


SUPER SEAL™ 300 / 400 / 600
INDUCTION CAP SEALER

ML0185-001-01

OWNER'S REFERENCE MANUAL



enercon
INDUSTRIES CORPORATION

 **DANGER:** Read entire Owner's Reference Manual
before installing, operating, or maintaining equipment.

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SECTION 1 – SAFETY AND WARNINGS



DO NOT OPERATE THIS EQUIPMENT IN AN EXPLOSIVE ENVIRONMENT!

1.1 GENERAL SAFETY INFORMATION

⚠ DANGER: Before placing this equipment into operation, you must read this manual carefully, in its entirety, to ensure you understand all the safety and operational requirements for using this equipment.

This equipment produces an **Electromagnetic Field** to facilitate the induction sealing process. The **Electromagnetic Field** quickly **Heats** any metal within the field and may, under certain conditions, **Ignite** the metal or surrounding materials. Personnel should refrain from placing jewelry, such as rings and watches beneath or within the sealing head's electromagnetic field!

HIGH VOLTAGE is present within this equipment. As with any piece of **ELECTRICAL** equipment, one should become familiar with the manual before applying power. Proper connections and operation are required for safe use. **FOLLOW INSTRUCTIONS** for safety of personnel when operating or maintaining this equipment. **INSTALLATION** of this equipment must be done in accordance with this manual, Enercon installation drawings and local codes to ensure the safety of personnel in the area and in the building.

Safety instructions in this manual are called out in colored safety boxes with bold-faced text for emphasis. The signal words **CAUTION**, **WARNING**, and **DANGER** are used to indicate hazard levels to personnel, and **NOTICE** is used to indicate potential hazards to property.

DANGER

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

NOTICE: Indicates a potentially hazardous situation which, if not avoided, could result in damage to property.

1.2 SAFETY PRECAUTIONS

DANGER

Do **not** operate this equipment in an explosive environment, or in the presence of flammable materials! Operation near flammable vapors, fuels, combustibles; including atmospheric product dust or particulates will result in explosion or fire.

Before installing, wiring, starting, operating, or making any adjustments, identify the components of the induction cap sealer using this manual as a guide.

The use of **High Voltage** is necessarily employed in the operation of this equipment. Precautions have been taken in the design of this equipment to make it as safe as possible for both operator and service personnel. However, since no amount of interlocks and safety devices can be absolutely infallible, precautionary measures must always be taken when working on this equipment.

Do **not** reach into the equipment, or any electrical enclosure, without first removing the input voltage.

Do **not** apply voltage to the system without **all** covers on and securely in place.

Lockout / Tag Out: To insure that voltage cannot be applied to the equipment while work is performed, secure or disconnect voltage supplies using the appropriate Lockout / Tag Out procedures. Ensure Lockout / Tag Out is complete prior to entering the equipment in any manner. **ALWAYS use safety as the first step!**

Capacitors Store Charge: Never trust a capacitor to be bled off completely. A meter or ground strap should be used to check each stud or lead before handling. Some capacitor studs, including those not tied to bus work (not used), may build up a considerable static charge. **GROUND BEFORE HANDLING!**

Never assume that a circuit is dead, **MAKE SURE!!!**

Do **not** stand in water or on grounded surfaces or touch grounded surfaces while reaching in any system enclosure. A piece of wood or other insulating material will act as an additional barrier to stand on.

WARNING

Do **not** tamper with Safety Interlocks: Under no circumstance should any of your system's safety interlocks be defeated, nor should any safety device be relied upon for removal of voltage from the equipment.

Test and Verify: Test all system safety interlocks to ensure they are fully functional before placing equipment into production after maintenance, troubleshooting, or an extended shutdown. If an induction sealer is integrated into an automated or partially automated system (e.g., integrated into a conveyance system) all safety features and interlocks present in the entire system should be tested and checked at regular intervals and after maintenance, troubleshooting, or an extended shutdown.

SEALING CONTAINERS OF FLAMMABLE OR COMBUSTIBLE MATERIAL: If an induction cap sealer will be used to seal containers of flammable or combustible materials, it must be integrated into a conveyance system, designed, and installed by a qualified professional integrator/installer with knowledge of the entire conveyance system and product to be sealed. **Such conveyance system must include all appropriate safety features, including a stalled bottle detector and/or a bottle back-up sensor to detect conveyance system failures. In the event of a conveyance system failure, containers remaining under an induction cap sealer may overheat, causing damage to the container and product, and pose a potential fire risk.**

IMPORTANT – stalled bottle detectors and/or bottle back-up sensors are not substitutes for specific safety features integrated into the entire conveyance system (e.g., manual emergency stops or other system safety interlocks) and proper training on their use. Under no circumstance should operators be allowed to or required to directly contact containers containing flammable or combustible material during the sealing process.

CAUTION

The equipment should only be installed, tested, operated and maintained by personnel familiar with the handling and hazards of high voltage and electrostatic discharge, and are familiar with the instructions and safety precautions contained within this manual.

Personnel should use common sense and good working practices while operating and maintaining this equipment. Follow all codes and understand the starting and stopping sequence.

Familiarize yourself thoroughly with the equipment, and **Never** attempt to work on this equipment unless you are completely familiar with it.

Always wear appropriate protective clothing and eyewear while working within the enclosure.

Only qualified personnel, equipped with the proper tools and protective gear, and following appropriate safeguards, should perform system maintenance.

NOTICE

Follow the maintenance schedules as outlined in the manual to ensure problem free operation after startup.

Do **not** connect any 3rd party control or monitoring equipment, except for appropriate test equipment, to the internal circuits of this equipment.

Connecting 3rd party equipment in this manner may result in failure of this equipment.

1.3 EQUIPMENT SAFETY LABELS

Safety labels alert personnel to potential hazardous situations. If for any reason a safety label is removed or defaced, you must obtain a replacement label from Enercon.

Safety labels are located on system components where direct contact, or contact beyond a point, would expose personnel to death or serious injury.



NA0056 – Located on the Sealing Head Connectors.



NA0136 – Located on the back of the power supply.



NA0137-01 – Located on the Sealing Head.

1.4 EQUIPMENT INFORMATION LABELS

Information labels provide information on equipment requirements that if not followed could result in damage to the equipment. If for any reason an information label is removed or defaced, you should obtain a replacement label from Enercon.

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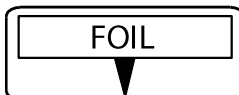
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RATING	<input type="text"/>	PAT.#	<input type="text"/>
MODEL	<input type="text"/>	MFG	<input type="text"/>
SERIAL	<input type="text"/>	ID	<input type="text"/>
	INPUT		OUTPUT
VOLTS	<input type="text"/>		<input type="text"/>
AMPS	<input type="text"/>		<input type="text"/>
FREQ	<input type="text"/>		<input type="text"/>
PHASE	<input type="text"/>		<input type="text"/>

Rating Plate – Located on the side of the power supply.



NA0023 – Located on both ends of all Sealing Heads.



NA0181 – Located on the sides of each end of the Deep Tunnel Sealing Head openings.

SECTION 2 – INSTALLATION

2.1 GENERAL

⚠ DANGER: Before installing this equipment, please read this section completely, and refer to the safety warnings of **Section 1**, to become familiar with **all** the safety requirements and precautions for this equipment.

All applicable safety requirements and precautions including those contained in this manual must be followed for safe and efficient operation of an induction cap sealer.

Induction cap sealers should be installed and operated in accordance with all applicable Federal, state and local laws and regulations.

Induction cap sealers (and all ancillary equipment) should be specified, integrated, and installed by qualified professionals. Proper specification, integration, and installation should include a risk assessment of the entire conveyance system (if used in conjunction with an induction cap sealer) in accordance with applicable industry standards. This risk assessment can only be conducted by the owner or its contracted conveyance system integrator/installer with knowledge of and access to the conveyance system equipment and product to be sealed.

An induction cap sealer should be properly configured for the intended sealing operation, including proper alignment and elevation with respect to a conveyance system (if used) and proper sealing window for the application. Induction cap sealer configuration should be re-checked and adjusted following any changes to the sealing operation (e.g., different container or product) and/or to the conveyance system in which an induction cap sealer is used. **As a reminder, Enercon offers a Start-Up Assistance program to help its customers properly configure an induction cap sealer.** Please contact Enercon regarding any conveyance line or product changes.


All operators of an induction cap sealer should receive proper training regarding operation of an induction cap sealer and the product being sealed. Training should include instruction on the specific safety features integrated into the entire conveyance system (e.g., emergency stop operation and location(s)). Enercon recommends that operators of an induction cap sealer be required to read and follow the most recent applicable operating manual provided with the induction cap sealer and/or available from Enercon. Enercon is also available to provide training and information to operators as part of its Start-Up Assistance program.

All equipment used on a conveyance system should be maintained in accordance with manufacturer recommendations. **As a reminder, Enercon recommends routine Preventative Maintenance visits, which includes Enercon's standard safety evaluation.**

⚠ WARNING: SEALING CONTAINERS OF FLAMMABLE OR COMBUSTIBLE MATERIAL. If an induction cap sealer will be used to seal containers of flammable or combustible materials, it must be integrated into a conveyance system, designed and installed by a qualified professional integrator/installer with knowledge of the entire conveyance system and product to be sealed. **Such conveyance system must include all appropriate safety features, including a stalled bottle detector and/or a bottle back-up sensor to detect conveyance system failures. In the event of a conveyance system failure, containers remaining under an induction cap sealer may overheat, causing damage to the container and product, and pose a potential fire risk.**

IMPORTANT - stalled bottle detectors and/or bottle back-up sensors are not substitutes for specific safety features integrated into the entire conveyance system (e.g., manual emergency stops or other system safety interlocks) and proper training on their use.

⚠ WARNING: Under no circumstance should operators be allowed to or required to directly contact containers containing flammable or combustible material during the sealing process.

 DANGER	
The potential of electrical shock is present if all system components are not properly grounded.	
The power supply should <i>not</i> be operated without either a 3-prong or 3-wire grounded line cord connected to a grounded receptacle.	
Do <i>not</i> by-pass the ground terminal.	
High voltage is present within the cabinet, only qualified personnel should be allowed to work within the equipment.	
Buss capacitors discharge very slowly, disconnect power and verify they are discharged before working on the power supply.	



WARNING

Magnetic Field heats metal within the field.
 Keep jewelry away from the sealing head.
 Do not use damaged or improperly applied liners.
 Liners may overheat causing liner and container contents to ignite.
 This equipment should *not* be used to seal containers containing flammable or combustible contents unless integrated into a conveyance system with proper safety equipment including a stalled bottle detector and/or bottle back-up sensor.



CAUTION

Small metal objects, such as screws, guiderails and brackets, located within the electromagnetic field, will continually heat creating a burn hazard.

NOTICE

Do *not* apply voltage across the interlocks!
 Applying voltage to the interlock control circuits may result in a failure of the control board interlock circuit components.
 Loosen the locking knob before adjusting the standard mount height.
 Ensure the standard mount safety nut remains securely in place.
 All other visible mount screws are factory set and cannot be field adjusted.

2.2 UNPACKING AND INSPECTION

The carrier accepted responsibility for your shipment when they signed the Bill of Lading at the point of origin of the shipment.

Your system may have shipped in more than one package. Compare the packing slip with the items received to ensure that all items were delivered.

Inspect contents of each package for concealed loss or damage. If loss or damage is discovered after delivery, notify the carrier at once to request an inspection. The carrier's agent must perform an inspection and issue a loss or damage report. This is absolutely necessary for the carrier to consider your claim.

If issues are found, contact Enercon Industries as soon as possible to expedite the shipment of replacement parts.

2.3 CONTACT INFORMATION

Enercon Customer Service Department 24hr
 Customer Service Phone Number: (262) 255-6070
 Service e-mail Address: service@enerconmail.com
 Parts e-mail Address: parts@enerconmail.com
 Website: www.enerconind.com

2.4 SYSTEM REQUIREMENTS

2.41 Input Voltage Requirements

The required input voltage is listed on the rating plate on the side of the power supply and in the drawings provided with your system.

SS300	200 - 240VAC, 1Ø, 5 Amps, 50/60 Hz ± 10%
SS400	200 - 240VAC, 1Ø, 7.5 Amps, 50/60 Hz ± 10%
SS600	200 - 240VAC, 1Ø, 10 Amps, 50/60 Hz ± 10%

2.42 Grounding Requirements

All system components must be connected to a good earthen ground point using the green ground wire provided in the power cord. Local codes will dictate the means of terminating the ground wire. A fused disconnect switch must be located between the power source and the power supply.

2.43 Temperature Rating

The *Super Seal™* is designed to operate in an ambient temperature range of 41° - 104°F (5° - 40°C) @ 80% maximum relative humidity, non-condensing.

2.5 INSTALLATION GUIDELINES

For safe and proper operation, use this manual, your system drawings, and any other supplied documents when installing system components.

2.51 Power Supply Enclosure Specs

Stainless Steel, IP55 Rated		
Dimensions		
Height*	Width	Depth
11 – ¹¹ / ₁₆ " (297mm)	18 – ¹¹ / ₃₂ " (466mm)	16 – ¹ / ₂ " (419mm)

*Power Supply height is measured from the top of the cover to bottom of the output CT without a sealing head attached.

2.6 FLOOR MOUNT INSTALLATION

The basic *Super Seal™ Induction Cap Sealing System* consists of a Power Supply, Sealing Head and Adjustable Floor Mount. The Floor Mount is designed for easy adjustment of the system height over your conveyor.

2.61 Floor Mount Assembly

Lay the mount on its side to reposition the conveyor brackets. Remove the lower bolt [1] and loosen the upper bolt [2], rotate the bracket [3] and reinstall [4] the lower bolt. Rotate the mount and repeat for the second bracket and align the brackets (**Figure 1**).

