

INTELLISPEC™

PMH-1200 Preform Inspection Machine

Pressco Technology Inc.

Part Number 69101 Rev. 02



Original Instructions

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Chapter 1

HOW TO CONTACT PRESSCO

24/ 7 Customer Support:

+1 440-498-2000

E-mail:

service@pressco.com (*mailto:service@pressco.com*) or *techsupport@pressco.com*
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Web Site:

www.pressco.com (*http://www.pressco.com*)

Business Hours:

Monday - Friday, 8:00am - 5:00pm Eastern Standard Time

Chapter 2

INTRODUCTION

ABOUT THIS OPERATOR'S GUIDE

This manual provides operating instructions for the PMH-1200 Preform Inspection Machine. It provides the necessary information to operate a PMH-1200 that is properly installed and programmed. This manual is not a programming nor hardware maintenance guide. Programming, maintenance, and system setup require specialized training. This training is available from Pressco and may be conducted at your plant or at Pressco in Cleveland Ohio, USA. For more information, contact Pressco's training department.

This manual:

- Is considered an integral part of the machine and should be kept handy for future reference as long as the system is being used in your plant.
- Is your responsibility to keep in good condition, in a dry place, and ready for consultation by the **authorized users** (on page 22) of the system.
- Contains the technology implemented at the time of selling and supplying the system and shall not be considered inadequate in case of technological enhancements in the machine or in the manual's illustrations.

Related information can be found in the Intellispec Series IV system manuals:

- Programming Guide 4.6 [part number 66777 Rev.01] or version 4.7 [part number 70292 Rev. 01]
- Hardware Guide Series IV-D+PET [part number 65397 Rev. 03]

TYPOGRAPHICAL CONVENTIONS

Following is a list of typographical conventions used in this manual:

- **Bold type** indicates a topic heading or an important item or statement.
- *Italicized type* indicates emphasis.
- Names of main components and system control signals have the first letter of each word capitalized. For example: Processor Cabinet.
- Caution messages appear as shown below:



Caution

Caution messages indicate important information which must be observed to prevent: loss of data, poor system performance, or equipment damage. These messages are set off from the body text as shown here.

- Warning messages appear as shown below:

**Warning**

Warning messages indicate the possibility of minor injury to yourself or others. These messages are set off from the body text as shown here.

- Danger messages appear as shown below:

**Danger**

Danger messages alert you to specific conditions that can cause serious or fatal personal injury. Danger messages give you important information which must be observed to prevent injury. These messages are set off from the body text as shown here.

- Notes appear as shown below:

❖ *Note: Notes contain special information that warrants being set off from the body text as shown here.*

- Important Notes appear as shown below:

**Important**

Important notes are set off from the body text as shown here.

Chapter 3

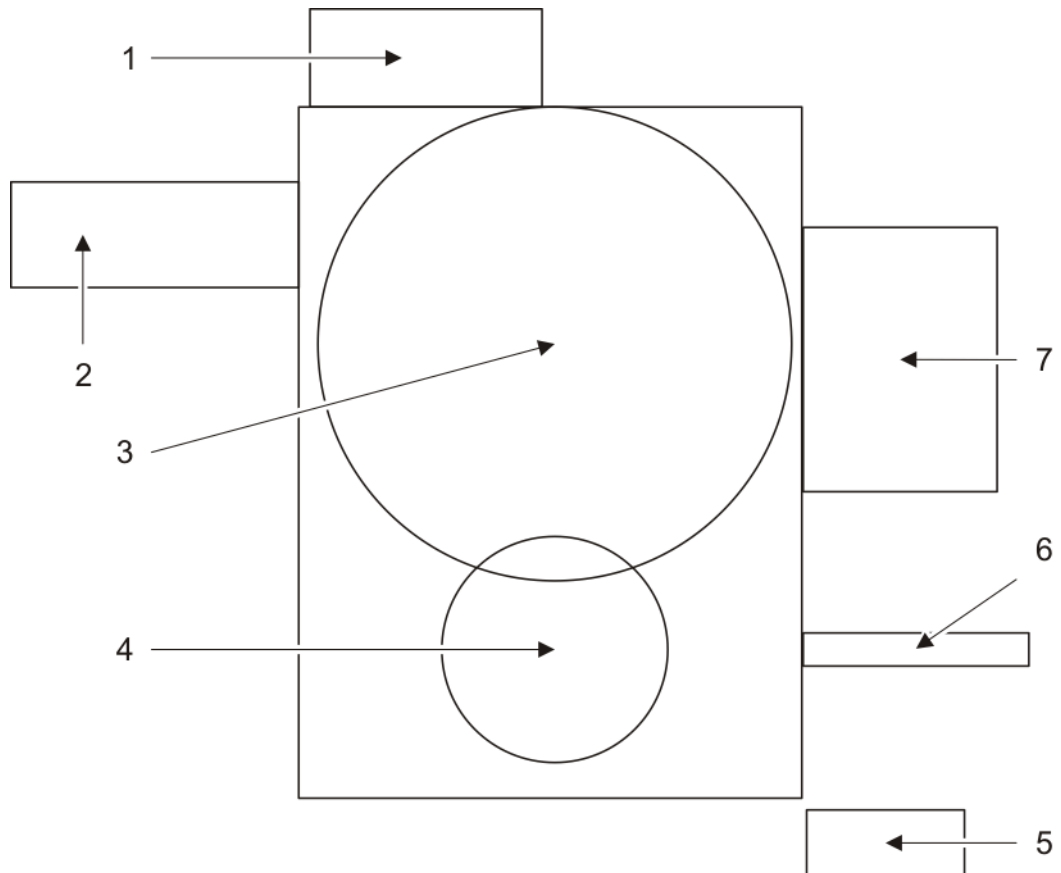
SYSTEM OVERVIEW

GENERAL DESCRIPTION

The PMH-1200 is a Preform Inspection Machine designed to convey various sized preforms through a series of video inspection positions. It consists of:

- an infeed assembly
- a stage 1 starwheel
- a stage 2 starwheel
- a reject device and chute
- a flat top outfeed conveyor

The first stage is designed to transport preforms such that the finish, seal, and gate are presented for inspection. The second stage is designed to transport preforms such that the body below the neck ring is presented for inspection. After this inspection, the preform is released and is either dropped onto the outfeed belt or blown into the reject chute.



1	Reject bin
2	Outfeed conveyor

3	Stage 2 starwheel
4	Stage 1 starwheel
5	Human Machine Interface (HMI)
6	Infeed Rails
7	3 camera preform inspection module

OPTIONS

The PMHI-1200 Preform Inspection Machine is an option to the PMH-1200. The PMHI-1200 contains a side grip outfeed conveyor whereas the PMH-1200 contains a flat top outfeed conveyor.

The first stage is designed to transport preforms such that the finish, seal, and gate are presented for inspection. The second stage is designed to transport preforms such that the body below the neck ring is presented for inspection. After this inspection, the preform is either diverted to the reject chute or released into the outfeed belts.

SYSTEM SPECIFICATIONS

Declaration of Conformity - PMH-1200



We,

Pressco Technology, Inc. of 29200 Aurora Road, Cleveland, Ohio USA 44139-1847,
hereby declare under our sole responsibility that the following machinery complies with
the essential health and safety standards and protection requirements of the following
standards:

Machinery Directive 2006/42/EC, amending Directive 95/16/EC (recast)

Electromagnetic Compatibility Directive 2004/108/EC

Simple Pressure Vessel Directive 87/404/EEC

Machine description: **Preform Inspection Machine**

Make: **Pressco Technology Inc**

Model Number: **INTELLISPEC™ PMH-1200**

We certify the above product and its components have been designed and manufactured
using the following transposed harmonized European standards:

EN1200-1 (2003)	Safety of Machinery - Basic concepts, general principles for design, Part 1: Basic terminology, methodology
EN12100-2 (2003)	Safety of Machinery - Basic concepts, general principles for design, Part 2: Technical principles and specifications
EN349 + A1 (2008)	Safety of Machinery - Minimum gaps to avoid crushing of parts of the human body
EN954-1 (1996)	Safety of Machinery - Safety-related parts of control systems - Part 1: General principles for design
EN983 + A1 (2008)	Safety of Machinery - Safety requirements for fluid power systems and their components - Pneumatics
EN1037 + A1 (2008)	Safety of Machinery - Prevention of unexpected startup
EN13850 (2008)	Safety of Machinery - Emergency stop - Principles for design
EN13857 (2008)	Safety of Machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
EN60201-I (2007)	Safety of Machinery - Electrical Equipment of Machines, Part 1: General principles for design

A technical construction file for this product is retained at the above address.

Signed:

Date:

Name: **Fritz Awig**

Title: **Vice President, Customer
Support Engineering**

Being the person authorized by the manufacturer to sign on their behalf.

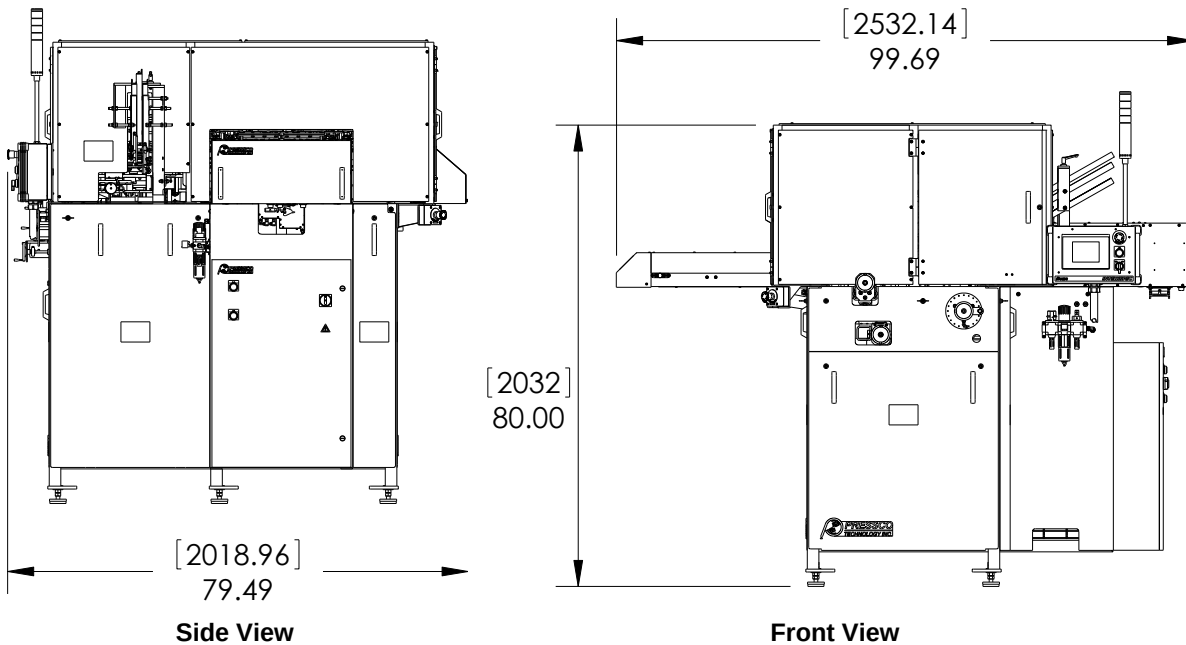
System Electrical Specifications

The following are electrical specifications for different configurations of the machine:

Configuration	Specification
Voltage Range	380-480 VAC
Frequency	50/60 Hz
Current	15A @ 480 VAC, 100% Load

System Measurements

The following are the weight and dimensions of the PMH-1200:



Measurement	Value
Weight (total machine)	1364 kg [3000 lbs]
Height	2032 mm [80.00 in]
Width	2532.14 mm [99.69 in]
Depth	2018.96 mm [79.49 in]

Environmental Conditions

The PMH-1200 machine is designed to be safe in the following environmental conditions:



Warning

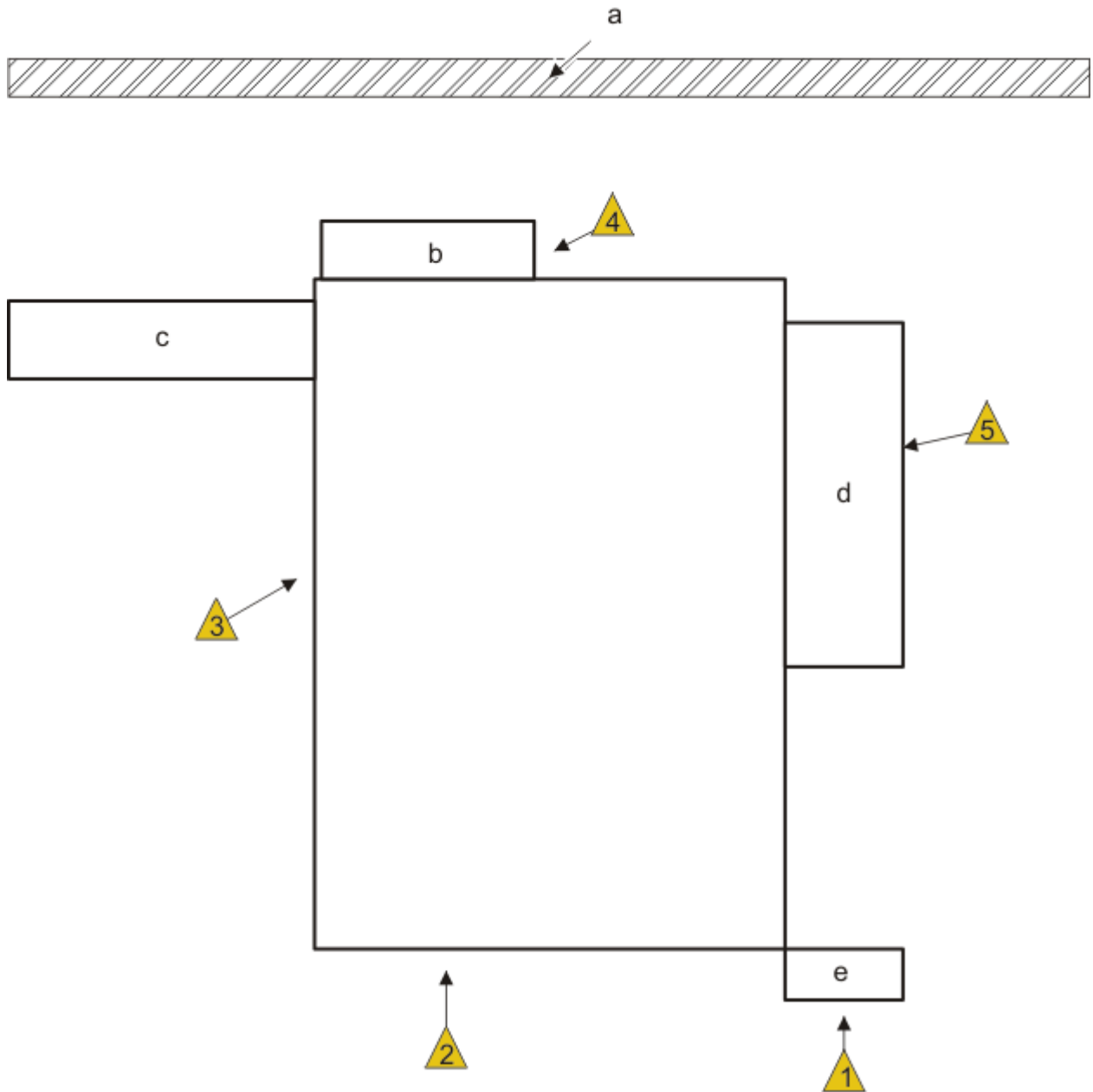
This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

❖ *Note: Please consult **Pressco Technology Inc.** (see "**How to Contact Pressco**" on page 3) if your environmental conditions are outside of those listed.*

Condition	Specifications
Indoor/ outdoor use	Indoor use only
Altitude	Up to 2000 meters
Operating Temperature	5 °C to 50 °C
Storage Temperature	0 °C to 70 °C
Humidity	Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 50 °C
Mains supply	Voltage fluctuations up to ± 10 % of the nominal voltage
Overvoltage protection rating	Transient overvoltage typically present on MAINS supply <i>NOTE: The normal level of transient overvoltage is impulse withstand (overvoltage) category II of IEC 60364-4-443.</i>
Rated pollution degree	This instrument is designed for use in Installation Category II and Pollution Degree 1 as per EN61010-1 and EN60664 respectively.

Sound Pressure Level

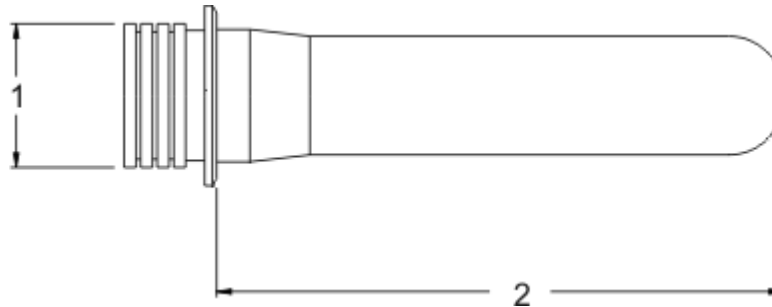
The PMH-1200 has a maximum 70 dBA level at 1 meter distance. Use proper hearing protection as specified by your plant safety instructions.



a	wall
b	Reject output
c	Output conveyor
d	Electrical cabinet
e	HMI

Acoustic Emissions Test Position 	Ambient	Emission	Limit
1	57.2	73.3	70 dBA
2	57.2	75.7	
3	56.9	73.5	
4	56.9	73.4	
5	56.9	76.4	

Range of Preforms



1	Finish Diameter: Minimum = 24.5 mm, Maximum = 50 mm
2	Length (Under Neck Ring): Minimum = 25 mm, Maximum = 150 mm

Pneumatic Requirements

Pneumatic requirements are 90 psi, 55.0 SCFM (620 KPa, 1500 LPM), variable, based on utilization of air knives. Air pressure is monitored by the PLC and will display an alarm condition on the HMI if it is not sufficient for rejection. If this condition repeats, a surge tank may be required.

SAFETY INFORMATION AND MARKINGS



Do not, under any circumstances, tamper with sealed machine parts or devices. This could result in the removal of protections that might create potentially hazardous conditions.



This product contains no operator serviceable parts. Refer servicing to qualified personnel. To prevent electrical shock do not open cabinet doors whilst power is connected.

1



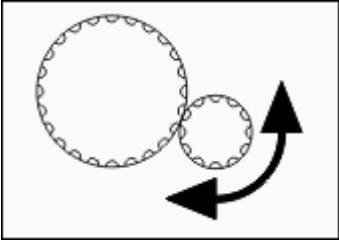
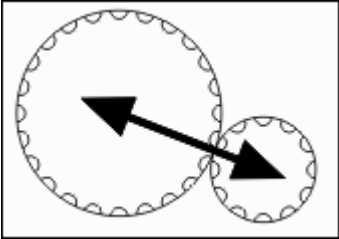
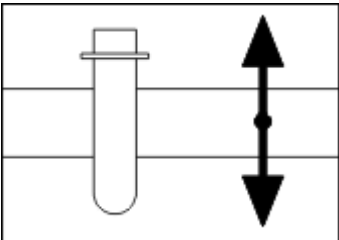
8

9

1	Series tag
2	Serial number
3	Enclosure type
4	Year of construction
5	Short circuit current rating
6	Electrical diagram wiring index
7	Weight of machine
8	Pressco contact information
9	Component certification
10	Full load current
11	Phase
12	Volts

DECALS

The following decals are found on the PMH-1200 machine. See ***Part Changeover Procedures*** (on page 81).

	Phase Adjustment
	Mesh Adjustment
	Height Adjustment

SYMBOLS

The following symbols are used on or near the PMH-1200 machine. Be aware of potential risk hazards.

 WARNING HIGH VOLTAGE 	High voltage
 WARNING Arc Flash and Shock Hazard Appropriate PPE Required Do not operate controls or open covers without appropriate personal protection equipment. Failure to comply may result in injury or death! Refer to NFPA 70E for minimum PPE requirements. 	Arc flash
PE	Protective Earthing Terminal (at incoming supply point)
	Protective Earthing Terminal

WARNING DEVICES

The PMH-1200 system has warning devices that indicate system failure or report excessive defects or warnings for your production line. See ***Machine Control Functions*** (on page 57).

RESIDUAL RISK

The PMH-1200 system has been designed to minimize any danger of personal injury. However, the system uses rejection devices to remove defective product from the production stream. Also, the electronics cabinets contain risk of shock if they are opened. Observe the following safety warnings when operating the system or working near it:



Warning

Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.



Warning

Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet door closed.

INTENDED USE

TYPE OF PROCESS

The PMH-1200 system is intended to monitor container and other special manufacturing processes and identify non-conforming product.

INTENDED USE

The PMH-1200 system is designed and constructed for use in an indoor industrial environment, always sheltered from the weather.

SPACE REQUIRED

The PMH-1200 machine and accompanying sensors must be installed in a place that will enable safe and easy installation, size changeover, user operation, and maintenance procedures.

NON-INTENDED USE



Warning

If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must only be used in a normal condition (in which all means of protection are intact).



Important

The PMH-1200 system should NOT be used for any purpose other than specifically indicated in the section titled **Intended Use** (on page 18).

The following uses are **not** intended:

- Use in an explosive environment
- Use in a flammable environment
- Use in a damp, moist, or wet environment, except where specifically indicated

PERSONAL PROTECTIVE EQUIPMENT



Important

Always follow the safety requirements of your plant in addition to the recommendations below.

We recommend, at minimum, use of the following Personal Protective Equipment (PPE):

	Protective clothing
	Protective gloves
	Protective ear plugs or headphones
	Protective eye wear
	Protective foot wear

PERSONNEL SAFETY

The following rules are recommended to ensure the safety of personnel in charge of machine operation and maintenance.

Do Not:

- Open safety guards during machine operation
- Perform maintenance and repair while the system is running
- Lean on the machine
- Sit on the machine components
- Use the machine for purposes other than those listed in this manual
- Modify parts of the machine
- Allow unqualified personnel to operate or perform maintenance procedures on the machine

During machine operation:

	Only one operator is needed to operate the machine. All others must keep at a safe distance.
	Operators must be familiar with all machinery connected to the Pressco equipment and know how to use emergency stop devices. <i>Note: the emergency stop devices may not be connected directly to the Pressco equipment, but it is important to know how to use them.</i>
	Before putting the Pressco system online, the operator must ensure that all safety devices used with all connected machinery are in place and operational.
	The operator must maintain maximum focus on his work and be alert throughout his shift. If this is not the case, immediately inform the shift supervisor.

When conducting maintenance or repair work:

	Follow the Machine Maintenance Lockout Procedure (on page 97).
	Before starting the machine, ensure that no person is close to the machine.
	If maintenance or repair requires the disconnection or removal of safety or protection systems, authorized personnel who ensure the prevention of personal injury or damage to the machine must supervise this operation. All machine movements must be performed with limited speed and limited movements.

	Exclusively authorized and trained personnel must carry out maintenance or repair work on electrical components. When running tests with power connected, you must strictly comply with the rules provided.
	Personnel working on higher parts of a machine must wear a harness and hook it on to a structure and must always move with extreme caution. The harness must not be connected to Pressco equipment or structure as it cannot support body weight.
	Never perform lubrication or maintenance procedures on mechanical parts with the machine running.

LIFTING HEAVY OBJECTS



Caution

Some components are heavy. Take proper precautions to prevent personal injury or damage to equipment. If you are not capable of lifting the object alone, ask a capable person to help lift the object, or use a mechanical lifting device

The components do not have handles to lift the equipment. Be sure to:

- Lift equipment from the bottom - do not use wires, brackets, nor other protrusions
- Keep fingers away from sensor lenses to keep the equipment clean
- Proceed slowly

To safely lift equipment:



Caution

Do not twist your body when moving the load. Instead take small steps with your feet turning until you are in the correct position.

1. Stand close to the load and center yourself over it with your feet shoulder width apart.
2. Tighten your abdominal muscles.
3. Keeping your back straight, bend your knees and squat down to the floor.
4. Get a good grasp on the load with both hands.
5. Keeping the load close to your body, use your leg muscles to stand up lifting the load off the floor.
 - Your back should remain straight throughout lifting, using only the muscles in the legs to lift the load.
6. To place the load in the appropriate spot, bend at the knees using only your leg muscles to lower the load.

AUTHORIZED USERS

Trained machine operators, mechanic and electrical maintenance staff, and plant managers are considered authorized users of the PMH-1200 system. These users should carefully read the information contained in this manual. The plant manager must ensure that the safety recommendations included in this manual are observed.



Warning

Allowing workers who are unfamiliar with the production process to operate the PMH-1200 system could result in hazard risk.

If you are unclear about any part of this manual, **contact Pressco Technical Support** (see "**How to Contact Pressco**" on page 3).



Important

No worker should ever operate the system outside of his/ her own area of competence and responsibility.

Proper Operation:

Only one worker is to operate the system at any given time. The correct position for the operator is in front of the user interface monitor or control enclosure (if applicable).

Repairs:

Any repair on the system shall be carried out exclusively by Pressco Technology Inc. service personnel or by other service expressly authorized by Pressco Technology Inc.

SPARE PARTS USAGE

The following restrictions apply to replacing parts:



Warning

Using spare parts that are not designed to Pressco's specifications can compromise the safety and effectiveness of the PMH-1200 system.

- The use of parts that are not within Pressco's design specifications is prohibited. This prohibition applies in particular when the parts involved contain or are connected with safety devices.
- Before resuming production, make sure all safety devices are in working order.

Pressco Technology Inc. shall not be liable in any way if any of the above-described directions are not complied with.

To obtain a spare parts list, contact the customer service department at Pressco. **How to Contact Pressco** (on page 3).

Pressco's technicians are available to help customers, in their own plant, to solve any problem that might arise during use and maintenance of the PMH-1200 system.

Chapter 5

INSTALLATION AND SETUP

PREPARATION FOR INSTALLATION

Recommendations prior to installation

Before the machine is installed, the Pressco installer, together with the Customer (or representative) shall check the following criteria in the environment where the machine is to be installed:

- Work required by contract for the installation of the machine has been carried out
- The plant layout drawing that describes where the machine will be installed is the final drawing agreed to by Pressco Technology Inc.
- The space and height required for installation are actually available
- Only the components included in the installation layout are present in the area where the machine is to be mounted. Ensure no machines or components have been added at a later stage that might hinder mounting or make it more difficult. Should this be the case, immediately contact Pressco's Project Engineering personnel to arrange a suitable solution to the problem.

We recommend the following prior to machine installation:

- Transport the machine in its packaging to the area where it will be installed to minimize possibility of damage
- Carefully remove the packaging material and check components for damage
- Check tightness of mechanical components, as they can loosen during transport
- Prepare the compressed air mains line. Before making final connections, ensure that the pipes are clean and free from any debris.

Shipping and Handling



Warning

Only qualified personnel must be involved in the operation of unloading, handling, and lifting the machine. Pressco Technology Inc. shall not be liable for damage to components and/or personal injury resulting from the involvement of unauthorized personnel and/or failure to comply with the directions provided in this manual in relation to lifting and transport.



Important

The site supervisor will be responsible for ensuring that all the various mounting phases are carried out safely and in compliance with current regulations.

Pressco Technology Inc. ships unassembled components in packing cases designed to protect the contents during handling and from exposure to weather.

Unless otherwise specified in the contract with the machine order, the Customer shall supply Pressco Technology Inc. with the means and equipment necessary for the unloading, lifting, and handling of machine parts. Pressco Technology Inc. deems it important to have one of their technicians supervise the process of unloading, handling, and lifting the machine. The technician can give useful advice as to the logical sequence in which the components should be unpacked and positioned for ease of assembly.

After the machine is delivered, check for any damage that might have occurred during shipping. In case of damage, contact **Pressco Technology Inc** (see "**How to Contact Pressco**" on page 3).

In handling the machine, always keep it close to the ground.



We recommend using a forklift truck with adequate capacity and forks to suit the weight to be lifted (machine plus packaging).

The dimensions and weight of a crate are listed below. Note that this is the maximum size and weight. The size and weight of the crate may be less depending on your configuration. You may receive multiple crates depending on your configuration.

Size	1 crate, 2337 mm x 2261mm x 2134 mm (92 x 89 x 84 inches)
Weight	1364 kg (3000 lbs.)

Ventilation

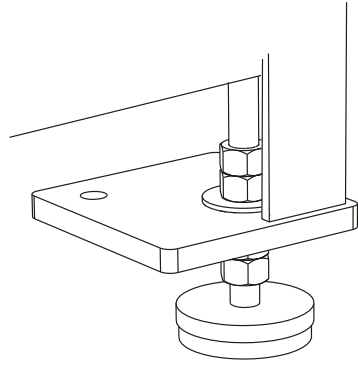
Place the PMH-1200 components in a position with adequate ventilation to allow proper air flow through the air filters. Make sure there is room for dunnage and for part removal.

Component	Spacing
PMH-1200	Leave 1 meter [39 inches] clear around machine
Intellispec cabinet	Leave 100 mm clear in front of the fan and vent

Securing to Floor

The ground under the machine must be sufficiently solid to sustain the machine mass at the support points. In addition, the floor must be free of bumps, grooves and other surface irregularities. The surface must be flat enough so that the entire base supports under the machine bear weight across their entire surface.

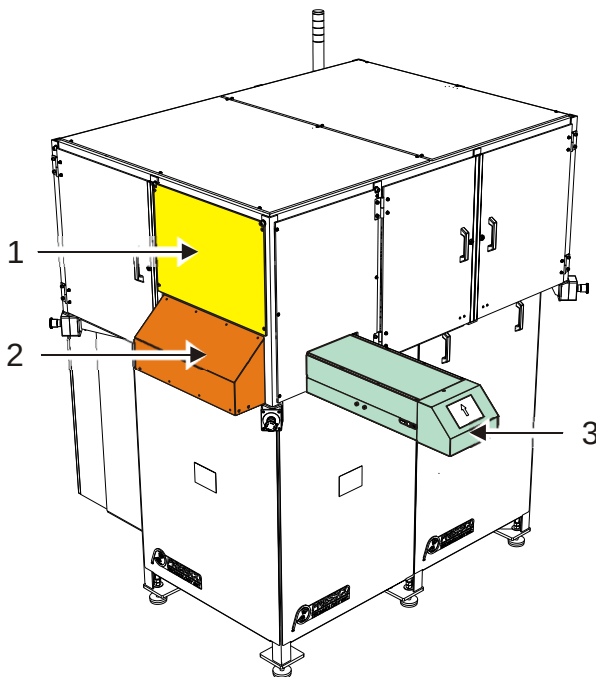
The machine may be attached to the floor by installing $\frac{1}{2}$ " or 13mm diameter lag bolts into the floor through the hole on the frame foot pad. The length of the bolt required will depend on how much of the leveling foot is exposed.



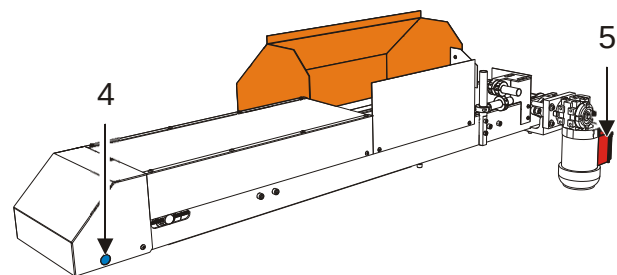
Mounting Outfeed Conveyor

To Mount Outfeed Conveyor:

1. Remove window [item 1].
2. Use included hardware to mechanically reattach the outfeed conveyor.
3. Mount reject chute [item 2] to conveyor.
4. Reconnect the motor leads per diagram on terminal box cover [item 5].
5. Connect outfeed conveyor sensor [item 3].
6. Reinstall reject chute full sensor [item 2].
7. Reinstall window [item 1].



