INDUCTION
CAP SEALING MACHINE
MODEL: SIGMA-I NEO

MACHINE SR. NO.: G-19074
MFG. YEAR.: 2019-20

CLIENT: M/s. ECO-FARMS PTY LTD.

MAHARSHI™

- HEAD OFFICE -
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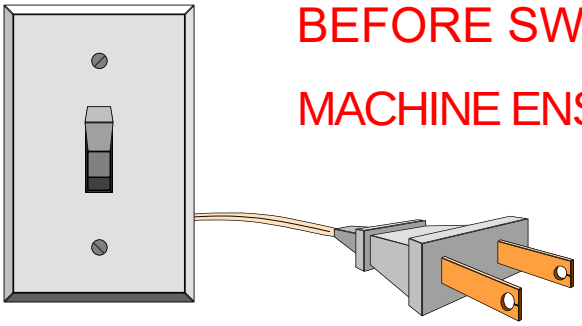
For Any Complaints, Please Contact
Customer Care No: 097277 54307 or e-mail: service@maharshi.com

MOST IMPORTANT



BEFORE SWITCHING “ON" THE MACHINE ENSURE THE FOLLOWING

- POWER SUPPLY: 220/240 V AC. SINGLE PHASE STABILIZED (ONLY THROUGH STABILIZED POWER SOURCE, IN CLIENT SCOPE) (ANY SPIKE / ELECTRIC SURGE CAN DAMAGE THE ELECTRONIC PCB / COMPONENTS)

- AIR SUPPLY: 4 TO 6 Kg./cm^2 AT CONSTANT PRESSURES ONLY THRO' FRL. UNIT.
  (FOR PNEUMATIC REJECTION SYSTEM)

- ENSURE TIGHTNESS OF ALL CONNECTORS.

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Section 1.0 Introduction

1.1 Manual Introduction

This Manual gives the necessary information for the correct installation, operation and maintenance of the machine.

We strongly suggest all concerned to read this Manual carefully and to comply with all instructions given there in.

Kindly preserve this Manual for the entire machine life. In an event of this machine being sold to a third party, kindly pass on this Manual to the concerned person.

Follow these steps to keep the Manual in good condition:

- While using the Manual care should be taken not to damage its content keep this Manual in a safe place.
- After using the Manual kindly return it to its proper place.
- Please do not use this Manual for writing any instructions or comments (for this please use plain paper).
- Do not remove or tear any page from this Manual.
- This manual is not controlled; however efforts will be made to update you from time to time.

If you need any further assistance or information which is not covered in this manual, please contact us to **Customer Care No: 097277 54307 or e-mail: service@maharshi.com**

The customer must ensure that the contents of this manual are explained and understood by all machine operators.

This manual is the property of **Maharshi Udyog.** and shall be used in an authorized manner only. We will not be responsible for any malfunctioning of the machine or any damages resulting from non-observance of the instructions and maintenance procedure mentioned herein.

Section 2.0 General Safety

2.1 User's Guide

User guide for **Induction Sealing Machine.** This Manual gives necessary information for the correct technical, installation, operation & Maintenance of the machine.

Kindly preserve this Manual for entire machine life.

The following conventions and words used in the manual have specific meanings.

Conventions and their meanings: -

Indicates loss of life of personnel injury if proper care is not taken

Indicates Machinery damage can result, if proper precautions are not followed.

Indicates preliminary action to be taken.

Indicates mandatory actions to be taken / followed.

Indicates personnel to read the manual before working on the machine.

Indicates personnel to read the manual before maintenance of the machine.

2.2 Personnel Safety

⚠WARNING

Only trained, skilled, qualified and authorized personnel should install, operate and maintain the machine.

⚠WARNING

Work area must be kept clean and dry.

⚠CAUTION

Do not commission the machine without the aid of the qualified instructor.

⚠WARNING

Do not tamper, remove or bypass any safety interlock provided on the machine. **Maharshi Udyog.** will not be liable for any accident or event happening there after if the same is violated

⚠WARNING

Don't operate the machine without proper connections. It can result in Severe injuries.

⚠WARNING 

Don't operate the machine without understanding the Installation, Operation and Maintenance manual thoroughly.

⚠WARNING

Do not store any loose tools in the Machine Compartments or cabinets.

⚠CAUTION

The user company must make the operating instructions available to the operator and must ensure that the operator has read and understood them.

⚠WARNING

Personnel with Pacemaker, metallic implant should not come in very close vicinity of the machine (approx. 5 meters away from the machine).

2.3 Installation Safety

⚠ CAUTION

Only skilled persons shall be used for Unpacking and Installations.

⚠ WARNING

Persons installing the machine should have sufficient know how and experience in Machine Installations.

⚠ CAUTION

Do not install the machine in corrosive environments.

⚠ CAUTION

Don’t lift the machine by Human Effort.

⚠ WARNING

The Machine shall be transported only by a suitable fork lift or any equipment suitable to handle weight of the Machine.

⚠ WARNING

The Machine is not designed for use in explosive atmospheres.

⚠ WARNING

Ensure that the Machine is properly grounded or earthed.

2.4 Operational Safety

⚠ CAUTION

Only trained skilled and qualified people shall operate and maintain the machine.

⚠ WARNING

Ensure that the Operator has read and understand the Operators Manual before operating the Machine.

⚠ WARNING

Study the safety as well as operating instructions carefully before starting the machine.

⚠ WARNING

Ensure that all the systems of the machine are properly connected.

⚠ WARNING

Do not disturb any elements in electrical control panel without proper knowledge. Do not by pass any of the safety interlocks for any reason. Electronics Devices World wide Pvt. Ltd; will not be liable in the event of any injury, which happens there after.

Before starting the machine ensure that, Allen keys, spanners, rachets and other tools are removed from the machine compartments, cabinets and enclosures.

⚠ CAUTION

If any faults occur during the operation, stop the machine immediately and eliminate the fault.

2.5 Maintenance Safety

⚠ CAUTION

Only trained skilled and qualified service personnel shall carry the maintenance of the machine.

⚠ WARNING

Ensure that the service personnel have read and understand the Maintenance Manual before carry the machine maintenance.

⚠ CAUTION

Place a sign over the control panel to inform others that the machine is down for aintenance or repair.

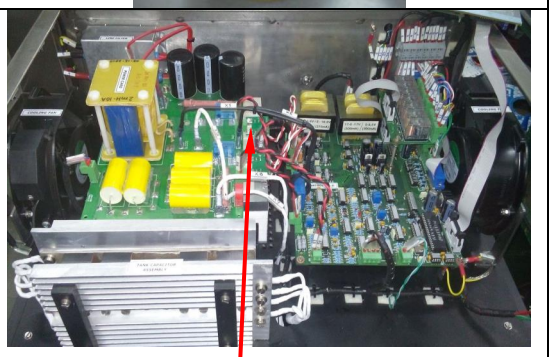
⚠ WARNING

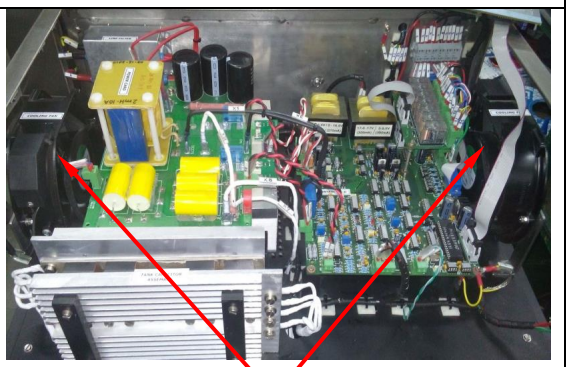
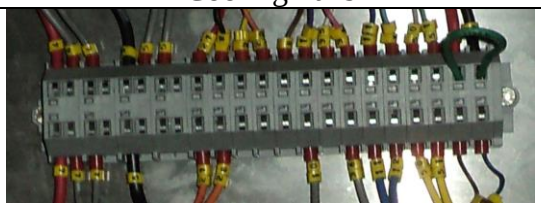
Shut down the machine completely and wait for 15 minutes before attempting any Maintenance.

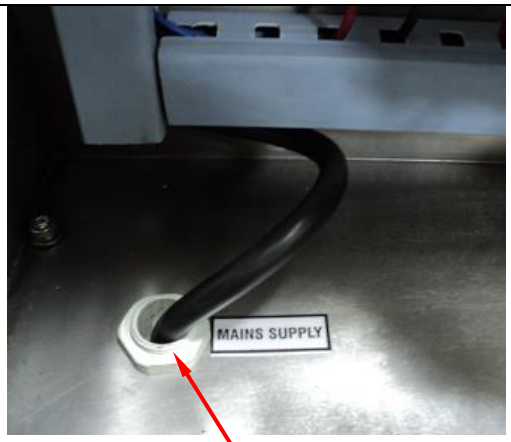
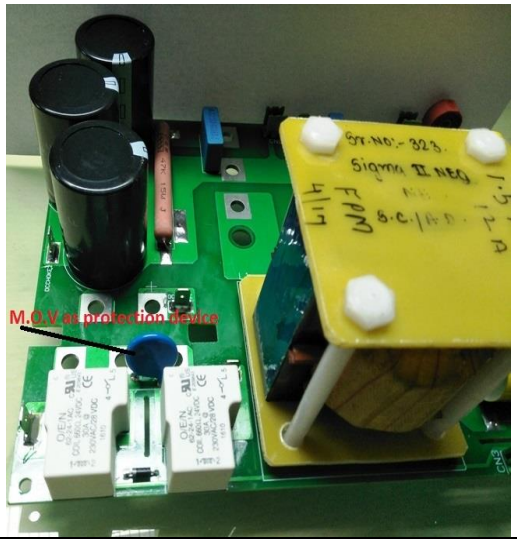
⚠ WARNING

Any modifications or alterations to the machine shall exclude any liability on the part of the manufacturer for any damage, which may arise. No modifications, which have adverse effect on safety, shall be undertaken. Before any modifications on the machine, consult Maharshi Udyog.

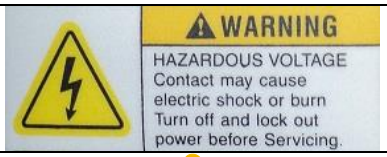
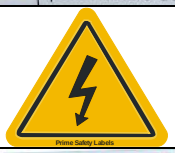
2.6 Safety features on the Machine

Sr. No.	Description	Safety Device
1	Top Cover on the Machine Body.	 Top Cover
2	Emergency Stop Switch on the Operator Panel.	
3	Cables tied with tie head to avoid the entanglement hazard.	 Cables in tied position

Sr. No.	Description	Safety Device
4	Cooling Fans are provided for internal cooling of the components.	 Cooling Fans
5	Proper ferruling's on the wires for proper traceability.	 Ferruling's
6	MCB inside the Rotary Switch panel. To cut out the electric supply during any electric failure such as short circuit In case if there is no supply in the display panel, check the MCB, it should be "ON". If the MCB is tripped OFF, kindly open the panel and put it in "ON position".	

Sr. No.	Description	Safety Device
7	Grommet in the control panel for the main cable which will protect the cable from cut hazard.	 Grommet
8	Safety Labels on the Machine to avoid Hazards.	Labels discussed in the section 2.7
9	M.O.V on the card as a protection device. In case the M.O.V is faulty, for temporary use of the machine, kindly remove the faulty M.O.V from the card.	

2.7 Safety labels and visual symbols on the machine

Sr. No.	Description	Safety Labels
1	Hazardous Voltage disconnect power before servicing.	
2	Risk of Electrical shock.	
3	Moving Belt Keep Hands clear	
4	Do Not Open the Cover during operation	
5	Protective Earthing Symbol	
6	Do Not Touch. (Stay Away)	

Section 3.0 Machine Introduction

Our induction sealing machines employs latest solid state technology. Model SIGMA I NEO is specially designed for cap sealing application. It is capable of sealing wide range of containers from 25 to 110mm diameter cap size in continuous duty operation. Very compact in design; it houses all components of control, power electronics and digital display in a single unit.

Complete unit is mounted on castor wheels for ease in movement from one location to another location.

All components are highly over rated and necessary safety devices are employed to protect both the operator and the equipment.

3.1 Machine Capabilities & Features

SIGMA I NEO is a totally **air-cooled machine.** It is designed to seal a wide range of cap sizes without having to change the sealing head. **It can seal cap sized from 25 to 110 mm in diameter. It has capability to seal containers up to 300 mm maximum height.** SIGMA I NEO can seal both flat caps and CRC (Child Resistant Caps) with the same sealing head. For nozzle type caps TUNNEL SEALING HEADS are optionally available if required by customer requirement.

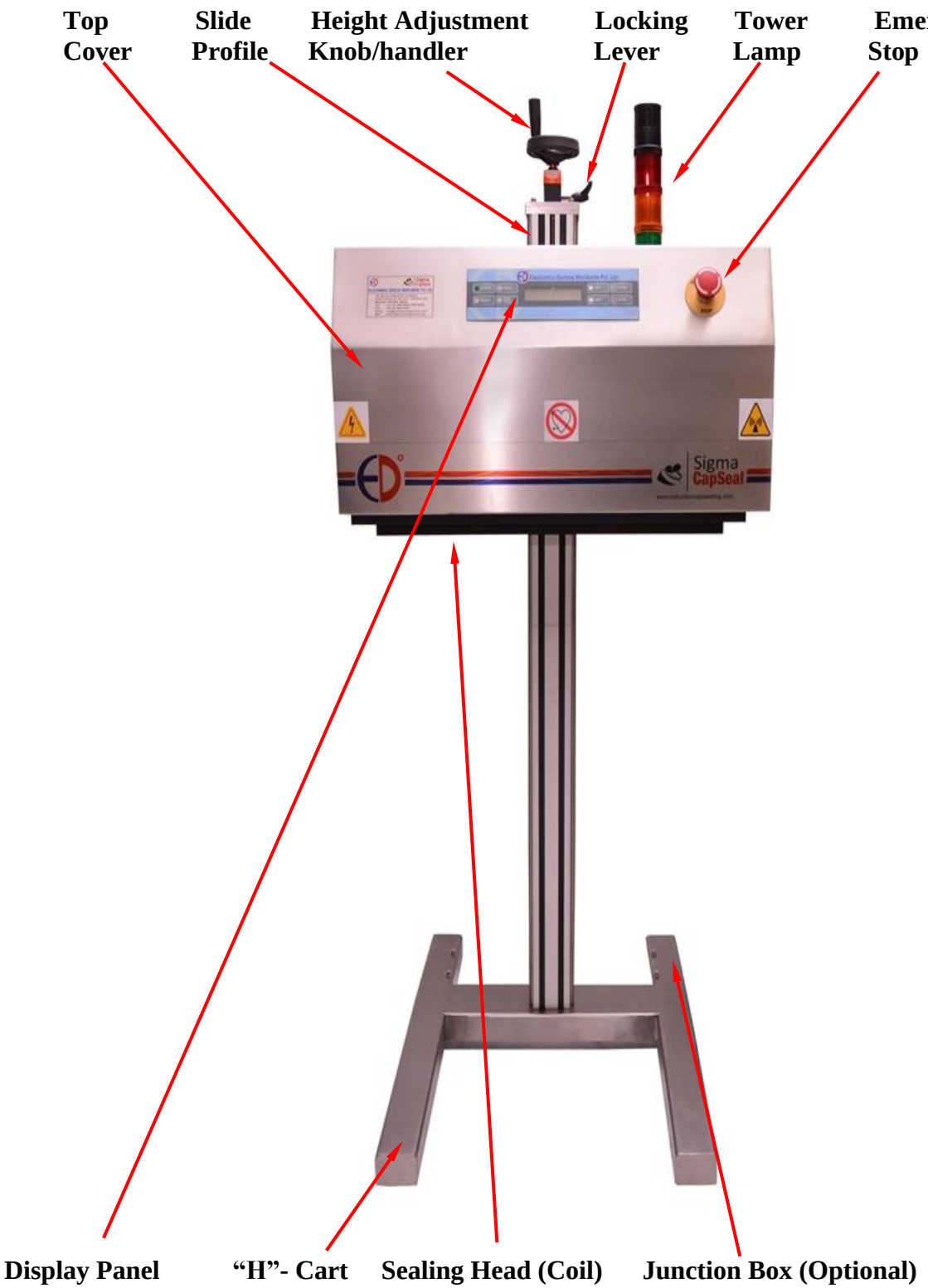
SIGMA I NEO is give maximum speed for both flat caps and CRC Caps. It can give sealing speed of 100 bottles per minute for 33 mm flat cap bottles and 60 bottles per minute for 33 mm CRC caps.

