Spectrum®
Powder Feed Center

Customer Product Manual
Part 1103292-05
Issued 08/20

For parts and technical support, call the Finishing Customer Support Center at (800) 433-9319.

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Contact Us

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Notice

Trademarks

Table of Contents

Change Record

Revision	Date	Change
04	04/15	Replaced part number 1100286 with part number 1606921.
05	08/20	Updating cylinder and components.

Section 1
Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to all persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

- All electrically conductive objects in the spray areas shall be electrically connected to ground with a resistance of not more than 1 megohm as measured with an instrument that applies at least 500 volts to the circuit being evaluated.
- Equipment to be grounded includes, but is not limited to, the floor of the spray area, operator platforms, hoppers, photoeye supports, and blow-off nozzles. Personnel working in the spray area must be grounded.
- There is a possible ignition potential from the charged human body. Personnel standing on a painted surface, such as an operator platform, or wearing non-conductive shoes, are not grounded. Personnel must wear shoes with conductive soles or use a ground strap to maintain a connection to ground when working with or around electrostatic equipment.
- Operators must maintain skin-to-handle contact between their hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If gloves must be worn, cut away the palm or fingers, wear electrically conductive gloves, or wear a grounding strap connected to the gun handle or other true earth ground.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments or cleaning powder spray guns.
- Connect all disconnected equipment, ground cables, and wires after servicing equipment.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out electrical power. Close pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the equipment.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Section 2
Description

Introduction

The Nordson Spectrum Feed Center conditions and supplies powder for up to 27 automatic powder spray guns. It contains a sieve, hopper table, lance and lift assembly, in-line powder pumps, level sensors, purge manifold, and electrical and pneumatic controls.

The feed center provides quick color changes and automatic purge cleaning. Powder is drawn from a powder source (box or fluidized hopper) by the lance-mounted in-line powder pumps and delivered through feed hoses to the spray guns (maximum 27 automatic guns and 2 manual guns). The powder source platform can be equipped with a vibrator motor to aid in the fluidization of powder in boxes.

Figure 2-1 Spectrum Powder Feed Center

The feed center controls are designed to accommodate two HDLV transfer pumps: a reclaim pump to transport over-sprayed powder from the booth recovery system to the feed center, and a optional bulk feed pump that adds virgin powder to the system as needed.

Both transfer pumps deliver the powder to the vibratory sieve, where it is conditioned before delivery to the powder spray guns. Ultrasonic sieve screens are available as an option.

The color change operation is automatic. During a color change, the lance assembly is lowered onto a purge manifold assembly and clamped in place. High-pressure purge air is then pulsed through the lances, powder feed pumps, hoses, and guns to clean them of powder. The reclaim and virgin powder transfer pumps can be purged manually, as required.

The Spectrum feed center requires a remote air extraction system that provides a constant airflow through the enclosure, preventing powder escaping into the spray room. The typical extraction system consists of an afterfilter assembly consisting of an exhaust fan, primary cartridge filters, pulse valves and controls, and final filters. A rectangular duct connection is provided at the bottom rear of the feed center enclosure.

Configurable Components List

See Figure 2-1. The following components are configurable per the application:

- feed center enclosure
- left or right-mounted control cabinet for pneumatic and electrical controls
- flush mount lighting
- lance lift assembly with locking lift cylinder
- 1–3 lance assemblies, each holding 1–9 in-line pumps (27 pumps total)
- lance-mounted fluidizing bars for use with powder boxes
- lance-mounted level sensors for feed hopper and box
- lance-mounted Prodigy suction tube holders for Prodigy manual guns
- high pressure purge manifolds, one per lance, with air cylinder clamping mechanism
- square or rectangular fluidized feed hoppers
- vibratory table for powder boxes
- HDLV powder reclaim system
- vibratory sieve

NOTE: Nordson round 50-lb hoppers can be used only when the feed center is configured with left and center mount lances without fluidizing bars.

Optional Component List

Optional components include:

- ultrasonic sieve screens
- HDLV virgin powder bulk feed system
- level sensor for bulk feed system

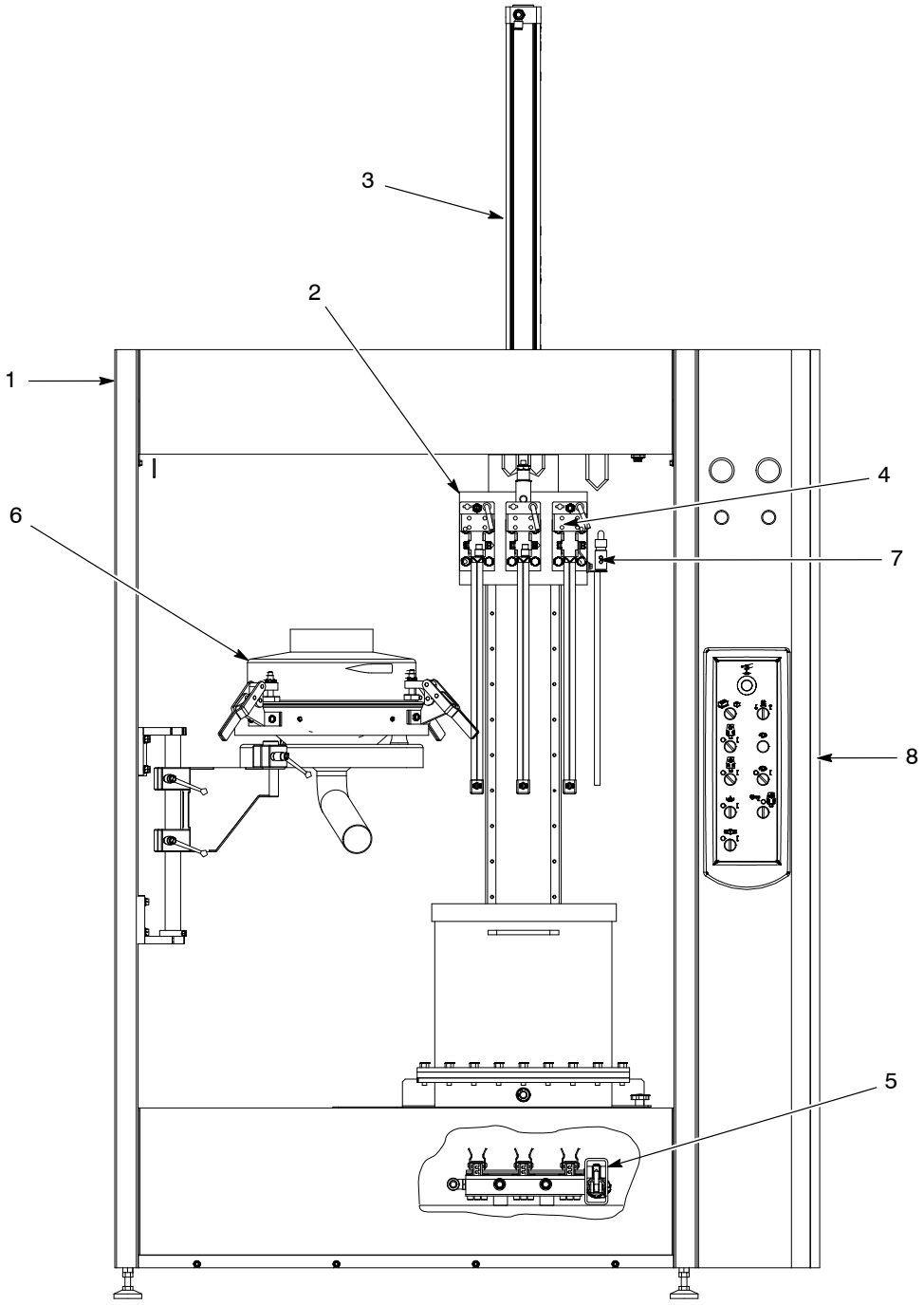


Figure 2-1 Major Components of Feed Center (shown with optional fluidizing feed hopper and three lances)

1. Enclosure
2. Lift assembly
3. Lift cylinder
4. Lance assembly
5. Purge manifold
6. Sieve
7. Level sensor
8. Electrical/Pneumatic cabinet

Note: Refer to Section 4, Operation, for a description of the feed center controls.

Lance Assemblies

One, two, or three lance assemblies are attached to the lift assembly. Up to nine in-line powder pumps can be mounted on each lance assembly. The pumps are installed in the lance ports and are locked in place with a retaining rod. If a lance pump port is not used, it is plugged with a plug module. Lance assemblies can be either fluidizing or non-fluidizing. Fluidized lances are typically used with powder boxes. Non-fluidizing lances are typically used with fluidized feed hoppers.

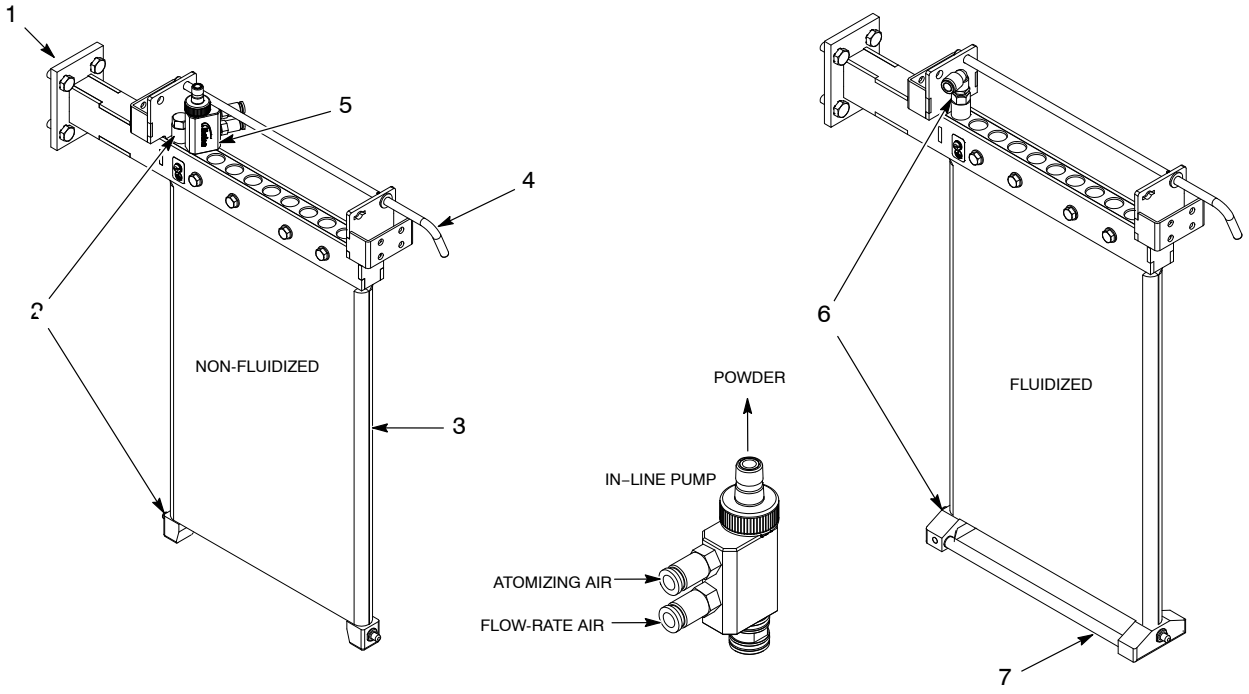


Figure 2-2 Lance Assembly

1. Arm
2. Latch block assembly
3. Lance
4. Pump retaining rod
5. Pumps
6. Fluidizing latch block assembly
7. Fluidizing bars

Lift Assembly

The lift assembly uses an air cylinder to raise and lower the lance assemblies in and out of the feed hoppers or powder boxes:

- If a feed hopper is selected as the powder source, the lance is lowered until it is a set distance above the fluidizing plate, as determined by the position of the stop proximity sensor.
- If a powder box is selected, the lance is lowered until the level sensor on the lance contacts the powder, and then lowered gradually as the powder is used up.

The lift cylinder has a spring-actuated locking mechanism released by air pressure. The cylinder is locked when the air line is vented; unlocked when pressurized. The cylinder also uses a balancing air circuit, which applies air pressure to both sides of the piston to prevent lurching when restarting motion after a locked stop.

When the cylinder moves the lance up, the lance down circuit is vented, allowing the lance up circuit air to push the piston up. When the cylinder moves the lance down, the lance up circuit is vented, allowing the lance down circuit air to push the piston down.

The flow control valves installed in the cylinder air ports control the travel speed of the piston rod. Three proximity sensors mounted on the cylinder sense when the cylinder piston is in the hopper, box, or purge positions.

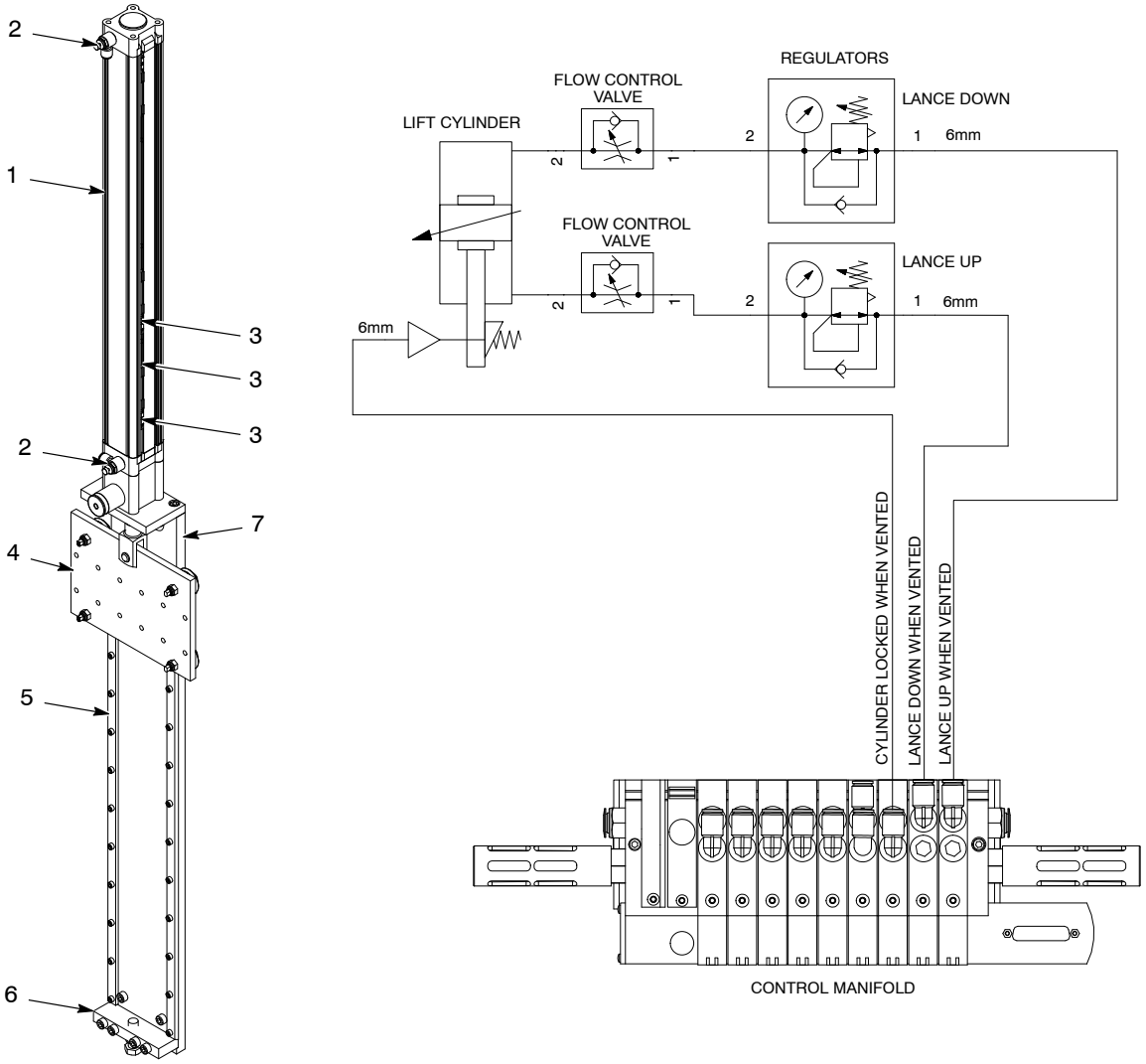


Figure 2-3 Lance Lift Assembly

1. Locking cylinder
2. Flow control valves
3. Proximity sensors
4. Lance carriage and v-rollers
5. V-edged carriage rails
6. Carriage stop
7. Mounting plate

Lance Lift Operation

See Figure 2-3.

Static State

- Lance lock solenoid valve non-energized, air line to lock vented, cylinder rod locked by spring force.
- Lance down and lance up solenoid valves non-energized, air lines to up and down flow control valves pressurized, lance up and lance down regulators supplying balanced pressure to both sides of the lift cylinder piston.

Dynamic State UP

- Lance lock solenoid valve energized, lock air line pressurized, cylinder rod unlocked.
- Lance up solenoid valve energized, venting line to Lance Down regulator and top of piston. Pressure to Lance Up regulator and bottom of piston forces piston up.

Dynamic State DOWN

- Lance lock solenoid valve energized, lock air line pressurized, cylinder rod unlocked.
- Lance down solenoid valve energized, venting line to Lance Up regulator and bottom of piston. Pressure to Lance Down regulator and top of piston forces piston down.

Purge Manifolds

During a color change procedure, the purge manifolds blow powder out of the lances, in-line pumps, powder feed hoses, and spray guns. When the operator activates the gun purge mode during a color change procedure, the lance assemblies are lowered onto the purge manifolds (7). The latch cylinder (3) is extended, causing the latches (5) to clamp the lances to the purge manifolds. Compressed air is then pulsed through the lances, in-line pumps, feed hoses, and spray guns, one manifold at a time. The purge sequence is controlled by the feed center PLC. Air is supplied by the purge valves mounted on the back of the feed center.

The latch assemblies can be adjusted to change the clamping force exerted on the lance assemblies, depending on the purge air pressure. Refer to the *Repair* section, page 8-4, for adjustment procedures.

Clamping Cylinder Operation

Extend (Clamp): The extend air line is pressurized with regulated air, forcing the cylinder rod out of the cylinder. The retract air line is vented.

Retract (Unclamp): The retract air line is pressurized with line air pressure, forcing the cylinder rod into the cylinder. The extend air line is vented.

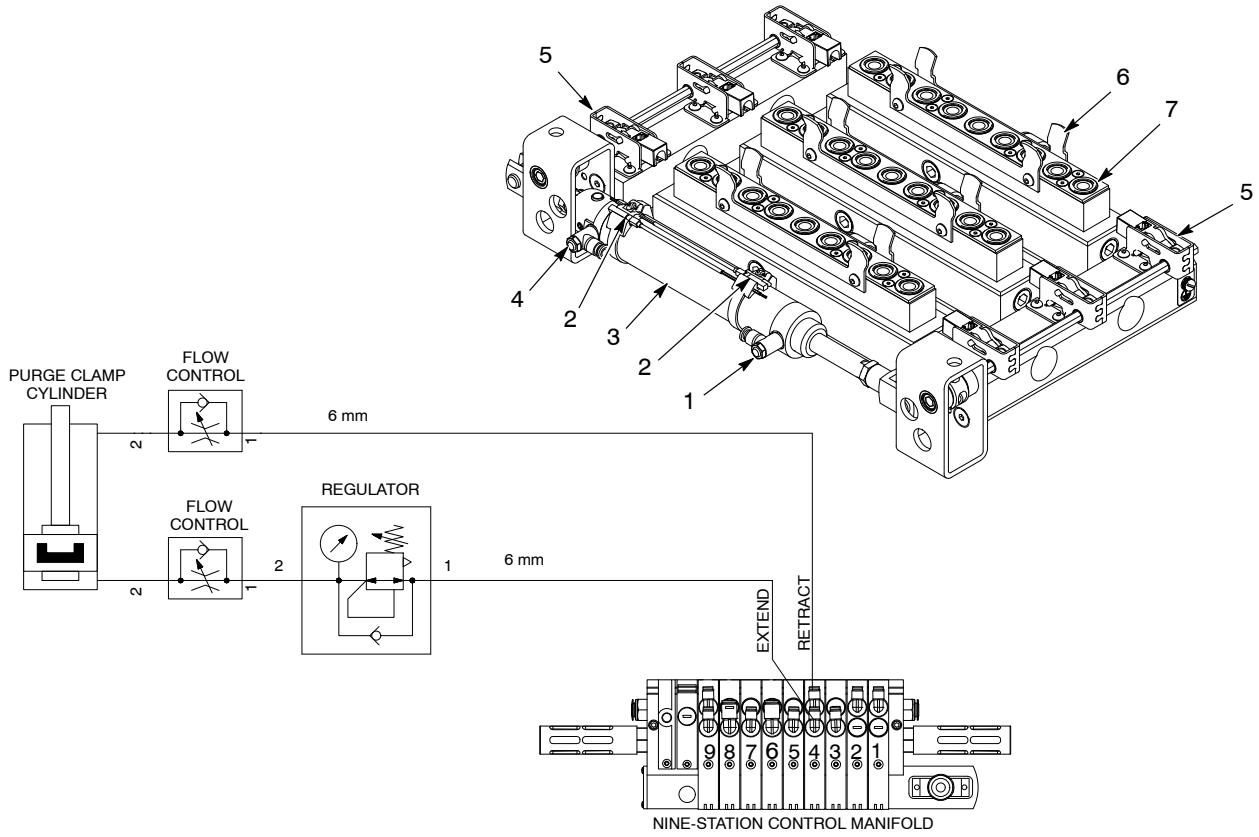


Figure 2-4 Purge Manifold Assembly (3 lance assembly shown with cylinder and latches in clamping position)

1. Retract flow control valve
2. Piston proximity sensors
3. Latch cylinder
4. Extend flow control valve
5. Latches
6. Lance guides
7. Purge Manifold

Sieve

The vibratory sieve is mounted on a bracket assembly that allows the sieve position to be adjusted vertically and horizontally. The locking collar (10) provides a stop for different sizes of feed hoppers.

The deck, screen, and screen gasket are clamped to the pan by two latches (4). Screens (8) are available in different mesh (micron) sizes. When the latches are released, the sieve pan (7) can be rotated so the discharge chute dumps the screened powder into the powder source, or when purging, so the chute is pointing toward the exhaust duct intake.

For hard to screen powders, a Vibrasonic system is available. Refer to *Options* for more information.

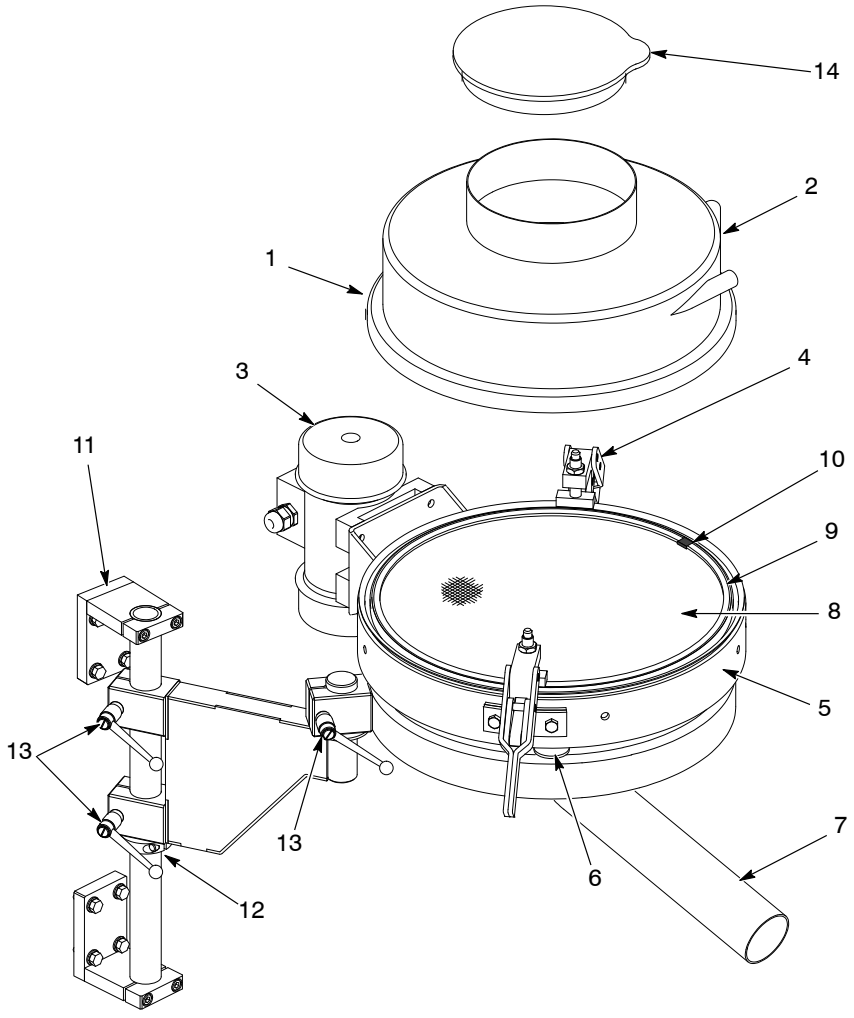


Figure 2-5 Sieve and Mounting Bracket Assembly (Standard Screen Shown)

1. Sieve deck
2. Powder inlet stubs
3. Vibrator motor
4. Deck latches
5. Sieve ring
6. Vibration isolators
7. Sieve pan discharge chute
8. Sieve screen
9. Screen gasket
10. Ground clip
11. Sieve bracket assembly
12. Locking collar
13. Clamps
14. Deck plug

Electrical and Pneumatic Controls

Refer to Table 2-1 for an explanation of the control functions.

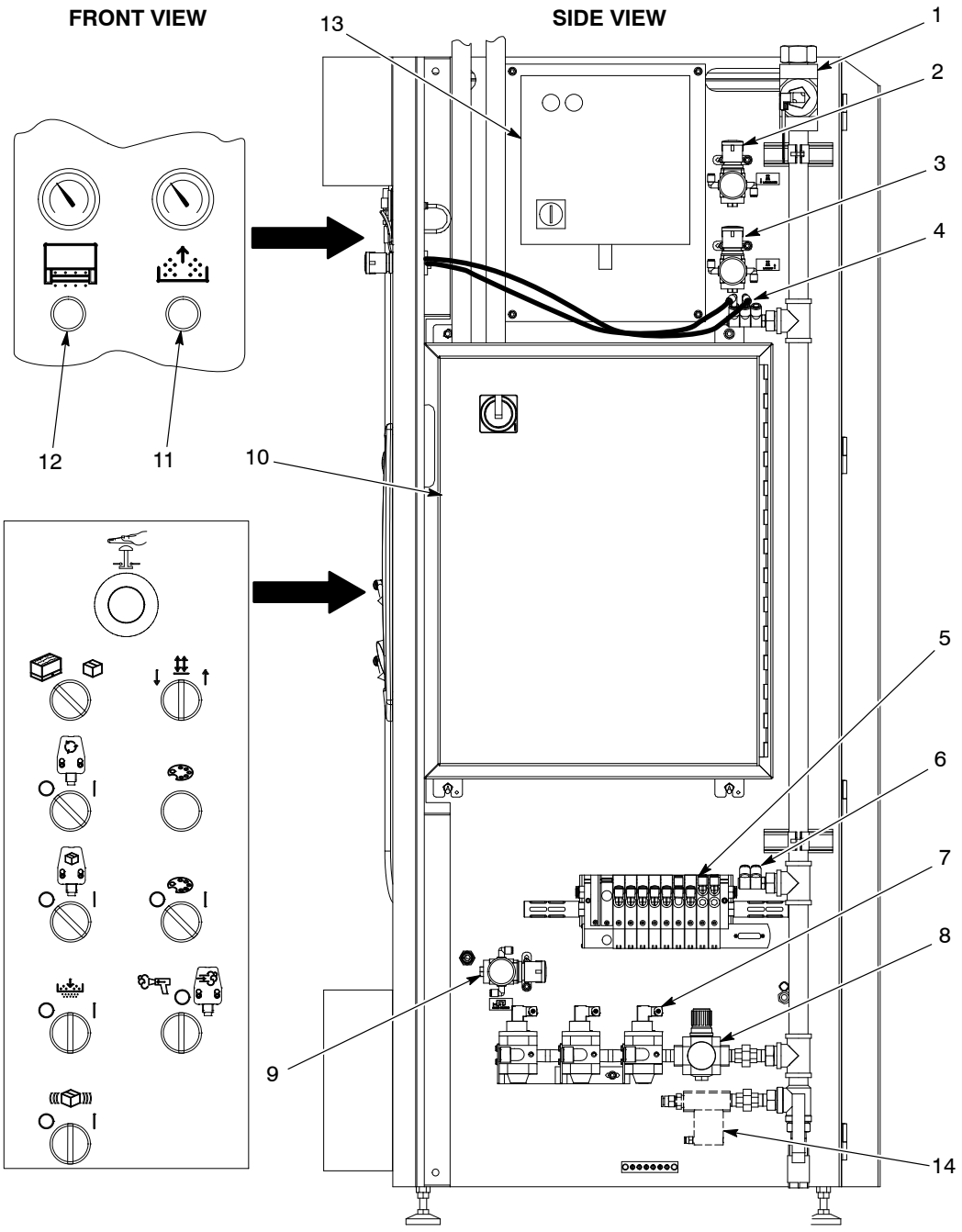


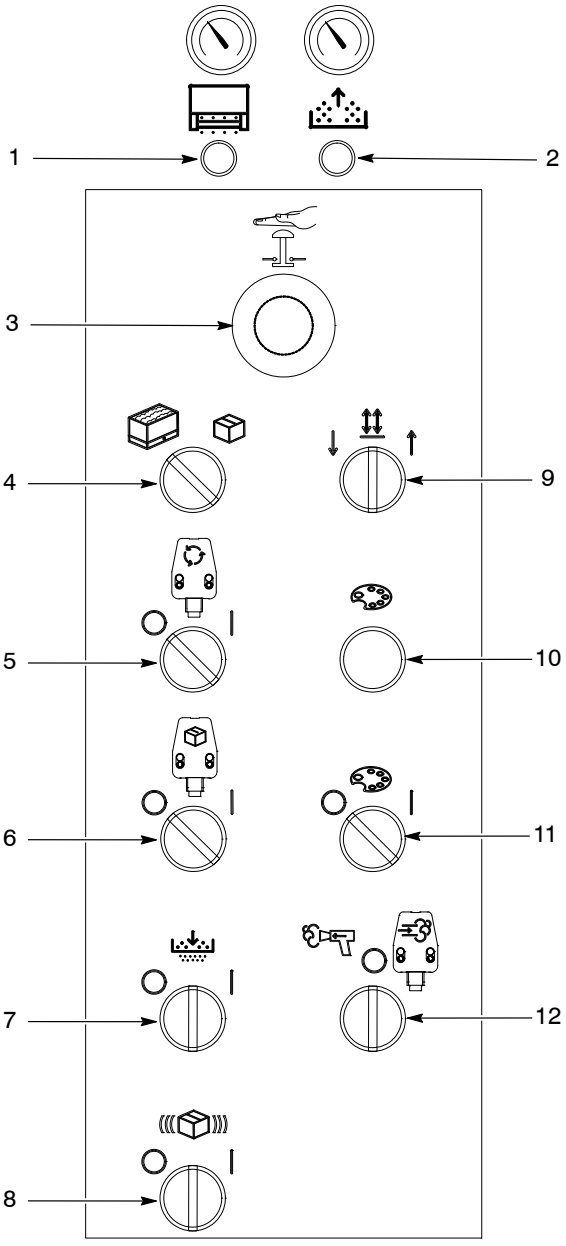
Figure 2-6 Electrical/Pneumatic Cabinet (door removed) (see Figure 2-7 for Solenoid Valve Functions)

1. Air supply interlock valve
2. Lance down pressure
3. Lance up pressure
4. Fluidizing air tees
5. Control manifold
6. Solenoid valve air tees
7. Purge valves
8. Purge air pressure
9. Purge clamp cylinder pressure
10. Electrical panel
11. Feed hopper fluidizing pressure
12. Lance fluidizing pressure
13. Ultrasonic panel (optional)
14. Process valve (bulk feed system option)

Note: Refer to *Section 4 Setup, and Section 5 Operation*, for air pressure and control settings and usage.

Control Panel

Table 2-1 Feed Center Controls

Control	Feed Center Control Panel
1. Lance Fluidizing Air Pressure 2. Feed Hopper Fluidizing Air Pressure 3. Emergency Stop 4. Powder Source Switch Left: Hopper Right: Box 5. Reclaim Powder Pump Switch Left: Off Right: On 6. Virgin Powder Pump Switch Left: Off Right: On 7. Sieve Switch Left: Off Right: On 8. Vibratory Table Switch Left: Off Right: On 9. Lance Control Switch Left: Down Center: Neutral (stop) Right: Up 10. Color Change Indicator Light (Green) Off: Disable Blinking: In cycle On: Complete 11. Color Change Enable Switch Left: Off Right: On 12. Purge Control Switch Left: Internal Gun Purge Center: Off Right: Pump Purge	

Pneumatic Control Manifold

Refer to Figure 2-6 for the location of the pneumatic control manifold in electrical/pneumatic cabinet.

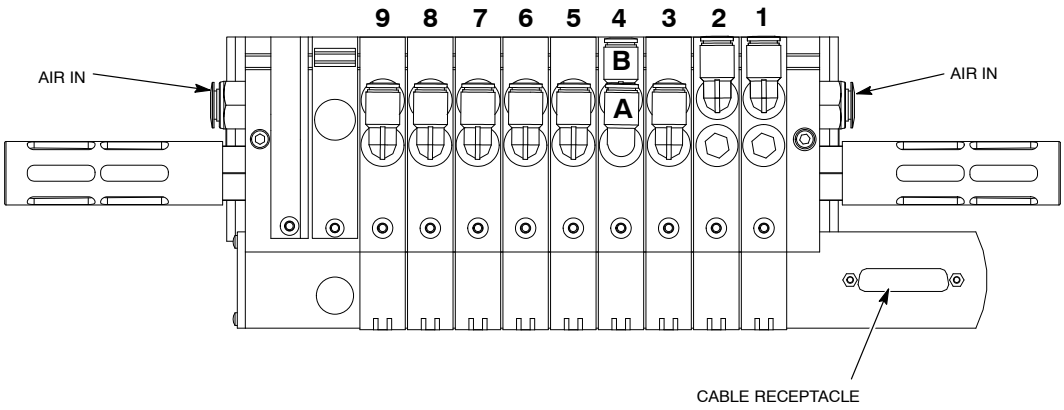


Figure 2-7 Pneumatic Control Manifold Functions

Solenoid Valve	Function
1	Lance Up (vented when energized, allowing Lance Up)
2	Lance Down (vented when energized, allowing Lance Down)
3	Lance Lock (energized to unlock cylinder)
4	Purge Clamp – A = Extend, B = Retract
5	HDLV Virgin Pump
6	HDLV Virgin Pump
7	HDLV Reclaim Pump
8	HDLV Reclaim Pump
9	Waste Transfer Pump and Collector Fluidize (not used with ducted feed centers)

Level Sensor Modules

Lance Mounted Level Sensor Function

When the powder source switch is set to **Hopper**, the lance is lowered down into the powder in the hopper to the position determined by the Hopper Proximity Switch on the lift cylinder. The Hopper Level Sensor is positioned to maintain the desired level of powder in the hopper, turning on and off the virgin transfer pump as the powder level rises and falls. If the level sensor detects a low powder condition for greater than 3 minutes (field adjustable), the low powder alarm is turned on.

When the powder source switch is set to **Box**, the lance is lowered until the Box Level Sensor contacts the powder. When the powder level falls below the level sensor, the lance is lowered further into the box. The Box Proximity Sensor on the lift cylinder prevents the lance from crashing into the bottom of the box.

To adjust the position of each level sensor for the application, loosen the clamp screw (4) with a hex key.

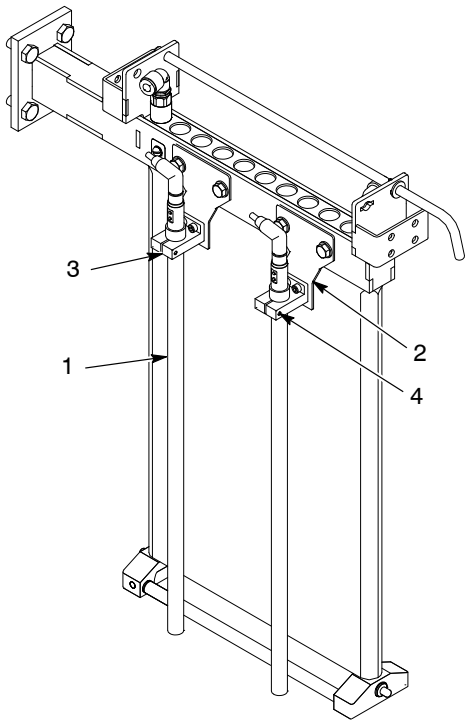


Figure 2-8 Level Sensor Modules

1. Level sensor
2. Bracket
3. Clamp
4. Clamp screw

Prodigy Siphon Tube Assembly

The optional Prodigy siphon tube provides powder to a Prodigy manual gun. The siphon tube bracket (3) is secured to the lance arm with the existing lance fasteners. The quick-disconnect fitting on the top of the siphon tube accommodates 8-mm tubing.

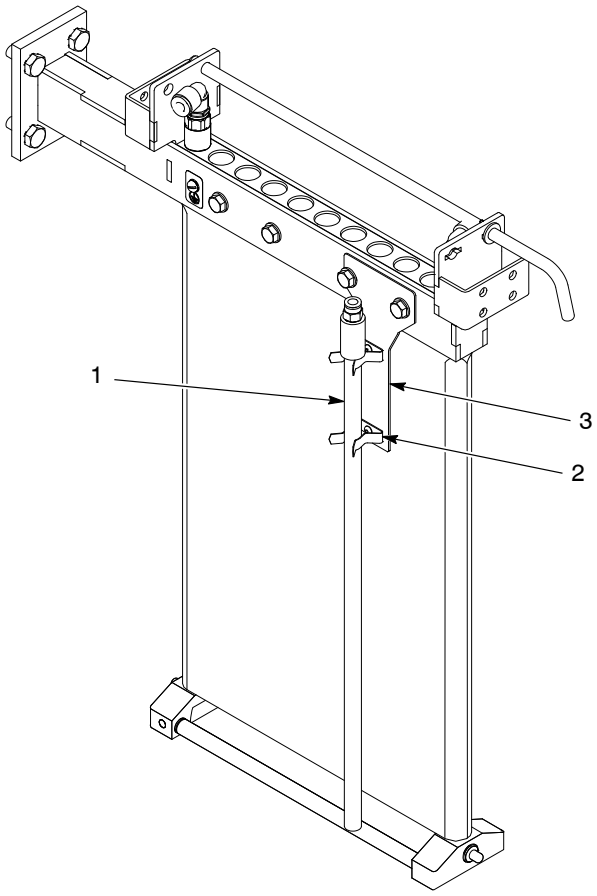


Figure 2-9 Prodigy Siphon Tube Assembly (Optional)

1. Siphon tube
2. Spring clips
3. Bracket

Powder Sources

The feed center can accommodate rectangular 75-lb (34 kg) and square 50-lb (22.7 kg) fluidizing hoppers, the cylindrical NHR-8-50 feed hopper, and different sizes of powder boxes. When powder boxes are used, the lance assembly is typically equipped with fluidizing bars, and the table is fitted with a vibrator motor, to fluidize the powder so that it can be pumped to the spray guns.

The fluidizing hoppers are plastic boxes with lids. They are equipped with replaceable fluidizing plates and 10-mm tube fittings in the plenum. An optional cart is available for the 75-lb hopper.

Refer to the *Options* section of this manual for the square and rectangular hopper part numbers and repair parts.

