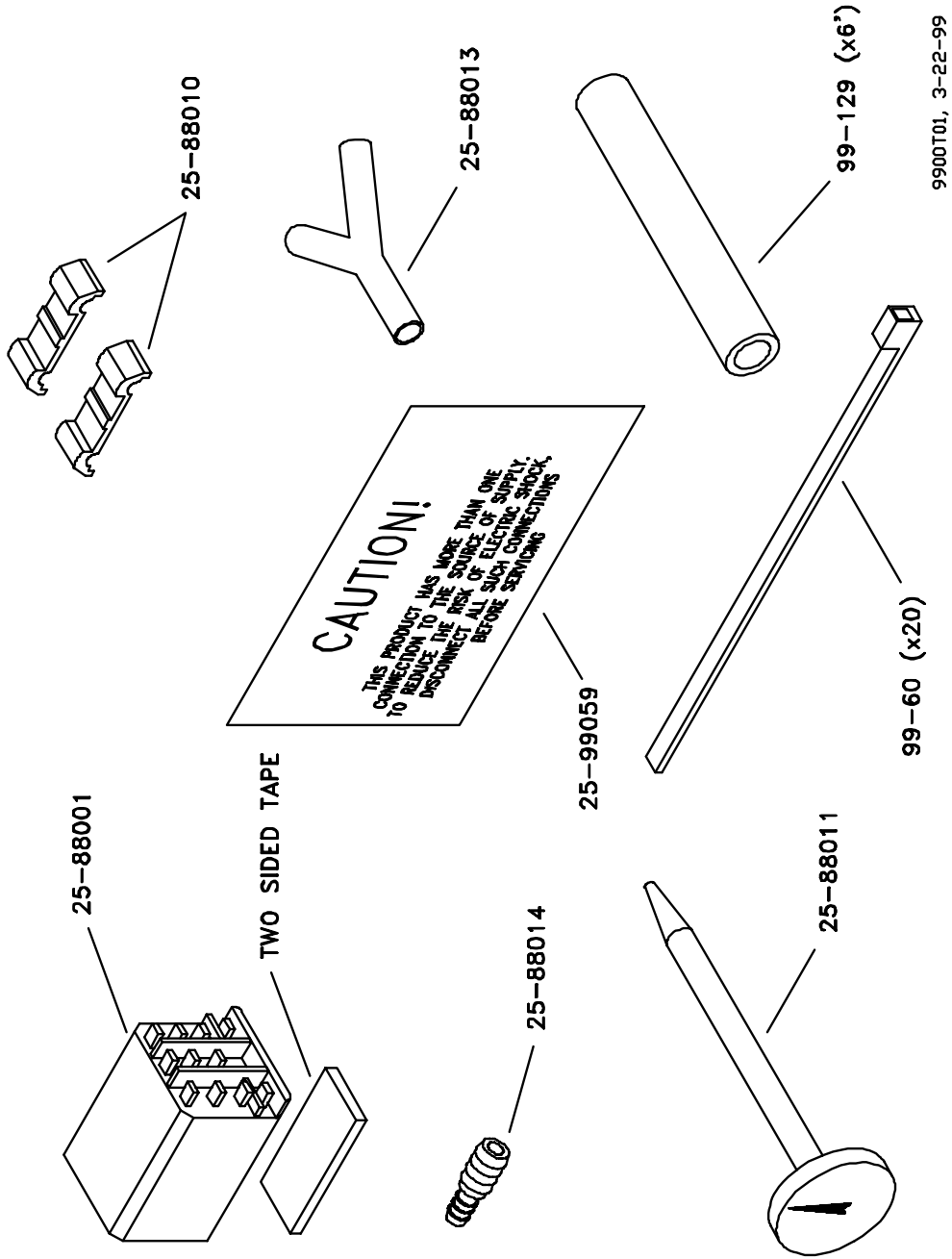
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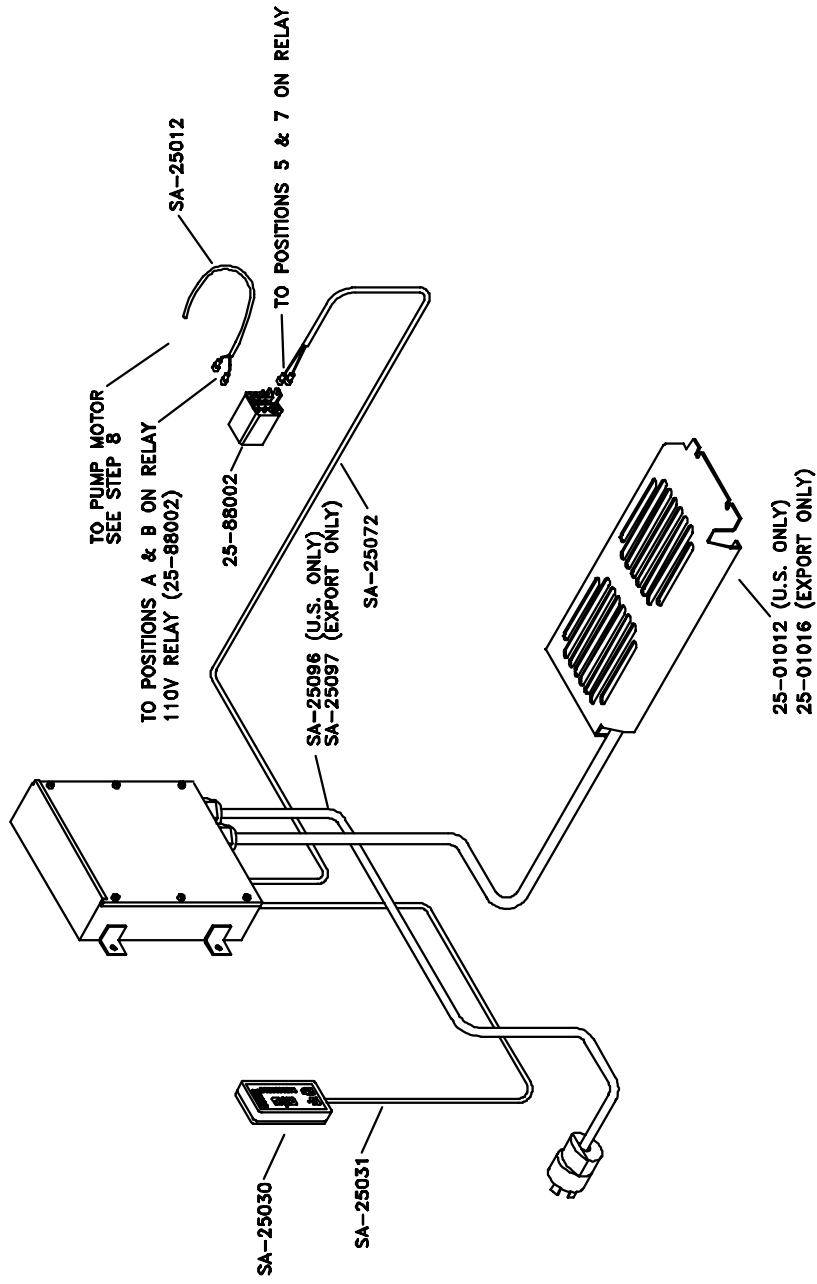


