

Excel 3000 Series Powder Coating Booth Installation

Customer Product Manual

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Excel® 3000 Series Booth Installation

This manual provides instructions and guidelines for the installation of a typical Excel 3000 Series powder coating booth. All systems are different; refer to your system drawings.

Once the booth is erected and all components are positioned and installed, your Nordson representatives will help you complete the system installation, start up the system, and train you how to operate it properly.

Safety

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed 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.

Regulations and Approvals

Before installing any system equipment, make sure it is rated and approved for the environment in which it will be 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. Refer to the National Fire Protection Association publication NFPA 33 for standards on installation and operation of powder spray systems.

Grounding

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.

Equipment to be grounded includes, but is not limited to, the floor of the spray area, booth base, operator platforms, hoppers, feed center, gun positioners, fixed gun stands, and afterfilter. Refer to the grounding instructions in the Nordson equipment manuals for more information.

Unloading and Storage

The Excel 3000 booth is shipped partially assembled, wired and plumbed. The degree of pre-assembly depends on the size of the booth. You will need forklift trucks and other rigging equipment to unload the system from the carrier.



WARNING: Do not attempt to lift equipment using covers, doors, panels, or cable and hose connections. Always balance the load when lifting. Never put stress on flat panel sheets.

Move all equipment to an indoor storage area, close to the installation site.

NOTE: Equipment stored outside and not protected from the elements could be damaged, voiding any warranty.

Unpacking

Locate the system electrical control panel. The control panel contains the shipping documents, listing the skids and boxes and their designations. A separate enclosed Packing Checklist lists the items on each skid and in each box.

When the shipment is unloaded, inventory and inspect each skid and box. If you discover damage or an inventory discrepancy, report it to your Nordson representative immediately. Report any damages or discrepancies to the carrier and keep a copy of the report for your Nordson representative.

Preparation

Tools

Installation of the ColorMax powder coating booth and its components will be easier and faster if the proper tools are available. Have the following tools on hand:

- Rigging equipment, including a forklift
- C-clamps or welder's clamps
- Chalk line
- Plumb-bob and line
- Multimeter
- Electrician's tools
- Mechanic's tools, including pipe wrenches
- Portable power drills and wrenches
- Razor knife
- Levels and squares
- Tubing cutter

Installation Location

No special foundation is required. The floor should be smooth and level. The spray room must be large enough to provide working clearances for both installation and operation. Refer to your system drawings for plan views and layouts.

The conveyor should already be installed, since the booth is located off the conveyor line.

Base Leveling Pad Installation

1. Roll the base to the installation area. Lift the base and remove the shipping casters.
2. See Figure 1, Detail A. Thread one locking nut onto each leveling pad.
3. Install the leveling pads into the holes in the cross beams, then thread another locking nut onto each leveling pad.
4. Use the bottom locking nut to adjust the leveling pad up or down to level the base. See Detail B. The typical base-to-floor dimension is 12 inches, though this can vary depending on the floor and the customer requirements.

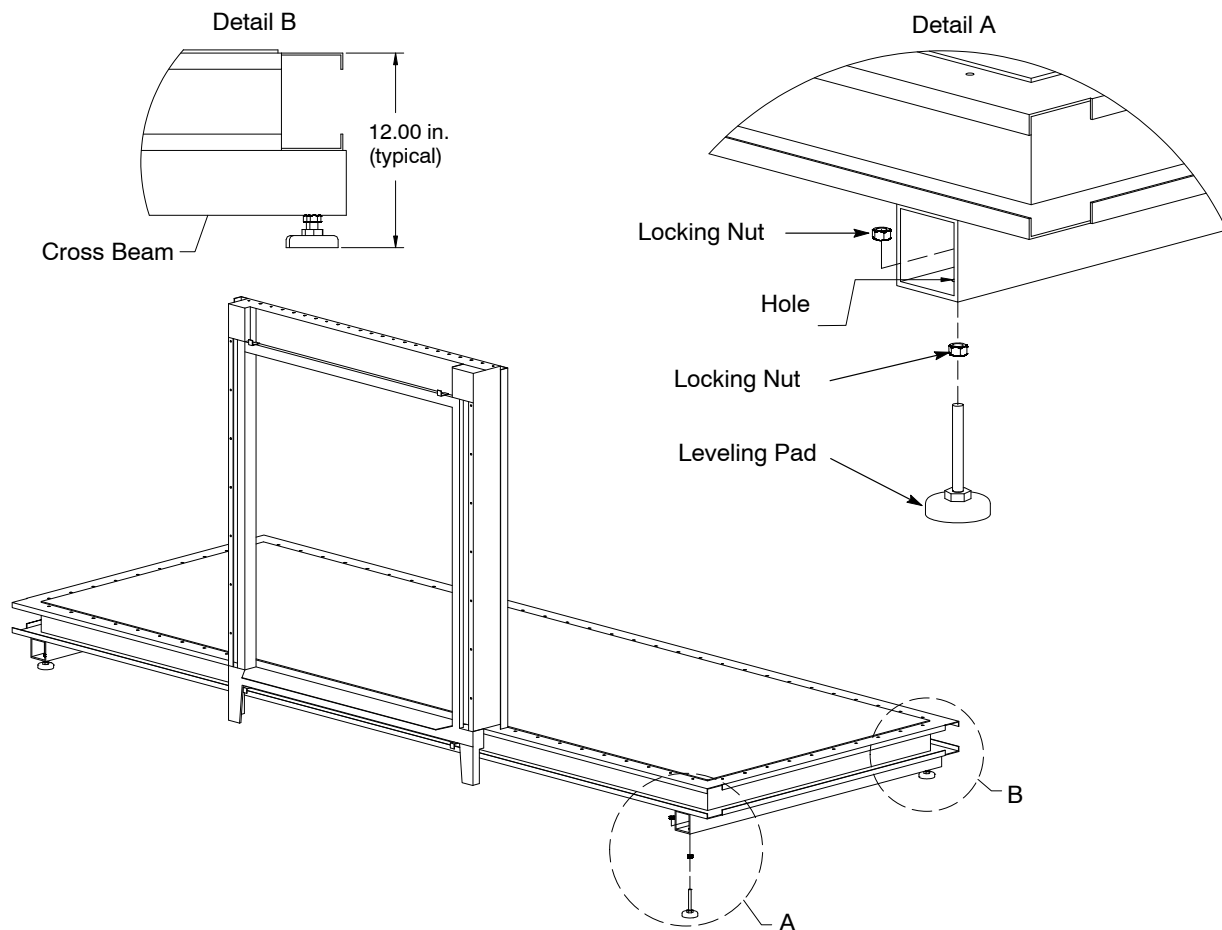


Figure 1 Leveling Pad Installation

Canopy Assembly

Fastener Rules

- **Metal Panel to Metal Panel:** Use metal fasteners.
- **Metal Panel to Plastic Panel:** Use metal fasteners.
- **Plastic Panel to Plastic Panel:** Use plastic fasteners.

End Vestibule Step Installation

1. See Figure 2. Fasten the bottom panel to the base with 5/16–18 hex head bolts and hex nuts.
2. Fasten the step panel to the bottom panel with 5/16–18 button head bolts and hex nuts.