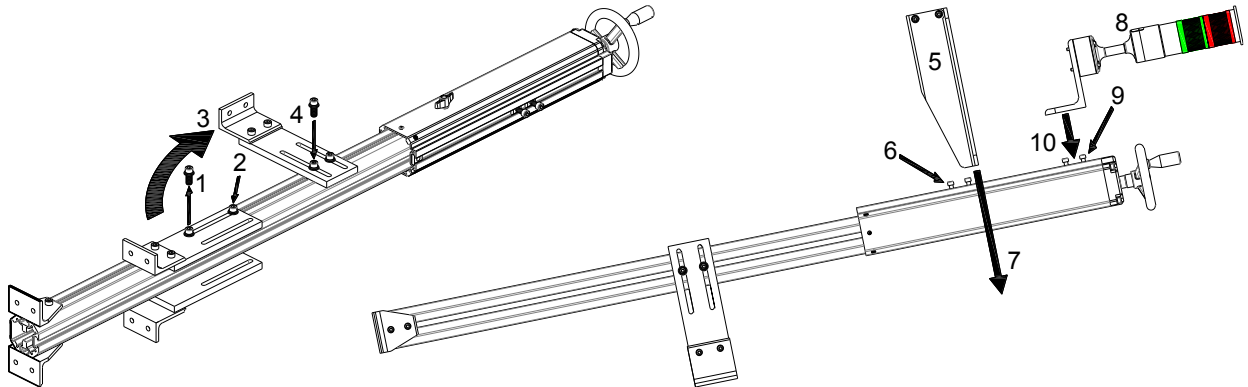


Figure 1

Reposition the mount to install the power supply yoke [5]. Remove the bolts [6], place the yoke [7] over the nuts and reinstall the mounting bolts. Slide the yoke high enough to allow the system to clear your conveyor and tighten the yoke to the mount.

If the optional stack light [8] is supplied, remove the bolts [9], place the bracket [10] over the nuts and reinstall the bolts. Slide the stack light to the highest point and tighten the bolts.

NOTE:

If a nut moves out of position, realign it with the bracket hole using a screwdriver or similar tool.

2.62 Floor Mount Installation

Choose a location with sufficient room for the power supply and options. Measure 12 ½" from the center of the conveyor [1] and mark that point on your floor [2] (**See Figure 2**).

Place the mount against the conveyor [3] and adjust [4] the brackets to center them on your conveyor, and to center the floor brackets [5] on the 12 ½" mark [2]. Ensure the mount is square [6] to your conveyor and tighten the conveyor bracket bolts [7].

Mark the conveyor [8] and floor [9] mount hole locations, remove the mount and drill the holes. Install appropriately sized anchors in the floor and realign the mount with the holes and bolt the mount securely to the conveyor [10] and floor [11].

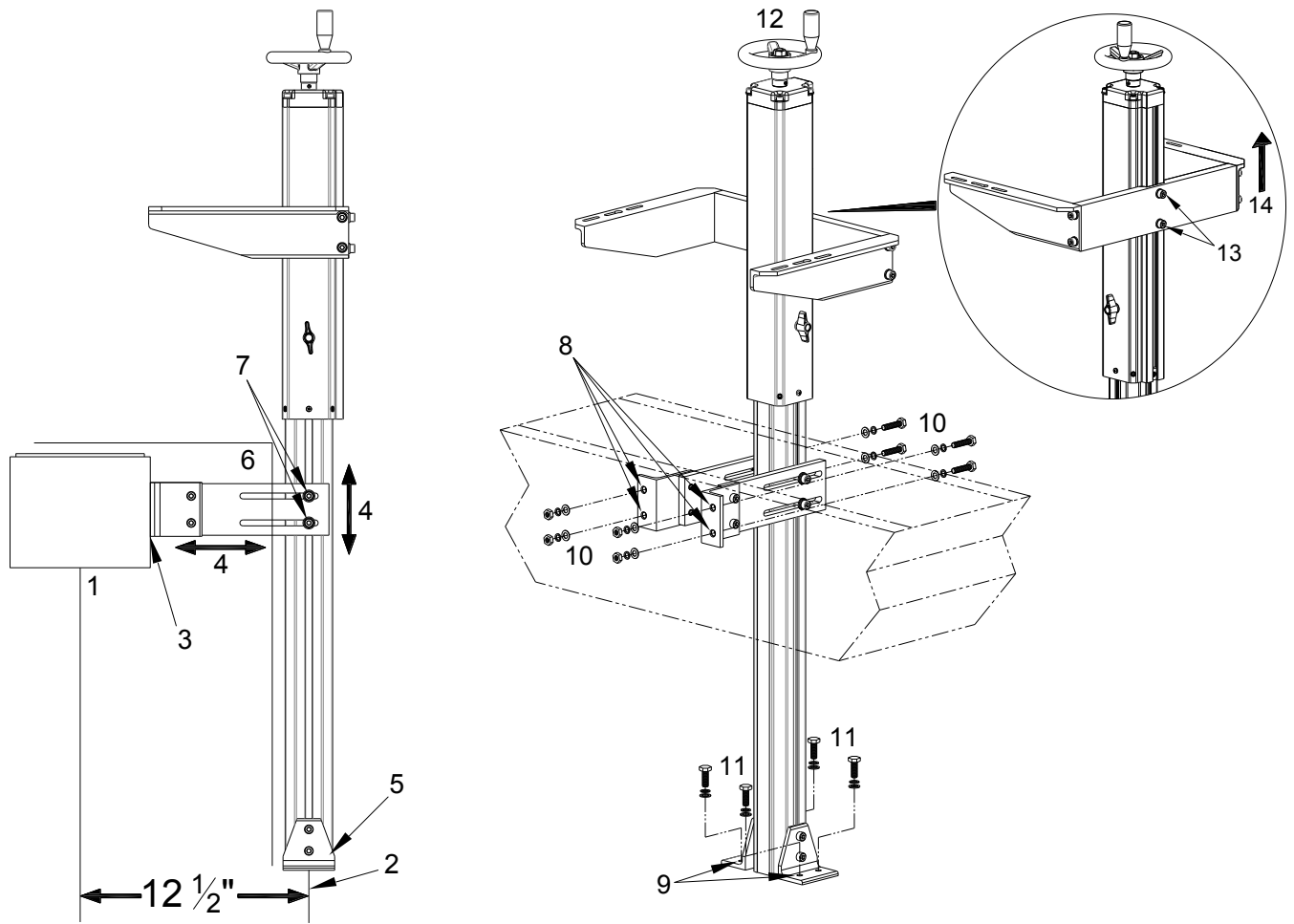


Figure 2

If the mounting yoke placement will not allow power supply to clear the conveyor, raise the yoke height using the hand wheel [12], or by loosening the yoke mounting bolts [13] and raise the mounting yoke [14].

2.63 Power Supply Installation

Remove the power supply's mounting bolts [1] and lift the power supply over the mounting yoke [2]. Align the guide bolts [3] with the keyholes [4], and lower [5] the power supply into position. Slide the power supply forward [6] and reinstall the mounting bolts [1] (Figure 3).

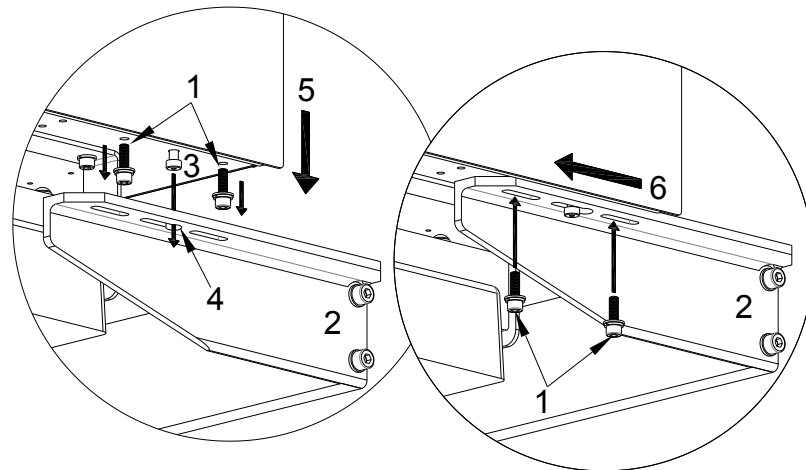


Figure 3

2.7 OPTIONAL MOBILE CART INSTALLATION

When your system includes an optional Standard [1] or Deluxe [2] Mobile Cart, the power supply is shipped mounted to the cart (See Figure 4).

Remove the leveling pads [3] from the cart base and install them so they clear the ground [4].

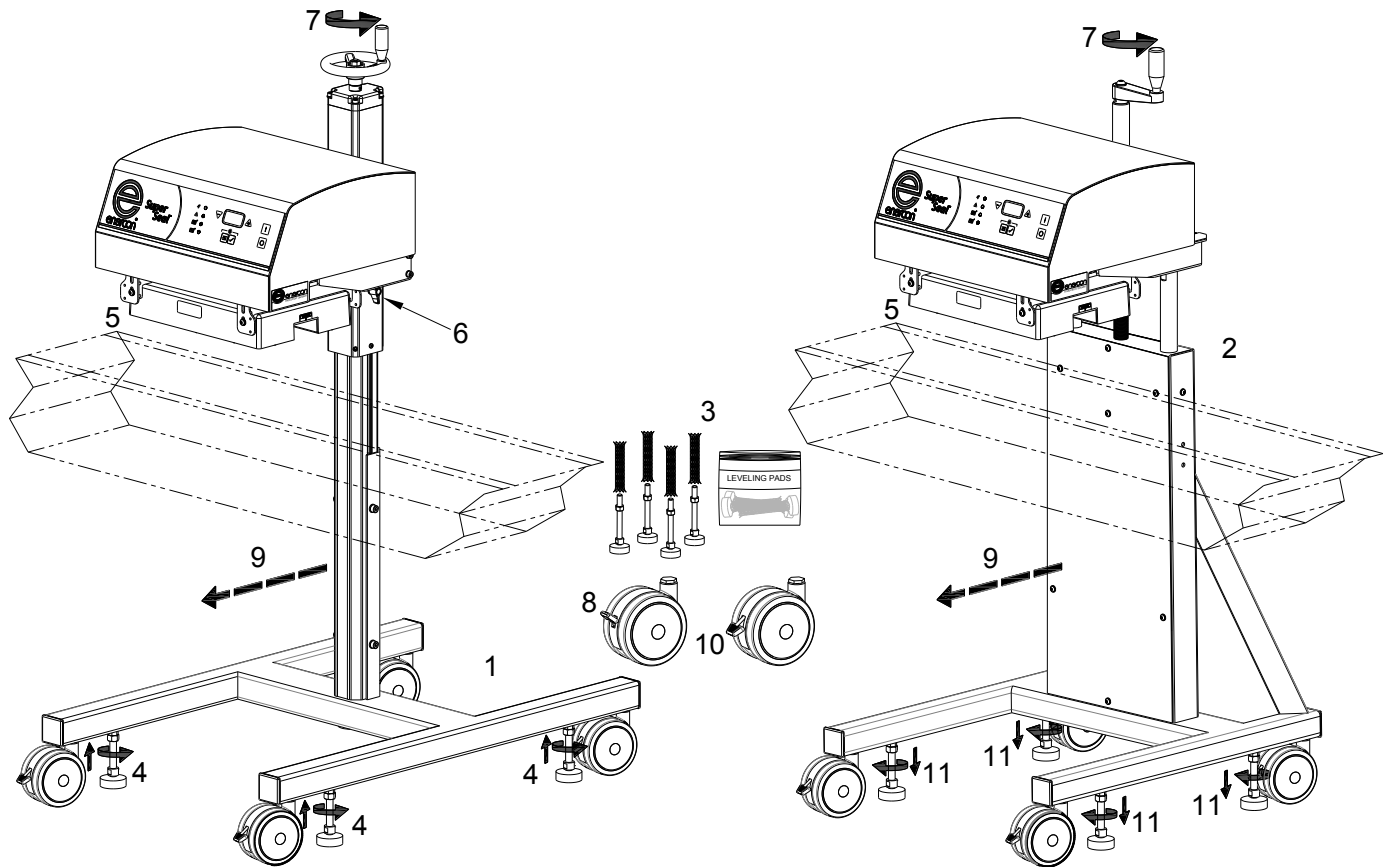


Figure 4

Choose a location with a sufficient footprint to accommodate the cart base, power supply, and options and ensure the bottom of the sealing head [5] will clear the conveyor.

To raise the sealing head, loosen the locking knob [6] on the standard cart mount, not required on deluxe cart, and rotate [7] the handle counterclockwise to raise the sealing head.

Unlock [8] the casters and roll the cart under the conveyor [9]. Center the sealing head over the conveyor, lock [10] the casters once the cart is in position and lower the leveling pads [11] to contact the ground to prevent accidental movement while continuing setup.

NOTE:

If the optional Stack Light is included with your system, it is factory installed to the cart.

2.8 SYSTEM ALIGNMENT

During the induction sealing process, the liner position must be uniform through the electromagnetic field to allow repeatable sealing results. This is achieved with a consistent gap and path beneath the sealing head.

▲ CAUTION: Due to the nature of an electromagnetic field, it will induct into metal located within the field, heating it to varying degrees.

Small metal objects: such as screws, guiderails, and brackets, that experience continual heating may become burn hazards and must be removed from the field or located at least 6 inches (15cm) below the sealing head.

Large metal objects, such as your conveyor, tend not to heat due to their mass, but may cause a slight change in performance of the sealer. This is typically unnoticeable, and is considered normal, and safe, to both personnel and equipment.

2.81 Container Path and Standard Sealing Head Alignment

The container path and air gap must be consistent along the full length of the sealing head.

Ensure the power supply is high enough to place your container beneath the sealing head [1] and center your container on the conveyor [2] using guide rails [3] or other guidance system (**See Figure 5**).