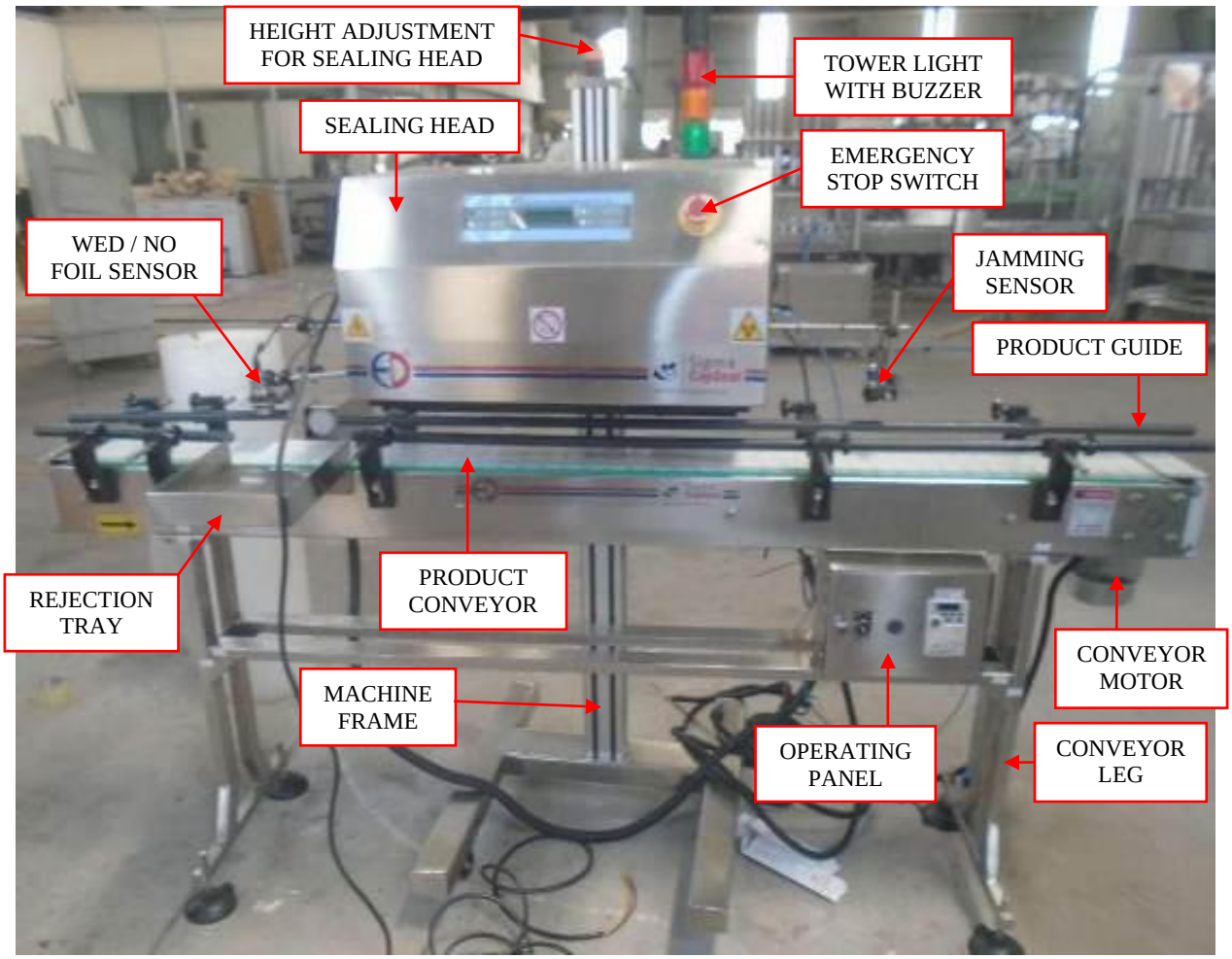
A gripper handle based hand wheel is provided for moving the sealing head in upward and downward directions.

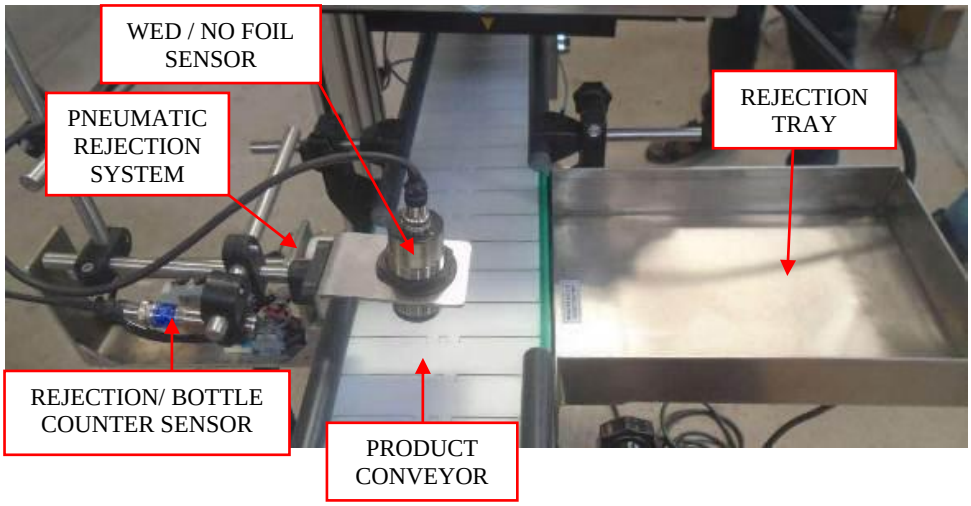
SIGMA I NEO is retrofitted with a Digital Position Indicator, which helps in online reading of the height of the sealing head and can provide consistent results and readings while sealing.

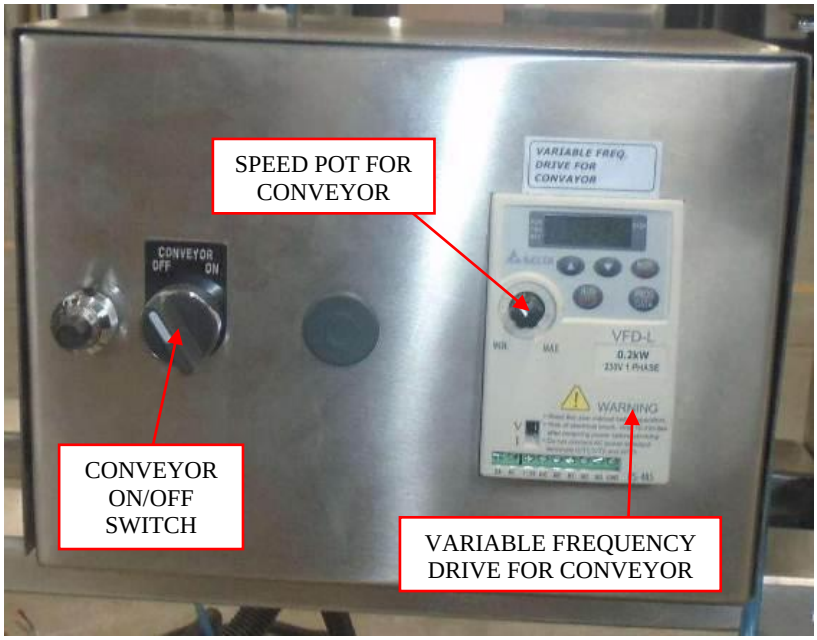
152 mm Delrin Slat Conveyor is supply with the machine.

3.2 Machine Photograph.




HEIGHT ADJUSTMENT FOR SEALING HEAD
TOWER LIGHT WITH BUZZER
SEALING HEAD
EMERGENCY STOP SWITCH
WED / NO FOIL SENSOR
JAMMING SENSOR
PRODUCT GUIDE
REJECTION TRAY
PRODUCT CONVEYOR
CONVEYOR MOTOR
MACHINE FRAME
OPERATING PANEL
CONVEYOR LEG


WED / NO FOIL SENSOR
PNEUMATIC REJECTION SYSTEM
REJECTION TRAY
REJECTION/ BOTTLE COUNTER SENSOR
PRODUCT CONVEYOR


SPEED POT FOR CONVEYOR
CONVEYOR OFF ON
VARIABLE FREQ. DRIVE FOR CONVAYOR
VFD-L
0.2kW
WARNING
CONVEYOR ON/OFF SWITCH
VARIABLE FREQUENCY DRIVE FOR CONVEYOR

3.3 Functional description / Components of the Induction Cap Sealing Machine are as following:

1) **Induction Sealing Unit (Top Cabinet)**
   i) Power Card
   ii) Tank Capacitor Assembly
   iii) Control Card
   iv) Cooling Fan
   v) Sealing Head (Coil)

2) **Slide Profile.**

3) **"H"-Cart (Base Frame)**

4) **Junction Box (optional)**

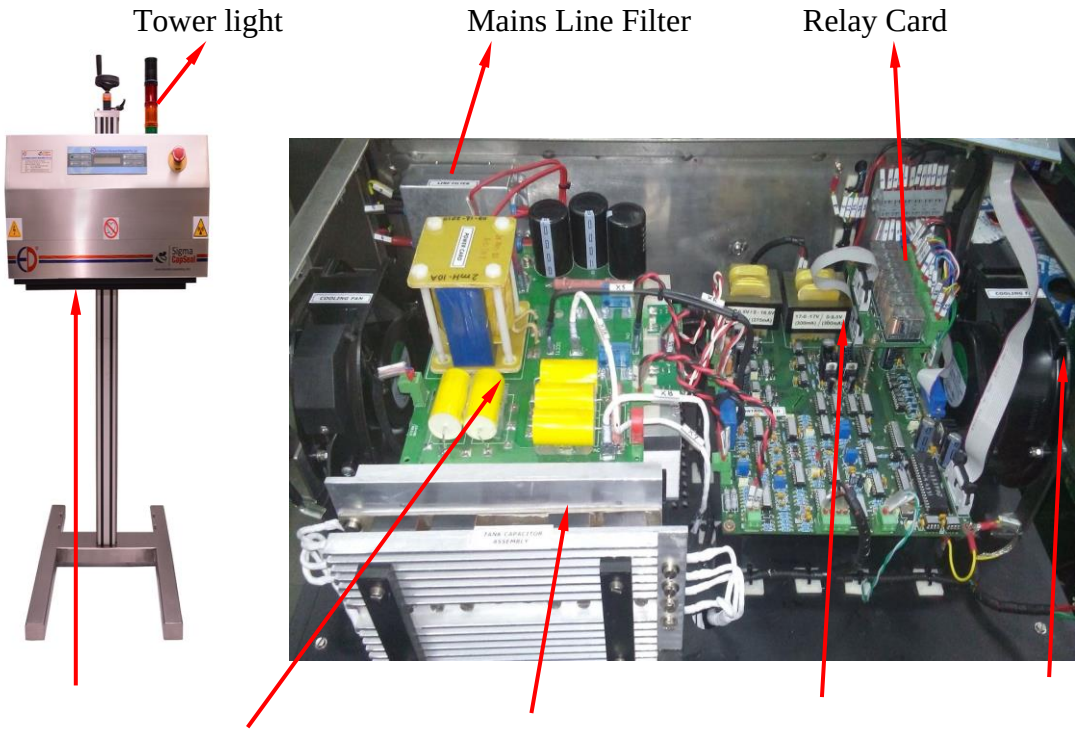
5) **Display Panel.**

6) **Tower light (Standard is only one colour tower light)**

7) **ED-Vantage (Sensor) System**

8) **Pneumatic Rejection Unit**

1) **Induction Sealing Unit:**
The Induction Sealing Unit is located at the top of the Machine, which is totally covered with Cover. The induction sealing unit consists of following things:



i) **Power Card:**

ii) **Tank Capacitor:**

iii) **Control Card:**

iv) **Cooling Fans:**

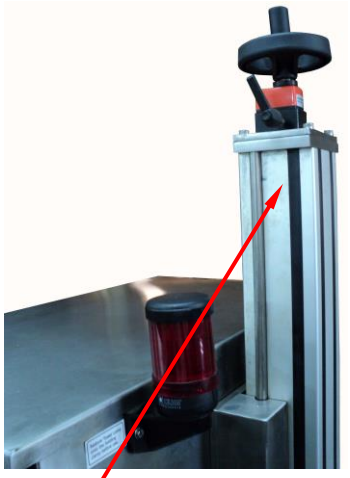
v) **Sealing Head:**

vi) **Relay Card:**

2) **Slide Profile:**

The slide profile in the Cap Sealing machine is mounted vertical on the "H"-Cart. The slide profile is basically used for giving the vertical to & fro movement to the Induction Sealing Unit for maintaining the distance between the bottles and the sealing head during operation.

A height adjustment knob with a DPI is provided at the top of the slide profile. A lever is provided next to the DPI for locking the sealing unit at a desire position before sealing operation.



Slide Profile **Height Adjustment Knob** **DPI** **Locking Lever**

3) **"H"-Cart:**

The entire machine along with the junction box is assembled on the "H"-Cart. The "H"-Cart is fabricated with SS 304 (Or Duly powder coated), consists of castor wheels for moving the entire machine from one place to another for easy line change over.

"H"-Cart

4) **Junction Box: (optional)**

A single phase junction box is mounted on the "H"-Cart.

5) Display Panel:

A display panel is mounted on the top cover for display and varying of set parameters.

Display Panel

Emergency Stop Switch to stop the machine in any emergency situation

Detail Description of the Display Panel

"Mains" indicates Mains supply to the machine

Menu membrane Key to view all the menu screens on the panel

LCD display screen

Increment membrane key to increase the set parameters

Start membrane key to start the sealing process

Reset membrane key to reset and acknowledge the alarm

Sub Menu membrane key to open the screens displayed by the Menu Screen

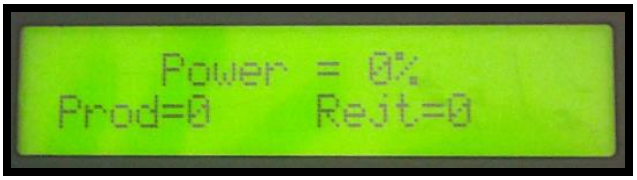
Decrement membrane key to decrease the set parameter

Stop membrane key to stop the sealing process

6) Display Description:

When the machine gets ON the display in the panel displays the Run Menu Screen shown below:

Run Menu Display



Press the Menu membrane Key to view the Menu display on the display Panel (As shown below)

Basic System Set-Up display

Now for opening the contents of the Basic System Set-Up display press the Sub Menu membrane Key.

Total Bottles Display

Press the Menu membrane Key to view the next screen in the display panel. (As shown below)

Timer Fault Set-Up Display

Now for opening the contents of the Timer Fault set-Up display, press the Sub Menu membrane Key. (As Shown Below)

Jam Timer Display

Press the Menu membrane Key to view the next display in the panel.
(As shown below)

Fault Reject Set-Up Display

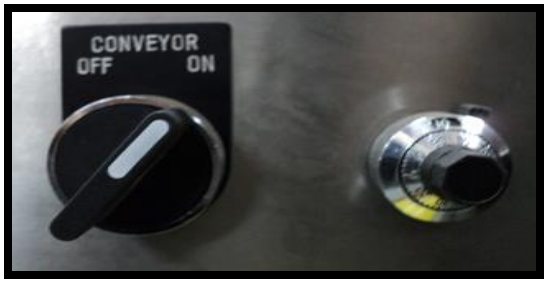
Now for opening the contents of the Fault Reject Set-Up display, press the Sub Menu membrane Key. (As Shown Below)

Rejection Time For No Foil Cap display

Press the Menu membrane Key to view the next display in the panel.
(As shown below)

Conveyor Set-Up (conveyor provided by EDWPL)

The conveyor speed can be adjusted via VFD

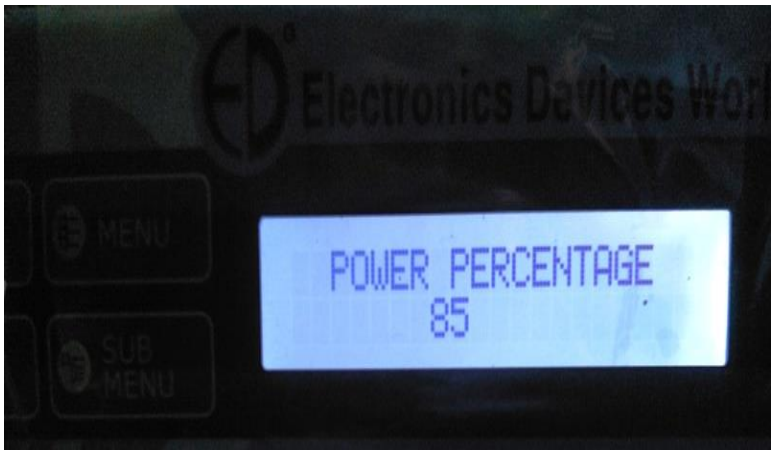


Conveyor speed adjustment can be done by rotating the conveyor speed pot,

6.1 How to change the set parameters in the Display ?

To change the set parameters, press the INC OR DEC Key to increase or decrease the set value.