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9870 AND 9900 SERIES ONLY

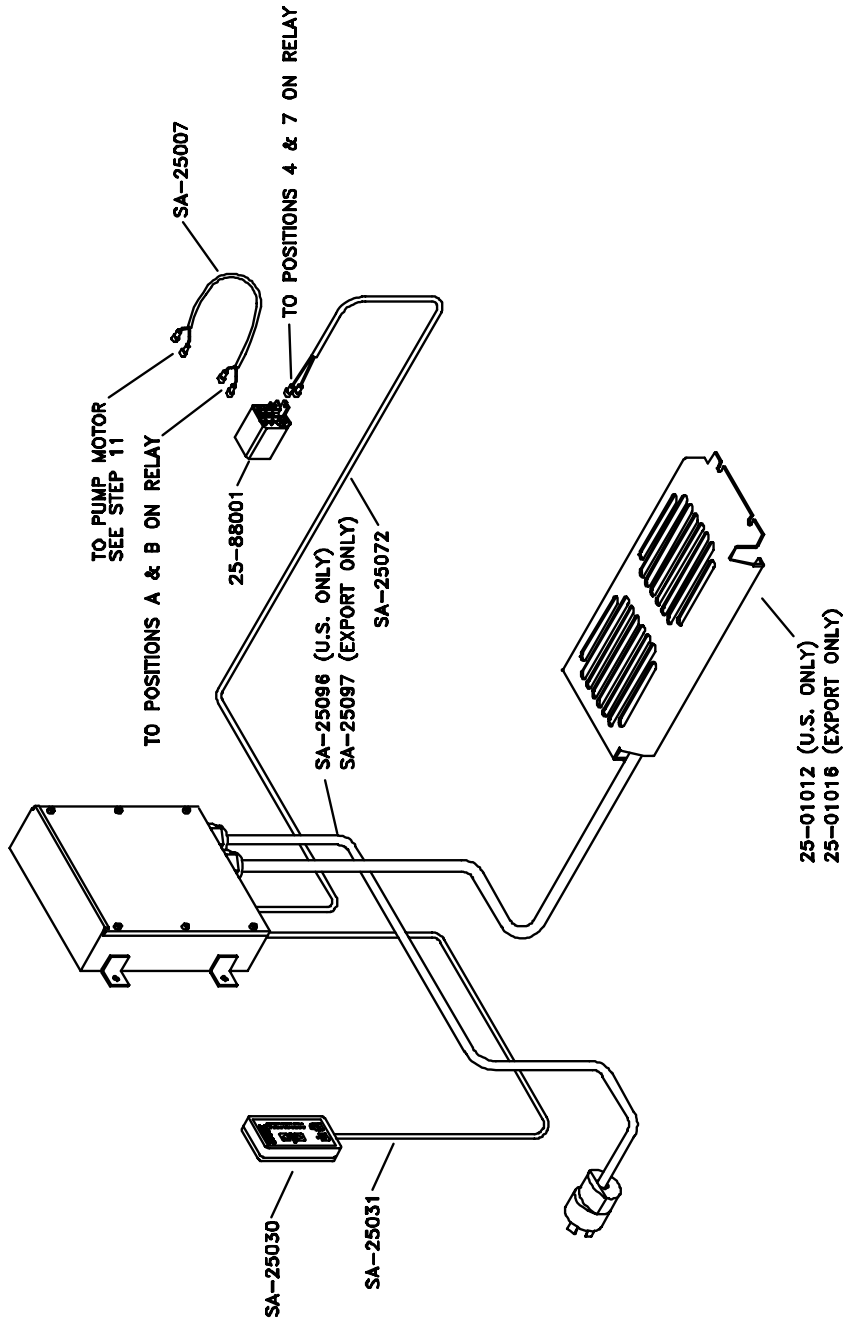


