Encore® Powder Feed Center

Customer Product Manual
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– English –
Issued 02/25

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– Original document –

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Change Record

Revision	Date	Change
02	11/14	Replaced part number 1604517 with part number 1605532
03	01/15	Revised default settings
04	04/15	Replaced part number 1100286 with part number 1606921
05	05/15	Mpa values added for air pressure
06	01/19	Cylinder kit updates
07	10/20	Replaced images and part number for 1604516 to 1615160
08	10/21	Updated schematic.
09	5/24	Replaced images and part number for 901074 to 1604113
10	2/25	Included 4A 1626399 to parts list

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 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 Material 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.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when 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.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- 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 system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

Disposal

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

Section 2
Description

Introduction

The Encore™ powder feed center conditions and supplies powder for up to 27 Venturi pumps. It contains a sieve, hopper table, lance and lift assembly, Venturi-type 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 box or fluidized hopper powder source by the lance-mounted, in-line powder pumps. The powder is then delivered through feed hoses to the spray guns. The feed center can be equipped with up to 27 Venturi pumps, and is furnished with a vibratory table to aid in the fluidization of powder in boxes.

The feed center controls are designed to accommodate one to two HDLV reclaim pumps to transport over-sprayed powder from the powder recovery system to the feed center, and an optional HDLV® virgin pump to transport virgin powder to the system as needed.

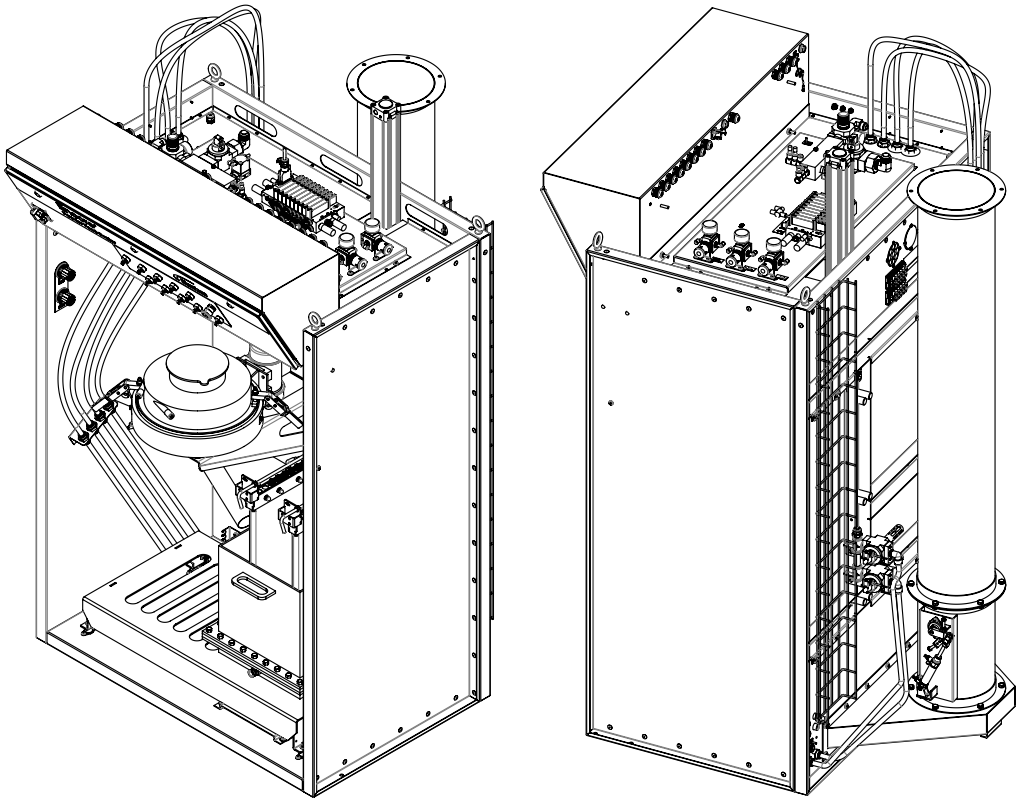


Figure 2-1 Encore Feed Center (Typical)

Introduction (contd)

Both HDLV 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 partially automatic. At the start of a color change, the lances are raised out of the powder source so it can be removed from the feed center. Then, when the operator initiates the gun purge, the lances are automatically lowered onto a purge manifold assembly and clamped in place. High-pressure purge air is then pulsed through the lances, in-line powder feed pumps, hoses, and guns to clean them of powder. The reclaim and virgin HDLV transfer pumps are purged manually when the operator is ready.

The Encore Powder Feed Center requires a remote air extraction system that provides a constant airflow through the feed center enclosure, preventing powder from escaping into the spray room. The typical ColorMax® 2 extraction system includes an afterfilter assembly consisting of an exhaust fan, primary cartridge filters, pulse valves and controls, and final filters, plus the ductwork to connect the afterfilter to the booth cyclone and feed center. Afterfilters are available in 9000, 11250, and 15750 CFM capacities.

A 10 inch duct with a transition section and a pneumatically-operated damper is provided with the feed center.

Components List

Standard Components

See Figure 2-1. The feed center consists of the following components:

- Enclosure
- 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 suction tube holders for Prodigy® or Encore® 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
- Vibratory sieve

Optional Component List

Optional components include:

- Ultrasonic sieve screens
- HDLV virgin powder bulk feed system

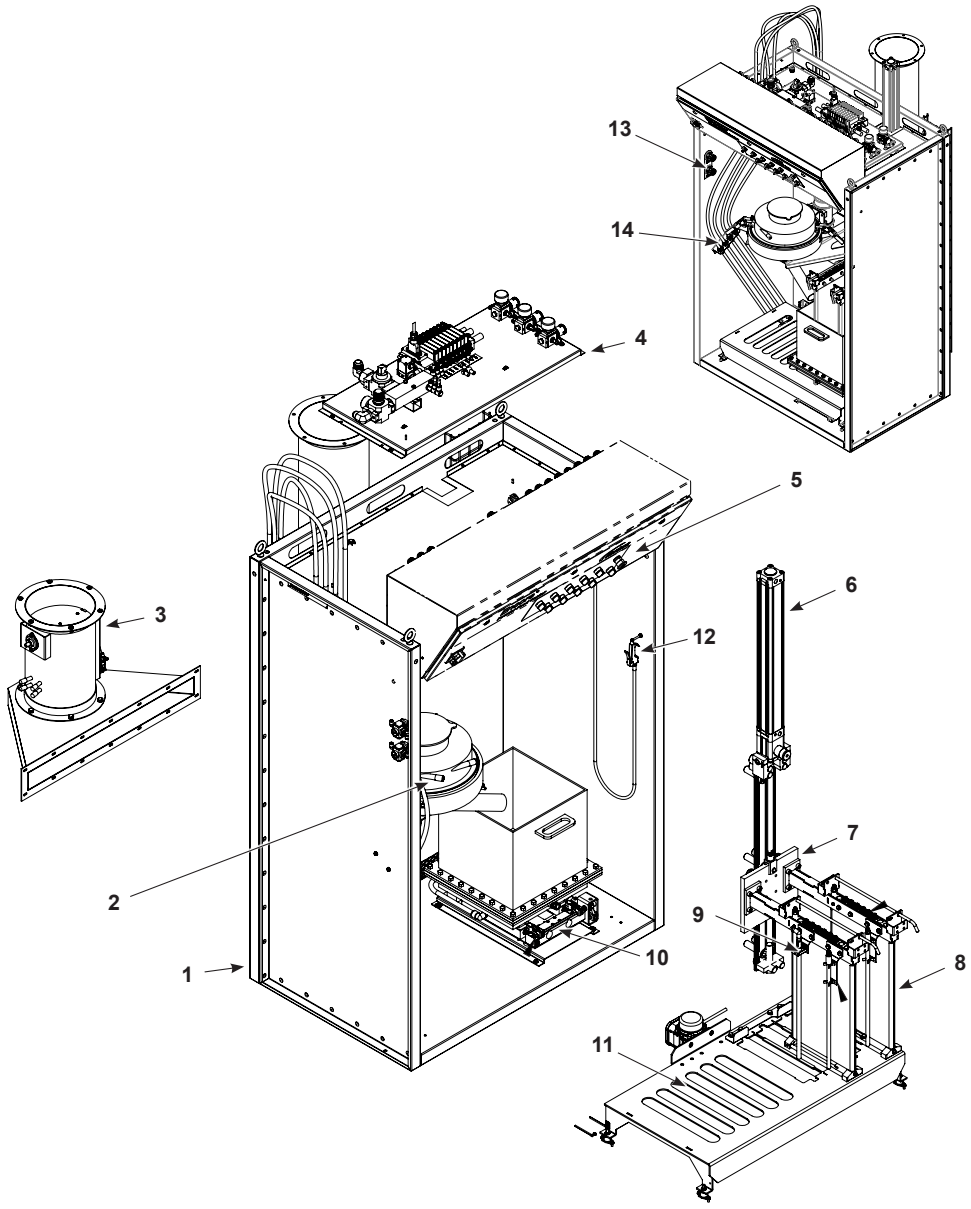


Figure 2-2 Major Components (Typical)

1. Enclosure
2. Sieve
3. Damper assembly
4. Pneumatic panel
5. Control panel
6. Lift cylinder
7. Lift assembly
8. Lance assembly
9. Level sensor
10. Purge manifold
11. Vibratory table
12. Blow-off gun
13. Fluidizing air regulators
14. Purge ports − transfer hoses

NOTE: Refer to the *Operation* section for a description of the feed center controls.

Feed Center Control Panel

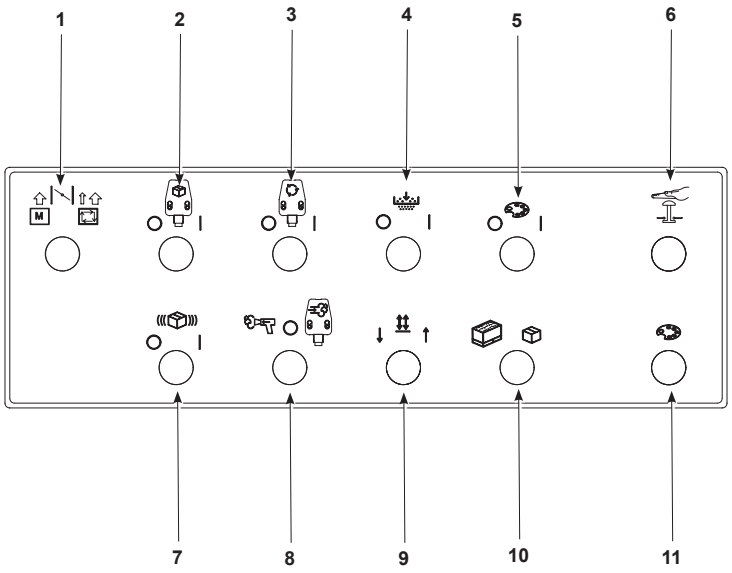


Figure 2-3 Control Panel Functions

Table 2-1 Feed Center Controls

Item	Description	Part	Description
1	**Damper Selection** **Left:** Manual Mode (open for high flow) **Right:** Auto Mode (damper is set to low flow until a color change is started. Then the damper is automatically opened for high flow.)	7	**Vibratory Table Motor Control** **Left:** Off **Right:** On
2	**Bulk Feed Pump Control** **Left:** Off **Right:** On	8	**Purge Selection** **Left:** Internal Gun Purge **Center:** Off **Right:** Pump Purge
3	**Reclaim Pump Control** **Left:** Off **Right:** On	9	**Lance Position Control** **Left:** Down **Center:** Neutral (stop) **Right:** Up
4	**Sieve Control** **Left:** Off **Right:** On	10	**Powder Source Selection** **Left:** Hopper **Right:** Box
5	**Color Change Enable** **Left:** Off **Right:** On	11	**Color Change Indicator (Green)** **Off:** Disable **Blinking:** In cycle **On:** Complete
6	**Emergency Stop** **Pressed In:** Stop **Rotate and Pull Out:** Start		

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 held into place with a retaining rod. If a lance pump port is not used, it is plugged with a plug module.

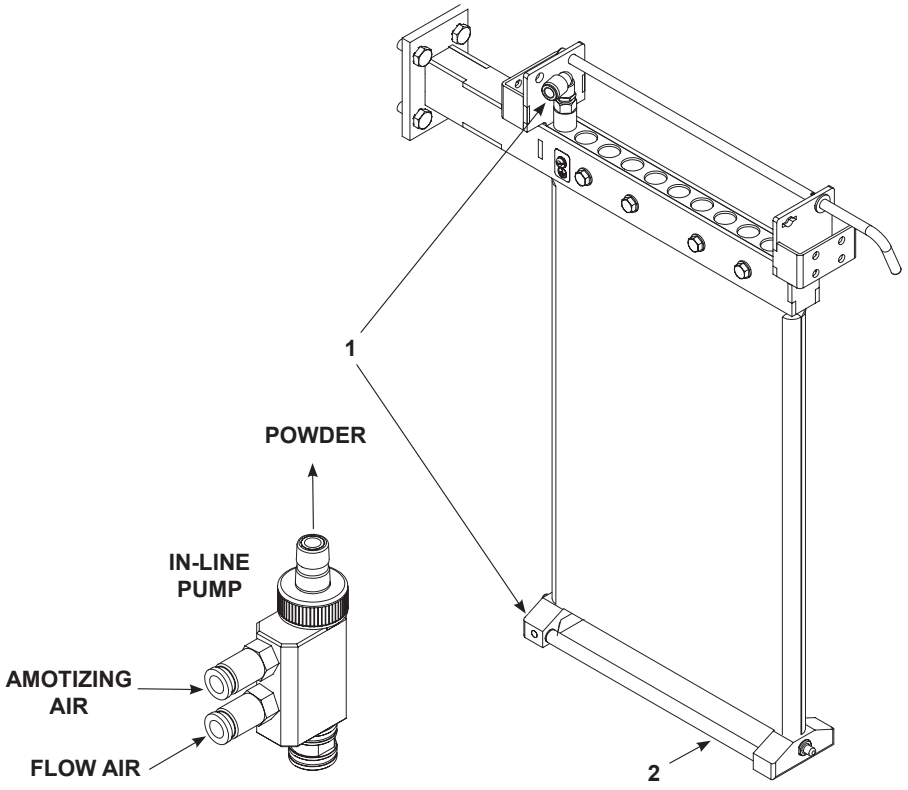


Figure 2-4 Lance Assembly

1. Fluidizing latch block assembly
2. Fluidizing bars

Lift Assembly

The lift assembly uses a locking 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 a proximity sensor on the lift cylinder.
- 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.

The cylinder motion and locking action are controlled by three solenoid valves that are part of the control manifold on the roof of the feed center.

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.

Lift Assembly (contd)

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 empty, or purge positions.

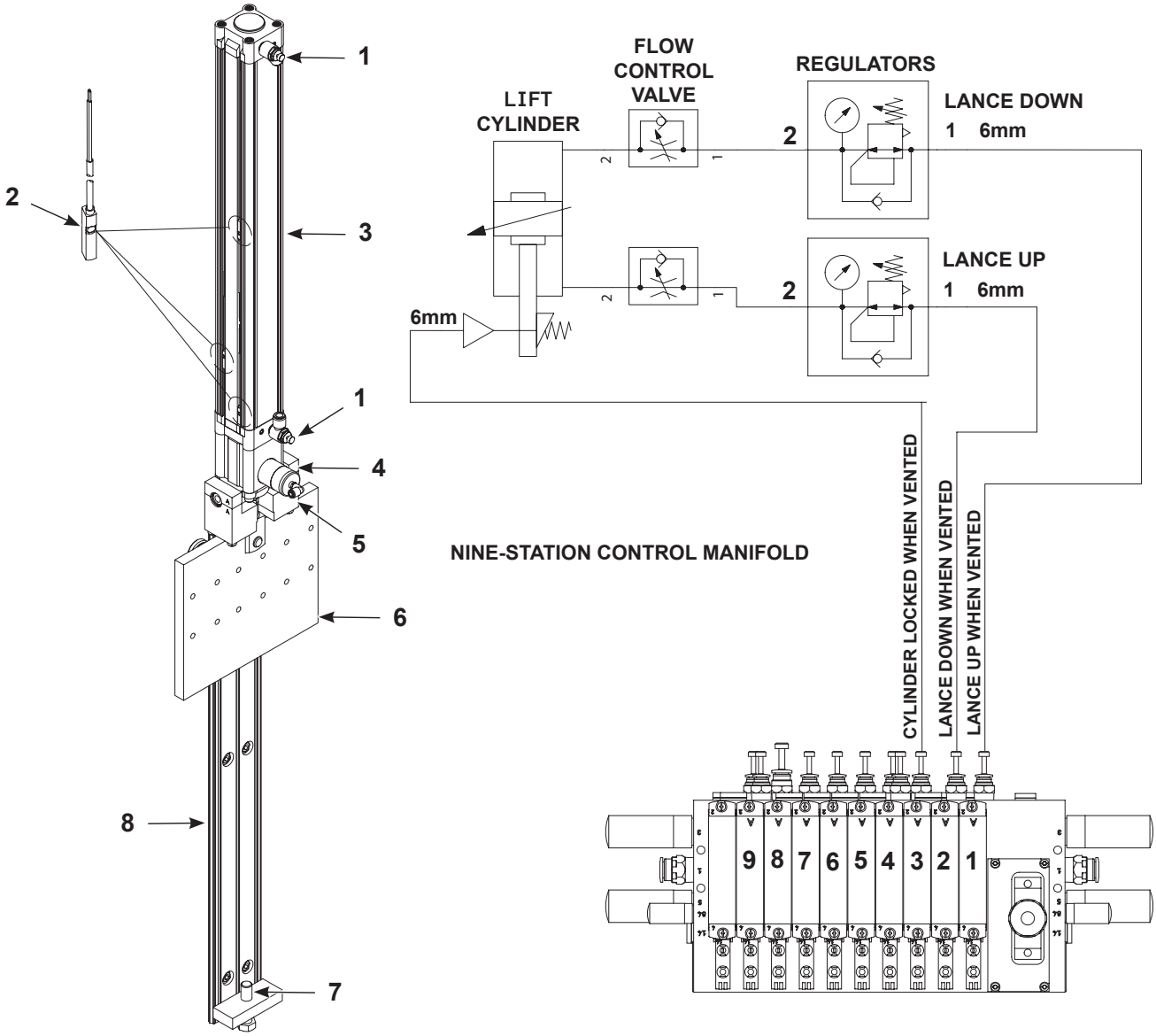


Figure 2-5 Lance Lift Assembly

1. Flow control valves
2. Proximity
3. Lift Cylinder
4. Locking mechanism
5. Support block
6. Lift plate with wheels
7. Carriage stop
8. Linear V-guide

Lance Lift Operation

See Figure 2-5.

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.

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.

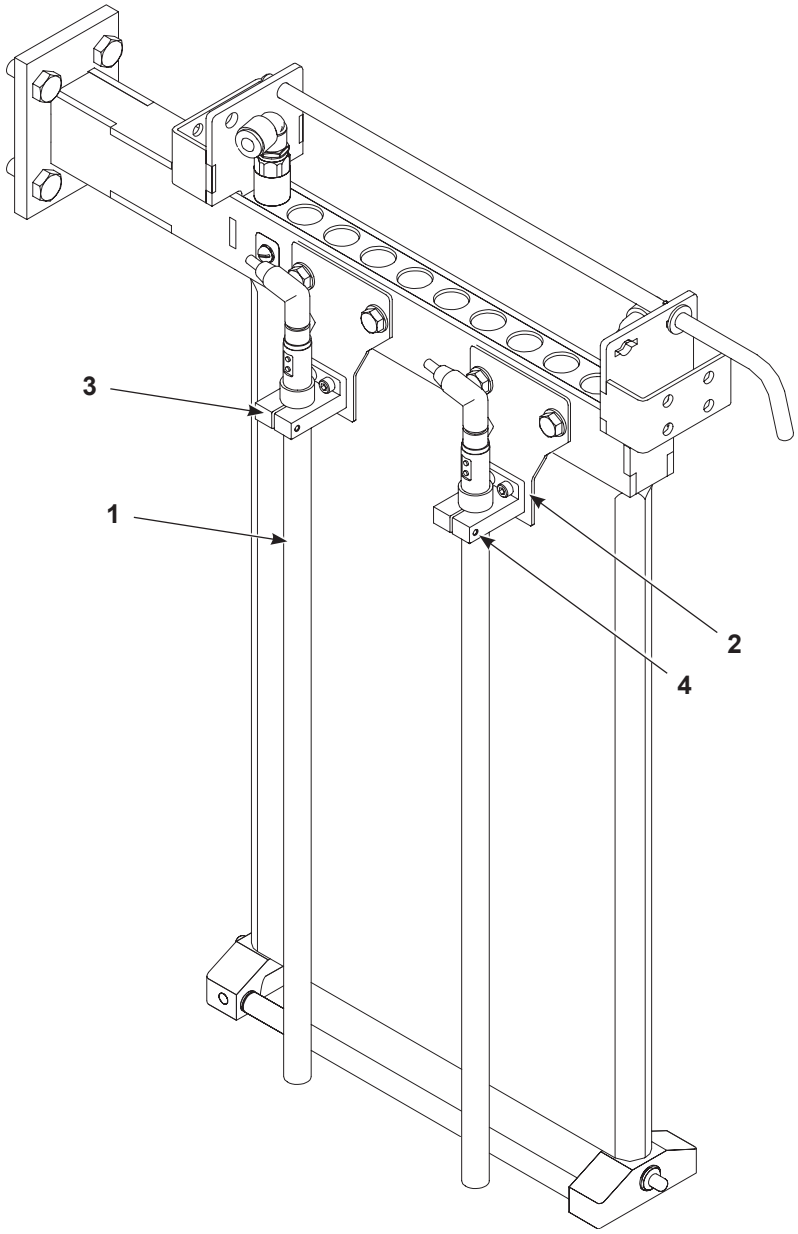


Figure 2-6 Level Sensor Modules

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

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 8-1 for adjustment procedures.

Clamping Cylinder Operation

Extend (Clamp): The air line to the regulator and extend flow control valve (4) at the fixed end of the cylinder is pressurized with regulated air, forcing the cylinder piston and rod out of the cylinder. The retract air line is vented.

Retract (Unclamp): The air line to the retract flow control valve (1) at the rod end of the cylinder is pressurized with line air pressure, forcing the cylinder piston and rod into the cylinder. The extend air line is vented.

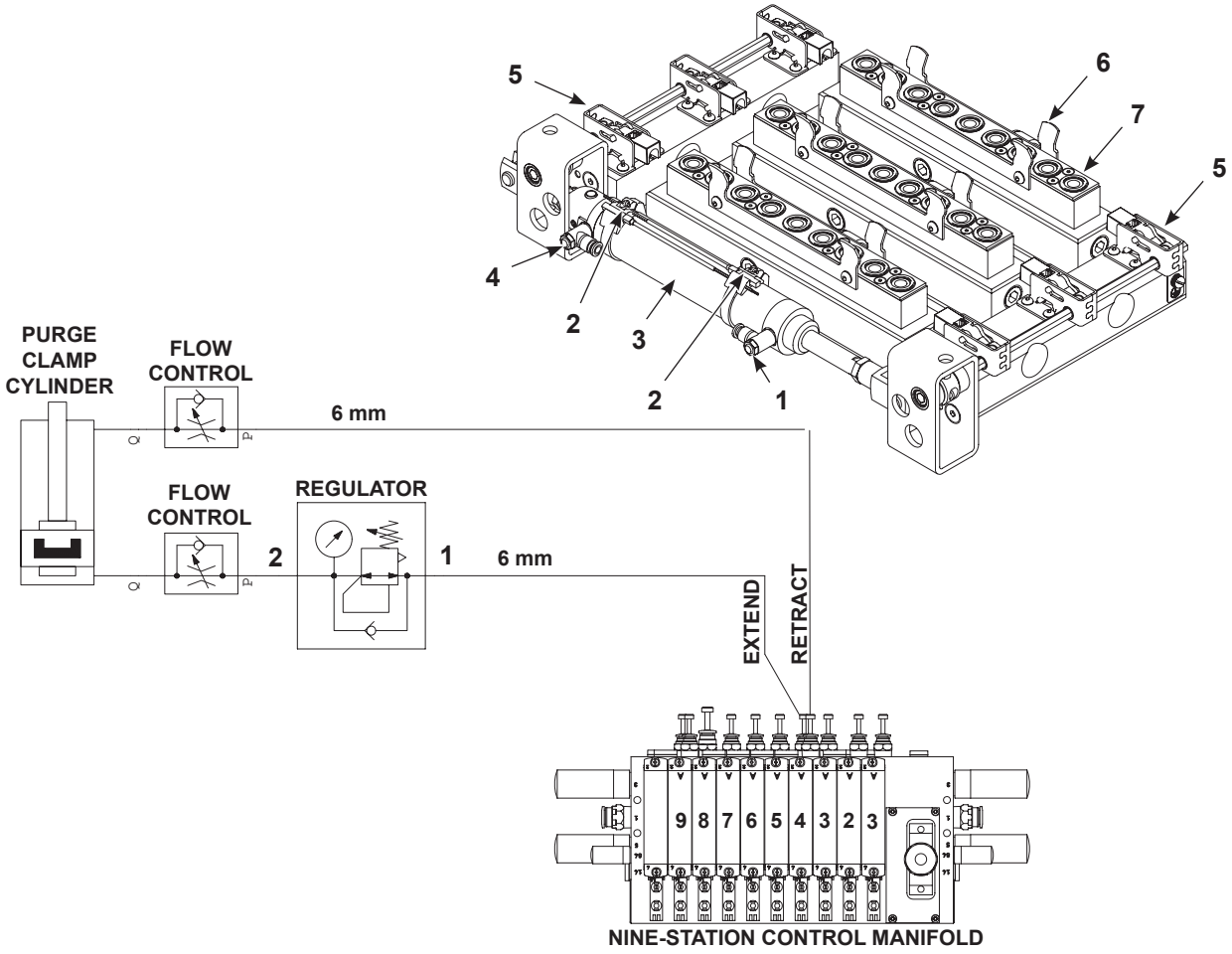


Figure 2-7 Purge Manifold Assembly (3 lance assembly shown with cylinder and latches in clamping position)

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

Sieve

The vibratory sieve is mounted onto a bracket assembly (5).

The deck (3), screen (10), and screen gasket (11) are clamped to the pan by two latches (6). Screens are available in different mesh (micron) sizes. When the latches are released, the sieve pan can be rotated so that the discharge chute (8) deposits 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 with an ultrasonic screen is available. Refer to Operation for more information.

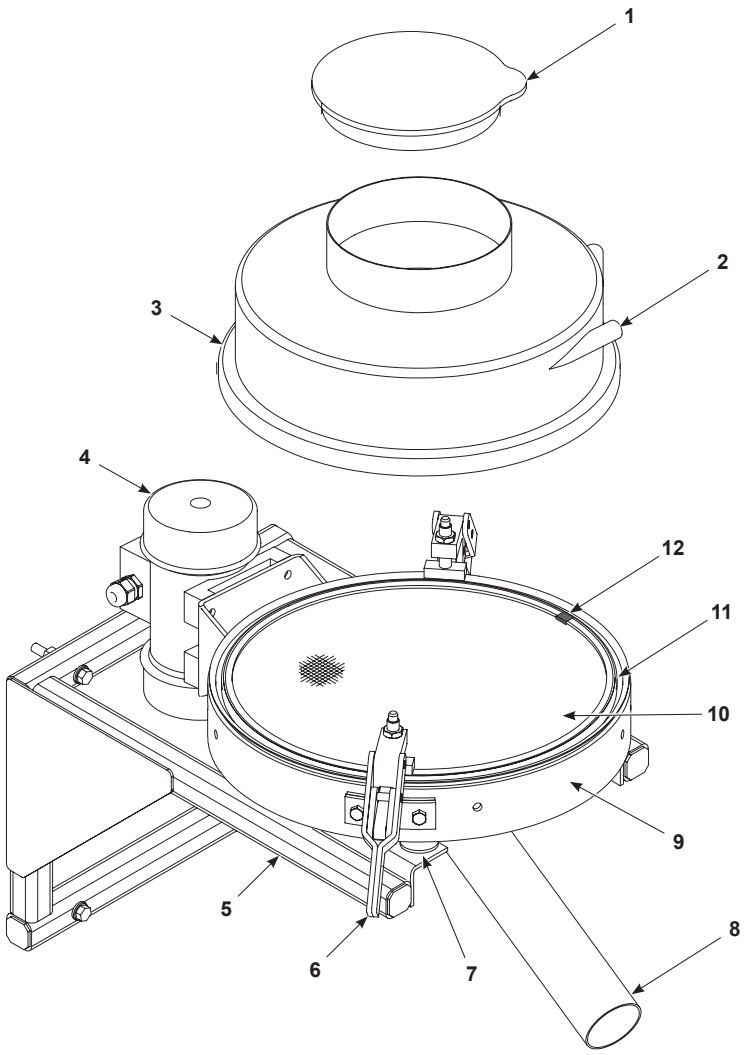


Figure 2-8 Level Sensor Modules

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

Pneumatic Panel Components

Refer to Figure 2-10 for an explanation of the 9-station control manifold functions. Refer to Figure 11-1 for the feed center pneumatic diagram.

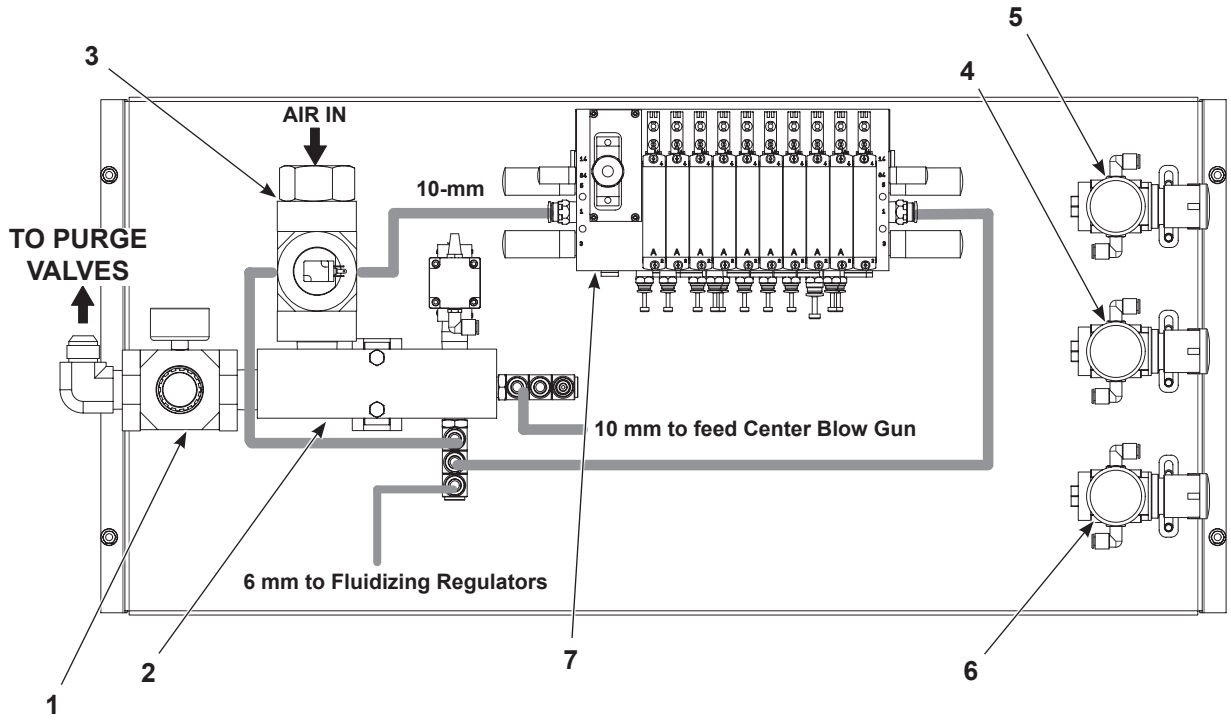


Figure 2-9 Pneumatic Components

1. Purge air regulator/gauge
2. Air manifold
3. Interlock valve
4. Lance UP regulator/gauge
5. Lance DOWN regulator/gauge
6. Purge clamp regulator/gauge
7. Control manifold

NOTE: Refer to Setup, and Operation, for air pressure and control settings and usage.

Control Manifold Functions

The control manifold controls most of the pneumatic equipment in the feed center. It is connected to the feed center control panel by a single cable.

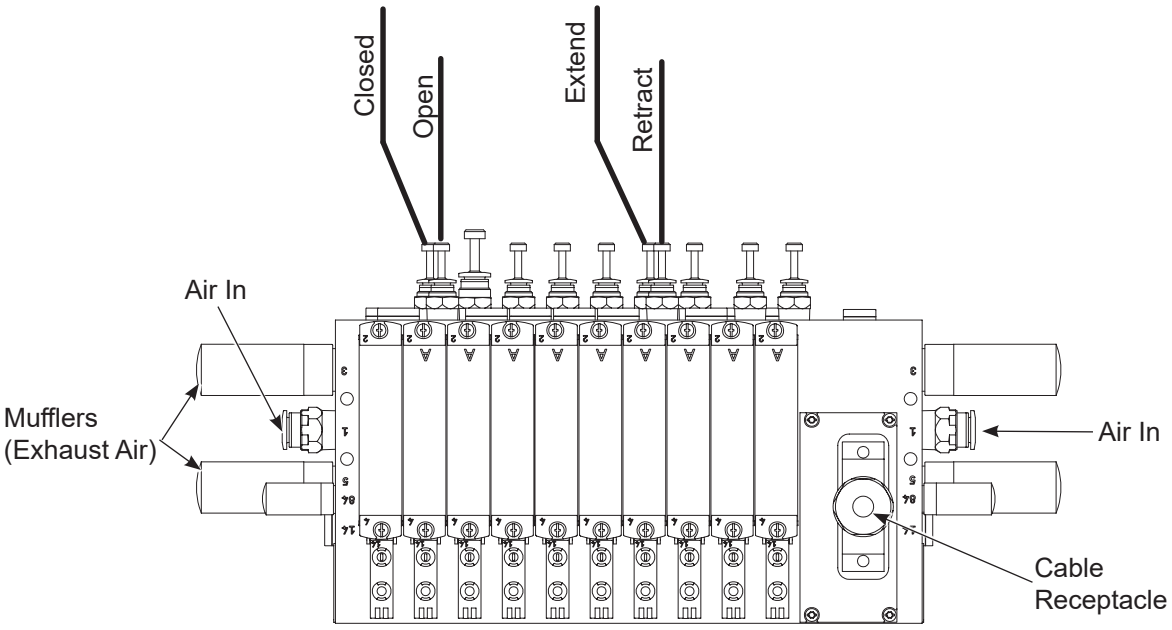


Figure 2-10 Control Manifold Functions

Valve No.	Solenoid Designation	Function
1	SOL 325/0	Lance Up (vented when energized, allowing Lance Up)
2	SOL 325/1	Lance Down (vented when energized, allowing Lance Down)
3	SOL 326	Lance Lock (energized to unlock cylinder, vented to lock cylinder)
4	SOL 331	Purge Clamp (extend/retract)
5	SOL 342	HDLV Virgin Pump Purge
6	SOL 338	HDLV Virgin Pump On
7	SOL 340	HDLV Reclaim Pump Purge
8	SOL 336	HDLV Reclaim Pump On
9	SOL 329	Damper (open/closed)

Optional HD Tube Assembly

The optional Prodigy/ Encore HD siphon tube provides powder to a Prodigy or Encore HD 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 (1) accommodates 8-mm tubing.

NOTE: This option can only be used with fluidized hoppers

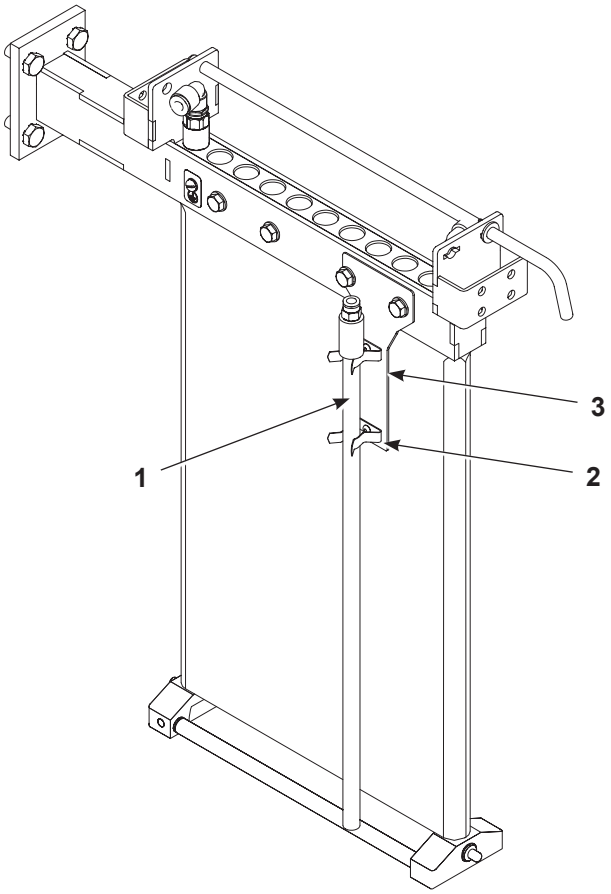


Figure 2-11 Siphon Tube Assembly (Optional)

1. Siphon tube
2. Spring clips
3. Bracket

Optional Powder Hoppers

The feed center can accommodate rectangular 75-lb (34 kg) and square 50-lb (22.7 kg) fluidizing hoppers and different sizes of powder boxes.