For Example: The below photograph displayed indicates, changing the Power %

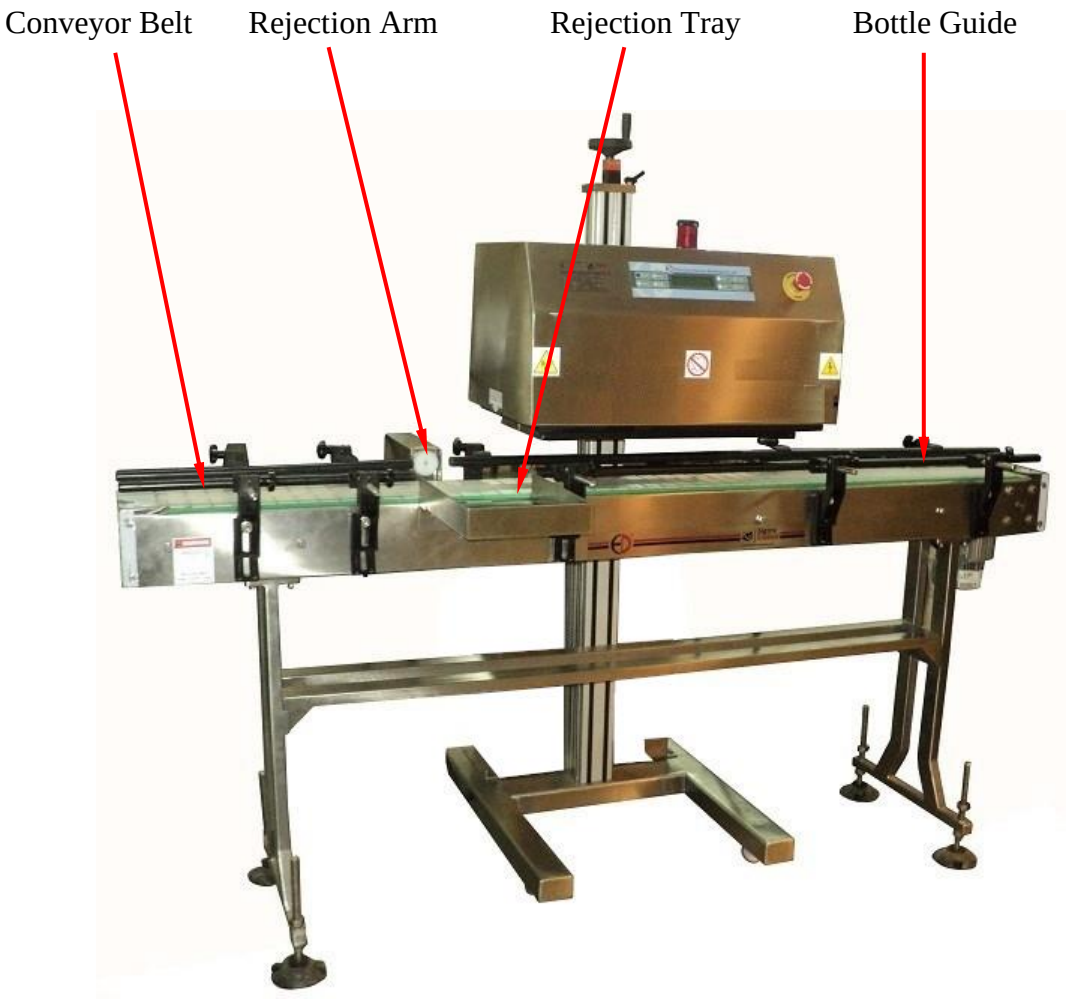


- If the INC Key is pressed the set value will increase.
- If the DEC Key is pressed the set value will decrease.

6) Conveyor:

SIGMA I NEO comes with a **2040 mm. Lg.** Delrin Slat conveyor, Bakelite bottle guides and variable speed control. The conveyor can be used even when SIGMA I NEO is turned off. A conveyor ON/OFF switch is provided for bypassing the control from the front panel. Refer to SIGMA I NEO ALL VIEWS DIAGRAM.

SIGMA I NEO allows the user to adjust the conveyor speed from the POT of VFD



7) ED-Vantage (Sensor) System:

a) No Foil Sensor / Jammer Sensor / Counter Sensor.

SIGMA I NEO comes with ED-VANTAGE PLUS monitoring system. ED-VANTAGE (Sensors) enables SIGMA I NEO to detect and give alarm, bottles without foil liners, bottles without caps, bottles jammed at entry and exit of the induction sealing head. It helps monitor number of bottles being sealed, number of bottles being rejected, total number of bottles passing through the system, number of faults that occur, each type of fault that occurs is individually monitored. ED-VANTAGE (Sensors) system remembers all the settings every time they are changed so that the operator does not have to setup the same settings each day.

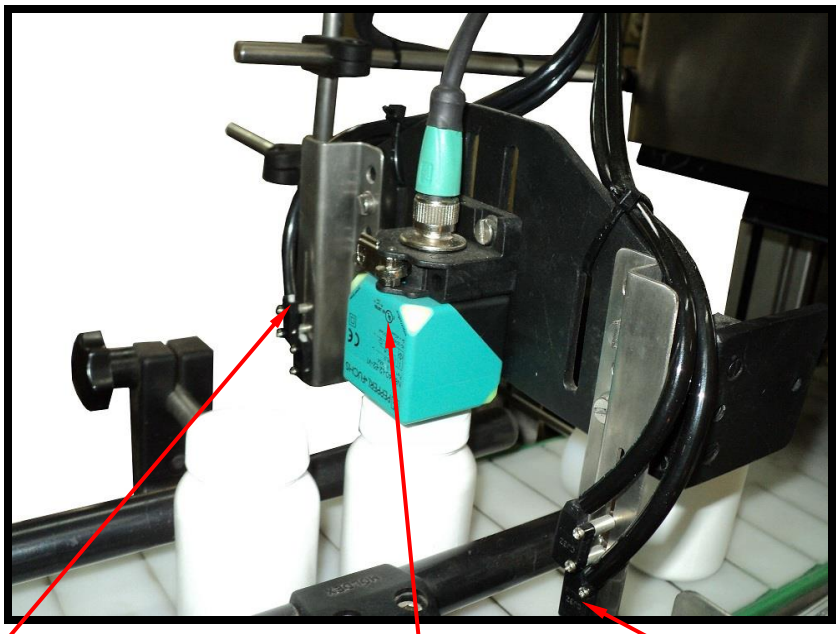
SIGMA I NEO keeps a track of how many consecutive faults of the same type occur, and reports back a critical fault when a fixed number of consecutive faults have been reached, so if there was something wrong with the capping machine and bottles kept coming without having any caps or sealing wads, SIGMA I NEO will report the consecutive faults and stop the system.

SIGMA I NEO enables batch processing, it will count the number of bottles being sealed and when a fixed batch size is reached it will stop sealing and report for batch completion.

b) High Cap / Tilted Cap Sensor: (Optional)

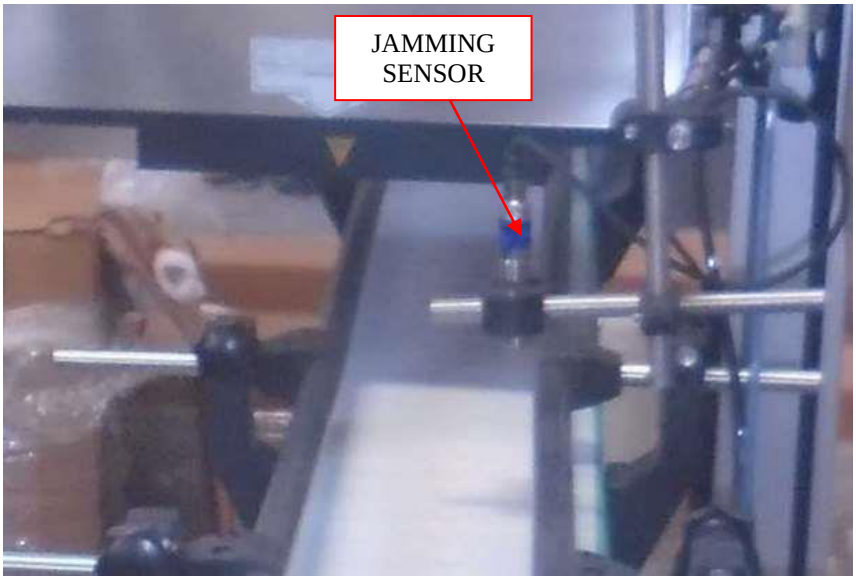
The following sensor detects bottle with high cap or tilted cap. The bottles will be automatically rejected by the pneumatic rejection system which is installed on the conveyor. The sensing range of the tilted cap bottle is in 2 to 3mm.

Sensors located at the bottle entry



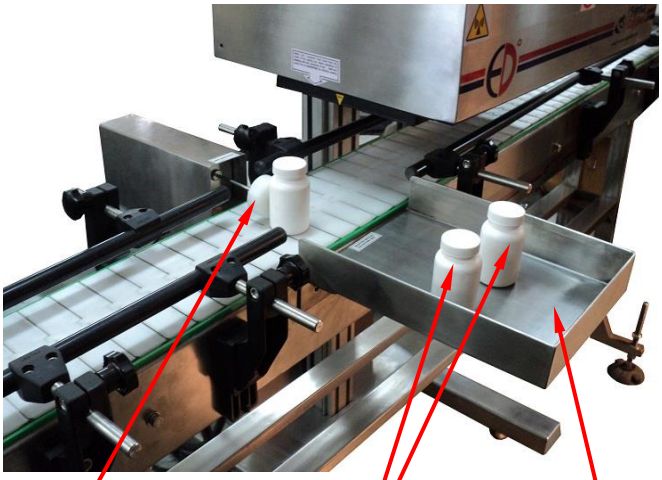
Tilted or Crooked Cap Sensor No Foil Sensor Counter / Jammer Sensor

Sensors located at exit of Induction cap sealing

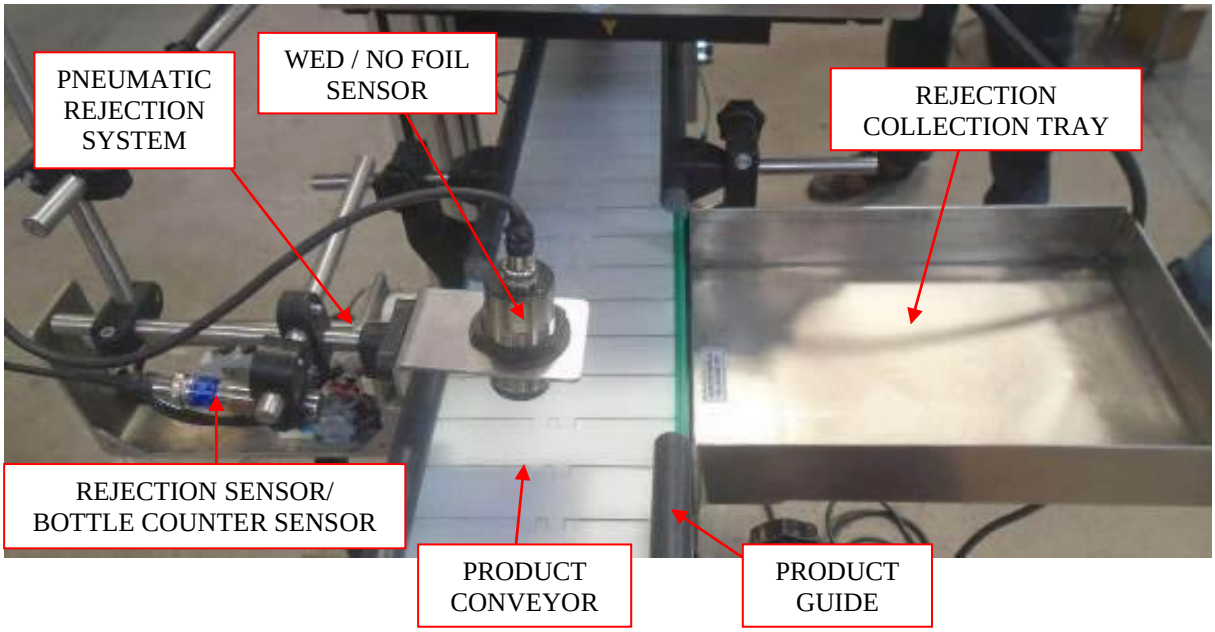


8) Pneumatic Rejection Unit:

SIGMA I NEO is equipped with pneumatic operated stopper. The pneumatic stopper actuates when there is a bottle without foil liners or without cap and if critical alarm persists. It also actuates if the machine is on standby mode.



Rejection Arm Rejected Bottles Rejection/Collection Tray


PNEUMATIC REJECTION SYSTEM
WED / NO FOIL SENSOR
REJECTION COLLECTION TRAY
REJECTION SENSOR/ BOTTLE COUNTER SENSOR
PRODUCT CONVEYOR
PRODUCT GUIDE