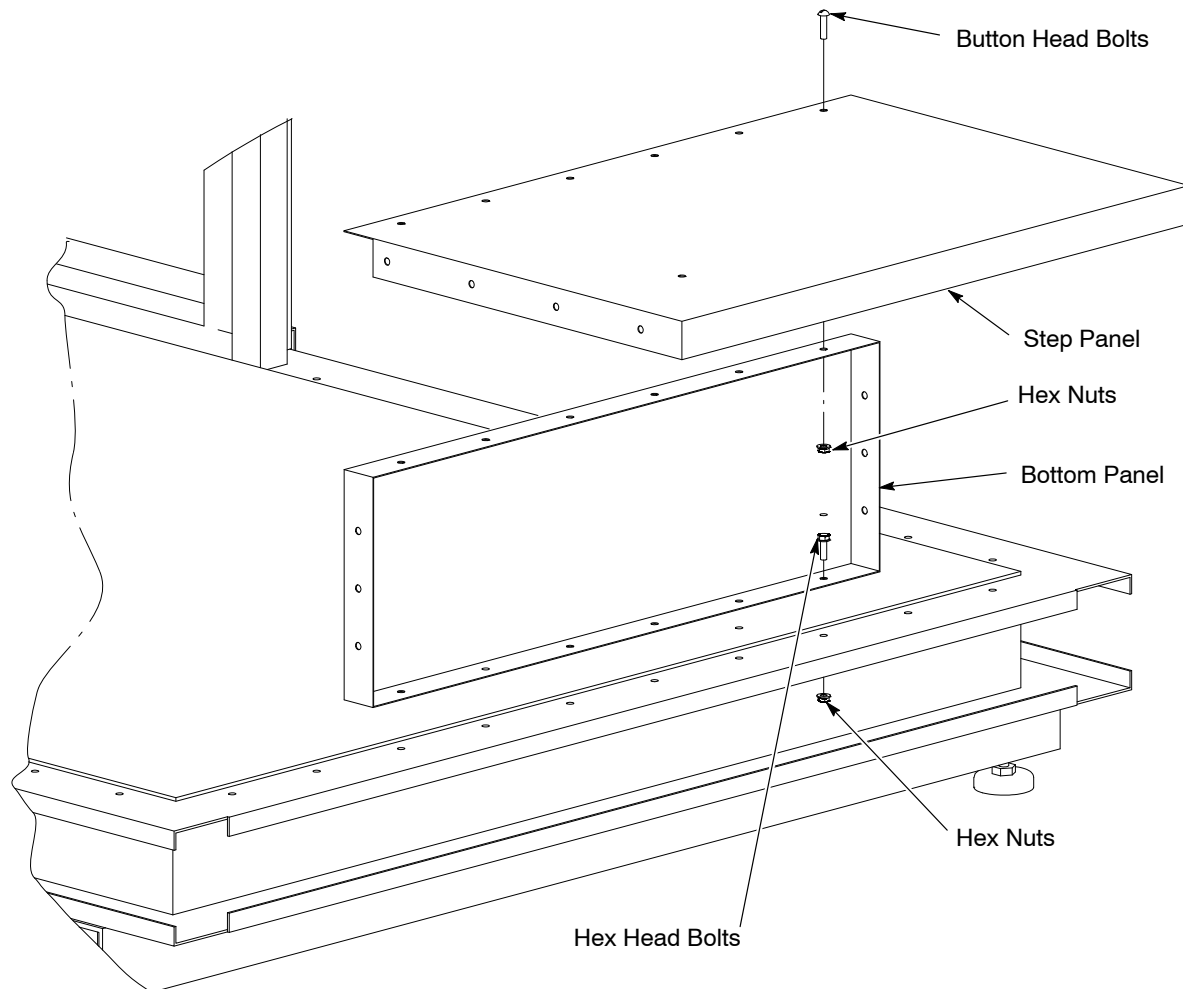


Figure 2 End Vestibule Step Installation

Canopy Wall Installation

1. See Figure 3. Attach a side panel to an end panel with 5/16–18 hex head bolts and hex nuts to create a corner assembly.
2. Move the corner assembly to the corner of the base as shown. Line up the bottom inside corner of the assembly with the corner of the floor.
3. Mark the positions of the holes on the booth base flange on the canopy panel flanges. Drill holes in the canopy flanges with a 3/8 in. drill bit.
4. Secure the corner assembly to the base with 5/16–18 hex head bolts and hex nuts.

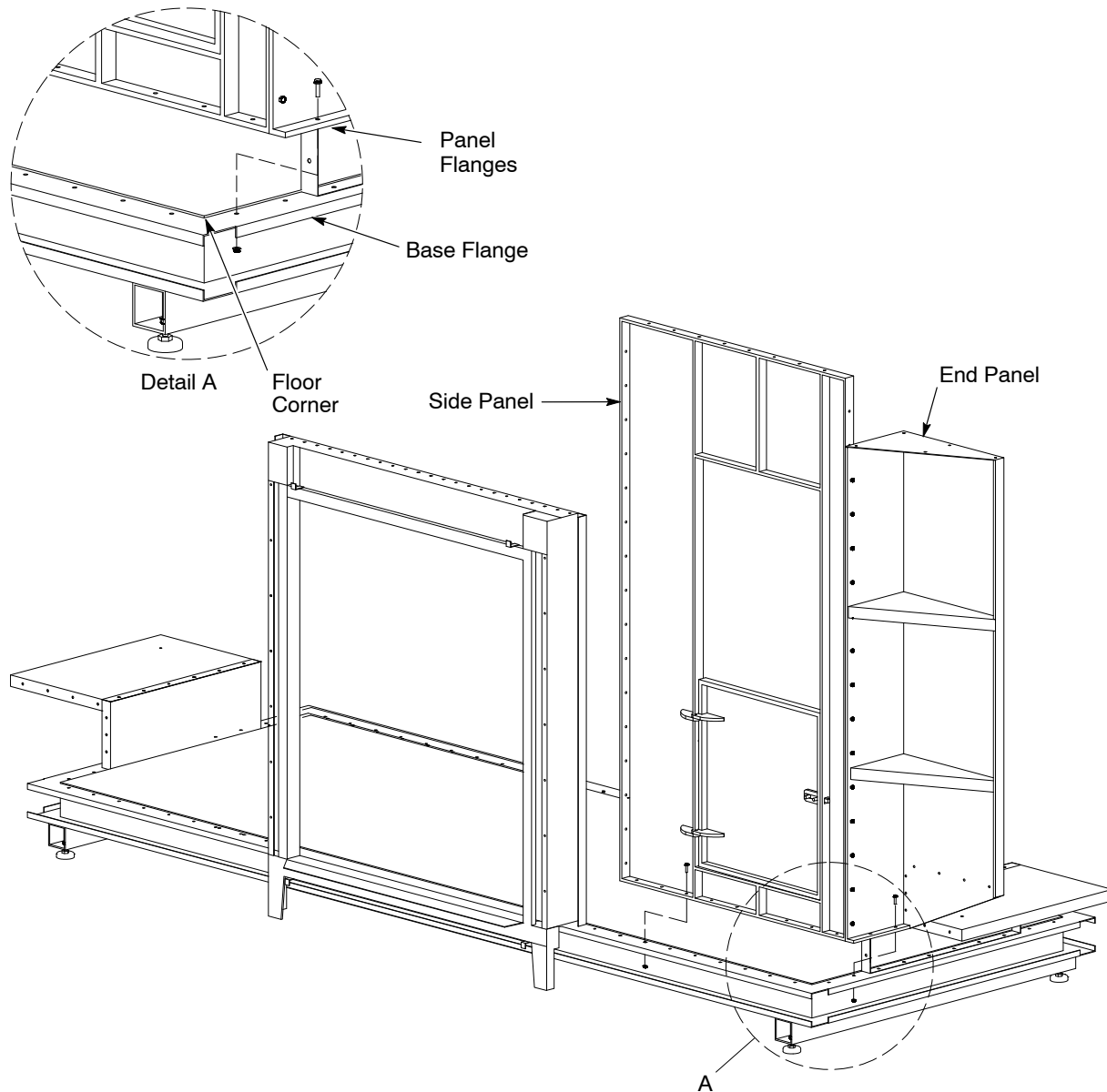


Figure 3 Corner Assembly

Canopy Wall Installation *(contd)*

5. See Figure 4. Line up the collector mouth flange with the side panel flange so that the mount and panel are flush on the inside of the booth.
6. Clamp the flanges together with 5 flange brackets, spacing the brackets evenly. Tighten the bracket bolts to clamp the flanges together.

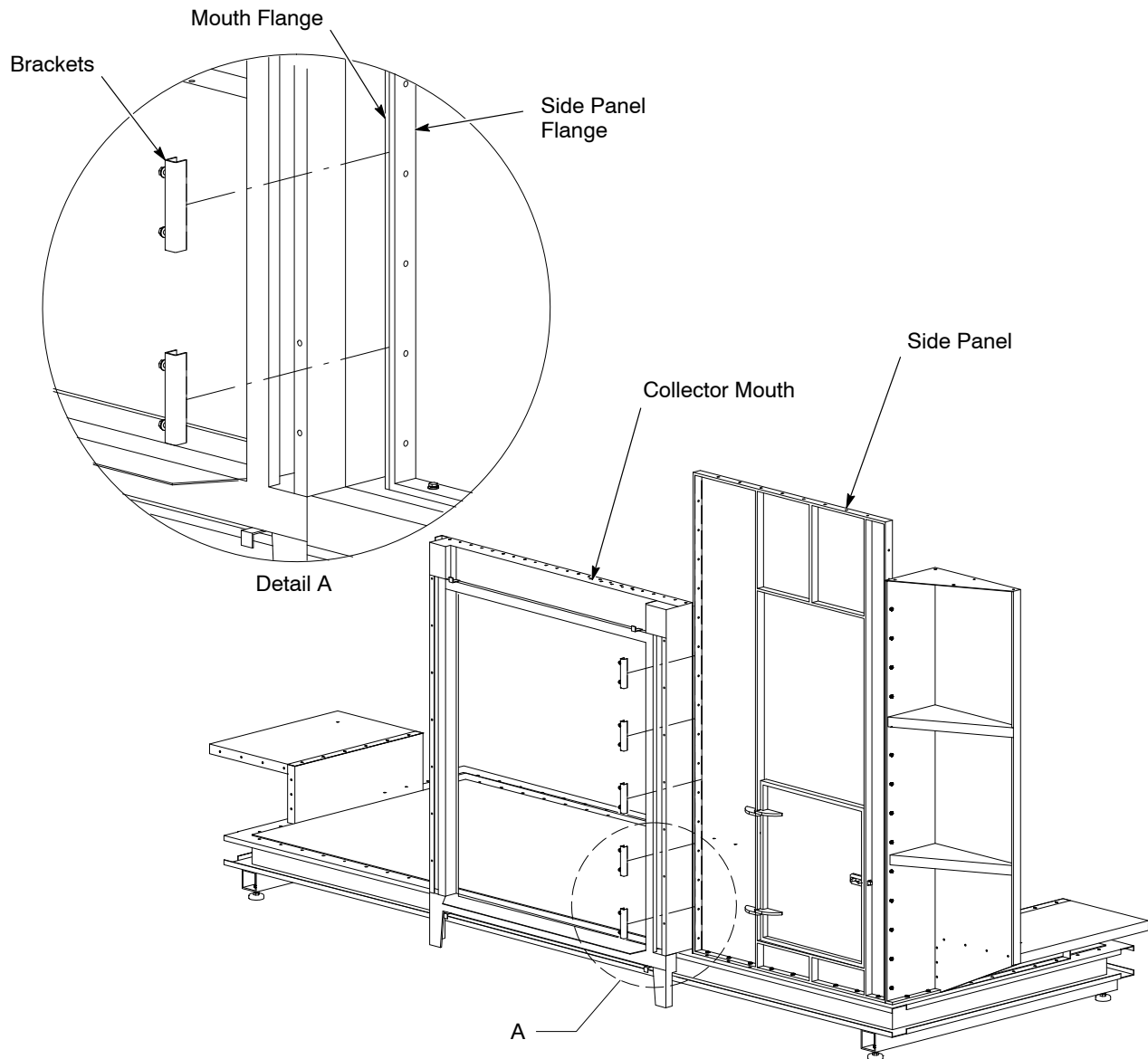


Figure 4 Securing Side Panels to Collector Mouth

7. See Figure 5. Align the mouth top panel flange holes with the holes in the side panel and collector mouth flanges.
8. Fasten the plastic side and top panels together with plastic 5/16–18 hex head bolts and hex nuts.
9. Fasten the top panel and the collector mouth together with 5/16–18 button head bolts and hex nuts. Insert the button head bolts up through the collector mouth flange and top panel flange.