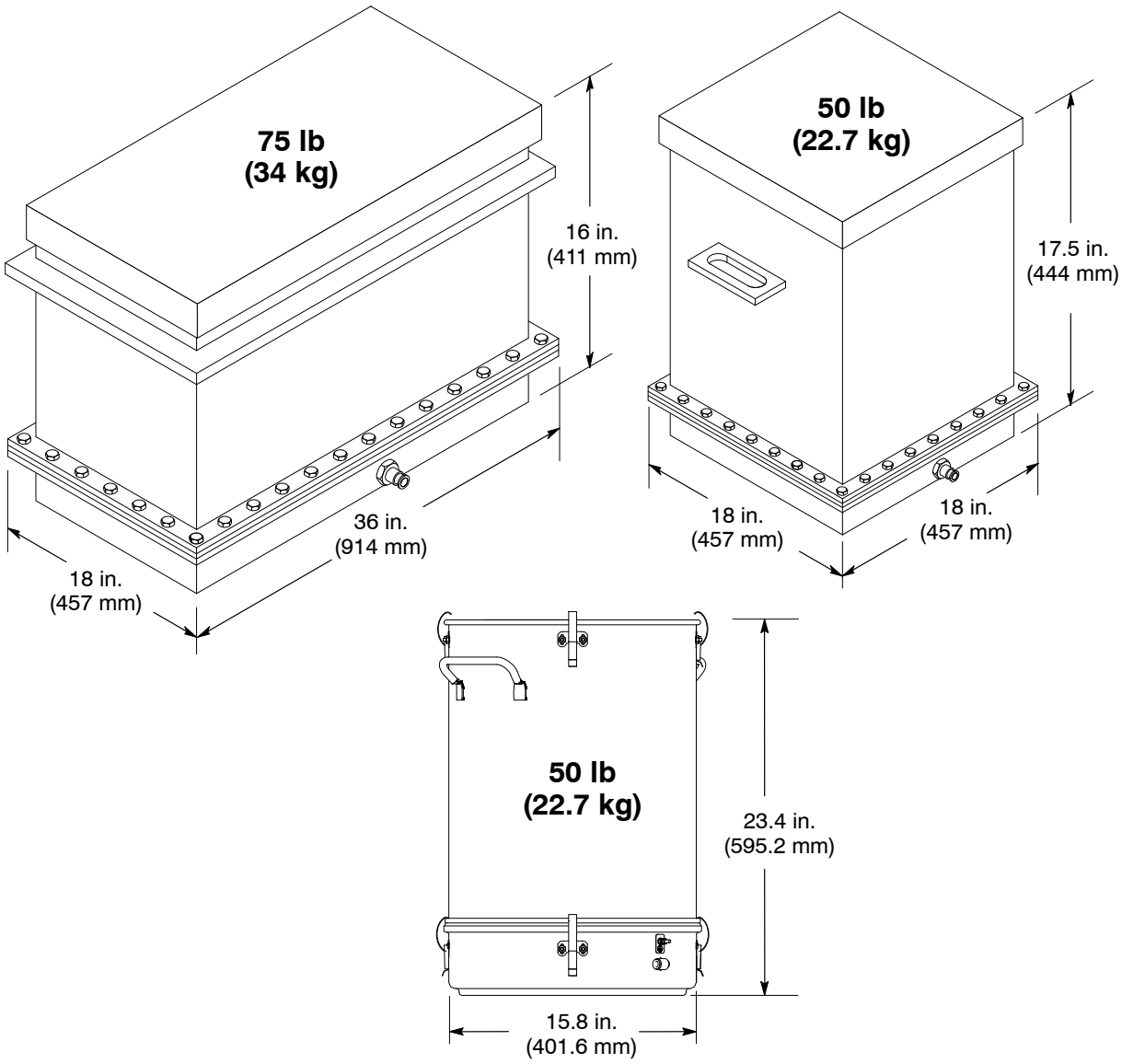


Figure 2-10 Optional Fluidizing Feed Hoppers

Specifications

Size and Weight

Weight: Approximately 612.3 kg (1350 lbs) depending on configuration and options.

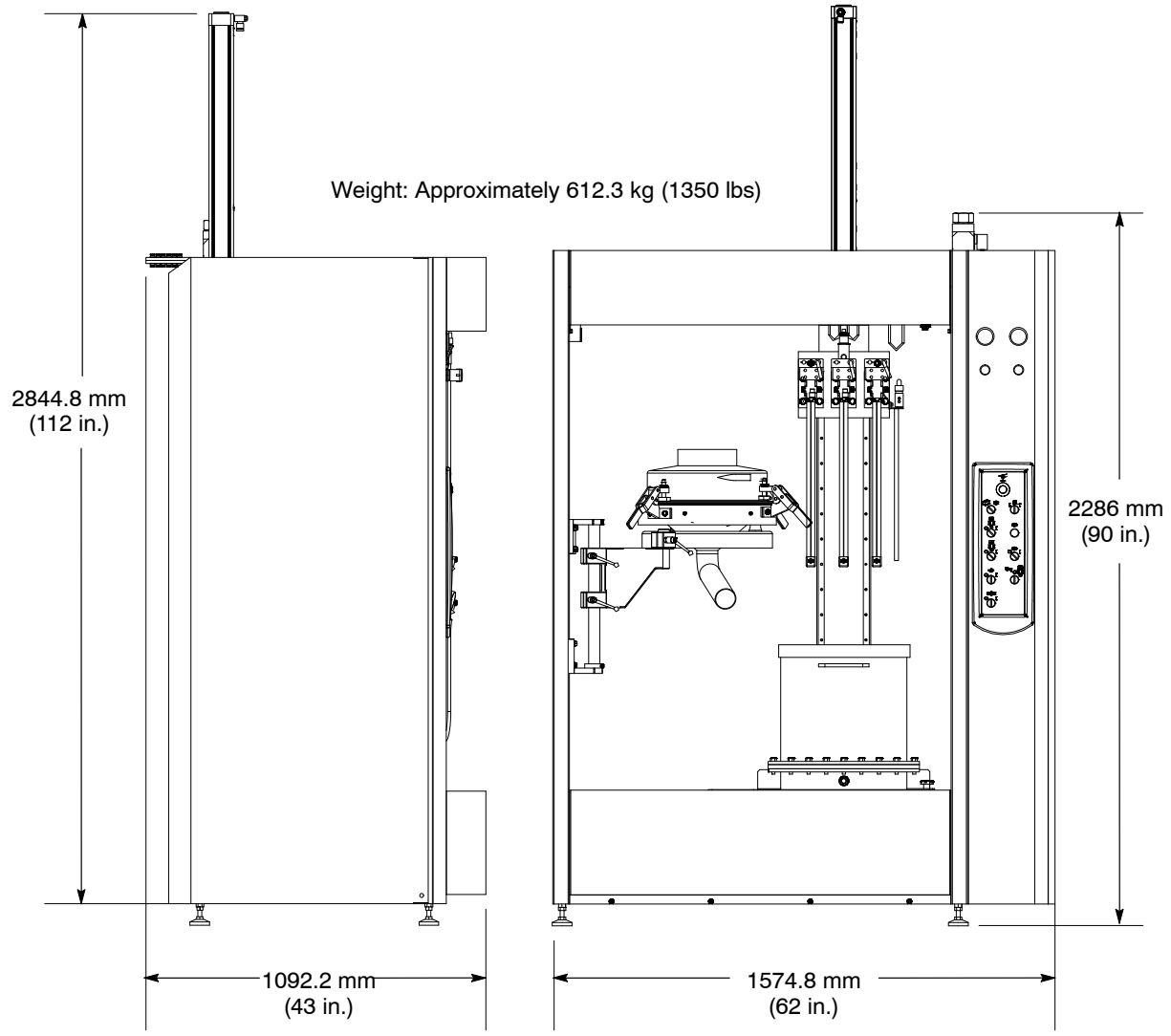


Figure 2-11 Feed Center Dimensions

Electrical Requirements

200V, 3 phase, 50 Hz, 6.6 amps
200V, 3 phase, 60 Hz, 6.6 amps
230V, 3 phase, 60 Hz, 6.1 amps
380V, 3 phase, 50 Hz, 3.6 amps
380V, 3 phase, 60 Hz, 3.6 amps
415V, 3 phase, 50 Hz, 3.5 amps
460V, 3 phase, 60 Hz, 3.5 amps
575V, 3 phase, 60 Hz, 2.5 amps

Air Requirements

Exhaust Air Flow

1800 CFM / 3058 m^3/hr

Compressed Air Supply

Air input: 1 in. BSPT with NPT adapter
Air consumption at 6.9 bar (100 psi):
76 m^3/hr (45 SCFM) – Normal operation
611 m^3/hr (360 SCFM) – Maximum
(instantaneous flow rate during purge sequence)

The air must be clean and dry. Use a dedicated, refrigerated or regenerative-desiccant air dryer that can produce a 3 °C (38 °F) or lower dewpoint at 6.9 bar (100 psi), and filter/separators with automatic drains.

Air Pressures

Function	Recommended Pressure
Lift Cylinder Up	1 Lance: 4.1 bar (60 psi) 2 Lances: 4.8 bar (70 psi) 3 Lances: 5.5 bar (80 psi)
Lift Cylinder Down	3.4 bar (50 psi)
Lift Cylinder Flow Control Valves	6 seconds full travel both directions
Purge Air	5.5 bar (80 psi)
Lance Purge Clamp Cylinder	3.4–4.1 bar (50–60 psi)
Clamp Cylinder Flow Control Valves	3 seconds full travel both directions
Feed Hopper Fluidizing	0.3–0.7 bar (5–10 psi) (see Note)
Lance Fluidizing	0.3–0.7 bar (5–10 psi) (see Note)
NOTE: Adjust fluidizing air as needed. Powder should be gently boiling, without geysering.	

Sieves

Sieve Motor Voltage Requirements (North America / Asia):
230/460V, 3 phase, 60 Hz
330/575V, 3 phase, 60 Hz
220/380V, 3 phase, 50 Hz
200/400V, 3 phase; 60 Hz

Available Sieve Screens

381 mm (15 inch) Sieve:
841 Micron, 20 mesh without ultrasonics
420 Micron, 40 mesh without ultrasonics
250 Micron, 60 mesh, with or without ultrasonics
125 Micron without ultrasonics
177 Micron, 80 mesh with ultrasonics
149 Micron, 100 mesh with ultrasonics
100 Micron, 145 mesh with ultrasonics

Vibratory Table Motor Voltage Requirements

North America / Asia:
230/460V, 3 phase, 60 Hz
330/575V, 3 phase, 60 Hz
240/415V, 3 phase, 50 Hz
220/380V, 3 phase, 60 Hz
220/380V, 3 phase, 50 Hz
200/400V, 3 phase, 60 Hz
200/400V, 3 phase, 50 Hz

Section 3
Installation

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Unpacking

Upon receipt, unpack the feed center carefully to avoid damage. Report any damage immediately to the shipper and to your Nordson representative. Save packing materials for possible later use, or dispose of properly according to local regulations.

Preparing for Installation

Position the feed center on a level floor, according to the general layout drawing supplied by Nordson application engineering. Use the leveling pads to level the feed center.

To ensure easy maintenance, provide a clear operating and access zone of at least 1m (3 ft) wherever possible.

Damper Installation

A 10-in. butterfly damper should be installed in the ductwork to the afterfilter. A damper is available from Nordson Corporation. Refer to the *Parts* section for the duct part number.

Extraction Duct Connection

See Figure 3-1 for the extraction duct hole pattern. Connect ductwork from the afterfilter/fan section to the feed center with a properly sized transition duct. A rectangular transition duct that mates to 10 in. round duct is available from Nordson Corporation. Refer to the *Parts* section for the duct part number.

Extraction Duct Connection *(contd)*

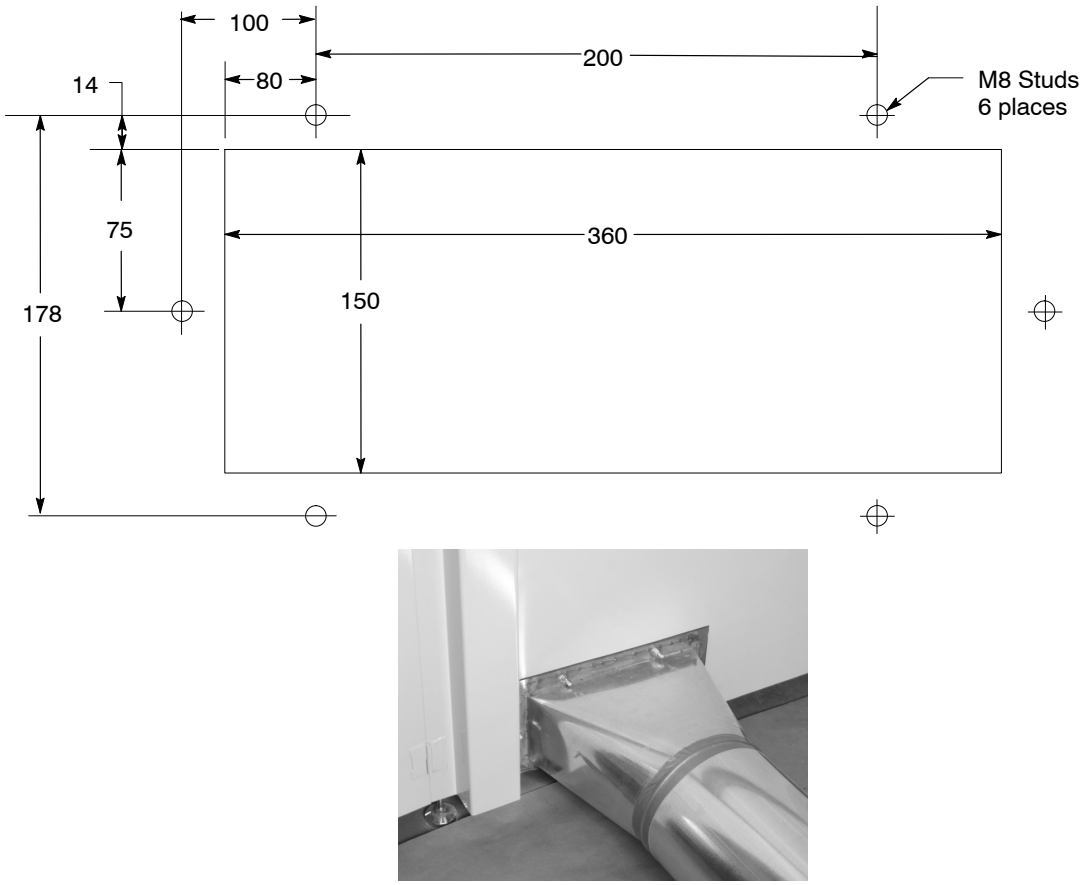


Figure 3-1 Extraction Duct Connection Dimensions (all dimensions in millimeters)

Lift Cylinder Installation

See Figure 3-2. The lift cylinder is removed for shipping. Follow this procedure to install it.

1. Remove the lift cylinder packaging and install the lift cylinder on the mounting bracket as shown with four M8 x 35 screws.
2. Connect the clevis to the lance carriage with the clevis pin and snap the pin clip around the clevis.
3. Connect air tubing to the cylinder:
   - 6-mm tubing from Down regulator to upper flow control valve
   - 6-mm tubing from Up regulator to lower flow control valve
   - 6-mm tubing from solenoid #7, SOL326 to the cylinder lock

4. If removed, install the proximity switches on the cylinder as shown.
   - LS306: Hopper Position
   - LS307: Box Position
   - LS308: Purge Position
5. When the feed center installation is complete, adjust the proximity switch positions as described on page 3-11.

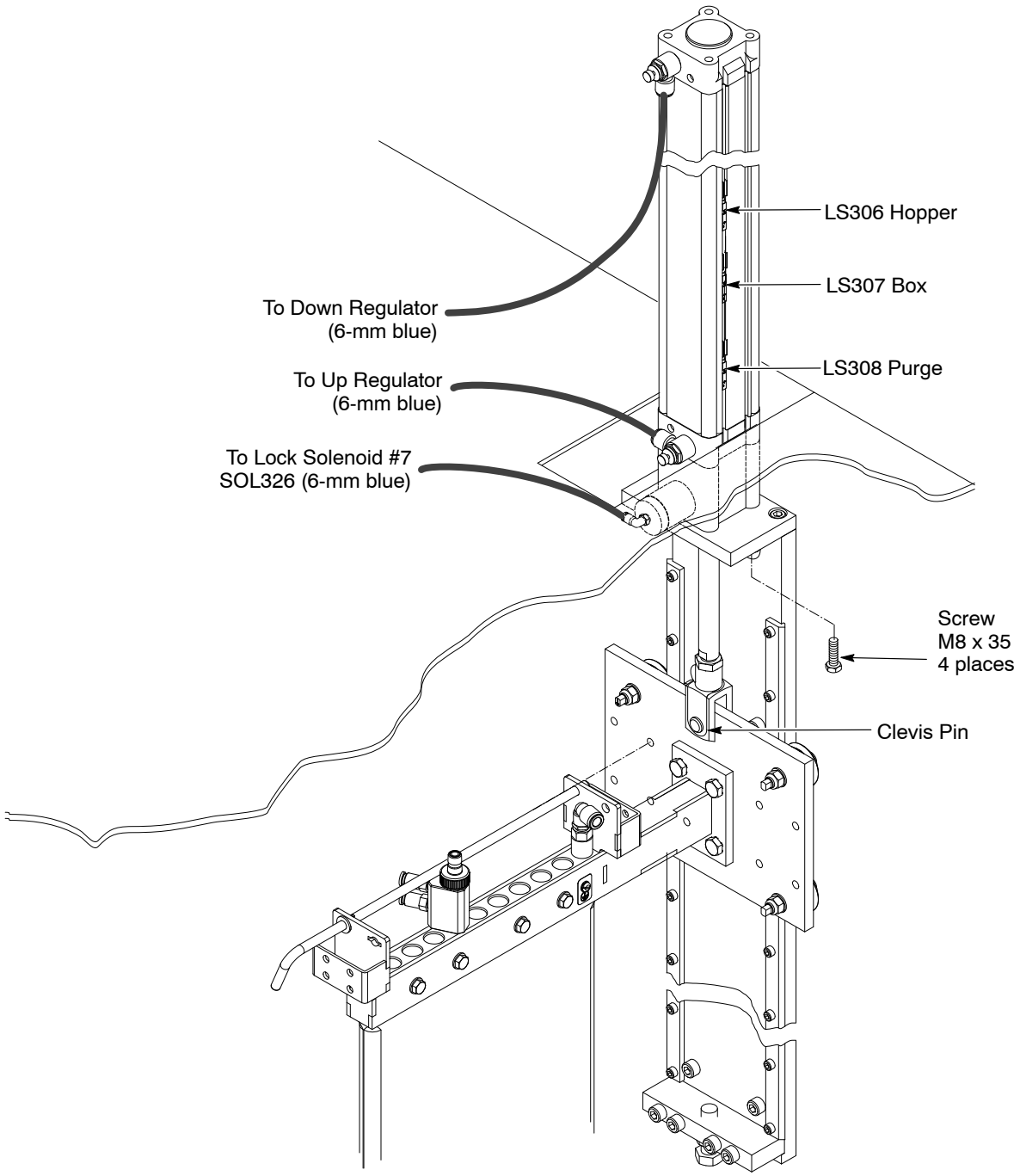


Figure 3-2 Lift Cylinder Installation

Electrical Connections

CAUTION: Equipment damage may occur if the electrical panel is connected to any line voltage other than that stated on the identification plate.

WARNING: Power to the feed center must be supplied from a locking disconnect switch or breaker. Failure to observe this warning may result in a severe shock during installation or repair.

Make sure that all electrical cables are correctly rated and suitable for the ambient temperature of the installation area. Provide adequate fuse/circuit protection from the power supply. Refer to the foldout wiring diagrams and schematics at the end of this manual for more information.

See Figure 3-3. Swing the feed center side cover out of the way and open the electrical control panel. Bring the power cable or conduit into the panel through a liquid-tight gland and connect the cable leads to the L1, L2, and L3 terminals on the disconnect switch.

Before starting up the feed center, turn on the feed center power and refer to the Setup procedure to program the controls for the application. This should be performed only by a Nordson field engineer or technician.

Pneumatic Connections

Air Connection: NPT (National Pipe Thread)
The feed center is supplied a 1-in. NPT female adapter (1) located at the main supply air valve (2). Leave this adapter in place if you are using NPT fittings to connect to your main air supply.

Air Connection: ISO 7/1 Rc1 (BSPT 1 inch)
Remove the 1-in. NPT adapter from the main supply air valve if you are using ISO7/1 Rc1 fittings to connect to your main air supply.

Clean, dry, compressed air should be supplied from a refrigerated or desiccant air dryer and filter/separators. Refer to *Specifications* in *Section 2* for compressed air specifications.

Refer to the pneumatic diagram on the 11 x 17 foldouts at the end of this manual for more information.

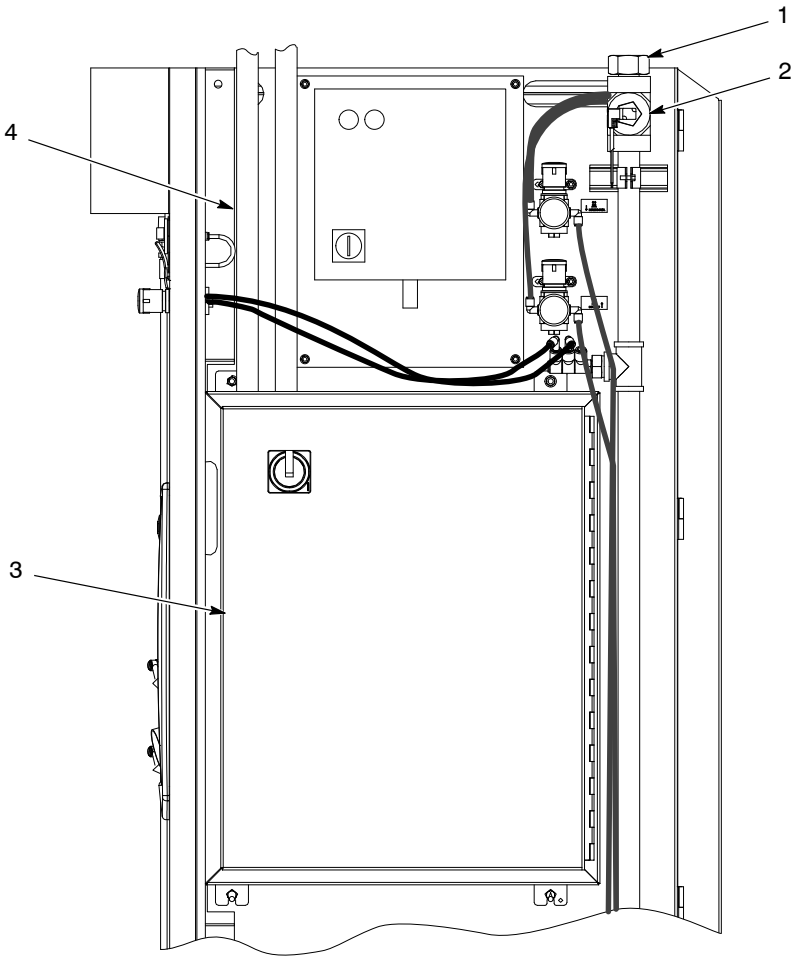


Figure 3-3 Electrical and Pneumatic Connections

1. Adapter, 1-in. NPT
2. Main air valve
3. Electrical Panel
4. Electrical conduit

Powder Feed Pump Installation

Pump Installation

See Figures 3-5. Install the powder pumps into the lance ports, with all the pump air fittings pointing in the same direction. Install the retaining rods into the brackets to lock the pumps in place. Label each pump with a number.

Air Tubing Connections

Label and route the 8-mm black (flow-rate air) and blue (atomizing air) pump air tubing from the pump air tubing bulkheads at the back of the enclosure through the large grommets in the enclosure roof and connect the tubing to the appropriate pump flow-rate and atomizing air fittings.

Air Tubing Connections *(contd)*

Make sure there is enough slack in the air tubing to allow the lance assembly to travel through its full range of movement without stretching or kinking the tubing. Bundle the air tubing with Velcro straps to prevent kinking or damage.

Powder Feed Hose Connections

Label and route the powder feed hoses from the spray guns through the multi-tube PVC grommets in the enclosure roof and connect the hoses to the appropriate pump outlet fittings.

Counterweighting

Allow enough slack in the hoses to allow the lance assembly to travel through its full range of movement without stretching or kinking the hoses. Bundle the hoses with the provided Velcro straps to prevent kinking or damage and hook them up to the counterweight.

The counterweight assembly is shipped with six weights. Use two weights for each lance assembly: two weights for one lance, four weights for two lances, six weights for three lances.

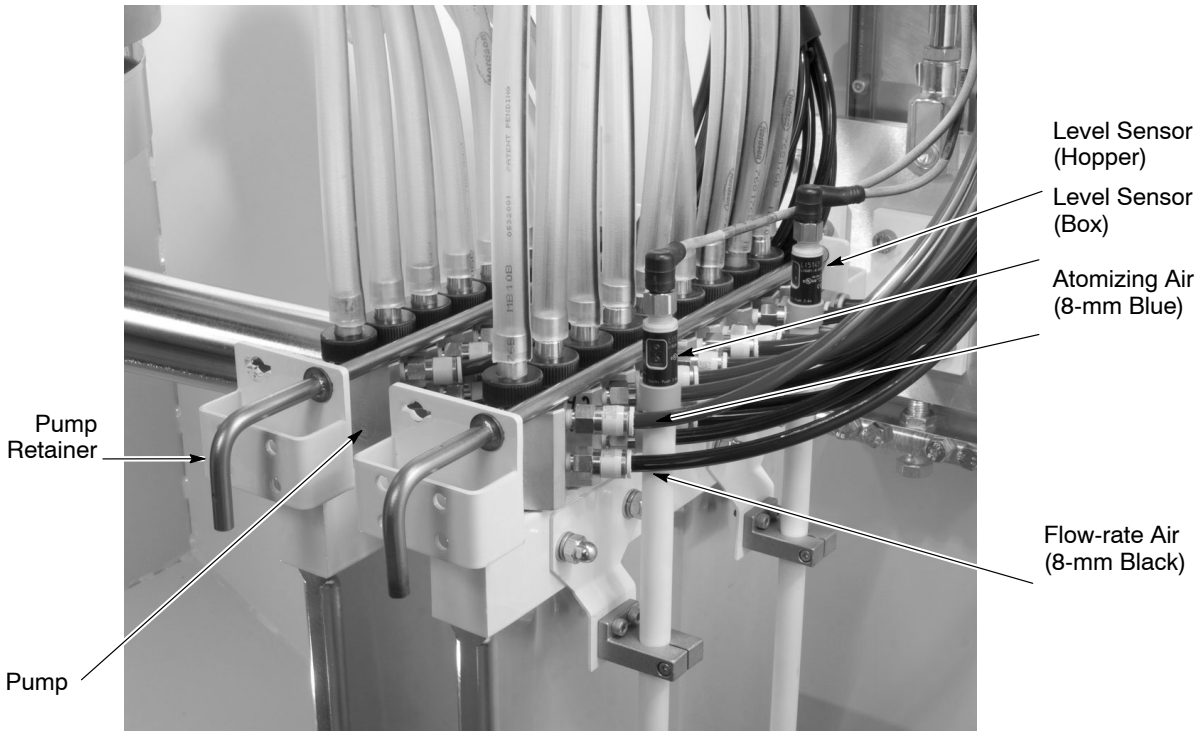


Figure 3-4 Pump, Air Tubing, and Powder Feed Hose Installation

Lance Fluidizing Air Connection (Optional)

See Figure 3-5. If you install fluidizing bars on the lances for use with powder boxes, route 8-mm blue air tubing from the fluidizing air regulator through the air tubing grommet and connect it to the fitting on the lance, as shown.

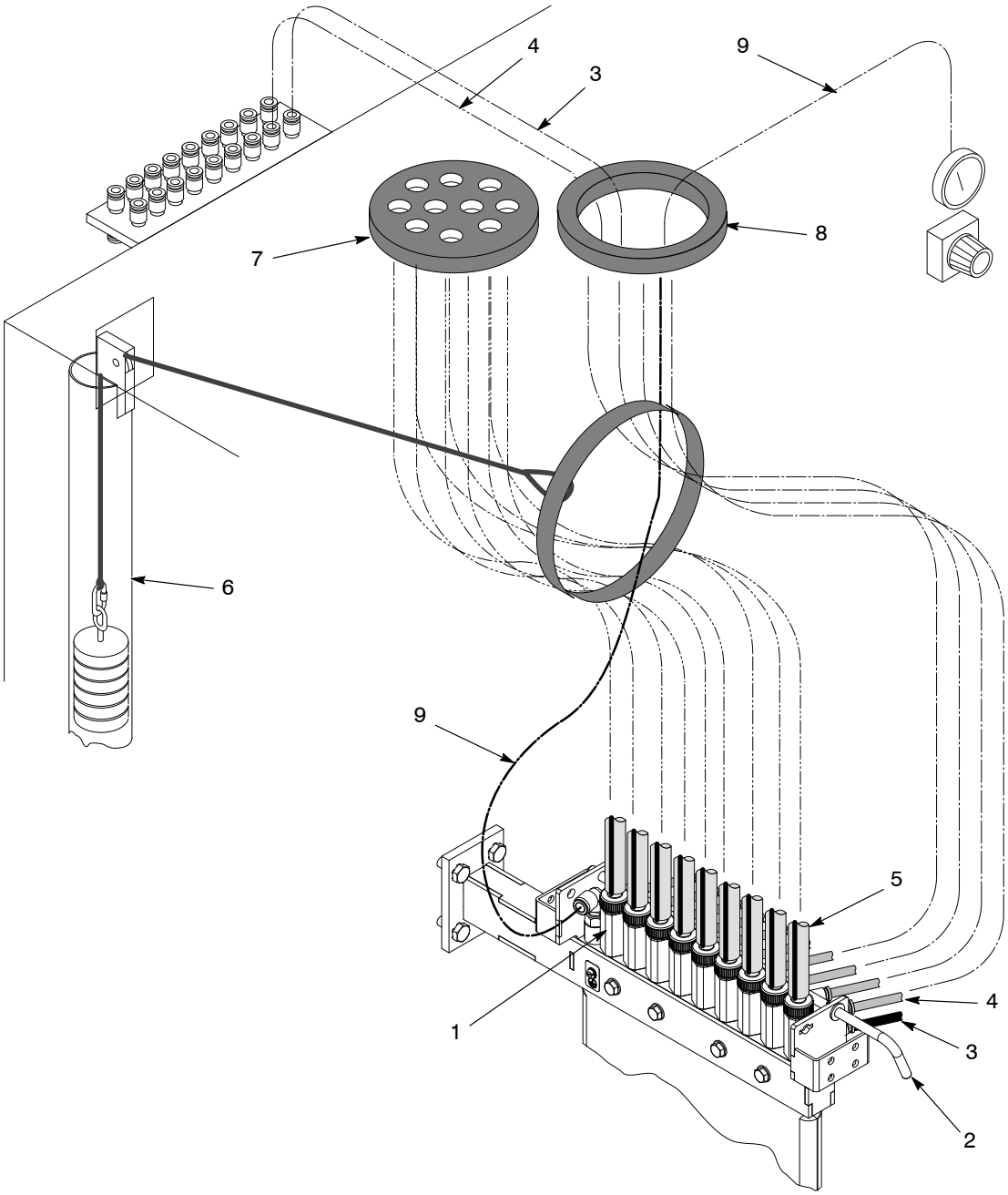


Figure 3-5 Pump, Powder Feed Hose, and Air Tubing Connections to Lance Assembly

1. Pumps
2. Retaining rod
3. Flow-rate air tubing (black)
4. Atomizing ar tubing (blue)
5. Powder feed hose
6. Counterweight assembly
7. Powder hose grommet
8. Air tubing grommet
9. Fluidizing air (optional)

Reclaim and Virgin Powder Feed Options

The bulk feed systems is optional. Most systems will use at least one reclaim system. Dual reclaim systems are often specified for coating wire goods.

Figures 3-6 and 3-7 illustrate typical connections and equipment required for reclaim and virgin powder feed systems. Refer to your system drawings for additional information and installation information.

Reclaim Powder Systems: The pump panel and HDLV transfer pump are mounted on the cyclone stand. The purge valve is plumbed into an air drop and the shuttle valve is mounted in the reclaim pump panel. When the reclaim pump is turned on, air flows from the feed center control manifold through 8-mm tubing to the pump operating air regulator. 6-mm tubing supplies regulated air to the transfer pan fluidizing air regulator and line pressure to the manual purge pushbutton valve. This valve allows the operator to purge the reclaim pump as needed.

During a color change cycle, when the operator selects Pump Purge, pilot air flows from the control manifold through 6-mm tubing to the reclaim pump purge valve. The valve opens and allows air at line pressure to flow through the pump and the 16-mm suction and delivery powder tubing to clean them.

Virgin Powder Feed System: A typical bulk feed system includes a HDLV transfer pump and pump panel as well a process valve to control system operation. The process valve is typically connected directly to the air drop inside the feed center electrical/pneumatic cabinet.

When a hopper is selected as the Powder Source and the lance level sensor tells the system that the powder level is low, pilot air flows from the control manifold through 6-mm tubing to the process valve, which opens and supplies air at line pressure to the virgin powder system and turns on the pump. Powder is pumped out of the bulk powder container to the feed center hopper. The pump panel has regulators to control air pressure to the pump and air pressure to an auxiliary function, such as a vibrator motor.

During a color change cycle, when the operator selects Pump Purge, pilot air flows from the control manifold through 6-mm tubing to the virgin pump purge valve. The valve opens and allows air at line pressure to flow through the pump and the 16-mm suction and delivery powder tubing to clean them.

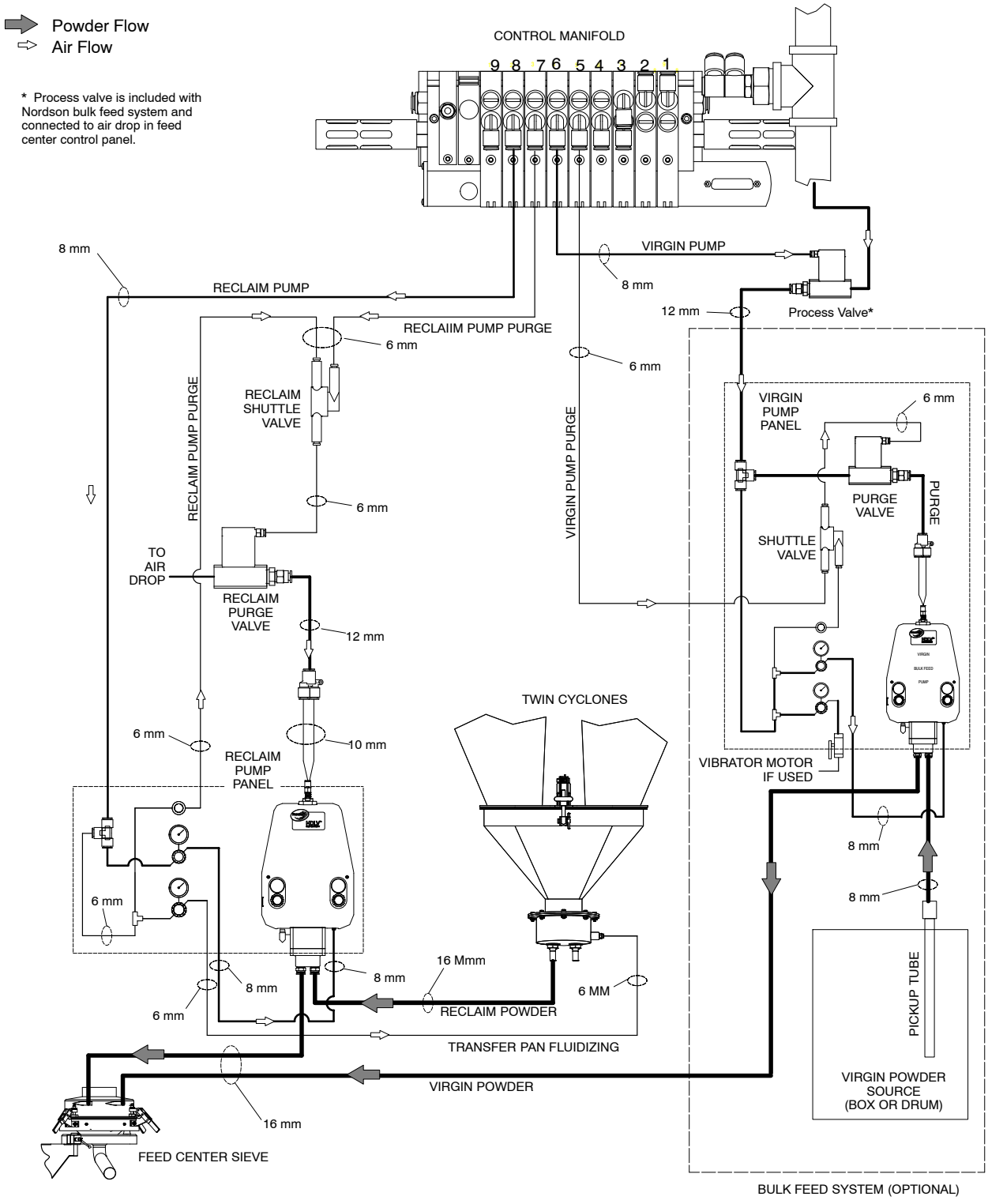


Figure 3-6 Single Reclaim Pump and Optional Virgin Powder Connections and Equipment

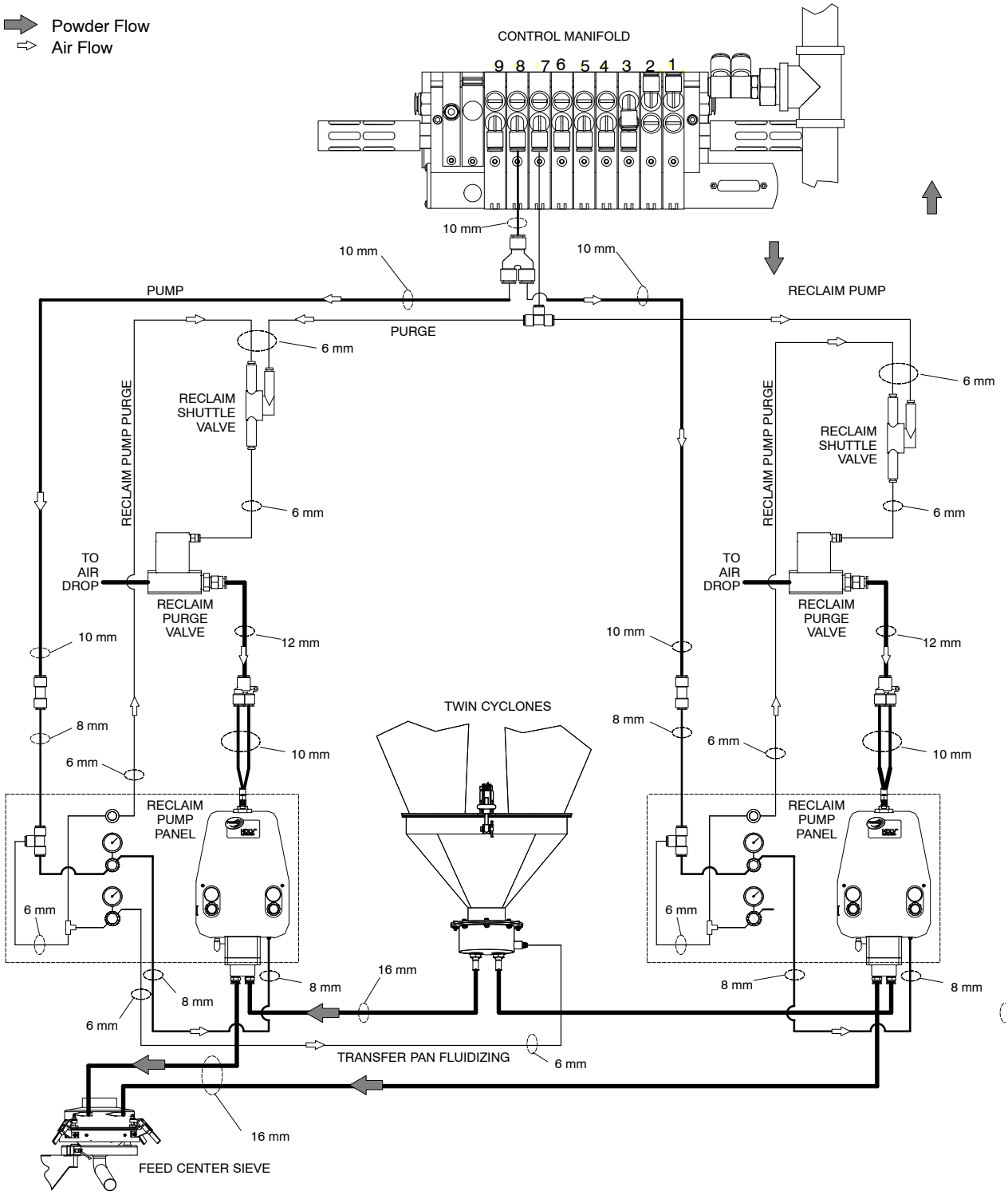


Figure 3-7 Dual Reclaim Pump Connections and Equipment

Lift Cylinder Proximity Switch Adjustment

There are three proximity switches on the lift cylinder. They sense the position of the cylinder piston, and therefore the bottom of the lance, in relation to the hopper fluidizing plate, the bottom of a powder box, and the purge manifold. Each switch has a LED that turns on when the switch is closed by a magnet embedded in the cylinder piston.

