Airspeed HC (Hybrid Cushion)
Troubleshooting Guide
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solenoid fuse/relay assembly</td>
</tr>
<tr>
<td>2</td>
<td>Tow Roller with Proximity Switch</td>
</tr>
<tr>
<td>3</td>
<td>Air Pressure Regulator</td>
</tr>
<tr>
<td>4</td>
<td>HMI (Human-Machine-Interface)</td>
</tr>
<tr>
<td>5</td>
<td>Emergency Stop</td>
</tr>
<tr>
<td>6</td>
<td>PLC (Programmable Logic Control)</td>
</tr>
<tr>
<td>7</td>
<td>Analog Card</td>
</tr>
<tr>
<td>8</td>
<td>Thermocouple Transmitter</td>
</tr>
<tr>
<td>9</td>
<td>Drive Belts</td>
</tr>
<tr>
<td>10</td>
<td>Solid State Relay</td>
</tr>
<tr>
<td>11</td>
<td>Seal Drum Fuse</td>
</tr>
<tr>
<td>12</td>
<td>Air Tube</td>
</tr>
<tr>
<td>13</td>
<td>Hood Sensor</td>
</tr>
<tr>
<td>14</td>
<td>24v DC component fuse</td>
</tr>
<tr>
<td>15</td>
<td>Power Supply</td>
</tr>
<tr>
<td>16</td>
<td>Drive Relay</td>
</tr>
<tr>
<td>17</td>
<td>Jog Relay</td>
</tr>
</tbody>
</table>
**Definition of Terminology**

The purpose of this section is to clearly identify each component of the Airspeed 5000 and help us understand why it is used and how it works.

**Relay**

A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism, but other operating principles are also used. Relays find applications where it is necessary to control a circuit by a low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits, repeating the signal coming in from one circuit and re-transmitting it to another. Relays found extensive use in telephone exchanges and early computers to perform logical operations. A type of relay that can handle the high power required to directly drive an electric motor is called a contactor. Solid-state relays control power circuits with no moving parts, instead using a semiconductor device triggered by light to perform switching. Relays with calibrated operating characteristics and sometimes multiple operating coils are used to protect electrical circuits from overload or faults; in modern electric power systems these functions are performed by digital instruments still called "protection relays".

**Solid state relay**

A solid state relay (SSR) is an electronic switch, which, unlike an electromechanical relay, contains no moving parts. The types of SSR are photo-coupled SSR, transformer-coupled SSR, and hybrid SSR. A photo-coupled SSR is controlled by a low voltage signal which is isolated optically from the load. The control signal in a photo-coupled SSR typically energizes an LED which activates a photo-sensitive diode. The diode turns on a back-to-back thyristor, silicon controlled rectifier, or MOSFET transistor to switch the load.

**Advantages over mechanical relays**

- SSRs are faster than electromechanical relays; their switching time is dependent on the time needed to power the LED on and off, on the order of microseconds to milliseconds
- Increased lifetime due to the fact that there are no moving parts, and thus no wear
- Clean, bounceless operation
- Decreased electrical noise when switching
- Can be used in explosive environments where a spark must not be generated during turn-on
- Totally silent operation
- Smaller than a corresponding mechanical relay.
- Can continue to operate while subjected to severe vibration.

Disadvantages

- Fail short more easily than electro-mechanical relays
- Increased electrical noise when conducting
- Higher impedance when closed (-> heat production)
- Lower impedance when open
- Reverse leakage current when open (µA range)
- Possibility of false switching due to voltage transients
- Isolated bias supply required for gate charge circuit
- Higher Transient Reverse Recovery time (Trr) due to the presence of Body diode

Programmable logic controller (PLC)