The fluidizing hoppers 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.

NOTE: This option can only be used with fluidized hoppers

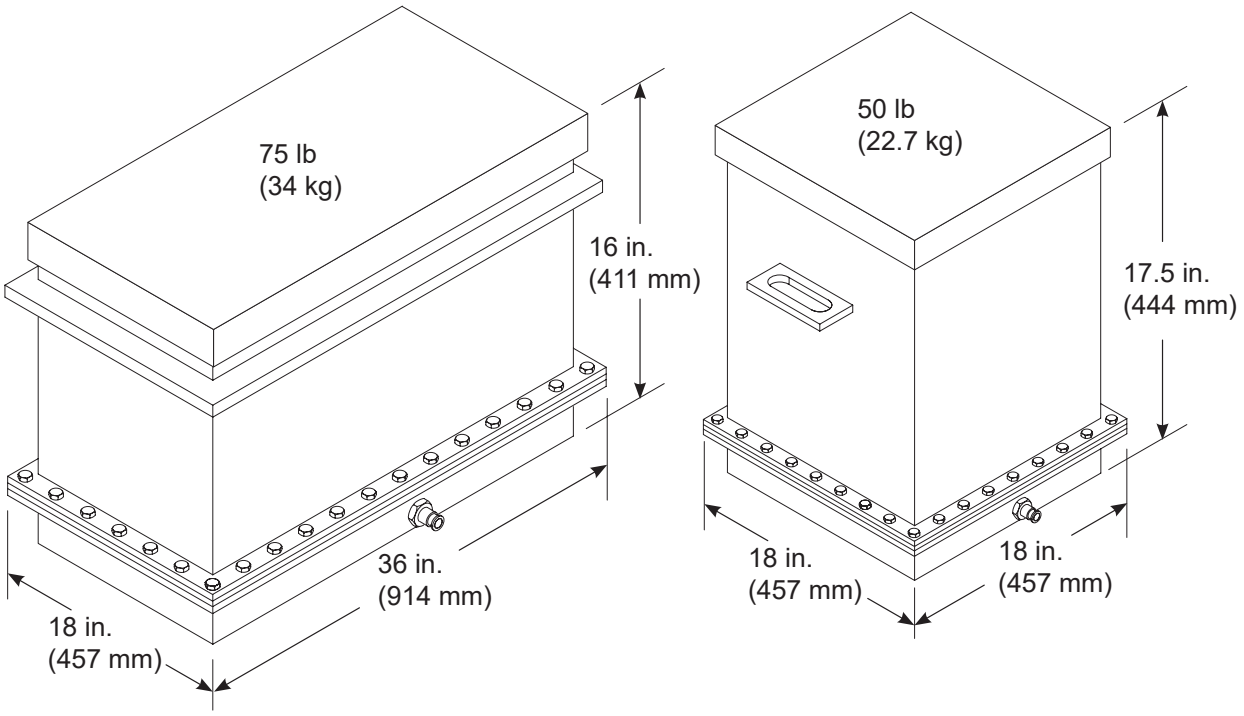
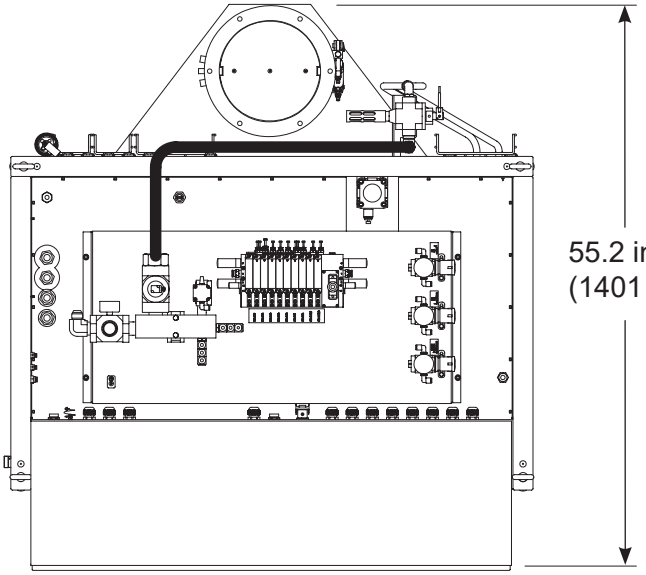


Figure 2-12 Optional Fluidizing Feed Hoppers

Specifications

Size and Weight

Weight: Approximately
1,040 lbs (471.8 kg)



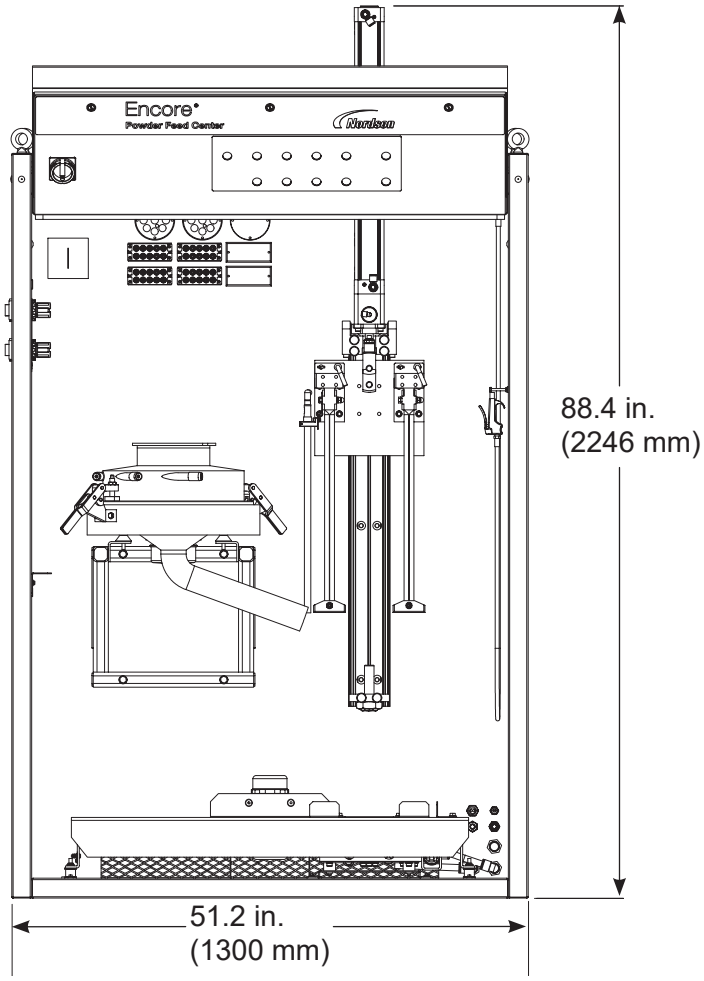


Figure 2-13 Feed Center Dimensions

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

Mode	Function
Color change mode	3058 - 3228m^3/hr (1800 - 1900 CMF)
Paint mode	3039 - 2209m^3/hr (1200 - 1300 CMF)

Exhaust Air Velocity

CFM	Duct Size	Air Flow Velocity
1200	10 in.	2201 ft/minute
1300	10 in.	2385 ft/minute
1800	10 in.	3202 ft/minute
1900	10 in.	3485 ft/minute

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 Pressures
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	6.2 bar (90 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	

Compressed Air Supply

Available Sieve Screens

381 mm (15 inch) Sieve:

864 Micron, 20 mesh without ultrasonics

381 Micron, 40 mesh without ultrasonics

234 Micron, 60 mesh, without ultrasonics

178 Micron, 80 mesh with ultrasonics

140 Micron, 100 mesh with ultrasonics

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.

NOTE: The feed center is typically shipped by truck or in a container. All internal air and electrical connections are made at the factory. If it is included as part of a ColorMax Engineered System with an integral utility deck, all air and electrical connections to the components on the deck are also complete. Refer to your system drawings for final connections.

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, or the booth utility deck, according to the system layout drawing supplied by Nordson application engineering.

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

Extraction Duct Connection

Connect ductwork from the afterfilter/fan section to the 10 in. diameter vertical duct at the back of the feed center.

Lift Cylinder Installation

See Figure 3-1. The lift cylinder may be removed for shipping. Follow this procedure to install it if necessary.

1. Remove the lift cylinder packaging and inspect it for damage. Three proximity switches should be installed in the grooves along the cylinder body.
2. Unsnap the clevis pin clip from the clevis and remove the pin.
3. Remove the four M8 x 75 screws from the bottom of each side of the bearing block and lift off the bearing caps.
4. Remove the bearings from the bearing caps. Install the bearings on the cylinder trunnions, with the bearing flanges toward the cylinder.
5. Install the cylinder through the square opening in the roof of the feed center, then carefully guide the bearings into the bearing block.
6. Install the bearing caps on top of the bearings, and secure the caps with the four M8 x 75 screws.
7. Connect the clevis to the lance carriage with the clevis pin and snap the pin clip around the clevis.
8. Connect air tubing to the cylinder:

- 6-mm tubing from the down regulator to the upper flow control valve.
- 6-mm tubing from the up regulator to the lower flow control valve.
- 6-mm tubing from solenoid #3 SOL326 to the cylinder lock.

9. If removed, install the proximity switches on the cylinder as shown.

- LS306: Hopper position
- LS307: Box position
- LS308: Purge position

10. When the feed center installation is complete, adjust the proximity switch positions as described in *Lift Cylinder Proximity Switch Adjustment*.

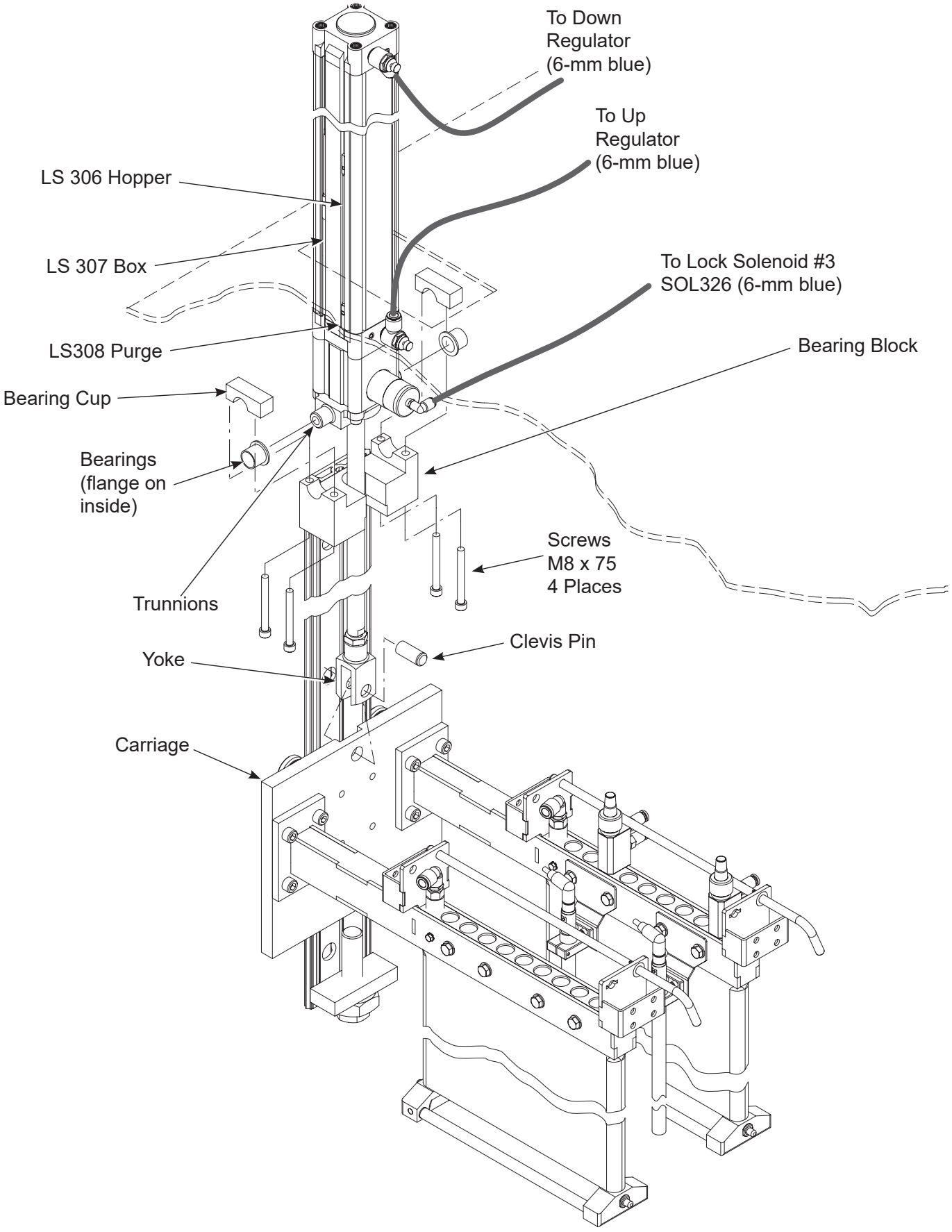


Figure 3-1 Lift Cylinder Installation

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 customer-supplied 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 wiring diagrams and system drawings supplied by Nordson application engineering for more information.

See Figure 3-2. The feed center is shipped with cables for power, E-stop, and control connections to the main system electrical panel. If the feed center is shipped mounted on a utility deck, all electrical connections to the main system electrical panel are made at the factory. If the feed center is shipped separately for floor installation, refer to your system wiring diagrams for connection information. The wiring diagrams for the feed center control panel are included at the back of this manual.

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

External Powder Hose and Air Connections

Air Connection: NPT (National Pipe Thread)

The feed center is supplied with a 1-in. NPT female adapter located at the main supply air valve. 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 for compressed air specifications.

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

Pump Flow and Atomizing Air Connections: Route 8-mm black (flow) and blue (atomizing) air tubing from the iControl control console to the air manifolds on the back of the feed center. Refer to your system drawings for the correct connections.

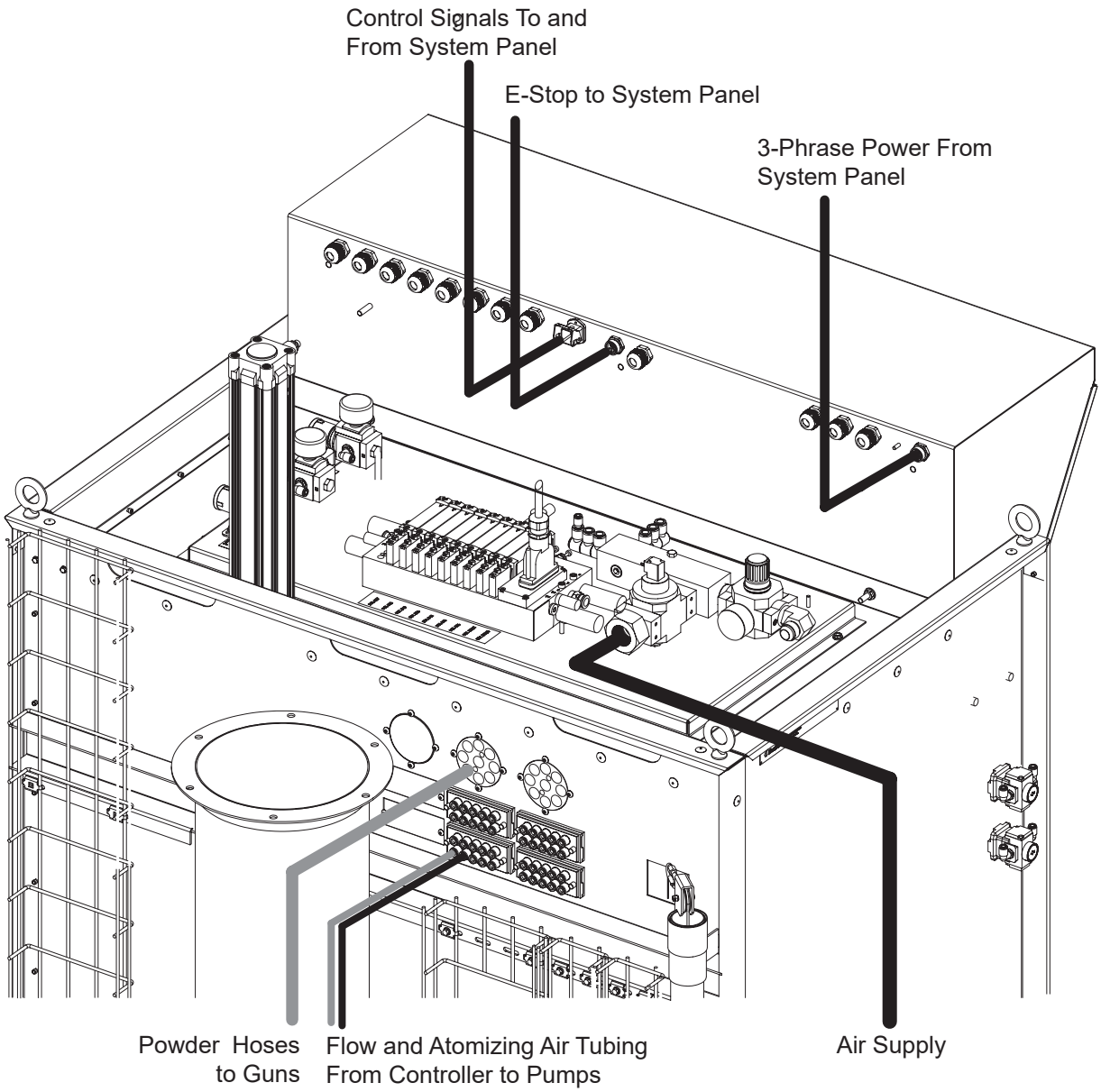


Figure 3-2 Electrical and Pneumatic Connections to Feed Center

Powder Pump Installation and Connections

Pump Installation

See Figure 3-3 and Figure 3-4. Typically, the pumps are installed at the factory. If not, 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. The pump connections are application specific; refer to your system drawings for the correct connections.

Pump Flow and Atomizing Air Tubing

See Figure 3-3 and Figure 3-4. If the pumps are installed at the factory, the flow (black) and atomizing (blue) air tubing is also installed from the pumps to the air manifolds on the back wall of the feed center. If not, the pumps are numbered and the tubing must be connected from the pumps to the appropriate fittings in the air manifolds on the back wall of the feed center.

Powder Feed Hose Connections

See Figure 3-3 and Figure 3-4. Label and route the powder feed hoses (5) from the spray guns through the multi-tube PVC grommets (7) on the back wall of the feed center and connect the hoses to the appropriate pump outlet fittings (1). Refer to your system drawings for the correct connections.

Hose and Tubing Counterweighting

See Figure 3-4. Allow enough slack in the hoses (5) and air tubing (3, 4) to allow the lance assembly to travel through its full range of movement without stretching or kinking the hoses or tubing. Bundle the hoses and tubing with the provided Velcro straps (10) to prevent kinking or damage, then attach the strap to the counterweight assembly (6).

The counterweight assembly is shipped with six weights. Use two weights for each lance assembly.

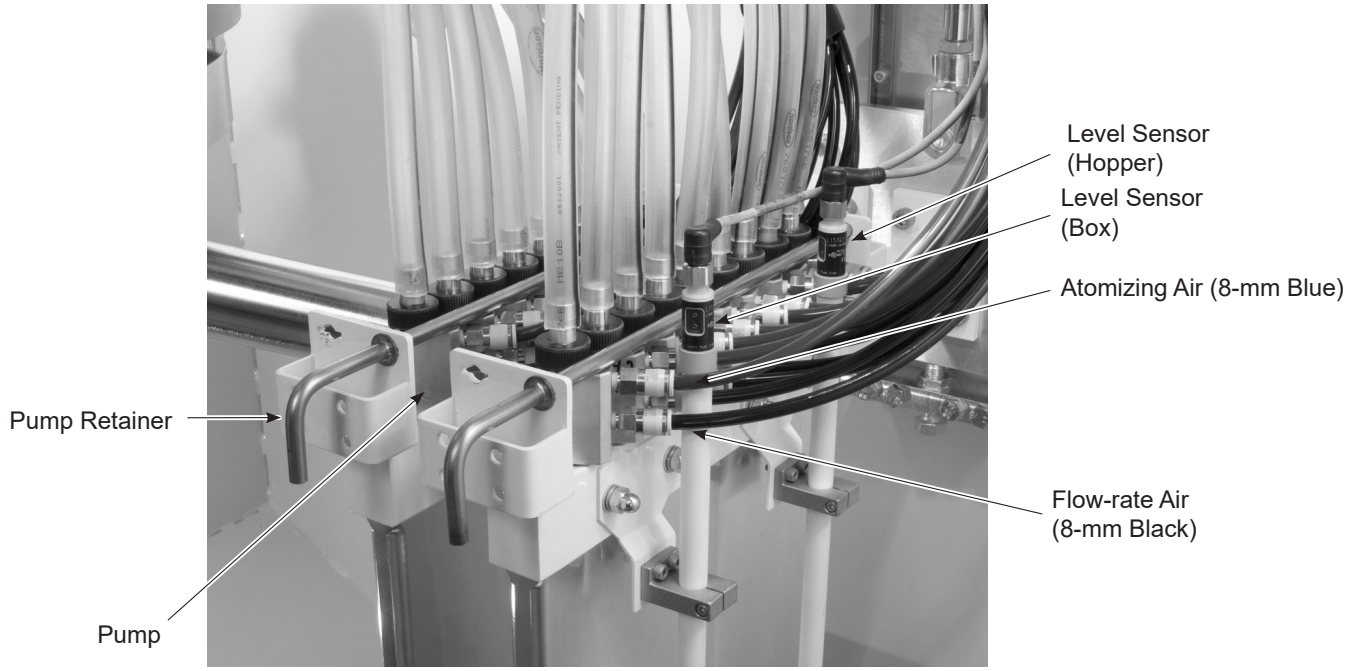


Figure 3-3 Pump, Air Tubing, and Powder Feed Hose Installation

Lance Fluidizing Air Connection

See Figure 3-4. If not done, connect 6-mm blue air tubing (9) from the fluidizing air regulator on the side wall of the feed center through the multi-tube connector and connect the tubing to the fitting on the lance, as shown.

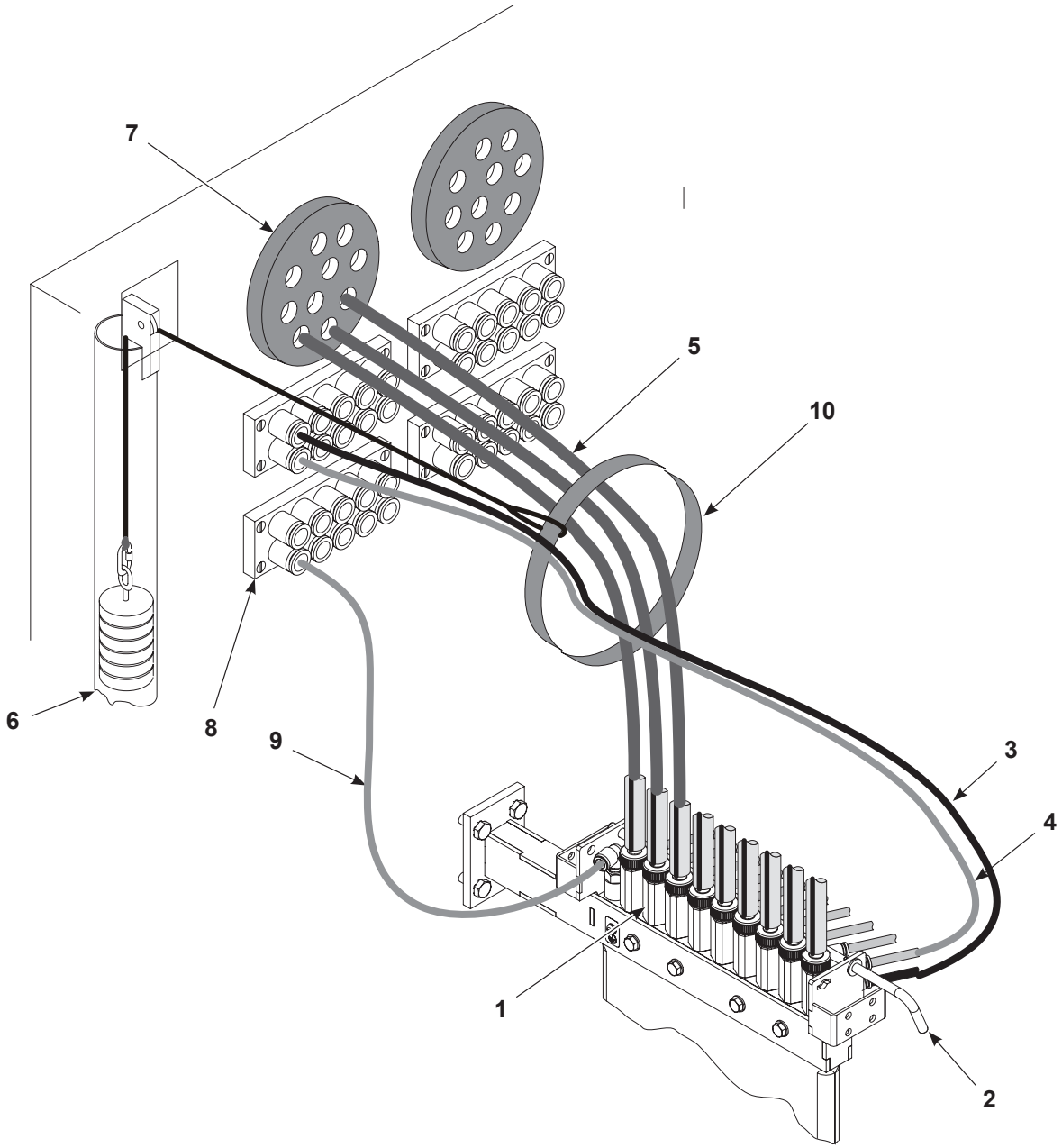


Figure 3-4 Pump, Powder Feed Hose, and Air Tubing connections to Lance Assembly

1. Pumps
2. Retaining Rod
3. Flow-rate air tubing (black)
4. Atomizing air tubing (blue)
5. Power feed hose
6. Counterweight assembly
7. Powder hose grommet
8. Air multi-tube connector
9. Fluidizing air
10. Velcro strap

Reclaim and Virgin Powder Feed Options

Bulk feed systems are optional. Most systems will use at least one HDLV reclaim pump. Dual reclaim systems are often specified for coating wire goods or for use with high gun counts.

Figure 3-5 and Figure 3-6 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 next to the purge valve. When the operator turns on the reclaim pump, air flows from a solenoid-operated valve 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, the operator disconnects the reclaim transfer hose from the sieve deck and connects it to one of the purge ports on the side of the feed center. The operator then turns the purge switch to the Pump Purge position. A signal from the feed center opens a solenoid valve in the control manifold, sending pilot air 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. The purged powder is dumped into the feed center exhaust duct to the afterfilter.

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 connected directly to the main air manifold on the feed center.

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, the operator disconnects the virgin transfer hose and suction hose from the sieve deck and connects it to one of the purge ports on the side of the feed center. The operator then turn the purge switch to the Pump Purge position. A signal from the feed center opens a solenoid valve in the control manifold, sending pilot air 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. The purged powder is dumped into the feed center exhaust duct to the afterfilter.

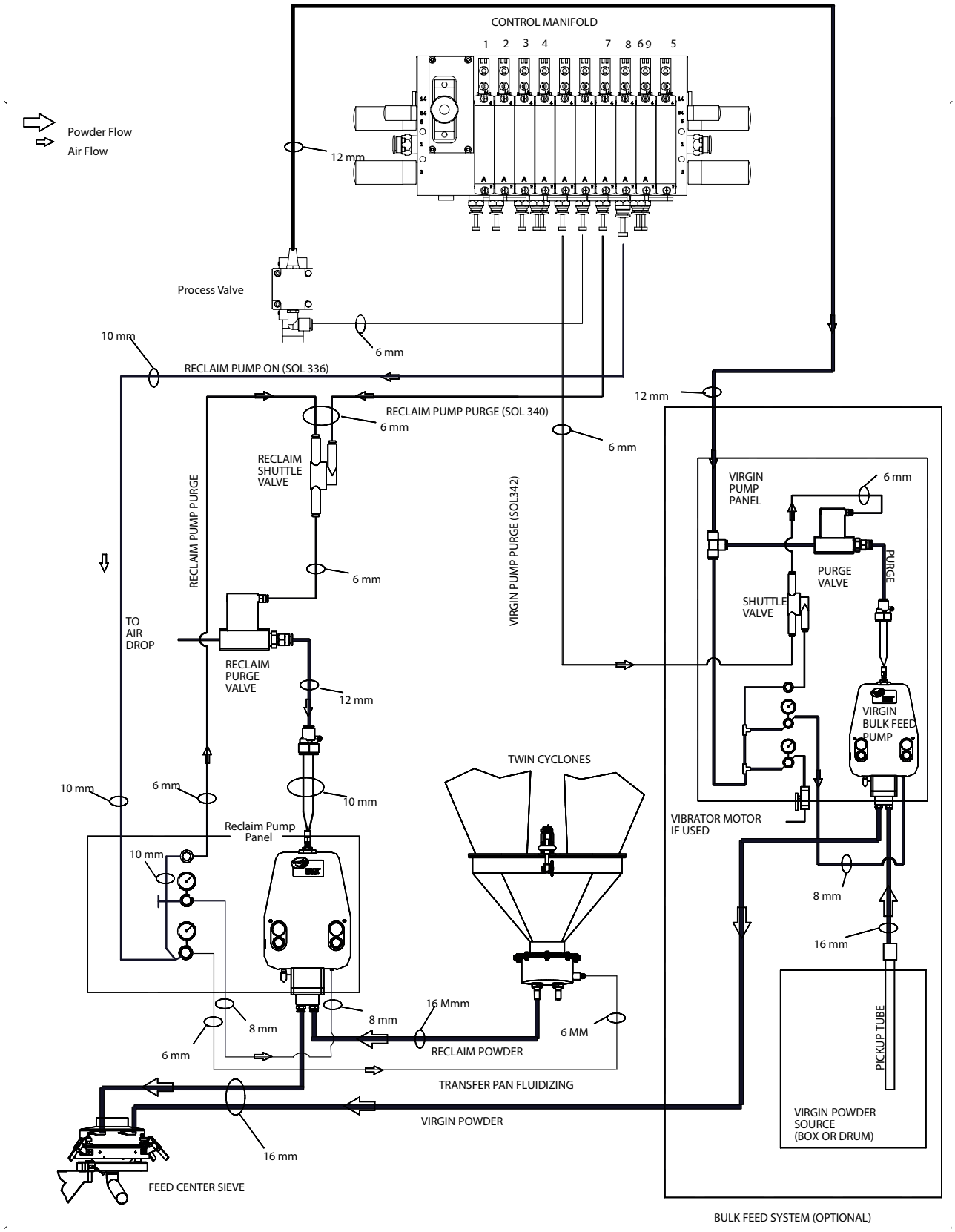


Figure 3-5 Dual Reclaim Pump connections and Equipment

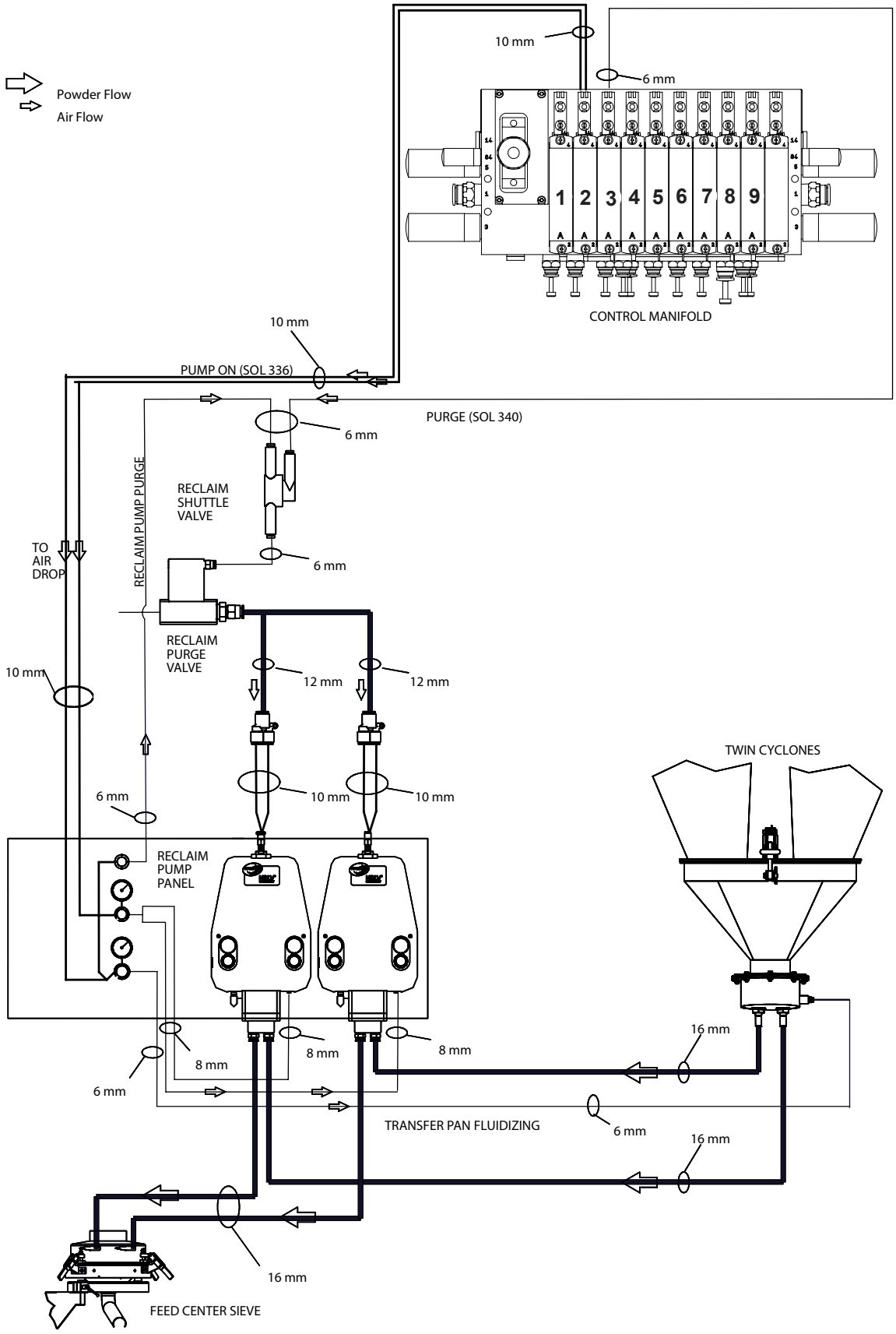


Figure 3-6 Dual Reclaim Pump Connections and Equiptment

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 an LED that turns on when the switch is closed through the use of a magnet embedded in the cylinder piston.

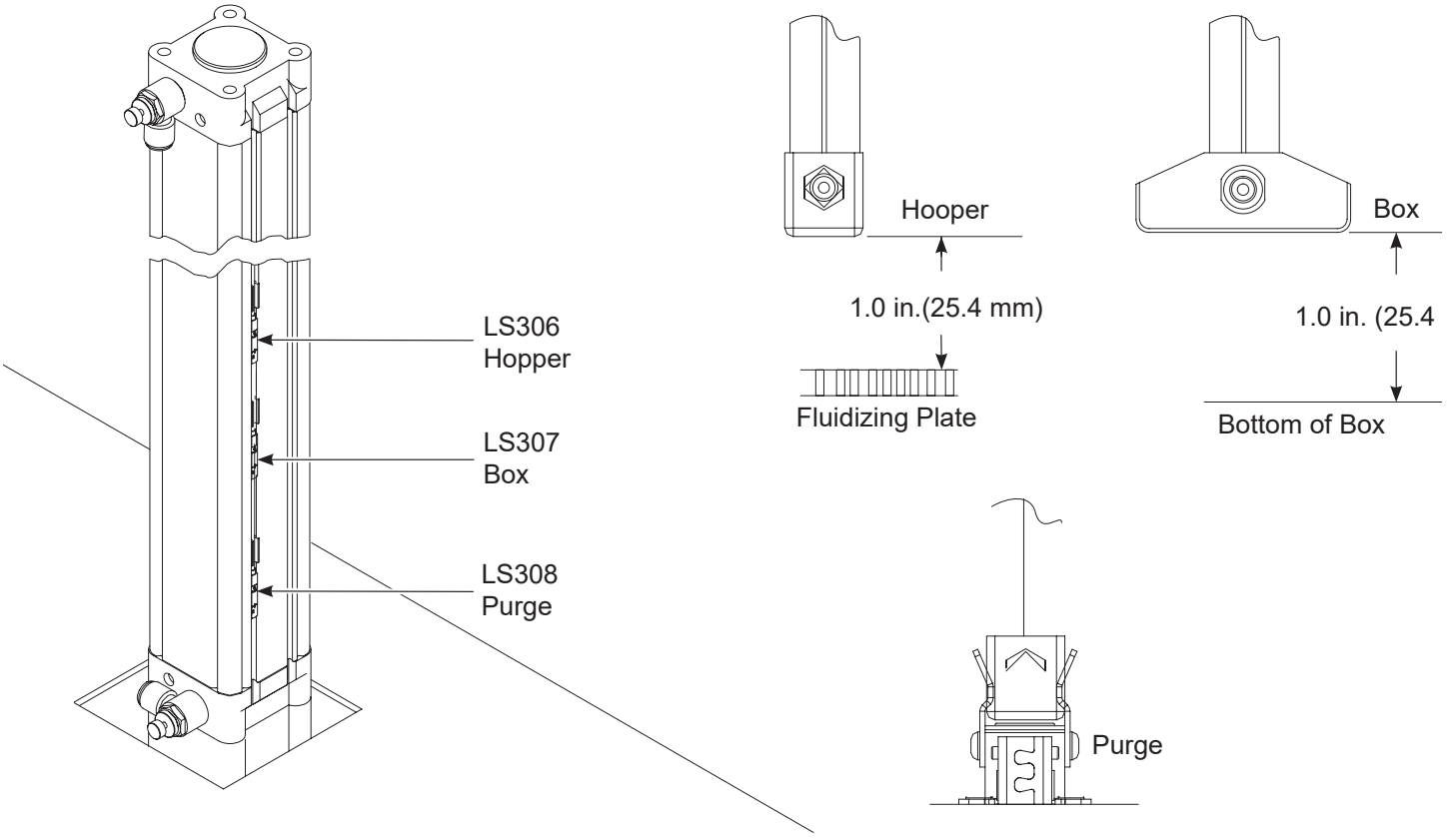


Figure 3-7 Proximity Switches and Settings (Typical Lift Cylinder Shown)

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.