3.4 Technical Specification.

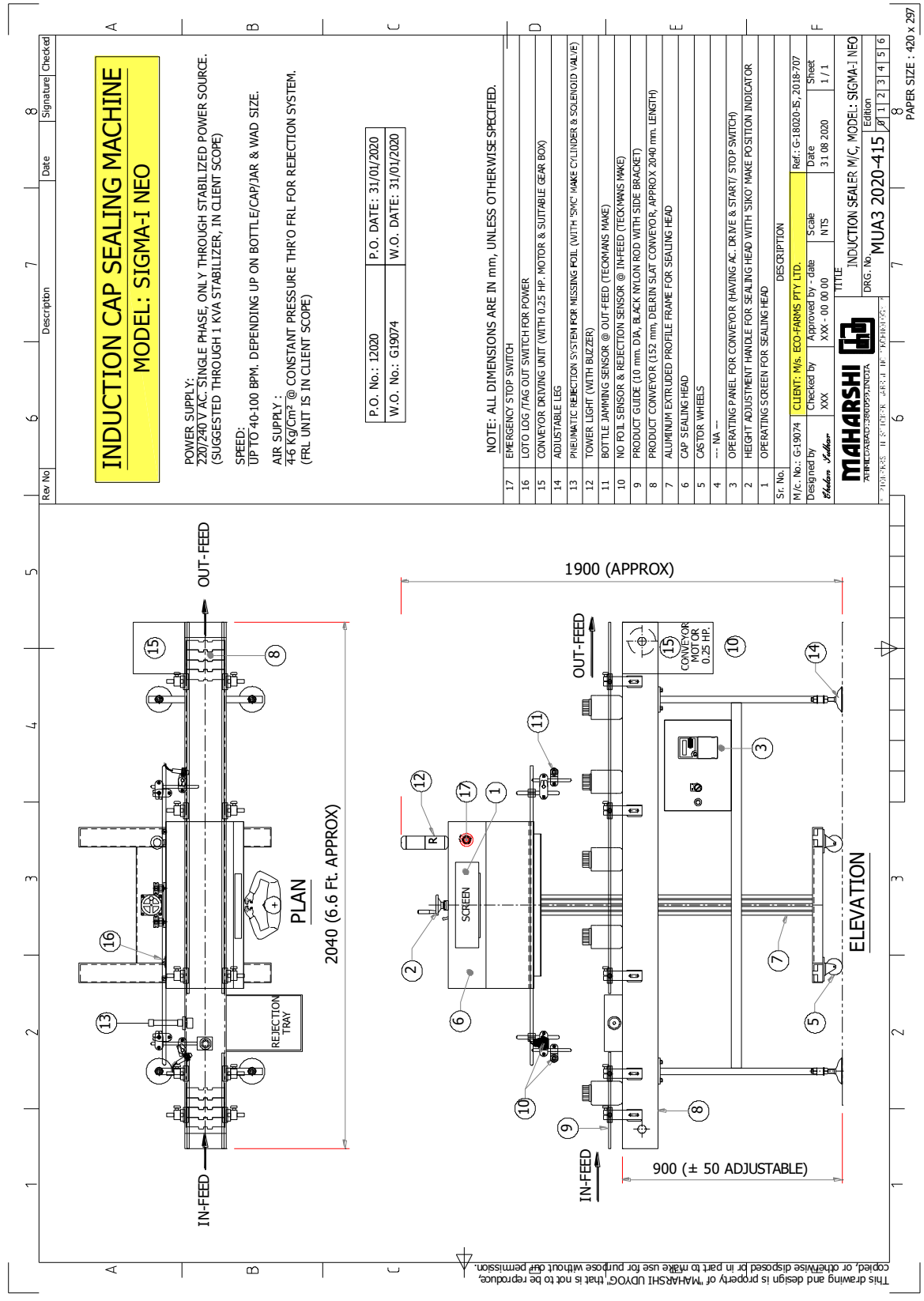
Machine Name	Induction Cap Sealing Machine
Machine Model	Sigma – I NEO
Machine Serial No.	G-19074
Bottle Size	25 to 150 mm. Dia.
Cap Size	Suitable for 20 to 120 mm Dia. Cap
Sealing capacity / Speed	Up to 40 to 100 BPM. (Depending up on bottle/cap & wad Size)
Product Conveyor	152 mm, Delrin Slat Conveyor, Approx. 2040 mm. Length.
Operating Height	900 (+/- 50 Adjustable) mm.
Conveyor Direction (Design)	Left → Right (from Operator Side)
Conveyor Drive Motor	'**Bonfiglioli'** Make, 0.18 kW. (0.25 HP), Three Phase AC Motor
Conveyor Gear Box	'**Bonfiglioli'** Make, Type: VF44F120P63B5 B3BE 63B4230/400
Variable Frequency AC. Drive (VFD) For Conveyor	'**Delta'** Make, (VFD-L), 0.2 kW. (0.25 HP) 230V, 1 Phase AC Drive
Pneumatic Rejection System	Pneumatic Rejection System having 'Teckmans' Make proximity rejection Sensor & SMC Make Cylinder & Solenoid valve & Rejection Bottle collection Tray.
No Foil Sensor	'Teckmans' Make, proximity sensor (PNP, DC 10-30V) before rejection system
Bottle Jamming Sensor	'Teckmans' Make, proximity sensor (PNP, DC 10-30V) after induction sealing
Tower Light	Tower Light with buzzer fitted on induction sealer
Emergency stop	Provided on Sealing Head, for stop the machine; In case of any emergency.
LOTO Log / Tag Out Switch for Power supply	Given Back side of Cap Sealing Head
Over all Measurements (L x W x H)	As Per GA. Dwg. No. MUA3 2020-412 (Ref. Line Drawing No. 2019-434-R12)
Note: ON/OFF Switch & speed pot for conveyor is provided with separate Operating Panel on conveyor's right side.	

Utility:

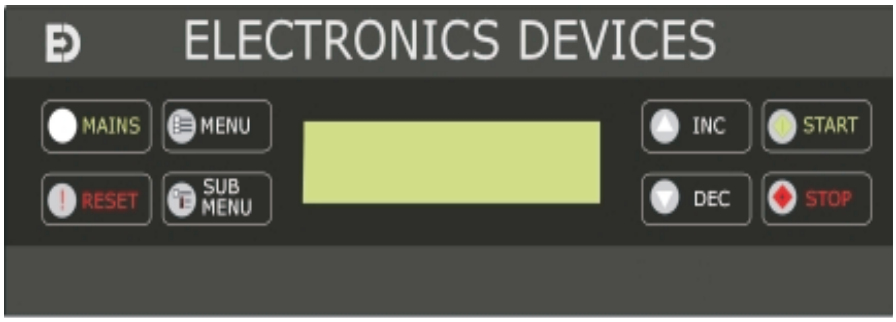
Power supply	220/240 V, 50 Hz, Single Phase AC, Stabilized (Through CVT=Constant Voltage Transformer in Client Scope)
Air Supply. (For Pneumatic Rejection System)	4 To 6 Kg/Cm² Thro' FRL at Constant Pressure. (FRL Unit is in Client Scope)

Note: Since our policy is of continuous development and improvement, we reserve the right to supply product, which may differ from those illustrated & described in this publication.

3.5 General Arrangement Drawing



Section 4.0 Main Control Panel



SWITCH	DESCRIPTION
START	**Start Switch** This switch is used to start the sealing process. When SEALING is ON, power percentage will be indicated on the LCD SCREEN. If the Induction Cap Sealer is in FAULT MODE, the co-responding FAULT MESSAGE will be displayed on the LCD SCREEN and sealing will not be turned on even if this button is pressed.
STOP	**Stop Switch** This switch is used to stop the sealing process when sealing is on. As SEALING is turned OFF the power percentage and current readings will be indicated as '0' on the LCD SCREEN. If the Induction Cap Sealer is in FAULT MODE, the co-responding FAULT MESSAGE will be displayed on the LCD SCREEN.
RESET	**Reset Switch** This switch is used to reset any critical fault alarm after it has been attended to. When pressed, the LCD SCREEN will display a reset message and return back to the VIEW STATISTICS SCREEN, if the critical fault does not persist. If there is no critical fault then pressing this button has no effect on the operation of the machine.
MENU	**Menu Switch** This switch is used to navigate through different main menus of the system. When this switch is pressed the LCD SCREEN will show the next MAIN MENU. After the last MAIN MENU if this switch is pressed it will wrap around to the first MAIN MENU.
SUB MENU	**Sub Menu Switch** This switch is used to navigate through different sub-menus of each main menu. When this switch is pressed the LCD SCREEN will show the next SUB MENU of the current MAIN MENU. After the last SUB MENU of the current MAIN MENU, if this switch is pressed it will wrap around to the first SUB-MENU.
INC	**Increment Switch** This switch is used to increment the value of various parameters.
DEC	**Decrement Switch** This switch is used to decrement the value of various parameters.
MAINS	**Mains On Led** This is a green LED used to indicate the presence of supply to the control card. When SIGMA-I NEO is turned ON, this LED will glow.

Section 5.0 Packing of the Machine

5.1 How is the Induction Cap Sealing Machine Packed?

After the successful testing of the sealing machine, then entire machine is well wrapped with shrink plastic sheets to avoid it from any damage.

A soft plastic is again wrapped on the machine for additional safety.

The Machine is kept on the wooden crate; four wooden crates are surrounded from the four sides and nailed properly.

The wooden box should be lifted by forklift and loaded in the container.

If the Machine is provided with the conveyor, Pneumatic Rejection System, and Sensors.

The sensors, rejection unit is well wrapped with shrink and soft plastic sheet and then packed in a corrugated box.

The conveyor and the Sealing Machine along with the platform are packed in separate wooden boxes.

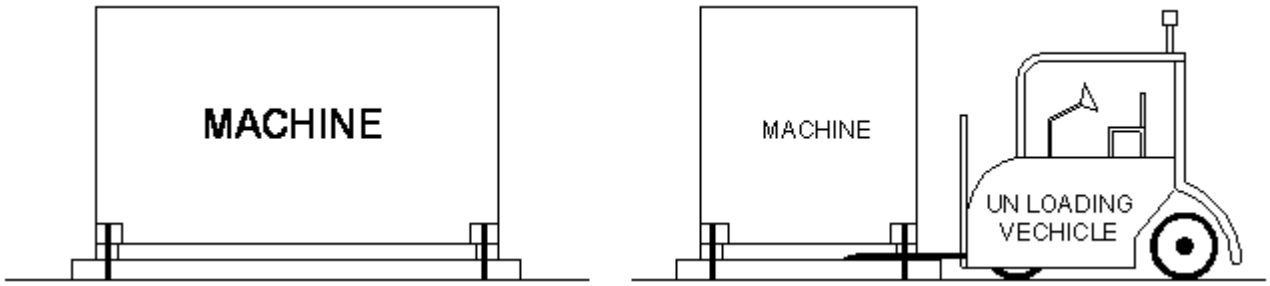
Section 6.0 Machine Installation

⚠WARNING

Only physically fit and skilled persons shall be used for Unpacking and Installations. Persons installing the Machine should have sufficient know how and experience in Machine Installations.

6.1 Procedure for unloading the machine.

- Unload the machine from the container with the help of the forklift.
- Carry the machine to the required site with the help of fork lift.



6.2 Procedure for Unpacking the machine.

Unpack machine carefully on arrival and check for transit damages. Check machine and equipment's according to packing list. Report the damages if any, to the manufacturer immediately.

Use proper claw hammers and bars to open the pallet box. While opening be careful not to hit the machine with the bars or hammer

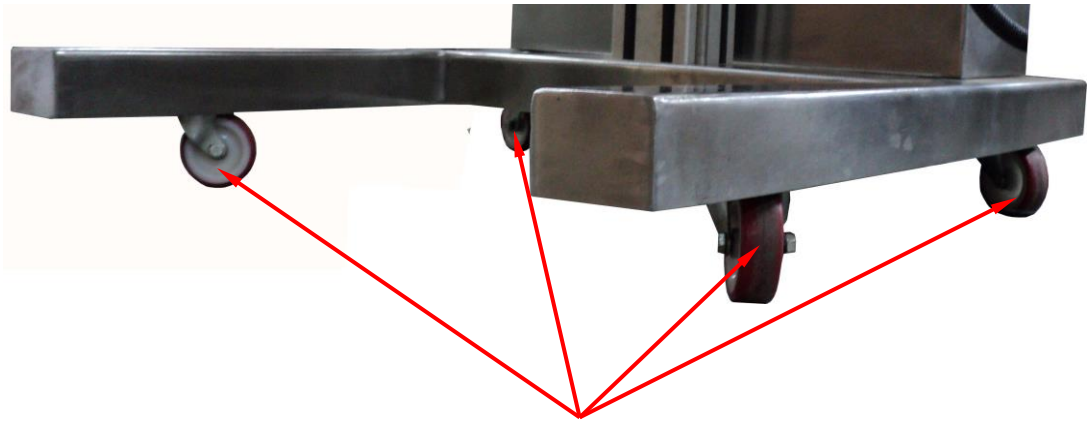
Remove the wooden guarding and put them a side. Be careful of the nails that would be coming out the wooden guarding.

6.3 Leveling the Machine

All our machines do not require any special foundation. Just make sure that the ground is properly leveled.

Service Personnel from Maharshi Udyog. will guide in assembling the machine.

Place the Induction Sealing Machine on the leveled ground; castor wheels are provided in the machine for moving it from one place to another.



Castor wheels

Ensure that the Machine is seated well and does not rock.

Once the machine is assembled, it should be leveled using a water level.

If the Conveyor along with the rejection Unit and the Sensor are supplied with the Machine. Install the Conveyor on the leveled floor.

The connections of the sensors and assembly of the machine will be done by the service Engineer from Maharshi Udyog.

Adjust the height of the conveyor by loosening the 16mm nuts by adjustable spanner provided on the leveling legs of the conveyor.

6.4 Machine Storage

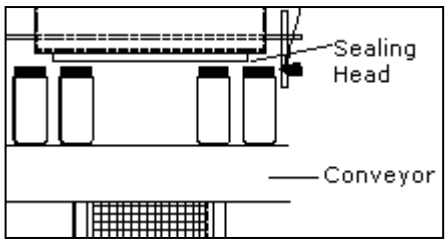
In case the machine has to be stored after its arrival in your plant please make sure that its kept in a sheltered area and properly covered for safety against dust, water, and other environment and atmospheric elements.

6.5 Location and initial setup

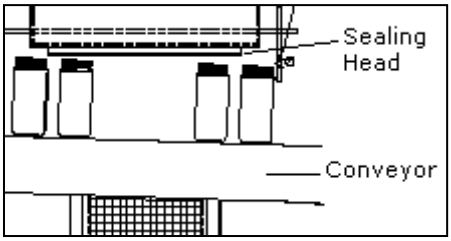
1. Open the top cover by unscrewing the two screws.
2. Carefully lift the top cover and remove the FRC Connector located at the right side of top panel, connecting the control card with the front display card.
3. Remove the top cover and verify that there are no loose connections or loose screws. Insert all connectors properly and tighten any loose screws.
4. If all the above steps are O.K. then connect the single phase supply and put ON the MAINS switch and check the fans are operating properly. MCB is mounted inside the switch box.
5. Put the top cover back on, connect the FRC connector between the control card and front panel display card.
6. Screw the top cover to the frame with the two screws.

6.6 Power level and sealing setup

1. Sealing head of the machine should be kept aligned with the center of the conveyor.
2. Check for paralleled sealing head with respect to the conveyor.
3. Put two bottles, one at each end of the sealing head.
4. Adjust the height of the sealing head using the knob on the top so that the sealing head just touches the top of the bottles.



Sealing Head parallel to Conveyor



Sealing Head Not parallel to conveyor

1. If the sealing head is not parallel to the conveyor as shown above then adjust the station pads of the Induction Cap Sealer until the sealing head is parallel to the conveyor.
2. Adjust the height of sealing head so that it is 15mm above the bottles cap.
3. Remove the two bottles from the conveyor and set conveyor as per line speed required.
4. Make sure the bottle lip (seal point on bottle) is free of burrs, product, seams, etc.
5. Make sure caps are properly tightened and seals (foils) are in contact with lip of the bottle. This can be verified by checking the marking for the lip on the sealing wad after it has been tightened once.

6. Before testing or using the machine ensure that all parts are put back in place and secured by appropriate fixing screws.

6.7 ED-Vantage plus system sensors setup

1. There are three sensors for the ED-Vantage system, the Foil Sensors, Rejection/Counter Sensor and Jamming Sensor.
2. For adjusting the position of the sensors a 4mm Allan Key needs to be used.
3. The No Foil and Bottle Rejection/Counter sensors are always mounted at the entry point of the sealing head.
4. The Jamming Sensor is always placed at the exit point of the sealing head.