A programmable logic controller (PLC) or programmable controller is a digital computer used for automation of electromechanical processes, such as control of machinery on factory assembly lines, amusement rides, or lighting fixtures. PLCs are used in many industries and machines. Unlike general-purpose computers, the PLC is designed for multiple inputs and output arrangements, extended temperature ranges, immunity to electrical noise, and resistance to vibration and impact. Programs to control machine operation are typically stored in battery-backed or non-volatile memory. A PLC is an example of a real time system since output results must be produced in response to input conditions within a bounded time, otherwise unintended operation will result.
**Thermocouple**

A **thermocouple** is a junction between two different metals that produces a voltage related to a temperature difference. Thermocouples are a widely used type of temperature sensor for measurement and control and can also be used to convert heat into electric power. They are inexpensive and interchangeable, are supplied fitted with standard connectors, and can measure a wide range of temperatures. The main limitation is accuracy: system errors of less than one Kelvin (K) can be difficult to achieve.

**Thermocouple Wiring**

Unlike RTDs and thermistors, thermocouples have plus and minus legs so polarity must be observed. They can be directly connected to a local 2-wire transmitter and copper leads can be run back to the receiving instrument. If the receiving instrument is capable of accepting thermocouple inputs directly you must use the same thermocouple wire or thermocouple extension wire all the way back to the receiving instrument.

**Proximity sensor**

A **proximity sensor** is a sensor able to detect the presence of nearby objects without any physical contact. A proximity sensor often emits an electromagnetic or electrostatic field, or a beam of electromagnetic radiation (infrared, for instance), and looks for changes in the field or return signal. The object being sensed is often referred to as the proximity sensor's target. Different proximity sensor targets demand different sensors. For example, a capacitive or photoelectric sensor might be suitable for a plastic target; an inductive proximity sensor requires a metal target. The maximum distance that this sensor can detect is defined "nominal range". Some sensors have adjustments of the nominal range or means to report a graduated detection distance. Proximity sensors can have a high reliability and long functional life because of the absence of mechanical parts and lack of physical contact between sensor and the sensed object.
Analog Card

Digital and analog signals

Digital or discrete signals behave as binary switches, yielding simply an on or off signal (1 or 0, True or False, respectively). Push buttons, limit switches, and photoelectric sensors are examples of devices providing a discrete signal. Discrete signals are sent using either voltage or current, where a specific range is designated as On and another as Off. For example, a PLC might use 24 V DC I/O, with values above 22 V DC representing On, values below 2VDC representing Off, and intermediate values undefined. Initially, PLCs had only discrete I/O.

Analog signals are like volume controls, with a range of values between zero and full-scale. These are typically interpreted as integer values (counts) by the PLC, with various ranges of accuracy depending on the device and the number of bits available to store the data. As PLCs typically use 16-bit signed binary processors, the integer values are limited between -32,768 and +32,767. Pressure, temperature, flow, and weight are often represented by analog signals. Analog signals can use voltage or current with a magnitude proportional to the value of the process signal. For example, an analog 4-20 mA or 0 - 10 V input would be converted into an integer value of 0 - 32767.

Solenoid Valve

A solenoid valve is an electromechanical valve for use with liquid or gas. The valve is controlled by an electric current through a solenoid coil. Solenoid valves may have two or more ports: in the case of a two-port valve the flow is switched on or off; in the case of a three-port valve, the outflow is switched between the two outlet ports. Multiple solenoid valves can be placed together on a manifold.

A solenoid valve has two main parts: the solenoid and the valve. The solenoid converts electrical energy into mechanical energy which, in turn, opens or closes the valve mechanically. A direct acting valve has only a small flow circuit, shown within section E of this diagram (this section is mentioned below as a pilot valve). This diaphragm piloted valve multiplies this small flow by using it to control the flow through a much larger orifice.
Solenoid valves may use metal seals or rubber seals, and may also have electrical interfaces to allow for easy control. A spring may be used to hold the valve opened or closed while the valve is not activated.

Solenoid valves are the most frequently used control elements in fluidics. Their tasks are to shut off, release, dose, distribute or mix fluids. They are found in many application areas. Solenoids offer fast and safe switching, high reliability, long service life, good medium compatibility of the materials used, low control power and compact design.