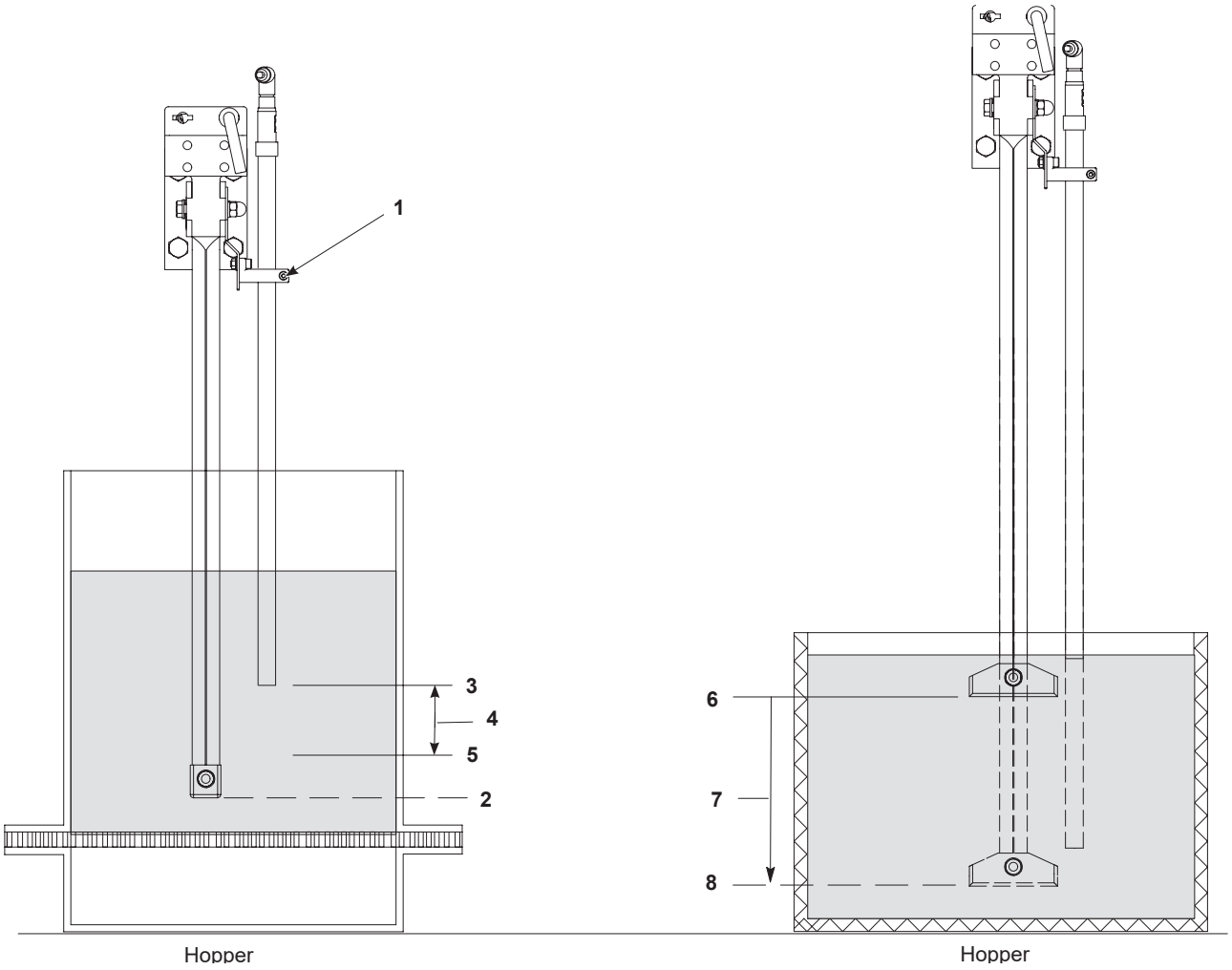


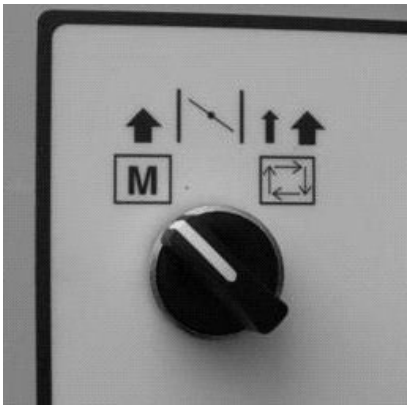
Figure 3-8 Level Sensor Position Adjustments

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

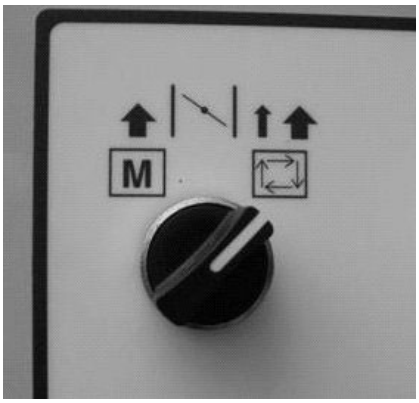
Damper Adjustment

The two-position damper is used to adjust the air flow that is drawn through the feed center extraction duct.

See Figure 3-9. When the damper selector switch is set to the automatic position, the damper will automatically move to the high flow setting during color change mode, and to the low flow setting during paint mode. When the selector switch is set to the manual position, the damper will move to the high flow position and remain there until the selector is moved back to the automatic position.



Damper Selection - Manual Position



Damper Selection - Automatic Position

Figure 3-9 Damper Selection Switch Settings

The feed center air flow settings must be adjusted in the field during system installation due to variations in system duct length and geometry. Use a hot wire-type anemometer to adjust the damper settings. A reading should be taken in the longest straight section of the 10 in. ductwork in order to obtain the least influence from air turbulence.

NOTE: A qualified technician with experience in accurate duct flow measurement techniques should preform this task.

See Table 3-2 for exhaust air flow settings.

Table 3-2 Exhaust Air Flow Settings

Mode	Air Flow Range
Color change mode	3058 - 3228 m³/hr (1800 - 1900 CFM)
Paint mode	2039 - 2209 m³/hr (1200 - 1300 CFM)

See Figure 3-10. The damper is equipped with adjustable stops for high and low flow settings (3, 4). These stops limit the movement of the crank arm that is attached to the butterfly valve.

The crank arm is set at the factory to allow the butterfly valve to move from completely closed to approximately half-way open. Depending on the system ductwork, this may need to be adjusted to achieve the desired flow range.

Damper Adjustment (contd)

The crank arm can be moved in relation to the butterfly valve. To do this, loosen the crank arm set screw (1), adjust for the new position, and

re-tighten the set screw. An indicator mark inscribed on the end of the butterfly valve shaft indicates the butterfly valve position (2).

NOTE: All crank arm adjustments must be done with the afterfilter fan in the OFF position.

Figure 3-10 shows the damper in the factory-set low flow, or closed, position. The butterfly valve position is indicated by the indicator mark (2), which is shown in a horizontal position.

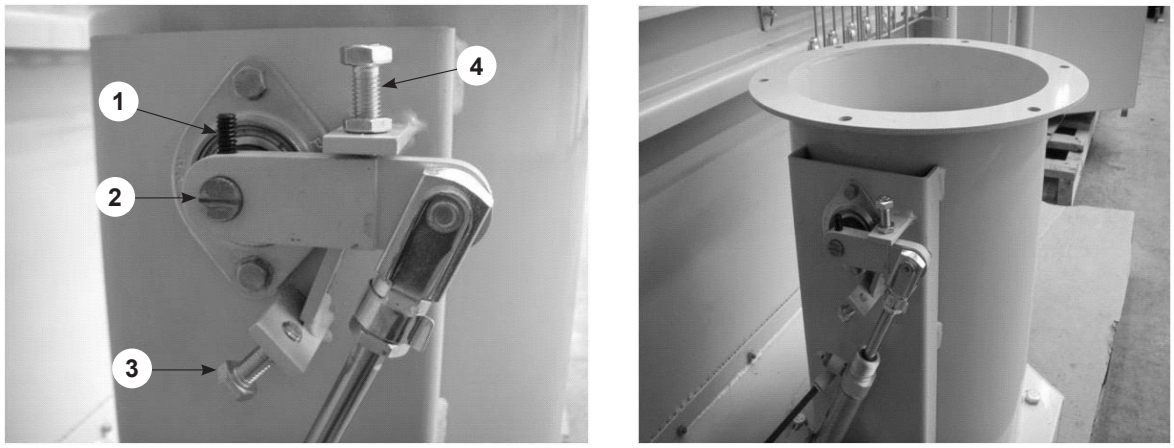


Figure 3-10 Damper Setting, Factory-Set Low Flow Position

1. Crank arm set screw
2. Butterfly valve position indicator
3. High flow adjustable stop
4. Low flow adjustable stop

Figure 3-11 shows the damper in the factory-set high flow position. The damper can be seen approximately half-way open, and the butterfly valve position indicator mirrors the angle of the damper, showing that it is open.

Figure 3-11 Damper Setting, Factory-Set High Flow Position

Figure 3-12shows the damper in an adjusted low flow position, which has been set slightly higher than the factory setting. The crank arm has been adjusted in relation to the butterfly, which is noted by the indicator line being at an angle similar to the new damper position.

Figure 3-12 Damper Setting, Adjusted Low Flow Position

Figure 3-13 shows the damper in an adjusted high flow position. Note that the indicator is now almost vertical, as is the new damper position.

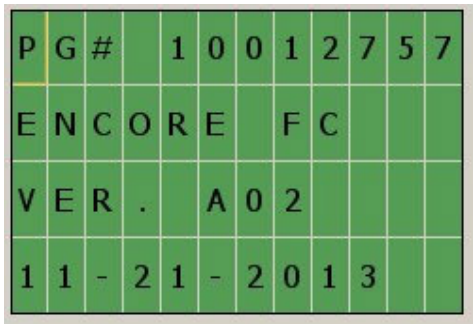
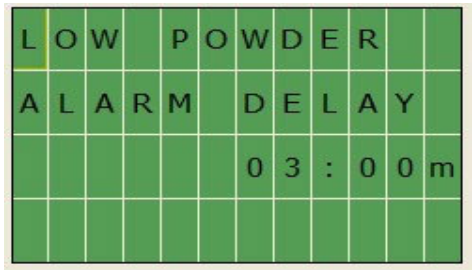
Figure 3-13 Damper Setting, Adjusted High Flow Position

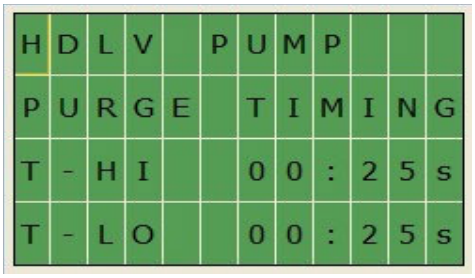
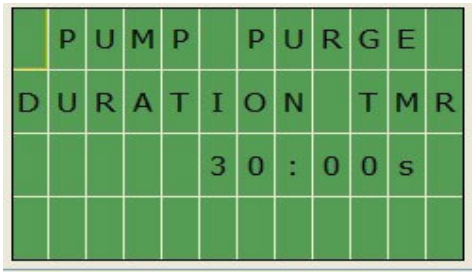
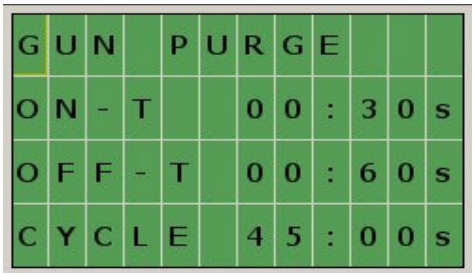
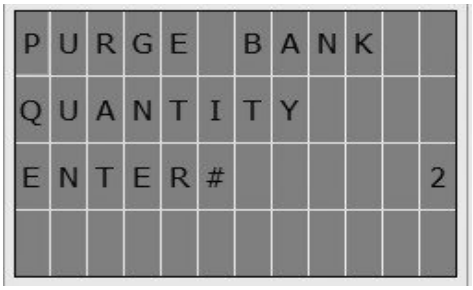
Section 4
Setup

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, on the front 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.

Problem	Possible Cause	Corrective Action	Default
	**SCREEN 1** Welcome Screen	Displays current version and date	
	**SCREEN 2** 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
	**SCREEN 3** 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

Problem	Possible Cause	Corrective Action	Default
	**SCREEN 4** 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
	**SCREEN 5** 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.	45.00 seconds
	**SCREEN 6** • Gun Purge Pulse “ON” Duration • Gun Purge Pulse “OFF” Duration • Gun Purge Duration Per Bank	• 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. • 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. • Sets the duration for the purge cycle for each purge bank. The purge cycle stops when the duration timer runs out.	• 0.50 seconds • 1.30 seconds • 45.00 seconds
	**SCREEN 7** 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 down the control panel door to access the PLC.

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

Figure 4-1 Feed Center PLC Interface

1. Press the **ESC** key to begin search mode.
2. Find the function screen to be changed by pressing the UP (.._) or **DOWN** (T) arrow keys.
3. While on the selected screen, press and hold the **ESC** key. A cursor will appear.
4. Use the **LEFT** (◄) and **RIGHT** (►) arrow keys to position the cursor on the value to be changed.
5. Press the **OK** key to highlight the value.
6. Use the **LEFT** (◄) and **RIGHT** (►) arrow keys to select the correct units (xx:xx) column, and then the **UP** (.._) and **DOWN** (T) arrow keys to change the value.
7. Press the **OK** key to enter the value.
8. Make additional changes to the same page by moving the cursor as described in steps 4−7.
9. When data changes to the page are complete, press the **ESC** key twice.

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

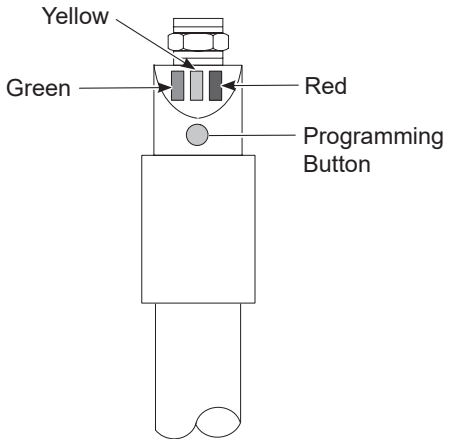


Figure 4-2 Programming the One Button Level Sensor Probe

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 4-2. 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.

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.

Lower the lance assembly until the powder covers at least 25 mm (1 in.) of the level sensor probe.

See Figure 4-2. 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.

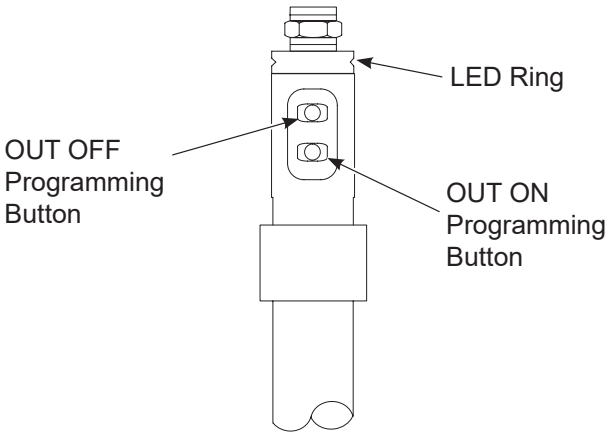


Figure 4-3 Programming the Two Button Level Sensor Probe

LED Functions

LED Color	Status	Meaning
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 4-3 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 4-3. 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	Procedures
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

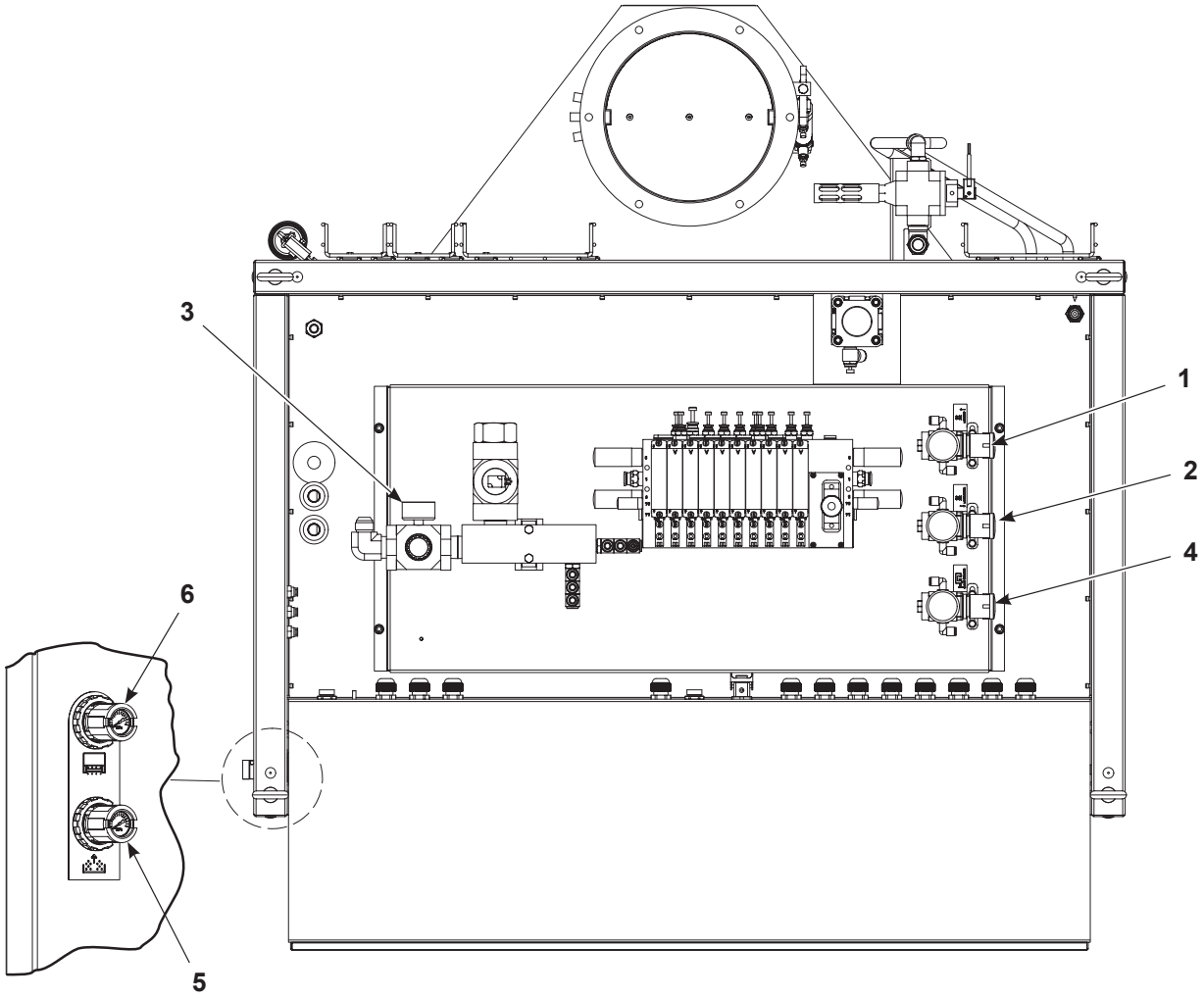


Figure 4-4 Pneumatic Controls (door removed)

Refer to Pneumatic and Electrical Diagrams for feed center pneumatic diagrams.

Item	Function	Recommended Pressure
1	Lift Cylinder Down	3.4 bar (50 psi) 0.34 Mpa
2	Lift Cylinder Up	1 Lance: 4.1 bar (60 psi) 0.41 Mpa 2 Lances: 4.8 bar (70 psi) 0.48 Mpa 3 Lances: 5.5 bar (80 psi) 0.55 Mpa
−	Lift Cylinder Flow Control Valves	6 seconds full travel both directions
3	Purge Air	6.2 bar (90 psi) 0.62 Mpa
4	Lance Purge Clamp	3.4−4.1 bar (50−60 psi) 0.34−0.41 Mpa
−	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) 0.03−0.06 Mpa
6	Lance Fluidizing	0.3−0.7 bar (5−10 psi) (see Note) 0.03−0.06 Mpa
NOTE: Adjust fluidizing air as needed. Powder should be gently boiling, without geysering		

Section 5
Operation

Controls

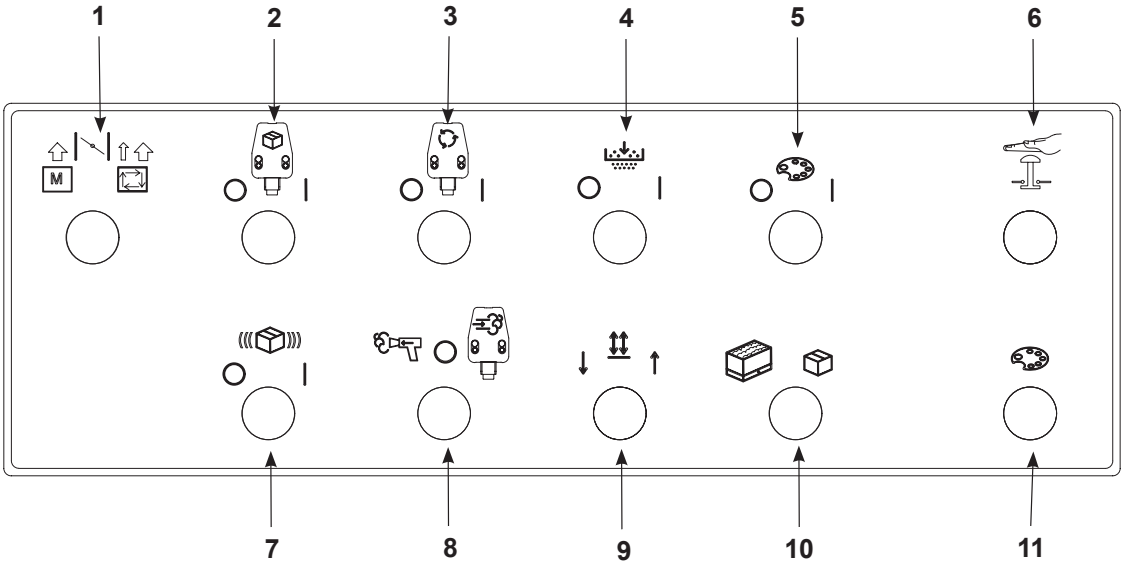


Figure 5-1 Feed Center Controls

Problem	Function
1. Damper Selection	Left: Manual mode − Damper is open for high flow. Right: Auto mode − Damper is partially closed during normal operation, open during color change.
2. Bulk Feed Pump	Turns the virgin powder transfer pump on and off. Used when system is equipped with a bulk feed system. When on, the pump is turned on and off automatically as needed to satisfy the level sensor on the lance assembly.
3. Reclaim Powder Transfer Pump	Turns the reclaim powder transfer pump on and off. When on, the pump operates continually
4. Sieve Control	Turns sieve vibrator motor on and off.
5. Color Change Enable	Starts color change sequence. If operator platform is equipped with an Ancillary Equipment Clean Cycle button, lances are automatically raised out of the hopper or box. If not, then it starts external gun blow off.
6. Emergency Stop	Shuts down powder coating system
7. Table Vibrator	Turns table vibrator motor on and off.
8. Purge Selection	Left: Start internal gun purge cycle. Center: Off Right: Start transfer pump purge cycle.

Continued...

Problem	Function
9. Lance Lift	Raises and lowers lance assembly.
10. Powder Source Select	Selects hopper or box, controls where lances stop when lowered into powder.
11. Color Change Indicator Light (Green)	Off: Color change cycle is disabled Blinking: In color change cycle. On: Color change automatic operations complete

Feed Center Operation

Refer to Figure 5-1 for the feed center operator controls, and the Setup section for the PLC function settings.

Sieve Operation

See Figure 5-1. 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 switch (4).

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

Reclaim and Virgin Pump Selector Switch Operation

See Figure 5-1. The operation of the Reclaim and Virgin powder transfer pumps are controlled by separate selector switches (2, 3). 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, toggle the selector switches off then on.

The virgin transfer pump is disabled when the sieve is turned off.

Reclaim Transfer Pump Operation

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

Virgin Transfer Pump Operation

The virgin transfer pump operation is controlled by a level sensor on the lance. If the powder level in the feed hopper falls below the level sensor, a delay timer (Screen 2, Virgin Powder Transfer Delay) 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 the level sensor detects a low level of powder for too long (Low Powder Alarm Delay, Screen 3), 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.

See Figure 5-1. Turn the Purge Control selector switch (8) 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

See Figure 5-1. When the Powder Source selector switch (10) 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 Feed Center Function Settings, for instructions on setting the timers.

Box Operation

When the Powder Source selector switch (10) 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 (8) 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.
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 5-2 for regulator locations.

Table 5-1 Feed Center Air Pressure Settings

Air Pressure	Typical Settings
Lance Fluidizing (typical)	0.3 bar (5 psi) 0.03 Mpa
Feed Hopper Fluidizing (typical)	0.3 bar (5 psi) 0.03 Mpa
Purge	5.5 bar (80 psi) 0.55 Mpa
Purge Clamp	3.4−4.1 bar (50−60 psi) 0.34−0.41 Mpa
Lance Cylinder:	4.1 bar (60 psi) 0.41 Mpa
Up, 1 Lance	4.8 bar (70 psi) 0.48 Mpa
Up, 2 Lances	5.5 bar (80 psi) 0.55 Mpa
Up, 3 Lances Down	3.4 bar (50 psi) 0.34 Mpa

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 plenum.
   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 are 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 that 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 Figure 5-1 for the feed center operator controls. 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.

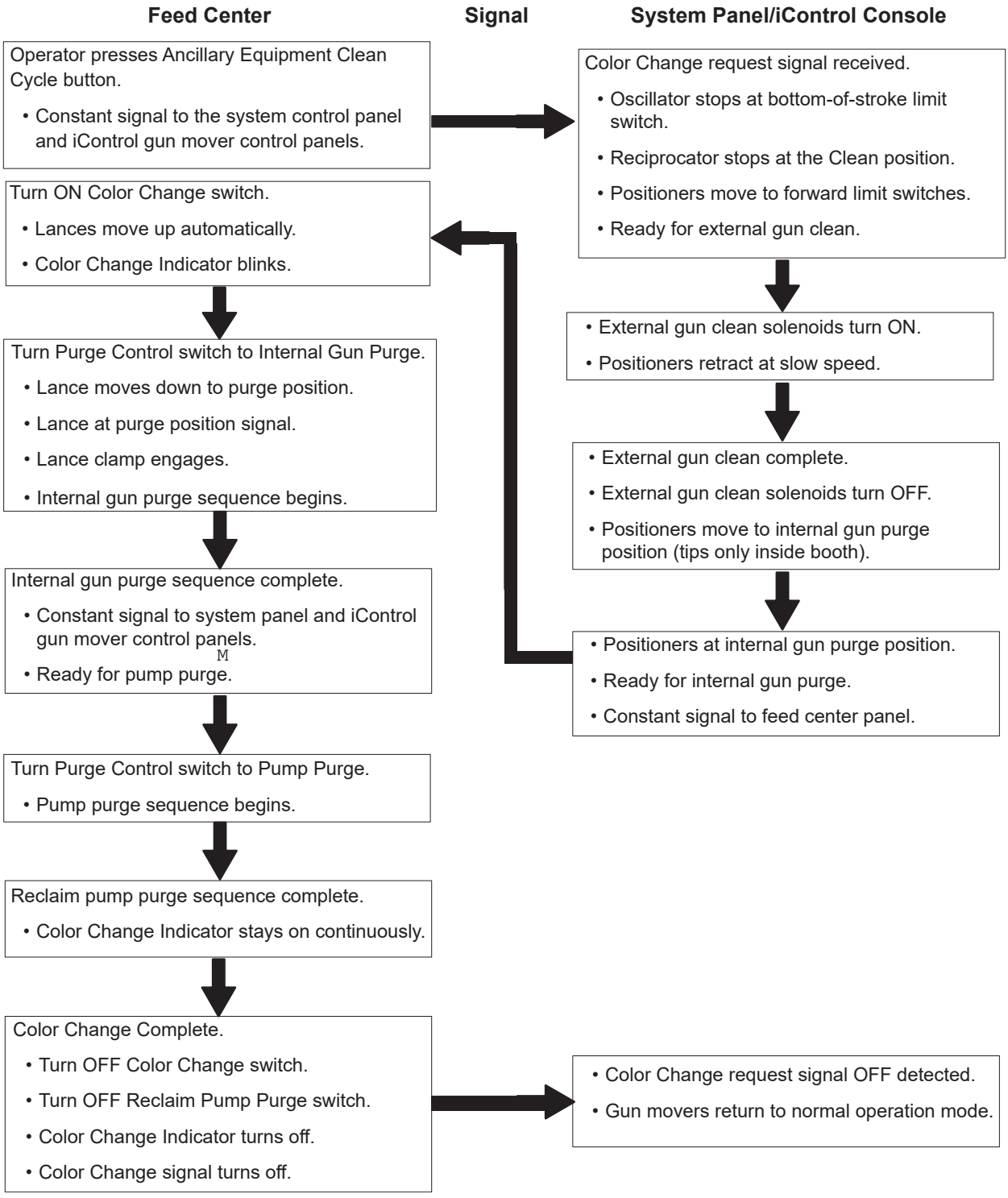


Figure 5-2 Color Change Sequence

Color Change Procedure

Refer to the Color Change Procedure included with your system manual for instructions on color changing a powder coating system with a ColorMax booth and this Encore Venturi Feed Center.

During a color change sequence, the lances are withdrawn from the powder source, then lowered onto the purge manifold. High pressure air is directed through the lances, pumps, feed hoses, and guns, purging them of powder. The reclaim and virgin transfer pumps are also purged. The operator cleans the sieve, lances, and the interior of the booth, and readies the feed center for the next color. Meanwhile, another operator cleans the booth and cyclone.

The recommended sequence of steps is provided in the color change charts furnished by Nordson, but can be modified as desired depending on the customer needs and requirements.

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 on.
3. If you will be shutting down the powder feed center for maintenance, repair, or an extended period of time, perform these steps:
4. Press the SYSTEM STOP button on the system control panel.
5. 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. If applicable, make sure the ground clip is installed around the screen gasket so it grounds the screen to the pan and deck. More information on sieve styles is available in the Parts section, beginning on page 6-1.
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. Refer to the Encore In-Line Pump manual, part number 1095928, for repair procedures and replacement 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, part number 1092270, for repair procedures and replacement parts.
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 6-1 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 approximately 2.8 m3/min (100 ft3/min). A lower reading indicates clogged ducts or afterfilter cartridge filters.
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 the Safety section “Grounding” on page 1-3 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 any leaking tubing or fittings.

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 Industrial Coating Systems 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.

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 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.
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 buildup 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.

Continued...

Problem	Possible Cause	Corrective Action
8. Excessive sieve noise	Sieve deck or discharge pan not secure	Tighten the clamps securing the sieve deck.
	Knobs or clamps not tightened; vibration 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
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	During normal operation, the reclaim and virgin pumps will not run unless the sieve is on. Turn on the sieve.
	Reclaim or Virgin switch or wiring is defective	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 control manifold, or solenoid valve not opening (reclaim SOL 336, virgin SOL 338)	Check the air supply to the control manifold on the roof of the feed center. Check for air output from solenoid valve. Check the control manifold cable wiring. Repair or replace as needed.
	Problem with transfer pump controls or pump	Check the pump and controls. Refer to High Capacity HDLV pump manual 1092270 and Pump Station manual 1073134.
	Level sensor failed or wiring defective	Check the solenoid valve in the control manifold. Make sure the manual operator on the valve is not in override position.
11. Reclaim or virgin transfer pump turned off but continues to run	Solenoid valve in manual override (reclaim SOL 336, virgin SOL 338)	Check the solenoid valve in the control manifold. Make sure the manual operator on the valve is not in override position.
	Solenoid valve failed open	Replace the valve.
12. 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
13. 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
14. Reclaim and/or virgin transfer pump purge cycle does not start when Purge 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.
	Control manifold purge solenoid valves or wiring defective	Check for air output from solenoid valve SOL 340 (reclaim), SOL 342 (virgin). Refer to the Description section for the solenoid valve location. Check air supply to control manifold. Check cable wiring. Repair or replace as needed.
	Purge air process valve or pilot air tubing defective	Check pilot air tubing. Make sure air signal is reaching process valve in pump station. Check process valve operation. Check air supply to process valve. Repair or replace as needed. Refer to pump station manual 1073134.
15. 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 switch to Gun Purge momentarily.
	Problem with powder supply or virgin transfer pump	Refer to problems related to powder, sieve, or pump.
16. Color change does not start when Color Change 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 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.

Continued...

Problem	Possible Cause	Corrective Action
17. Color change does not start with Color Change 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 controller did not receive Color Change start signal from feed center	The feed center passes signals for color change to the gun positioner controller which then communicates with the iControl system. Check the wiring and connections between the feed center control panel and the gun positioner controller.
	Reciprocator not in auto mode	Reciprocator must be in auto mode for color change cycle to start. Set the reciprocator to auto mode.
18. 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.
	ColorMax not selected on iControl gun positioner configuration screen (USA only)	Check gun positioner configuration.
	Oscillator not stopped	Oscillator gets stop command from gun positioner controller. Refer to your system electrical drawings. Contact Nordson technical support. 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.
19. Color change cycle started, blowoff air does not turn on	No air supply to solenoid valve or process valve, failed valve, or bad electrical connection	Solenoid valve in the main system panel is activated by a 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 process valve operation. Check the wiring and connections between the gun positioner controller and solenoid valve.

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.

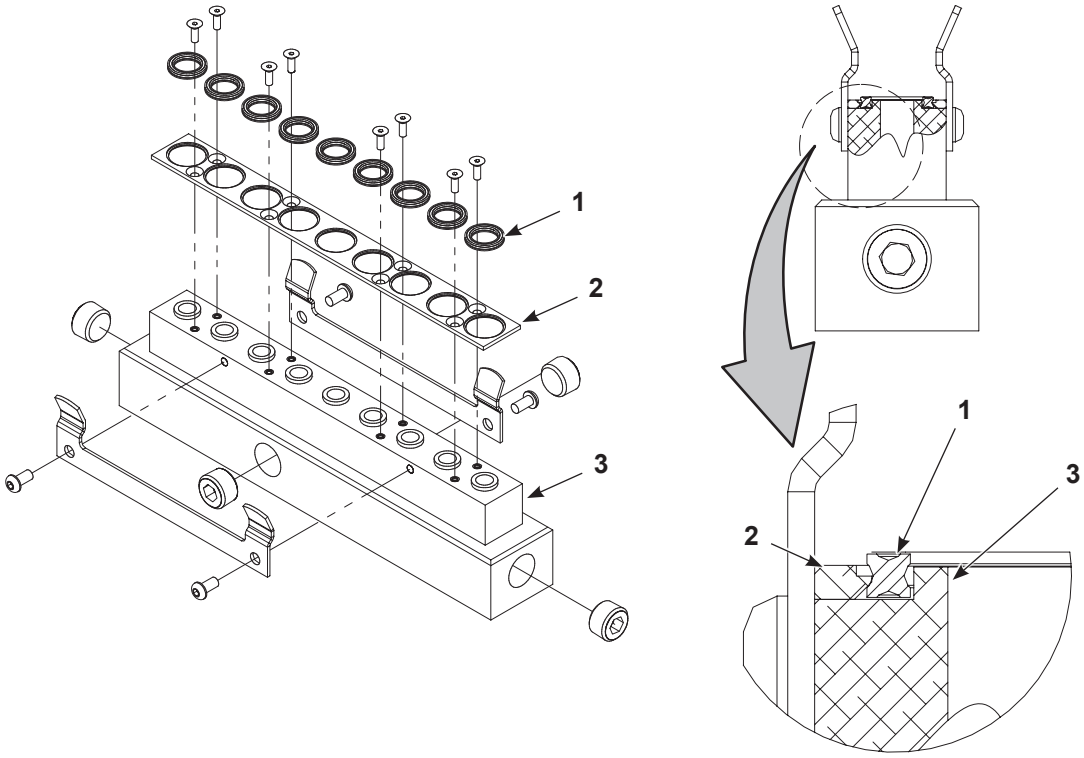


Figure 8-1 Purge Manifold Quad Ring Replacement

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 relieves the air pressure and mechanically locks the lift cylinder in position.
3. Remove the hopper/box table from the enclosure:
   a. Remove the nuts (2) from the isolation mounts (1).
   a. If using a vibrator motor, loosen the motor cable cord grip and pull the cable slack through the grip.
   a. Lift the table up off the mounts and move it enough to gain access to the purge manifold assembly.