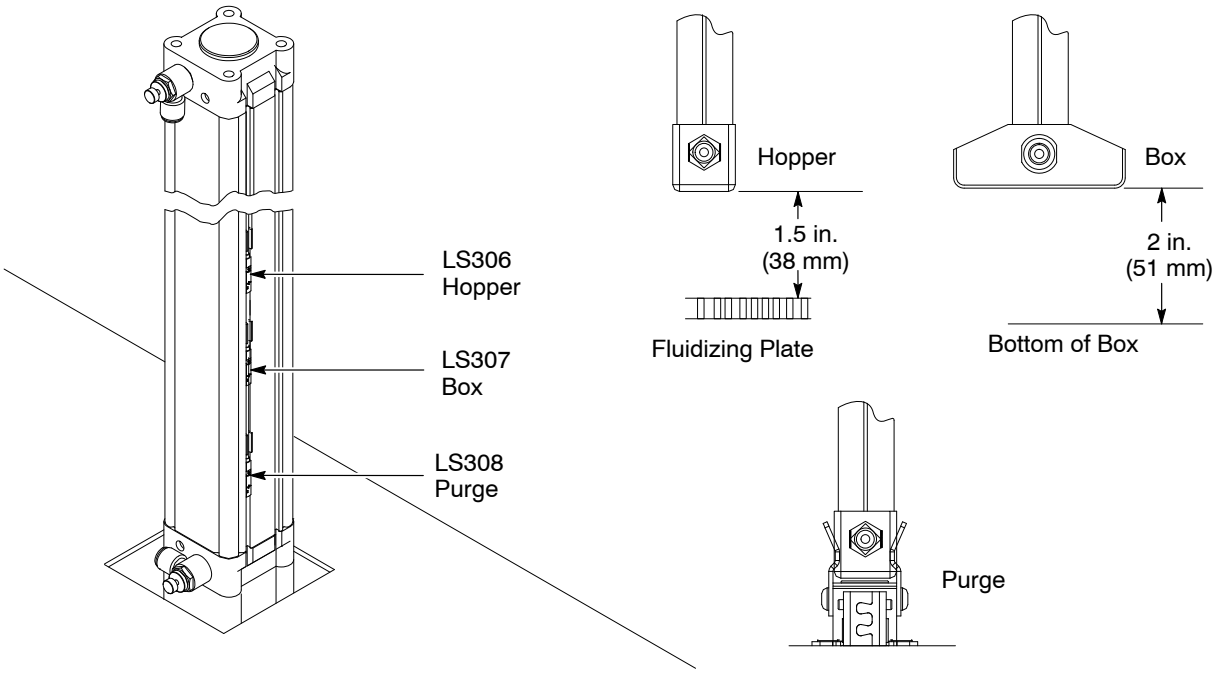


Figure 3-8 Proximity Switches and Settings (Typical Lift Cylinder Shown)

NOTE: The lance assembly will stop at the Box or Hopper switch, depending on the powder source selected. To override the switch, continue to hold the Lance Control switch in the down position for 3 seconds after it stops.

LS308 Purge Switch (Bottom Switch): Lower the lance down onto the stop bolt. Slide the switch up and down while watching the LED. Mark the positions at which the switch LED turns on in both directions, then secure the switch midway between the on positions.

LS307 Box Switch (Middle Switch): Position an empty powder box on the table. Lower the lance assembly down until it is at the recommended height above the bottom of the box. Slide the switch up or down until the switch LED turns on. Mark the positions at which the switch LED turns on in both directions, then secure the switch midway between the on positions.

LS306 Hopper Switch (Top Switch): Position an empty hopper on the table. Lower the lance assembly down until it is at the recommended height above the fluidizing plate. Slide the switch up or down until the switch LED turns on. Mark the positions at which the switch LED turns on in both directions, then secure the switch midway between the on positions.

Level Sensor Position Adjustment

Adjust the level sensor position by loosening the clamp screw with a hex wrench and sliding the sensor up and down.

Hopper Level Sensor: Adjust the level sensor so that when the Lance Proximity Sensor stops the lance, the bottom of the level sensor is at the position where you want the virgin transfer pump delay to start. This position must take into account both the delay time and the usage rate, since the powder level will continue to fall until the delay timer runs out and the virgin pump is turned on.

Box Level Sensor: Adjust the level sensor so that the fluidizing bars and lance are submerged in the powder when the level sensor contacts it. Each time the powder level falls below the level sensor, the lance will be moved down until the sensor is again in contact with the powder. The Box Proximity Sensor stops the lance before it contacts the bottom of the box.

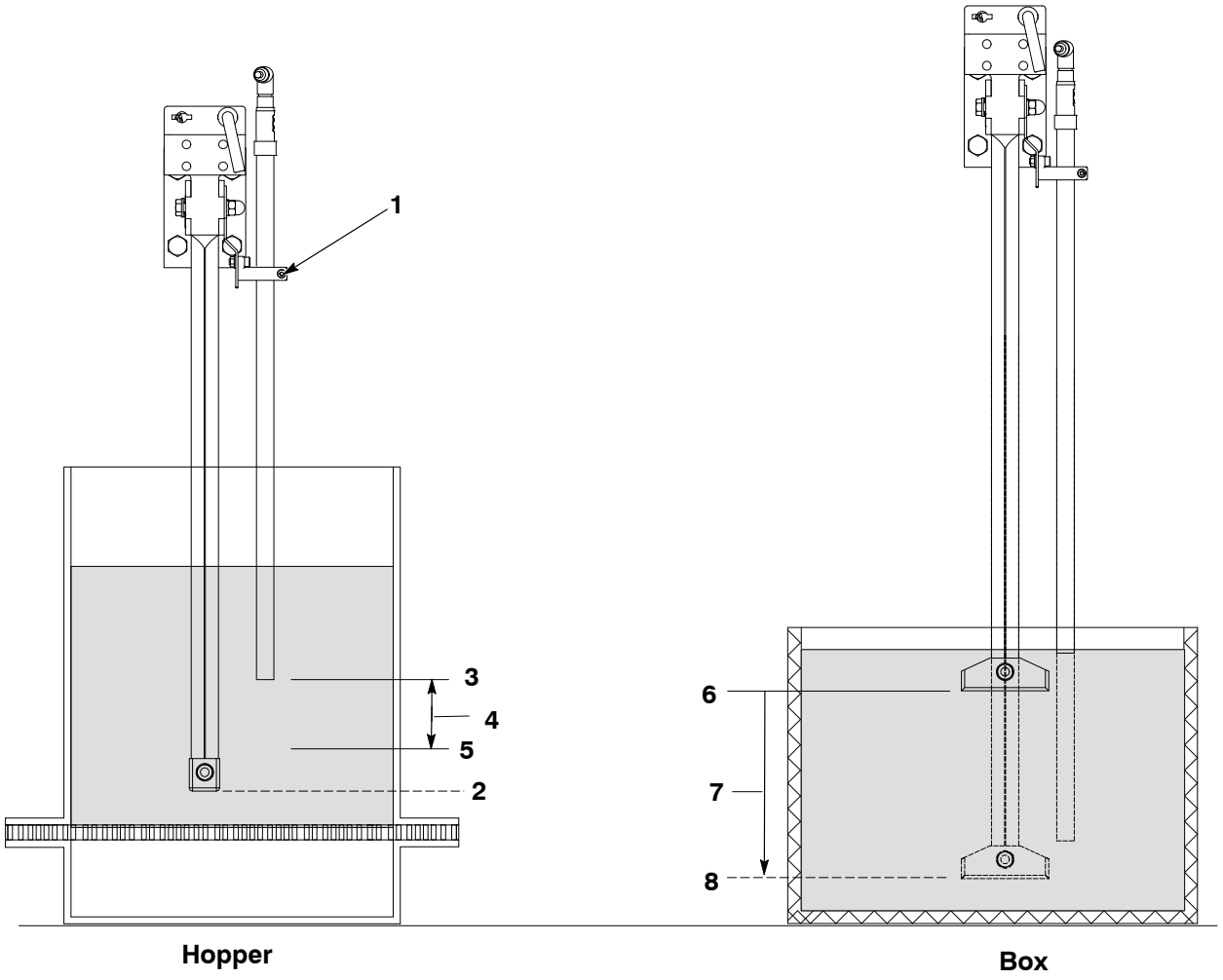


Figure 3-9 Level Sensor Position Adjustments

1. Clamp screw
2. Hopper proximity switch stop
3. Low powder delay start
4. Powder used during delay
5. Delay runs out, virgin pump starts
6. Box level sensor stop
7. Total lance travel length
8. Box proximity switch stop

Section 4
Setup

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Feed Center Function Settings

The feed center functions are controlled by a PLC inside the feed center control panel, located on the side of the feed center. The following function values are programmed into the controller at the factory and can be adjusted as needed for the application.

Designator	Function	Description	Default
B01:T	Virgin Powder Transfer Delay	Sets the time to wait after the powder level falls below the level sensor before turning on the virgin transfer pump. The virgin pump and sieve must be on. This delay prevents frequent pump starts and stops (chattering).	40.00 seconds
B02:T	Low Powder Alarm Delay	Sets the time to wait after the powder level in the feed hopper falls below the level sensor before turning on the alarm buzzer. The virgin transfer pump must be on. If powder is detected before the timer runs out, the timer is canceled. The buzzer can be silenced by switching Gun Purge on momentarily.	3.00 minutes
B04:T	HDLV Pump Purge Pulse Cycle Rate	Sets the on/off cycle rate for the reclaim and virgin HDLV transfer pump purge cycle. The purge cycle is active while the pump purge duration timer is running.	0.25 seconds
B05:T	HDLV Pump Purge Duration	Sets the duration for the reclaim and virgin HDLV transfer pump purge cycle. The purge cycle stops when the duration timer runs out.	30.00 seconds
B06:T-TH	Gun Purge Pulse “ON” Duration	Sets the pulse duration of the internal gun purge during the gun purge cycle. The cycle is active while the gun purge duration timer is running.	0.25 seconds
B06: T-TL	Gun Purge Pulse “OFF” Duration	Sets the duration of the delay between internal gun purge pulses during the gun purge cycle. The cycle is active while the gun purge duration timer is running.	0.25 seconds
B07:T	Gun Purge Duration Per Bank	Sets the duration for the purge cycle for each purge bank. The purge cycle stops when the duration timer runs out.	10.00 seconds
B14:C	Gun Purge Bank Quantity	Configures the gun purge bank quantity per system. The maximum number of gun purge banks is three.	2

Changing Function Values

Swing aside the pump panels on the left side of the feed center to access the control panel. Open the control panel door to access the PLC.

NOTE: These instructions are also reproduced on a label on the inside of the control panel door.

Figure 4-10 Feed Center PLC Interface

1. Press the **ESC** and **OK** keys simultaneously.
2. Press the **DOWN** (▼) key until the display pointer is on **SET PARAM**.
3. Press the **OK** key. The display will show **B0x:T** and the register preset value.
4. Press the **UP** (▲) key or **DOWN** (▼) key to select the register preset value to change.
5. Press the **OK** key. The display will highlight the first digit of the preset value.
6. Press the **LEFT** (◀) or **RIGHT** (▶) key until the digit to change is highlighted.
7. Press the **UP** (▲) key or **DOWN** (▼) key to change the digit value.
8. After each digit is changed to the desired value, press the **OK** key.
9. To change another value, go back to step 4. To exit, press the **ESC** key twice to return to the **RUN** display.

Level Sensor Programming

The level sensor probe tells the feed center PLC what the powder level is in the powder source. Follow these procedures to program the level sensor probe to recognize the level of powder in the feed source.

There are two different kinds of sensor probes, identified by the number of programming buttons on the probe.

Turn on the afterfilter exhaust fan and thoroughly fluidize the powder in the hopper or box before you program the level sensor probe.

One Button Level Sensor Probe Programming

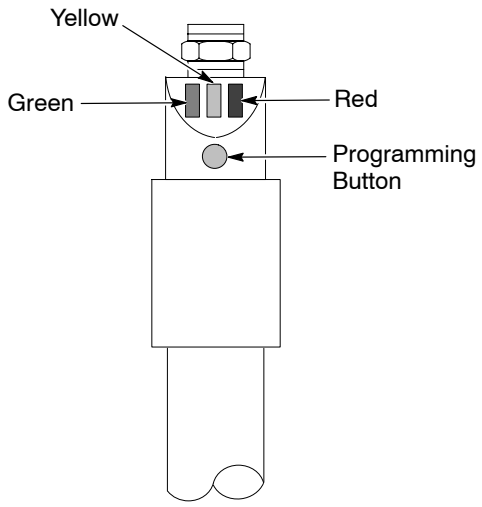


Figure 4-11 Programming the One Button Level Sensor Probe

LED Functions

LED Color	Status	Meaning
Green	Lit continuously	Ready for operation (power is on)
Yellow	Lit continuously	Output has switched (powder is detected; full condition)
Yellow and Red	Flashing quickly	Short circuit of the switching output
Red	Lit temporarily	Normal function check; level sensor probe is approaching the full state
	Lit continuously	Level sensor probe is dirty or out of adjustment.

Empty (no powder) Programming

NOTE: Programming the level sensor for Empty overwrites the values set for Full. If you program the level sensor for Empty, be sure to also program it for Full.

1. Lower the lance assembly until the powder covers at least 25 mm (1 in.) of the level sensor probe.
2. Raise the lance assembly so that the bottom of the level sensor probe is at least 25 mm (1 in.) away from the surface of the powder.
3. See Figure 4-11. Press the programming button until the green LED flashes slowly, then release it. When the green LED stops flashing and the yellow LED turns off, the level sensor is programmed for Empty.

   NOTE: The green LED will flash slowly for 5 seconds, then start flashing quickly. If you are still pressing the programming button when the green LED starts to flash quickly, you will be programming the level sensor for Full instead of Empty. Repeat the procedure from the beginning to program the level sensor for Empty, releasing the button while the green LED is flashing slowly.

Full Programming

NOTE: You can program the level sensor for Full as often as desired without overwriting the Empty value.

1. Lower the lance assembly until the powder covers at least 25 mm (1 in.) of the level sensor probe.
2. See Figure 4-11. Press the programming button until the green LED flashes quickly, then release the button.

   The green LED flashes slowly at first, then after five seconds it flashes quickly. When both the green and yellow LEDs are lit continuously, the full adjustment is complete.

Locking and Unlocking the Level Sensor

The level sensor can be locked to protect it from unauthorized adjustment.

NOTE: The level sensor is shipped unlocked.

Task	Procedure
Locking	Press the programming button for 10 seconds. The green LED will flash slowly for five seconds, then it will flash quickly. When the green LED turns off, the level sensor probe is locked. When the green LED turns back on continuously, the level sensor probe is ready for operation.
Unlocking	Press the programming button for 10 seconds. After 10 seconds, all LEDs turn off, indicating that the level sensor probe is unlocked.

Operational Faults (Red LED Flashing)

If either Empty or Full programming cannot be completed, the red LED flashes quickly.

Task	Procedure
Clearing a Fault	Clear the fault by either: • pressing the programming button once, or • cycling feed center power.
Correcting Faults	Check for and correct any of these possible causes for the fault: • The difference between Empty and Full is not great enough. Reprogram the level sensor. • Empty programming done while the probe was in the powder, or Full programming done while the probe was out of the powder. • During Empty programming, the distance between the probe and the powder was too short.

Two Button Level Sensor Probe Programming

When you program the level sensor probe, the powder feed center exhaust fan must be on and the powder in the hopper must be thoroughly fluidized.

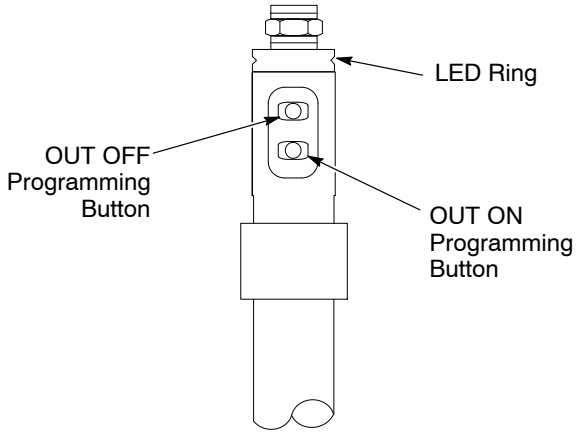


Figure 4-12 Programming the Two Button Level Sensor Probe

LED Functions

LED Color	Status	Means
Green	On	Material not detected
Yellow	On	Material detected

Empty (No Powder) Programming

1. Lower the lance assembly until the powder covers at least 25 mm (1 in.) of the level sensor probe.
2. Raise the lance assembly so that the bottom of the level sensor probe is at least 25 mm (1 in.) away from the surface of the powder.
3. See Figure 4-12. Press the OUT OFF programming button until the LED ring slowly flashes yellow.
4. Release the button and the yellow light will go off. Empty programming is complete.

Full Programming

1. Lower the lance assembly until the powder covers at least 25 mm (1 in.) of the level sensor probe.
2. See Figure 4-12. Press the OUT ON programming button until the LED ring switches from flashing slowly to flashing quickly.
3. Release the button and the LED ring lights yellow continuously. Full programming is complete.

Locking and Unlocking the Level Sensor

The level sensor can be locked to protect it from unauthorized adjustment.

NOTE: The level sensor is shipped unlocked.

Task	Procedure
Locking	Simultaneously press the two programming buttons for 10 seconds in the operating mode. When the LED ring light changes its status for a brief moment, release the buttons. The level sensor is now locked.
Unlocking	Simultaneously press the two programming buttons for 10 seconds in the operating mode. When the LED ring light changes its status for a brief moment, release the buttons. The level sensor is now unlocked.

Operational Faults

If the sensor deviates from normal operation, check for and correct any of these possible causes:

- The difference between Empty and Full is not great enough. Reprogram the level sensor.
- Empty programming was done while the probe was in the powder, or Full programming was done while the probe was out of the powder.
- During Empty programming, the distance between the probe and the powder was too short.

Air Pressure Settings

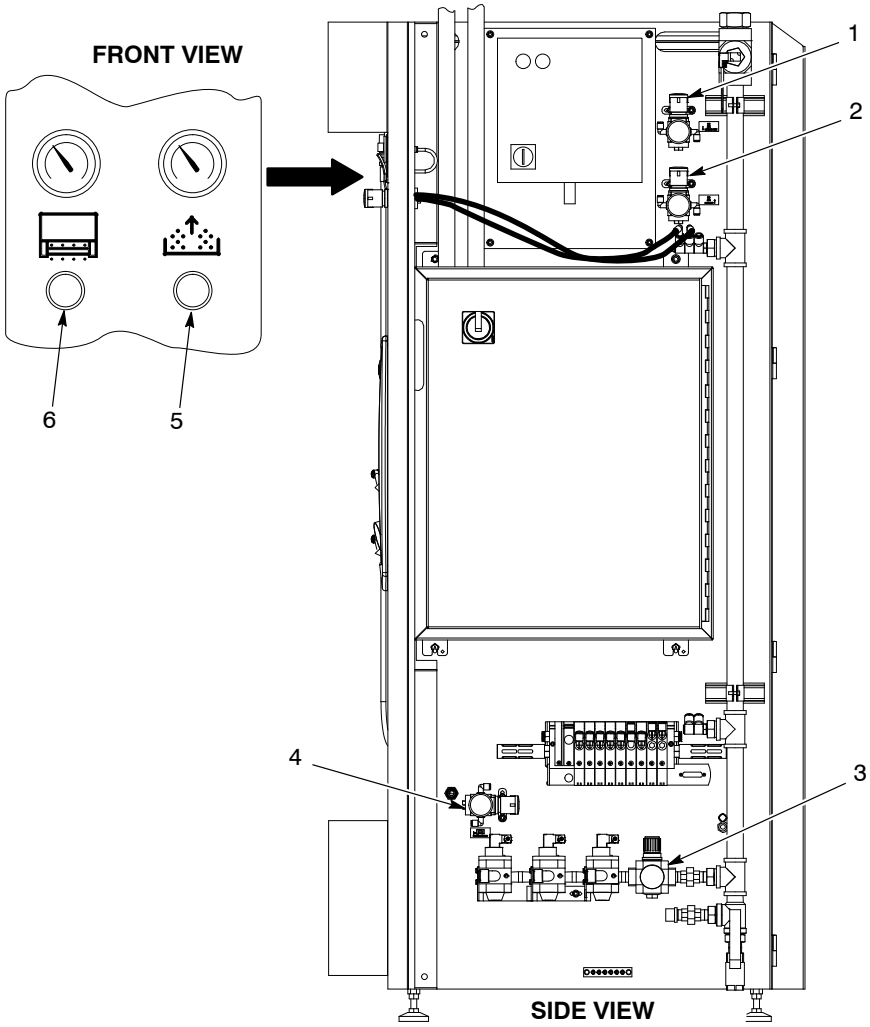


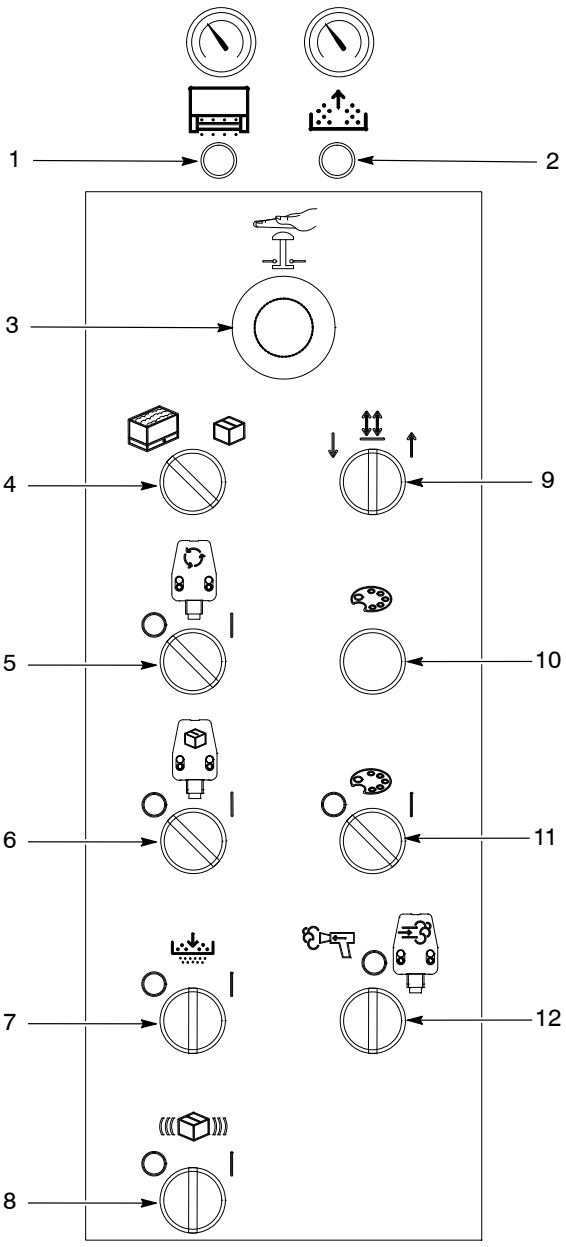
Figure 4-13 Pneumatic Controls (door removed)

Item	Function	Recommended Pressure
1	Lift Cylinder Down	3.4 bar (50 psi)
2	Lift Cylinder Up	1 Lance: 4.1 bar (60 psi) 2 Lances: 4.8 bar (70 psi) 3 Lances: 5.5 bar (80 psi)
–	Lift Cylinder Flow Control Valves	6 seconds full travel both directions
3	Purge Air	5.5 bar (80 psi)
4	Lance Purge Clamp	3.4–4.1 bar (50–60 psi)
–	Clamp Cylinder Flow Control Valves	3 seconds full travel both directions
5	Feed Hopper Fluidizing	0.3–0.7 bar (5–10 psi) (see Note)
6	Lance Fluidizing	0.3–0.7 bar (5–10 psi) (see Note)
NOTE: Adjust fluidizing air as needed. Powder should be gently boiling, without geysering.		

Section 5
Operation

Controls

Table 5-1 Feed Center Controls

Control	Feed Center Control Panel
1. Lance Fluidizing Air Pressure 2. Feed Hopper Fluidizing Air Pressure 3. Emergency Stop 4. Powder Source Switch Left: Hopper Right: Box 5. Reclaim Powder Pump Switch Left: Off Right: On 6. Virgin Powder Pump Switch Left: Off Right: On 7. Sieve Switch Left: Off Right: On 8. Vibratory Table Switch Left: Off Right: On 9. Lance Control Switch Left: Down Center: Neutral (stop) Right: Up 10. Color Change Indicator Light (Green) Off: Disable Blinking: In cycle On: Complete 11. Color Change Enable Switch Left: Off Right: On 12. Purge Control Switch Left: Internal Gun Purge Center: Off Right: Pump Purge	

Feed Center Operation

Refer to Table 5-1 for the feed center operator controls, and *Section 4, Setup*, for the PLC function settings.

Sieve Operation

Powder is supplied to the feed center by HDLV reclaim and virgin powder transfer pumps. The powder is screened before flowing into the feed hopper. The sieve is turned on and off with the Sieve Control selector switch.

When the sieve is turned off, the reclaim and virgin powder transfer pumps are disabled.

Reclaim and Virgin Pump Selector Switch Operation

The operation of the Reclaim and Virgin powder transfer pumps are controlled by separate selector switches. Turning the switches to ON (**I**) enables the transfer pumps.

If the reclaim or virgin transfer pump selector switches are in the ON position when the feed center is turned on, or after a color change cycle is completed, then the pumps will be forced off. To re-enable the pumps you must toggle the selector switches off then on.

The transfer pumps are disabled when the sieve is turned off.

Reclaim Transfer Pump Operation

The reclaim pump operates continuously as long as it is turned on and the sieve is on.

Virgin Transfer Pump Operation

The virgin transfer pump operation is controlled by the level sensor. If the powder level in the feed hopper falls below the level sensor a delay timer (function B01:T) is started. When the delay timer runs out the virgin powder transfer pump is started. The pump runs until the powder in the feed hopper reaches the level sensor, then turns off.

If level sensor detect a low level of powder for too long, (time determined by the low powder alarm delay setting, function B02:T), a buzzer is turned on to warn the operator that the feed hopper powder supply has not been replenished.

The buzzer can be silenced by:

- filling the feed hopper until the powder contacts the level sensor.
- momentarily turning on gun purge.
- turning the virgin transfer pump off.

Transfer Pump Manual Purging

If a transfer pump becomes clogged during operation, purging the pump may clear it.

Turn the Purge Control selector switch to the Pump Purge position while the pump is on. Purge air is applied to the pump as long as the switch is in the purge position.

Powder Level Sensor Operation

Hopper Operation

When the switch is set to Hopper, the lance is moved down into the hopper until the Hopper Proximity Sensor on the lift cylinder is activated and stops the lance above the fluidizing plate. When the level of powder falls below the level sensor, a delay timer (field-adjustable) is started. When the delay timer runs out, the virgin transfer pump is turned on to refill the hopper. When the level sensor detects powder, the virgin transfer pump is turned off. If the level sensor detects no powder for greater than 3 minutes (field-adjustable), the low powder alarm is turned on. Refer to *Section 4, Settings*, for instructions on setting the timers.

Box Operation

When the Powder Source selector switch is set to Box, the system lowers the lance assembly into the box until the level sensor “sees” powder. As the powder is used, the level sensor automatically lowers the lance into the box until the Box Proximity Sensor on the lift cylinder is activated and stops the lance. If the level sensor detects no powder for greater than 3 minutes (field-adjustable), the low powder alarm is turned on.

Silencing the Low Powder Alarm

Turn the Purge Selector switch to Gun Purge momentarily to silence the low powder alarm buzzer.

Startup

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Make sure all settings in the Setup section of this manual have been completed before starting up the system for the first time.

1. Turn on the afterfilter exhaust fan.
2. Turn on power and air to the feed center, if not already on.

Startup *(contd)*

3. Make sure compressed air is being supplied to the feed center at above 5.5 bar (80 psi) and that air pressures are adjusted properly. See Figure 2-6 for regulator locations.

Table 5-2 Feed Center Air Pressure Settings

Air Pressure	Typical Setting
Lance Fluidizing (Typical)	0.3 bar (5 psi)
Feed Hopper Fluidizing (Typical)	0.3 bar (5 psi)
Purge	5.5 bar (80 psi)
Purge Clamp	3.4–4.1 bar (50–60 psi)
Lance Cylinder: Up, 1 Lance Up, 2 Lances Up, 3 Lances Down	 4.1 bar (60 psi) 4.8 bar (70 psi) 5.5 bar (80 psi) 3.4 bar (50 psi)

4. Move a feed hopper or box into the feed center, and position it below the lance assembly, adjusting the table stops as necessary. Select Hopper or Box with the Powder Source Selector switch on the control panel.
5. If using a feed hopper:
   a. Connect the fluidizing tubing to the fitting on the feed hopper fluidizing pan.
   b. Fill the hopper 2/3 full of powder. Do not overfill; the powder expands when fluidizing air is turned on.
   c. Gradually increase the feed hopper fluidizing air pressure until the powder is gently boiling.
   d. Lower the lance assembly into the hopper with the Lance Control switch. The lance stops automatically above the fluidizing plate.
6. If using a powder box:
   a. Turn on the vibratory table.
   b. Lower the lance assembly into the box with the Lance Control Selector switch (Left for down) until the fluidizing bars and end of the level sensor is covered by powder.
   c. Gradually increase the lance fluidizing air pressure until the powder is gently boiling.
7. Make sure the sieve discharge pan is positioned so the discharge tube directs the screened powder into the feed hopper or box. Loosen the deck clamps to rotate the pan, then re-clamp the deck.
8. If used, make sure the Reclaim and Virgin powder transfer hoses are connected to the tubing stubs on the sieve deck. Turn on the Reclaim transfer pump and enable the Virgin transfer pump.
9. Turn on the sieve.
10. Turn on the spray guns and start spraying powder. Make sure everything is working correctly before starting production.

Color Change Operation

Refer to Table 5-1 for the feed center operator controls and Table 5-3 for the color change procedure. A color change sequence is started by turning the Color Change Enable selector to ON. The sequence is finished or aborted by turning the selector to OFF.

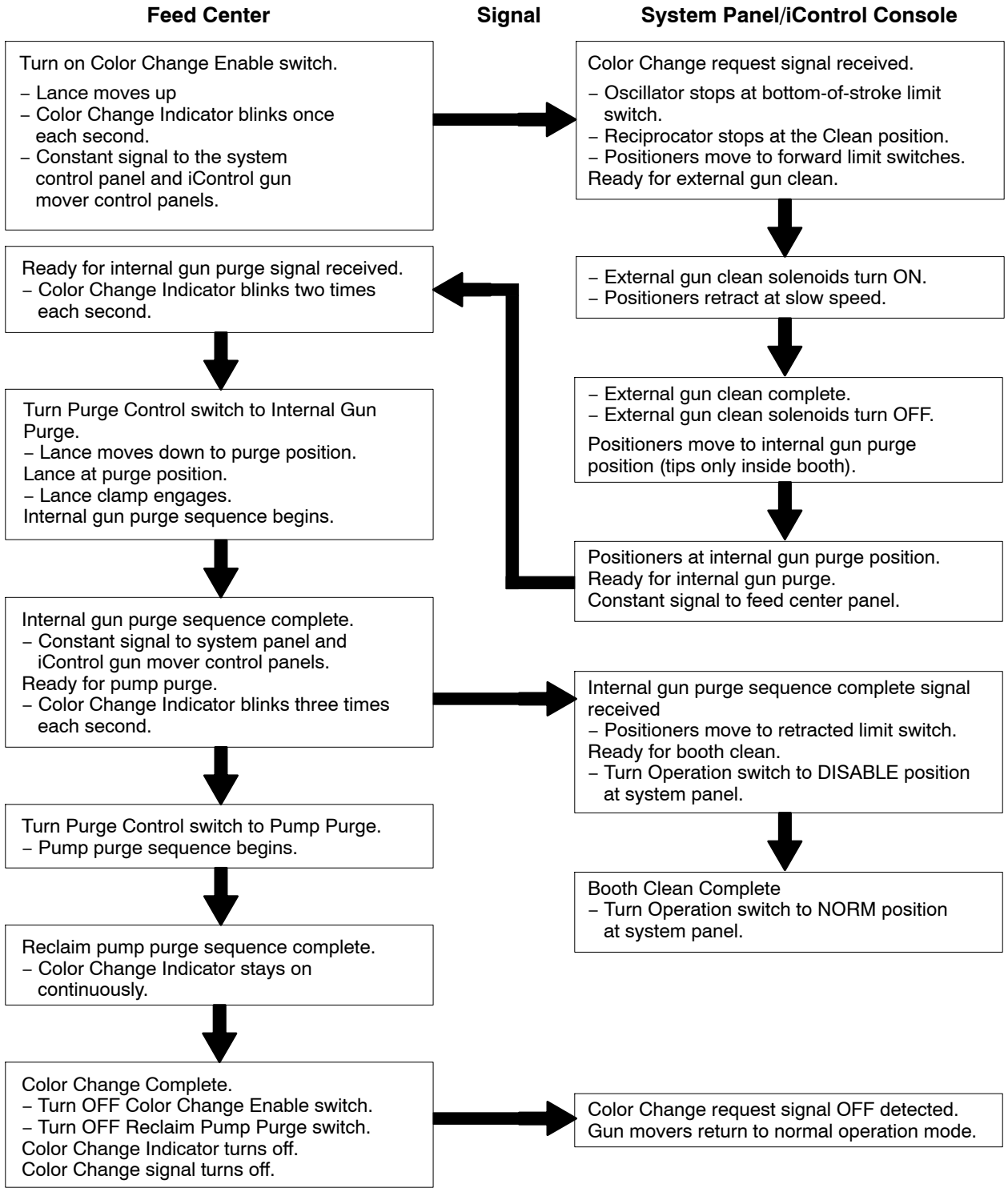


Figure 5-14 Color Change Sequence

Color Change Procedure

Table 5-3 Color Change Procedure

Operator A – Booth	Operator B – Feed Center
1. Close the booth doors. 2. Blow off: • Door seams at the entrance end of the booth • Operator doors • Gun slots Wait for the internal gun purge sequence to complete. The **color change indicator** will blink three times every second when the sequence is complete.	1. Turn OFF the Sieve. 2. Turn OFF the Virgin Powder Pump (optional equipment). 3. Turn OFF the Reclaim Powder Pump. 4. Disconnect the reclaim and virgin powder feed hoses from the sieve deck and place the ends of the hoses into the hose support on the feed center wall. 5. Unclamp the sieve lid and turn the sieve pan so that the chute dumps to the rear of the enclosure. 6. Turn ON the Sieve. 7. Turn ON the Reclaim Powder Pump. 8. Turn ON the Color Change Enable switch. a. The lance assembly moves up. b. The gun blow off sequence begins. c. The **Color Change Indicator** blinks one time every second. 9. Turn OFF the Vibratory Table switch (optional equipment). 10. Remove the powder source from the feed center. • If using a fluidized hopper, first turn off the fluidizing air and disconnect the air tubing from the hopper fluidizing pan. 11. Blow off the lance assembly. 12. When the gun blow off sequence is complete the **Color Change Indicator** will blink two times every second. 13. Turn the Purge Control switch to Internal Gun Purge. a. The lance assembly moves down to the purge position. b. The purge clamp engages the lances. c. The internal gun purge sequence begins. 14. When the internal gun purge sequence is complete the **Color Change Indicator** will blink three times every second.
Continued...	

Operator A – Booth	Operator B – Feed Center
When the Internal Gun Purge sequence is complete: 1. Blow off the door sills at the entry end of the booth, then enter the booth and blow off the ceiling and walls. 2. Blow off the AeroDecks (if used). 3. Blow out the inlet duct and the vertical duct. 4. Set the AeroDecks in operating position and exit the booth. 5. Turn ON the Virgin Powder Pump. • Make sure all transfer hoses are parked in the hose support. 6. Turn the Purge Control Switch to Pump Purge. The pump purge sequence begins. 7. Open the transfer pan at the bottom of the cyclones and blow out all remaining powder in the pan. **NOTE:** If the pump purge sequence completes before the pan is clean, press and hold the manual purge button on the reclaim pump panel to finish cleaning the pan. 8. When the pump purge sequence is complete the **Color Change Indicator** lights continuously.	1. Turn OFF the Sieve switch. 2. Unclamp and disassemble the sieve. 3. Blow off the deck, screen, and pan. 4. Assemble the sieve with the pan chute toward the lances. When installing the sieve screen, make sure the ground clip is in place around the screen gasket so it makes metal to metal contact with the screen, pan, and deck.
When the Pump Purge sequence is complete: 1. Open the cyclone access doors and blow off the interior with the short wand, then with the long wand. 2. Close and latch the cyclone access doors. 3. Close and latch the transfer pan.	When the Pump Purge sequence is complete, blow off the lance assembly, vibratory table, purge manifold assembly, and feed center interior until clean.

Continued...

Operator A – Booth	Operator B – Feed Center
	When the booth and feed center are clean: 1. Turn OFF the Color Change switch. The indicator turns off. 2. Turn OFF the Purge Control switch. 3. Connect the transfer hoses to the sieve deck. 4. Install a new powder feed source and connect the fluidizing air tubing, if the source is a fluidized hopper. 5. Select a Powder Source (Box or Hopper). 6. Turn ON the: • Reclaim Powder Pump. • Virgin Powder Pump (if used). • Sieve. • Vibratory Table (if used).

Shutdown

1. Move the system offline, if applicable.
2. Clean the system by performing the color change process, but do not install a new powder source or turn the pumps, sieve, or vibratory table.
3. If you will be shutting down the powder feed center for maintenance, repair, or an extended period of time, perform these steps:
   d. Press the SYSTEM STOP button on the system control panel.
   e. Turn the electrical disconnect switch on the powder feed center control panel to the off position.

Section 6
Maintenance

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

NOTE: Maintenance procedures given here are for the feed center only. Refer to your system component manuals for maintenance procedures for all other system equipment.

Daily Maintenance

NOTE: You may need to perform these procedures more or less often, depending on your application requirements.

Table 6-1 Daily Maintenance Procedures

Component	Maintenance Procedure
Sieve	Disassemble and clean the sieve pan and screen. Inspect the sieve screen and replace it if powder is fused to it or it is damaged. Make sure the ground clip is installed around the screen gasket so it grounds the screen to the pan and deck.
Purge Manifold Assembly	Raise the lance assembly and blow off the purge manifolds, latches, yokes, and air cylinder. Make sure all quad ring seals are in place on the purge manifolds.
Lance Assemblies	Blow off the lance assemblies and check all powder hose and air tubing connections.
In-Line Pumps	Disassemble the pumps and blow off the parts with low-pressure compressed air. Replace any worn parts.
Cables, Tubing, and Feed Hoses	Check all external cables, powder hoses, and air tubing for damage. Repair or replace as necessary.
HDLV Transfer Pumps	Purge the pumps. Inspect the pinch valve body for signs of powder leakage. If powder is present in the pinch valve section, replace the pinch valves. Refer to the Prodigy HDLV High-Capacity pump manual for repair procedures.
Powder Supply	Check the powder supply level regularly and add powder as necessary.
Compressed Air Supply	Check the compressed air dryers and filters. Drain filters if needed. Perform maintenance as necessary.
Enclosure	Clean the interior and exterior of the feed center. Check all equipment ground connections.

Periodic Maintenance

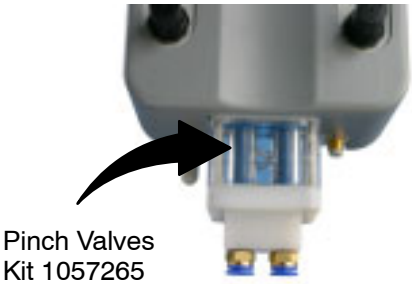
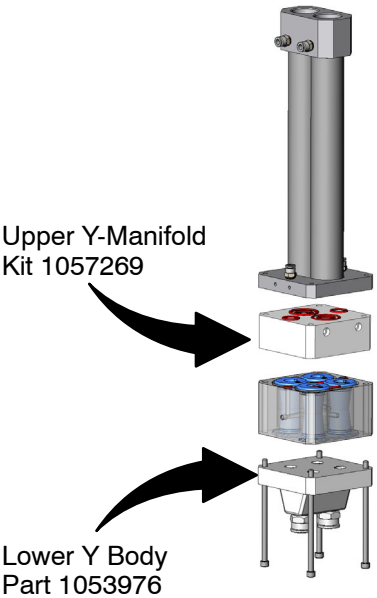
NOTE: You may need to perform these procedures more or less often, depending on your application requirements.

Table 6-2 Periodic Maintenance Procedures

Component	Maintenance Procedure
Air Flow	Take regular air flow readings at the face of the feed center. A properly functioning powder feed center should provide a face velocity of around 2.8 m^3/min. (100 ft^3/min). A lower reading indicates clogged ducts or filters, or a malfunctioning fan.
Compressed Air System	Open the drop leg and use a clean, white cloth to check for contaminants. Correct any problems immediately. Drain the air filters and change the elements as necessary.
Electrical System	Tighten all electrical connections and inspect for loose or broken wires. Check the electrical system for electrical safety every 12 months. The system must comply with all local, state, and federal codes.
System Grounds	Check all equipment grounds. Electrical equipment must be grounded according to code. For maximum transfer efficiency and safety, electrostatic equipment must be grounded to provide a complete circuit from the spray guns through the workplace hangers, conveyors, and booth back to the gun controllers. Refer to *Grounding* in the *Safety* section of this manual and to publication number TCTT-06-3881 on the Nordson emanuals web site (http://emanuals.nordson.com/finishing) for more information on powder coating system grounding.
Air Tubing	Pressurize the system and listen for air leaks. Replace or repair leaking tubing or fittings.

HDLV Transfer Pump and Transfer Pan Maintenance

For more detailed maintenance and repair information, refer to the Prodigy HDLV High-Capacity Pump manual.