Besides the plunger-type actuator which is used most frequently, pivoted-armature actuators and rocker actuators are also used.
AirSpeed HC V1 and V2 Process Timeline

Start Cycle

Heater Relay activated
Solid State Relay begins seal drum heat up (Start Delay)
Blower relay activated and blower comes up to full speed

Drive Components

Drive motor relay activated motor starts to accelerate
Driver motor achieves full speed
Blower relay activated and blower comes up to full speed
Blower Solenoid relay activated, pulses solenoid (Blower offset)

Heater Components

Seal drum achieves full temperature
Machine has reached full operating parameters
Solid state relay ramps down the seal drum

Air Components

Drive relay activated
Motor starts to accelerate
Drive motor achieves full speed
Seal drum achieves full temperature
Machine has reached full operating parameters

Stop Cycle

Solid state relay ramps down
Solenoid relay deactivated
Machine at complete stop

Drive relay deactivated
Solenoid relay deactivated
Blower relay deactivated

Drive Components

Blower relay deactivated
Solenoid stops pulsing. Relay is still activated

Heater Components

Heater Relay deactivated

Air Components

AirSpeed HC V1 and V2 Process Timeline
Operator Interface Touch Screen

The operation of the Interface Screens is separated into three levels of security defined by passwords that allow access only to specific personnel.

The access levels are defined as:

Operator
Management
Technician

Each level of access allows varying access to the following screens:

Main (Ready to Run)
Machine Setup
    Parameter Setup
    Load Recipe
    save Recipe

Use the Up/Down arrow buttons to select a specific line/function. The cursor moves to the selected line.

Use the Plus/Minus buttons to change the Actual value, or accept the line/function choice which routes you to the applicable parameter.

The passwords for both the Operator and Management levels are set at the Technician level. The Technician level password has been programmed into the system and cannot be changed.

NOTE: Once you leave the Password parameter, the password value shown at the Actual returns to the default of zero (0).

Technician Access Level
The Technician level is used to program the machine. This level also allows access to all Operator and Management level parameters, as well as the following additional parameters:

Actual Temp Fdbk
Lifetime Odometer (km)
Belt Life Limit (km)
Maximum Seal Temp (degrees F or C)
Minimum Seal Temp (degrees F or C)
Level #2 Access
Level 1# Access
Motor Calibration
Seal Gains – Plim (%)
Seal Gains- Kd
Seal Gains- Ki
Seal Gains- Kp
Test Mode On/Off
Start Delay (mSec)
Airflow Offset
Deceleration Rate (%)
Acceleration Rate (%)
Machine Speed (%)

The Minimum/ Maximum line values are preset by the manufacturer and cannot be changed.

For all Parameter Setup screens, the arrow cursor designates the Actual value line is active. Use the Plus/Minus buttons to change the line value. Press the Up/Down arrow buttons to accept the new value and move to another parameter.
Airspeed HC Menu Functions

Main (Ready to Run)

This screen allows the operator to select the machine operating mode.

The three (3) operating modes include:

Normal Operation

The machine is started and runs continuously until manually stopped, or film supply is depleted. Machine operation is controlled by the control panel START and STOP buttons,

Automatic Stop After “xx” ft.

This setting is used to manually select a length of film to run. The machine will stop once the proximity sensor detects the set film length has been run. The quantity of cushions created for the selected film length will vary with the cushion size. Use the “Up” and “Down” arrow buttons to access the “after XX ft” (in this example” after 50 ft”).

![Menu Functions](image)
Use the “Plus” and “Minus” buttons to increase or decrease the footage.