PMH-1200 Outfeed Location



Outfeed Conveyor

1	Window
2	Reject chute
3	Outfeed conveyor
4	Outfeed conveyor sensor
5	Motor Terminal Box

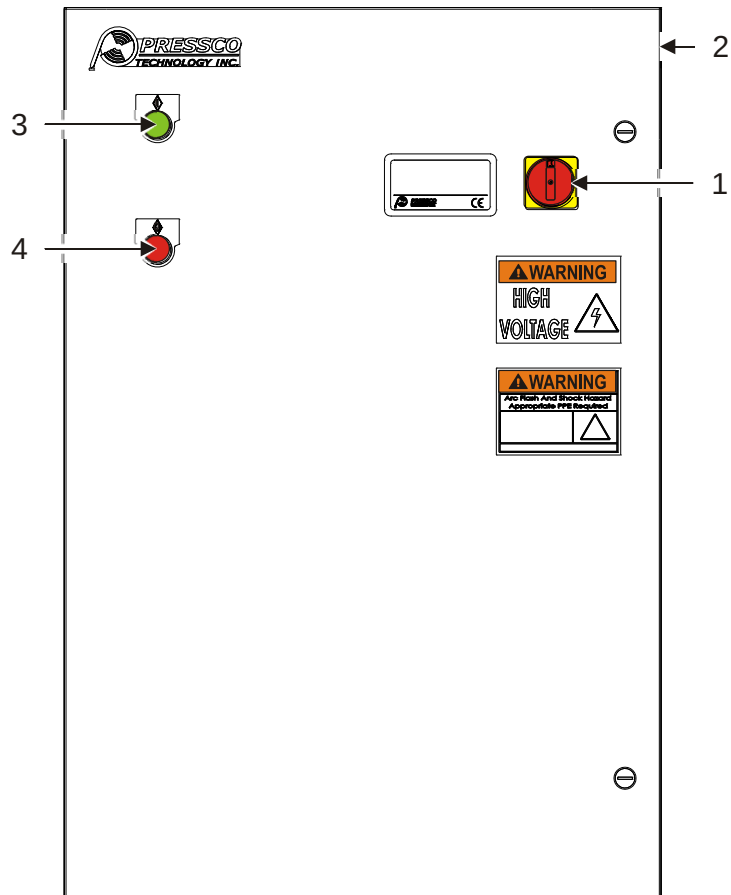
Electrical Service



Warning

The electrical connections must meet local and national codes.

Have a qualified electrician connect the correct voltage and amperage wiring to the top right entry to the electrical enclosure. See nameplate on electrical enclosure door.



1	Rotary disconnect
2	Incoming electrical service
3	Start push button
4	Stop push button

Protective Earthing

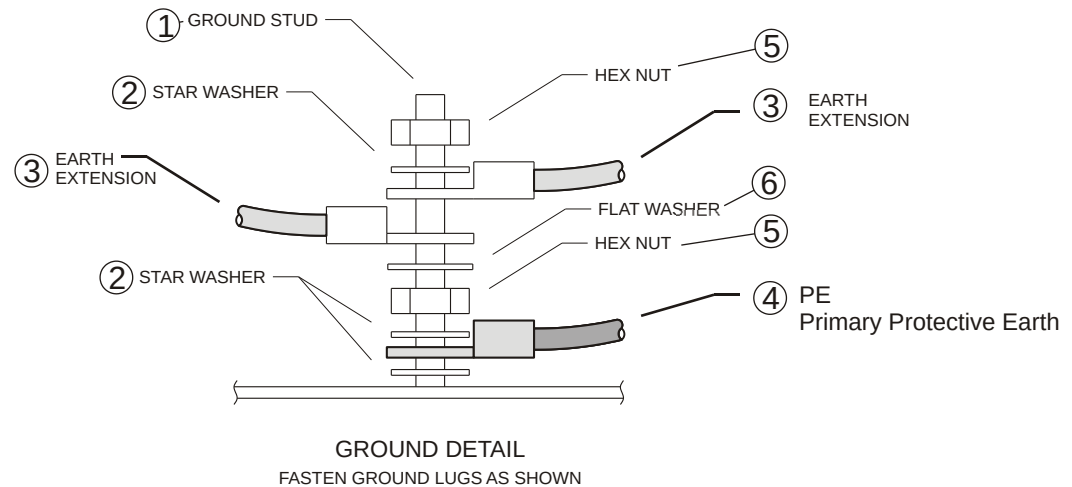


Danger

Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service technician if you are in doubt as to whether the product is properly grounded.

This product must be grounded (earthed). If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

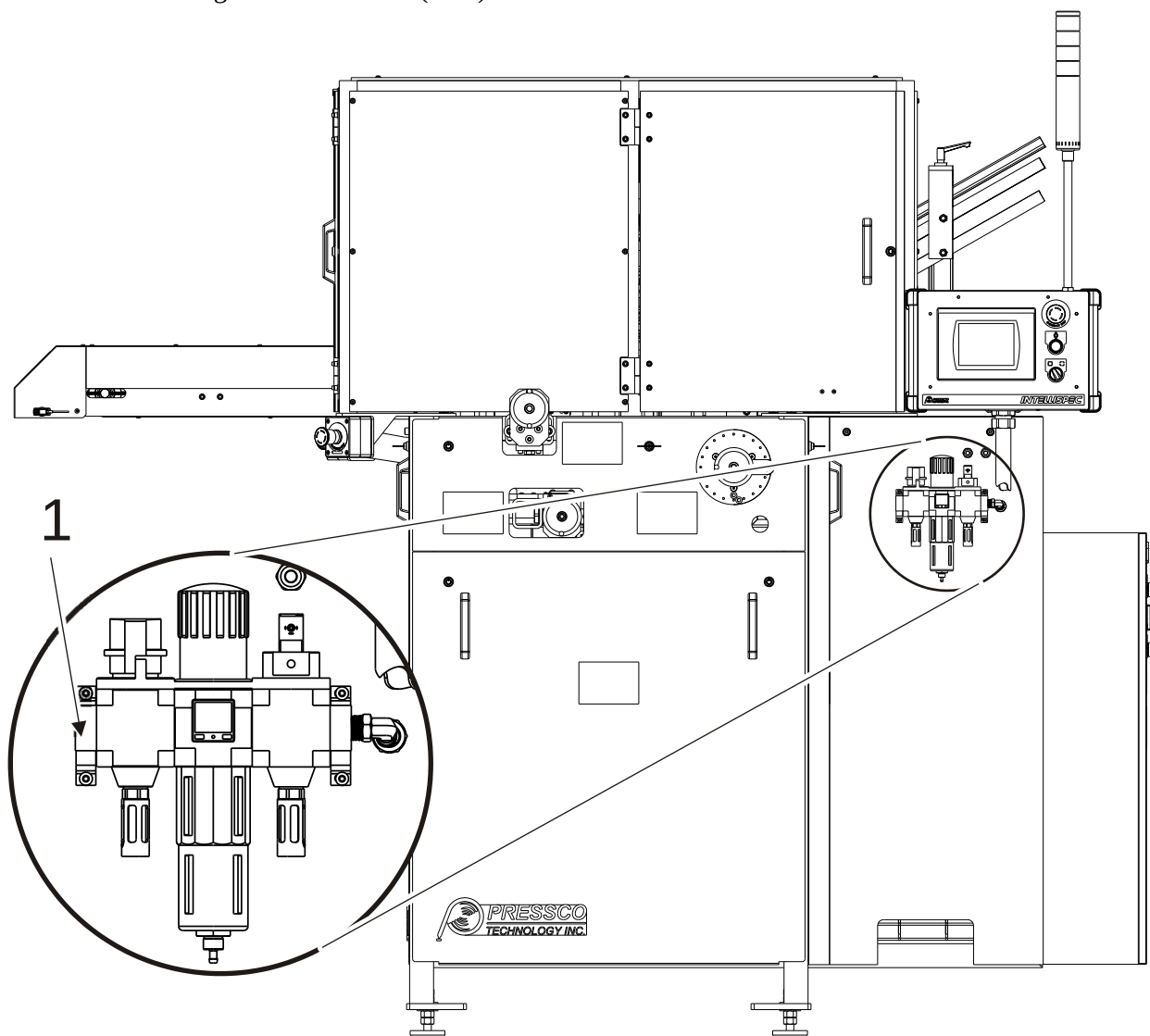
Located close to the entry of the incoming electrical supply, a terminal is provided for connection of the machine to the external protective earthing conductor. This terminal will be marked PE. Other ground conductors can connect to this same terminal, but the external protective earthing conductor (Primary) must be located on the bottom per the figure below.



1	Ground Stud
2	Star Washer
3	Earth Extension
4	PE (Primary Protective Earth)
5	Hex Nut
6	Flat Washer

Pneumatic Service

Connect plant air supply of 90 PSI, 55 SCFM minimum, to 3/8 NPT port on the Filter Regulator Lubricator (FRL).



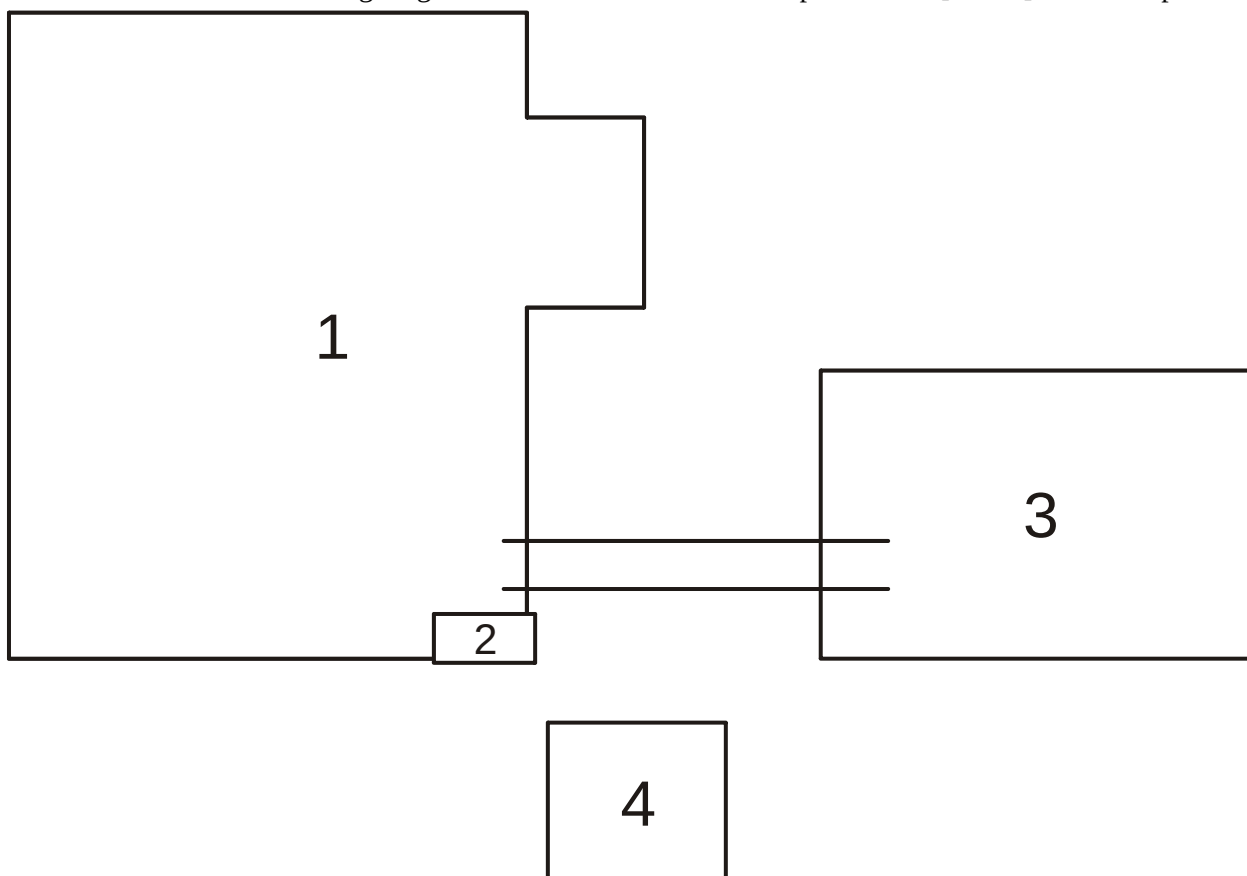
1	Air supply connection
---	-----------------------

Initial Adjustments

See *Part Changeover Procedures* (on page 81).

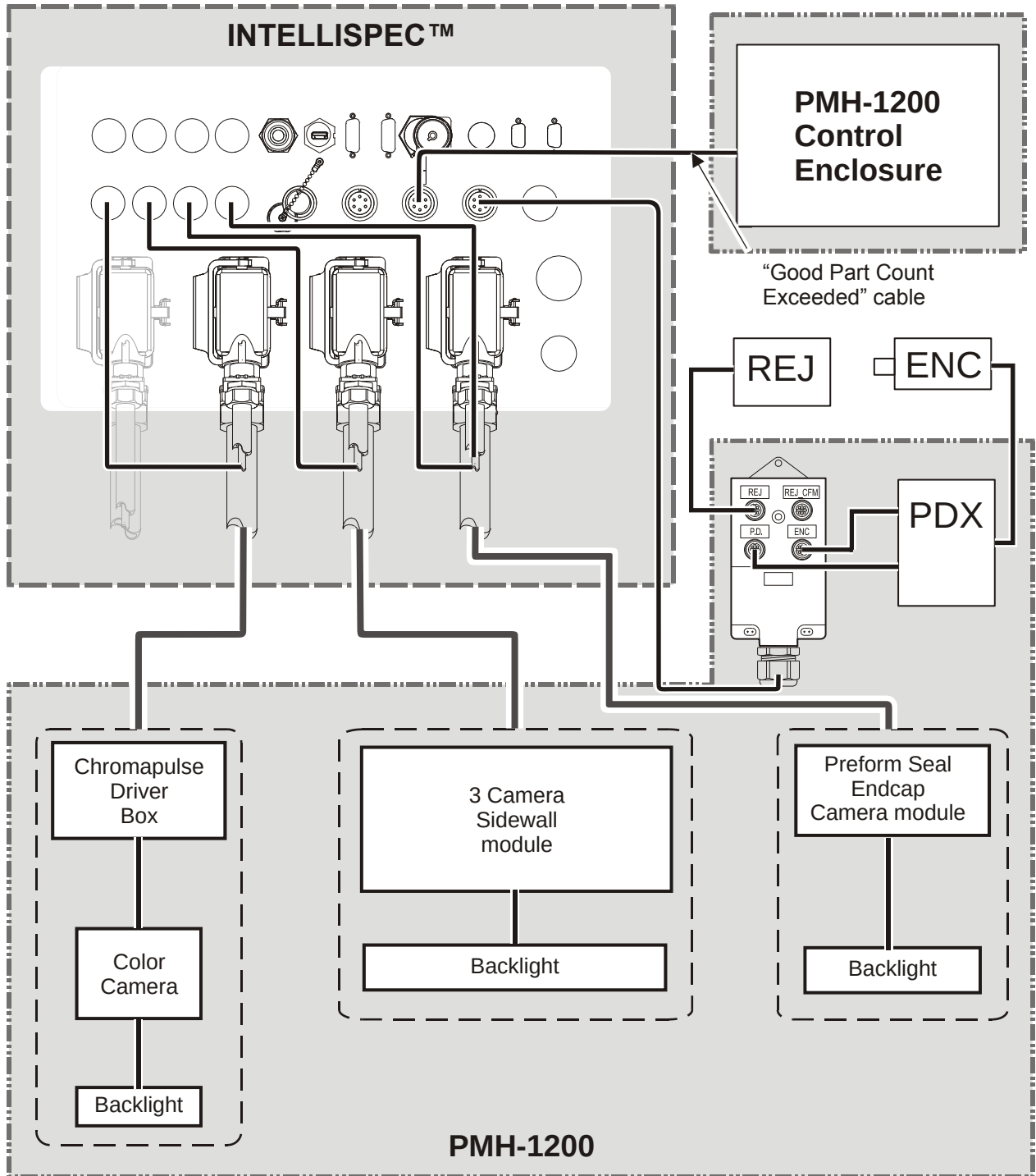
LOCATION AND CONNECTION OF EQUIPMENT

The following diagram indicates where the Intellispec cabinet [item 4] should be placed:

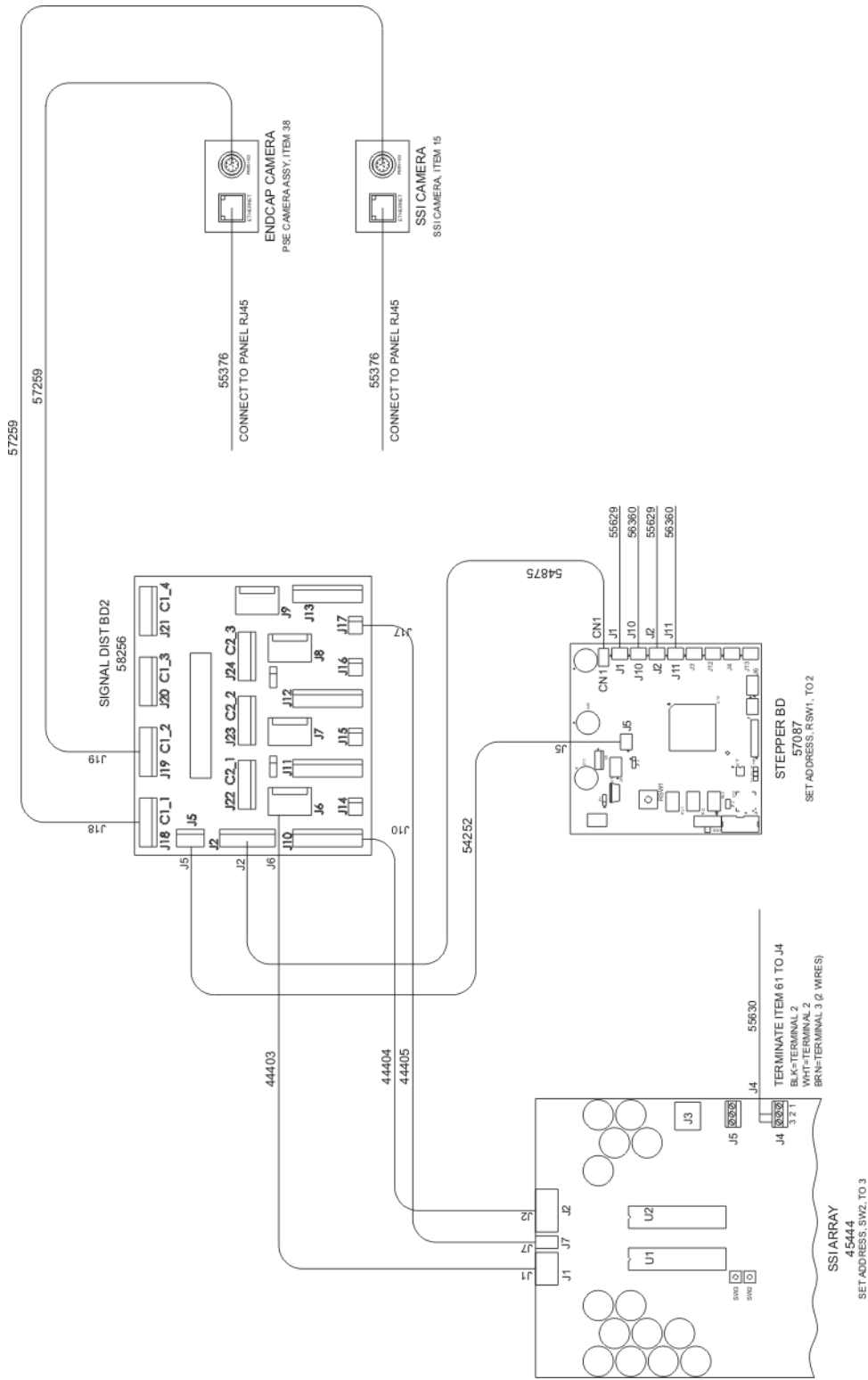


1	PMH-1200
2	HMI
3	Preform feeder
4	Intellispec cabinet

INTERCONNECT DIAGRAMS



Internal interconnect Preform Seal Endcap motorized focus S IV-D

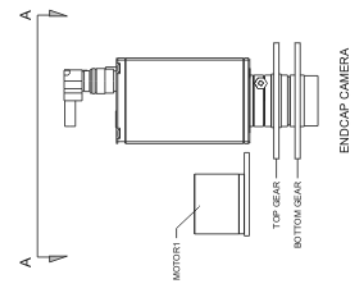
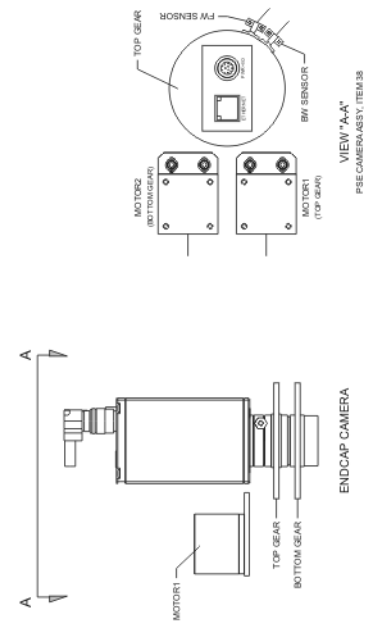
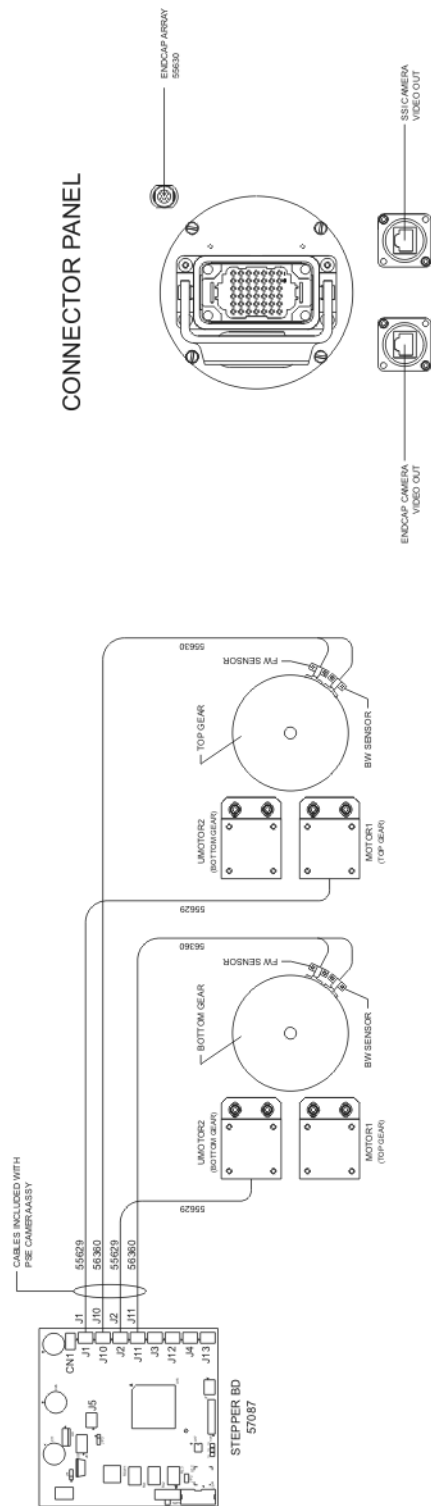


Cable References:

Cable part number	Description
44403	Chromapulse LED power

Cable part number	Description
44404	Chromapulse LED signal
44405	RS485 signal return
54252	Stepper motor control RS485 comm.
54875	Stepper motor PCB power
55376	Cable Cat6 patch cord UTP 1ft black
55629	Assy stepper motor w/ connector - see below
55630	4-pin panel mount 12" leads
56360	2 limit switches with 6-pin connector
57259	GIG-E camera control CP right-angle

MOTOR/LIMIT SWITCH INTERCONNECT



COMMISSIONING

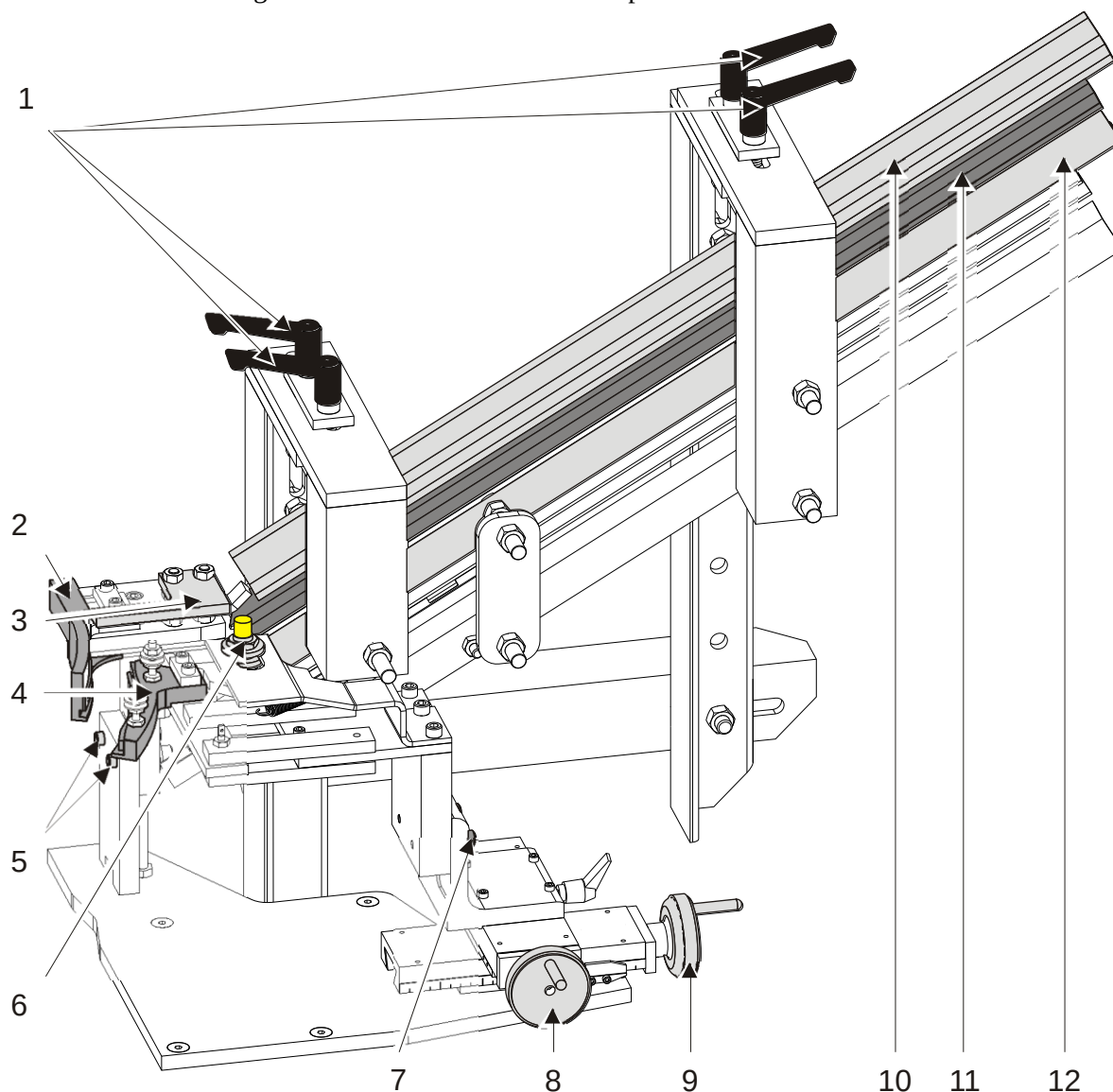
Before placing the machine into operation, make sure the following checks are completed:

Completed	Yes	No
<i>Preparation for Installation</i> (on page 23)		
Position components with adequate ventilation, see <i>Ventilation</i> (on page 24)		
Secure PMH-1200 to floor, see <i>Securing to Floor</i> (on page 24)		
Verify connection of applicable electrical service and grounding, see <i>Electrical Service</i> (on page 26)		
Connection of compressed air line to machine FRL		
Connection of power supply to user interface cabinets		
Proper wiring from user interface cabinet to sensor module(s) if applicable		

MACHINE COMPONENTS AND SYSTEMS

INFEEED COMPONENTS

The drawing below illustrates the infeed components of the PMH-1200.

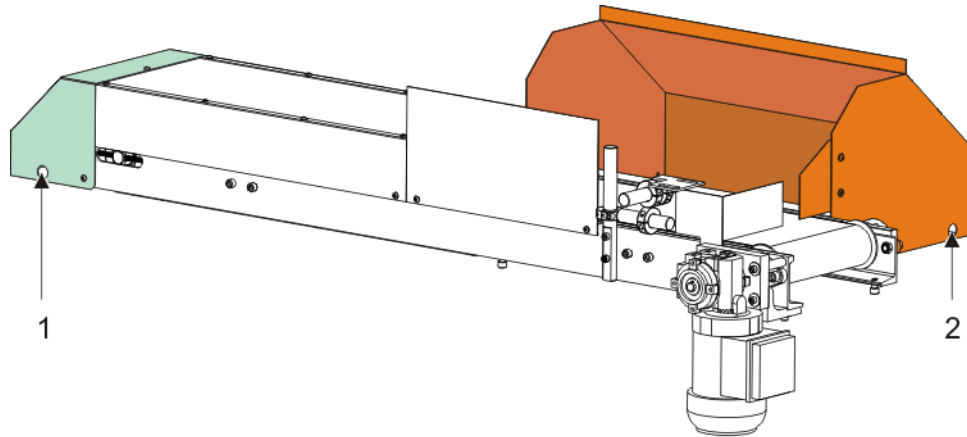


1	Infeed slide adjustment
2	Curved infeed guide
3	Top guide for infeed rail assembly
4	Outboard curved infeed guide
5	Infeed guide height adjustment

6	Jam detection sensor
7	Outboard infeed guide height adjustment
8	Lateral adjustment for infeed slide #4 (.437")
9	Front to back adjustment for infeed slide #4 (.75")
10	Top infeed slide (adjustable)
11	Infeed slide (fixed side)
12	Infeed slide (adjustable side)

OUTFEED ASSEMBLY

The drawing below represents the Outfeed assembly. The sensors stop the machine when the bins are full.



1	Good part exit full sensor (4PE10)
2	Reject chute full sensor (4PE12)

The Good Part Exit Full Sensor

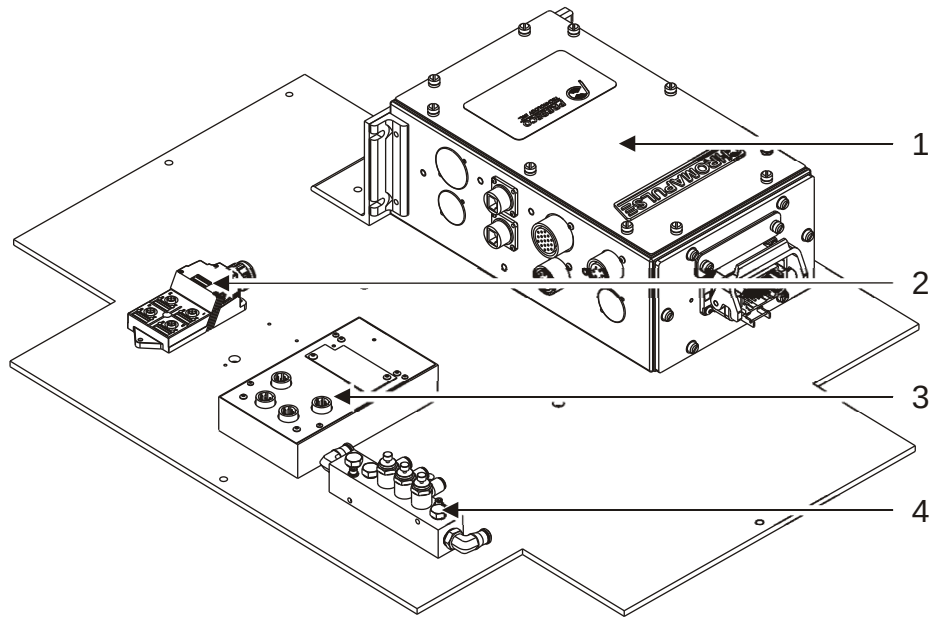
The Good Part Exit full sensor is a photo eye sensor that beams across the opening of the exit-conveyor chute. If parts are detected for x seconds, the machine will stop and an alarm will be triggered. Unblocking the photo eye beam for y seconds is required before the alarm can be cleared and the machine can be restarted. The times x and y are variable, and can be set through the HMI configuration screen OUTFEED SENSOR SETUP.

The Reject Chute Full Sensor

The Reject Chute full sensor is a photo eye sensor that beams across the opening of the reject chute. If parts are detected for x seconds, the machine will stop and an alarm will be triggered. Unblocking the photo eye beam for y seconds is required before the alarm can be cleared and the machine can be restarted. The times x and y are variable, and can be set through the HMI configuration screen OUTFEED SENSOR SETUP.

BOTTOM PLATE COMPONENTS

The drawing below represents the Bottom Plate components:



1	Control box for cameras and lighting
2	4-port distribution box
3	PDX module
4	Air manifold

Control Box for Cameras and Lighting

The control box contains the electronics required to power the Color Camera Module and its backlight as well as sending the trigger signal to each. It then outputs the camera images to the Intellispec main console.