<table>
<tr><th>Component</th><th colspan="2">Maintenance Procedure</th></tr>
<tr><td rowspan="2">HDLV Reclaim and Virgin Transfer Pumps</td><td>Daily
Inspect the pinch valve body for signs of powder leakage. If you see powder in the pinch valve body or stress cracks in the pinch valves, replace the pinch valves.</td><td> 
Pinch Valves
Kit 1057265</td></tr>
<tr><td>Every Six Months or
Each Time You Disassemble the Pump
Disassemble the pump assembly and inspect the lower Y body and upper Y-manifold for signs of wear or impact fusion. Clean these parts in an ultrasonic cleaner if necessary.
NOTE: To reduce downtime, keep a spare upper Y-manifold and lower Y body in stock to install while you are cleaning the other set.</td><td> 
Upper Y-Manifold
Kit 1057269
Lower Y Body
Part 1053976</td></tr>
<tr><td>Transfer Pan (Cyclone)</td><td colspan="2">Periodically disassemble and clean the transfer pan. Refer to Transfer Pan Cleaning for instructions.
NOTE: Required cleaning frequency depends on several factors, including powder type used, color change frequency, and experience.
Periodically blow off the fluidizing plate and inspect it for signs of air contamination. If the plate is discolored and appears to be contaminated, replace it. Refer to Transfer Pan Cleaning for replacement instructions. Check your air supply and correct any contamination problems.</td></tr>
</table>

Transfer Pan Cleaning

Disassembly

1. See Figure 6-1. Disconnect the fluidizing air tubing (12).
2. Disconnect the 16-mm powder tubing (6) from the bulkhead union (7). Disconnect the bulkhead union from the discharge tube (5).
3. Remove the plenum (3) from the transfer pan (11) by removing the eight bolts (10) and nuts (9).
4. Remove the jam nut (8) and sealing washer (4) from the discharge tube. Use two wrenches: one on the flats of the discharge tube and the other on the jam nut.
5. Lift the fluidizing plate (1) with gasket (2) and discharge tube out of the plenum. Unscrew the discharge tube from the fluidizing plate.
6. Remove the gasket from the fluidizing plate and inspect both parts. If either part is damaged, replace it.

   NOTE: If you replace the fluidizing plate, replace the gasket, too.

Cleaning

CAUTION: Remove the plenum and fluidizing plate before cleaning the transfer pan. The solvent used to clean the transfer pan will damage the fluidizing plate and gasket.

Clean any impact-fused powder from the inside of the transfer pan with clean cloths and solvent.

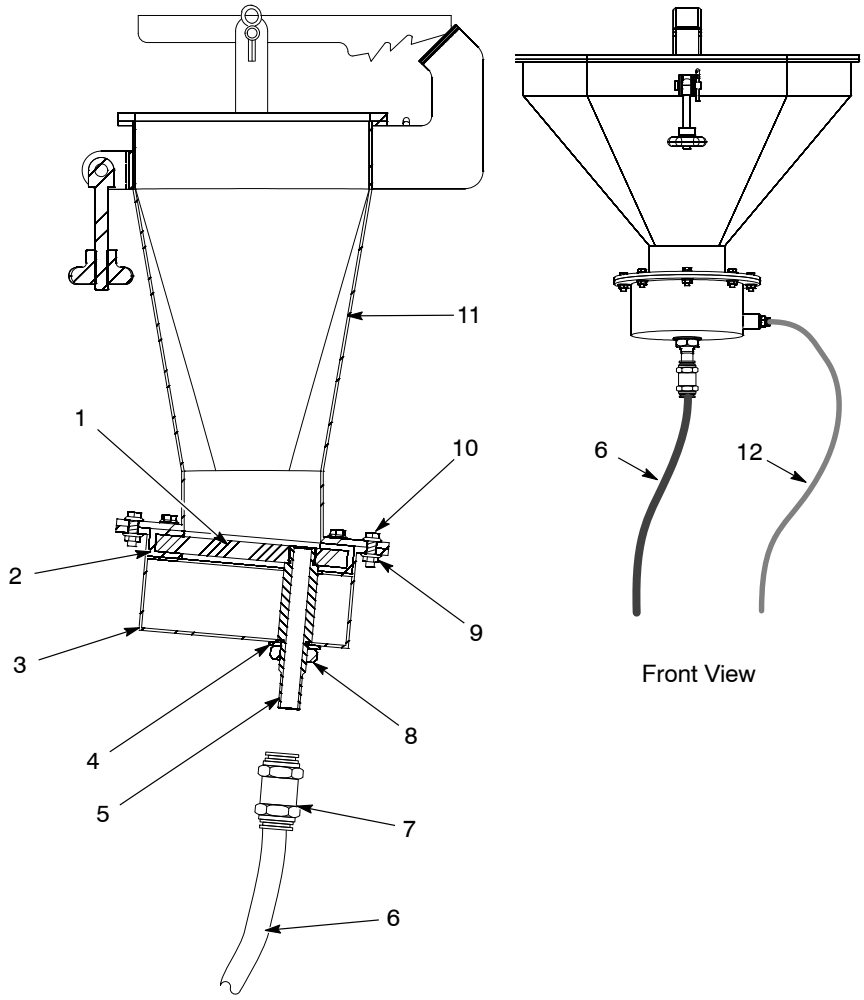
Assembly

CAUTION: Install the discharge tube into the threaded side of the fluidizing plate. (The threaded side is marked with a black dot.) Installing the discharge tube incorrectly may damage the fluidizing plate or discharge tube and cause leakage around the fluidizing plate.

1. Install the discharge tube (5) into the threaded side of the fluidizing plate (1) until the discharge tube is either
   - flush with the opposite side of the fluidizing plate, or
   - bottoms out against the fluid plate.

   Do not over tighten the discharge tube.
2. Install the fluidizing plate, gasket (2), and discharge tube assembly into the plenum (3).
3. Install the sealing washer (4) and jam nut (8) onto the end of the discharge tube. Tighten the jam nut snugly using two wrenches: one on the flats of the discharge tube and the other on the jam nut. Do not over tighten the jam nut.

4. Install the plenum assembly onto the bottom of the transfer pan (11) using the eight bolts (10) and nuts (9).
5. Install the bulkhead union (7) onto the discharge tube and connect the 16-mm powder tubing to the bulkhead union.
6. Connect the fluidizing air tubing (12).



Side View – Cutaway

Front View

Figure 6-1 Cyclone Transfer Pan

1. Fluidizing plate
2. Gasket
3. Plenum
4. Sealing washer
5. Discharge tube
6. 16-mm transfer line
7. Bulkhead union
8. Jam nut
9. Nuts
10. Bolts
11. Transfer pan
12. Fluidizing air tubing

Section 7
Troubleshooting

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

If you cannot solve your problem with the information in this manual or related equipment manuals, contact the Nordson ICS Customer Support Center at (800) 433−9319 or your local Nordson representative.

Refer also to the wiring diagrams and schematics at the end of this manual.

Troubleshooting Chart

Problem	Possible Cause	Corrective Action
1. Powder not contained within feed center enclosure, afterfilter fan not running	E-Stop button pressed	Reset the E-Stop.
	Final filters clogged	Check the final filters. The fan is shut off automatically if the pressure across the filters reaches 3 in. w.c. If the filters are clogged check the cartridge filter media and gaskets for leaks. Replace damaged cartridge filters. Replace the final filters.
	Fan start/stop button or wiring defective	Check the fan motor control circuits (main system electrical panel).
	Fan motor overload tripped	Overload occurs when the motor operates at a greater amperage than designed for. Make sure the overload is set to the proper limit. Make sure nothing is stopping the motor and fan from turning. Check the fuses. Failure of one of three fuses in a 3-phase motor circuit can cause the overload to trip. Check the motor and electrical connections. Reset the overload.
	Fan motor fuse failure	Check the motor and electrical circuits. Replace the fuses.
	Fan motor failure	Replace the motor.

Continued...

Problem	Possible Cause	Corrective Action
2. Powder escaping from enclosure openings	Afterfilter cartridge filters clogged; pulsing not cleaning filters	Pulse the cartridge filters to blow off powder. Check the pulse air pressure. Check the cartridge filter pulse sequence. If the Off duration is too short the pulse manifold may not build up enough pressure to blow off the cartridge filters. If the On duration is too short not enough air is released to blow off the filters. If the On duration is too long the pulse manifold may not be able to build up enough air pressure. Replace the cartridge filters if pulsing does not correct the problem.
	Pulse pressure too low	Increase the pulse pressure to the recommended level.
	Pulse valve failed	Replace the pulse valve.
	Cartridge filters leaking	Check the cartridge filter gaskets and media for damage. Tighten the mounting nut to compress the gaskets. Replace filters as necessary.
	Cross drafts interfering with exhaust fan draw	Check for cross drafts at the enclosure opening. Eliminate or divert drafts.
	Fan rotation backward	Reverse the motor rotation.
	Access panels not sealed	Tighten all access panels. Check and replace the panel gaskets as necessary.
3. No feed hopper fluidizing air	Afterfilter fan not running, interlock valve closed	Start the afterfilter exhaust fan. Check feed center E-stop. Check valve connections.
	Fan interlock circuit or solenoid valve circuit defective	Check the fan interlock wiring between the feed center panel and main system panel. Check the wiring from the feed center panel to the solenoid valve assembly on top of the feed center air drop.
	Fluidizing air regulator defective	Check the fluidizing air regulator.

Continued...

Problem	Possible Cause	Corrective Action
4. Powder in feed hopper not fluidizing, or clouds of powder erupting from surface	Fluidizing air pressure too low or too high	Increase the fluidizing air pressure until the powder is gently boiling. Decrease the pressure if clouds of powder are erupting from the surface.
	Moist or oil-contaminated powder	Check the air supply for water or oil. Check the filters, separators, and air dryer. Replace the powder in the feed source if it is contaminated. Refer to the next possible cause.
	Fluidizing plate gasket leaking, or fluidizing plate plugged, cracked, or installed incorrectly	Check for air leaks around the fluidizing plate gasket. If leaks are found, replace the gasket. Inspect the fluidizing plate for stains, discoloration, polished surfaces, or cracks. Replace it if it is contaminated, plugged, or damaged. The plate should be installed with the smooth surface up (in contact with the powder).
	Incorrect ratio of reclaimed to virgin powder	Increase or decrease the transfer rate. The powder supply should be no more than three parts reclaim-to-one part virgin powder.
	Uneven distribution of powder in feed source	Check the powder and the fluidizing plate for contamination as previously described.
5. Powder in box not fluidizing, or clouds of powder erupting from surface	Lance fluidizing air pressure too low or too high	Increase the lance fluidizing air pressure until the powder is gently boiling. Decrease the pressure if clouds of powder are erupting from the surface.
	Moist or oil-contaminated powder	Check the air supply for water or oil. Check the filters, separators, and air dryer. Replace the box if the powder is contaminated. Refer to the next possible cause.
	Fluidizing bar assembly leaking or damaged	Raise the lance assembly and check the fluidizing bars.
	Vibratory table motor defective	Check the vibrator motor. Refer to Problem 6 for motor troubleshooting procedures.

Continued...

Problem	Possible Cause	Corrective Action
6. Sieve or Vibratory Table turned ON, but no vibration	E-Stop button pressed	Reset the E-Stop button.
	Afterfilter exhaust fan not running	Start the exhaust fan.
	Sieve switch or wiring defective	Check the switch and wiring. Replace the switch or repair the wiring as needed.
	Sieve motor overload	Overload occurs when motor operates at higher amperage than designed for. Make sure nothing is preventing motor vibration. Check the motor and electrical connections. Check the motor internal weights for proper adjustment. Make sure the overload protector is set to the proper limit. Reset the overload.
	Sieve motor failed	Replace the sieve motor.
7. Powder build up on sieve screen	Screen not cleaned frequently enough	Clean the sieve mesh at more frequent intervals. Upgrade to Vibrasonic sieve screen if necessary.
	Screen mesh size too small for powder being used	Use a sieve screen with a larger mesh size. Upgrade to Vibrasonic sieve screen if necessary.
8. Excessive sieve noise	Sieve deck or discharge pan not secure	Tighten the clamps securing the sieve deck.
	Knobs or clamps not tightened; isolators loose or damaged; screen gasket damaged	Make sure the clamps are tight. Check the isolators for looseness or damage. Tighten the isolator mounting screws. Check the screen gasket and replace it if damaged.
9. Contaminants in feed hopper powder	Sieve screen torn	Replace the screen.
	Sieve screen not thoroughly cleaned before installation	Remove and clean the sieve screen.

Continued...

Problem	Possible Cause	Corrective Action
10. Reclaim or Virgin transfer pump turned on, but pump does not run	E-Stop button pressed	Reset the E-Stop button.
	Afterfilter exhaust fan not running, or fan interlock circuit defective	Turn on the exhaust fan. Check the fan interlock wiring between the feed center panel and the main system panel.
	Sieve motor not running	Reclaim or Virgin pumps will not run unless the sieve is on. Turn on the sieve.
	Reclaim or Virgin switch or wiring is defective	Check the switch and wiring. Repair or replace as needed.
	Reclaim or Virgin circuits disabled	Circuits are disabled if the switches are in the On position when feed center power is turned on, or when the Color Change Stop button is pressed. To reset the circuits, turn the Reclaim or Virgin switch Off then On.
	No air supply to solenoid valve assembly, or solenoid valve not opening	Check the air supply to the solenoid valve assembly on the side of feed center. Check the solenoid valve and wiring. Replace the valve or repair the wiring as needed. Refer to Section 2 for the solenoid valve location.
	Problem with transfer pump controls or pump.	Check the pump and controls. Refer to High Capacity HDLV pump manual.
	Level sensor failed or wiring defective	Check level sensor and wiring. Repair or replace as needed.
11. Reclaim or Virgin transfer pump cannot be purged	Reclaim or Virgin pump not turned on	Turn the Reclaim or Virgin pump switch to the On position. Turn the Purge Control selector switch to the purge position. The purge cycle is controlled by the PLC in the electrical panel.
12. Reclaim or Virgin transfer pump turned off but continues to run	Solenoid valve in manual override	Check the solenoid valve assembly. Make sure the manual operator on the valve is not in override position.
	Solenoid valve failed open	Replace the valve.
13. Virgin transfer pump is turned on but pump not running	Level sensor on feed hopper is detecting powder in hopper	The pump will not turn on until the powder level falls below the level sensor and the delay timer runs out.
	Refer to Problem 10 for other causes	

Continued...

Problem	Possible Cause	Corrective Action
14. Virgin transfer pump does not stop automatically	No powder supply at bulk feed system	Check the virgin powder supply.
	Feed hopper level sensor not adjusted properly	Level sensor stops pump when it detects powder. Sensor indicating light should be yellow when powder is detected. Adjust the level sensor if it is not detecting powder. Refer to level sensor documentation.
	Level sensor failed or wiring defective	Check level sensor and wiring. Repair or replace as needed.
15. Reclaim and/or Virgin transfer pump purge cycle does not start when Purge Control selector switch turned to Pump Purge position	Reclaim and Virgin transfer pumps not turned on	Pumps must be on before purge can start. Turn on pump to be purged.
	Switch or wiring defective	No signal from switch to controller. Turning the switch to Pump Purge position should turn on signal. Check switch and wiring, repair or replace as needed.
	Purge solenoid valves or wiring defective	Check wiring from feed center control panel to solenoid valve assembly on top of feed center. Check solenoid valve operation. Check air supply to solenoid valve assembly. Repair or replace as needed.
	Purge air pilot valve or pilot air tubing defective	Check pilot air tubing. Make sure air signal is reaching pilot valve. Check pilot valve operation. Check air supply to pilot valve. Repair or replace as needed.
16. Feed center low powder level alarm buzzer on	Alarm buzzer delay timer has run out, level sensor not detecting powder	Alarm buzzer timer starts when the transfer pump turns on. If the timer runs out and the level sensor has still not detected powder then the alarm buzzer is turned on. The timer default is 3 minutes. To turn off the buzzer, turn the Purge Selector switch to Gun Purge momentarily.
	Problem with powder supply or Virgin transfer pump	Refer to Problems related to powder, sieve, or pump.

Continued...

Problem	Possible Cause	Corrective Action
17. Color change does not start when Color Change Enable switch turned on, light off	E-Stop button pressed	Reset E-Stop button.
	Afterfilter exhaust fan not running, or fan interlock circuit defective	Turn on exhaust fan. Check fan interlock wiring between feed center panel and main system panel.
	Color Change Enable switch or wiring defective	No signal from switch to controller. Check switch and wiring, repair or replace as needed.
	PLC not initiating color change sequence.	Check PLC operation. Contact your Nordson representative or technical support center for help.
18. Color change does not start with Color Change Enable switch turned on, light on	Parts still in booth	iControl system tracks parts through booth and will delay color change start until parts clear booth. Booth length is configurable through iControl Configuration. Refer to iControl Operator Interface manual for more information.
	iControl gun positioners not in manual or auto mode	Set the gun positioners to either manual or auto mode.
	iControl gun positioner #1 controller did not receive Color Change start signal from feed center	The feed center passes signals for color change to the gun positioner #1 electrical panel which then communicates with the iControl system. Check the wiring and connections between the feed center control panel and the gun positioner #1 panel.
	Reciprocator not in auto mode	Reciprocator must be in auto mode for color change cycle to start. Set the reciprocator to auto mode.

Continued...

Problem	Possible Cause	Corrective Action
19. Color change cycle started, gun positioner stopped at forward limit switch	Oscillator not at bottom of stroke (USA only)	Oscillator must be at bottom of stroke for spray guns to be in position for gun blowoff. Blowoff will not start until bottom of stroke sensor is on and remains on. Check oscillator position.
	USA ColorMax not selected on iControl gun positioner configuration screen	Check gun positioner configuration.
	Oscillator not stopped	Oscillator gets stop command from gun positioner #1 control panel. Check wiring and connections between gun positioner control panel and main system panel. USA only – Oscillator bottom of stroke sensor not sending signal to main system panel. Sensor detects rotating lever arm. Make sure sensor is positioned to detect arm and check wiring and connections to sensor.
	Reciprocator not at Park position	Reciprocator must be at Park position for spray guns to be in position for gun blowoff. Blowoff will not start until Park position is achieved. Check reciprocator position. Make sure Park position is configured within stroke range. Refer to iControl Operator Interface manual for reciprocator configuration settings.
20. Color change cycle started, blowoff air does not turn on	No air supply to solenoid valve or pilot valve, failed valve, or bad electrical connection	Solenoid valve (typically located in the main system panel) is activated by signal from the gun positioner control panel. Solenoid valve sends air signal to large pilot valve that provides air to the blowoff nozzles. Make sure main system panel air supply is on. Check solenoid valve output. If solenoid coil is energized but no air flows from valve, replace valve. Check air tubing to pilot valve. Check pilot valve operation. Check the wiring and connections between the gun positioner panel and main system panel.

Section 8
Repair

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Purge Manifold Assembly Repairs

Quad Ring Replacement

When replacing the purge manifold quad rings, make sure the lower portion of the ring is pressed into the pocket formed by the manifold block and the seal retainer plate. Use your fingernail or a tool to work the ring into the pocket. Be careful not to damage the rings when installing them.

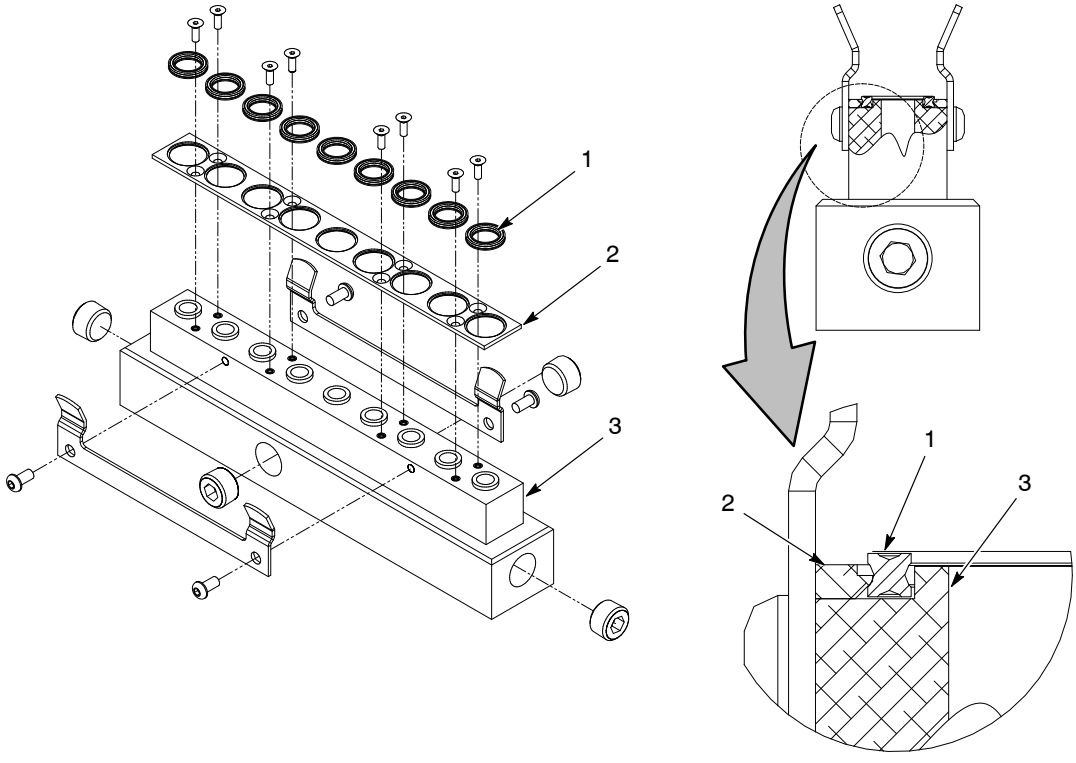


Figure 8-2 Purge Manifold Quad Ring Replacement

1. Quad ring
2. Seal retainer plate
3. Manifold block

Latch Pawl Replacement

See Figure 8-1. To remove a latch pawl from a latch:

1. Raise the lance assembly all the way up.
2. Press the E-stop button on the feed center control panel to shut off the power and air. This will relieve the air pressure and mechanically lock the lift cylinder in position.
3. Remove the hopper/box table from the enclosure:
   a. Remove the nuts (2) from the isolation mounts (1).
   b. If using a vibrator motor, loosen the motor cable cord grip and pull the cable slack through the grip.
   c. Lift the table up off the mounts and move it enough to gain access to the purge manifold assembly.

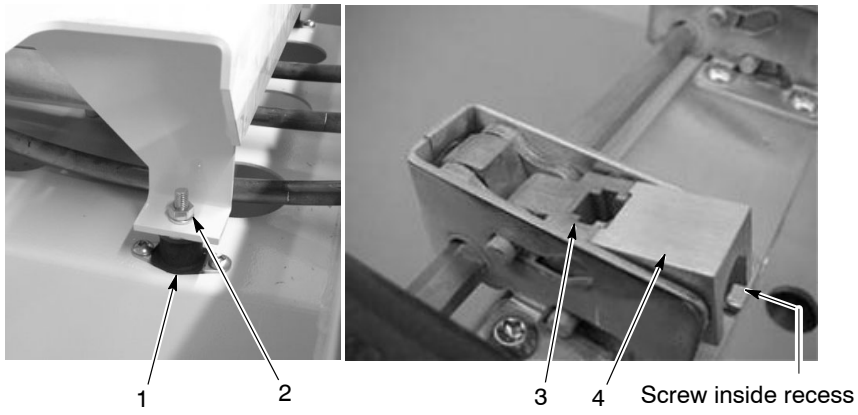


Figure 8-1 Pawl Replacement

1. Isolation mount
2. Nut
3. Pawl mount
4. Pawl

4. Remove the Philips-head screw securing the pawl (4) to the pawl mount (3).
5. Position the new pawl on the latch with top surface of the pawl flush with the top surface of the latch lever.
6. Secure the pawl to the latch with the screw. Tighten the screw securely.
7. Re-install the hopper/box table on the isolation mounts, and then, if used, pull the vibrator motor cable back into the control cabinet. Leave enough slack in the cable to avoid any strain on it, then tighten the cord grip.

Latch Replacement

Latch Removal

To remove a latch from the purge manifold:

1. Perform steps 1–3 in *Latch Pawl Replacement*.
2. Disconnect the air lines from the purge manifold clamping cylinder.
3. See Figure 8-2. Grasp the cylinder clevis and pull the cylinder shaft out to the fully extended position to extend the latches and provide access to the latch set screws (3).

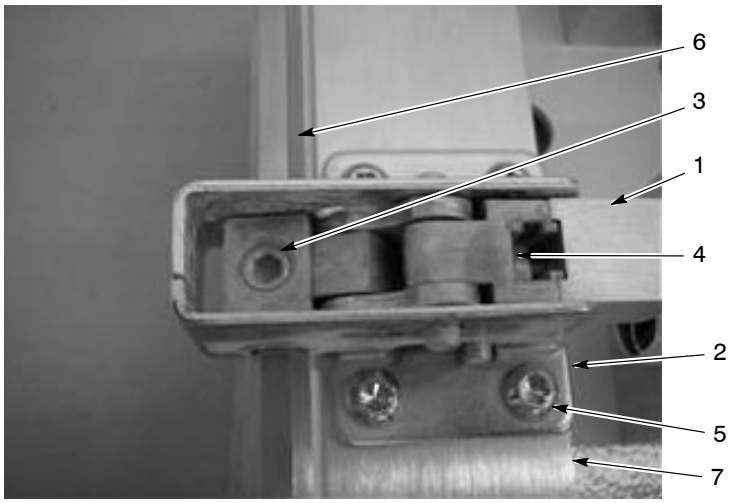


Figure 8-2 Latch Replacement

1. Pawl
2. Latch body
3. Set screw
4. Pawl mount
5. Socket screws
6. Hex shaft
7. Mounting block

4. Loosen the set screw (3) securing the latch to the hex shaft (6), then remove the four button-head socket screws (5) securing the latch body (2) to the mounting block (7).
5. Remove other latches as needed if the broken latch is not the last latch on the shaft. Slide the latch(es) off the end of the hex shaft.

Latch Installation

1. Make sure the clamping cylinder and the new latch are fully extended and that the top surface of the latch pawl (1) is flush with the top surface of the pawl mount (4). Adjust the pawl position if necessary by loosening the philips-head screw in the pawl recess.
2. Slide the new latch on the hex shaft so that the bottom of the latch body is parallel to the surface of the mounting block.
3. Position the latch body over the tapped holes in the mounting block and install the four socket screws.

Latch Installation *(contd)*

4. See Figure 8-3. If all latches have been removed from the hex shaft, push or pull on the hex shaft (4) to center the lever (2) in the yoke (1) before you tighten the set screw to secure the latch to the hex shaft.

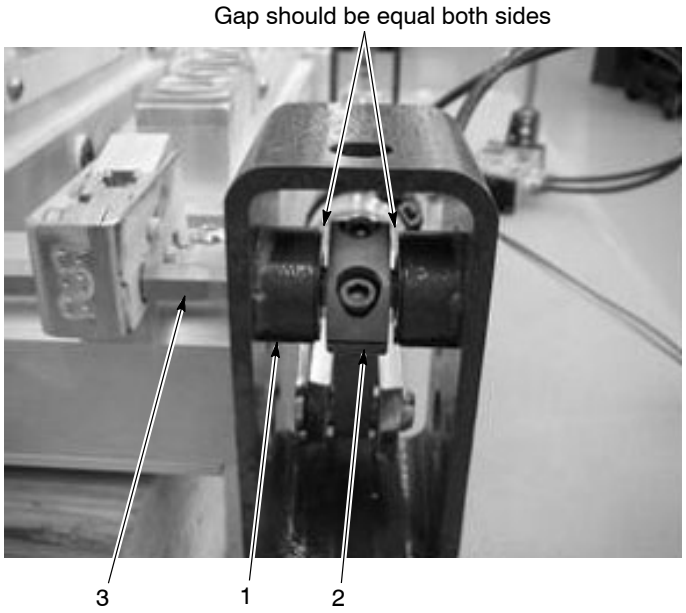


Figure 8-3 Lever Position – Step 4

1. Yoke
2. Lever
3. Hex shaft

5. After all latches have been re-installed, check the latch movement by extending and retracting the clamping cylinder by hand. The pawl should move freely side-to-side and not bind on the sides of the latch body when the latch is extended and retracted.

   If the pawl binds against the sides of the body, loosen the four latch mounting screws, then push outwards on the sides of the latch body while re-tightening the screws.

Latch Pawl Adjustment

Figure 8-4 shows a latch extended until it is over-center. The latch pawl (2) is normally installed with the top surface flush with the top surface of the pawl mount (1). With the lance clamped down, the latch should not go over-center (fully extended). The latch pins (3) should not be up against the ends of their slots.

If the latch does go over-center, the latch pins make a clicking noise when they hit the ends of the slots.

To reduce latch travel and increase clamping force, loosen the philips-head screw in the pawl recess and move the pawl down one notch. This adjustment may also be required with higher purge air pressures to increase the clamping force.

To reduce clamping force, the pawl can be moved up one notch. However, do not do so if this allows the latch to go over-center when the lance is clamped down.

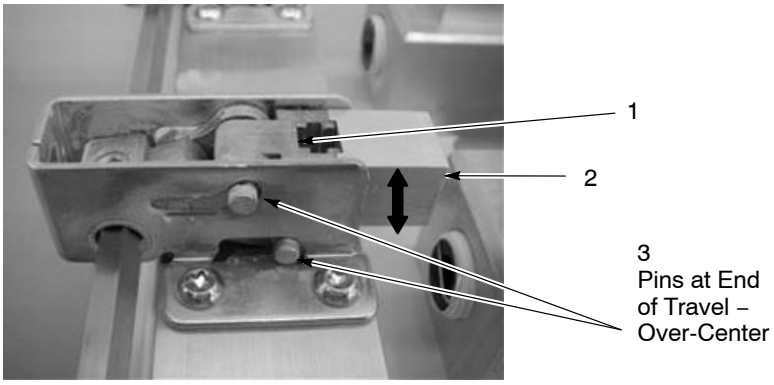


Figure 8-4 Pawl Adjustment – Latch Shown Over-Center

1. Pawl mount
2. Pawl
3. Pins

Clamping Cylinder Replacement

1. Perform steps 1-3 in *Latch Pawl Replacement*.
2. See Figure 8-5. Disconnect the air tubing from the extend and retract flow control valves (8, 9).
3. Retract the cylinder rod (13) to gain access to the lever hardware.
4. Remove the clamp screws (5) on each lever assembly (4), then remove the cylinder assembly (10), and lever assembly (4) from the manifold shaft (11).
5. Discard the old cylinder assembly (10) and lever assemblies (4).
6. Remove the proximity switches (6, 7) from the new cylinder assembly (10).
7. Center the new cylinder assembly (10) inside cylinder adapter spacer (12) with the latches in fully open position and the cylinder rod (13) fully retracted.

NOTE: Indentations in the lever assemblies (4) must be located facing inwards.

8. Using an M5 Allen wrench, attach the lever assemblies (4) to the manifold shaft (11) ensuring that lever assemblies (4) remain centered and the latches will remain open.

NOTE: It may be necessary to re-clock the cylinder rod (13) or slightly extend the cylinder rod (13) to ensure lever assemblies (4) attach properly with latches fully open.

9. Install proximity switches as follows:
   - Extend (Engaged): LS403 (7) – Install on rod end.
   - Retract (Released): LS404 (6) – Install on fixed end.

NOTE: Refer to the electrical schematic.

10. Push the cylinder rod (13) into the cylinder assembly (10) until it is fully retracted. Verify that when the cylinder rod (13) is retracted, the latches are fully open. Material may be ground off of black delrin spacer (3) if needed to adjust length.
11. Verify that when the cylinder rod (13) is extended, the levers are making contact with the clevises (1) and the latches are fully closed.

Clamping Cylinder Replacement *(contd)*

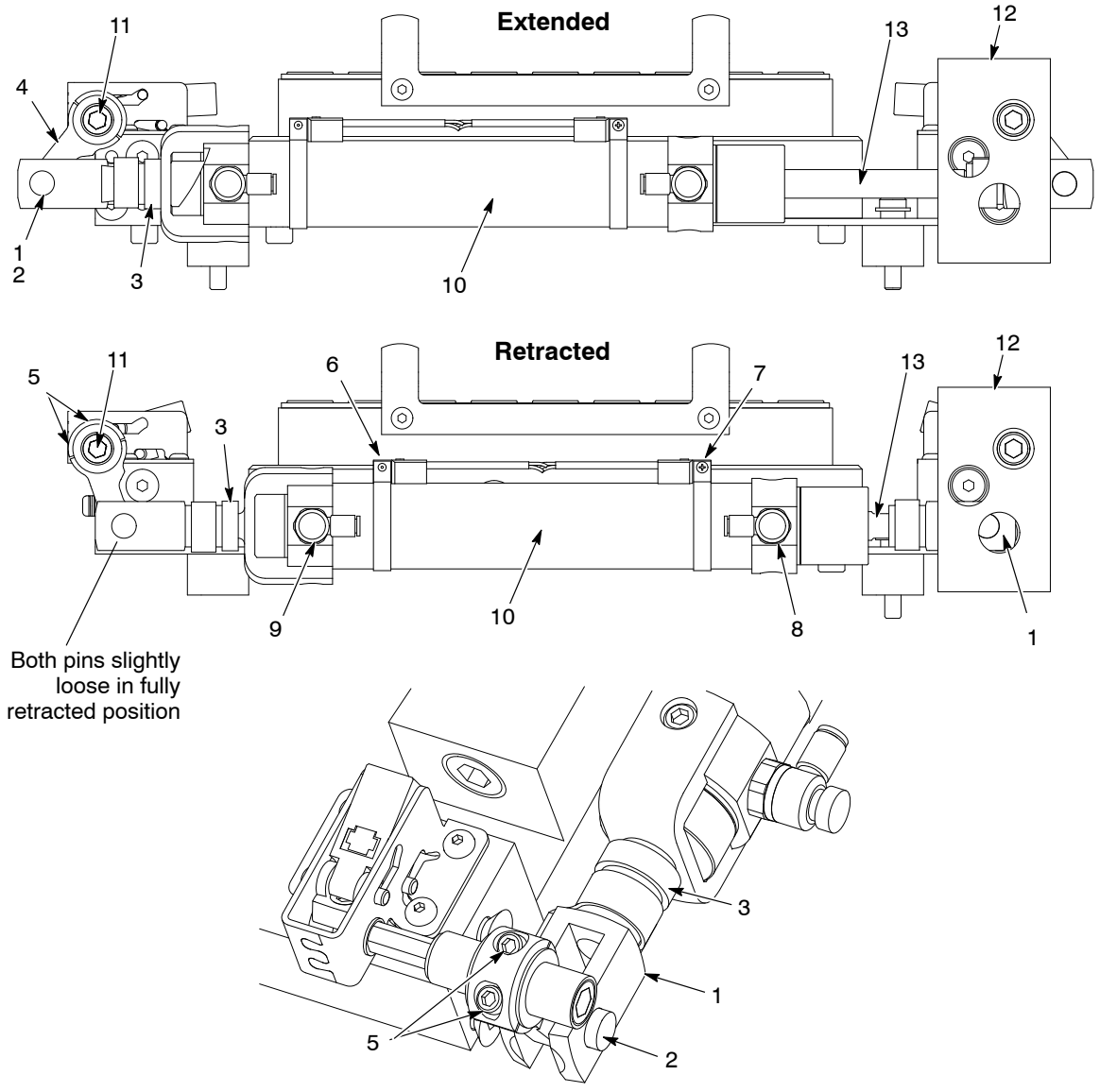


Figure 8-5 Clamping Cylinder Replacement

1. Clevises
2. Clevis pins
3. Delrin spacer
4. Lever
5. Lever clamp screws
6. Retract proximity switch (LS404)
7. Extend proximity switch (LS403)
8. Retract flow control valve
9. Extend flow control valve
10. Cylinder assembly
11. Manifold shaft
12. Cylinder adapter spacer
13. Cylinder rod

12. Connect the air tubing to the appropriate cylinder flow control valves. Refer to the pneumatic schematic foldout in this manual.
13. Turn on the feed center air supply.
14. Lower the lance onto the purge manifold and set the purge air pressure to zero. Refer to *Air Pressure Settings* in *Section 3, Setup* for the location of the purge air pressure regulator.
15. Select Gun Purge on the control panel, and adjust the extend flow control valve for a 3 second extend. Turn Gun Purge off and adjust the retract flow control valve for a 3 second retract. Toggle Gun Purge on and off as needed while adjusting the valves.
16. Select Gun Purge and clamp the lance. Position the extend proximity switch (LS403) (7):
    a. Slide the switch on the cylinder rod (13) until it senses the magnet in the cylinder piston and the LED lights.
    b. Note the position where the LED turned on, then continue sliding it in the same direction until the LED turns off.
    c. Position the switch in the midpoint between LED off positions and tighten the clamp screw to secure it in place.
17. Turn off the Gun Purge and allow the cylinder rod (13) to retract. Adjust the retract proximity switch at the fixed end of the cylinder in the same way as the extend switch.
18. Raise the lance and re-install the hopper/box table.
19. Adjust the purge air pressure to 5.5 bar (80 psi).

Lift Cylinder Replacement

Lift Cylinder Removal

1. Lower the lance assembly onto the purge manifold. The lance carriage will be up against the stop bolt.
2. See Figure 8-6. Unclip the clevis pin (3) from the clevis (1) and pull the pin out of the clevis and carriage plate (2). Do not lose the pin, you will need it to install the new cylinder.

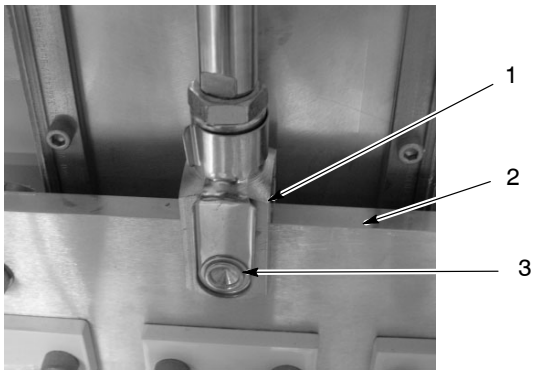


Figure 8-6 Lift Cylinder Clevis Pin

1. Clevis
2. Carriage plate
3. Clevis pin

Lift Cylinder Removal *(contd)*

3. Raise the cylinder to the full up position.
4. Turn off the feed center air supply and power by pressing the E-stop button on the control panel. This relieves the air pressure and mechanically locks the cylinder in place.
5. See Figure 8-7. Disconnect the air tubing from the Up and Down flow control valves (1) at the top and bottom of the cylinder.
6. Disconnect the air tubing from the cylinder lock (3).
7. Remove the proximity switches (4) and brackets from the cylinder slots.
8. Have one person hold the cylinder while another removes the four socket-head screws (6) from the bottom of the cylinder mounting plate (5).
9. Lift the cylinder up and out of the enclosure.
10. Remove the clevis and locknut, and sleeve and washer if used, from the old cylinder.

NOTE: The sleeve and washer limit the cylinder up travel for systems that use powder boxes or the square or rectangular fluidized hoppers. The sleeve and washer are not used with Nordson 50-lb cylindrical hoppers.

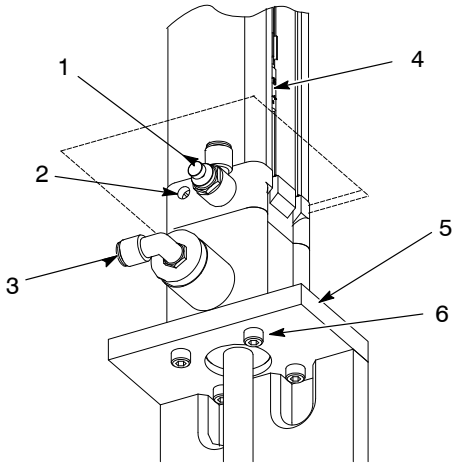


Figure 8-7 Cylinder Flow Control Valve and Cushion Stop Adjustment (Rod End)

1. Flow control valve (Up)
2. Cushion stop adjustment
3. Cylinder lock
4. Proximity switch
5. Mounting plate
6. Socket screws

Lift Cylinder Installation

1. See Figure 8-8. If not using Nordson 50-lb cylindrical hoppers: Install the sleeve and washer on the new cylinder.
2. For all applications: Thread the locknut on the new cylinder rod, then thread the clevis all the way onto the new cylinder rod and lock it in place with the locknut.
3. Install the new cylinder on the mounting plate with the lock air fitting toward the front of the feed center. Secure the cylinder with the four socket-head screws.

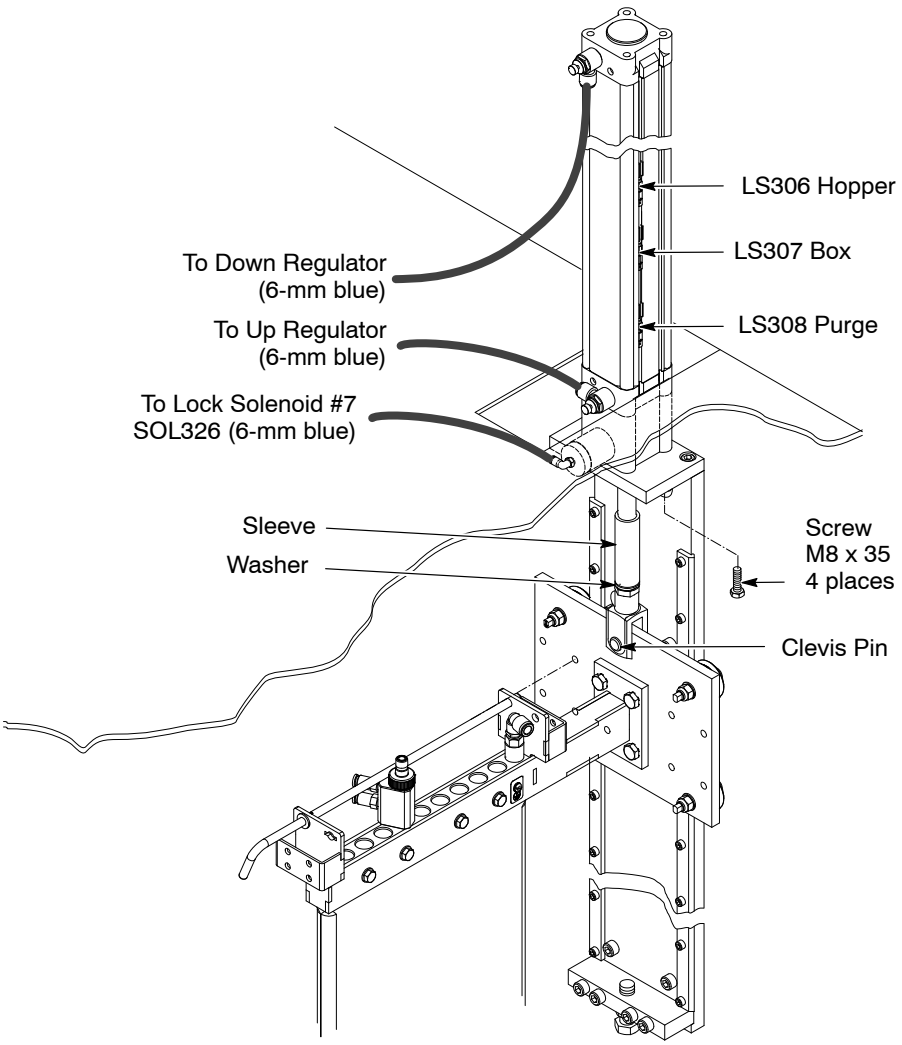


Figure 8-8 Lift Cylinder Installation

4. Connect the air tubing to the appropriate cylinder flow control valves. Refer to the pneumatic schematic foldout in this manual.
5. Rotate the E-stop button on the feed center control panel clockwise to release it and turn on feed center power and air.
6. Lower the cylinder clevis down to the lance carriage, which should be resting on the stop bolt.