**The Basket With “xx” ft.**

This setting is used to select a length of film to automatically run once the collection basket/bin is low. A sensor mounted above the bin detects when the bin is low, after which the selected length of film is then run. After the sensor initially detects the bin as low, there is a four second delay before the cushion machine is started. This prevents the cushion machine from pulsing on and off. Once the preset length of film has been run, the Main screen “Ready to Run” message changes to “PAUSED”, and the machine stops. Use the “Up” and “Down” arrow buttons to access the “after XX ft” (in this example “after 50 ft”). Use the “Plus” and “Minus” buttons to increase or decrease the footage.
**Machine Setup**

ON the main screen, use the “Up and “Down” arrow buttons to move the cursor down to “Setup the Machine”. Press the “Plus” button to access the menu. The following screen will appear. Move the cursor down to “Password” and, using the “Plus” and “Minus” buttons, enter a value of “263”.

IMPORTANT: Password protected areas of the machine are sensitive and should be restricted to Technician / Management use.

From this point there are three options. Move the cursor to any one of the following and press the “Plus” button to access the menu:

- Parameter Setup- allows access to machine function menus (e.g. machine speed, seal temperature, etc.).
- Load Recipe- Allows technician to load a previously saved recipe (see Recipe section for details on creating/loading/saving recipes)
- Save Recipe- Allows technician to save a newly created recipe (see “Recipe” section for details on creating/loading/saving recipes)
Recipe

Note: Enter the password before attempting to load or save a recipe.

Save Recipe- On the Machine Setup screen, press the Down arrow button to scroll the cursor to the “Save Recipe” line. Press the Plus button to access the Save Recipe screen.

The Save Recipe screen allows the machine to save the current machines settings under one of four existing recipes. Press the Up/Down arrow buttons to scroll to cursor up and down. Press the Plus key to select the desired recipe.
The screen will indicate that the recipe has been saved. Press the Start, Stop, Jog, or Reset buttons to return to the Main screen.
**Seal Temperature Screen**

Displays current temperature setting and allows for temperature adjustment using the plus and minus buttons. Also displays minimum and maximum seal temperatures however adjustment of these settings is restricted to a separate menu.

![Seal Temperature Screen](image)

**Jog With Cover Open**

Disables the cover guard sensor and allows the technician to jog the machine with the cover open (for diagnostic purposes). To use this function, enter a value of “1” for **Actual**.

![Jog With Cover Open](image)
**Machine Speed**

Adjusting the **Actual** setting using the plus and minus buttons decreases or increases drive motor speed. Adjusting this setting will often require adjustments to other settings such as seal temperature, air volume, etc. 

*Note: Default setting is 70%.*

**Acceleration Rate**

This value is used to adjust how quickly the machine accelerates from zero speed to the Machine Speed Value. The acceleration rate should be tailored to the film properties and the machine’s other settings. If set too high, the machine may tear perforations, especially at start-up, under inflate cushions, have weak seals, etc.
**Deceleration Rate**

This value is used to adjust how quickly the machine decelerates from Machine Speed Value to zero speed. The deceleration rate should be tailored to the film properties and the machine’s other settings. If set too high, the heater may not cool down sufficiently, burning through the film that remains in contact with the sealing surface. If set too low, the seal may become weak before the machine stops. Lowering the deceleration rate helps to prevent the film parent roll from over-spinning when STOP is pressed. Over-spinning of the film roll can cause slack in the film that may result in the perforation tearing at the air pipe during restart. If set too low, the machine may not react quickly enough to an immediate need to stop.

**Airflow Offset**

This parameter controls how long the solenoid air valve is open vs. closed during the pulsing sequence. Setting the Airflow Offset to a larger value helps fill the pillows more during a restart. This parameter will differ depending upon the Machine Speed and Acceleration/Deceleration Rate values; therefore it should be set last.
Start Delay

When the machine is started, this value provides a time delay to the start of film feeding to allow the seal wire additional time to heat up. This function reduces the amount of film waste.