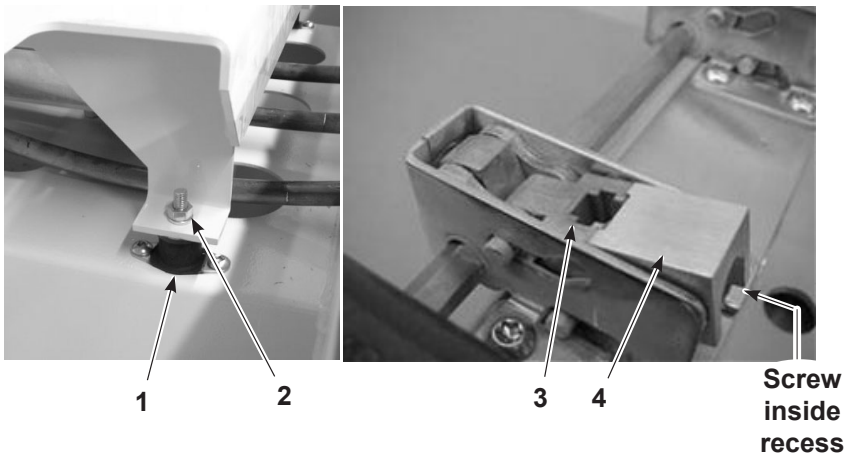


Figure 8-2 Pawl Replacement

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 the 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).

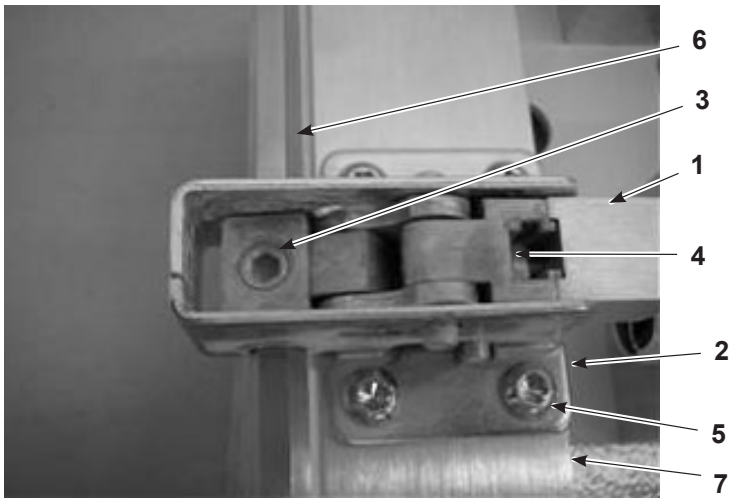


Figure 8-3 Latch Replacement

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.
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.

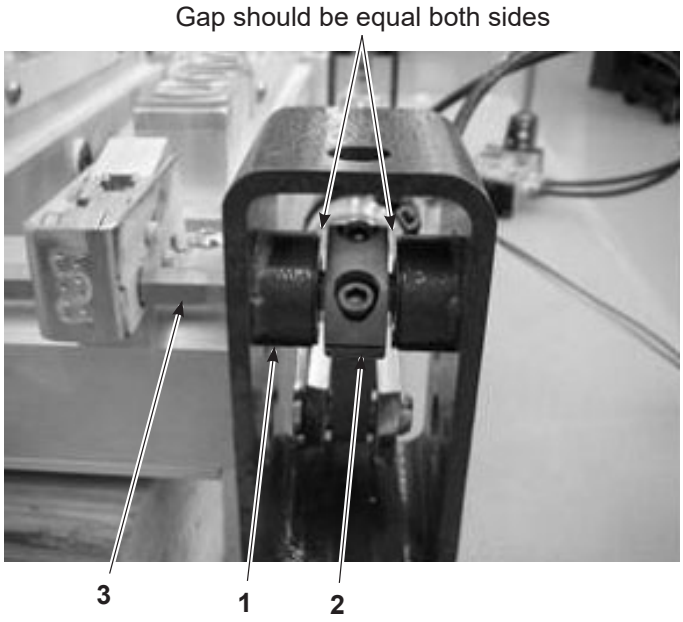


Figure 8-4 Pawl Replacement

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 8-5 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.

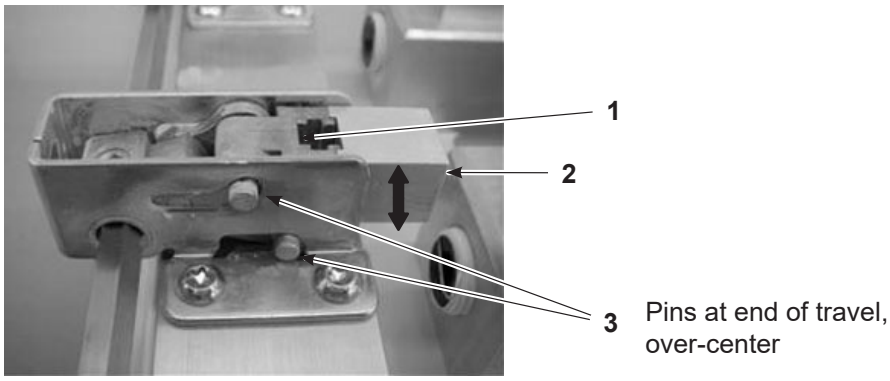


Figure 8-5 Pawl Adjustment - Latch Shown Over-Center

1. Pawl Mount
2. Pawl
3. Pins

Clamping Cylinder Replacement

1. Perform steps 1-3 in Latch Pawl Replacement.
2. See Figure 8-6. Disconnect the air tubing from the cylinder flow control valves.
3. Retract the cylinder 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 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 rod or slightly extend the cylinder to ensure lever assemblies (4) attach properly with latches fully open.

9. Install proximity switches as follows:

- Extend (Engaged): LS403 − Install on rod end.
- Retract (Released): LS404 − Install on fixed end.

NOTE: Refer to the electrical schematic.

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

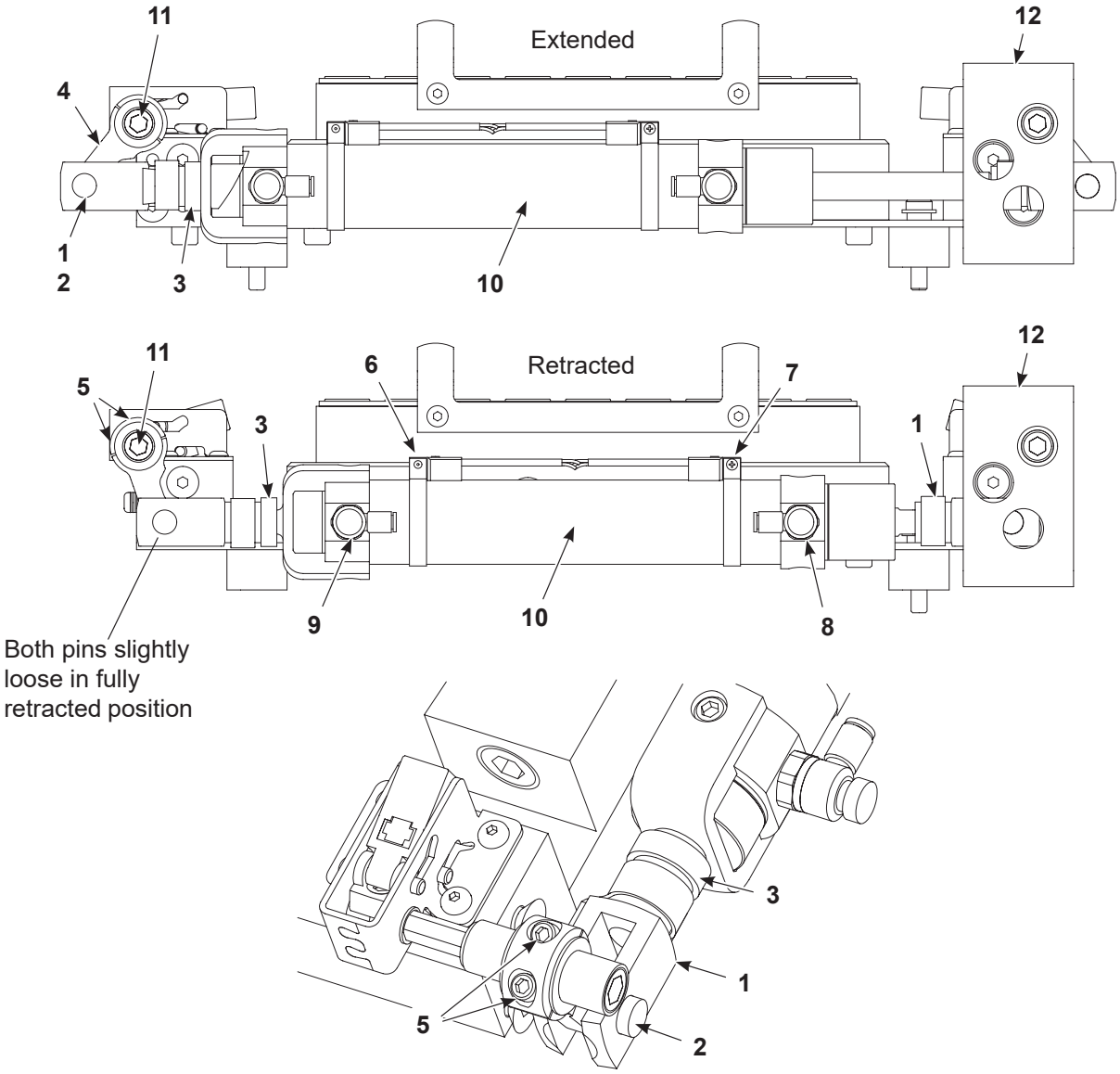


Figure 8-6 Clamping Cylinder Replacement

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

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” on page 4-8 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):
    - Slide the switch on the cylinder until it senses the magnet in the cylinder piston and the LED lights.
    - Note the position where the LED turned on, then continue sliding it in the same direction until the LED turns off.
    - 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 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

The replacement lift cylinder listed in the Parts section of this manual does not include the trunnion flange and fasteners, clevis and clevis pin, or proximity switches. Re-use your existing components, or order new ones as needed.

Lift Cylinder Removal

1. Lower the lance assembly onto the purge manifold. The lance carriage will be positioned against the stop bolt.
2. See Figure 8-7. 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, as you will need it to install the new cylinder.

Figure 8-7 Lift Cylinder Clevis Pin

1. Clevises
2. Clevis plate
3. Clevis pin

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 8-8. Disconnect the air tubing from the Up and Down flow control valves and the cylinder lock at the top and bottom of the cylinder.
6. Measure and note the position of the proximity switches. Label the switches and remove them and their brackets from the cylinder.
7. Remove the four M8 socket-head screws from the bottom of the trunnion support block.
8. Remove the bearing caps, then pull the bearings off the cylinder trunnions. Lift the cylinder up and out of the enclosure. Save the bearing caps and bearings for re-use.
9. Remove the clevis and lock nut from the cylinder. Save these parts for re-use.
10. Remove the trunnion flange from the cylinder. Save the flange and four screws for re-use.

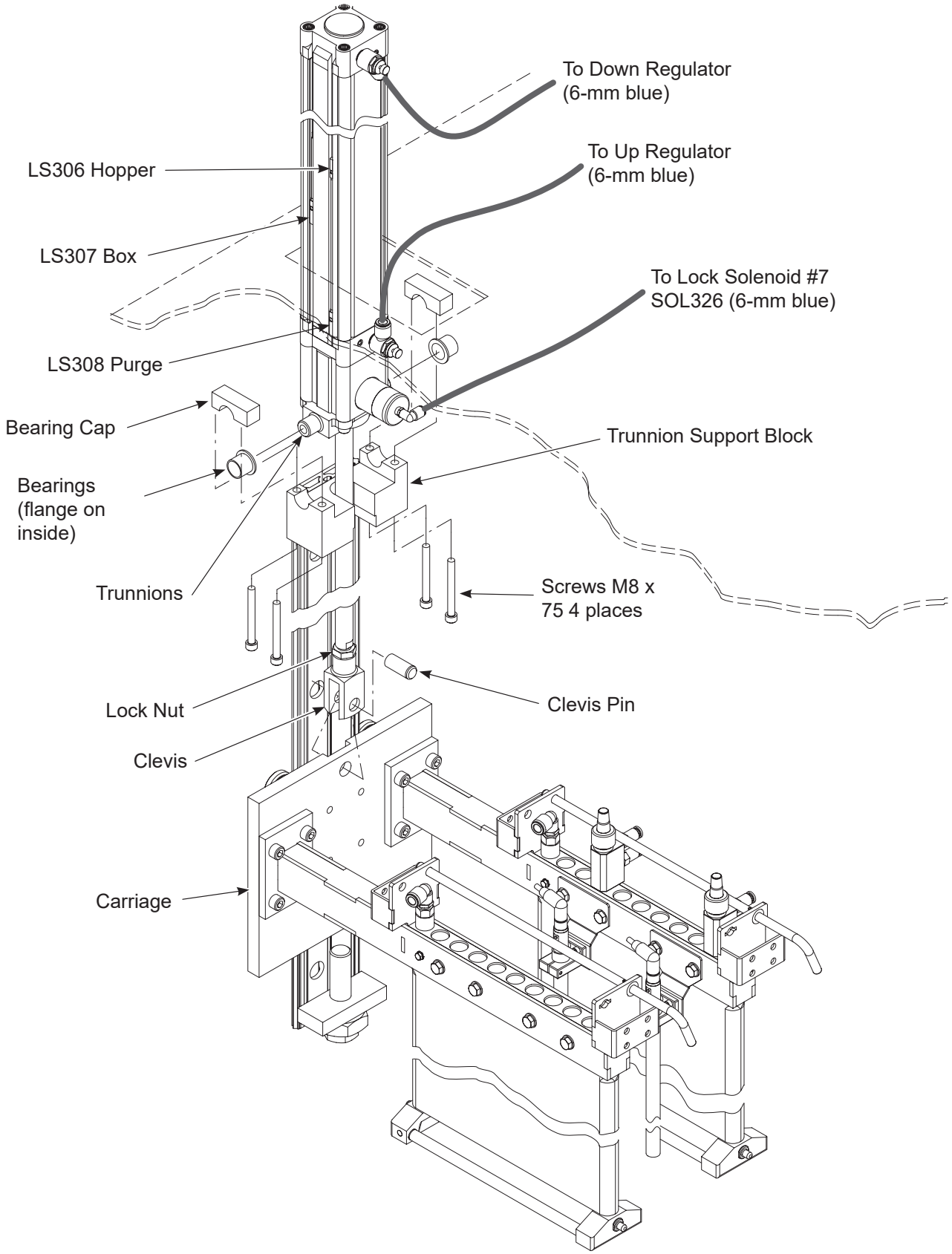


Figure 8-8 Lift Cylinder Replacement

Lift Cylinder Installation

1. Remove the lift cylinder packaging and inspect it for damage.
2. See Figure 8-8. Install the trunnion flange on the new cylinder.
3. 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.
4. Unsnap the clevis pin clip from the clevis and remove the pin.
5. Remove the four M8 x 75 screws from the bottom of each side of the bearing block and lift off the bearing caps.
6. Remove the bearings from the bearing caps. Install the bearings on the cylinder trunnions, with the bearing flanges toward the cylinder.
7. Install the cylinder through the square opening in the roof of the feed center, then carefully guide the bearings into the trunnion support block.
8. Install the bearing caps on top of the bearings, noting that the bearing caps have position letters stamped on each cap which match letters stamped on the block. Reinstall with the matching letters aligned. Secure the caps to the support block with the four M8 x 75 screws.
9. 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 #3 SOL326 to the cylinder lock.
10. Rotate the E-Stop button on the feed center control panel clockwise to release it and turn on feed center power and air.
11. Lower the cylinder clevis down the the lance carriage, which should be resting on the stop bolt at the bottom of the V-track rail.
12. Connect the clevis to the lance carriage with the clevis pin. Snap the pin clip around the clevis.
13. Install the proximity switches on the cylinder at the same positions as on the old cylinder:
    - LS306: Hopper position
    - LS307: Box position
    - LS308: Purge position
14. 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 off positions and secure it in place.

NOTE: Refer to *Lift Cylinder Proximity Switch Adjustment* on page 3-11 of this manual to set the positions of the Box switch (LS307) and the Hopper switch (LS306).

15. Raise and lower the lance assembly and adjust the cylinder flow control valves for 6 seconds full travel in each direction.

Cylinder Cushion Stop Adjustment

Make sure the top cylinder cushion stop is adjusted to bring the piston to a gentle stop when fully retracted.

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

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

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 8-9. 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.

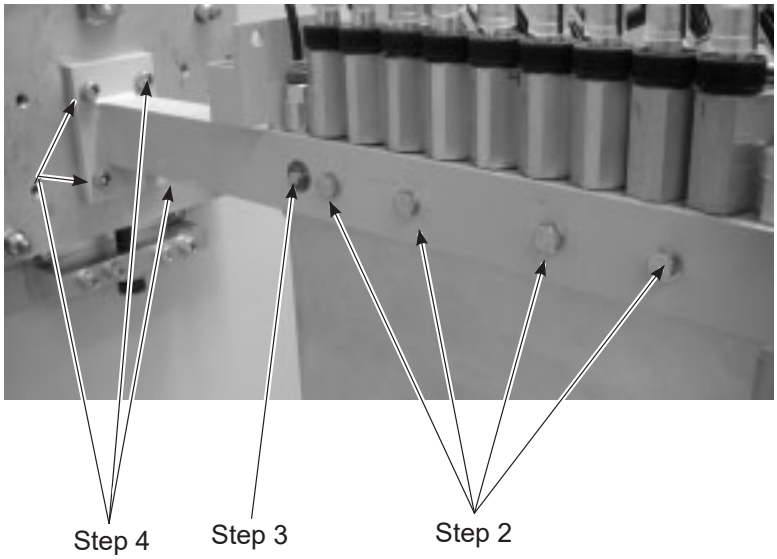


Figure 8-9 Lance Adjustment Steps 2-4

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.

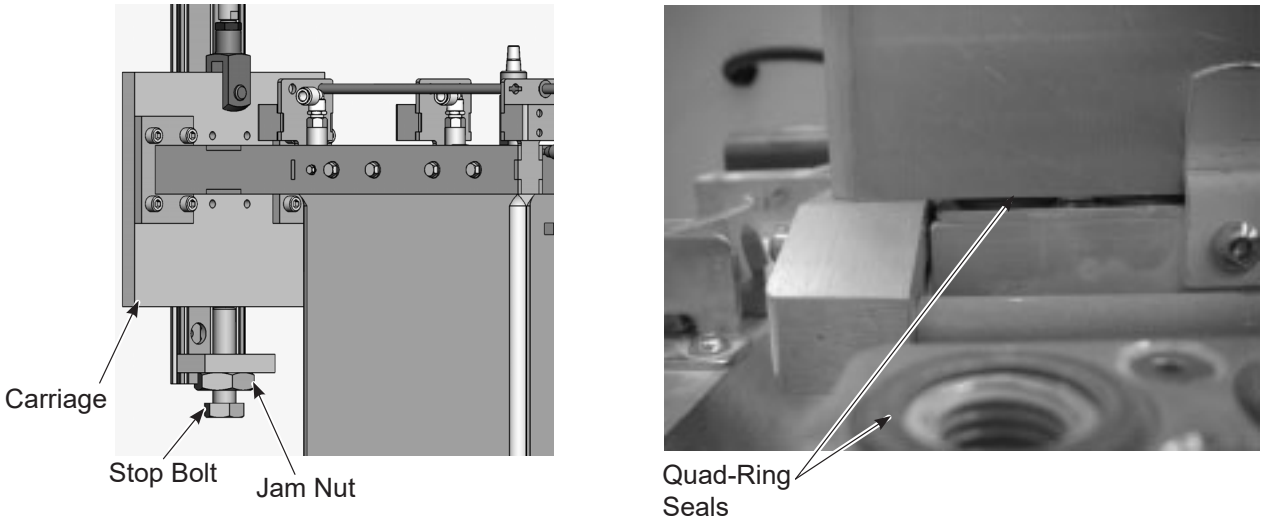


Figure 8-10 Stop Bolt Adjustment

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.

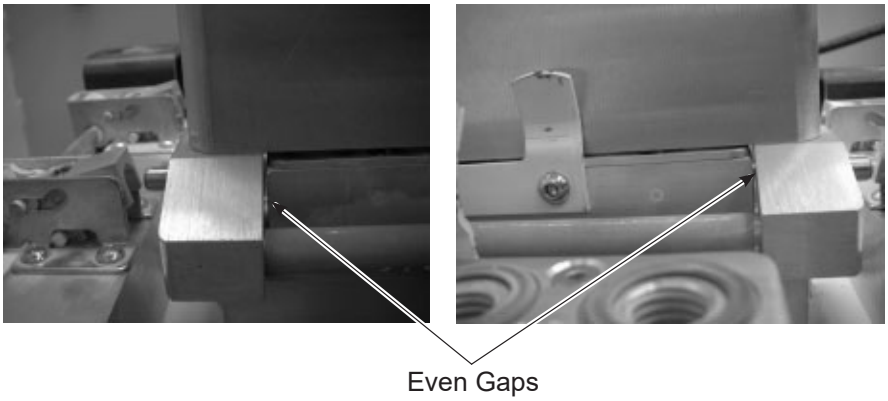


Figure 8-11 Lance Adjustment, Step 8

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 8-14 for the pawl adjustment procedure.

Feed Hopper Fluidizing Plate Replacement

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 8-12. 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.

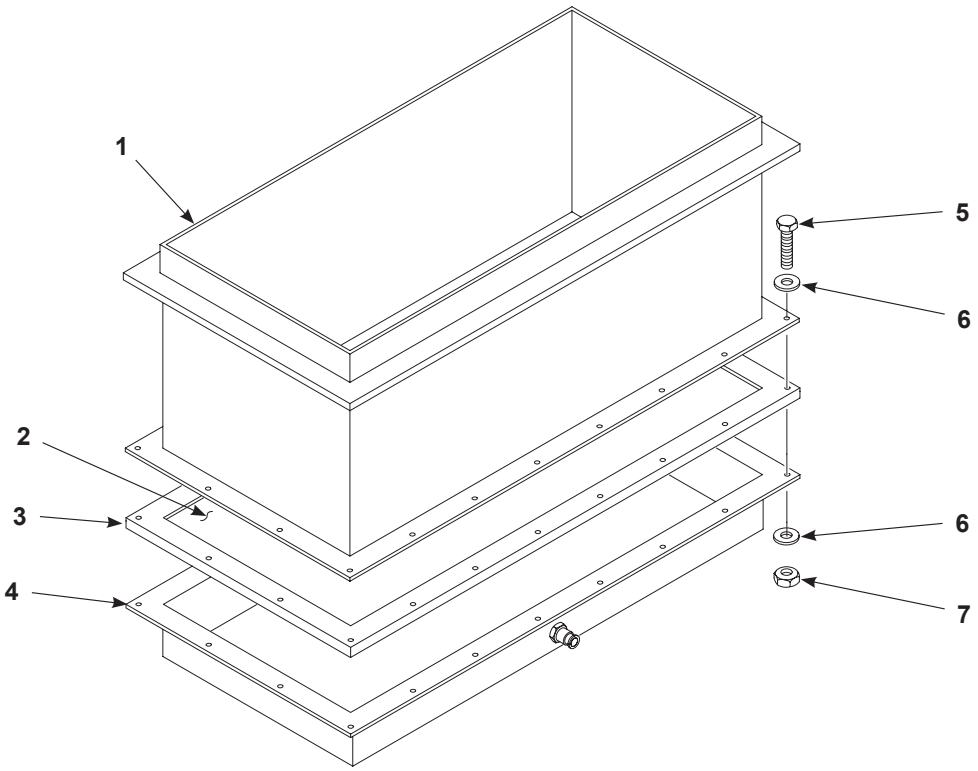


Figure 8-12 75-lb Feed Hooper Fluidizing Plate Replacement

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 8-13. 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.

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.

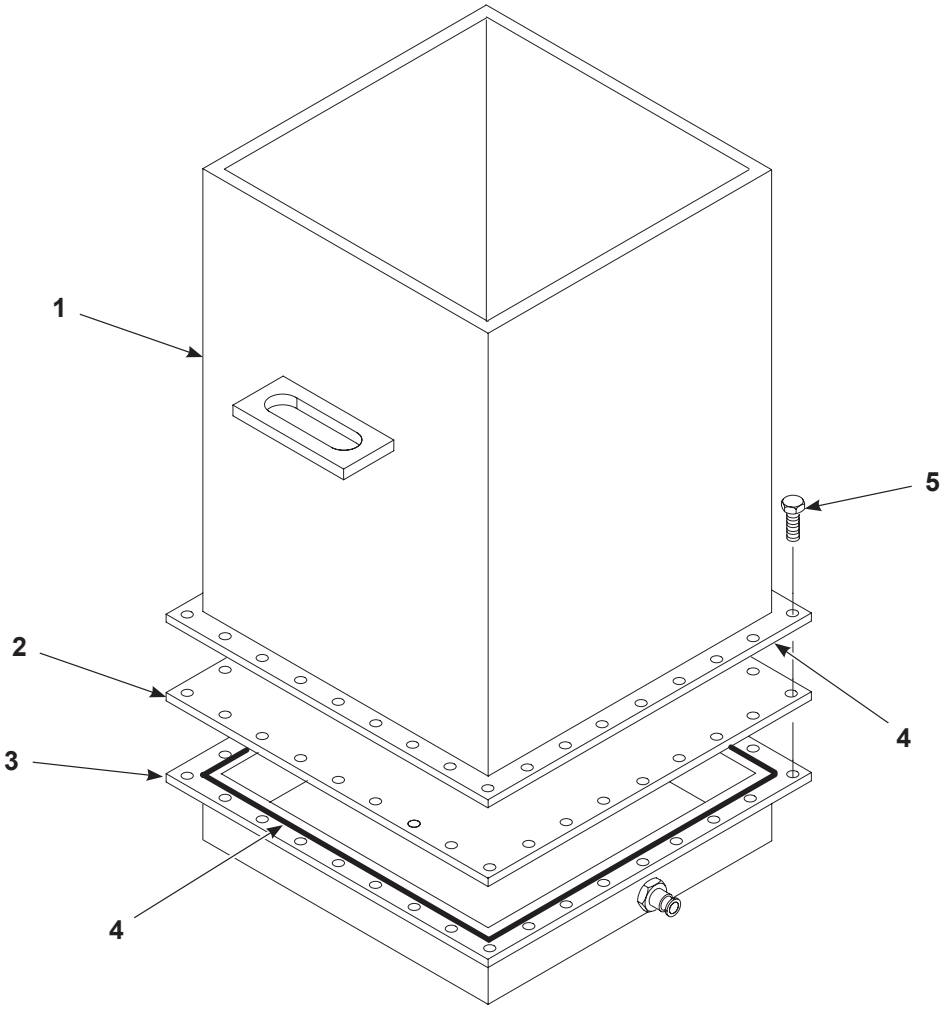


Figure 8-13 50-lb Feed Hooper Fluidizing Plate Replacement

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

Vibratory Table Motor Weight Adjustment

Refer to Table 8-1. If you replace the vibratory table 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	Description	Manufacturer	Weight Setting
1602109	VIBRATOR, 230/460V, 3PH/60Hz	Oli−Wamgroup/MVE 60/3	66%
1602896	VIBRATOR, 330/575V, 3PH/60Hz	Oli−Wamgroup/MVE 60/3	66%
1602893	VIBRATOR, 220/380V, 3PH/60Hz	Oli−Wolong/MVE 60/3	66%
1602109	VIBRATOR, 200/400V, 3PH/50Hz, ATEX	Oli−Wamgroup/MVE 60/3	75%
1602896	VIBRATOR, 220/380V, 3PH/50Hz	Oli−Wolong/MVE 60/3	75%
1602893	VIBRATOR, 240/415V, 3PH/50Hz	Oli−Wolong/MVE 60/3	75%

60Hz Motor Weight Adjustment

See Figure 8-14 for steps 1 - 4 when replacing or retrofitting a 60Hz vibratory table motor for the Encore Powder Feed Center.

FC 66% = 2 blades turned

60Hz = 156.5 lb. FC X 66% = 103.29 lb. FC

1. Remove the caps from both ends of the motor.
2. Place wrenches on the nuts located on both ends of the motor shaft.
3. Unscrew one nut and remove the weight blades from that end of the shaft. The opposite nut will remain tight.

NOTE: 60Hz motors come with one weight blade already rotated at each end.

4. 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. Remove the weight blades from the end of the shaft.

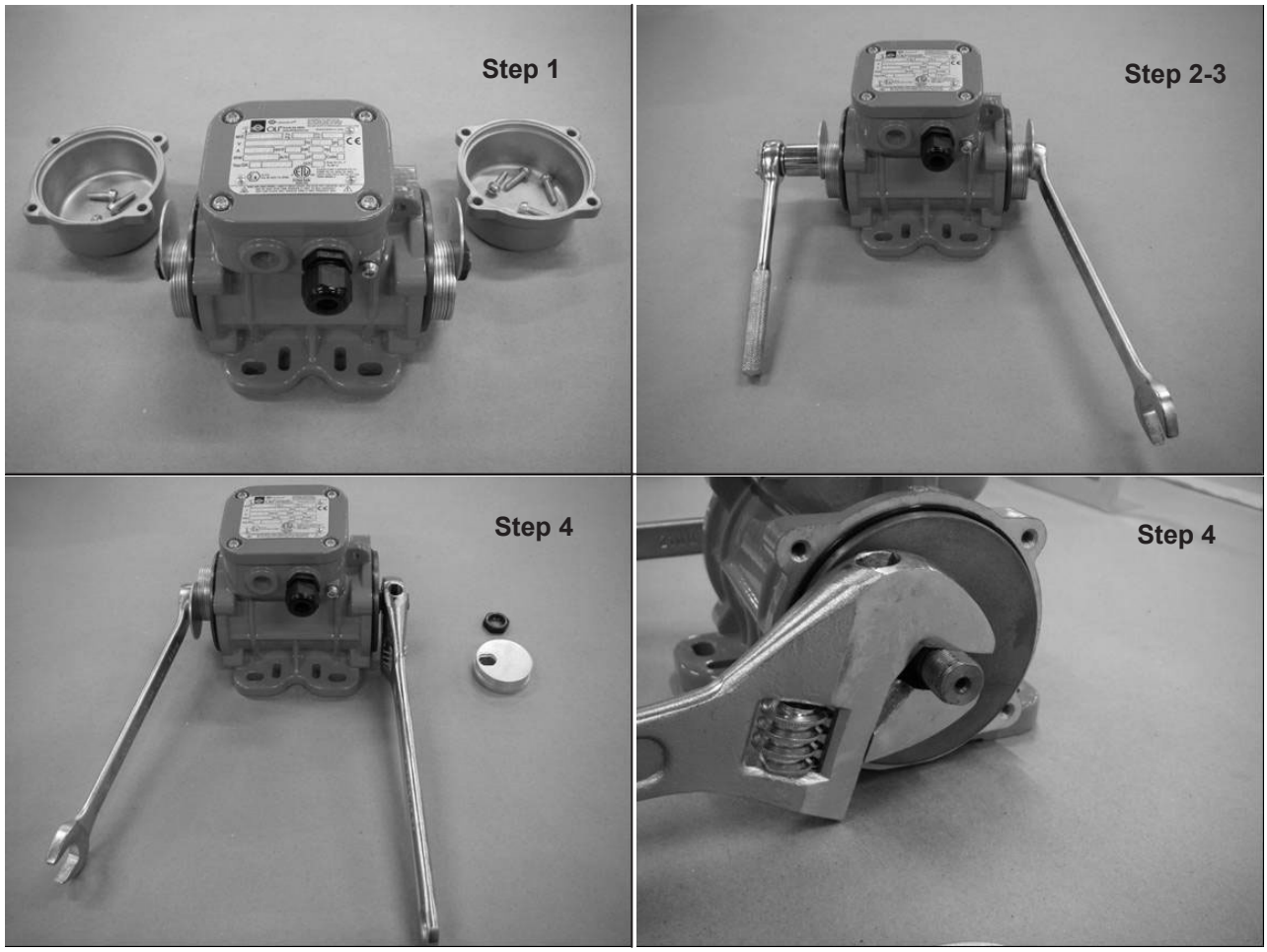


Figure 8-14 Vibrator Weight Adjustment, 60Hz, Steps 1-4

60Hz Motor Weight Adjustment (con't)

See Figure 8-15 for steps 5 - 8 when replacing or retrofitting a 60Hz vibratory table motor for the Encore Powder Feed Center.

5. Install the weight blades that were removed. Turn (2) weight blades on each shaft end to the opposite position as shown.
6. Make sure that the weight blades are in the same configuration at both ends of the motor. **Two** weight blades must be rotated at each end. Tighten both shaft nuts securely to 74-78 ft-lbs.
7. Install the end caps with the flat area on the cap aligned with the flat area on the mounting flange.
8. Tighten the screws to 4 ft-lbs.

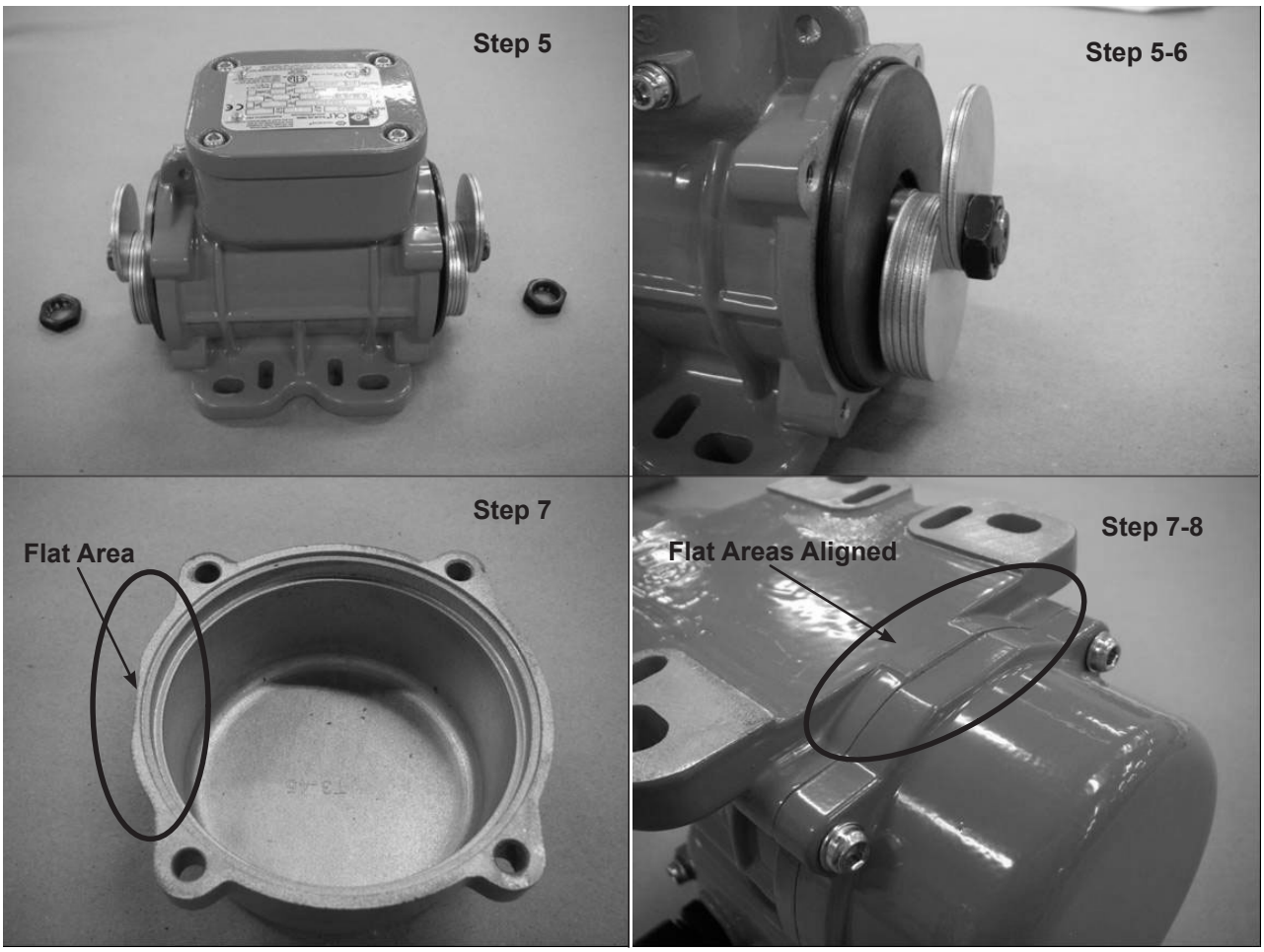


Figure 8-15 Vibrator Weight Adjustment, 60 Hz, Steps 5-8

50Hz Motor Weight Adjustment

See Figure 8-16 for steps 1 - 4 when replacing or retrofitting a 50Hz vibratory table motor for the Encore Powder Feed Center.