4-Port Distribution Box

The 4-Port Distribution box receives the Part Detect and Encoder signals that are generated from the PDX. It also outputs the Reject signal to the Rejecter. A multi-conductor cable ties the 4-port back to the Intellispec main console.

PDX Module

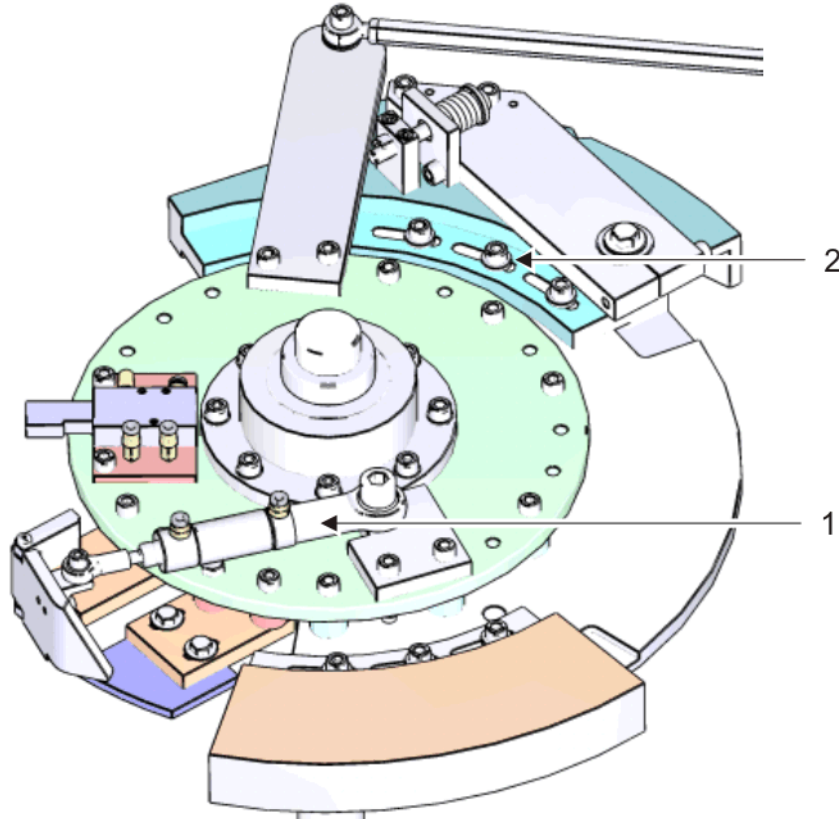
The PDX Module connects to a rotary encoder mounted on the axis of the main drive. The encoder signal is processed in the PDX and it outputs a Part Detect signal and encoder signal to the 4-port. Setup instructions for the PDX are available in the Appendix.

Air Manifold

The Air Manifold receives conditioned and regulated air from the FRL unit and distributes to the air knives and to the Rejecter.

PMHI-1200 REJECTER (OPTION)

The reject mechanism is located on top of the Stage 2 Starwheel. It needs no adjustment. The illustration below shows the Rejecter. It also shows a cam that can be adjusted, if necessary, when there is a significant change in the preform size being inspected.

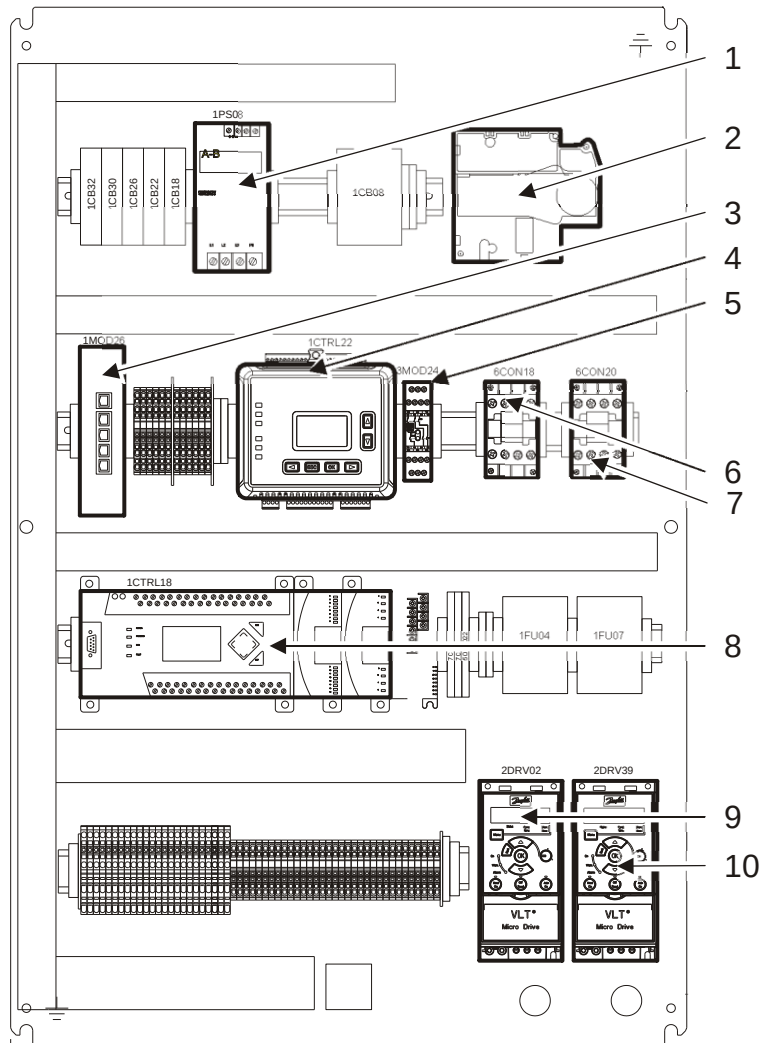


1	Rejecter assembly
2	Cam - can be adjusted for timing for large changes in preform size

ELECTRICAL SYSTEM

The electrical system is primarily enclosed within a 36 H x 24 W x 8 D inch enclosure. Incoming three-phase power is supplied to the top of a fused disconnect, and then branches to two motor controllers, and to a 24 VDC power supply. The 24 VDC power is then used to power the rest of the machine. The main components of the electrical system are:

- PLC
- Safety PLC
- Ethernet Switch
- Frequency Drives
- HMI



1	24 VDC power supply (1PS08)
2	Main Disconnect (1DISC03)
3	Ethernet switch (1MOD26)
4	Safety PLC (1CTRL22)
5	Safety relay (3MOD24)
6,7	Safety contactors (6CON18, 6CON20)

8	PLC (1CTRL18)
9	Main drive VSD (2DRV02)
10	Exit conveyor VSD (2DRV39)

Programmable Logic Controller (PLC)

The PLC is a programmable logic controller (1CTRL18) and is used to control sequencing of the machine. It monitors all sensor inputs (digital and analog), controls light tree indicators, air supply, motor start/stop, and machine speed. It also communicates directly with the HMI via Ethernet.

Safety PLC

The Safety PLC is a safety controller (1CTRL22) and is used to monitor all Emergency Stop push buttons and Door Switches. All inputs use redundant contacts, and the output devices are monitored to achieve control reliability. If one of the devices is actuated, the output contactors are de-energized to protect the operator.

Ethernet Switch

The Ethernet Switch allows connection of the PLC to the HMI and allows a programmer to connect a laptop to the network to communicate with the HMI and PLC.

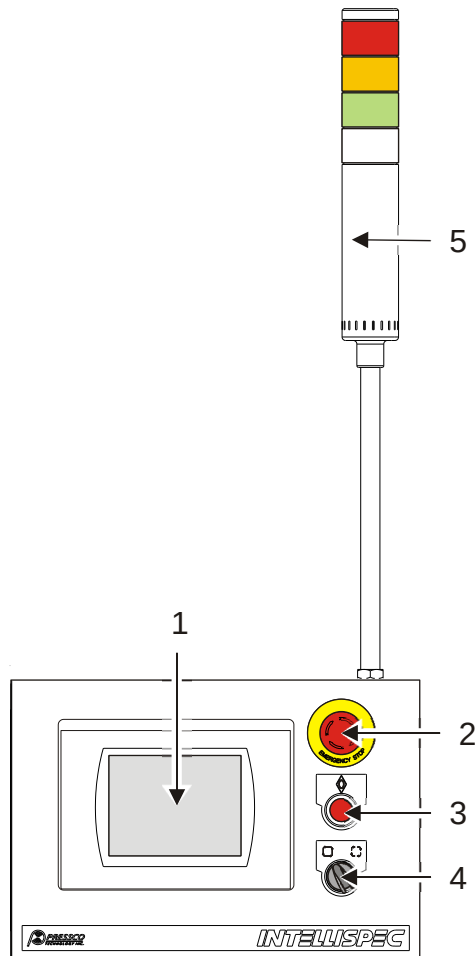
Frequency Drives

There are two Variable Speed Drives (VSD) used to control the speed of the main drive and the exit conveyor. The main drive is controlled by a 1 HP drive, 2DRV02, and the exit conveyor is controlled by a ½ HP drive, 2DRV39. The PLC sends analog commands to the drives to control the speed.

Human Machine Interface (HMI)

The six-inch color touch screen (1HMI30) is used to control machine functions, display and log alarms, etc.

The Light Tree is connected to the top of the HMI enclosure.



1	HMI touch screen
2	Emergency stop push button
3	Reset push button
4	Jog selector switch
5	Light tree

MACHINE MOUNTED SAFETY COMPONENTS

There are four Emergency Stop (E-Stop) push buttons on the machine :

- One on three corners of the machine
- One on the HMI Enclosure

Press the push buttons to activate. Twist to release the push button. See ***Emergency Stop (E-Stop) Overview*** (on page 63).

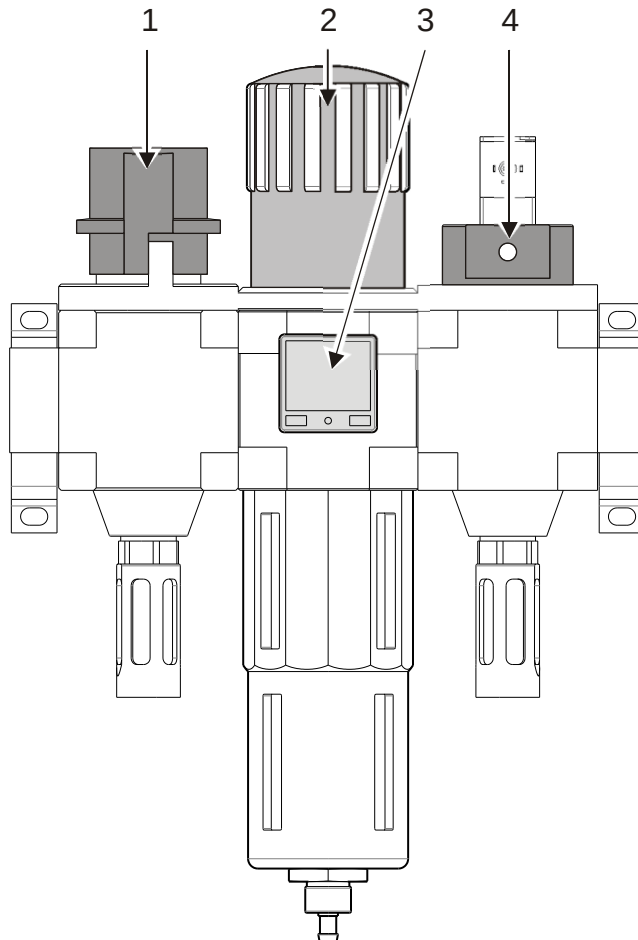
There are four Door Switches, one on each of the hinged doors on each side of the machine. They are magnetic and are set to about a 1.5mm gap.

All E-Stop push buttons and Door Switches use redundant contacts and are monitored by a Safety PLC (1CTRL22) as described above. When a device is opened, the safety PLC shuts down its redundant safety outputs, which drop out safety relay (3MOD24), which in turn drops out safety contactors (6CON18 and 6CON20). The safety contactors drop power to the Frequency Drives, which stops the motors. The safety contactors are monitored by the safety PLC. The components used, and the configuration of the components, make this system control reliable.

PNEUMATIC SYSTEM

Pure compressed air is fundamental to ensure optimum performance, durability and reliability of pneumatic components. The air treatment system installed in the machine is composed of the following elements:

The picture below shows the air treatment unit and components:



1	Pneumatic shutoff valve (lockable)
2	Filter/regulator/lubricator
3	Digital pressure gauge (4MOD59)
4	Air dump valve (6SOL16)

Shutoff Valve

The shutoff valve makes it possible to stop feeding compressed air to the machine's pneumatic system. Closing the valve results in depressurization of the pneumatic system connected to the outlet. This valve may be manually locked out with a padlock.

Filter/Regulator/Lubricator

Filter

The filter consists of a diffuser followed by a deflector with fins; air is conveyed in a centrifugal movement, liquid and solid impurities are projected against the sides of the cup and decanted in the lower part. The air then passes through a filtering cartridge that completes the filtering action. The cup collecting the impurities and condensation needs to be emptied out regularly.

Regulator

This has been designed to keep the outlet pressure constant regardless of inlet pressure variations. Outlet pressure is regulated by a block cylinder which controls a spring regulating the opening of a valve to keep outlet pressure constant. The pressure is manually adjusted by rotating the knob.

Lubricator

The lubricator is not used in this application.

Digital Pressure Gauge (4MOD59)

Indicates with a digital readout the pressure detected at the regulator outlet. It also provides an analog output to the PLC so the machine can react to abnormal machine air pressure.

Air Dump Valve (6SOL16)

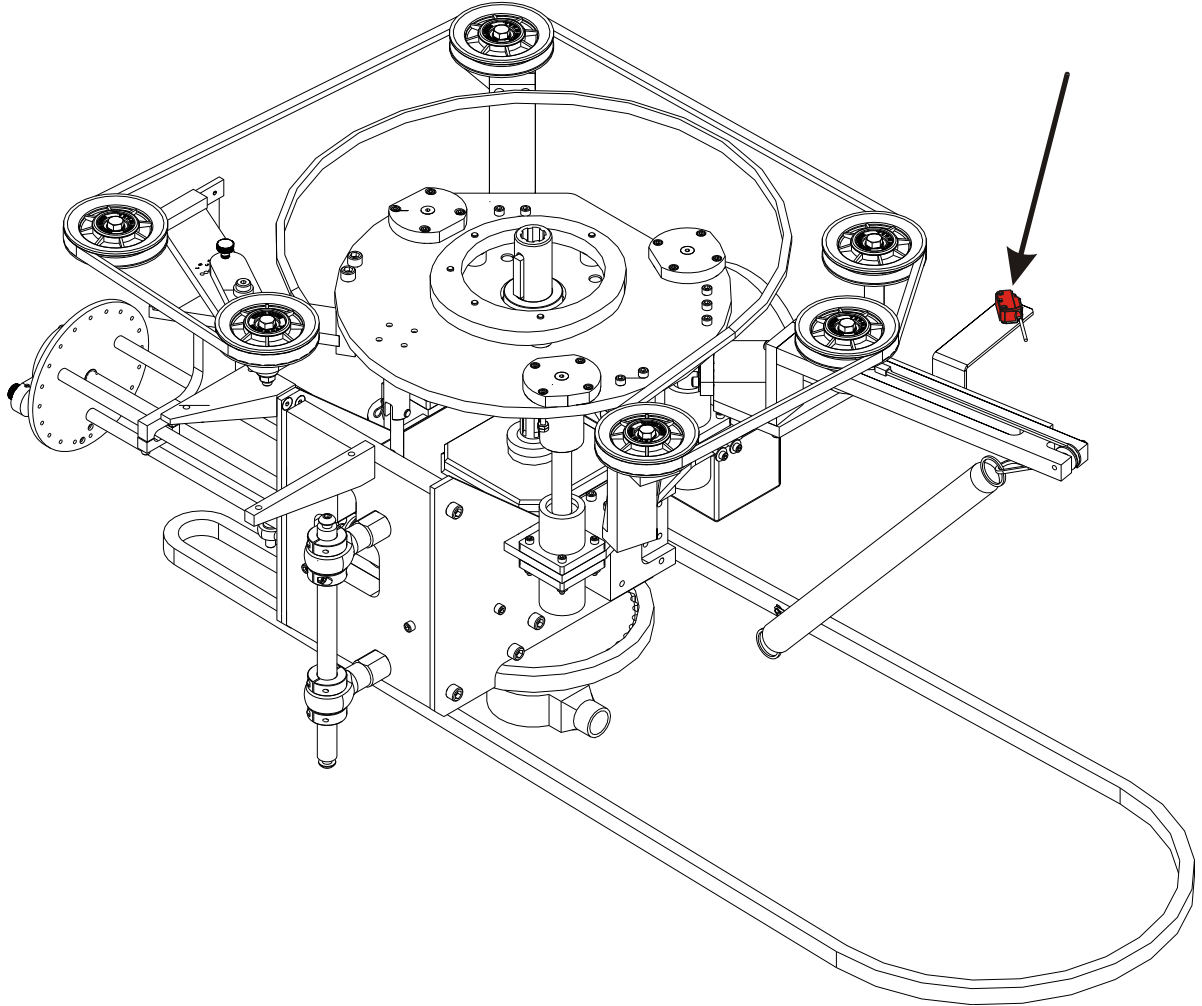
The air dump valve is located at the exit of the FRL and is controlled by the PLC. Under normal operation, when the machine is powered up and all emergency stop conditions have been cleared, the valve opens and supplies air to the machine. Upon an emergency stop condition, the valve will close and machine air will be exhausted to the atmosphere.

Machine Air Usage

The filtered and regulated air is used for two purposes: air knives and part ejection. The air knives are located at the Color Camera Back Light and the 3 Camera Sidewall Module viewing window. Their purpose is to remove small particulates from these surfaces. Air is also supplied to a Reject solenoid valve to remove rejected parts from the machine.

BROKEN BELT DETECTION

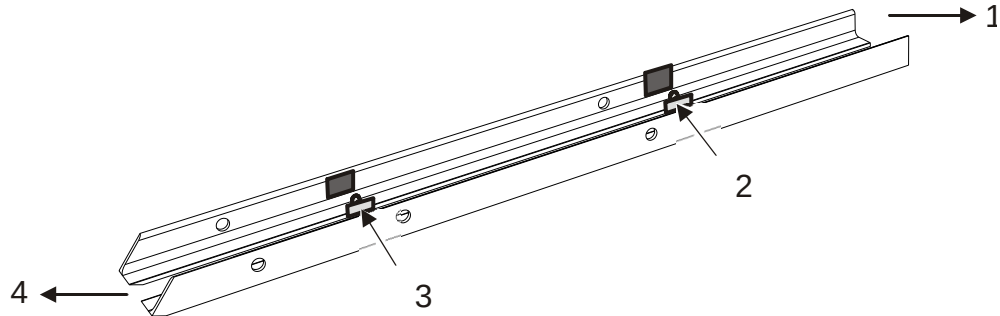
The position of the main drive belt is monitored by a sensor, 4PE16. If the belt breaks, the sensor will notify the PLC. The machine will stop and an alarm will be triggered. If this occurs, most probably the belt is broken. Replace belt and reset alarm, see **HMI Alarms** (on page 77).



DESCRAMBLER TRACK SENSORS

The descrambler feeds parts into the infeed section of the PMH-1200. Two sensors are mounted on the descrambler track to detect the presence or absence of preforms:

- Lower Infeed (4PE04)
- Upper Infeed (4PE06)



1	To descrambler
2	Upper Infeed Sensor (4PE06)
3	Lower Infeed Sensor (4PE04)
4	To PMH

The state of the sensors will control the speed of the machine. The following combinations are possible:

State of sensors	Speed of Machine
Both sensors active	High speed
Lower sensor active, upper sensor inactive	Low speed
Neither sensor active	Stops
Upper sensor active, lower sensor inactive	Stops - indicates a jam in the track which triggers an alarm (see HMI Alarms (on page 77)).

❖ *Note: The machine will automatically speed up, slow down, start, and stop based on the condition of the sensors. No operator intervention is required except to fix a jam in the track.*

LIGHT TREE DEFINITIONS

The light tree has four sections. From top to bottom: Red, Amber, Green, and White. The table below lists the different states:

Light color		Condition	What it means
	Red	On - steady	Emergency Stop State
	Amber	On - steady	Indicates machine Abnormal Condition, or alarm
	Amber	On-blinking	Machine Air Supply has been manually enabled or disabled through the HMI.
	Green	On - steady	Machine Power On
	White	On - steady	Parts are being fed through machine
	White	On - blinking	Machine is ready to run, but is waiting on parts

INSPECTION SYSTEM GOOD PART COUNT EXCEEDED

This option has been included to allow you to preset a quantity of preforms in the Intellispec system and have the machine stop when that amount is reached. A cable is run from the Intellispec I/O to the PMH-1200 PLC to transmit this signal. A programmable output in the Intellispec is used for this purpose. For example, the Intellispec IV, PO1, TB1 55 can be used. See electrical drawings 67115E, sheet 5, found in the control enclosure pocket.

When the Good Part Count is exceeded, the machine will stop and an alarm will be triggered. Reset the alarm at the Intellispec, reset the alarm at the HMI, and then re-start the PMH-1200.

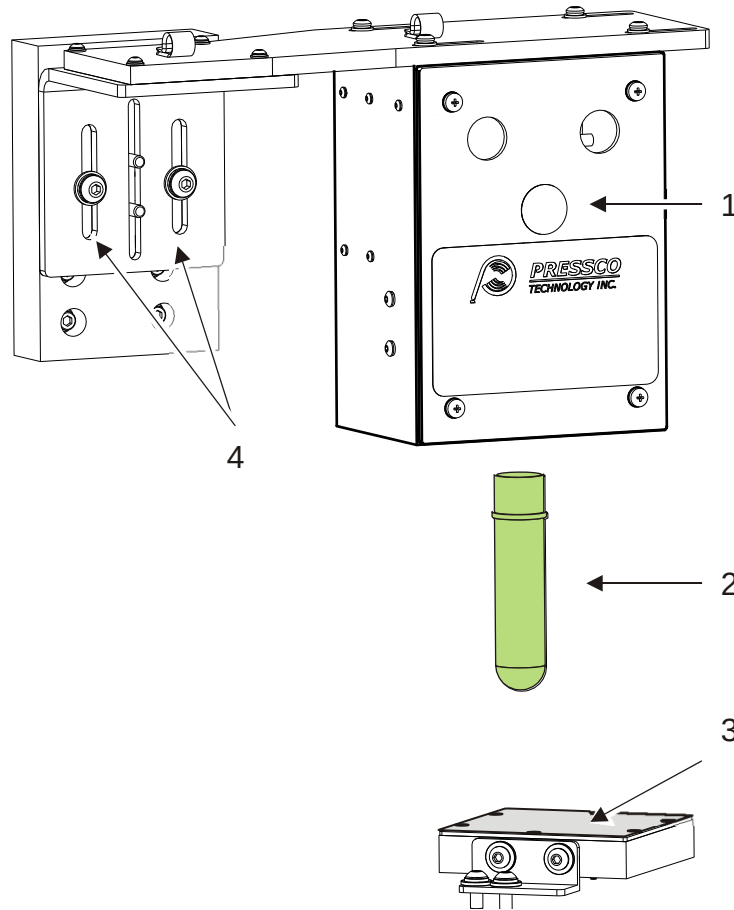
Chapter 7

PREFORM CAMERA MODULES

COLOR CAMERA

This camera inspects for proper color preforms.

The camera and backlight unit are mounted inside the preform material handling unit such that the preform passes between them. The module positioning slots are used to adjust the centering of the preform in the Intellispec system image.



1	Camera box
2	Preform under inspection
3	Lighting module
4	Module positioning slot

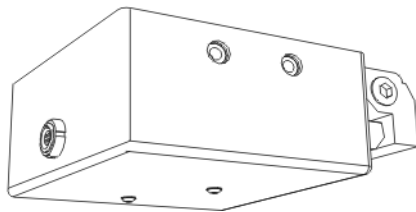
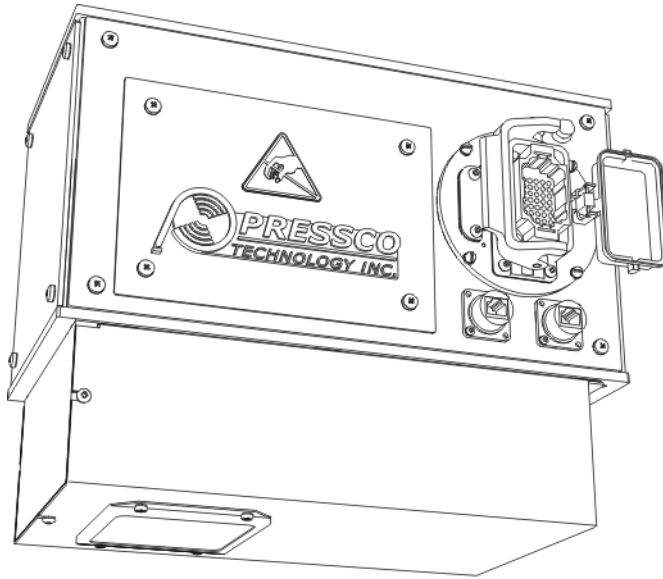
PREFORM SEAL ENDCAP MODULE

The Preform Seal Endcap Module contains two cameras and two solid-state illumination panels. The cameras and one of the illumination components are housed in the main enclosure. The second illumination panel is mounted in a separate enclosure.

The main enclosure is typically mounted above a preform's seal surface and the second illumination panel is located below the end cap. In this configuration, the cameras inspect the seal surface and the end cap of a preform simultaneously.

The illustration below shows the main enclosure and second illumination panel. Below are typical images produced by the two cameras of this inspection module.

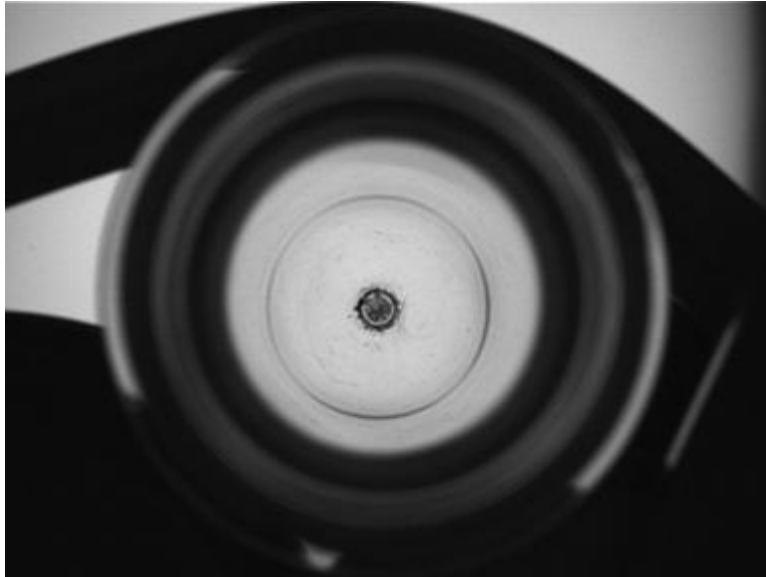
-
- ❖ *Note: The connectors [shown below] on the side of this module are for alternate module configurations. Your module may have the connectors on the end instead. Otherwise, all information in this chapter applies to both styles of inspection modules.*
-



The image below is a typical preform seal surface image taken by a preform seal endcap module.



The image below is a typical endcap image taken by a preform seal endcap module.



Adjusting the Preform Seal Endcap module

Observe Part Image

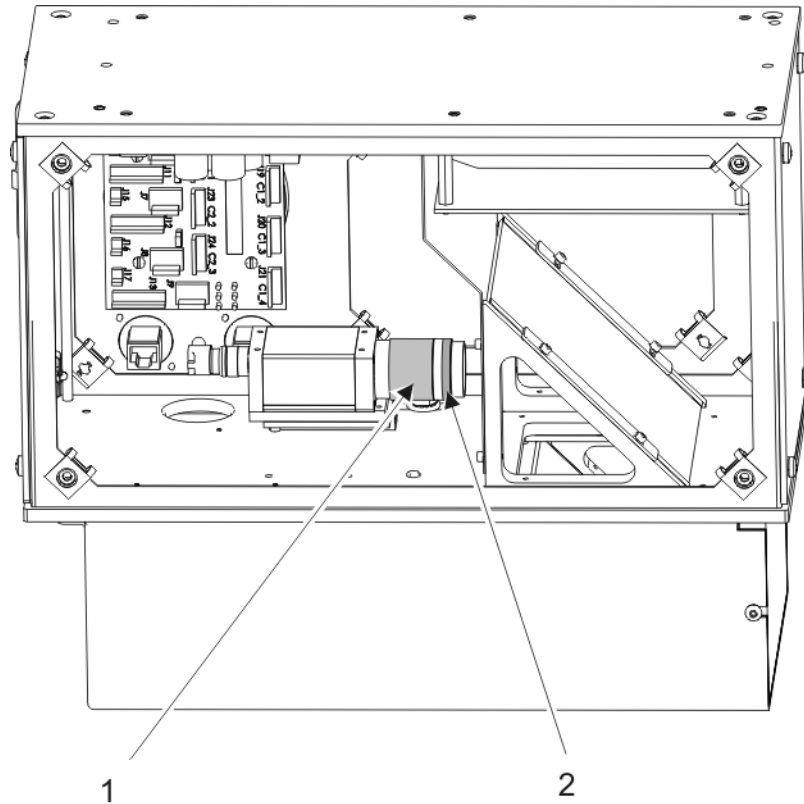
When adjusting the focus, aperture, or height, it is helpful to place the Intellispec System in the Live Image mode so you can immediately see the effect of an adjustment on the image quality.

With the system Offline, choose the correct camera view > right-click the Snap button > and choose  Live Images. If the production line is not running, place a part in the camera view as it would be during normal production.

Camera Adjustments

Normally, you do not need to make adjustments inside this module. It is set up for the largest sized preform during installation. If you change to a smaller sized preform, you can adjust the focus for the new endcap location through the software [Camera Control]. The endcap camera is located in the lower portion of this module and has motorized focus.

If you need to adjust focus [item 2] or aperture [item 1] for the seal surface camera, those adjustment rings are illustrated below.

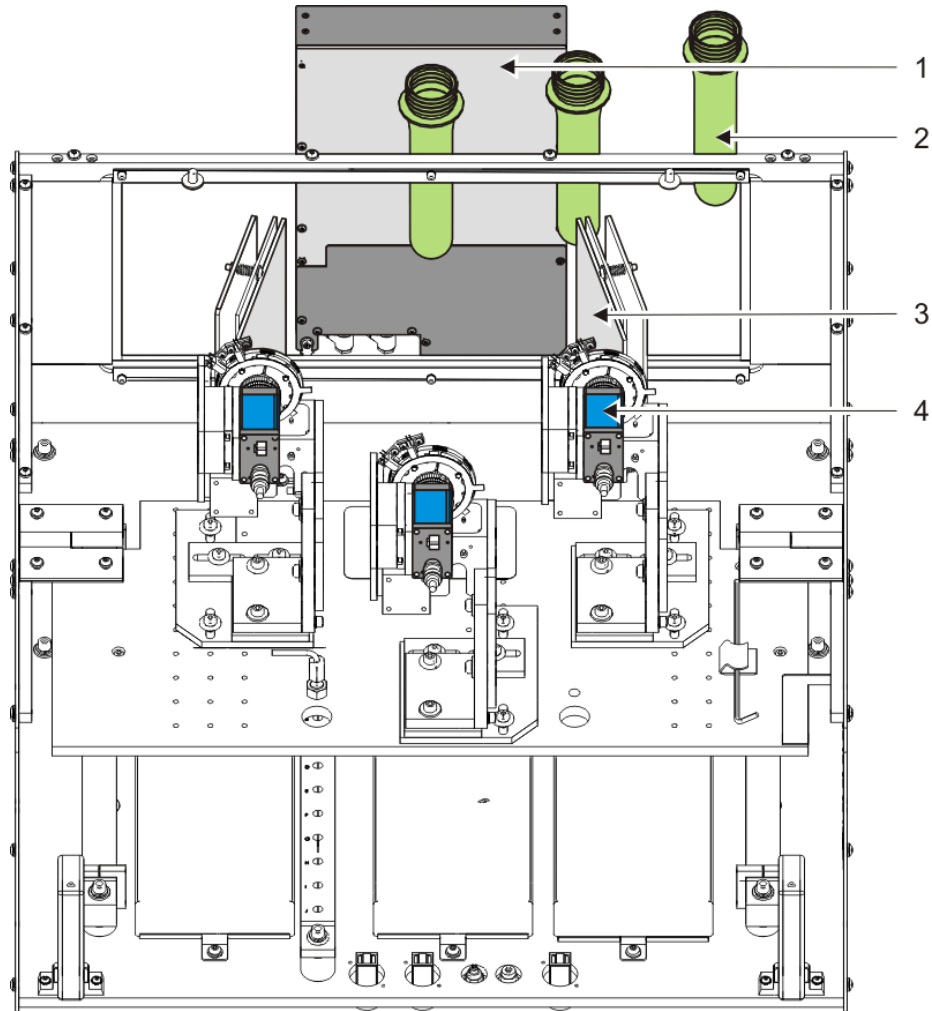


1	Aperture adjust ring
2	Focus adjust ring

THREE CAMERA SIDEWALL MODULE

There are three cameras, two mirrors, and one lighting module that make up the Sidewall Inspection Module. The sidewall cameras are mounted on a common slide table that can be moved forward or backward to accommodate a variety of preform lengths. Each sidewall camera has a servo motor on the focus ring for simple focus adjustments through the software.