Seal Gains Plim

This value (power limit) represents the allowable percentage (%) of available peak power to the sealing drum. The factory default setting is the absolute highest level of power that should be sent to the heater, even for a short time. **NOTE: This value is set from the factory and should not require adjustment!**
Seal Gains Kp

Used in the control and adjustment of the sealing wire temperature loop. This value (proportional setting) represents how quickly the system reacts to the difference (error) between the set point and the actual reading. This can be thought of as the error correction rate. **NOTE: This value is set from the factory and should not require adjustment!**

Seal Gains Ki

Used in the control and adjustment of the sealing wire temperature loop. This value (integral setting) represents the variable of time within the control loop. This setting provides additional aid to attain the set point. The longer the function of the proportional setting (Kp) is stalled by the function of the derivative setting (Kd), the more intense the integral setting (Ki) function becomes. **NOTE: This value is set from the factory and should not require adjustment!**
**Seal Gains Kd**

Used in the control and adjustment of the sealing wire temperature loop. This value (derivative setting) represents how much counteraction (acceleration limit) is placed on the error correction rate (Kp). This can be thought of as electronic dampening. **NOTE: This value is set from the factory and should not require adjustment!**

![Seal Gains Kd Settings](image)

---

**Level #1 Access**

This is the password that allows a user access to the Operator level parameters. Setting the **Actual** value above 100 disables (allows the operator full access) the password protection. Setting the **Actual** value below 100 (default is 0) enables the password protection.

![Level #1 Access Settings](image)
**Level #2 Access**

This is the password that allows a user access to the Management level parameters. IF this is changed to a non-zero number all users will need to enter that value before they are allowed to view or change any Management level parameters. A setting of zero allows anyone access to the Management and Operator level parameters, without the need to enter a password.

![Level #2 Access](image)

**Motor Calibration**

This value calibrates the machine controller (PLC) to the motor drive. The PLC issues a voltage to control the speed of the motor. Different motor drives may have different voltage input requirements.

![Motor Calibration](image)
**Minimum Seal Temperature**

This parameter is used to set the lowest temperature value that can be set with the Seal Temperature parameter. This value works in combination with the Maximum Seal Temperature parameter value to create the set point range.

**Maximum Seal Temperature**

This parameter is used to set the highest temperature value that can be set with the Seal Temperature parameter. This value works in combination with the Minimum Seal Temperature parameter value to create the set point range.
This value is the drive belt life expectancy used in the Belt Odometer parameter, as the Maximum value, to inform the machine operator when the drive belts need inspection and/or replacement. When the belts run farther than this value, the Main screen “Ready to Run” message is replaced by a “Change Belts” message. The machine will continue to operate. Note: This message can be cleared by setting the Belt Odometer parameter Actual value to zero.

**Lifetime Odometer**

Display-only parameter used to view the total film distance that has been run on the machine. The actual value cannot be reset.
Feedback

Display-only parameter of the actual temperature feedback that the program is detecting. This value is used for troubleshooting purposes only.

![Feedback Display](image)

Language Selection

Adjusting the **Actual** value using the plus and minus buttons results in the following:

- 0 French
- 1 German
- 2 Italian
- 3 Spanish
- 4 English
**Temperature Scale**

Adjust the **Actual** setting using the plus and minus buttons results in the following:

0 Fahrenheit
1 Celsius

**Test Mode**

For normal operation of the machine, the Actual value should be set to 0 (Test Mode Off), the default setting. The machine will shut down if it does not detect film movement. Setting the Actual value to 1 (Test Mode On) will disable the “Film Runout or Jam” fault, allowing the machine to be run without film.
**Spare**

On machines with software version 1.7 the Spare screen serves as the Lifetime Odometer.