FC 75% = 1 blade turned

50Hz = 145.5 lb. FC X 75% = 109.125 lb. FC

1. Remove the caps from both ends of the motor.
2. Place wrenches on the nuts located on both ends of the motor shaft.
3. Unscrew one nut and remove the weight blades from that end of the shaft. The opposite nut will remain tight.

NOTE: 50Hz motors come with all of the weight blades rotated in the same direction.

4. 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. Remove the weight blades from the end of the shaft.

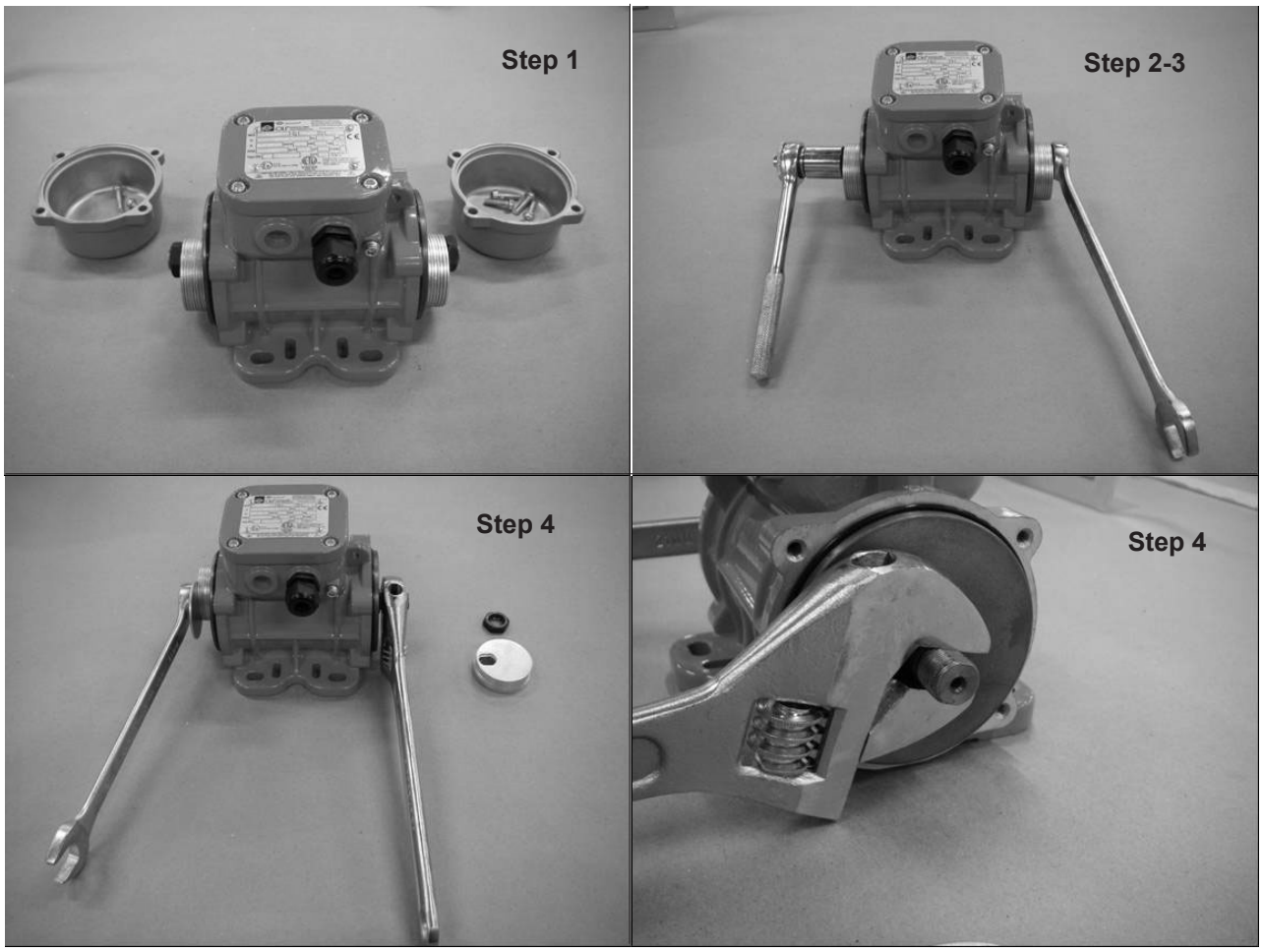


Figure 8-16 Vibrator Weight Adjustment, 50Hz, Steps 1-4

50Hz Motor Weight Adjustment (con't)

See Figure 8-17 for steps 5 - 8 when replacing or retrofitting a 50Hz vibratory table motor for the Encore Powder Feed Center.

5. Install the weight blades that were removed. Turn (1) weight blade on each shaft end to the opposite position as shown.
6. Make sure that the weight blades are in the same configuration at both ends of the motor. ONE weight blade must be rotated at each end. Tighten both shaft nuts securely to 74-78 ft-lbs.
7. Install the end caps with the flat area on the cap aligned with the flat area on the mounting flange.
8. Tighten the screws to 4 ft-lbs.

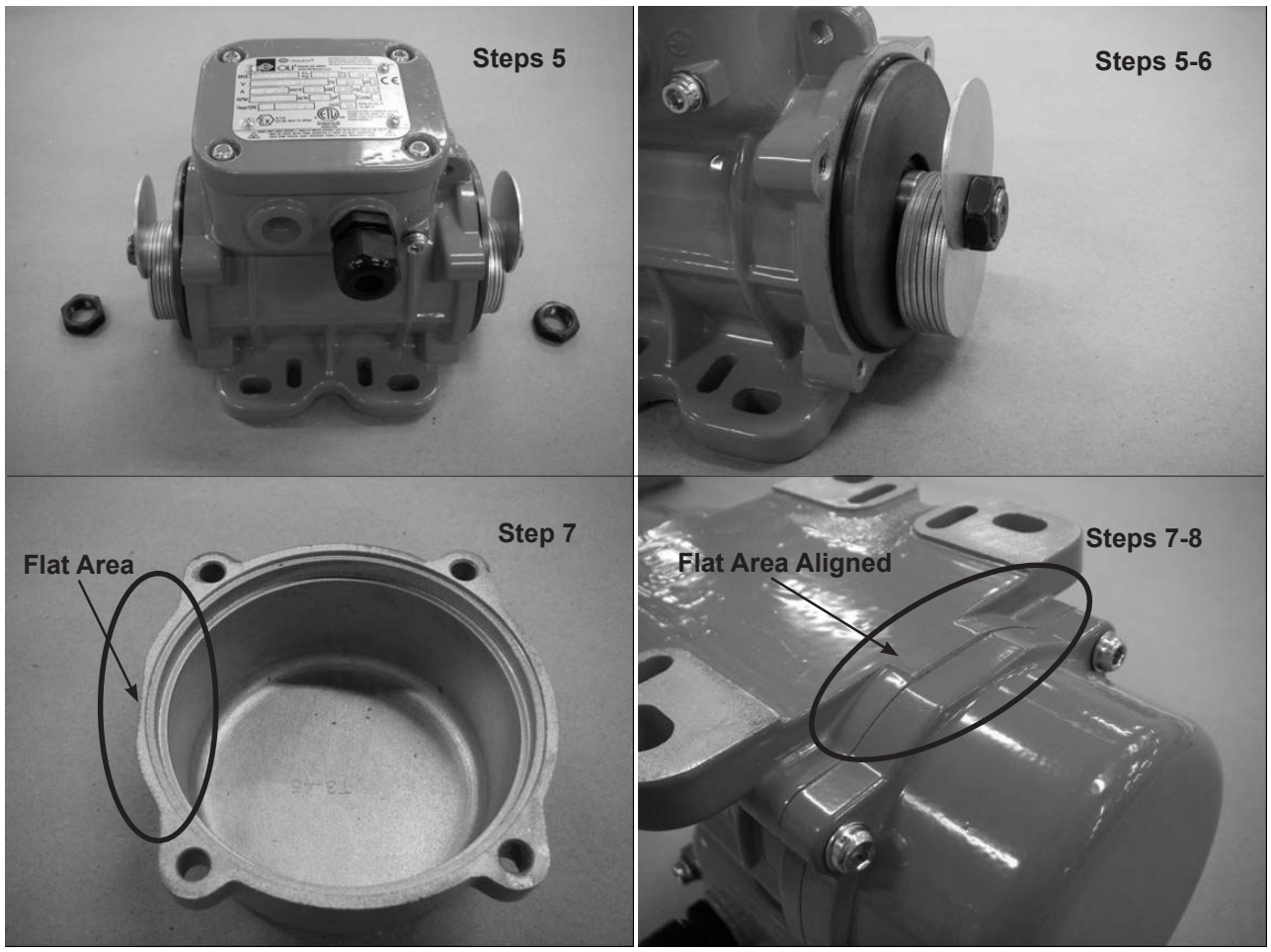


Figure 8-17 Vibrator Weight Adjustment, 50Hz, Steps 5-8

Section 9
Parts

Introduction

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

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. Indentions 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	Part	Part	Description	Quantity	Note
—	- - - - - -	—	—		—	
1	- - - - - -					
2						

Continued...

NOTE: A.

B.

NS: Not Shown

AR: As Required

Powder Feed Center Parts

See Figure 9-1.

Item	Part	Description	Quantity	Note
—	------	Encore Powder Feed Center Assembly	1	
1	1602304	• REGULATOR, air, 0.02 - 0.2 MPA, with gage	2	
2	1602947	• KIT, blowoff gun, Encore PFC	1	
3	1086213	• UNION, bulk, KQ2E16-00, 16 mm	3	
4	1091201	• TUBE, polyurethane, 16 mm OD	9	
5	1066079	• GROMMET, ⅜” lip style	3	
6	249461	• SOCKET, F, 8, 10 tube, pneumatic	6	
7	1099946	• PLUG, M, 8, 10 tube, pneumatic	6	

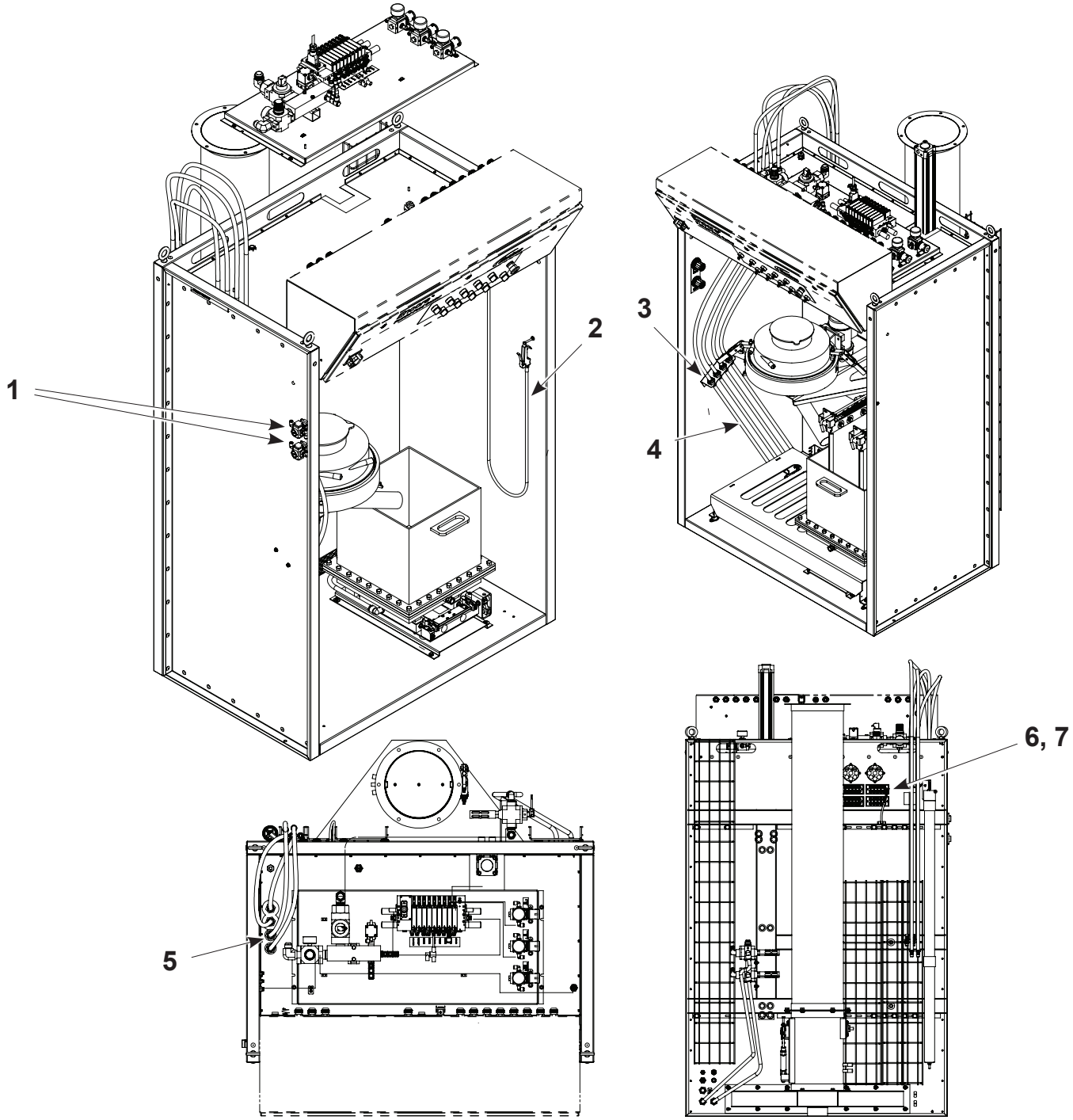


Figure 9-1 Powder Feed Center Parts

Lift Assembly Parts

See Figure 9-2.

Item	Part	Description	Quantity	Note
—	–––––––	Lift Module	1	
1	1602289	• GUIDE, V linear, feed center	1	
2	1602290	• PLATE, 3, lift carriage, with wheels	1	
3	–––––––	• TRUNNION SUPPORT BLOCK	1	
4	–––––––	• PLATE, lift stop	1	
5	1602292	• BEARING, IGUS	2	
6	345439	• SCREW, socket, M16 x 2.0 x 50, zinc	1	
7	984697	• NUT, hex, jam, M16 x 2.0, steel, zinc	1	
8	1602342	• SCREW, socket, M8 x 1.25 x 75, zinc	4	
9	982160	• SCREW, socket, M8 x 1.25 x 25, zinc	4	
10	1602802	• SCREW, socket, M10 x 1.50 x 20, steel, zinc	6	
11	982926	• SCREW, socket, M8 x 12, steel, zinc	2	
–	–––––––	Lift Cylinder Module	1	
12	1602294	• CYLINDER, locking, 63 x 600 mm, Festo	1	
13	–––––––	• CLEVIS, Festo rod, M16	1	
14	1603063	• VALVE, flow control, .38 Rc x 6 T, meter out	2	
15	1103505	• SWITCH, cylinder proximity	3	
16	972837	• ELBOW, male, 6 mm tube x 1/8 BSPT	1	
17	–––––––	• TRUNNION FLANGE, Festo	1	
18	982160	• SCREW, socket, M8 x 1.25 x 25, zinc	4	

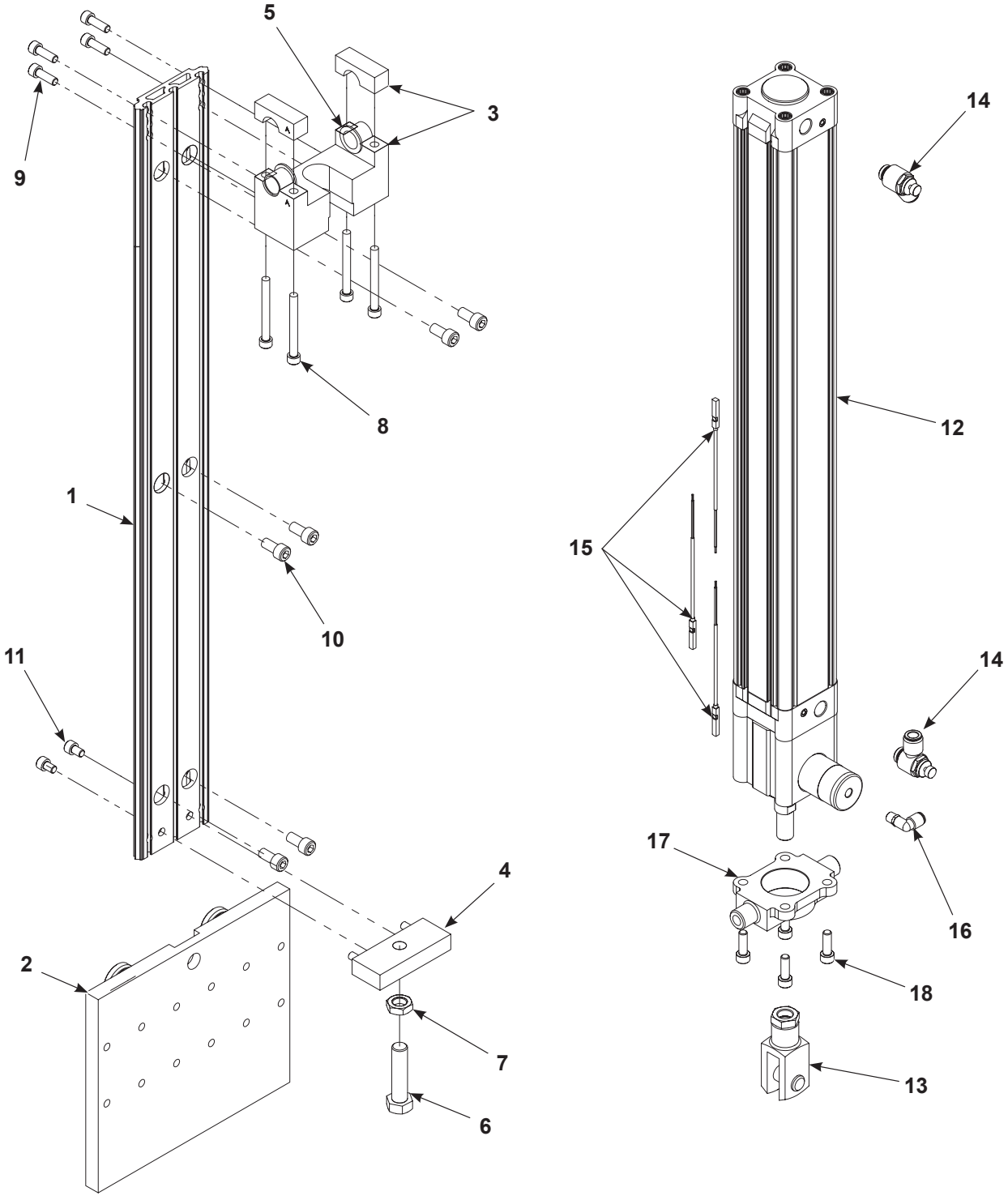


Figure 9-2 Lift Assembly Parts

Lance Assembly Parts

Basic Lance Parts

See Figure 9-3. 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, corona, Encore Gen II, pkg	AR	A
NOTE: A. Refer to pump manual for repair parts. Pumps must be ordered separately AR: As Required				

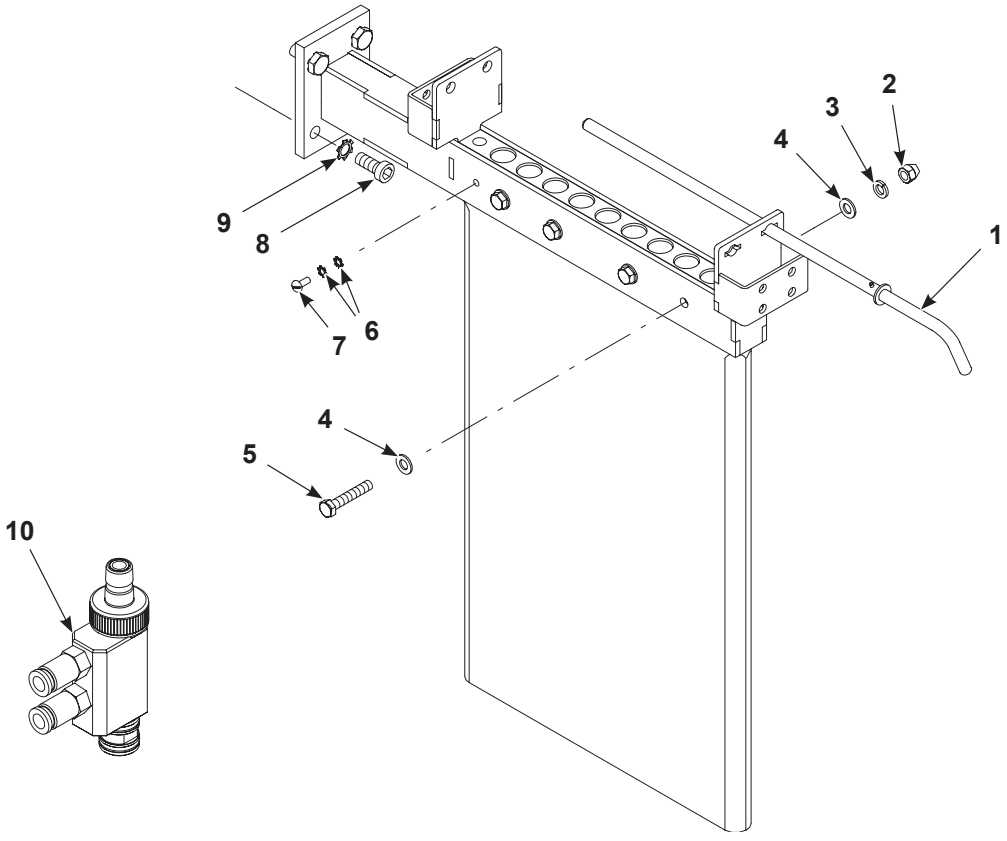


Figure 9-3 Basic Lance Assembly Parts Lance Assembly Parts

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	

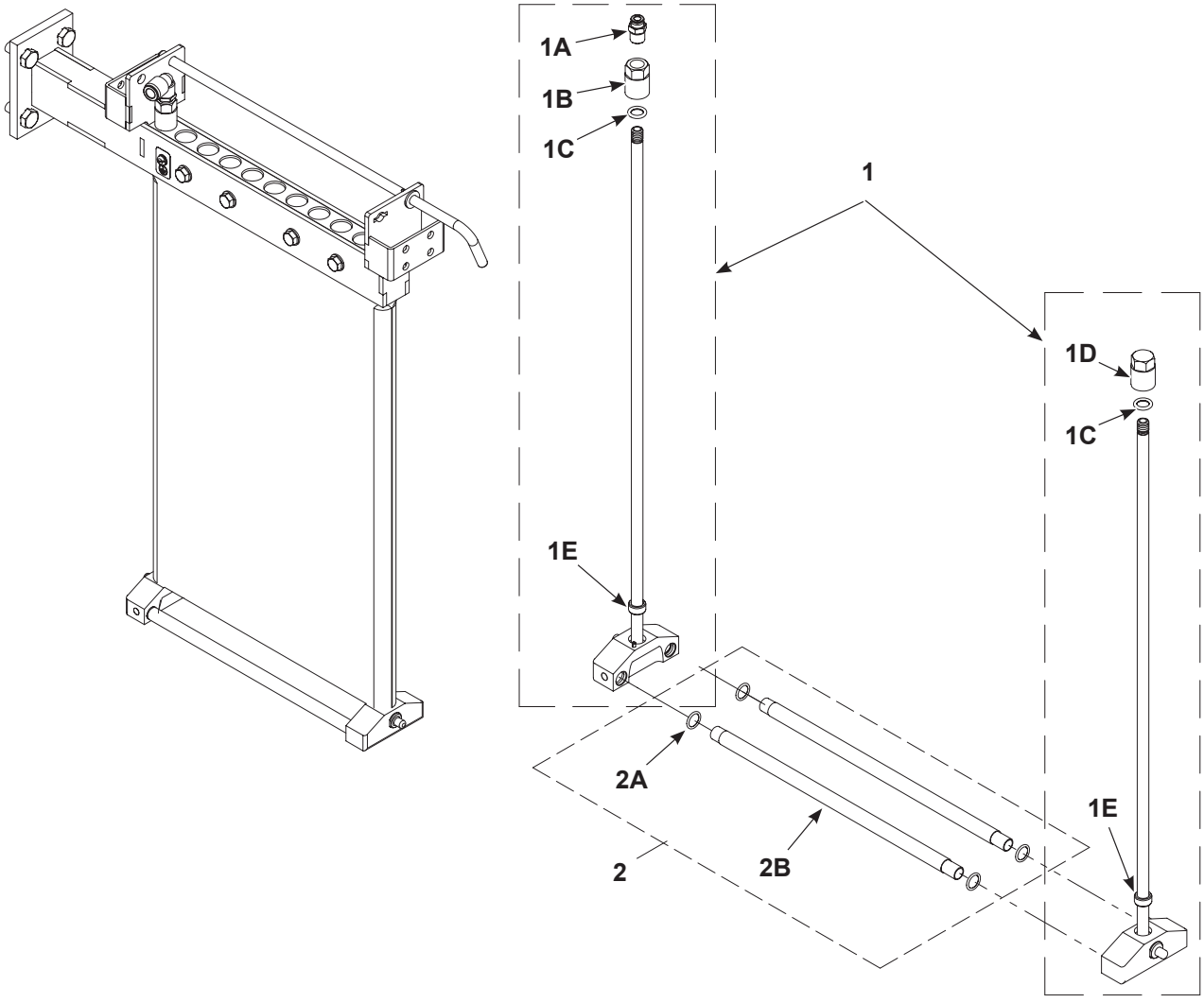


Figure 9-4 Basic Lance Assembly Parts

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	

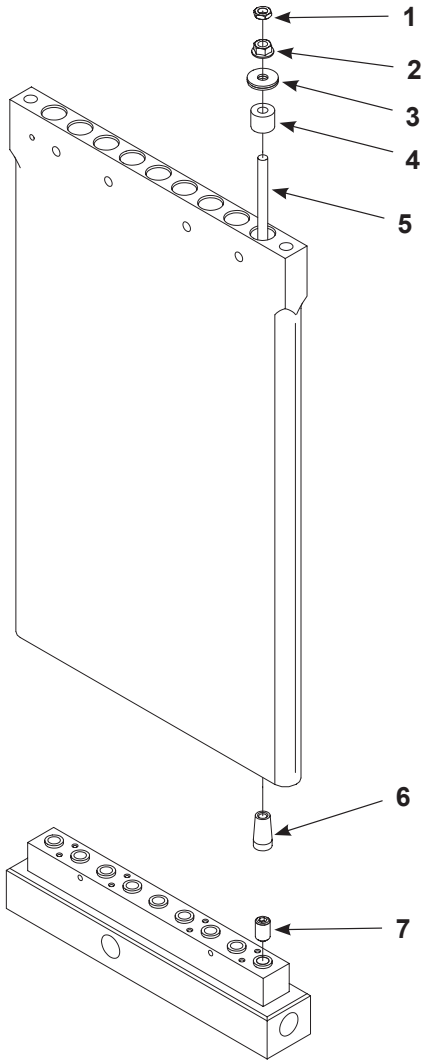


Figure 9-5 Lance Port Plug Module Parts

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	

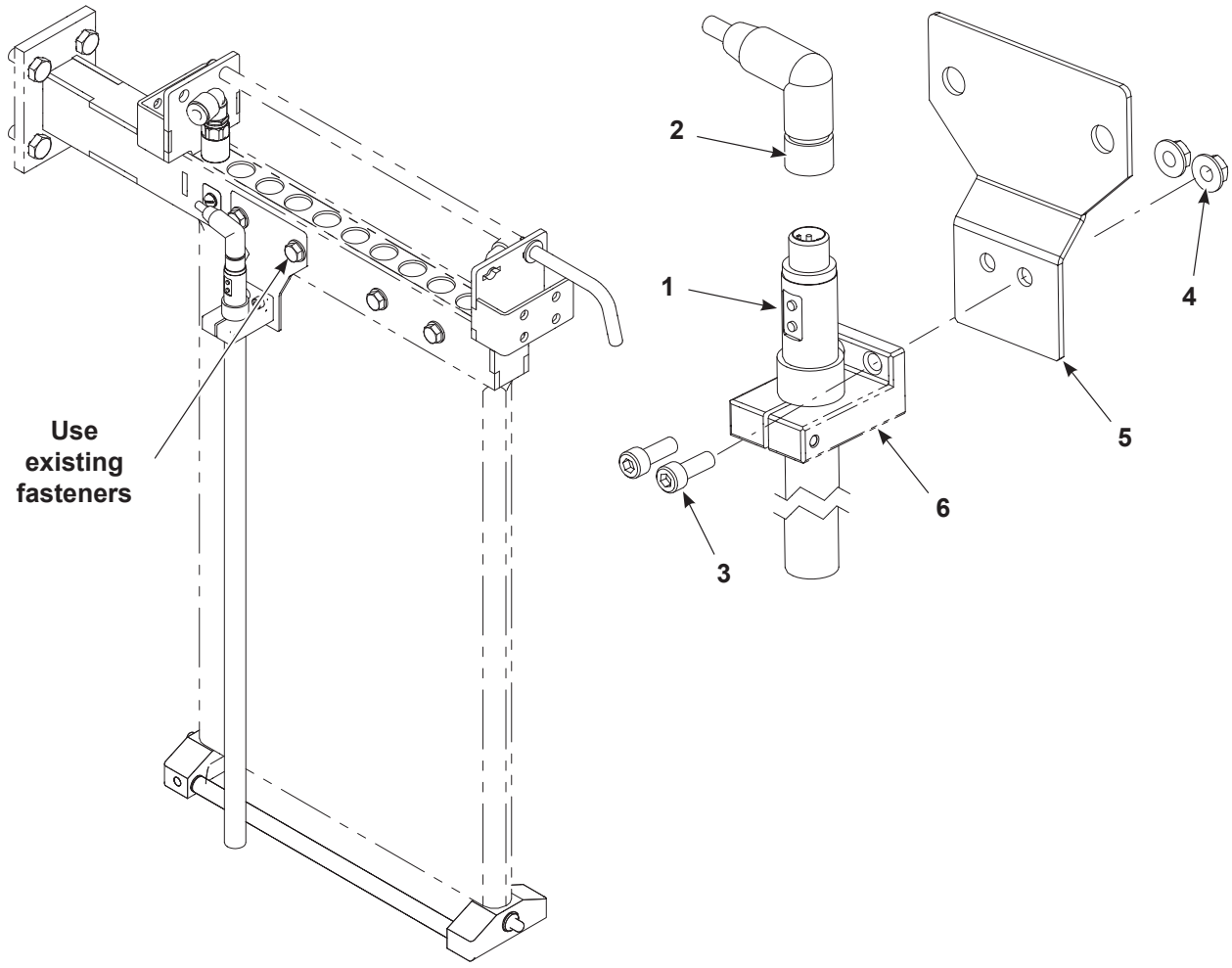


Figure 9-6 Level Sensor Module Parts

Prodigy/Encore HD Siphon Tube Module

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

Item	Part	Description	Quantity	Note
–	1100131	MODULE, global PFC	1	
1	1100137	• SIPHON TUBE, global PFC	1	
2	–––––––	• SCREW, cap, 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, siphon, global PFC	1	

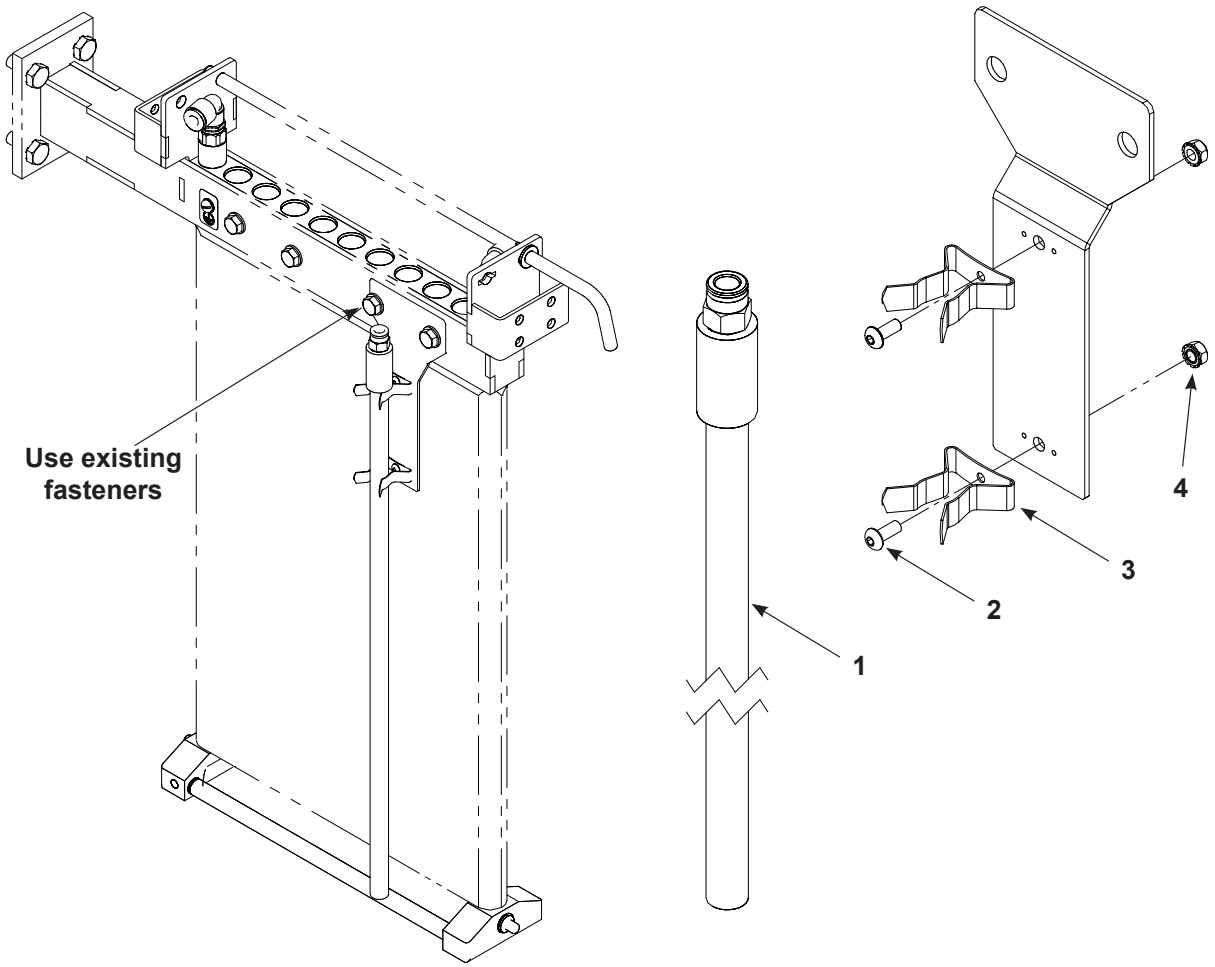


Figure 9-7 Prodigy/Encore HD Siphon Module Parts

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				

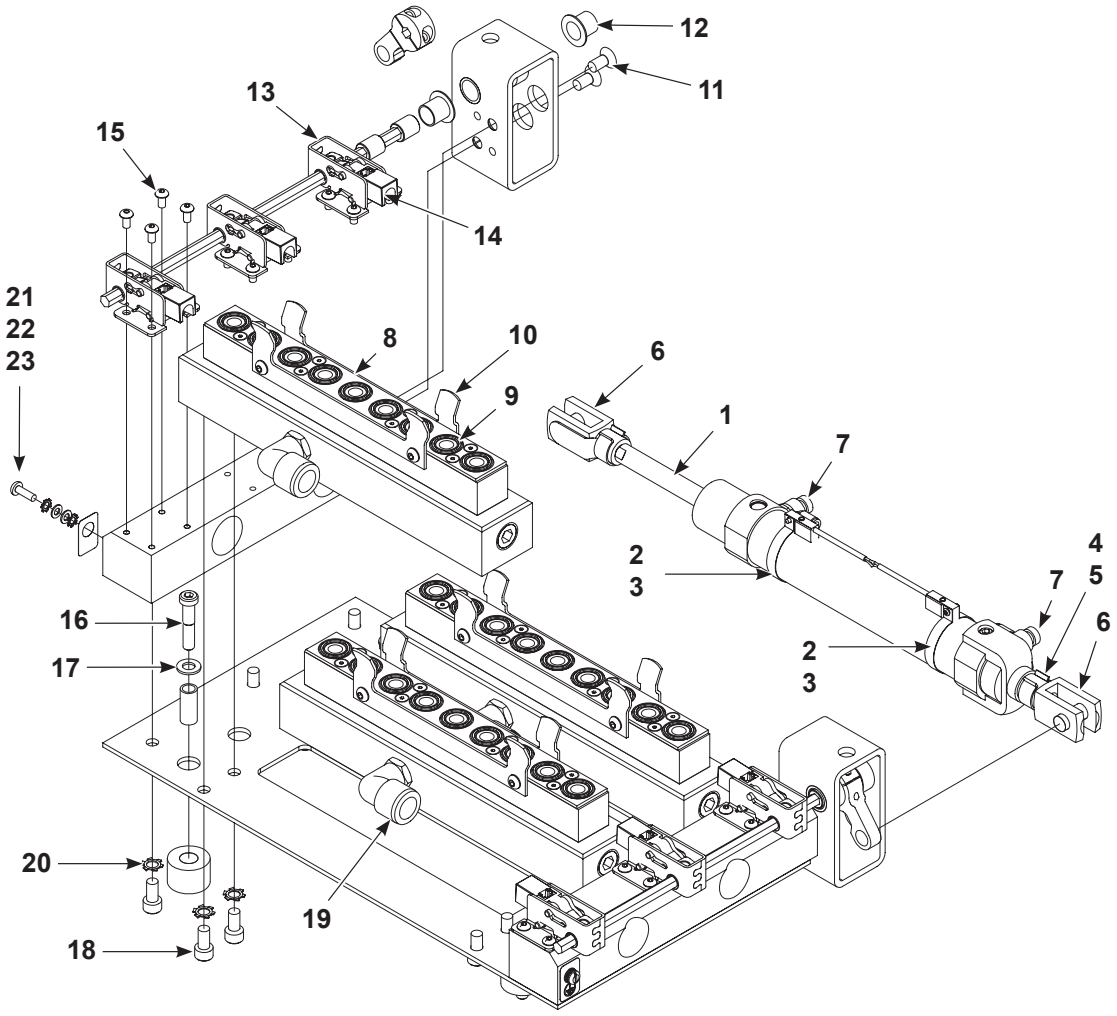


Figure 9-8 Purge Manifold Module Parts

Purge Valve Assembly - One Lance Configuration

See Figure 9-9.