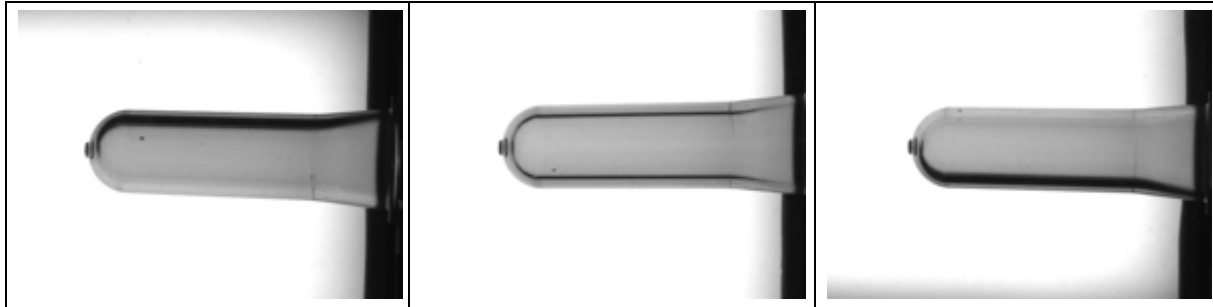
The following is a view of the three camera preform sidewall module with covers removed, looking from the outside towards the preforms inside the material handling unit.



1	Lighting module - mounted underneath Stage 2 starwheel
2	Preforms - shown for reference
3	Mirrors - quantity 2
4	Sidewall cameras - quantity 3

Images

Below are images from the three sidewall cameras. The images are all taken at one acquisition point; therefore the images are all considered part of one channel.



Adjust Viewing Distance

If all cameras are in proper alignment, you can simply move the slide table backward or forward to inspect larger or smaller preforms. The table has spring-loaded pins that lock the table to a required position.

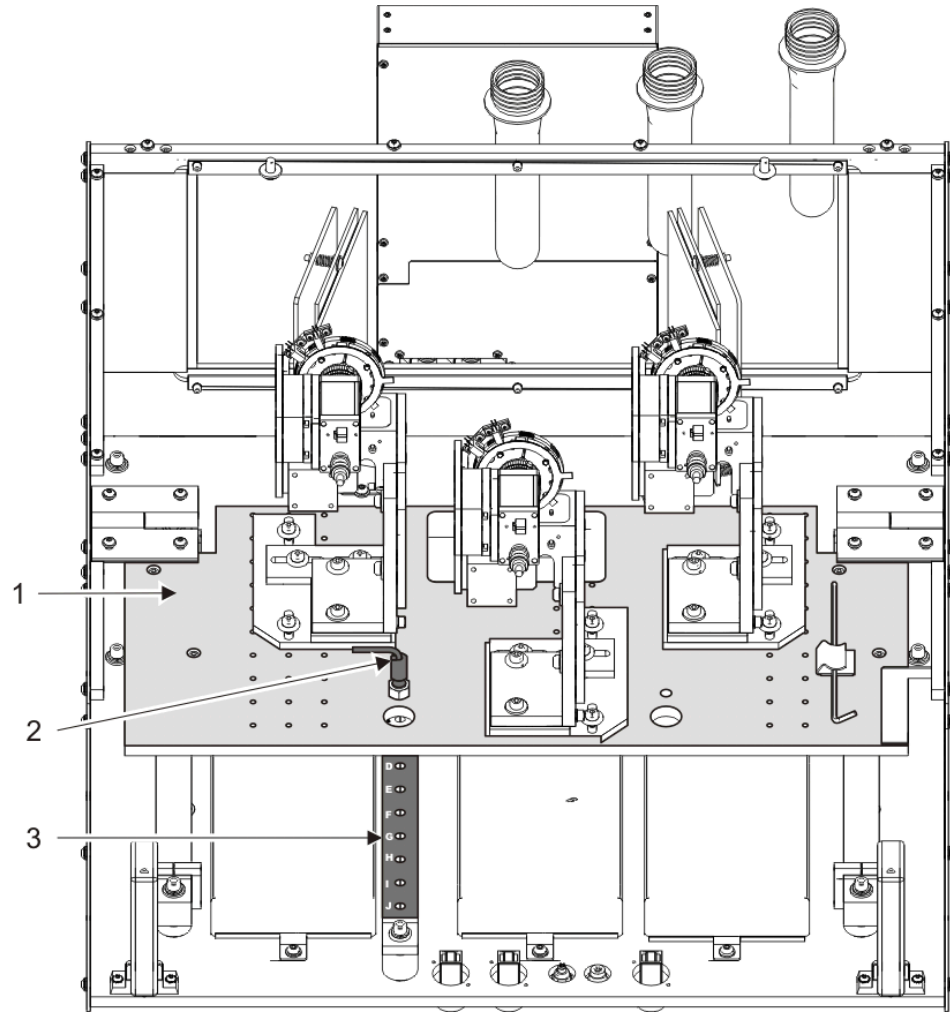
❖ *Note: Proper camera alignment is performed during manufacturing. If you have not replaced any cameras, mirrors, or touched any of the screw adjustments on the cameras or mirrors, they should remain in proper alignment.*

Moving the slide table closer to the lighting module will make the preform appear larger in the image. Moving it away from the lighting module will make the preform appear smaller in the image.

To move the slide table:

1. Lift and twist the retaining pin [item 1].
2. Move the slide table to desired position.

3. Twist the retaining pin to secure it into the slide table at the desired position.



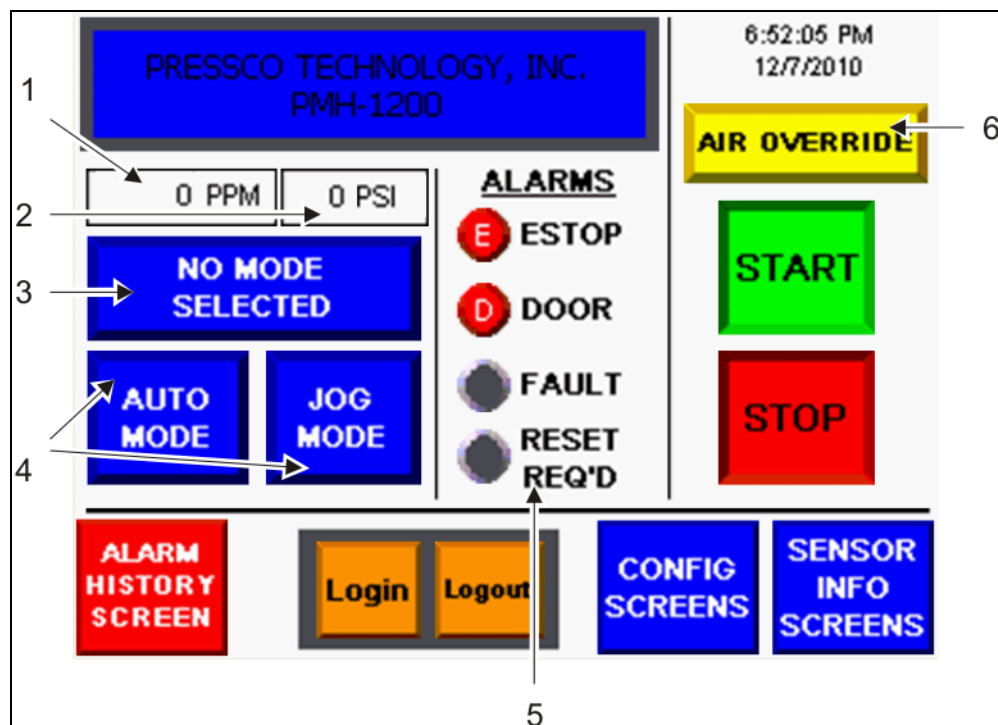
1	Slide table
2	Retaining pin - twist and lift to move slide table
3	Guide for preform size

Chapter 8

MACHINE CONTROL FUNCTIONS

HUMAN MACHINE INTERFACE (HMI) MAIN CONTROL SCREEN

The HMI controls and monitors the PMH-1200 operation. The Main Screen contains various indicators providing information on the status of the machine and links to more detailed informational screens and configuration screens.



1	PPM display	PPM indicates the speed the machine is running in parts per minute
2	PSI display	PSI indicates the current machine air pressure
3	Status Window	Status Window indicates various states of the machine such as Mode Selected, Auto Run Slow, Auto Run Fast, Waiting on Parts, Jog Mode, Jogging, Fault, E-Stop, and Auto Mode Not Started
4	Mode Buttons	Use mode buttons to put the machine in Auto or Jog Mode
5	Alarms	Alarms summarize the alarms E-Stop, Door Open, General Fault, and Reset Required

6	Air Override Indicator	Blue = Air Override Off Yellow = Air Override when air is forced on or if the air faults are bypassed
---	------------------------	--

Auto Mode

In Auto Mode, the machine must be started by using the **Start** push button from the main screen, or the **Start** push button on the enclosure door. The machine will then run automatically based on status of infeed track sensors. The machine is stopped by pressing the **Stop** push button from the main screen, or the **Stop** push button on the enclosure door.

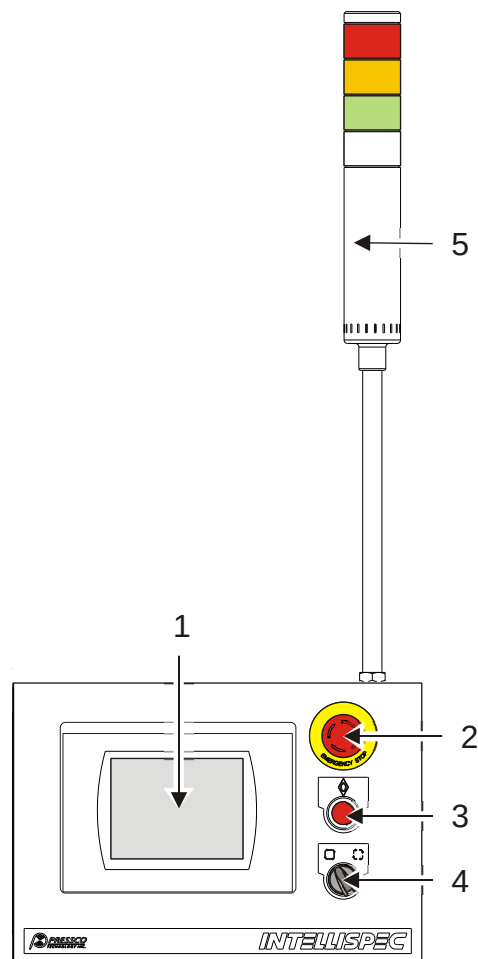
Jog Mode

In Jog Mode, the machine can be rotated slowly by using the Jog Selector switch.

HMI CONTROL DEVICES

There are three control devices on the HMI enclosure:

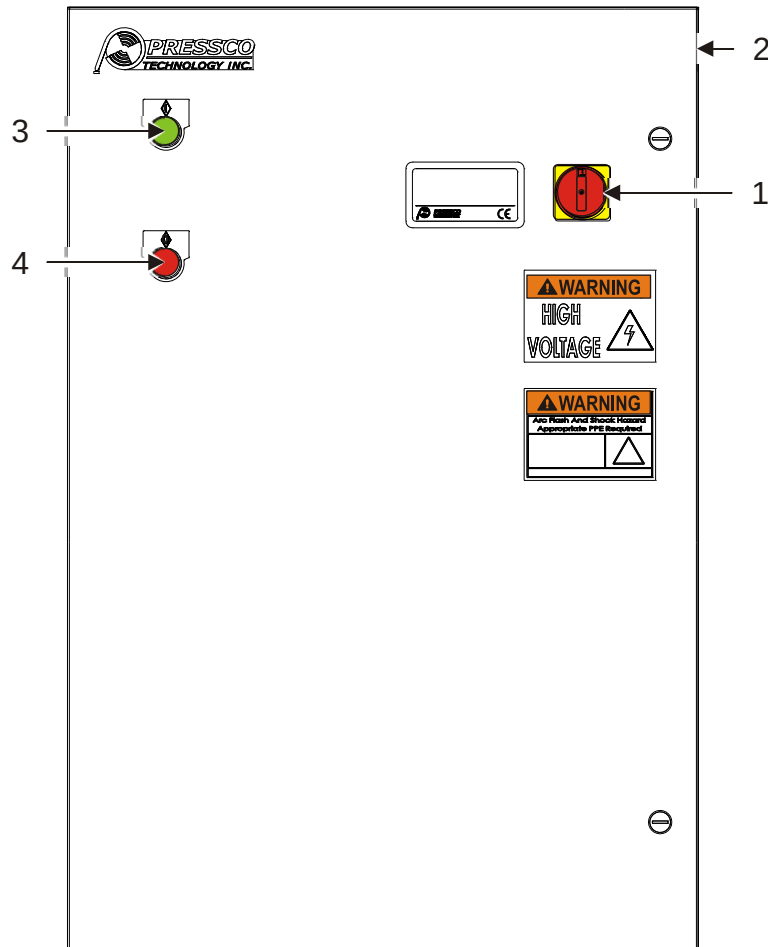
- **Emergency Stop** – Pressing this push button will drop power to all machine output devices.
- **Reset** – This push button is used to reset the machine main contactors after an Emergency Stop.
- **Jog** – This selector switch is used to jog the machine when in JOG Mode.



1	HMI touch screen
2	Emergency stop push button
3	Reset push button
4	Jog selector switch
5	Light tree

ENCLOSURE DOOR CONTROL DEVICES

There are two control devices on the enclosure door, a **Start** push button and **Stop** push button. These devices have the same functionality as the HMI Main Screen **Start** and **Stop** push buttons.



1	Rotary disconnect
2	Incoming electrical service
3	Start push button
4	Stop push button

HMI Bypass Machine Start Feature

If the touch screen should fail for any reason, the machine can still be started by following this sequence:

1. Cycle power to the machine by rotating the main disconnect to the OFF position, then ON. Machine will be in neither AUTO or JOG Modes.
2. Press the **Stop** push button quickly 5 times (less than 3 seconds), and the machine will go to JOG Mode. Test by using the Jog selector switch.
3. Press the **Start** push button quickly 5 times (less than 3 seconds), and the machine will go to AUTO Mode.
4. Wait several seconds, then press the **Start** push button and the machine should begin to run in AUTO Mode.

HMI INFORMATIONAL SCREENS

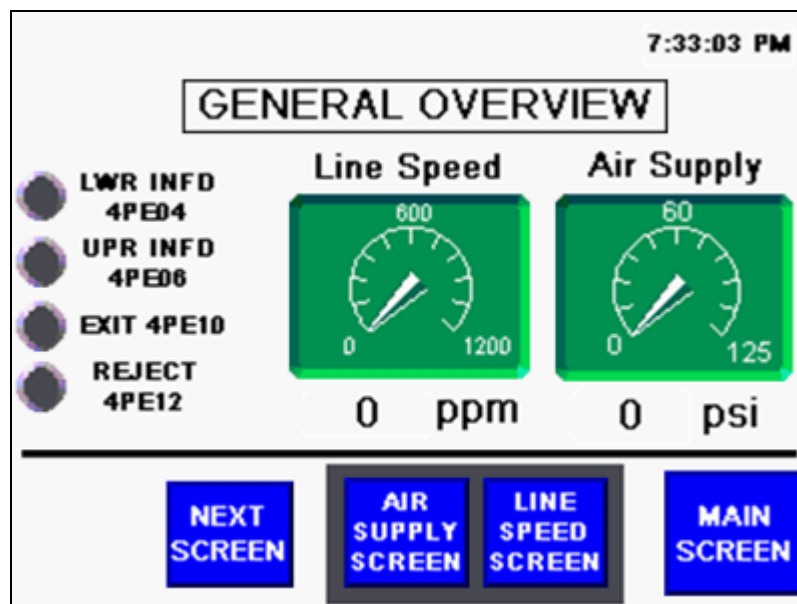
From the Main screen, press the **Sensor Info Screens** button to view more information about the sensors. These screens are helpful in troubleshooting alarms or faults, or viewing the status of PMH-1200. These screens are informational - you cannot enter setup information in the SENSOR INFORMATION SCREENS.

General Overview

To view this menu:

From the Main screen, press the **Sensor Info Screens** button. The GENERAL OVERVIEW screen is displayed.

The GENERAL OVERVIEW screen is the first Sensor Information screen. It displays infeed and outfeed sensors status, and current line speed and air pressure.



The indicators show the current status of the infeed and outfeed sensors. The indicators are displayed as:

- Gray if the sensor is not active
- Green if the sensor is active

For more information about the sensors, go to the **Track Sensor Overview** (on page 66).

For more information about line speed or air supply, press the **Air Supply** (on page 67) or **Line Speed** (on page 68) button.

Sensor Overview

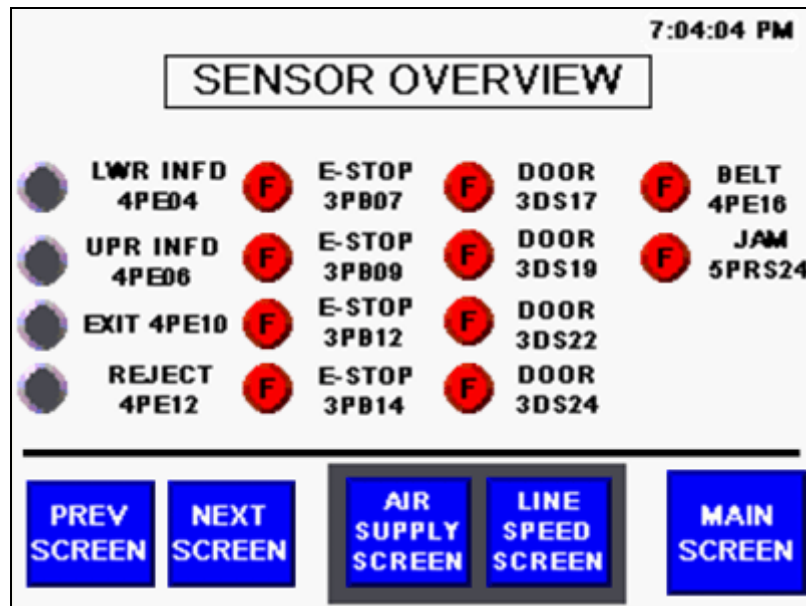
To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Next Screen** button until the desired screen is displayed.

The Sensor Overview screen displays the current status of all the sensors in the PMH-1200. The indicators are displayed as:

- Gray if the sensor is not active
- Red if an alarm sensor is active
 - "F" is displayed as a further indication of an alarm condition
- Green if the sensor is active or the status is normal

❖ Note: **Active** status is associated with the *infeed, outfeed, or belt* sensors. **Normal** run condition is associated with the *E-Stop or Door Alarm* sensors.

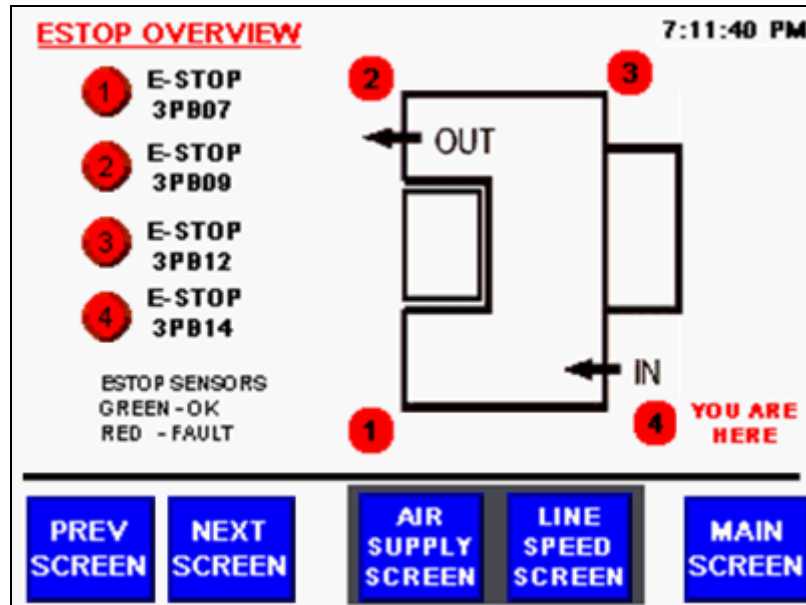


Emergency Stop (E-Stop) Overview

To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Next Screen** button until the desired screen is displayed.

This screen shows the location and status of all the E-STOP.



The color of the E-Stop indicators show the status. If one or more of the **E-stop** buttons is pressed, a Fault is detected.

- Green = OK
- Red = Fault

To clear the fault, release the appropriate E-stop button and press the **Reset** button on the HMI interface.

Door Alarm Overview

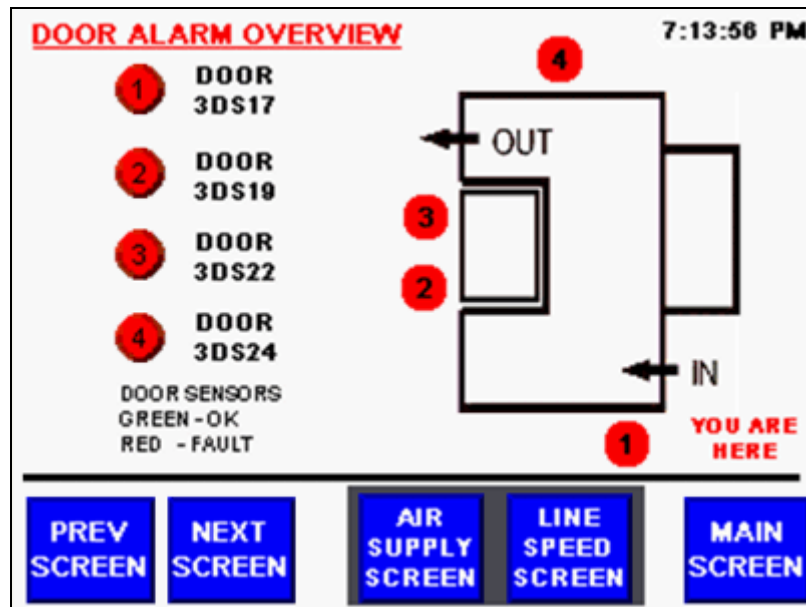
To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Next Screen** button until the desired screen is displayed.

This screen shows the location and status of all the Door Alarm sensors. If a door has been opened, or a sensor is defective, a Fault is detected.

- Green = OK
- Red = Fault

To clear the fault, release the appropriate E-stop button and press the **Reset** button on the HMI interface.



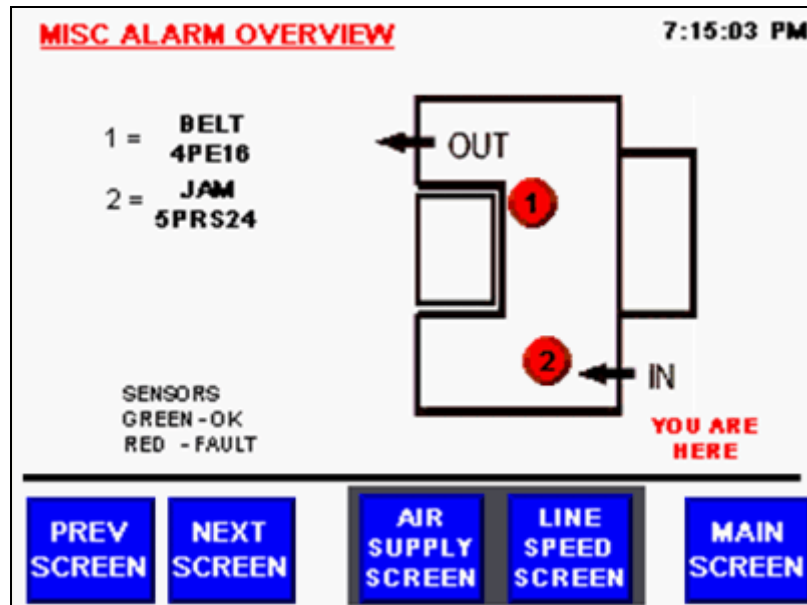
Miscellaneous Alarm Overview

To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Next Screen** button until the desired screen is displayed.

This screen shows the location and status of the Belt Sensor and the Jam Detect Sensor.
A Fault is detected if:

- a belt breaks or falls off the track
- a preform jams while transferring into the Main Drive

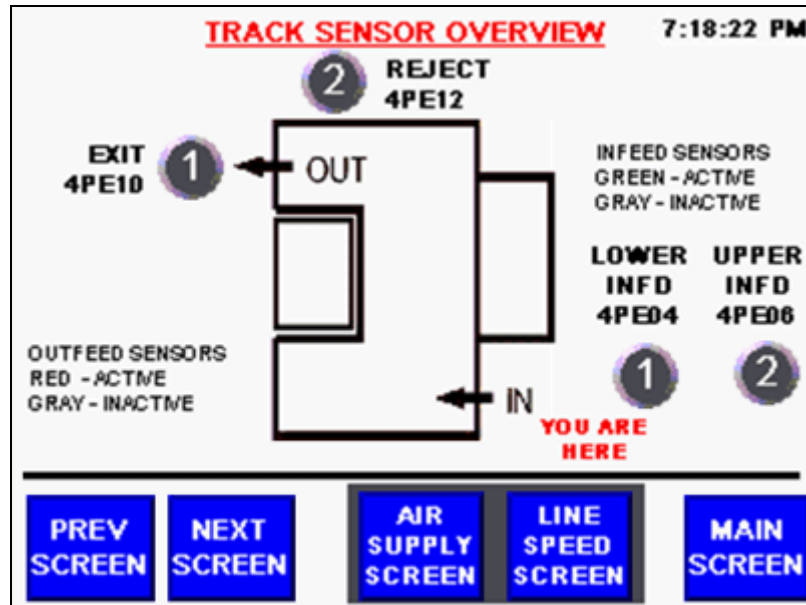


Track Sensor Overview

To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Next Screen** button until the desired screen is displayed.

This screen shows the location and status of all the Infeed and Outfeed sensors.



- If Exit or Reject sensor is active, it stops the PMH-1200 from running. An alarm is triggered to alert you that one of the outfeed bins is full.
- Lower Infeed and Upper Infeed sensors control the speed of the machine, as displayed by the following table:

State of sensors	Speed of Machine
Both sensors active	High speed
Lower sensor active, upper sensor inactive	Low speed
Neither sensor active	Stops
Upper sensor active, lower sensor inactive	Stops - indicates a jam in the track which triggers an alarm (see HMI Alarms (on page 77)).

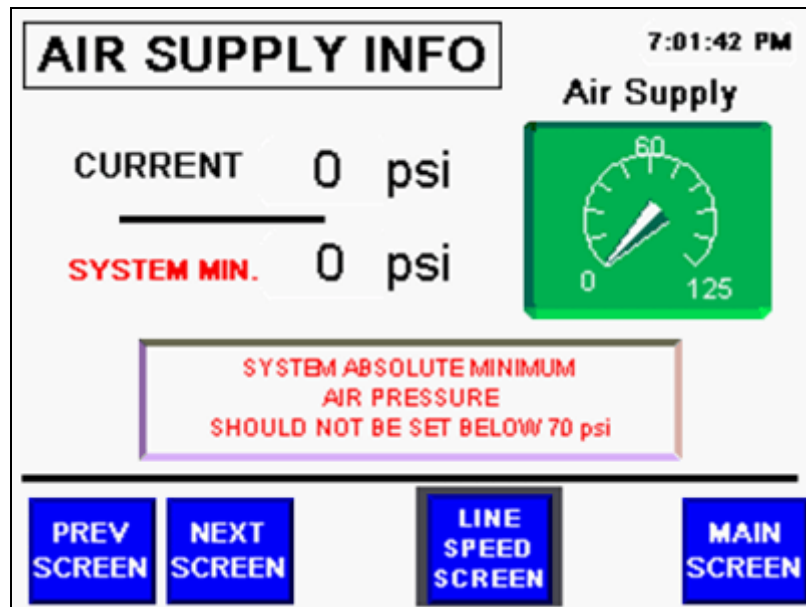
- The Minimum and Maximum line speeds are set in the **Line Speed Setup** (on page 69).

Air Supply

To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Air Supply Screen** button. The Air Supply Info screen is displayed.

This is an informational screen that displays the current air pressure, and the minimum programmed air pressure, see **Air Reject Setup** (on page 70). This screen is useful if the HMI program indicates an air alarm or fault, and you need to know the current air pressure.

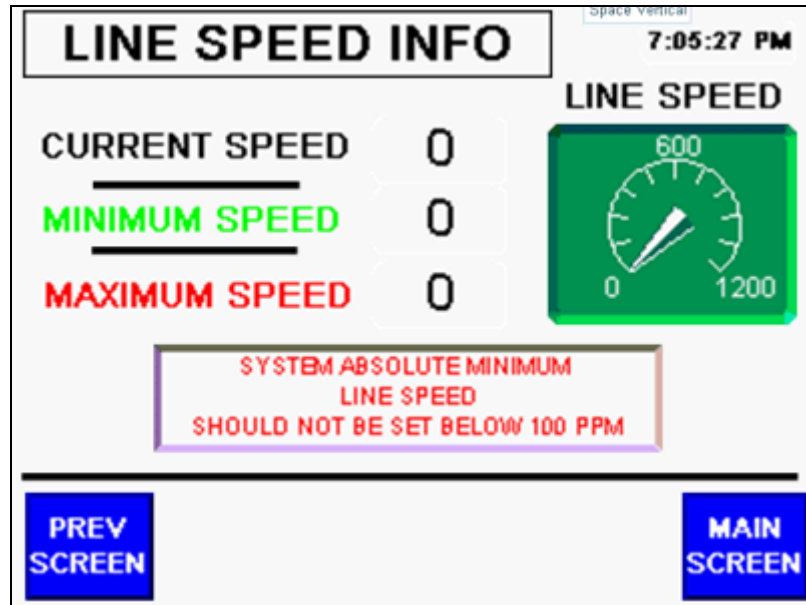


Line Speed

To view this screen:

1. From the Main Screen, press the **Sensor Info Screens** button.
2. Press the **Line Speed Screen** button. The Line Speed Info screen is displayed.

This is an informational screen to show you the line speed range.



Current Speed

The current speed at which the PMH-1200 is running.

Minimum Speed

The speed at which the PMH-1200 runs if the criteria for the Lower Infeed Sensor is met. This indicates that there are enough parts present at the Lower Infeed Sensor to run the PMH-1200, but there are not enough parts present at the Upper Infeed Sensor to allow the PMH-1200 to run at full speed. The PMH-1200 requires enough parts at the infeed area to create back pressure for the parts to prevent jams or other part handling errors.

Maximum Speed

The speed at which the PMH-1200 runs if the criteria for the Upper Infeed Sensor is met. This indicates that there are enough parts present at the Upper Infeed Sensor to allow the PMH-1200 to run at full speed.

The minimum and maximum speeds are programmed in the **Line Speed Setup** (on page 69).

HMI CONFIGURATION SCREENS

Login

The configuration screens are password-protected. You must be an authorized user to access the configuration screens.