**“ERROR” Screen**

This screen may occur during machine start up. This situation is usually the result of the Start button stuck in the “on” position due to damage. Check Start button and overlay for damage. If either component is damaged replace overlay and/or HMI.
**Problem Description:**
Faulty Seals

**Possible Causes:**
- Incorrect heat setting
- Seal drum failure
- Kapton tape has “bunched” or has pulled off the drum
- Machine is running too fast for current seal temperature setting

**Troubleshooting Steps:**
- Check heat setting. (Note: 270-275 degrees is sufficient for most material/machine speeds)
- Verify kapton tape is intact.
- Check seal drum for short. (Note: There are two ways to check the drum. First, visually inspect the seal element for burn marks. Second, perform a continuity check with a multimeter)

**Resolution:**
- Set temperature to correct setting.
- Replace Kapton tape.
Replace seal drum.

Note: Slip ring failures, while not common, can result from a seal drum failure (or vice versa). It is always good practice to perform a continuity check for each slip ring wire before installing a new seal drum.

Note: There is a 3amp fuse located on the right side of the power supply. This fuse can blow as a result of a seal drum failure. Check fuse before continuing.

**Problem Description:**

Machine running slow

**Possible Causes:**

Incorrect machine speed setting

**Troubleshooting Steps:**

Verify machine speed setting via HMI menu screen labeled “Machine Speed”

**Resolution:**

Adjust machine speed via HMI

**Problem Description:**

Film jams before seal drum

*NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!*
**Possible Causes:**
- Dull Knife blade
- Bent air tube

**Troubleshooting steps:**

*NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!*

- Inspect knife blade
- Verify air tube is not bent

**Resolution:**

*NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!*

- Replace knife blade.
- Replace air tube.

**Problem Description:**

No Display (HMI)

**Possible Causes:**
- Machine not powered
- Faulty HMI
- HMI unplugged
- Faulty 24V power supply
**Trouble Shooting Steps:**

Verify machine is plugged in correctly. (Note: check power source for proper voltage)

Verify 24V is getting to the HMI.

Inspect cable s going into HMI.

Verify 24V coming from the power supply

---

**Resolution:**

Plug machine into proper 110v source.

If 24V is present, replace HMI.
Reconnect cables.
If 24V is absent, replace power supply.

**Problem Description:**
Fault on PLC

**Possible Causes:**
Faulty input to PLC
Faulty PLC

**Troubleshooting Steps:**
Check 24V going into the PLC
Check external inputs to the PLC to insure none are shorted or defective.

**Resolution:**
If voltage is below 21V, replace power supply
If you have proper voltage, re-load the program.

*To program: With the machine powered off, remove the plastic cover and insert the program chip. Power the machine. Wait approximately 30 seconds. Power down the machine. Remove the chip and reinsert the plastic cover.*
Verify PLC is wired correctly per schematic.
Replace PLC.

**Problem Description:**
Fault Code “XX” on display

**Possible Causes:**
HMI display software fault
HMI display button fault

**Troubleshooting Steps:**
Check buttons and screen for damage.
Verify connectors in the back of HMI are connected properly.

**Resolution:**
If buttons are damaged, replace HMI overlay.
If HMI damaged, replace HMI.

**Problem Description:**
Low power indicator on 24V power supply
**Possible Causes:**

Faulty 24V power supply  
PLC or HMI shorted  
Defective foot pedal or sensor

**Troubleshooting Steps:**

Disconnect 24v power supply output leads and check for 24v.  
Reconnect 24V power supply and remove the 24V leads from PLC, check voltage.  
Reconnect PLC and remove the 24V leads from the HMI, check voltage.  
Remove foot pedal or sensor from the connector, check voltage.

**Resolution:**

If 24V is still intermittent at the power supply, replace power supply.  
If after disconnecting PLC or HMI, 24V is present, replace defective unit.  
If 24V is present after foot pedal or sensor is removed, replace defective unit.

**Problem Description:**

Film cut at seal (“ribbon cutting”, “Scrimming”)  

*NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!*

**Possible Causes:**

Incorrect tow roller tension/position
Incorrect roll tension

Incorrect belt tension

**NOTE:** This condition cannot be caused by a film issue. Film channel widths are set by the actual pattern and not subject to distortion or tolerance issues.