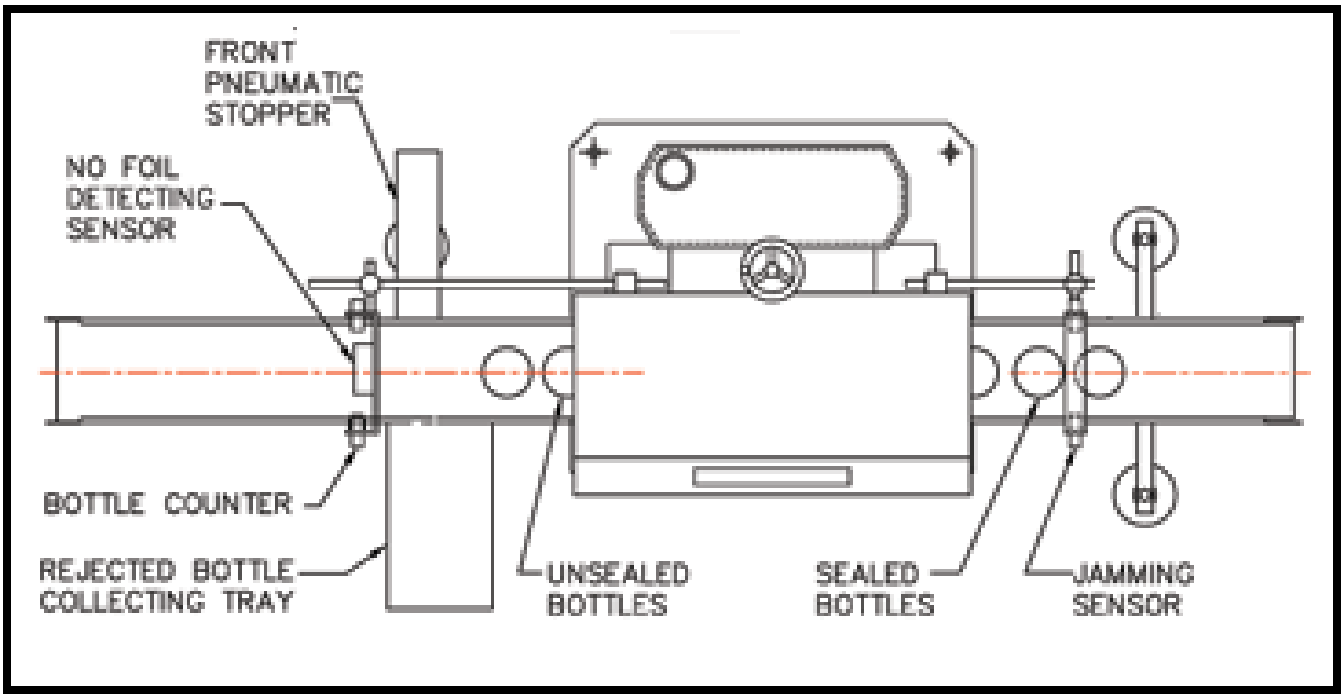


Figure 1 Correct Sensor Positions (diagram for illustration purpose)

1. Turn off conveyor and place a bottle with foil cap under the No Foil Sensor on the center of the conveyor.
2. Adjust the No Foil sensor so that it is in the center of the bottle.
3. Adjust the height of the No Foil sensor so that the orange LED on the sensor glows. The distance between the foil sensor and the cap should be around 2mm - 5mm.
4. Adjust the height of the Rejection Sensor/ Bottle Counter Sensor so that it is pointing at the CAP of the bottle and not the body.

5. Ensure the Bottle Counting sensor is not too low by passing two bottles touching each other and verify that the led on the Bottle Counting Sensor turns on/off twice, once for each bottle.

6. This will reflect on the ED-Vantage System and the Production Counter will increment.

7. Adjust the height of the Jamming Sensor so that it is pointing at the CAP of the bottle and not the body.

8. Ensure the sensor is not too low by passing two bottles touching each other and verify that the led on the Jamming Sensor turns on/off twice, once for each bottle.

9. Refer to the ED-Vantage Plus Monitoring System Settings section for time settings and feature operations of the ED-Vantage System.

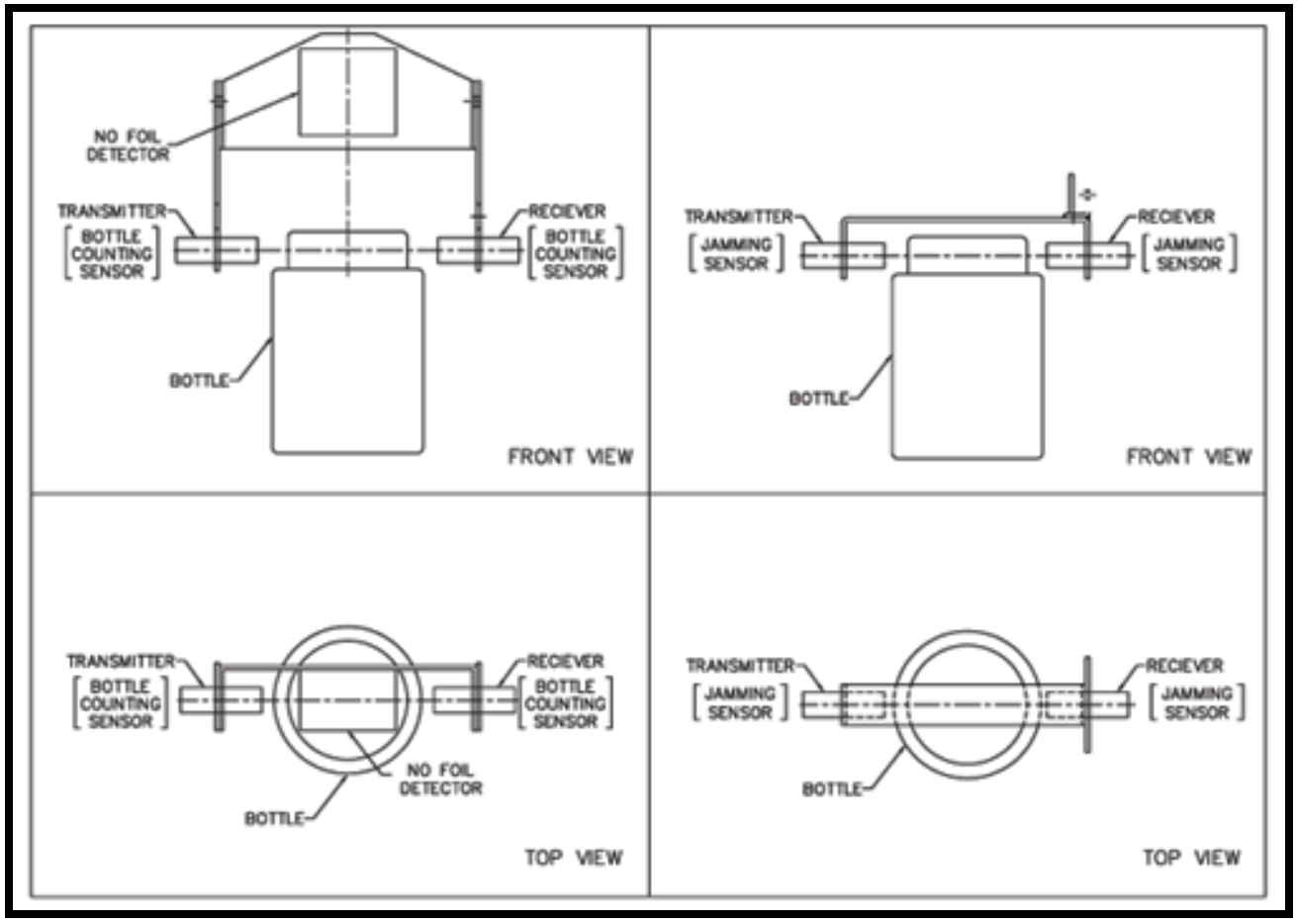
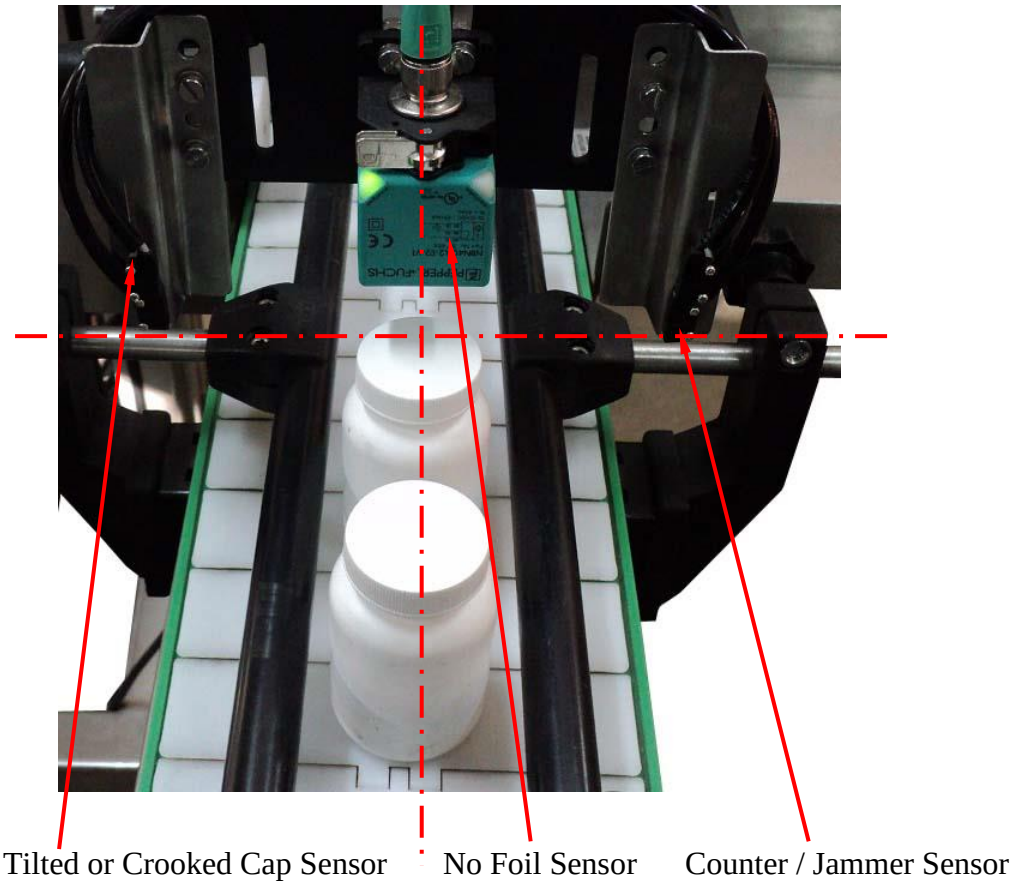


Figure 2 Correct Sensor Setting

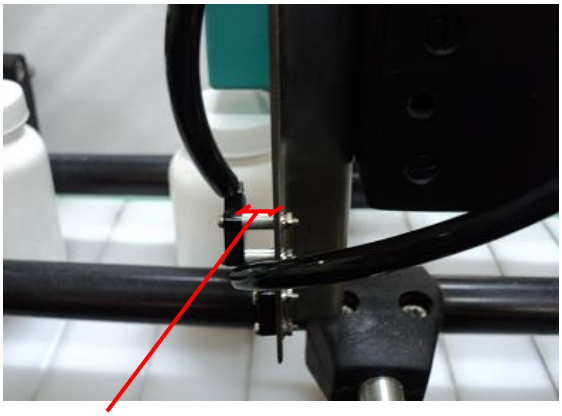
ED-Vantage Plus Monitoring System



Note:

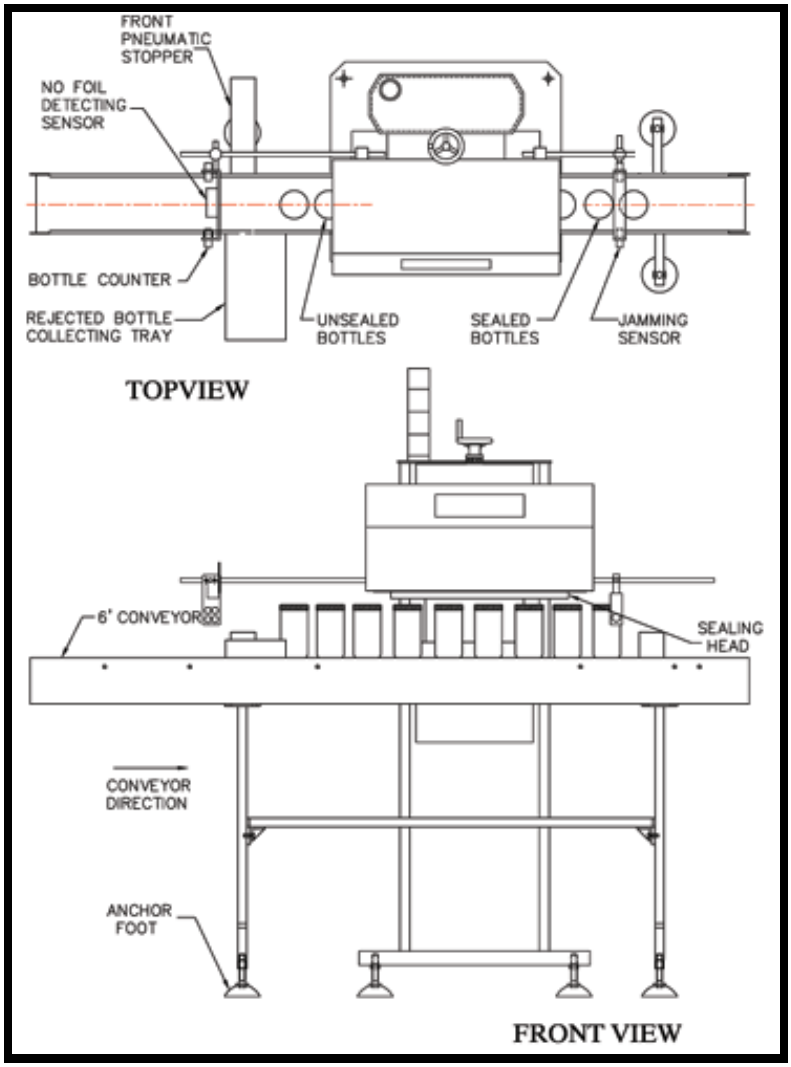
No foil Sensor, Rejection/Counter Sensor should be centrally aligned with the center of the Bottle Cap; as shown in the above picture.

The mounting distance of the crooked cap sensor should be adjusted 10mm away from the Counter / Jammer Sensor or Tilted / crooked cap sensor timing should be adjusted for proper detection. Tilted sensor is optional and not standard supply. Above Sensors are Not Standard Supply; will be provided if required by customer with extra cost.



6.8 Machine and conveyor setup

The illustration below shows the position of the machine, caps & conveyor required for proper sealing: (Correct position; diagram provided for illustration purpose)



1) As stated above the centerlines of the conveyor, caps & sealing head should be aligned.

2) The bottles should be placed such that they move in a straight line.

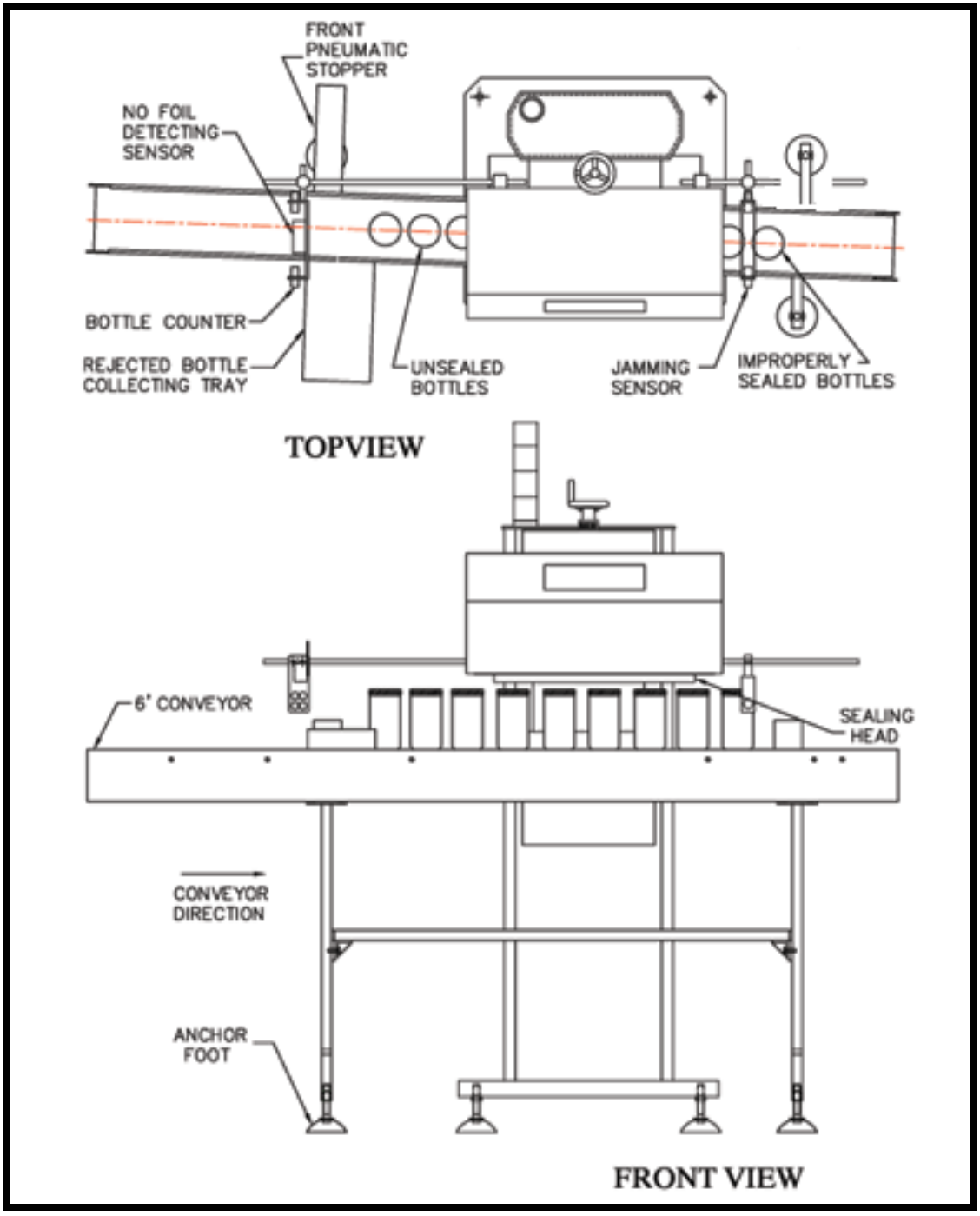
3) The conveyor should be adjusted such that its top surface should be parallel to the sealing head (Coil), this is achieved by slightly raising the stand up or down along the anchor feet screw of the conveyor or the station pads on the machine.