To login:

1. From the Main Screen, press the **Login** button.
2. Enter the password.

❖ *Note: If you do not know the PMH-1200 HMI password, please contact Pressco Technical Support.*

Logout

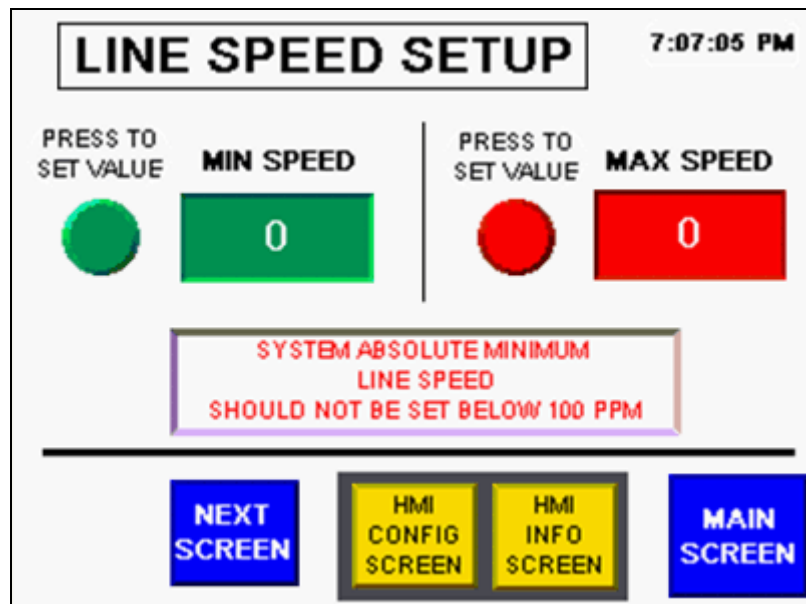
You will remain logged in until:

- You press the **Logout** button from the Main Screen, or
- 30 minutes with no activity elapses. After 30 minutes, the HMI automatically logs you out to prevent unauthorized access to the program.

Line Speed Setup

To view this screen:

1. From the Main Screen, press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. The LINE SPEED SETUP screen is displayed. This screen allows you to program the minimum and maximum line speeds that the PMH-1200 will run.



Min Speed

The speed at which the PMH-1200 runs if the criteria for the Lower Infeed Sensor is met. This indicates that there are enough parts present at the Lower Infeed Sensor to run the PMH-1200, but there are not enough parts present at the Upper Infeed Sensor to allow the PMH-1200 to run at full speed. The PMH-1200 requires enough parts at the infeed area to create back pressure for the parts to prevent jams or other part handling errors.

Max Speed

The speed at which the PMH-1200 runs if the criteria for the Upper Infeed Sensor is met. This indicates that there are enough parts present at the Upper Infeed Sensor to allow the PMH-1200 to run at full speed.

❖ *Note: Min Speed should not be set below 100 PPM (parts per minute).*

Some conditions for setting speeds apply:

- Minimum speed must be set at a lower speed than Maximum speed
- If you try to set Max Speed lower than Min Speed, the system will subtract a value of 10 PPM from the entered Max Speed and that value will be the new Min speed. The Max Speed will always be the greater value.
- If you try to set Min Speed higher than Max Speed, that value will be ignored and the original values will remain the same

Air Reject Setup

To view this screen:

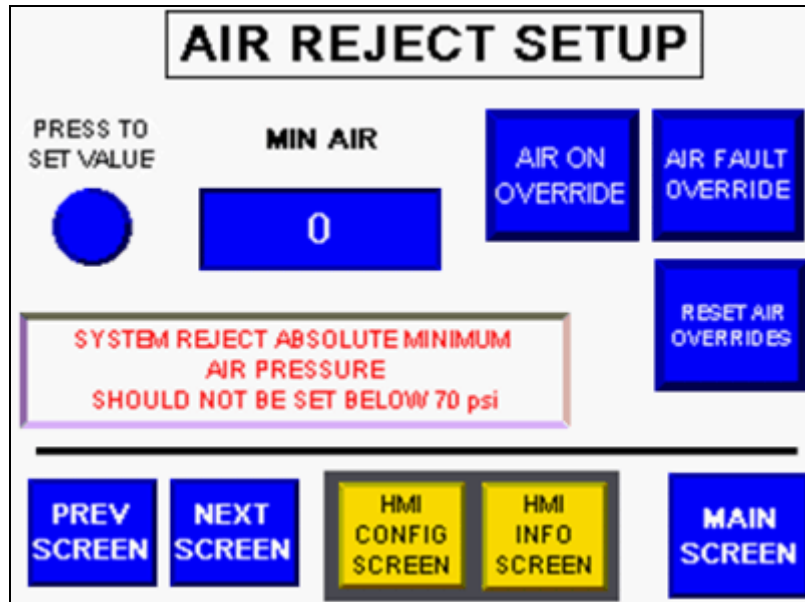
1. From the Main Screen, press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. Press the **Next Screen** button until the desired screen is displayed.

The AIR REJECT SETUP screen allows you to set the minimum air pressure. The air transducer in the PMH-1200 monitors the air pressure, which is needed to:

- run the air knives on the color camera backlight.
- run the air knives on the 3 Camera Sidewall Module viewing window.
- supply air to the part reject device.

Air solenoid (6SOL16) will turn on machine air when all E-stops have been reset. If air pressure drops below the minimum limit for 5 seconds, a Low Pressure alarm will be displayed and the machine will stop.

❖ *Note: for best results, set the minimum air pressure to at least 80 psi*



Air On Override button

Press this button to turn on the machine air when the machine is in E-Stop mode. This is particularly useful if you would like to do some setup and testing with the doors open. To turn off, press the Reset Air Overrides button.

Air Fault Override button

This allows the PMH-1200 to operate without air pressure. Normally the system activates an alarm when there is no (or low) air pressure. When you press this button, the alarm will be bypassed. To turn off, press the **Reset Air Overrides** button.

When either of the above overrides is active, an indicator on the main screen will turn amber and flash AIR OVERRIDE. The Amber light on the light tree will also flash.



Warning

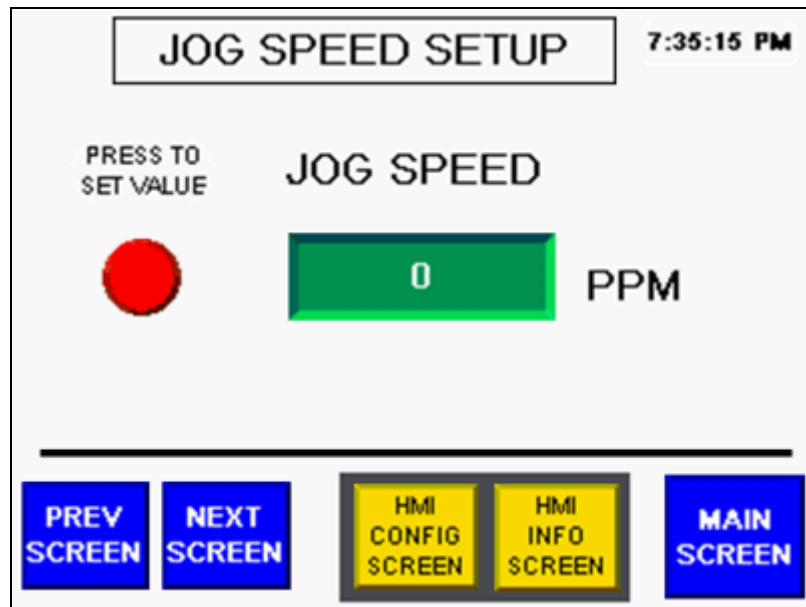
Bypassing Air Alarms should only be used during system setup or troubleshooting. We do not recommend bypassing the air alarms during normal operation.

Jog Speed Setup screen

To view this screen:

1. From the Main Screen, press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. Press the **Next Screen** button until the desired screen is displayed.

The Jog Speed Setup screen allows you to program the speed at which the PMH-1200 runs if you place it in **Jog Mode** (on page 58), which is used during setup and troubleshooting. The default jog speed is 100 PPM (parts per minute).



Infeed and Outfeed Sensor Setup

To view this screen:

1. From the Main Screen, press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. Press the **Next Screen** button until the desired screen is displayed.

This screen allows you to set up the activation time and deactivation time for the Infeed and Outfeed Sensors.

INFEED SENSOR SETUP
(ENTER VALUE IN THOUSANDTHS) 7:22:40 PM

PRESS TO SET VALUE	LOWER INFEED ACTIVATE TIME	PRESS TO SET VALUE	UPPER INFEED ACTIVATE TIME
[Red Circle]	0 SEC.	[Red Circle]	0 SEC.
PRESS TO SET VALUE	LOWER INFEED DEACTIVE TIME	PRESS TO SET VALUE	UPPER INFEED DEACTIVE TIME
[Red Circle]	0 SEC.	[Red Circle]	0 SEC.

Navigation buttons: PREV SCREEN, NEXT SCREEN, HMI CONFIG SCREEN, HMI INFO SCREEN, MAIN SCREEN

The Outfeed Sensor screen is similar to the Infeed Sensor screen. Press the **Next Screen** button to get to the Outfeed Sensor Setup screen.

Activate time

This is the on time hysteresis of a sensor. Once a sensor is activated, it must remain active for n seconds before the system will treat that sensor as active.

Deactive (Deactivate) time

This is the off time hysteresis of a sensor. Once a sensor is off, it must not change states for n seconds before the system will treat the sensor as being off.

The preset values for all the Infeed and Outfeed Sensors are:

- 2 seconds = Activate time
- 1 second = Deactivate time

To see the location of the sensors, look at the **Track Sensor Overview** (on page 66).

When installing the sensors, keep the following in mind:

- If the PMH-1200 runs at 1200 PPM, then it takes 5 seconds to stop. This is a linear equation; if the PMH-1200 runs at 600 PPM, then it takes 2.5 seconds to stop.
- The Lower Infeed Sensor must be placed at a distance to allow [Deactivate Time + number of seconds to stop] enough preforms to flow into the PMH-1200 between the Infeed Sensor and the **Infeed components** (on page 35) (Inboard Feed Guide).

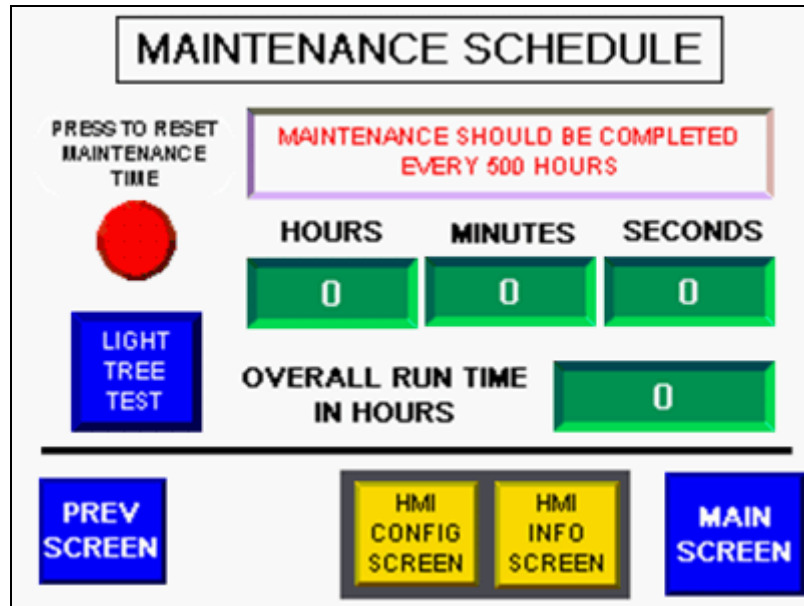
Maintenance Schedule

To view this screen:

1. From the Main Screen, press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. Press the **Next Screen** button until the desired screen is displayed.

The Maintenance Schedule screen allows you to reset the maintenance counter.

Maintenance on the PMH-1200 should be completed every 500 hours. A banner will be displayed on the HMI Main screen when 500 hours has elapsed. You must acknowledge the message on the banner before proceeding with operation.



- The **Press To Reset Maintenance Time** button will reset the counter.
- The **Light Tree Test** button will display all working lights on the light tree.
- The elapsed number of HOURS, MINUTES, and SECONDS since the maintenance counter was reset is displayed in the green boxes.
- The counter is only active when the motor is running.
- The overall run time counter is not resettable. Similar to an odometer on an automobile, the counter continues to count even after the maintenance counter has been reset.

HMI Information

This screen was developed for the purpose of displaying program revision level information. It is not currently being used. Program revision information is maintained by Pressco Technology Inc.

To view this screen:

1. From the Main Screen, press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. Press the **HMI Info Screen** button.

The screenshot displays the HMI Information screen with the following data:

Label	Value
HMI BOOT CODE VER.	01.01
HMI APP CODE VER.	01.20.000
HMI SOFTWARE VER.	0
PLC CODE VER.	0
HMI IP ADDRESS	192.168.67.77
PLC IP ADDRESS	0

At the bottom of the screen, there are three buttons: **PREVIOUS SCREEN**, **FAULT COUNT SCREEN**, and **MAIN SCREEN**.

Fault Count

To view this screen:

1. From the Main Screen press the **Config Screens** button.
2. If you are not logged on, you will be prompted for a password.
3. Press the **HMI Info Screen** button.
4. Press the **Fault Count Screen** button.

This screen displays the number of faults that have occurred. These values continue to accumulate over time; you cannot reset them. This information is generally used for troubleshooting.

FAULT COUNT SCREEN				7:30:23 PM
ESTOP 3PB07	DOOR 3DS17	AIR LOW		
0	0	0		
ESTOP 3PB09	DOOR 3DS19	DRIVE BELT		
0	0	0		
ESTOP 3PB12	DOOR 3DS22	INFEED JAM	JAM SENSOR	
0	0	0	0	
ESTOP 3PB14	DOOR 3DS24	EXIT FULL	REJECT FULL	
0	0	0	0	
PREVIOUS SCREEN		MAIN SCREEN		

HMI ALARMS

When Alarms or Faults are Triggered

When an Alarm or Fault is triggered, the PMH-1200 stops running. A banner is displayed across the main screen with information about the alarm or fault.

You must acknowledge the alarm, and/ or troubleshoot the problem before proceeding. An example of an alarm is DOOR 3 OPEN, 3DS22.

Three buttons are available: **Ack (Acknowledge)**, **Clear**, and **Close**.

- Press **ACK** (recommended) to acknowledge the alarm and remove the banner from the screen. The alarm will be listed in the **Alarm History Screen** (on page 78).
- If you press **Clear**, then the alarm is cleared. It does not get listed in the Alarm History Screen.
- If you press **Close**, then the banner closes. The alarm is listed in the Alarm History Screen as unacknowledged, where you can acknowledge it at a later time.

To run the system after an E-Stop or Door alarm has occurred:

1. Clear the alarm (close door or rotate E-stop button).
2. Press **ACK** to acknowledge the alarm and remove the banner from the screen.
3. Press the Reset button on the HMI interface.
4. Press the **Start** button on the HMI main screen.

The PMH-1200 remembers which mode you were using prior to the alarm. It will remain in that mode (Auto or Jog) until you change it.

To run the system after an E-Stop or Door fault has occurred:

1. Switch off power to the PMH-1200.
2. Repair the problem.
3. Restore power to the PMH-1200.

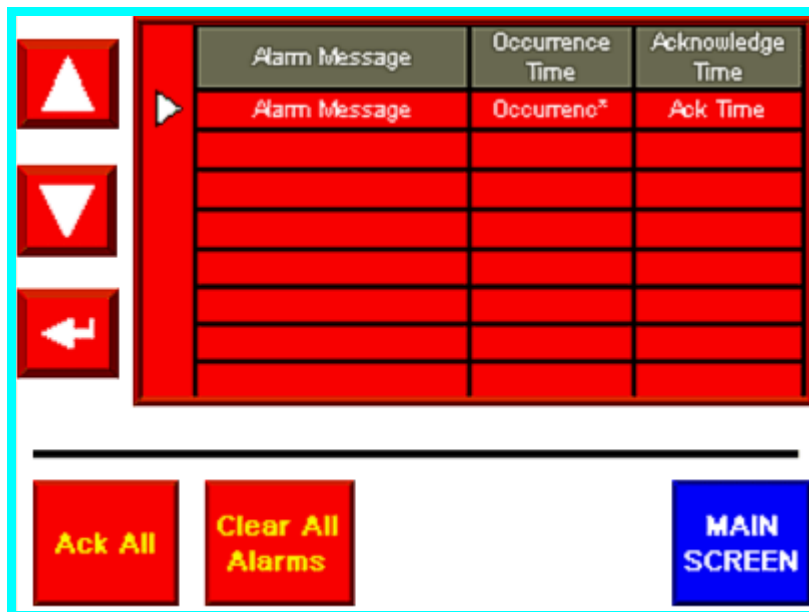
Note: you must cycle power to the PMH-1200 when an E-Stop or Door fault occurs.

4. Press **ACK** to acknowledge the alarm and remove the banner from the screen.
5. Press the **Reset** button on the HMI interface.
6. Press the **Start** button on the HMI main screen.

The PMH-1200 remembers which mode you were using prior to the alarm. It will remain in that mode (Auto or Jog) until you change it.

Alarm History Screen

From the Main Screen, log on and press the **Alarm History Screen** button to view the alarm history.



This screen provides a history up to the last 100 alarms or faults. It displays the time of occurrence and time when the alarm was acknowledged, if any. Use the up and down arrows to scroll through the list. [Ignore the  button, as this is not applicable.]

Ack (Acknowledge) All

Press the **Ack All** button to acknowledge all alarms at once.

Clear All Alarms

Press the **Clear All Alarms** button to remove all alarms from this list.

Main Screen

Press the **Main Screen** button to return to the main PMH-1200 screen.

Notes about the alarms on this list:

- If an alarm was triggered and **CLEAR** was pressed from the alarm banner, the alarm does not appear in this list
- If an alarm was triggered and **ACK** was pressed from the alarm banner, the alarm is listed. It does not need to be acknowledged again.
- If an alarm was triggered and **CLOSE** was pressed from the alarm banner, the alarm is listed. You can acknowledge the alarm from this screen.
- The history of the last 100 alarms or faults is listed, even if the system loses power.

Chapter 9

MACHINE STARTUP AND SHUTDOWN

During machine operation:

	Only one operator is needed to operate the machine. All others must keep at a safe distance.
	Operators must be familiar with all machinery connected to the Pressco equipment and know how to use emergency stop devices. <i>Note: the emergency stop devices may not be connected directly to the Pressco equipment, but it is important to know how to use them.</i>
	Before putting the Pressco system online, the operator must ensure that all safety devices used with all connected machinery are in place and operational.
	The operator must maintain maximum focus on his work and be alert throughout his shift. If this is not the case, immediately inform the shift supervisor.

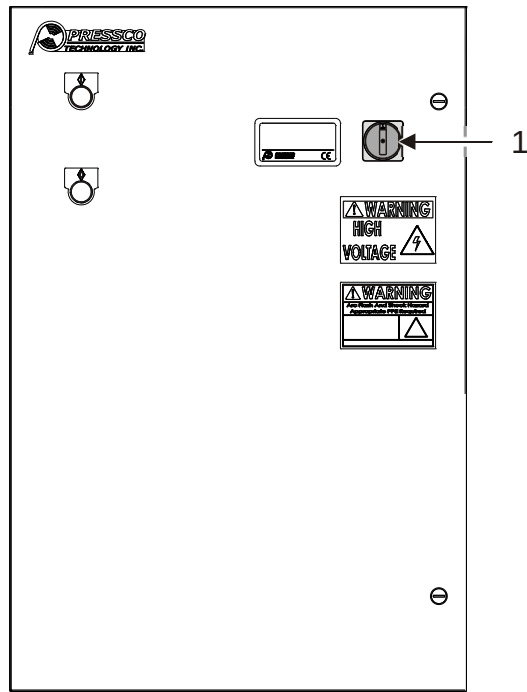
STARTUP SEQUENCE

When starting the machine, complete the following sequence:

1. Walk around machine to verify that good part and reject part bins are not full and that all lower guarding is in place.
2. Verify the descrambler is loaded with proper parts.
3. Verify the Intellispec system is Online and ready to run. See Intellispec Programming Guide.
4. Power up the PMH-1200 by rotating the disconnect switch to the ON position [item 1].
5. When the touchscreen completes its bootup sequence, press the **Auto Mode** touch screen button.

Note: As long as all alarms are reset, and the machine has sufficient air pressure, the status window should state AUTO MODE NOT STARTED.

6. Press the **Start** touch screen button.



1	Rotary disconnect
---	-------------------

SHUTDOWN SEQUENCE

To shutdown the machine:

- For extended periods of downtime or maintenance, rotate the disconnect switch to the OFF position.
- For short periods of downtime, press the **Stop** touch screen button. This will take the machine out of Auto run mode. Or, you can simply push the E-Stop button, see **Emergency Stop (E-Stop) Overview** (on page 63). This will take the machine out of Auto run mode, and disable the motor drives.

Chapter 10

PART CHANGEOVER PROCEDURES

PART CHANGEOVER SEQUENCE

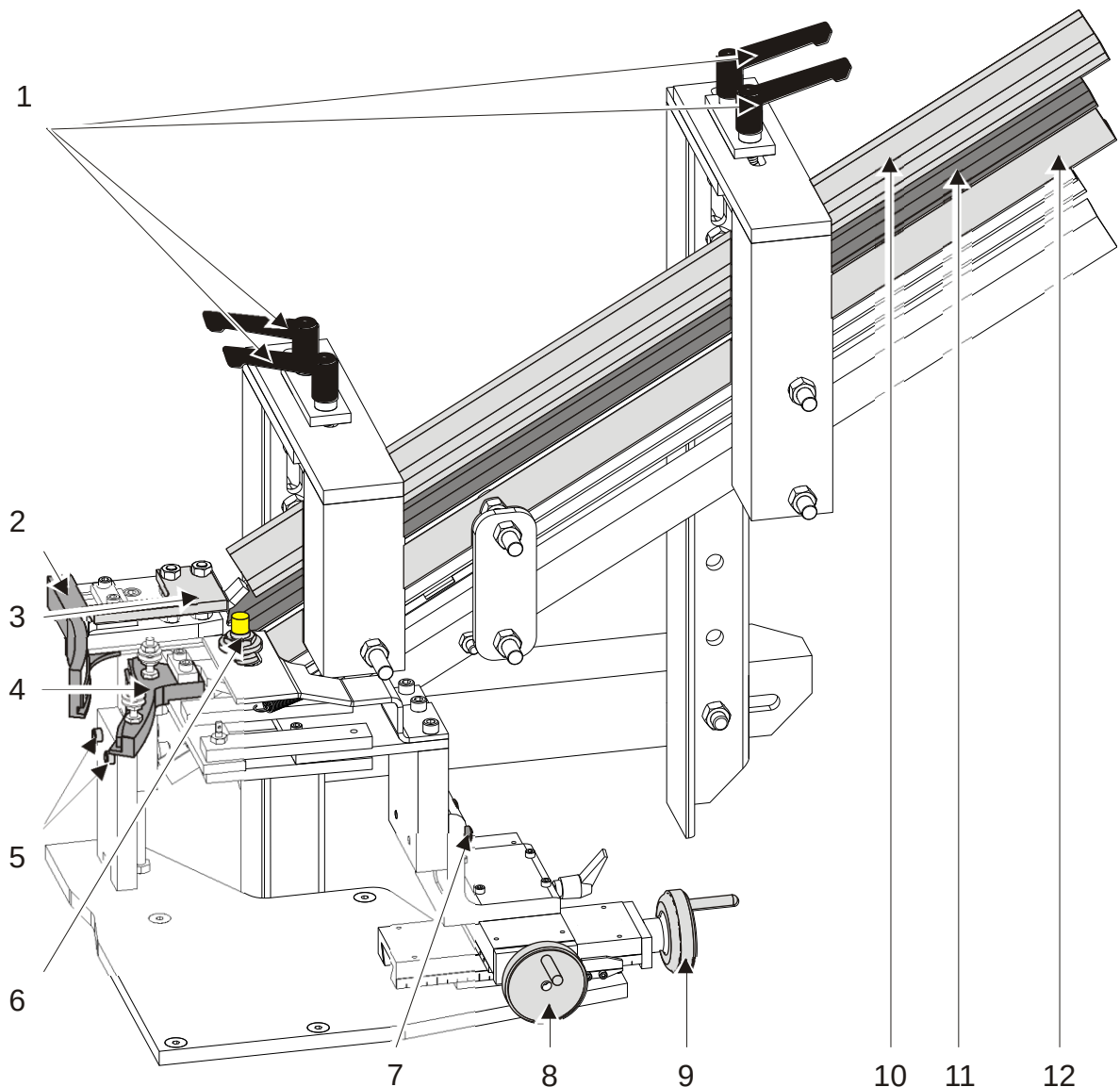
To change a part, conduct the following adjustments:

1. **Infeed Adjustments** (on page 82)
2. **Preform Diameter Adjustment** (on page 84)
3. If needed, **Stage 1 Starwheel Changeover** (on page 85)
4. **Stage 1 Height Adjustment** (on page 88)
5. **Stage 1 and Stage 2 Center to Center Adjustment** (on page 89)
6. If needed, **Stage 1 and Stage 2 Phase Adjustment** (on page 90)
7. **PMHI-1200 Optional Side Belt Outfeed Adjustment** (on page 91)
8. If needed, **PSE Position Adjustment** (see "**Preform Seal Endcap (PSE) Module Position Adjustment**" on page 93)

INFEED ADJUSTMENTS

To adjust the infeed assembly:

1. Adjust the outboard infeed guide height adjustment [item 7] and the infeed guide height adjustment [5] so that the neck ring surfaces of the outboard curved infeed guide [item 4] and curved infeed guide [item 2] are planar. This should not need to be adjusted during changeover, but should be checked and corrected if need be.
2. Align infeed slide [item 11 (fixed)] to infeed guide [item 2] and infeed slide [item 12 (adjustable)] to accommodate the preform size. This can be done by loosening the Infeed slide adjustment [item 1], then moving the infeed slide [item 12 (adjustable)] to the correct size and the retighten the Infeed slide adjustment [item 1].
3. Adjust infeed guide [item 5] according to the specific preform using the lateral adjustment [item 8] and the front and back adjustment [item 9] knobs. Once adjusted the preform should have some side to side space (roughly 0.120 inches) between bottle neck and infeed guides.
4. Set the top infeed slide [item 10] height to have roughly a 5-6mm of vertical play between the infeed slide and the head of the preform.

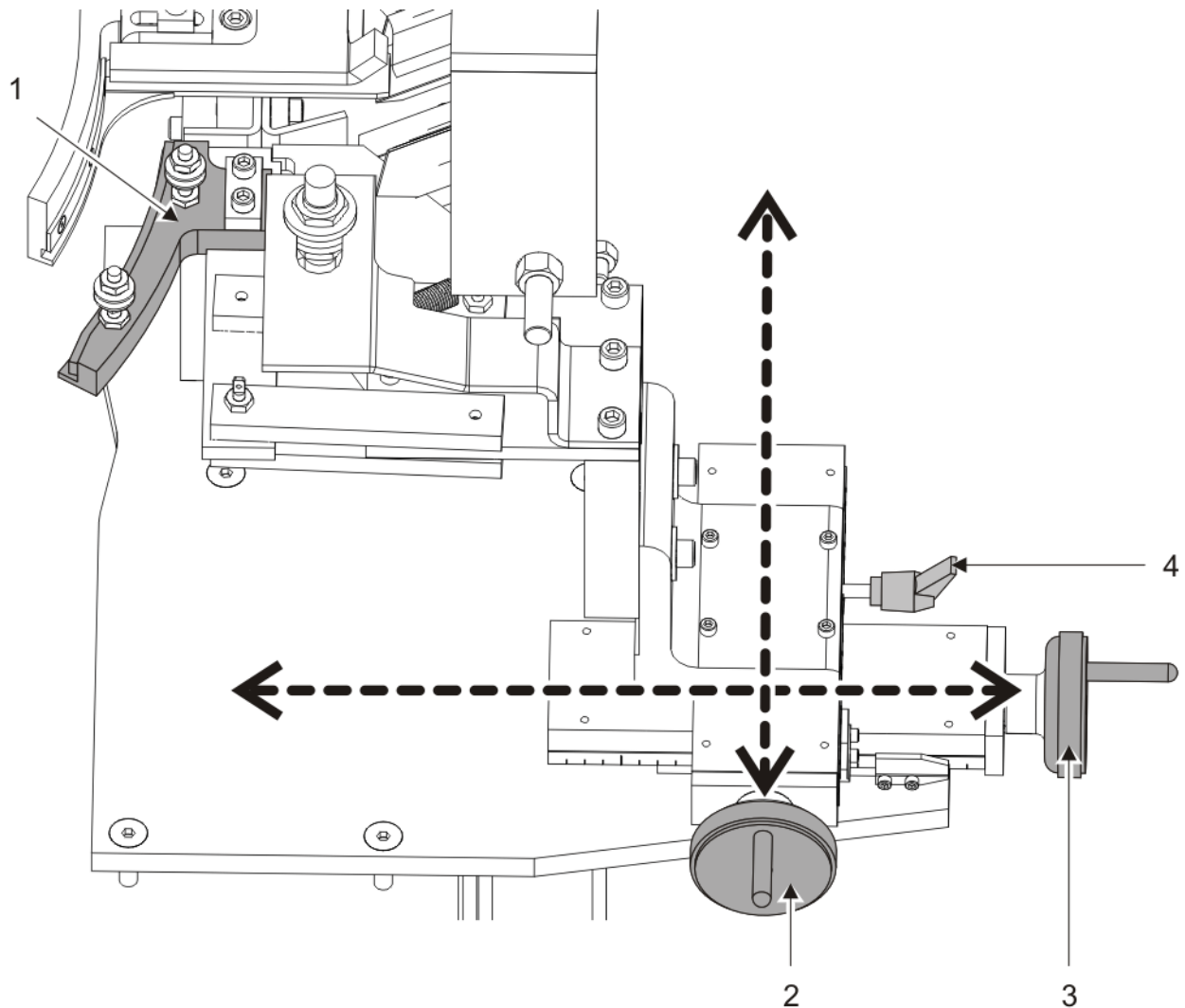


1	Infeed slide adjustment
2	Curved infeed guide
3	Top guide for infeed rail assembly
4	Outboard curved infeed guide
5	Infeed guide height adjustment
6	Jam detection sensor
7	Outboard infeed guide height adjustment
8	Lateral adjustment for infeed slide #4 (.437")
9	Front to back adjustment for infeed slide #4 (.75")
10	Top infeed slide (adjustable)
11	Infeed slide (fixed side)
12	Infeed slide (adjustable side)

PREFORM DIAMETER ADJUSTMENT

To fit the preform diameter, use the following knobs to adjust the infeed track and the pivoting pulley arm to adjust the belt.

❖ *Note: Release locking mechanisms before adjusting and re-engage locking mechanisms after adjustment.*

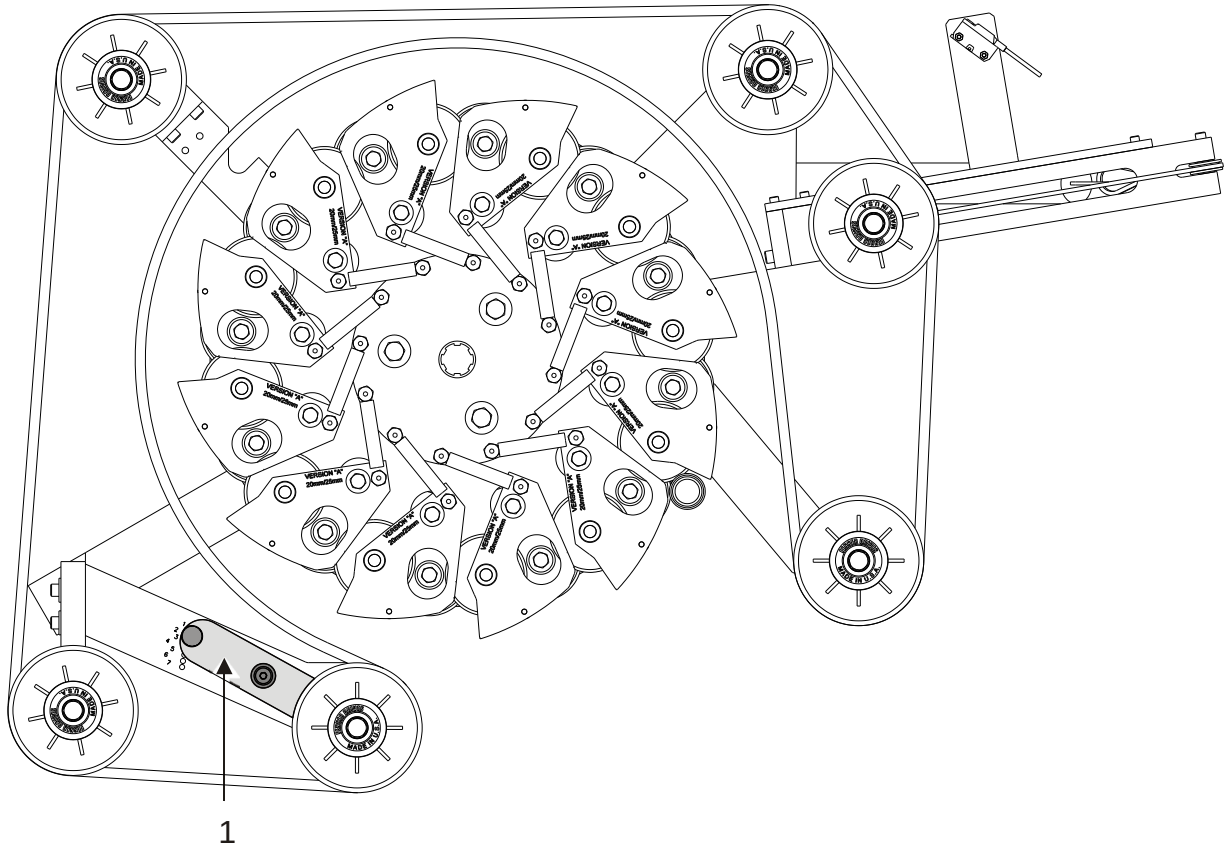


1	Outboard curved infeed guide
2	Lateral adjustment for infeed slide
3	Front to back adjustment for infeed slide
4	Slide position lock knob (one per slide)

❖ *Note: Graphic is only showing one lock [item 4].*

Pivoting Pulley Arm

Release the detent pin and rotate the pivoting pulley arm so that the belt is trapping the preform in the primary wheel just as it is released from the infeed rails. After this position is found, re-engage the locking pin.