Lift Cylinder Installation *(contd)*

7. Position the clevis on the lance carriage and install the the clevis pin. Clip the pin to the clevis.
8. Install the proximity switches on the new cylinder in the following order, from top to bottom, in approximately the position
   - LS306 – Hopper (top)
   - LS307 – Box (middle)
   - LS308 – Purge (bottom)
9. Adjust the position of the Purge proximity sensor (LS308).
   a. Slide the switch up or down until it senses the magnet in the cylinder piston and the LED lights.
   b. Note the position where the LED turned on, then continue sliding it in the same direction until the LED turns off.
   c. Slide the switch back up and position it in the midpoint between the on positions and secure it in place.

NOTE: Refer to *Lift Cylinder Proximity Switch Adjustment* in the *Installation* section of this manual to set the positions of the Box switch (LS307) and the Hopper switch (LS306).

10. See Figure 8-7. Raise and lower the lance assembly and adjust the flow control valves for 6 seconds full travel in each direction.

Cushion Stop Adjustment

If you are using a 50-lb cylindrical hopper, the stop sleeve on the cylinder rod is not used, so the cylinder can be fully retracted. Make sure the top cylinder cushion stop is adjusted to bring to the piston to a gentle stop.

The adjustment screw is recessed into the end cap next to the flow control valve. Clockwise increases the dampening effect; counterclockwise decreases the effect.

The bottom cushion stop can be adjusted in the same manner.

Lift Assembly Repair

V-Roller Track Rail Replacement

NOTE: Use Loctite 242 removable threadlocking compound on the track rail screw threads.

If a V-roller track rail must be replaced, make sure the shoulder of the rail is flush up against the track mounting plate for the full length of the rail. It may be necessary to clamp the rail to the mounting plate to remove any bow in the rail before tightening the screws.

V-Roller Replacement

The four V-rollers are installed on two concentric and two eccentric studs. The concentric studs are installed on the right side of the lance carriage; the eccentric studs are installed on the left side.

V-Roller Removal

1. Select Box with the Powder Source switch and lower the lances until they stop.
2. Press the E-Stop button to shut off power and air. The lift cylinder mechanically locks at the current position.
3. Disconnect the air lines, powder tubing, and level sensor cables from the lance assemblies.
4. Support each lance assembly while removing the four screws and lockwashers securing the lance assembly arm to the lance carriage. Remove the lance assemblies from the feed center.
5. See Figure 8-9. Remove the clevis pin (9) from the lift cylinder clevis and carriage plate (8). Lower the carriage assembly to the stop bolt (10).
6. Loosen the eccentric stud (1) locknuts (3) and rotate the studs until the V-rollers are loose on the track rails (11).
7. Remove the locknuts and flat washers (3, 4) from the concentric studs (2). Remove the carriage plate (8) from the track rails.
8. Remove the eccentric studs and V-rollers from the carriage plate.
9. Remove the locknuts, flat washers, and V-rollers (5, 6, 7) from the studs.

V-Roller Replacement *(contd)*

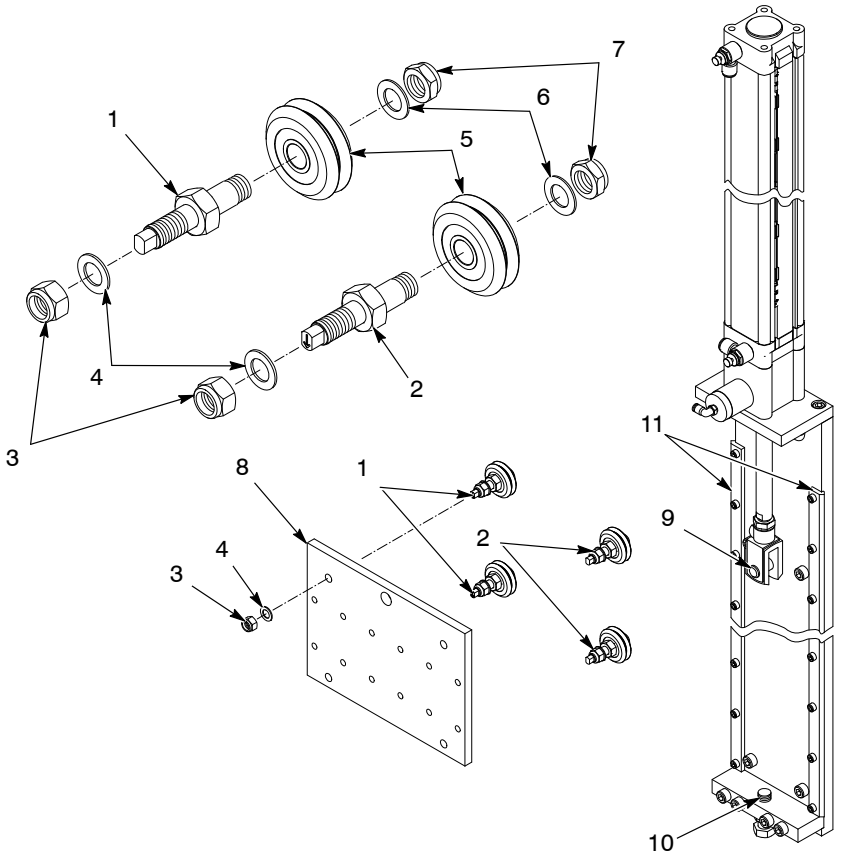


Figure 8-9 V-Roller Replacement

1. Eccentric studs
2. Concentric studs
3. locknuts (stud mounting)
4. Flat washers (stud mounting)
5. V-rollers
6. Flat washers (roller mounting)
7. locknuts (roller mounting)
8. Carriage plate
9. Clevis pin
10. Stop bolt
11. Track rails

V-Roller Installation

1. Install the new V-rollers (5) on the studs (1, 2) with the flat washers and locknuts (6, 7).
2. Install the eccentric studs (1) on the left side of the carriage plate (8). Do not tighten the locknuts (3).
3. Place the carriage plate on top of the bottom stop with the eccentric stud V-roller grooves up against the left track rail.
4. Install the concentric studs (2) on the carriage plate with the V-roller grooves in the right track rail. Place a 3/4 in. open-end wrench on the flats of the studs between the carriage plate and the rollers, and tighten the locknuts (3) securely.

5. With a wrench, rotate the ends of the eccentric studs until all free play between the V-rollers and the track rails is removed. Place a 3/4 in. open-end wrench on the flats of the studs between the carriage plate and the rollers, and tighten the locknuts (3) securely.

   NOTE: The preload on the V-rollers should be just enough so the rollers are in constant contact with the track rails and cannot be rotated by hand. Move the carriage up and down the track rails and verify that there is no free play or binding along the entire rail length.

6. Connect the carriage to the lift cylinder clevis with the clevis pin (9).
7. Install the lance assemblies on the carriage with the four lock washers and screws.
8. Perform the *Lance Assembly/Purge Manifold Alignment* procedure.

Lance Assembly/Purge Manifold Alignment

Anytime the purge manifold, lance, lance arm, or lift assembly is moved, the purge manifold and lances must be re-aligned with each other to ensure proper operation and lance-to-purge manifold sealing.

1. Remove the hopper/box table.
2. See Figure 8-10. Loosen the 8-mm through bolts securing the lance plates to the lance arms.
3. Loosen the ground screw on the lance arm.
4. Loosen the four screws securing the lance arm to the lift carriage plate , just enough to move the lance arm. The lance arms must not sag.

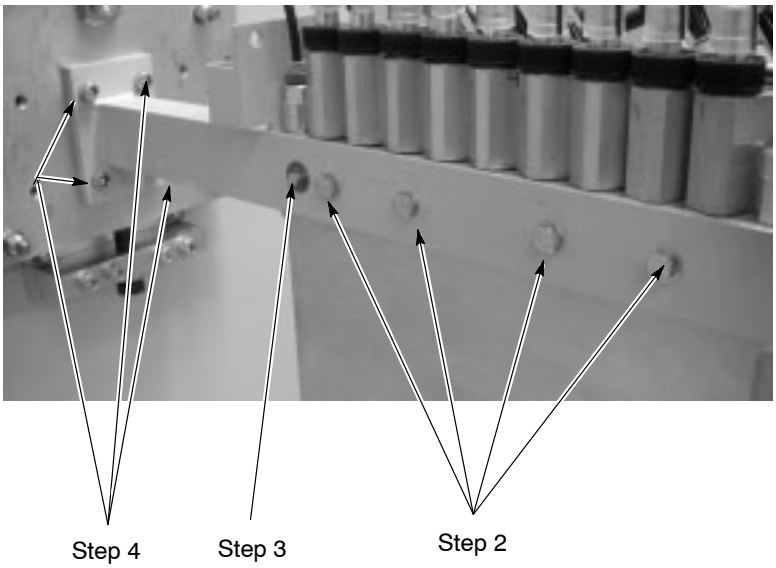


Figure 8-10 Lance Adjustment Steps 2–4

Lance Assembly/Purge Manifold Alignment *(contd)*

5. Set the purge air pressure to zero.
6. Move the lance down to the stop bolt (Purge Position). Verify that the stop bolt is adjusted to stop the carriage just before the lance makes contact with the purge manifold quad-ring seals. Manual alignment of the lances to the purge manifolds may be necessary as all the fasteners are loose.

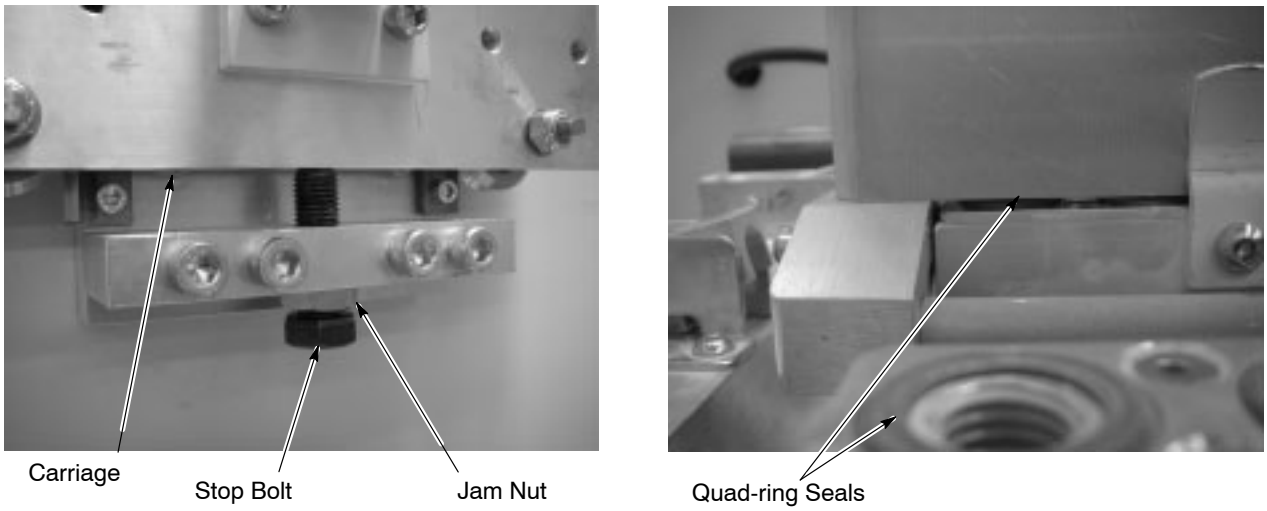


Figure 8-11 Stop Bolt Adjustment

7. Turn the Purge Control switch to the Internal Gun Purge position. The lance will be clamped into place.
8. Make sure the alignment between the lance latch blocks and the purge manifolds, front to back, is correct.

   The manifolds and lances should be parallel and the gap between the lances and the manifold seal retainer plate should be even all the way around.

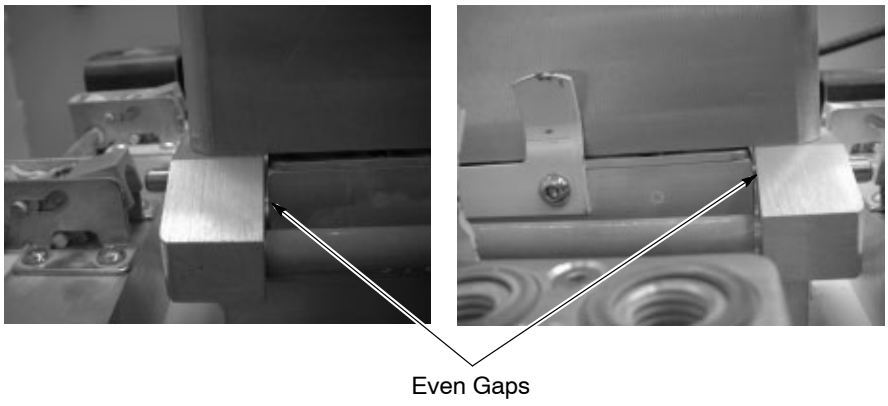


Figure 8-12 Lance Adjustment Step 8

9. When each of the lance plates and manifold latches are adjusted correctly the fasteners loosened in steps 2–4 can be tightened. Tighten the through bolts first, then the four screws securing the lance arms to the lift carriage, then the ground screw.

10. Turn Off the Purge Control switch.
11. Adjust the purge air to 5.5 bar (80 psi).
12. Select Internal Gun Purge with the Purge Control switch. The lances will be clamped and the purge air will turn on.
13. Verify that the lances and purge manifolds align properly and that little or no air escapes from between them while the guns are being purged.

    If air leaks from the seals, loosen the latch pawl screws and move the pawls down one notch for a tighter clamp force. Refer to page 8-4 for the pawl adjustment procedure.

75-lb Feed Hopper Fluidizing Plate Replacement

1. Empty the hopper and vacuum as much powder as possible out of the hopper.
2. See Figure 8-13. Remove the screws (5), flat washers (6), and nuts (7) securing the body (1) to the plenum (4). Lift the body off the plenum.
3. Remove and discard the old fluidizing plate (2) and U-gasket (3).
4. Vacuum the inside of the plenum and clean the body and plenum flanges.
5. Install the U-gasket around the outside edge of the new fluidizing plate.

NOTE: Make sure that the smooth side of the new fluidizing plate is facing up.

6. Re-assemble the body, fluidizing plate, and plenum with the screws, washers, and nuts.

CAUTION: Do not overtighten the nylon screws. Overtightening the screws will result in stripped threads and possible air or powder leaks.

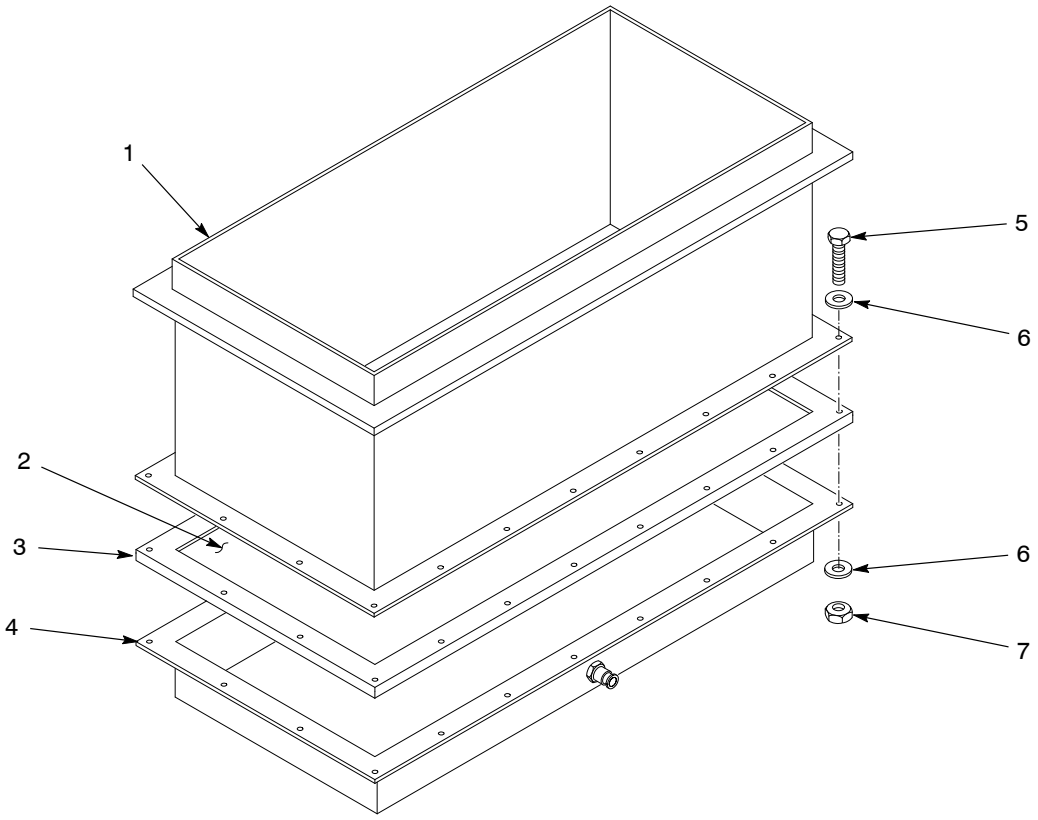


Figure 8-13 75-lb Feed Hopper Fluidizing Plate Replacement

1. Body
2. Fluidizing plate
3. U-Gasket
4. Plenum
5. Nylon screws (M8 x 40 mm)
6. Nylon flat washers
7. Nylon hex nuts (M8)

50-lb Feed Hopper Fluidizing Plate Replacement

1. Empty the hopper and vacuum as much powder as possible out of the hopper.
2. See Figure 8-14. Remove the screws (5) securing the body (1) to the plenum (3). Lift the body off the plenum.
3. Remove and discard the old fluidizing plate (2).
4. Vacuum the inside of the plenum and clean the body and plenum flanges.
5. Check the O-ring gaskets (4) on the body and plenum flanges and make sure they are securely installed in the flange grooves.

50-lb Feed Hopper Fluidizing Plate Replacement *(contd)*

NOTE: Make sure the smooth side of the new fluidizing plate is facing up.

6. Re-assemble the body, fluidizing plate, and plenum with the nylon screws.

CAUTION: Do not overtighten the nylon screws. Overtightening the screws will result in stripped threads and possible air or powder leaks.

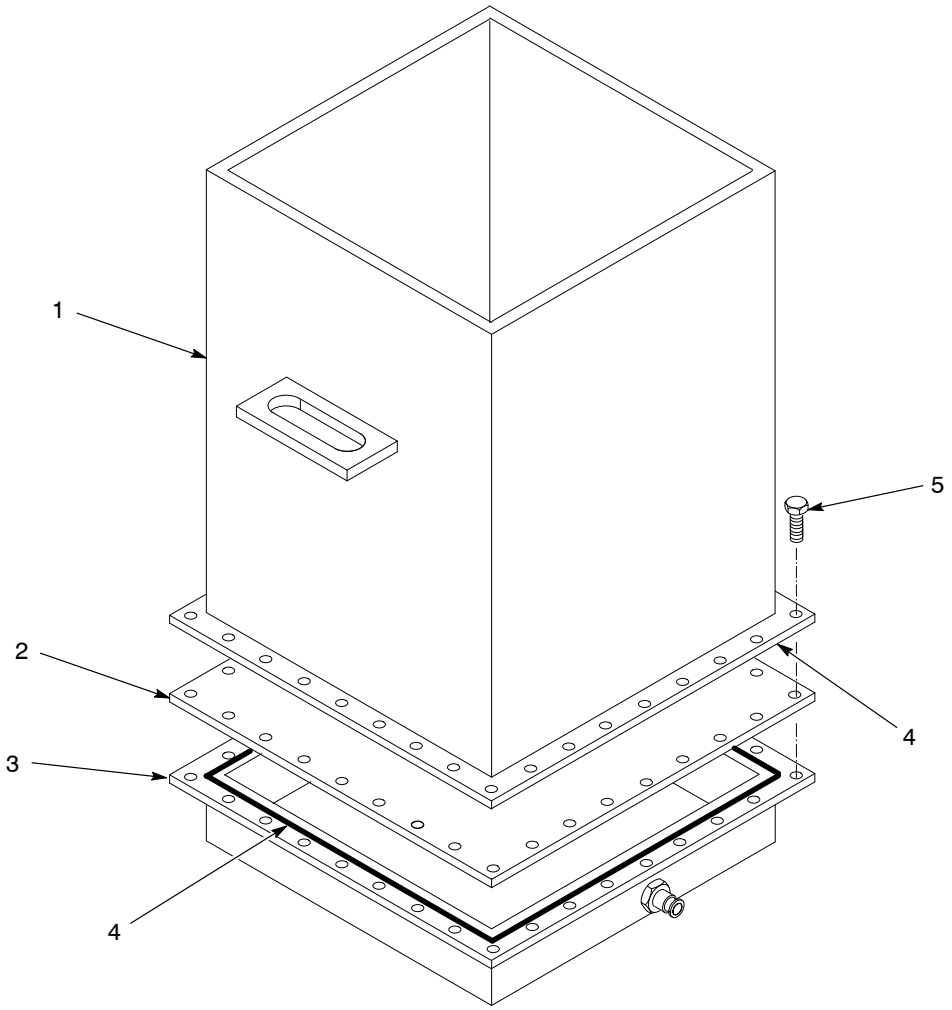


Figure 8-14 50-lb Feed Hopper Fluidizing Plate Replacement

1. Body
2. Fluidizing plate
3. Plenum
4. O-ring gaskets
5. Nylon screws

Hopper/Box Table Vibrator Motor Weight Adjustment

Refer to Table 8-1. If you replace the hopper/box table vibrator motor, or retrofit a motor to the table, you will need to adjust the new motor weights to the specified setting. Use the applicable instruction to adjust the weights.

Table 8-1 Table Vibrator Motor Weight Settings and Instructions

Nordson Part Number	Manufacturer/ Part Number	Voltage/Frequency	Weight Setting %	Use Instruction
1058712	Martin/C600311G	220/380 V, 60 Hz	30	1
1058669	Martin/C600311	230/460 V, 60 Hz	30	1
1058710	Martin/C600311F	330/575 V, 60 Hz	30	1
1058711	Martin/C600311A	220/380 V, 50 Hz	40	1
1104784	MartinC600311D	240/415 V, 50 Hz	40	1
1601111	Oli-Wolong/MVE 100/3	200 V, 60 Hz	50	2
1601110	Oli-Wolong/MVE 100/3	380 V, 60 Hz	50	2
1600835	Oli-Wolong/MVE 220/2	230/460 V, 60 Hz	50	2
1600836	Oli-Wolong/MVE 220/2 T6	330/575 V, 60 Hz	50	2
1601112	Oli-Wolong/MVE 100/3	200 V, 50 Hz	49.9	3
1601108	Oli-Wolong/MVE 100/3	415 V, 50 Hz	49.9	3
1601109	Oli-Wolong/MVE 100/3	220/380 V, 50 Hz	49.9	3

Instruction 1

See Figure 8-15.

1. Remove the caps from both ends of the motor.
2. Place wrenches on the nuts on both ends of the motor shaft and loosen one nut. The opposite nut will remain tight.
3. Place a wood block as shown to prevent the weight from turning, then loosen the nut. Unscrew both nuts enough to allow you to rotate the outside weights.
4. Turn the outside weight so that the pointer is on the recommended weight setting and the outside weight pin slips into the appropriate hole in the inside weight.
5. Tighten both shaft nuts securely. Install the end caps.

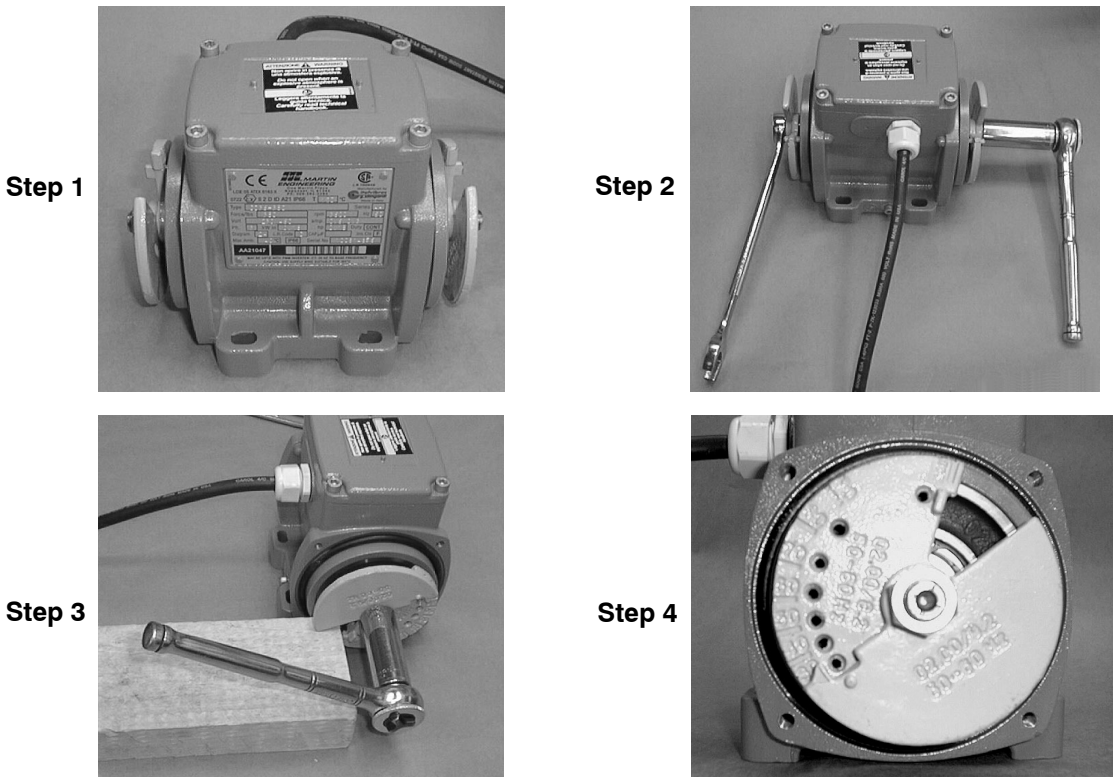


Figure 8-15 Vibrator Weight Adjustment

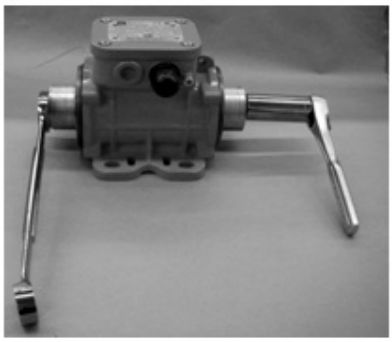
Instruction 2

See Figure 8-16.

1. Remove the caps from both ends of the motor.
2. Place wrenches on the nuts located on both ends of the motor shaft. Unscrew one nut and remove the weight blades from that end of the shaft. The opposite nut will remain tight.
3. Place an adjustable wrench on the shaft flat. Make sure that the wrench does not grip the threaded area of the shaft. Use another wrench to unscrew the remaining nut.
4. Install the weight blades that were removed in Step 3. Turn **4** weight blades on each shaft end to the opposite position as shown. Make sure that the weight blades are in the same configuration at both ends of the motor.
5. Tighten both shaft nuts securely. Install the end caps.

Step 1

Step 2



Step 3

Step 4

Typical

Figure 8-16 Vibrator Weight Adjustment

Instruction 3

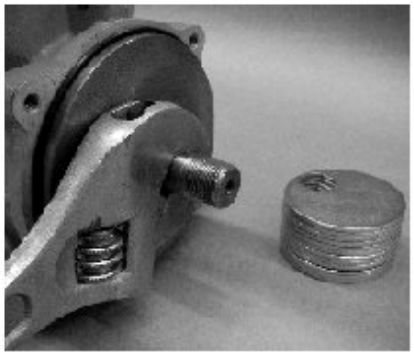
See Figure 8-17.

1. Remove the caps from both ends of the motor.
2. Place wrenches on the nuts located on both ends of the motor shaft. Unscrew one nut and remove the weight blades from that end of the shaft. The opposite nut will remain tight.
3. Place an adjustable wrench on the shaft flat. Make sure that the wrench does not grip the threaded area of the shaft. Use another wrench to unscrew the remaining nut.
4. Install the weight blades that were removed in Step 3. Turn **3** weight blades on each shaft end to the opposite position as shown. Make sure that the weight blades are in the same configuration at both ends of the motor.
5. Tighten both shaft nuts securely. Install the end caps.

Step 1

Step 2

Step 3



Step 4

Typical

Figure 8-17 Vibrator Weight Adjustment

Notes:

Section 9
Parts

Introduction

To order parts, call the Nordson Finishing Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

Refer also to *Section 10, Options*, for additional parts lists.

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indents show the relationships between assemblies, subassemblies, and parts.

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

Item	Part	Description	Quantity	Note
—	0000000	Assembly	1	
1	000000	• Subassembly	2	A
2	000000	• • Part	1	

Lift Assembly Parts

See Figure 9-1.

Item	Part	Description	Quantity	Note
1	1103503	CYLINDER, lock, 63 x 750	1	B
2	1103505	SWITCH, cylinder proximity	3	
3	1103936	CLEVIS, Festo rod, M16	1	
4	1103937	FITTING, flow control, 3/G8G	2	
5	1102789	SLEEVE, lift cylinder, Spectrum PFC	1	A
6	1102931	WASHER, flat, 21 x 38 x 5 mm, stainless steel	1	A
7	981528	SCREW, socket, M8 x 30, zinc	4	C
8	- - - - - -	SCREW, socket, M10 x 1.5 x 20, zinc	3	C
9	982043	SCREW, socket, M10 x 1.5 x 20, zinc	4	C
10	1099842	ROLLER, V-groove	4	
11	- - - - - -	STUD, concentric, V-roller mount	2	
12	- - - - - -	STUD, eccentric, V-roller mount	2	
13	- - - - - -	SCREW, socket, M6 x 1.0 x 20, zinc	26	C
14	- - - - - -	SCREW, socket, M10 x 1.5 x 60, zinc	4	C
15	- - - - - -	NUT, hex, jam, M16 x 2.0, steel, zinc	1	
16	- - - - - -	SCREW, hex, M16 x 2.0 x 50, black	1	
17	1099843	RAIL, V-roller track, GFC	2	

NOTE A: Sleeve and washer limit lift height for standard hoppers and boxes. Remove them only if using the Nordson NR-50 (50 lb.) cylindrical hopper.

B: Cylinder only.

C: Use Loctite 242 removable thread locking adhesive.

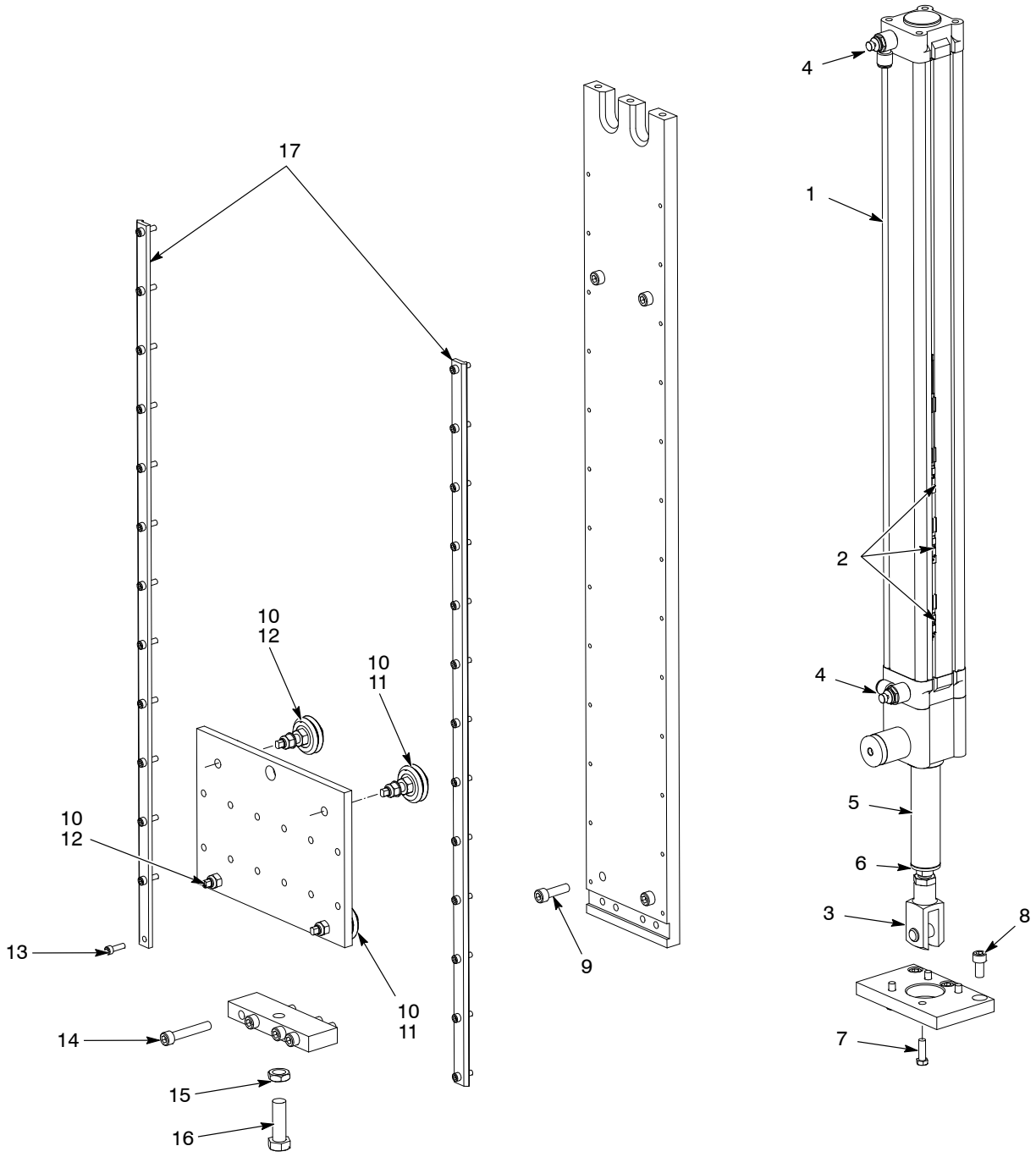


Figure 9-1 Lift Assembly Parts

Lance Assembly Parts

Basic Lance Parts

See Figure 9-2. For a complete lance assembly, order either a fluidizing or non-fluidizing latch block module listed on the following pages.

Item	Part	Description	Quantity	Note
–	1099893	LANCE ASSEMBLY, global PFC	1	
1	1099891	• ROD, pump retaining	1	
2	- - - - - -	• NUT, hex, acorn, M8	4	
3	- - - - - -	• WASHER, lock, split, M8, steel, zinc	4	
4	- - - - - -	• WASHER, flat, regular, M8, steel, zinc	8	
5	- - - - - -	• SCREW, hex, cap, M8 x 1.24, 50, F.T	4	
6	- - - - - -	• WASHER, lock, external, M5, steel, zinc plate	2	
7	- - - - - -	• SCREW, hex, serrated, M5 x 12, steel, zinc	1	
8	- - - - - -	• SCREW, socket, M10 x 25 mm	4	
9	- - - - - -	• WASHER, lock, split, M8, steel, zinc	4	
10	1095926	PUMP ASSEMBLY, inline, Encore	AR	A

NOTE A: Refer to pump manual for repair parts. Pumps must be ordered separately.
AR: As Required

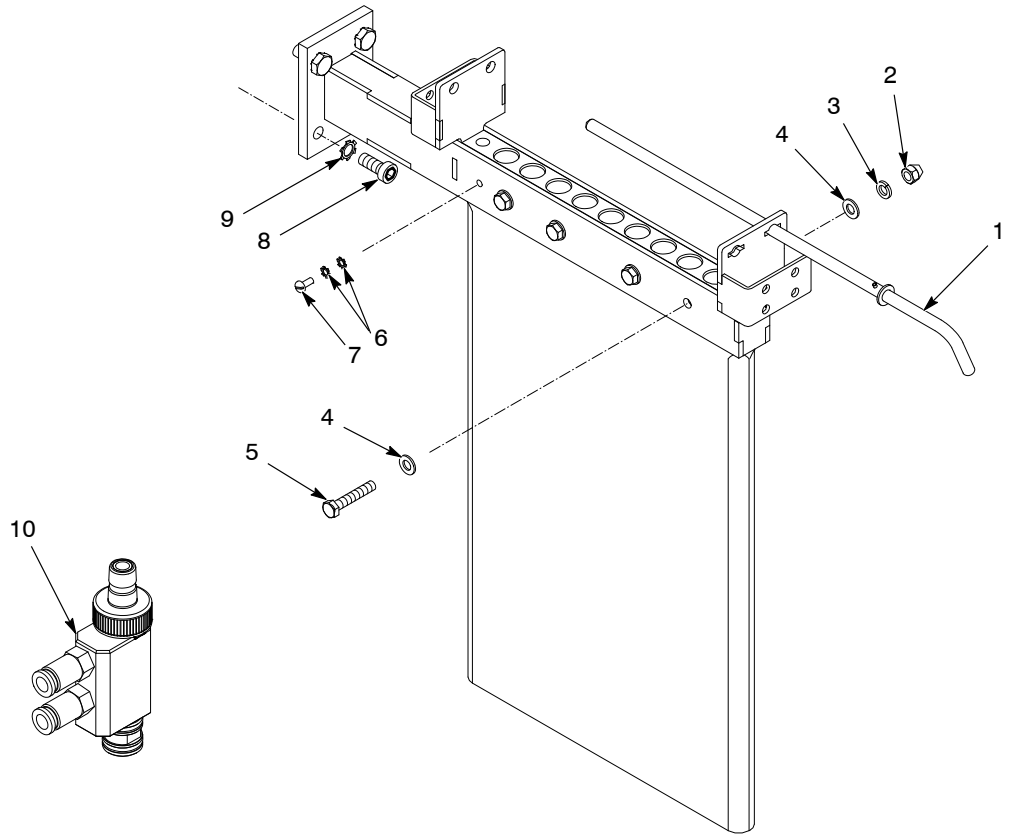


Figure 9-2 Basic Lance Assembly Parts

Non-Fluidizing Latch Block Module

See Figure 9-3. Use this module with fluidized feed hoppers where additional fluidizing air is not needed. The module includes all the parts shown; only serviceable items are listed.

Item	Part	Description	Quantity	Note
1	1099935	MODULE, latch block, non-fluidized	1	A
2	- - - - - -	• NUT, air passage blanking	2	
3	- - - - - -	• SLEEVE, locating, global PFC lance	2	
4	- - - - - -	• ROD, threaded, m10 x 556mm	2	
NOTE A: One latch block module is used per lance assembly.				