The illustrations below show the incorrect positions of the machine, cap & conveyor, which should be avoided

a) When the conveyor is tilted its centerline & that of the cap, is misaligned with respect to the centerline of the sealing head hence improper sealing may occur.

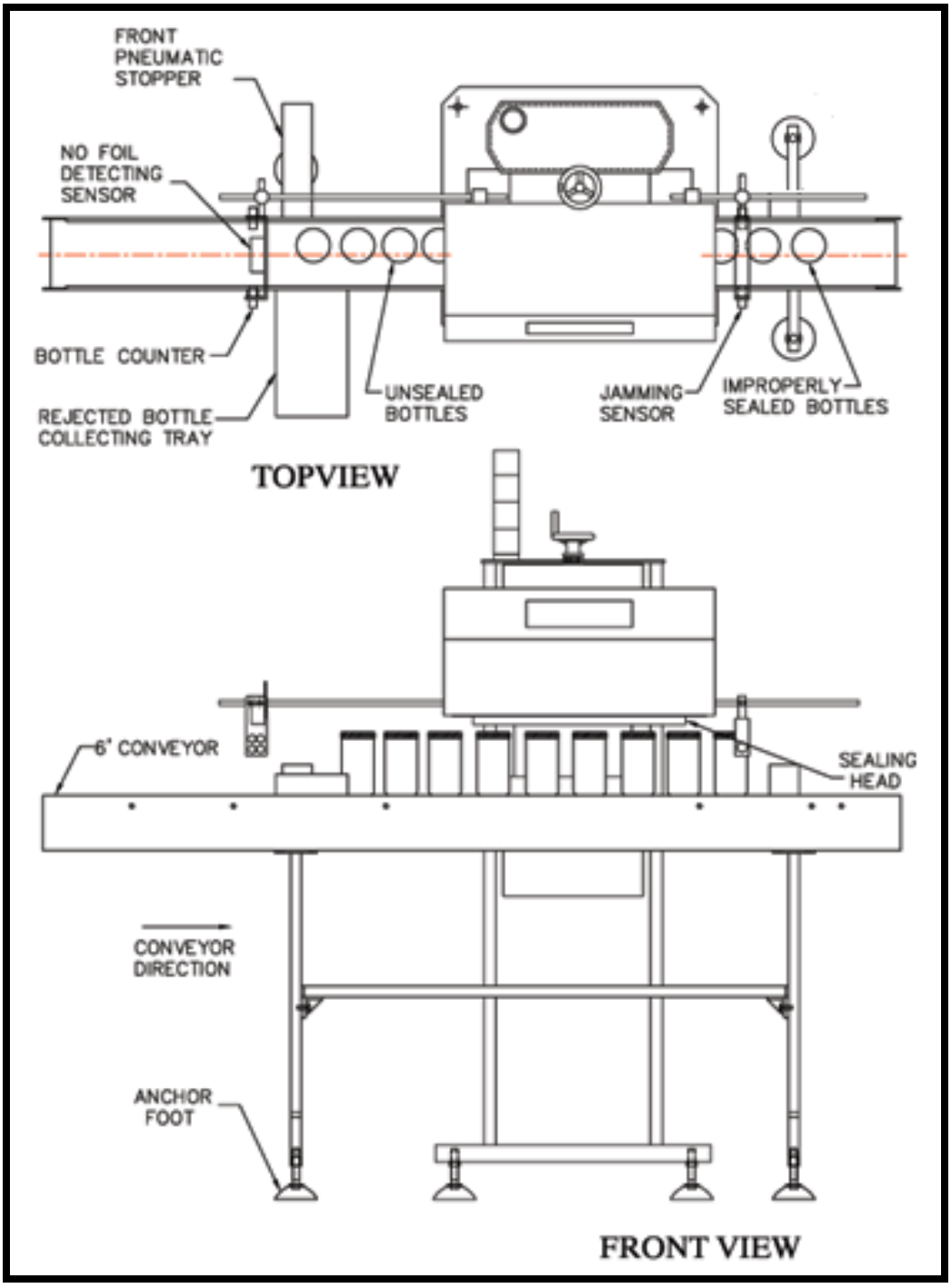
b) When the machine & the sealing head within it, is tilted, the sealing head's Centerline gets misaligned with respect to that of the cap's centerline, which may result in improper sealing.

(Incorrect position, diagram provided for illustration purpose**)**



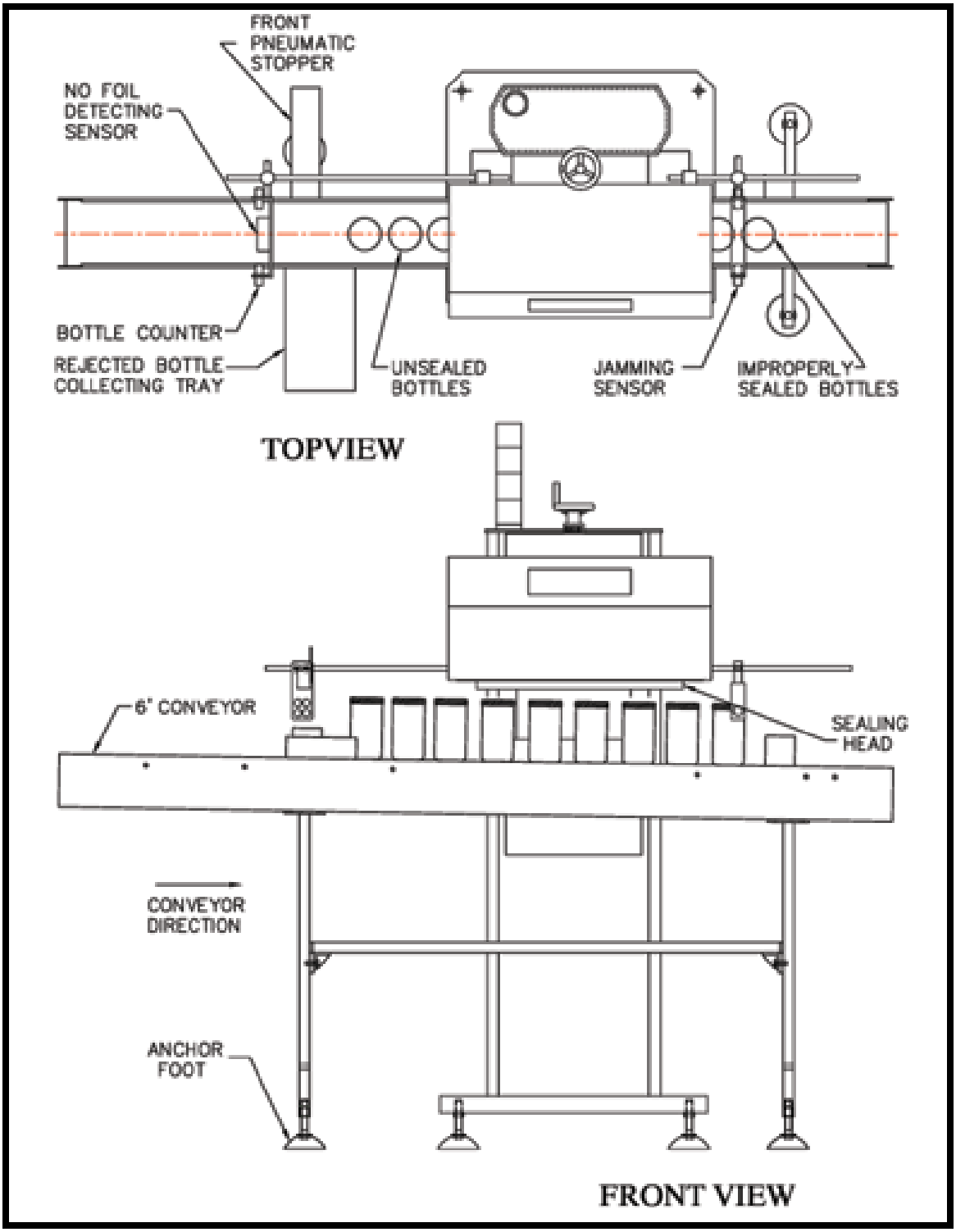
c) When the jars & the caps are not moving in a straight line along the conveyor as shown above improper sealing may occur.

(Incorrect position)



d) When the Conveyor is tilted upwards or downwards it may result in improper cap sealing.

(Incorrect position)



Section 7.0 Setting

7.1 How to Set "Rejection Time For No Foil Cap"

1. "Rejection Time for No Foil Cap" is the time taken by the bottle to reach the center of the rejection system after passing the NO FOIL DETECTOR and BOTTLE REJECTION/COUNTER Sensors. Each time the conveyor speed is changed the following steps should be taken to set the "Rejection Time for No Foil Cap":
2. Adjust the conveyor to the desired speed and let it attain that speed.
3. Place the bottle at the beginning of the conveyor.
4. Using a stopwatch, measure the time taken by the bottle to reach the center of the rejection system.
5. Repeat steps 2 and 3, five times and take the average of the time.
6. To set this average time as "Rejection Time For No Foil Cap".
7. Press MENU switch till the SCREEN reads FAULT REJECT SETUP.
8. Press SUB-MENU switch once, the SCREEN reads "Rejection Time For No Foil Cap"
9. Using the INC or DEC switch set the average value.

7.2 How to Set "For How Long Piston Should Extend"

1. "For How Long Piston Should Extend" is the time within which the extended REJECTION Piston retracts to its normal, non-obstructive position. The distance between two consecutive bottles and the speed of the conveyor can determine this time. Each time the conveyor speed is changed the following steps should be taken to set the "For How Long Piston Should Extend":
2. Adjust the conveyor to the desired speed and let it attain that speed.
3. Place the un-capped bottles at the beginning of the conveyor one after the other at the required distance.
4. Using a stopwatch, measure the time taken after the first bottle is rejected and the second bottle reaches the center of the rejection system.
5. Repeat steps 2 and 3, five times and take the average of the time.
6. This is the maximum time within which the Rejection Piston should be back at the normal position.
7. To set this average time as "For How Long Piston Should Extend".
8. Press MENU switch till the SCREEN reads FAULT REJECT SETUP.
9. Press SUB-MENU switch once, the SCREEN reads "For How Long Piston Should Extend"
10. Using the INC or DEC switch set the average value.

7.3 How to Set Bottle Jamm Time

1. Bottle Jam Time is the time after which the machine will shut down in case of a bottle jam on the conveyor. Each time the conveyor speed is changed the following steps should be taken to set the Bottle Jam Time:
2. Adjust the conveyor to the desired speed and let it attain that speed.
3. Place the bottle at the beginning of the conveyor.
4. Using a stopwatch, measure the time taken by the bottle to pass the BOTTLE REJECTION/COUNTER Sensor.
5. Repeat steps 2 and 3, five times and take the average of the time.
6. Add one second to the averaged value. Set this value by:
7. Press MENU switch till the SCREEN reads TIMER FAULT SETUP
8. Press SUB-MENU switch once, the SCREEN reads “JAM TIMER”
9. Using the INC or DEC switch set the average value.

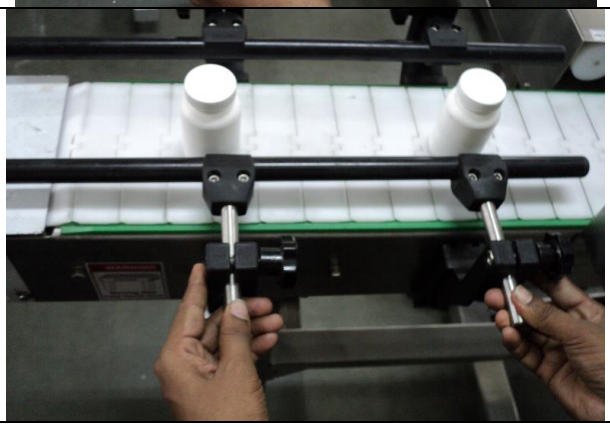
7.4 How to Set Power Save Setting.

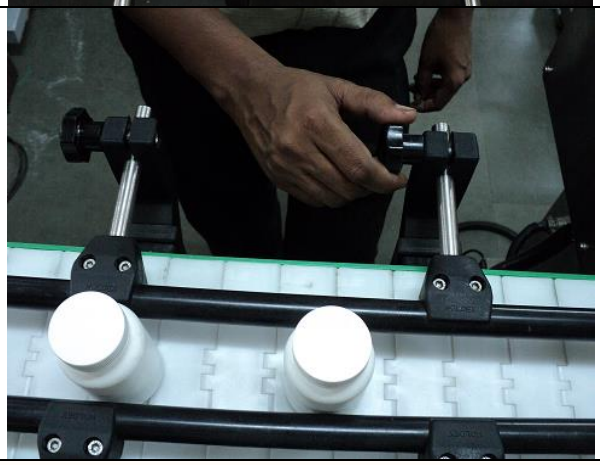
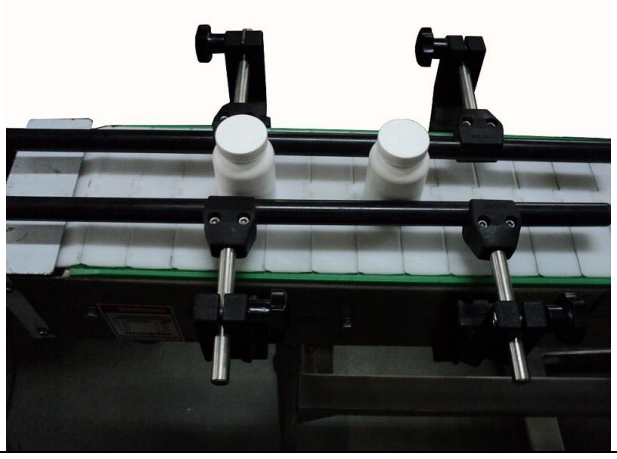
1. Power Save Setting is the time after which the machine will go in standby mode in case no bottle is on the conveyor. This time is used to save power as the machine will not be operating when there is no bottle on the conveyor. The following steps should be taken to set the power save setting:
2. Adjust the conveyor to the desired speed and let it attain that speed.
3. Place the bottle at the beginning of the conveyor.
4. Using a stopwatch, measure the time taken by the bottle to travel from the BOTTLE REJECTION/COUNTER Sensor to the JAMMING Sensor.
5. Repeat steps 2 and 3, five times and take the average of the time.
6. Add **five** second to the averaged value. Set this value
7. Press MENU switch till the SCREEN reads TIMER FAULT SETUP.
8. Press SUB-MENU switch once, the SCREEN reads “JAM TIMER”
9. Using the INC or DEC switch set the average value.

Note : 1. If single Tower light supplied , RED TowerLight will be ON / Flahsed.
2. If 3-towerlight supplied ,AMBER (Orange) Towerlight will be ON.

Section 8.0 Adjustment

8.1 Guards Adjustment as per bottle size.

Sr. No.	Method	Photograph
1	Unlock the 2 nos. adjustment knob which will loose the conveyor guides.	
2	Adjust the conveyor guides.	
3	Place the bottle and adjust the conveyor guides as per the bottle size.	