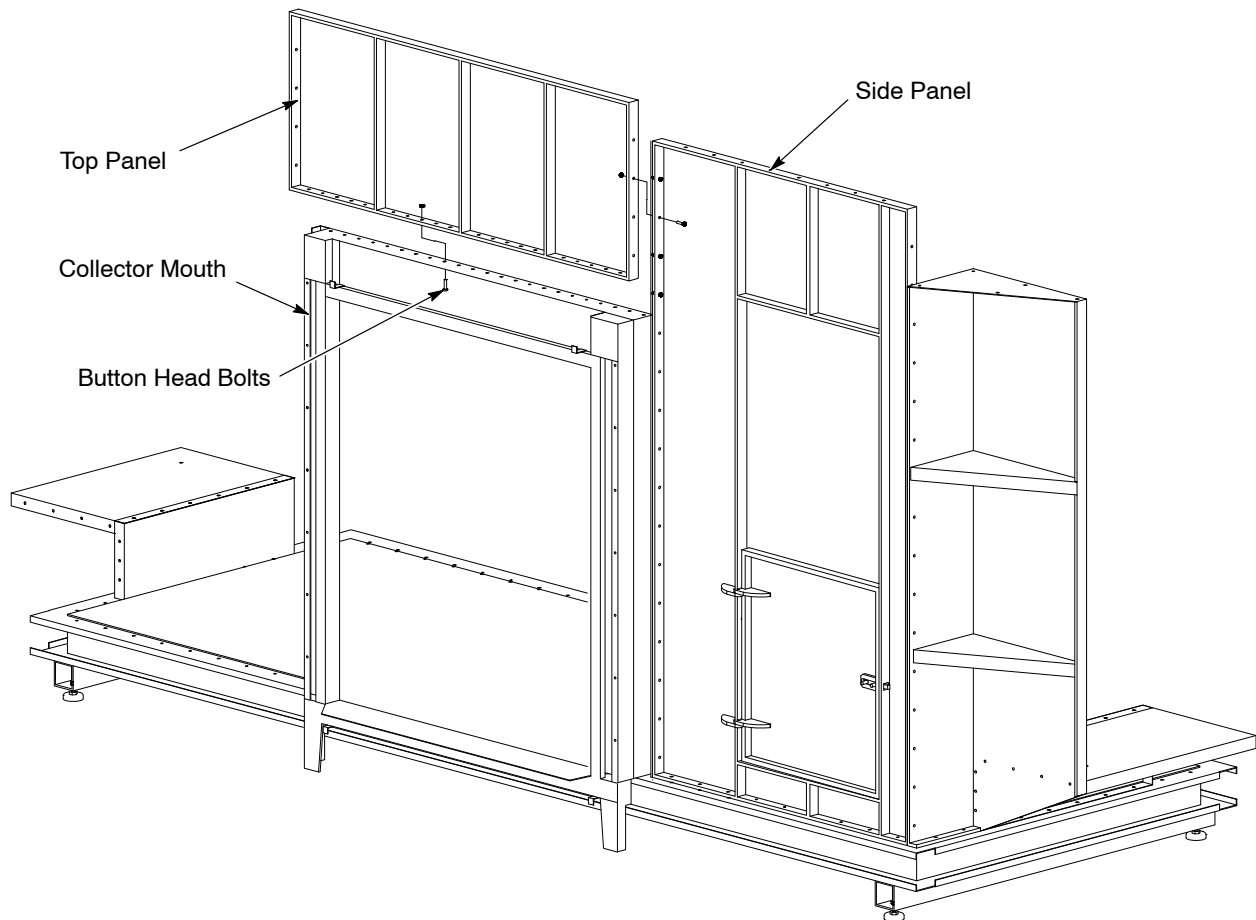


Figure 5 Securing Top Panels to Collector Mouth and Side Panels

Canopy Wall Installation *(contd)*

10. See Figure 6. Build a second corner panel assembly as shown, using 5/16–18 hex head bolts and hex nuts.
11. Attach this corner panel assembly to the booth base as shown in Figure 3.
12. Attach the corner panel assembly to the top panel and collector mouth as shown in Figure 4.

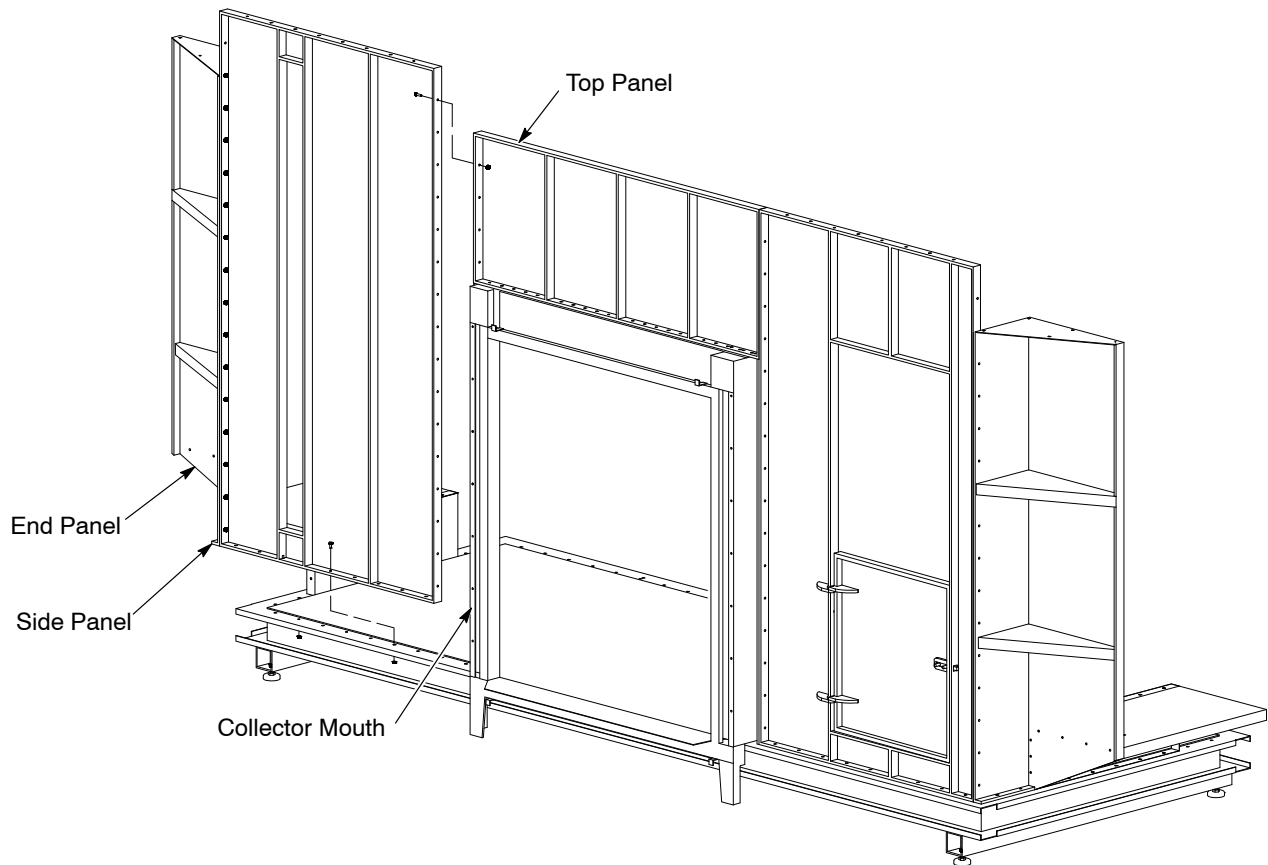


Figure 6 Corner Panel Assembly

13. See Figure 7. Build corner assemblies for the other side of the booth as shown, using 5/16–18 hex head bolts and hex nuts.
14. Position the corner assemblies on the base so that the inside corners of the assemblies align with the corners of the floor.
15. Fasten the side panels together with 5/16–18 hex head bolts and hex nuts.
16. Align the panel flanges with the base and mark the positions of the holes in the base on the panel bottom flanges. Drill holes in the panel flanges with a 3/8 in. drill bit.
17. Fasten the panels to the base with 5/16–18 hex head bolts and hex nuts.