1	Pivoting pulley arm
---	---------------------

STAGE 1 STARWHEEL CHANGEOVER

You may need to change over the Stage one starwheel when the preform size does not fit the current starwheel.

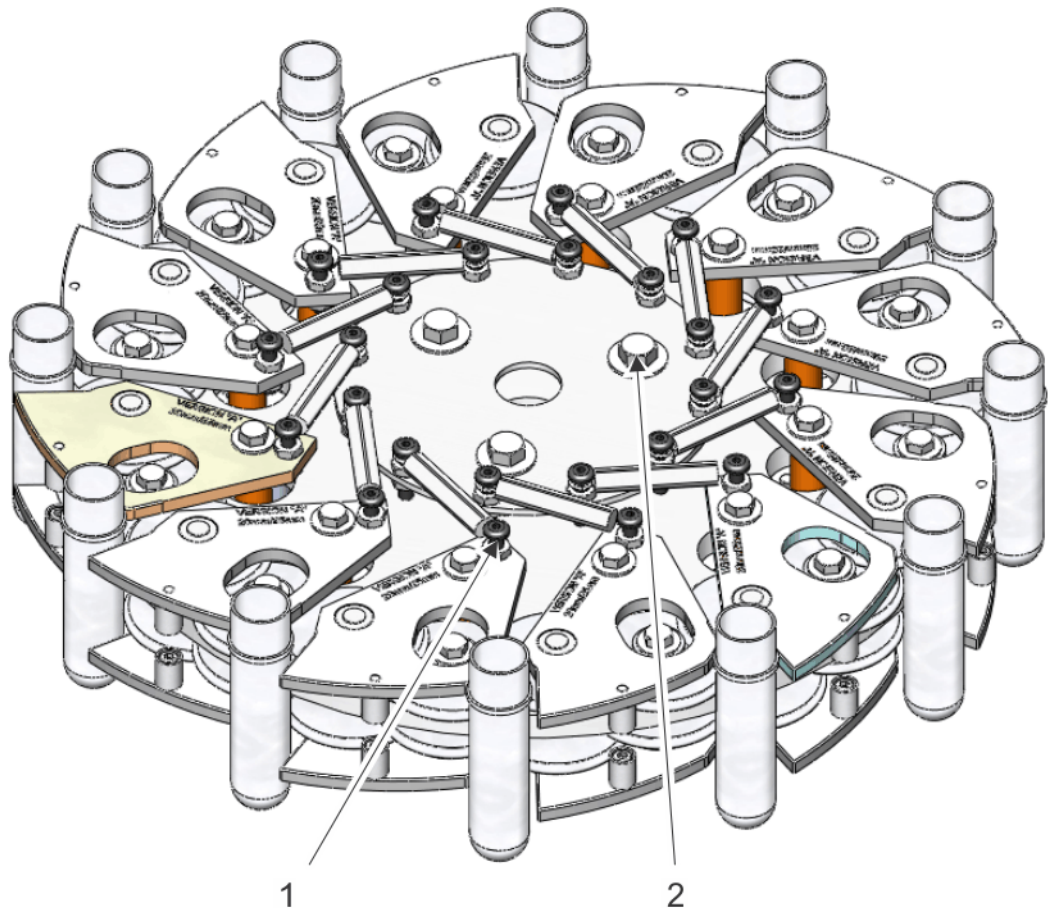
What you need:

- Needle nose pliers

To remove the starwheel:

Refer to the illustration below.

1. Using needle nose pliers remove the hook of the springs from the screws on the lobe [item 1]. Remove all of the spring hooks around the starwheel. This will remove the tension on the lobe assemblies.
2. Loosen, BUT DO NOT REMOVE, the three mounting bolts [item 2]. If you pull the screws out too far, the spacers between the main plate and the spring plate will become loose and may be lost.
3. Lift the wheel and remove it. Store the wheel as is for a quick changeover in the future.

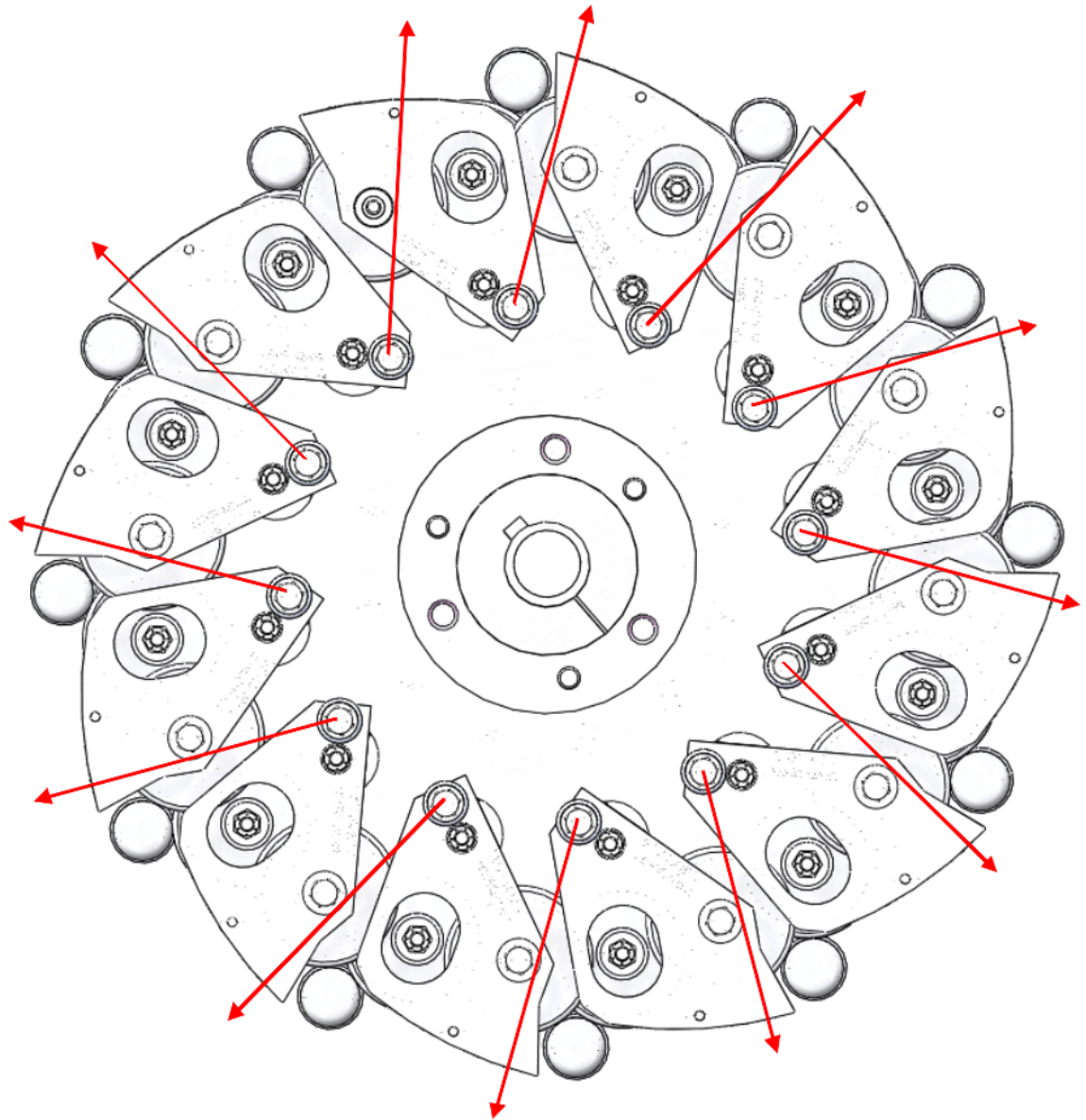


1	Remove spring hook here
2	Mounting bolts

Next, install the new starwheel.

To install the starwheel:

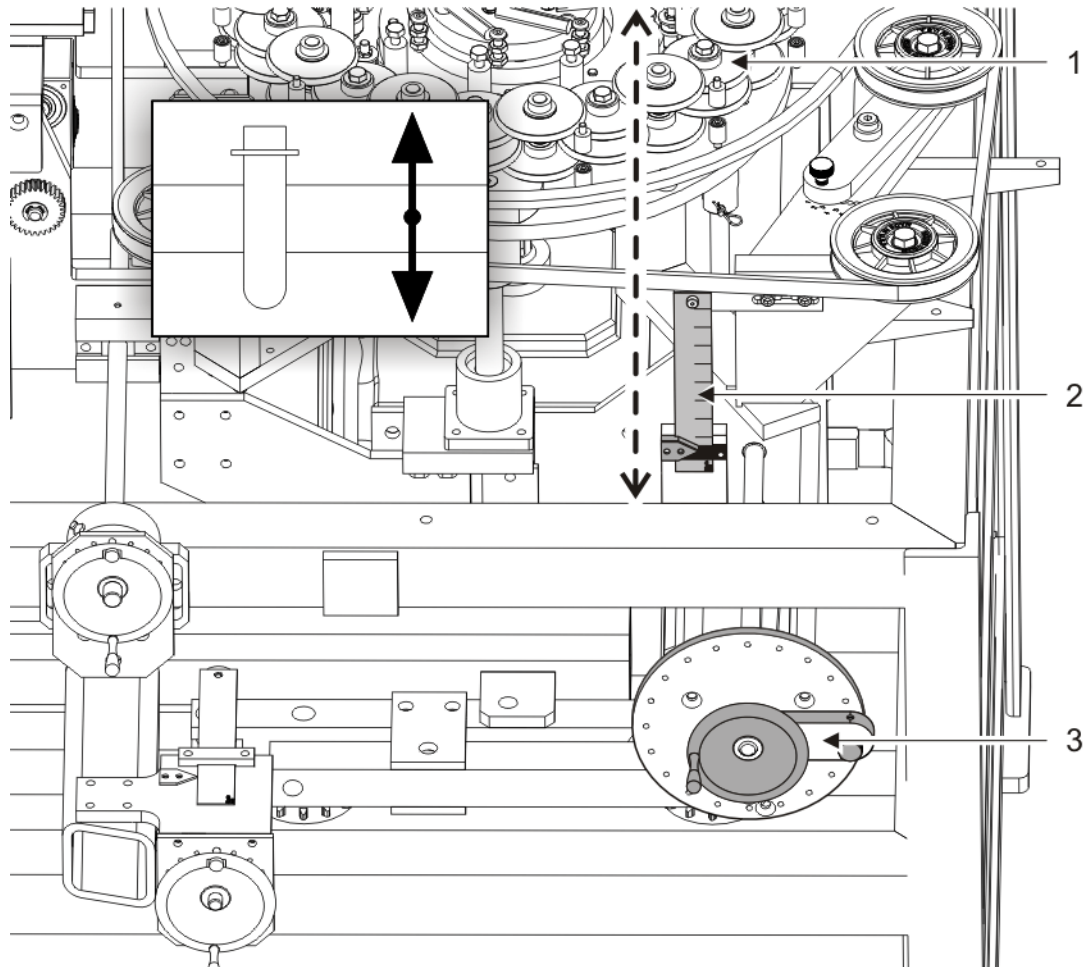
1. Remove the spring hooks as described above for removing the starwheel.
2. Rotate all the lobes out so that the cam followers are moved towards the outside of the assembly (see illustration below).
3. When all lobes are rotated out, put the starwheel in place on the stage one drive assembly and tighten the three mounting bolts [item 2, above].
4. After the screws are tightened, re-attach the springs, and make sure that the stage one belt is seated properly in the starwheel and all the pulleys.
5. Replace the doors and other components as necessary, and resume operation.



STAGE 1 HEIGHT ADJUSTMENT

To adjust the height:

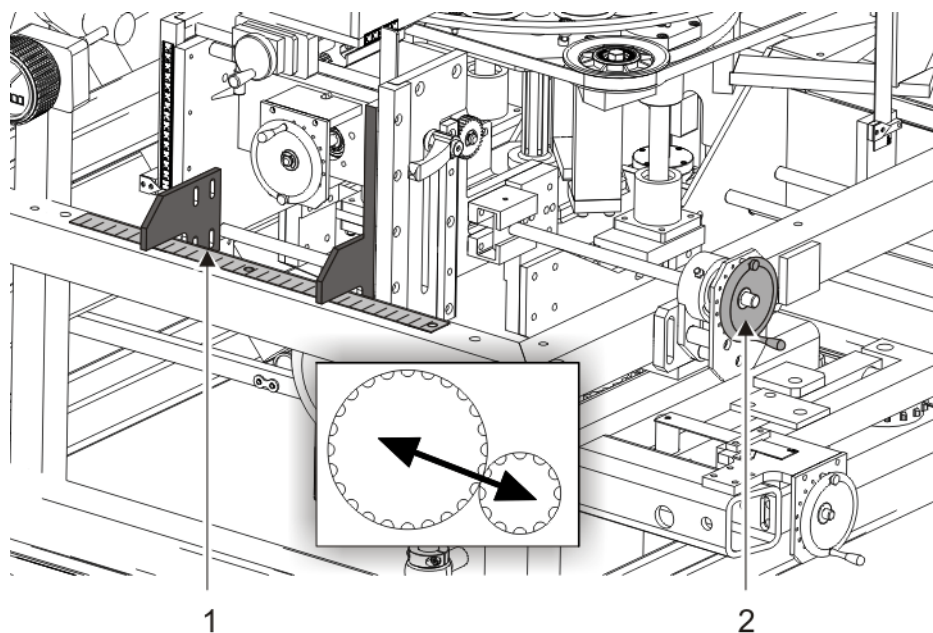
Rotate the knob [item 3] clockwise to raise the starwheel up to the preform. The majority of the preform body should be captured by the starwheel.



1	Starwheel 1
2	Height scale
3	Up and down adjustment for starwheel 1

STAGE 1 AND STAGE 2 CENTER TO CENTER ADJUSTMENT

Rotate the center to center adjustment for starwheel 1 [item 2] to modify the space between the two starwheels.

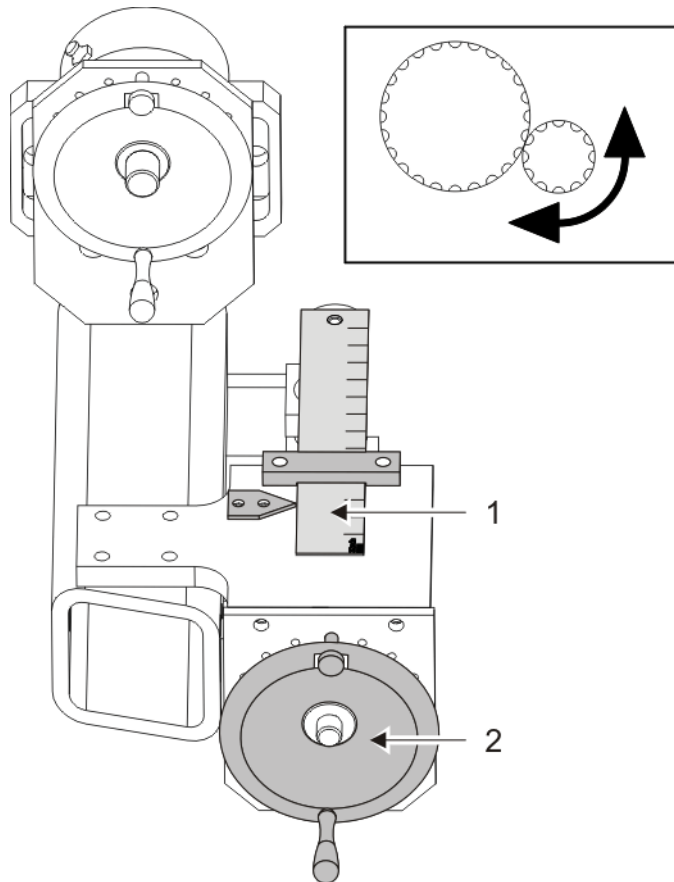


1	Center to center adjustment scale
2	Moves starwheel 1 center to center (closer to starwheel 2)

STAGE 1 AND STAGE 2 PHASE ADJUSTMENT

To adjust the hand off point between Stage 1 and Stage 2:

Rotate the Phase adjustment for starwheel 1 [item 2] such that the pockets of starwheels 1 and 2 line up.



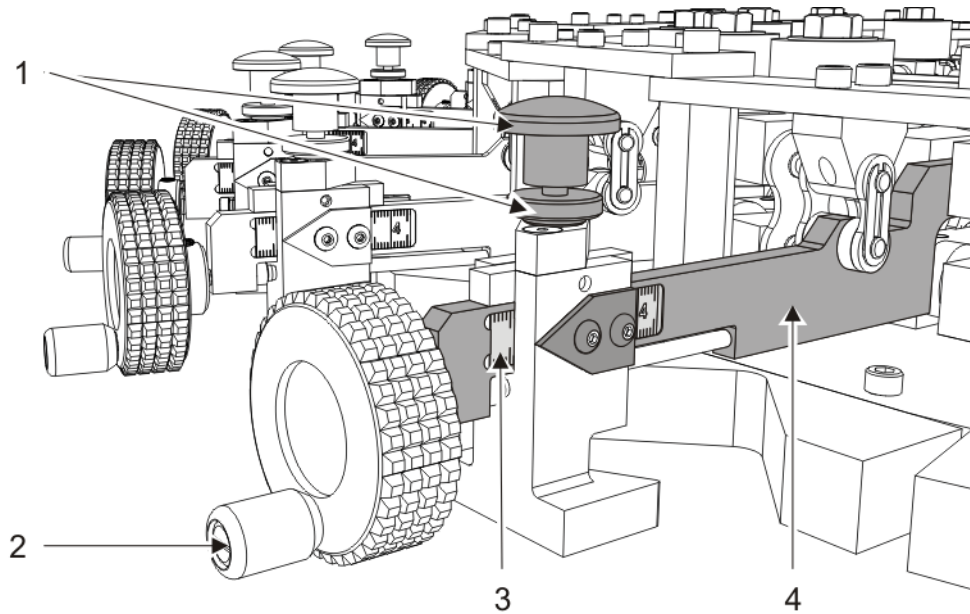
1	Phase scale
2	Phase adjustment for starwheel 1

STAGE 2 CLAMP STATION ADJUSTMENT

To adjust the Clamp Station:

If the preform is not held firmly in place (or is being deformed):

1. Release the locking knobs [item1].
2. Using the adjustment knob, tighten the grip [item 2].
3. Set all of the arms to the same value [item 4].



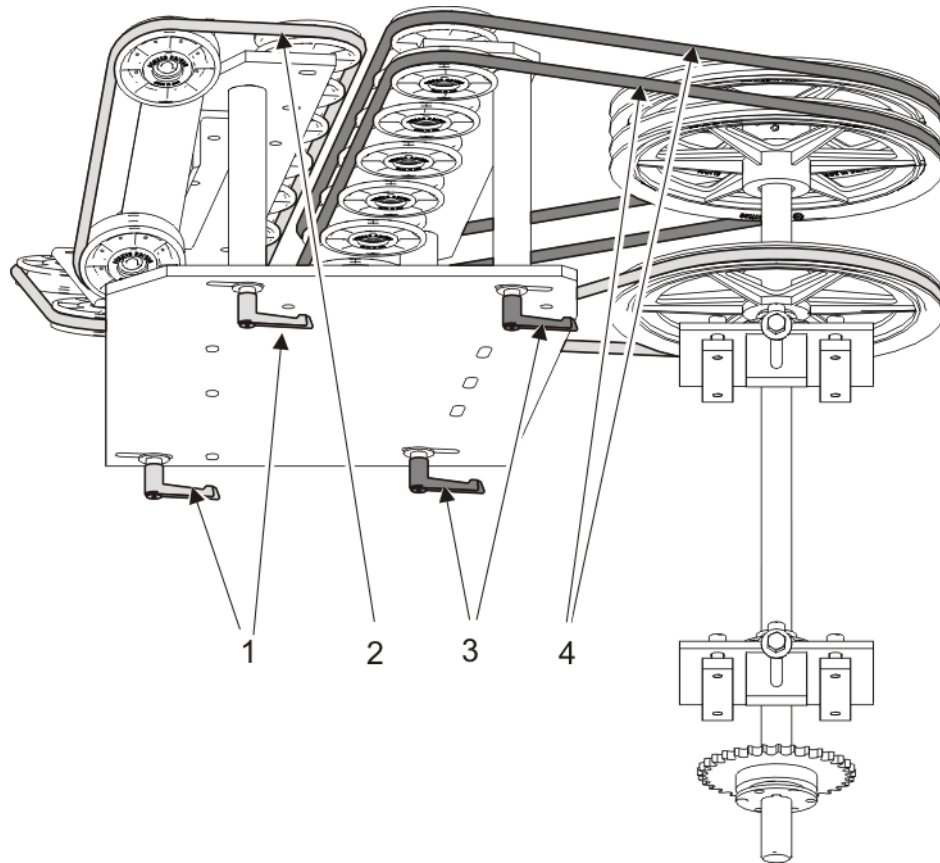
1	Locking knobs
2	Adjustment knob
3	Indicator
4	Arm

PMHI-1200 OPTIONAL SIDE BELT OUTFEED ADJUSTMENT

To adjust the Outfeed components:

1. Using the hand clamps located outside and underneath the outfeed area of the PMHI-1200 [item 1]; adjust the position of the outboard belt [item 2] so that the body of preform is held snugly as it passes along the belts.
2. If there is a large change in preform size, use the hand clamps [item 3] to adjust the position of the inboard belts [item 4] so that the body of the preform is tangent to the belts at the transfer point from the Stage 2 Clamping Wheel.
3. Test the operation of the PMHI-1200 with several preforms to ensure the smooth transition from the infeed slides to the infeed assembly, to the stage 1 clamping wheel, to the stage 2 clamping wheel, to the outfeed conveyor.
4. Make final adjustments as necessary.

The illustration below shows the components and adjustments for the outfeed conveyor belts.



1	Adjust outboard belt
2	Outboard belt
3	Adjust inboard belts
4	Inboard belts

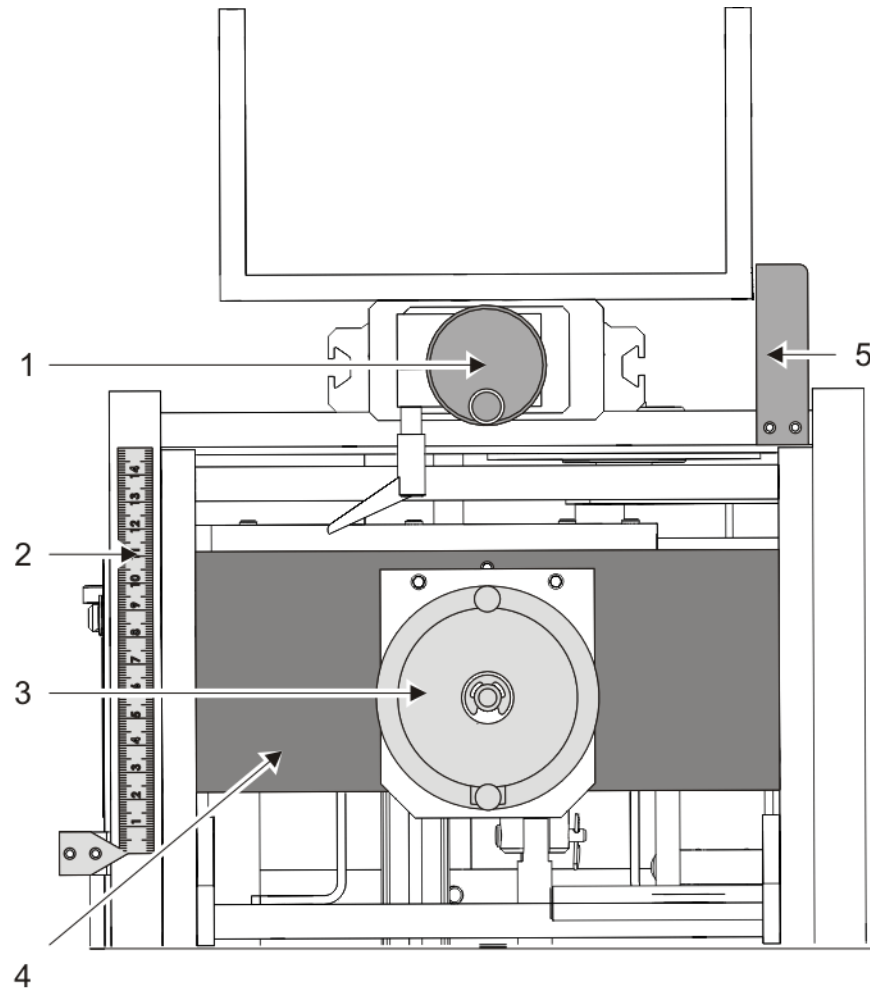
PREFORM SEAL ENDCAP (PSE) MODULE POSITION ADJUSTMENT

To adjust the PSE:

1. Rotate the In/Out knob [item 1] so that the PSE part is in full field of view.

Note: The In/Out knob is used to center the module on the preform stage 1 starwheel. The flag on the right side [item 5] shows the repeatable location. The flag points to a ruler on the side of the assembly.

2. Rotate the height adjustment knob [item 3] to change the height of the PSE and maximize the viewing window as much as possible. This also adjusts the distance from the module to the seal surface of the preform in stage 1 starwheel.



1	In/out adjustment knob
2	PSE module position scale
3	Height adjustment knob
4	PSE module
5	In/out position flag

Chapter 11

MAINTENANCE FREQUENCY

When conducting maintenance or repair work:

	Follow the Machine Maintenance Lockout Procedure (on page 97).
	Before starting the machine, ensure that no person is close to the machine.
	If maintenance or repair requires the disconnection or removal of safety or protection systems, authorized personnel who ensure the prevention of personal injury or damage to the machine must supervise this operation. All machine movements must be performed with limited speed and limited movements.
	Exclusively authorized and trained personnel must carry out maintenance or repair work on electrical components. When running tests with power connected, you must strictly comply with the rules provided.
	Personnel working on higher parts of a machine must wear a harness and hook it on to a structure and must always move with extreme caution. The harness must not be connected to Pressco equipment or structure as it cannot support body weight.
	Never perform lubrication or maintenance procedures on mechanical parts with the machine running.

FREQUENCY TABLE

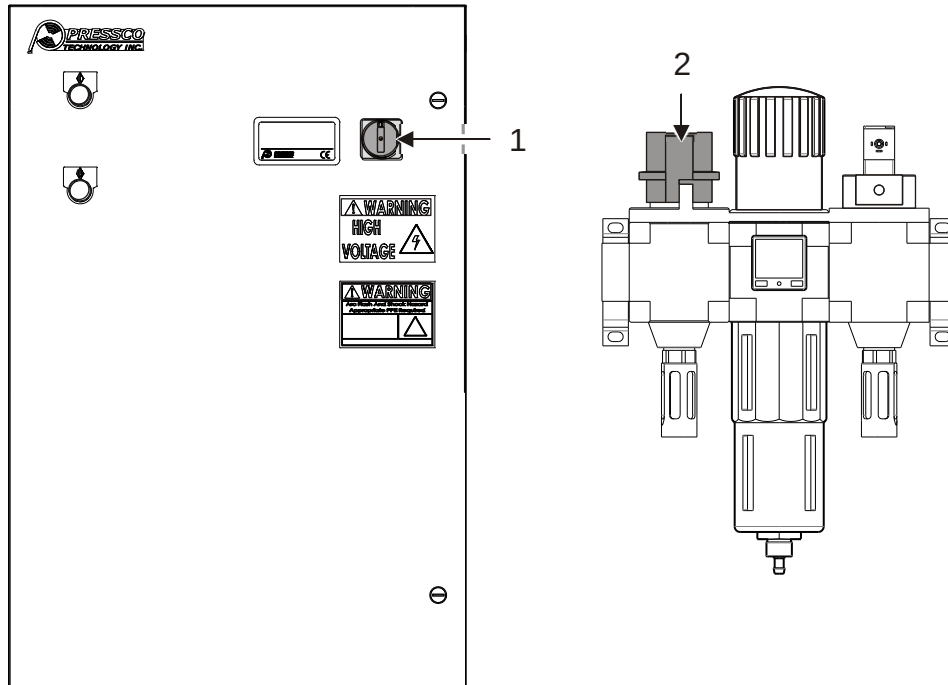
What	Location	Frequency
Grease bearings (see " Underside of Stage 2 Starwheel " on page 98)	Underside of Stage 2 Starwheel	Every 500 hours
Grease bearings (see " PMHI-1200 Optional Side Grip Outfeed Conveyor " on page 100)	Near outfeed	Every 500 hours
Grease lifting mechanism (on page 101)	Stage 1 lifting mechanism near threaded shaft	Every 500 hours
Dust	Whole preform material handling unit	Every 500 hours
Oil chain (on page 102)	Drive chains	Every 500 hours
Replace belts	Stage 1 and Optional outfeed	When worn
Lubricate Pulley Surface (on page 103)	Part of Stage 1, near the outfeed conveyor	As needed

MACHINE MAINTENANCE LOCKOUT PROCEDURE

Prior to any machine maintenance that requires the operator to enter the machine, the machine must be properly locked out. There are two lockout points:

- Rotary disconnect switch (see **Startup Sequence** (on page 79))
- Pneumatic shutoff valve

For each, rotate the handle to the OFF (lockable) position and apply an approved safety lock. If multiple personnel are working on the machine, apply a lockout hasp so that a safety lock for each worker can be applied.