Ensure both ends of the sealing head are centered over the container [4]. If needed, loosen the power supply mounting bolts [5] and slide [6] the power supply over the container [6], and retighten the bolts.

If the sealing head is not aligned with the conveyor, refer to **Figure 2** or **4**, and adjust the alignment of the mount or cart to correct the power supply alignment to the conveyor.

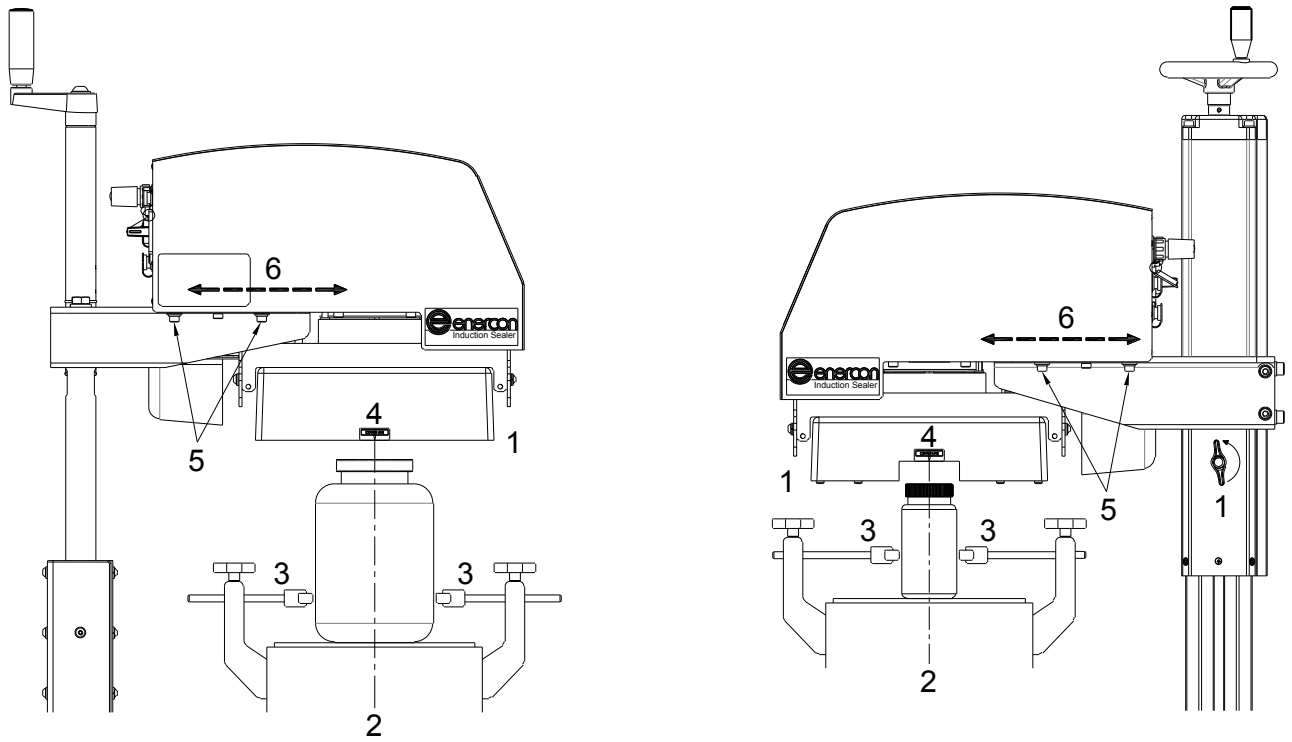


Figure 5

To set the air gap, place a container at each end of the sealing head, with the supplied 3mm (1/8") gap gauge [1] between the containers and sealing head. Place the gauge between the container and conveyor on a tunnel sealer head [2], or between the sealer head and your container on a flat sealer head [3] (Figure 6).

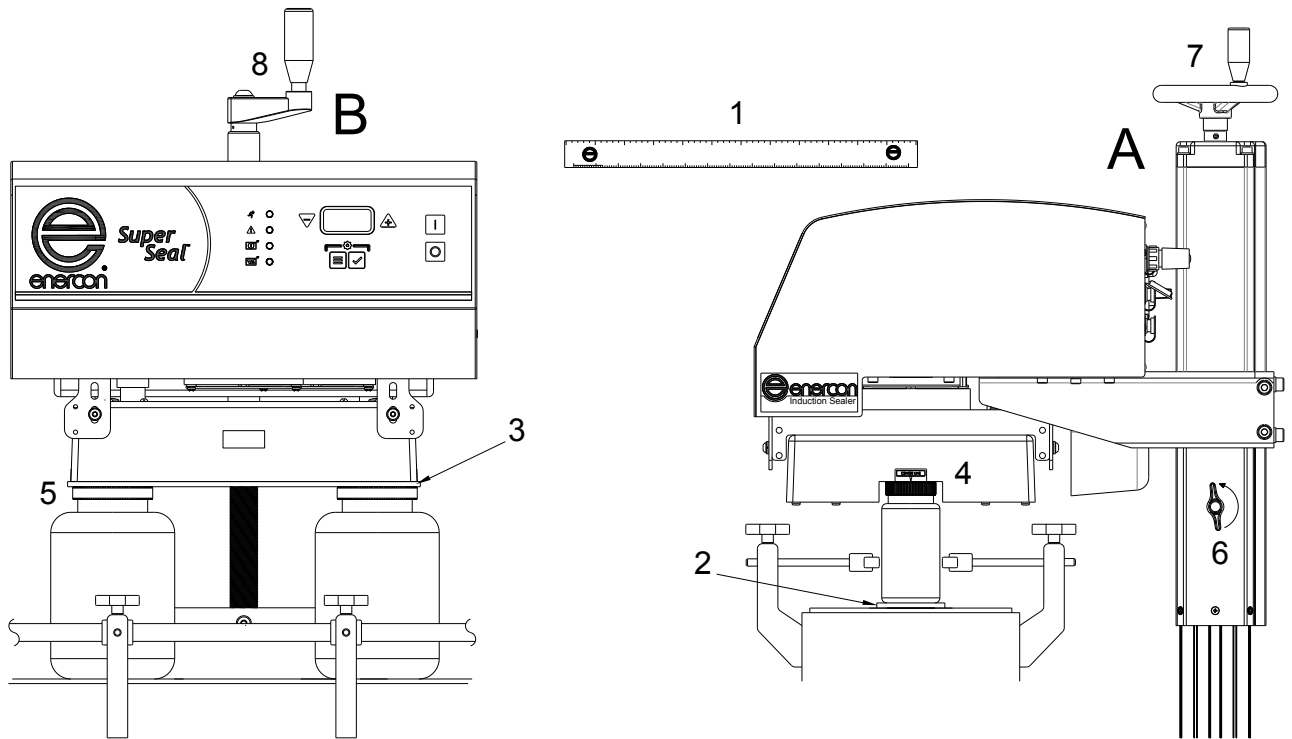


Figure 6

Lower the power supply until it contacts the container cap [4] or gap gauge [5], by loosening the locking knob [6] on the standard mount and optional standard mobile cart mount [A] and adjusting the hand wheel [7]. With an optional deluxe mobile cart [B] you only need to adjust the handle [8] to lower the power supply.

Once the air gap is properly set, tighten the locking knob [6], if required, and remove the gap gauge.

2.82 Deep Tunnel Sealing Head Setup

Deep tunnel sealing heads are a specialty sealing head and are typically used in applications where the cap or container won't allow the product to fit within the standard tunnel sealing head. Deep tunnel sealing heads have a standard centerline indicator [1] and two foil indicators [2] on each end of the sealing head (**Figure 7**).

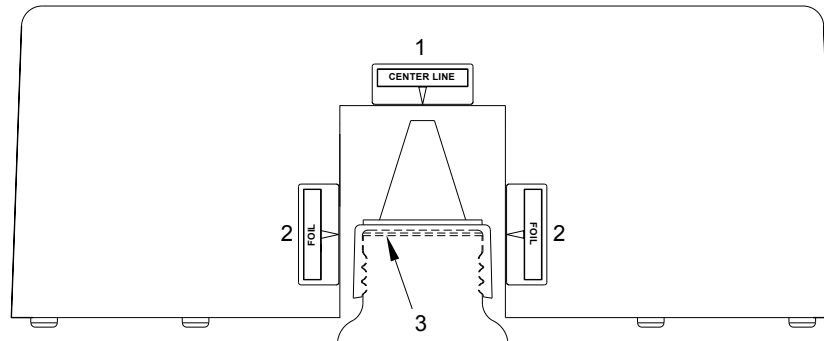


Figure 7

The initial setup of the deep tunnel sealing head is the same as a standard tunnel sealing head (Refer to **Figure 5**). After the initial setup, ensure the cap is removed from your container and lower the sealing head to align the foil indicators with the lip of the container [3] where the foil liner rests.

If cap or container dimensions prevent the lip of the container from reaching the foil indicators, position the container lip into the tunnel as far as possible, ensuring the container can still pass without contacting the sealing head.

2.83 All-In-One Universal Sealing Head Setup

The All-In-One Universal Sealing Head is designed to run a variety of applications, typically 24mm to 120mm, by allowing adjustment of the coil's position within the housing. The adjustments do *not* require tools, allowing single hand adjustments.

Center the sealing head over the cap with a 3mm (1/8") gap between the sealing head and cap (Refer to **Figure 5**).

Once the sealing head is aligned, determine the appropriate liner position for the liner size you will be running, and adjust the sealing head accordingly (**Figure 8**).

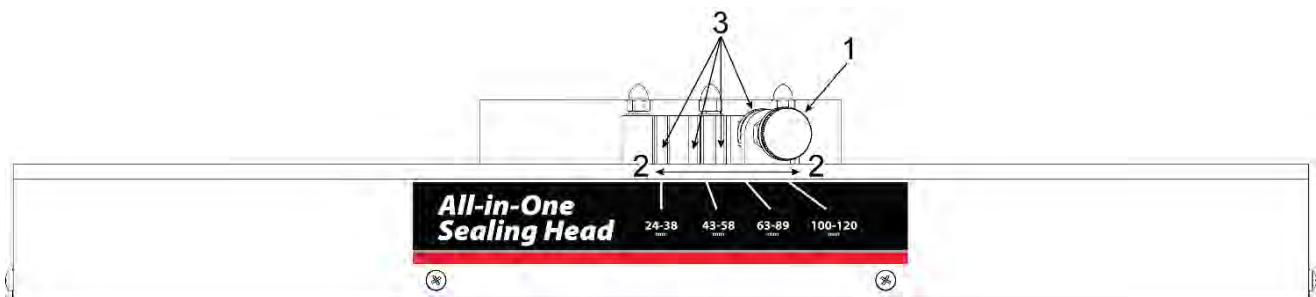


Figure 8

NOTICE The adjustment knob and locking pin are spring loaded.

Release the locking pin by pulling out the adjustment knob [1] and slide the pin assembly to the appropriate liner range position [2].

Release the knob, ensuring the pin seats firmly into the appropriate groove [3].

2.9 CABLE CONNECTIONS


The Super Seal™ Induction Cap Sealer includes connectors on the rear of the power supply for connecting available options. Refer to **SECTION 4** for details of your system's connections.

2.10 INPUT VOLTAGE

Once the system components are installed, run the input voltage cable from the power supply to the fused disconnect switch. Refer to the power supply rating plate and your system drawings for details on the required.

SECTION 3 – PRINCIPLES OF OPERATION

3.1 GENERAL

 **DANGER:** Before operating this equipment, please read this section completely, and refer to the safety warnings of **Section 1**, to become familiar with *all* the safety requirements and precautions for this equipment.



DANGER

Do not operate this equipment in an explosive environment.

The potential of electrical shock is present if all system components are not properly grounded.

The power supply should *not* be operated without either a 3-prong or 3-wire grounded line cord connected to a grounded receptacle.

Do *not* by-pass the ground terminal.

High voltage is present within the power supply.

Buss capacitors discharge very slowly, disconnect power, and verify they are discharged before working on the power supply.



WARNING

Magnetic Field heats metal within the field.

Keep jewelry away from the sealing head.

Do not use damaged or improperly applied liners.

If dwell time is too long, liners may overheat causing liner and container contents to ignite.

If containers stop beneath the sealing head, liners may overheat causing liner and container contents to ignite.

This equipment should *not* be used to seal containers containing flammable or combustible contents unless integrated into a conveyance system with proper safety equipment including a stalled bottle detector and/or bottle back-up sensor.



CAUTION

Small metal objects, such as screws, guiderails, and brackets, located within the electromagnetic field, will continually heat creating a burn hazard.

NOTICE

Do *not* apply voltage across the interlocks!

Applying voltage to the interlock control circuits may result in a failure of the control board interlock circuit components.

3.2 OPERATING INSTRUCTIONS

3.21 APPLYING THE INPUT VOLTAGE

Ensure the system installation and alignment is complete, including options, and rotate the power supply's disconnect switch to the ON position.

The display will illuminate and flash the last output % setpoint (**See Figure 9**).