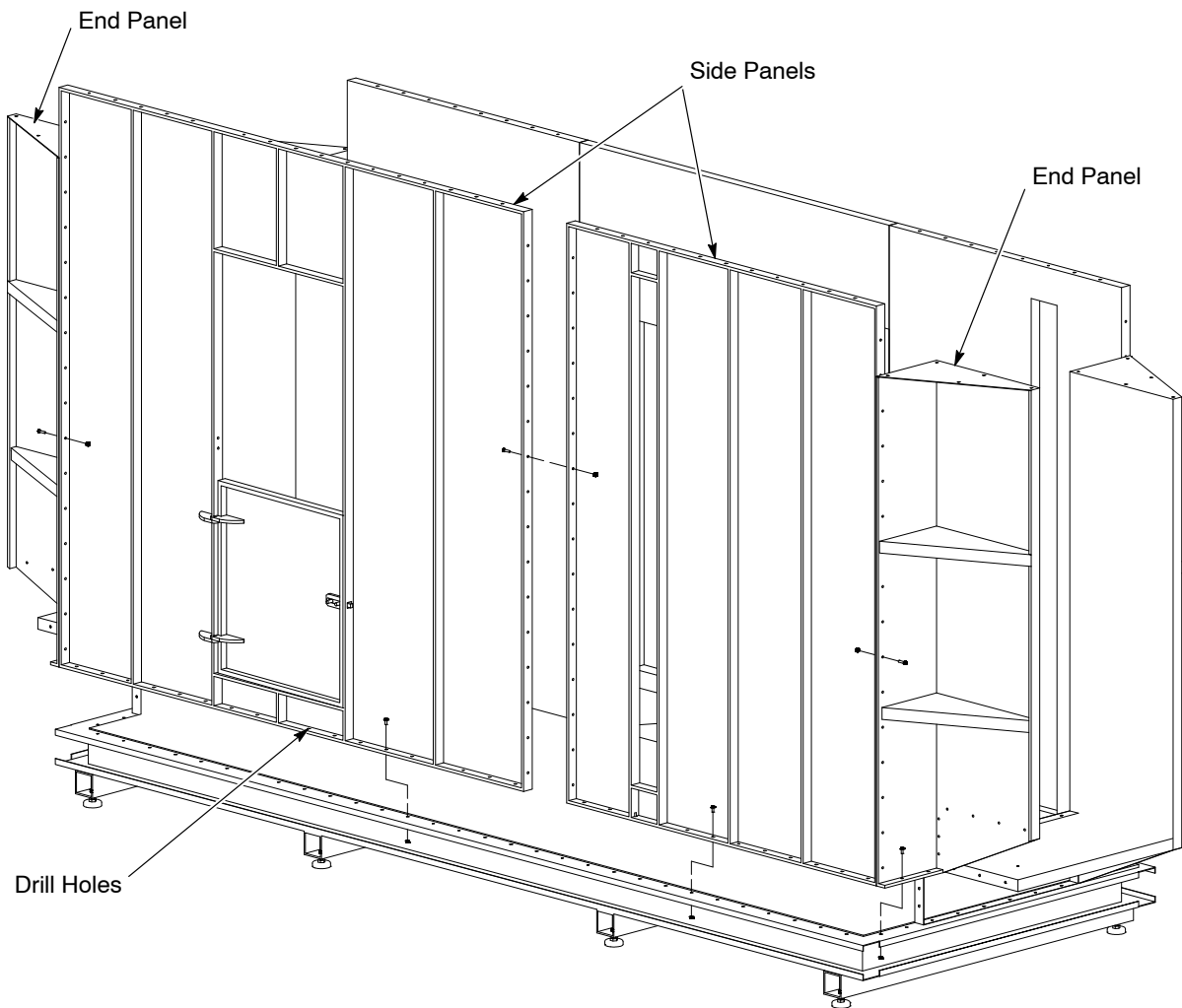


Figure 7 Assembling Opposite Side of Canopy

Canopy Wall Installation *(contd)*

18. See Figure 9, Detail A. Align the holes in the top vestibule panel with the holes in the side panels and end panels. Fasten the top panels to the side and end panels with 5/16–18 hex head bolts and hex nuts.
19. See Detail B. Fasten the end panels to the vestibule bottom and step panels with 5/16–18 hex head bolts and hex nuts.

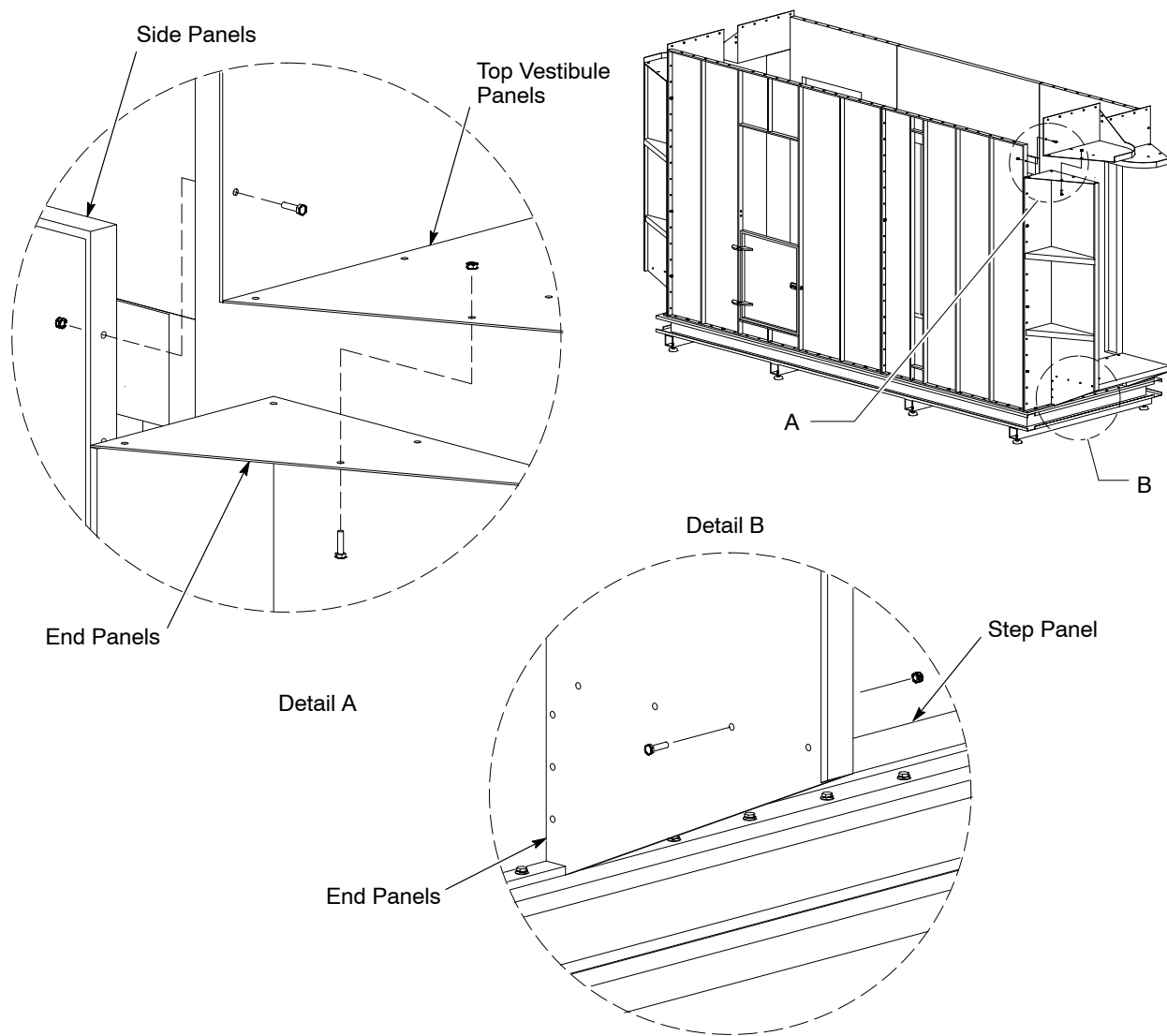


Figure 8 Top Vestibule Panel Installation

Canopy Roof Installation

NOTE: Start the roof installation by installing one roof panel on one side. At least 2 people are required to install the roof panels.

1. See Figure 9. Attach the roof panels to the top vestibule panels, side panels, and other roof panels with 5/16–18 hex head bolts and hex nuts.

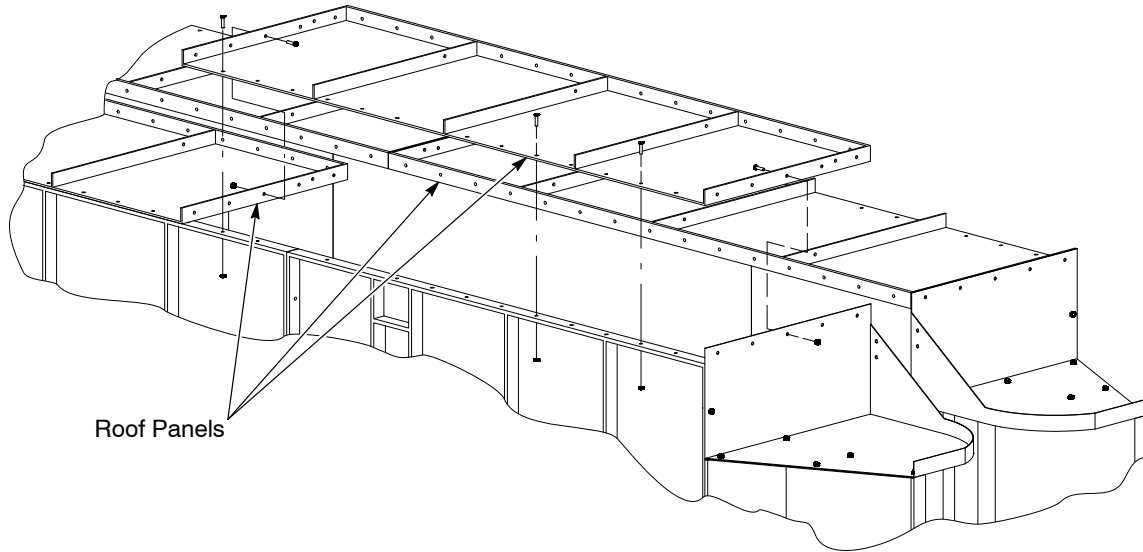


Figure 9 Roof Installation

2. See Figure 10. Place the conveyor shrouds flush against the roof panel flange and secure them with 5/16–18 flat head bolts and hex nuts. Install the bolts from the conveyor slot side, so that the heads go into the countersunk holes in the shrouds.