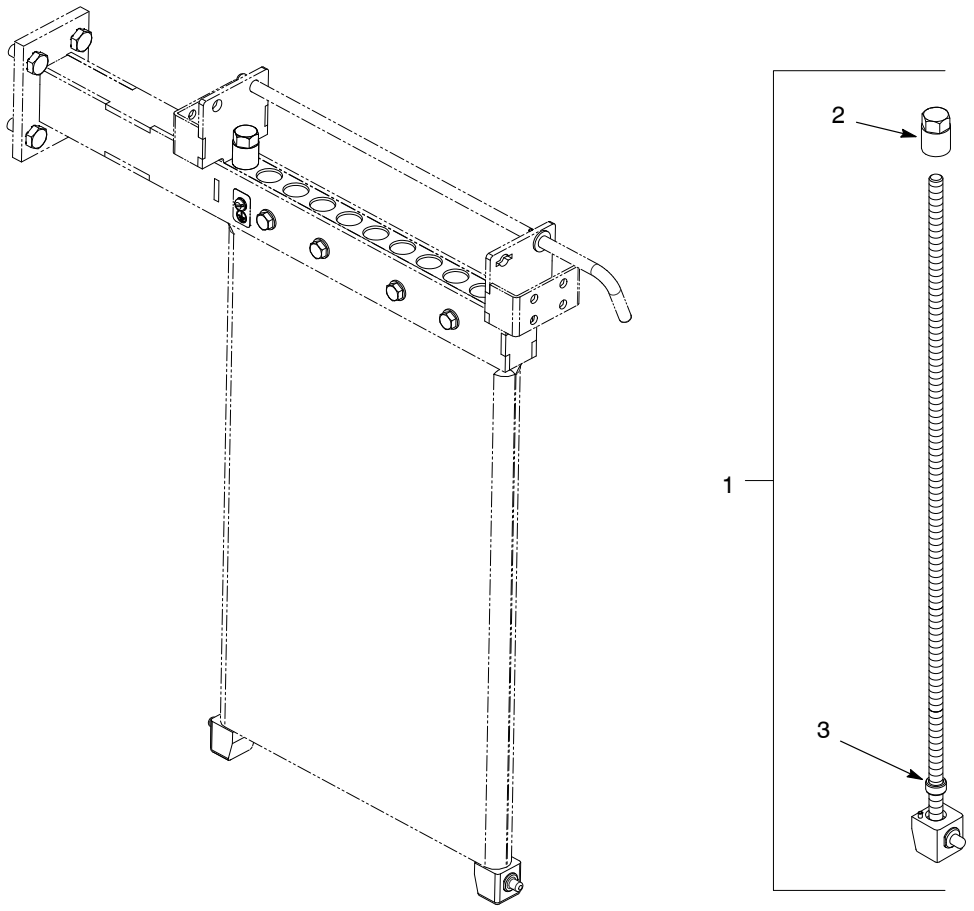


Figure 9-3 Non-Fluidizing Latch Block Module Parts

Fluidizing Latch Block Kits

See Figure 9-4. Use these kits to fluidize the powder around the lance assembly. These kits are typically used with non-fluidized powder sources such as boxes.

Item	Part	Description	Quantity	Note
1	1102803	KIT, fluidizing manifold, PFC	1	
1A	- - - - - -	• CONNECTOR, male, 6 mm tube x 1/4 BSPT	1	
1B	- - - - - -	• NUT, adapter, lance air tube	1	
1C	941113	• O-RING, silicone, 0.424 in. ID x 0.103 in. wide	2	
1D	- - - - - -	• NUT, air passage blanking	1	
1E	- - - - - -	• SLEEVE, locating, global PFC lance	2	
2	1102804	KIT, fluidizing tube, PFC	1	
2A	940142	• O-RING, silicone, 0.489 in. ID x 0.07 in. wide	4	
2B	- - - - - -	• TUBE, fluidizing, stainless steel	2	

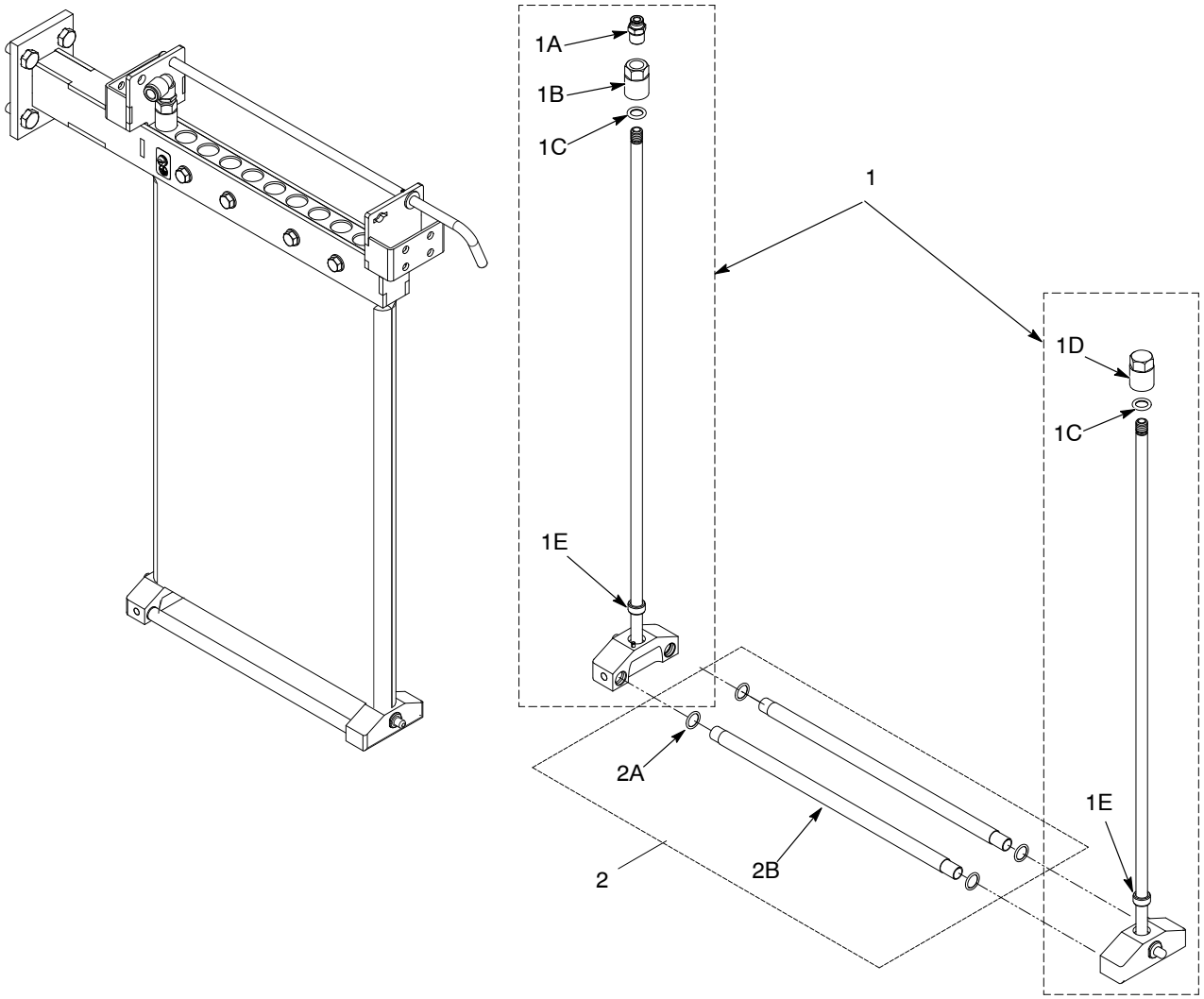


Figure 9-4 Fluidizing Latch Block Module Parts

Lance Port Plug Module

See Figure 9-5. Use this module to plug unused lance ports. The module includes all the parts shown.

Item	Part	Description	Quantity	Note
–	1100097	MODULE, plug, lance assembly port	1	
1	- - - - - -	• NUT, hex, acorn, M8	1	
2	- - - - - -	• NUT, hex, M8, steel, zinc	1	
3	- - - - - -	• WASHER, sealing, lance plug, global PFC	1	
4	- - - - - -	• SLEEVE, lance plug, global PFC	1	
5	- - - - - -	• ROD, threaded, lance plug, GPFC		
6	- - - - - -	• PLUG, lance, global PFC	1	
7	- - - - - -	• SCREW, set, cup point, M12 x 1.75, 12mm long, stainless steel	1	

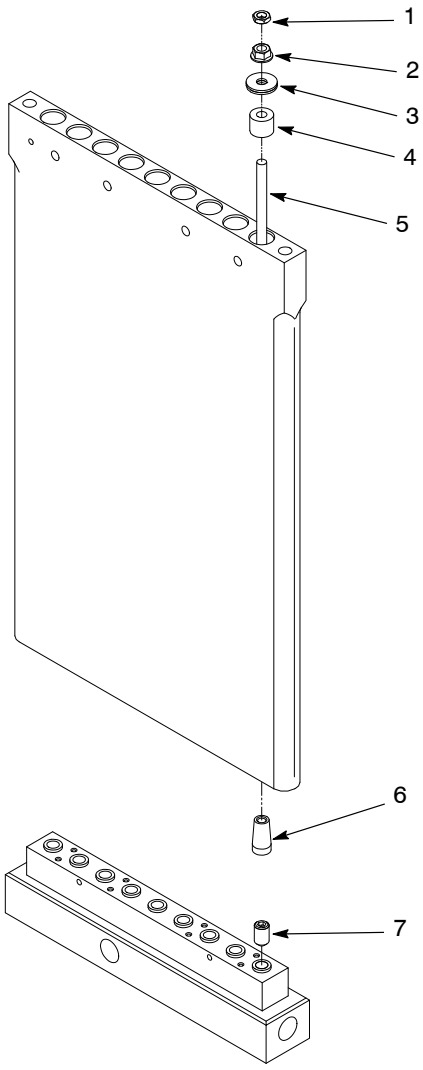


Figure 9-5 Lance Port Plug Module Parts

Level Sensor Module

See Figure 9-6. Use this module for the lance-mounted level sensor used in North America and Asia.

Item	Part	Description	Quantity	Note
–	1100078	MODULE, level sensor, North America and Asia	1	
1	1014553	• SENSOR, level, quick disconnect, M12	1	
2	1023925	• CABLE, 4 pin, M12 connector, 5 meters long	1	
3	- - - - - -	• SCREW, socket, M5 x 16, zinc	2	
4	- - - - - -	• NUT, lock, M5	2	
5	- - - - - -	• BRACKET, level sensor	1	
6	1100076	• SUPPORT, 16 mm shaft, clamping	1	

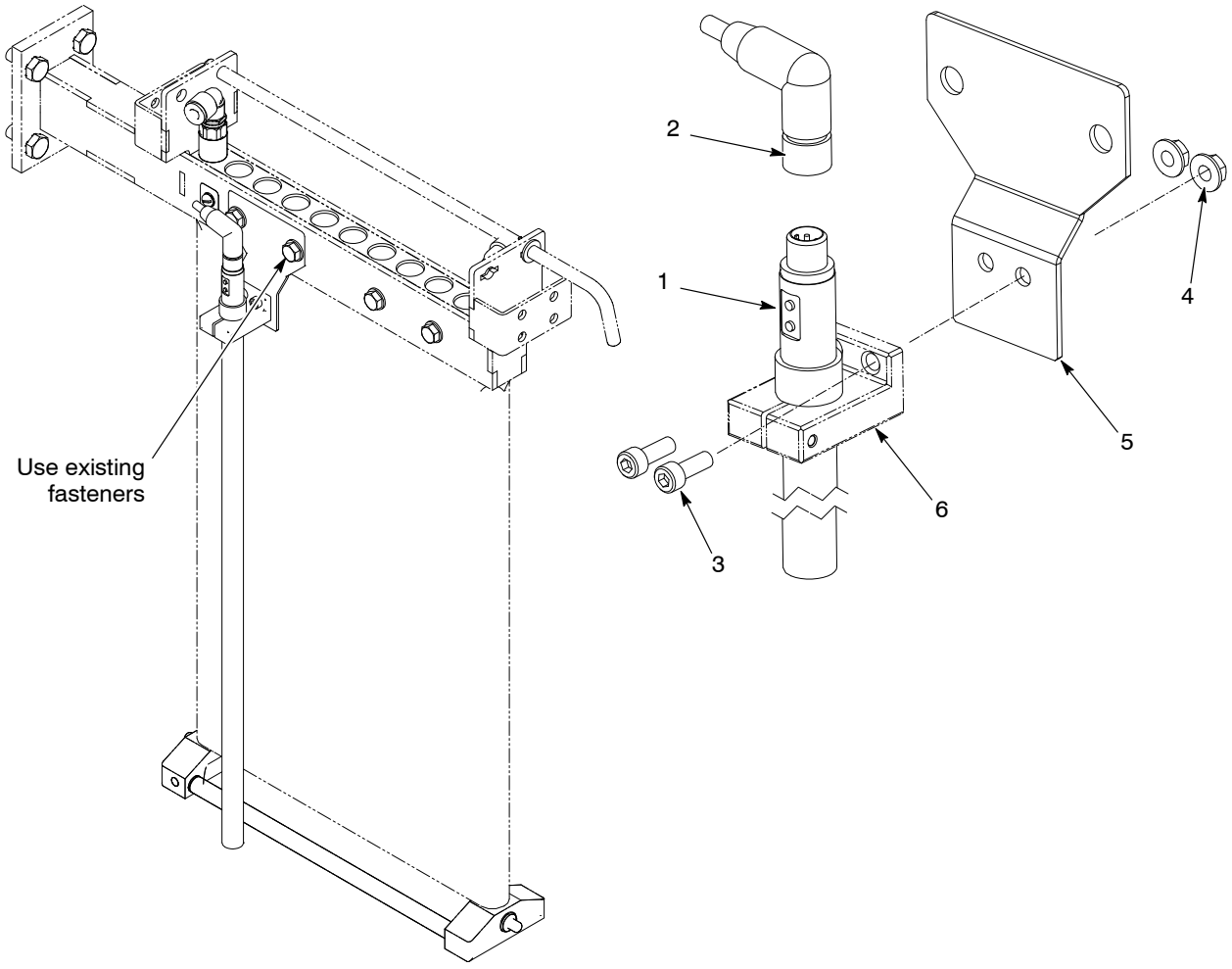


Figure 9-6 Level Sensor Module Parts

Prodigy Siphon Tube Module

See Figure 9-7. Use this module to provide powder to Prodigy manual guns through 8-mm tubing.

Item	Part	Description	Quantity	Note
–	1100131	MODULE, Prodigy, global PFC	1	
1	1100137	• PRODIGY siphon tube, global PFC	1	
2	- - - - - -	• CAP SCREW, button head socket, M4, 10 mm, steel, zinc plated	2	
3	- - - - - -	• HOLDER, tool, spring type	2	
4	- - - - - -	• NUT, lock, nylon, M4 steel, zinc	2	
5	- - - - - -	• BRACKET, Prodigy siphon, global PFC	1	

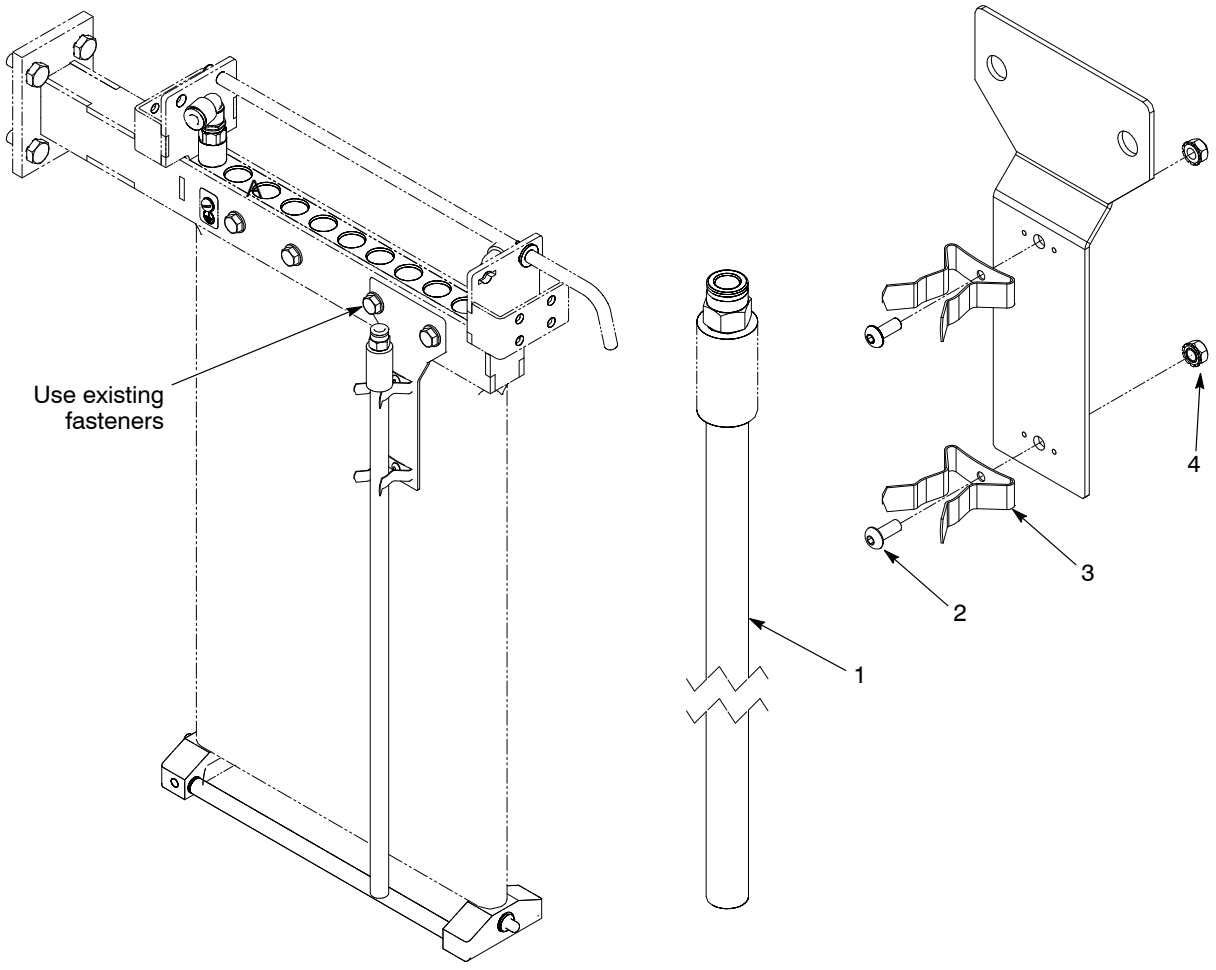


Figure 9-7 Prodigy Siphon Tube Module Parts

Purge Manifold and Pneumatics

Purge Manifold Assembly

See Figure 9-8. Quantities listed as As Required are dependent on the number of purge manifolds.

Item	Part	Description	Quantity	Note
—	1613398	KIT, cylinder, clamping, global PFC	—	
1	–––––––	• CYLINDER, air, 40 x 160, SMC	1	
2	–––––––	• SWITCH, cylinder proximity sensor	2	
3	–––––––	• CLAMP, proximity sensor, 40 mm ID	2	
4	–––––––	• ADAPTER, PFC, clamp, cylinder to clevis	1	
5	–––––––	• SET SCREW, socket, M10 x 1, cup	2	
6	–––––––	• CLEVIS, cylinder, 12mm rod, M12 x 1.25	2	
7	–––––––	• FITTING, flow control, ¼R	2	
8	–––––––	MANIFOLD, purge, global PFC	AR	
9	1100024	• QUAD RING, 208 silicone	9	
10	1100023	• GUIDE, lance, global PFC	2	
11	–––––––	SCREW, flat head, M8 x 16 mm, black	4	
12	1100036	BEARING, 14 mm, plain, flanged	4	
13	1100025	LATCH, complete, 890N, modified	AR	
14	1100028	• PAWL, latch, global PFC	AR	
15	–––––––	SCREW, button head, socket, M5 x 10, zinc	AR	
16	–––––––	SCREW, socket, M8 x 40, zinc, full thread	4	
17	–––––––	WASHER, flat, regular, M8, steel, zinc	4	
18	–––––––	SCREW, socket, M8 x 16mm, zinc	AR	
19	–––––––	ELBOW, push in, 0.50 RPT x 16 mm tube	AR	
20	–––––––	WASHER, lock, internal/external tooth, 5/16 in.	AR	
21	–––––––	SCREW, pan, slotted, M5 x 20, brass	2	
22	–––––––	WASHER, lock, external, M5, steel, zinc	4	
23	–––––––	WASHER, flat, M5, brass	4	

AR: As Required

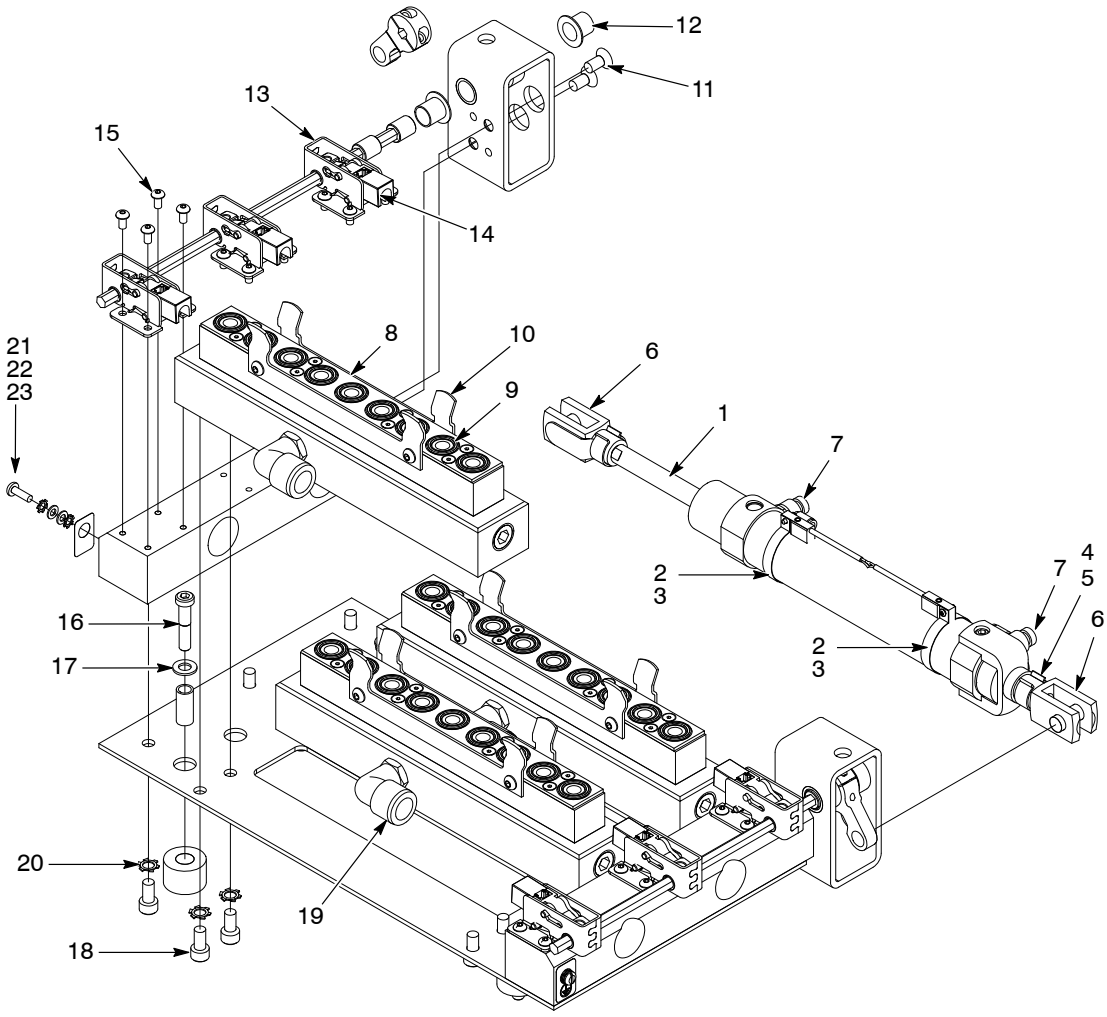


Figure 9-8 Purge Manifold Module Parts

Purge Valve Assembly – One Lance Configuration

See Figure 9-9.

Item	Part	Description	Quantity	Note
1	- - - - - -	NIPPLE, pipe, 1.0 BSPT, close	2	
2	- - - - - -	UNION, 1, BSPT, black	1	
3	1100285	REGULATOR, air, 0.5 in., 0.05–12 bar	1	
4	- - - - - -	BUSHING, pipe, R 1 x R $^1/_2$, BSPT, black	1	
5	- - - - - -	NIPPLE, pipe, standard, R 0.5, close	2	
6	- - - - - -	TEE, pipe, 1/2 BSPT, black	1	
7	- - - - - -	PLUG, pipe, socket, flush, R $^1/_2$	1	
8	- - - - - -	SCREW, hex, serrated, M5 x 12, steel, zinc	2	
9	- - - - - -	BRACKET, 3 purge valve, global PFC	1	
10	- - - - - -	NUT, hex, flanged, serrated, M6	2	
11	- - - - - -	ELBOW, push-in, 0.50 RPT x 16 mm tube	1	
12	1100283	VALVE, solenoid, air, 2 x 3, G.5	1	
13	1606921	CABLE, valve, purge, 5 m	1	
14	1102678	SILENCER, air, 3/8 Rc	1	

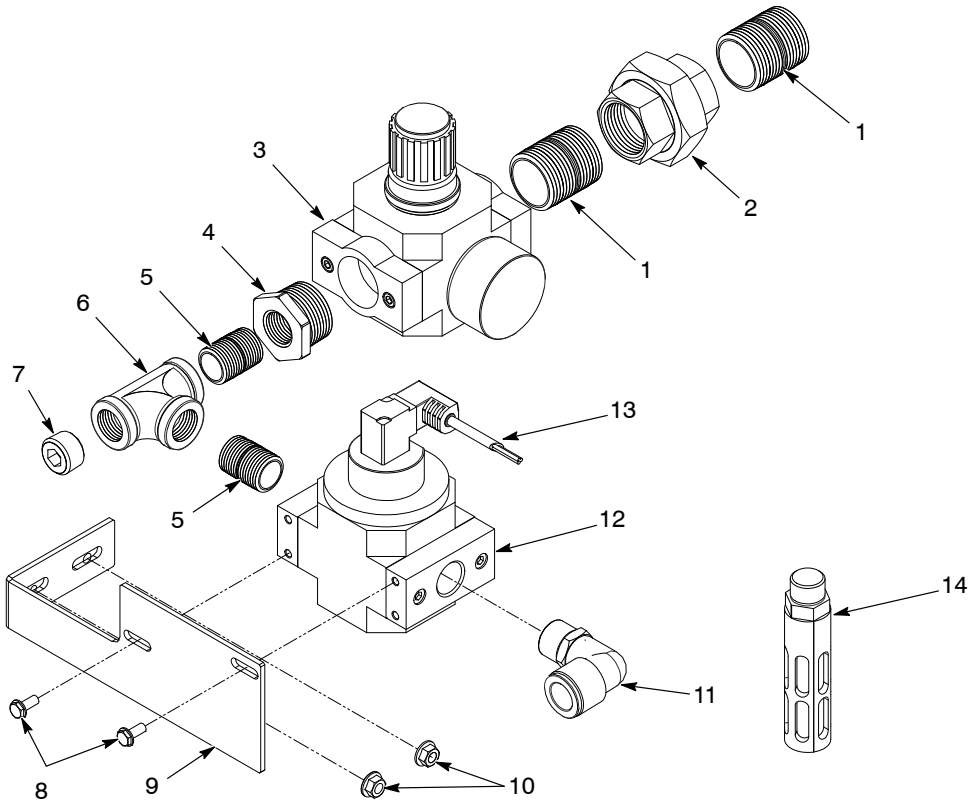


Figure 9-9 Purge Valve Assembly – One Lance Configuration

Purge Valve Assembly – Two Lance Configuration

See Figure 9-10.

Item	Part	Description	Quantity	Note
1	- - - - - -	NIPPLE, pipe, 1.0 BSPT, close	1	
2	- - - - - -	UNION, 1, BSPT, black	1	
3	1100285	REGULATOR, air, 0.5 in., 0.05–12 bar	1	
4	- - - - - -	BUSHING, pipe, R 1 x R $^1/_2$, BSPT, black	1	
5	- - - - - -	NIPPLE, pipe, standard, R 0.5, close	3	
6	- - - - - -	TEE, pipe, 1/2 BSPT, black	2	
7	- - - - - -	PLUG, pipe, socket, flush, R $^1/_2$	1	
8	- - - - - -	SCREW, hex, serrated, M5 x 12, steel, zinc	2	
9	- - - - - -	BRACKET, 3 purge valve, global PFC	1	
10	- - - - - -	NUT, hex, flanged, serrated, M6	2	
11	- - - - - -	ELBOW, push-in, 0.50 RPT x 16 mm tube	2	
12	1100283	VALVE, solenoid, air, 2 x 3, G.5	2	
13	1606921	CABLE, valve, purge, 5 m	2	
14	- - - - - -	NIPPLE, pipe, standard, R1/2 x 3 long	1	
15	1102678	SILENCER, air, 3/8 Rc	2	

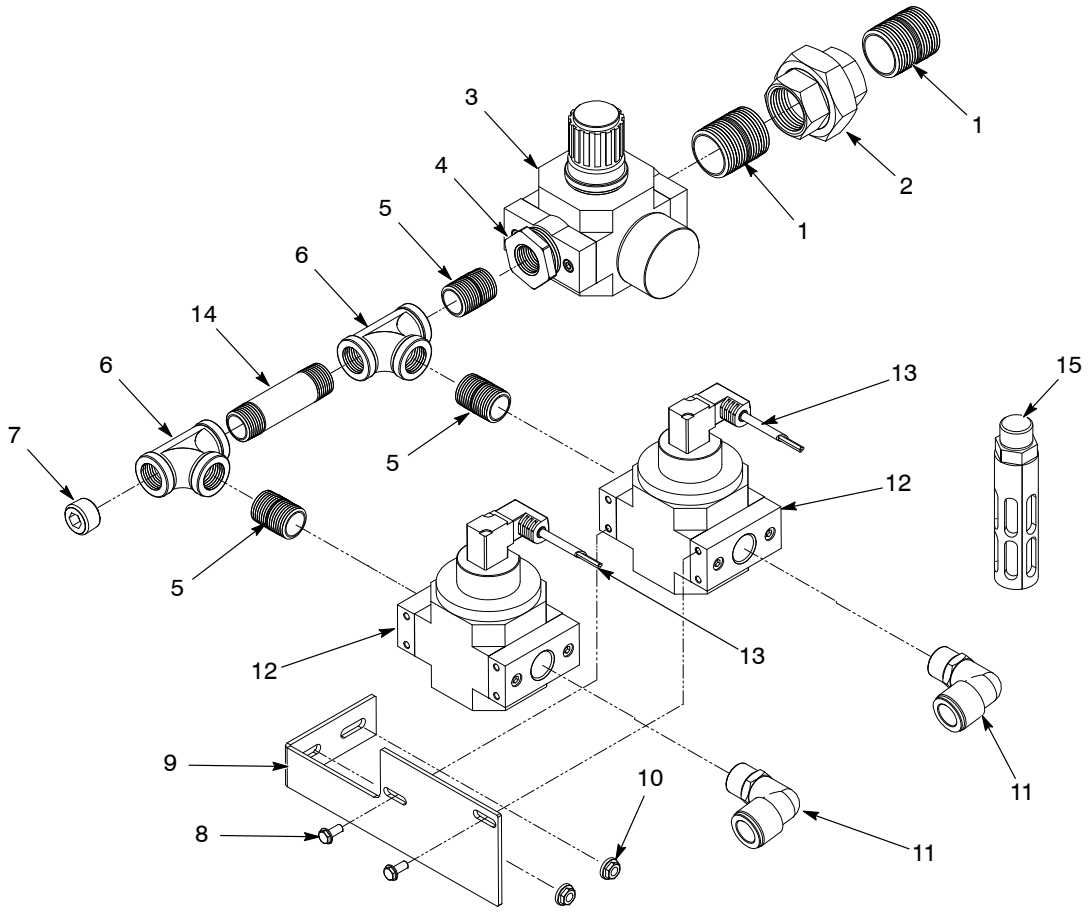


Figure 9-10 Purge Valve Assembly – Two Lance Configuration

Purge Valve Assembly – Three Lance Configuration

See Figure 9-11.

Item	Part	Description	Quantity	Note
1	- - - - - -	NIPPLE, pipe, 1.0 BSPT, close	2	
2	- - - - - -	UNION, 1, BSPT, black	1	
3	1100285	REGULATOR, air, 0.5 in., 0.05–12 bar	1	
4	- - - - - -	BUSHING, pipe, R 1 x R $^1/_2$, BSPT, black	1	
5	- - - - - -	NIPPLE, pipe, standard, R 0.5, close	4	
6	- - - - - -	TEE, pipe, 1/2 BSPT, black	3	
7	- - - - - -	PLUG, pipe, socket, flush, R $^1/_2$	1	
8	- - - - - -	SCREW, hex, serrated, M5 x 12, steel, zinc	2	
9	- - - - - -	BRACKET, 3 purge valve, global PFC	1	
10	- - - - - -	NUT, hex, flanged, serrated, M6	2	
11	- - - - - -	ELBOW, push-in, 0.50 RPT x 16 mm tube	3	
12	1100283	VALVE, solenoid, air, 2 x 3, G.5	3	
13	1606921	CABLE, valve, purge, 5 m	3	
14	- - - - - -	NIPPLE, pipe, standard, R1/2 x 3 long	2	
15	1102678	SILENCER, air, 3/8 Rc	2	

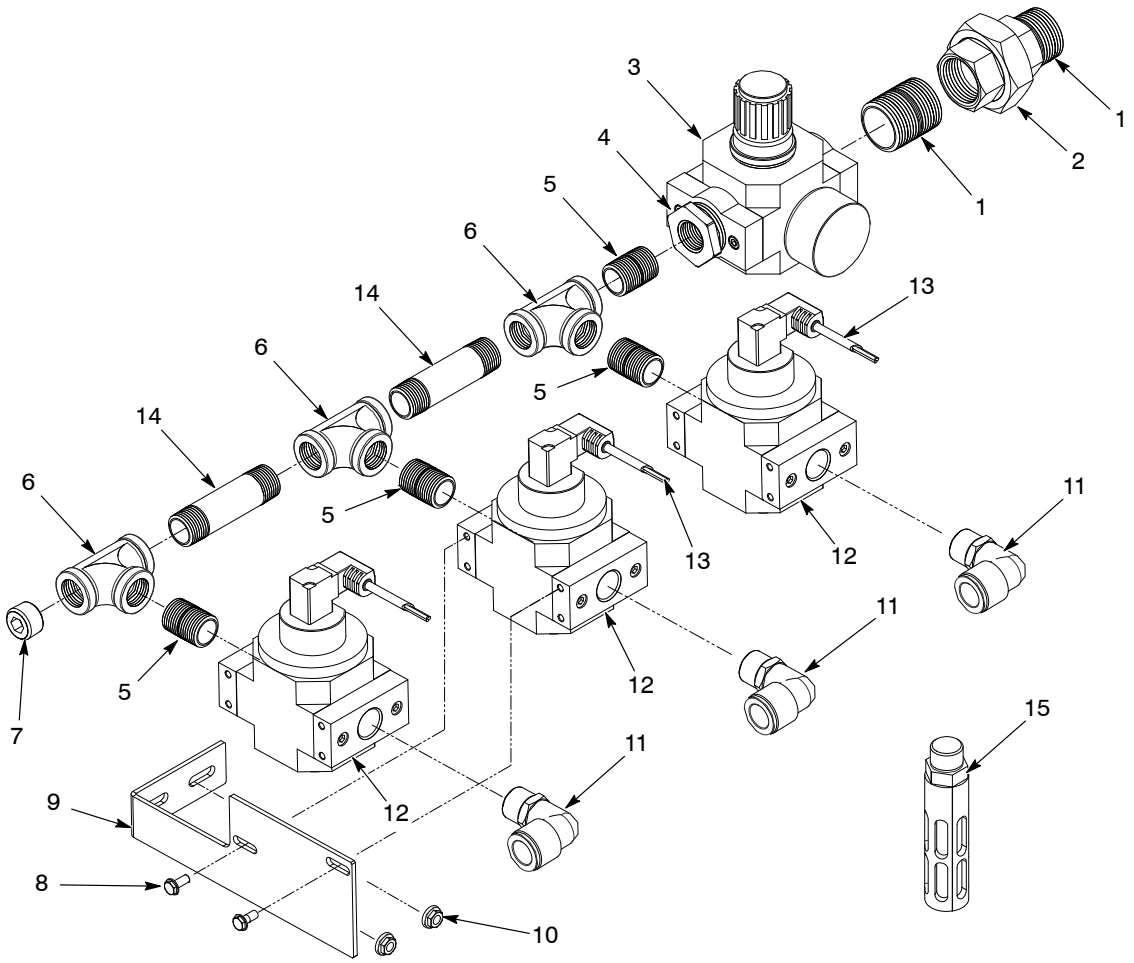


Figure 9-11 Purge Valve Assembly – Three Lance Configuration

Purge Valve Module Parts

Item	Part	Description	Quantity	Note
1	1100320	PLUG, dome, 1.38 in.(35 mm), Nylon	AR	
2	1066079	GROMMET, 3/8 in. lip style	AR	
3	- - - - - -	UNION, elbow, 16 mm tube x 16 mm tube	AR	
4	- - - - - -	GRIP, cord, 2X, 5–6 mm, 1/2 in. NPT, Nylon	1	
5	- - - - - -	GRIP, cord, 2X, 2.5–3 mm, 3/8 in. NPT, Nylon	1	
AR: As Required				

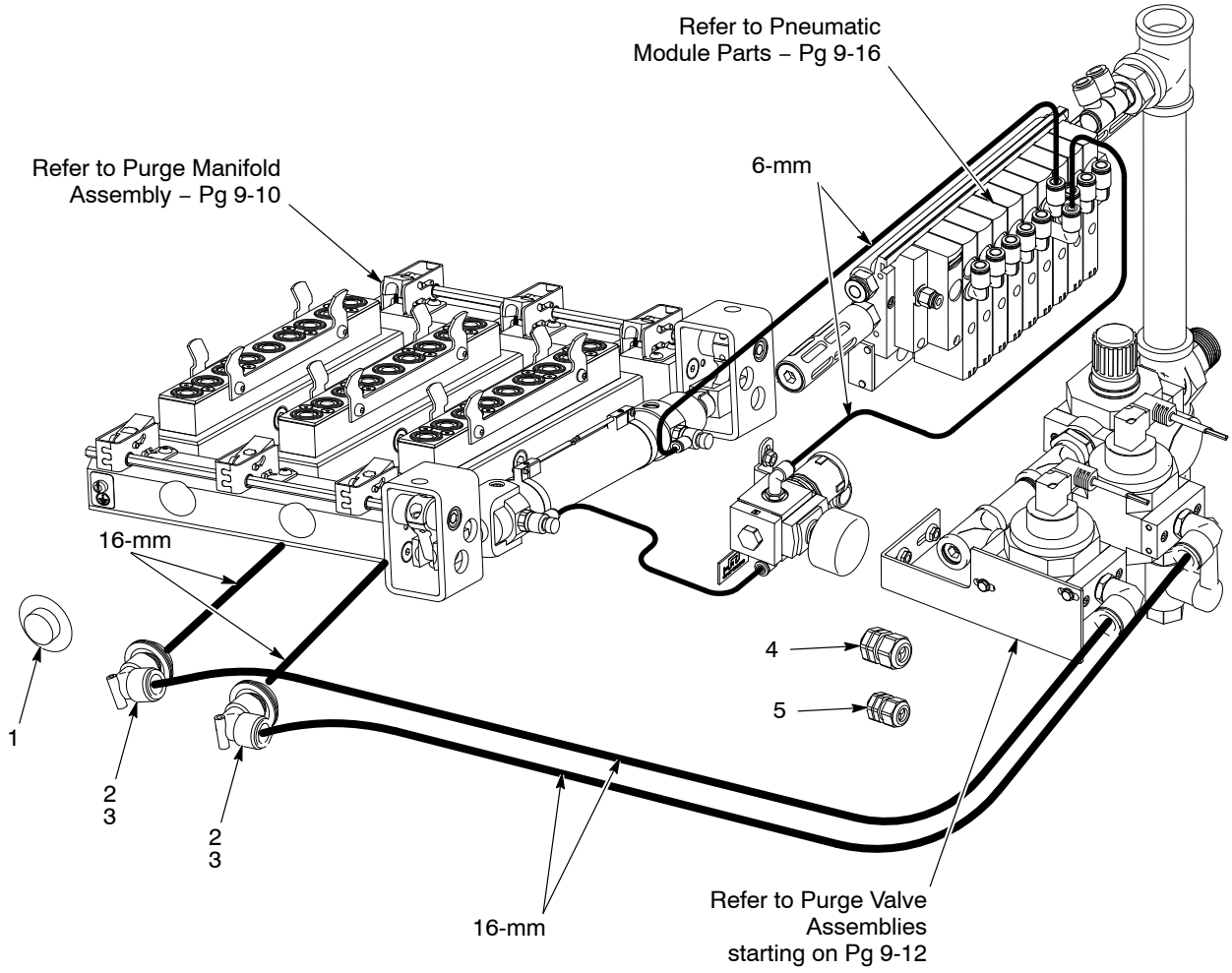


Figure 9-12 Purge Valve Module Parts

Pneumatic Module Parts

See Figure 9-13. Refer to the 11 x 17 foldouts at the end of this manual for the pneumatic diagram.