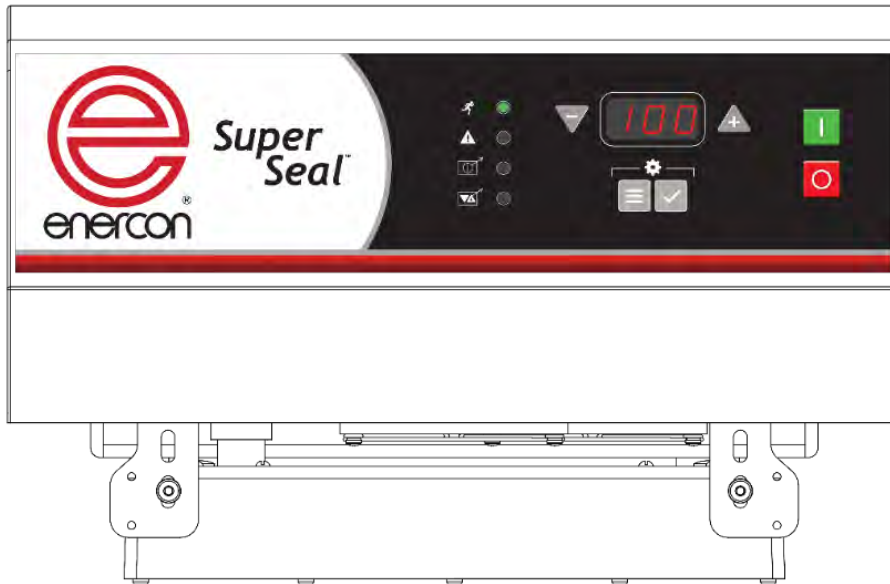














Figure 9

3.22 Power Supply Front Panel

The Super Seal™ Induction Cap Sealer utilizes a Digital Display and Pushbuttons to monitor and control the power supply output and settings.

Controls and Indicators			
 Display Meter	Displays the output % and setup information.	 Settings	 Menu: Press to enter and exit Setup Mode.  OK: Press to select and acknowledge changes.
 Start	Local Start/Stop Mode: Starts the power supply. Remote Start/Stop Mode: Inactive.	 Stop	Local Start/Stop: Stops the power supply and resets faults. Remote Start/Stop: Stops the power supply and resets faults.
 Increase	Increases the output %, scrolls up through settings and enables modes.	 Decrease	Decreases the output %, scrolls down through settings and enables modes.
 Run	Blank = Idle Green = Running	 Fault	Blank = No Fault Red = Faulted
 Remote Start / Stop	Blank = Local Amber = Remote	 Remote Level	Blank = Local Amber = Remote

3.3 BASIC OPERATION

The Super Seal™ Induction Cap Sealer is designed for easy operation and was fully tested and setup for Local operation. You will be able to operate the sealer in Local control modes once installation is complete.

⚠ WARNING: If containers stop beneath the sealing head, liners may overheat causing liner and container contents to ignite.

3.31 Local Operation

With the disconnect switch ON, verify **Local Start/Stop**, **No Fault** and the correct output level is flashing on the **Display Meter**.

If required, press **Increase** or **Decrease** to correct the output.

If **Faulted** is displayed, address any fault issue and press **Stop** to reset the fault.

If **Remote Start/Stop** is displayed, refer to **3.5 POWER SUPPLY SETUP** to enable **Local Start/Stop**.

Press **Start** and the power supply will run, the meter stops flashing, and **Running** is displayed.

Press **Stop** and the power supply will stop, the **Display Meter** will flash and **Idle** is displayed.

3.32 Power Supply Output Range Verification

Once the power supply is running, you should verify the full output range. Maximum output is always 100%, but the minimum output varies depending on the size of the power supply.

Super Seal™ 300	Super Seal™ 400	Super Seal™ 600
55% – 100%	40% – 100%	35% – 100%

3.4 POWER SUPPLY SETUP

The basic system is set to **Local** Start/Stop and Level modes, and options are set to factory defaults. Setup is required for remote operations and to customize options settings, refer to **SECTION 4**.

Press **Menu** to enter setup, and **Increase / Decrease** to scroll through setup functions.

 Start/Stop Setup	 Output Level Setup	 Alarm Setup	 Local	 Remote
---	---	--	--	---

3.41 Start/Stop Setup

Start/Stop control determines how you will start and stop the power supply. Remote Start/Stop requires use of the optional Automation I/O cable (Refer to **Figure 10**).

Scroll through setup functions to display **Start/Stop Setup**, press **OK** to edit Start/Stop mode.

Press **Increase** to enable **Local**, press **Decrease** to enable **Remote** mode.

Press **OK** to save the new setting, or **Menu** to exit setup without saving the new setting.

3.42 Level Setup

Level control determines how you will increase and decrease the output % setpoint of the power supply. Remote Level requires use of the optional Automation I/O cable (Refer to **Figure 10**) and an isolated 0-10VDC signal.

Scroll through setup functions to display **Output Level Setup**, press **OK** to edit Level mode.

Press **Increase** to enable **Local**, press **Decrease** to enable **Remote** mode.

Press **OK** to save the new setting, or **Menu** to exit setup without saving the new setting.

3.43 Alarm Setup

Alarm is a setpoint, 2 - 10%, that sets the percentage of change to the power supply output that will trip the alarm circuit. The Alarm function is most useful with the optional Stack Light or Automation I/O Cable, but they are not required.

Scroll through setup functions to display **Alarm Setup**, press **OK** to edit the Alarm setpoint.

Press **Increase** or **Decrease** to change the alarm setpoint percentage.

Press **OK** to save the new setting, or **Menu** to exit setup without saving the new setting.

3.5 OPERATING WINDOW SETUP

You should determine the operating window for each package you will be sealing, finding the minimum and maximum output power settings that achieve a good seal. Then determine the exact production output level you will use for each package.

⚠ WARNING: If containers stop beneath the sealing head, liners may overheat causing liner and container contents to ignite.

3.51 Minimum and Maximum Power Levels

For each product package, initially set the output power to a midpoint of your sealer's output range and set your conveyor to your production speed. Run a sample, check the seal, and refer to the information below to determine the operating window.



OPERATING WINDOW

Window Minimum Output

Lower the output 1%, running a new container, to find the minimum output level where a good seal is achieved.

Window Maximum Output

From the Window Minimum Output, raise the output 1%, running a new container, to find the maximum output level where a good seal is achieved.

Raise output 5% and run a **new** container. Repeat as needed.

Lower output 5% and run a **new** container. Repeat as needed.

3.52 Production Power Level

With the Operating Window defined, use the output power level at the midpoint of the window. Run samples to refine the production output power level that gives you the desired sealing results. Ensure any output power level adjustments are within the operating window.

Run the power supply at the production output level and run several containers back to back and ensure they all seal.

NOTE:
Each of your packages may have unique characteristics that will change the sealer’s setup between packages. For easy change over, record each package’s **Product**, **Cap size / Liner type**, **Container type**, **Line Speed**, **Production output %**, and the operating window **Min** and **Max** output % in the **Production Information** table in **SECTION 7**.

3.6 REMOTE OPERATIONS

The Super Seal™ Induction Cap Sealer includes Remote Start/Stop and Level control. Refer to **3.5 POWER SUPPLY SETUP** to enable the remote modes.

Display Meter	Increase	Decrease	Start	Stop - Reset	No Fault	Faulted
Local Start/Stop	Remote Start/Stop		Local Level Control	Remote Level Control	Running	

3.61 Remote Start/Stop

With the disconnect switch ON, verify **Remote Start/Stop**, **No Fault** and the correct output level is flashing on the **Display Meter**.

If required, press **Increase / Decrease**, or adjust the isolated 0-10VDC remote level control signal to correct the output.

If **Remote Start/Stop** is not displayed, refer to **3.51 Start/Stop Setup** to enable remote start/stop.

If **Faulted** is displayed, address any fault issues and press **Stop - Reset** to reset the fault.

Close the remote start/stop contact across the Automation I/O cable (Refer to **Figure 10**). The power supply will run, the **Display Meter** stops flashing, and **Running** is displayed.

3.62 Remote Level Control

Remote level control allows you to adjust the output power % using an isolated 0-10VDC connected across the optional Automation I/O cable (Refer to **Figure 10**).

If **Remote Level Control** is not displayed, refer to **3.52 Level Setup** to enable remote level control.

NOTE:
The **Increase / Decrease** arrows will not function when **Remote Level Control** is enabled.

Whether the power supply is idle or running, you will be able to raise and lower the power supply output % by adjusting the 0-10VDC signal.

SECTION 4 – EQUIPMENT INTERCONNECTION & OPERATION WITH OPTIONS

4.1 GENERAL

⚠ DANGER: Before installing or operating any optional equipment, please read this section completely, and refer to the safety warnings of **Section 1**, to become familiar with **all** the safety requirements and precautions for this equipment.

Several options were available when purchasing your Super Seal™ Induction Cap Sealing System but can also be ordered as needed. Options should be requested when placing the original order with Enercon, as some options may require changes to the power supply or its attachments.

4.2 MOBILE CARTS

The optional mobile cart systems provide portability, ease of installation and adjustment of your Super Seal™ Induction Cap Sealing System.

Standard Mobile Cart System: Includes a shortened adjustable floor mount attached to the mobile cart frame.

Deluxe Mobile Cart System: Includes a stainless steel adjustable mount attached to a mobile frame.

Refer to **2.7 OPTIONAL MOBILE CART INSTALLATION** and **Figure 4** for details on installing your mobile cart and refer to **2.8 SYSTEM ALIGNMENT** and **Figures 5 & 6** for setup details.

4.3 AUTOMATION I/O CABLE

Remote Start/Stop, Remote Level Control, Alarm, Ready and Customer Interlock functions require the Automation I/O Cable [1]. Remove the defeat connector [2] and connect the I/O cable to your control and monitoring equipment and to the **AUTOMATION I/O** connector [3] on the rear of the power supply (**Figure 10**).

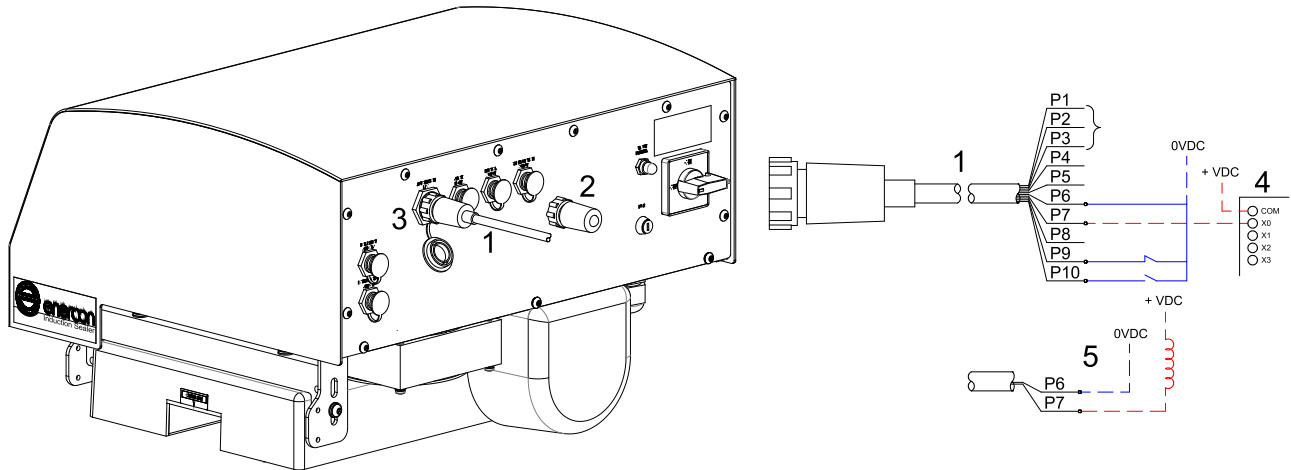


Figure 10

Pin #	Cable Cores	Function	IO	Connects To:
P1	Black	Alarm N.O.	Sealer Alarm Output – Potential Free	Customer Alarm
P2	White	Alarm N.C.	Sealer Alarm Output – Potential Free	Customer Alarm
P3	Red	Alarm Com.	Sealer Alarm Common – Potential Free	Customer Alarm
P4	Blue	0-10V Out	Sealer Output	PLC – Level Control
P5	Orange	0-10V Com.	Common	PLC – Level Control
P6	Black/White	Common (0V)	Common	Interlock, Ready and Remote Start/Stop
P7	White/Black	Ready	Sealer Output	PLC – System Status
P8	Red/White	0-10V In	Sealer Input	PLC – Level Control
P9	Blue/White	Interlock	Sealer Input	Customer N.O. Dry Contact – Must Be Closed to Run
P10	Orange/Black	Start/Stop	Sealer Input	Customer N.O. Dry Contact – Close = Run / Open = Stop

Note: Alarm outputs are dry relay contacts. All other discreet outputs are transistor outputs that sink low when active. Cables Displayed - - - - and - - - - are optional and are only required when using the Ready circuit. Contact Enercon if assistance is needed when using the Automation I/O Cable outputs.

⚠ DANGER: Remove all external power, ensuring proper lockout / tag out procedures are followed, before connecting or disconnecting external cables.

4.31 External Interlock

To interlock the power supply with your production line, connect the Automation I/O Cable's Blue/White [P9] and Black/White [P6] wires to a normally closed (N.C.), potential free interlock contact.

The contact must be closed for operation, and when open, it will shut down, or prevent the power supply from running.

NOTICE Do *not* apply voltage across the interlock contacts on the Automation I/O cable.

NOTE:

If an External Interlock is *not* provided when using the Automation I/O Cable for other functions, the Blue/White [P9] and Black/White [P6] wires must be tied together to defeat the interlock function.

4.32 Loss of Seal Alarm

To monitor the power supply status, connect the Automation I/O Cable's Black [P1] (N.O.), White [P2] (N.C.) and Red [P3] (COM) wires to an external alarm or PLC. The alarm contacts are dry but should only be wired into a circuit that does not exceed 24 volts and 3 amperes.

When the input voltage is applied, but the power supply is *not* running, or is running and the actual output is outside of the alarm set point window, the alarm contacts will be in their de-energized state (N.C. contact is closed).

When the unit is running and the actual output is within the alarm set point window, the relay contacts will be in their energized state (N.C. contact is open).

Refer to **3.53 Alarm Setup** for a detailed description on setting the alarm set point window.

4.33 Ready

To monitor the power supply readiness, use the Automation I/O Cable's Ready signal, White/Black [P7] and Black/White [P6] wires.