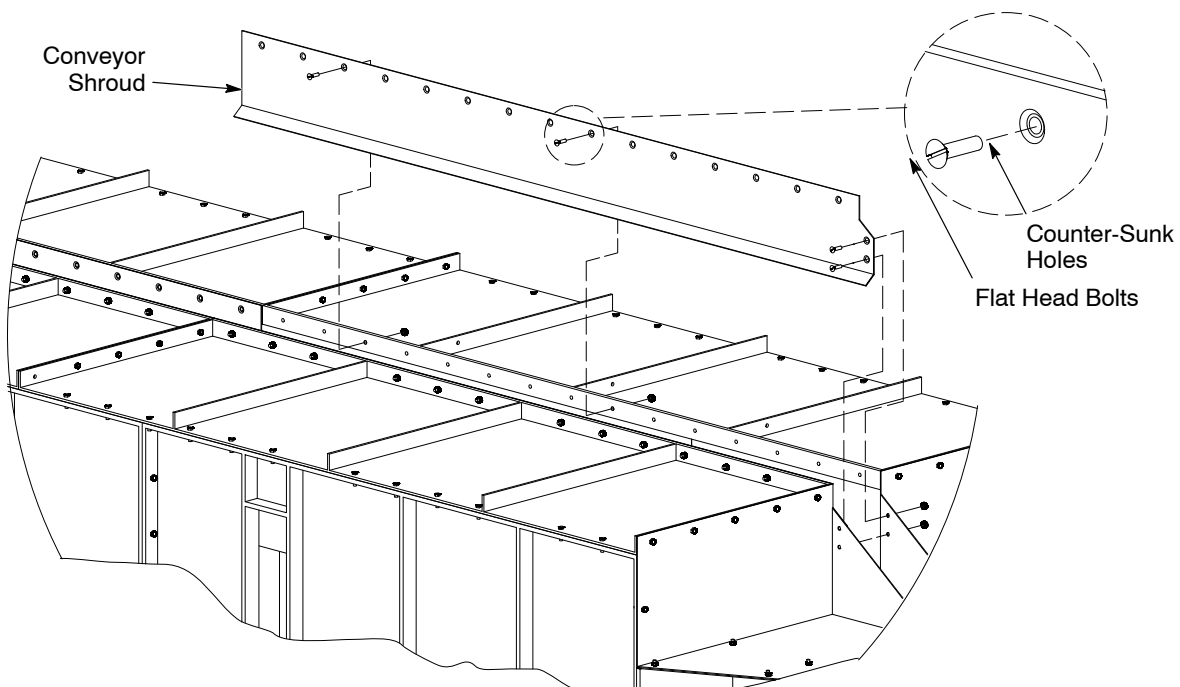


Figure 10 Conveyor Shroud Installation

Booth Positioning

1. Use the system drawings to find the location of one end of the base.
2. See Figure 11. Hang a plumb bob for the center of the conveyor and mark the floor.
3. Move the plumb bob along the conveyor the length of the booth base and mark the floor.
4. Snap a chalk line from mark to mark. This line is the centerline of the conveyor.
5. Mark the center of the booth at each end, then position the booth on the centerline, with booth center marks aligned with the conveyor centerline.
6. Adjusting the leveling pads so that the booth floor is 12 inches from the plant floor.
7. Starting at the collector mouth, level the booth base a minimum of 4 ft from side to side and from end to end within $\pm 1/16$ inch by adjusting the leveling pads on the bottom of the base. Tighten the locking nuts when complete.

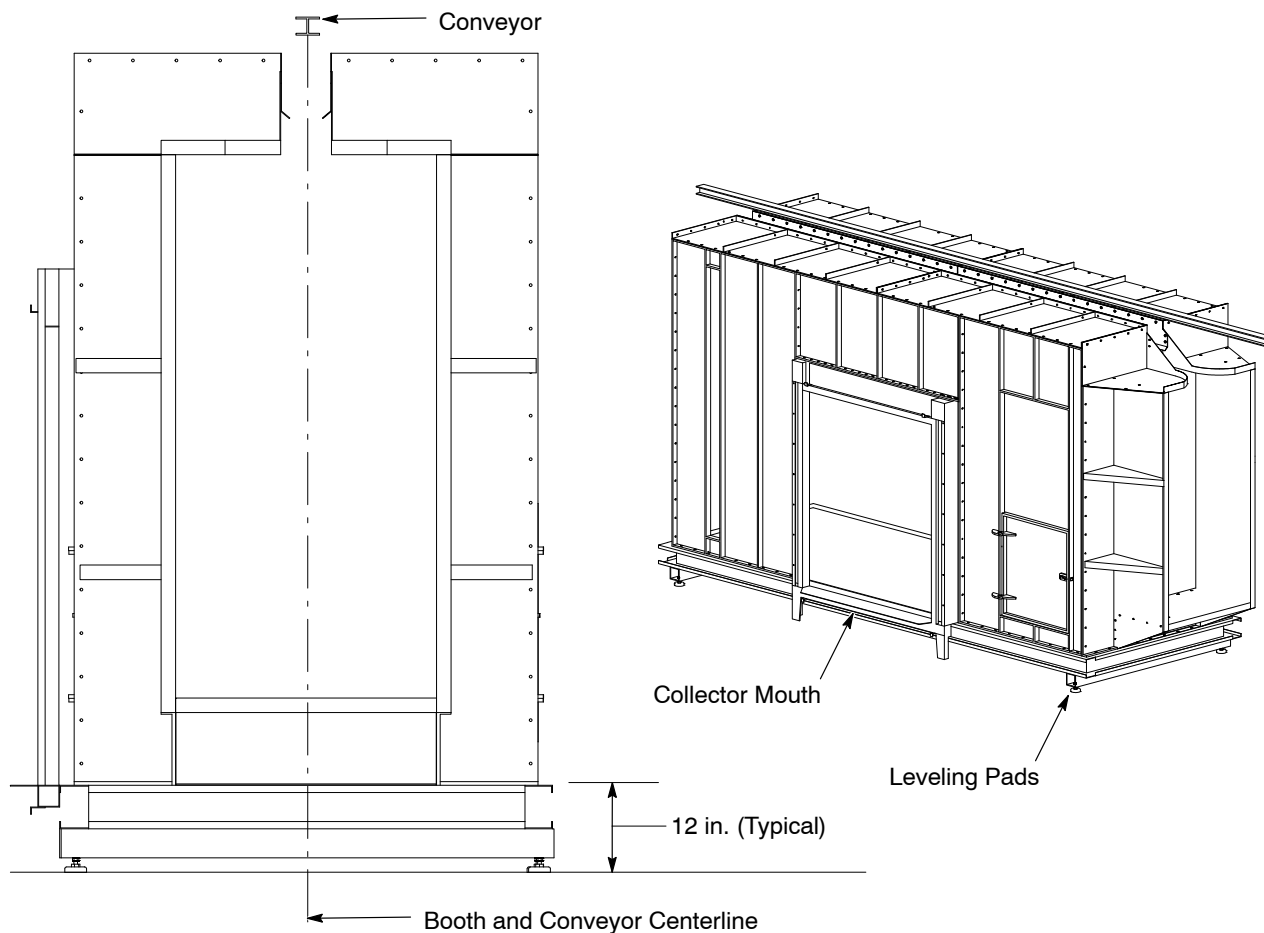


Figure 11 Booth Positioning

Roof Support Installation

A standard booth includes 3 sets of roof supports. The quantity may vary depending on the length of the booth. Assembly of the roof supports is determined by the distance from the top of the conveyor to the booth roof and the width of the conveyor slot.

1. Thread 5/16–18 hex nuts onto the vertical rods.
2. Determine the required spacing between the support rods and the resulting holes to use in the horizontal tubes.
3. Slide the support rods through the holes in the horizontal tubes then thread a second 5/16–18 hex nut on each rod.
4. Measure the distance (N) from the top of the conveyor rail to the top of the booth roof flange, then set this distance between the bottom of the horizontal tubes and the top of the support rod bars.
5. Install the roof supports so that the horizontal bar rests on the conveyor rail. Align the support rod bars with the roof flanges and mark the location of the holes in the support bars on the flanges.
6. Drill 3/8 in. holes in the flanges and secure the support rod bars to the flanges with 3/8–16 hex head bolts and hex nuts.