Item	Part	Description	Quantity	Note
1	------	NIPPLE, pipe, std, R.5, close	1	
2	------	ELBOW, push in, 0.5 RPT x 16 mm tube	1	
3	972770	TUBE FITTING, conn., M, 37 degree, 3/4 T, 1/2 NPT	1	
4	------	TEE, pipe, 1/2 BSPT, black	1	
5	1100283	VALVE, solenoid, air, 2 x 3, G.5	1	
6	------	BRACKET, purge valve	1	
7	------	SCREW, hex, serrated, M5 x 12, steel, zinc	2	
8	------	PLUG, pipe, socket, flush, R 1/2	1	
9	1606921	CABLE, valve, purge, 5 m	1	
10	1102678	SILENCER, air, 3/8 Rc	1	
11	------	SCREW, hex,serrated, M6 X 16, steel, zinc	1	
12	------	NUT, hex, flanged, serrated, M6	1	

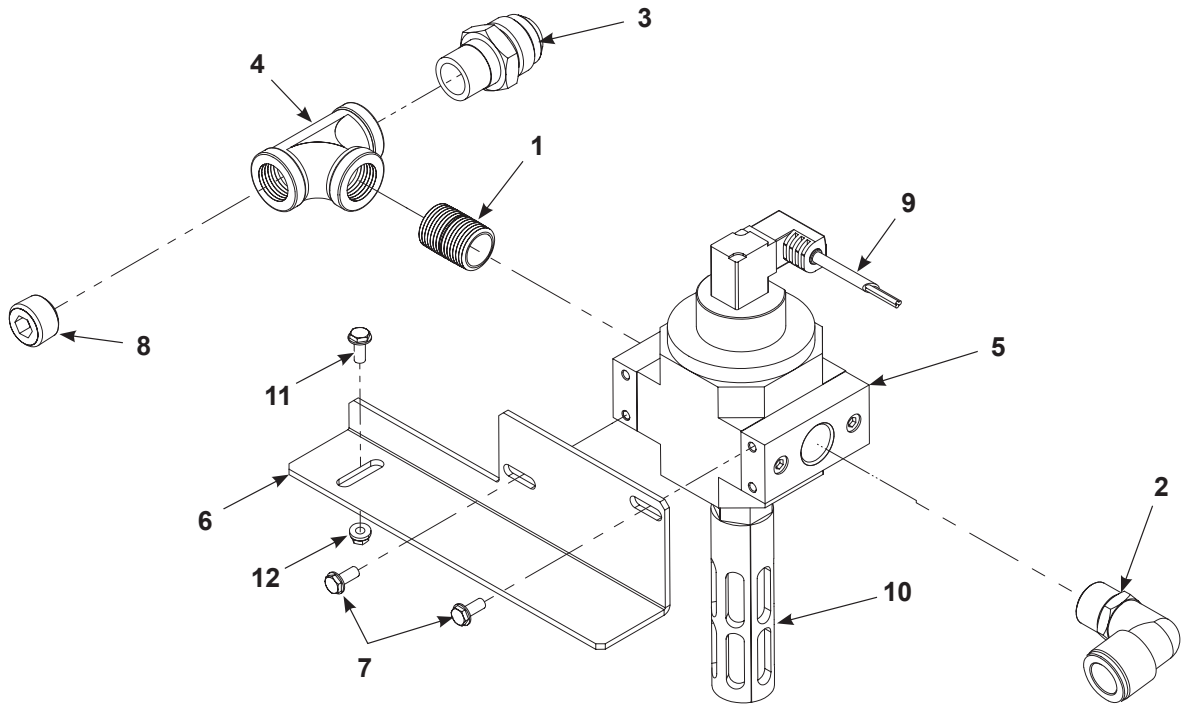


Figure 9-9 Purge Valve Assembly - One Lance Configuration

Purge Valve Assembly - Two Lance Configuration

See Figure 9-10.

Item	Part	Description	Quantity	Note
1	------	NIPPLE, pipe, std, R.5, close	2	
2	------	ELBOW, push in, 0.5 RPT x 16 mm tube	2	
3	972770	TUBE FITTING, conn., M, 37 degree, 3/4 T, 1/2 NPT	1	
4	------	TEE, pipe, 1/2 BSPT, black	2	
5	1100283	VALVE, solenoid, air, 2 x 3, G.5	2	
6	------	BRACKET, purge valve	2	
7	------	SCREW, hex, serrated, M5 x 12, steel, zinc	4	
8	------	PLUG, pipe, socket, flush, R 1/2	1	
9	1606921	CABLE, valve, purge, 5 m	2	
10	1102678	SILENCER, air, 3/8 Rc	2	
11	------	NIPPLE, pipe, std, R1/2 x 3 long	1	
12	------	SCREW, hex,serrated, M6 X 16, steel, zinc	2	
13	------	NUT, hex, flanged, serrated, M6	2	

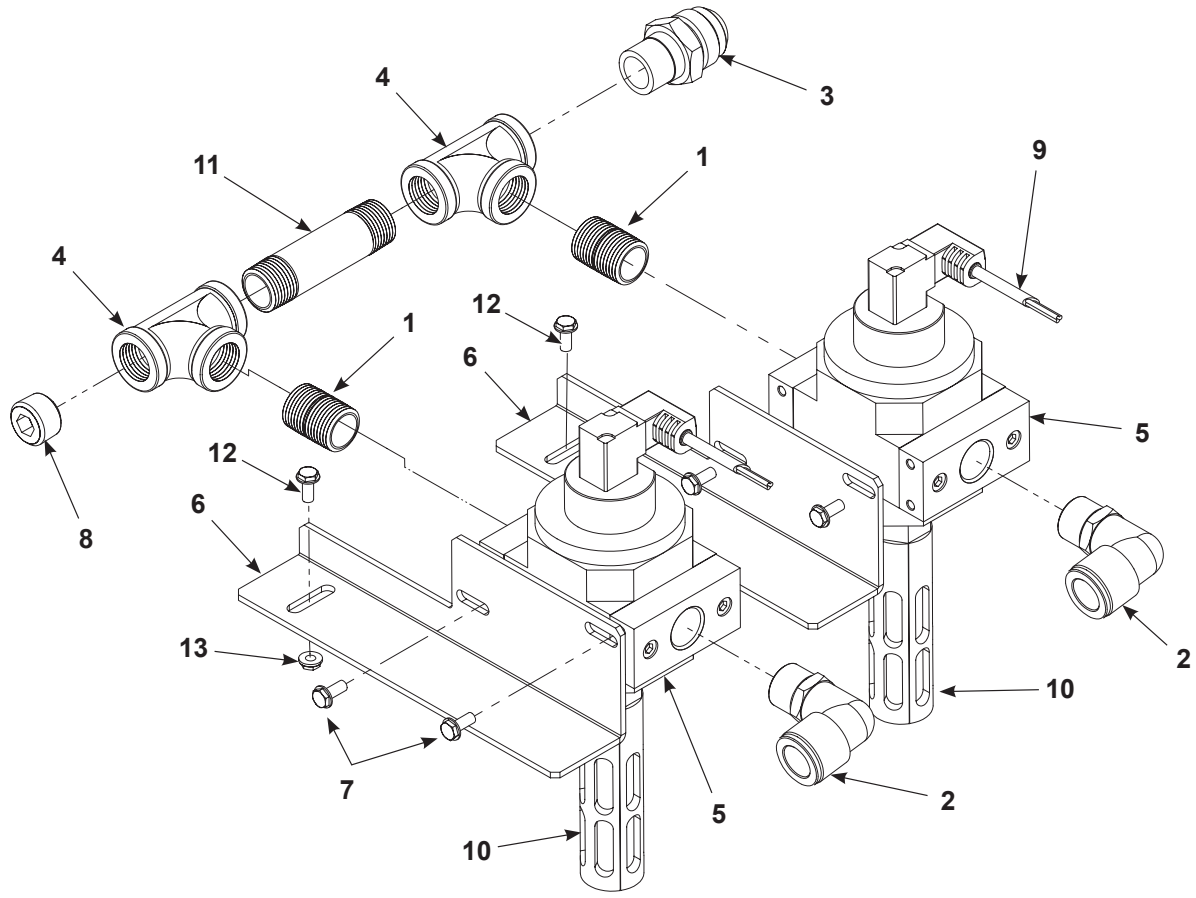


Figure 9-10 Purge Valve Assembly - Two Lance Configuration

Purge Valve Assembly - Three Lance Configuration

See Figure 9-11.

Item	Part	Description	Quantity	Note
1	------	NIPPLE, pipe, std, R.5, close	3	
2	------	ELBOW, push in, 0.5 RPT x 16 mm tube	3	
3	972770	TUBE FITTING, conn., M, 37 degree, 3/4 T, 1/2 NPT	1	
4	------	TEE, pipe, 1/2 BSPT, black	3	
5	1100283	VALVE, solenoid, air, 2 x 3, G.5	3	
6	------	BRACKET, purge valve	2	
7	------	SCREW, hex, serrated, M5 x 12, steel, zinc	4	
8	------	PLUG, pipe, socket, flush, R 1/2	1	
9	1606921	CABLE, valve, purge, 5 m	3	
10	1102678	SILENCER, air, 3/8 Rc	3	
11	------	NIPPLE, pipe, std, R1/2 x 3 long	2	
12	------	SCREW, hex,serrated, M6 X 16, steel, zinc	2	
13	------	NUT, hex, flanged, serrated, M6	2	

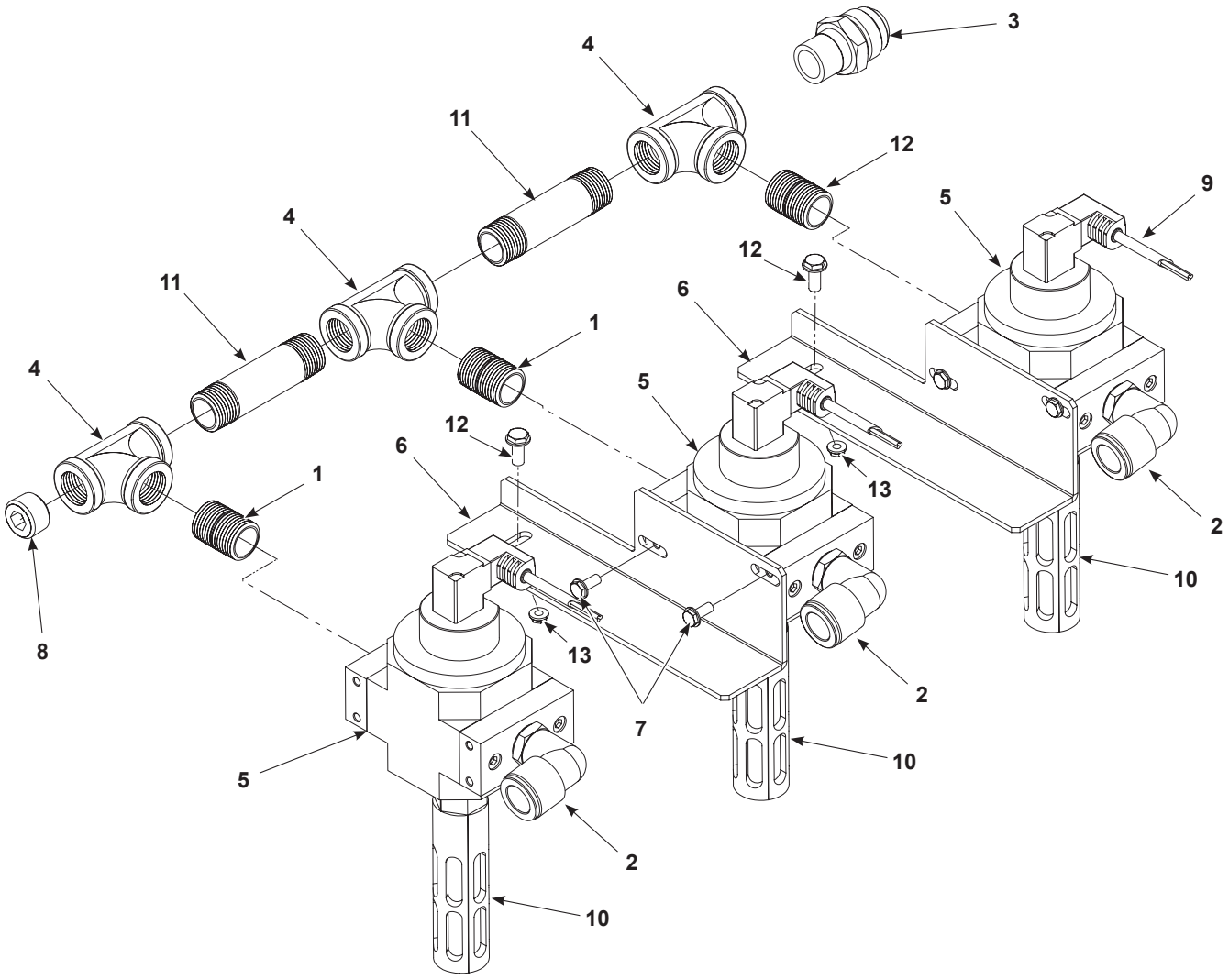


Figure 9-11 Purge Valve Assembly - Three Lance Configuration

Purge Valve Module Parts

See Figure 9-12.

Item	Part	Description	Quantity	Note
1	1604501	UNION, bulk, KQ2E16−00 16 mm tube	3	
2	−−−−−−	GRIP, cord, 2X, 2.5−3 mm, 3/8 in. NPT, Nylon	AR	
3	−−−−−−	GRIP, cord, 2X, 5−6 mm, 1/2 in. NPT, Nylon	AR	
4	−−−−−−	ELBOW, plug in, 16 mm T x 16 mm T	3	
AR: As Required				

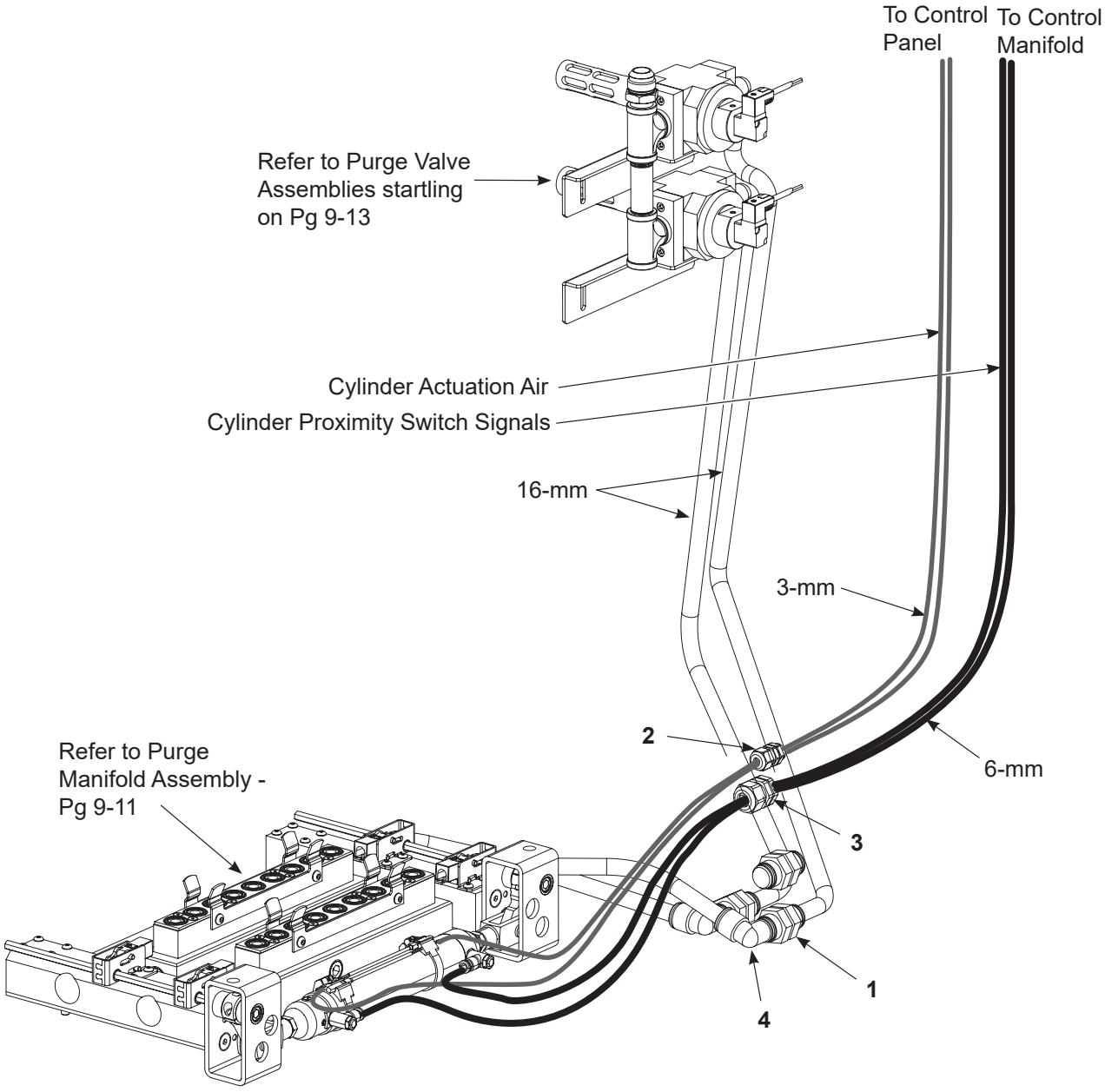


Figure 9-12 Purge Valve Module Parts

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	1099413	REGULATOR, 0.3−7 bar, .25	3	
2	1605532	CONNECTOR, male, elbow, 6MM T X R1/4	6	
3	1615160	VALVE, 9-station, Encore PFC	1	
4	1099424	VALVE, air, global PFC main interlock	1	
5	1606921	CABLE, valve, purge, 5 m	1	
6	−−−−−−	ELBOW, 1 in. BSPT x 3/4 JIC	1	
7	1102676	GAUGE, air, 0−150 psi, rear 1/4 G thread	4	
8	1100285	REGULATOR, air, 1 in., 0.5−12 bar	1	
9	−−−−−−	MANIFOLD, Encore PFC, pneumatic	1	
10	148256	PLUG, 10 mm, tubing	2	
11	−−−−−−	ELBOW, 3 port, 10 mm tube x 3/8 R	2	
12	−−−−−−	VENT, breather, 3/8 BSPT, sintered	3	
13	1101992	NIPPLE, close, 1 in., (4788K416)	2	
14	241040	MUFFLER, air 1/8 NPT	1	
15	1604113	VALVE, airpilot, 2-way	1	
16	−−−−−−	ELBOW, 6mm tube x 1/8 RPT	1	

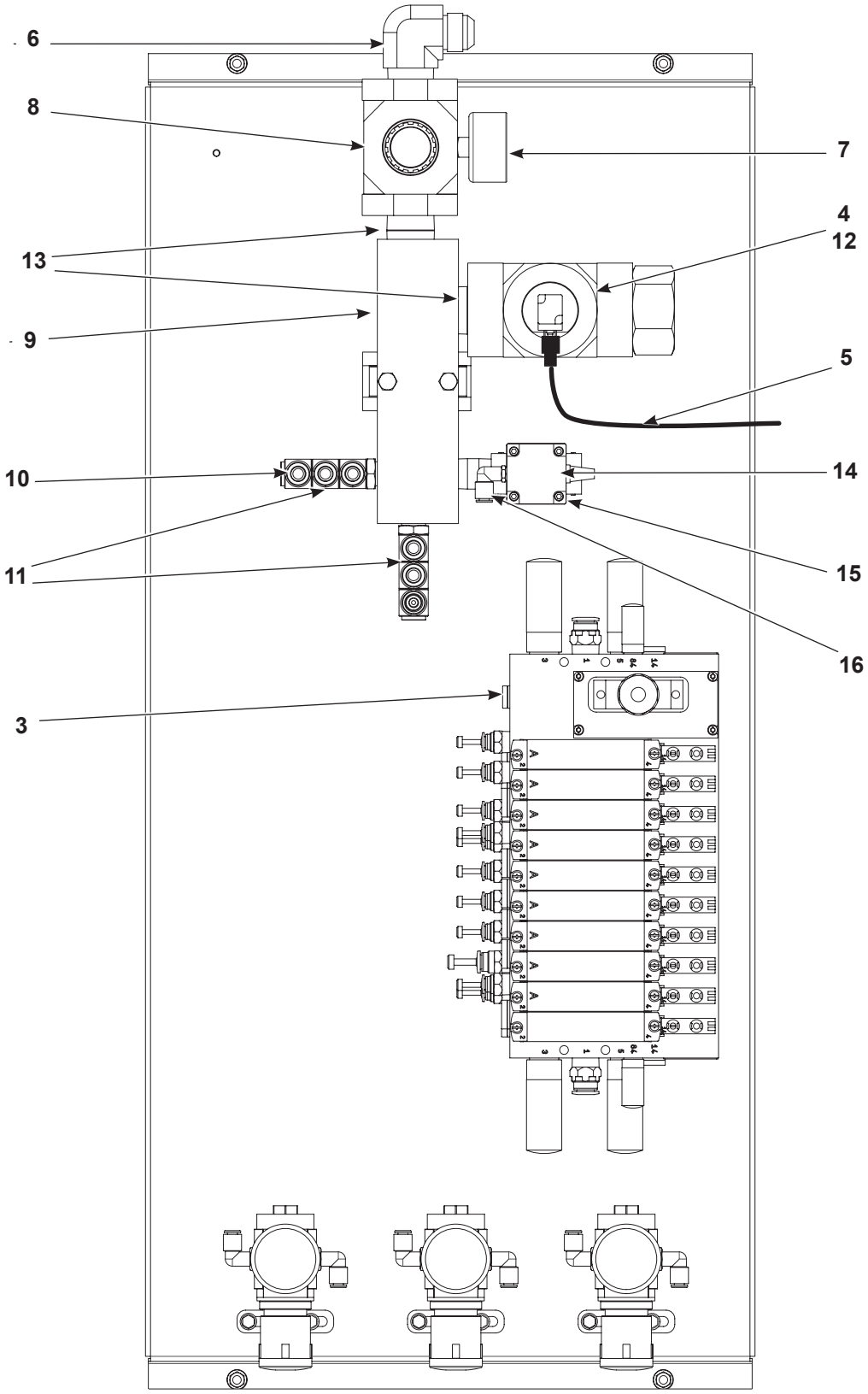


Figure 9-13 Pneumatic Module Parts

Hopper Platform and Vibrator Parts

See Figure 9-14.

Item	Part	Description	Quantity	Note
1	1602109	VIBRATOR, 230/460V, 3 phase, 60 Hz	1	A
1	1602896	VIBRATOR, 330/575V, 3 phase, 60 Hz	1	A
1	1602895	VIBRATOR, 200/400V, 3 phase, 50 Hz, ATEX	1	A
1	1602894	VIBRATOR, 220/380V, 3 phase, 50 Hz	1	A
1	1602893	VIBRATOR, 220/380V, 3 phase, 60 Hz	1	A
1	1602892	VIBRATOR, 240/415V, 3 phase, 50 Hz	1	A
2	------	SCREW, flat head, socket, M8 x 35, black	2	
3	------	SCREW, hex, serrated, M8 x 35, steel, zinc	2	
4	1099588	MOUNT, vibration, isolator	4	
5	------	SCREW, hex, serrated, M8 x 16, steel, zinc	8	
6	------	NUT, hex, flanged, serrated, M8	8	
7	------	NUT, hex, machine, M5, brass	1	
8	------	WASHER, lock, external, M5, steel, zinc	2	
9	------	JUMPER, ground, 12 in.	1	
10	------	TAG, ground	1	
11	------	SCREW, pan head, slotted, M5 x 20, brass	1	
12	------	SCREW, hex, serrated, M6 x 16, steel, zinc	8	
13	------	STRAIN RELIEF, cable, 1/2 NPT	1	
14	------	CABLE, SO, 4C, 16 gauge	AR	
15	------	POSITIONER, feed center hopper	2	
16	1068715	WASHER, lock, dished, #10	1	

NOTE: A. 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

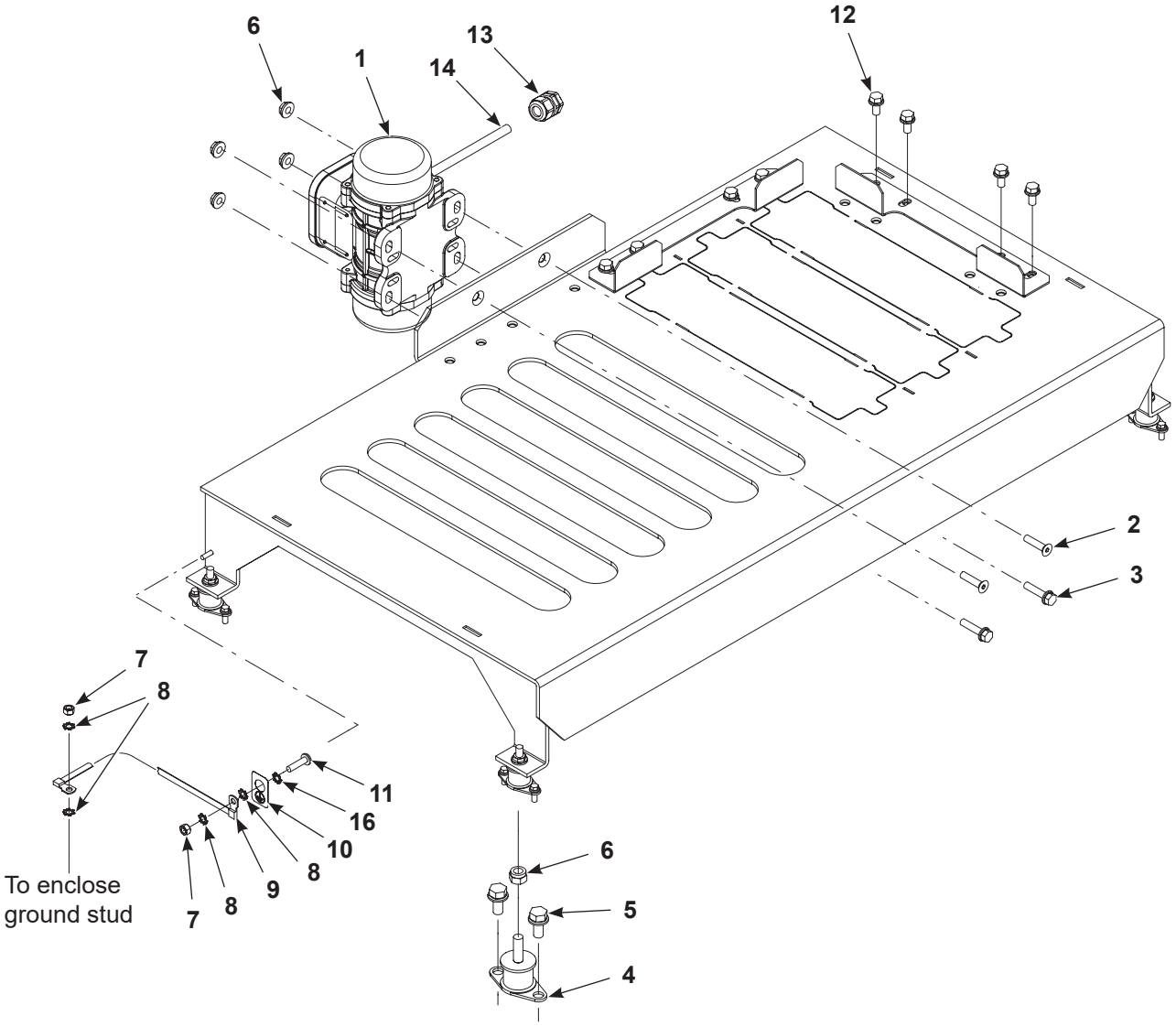


Figure 9-14 Hopper Platform and Vibrator Parts

Pneumatic Damper Parts

See Figure 9-15.

Item	Part	Description	Quantity	Note
1	1602175	Cylinder, feed center damper	1	
2	1602786	Rod end, damper cylinder	1	
3	1107595	Valve, flow control, 6 mm tube x 1/8 in. unithread	2	
4	------	Screw, hex, cap, M8 x 25, zinc	2	
5	------	Nut, hex, jam, M8, steel, zinc	2	

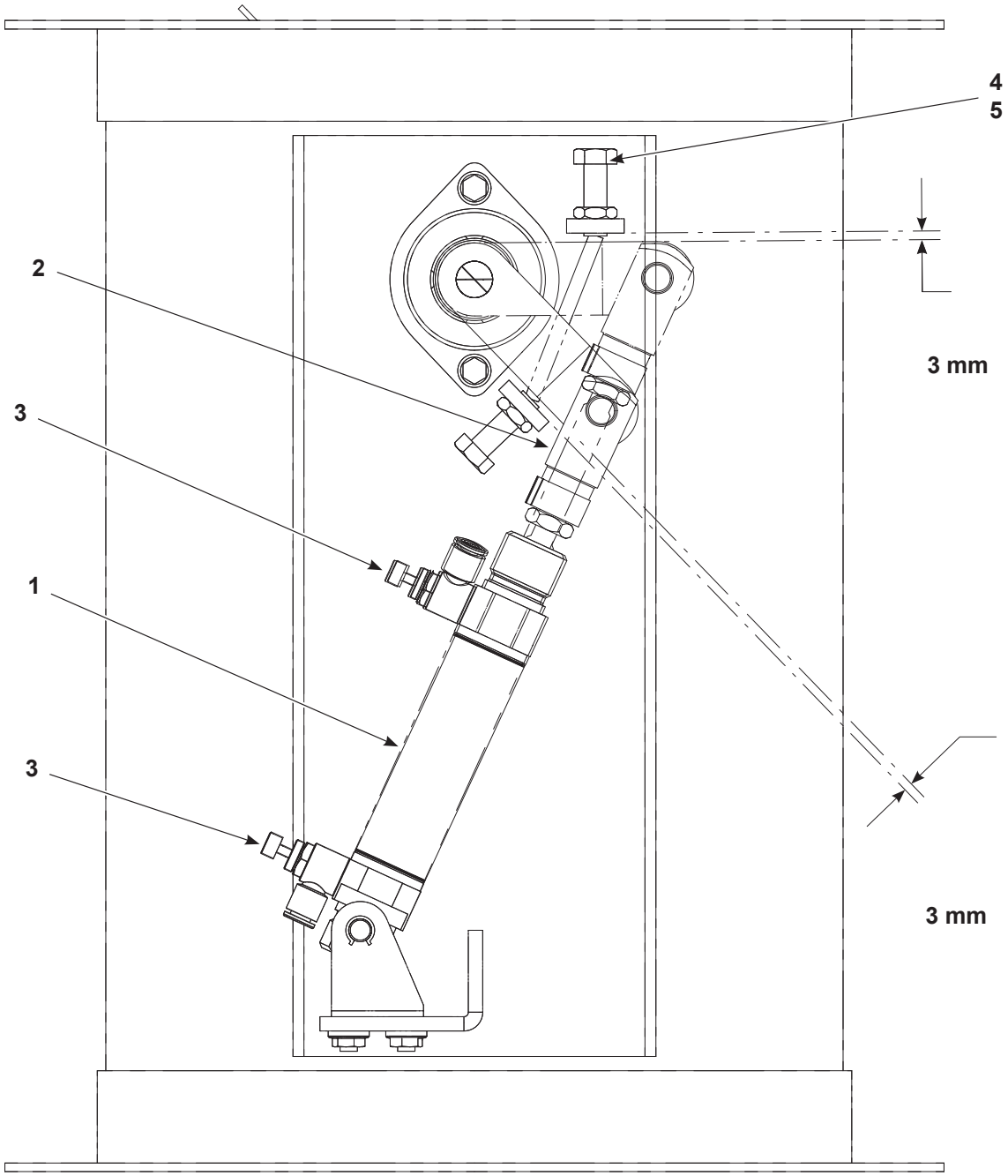


Figure 9-15 Pneumatic Damper Parts

Sieve and Mounting Parts

Replacement Parts for Non-CE/ATEX Sieve 1

See Figure 9-16 for Sieve 1 latch style. See Figure 9-18 for parts.

Screens

Item	Part	Description	Note
1	1603634	Screen, sieve, vibratory, 15 in., 20 mesh (841 microns)	
1	1604110	Screen, sieve, vibratory, 15 in., 30 mesh (595 microns)	
1	1603635	Screen, sieve, vibratory, 15 in., 40 mesh (400 microns)	
1	1603636	Screen, sieve, vibratory, 15 in., 60 mesh (250 microns)	

Vibrator Motors

Item	Part	Description	Note
2	1603628	Vibrator, sieve, 230/460V, 60 Hz, 3 phase	
2	1603629	Vibrator, sieve, 330/575V, 60 Hz, 3 phase	
2	1603630	Vibrator, sieve, 220/380/415V, 50 Hz, 3 phase	
2	1603631	Vibrator, sieve, 220/380V, 60 Hz, 3 phase	
2	1603632	Vibrator, sieve, 200/346V, 50 Hz, 3 phase	

Miscellaneous Parts

Item	Part	Description	Quantity	Note
3	1603633	Gasket, screen, sieve, 15 in.	1	A
4	1603637	Latch, sieve, toggle	2	
4A	1626399	Spindle, PTFE Pad	AR	
5	1017602	Mount, isolation, sieve	4	
6	1104897	Cap, vinyl, 3/4−13/16, black	AR	
7	1070199	Plug, hopper fill, NHR	1	
8	−−−−−−	Clip, ground, sieve screen	0	B

NOTE: A. The screen gasket is made from a conductive material. DO NOT replace it with a non-conductive gasket.

B. Ground clip is required only for systems using Sieve 2.

AR: As Required

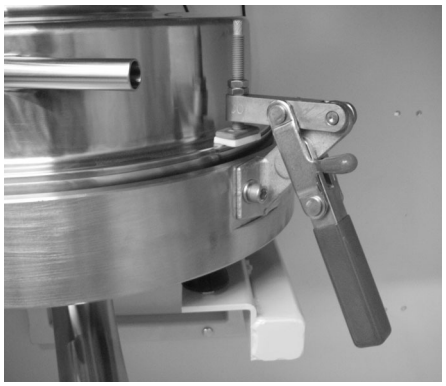


Figure 9-16 Latch, Sieve 1

Replacement Parts for Non-CE/ATEX Sieve 2

See Figure 9-17 for Sieve 2 latch style. See Figure 9-18 for parts.