The Ready signal can be run to your PLC [4] input, to a relay coil [5], or one side of a controlled light or alarm. When using the Ready signal, provide +24 VDC to the circuit and 0VDC to common [P6].

When the power supply is ready, the output signal will sink low to system common, to indicate ready.

NOTE:

The remaining Automation I/O Cable functions are addressed in **SECTION 3 – PRINCIPLE OF OPERATION**.

4.4 STACK LIGHT

The optional stack light provides a visual, or visual / audible indication of the power supply's operating status, which is pole mounted on a bracket at the top of the adjustable mount [1], or to the power supply mounting bracket on a deluxe mobile cart [2] (Figure 11).

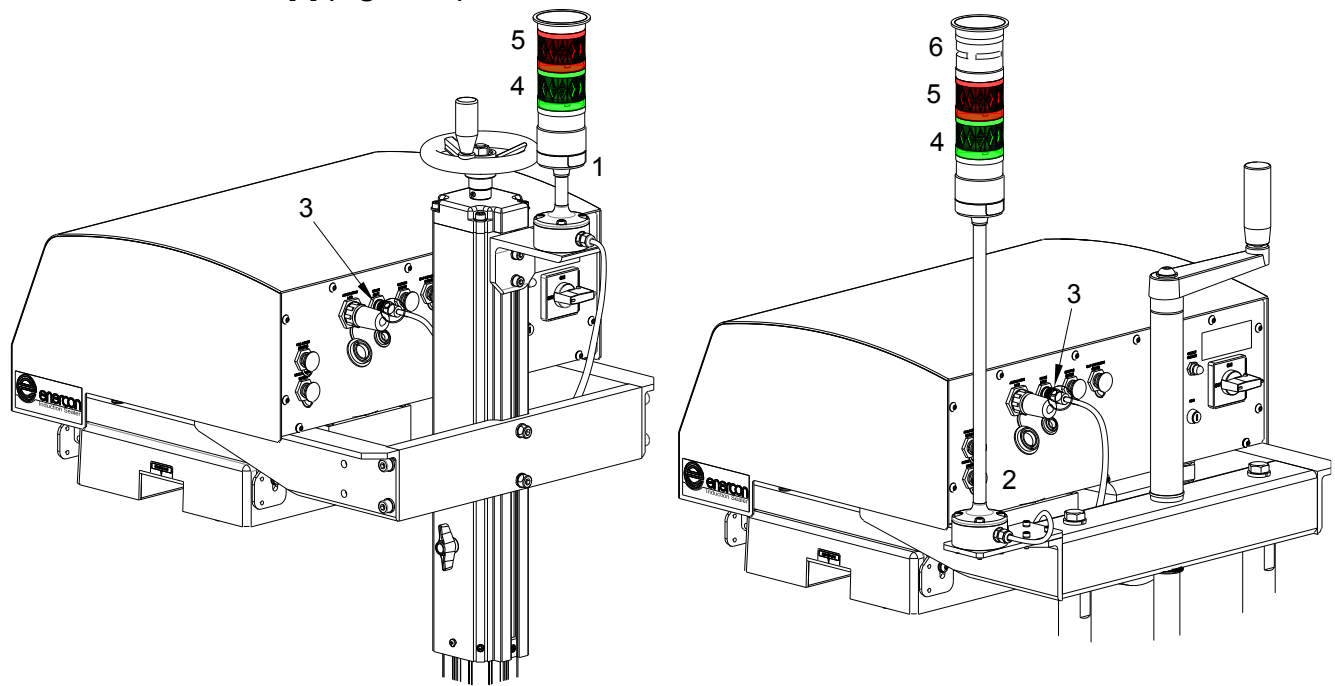


Figure 11

4.41 Installation

The stack light is factory mounted on both optional mobile cart systems, but must be installed on the adjustable floor mount, refer to **2.61 Floor Mount Assembly** and **Figure 1** for details.

Once mounted, connect the stack light cable to the **STACK LIGHT** connector [3].

4.42 Setup

For the stack light to operate as designed, you will need to ensure the Alarm Setpoint is correct, refer to **3.53 Alarm Setup**.

4.43 Operation

The standard stack light includes Green [4] and Red [5] indicator lights, and the audible stack light includes the indicators and a buzzer [6].

Green Solid – The power supply is running, and the output is **within** the range of the alarm setpoint.

Red Solid – The power supply is running, and the output is **below** the range of the alarm setpoint.

Red Flashing – The power supply has experienced a **Fault** condition.

4.5 STALLED BOTTLE DETECTION

Optional stalled bottle detection allows you to automatically stop the power supply whenever a container is detected entering the sealing head but is not detected exiting the sealing head. This prevents containers from overheating if they stop beneath the sealing head.

⚠ WARNING: If containers stop beneath the sealing head, liners may overheat causing liner and container contents to ignite.

4.51 Installation and Alignment

The stalled bottle option includes 2 bracket mounted sensors [1], loose cables [2], bracket mounted reflectors [3] and mounting hardware [4] (**Figure 12**).

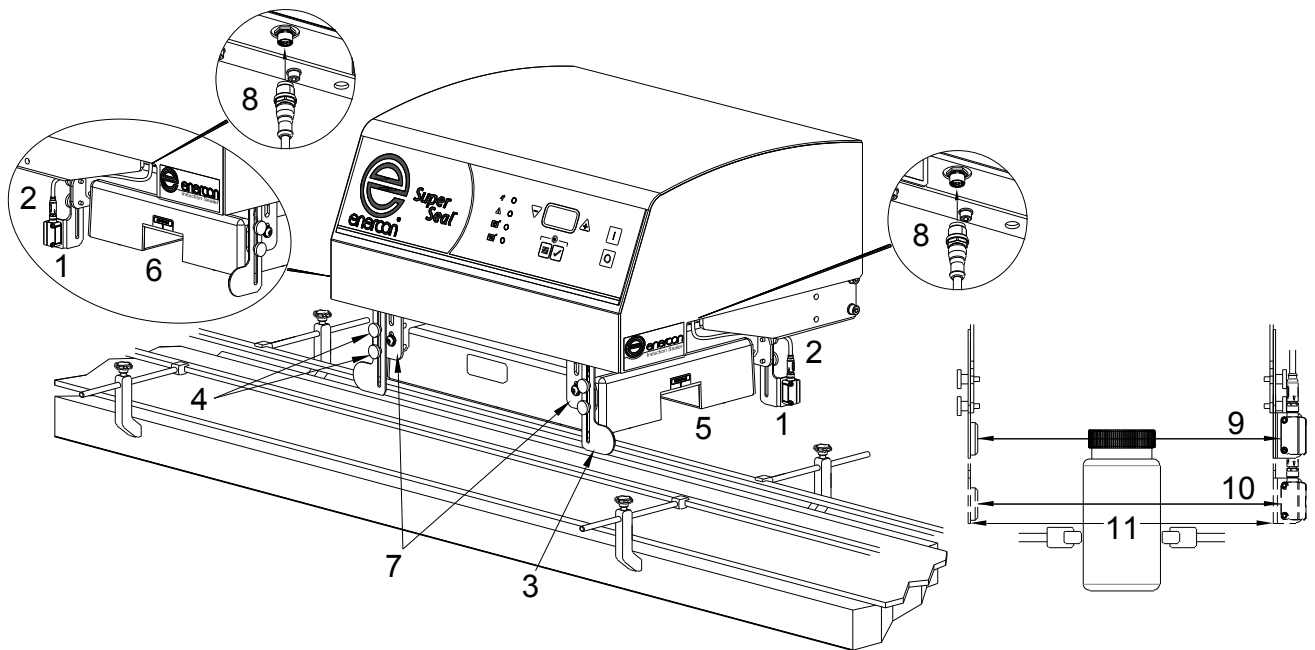


Figure 12

Install the right hand [5] and left hand [6] sensors to the sealing head mounting brackets [7] and connect the cables to the connectors [8] on the power supply baseplate.

With no consistent spacing between containers, align the sensor and reflector to the cap or shoulder of the container [9], if there is consistent spacing between the containers, align the sensor and reflector to the body of the container [10], then align the bottoms of the brackets [11].

4.52 Setup

Stalled bottle detection is setup and tested before your induction sealing system was shipped, but you will need to set the stalled bottle timing and ensure the conveyor and sealers direction of travel match.

Menu	OK	Increase	Decrease	Display Meter	Direction	Left to Right
Right to Left	Stall	Blocked	Stalled Bottle Time	Start	Stop - Reset	

4.521 Direction

You will need to ensure that your conveyor's actual direction of travel, and the sealers direction setting match so the stalled bottle sensors detect the container properly.

Press **Menu** to enter setup, and **Increase / Decrease** to scroll through setup functions until **Direction** is displayed on the **Display Meter**. Press **OK** to enter direction setup.

If the direction of travel displayed is correct, press **OK** to return to setup. If the direction of travel is **not** correct, press **Increase** to select **Left to Right** or **Decrease** to select **Right to Left**, and press **OK** to exit direction setup.

4.522 Stalled Bottle Time

To determine the stalled bottle timing, run and time a container between the entry and exit sensors at your production line speed. Add 10% to the measured time and this is the stalled bottle time.

In Setup, press **Increase / Decrease** to scroll through setup functions until **Stall** is displayed on the **Display Meter**. Press **OK** to enter stall setup.

Use **Increase / Decrease** to enter your **Stall Bottle Time** and press **OK** to exit stall setup.

4.53 Operation

⚠ WARNING: If containers stop beneath the sealing head, liners may overheat causing liner and container contents to ignite.

Apply the input voltage to the power supply, press **Start** to start the power supply. Start your conveyor, run a container beneath the sealer and ensure the sealer continues to run.

Run another container, stopping or removing it before it reaches the exit sensor. The power supply should stop once the stalled bottle time has expired.

Restart the power supply and run a string of containers that fill the sealing head with your production spacing, and ensure the containers pass without issue.

NOTE:

If a sensor is tripped for an extended period, **Blocked** is displayed on the **Display Meter**.

4.6 FOIL DETECTION

Optional Foil Detection allows you to determine if a container's foil liner is missing. The assembly includes a proximity sensor and beam sensor mounted on adjustable mounting brackets. The beam sensor detects your container, and the proximity sensor detects the presence of foil liner within your cap.

Foil detection includes the Ejector Output cable, and the optional Cap Inspection Output cable is available to supply a secondary missing foil contact.

4.61 Installation and Alignment

The foil detection assembly mounts to the power supply mounting yoke, with reversible brackets to allow right or left hand installation, right hand installation shown (**See Figure 13**).

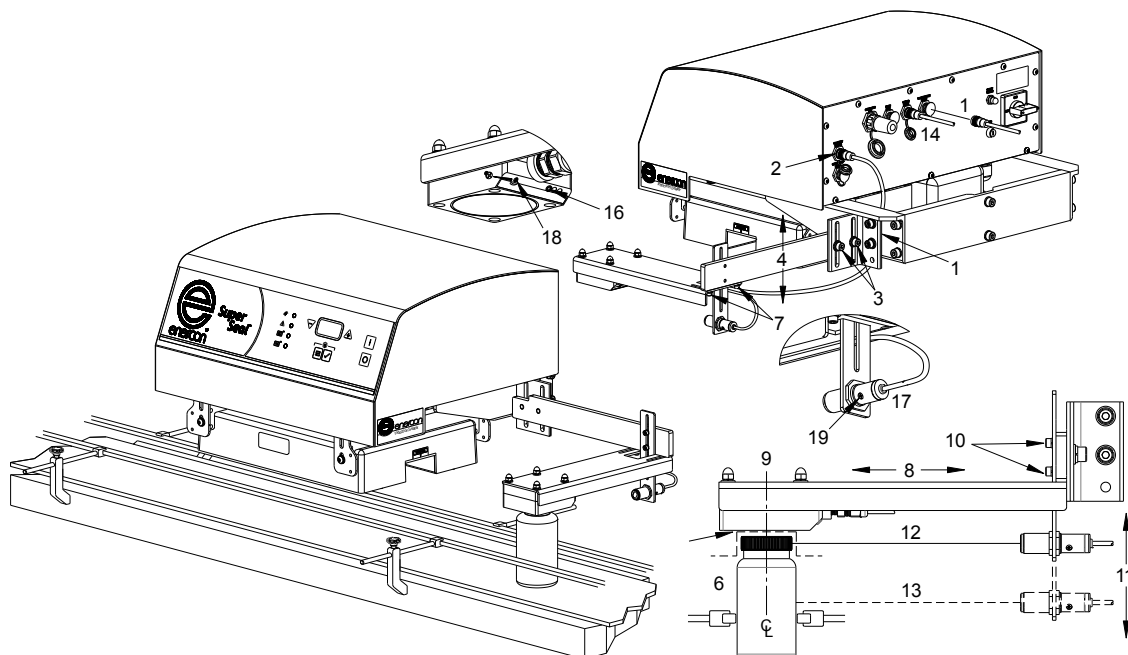


Figure 13

18

Install the foil detector mounting angle [1] to the yoke and connect the cable to the **FOIL DETECT SENSORS** connector [2].

Loosen the mounting arm bolts [3] and adjust the arm [4] to align the proximity sensor to either the top of the tunnel of the tunnel sealing head, or the bottom of a flat sealing head tunnel [5].

Place a container beneath the proximity sensor [6], and if required, loosen the sensor arm mounting bolts [7] and adjust [8] the sensor arm to center the proximity sensor over the container [9].

Loosen the beam sensor bracket's mounting bolts [10] and align [11] the beam sensor to the container cap [12], recommended, avoiding the container neck.

Under some circumstances you may be required to align the beam sensor to the container body [13], which will require a consistent gap between containers.

Connect the Ejector Output cable to your controls and the **EJECTOR OUTPUT** connector [14].