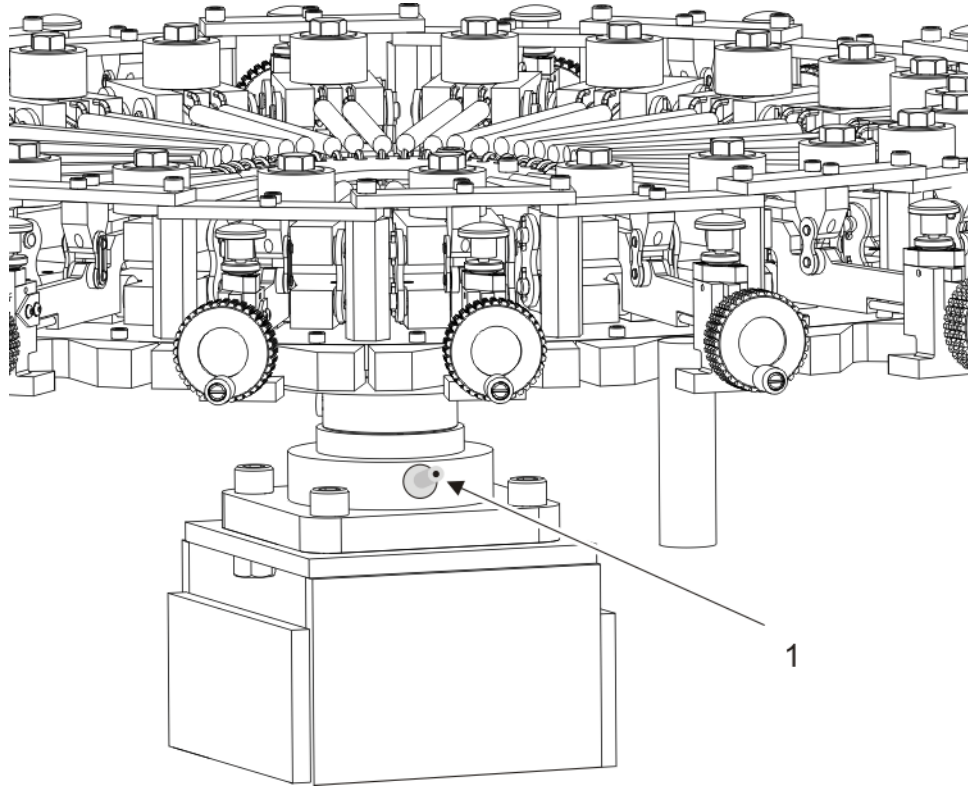


1	Rotary disconnect
2	Pneumatic shutoff valve (lockable)

GREASE BEARINGS

Underside of Stage 2 Starwheel

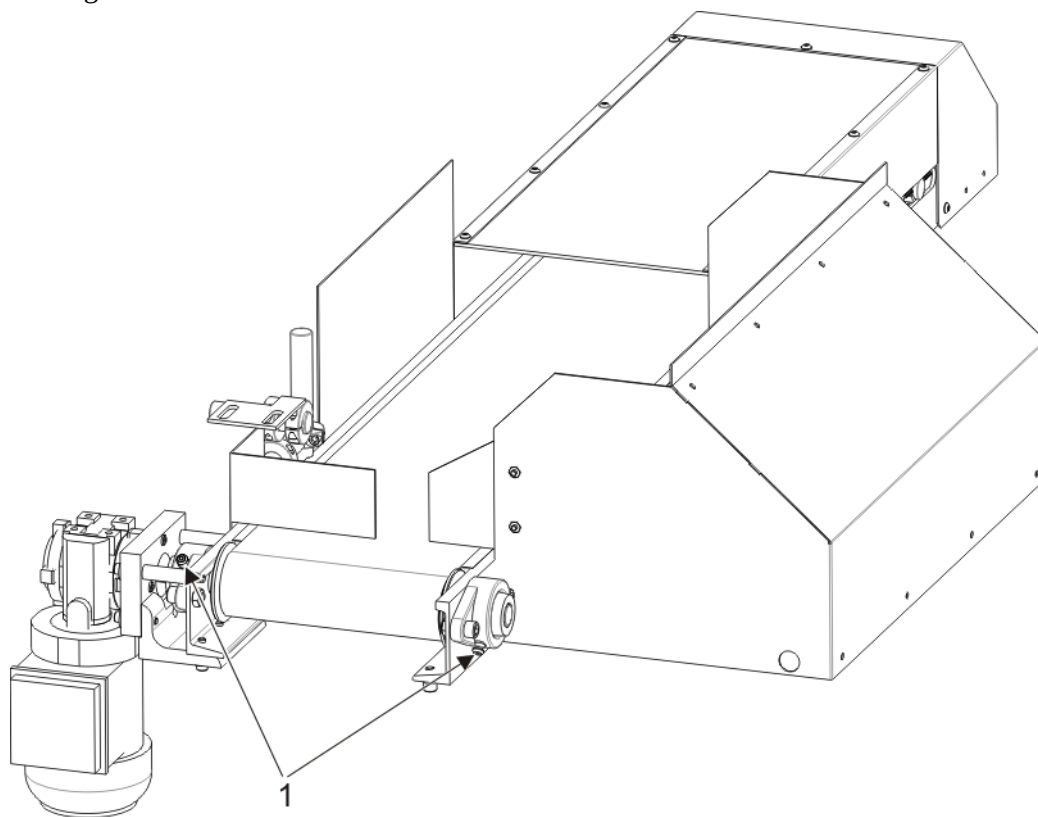
Using standard lithium grease and the available grease fitting, grease the bearings on the underside of the Stage 2 Starwheel.



1	Grease fitting
---	----------------

Flat Outfeed Conveyor

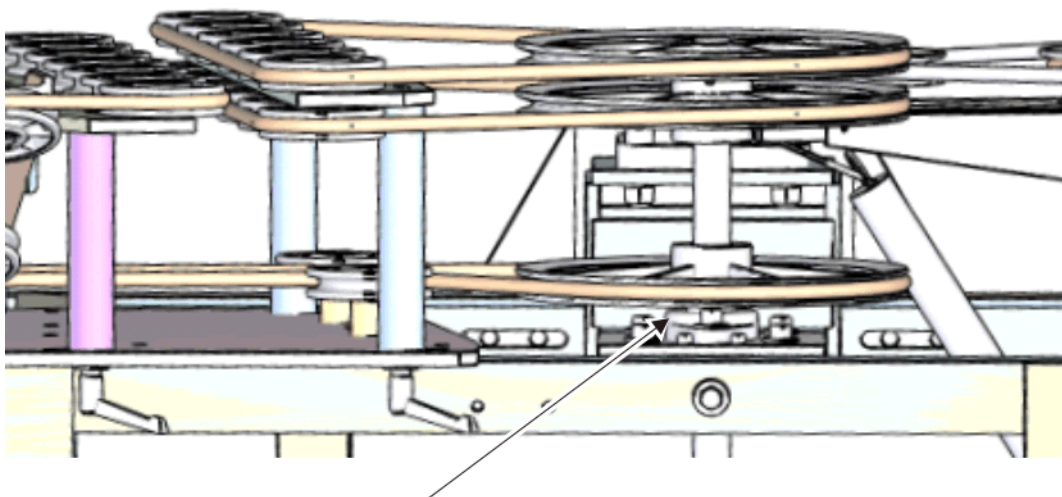
Using standard lithium grease and the available grease fittings [item 1], grease the bearings on the drive shaft end.



1	Grease fittings
---	-----------------

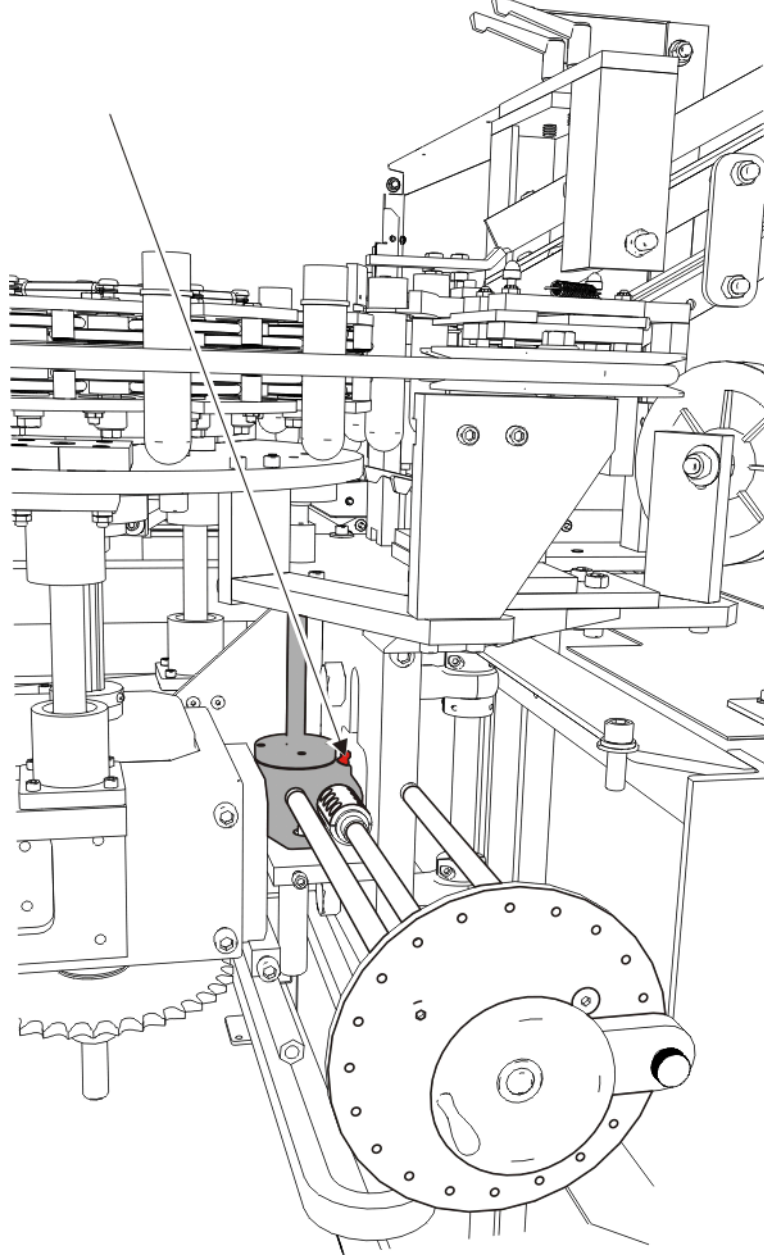
PMHI-1200 Optional Side Grip Outfeed Conveyor

Using standard lithium grease and the available grease fitting, grease the bearings underneath the belts near the outfeed.



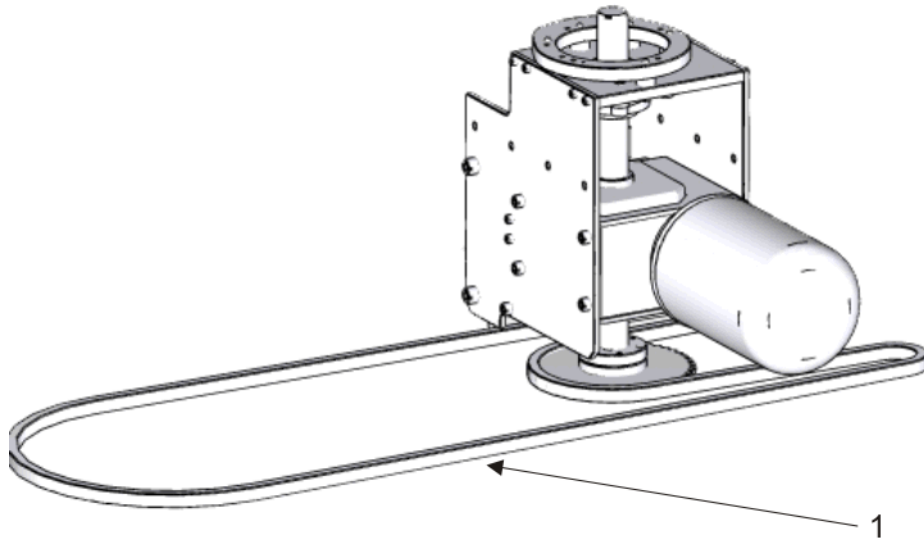
GREASE LIFTING MECHANISM

Using standard lithium grease and the available grease fitting, grease the Stage 1 lifting mechanism located near the threaded shaft.



OIL CHAIN

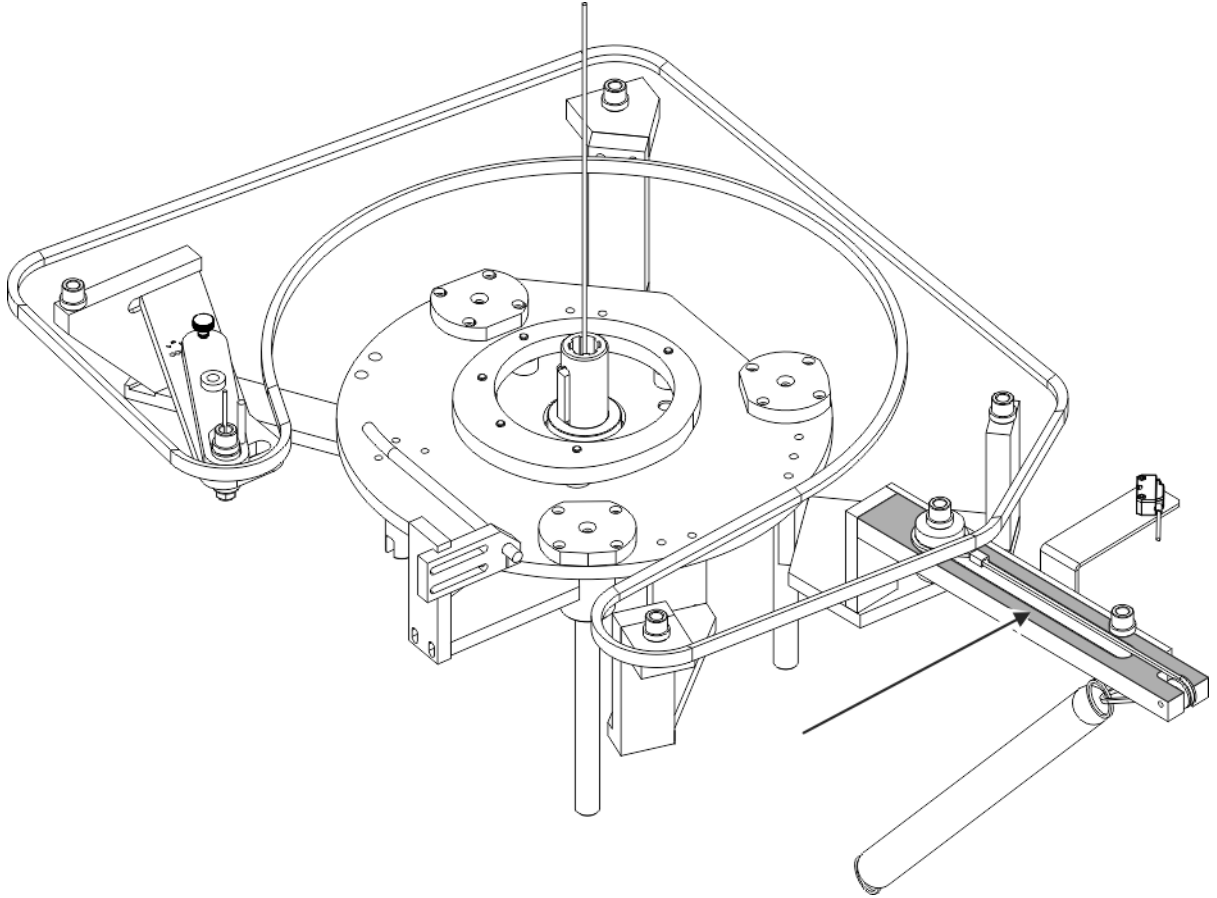
Using standard spray chain oil, oil the preform material handling drive chains.



1	Chain
---	-------

LUBRICATE PULLEY SURFACE

Apply spray lubricant to the surface underneath the belt as needed. You can reach this surface through doors near the outfeed conveyor. The pulley assembly should slide easily if you try to move it with your hand.



Chapter 12

TROUBLESHOOTING

TROUBLESHOOTING ALARMS

Use the table below to determine what action to take when an alarm or fault is triggered.

Alarm Message	Reference for Additional Information	Possible Cause
DOOR 1 OPEN, 3DS17	Door Alarm Overview (on page 64)	One of the PMH-1200 doors is open
DOOR 2 OPEN, 3DS19		
DOOR 3 OPEN, 3DS22		
DOOR 4 OPEN, 3DS24		
ESTOP 1 ACTIVE, 3PB07	Emergency Stop (E-Stop) Overview (on page 63)	One of the E-stop Pushbuttons has been pushed
ESTOP 2 ACTIVE, 3PB09		
ESTOP 3 ACTIVE, 3PB12		
ESTOP 4 ACTIVE, 3PB14 (AT HMI)		
MIN AIR FAULT. RESTORE AIR. START.	Air Supply (on page 67)	Air pressure has fallen below the minimum level
PARTS DETECTED AT UPPER INFEED (4PE06), BUT NOT LOWER INFEED (4PE04)	Track Sensor Overview (on page 66)	Preforms are jammed in descrambler feed track
EXIT CHUTE PARTS BACKED UP (4PE10)	Track Sensor Overview (on page 66)	Good part bin is full
ESTOP1(3PB07)FAULT, RELEASE, PRESS RESET	Emergency Stop (E-Stop) Overview (on page 63)	E-stop Pushbutton possibly defective, loose wire. Check connections. Cycle power to machine.
ESTOP2 FAULT(3PB09), RELEASE, PRESS RESET		
ESTOP3 FAULT (3PB12), RELEASE, PRESS RESET		
ESTOP4 FAULT (3PB14, AT HMI), RELEASE, PRESS RESET		
DOOR ALARM1 FAULT (3DS17), CLOSE, PRESS RESET	Door Alarm Overview (on page 64)	Door Switch possibly defective, loose wire. Check connections. Cycle power to machine.
DOOR ALARM2 FAULT (3DS19), CLOSE, PRESS RESET		
DOOR ALARM3 FAULT (3DS22), CLOSE, PRESS RESET		
DOOR ALARM4 FAULT (3DS24), CLOSE, PRESS RESET		

Alarm Message	Reference for Additional Information	Possible Cause
SCHEDULED MAINTENANCE REQUIRED	Maintenance Schedule (on page 74)	500 hour maintenance required. Can be reset on Maintenance Schedule Screen.
GOOD PART COUNT EXCEEDED, RESET AT ISPEC	N/A	The Good Part Count set in the Ispec has been exceeded.
REJECT CHUTE BLOCKED (4PE12)	Track Sensor Overview (on page 66)	Reject part bin is full
INFEED JAM SENSOR TRIPPED. CLEAR. PRESS RESET. START.	Miscellaneous Alarm Overview (on page 65)	A preform has jammed entering the main drive wheel
DRIVE BELT FAULT. REPAIR. PRESS RESET. START.	Miscellaneous Alarm Overview (on page 65)	The drive belt is either broken or has fallen off the pulley.
PLC BATTERY LOW. PRESSCO PART 68350.	N/A	The PLC battery needs replaced.
MAIN DRIVE VFD 2DRV02 FAULT	N/A	The motor drive has faulted. Reference fault code on display window.
EXIT CONV VFD 2DRV39 FAULT		

See **When Alarms or Faults are Triggered** (on page 77) for information about re-starting the machine.

PREFORM TROUBLESHOOTING

Use the table below to troubleshoot preform problems.

Problem	Solution
Preforms are falling from the secondary wheel.	Adjust the phase and spacing wheels so the preform sits evenly in the pocket. See Stage 2 Clamp Station Adjustment (on page 91) and Stage 1 and Stage 2 Phase Adjustment (on page 90).
Preforms are tilted in the primary wheel.	Adjust the pivoting pulley arm so the belt grabs the preform before it leaves the infeed guide rails. See Pivoting Pulley Arm (on page 85).

Chapter 13

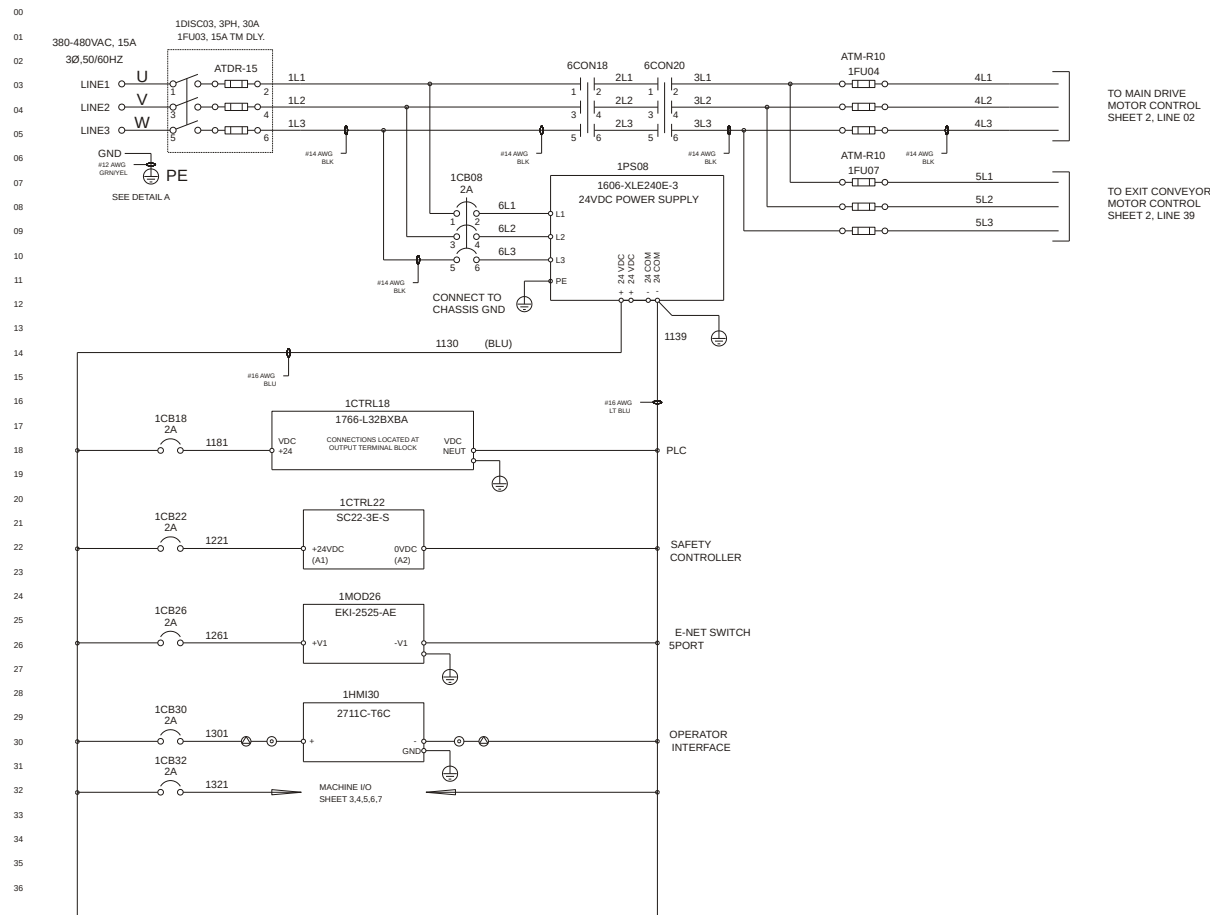
APPENDIX

APPENDIX A - WIRING DIAGRAMS

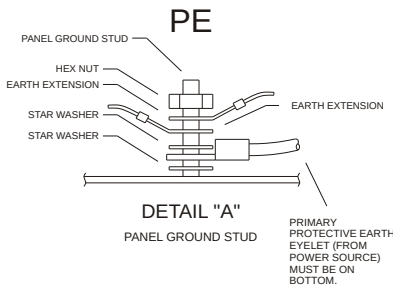
❖ *Note: Full size diagrams are located inside the machine's electrical enclosure.*

Wiring Diagram Page 1

PMH1200 SCHEMATIC MAIN POWER SECTION



WIRING NOTES: UNLESS OTHERWISE SPECIFIED,
UNGROUND AC POWER CONDUCTORS ARE BLK, AWG AS SPECIFIED
+24 VDC POWER TO DEVICES IS #16 BLUE, COMMON IS #16 LT BLUE
+24 VDC I/O WIRING IS #18 BLUE
GROUND IS #14 GREEN/YELLOW
LABEL INCOMING SUPPLY TERMINALS U, V, AND W
LABEL TERMINAL FOR EXTERNAL PROTECTIVE EARTHING SYSTEM WITH THE LETTERS "PE"

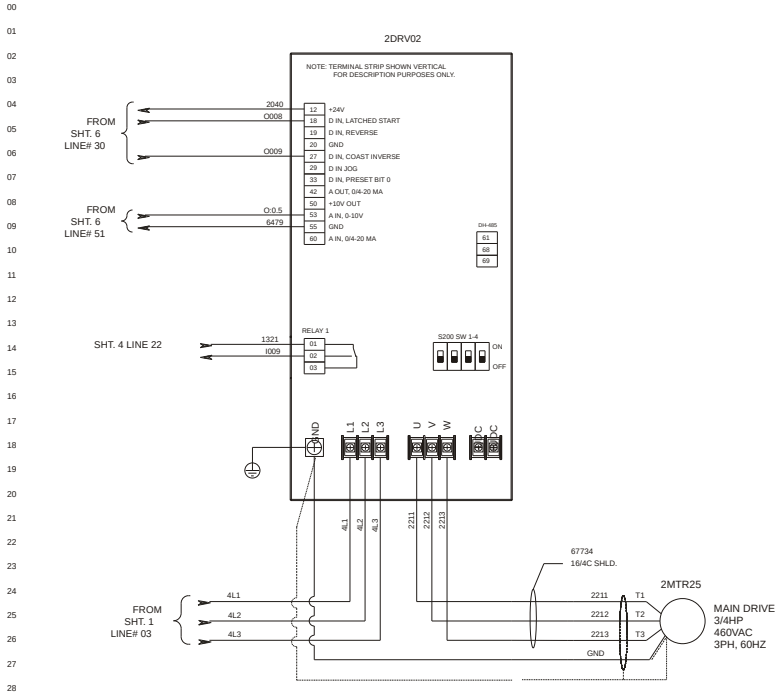


DEVICE LEGEND
△ MACHINE MOUNTED
□ OPERATOR INTERFACE
○ MAIN ENCLOSURE
⊙ TERM. STRIP MAIN PANEL
⊙ TERM. STRIP OPER INT.

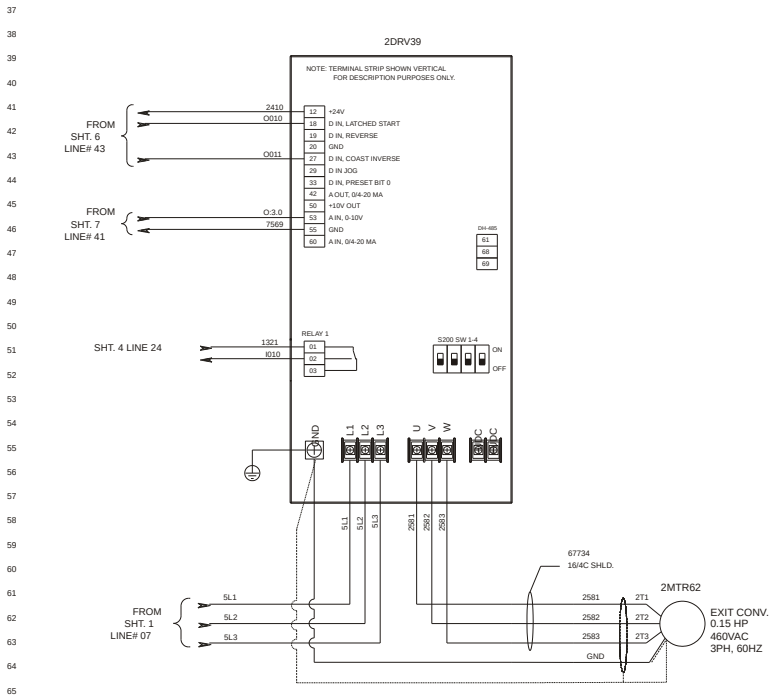
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Wiring Diagram Page 2

VFD, 1HP, MAIN DRIVE



VFD, 1/2 HP, EXIT CONVEYOR



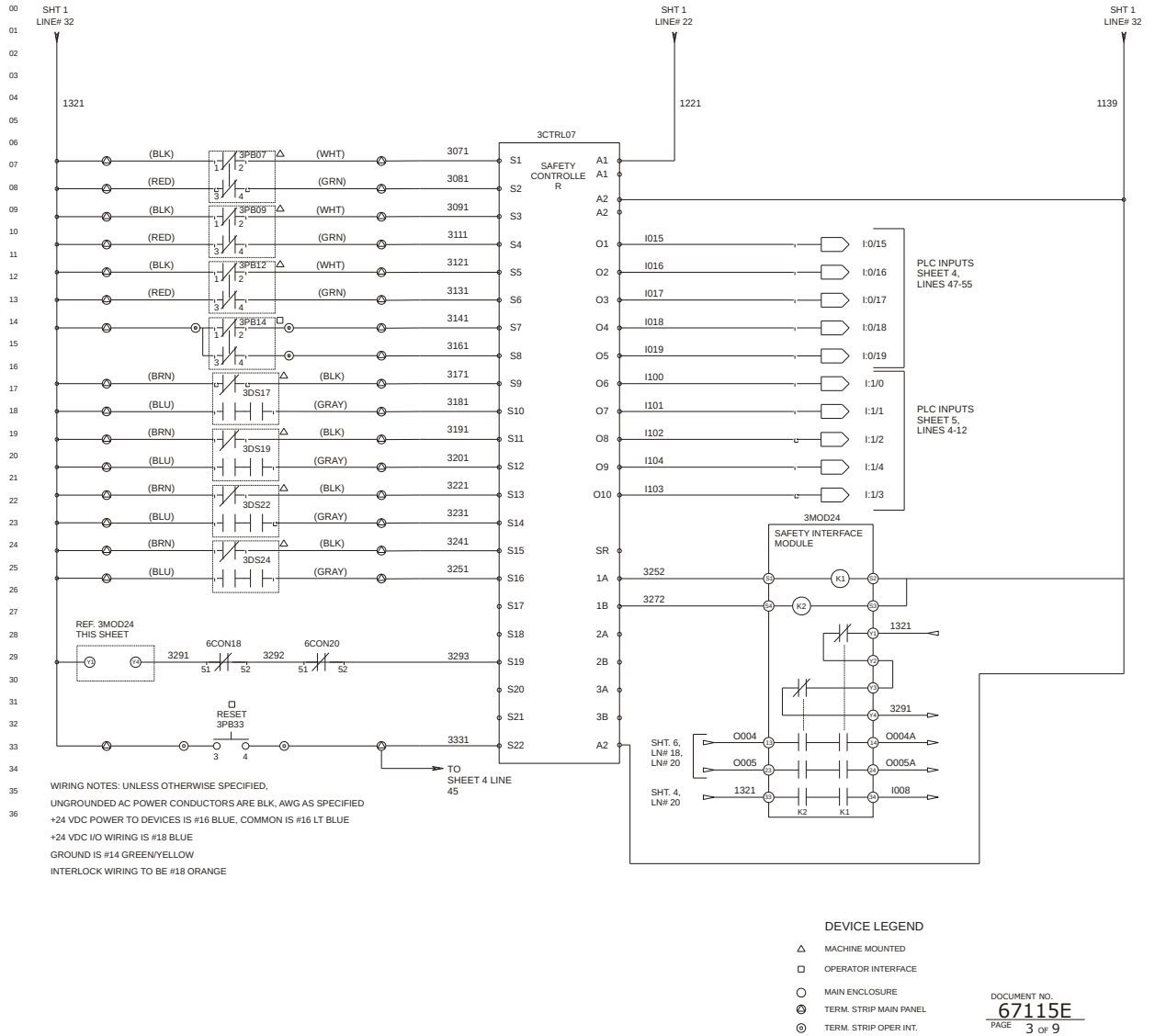
WIRING NOTES: UNLESS OTHERWISE SPECIFIED,
UNGROUND AC POWER CONDUCTORS ARE BLK, AWG AS SPECIFIED
+24 VDC POWER TO DEVICES IS #16 BLUE, COMMON IS #16 LT BLUE
+24 VDC I/O WIRING IS #18 BLUE
GROUND IS #14 GREEN/YELLOW
INTERLOCK WIRING TO BE #18 ORANGE

DEVICE LEGEND

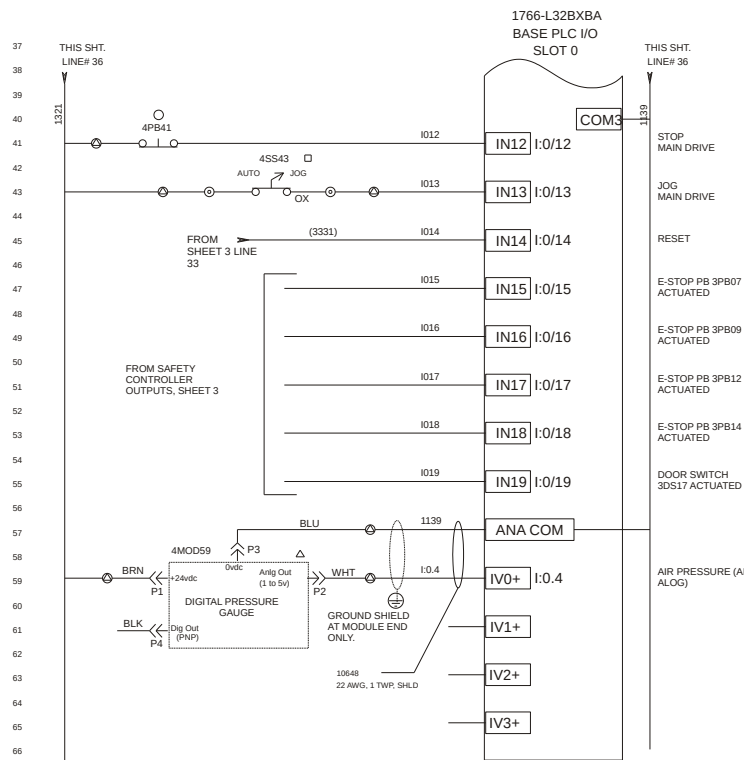
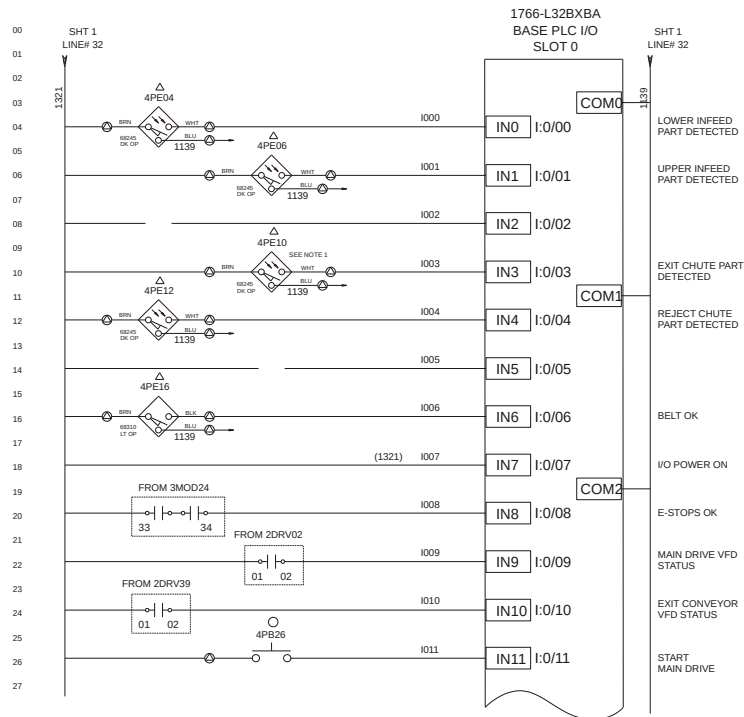
- △ MACHINE MOUNTED
- OPERATOR INTERFACE
- MAIN ENCLOSURE
- ⊗ TERM. STRIP MAIN PANEL
- ⊙ TERM. STRIP OPER INT.