9800 - 9850 ONLY



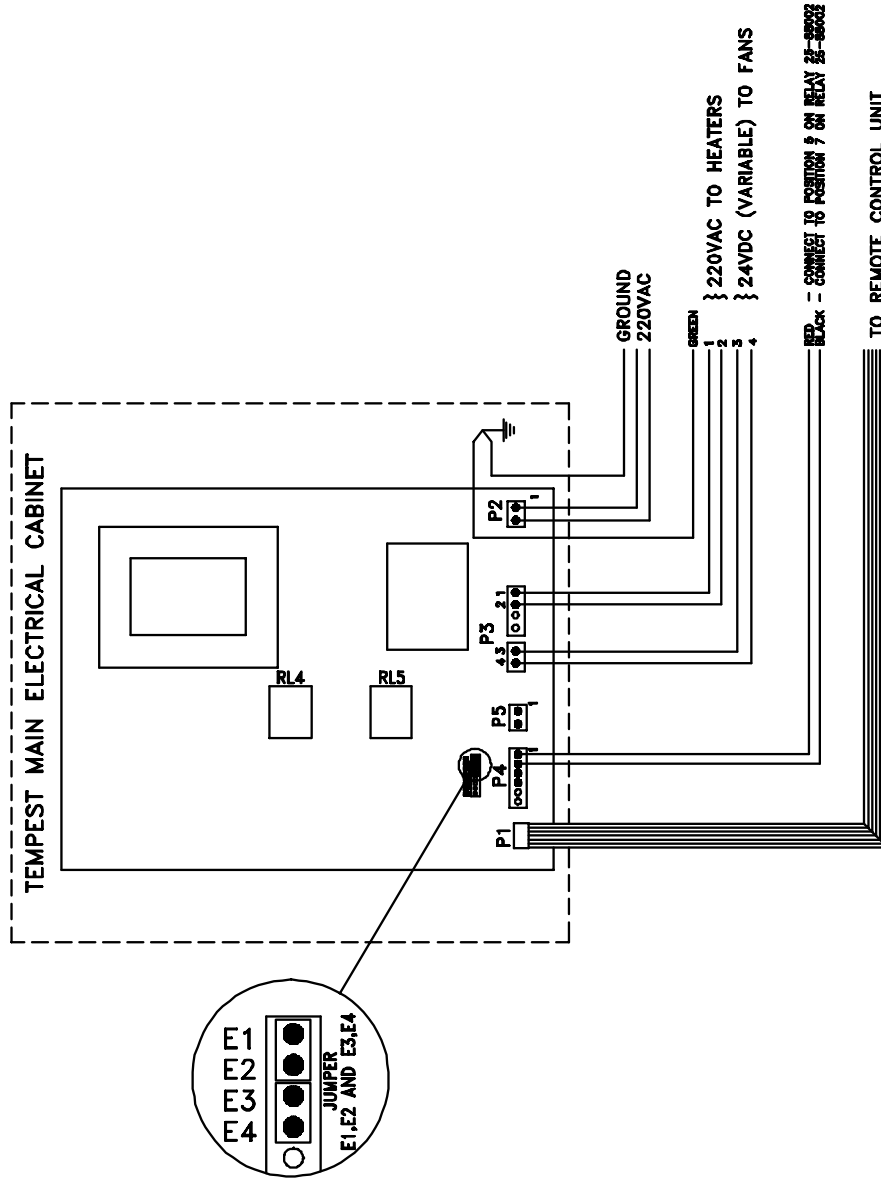
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9870 AND 9900 SERIES ONLY