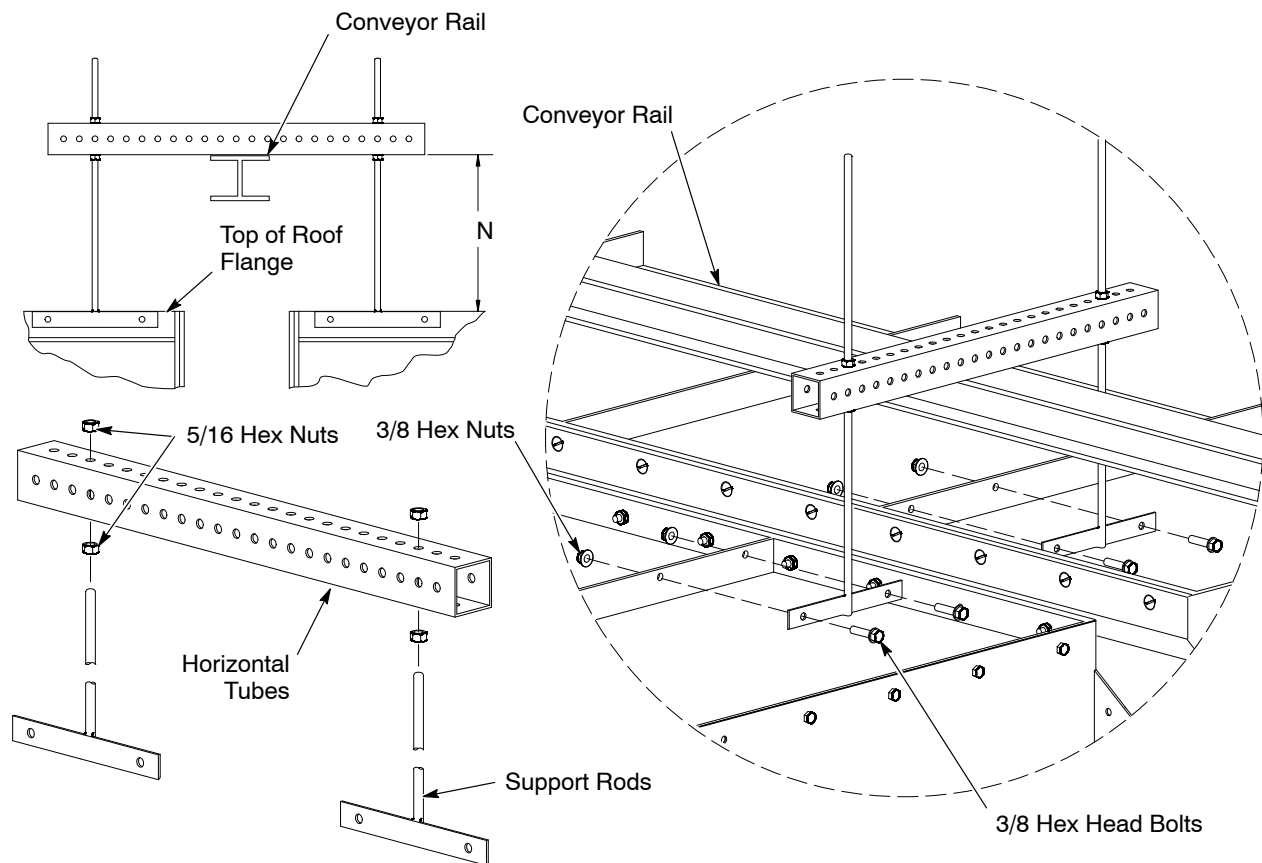


Figure 12 Roof Support Installation

Fan Section Installation

Fan Section Supports

1. See Detail A. Thread a locking nut onto each leveling pad, then install the leveling pads into the holes in the fan section supports.
2. Thread a second locking nut onto each leveling pad. Do not tighten these locking nuts.
3. Align the fan section supports with the collector mouth, using the bottom locking nuts on the leveling pads to align the bolt holes in the support flanges with the holes in the collector mouth and level the supports.
4. See Detail B. Secure the supports to the collector mount with 3/8–16 hex head bolts.
5. Install the fan support brackets on the fan supports with 3/8–16 hex head bolts.

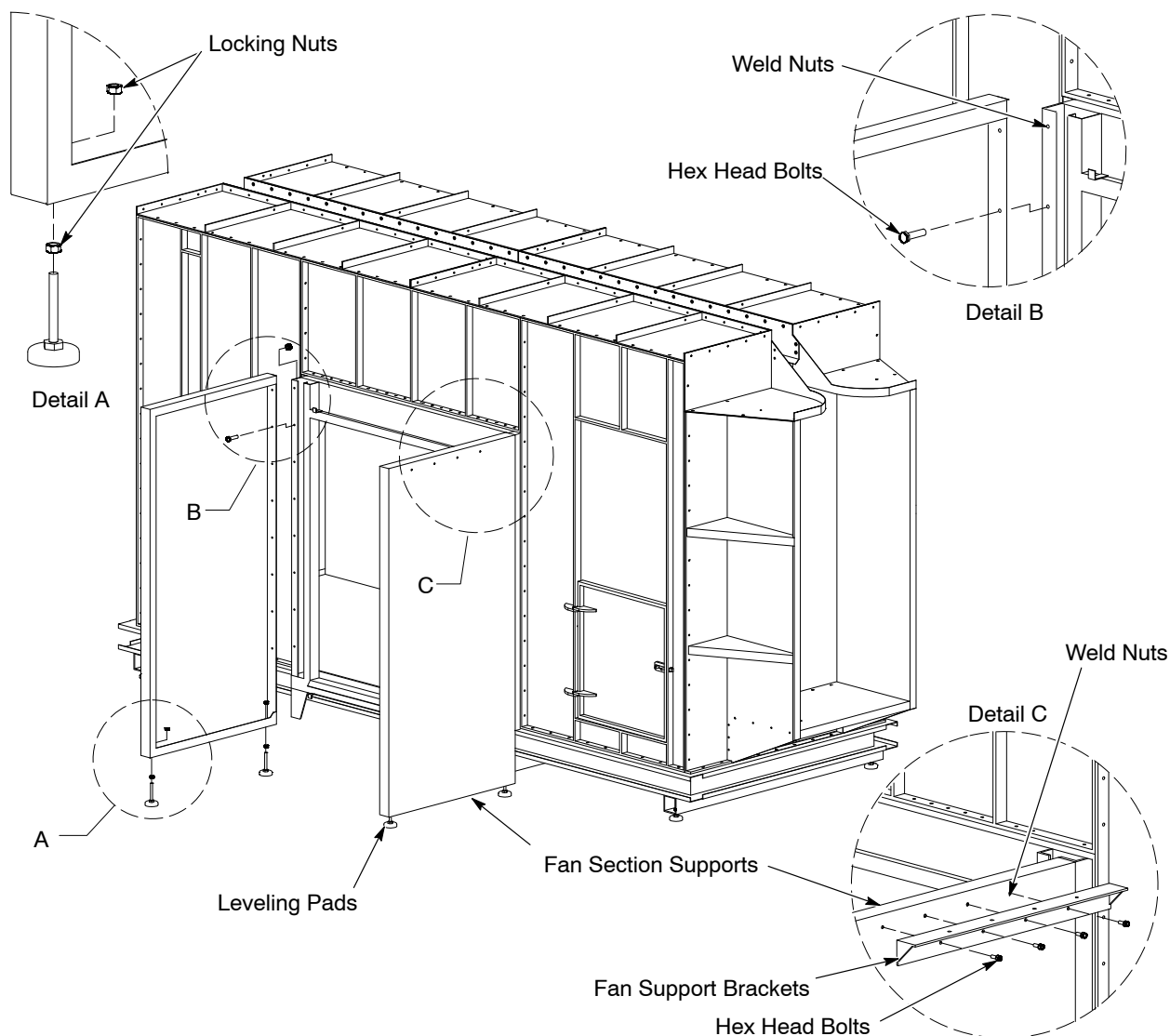


Figure 13 Fan Section Support Installation

Fan Section

1. Lift the fan section with a towmotor. Make sure the forks are centered under the fan section before lifting.
2. Move the fan section directly above the fan section supports, align the holes in the support brackets with the holes in the bottom of the fan section, and lower the fan section onto the supports.
3. Install 3/8-16 hex head bolts through the support brackets and thread the bolts into the weld nuts inside the fan section. Tighten the bolts securely before removing the towmotor forks from under the fan section.

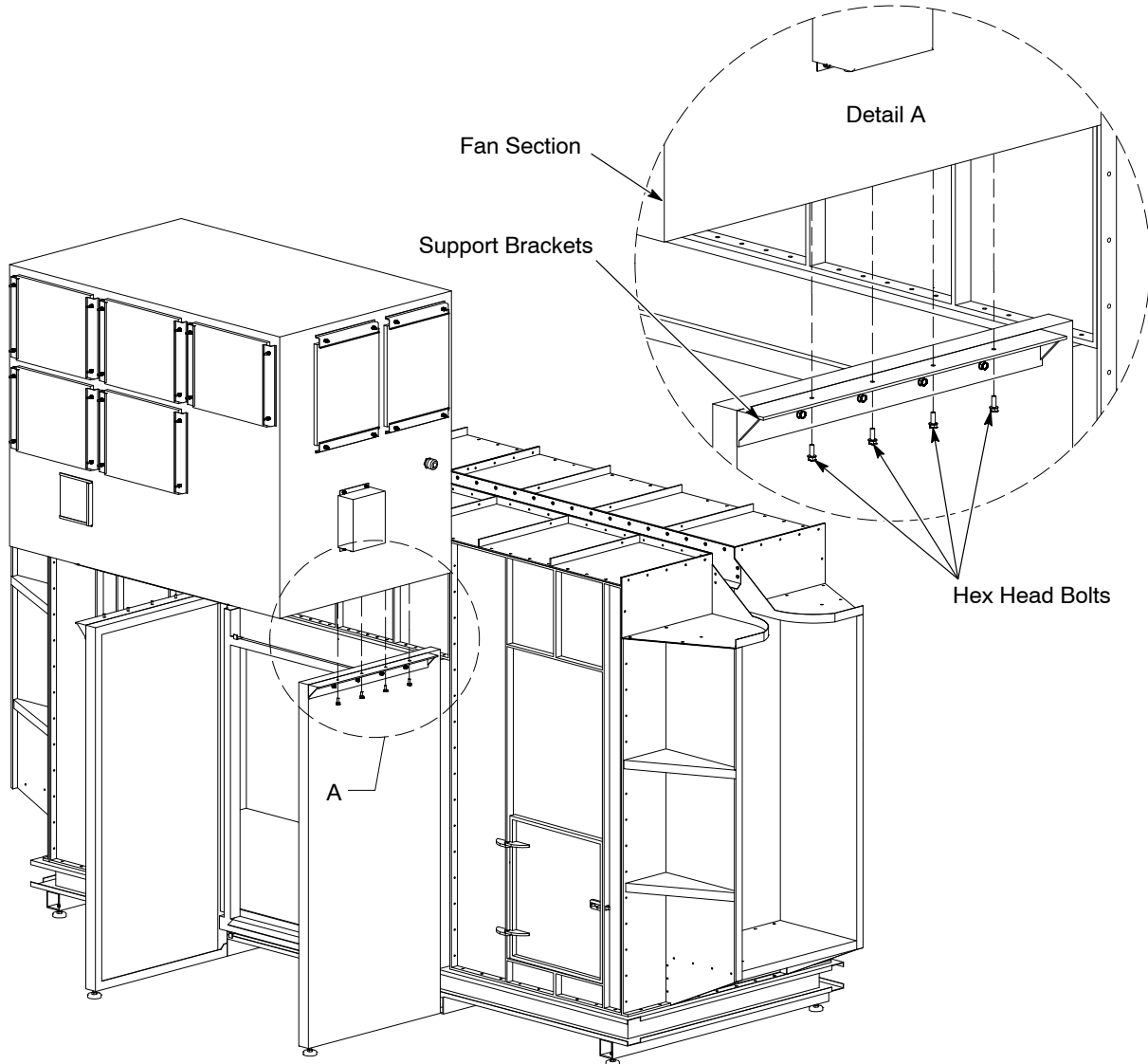


Figure 14 Fan Section Installation

Color Module Seal

1. Locate the valve stem track section, which has a 3/8 in. hole in the center of the section.
2. Align the valve stem hole and screw holes in the track section with the holes in the bottom of the fan section.
3. Fasten the track section to the fan section with #10 flat head screws, flat washers, lock washers, and nuts.
4. Fasten the rest of the track sections to the fan section, working around the fan opening.
5. Locate the valve stem on the color module seal. Insert the valve stem into the hole in the valve stem track section, then install the seal into the track.