Item	Part	Description	Quantity	Note
1	- - - - - -	ADAPTER, 1 R x 1 in. female NPT	1	
2	1099424	VALVE, air, global PFC, main interlock	1	
2A	1102678	SILENCER, air, 3/8 Rc	1	
2B	1606921	CABLE, valve, purge, 5 m	1	
3	- - - - - -	TEE, Rc1, class 150	4	
4	- - - - - -	NIPPLE, pipe, 1.0, BSPT, close	1	
5	- - - - - -	NIPPLE, pipe, standard, R 0.5, close	3	
6	- - - - - -	VALVE, ball, 1/2 in. BSPT, brass	1	
7	- - - - - -	CAP, pipe, RC 1/2	1	
8	- - - - - -	UNION, 1/2 in. BSPT	1	
9	- - - - - -	BUSHING, pipe, R1 x R 1/2, BSPT, steel, zinc	3	
10	1099413	REGULATOR, 0.3–7 bar, 0.25	3	
11	1099423	VALVE, 9 station, global PFC	1	
12	1099582	KIT, blowoff gun, 3 meter	1	
13	- - - - - -	TUBE FITTING, 90 degree male, 37, 1/4 tube x 1/4 NPT, brass	1	
14	- - - - - -	ELBOW, swivel, push in, 2 x 10T x 0.5 R	1	
15	- - - - - -	BUSHING, pipe, R1 x RC 0.38, steel, zinc	1	
16	- - - - - -	CONNECTOR, bulkhead, 1/4 in. NPT x 10 mm tube	1	
17	- - - - - -	CONNECTOR, male, elbow, 6 mm x 1/4 in. unithread	4	
18	1102676	GAUGE, air, 0–150 psi, rear 1/4 G thread	3	
19	971109	UNION, bulkhead, 10 mm tube x 10 mm tube		

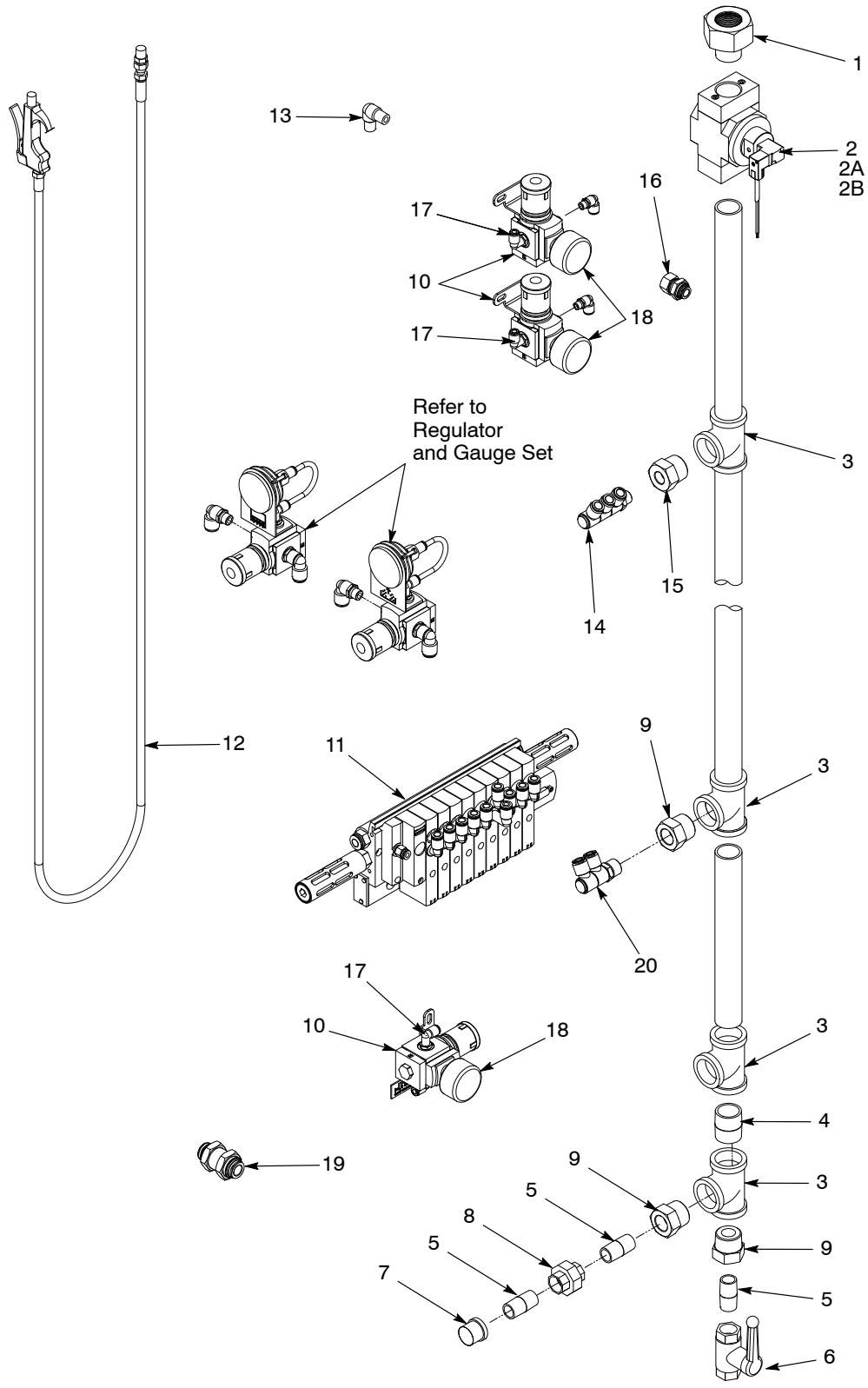


Figure 9-13 Pneumatic Module Parts

Regulator and Gauge Set

See Figure 9-14.

Item	Part	Description	Quantity	Note
1	1100102	REGULATOR, air, 1/4, 0.3–4 bar	1	
2	- - - - - -	CONNECTOR, male, elbow, 10 mm tube x 1/4 in. unithread	1	
3	1100103	GAUGE, 0–2.5 bar, 1/4 RPT, panel mounted	1	
4	- - - - - -	CONNECTOR, male, elbow, 6 mm tube x 1/4 in. unithread	2	
5	- - - - - -	CONNECTOR, female, 6 mm tube x 1/4 RPT	1	
6	- - - - - -	TUBING, polyurethane, 6/4 mm, blue	AR	
AR: As Required				

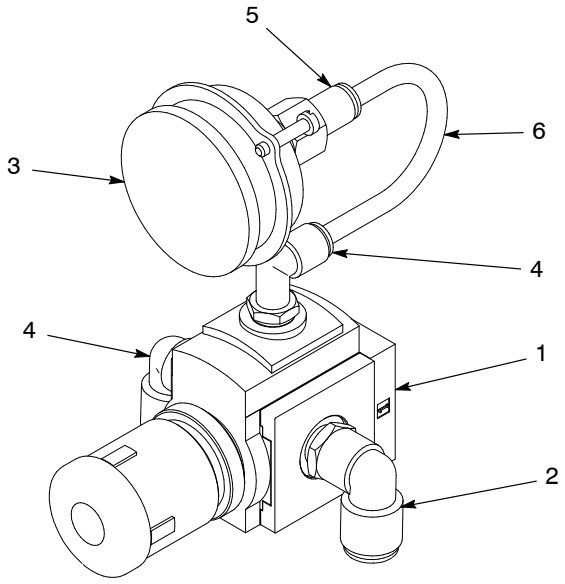


Figure 9-14 Regulator and Gauge Parts

Hopper Platform and Vibrator Parts

See Figure 9-15. This illustration shows a two-position platform.

Item	Part	Description	Quantity	Note
1	1601109	VIBRATOR, 220/380V, 3 phase, 50 Hz	1	A
1	1600835	VIBRATOR, 230/460V, 3 phase, 60 Hz	1	A
1	1600836	VIBRATOR, 330/575V, 3 phase, 60 Hz	1	A
1	1601112	VIBRATOR, 200V, 3 phase, 50 Hz	1	A
1	1601111	VIBRATOR, 200V, 3 phase, 60 Hz	1	A
1	1601110	VIBRATOR, 380V, 3 phase, 60 Hz	1	A
1	1601108	VIBRATOR, 415V, 3 phase, 50 Hz	1	A
2	- - - - - -	SCREW, flat head, socket, M8 x 40, black	2	
3	- - - - - -	WASHER, flat, regular, M8, steel, zinc	4	
4	- - - - - -	NUT, lock, nylon, M8, steel, zinc	4	
5	- - - - - -	SCREW, hex, serrated, M8 x 40, steel, zinc	2	
6	1099588	MOUNT, vibration, isolator	4	
7	- - - - - -	SCREW, hex, serrated, M8 x 16, steel, zinc	16	
8	- - - - - -	NUT, hex, flanged, serrated, M8	4	
9	- - - - - -	NUT, hex, machine, M5, brass	1	
10	- - - - - -	WASHER, lock, external, M5, steel, zinc	1	
11	- - - - - -	JUMPER, ground, 12 in.	1	
12	- - - - - -	TAG, ground	1	
13	- - - - - -	SCREW, pan head, slotted, M5 x 20, brass	1	
14	- - - - - -	SCREW, hex, serrated, M6 x 16, steel, zinc	8	
15	- - - - - -	STRAIN RELIEF, cable, 1/2 NPT	1	

NOTE A: North America and Asia. Check the identification plate on your existing motor before ordering. Before installing, verify the correct weight adjustment to ensure proper operation. Refer to the *Repair* section for instructions.

AR: As Required

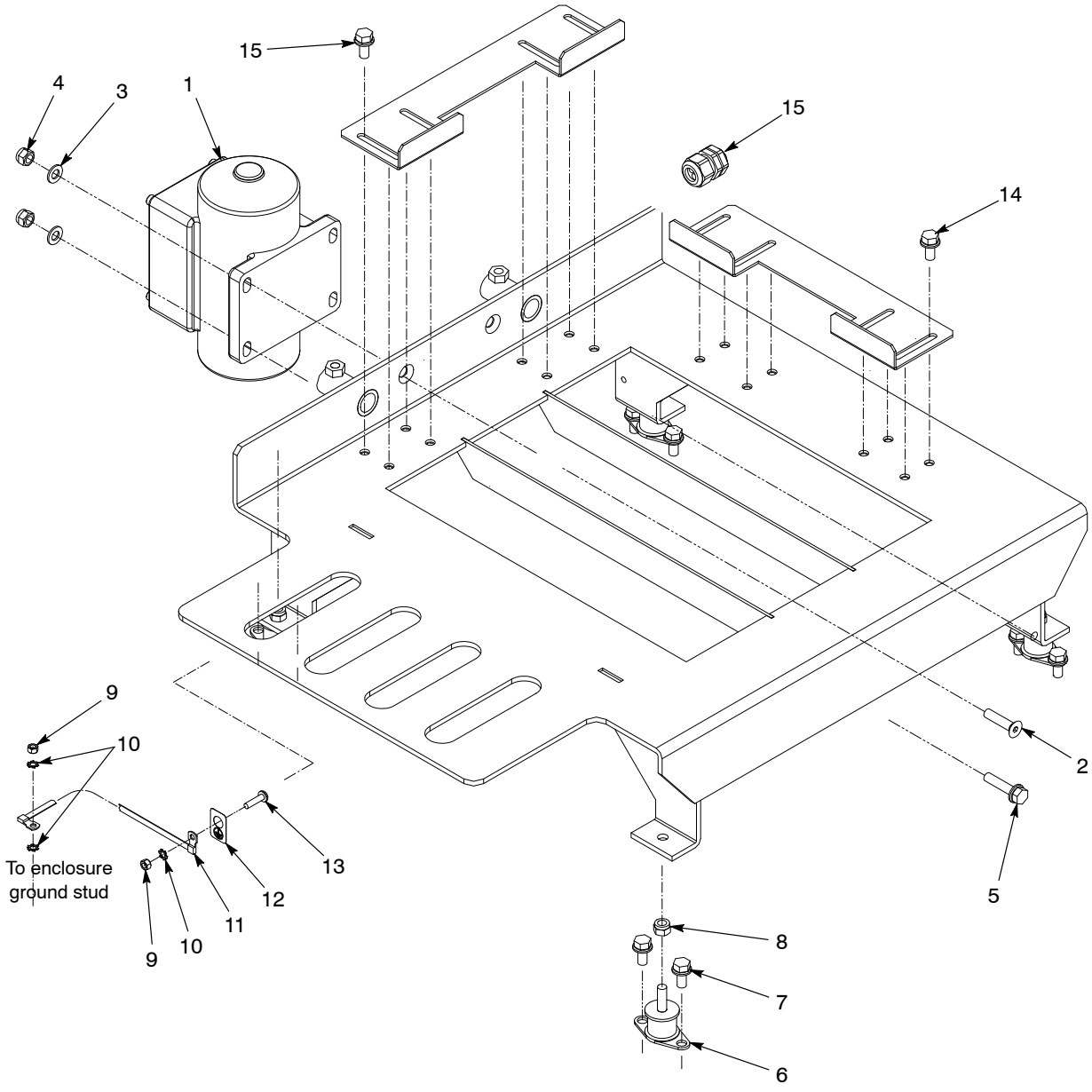


Figure 9-15 Hopper Platform and Vibrator Parts

Sieve and Mounting Parts

Non-CE/ATEX Sieve Parts

See Figure 9-16.

Item	Part	Description	Quantity	Note
1	1056563	SCREEN, 20 mesh (864 micron)	1	A
1	1014561	SCREEN, 40 mesh (381 micron)	1	A
1	1014562	SCREEN, 60 mesh (234 micron)	1	A
2	1060113	MOTOR, vibrator, 230/460, 3 phase, 60 Hz	1	
2	1060114	MOTOR, vibrator, 220/380, 3 phase, 50 Hz	1	
3	1014563	GASKET, screen, sieve, 15 in.	1	
4	1017602	MOUNT, isolation, sieve	1	
5	1104897	CAP, vinyl, 3/4–13/16, black	AR	
6	1104478	CLIP, ground, sieve screen	1	
7	1070199	PLUG, hopper fill, NHR	1	
NS	1103290	PLUG, sieve lid		A
8	1600758	GASKET, plastic wear ring	1	

NOTE A: Use with Vibrasonic sieve option. Vibrasonic screens are listed on the following page.

AR: As Required

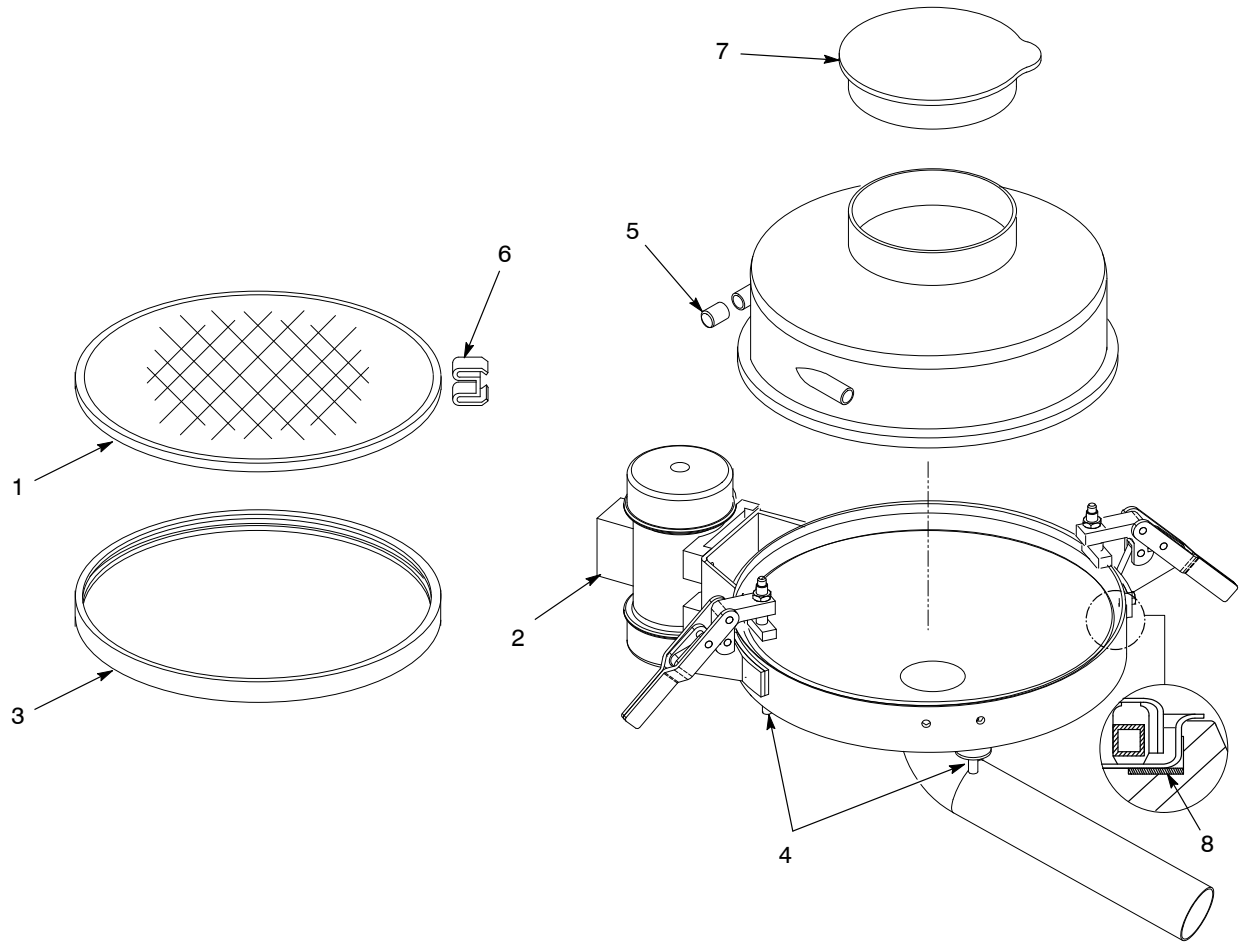


Figure 9-16 Sieve Parts

Vibrasonic Sieve Screens

Part	Description	Note
1014565	SCREEN, Vibrasonic, 80 mesh (178 micron)	
1090890	SCREEN, Vibrasonic, 100 mesh (140 micron)	

Sieve Mounting Bracket

See Figure 9-17.

Item	Part	Description	Quantity	Note
1	1099554	HANDLE, adjustable, M10 x 40 stud	3	
2	- - - - - -	SCREW, hex, serrated, M8 x 25, steel	8	
3	- - - - - -	COLLAR, clamp, 1.3 in.	1	

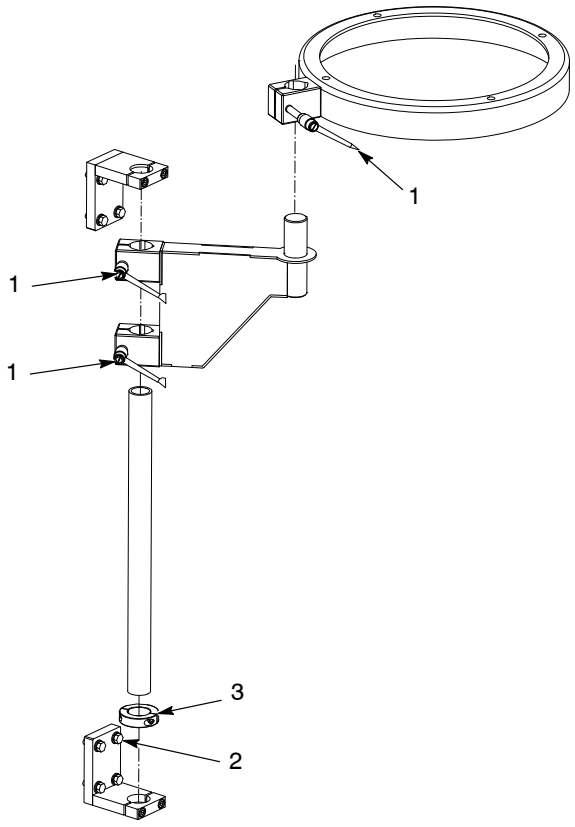


Figure 9-17 Sieve Mounting Bracket

Powder Hose and Air Tubing Sleeves

See Figure 9-18.

Item	Part	Description	Quantity	Note
–	1100204	MODULE, hose sleeve, powder hose	1	
1	- - - - - -	TUBING, spiral cut	1	
2	- - - - - -	PLATE, powder hose, bulkhead, global PFC	1	
3	- - - - - -	• WASHER, flat, reg, M6, steel, zinc	4	
4	- - - - - -	• SCREW, button, socket, cap, M6 X 16, zinc	4	
–	1100205	• MODULE, hose sleeve, air tubing, GPFC	1	
5	- - - - - -	• TUBING, spiral cut	1	
6	- - - - - -	• GROMMET, air lines, global PFC	1	
7	- - - - - -	• WASHER, flat, reg, M6, steel, zinc	3	
8	- - - - - -	• SCREW, button, socket, cap, M6 X 16, zinc	3	

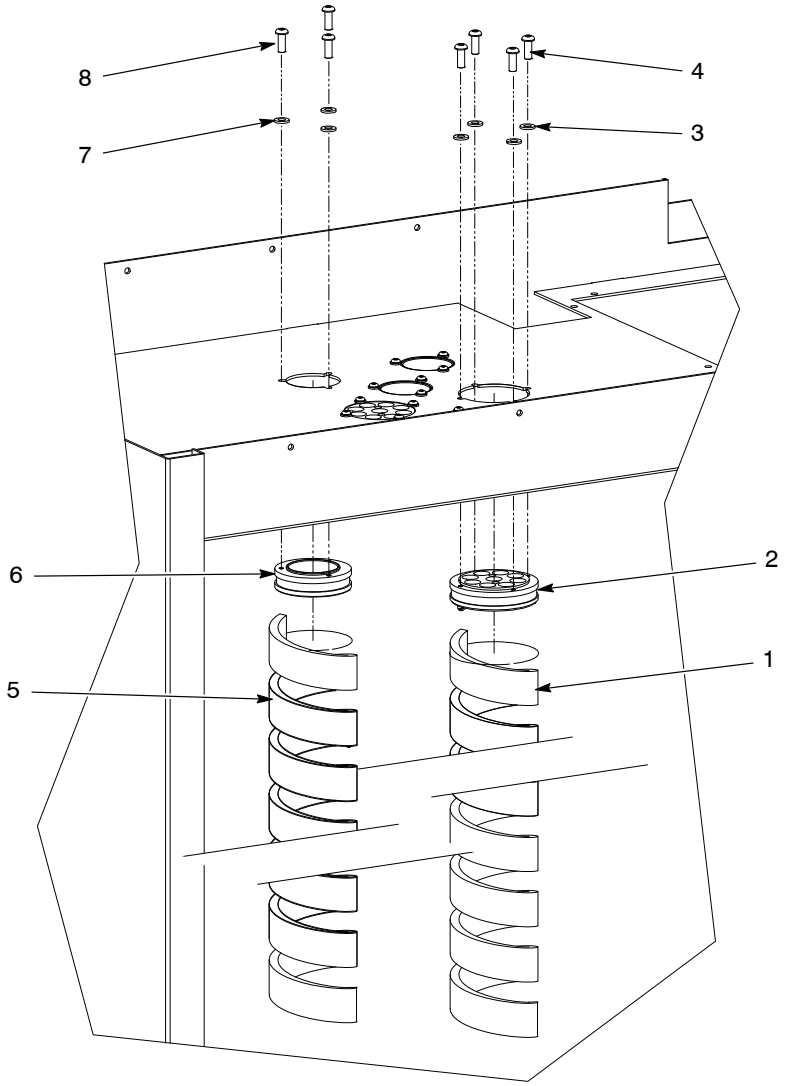


Figure 9-18 Powder Hose and Air Tubing Sleeves and Bulkhead Plates

Hose/Air Bulkhead Blanking Plate Kit

See Figure 9-19.

Item	Part	Description	Quantity	Note
–	1102312	MODULE, hose/air bulkhead blanking plate,GPFC	1	
1	- - - - - -	• PLATE, BLANK, air line bulkhead, GPFC	1	
2	- - - - - -	• PLATE, BLANK, hose bulkhead, GPFC	1	
3	- - - - - -	• WASHER, flat, regulator, M6, steel, zinc	7	
4	- - - - - -	• SCREW, button, socket, cap, M6X16, zinc	7	

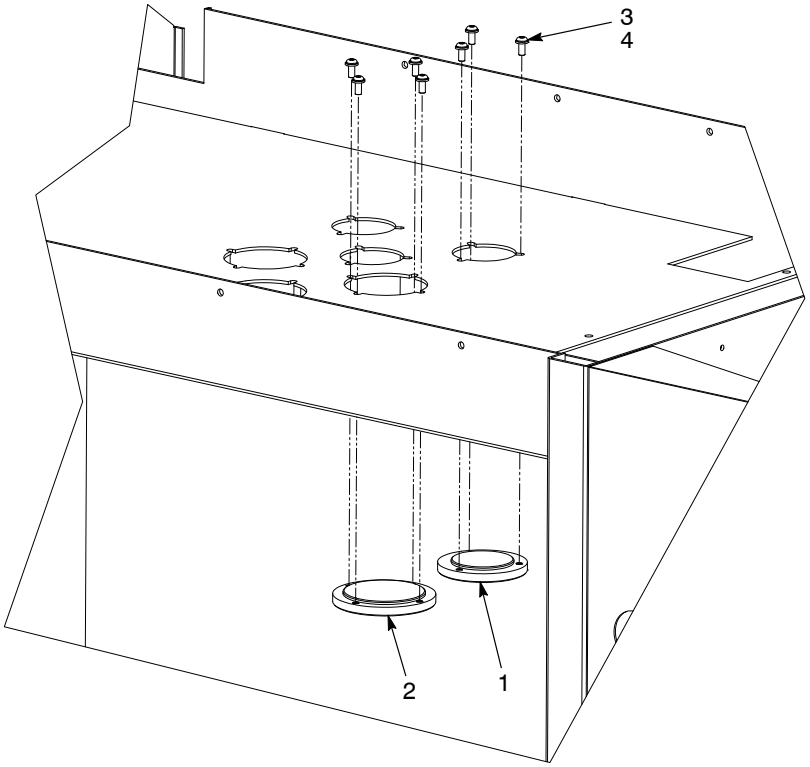


Figure 9-19 Hose/Air Bulkhead Blanking Plate Kit

Pump Air Tubing Bulkhead Fittings

See Figure 9-20.

Item	Part	Description	Quantity	Note
1	249461	SOCKET, female, 8 mm, 10 tube, pneumatic	1	
2	249455	PLUG, male, 8mm, 10 tube, pneumatic	1	

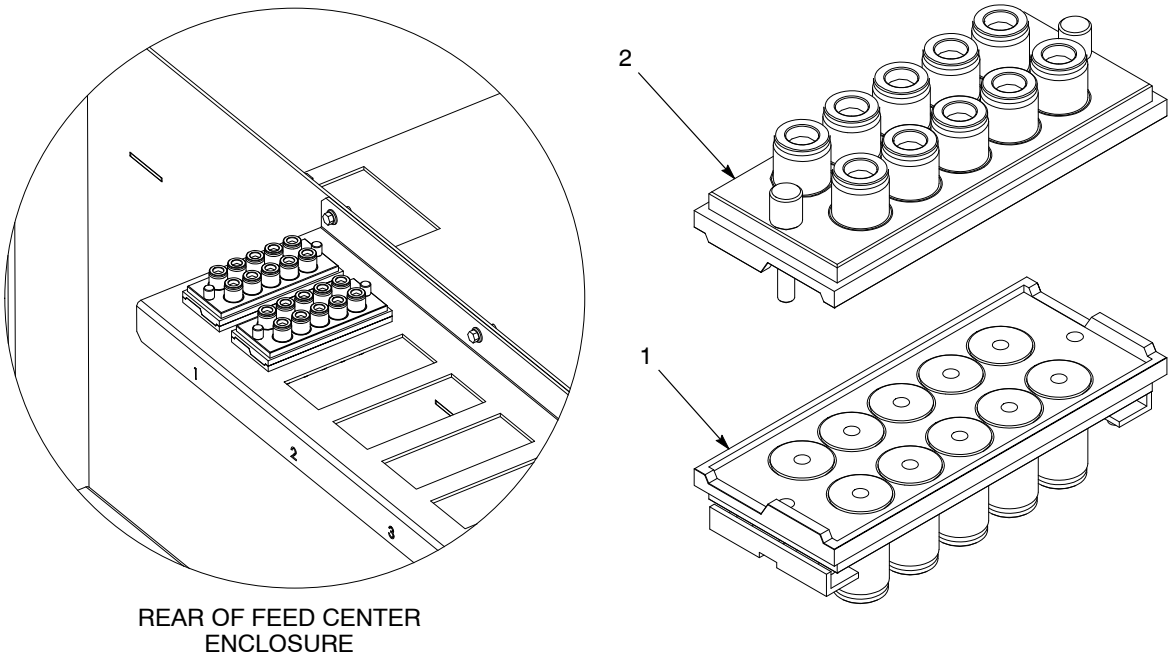


Figure 9-20 Pump Air Bulkhead Fittings

Other Service Parts

Light Fixture

Part	Description	Note
1102177	FIXTURE, light, florescent, rear access, 2 ft (N. America and Asia)	

Powder Transfer Tubing and Grommets

Part	Description	Note
1063654	TUBING, polyethylene, 16 mm OD, natural	
1066079	GROMMET, lip style, 3/8 in.	
1100320	PLUG, dome, 35 mm, (1.38 in.), Nylon	

Air Tubing and Fittings

Part	Description	Min. Quantity
900742	TUBING, polyurethane, 6 mm OD, blue	50
900618	TUBING, polyurethane, 8 mm OD, blue	50
900619	TUBING, polyurethane, 8 mm OD, black	50
900740	TUBING, polyurethane, 10 mm OD, blue	50
900613	TUBING, polyurethane, 12 mm OD, blue	50
183804	PLUG, blanking, 6 mm tube	–
972930	PLUG, push in, 8 mm tube, plastic	–
148256	PLUG, 10 mm, tubing	–

Feed Hoppers

Part	Description	Note
1071873	HOPPER, square, 50 lb	A
7404027	HOPPER, rectangular, 75 lb	A
1070536	HOPPER, cylindrical, 50 lb, NHR-2-50	B

NOTE A: Refer to Section 10, Options for service parts.

B: Refer to the NHR hopper manual, part number 1062942, for service parts and instructions.

Duct Components

Part	Description	Note
1106342	DUCT, transition	
1106343	DAMPER	

Fittings for Transfer Pump Air

Use these fittings to supply air from the control manifold to the HDLV transfer pump when runs are greater than 25 ft. or when dual reclaim transfer pumps are used. Refer to *Section 3, Installation* for diagrams.

Part	Description	Note
1106371	VALVE, straight fitting, 10 mm, Festo	
7404027	FITTING, Y-branch, 10mm plug-in x 10 mm tube	
1070536	FITTING, straight, 10 mm tube – 8 mm tube	

Section 10
Options

Introduction

This section contains information about optional equipment for the Spectrum powder feed center. Contact your Nordson representative for more information about the options listed in this section.

75-lb Feed Hopper

See Figure 10-1.

Item	Part	Description	Quantity	Note
–	7404027	HOPPER, fluidizing, powder feed center, 75 lbs.	1	
1	- - - - - -	• LID, hopper, PFC	1	
2	- - - - - -	• BODY, hopper, PFC	1	
3	—	• PLENUM, hopper	1	
4	—	• CONNECTOR, 10 mm tubing x 1/2 in. NPT	1	
–	1086406	• KIT, SERVICE, fluidizing hopper, PFC		
5	- - - - - -	• • FLUID PLATE, hopper, PFC	1	
6	1604476	• • GASKET, hopper, PFC	1	
7	- - - - - -	• • NUT, hex, M6, nylon	40	C
8	- - - - - -	• • WASHER, flat, M6, nylon	80	C
9	- - - - - -	• • SCREW, hex, M6 x 40, Nylon	40	C
NS	1043414	CART, fluidizing hopper	1	A
NS	1051364	KIT handle, cart, fluidizing hopper	1	B

NOTE A: The optional cart allows the fluidizing hopper to be transported easily.
B: Order this kit to install a handle on the hopper cart.
C: These parts included in 1100936 Kit, Service, PFC Hopper Hardware.
NS: Not Shown

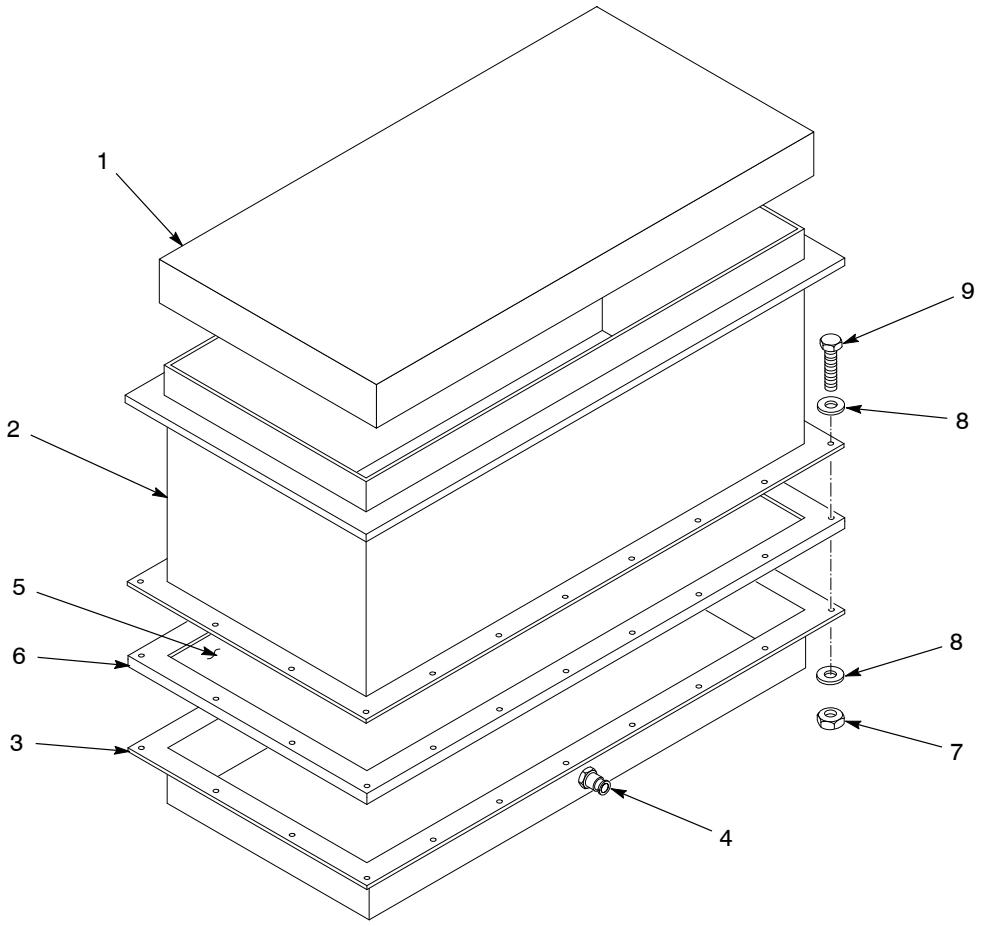


Figure 10-1 75-lb Feed Hopper Parts

50-lb Feed Hopper

See Figure 10-2.

Item	Part	Description	Quantity	Note
–	1071873	HOPPER ASSEMBLY, 18 x 18 x 17.5 in., 50 lbs	1	
1	- - - - - -	• LID, hopper	1	
2	- - - - - -	• BODY, hopper	1	
3	1071872	• PLATE, fluidizing, 0.50 x 18 x 18 in.	1	
4	- - - - - -	• PLENUM, hopper	1	
5	- - - - - -	• GASKET, Buna-N, 3/16 in. diameter	2	
6	971103	• CONNECTOR, 10 mm tubing x 1/2 in. unithread	1	
7	- - - - - -	• SCREW, hex head, 3–16 UNC x 1.5 in.	32	

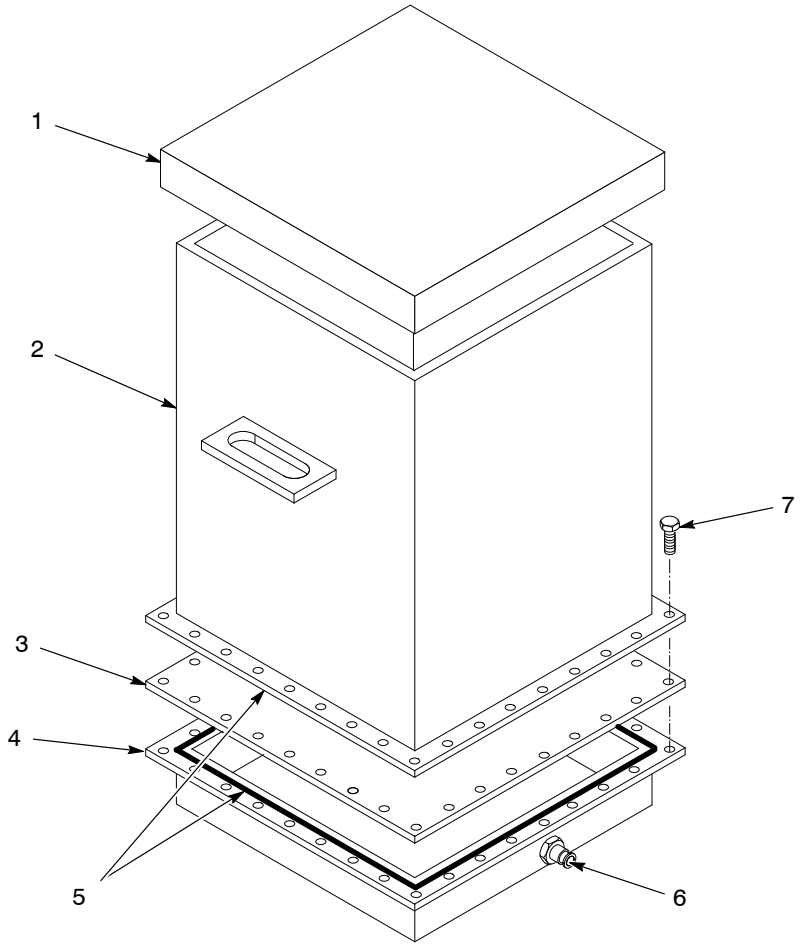


Figure 10-2 50-lb Feed Hopper Parts

Vibrasonic Sieve Screen

The Vibrasonic system increases sieve screen life and powder throughput, by applying an ultrasonic frequency to the screen. The ultrasonic frequency breaks down the surface tension in the screen, preventing blinding.

System Components

See Figure 10-3.

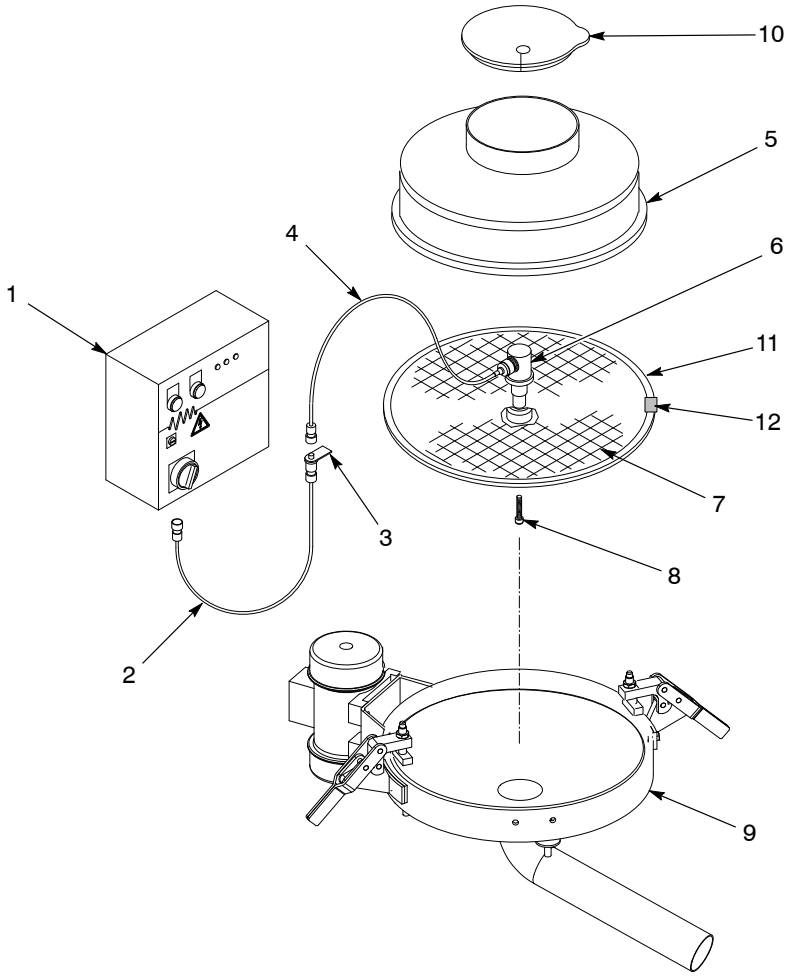


Figure 10-3 Vibrasonic System Components

1. Vibrasonic controller
2. Control cable
3. Bulkhead connector
4. Transducer cable
5. Sieve deck
6. Vibrasonic transducer
7. Sieve screen
8. Cap screw
9. Sieve pan
10. Plug
11. U-gasket
12. Ground clip

Installation

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

WARNING: Turn off and lock out system electrical power before performing the following tasks. Failure to observe this warning may result in personal injury or equipment damage.

NOTE: Inspect all Vibrasonic system components for cleanliness and damage. Contact your Nordson representative if any components are damaged.

Vibrasonic Transducer and Sieve Screen Installation

1. See Figure 10-3. Clean the sieve screen's (7) center hub and the bottom of the transducer (6) with acetone.

   NOTE: The transducer must be secured to the flat side of the sieve screen hub.

2. Place the transducer on the center hub of the sieve screen. Hand tighten the cap screw (8) through the bottom of the sieve screen.
3. Hold the base of the transducer with the supplied pin wrench and turn the cap screw with the supplied torque wrench until you hear a click.
4. Install the U-gasket (11) and ground clip (12) on the screen.
5. Set the sieve screen into the vibratory sieve (9). Plug the transducer cable (4) into the transducer, route the cable through the sieve deck (5), then clamp the sieve deck onto the sieve pan.
6. Slide the transducer cable through the slit in the plug (10), then install the plug into the sieve deck.