The optional Cap Inspection Output cable supplies contacts for a secondary missing foil indication, if included, and is connected to the **CAP INSPECTION OUTPUT** connector [15].

Remove the container and apply the input voltage to the power supply. Check the sensors and assess the status of the indicators – no container, the proximity sensor LED should be out [16], and only the green indication should be lit on the back of the beam sensor [17].

Place a container **without** a foil liner beneath the proximity sensor. The proximity sensor LED should remain out [17], but the orange and green indications should now be lit on the back of the sensor [18].

Place a container **with** a foil liner beneath the proximity sensor. The proximity sensor LED should be lit [16], and the orange and green indications should remain lit on the back of the beam sensor [17].

If the proximity sensor LED is **not** performing correctly, proximity sensor setup is required.

If the orange beam sensor indication is not performing correctly; never lit, or lit with no container present, readjust the sensors position to ensure proper alignment with the container.

If the alignment is good, but the orange indication is still **not** correct, beam sensor setup is required.

4.62 Optional Cap Inspection Output Cable Wiring

If the optional Cap Inspection Output Cable is included with your system, a secondary Missing Foil signal is sent out on the red wire each time a missing foil is detected (**Figure 14**).

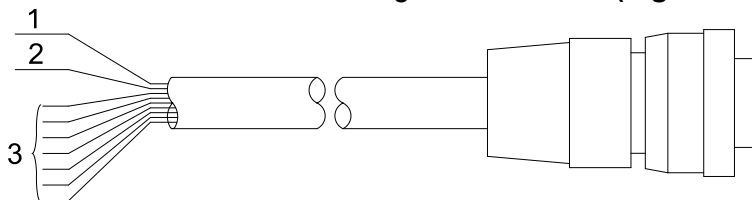


Figure 14

This secondary contact can be used to drive a Missing Foil alarm or light and can be used in conjunction with the Ejector Output Cable.

Item #	Cable Cores	Function	Connects To:
1	Red	Missing Foil N.O.	Customer Alarm / Light
2	Orange	Missing Foil Common	Customer Alarm / Light
3	--	None	Remaining wires are not used

4.63 Setup

Foil detection is setup and tested before your induction sealing system was shipped, so setup is typically limited to ensuring the conveyor and sealers direction of travel match, refer to **4.52a Direction** for details.

4.631 Proximity Sensor Setup

Apply the input voltage to the power supply. Remove the beam sensor bracket's mounting bolts [10] and remove the sensor from the mounting bracket, verify it is not sensing any objects (orange indication off).

Place a container **with** a foil liner beneath the proximity sensor, and if the LED is still not on, remove the sensitivity adjustment pot cover screw [18] and adjust the potentiometer counterclockwise (CCW) until the LED just turns on. Remove the container and the LED should turn off.

Adjust the potentiometer CCW, counting the number of turns until the LED just turns on again.

Adjust the potentiometer clockwise (CW) half the number of turns counted, e.g. 12 turns CCW = 6 turns CW.

The LED should now be off, and the sensitivity set at its optimum point. Place a container **with** a foil liner beneath the proximity sensor, and verify the LED is on.

Reinstall and realign the beam sensor.

4.632 Beam Sensor Setup

Apply the input voltage to the power supply. The beam sensor potentiometer's [19] adjustment range is 270°, adjust the potentiometer to about mid-range before proceeding.

When voltage is applied to the beam sensor the green indication is lit, and when the sensor is seeing an object the orange indication is lit.

The container must be centered under the proximity sensor for setup.

If required, adjust the potentiometer so it detects the container, then move the container away from the beam sensor, about an inch, and verify it still detects the container. Remove the container and verify the orange indication goes out.

4.633 Optional Cap Inspection Output Cable Setup

If your system includes the optional Cap Inspection Output Cable, you will need to setup the timing of the missing foil output signal.

Menu	OK	Increase	Decrease	Display Meter	Missing Foil	Missing Foil Time

Press **Menu** to enter setup, and **Increase / Decrease** to scroll through setup functions until **Missing Foil** is displayed on the **Display Meter**. Press **OK** to enter missing foil setup.

With **Missing Foil Time** displayed, press **Increase / Decrease** to select the time, up to 3.0 seconds, required by your monitoring equipment, and press **OK** to exit missing foil setup.

4.64 Operation

When a container is run through the foil detection sensors, the beam sensor will detect the container and proximity sensor will look for metal of the liner as the container passes.

If the metal liner is detected, no missing foil signal is sent to the power supply.

If the metal liner is **not** detected, the missing foil signal is sent to the power supply and an eject signal is sent to the optional Ejector, or your eject circuits, through the **EJECTOR OUTPUT** connector [15].

Refer to **4.82 Setup** to set the eject signal.

4.7 BOTTLE BACKUP

Optional bottle backup allows you to automatically stop the power supply if containers are blocked downstream and back up towards the sealing head, preventing containers that accumulate beneath the sealing head from overheating.

⚠ WARNING: If containers stop beneath the sealing head, liners may overheat causing liner and container contents to ignite.

4.71 Installation and Alignment

Install the backup sensor [1] and reflector [2] to the conveyor, downstream of the sealer, 12ft. (3.7m) maximum, far enough to allow the sensor to stop the power supply before containers can accumulate beneath the sealing head (**Figure 15**).

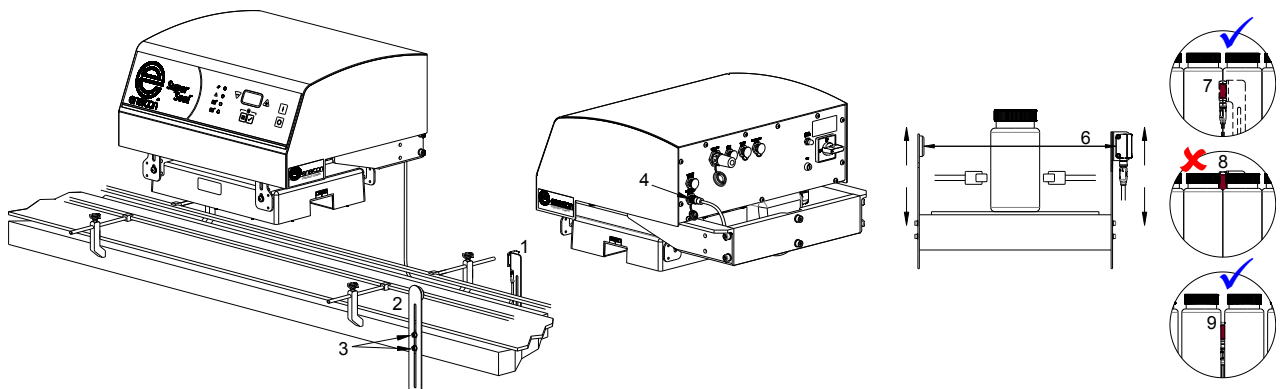


Figure 15

Use the supplied mounting hardware [3] to secure the brackets to the conveyor and connect the sensor cable to the **BOTTLE BACKUP SENSOR** connector [4].

Adjust the sensor and reflector [5] aligning [6] them with the body of your container to ensure the sensor is triggered when containers stop [7]. Do **not** place the sensor to the cap or neck, as this may prevent detection of stopped containers [8].

Ensure there is a consistent gap between containers [9] to prevent false trips.

4.72 Setup

Bottle backup is setup and tested before your induction sealing system was shipped, but you will need to ensure the stalled bottle time is set correctly, refer to **4.52b Stalled Bottle Time**.

Start the power supply and run a string of containers, with production spacing, that fills the sealing head, ensuring the containers pass the backup sensor without issue.

Block the containers downstream of the sensor, allowing them to back up past the sensor, and ensure the power supply stops before they reach the sealing head.

NOTE:

If optional Stalled Bottle Detection was included with your system, the stall bottle timing for that option will be the setting for bottle backup.

4.73 Operation

The bottle backup sensor monitors your containers as they pass through the reflected beam, and as long as there is a break between containers [9] the stalled bottle timeout will reset. When a break is **not** detected, the stall bottle timeout will continue until it expires and stops the power supply.

4.8 EJECTOR

The optional Ejector provides a means to eject containers from your conveyor and is designed to function with the Super Seal™ induction sealer and the optional Foil Detection system.

4.81 Installation

Install the ejector [1] downstream of the sealer and optional foil liner detector [2], 12ft. (3.7m) maximum, in a location that will allow the ejected containers to be easily moved off the line [3] (**Figure 16**).

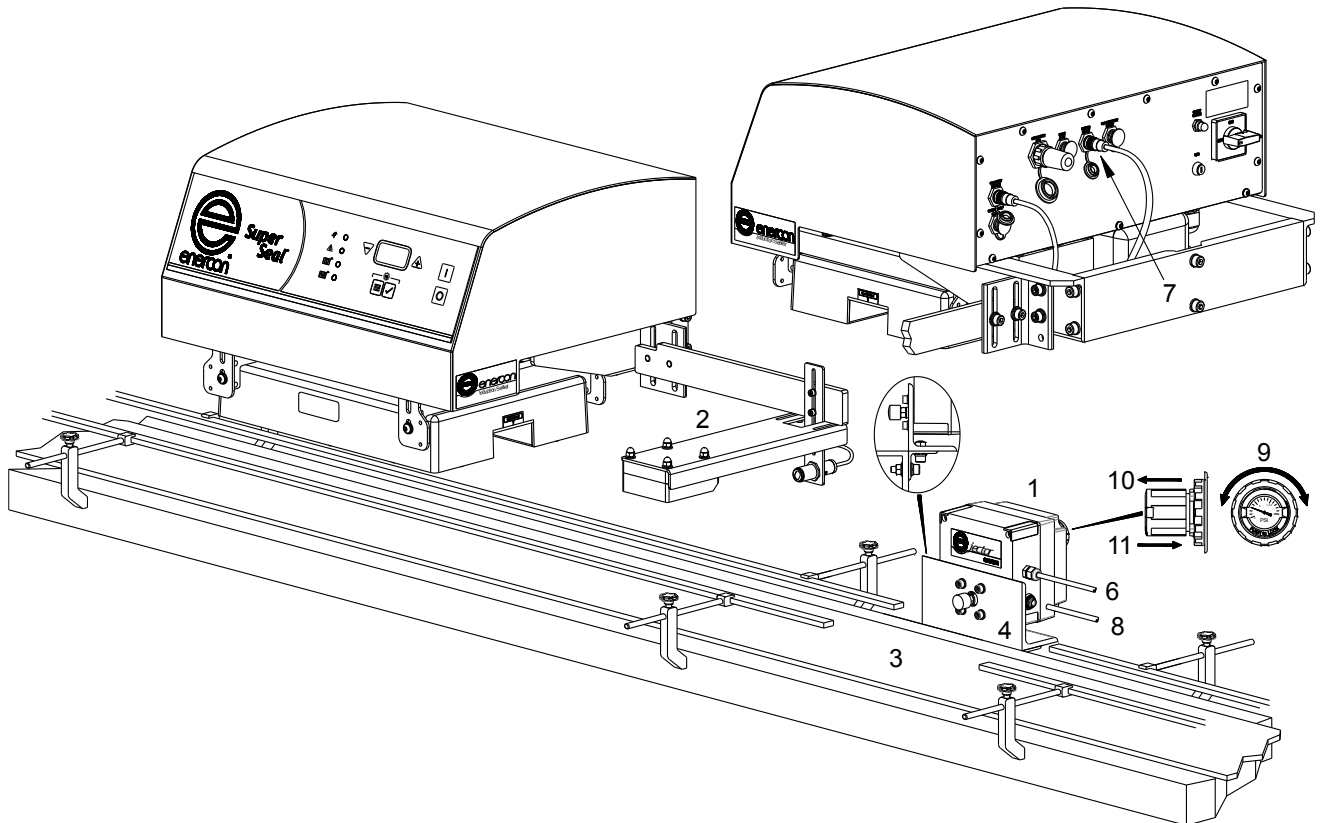


Figure 16

Use the supplied mounting brackets [4] and hardware [5] to secure the ejector to your conveyor and connect the ejector cable [6] to the **EJECTOR OUTPUT** connector [7]. Connect a ¼" O.D. air tube [8] to the ejector from an appropriate compressed air source (90 psi Max).

4.82 Setup

The ejector was setup and tested before your induction sealing system was shipped, but you will need to ensure the air pressure setting is correct and set the **Eject Delay** and **Eject Time** for your production needs.

4.821 Air Pressure Setup

With the ejector connected to your compressed air source, turn on the air and check the pressure setting at the ejector, ensuring it is 30 psi [9].

If the air pressure needs adjustment, pull the knob out [10], and turn the knob in either direction to adjust the pressure to 30 psi, then push the knob in to lock it [11].

NOTE:

Depending on the force required to push your container, the air pressure setting may require adjustment. Perform the rest of the set up before testing the air pressure setting.

4.822 Eject Delay

Eject delay is the delay between the detection of a missing foil and the eject signal being sent to the ejector, 30.0 seconds max, and the delay time must be calculated for all the packages you are sealing.

The eject delay needs to account for the container size, line speed and the beam sensor and ejector separation.

Apply input voltage to the sealer and ensure the beam sensor green indicator is on. Align a container with the trailing edge of the beam sensor [12], orange indicator just goes out, and center a container on the ejector plunger [13] (Figure 17).