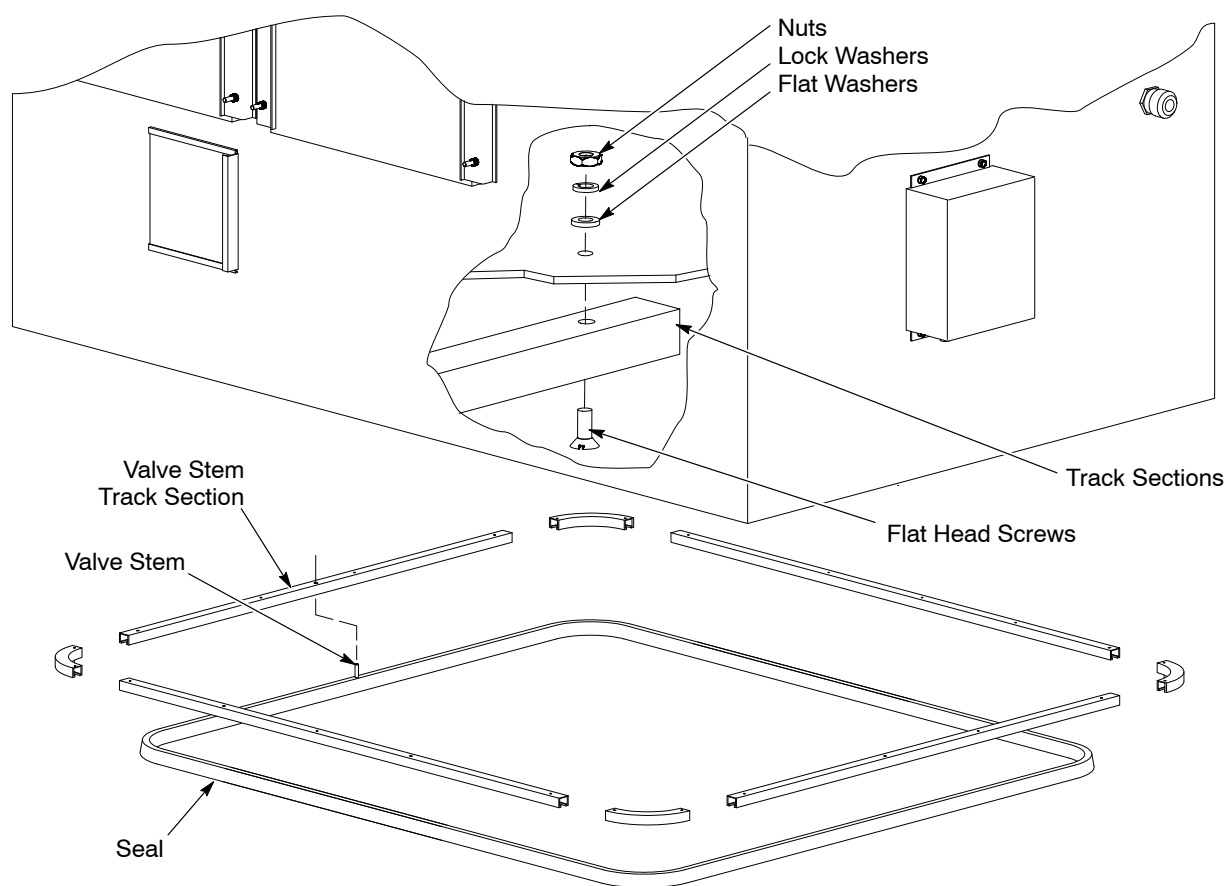


Figure 15 Color Module Seal Installation

Color Module Accessories

NOTE: Accessories shown in this section are optional. Your system may be different.

Cover plates should be installed last so that the inside of the color module can be accessed to install other accessories.

Transfer Pump Pickup Tubes

1. See Figure 16, Detail A. Slide the tube holder gasket onto the tube holder, then install the tube holder into the tube well. Secure the tube holder to the well by reaching inside the module and threading the locking nut onto the holder. Tighten the nut securely.
2. Slide the pickup tube into the tube holder.
3. Plug the unused pickup tube wells with the plugs shipped with the system.

Level Sensors

1. See Figure 16, Detail B. Slide the level sensor gasket onto the sensor well, then install the sensor well into the sensor hole.
2. Secure the sensor well by reaching inside the module and threading the well nut onto the sensor well. Tighten the nut securely.
3. Plug any unused sensor well holes with the plugs shipped with the system.

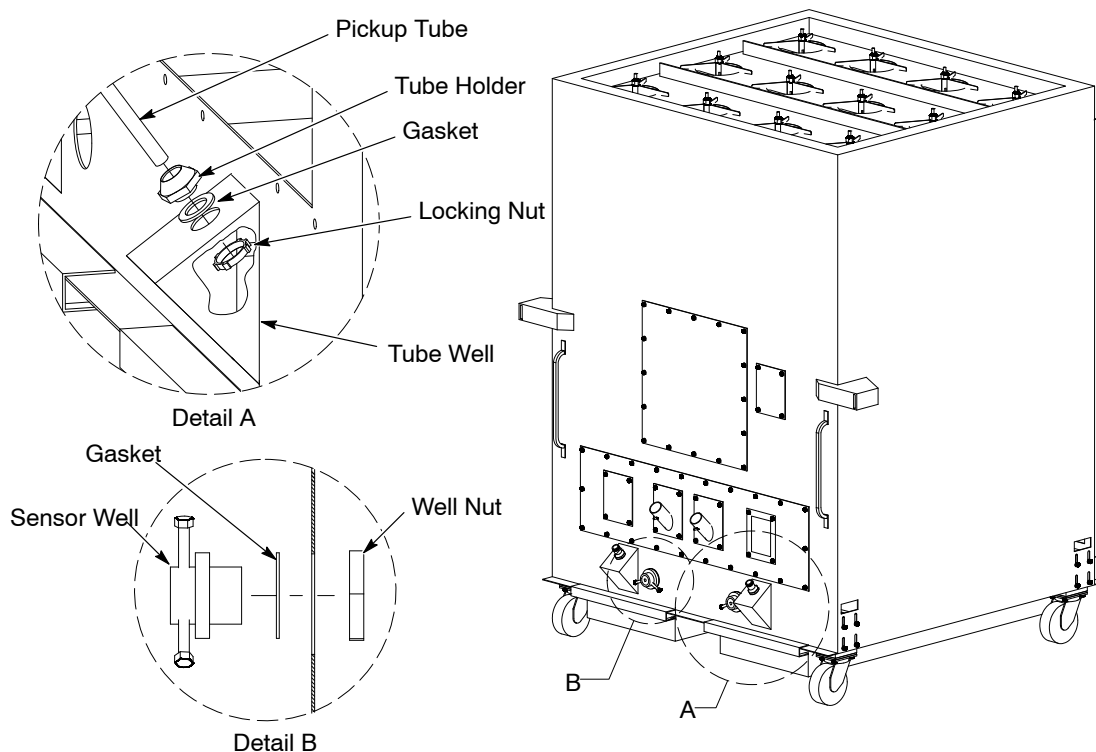
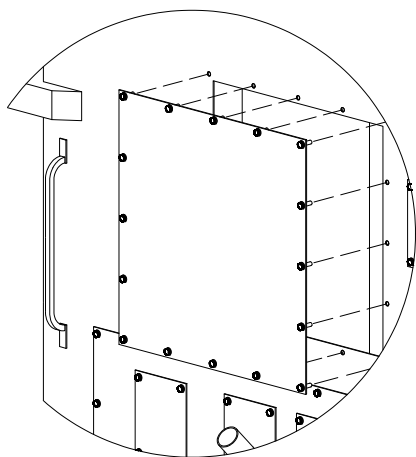


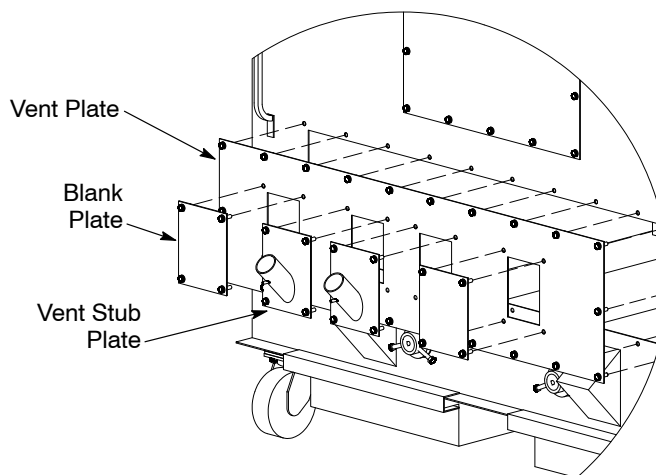
Figure 16 Color Module Transfer Pump Pickup Tube and Level Sensor Well Installation

Color Module Cover Plate Installation

If needed, install cover plates on the color module with 5/16-18 hex head bolts. The cover plates are configured for your application. The upper cover plate can be either blank or a direct vent plate. The lower plate can accommodate up to four vent stub plates that connect feed hopper vent hoses to the color module. Blank plates cover the unused openings.



Blank Plate Over Direct Vent Opening



Remote Vent Cover Plates

Figure 17 Color Module Cover Plate Installation

Color Module Installation

Roll the color module under the fan section. Hook the clamps onto the clamp brackets on both sides of the color module, then crank the strap ratchets to tighten the color module snugly against the collector mouth.