Sr. No.	Method	Photograph
4	Unlock the 2 nos. adjustment knob on the other side of the conveyor guides.	
5	Adjust the conveyor guides size as per the bottle size.	
6	The bottle should travel on the conveyor with proper centering.	

Section 9.0 Operation Manual

This operation manual helps the operator and maintenance staff to give general outline of the methods and function of the machine. It also aims to ensure that customer obtains maximum services and the best results in most efficient manner.

Altering any portion of this manual is prohibited unless approved in writing by the Maharshi Udyog. any operation or maintenance point not completely understood should be clarified by contact to Customer Care No: 097277 54307 or e-mail: service@maharshi.com

9.1 Pre-Startup check list

Electrical:

1. Check the single phase main cable connection is connected to the machine incoming supply.
2. Check the other end of the main cable is connected to the main junction box.
3. Check the Control Panel wiring for any loose connection.
4. Fix a location on the conveyor line where you would want the Induction Cap Sealer to seal.
5. A 230V/15A three pin electrical socket should be available near this location.
6. This location must be at-least 600mm along the length of the conveyor above which the sealing head will be located.
7. Ensure that the MCB of the machine is in ON Condition.

Container:

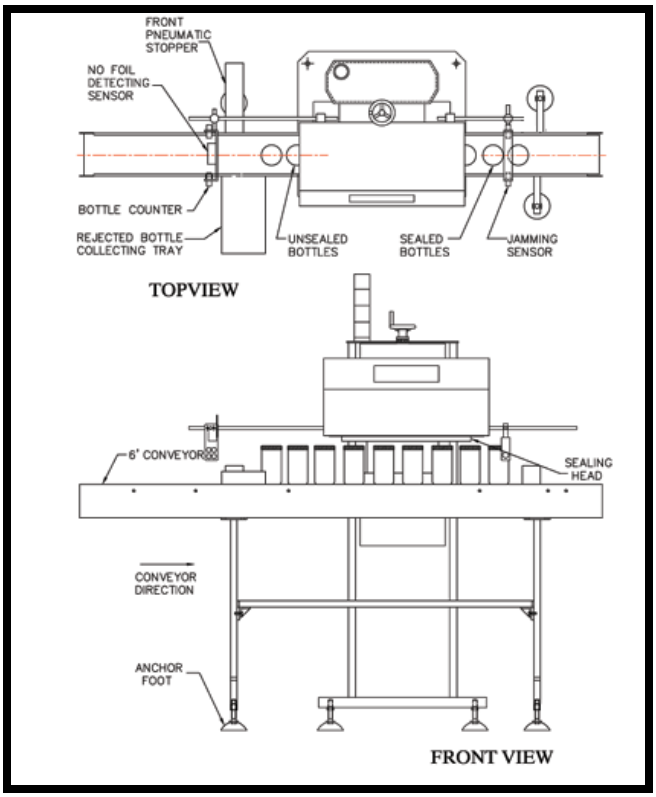
1. Lip of the container should be even and not uneven.
2. Gap between the roof of the cap and the lip of the container should be minimum (just enough for the wad to sit) when the cap is fully tightened. This on order builds a positive pressure on the surface of the lip.
3. Thickness of the wad should be > the gap between the roof of the cap and the lip of the container.
4. The wad should uniformly sit on the lip of the container. To ensure this insert a wad in the cap and tighten it on the bottle. Now uncap the cap. An impression of the lip of the bottle will be seen on the foil. A clear impression shows uniform contact.
5. The cap should uniformly sit on the lip of the container and not be in tilted position.

General Information:

1. Ensure no tools or spanners are left on the equipment or the control panel.
2. Check the Pneumatic air-supply.
3. Ensure all the safety guards of the machine are covered properly.
4. De-Activate the Emergency Stop Switch if activated.

9.2 How to Start the Machine ?

1) Ensure that the conveyor is placed in the center of the sealing unit. Adjust it as per the center arrow pasted on the Sealing Unit.



2) Adjust the Induction Sealing Unit height as per the bottle size. The size can be adjusted by the hand wheel provided at the top of the slide profile.

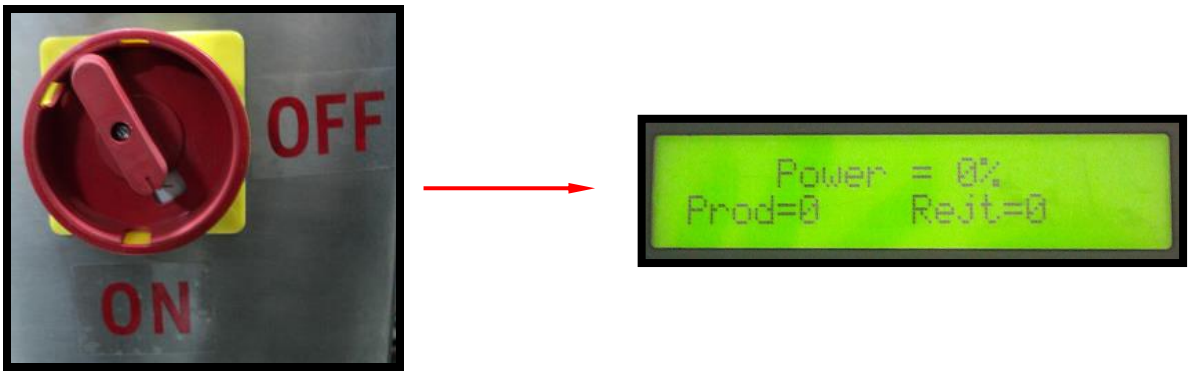
3) Distance of 2mm should be maintained between the bottle cap and the Sealing Unit for good sealing.

4) Feed the bottles on the machine infeed conveyor manually.

5) Switch on the **Supply Mains** from the main junction box.
By switching the **Supply Mains** from the Main Junction Box the electrical power comes to the machine Control Panel.

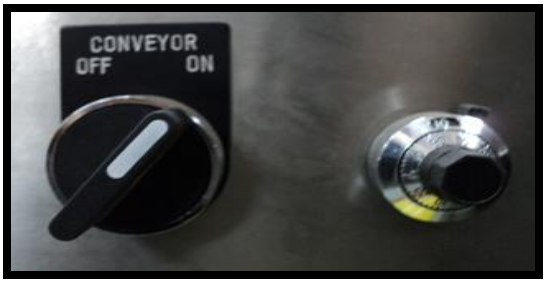
Note: (Applicable if rejection system provided by Electronics Devices)
Check the Pneumatic Air Supply for the Rejection Unit it should be 3 to 5 Kg / CM SQ.

6) Switch the **Main Supply Selector Switch** towards ON position which will activate the HMI Screen in the operator panel and start displaying the Main Screen. The red lamp behind the sealing unit starts glowing with red indication indicating the machine is ready for operation.



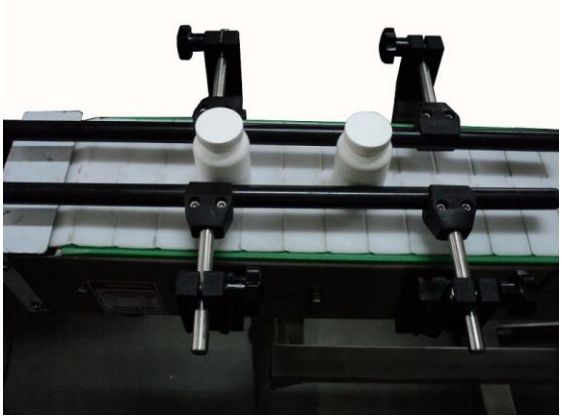
Note:
LCD Screen Description is shown in the Section 3.6 Point No.6 HMI Description.

7) Select the Selector Switch towards ON Position to start the conveyor, when you want to use the conveyor as a transport conveyor and not to seal the bottles.



Note:
Conveyor speed adjustment can be done by rotating the conveyor speed pot, applicable if conveyor is supplied by Electronics Devices.

8) Pass the bottles on the conveyor one after other.

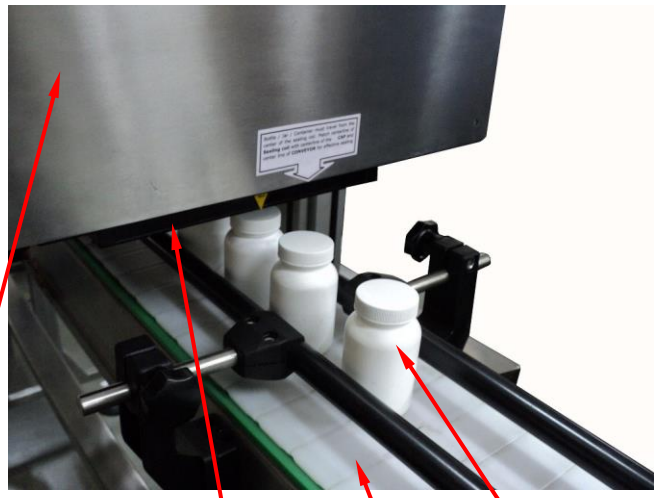


9) Press the Start Key on the operator panel to start the sealing operation.

Start Key

10) If there is a rejection unit, the bottles without any wad is sensed by the sensor which commands the pneumatic cylinder to get active and reject the bottle.

11) Meanwhile the good bottles travel below the induction sealing head which generates a varying electromagnetic field. As the bottle passes under the induction sealing head the conductive aluminum foil begins to heat. The heat melts the wax, which absorbs into the pulp backing and releases the foil from the cap. The polymer film also heats and bonds with the lip of the bottle. When cooled, the polymer creates a bond with the bottle resulting in a sealed product.



12) The power percentage readings get displaced on the LCD SCREEN. If the Induction Cap Sealer is in *FAULT MODE*, the co-responding *FAULT MESSAGE* will be displayed on the LCD SCREEN and sealing will not be turned on even if this button is pressed.

9.3 How to Stop the Machine ?

1) Press the Stop Key on the operator panel to stop the sealing operation.

Stop Key

2) Switch the **Main Supply Selector Switch** towards OFF position which will Di-activate the Display Screen and switch off the red indication lamp.

3) Switching OFF the **Mains Supply,** there will be no electrical power to the machine.

Section 10.0 Maintenance Manual

This maintenance manual is issued to give the operator and maintenance staff a general outline of the methods and function of the machine maintenance. It also aims to ensure that customer obtains maximum services and the best results in most efficient manner. Before attempting to perform maintenance on this machine you should read this manual carefully and become familiar with maintenance procedure and schedules so you may perform them properly and safely.

Any operation or maintenance point not completely understood should be clarified by contact to Customer Care No: 097277 54307 or e-mail: service@maharshi.com :

Trained, qualified and authorized personnel must only carry out maintenance and repair operations.

For any Maintenance job either Preventive or Break down the Safe Maintenance Practices should be followed. In any case no Safe guarding interlock should be bypassed during maintenance. The Preventive Maintenance schedule as specified by manufacturer should be preferably put to practice.

Do not carry out maintenance work immediately after switching off the machine. Allow the moving elements to come to rest.

10.1 Lock out tag

Lock Out Tag

MACHINE UNDER MAINTAINENCE

DO NOT START THE MACHINE

LOCK OUT ACTIVATION TIME: _____ SIGN:
MAINTANANCE ENGINEER

SIGN:
MACHINE COMMANDER

LOCK OUT REMOVAL TIME: _____ SIGN:
MAINTANANCE ENGINEER

SIGN:
MACHINE COMMANDER

⚠WARNING

Before servicing electrical panel, disconnect the supply to the machine main switch. Because there is live high voltage in electrical panel, even after main switch of machine is in off condition

10.2 General Maintenance

⚠WARNING

Only qualified person should attend the machine.

⚠WARNING

Before carrying out any maintenance or repair work please disconnect the electric power supply and compressed air supply to the machine.

To clean the machine only wipe it with soft cotton cloth.

A periodic visual inspection is good practice.

Visual inspection:

Check for dust built up (especially in dusty environments) inside the top cabinet. Heavy build up, especially metallic type dust, will impair cooling and may cause short circuits. If there is a dust built up, use an air hose, set to low pressure just enough to remove dust, to blow dust from the equipment. Note that air must be clean & dry.

Confirm that **cooling fan** on top section and bottom section are not Jammed and working smoothly. There is not much vibration from the fan.

⚠WARNING

Dangerously high voltages may exist inside the top section even when main power supply is cut off. Wait for at least 15 minutes for filter capacitors to discharge before attempting any repairs.

10.3 Preventive Maintenance

To ensure reliable and trouble-free operation, follow the maintenance procedure outlined below:

a. Ensure all connections secure in top section. For this wait for 10 minutes after switching OFF supply to allow filter capacitor to discharge completely.

b. Confirm that cooling fan on top section and bottom section are not Jammed and working smoothly. There is not much vibration from the fan.

c. Blow the dry air with low pressure to clean any dirt settled in the machine

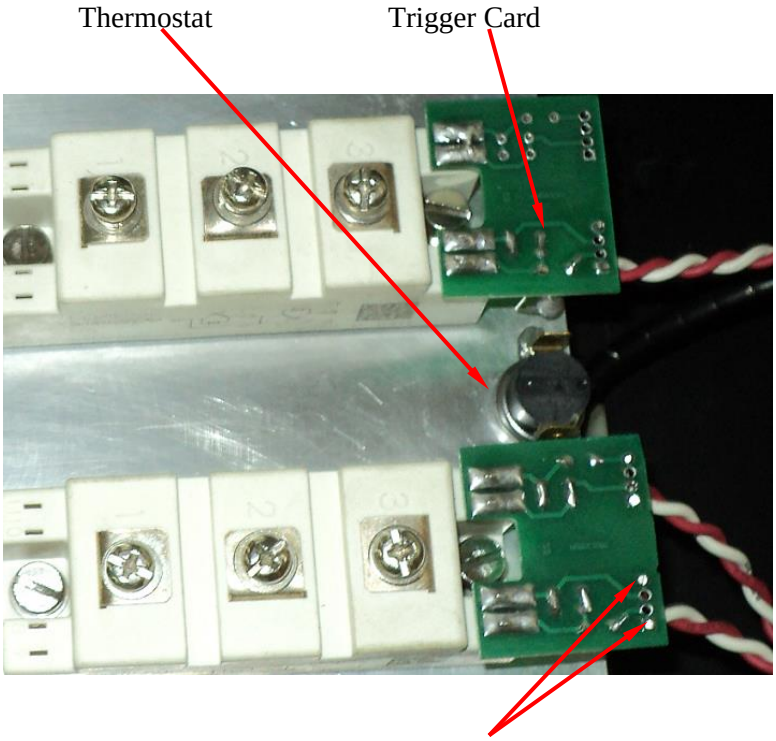
d. To Clean a) Wipe with cloth. b) Don't spray water/liquid on the surface.

10.4 Checking of IGBT'S

1. Switch OFF the Mains supply from the machine.
2. Remove the side screws of the top cabinet cover.
3. Slowly slide the cover and remove the FRC cable (communication cable).
4. Disconnect the connectors of IGBT's from control card. See the wiring diagram Or the Picture.
5. Put the probe of Measuring Meter across white and red wire. It should read 9.90 to 10 kilo ohms. Measure this on each IGBT connections.
6. If the reading is not within the range for the IGBT, change the IGBT since it has become faulty.
7. After replacing the faulty IGBT with the New IGBT, connect the connectors to the control card.
8. Check all the connectors and lugs are inserted properly and are tight.
9. Connect the FRC cable (communication cable) and slide the top cover.
10. Tight all screws of the top cover.

Note: -
One side of IGBT (Chopper) should be shorted as shown in the diagram.