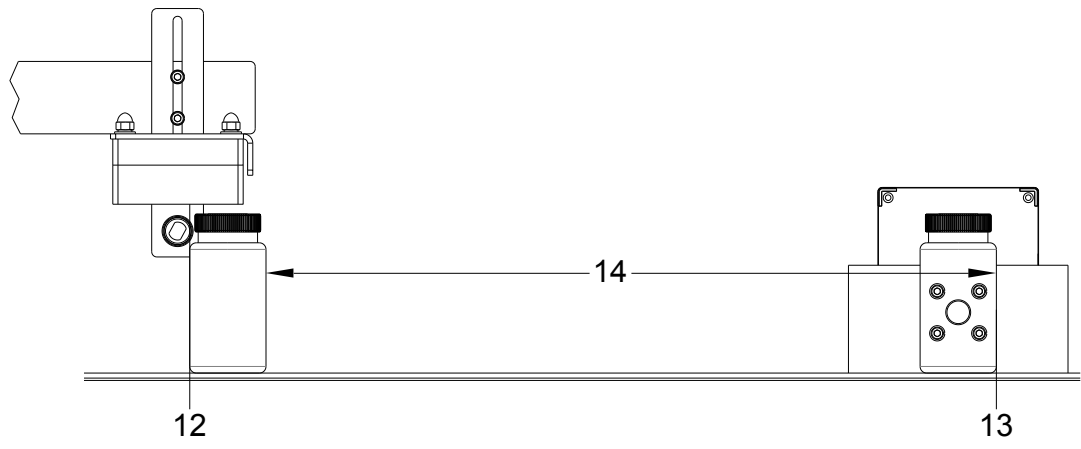


Figure 17

Measure the distance [14] between the trailing edge of both containers and calculate the time delay requirement using this measurement and your production line speed.

Menu	OK	Increase	Decrease	Eject Delay	Eject Time	Time Setting

Press **Menu** to enter setup, and **Increase / Decrease** to scroll through setup functions until **Eject Delay** is displayed. Press **OK** to enter eject delay setup.

Press **Increase** or **Decrease** to adjust the **Time Setting** and press **OK** to exit eject delay setup.

4.823 Eject Time

Eject Time is the time the plunger is extended from the ejector, 1 second max, and must allow the plunger to push your container off the line and retract without contacting the next container.

Press **Menu** to enter setup, and **Increase / Decrease** to scroll through setup functions until **Eject Time** is displayed. Press **OK** to enter time delay setup.

Press **Increase** or **Decrease** to adjust the **Time Setting** and press **OK** to exit eject delay setup.

4.83 Operation

Once the eject and time delays have been entered, you need to test the eject system to verify the settings. Ensure the input voltage is still applied, but the sealer is **not** running, then start and run your conveyor at production speed.

Run a container, without a foil liner, through the foil detection sensors and monitor the ejector operation. If the ejector missed the container, or struck it off center, make the appropriate eject delay adjustments using **4.72b Eject Delay**, and run another container to verify the new setting.

Repeat adjustments until the eject delay is set properly for the package.

Next, run a mixture of containers with and without foil liners, at production speed and spacing and monitor the ejector operation.

If the plunger was extended too long contacting the good containers, make the appropriate time delay adjustments using **4.72c Eject Time**, and run another group of mixed containers to verify the new setting.

NOTE:

Air pressure adjustments may be required if the plunger fails to extend with enough force to move the container off the line or kicks the container off too aggressively or causes damage to the container.

4.9 SPARE PART KITS

Enercon offers spare part kits for your Super Seal™ Induction Cap Sealer. Contact Enercon's Parts Department for details.

SECTION 5 – MAINTENANCE

5.1 GENERAL

⚠ DANGER: Before performing maintenance on this equipment, please read this section completely, and refer to the safety warnings of **Section 1**, to become familiar with **all** the safety requirements and precautions for this equipment.

⚠ DANGER

Before performing maintenance, ensure all power is disconnected from the power supply before removing the cover.

Follow your company's lock out / tag out procedures for equipment.

5.2 PREVENTIVE MAINTENANCE

Under normal circumstances, your cap sealing system will run with minimal maintenance.

However, stress on components and your plant conditions may require more frequent intervals of the listed maintenance checks.

It is recommended that you setup, and follow, a preventative maintenance program to ensure safe, trouble free operation.

5.3 WEEKLY CHECKS

5.31 Visual Inspection

A weekly visual inspection is a good practice that will often identify issues before they affect the equipment.

Check for dust and corrosive buildup on the system and its hardware. If equipment is in a corrosive environment a daily inspection may be necessary.

In most instances, compressed air can remove contaminants, but if compressed air fails, or is not available, wipe or wash down the power supply.

The *Super Seal*[™] enclosure is IP55 rated and utilizes external wash down fans.

The enclosure prevents moisture intrusion in normal wash down environments but does **not** prevent intrusion from high pressure wash downs. Do **not** expose the power supply to a high pressure wash down!

The fans must remain running in a wet environment, or when exposed to a wash down. Allowing the fans to stop while wet, increases the chance of seizing. During a wash down, keep the disconnect switch on until the system is dry.

5.32 External Connections

Inspect any cables attached to the power supply, and inspect the unused connectors, ensuring the covers are intact and the connectors are free of any corrosion or build up.

5.4 MONTHLY CHECKS

5.41 Sealing Head Inspection

To perform inspections, you will need to remove the sealing head [1] (**Figure 18**).

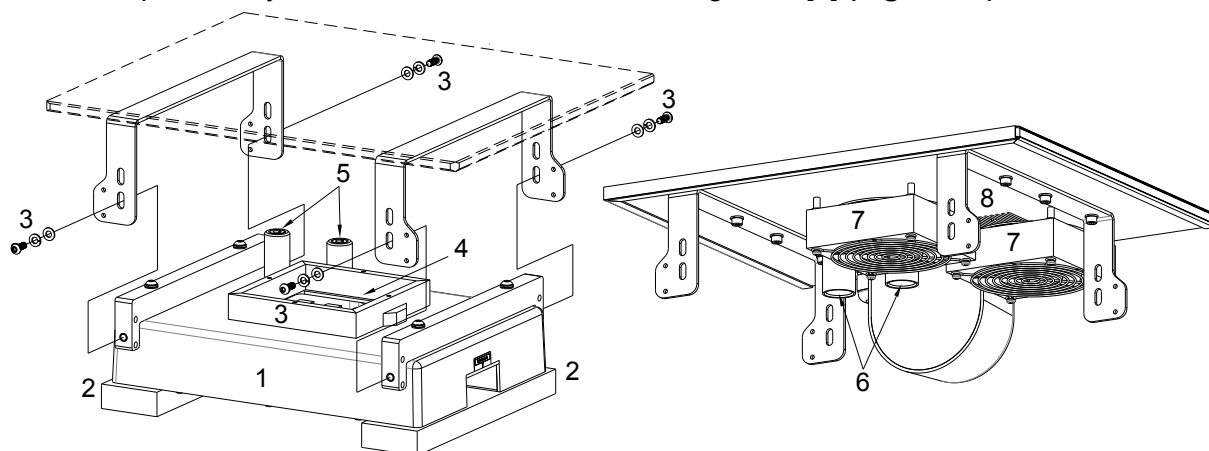


Figure 18

Lower the sealing head onto wooden supports [2], preferably on your conveyor, remove the bolts [3] and raise the power supply off the sealing head.

Inspect the sealing head for dirt buildup on the body, and in the cooling air opening [4]. Use a lint free cloth to wipe down the sealing head body, and compressed air to remove any dirt or debris from the sealing head interior.

Inspect the sealing head [5] and power supply output connectors [6] for physical damage or signs of arcing.

NOTE:

If the inspection shows signs of physical damage, arcing or buildup that cannot be easily removed, contact Enercon Customer Service.

5.42 Cooling Fans Inspection

The power supply and sealing head are cooled by fans [7] located between the sealing head and power supply (Refer to **Figure 18**).

The cooling fans direct air up against the power supply heat sink [8], and down into the sealing head opening [4], ensure the fans are clean and rotate freely.

Remove the lockout and apply the input voltage. Verify the fans spin up immediately and the direction of rotation is correct and up to speed for both fans.

Once inspection is complete, reapply the lockout and reinstall the sealing head.

5.43 Internal Connections

Remove the cover to access the power supply interior by removing the cover screws [1] and sliding the cover forward [2] far enough to access and disconnect the ribbon cable [3] at the control board (**Figure 19**).

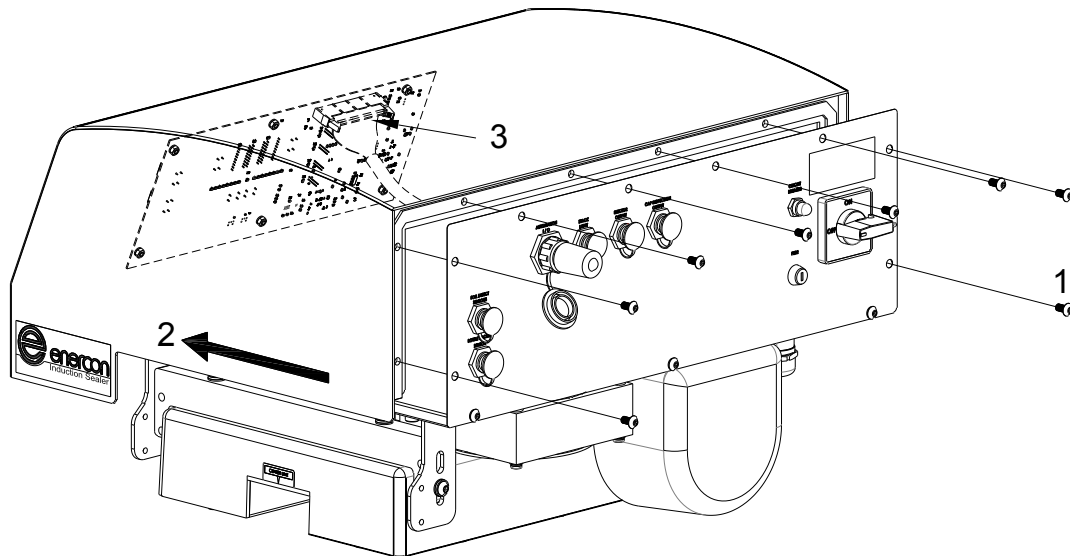


Figure 19

Inspect the power and bus connections, ensuring they are tight without any signs of discoloration from overheating. Tighten any loose connections and replace any damaged wires or connectors. Do **not** over-tighten connections.

Once internal maintenance is complete, reinstall the cover, reconnect the ribbon cable and reinstall the eight rear cover screws.

5.5 MAINTENANCE RECORD

A table is provided for the logging of maintenance for this equipment in **SECTION 7**. Regularly record the maintenance performed, including any issues found and their resolution.

SECTION 6 – TROUBLESHOOTING

6.1 GENERAL

⚠ DANGER: Before troubleshooting this equipment, please read this section completely, and refer to the safety warnings of **Section 1**, to become familiar with *all* the safety requirements and precautions for this equipment.

⚠ DANGER

Before performing troubleshooting within the cabinet, ensure all power is disconnected from the power supply and lock out / tag out all electrical power to the power supply before removing the cover.

Follow your company's lock out / tag out procedures for equipment.

NOTICE

Always use the *new* Gate Leads supplied with the replacement Inverter Device.

Always apply the supplied thermal compound to the device base before installation.

Mount device securely to the heat sink and torque the bolts to 30 in/lbs. (3.39 N-m).

It can be a natural tendency to attempt adjustments to internal settings when electronic equipment is not functioning properly, **AVOID THIS TEMPTATION!**

The *Super Seal™ Induction Cap Sealer* control circuitry is specifically designed to eliminate the need of making any internal adjustments, by automatically compensating for load conditions.

Troubleshooting may require removal of the sealing head (Refer to **Figure 18**) or cover (Refer to **Figure 19**) Secure and Lock Out / Tag Out the input voltage to the power supply using your company's approved procedure.

Start	Stop - Reset	Increase	Decrease	Menu	OK	No Fault	Faulted		
Display Meter	Sensors	Foil Prox High	Foil Prox Low	Foil Sensor High	Foil Sensor Low	Factory	Reset	Yes	No

6.2 FRONT PANEL ISSUES

6.21 Blank Front Panel

When the **Display Meter** is *not* lit after applying input voltage, verify whether the cooling fans are turning, and follow the appropriate troubleshooting.

If the cooling fans are *not* turning.

- **Disconnect Switch Off:** Ensure the disconnect switch is turned on.
- **Input Voltage Interrupted:** Verify the power supply is connected to an appropriate voltage source, and that the main electrical breaker or fuses are not tripped.
- **Disconnect Switch or Wiring Damaged:** Refer to **5.43 Internal Connections** and remove the power supply cover. Check the disconnect switch and ensure wires are connected properly.

If the Cooling fans are turning.

- **Ribbon Cables:** Refer to **5.43 Internal Connections** and remove the power supply cover. Inspect the power and control board ribbon cable.

The following can only be performed if you have spare boards.


- **Failed Control or Power Board:** Replace the control and power boards one at a time, reinstalling the cover and reapplying the input voltage after changing each board. When replacing the control board, take care to ensure the pushbuttons align correctly with the cover cutouts.


If the issue is resolved, secure the cover.


If the issue is not resolved, contact Enercon Customer Service for information on Repair or Service.


6.22 Buttons Do Not Function


The **Start**, **Stop - Reset**, **Increase**, **Decrease**, **Menu** and **OK** buttons do not function after applying the input voltage. The front panel LEDs may remain lit, and the **Display Meter** may display a button fault if buttons are depressed or failed closed.


 = OK Button is constantly pressed.

 = Menu Button is constantly pressed.

 = Start Button is constantly pressed.

 = Stop Button is constantly pressed.

 = Up Button is constantly pressed.

 = Down Button is constantly pressed.

- **Incorrectly Installed Control Board:** If the control board has been incorrectly installed, depressing pushbuttons, the appropriate button fault will be displayed. If multiple buttons are depressed, the lowest number button fault is displayed.

Refer to **5.43 Internal Connections** and remove the power supply cover. Loosen the control board mounting screws and align the buttons with the cover cutouts, snug the mounting screws and test the movement of the buttons.