**Troubleshooting Steps:**

**NOTE:** Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!

Check tow roller position and make adjustments in small increments

Verify proper roll tension. (Note: proper roll tension can be verified by observing the film as it passes over the silver roller just before it meets the air tube. If the film is “bouncing” or appears to move in “waves” as it passes over the roller the tension needs to be increased. Increasing the tension too much will result in tearing the perforation either as it meets the air tube or at some point before it reaches the belts.)
Resolution:

**NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!**

Verify proper belt tension. Adjust if necessary

Adjust tow roller tension and/or position

Adjust film roll tension

Problem Description:

Film perforation tearing while passing through rollers

**NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!**

Possible Causes:

Incorrect belt tension

Incorrect roll tension

Defective perforation (bad roll)

Troubleshooting Steps:

**NOTE: Before making any corrections or adjustments regarding this type of issue first verify the film roll is installed correctly!**

Reduce belt tension

Reduce roll tension
Replace roll with one from a different manufacture date, machine number, lot number, etc.

**Resolution:**

*NOTE: Before making any corrections or adjustments for this type of issue first verify the film roll is installed correctly!*

Adjust belt tension

Adjust roll tension

Replace roll

**Problem Description:**

Unable to input data into display

**Possible Causes:**

HMI display software fault

HMI display button fault

**Troubleshooting Steps:**

Reset HMI (cycle power)

Inspect buttons for damage. (Note: Button damage can cause HMI error on power up)

**Resolution:**

Replace HMI overlay and cycle power.

Replace HMI.
Problem Description:
HMI reads “film run out or jam”

Possible Causes:
Machine has run out of film
Screws missing from tow roller (lower roller, proximity switch)
Proximity sensor is defective
Tow rollers not moving (film is no longer present)

Troubleshooting steps:
Using proper film loading procedures reload film and test machine operation.
Verify tow roller screws are intact (note: some machines have 4 Allen set screws, some have 5, and some have 4 button-head Allen screws).
Verify film is not pulling off tow rollers during operation.
Verify proximity sensor function (proximity sensor light will flash as wheel is rotated)

Resolution:
Replace tow roller screws.
Adjust tow rollers.
Replace defective proximity switch.
**Problem Description:**
Compressor not operational

**Possible Causes:**
Defective compressor relay
Defective compressor

**Troubleshooting Steps:**
Verify relay engagement after pressing "start" on the HMI.
Verify compressor is getting power

**Resolution:**
If relay does not engage, replace relay
Replace compressor

**Problem Description:**
HMI displays seal temperature too “high/low”

**Possible Causes:**
Faulty Thermocouple transmitter
a.k.a. “The Blue Block”
Troubleshooting Steps:

Check continuity of slip ring wires.

On version 2 machines check fuse (note: version 1 machines do not have a fuse for this application).
Resolution:

Replace slip ring.

Replace thermocouple transmitter.
THINGS TO REMEMBER WHEN LOADING FILM:

1. Load film on spindle with unsealed air tube slot to the inside and push all the way until the roll touches the spindle pin. Secure lock pin in place.

2. Pull film behind and under the white tension roller.

3. Pull film up and over silver roller. Slide unsealed edge slot of the film over the air injection tube and gently pull to the first roller. Separate tow rollers and place film in between.

4. While holding the ‘Jog’ button on the control panel, gently pull the film toward the front of the machine until it is even with the front of machine.
5. Press start.

**CLEARING A FILM JAM:**

1. DO NOT continue to press the start button if film is jammed.
2. Gently guide the film backwards off the inflation tube

**DO:**

- Remember to activate the sensor by pressing the start button when turning on the machine or loading a new roll of film. The setting on the control panel should read ‘Paused.’

- Call Pregis technical service directly (business card on machine) if you need technical support.

**DO NOT:**

- Put excess tension on the film by pulling it from the machine.

- Use a knife or sharp object to clear a film jam.

- Adjust the temperature settings on the machine.

- Over-inflate the air pillows.