Enlarged Photograph of IGBT's

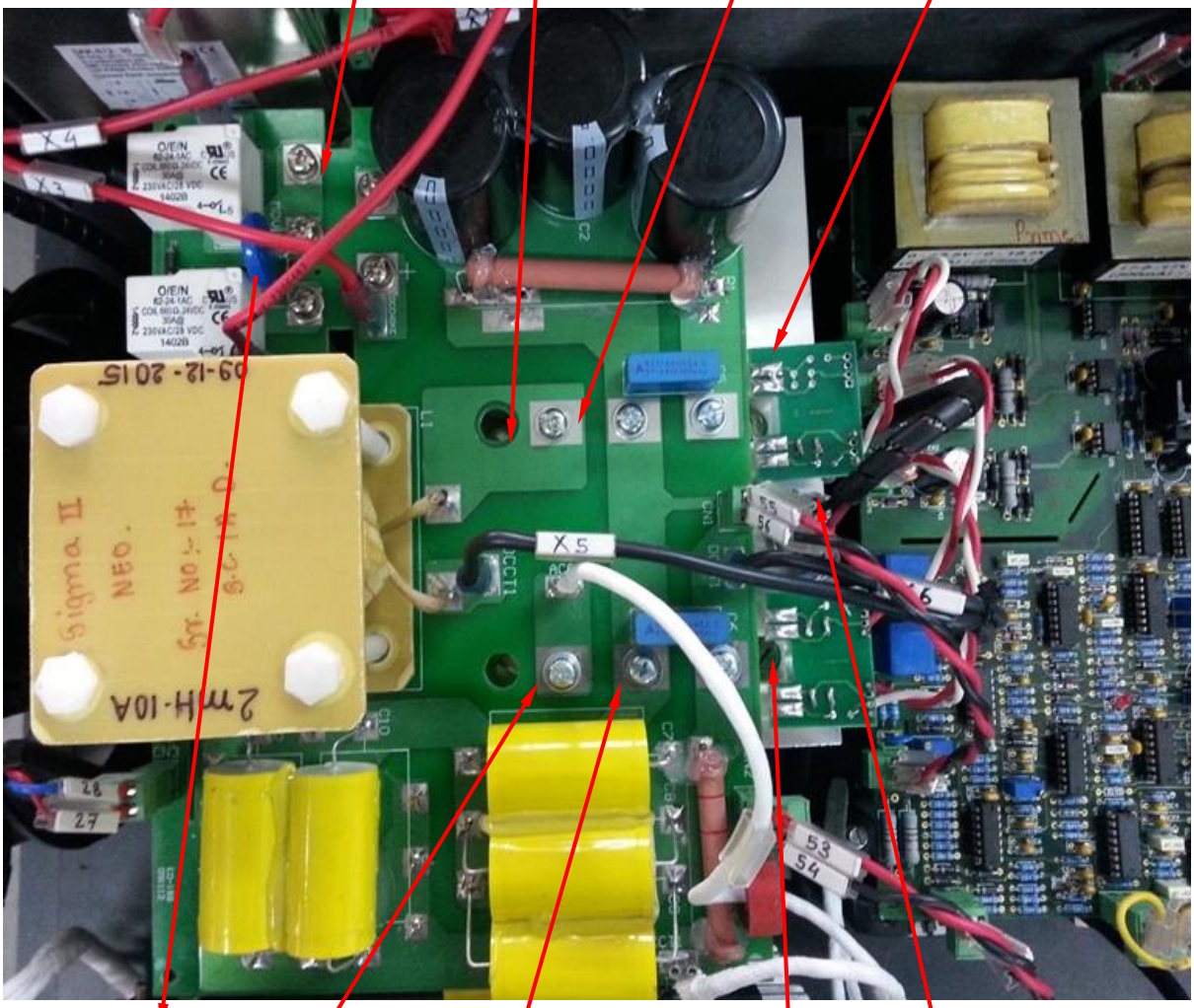


10.5 How to Change IGBT's

1. Switch off the Mains Supply
2. Slightly loose M4 screws of IGBT's mounted on heat sink.
3. Remove all M5 screws on IGBT inverter and IGBT chopper. Remove all connectors of IGBT's from control card
4. Slightly lift the Power Card and slide the IGBT forward. After sliding the IGBT remove it beneath the power card.
5. Replace the faulty IGBT's with the New IGBT's.
6. Slide the New IGBT's [IGBT (Inverter) & IGBT (Chopper)], Beneath the Power Card by lifting it slightly.
7. Put M5 screws on IGBT, keep the screws initially loose.
8. Ensure the mounting of the IGBT is aligned, tight all M5 screws.
9. Tight the M4 screws of IGBT are mounted on Heat sink.
10. Insert IGBT connectors to Control card correctly.

Note: -
One side of IGBT (Chopper) should be shorted as shown in the diagram.

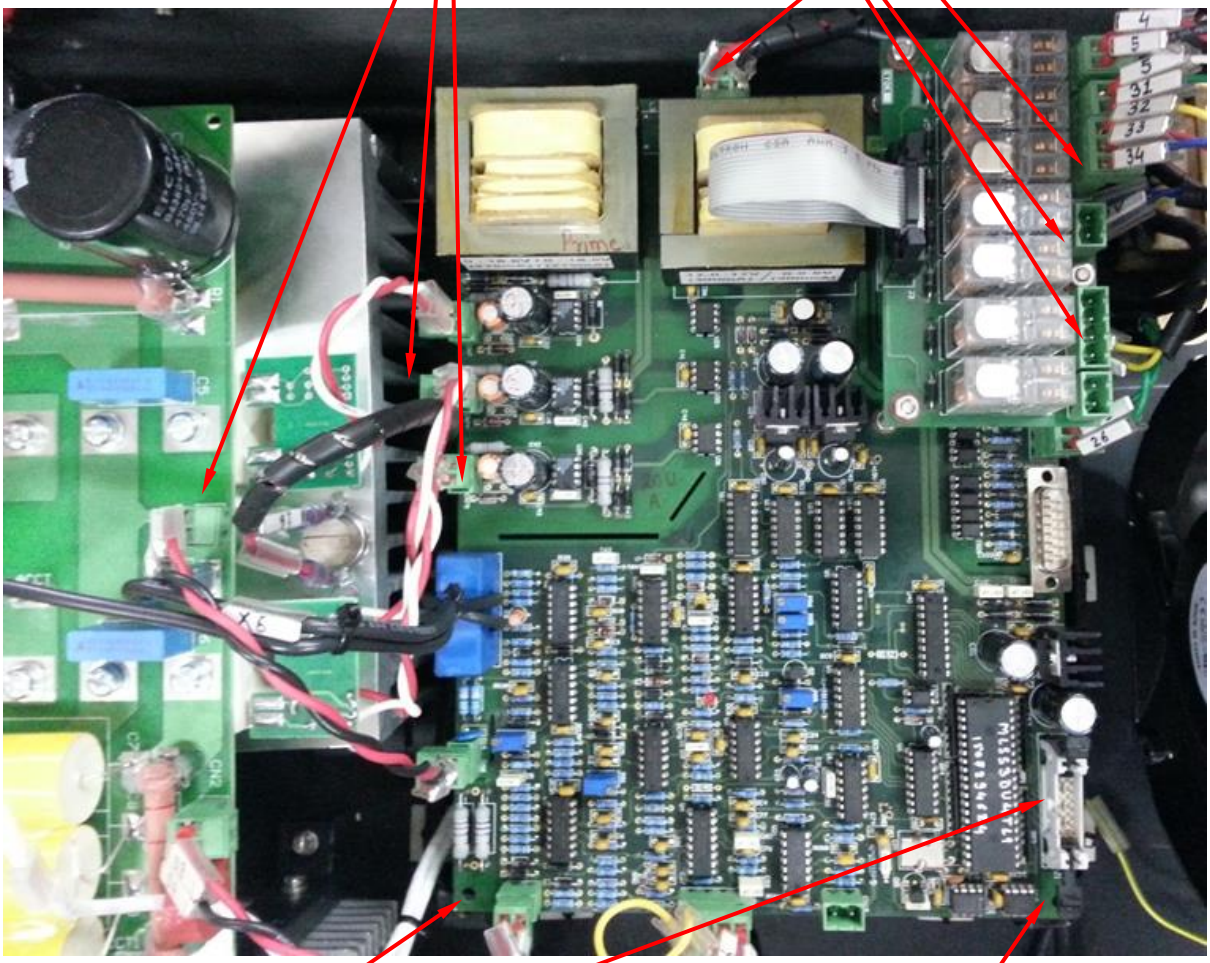
Enlarged Photograph of IGBT



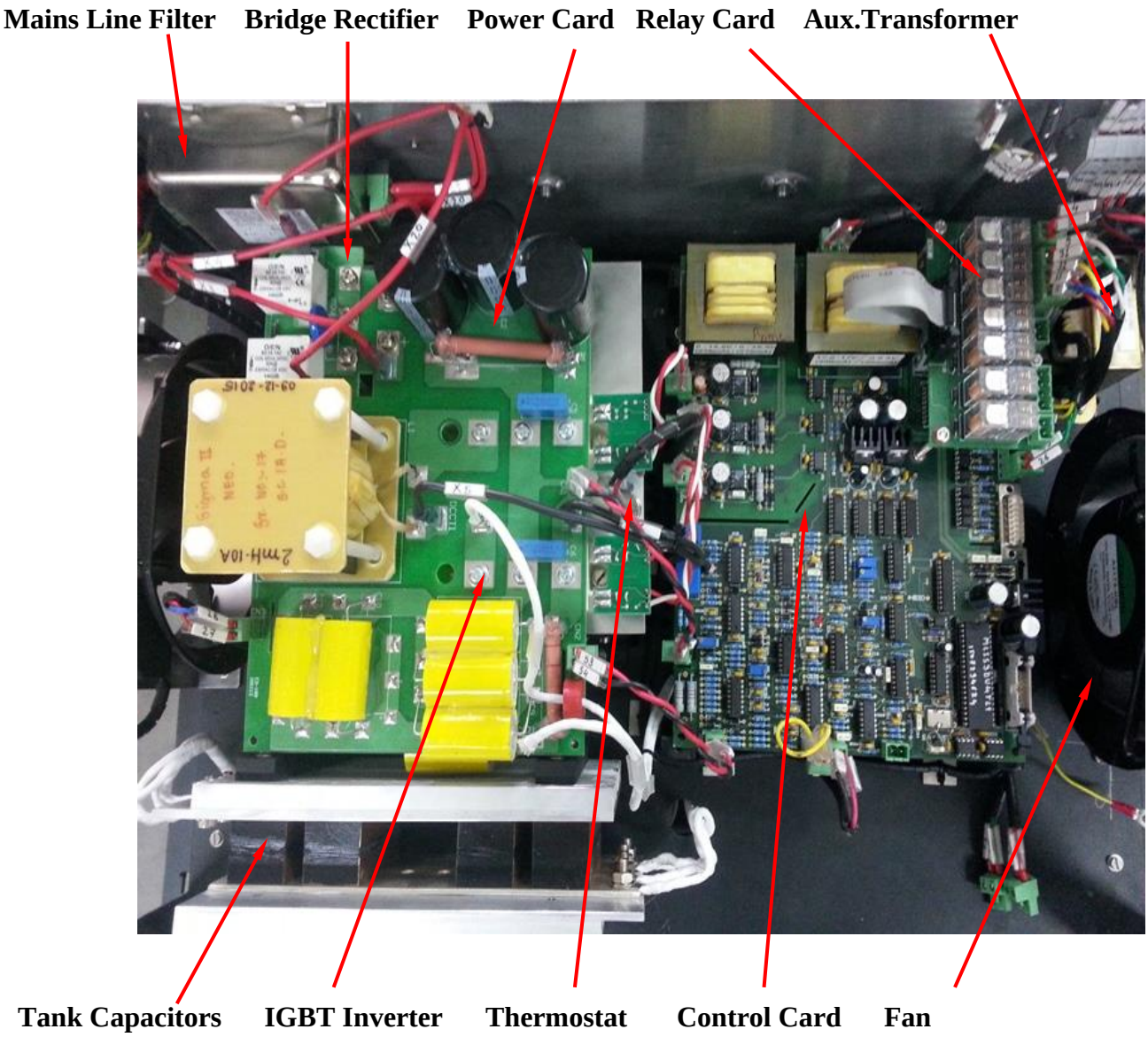
10.6 How to Change Control Card.

1. Switch off the Mains Supply
2. Remove top cover of the machine.
3. Remove all the connectors and Lugs connection from Control card.
4. Remove all M4 screws from Control Card.
5. Replace Old control card with new control card.
6. Put M4 screws on control card and keep the screws initially loose. After the control card is aligned, tight all M4 screws.
7. Insert all connectors and lugs to the control card.
8. Connect the FRC Cable (communication cable) to J1 of Control Card.
9. Slide the top covers backwards and tight the screws.
10. Put on the Mains supply of the machine. (Put the M.C.B ON)
11. Adjust the Power Level to the desired requirement. Seal the Jars/ bottles.

Enlarged Photograph of the Control Card



Enlarged Photograph of Cards / Components



1) Ensure that the compressed air tube for rejection system is connected properly.
2) Ensure Proper wire Connection to the cards.

Section 11.0 Trouble Shooting

SYMPTONS	PROBABLE CAUSE
No sealing	1. Wrong sealing WAD or liner, for that type of container. 2.Induction sealing equipment OFF 3. Gap between sealing head and cap of container too wide. 4.Removing closure too soon after induction sealing 5.Too low power setting for line speed
Partial Seals High Percentage of Leakers	1.Closure having too low torque 2.Induction head not centered above container 3. Induction head not parallel to the conveyor. 4.Land area, on lip of the container, having high areas or low areas 5.Land area, on lip of the container, not level 6.Product touching liner when being induction sealed 7.Part of land area contaminated with product, flame treated or chemical treated
Partial Seals Low Percentage of Leakers Less than 2%	1. Inconsistency in required on torque 2. Land area not flat or level 3. Land area contaminated with product 4.Closure not designed to accommodate the overhand of liner 5.Liner too thick or rigid for closure to apply consistent pressure on the land area 6. Closure not turning a full 360 deg. 7.Container finish has saddle, ridges, flashing, parting line or narrow land area 8.Closure is too large for neck of container 9.Closure should be designed to have raised pressure bead to cover majority of land area to ensure consistent and complete seals
Do Leakers occur in a common area	1. Closure not turning a full 360^0 2. Check both parting lines 3. Oversize liner (overhang)interfering with uniform pressure 4. In unscrewed closure most times the overhang is in the same location so leakers could be at the overhang or opposite to it.

SYMPTONS	PROBABLE CAUSE
Excessive removal torque of closure on one-piece liner	1. Excessive exposure time (low conveyor speed) 2. Too high-power setting on induction equipment 3. Too high on-torque 4. Closure and container threads not properly matched. 5. Tri-Tabs sticking to side wall and threads of closure 6. Liner's overhang sticking to side wall and threads of closure 7. With excessive power, the primary liner will stick to the P.E. secondary liner on the outside edges.
Excessive removal torques of closures on two-piece liners. Wax not totally absorbed	1. Insufficient exposure time (conveyor too fast) 2. Insufficient induction field strength (Low Power) 3. Improper sealing head height 4. Insufficient hot melt adhesive 5. Hot melt off center and squeezes up threads 6. Liner disk undersized. Plastic from container finish squeezing and bonding to closure pulp backing 7. Too high on-torque application 8. Product touching liner when being induction sealed.
Scorched or Burnt Pulp and Induction Liner	1. Excessive exposure time (low conveyor time) 2. Excessive power setting (field strength too high) 3. Bottle Jamming under induction head 4. Closure not fully torqued-on (no heat sink from containers and closure) 5. Induction sealing head alignment not parallel, centered and level to closure
Very little or no removal torques of closures	1. Closure applied too lightly (very little on-torque before sealing) 2. Excessive power setting degradation of pulp backing 3. Excessive application torque and stripping of threads
No Display on Front Panel.	1. Open Rotary switch panel and check the MCB, it should be in "ON position" 2. Check Bridge rectifier and wire connections. 3. Check M.O.V. on the card, it should be O.K. If it is faulty, temporary you need to remove MOV from card and can START the machine. It is recommended to replace the faulty MOV with NEW MOV.

Section 12.0 Checking the Bottle Seals

Due to the wide variety of sealing materials available, the specific adhesion properties of each cap/container combination will have to be determined by the customer. Generally, proper sealing can usually be determined by the following:

Sr.no.	Possible Causes	Remedy
1	Was the seal completely cool before removing the cap?	If Not, let the cap cool for two (2) minutes before opening it. minutes before removing cap
2	Foil liner melts bottle top?	If Yes, reduce power level
3	Was there any burning of the cap?	If Yes, reduce power level
4	Did the wax release from the foil liner and pulp board?	If Not, increase power level
5	Did the liner seal completely around the opening?	If Not, increase power level
6	Does the seal leak?	Check for product content on the container lip.
7	Does the seal release easily (for peel off seals)?	If Yes, increase power level slightly

Section 13.0 Notes

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