Repeat as required to align the buttons with the cutouts.

The following can only be performed if you have spare boards.

- **Failed Control Board:** If the buttons are aligned correctly, the control board is likely failed. Remove the power supply cover, and replace the control board, take care to ensure the pushbuttons align correctly with the cover cutouts.

If the issue is resolved, secure the cover.

If the issue is not resolved, contact Enercon Customer Service for information on Repair or Service.

6.3 DISPLAYED FAULTS

If a fault is present when the input voltage is applied, **Start** is pressed or while running, the **Display Meter** will show a fault code. Depending on the fault type, or the run condition when the fault occurred, **Faulted** may also be displayed. The displayed fault code will point you to the issues that need to be addressed, and you may need to press **Stop - Reset** if **Faulted** is displayed.

6.31



If **VOL** is displayed, the input voltage applied to the power supply is below the minimum voltage requirement.

- Verify the input voltage is 200 - 240VAC, 1Ø, 11 Amps, 50/60 Hz. Change the voltage source if required.
- Ensure the voltage source is not being pulled down by other equipment. Change the voltage source if required.

If your input voltage is within specifications and you cannot resolve this issue, contact Enercon Customer Service for information on repair or service.

6.32



If **INT** is displayed, there may be an issue with your defeat connector, your supplied customer interlock or the automation I/O cable. If the interlock fault occurred while running, **Faulted** may also be displayed.

- **Customer Interlock Open:** This could be a normal condition depending on the source of your interlock contact. Verify the condition of your interlocked equipment and correct any issues.
- **Defeat Connector:** Your defeat connector may be damaged or disconnected from the **AUTOMATION I/O** connector. Reinstall or replace the defeat connector as required.
- **Interlock Wires:** If you are using the automation I/O cable only for functions other than interlocking, the Blue/White and Black/White wires must be jumped together. Jump the wires together or connect them to an interlock contact.
- **Automation I/O Cable:** The automation I/O cable may be damaged or disconnected from either the **AUTOMATION I/O** connector or your interlock contact. Reinstall or replace the cable as required.

6.33 **TMP**

If **TMP** is displayed, the temperature of the heat sink near the inverter has either risen above 90° C. If the over temperature fault occurred while running, **Faulted** may also be displayed.

- **Excessive Ambient Temperature:** The ambient temperature cannot exceed 104° F (40° C) for proper operation, provide forced air cooling until the ambient temperature is below 104° F (40° C).
- **Cooling Fan And Heat Sink:** Ensure that both the cooling fans and base plate are clean and that the fans are turning in the correct direction and at the correct speed. Reorient or replace the cooling fans as needed.

The following can only be performed if you have spare thermistor on hand.

- **Failed Thermistor:** If the ambient temperature, cooling fans and heat sink are good, refer to **5.43 Internal Connections**, and remove the power supply cover. Remove the thermistor from the base plate, disconnect the cable from J4 and J5 on the Power/Connector Board, and install the new thermistor. Reinstall the power supply cover, without securing the cover, and reapply the input voltage. If **TMP** goes out, reinstall the power supply cover.

The following can only be performed if you have spare boards on hand.

- **Failed Control or Power Board:** Replace the control and power boards one at a time, reinstalling the cover and reapplying the input voltage after changing each board. When replacing the control board, take care to ensure the pushbuttons align correctly with the cover cutouts.

If the issue is resolved, secure the cover.

If the issue is not resolved, contact Enercon Customer Service for information on Repair or Service.

6.34 **CAP**

If **CAP** is displayed, the cap trip board has detected a shift in the output current. With a capacitor fault, **Faulted** is also displayed.

The output capacitors are located inside of the power supply in capacitor banks with a capacitor buss board mounted on the capacitors (**Figure 20**).

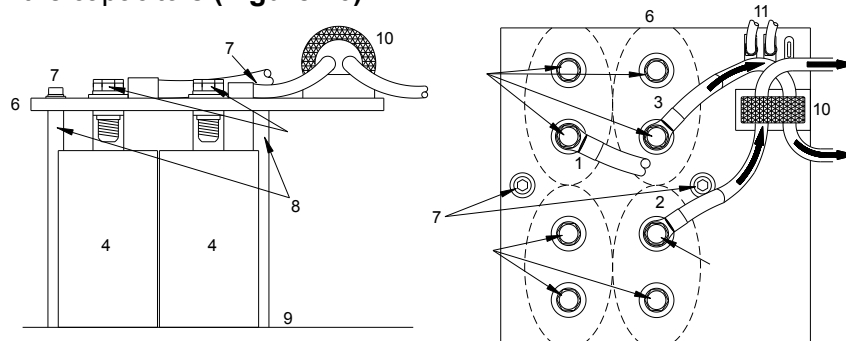


Figure 20

Remove the power supply cover (Refer to **Figure 19**), and visually inspect the capacitors for damage as well as loose or overheated connections. If a failed capacitor(s) is found, you will need to replace all capacitors in the unit due to stress on the other capacitor(s). Use the following steps to replace the capacitors.

6.341 Removing/Installing Output Capacitors

Remove the output cable [1] and the feedback jumper cables [2 & 3] from the capacitors [4] by removing their connector bolts [5]. Note the cable locations on the capacitors.

Remove the capacitors [4] without removing the capacitor bus board [6], loosen, but do **not** remove the bolts [7] from the supports [8] to allow removal of the capacitors [4] from beneath the capacitor bus board [6].

Ensure the base plate [9] is clean, removing any dirt and buildup as needed.

Place the new capacitors [4] beneath the capacitor bus board [6], align the board over the capacitor connector bar holes, and loosely install the connector bolts into the holes that do **not** require cables.

Place the output [1] and the feedback jumper cables [2 & 3] to their proper locations, and loosely install the remaining connector bolts [5].

Tighten the holding bolts [7] into the supports and then tighten the connector bolts [5] ensuring the tank bus board is secure to the capacitors and that the assembly does **not** move.

NOTE:

When a capacitor tank bus board is replaced, ensure the feedback jumper cables are run through the CT [10] correctly, and the control wires [11] are reconnected correctly. Refer to your system drawings for details.

6.35 **CUR**

If **CUR** is displayed, the sealer has experienced an output current spike, shutting the sealer down to prevent damage to other system components. With an over current trip, **Faulted** is also displayed.

- **Sealing Head and Power Supply Connectors:** Refer to **5.41 Sealing Head Inspection** and remove the head for inspection. Inspect the head and power supply connectors, repair or replace as needed.
- **Damaged internal wiring:** Refer to **5.43 Internal Connections** and remove the power supply cover. Inspect the power supply connectors and internal wiring. Refer to your system drawings to confirm or repair wiring issues.

The following can only be performed if you have spare boards on hand.

- **Failed Control or Power Board:** Refer to **5.43 Internal Connections** and remove the power supply cover. Replace the control and power boards one at a time, reinstalling the cover and reapplying the input voltage after changing each board. When replacing the control board, take care to ensure the pushbuttons align correctly with the cover cutouts.

If the issue is resolved, secure the cover.

If the issue is not resolved, contact Enercon Customer Service for information on Repair or Service.

6.36 **FRQ**

If **FRQ** is displayed, the sealer has experienced a frequency shift, placing it outside of the operating frequency window. With an under frequency trip, **Faulted** is also displayed.

- **Sealing Head Not Properly Connected:** Inspect the sealing head installation, ensuring the mounting hardware is installed and that the sealing head does not move. Reinstall and secure the sealing head as needed.

If the sealing head is installed properly, refer to **5.41 Sealing Head Inspection** and remove the head for inspection. Inspect the head and power supply connectors, repair or replace as needed.

The following can only be performed if you have spare boards on hand.

- **Failed Control or Power Board:** Refer to **5.43 Internal Connections** and remove the power supply cover. Replace the control and power boards one at a time, reinstalling the cover and reapplying the input voltage after changing each board. When replacing the control board, take care to ensure the pushbuttons align correctly with the cover cutouts.
- **Failed Output Capacitors:** Due to the standard operating frequency of a medium frequency Super Seal™ power supply, a failing capacitor can shift the operating frequency without experiencing a **Capacitor** fault. Perform **6.34**, capacitor troubleshooting.

If the issue is resolved, secure the cover.

If the issue is not resolved, contact Enercon Customer Service for information on Repair or Service.

6.37 **STL** / **BLK** / **BUP**

The faults **STL**, **BLK** or **BUP** are displayed when a specific option has tripped, or a sensor is blocked for an extended period. When faults occur while running, **Faulted** is also displayed.

6.371 Stalled Bottle

If a container fails to pass the second Stalled Bottle sensor in the allotted time, **STL** is displayed and the power supply is stopped, if running. Clear the stall beneath the sealing head, and press **Stop - Reset** to clear the fault indication. If a stalled bottle sensor is tripped for an extended period, **BLK** is displayed.

6.372 Bottle Backup

If containers stop in front of the Bottle Backup sensor, **BUP** is displayed and the power supply is stopped, if running. Resolve the line issue causing the containers to backup, clear the containers, and press **Stop - Reset** to clear the fault indication.

6.373 Misaligned / Misadjusted Sensors:

The Stalled Bottle and Bottle Backup sensors can become misaligned and misadjusted over time. If the issue is not obvious, check each sensor's status by pressing **Menu** to enter setup,

and **Increase / Decrease** to scroll through setup functions until **Sensors** is displayed. Press **OK** to enter sensor monitoring.

Press **Increase** or **Decrease** to scroll through the sensors and view their status.

LHI = left hand stalled bottle sensor beam is being detected.

RHI = right hand stalled bottle sensor beam is being detected.

BHI = bottle backup sensor beam is being detected.

LLD = left hand stalled bottle sensor beam is **not** being detected and the sensor is tripped.

RLO = right hand stalled bottle sensor beam is **not** being detected and the sensor is tripped.

BLO = bottle backup sensor beam is **not** being detected and the sensor is tripped.

Refer to **4.5 STALLED BOTTLE DETECTION** and **4.7 BOTTLE BACKUP** and check the alignment of any sensors displaying a Low status without a container blocking the beam.

NOTE:

If a sensor is not included with your system, the status is still shown and will be listed as High.

6.4 FACTORY RESET

If you find that your settings have caused issues with the function of the sealer or its options, a factory reset function is available to clear all your settings.

NOTE:

Factory reset should only be performed after contacting Customer Service.

Press **Menu** to enter setup, and **Increase / Decrease** to scroll through setup functions until **Factory** is displayed. Press **OK** and **Reset** is displayed, but if you have entered **Factory Reset** accidentally, press **Menu** to exit.

With **Reset** displayed, press **OK** and **No** is displayed. Press **OK** to exit reset, or **Increase / Decrease** to display **Yes**.

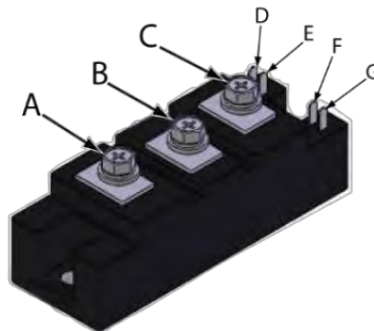
Press **Yes**, and your settings will be reset, and after a short delay **Factory** is displayed.

6.5 INVERTER AND BRIDGE RECTIFIER

Using either a Standard VOM or DVOM with Diode Test, perform the ohm check procedures for the suspected failed device.

Any “Zero” ohm reading will constitute a failed device and will require replacement.

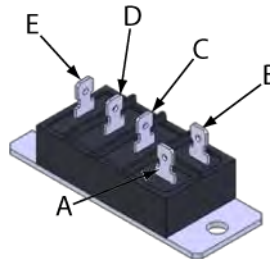
6.51 Inverter Ohm Check Procedure



Meter Lead Hook-Up	VOM (Rx1 Scale)	DVOM (Diode Test)
(+) A to (-) B	OPEN	OPEN
(-) A to (+) B	≈ 20	.4V
(+) A to (-) C	≈ 20	.4V
(-) A to (+) C	OPEN	OPEN
(+) B to (-) C	≈ 40	.8V
(-) B to (+) C	OPEN	OPEN
* (+) D to (-) E	Slight Deflection, Then OPEN	OPEN
* (+) G to (-) F	Slight Deflection, Then OPEN	OPEN

(+)=Positive (black) meter lead. (-)=Negative (red) meter lead. *Measure with gate leads disconnected, meter at its highest resistance scale.

6.52 Bridge Rectifier Ohm Check Procedure



Meter Lead Hook-Up	VOM (Rx1 Scale)	DVOM (Diode Test)
(+) A to (-) C / (-) D & (-) E	OPEN	OPEN
(-) A to (+) C / (+) D & (+) E	≈ 10	.4V
(+) B to (-) C / (-) D & (-) E	≈ 10	.4V
(-) B to (+) C / (+) D & (+) E	OPEN	OPEN

(+)=Positive (black) meter lead. (-)=Negative (red) meter lead.

6.53 Replacing Inverters and Bridge Rectifiers

Disconnect the wiring and buss work from the failed device and remove it from the heat sink.

Apply a dab of the supplied thermal compound to the center of the device's base and spread the compound into an **extremely** thin layer over the entire base.

NOTE:

A packet of thermal compound is supplied with every replacement device.

Wipe away any excess compound to prevent device failure from improper heat sinking.

Mount the device to the heat sink and torque the bolts to 30 in/lbs. (3.39 N-m).

If the Inverter device was replaced, install the **new** gate leads that were supplied with the replacement Inverter Device.

Refer to the power supply wiring diagram, supplied with your system drawings, and reconnect the wiring and buss work.

6.6 FACTORY ASSISTANCE

If you are not able correct your issue with the information in this Section, contact Enercon Customer Service for further assistance.

Enercon Customer Service Department – 24hr

Phone #: (262) 255-6070

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Website: www.enerconind.com



Visit Support.