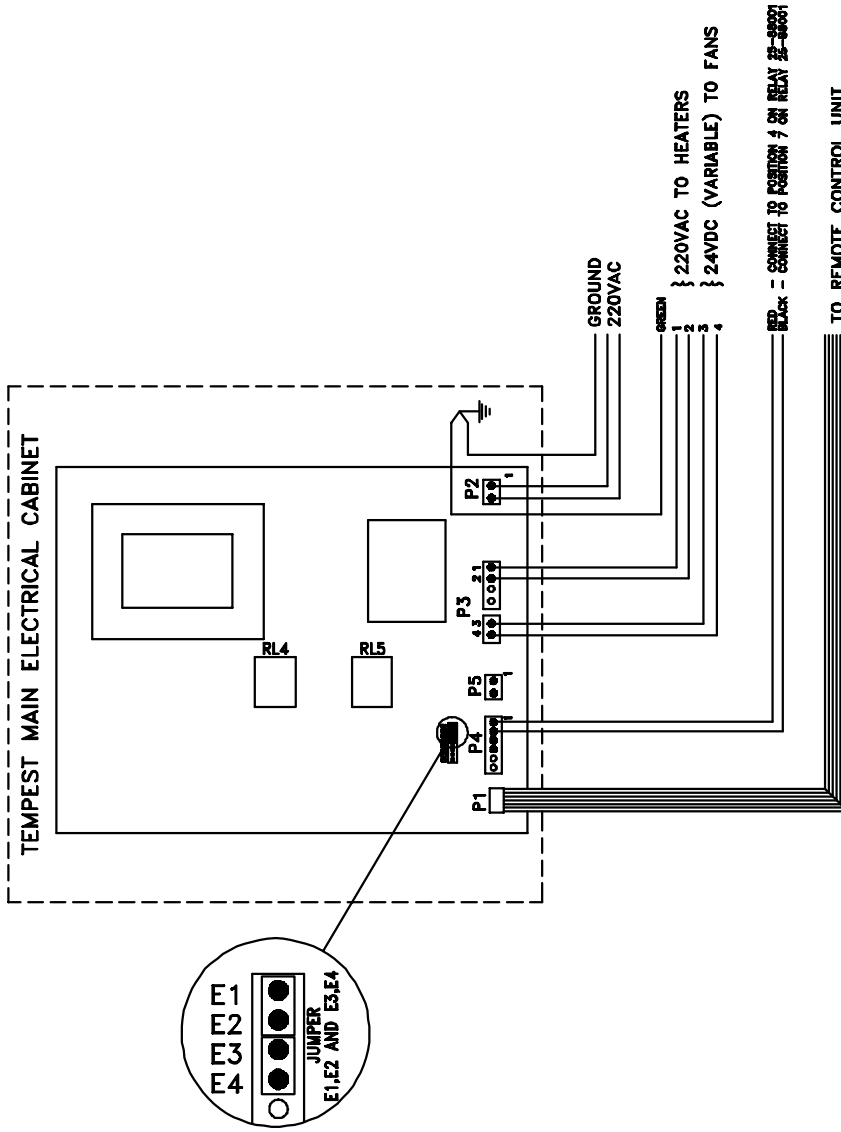
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ABDICK 9800/9850 TEMPEST  
ELECTRICAL DIAGRAM



9800T14, 3-19-99

ABDICK 9870/9900 TEMPEST  
ELECTRICAL DIAGRAM



9800T14, 3-19-99





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