Controller and Cable Installation

1. See Figure 10-3. Make sure that the voltage selector on the controller (1) is set to your system's electrical supply specification.
2. Mount the controller above the powder feed center electrical panel as shown in Figure 2-6.
3. Connect the control cable (2) to the controller. Route the other end to the feed center roof.
4. Mount the bulkhead connector (3) in the feed center roof, then route the transducer cable (4) to the bulkhead connector and plug it in.

Operation

To turn on the Vibrasonic system, turn the red switch on the controller clockwise 90 degrees. The POWER and VIBRASONICS indicators on the controller will light. The five LEDs on the controller door are used for troubleshooting. During operation, LED 1 will light to indicate normal operation.

Troubleshooting

These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

Fault Conditions

Refer to Table 10-1 for a description of operating conditions indicated by the LEDs and indicators.

Refer to the Troubleshooting Procedures on the following pages to identify and correct error conditions indicated in Table 10-1.

Table 10-1 LED Functions

Condition	POWER Indicator	VIBRASONICS Indicator	LED 1	LED 2	LED 3	LED 4	LED 5
Normal	On	On	On	Off	Off	Off	Off
Under Voltage	On	On or Off	Off	On	Off	Off	Off
Over Voltage	On	On	Off	Off	On	Off	Off
Open Circuit	On	Flashing	Off	On	Off	On	Off
Short Circuit	On	On	Off	On	Off	Off	On

Electrical Troubleshooting Procedures

Use the following chart to correct faults conditions indicated by the LEDs.

Problem	Possible Cause	Corrective Action
1. Under voltage (output voltage too low)	Supply voltage too low	Increase the supply voltage.
	Sieve screen center hub bonding damaged	Replace the sieve screen.
	Damaged generator	Contact the Vibrasonic system manufacturer.
2. Over voltage (output of generator too high)	Poor contact surfaces between transducer and sieve screen	Remove the transducer from the screen and clean the mating surfaces with acetone. Assemble the transducer to the screen using the *Vibrasonic Transducer and Sieve Screen Installation* procedure.
	Loose transducer	Tighten the transducer using the supplied torque wrench. Refer to the *Vibrasonic Transducer and Sieve Screen Installation* procedure.
	Damaged sieve screen mating surface	Replace the sieve screen.
	Damaged transducer mating surface	Replace the transducer.
3. Open circuit (open circuit in output from controller)	Disconnected transducer cable	Check the transducer cable connections.
	Damaged control cable or connector	Replace the control cable.
	Loose or damaged wiring in the controller	Check the controller wiring. Tighten any loose connections.
	Damaged transducer	Replace the transducer.
4. Short circuit (short circuit in output from controller)	Short circuit in control cable	Replace the control cable.
	Short circuit in either control or transducer cable connectors	Thoroughly clean the connectors.
	Short circuit in transducer	Replace the transducer.

VIBRASONICS/POWER Indicator Troubleshooting

Use the following chart to correct fault conditions indicated by the POWER and VIBRASONICS indicators.

Indicator Status	Possible Cause	Corrective Action
POWER: on **VIBRASONICS: off**	Faulty indicator bulb	Check the indicator light bulb and replace if necessary.
	Loose cable connection	Check all cable connections.
	Poor contact surfaces between transducer and sieve screen	Remove the transducer from the screen and clean the mating surfaces with acetone. Assemble the transducer to the screen using the *Vibrasonic Transducer and Sieve Screen Installation* procedure.
POWER: off **VIBRASONICS: off**	Controller power is off	Turn on power to the controller.
	Circuit breaker tripped	Open the controller and reset the miniature circuit breaker.
	Faulty indicator bulbs	Check the indicator light bulbs and replace if necessary.
POWER: off **VIBRASONICS: on**	Faulty indicator bulb	Check the indicator light bulb and replace if necessary.
POWER: on **VIBRASONICS: flashing**	Break in continuity or change in polarity in control or transducer cable	Turn off controller power and check the transducer cap screw for the proper torque. Turn on controller power and check indicators. If the condition persists, replace the cables.

Vibrasonic System Parts

See Figure 10-4.

Item	Part	Description	Quantity	Note
—	1103009	SYSTEM, Vibrasonic, with interface card	1	
1	- - - - - -	• BOX, control, Vibrasonic	1	
2	- - - - - -	• CABLE, 4-meter, with support bracket	1	
3	- - - - - -	• CABLE, transducer	1	
4	- - - - - -	• TRANSDUCER, Vibrasonic	1	
5	1014565	• SCREEN, Vibrasonic, 80 mesh (178 micron)	1	A
5	1090890	• SCREEN, Vibrasonic, 100 mesh (140 micron)		A
6	1014563	• • GASKET	1	
7	- - - - - -	• SCREW, cap, socket head, M8	1	
8	1104478	CLIP, ground, sieve screen	1	
9	1103290	PLUG, sieve	1	
NOTE A: Other mesh sizes are available. Contact your Nordson representative for more information.				

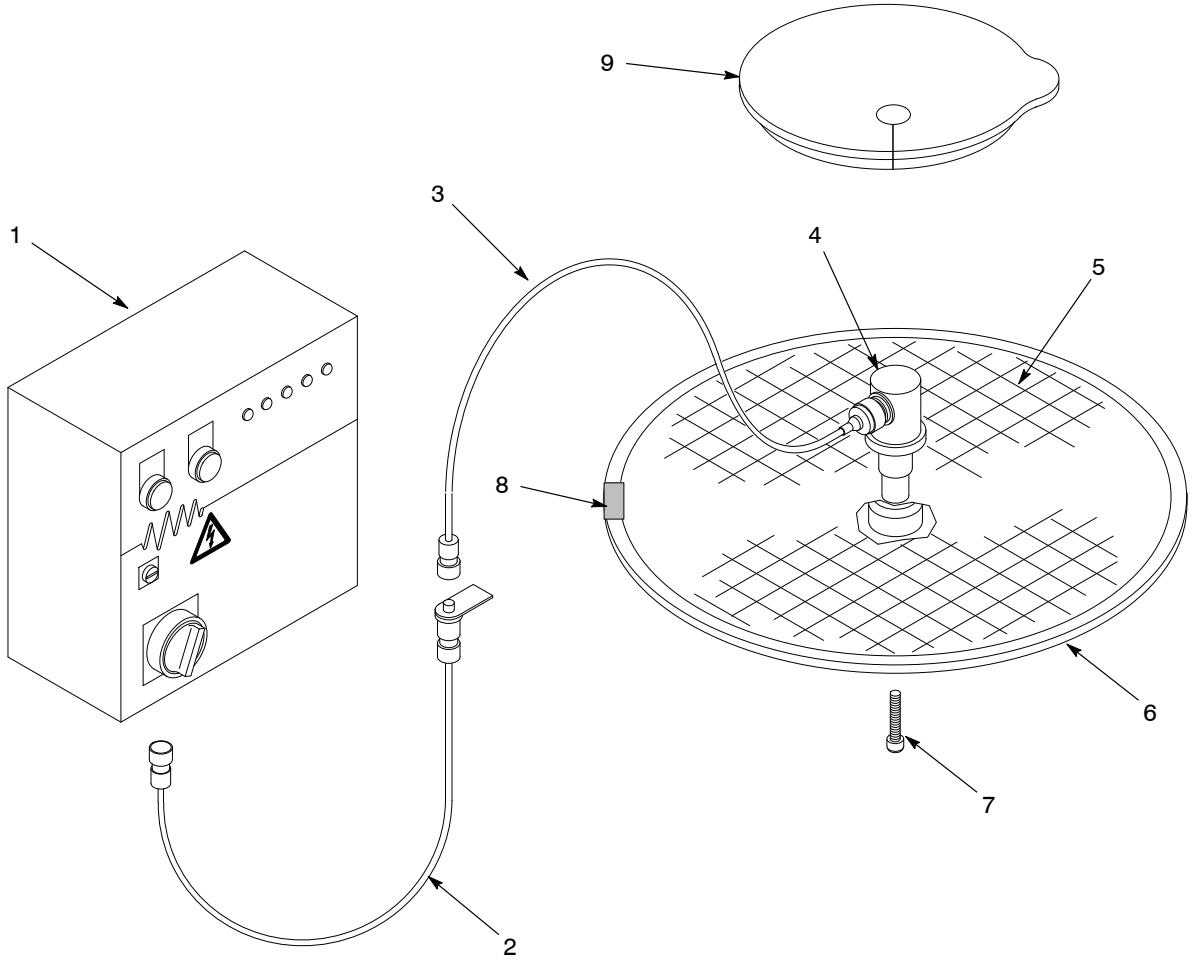


Figure 10-4 Vibrasonic System Parts

Section 11
Pneumatic and Wiring Diagrams

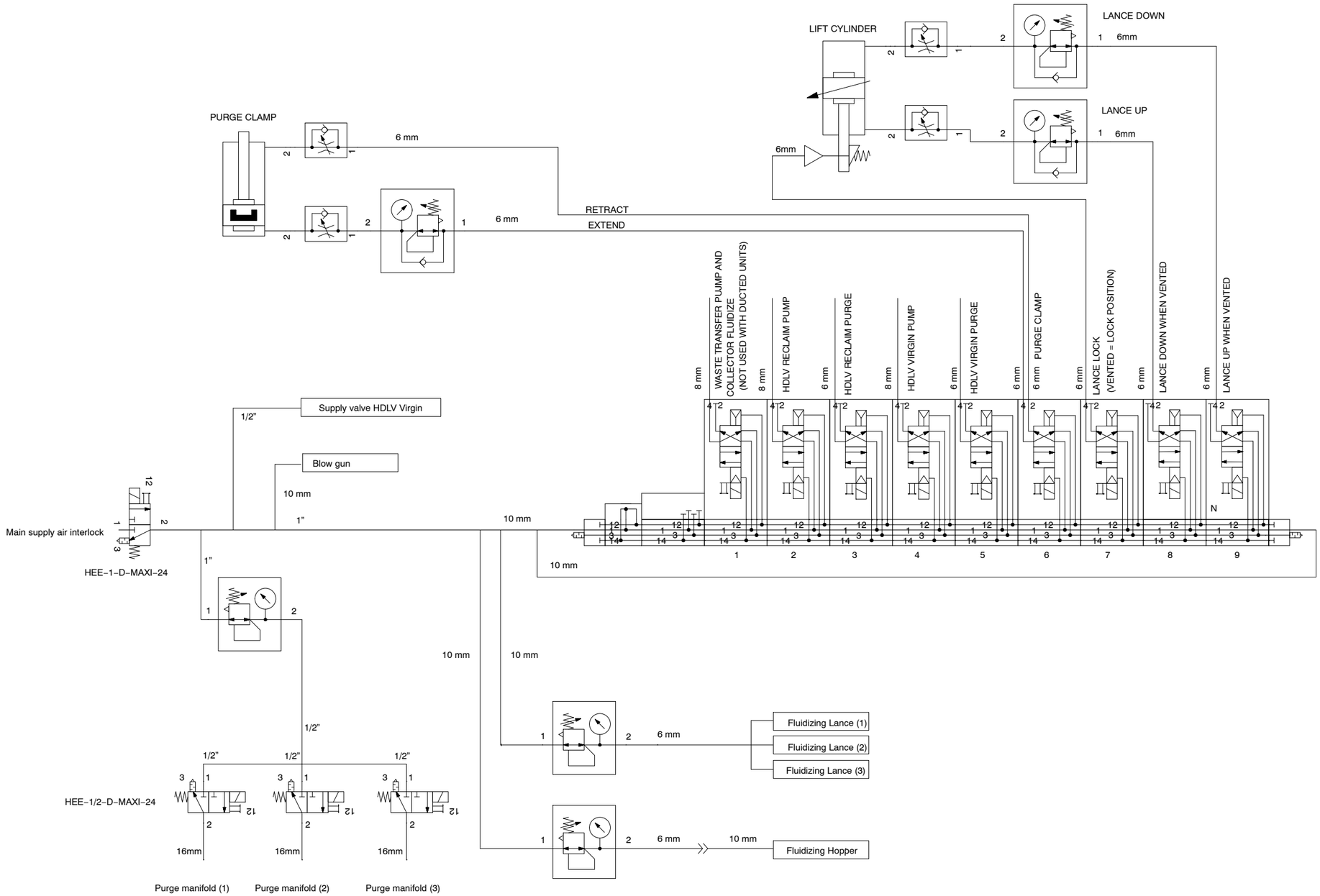
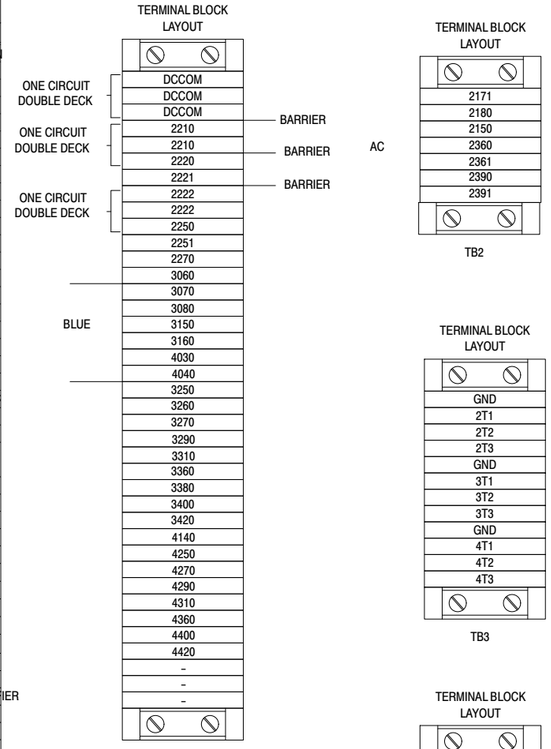
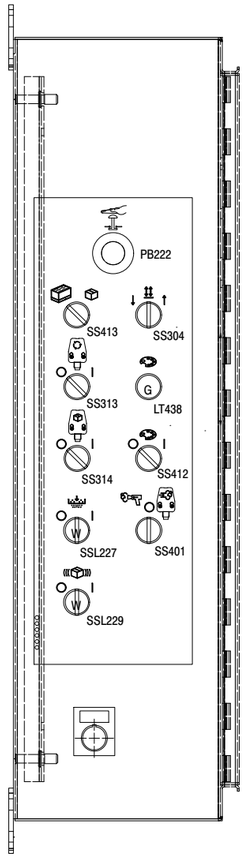


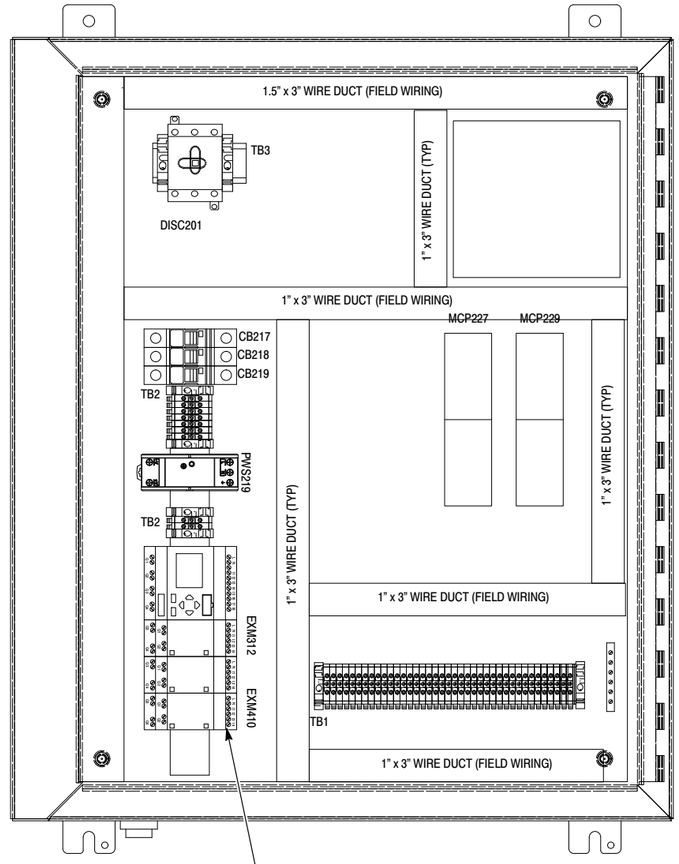
Figure 11-1 Spectrum Feed Center Pneumatic Diagram

VENDOR'S BILL OF MATERIAL				
ITEM	QTY	ITEM	PART NO.	MFG.
	1	ENCLOSURE W/SUB-PANEL	1102807	NORDSON/HOFFMAN
	1	REFFERENCE DRAWING, DEVICE LABEL SYMBOLS	SEE ITEM 04	NORDSON
DISC201	1	DISCONNECT, NON-FUSED	OT40F3	A.B.B.
DISC201	1	DISCONNECT, HANDLE	OHYS2AJ	A.B.B.
DISC201	1	DISCONNECT, EXTENDED SHAFT	OXS6X85	A.B.B.
DISC201	2	END ANCHOR	XBAES35C	CUTLER HAMMER
	AR	WIRE DUCT, 1.5" X 3"	71530	TAYLOR
	AR	DUCT COVER, 1.5"	79015	TAYLOR
	AR	WIRE DUCT, 1" X 3"	71030	TAYLOR
	AR	DUCT COVER, 1"	79010	TAYLOR
TB1	7	ONE CIRCUIT,DOUBLE DECK TERMINAL BLOCK, BLK	3430/1P	WOERTZ
TB1	3	ONE CIRCUIT,DOUBLE DECK END BARRIER	3431	WOERTZ
TB1	1	CENTERS JUMPERS, 10 POLE	81526/10	WOERTZ
TB1	7	BLUE TERMINAL BLOCK,6MM,600V,30AMP	3450BL	WOERTZ
TB1	AR	DIN RAIL, 30DEG, HIGH RISE	XUS001737	ABB
TB2, TB3, TB4	AR	DIN RAIL	D5PD2-20	CUTLER-HAMMER
TB1,TB2,TB3,TB4	8	END ANCHOR	3418	WOERTZ
TB1,TB2,TB3,TB4	4	END BARRIER	3460	WOERTZ
TB1,TB2,TB3,TB4	46	GRAY TERMINAL BLOCK,6MM,600V,30AMP	3450GR	WOERTZ
TB3	3	GREEN TERMINAL BLOCK,6MM,600V,30AMP	3450GN	WOERTZ
GTB1	1	GROUND TERMINAL	TGL1	GENERAL ELECTRIC
CB218,CB219	2	CIRCUIT BREAKER, 2A	MG24426	MERLIN GERIN
CB217	1	CIRCUIT BREAKER, 5A	MG17414	MERLIN GERIN
PRM301	1	PROGRAMMABLE RELAY CONTROLLER SIEMENS LOGO, 6ED1052-1HB00-0BA6	SEE ITEM 02	NORDSON
EXM312,401,410	3	EXPANSION MODULE, PROGRAMABLE RELAY	6ED1055-1HB00-0BA0	SIEMENS LOGO
PWS219	1	POWER SUPPLY, 24VDC, 2.1A	SDP 2-24100T	SOLA
PB222	1	E-STOP BUTTON, TWIST-RELEASE	XB4BS542	TELEMECANIQUE
PB222	1	2 NC CONTACT BLOCK	ZBE204	TELEMECANIQUE
SSL227,SSL229	2	22MM SELECTOR SWITCH, 3POS,ILLU WHITE,SR	ZB4BK1513	TELEMECANIQUE
SSL227,SSL229	2	WHITE 24V, PROTECTED LED W/1NC ,1NO	ZB4BW0B15	TELEMECANIQUE
SS313,314,412	3	SELECTOR, CHROME BEZEL, 2-POSITION	XB4BD21	TELEMECANIQUE
SS413	1	SELECTOR, CHROME BEZEL, 2-POSITION	XB4BD2	TELEMECANIQUE
SS413	1	2 NC CONTACT BLOCK	ZB4BZ103	TELEMECANIQUE
LT438	1	GREEN LIGHT, 24 VDC	XB4BVB3	TELEMECANIQUE
SS304	1	SELECTOR, CHROME BEZEL, 3-POSITION SR	XB4BD53	TELEMECANIQUE
SS401	1	SELECTOR, CHROME BEZEL, 3-POSITION	XB4BD33	TELEMECANIQUE
D336,D337	2	DIODE	1N4148	INTERNATIONAL RECTIFIER
AH442	1	ALARM,PIEZO,CONT. TONE,EXTRA LOUD	BC3B-24	SIGNAWORKS
MCP227	1	MANUAL MOTOR STARTER WITH OL PROTECTOR	SEE CHART	TELEMECANIQUE
MCP229	1	MANUAL MOTOR STARTER WITH OL PROTECTOR	SEE CHART	TELEMECANIQUE
MCP227,229	2	AUX. CONTACT 1NO,1NC(FAULT)	GVAD0110	TELEMECANIQUE
MCP227,229	2	MANUAL MOTOR STARTER ADAPTOR PLATE	GK2AF01	TELEMECANIQUE
MCP227,229	1	MANUAL MOTOR STARTER INSULATING BARRIER	GV2GH7	TELEMECANIQUE
M227,M229	2	CONTACTOR, MOTOR	LC1D09BD	TELEMECANIQUE
M227	1	AUX. CONTACT 2NO	LADN20	TELEMECANIQUE
T215	1	TRANSFORMER, 1KVA, 50/60HZ	CE1000MH	SOLA
FU213	2	FUSE,CLASS FNQ-R	SEE CHART	BUSSMANN
FU213	1	FUSEBLOCK, DINRAIL	SEE CHART	BUSSMANN
	1	SKINTOP SLN,CORD GRIP,NON-METALIC,NPT-3/8"	S2138	LAPP GROUP
	4	SKINTOP SLN,CORD GRIP,NON-METALIC,NPT-1/2"	S2112	LAPP GROUP
	1	SKINTOP SLRN,CORD GRIP,NON-METALIC,NPT-1/2"	S2212	LAPP GROUP
	1	SKINTOP SLN,CORD GRIP,NON-METALIC,NPT-3/4"	S2134	LAPP GROUP
	1	SKINTOP SLRN,CORD GRIP,NON-METALIC,NPT-3/4"	S2234	LAPP GROUP
	1	SKINTOP,MULTIPLE CABLE BUSHING,NPT-3/8", 2 HOLES,118" SIZE	53609230	LAPP GROUP
	1	SKINTOP,MULTIPLE CABLE BUSHING,NPT-1/2", 2 HOLES,197" SIZE	53613250	LAPP GROUP
	1	SKINTOP,MULTIPLE CABLE BUSHING,NPT-1/2", 3 HOLES,157" SIZE	53613340	LAPP GROUP
	1	SKINTOP,MULTIPLE CABLE BUSHING,NPT-3/4", 3 HOLES,276" SIZE	53621370	LAPP GROUP
	2	SKINTOP, INSERTS; .118" SIZE	53100003	LAPP GROUP
	3	SKINTOP, INSERTS; .157" SIZE	53100004	LAPP GROUP
	2	SKINTOP, INSERTS; .197" SIZE	53100005	LAPP GROUP
	3	SKINTOP, INSERTS; .276" SIZE	53100007	LAPP GROUP
	1	SKINTOP,NYLON LOCKNUT,NPT-3/8"	911370	LAPP GROUP
	5	SKINTOP,NYLON LOCKNUT,NPT-1/2"	911371	LAPP GROUP
	2	SKINTOP,NYLON LOCKNUT,NPT-3/4"	911372	LAPP GROUP



TRANSFORMER REF. CHART						
ITEM	208V	230V	380V	415V	460V	575V
FU213	FNQ-R-10	FNQ-R-10	FNQ-R-5	FNQ-R-5	FNQ-R-4	FNQ-R-4
FUSEBLOCK	CHM2D	CHM2D	CHM2D	CHM2D	CHM2D	CHM2D
1/6 HP MOTOR (TABLE VIBRATOR)						
ITEM	208V	230V	380V	415V	460V	575V
MCP229	GV2P05	GV2P04	GV2P03	GV2P03	GV2P03	GV2P03
RANGE	.6-1 A	.4-.63 A	.25-.4 A	.25-.4 A	.25-.4 A	.25-.4 A
1/4 HP MOTOR (SIEVE)						
ITEM	208V	230V	380V	415V	460V	575V
MCP227	GV2P06	GV2P06	GV2P04	GV2P04	GV2P04	GV2P04
RANGE	1-1.6 A	1-1.6 A	.4-.63 A	.4-.63 A	.4-.63 A	.4-.63 A
TOTAL CURRENT CALC. CHART						
	208V	230V	380V	415V	460V	575V
1/6 HP	.6	.6	.4	.4	.3	.3
X QTY						
1/4 HP	1.2	1.1	0.6	0.6	0.5	0.4
X QTY						
1.0 KVA TRANX	4.8	4.34	2.6	2.4	2.7	1.74
= TOTAL CURRENT						





1103002 Relay, prgm'd, Spectrum PFC controls

1. INDICATES OPTIONAL EQUIPMENT
2. ALL PHASES OF INSTALLATION MUST COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES. ALL WORK LOCATED IN CLASS 2, DIVISIONS 1 AND 2 HAZARDOUS LOCATIONS MUST COMPLY WITH NFPA CODE 33 AND NFPA CODE 70, ESPECIALLY ARTICLES 500, 502 AND 516, LATEST EDITIONS.
3. UL 508
4. ELECTRICAL INSTALLATION MUST COMPLY WITH NEC ESPECIALLY ART. 430, LATEST EDITION

Figure 11-2 Spectrum Powder Feed Center Control Panel (1 of 5)

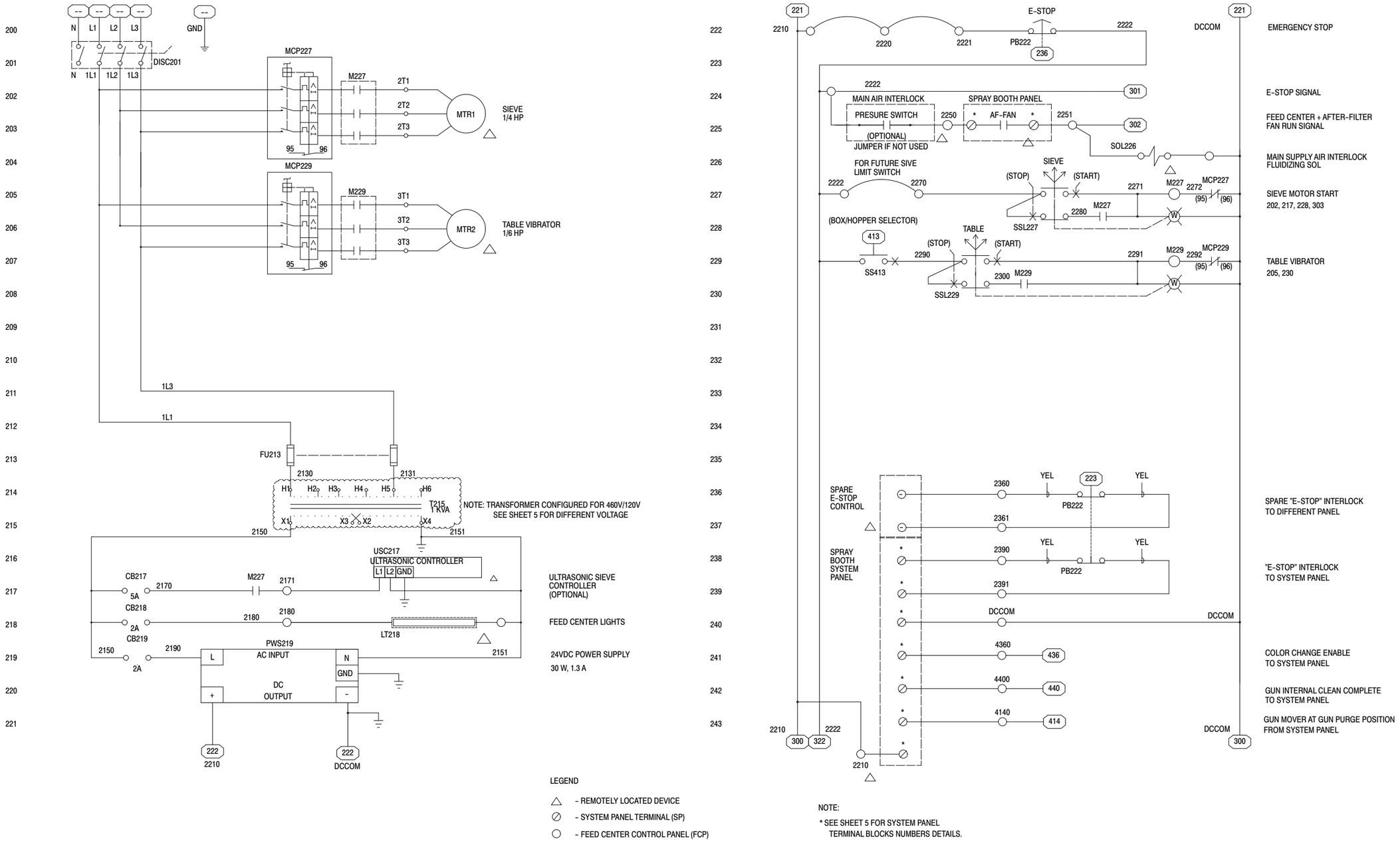


Figure 11-3 Spectrum Powder Feed Center Control Panel (2 of 5)

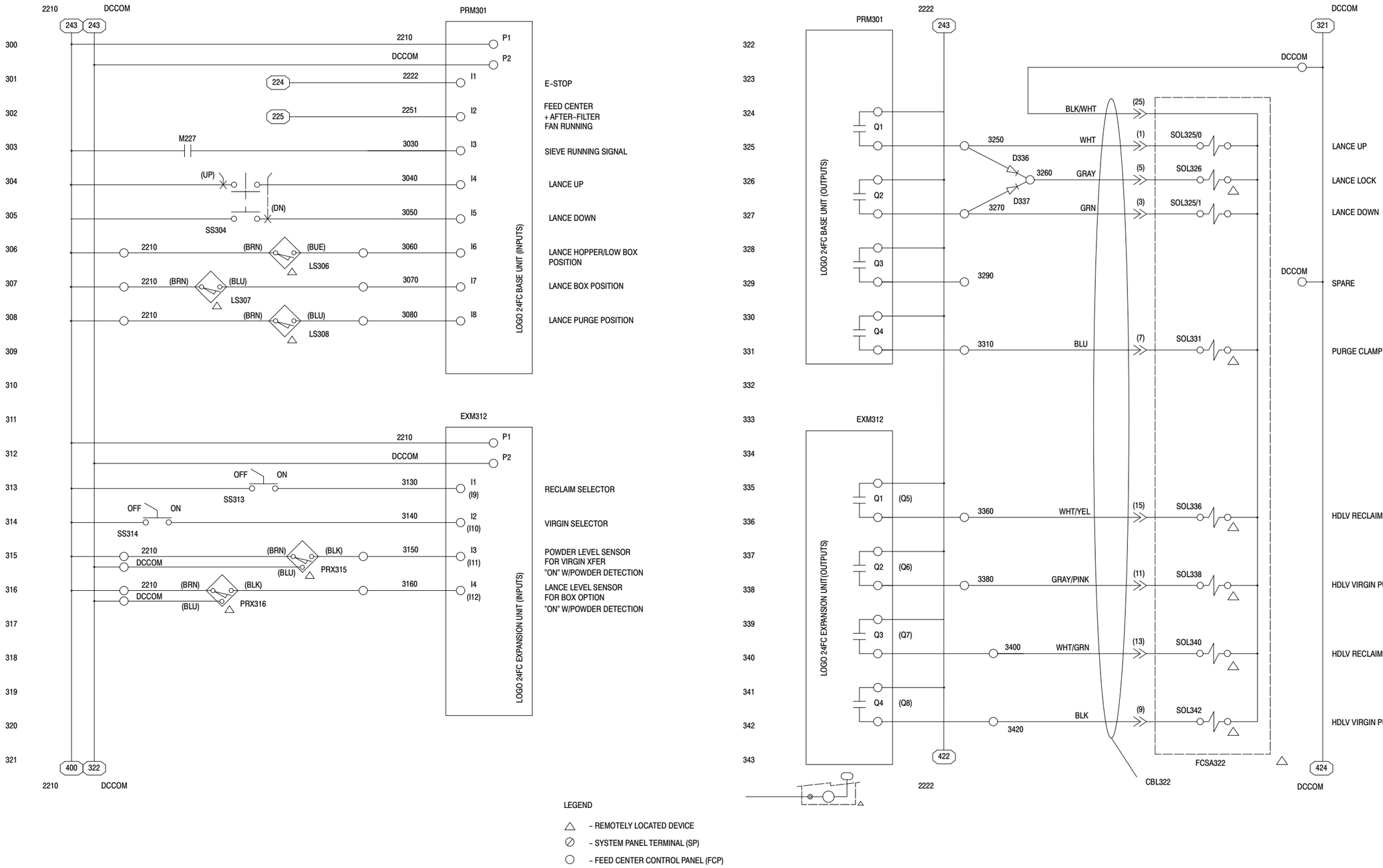


Figure 11-4 Spectrum Powder Feed Center Control Panel (3 of 5)

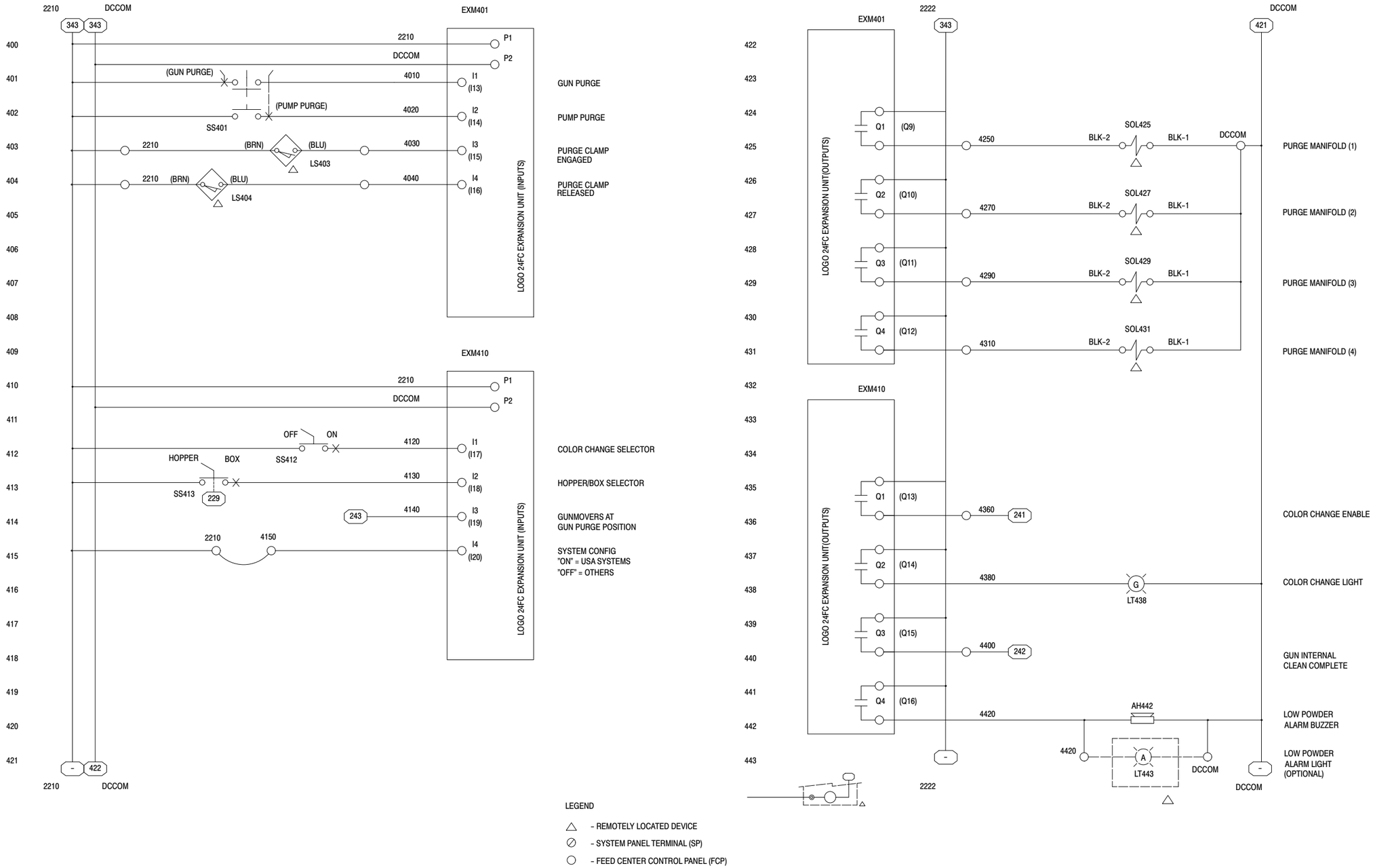
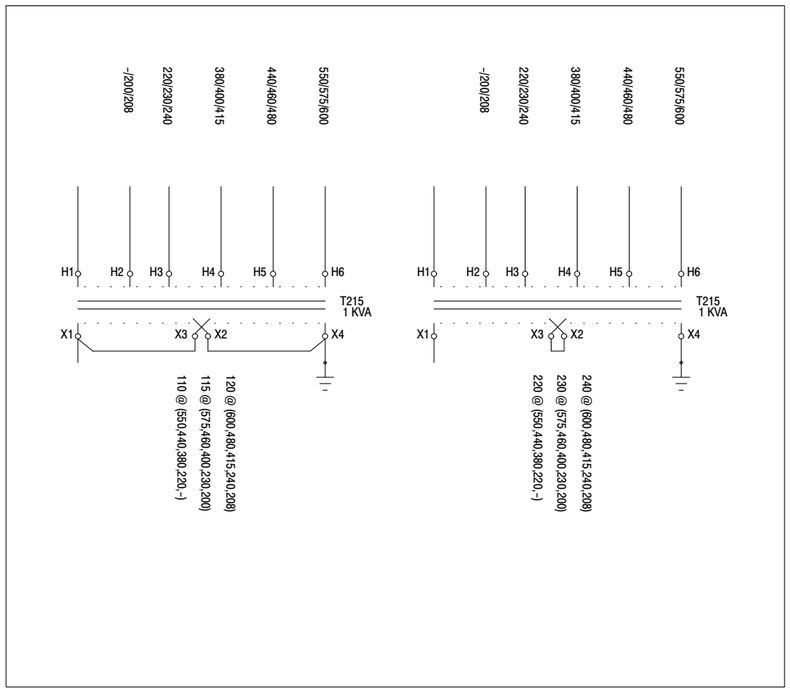
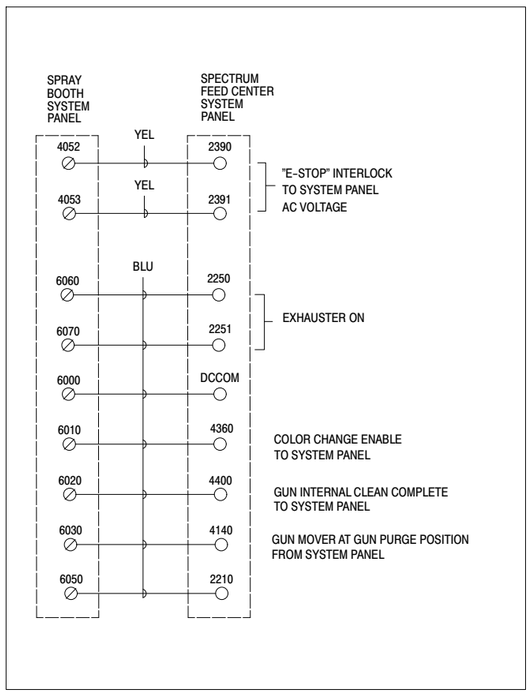


Figure 11-5 Spectrum Powder Feed Center Control Panel (4 of 5)

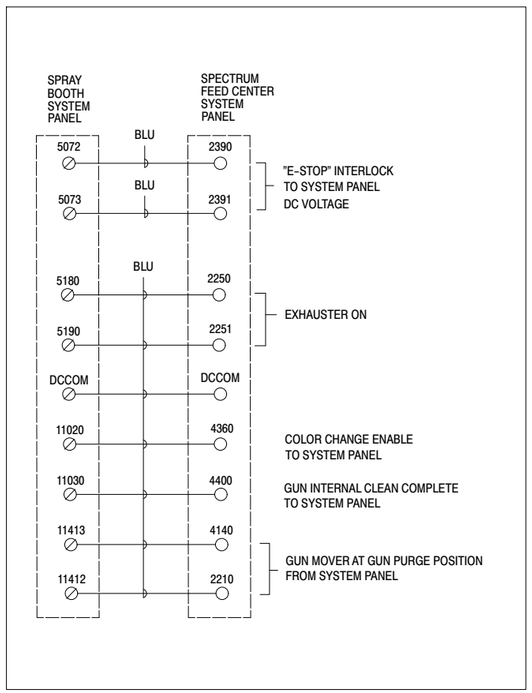
T215 VOLTAGE CONFIGURATION 50/60 HZ



SYSTEM PANEL TERMINAL BLOCKS NO. DETAILS FOR
COLOR MAX BOOTH USA TYPE



SYSTEM PANEL TERMINAL BLOCKS NO. DETAILS FOR
COLOR MAX BOOTH PDMC TYPE



LEGEND

△ – REMOTELY LOCATED DEVICE
⊘ – SYSTEM PANEL TERMINAL (SP)
○ – FEED CENTER CONTROL PANEL (FCP)

Figure 11-6 Spectrum Powder Feed Center Control Panel (5 of 5)