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Wiring Diagram Page 3



Wiring Diagram Page 4



NOTES:
1. CABLE DISCONNECT USING 4P MALE 44836 (SENSOR END) AND 4P FEMALE 52131 (PWR SPLY END) TO ALLOW EASY REMOVAL OF CONVEYOR.

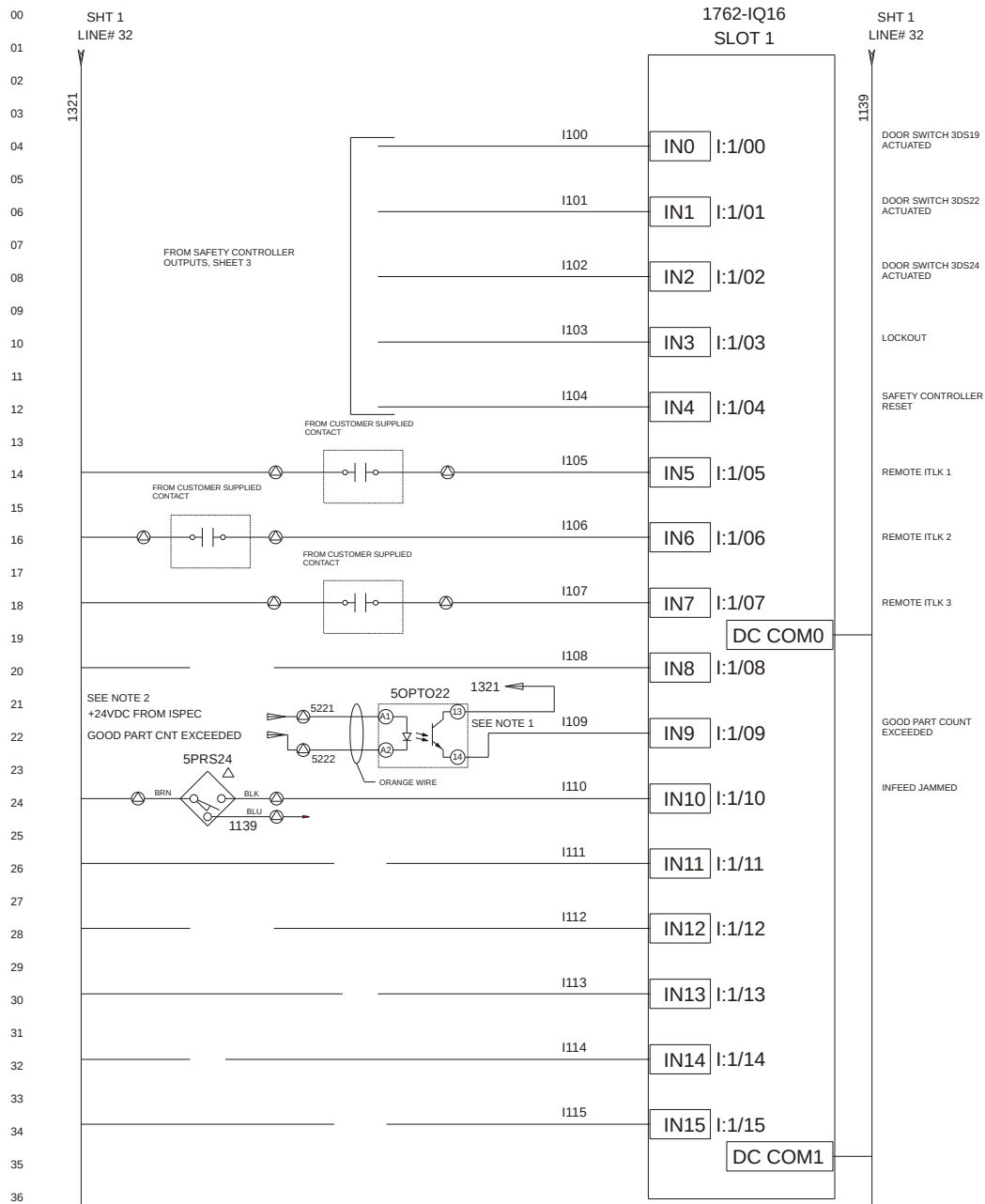
WIRING NOTES: UNLESS OTHERWISE SPECIFIED,
UNGROUND AC POWER CONDUCTORS ARE BLK, AWG AS SPECIFIED
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INTERLOCK WIRING TO BE #18 ORANGE

DEVICE LEGEND

- △ MACHINE MOUNTED
- OPERATOR INTERFACE
- MAIN ENCLOSURE
- ⊗ TERM. STRIP MAIN PANEL
- ⊙ TERM. STRIP OPER INT.

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Wiring Diagram Page 5



WIRING NOTES: UNLESS OTHERWISE SPECIFIED,
UNGROUND AC POWER CONDUCTORS ARE BLK, AWG AS SPECIFIED
+24 VDC POWER TO DEVICES IS #16 BLUE, COMMON IS #16 LT BLUE
+24 VDC I/O WIRING IS #18 BLUE
GROUND IS #14 GREEN/YELLOW
INTERLOCK WIRING TO BE #18 ORANGE

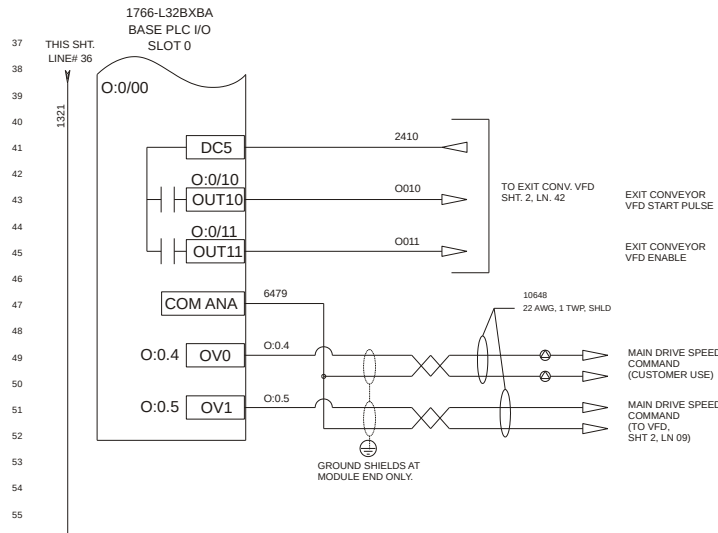
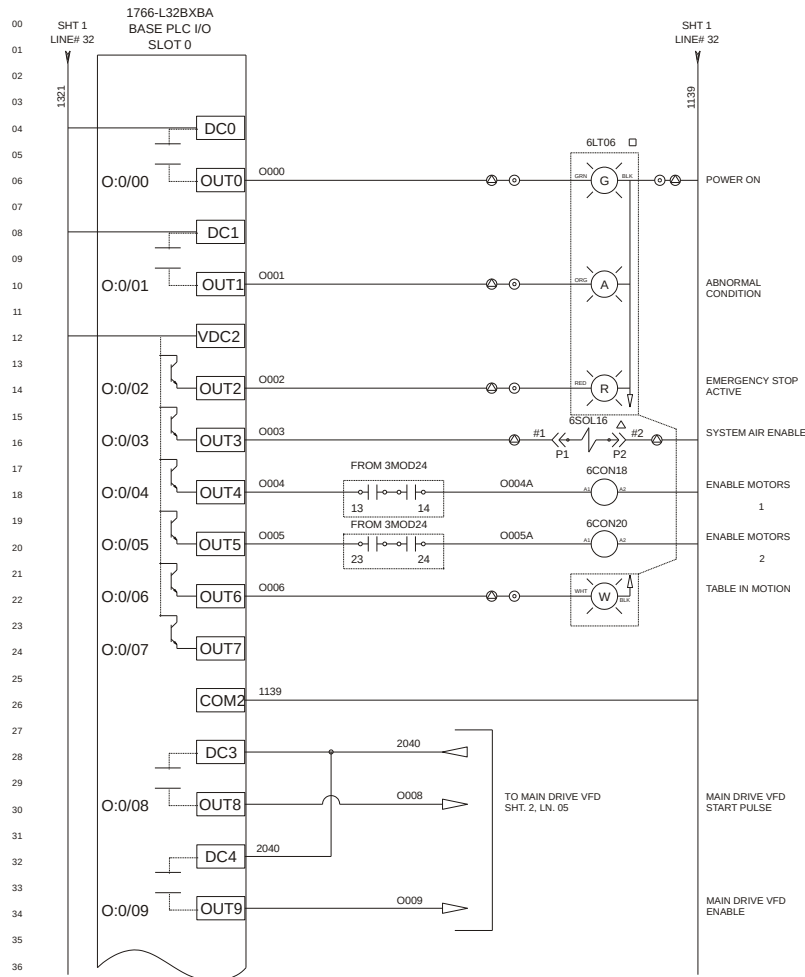
1. TERMINAL DESIGNATIONS ON FACE OF MODULE
ARE FOR DRY CONTACT USAGE. REFERENCE SIDE
OF MODULE FOR OPTICALLY ISOLATED USAGE. 11
AND 13 ARE THE SAME TERMINATION POINT.
2. FOR SERIES IV, +24VDC TO TB1 25 THRU 36, AND
"GOOD PART COUNT EXCEEDED" TO TB1 55 (PO1).

DEVICE LEGEND

- △ MACHINE MOUNTED
- OPERATOR INTERFACE
- MAIN ENCLOSURE
- ⊗ TERM. STRIP MAIN PANEL
- ⊙ TERM. STRIP OPER INT.

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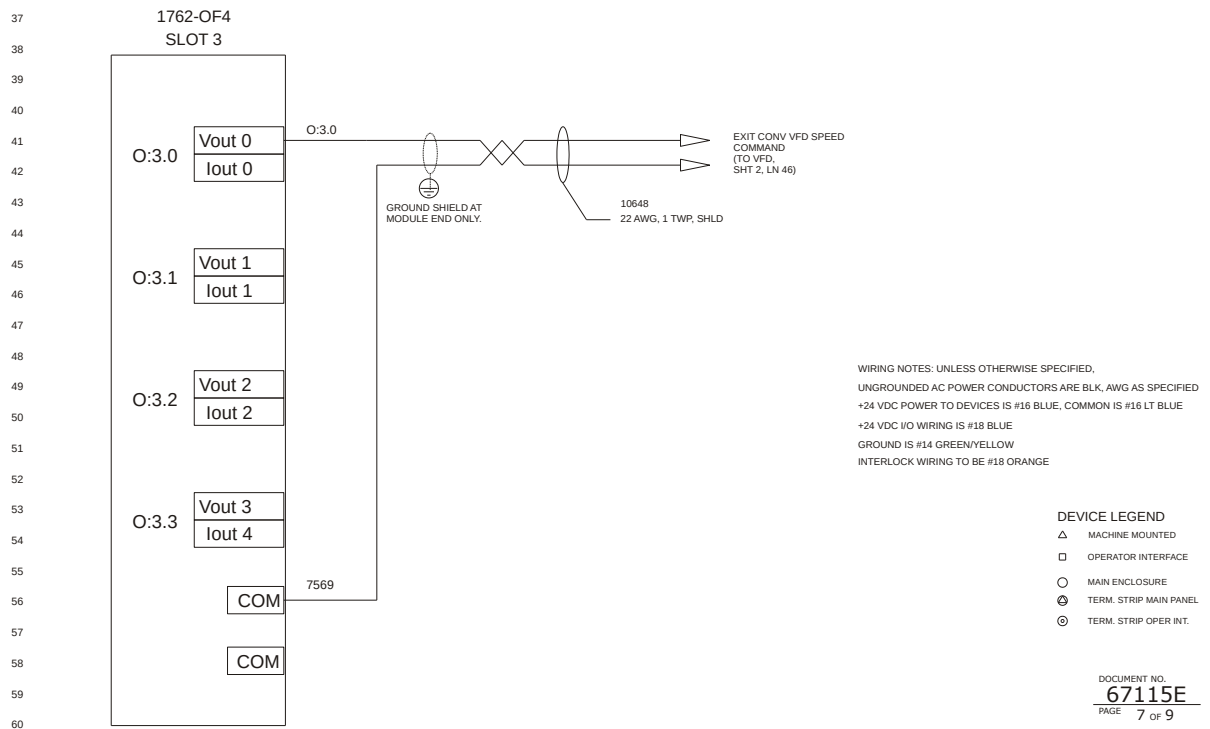
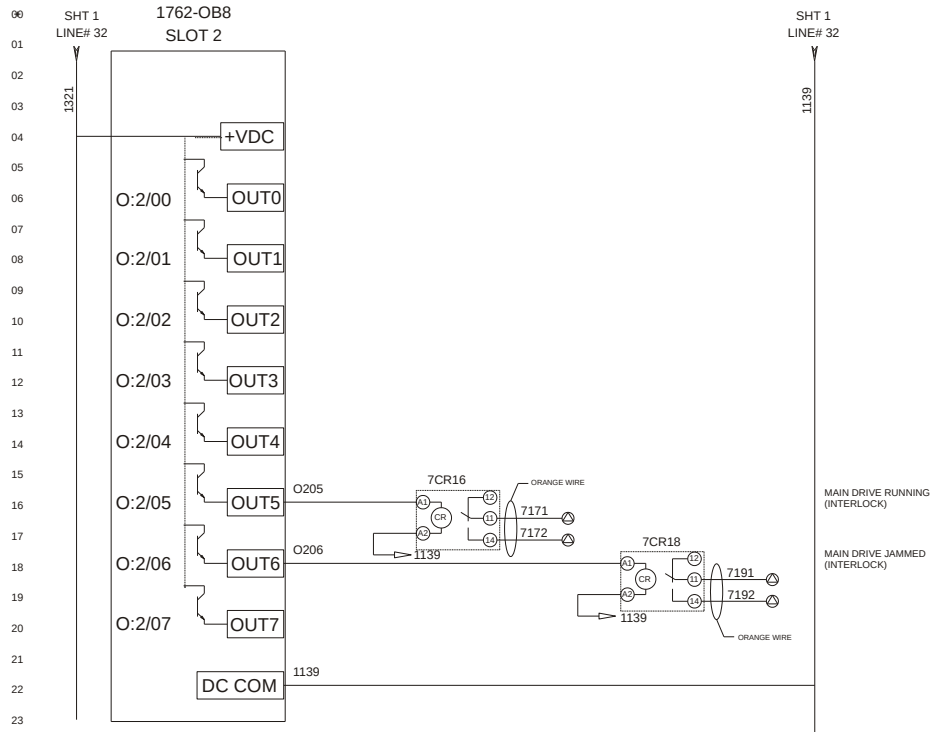
WIRING NOTES: UNLESS OTHERWISE SPECIFIED,
UNGROUND AC POWER CONDUCTORS ARE BLK, AWG AS SPECIFIED
+24 VDC POWER TO DEVICES IS #18 BLUE, COMMON IS #16 LT BLUE
+24 VDC I/O WIRING IS #18 BLUE
GROUND IS #14 GREEN/YELLOW
INTERLOCK WIRING TO BE #18 ORANGE

DEVICE LEGEND

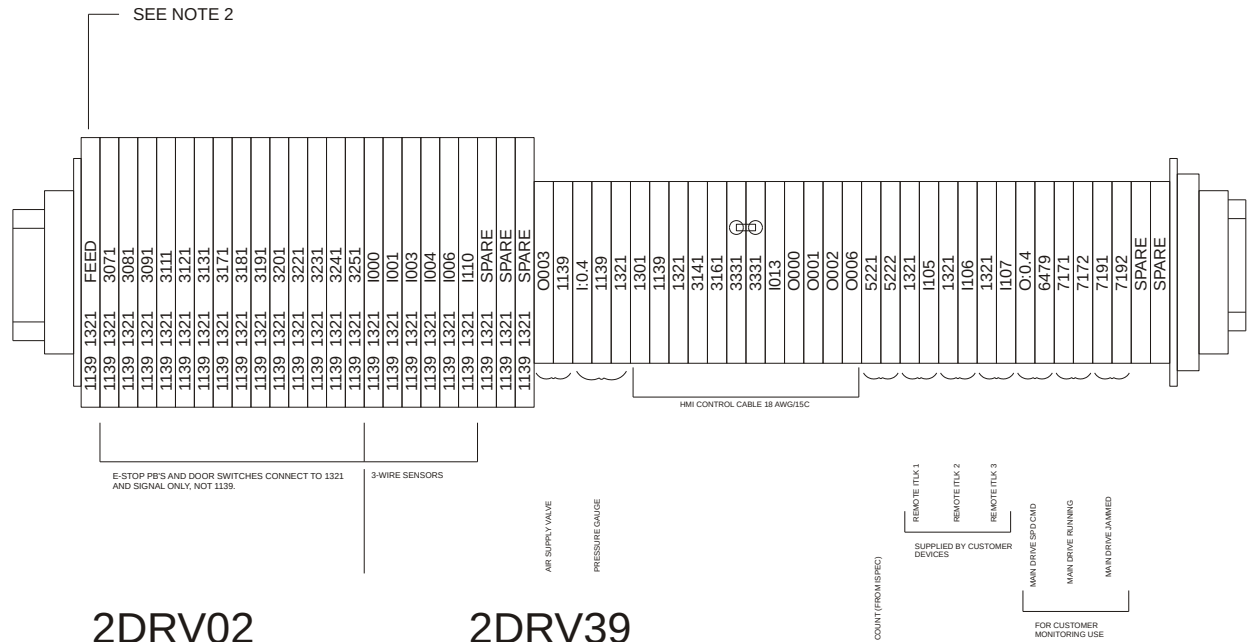
- △ MACHINE MOUNTED
- OPERATOR INTERFACE
- MAIN ENCLOSURE
- ⊗ TERM. STRIP MAIN PANEL
- ⊙ TERM. STRIP OPER INT.

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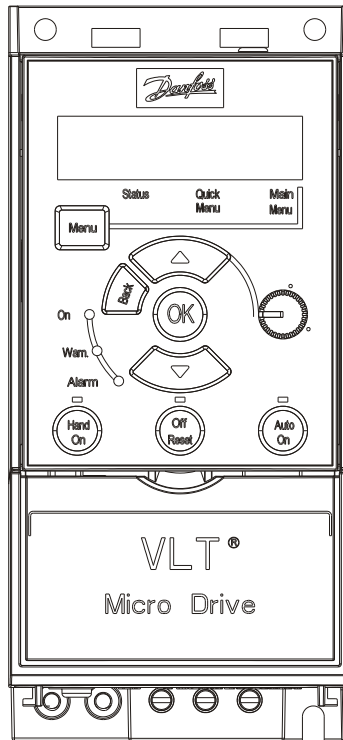
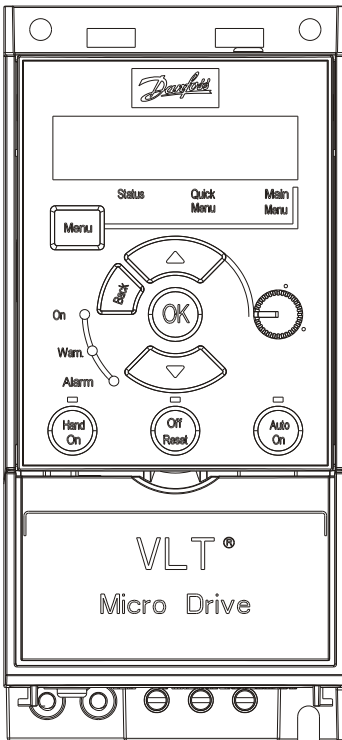


Wiring Diagram Page 8



2DRV02

2DRV39

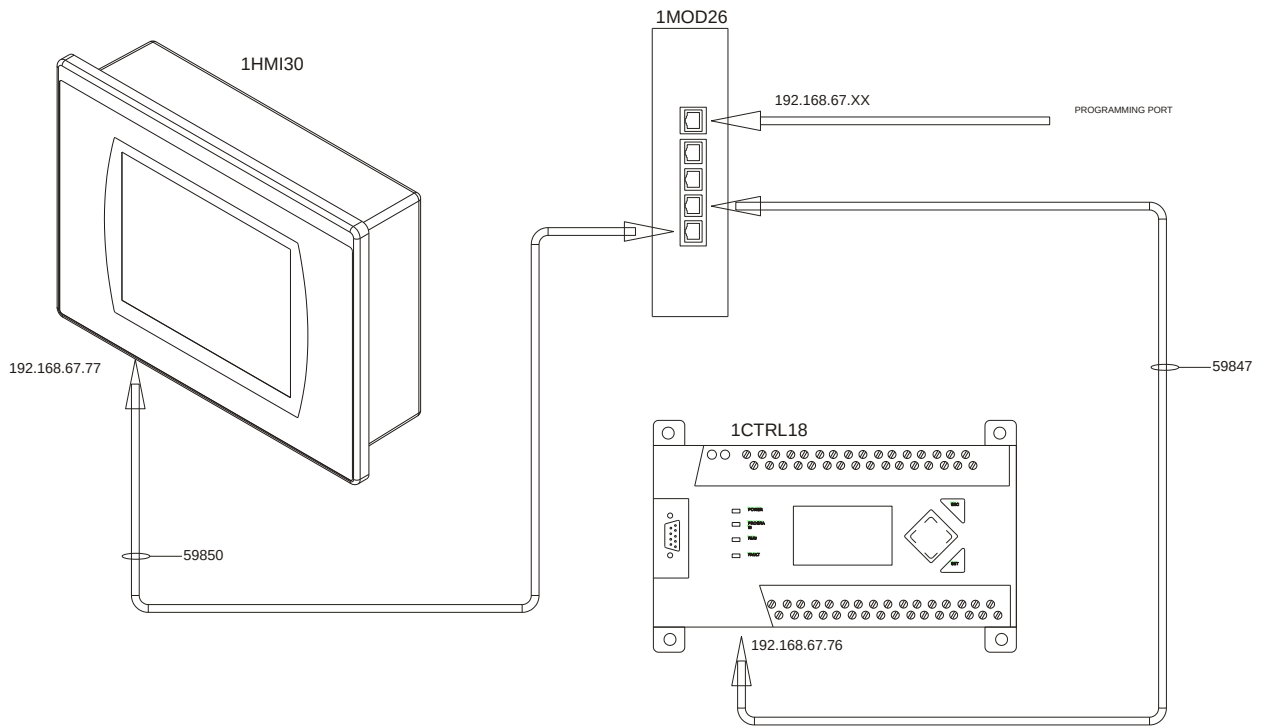


NOTES:

- 1) FOR SENSOR TERM BLOCKS:
RED JUMPER BAR (+24VDC) IS INSTALLED IN MIDDLE LEVEL OF TERMINAL BLOCK.
BLUE JUMPER BAR (24COM) IS INSTALLED IN LOWER LEVEL OF TERMINAL BLOCK.
THE SIGNAL CONDUCTOR FROM THE DEVICE PASSES THROUGH TERMINAL ON TOP LEVEL.
- 2) POWER CONNECTS TO THE FIRST BLOCK ON THE LEFT.

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PAGE 8 OF 9

Wiring Diagram Page 9



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APPENDIX B - USING THE PDX

PDX (Part Detect Generator) Adjustment

When the system inspects directly on a machine (such as a Belvac), you must use the PDX box instead of the normal Part Present Delay.



DANGER

Be sure the Emergency Stop push button on the conveyor drive system is pressed and the machine is in an Emergency Stop condition before servicing the Inspection Module. Contact with moving machinery or parts could result in serious injury.

❖ *Note: This setup procedure is completed during installation, usually by the Pressco Technician.*

The PDX performs three functions:

- It derives a one-pulse-per-pocket snap signal from the encoder signal.
- It provides an adjustable delay of the snap signal relative to the 1 ppr (pulses per revolution) index pulse for control of snap timing and image position.
- It divides the frequency of the encoder signal to keep it within a range acceptable by the vision engine for part tracking.

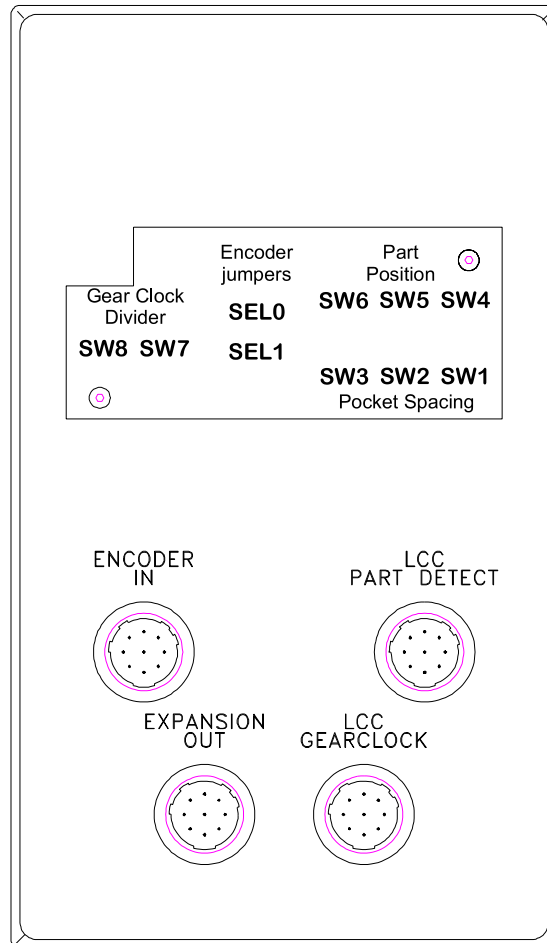
A Snap Signal is a timing signal that tells the Intellispec precisely when to take a picture of the part. The timing of the Snap Signal is critical since it affects the position of the image. The picture should be snapped at the instant the center of the part aligns with the optical center of the Inspection Module.

In a typical setup, the encoder generates a 2400 ppr output, and one Index Pulse (1 ppr) through another wire output. For a 24-pocket starwheel, 100 pulses per pocket are needed. In this 24-pocket example, the 2400 ppr encoder signal is divided by 24 to yield 100 pulses per pocket.

The 1 ppr encoder Index Pulse is used to synchronize the Snap Signals to the position of the starwheel pockets. By controlling the timing of the Snap Signals relative to the Index Pulse, the Snap Signals can be synchronized to the starwheel position so images are snapped when the pocket is correctly positioned at the optical center of the Inspection Module.

❖ *Note: The PDX is located on the bottom plate of the PMH-1200.*

PDX Module



Setup of the PDX Module

Setup and adjustment of the PDX Module can be broken down into four phases:

- **Set the Encoder type and phasing** (on page 117)
- **Set the pocket-to-pocket spacing between snap signals** (on page 118)
- **Set part position** (on page 118)
- **Set gear clock divider switches** (on page 119)

Set the Encoder Type and Phasing

Set jumper SEL1 on the PDX Module for Encoder type:

Setup the PDX as follows: See **PDX Module** (on page 117) for jumper, switch and connector locations. Jumpers SEL1 and SEL0: Selects encoder rotation and signal phasing.

SEL1	SEL0	Rotation and Phase
0	0	CCW-Phase A leads B (BEI H25 Encoder)
0	1	CW-Phase B leads A (BEI H25 Encoder)
1	0	CW-Phase A leads B (Dynapar HS35 Encoder)

1	1	CCW-Phase B leads A (Dynapar HS35 Encoder)
0=away from connectors	1=towards connectors	

Encoder phasing is set to compensate for differences in the rotational direction of the encoder due to the encoder's mechanical mounting. Phasing is accomplished by placing jumper SEL0 on the PDX Module in one of two possible positions.

Set as follows: Spin the starwheel in the forward direction and watch the Part Detect LED on the Main I/O.

- If the LED does *not* indicate Part Detect Signals, move the number on SEL0 to the opposite position. For example, if the jumper on SEL0 is on pins 1 and 2, move the jumper to pins 2 and 3. Settings are defined as follows:
 - Phase B leads Phase A = Position 1-2 (towards connectors)
 - Phase A leads Phase B = Position 2-3 (away from connectors)

Set the Pocket-to-Pocket Spacing Between Snap Signals

The objective here is to divide the encoder signal to yield a one-pulse-per-pocket snap signal. The pocket-to-pocket spacing is set as a hexadecimal number using rotary hex switches SW3, SW2, and SW1. These switches are located beneath a cover on the **PDX Module** (on page 117). SW3 is the most significant bit; SW1 is the least significant bit. Typically, the setting is pre-calculated and set prior to installation. If necessary, the setting may be verified and corrected as follows:

- Determine the pocket-to-pocket encoder pulses, subtract 1 and convert that value to a hexadecimal (base 16) number:
 - Example: This example involves a 2400 ppr encoder and a 16-pocket starwheel.
 Pocket-to-pocket pulses = (encoder ppr / number of pockets) - 1
 =(2400 ppr / 16 pockets) - 1
 =149 (decimal) pocket-to-pocket pulses
 =95 hexadecimal
- Correct the settings of switches SW3, SW2, and SW1 if necessary. From the calculation above (resulting in 95 hexadecimal), you would set the switches as follows:

SW3 set to 0
SW2 set to 9
SW1 set to 5

Set Part Position

This adjustment controls the position of the images as they appear on the monitor by controlling the timing of the Snap Signals relative to the Index Pulse. The objective is to have the images accurately centered on the monitor. SW6, SW5, and SW4 are used to adjust Part position. These rotary hex switches are located under a cover on the **PDX Module** (on page 117).

Adjust the switches as follows:

1. Run the system in the Continuous Snap Mode.
2. Adjust SW6, SW5, and SW4 until the image is centered as accurately as possible.
Note the following:

- SW6 is used as a very coarse adjustment. Its only valid settings are 0 and 1. Keep in mind that the combination of SW6/SW5/SW4 is a hex number setting, and SW6 is used as the most significant bit. Also, make sure that this number is lower than that set on switches SW3/SW2/SW1.
- SW5 may be used as a coarse adjustment in this procedure.
- SW4 may be used as a fine position adjustment.

❖ *Note: The value of SW6/SW5/SW4 must be less than or equal to the value set for SW3/SW2/SW1. Other settings will cause unpredictable operation.*

Set Gear Clock Divider Switches

❖ *Note: It is important that the encoder is securely attached to the conveyor shaft so that there is no slippage or binding.*

The objective here is to divide the frequency of the encoder signal to keep it within a range acceptable by the vision engine.

Switches SW8 and SW7 are used to set a divide ratio for the encoder signal. The frequency of the encoder signal must be reduced to yield a signal with an encoder rate of 10 kHz or less when the starwheel is running at maximum expected speed. This resulting signal, which is proportional to the starwheel speed, is used by the system's computer to calculate the timing of the part reject signal.

The switch settings are in hexadecimal, and SW8 is the most significant bit. The switch settings range from 01-FF Hex (1-255 decimal), and 00 Hex represents 256 decimal.

Examples of Gear Clock Divide Ratios		
Setting (HEX)		Divide Ratio
SW8	SW7	(Decimal)
0	0	256
0	1	1
0	2	2
0	3	3
...	...	...
1	2	18
...	...	...
8	0	128
...	...	...
F	F	255

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