Screens

Item	Part	Description	Quantity
1	1056563	Screen, 20 mesh (864 micron)	1
1	------	Screen, 30 mesh (595 microns)	1
1	1014561	Screen, 40 mesh (381 micron)	1
1	1014562	Screen, 60 mesh (234 micron)	1

Vibrator Motors

Item	Part	Description	Quantity
2	1060113	Motor, vibrator, 230/460, 3 phase, 60 Hz	1
2	1060114	Motor, vibrator, 220/380, 3 phase, 50 Hz	1

Miscellaneous Parts

Item	Part	Description	Quantity	Note
3	1014563	Gasket, screen, sieve, 15 in.	1	
4	------	Latch, sieve, toggle	2	
4A	1626399	Spindle, PTFE Pad	AR	
5	1017602	Mount, isolation, sieve	1	
6	1104897	Cap, vinyl, 3/4−13/16, black	AR	
7	1070199	Plug, hopper fill, NHR	1	
8	1104478	Clip, ground, sieve screen	1	A
NOTE: A. Ground clip is required only for systems using Sieve 2.				

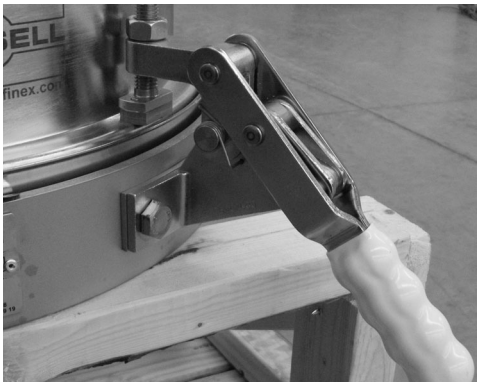


Figure 9-17 Latch, Sieve 2

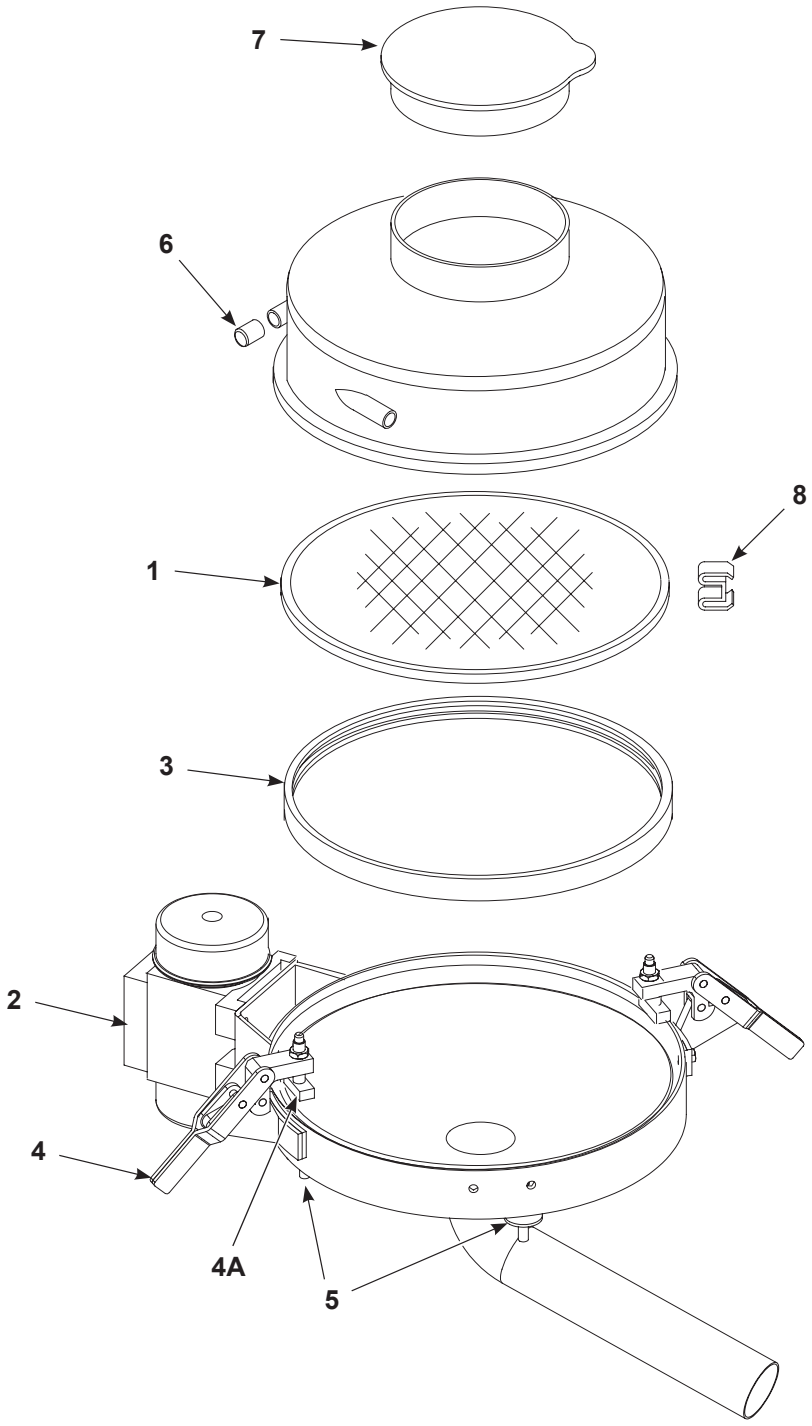


Figure 9-18 Sieve Parts (Sieve with Angled Chute Shown)

Pneumatic Damper Parts

See Figure 9-19.

Item	Part	Description	Quantity	Note
1	249461	Socket, female, 8 mm, 10 tube, pneumatic	1	
2	249455	Plug, male, 8mm, 10 tube, pneumatic	1	
3	1100200	Plate, powder hose bulkhead, PFC	AR	
4	1100047	Screw, button head, socket, M6 x 12, zinc	AR	
AR: As Required				

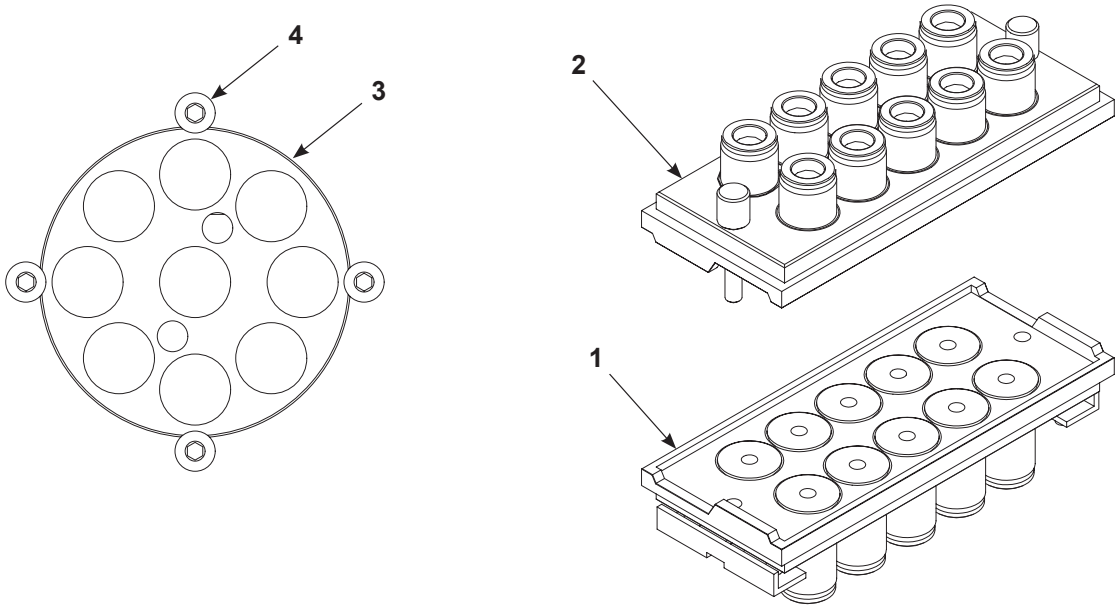


Figure 9-19 Powder Hose and Pump Air Bulkhead Fittings

Other Service Parts

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	
1086213	Union, bulkhead, 16 mm	

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	–

Miscellaneous Parts

Part	Description	Note
1071873	Hopper, square, 50 lb	A
7404027	Hopper, rectangular, 75 lb	A
NOTE: A. Refer to Options for service parts		

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 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 options available for the Encore 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	7404175	• • Gasket, hopper, PFC	1	
7	- - - - - -	• • Nut, hex, M6, nylon	40	
8	- - - - - -	• • Washer, flat, M6, nylon	80	
9	- - - - - -	• • Screw, hex, M6 x 40, Nylon	40	
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.

AR: As Required

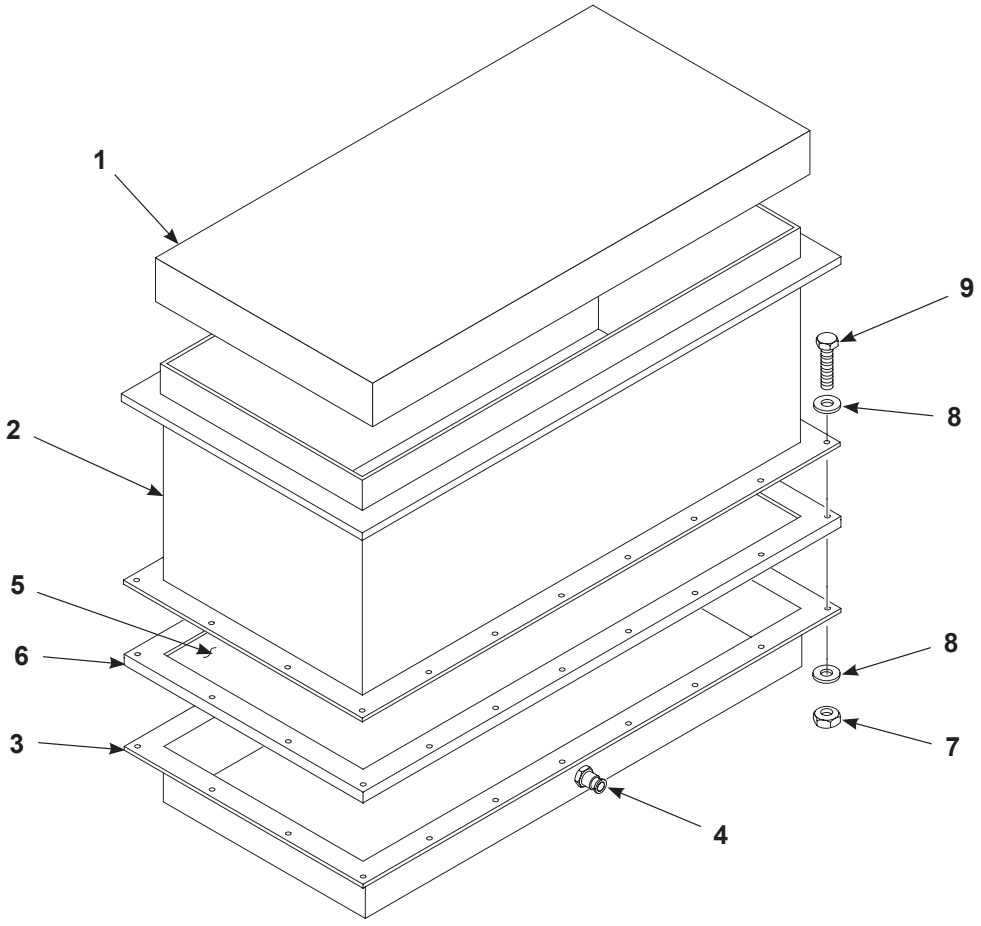


Figure 10-1 75-lb Feed Hopper Parts

50-lb Feed Hopper

See Figure 10-2.

Item	Part	Description	Quantity	Note
–	1071873	Hopper, 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	

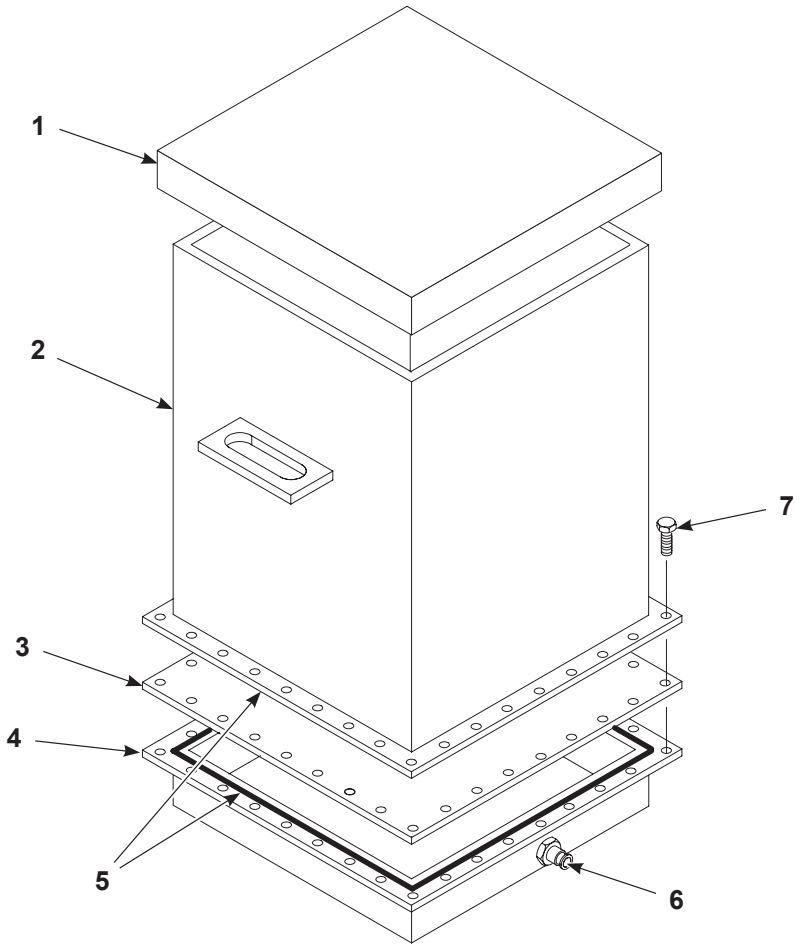


Figure 10-2 50-lb Feed Hopper Parts

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.

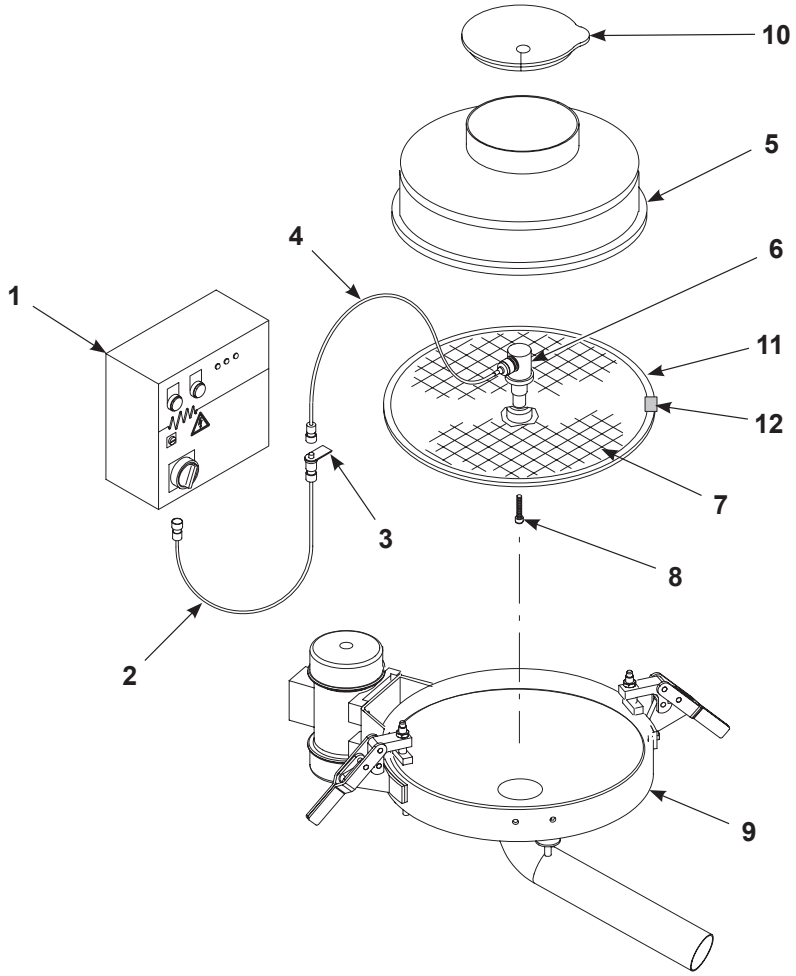


Figure 10-3 Vibrasonic System Components

1. Vibrasonic controller
2. Control cable
3. Bulkhead connector
4. Vibrasonic 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 2-9.
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

Condition	POWER Indicator	VIBRASONICS Indicator
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. **Under voltage (output voltage too low)**	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. **Under voltage (output voltage too low)**	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. **Under voltage (output voltage too low)**	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.				

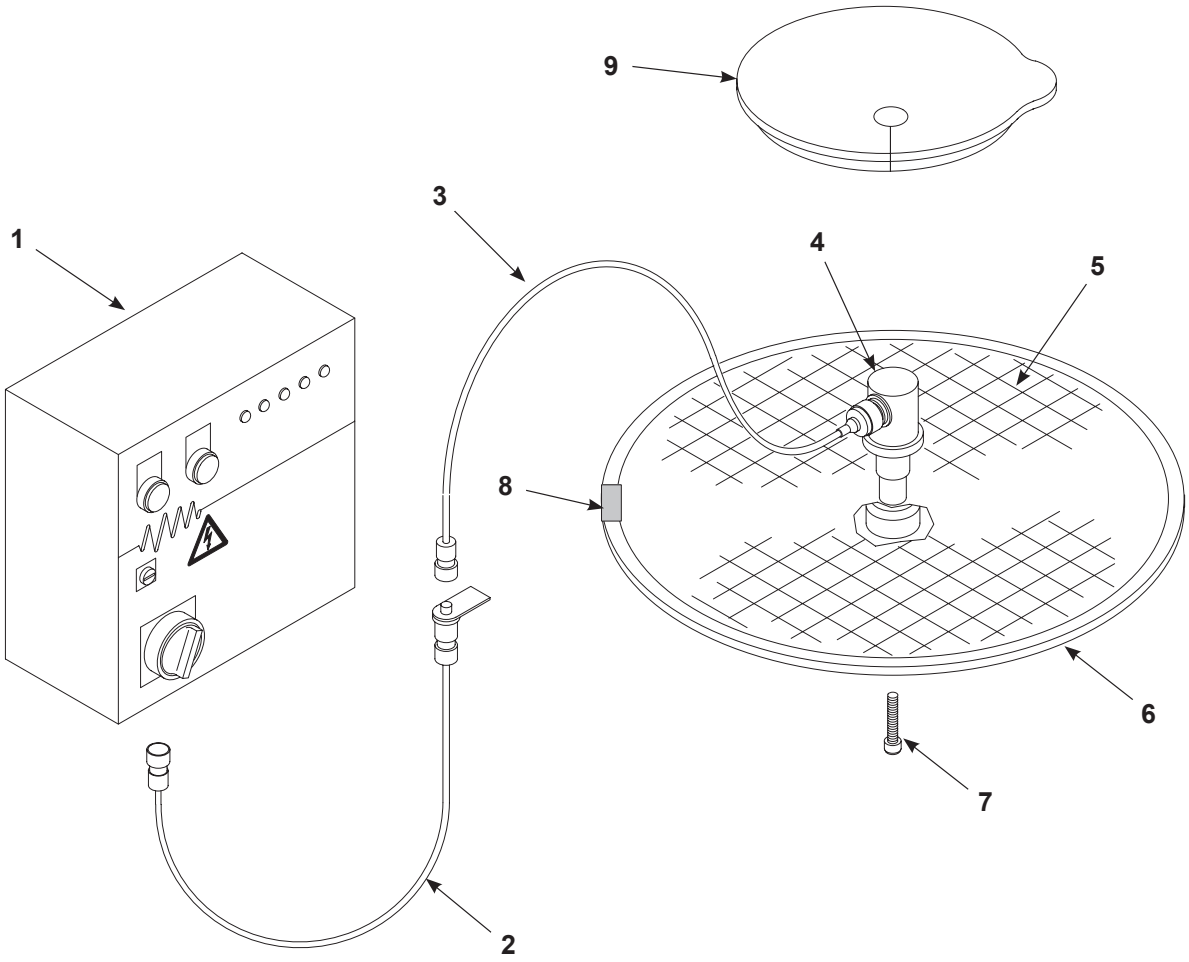


Figure 10-4 Vibrasonic System Parts

Section 11

Pneumatic and Electrical Diagrams

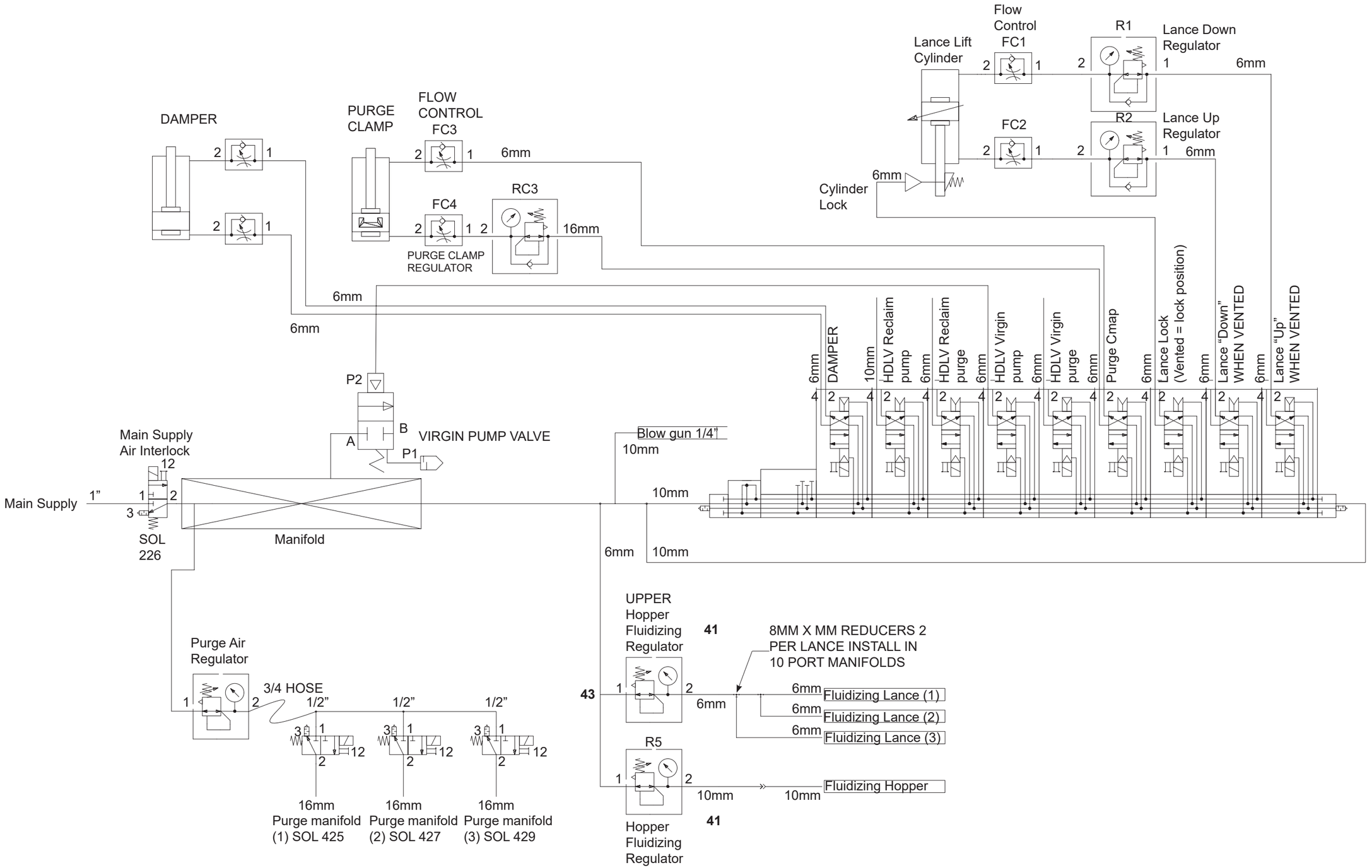


Figure 11-1 Encore Feed Center Pneumatic Schematic

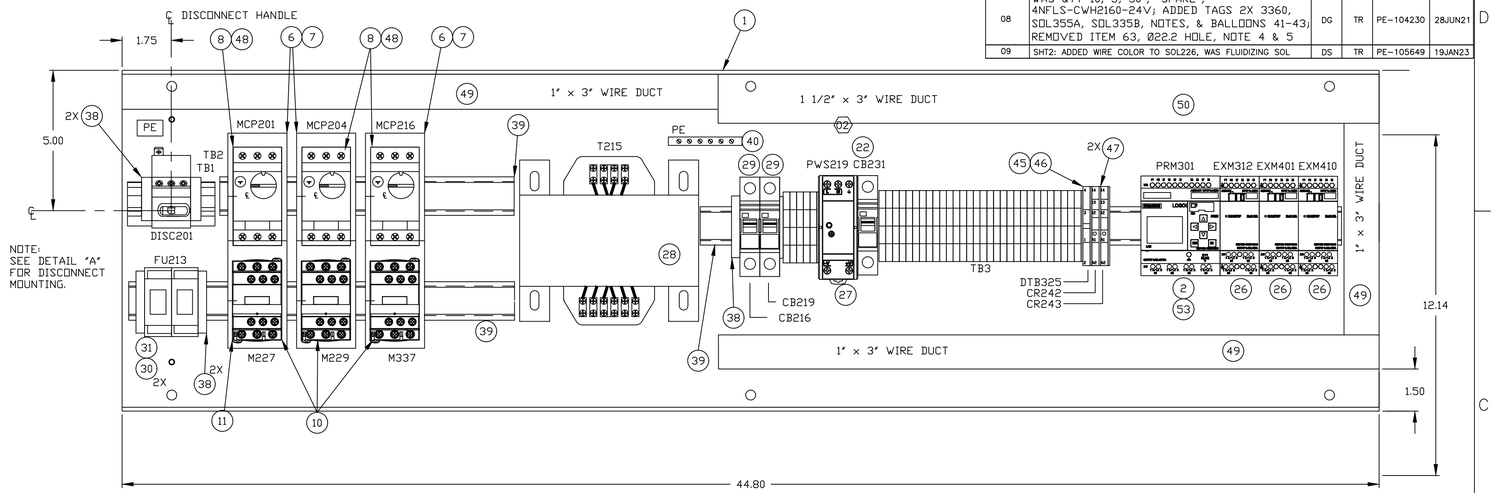
CONTROLLER, ENCORE, NAD

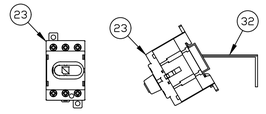
ITEM NO.	ITEM DESIGNATOR	DESCRIPTION	QTY	MANUFACTURER	MFG PART NO.	NORDSON	
001		Enclosure, Electrical, FC (includes sub-panel)	1	Nordson		1603949	
002	PRM301	Relay Controller,Programmed,Encore Feedcenter	1	Siemens		1604682	
003		Device Label Set, Encore PFC	1	Nordson		1604314	
004		Nordson Banner Label, Encore Feed Center	1	Nordson		1602151	
005							
006	MCP201,204,216	Manual Motor Starter Adapter Plate	3	Telemecanique	GK2AF01		
007	MCP201,204,216	Manual Motor Starter Insulating Barrier	3	Telemecanique	GV2GH7		
008	MCP201,204,216	Manual Motor Starter OL Protector	3	Telemecanique	SEE CHART		
009							
010	M227,M229,M337	Contactor Motor	3	Telemecanique	LC1D09BD		
011	M227	Auxiliary Contact, 2N.O.	1	Telemecanique	LADN20		
012	PB222	E-Stop Button, Twist-Release	1	Telemecanique	XB4BS542		
013	PB222	Contact Block, 2 NC	1	Telemecanique	ZBE204		
014	SSL227,SSL229	22mm Selector Switch,3-Position,Illuminated,White,Sr	2	Telemecanique	ZB4BK1513		
015	SSL227,SSL229	White 24V Protected Led W/1NC & 1NO Contact Block	2	Telemecanique	ZB4BW0B15		
016	SS313,SS314,SS329,SS412	Selector, Chrome Bezel, 2-Position	4	Telemecanique	XB4BD21		
017	SS413	Selector, Chrome Bezel, 2-Position	1	Telemecanique	ZB4BD2		
018	SS413	Contact Block, 2 NO	1	Telemecanique	ZB4BZ103		
019	LT438	Green Light, 24VDC	1	Telemecanique	XB4BVB3		
020	SS304	Selector, Chrome Bezel, 3-Position Sr	1	Telemecanique	XB4BD53		
021	SS401	Selector, Chrome Bezel, 3-Position	1	Telemecanique	XB4BD33		
022	CB231	Circuit Breaker, 1 Pole, 3A	3	Merlin Gerin	MG2447		02
023	DISC201	Disconnect, Non-Fused		ABB	OT40F3		
024	AH442	30mm Alarm, Piezo, Cont. Tone, Extra Loud	1	ICC/Intervox	BRP4535S-24-C		
025							
026	EXM312,401,410	Expansion Module, Progammable Relay	3	Siemens	6ED1055-1HB00-0BA2		
027	PWS219	Power Supply, 24VDC, 3.75A	1	IDEC	PS5R-VE24	1621204	08
028	T215	Transformer, 1KVA, 50/60 Hz	1	Hammond	SEE CHART		
029	CB216,CB219	Circuit Breaker, 1 Pole, 2A	2	Merlin Gerin	MG24426		02
030	FU213	Fuse, Class FNQ-R	2	Bussmann	SEE CHART		
031	FU213	Fuseblock, Dinrail	1	Bussmann	CHM2D		
032	TB1	Din Rail, 30 Deg High Rise	A/R	ABB	XUS001737		
033	TB3	Two Circuit Double Deck Terminal Block Blue	30	Woertz	3430BL		
034	TB3	Double Deck End Barrier	2	Woertz	3431		
035	TB3	Center Jumpers, 10 Pole	1	Woertz	81526/10		
036	TB3	Two Circuit Double Deck Terminal Block Gray	5	Woertz	3430GR		
037	TB3	Double Deck End Anchor	4	Woertz	30199		
038	TB1,TB2,TB3	End Anchor	8	Woertz	3418		
039	TB2,TB3	DinRail,35mm	A/R	Cutler-Hammer	D5PD2-20		
040	GTB1	Ground Terminal	1	General Electric	TGL1		
041		Non Metallic Strain Relief Cable Gland, M20	11	LAPP	53111420		08
042		Metric Nylon Locknut	11	LAPP	53119020		08
043		Multiple Cable Sealing Bushings, 2 Holes	5	LAPP	53320260		08
044		Multiple Cable Sealing Bushings, 3 Holes	1	LAPP	53320353		
045	DTB325	Terminal Block, Diode-OR	1	ASI	PE119		
046	DTB325	Endplate, Terminal Block	1	ASI	PE101		
047	CR242,CR243	Relay, 24 VDC, 6 Amp Contact	2	Idec	RV8H-L-D24		
048	MCP201,204,216	Manual Motor Starter Aux, Contact,1NO,1NC(Fault)	3	Telemecanique	GVAD0110		
049		Wire Duct, 1" x 3" / Cover 1"	A/R	Thomas & Betts	TY1X3WPW6/TY1CPW6		
050		Wire Duct, 1.5" x 3" / Cover 1.5"	A/R	Thomas & Betts	TY15X3WPW6/TY15CPW6		
051		Tag CE Mark, Riveted	1				
052	DISC201	Disconnect Handle	1	ABB	OHBS2AJ		
053		Instructions, Encore PFC Controller	1	Nordson			
054	DISC201	Disconnect, Extended Shaft	1	ABB	OXS6X250		
055	MTR3	3-pin, 14awg, female receptacle, w/36" leads	1	Mencom	MINH-3FR-1M		
056	FCE	5-pin, 16awg, male receptacle, w/12" leads	1	Mencom	MIN-5MR-1		
057	FCP	4-pin,14awg, male receptacle, w/12" leads	1	Mencom	MINH-4MR-1		6
058	FCS	8-pin female insert	1	ILME	CDF-08		
059	FCS	size 21.21 insert housing	1	ILME	CKA-03I		
060	FCS	Insert pins, 18awg	8	ILME	CDFA-0.7		
061	FCS	Dust Tight Seal	1	ILME	CKR-65		
062		Hole Cover for 22mm	1	Hoffman	AS050LG		
063							04 08
064	LT231	U-Channel / Clear Polycarbonate Lens	42"		Included w/ item 001		
065	LT231	Strip Light Gasket Material, 1/2" x 1/8" Soft Poron	A/R	McMaster-Carr	93275K12		
066	(SEE SHEET 6)	LED Strip w/ PSA back (Cool White) 885 L/Ft	42"	SuperbrightLEDs.com	4NFLS-CWH2160-24V		04 08
067	(SEE SHEET 6)	Wire, 16awg, 26 Strand Red PVC Jacket	48"				
068	(SEE SHEET 6)	Wire, 16awg, 26 Strand White PVC Jacket	48"				
069	(SEE SHEET 6)	Solder / Potting Compound	A/R				
070	A	Manual Motor Starter OL Protector (.25-.4A)	1	Telemecanique	GV2P03		
071	B	Manual Motor Starter OL Protector (.4-.63A)	1	Telemecanique	GV2P04		
072	C	Manual Motor Starter OL Protector (.6-1.0A)	1	Telemecanique	GV2P05		
073	D	Manual Motor Starter OL Protector (1.0-1.6A)	1	Telemecanique	GV2P06		

10018963

CHG LTR	REVISION	BY	CHK	ECR NO.	DATE
01	RELEASED	DU	DLU	PE-100730	21MAR19
02	SHT. #1) ITEM 29 WAS QTY. 3, ADDED ITEM 22, SHT.#2) LINE 231 WAS 2A	DU	DU	PE-101850	26JUN19
07	03) SHT #1&6 ITEM WAS LED STRIP LIGHT 04) SHT 1&6 ITEM 66 WAS QTY 42IN. 05) SHT#6 ADDED 22MM HOLE TO ITEM 64 06) SHT#6 WAS ITEM BALLOON 63 07) UPDATED WINDOW & LIGHT ASSEMBLY NOTES TO INCLUDE GROMMETT	DU	DU	PE-102581	04FEB20
08	WAS QTY 10, 5, 30", "SPARE", 4NFLS-CWH2160-24V; ADDED TAGS 2X 3360, SOL355A, SOL335B, NOTES, & BALLOONS 41-43; REMOVED ITEM 63, Ø22.2 HOLE, NOTE 4 & 5	DG	TR	PE-104230	28JUN21
09	SHT2: ADDED WIRE COLOR TO SOL226, WAS FLUIDIZING SOL	DS	TR	PE-105649	19JAN23

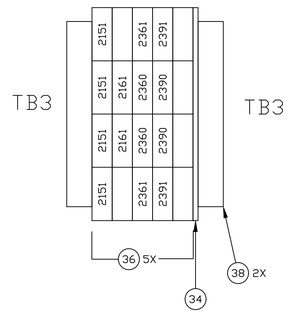
ENCLOSURE SUB-PANEL LAYOUT

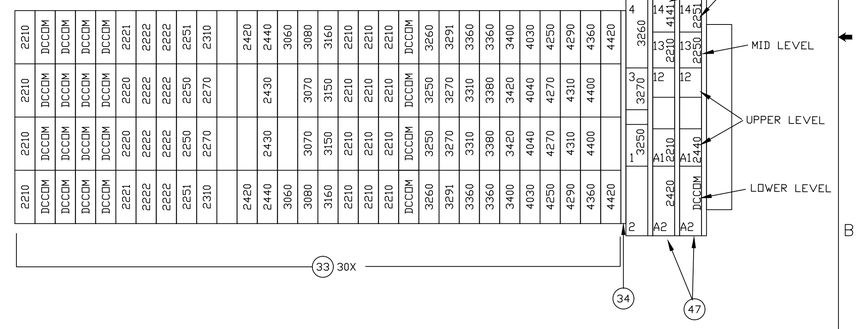




DETAIL "A"

MOUNT DISCONNECT (ITEM 2) ON 30" HIGH RISE DIN RAIL (ITEM 32). MOUNT TO PANEL AT SHAFT CENTER LINE AS SHOWN.





NORDSON P/N	1617137	1617138	1617139	1617140	1602305	1617141
VOLTAGE	208V	230V	380V	415V	460V	575V
1/6 HP MOTOR 3PH (TABLE VIBRATOR)						
ITEM	208V	230V	380V	415V	460V	575V
MCP204	C	B	A	A	A	A
RANGE	.6-1 A	.4-.63 A	.25-.4 A	.25-.4 A	.25-.4 A	.25-.4 A
1/4 HP MOTOR 3PH (SIEVE)						
ITEM	208V	230V	380V	415V	460V	575V
MCP201	D	D	B	B	B	B
RANGE	1-1.6 A	1-1.6 A	.4-.63 A	.4-.63 A	.4-.63 A	.4-.63 A
1/10 HP MOTOR 1PH (BOX FEEDER VIBRATOR)						
ITEM	115V	230V				
MCP216	C	B				
RANGE	.6-1 A	.4-.63 A				
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
T215	SP1000SP	SP1000MQMJ	SP1000SP	SP1000SP	SP1000MQMJ	SP1000ACP

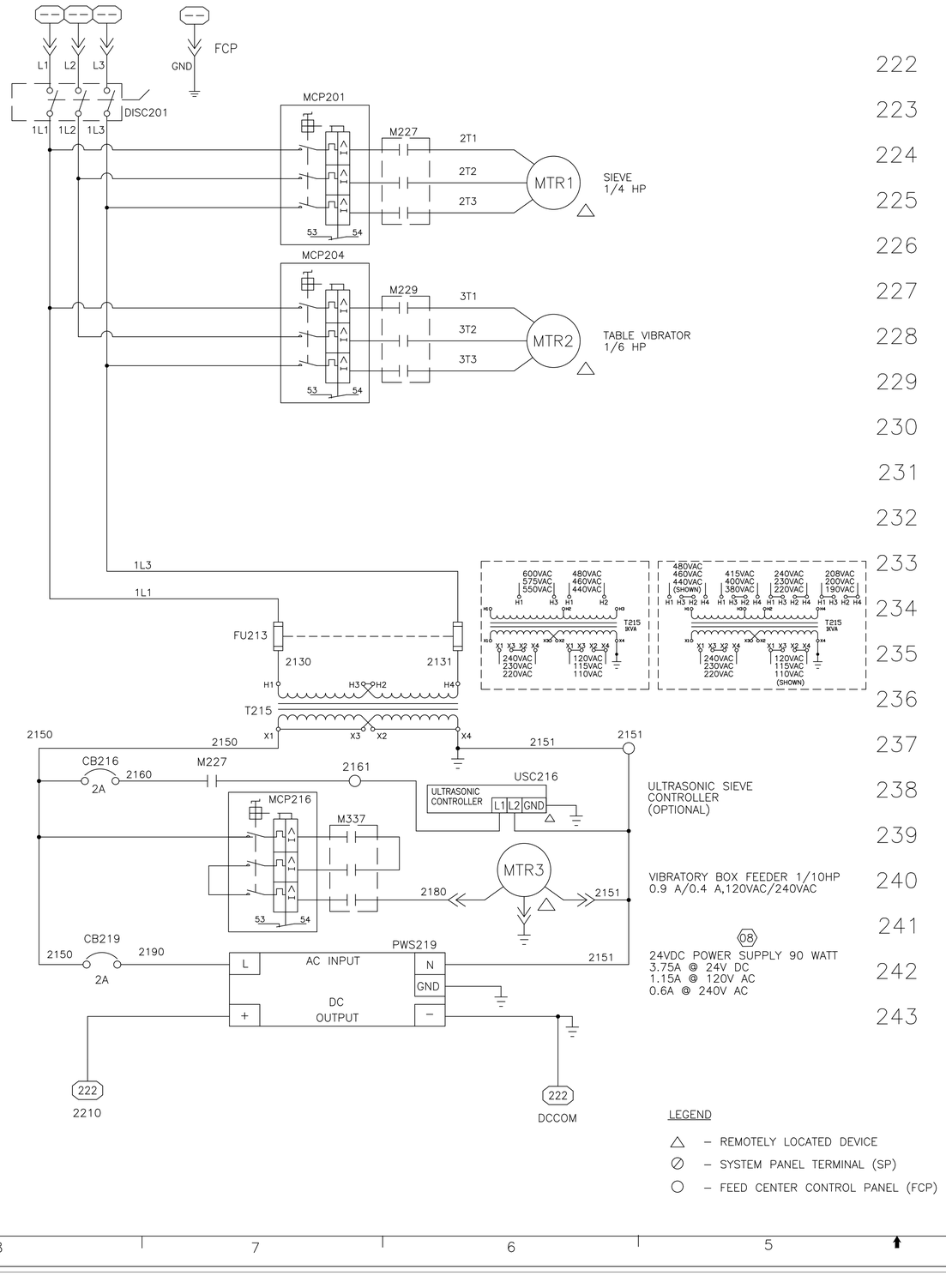
TOTAL CURRENT CALC. CHART						
	208V	230V	380V	415V	460V	575V
1/6 HP	.6	.6	.4	.4	.3	.3
X QTY						
1/4 HP	1.2	1.1	0.6	0.6	0.5	0.4
X QTY						
1.0 KVA TRANX	4.8	4.34	2.6	2.4	2.7	1.74
= TOTAL CURRENT						

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
5. ALL GROUND WIRES MUST BE GREEN/YELLOW STRIPED. YELLOW STRIPE MUST BE APPROX 30% - 70% OF TOTAL WIRE COLOR
6. RECEPTACLE ONLY USED WITH 575V, 460V, 415V OR 380V SYSTEMS. 230V OR 208V SYSTEMS WILL REQUIRE #10 AWG WIRE.

01	X	X	X		X
ALL DIMENSIONS IN INCHES EXCEPT AS NOTED			D SIZE	NORDSON CORPORATION POWDER SYSTEMS GROUP, AMHERST, OHIO, 44001	
XXXXXX	X.XX +/- .030	X.XXX +/- .010	DRAWN BY BGZ	DATE 21MAR19	REF DWG, PANEL,FEED CENTER, ENCORE,NAD
NEXT ASSEMBLY	MACHINED SURFACES 125 AA		CHECKED BY	APPROVED BY	
FIRST PRODUCT USED ON XXXXXXXXX	BREAK OUTSIDE AND INSIDE CORNERS .004 TO .032 MAX.		REL NO		
INTERPRET DRAWINGS PER ANSI Y14.5M - 1994 STD.	THREAD LENGTH DIMS. ARE FULL THREAD		CONTROL NUMBER	10018963	REV. 09
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES	THIRD ANGLE PROJECTION		SCALE: 1:4	PRODUCT DEVELOPMENT DEPARTMENT CAD GENERATED DRAWING	PAGE 1 / 6

10018963

CHG LTR	REVISION	BY	CHK	ECR NO.	DATE
–	SEE SHEET 1 FOR CURRRENT REVISION INFORMATION	–	–	–	–

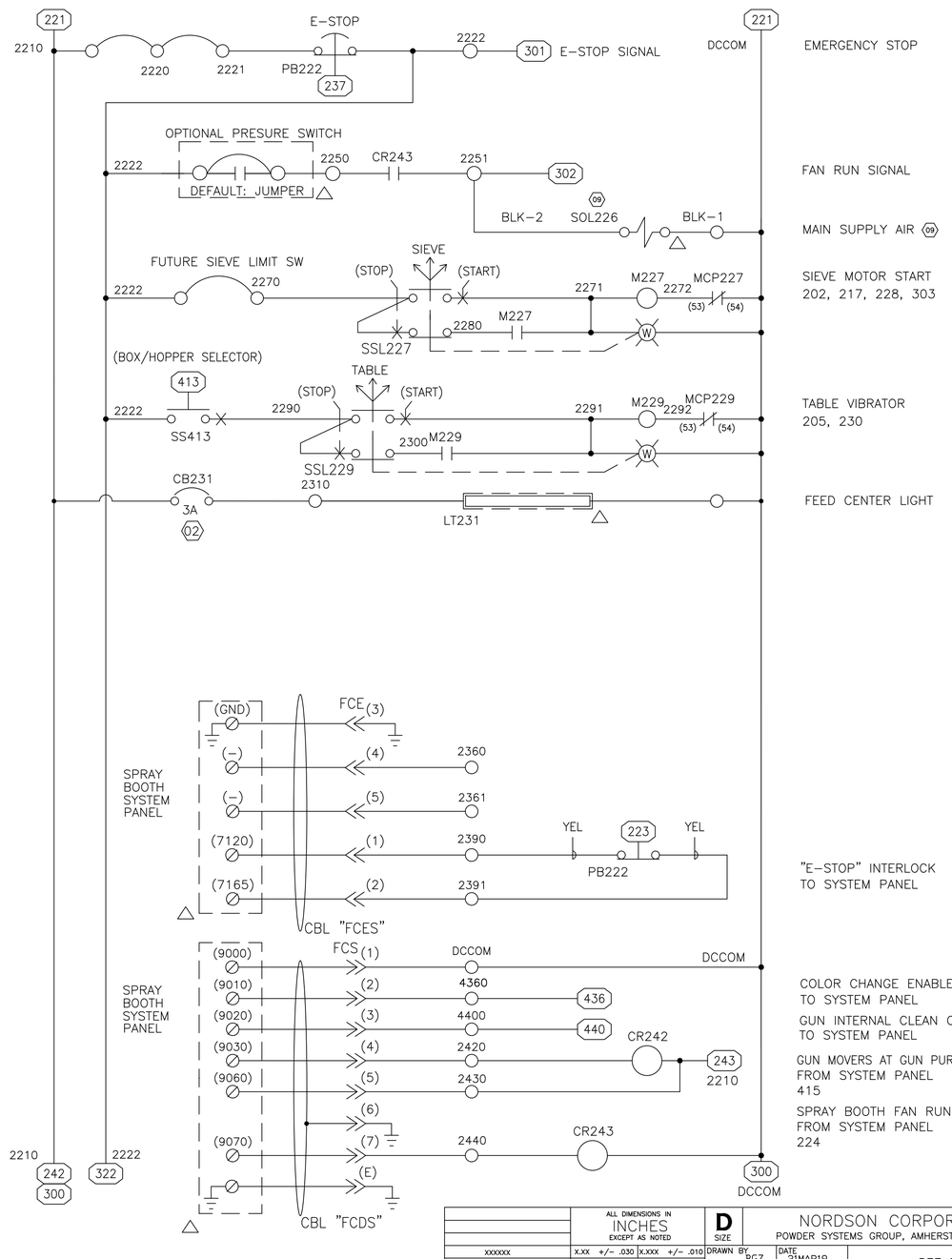


LEGEND

△ – REMOTELY LOCATED DEVICE

⊘ – SYSTEM PANEL TERMINAL (SP)

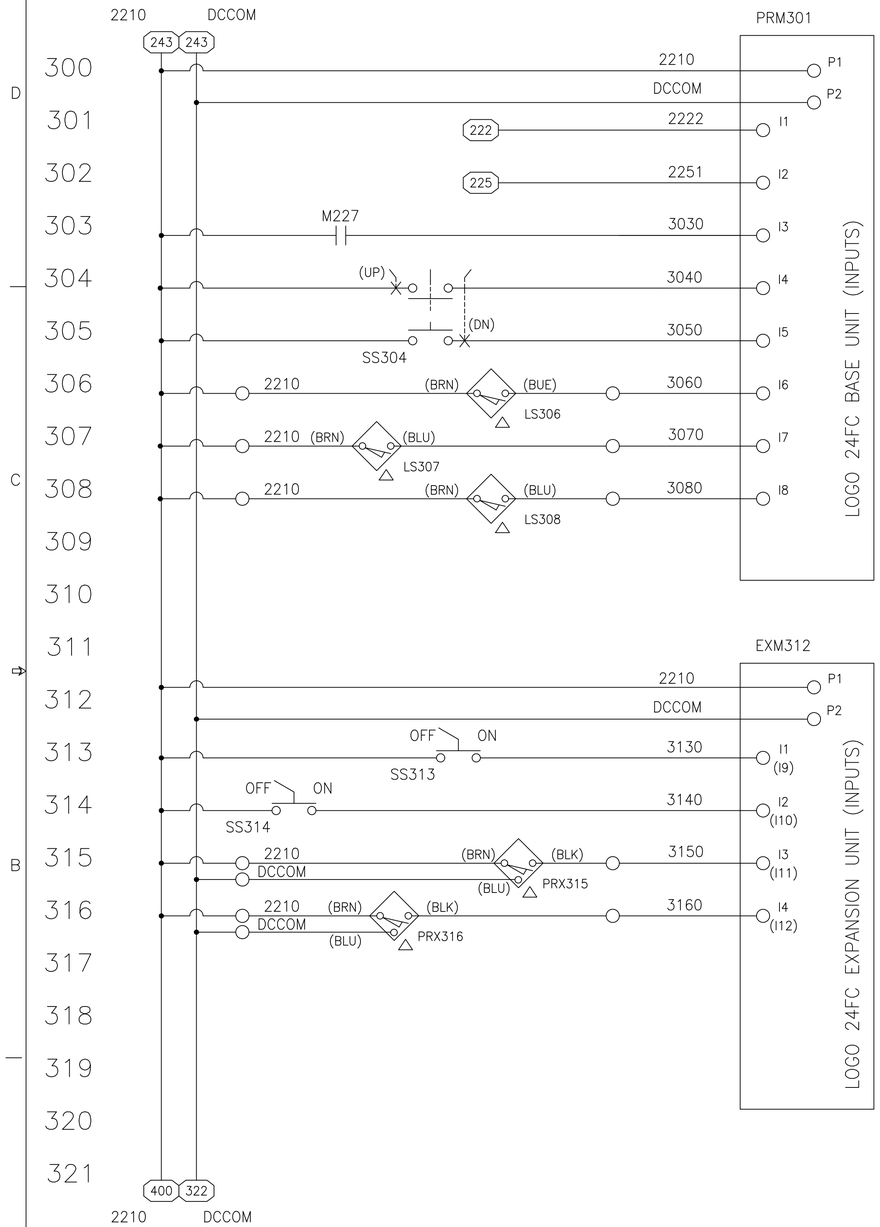
○ – FEED CENTER CONTROL PANEL (FCP)

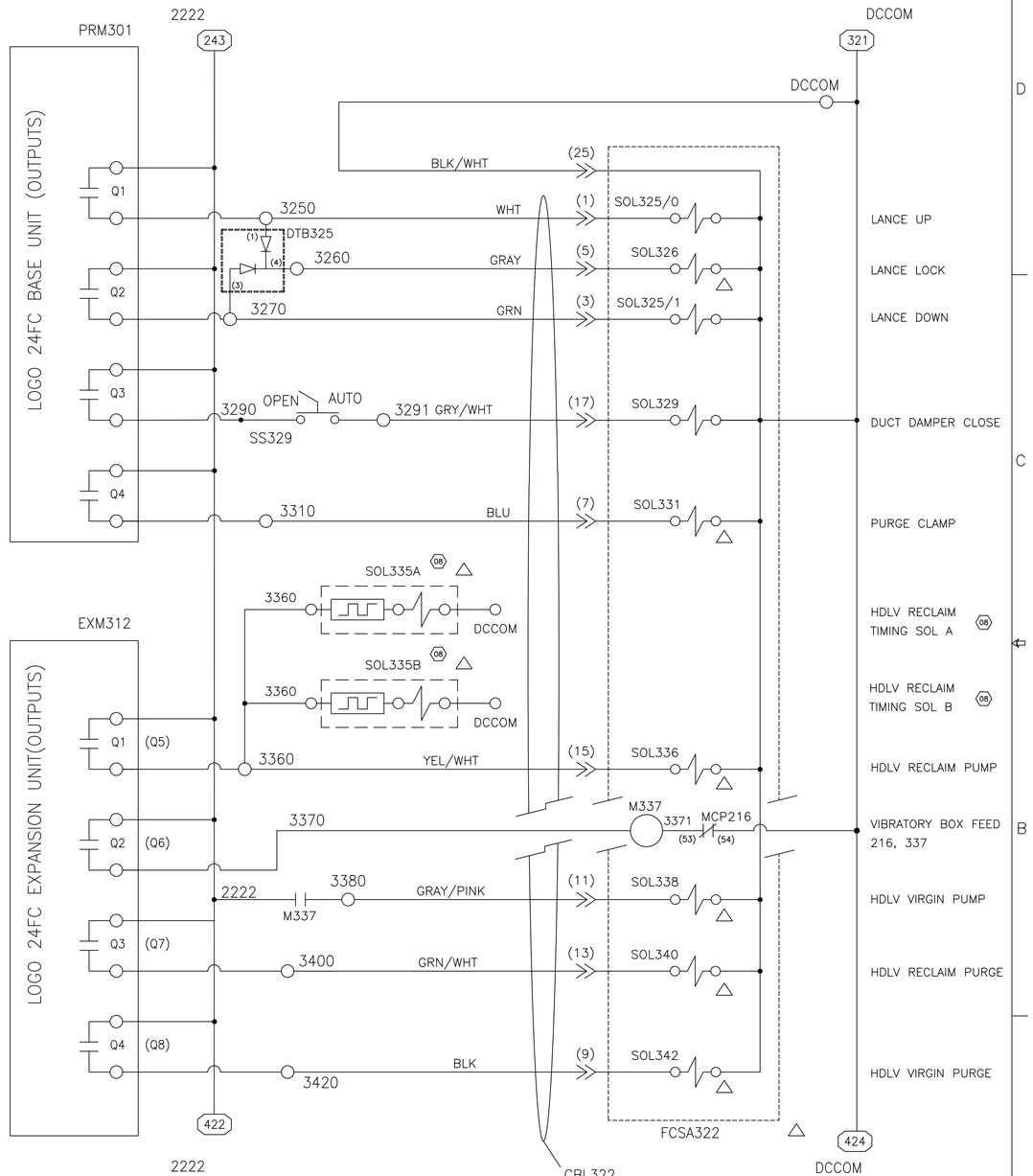


	ALL DIMENSIONS IN INCHES EXCEPT AS NOTED	D SIZE	NORDSON CORPORATION POWDER SYSTEMS GROUP, AMHERST, OHIO, 44001
XXXXXX NEXT ASSEMBLY	X.XX +/– .030 X.XXX +/– .010	DRAWN BY BGZ	DATE 21MAR19
	MACHINED SURFACES 125 AA	CHECKED BY	APPROVED BY
FIRST PRODUCT USED ON XXXXXXXXX	BREAK OUTSIDE AND INSIDE CORNERS .004 TO .032 MAX.	REL NO	REF DWG, PANEL,FEED CENTER, ENCORE,NAD
INTERPRET DRAWINGS PER ANSI Y14.5M – 1994 STD.	THREAD LENGTH DIMS. ARE FULL THREAD	CONTROL NUMBER	10018963 REV. 09
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES	THIRD ANGLE PROJECTION	SCALE: 1:4	PRODUCT DEVELOPMENT DEPARTMENT CAD GENERATED DRAWING PAGE 2 / 6

10018963

CHG LTR	REVISION	BY	CHK	ECR NO.	DATE
–	SEE SHEET 1 FOR CURRRENT REVISION INFORMATION	–	–	–	–





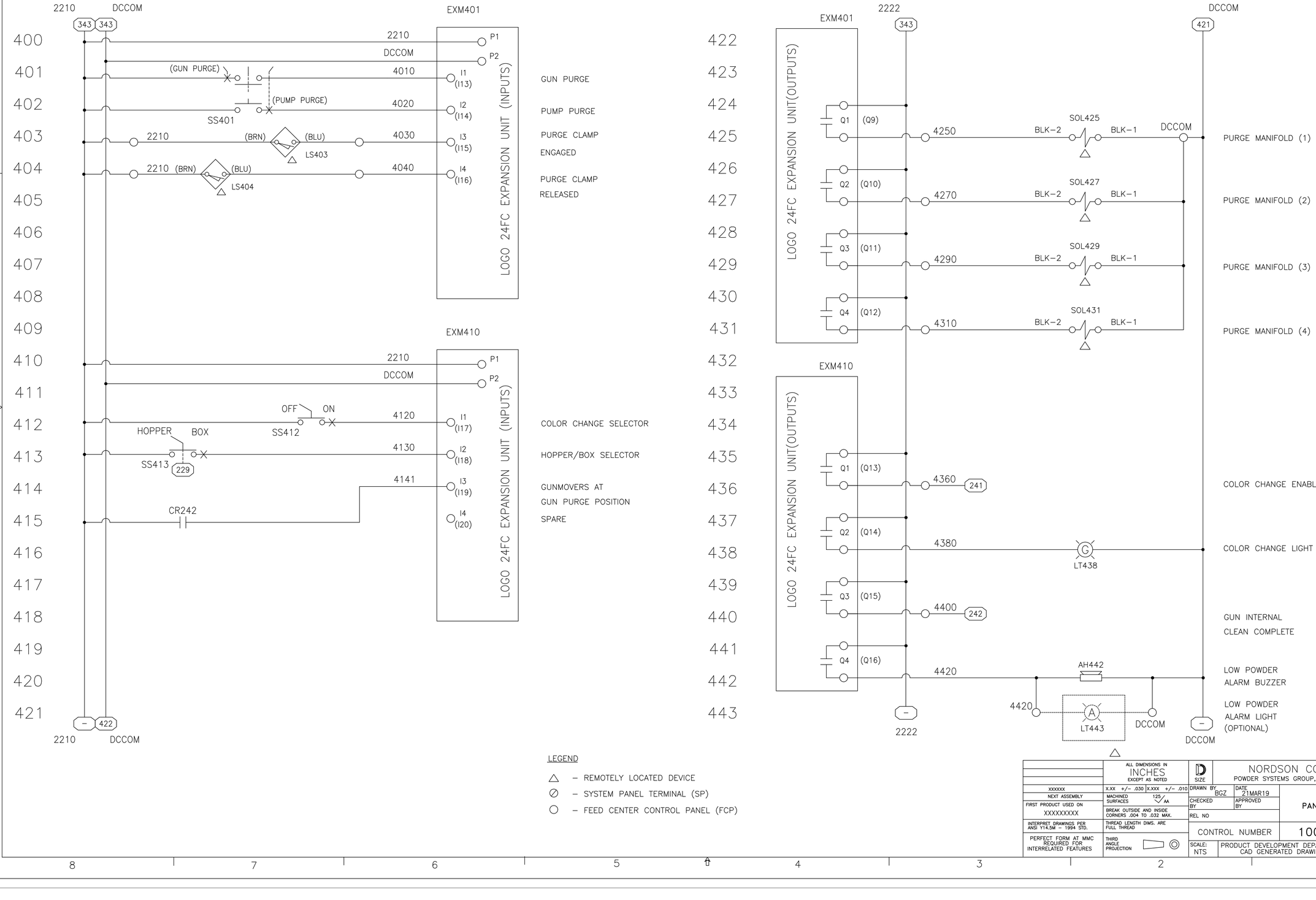
LEGEND

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

	ALL DIMENSIONS IN INCHES EXCEPT AS NOTED	SIZE D	NORDSON CORPORATION POWDER SYSTEMS GROUP, AMHERST, OHIO, 44001
XXXXXX	X.XX +/- .030 X.XXX +/- .010	DRAWN BY BGZ	DATE 21MAR19
NEXT ASSEMBLY	MACHINED SURFACES 125 AA	CHECKED BY	APPROVED BY
FIRST PRODUCT USED ON XXXXXXXXX	BREAK OUTSIDE AND INSIDE CORNERS .004 TO .032 MAX.	REL NO	REF DWG, PANEL,FEED CENTER, ENCORE,NAD
INTERPRET DRAWINGS PER ANSI Y14.5M – 1994 STD.	THREAD LENGTH DIMS. ARE FULL THREAD	CONTROL NUMBER	10018963 REV. 09
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES	THIRD ANGLE PROJECTION	SCALE: NTS	PRODUCT DEVELOPMENT DEPARTMENT CAD GENERATED DRAWING — PAGE 3 / 6

10018963

CHG LTR	REVISION	BY	CHK	ECR NO.	DATE
–	SEE SHEET 1 FOR CURRRENT REVISION INFORMATION	–	–	–	–



LEGEND

△ – REMOTELY LOCATED DEVICE

⊘ – SYSTEM PANEL TERMINAL (SP)

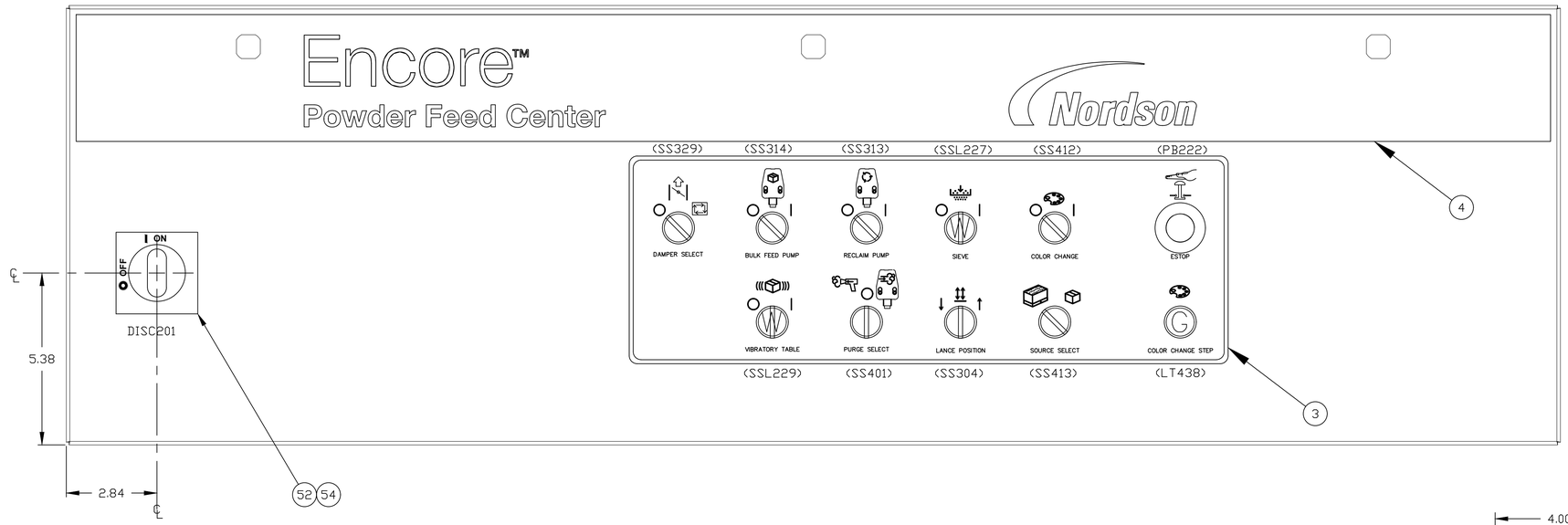
○ – FEED CENTER CONTROL PANEL (FCP)

	ALL DIMENSIONS IN INCHES EXCEPT AS NOTED	SIZE D	NORDSON CORPORATION POWDER SYSTEMS GROUP, AMHERST, OHIO, 44001
XXXXXX	X.XX +/– .030 X.XXX +/– .010	DRAWN BY BGZ	DATE 21MAR19
NEXT ASSEMBLY	MACHINED SURFACES 125/ AA	CHECKED BY	APPROVED BY
FIRST PRODUCT USED ON XXXXXXXXX	BREAK OUTSIDE AND INSIDE CORNERS .004 TO .032 MAX.	REL NO	REF DWG, PANEL,FEED CENTER, ENCORE,NAD
INTERPRET DRAWINGS PER ANSI Y14.5M – 1994 STD.	THREAD LENGTH DIMS. ARE FULL THREAD	CONTROL NUMBER	10018963 REV. 09
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES	THIRD ANGLE PROJECTION	SCALE: NTS	PRODUCT DEVELOPMENT DEPARTMENT CAD GENERATED DRAWING PAGE 4 / 6

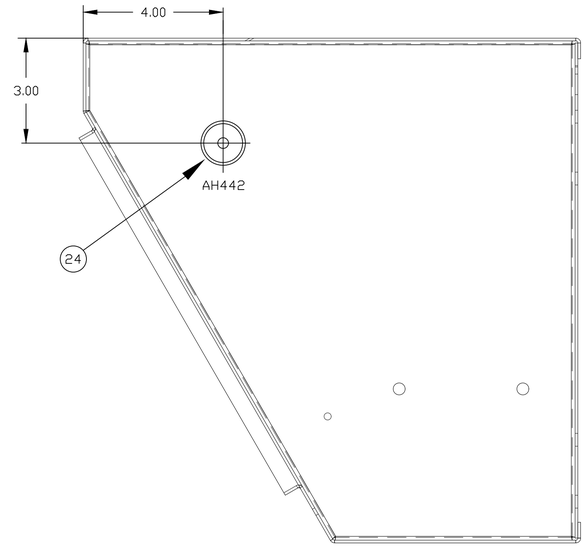
10018963

CHG LTR	REVISION	BY	CHK	ECR NO.	DATE
–	SEE SHEET 1 FOR CURRRENT REVISION INFORMATION	–	–	–	–

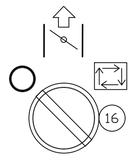
ENCLOSURE DOOR LAYOUT



ENCLOSURE RIGHT SIDE

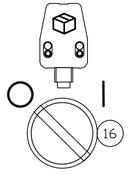


(SS329)



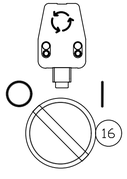
DAMPER SELECT

(SS314)



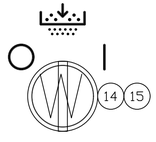
BULK FEED PUMP

(SS313)



RECLAIM PUMP

(SSL227)

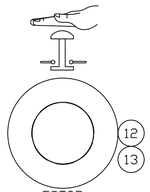


SIEVE

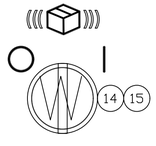
(SS412)

COLOR CHANGE

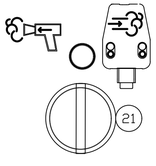
(PB222)



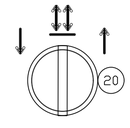
ESTOP



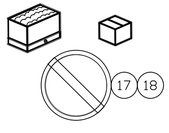
VIBRATORY TABLE



PURGE SELECT



LANCE POSITION



SOURCE SELECT

COLOR CHANGE STEP

(SSL229) (SS401) (SS304) (SS413) (LT438)

VIEW OF DOOR DEVICES (SCALE 2:1)

01	X	X	X	X

	ALL DIMENSIONS IN INCHES EXCEPT AS NOTED	D SIZE	NORDSON CORPORATION POWDER SYSTEMS GROUP, AMHERST, OHIO, 44001
XXXXXX	X.XX +/- .030 X.XXX +/- .010	DRAWN BY BGZ	DATE 21MAR19
NEXT ASSEMBLY	MACHINED SURFACES 125/ AA	CHECKED BY	APPROVED BY
FIRST PRODUCT USED ON XXXXXXXXX	BREAK OUTSIDE AND INSIDE CORNERS .004 TO .032 MAX.	REL NO	REF DWG, PANEL,FEED CENTER, ENCORE,NAD
INTERPRET DRAWINGS PER ANSI Y14.5M – 1994 STD.	THREAD LENGTH DIMS. ARE FULL THREAD	CONTROL NUMBER	10018963 REV. 09
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES	THIRD ANGLE PROJECTION	SCALE: 1:4	PRODUCT DEVELOPMENT DEPARTMENT CAD GENERATED DRAWING PAGE 5 / 6

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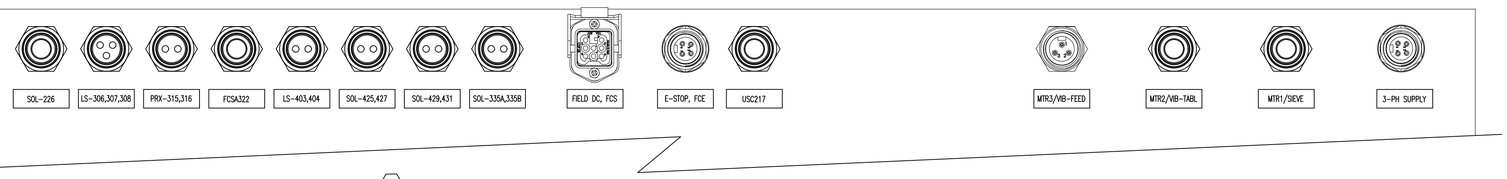
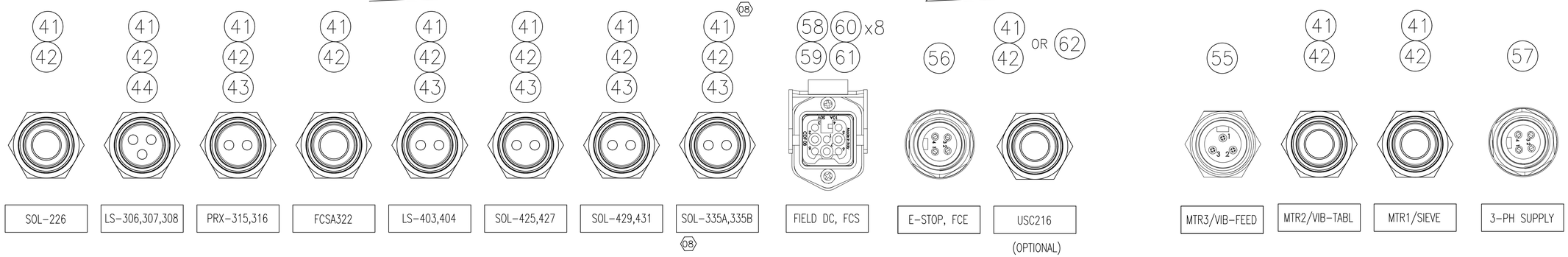
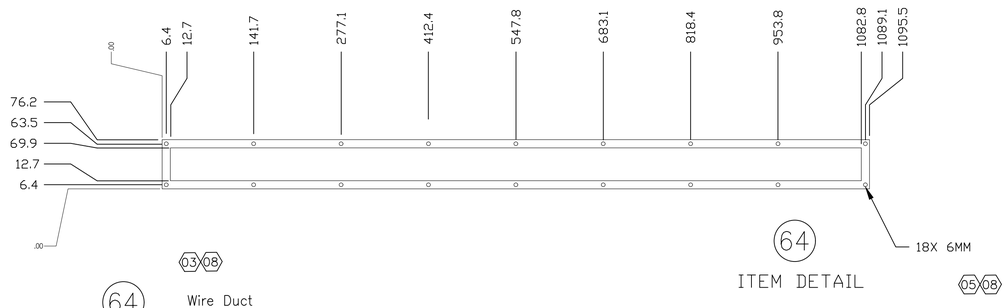
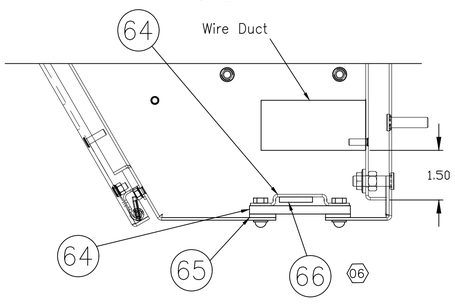
CHG LTR	REVISION	BY	CHK	ECR NO.	DATE
–	SEE SHEET 1 FOR CURRRENT REVISION INFORMATION	–	–	–	–

ENCLOSURE REAR VIEW

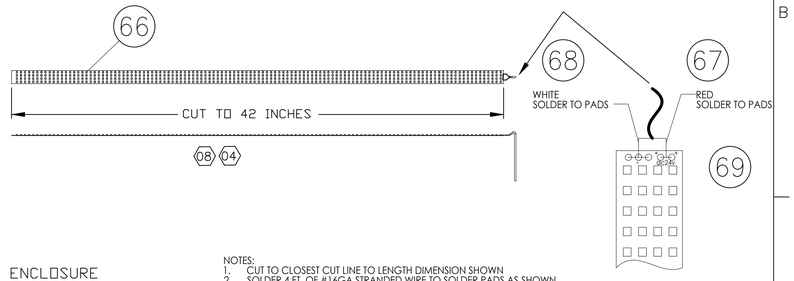








ENCLOSURE SIDE VIEW



08 07 WINDOW & LIGHT ASSEMBLY:
1. USE SOFT FOAM RUBBER GASKET MATERIAL (1/16" - 1/8 " THICK) BETWEEN LEXAN AND ENCLOSURE (ITEM 65).
2. USE A NYLON FLAT WASHER OR SEALING WASHER BETWEEN HEAD OF MOUNTING SCREW AND ENCLOSURE.
3. USE ZINC BUTTON HEAD SCREWS, 16 REQUIRED, WITH NUT, SEAL WASHER AND STAR WASHER..

NOTES:
1. CUT TO CLOSEST CUT LINE TO LENGTH DIMENSION SHOWN
2. SOLDER 4 FT. OF #16GA STRANDED WIRE TO SOLDER PADS AS SHOWN
3. POT SOLDERED CONNECTIONS WITH ROOM TEMP. CURING ELECTRICAL INSULATING POTTING COMPOUND

01	X	X	X	X

ALL DIMENSIONS IN INCHES EXCEPT AS NOTED
X.XX +/- .030 X.XXX +/- .010
MACHINED SURFACES 125 AA
BREAK OUTSIDE AND INSIDE CORNERS .004 TO .032 MAX.
THREAD LENGTH DIMS. ARE FULL THREAD
THIRD ANGLE PROJECTION

XXXXXX
NEXT ASSEMBLY
FIRST PRODUCT USED ON XXXXXXXXX
INTERPRET DRAWINGS PER ANSI Y14.5M – 1994 STD.
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES

D SIZE

NORDSON CORPORATION
POWDER SYSTEMS GROUP, AMHERST, OHIO, 44001

DRAWN BY BGZ DATE 21MAR19
CHECKED BY APPROVED BY
REL NO

REF DWG, PANEL,FEED CENTER, ENCORE,NAD

CONTROL NUMBER 10018963 REV. 09

SCALE: 1:1
PRODUCT DEVELOPMENT DEPARTMENT CAD GENERATED DRAWING