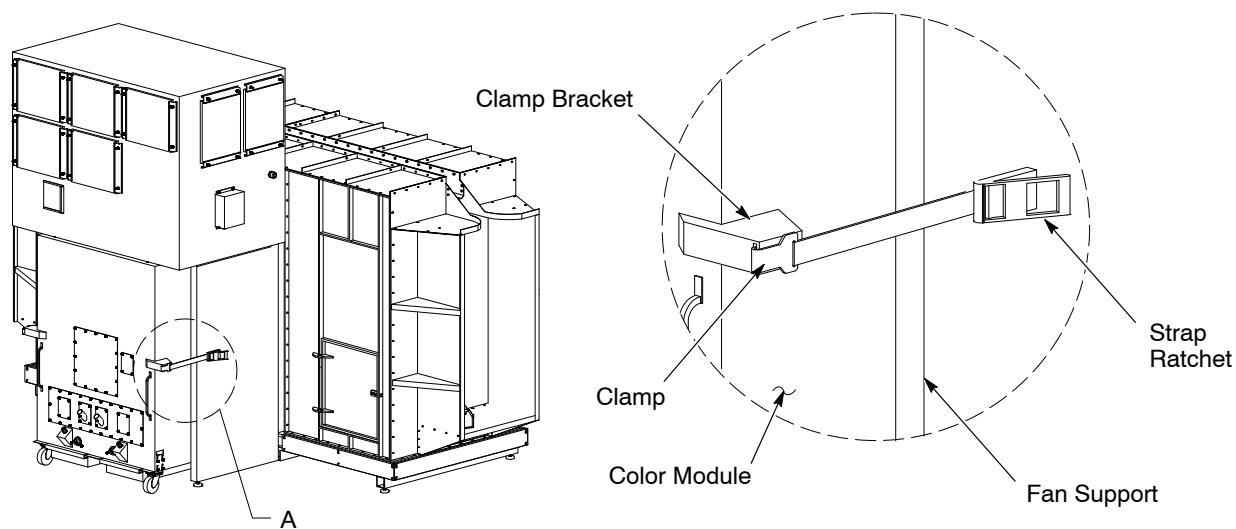


Figure 18 Color Module Installation

Color Module Limit Switch Adjustment

The color module limit switch is a safety feature that prevents the exhaust fan from running unless a color module is installed under the fan section. If the limit switch is not closed when the color module is clamped to the booth, the following adjustments can be made:

- Rotate the limit switch arm by loosening the allen screw shown in View 1.
- Extend the limit switch arm by loosening the allen screw shown in View 2.

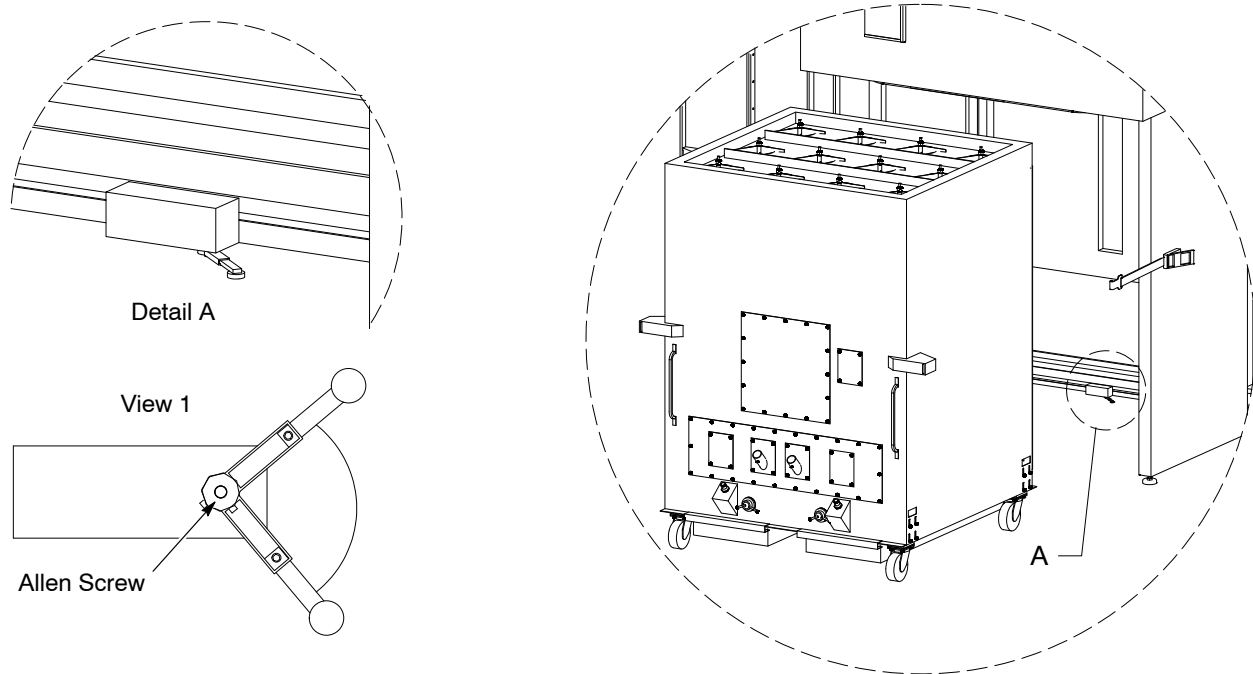


Figure 19 Color Module Limit Switch Adjustment

Fire Detection Head Installation

1. Align the holes in the top bracket with the holes in the back of the detector head. Secure the bracket to the head with 1/4-20 hex head bolts, washers, and nuts.
2. Align the end holes in the bottom bracket with the end holes in the top bracket.
3. Fasten the brackets together with 3/8-16 hex head bolts, washers, and nuts.
4. Determine the desired location for the detector head, so it can see diagonally across the booth. Most effective location is on the vestibule floor, or on the outside edge of the floor.
5. Drill a hole in the desired detector head mounting location with a 3/8 in. bit. Fasten the detector head to the booth with a 3/8-16 hex head bolt, washers, and nut. Point the detector head toward the opposite top end of the booth.

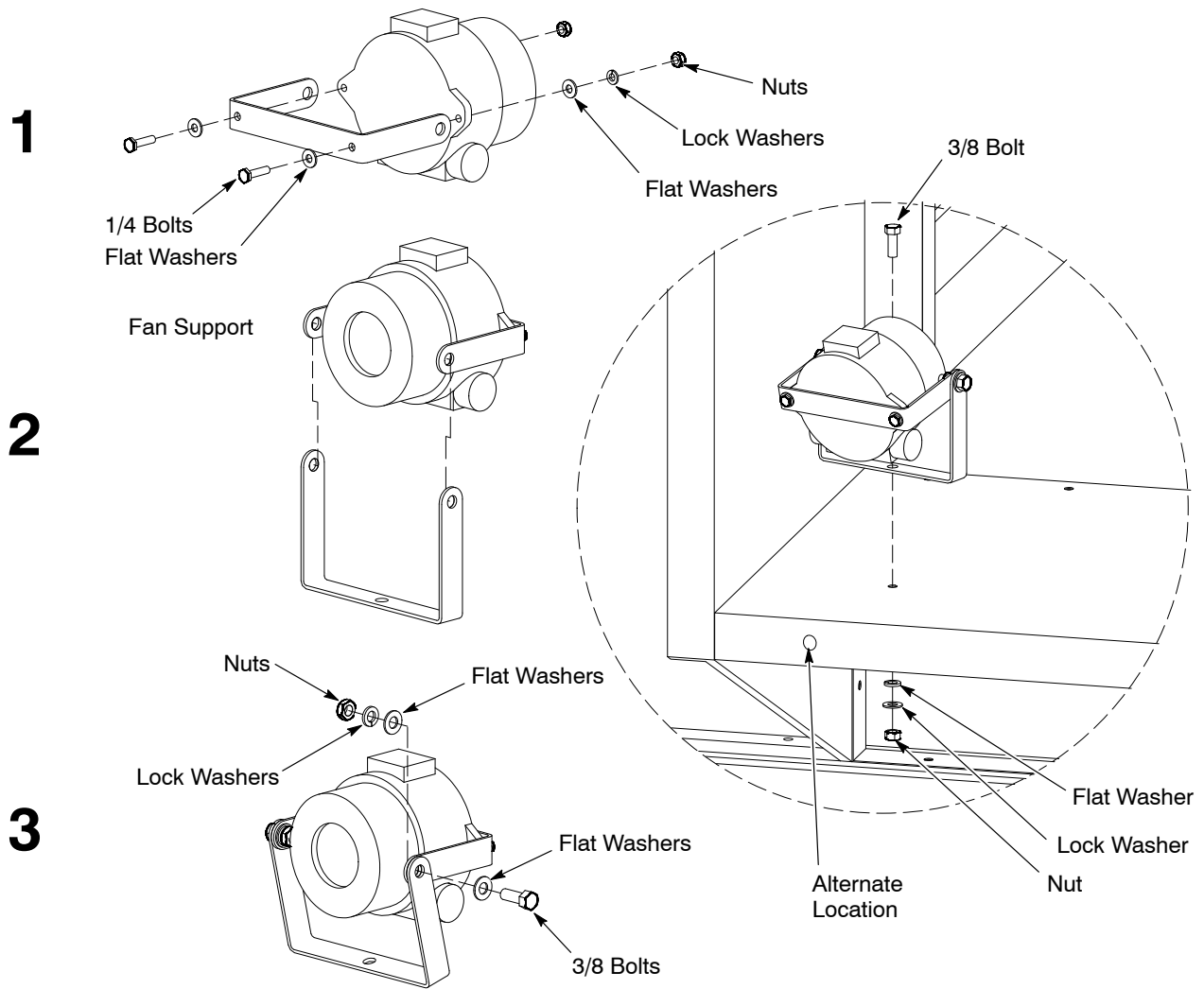


Figure 20 Fire Detection Head Installation

Base Cover Plate Installation

1. Locate the base side and end covers. The side covers are longer than the end covers.
2. Starting on one end of the booth, align the holes in the covers with the pre-drilled holes in the base.
3. Use 5/16–18 hex head self-tapping screws to fasten the covers to the base. Work around the booth until the base is completely covered.

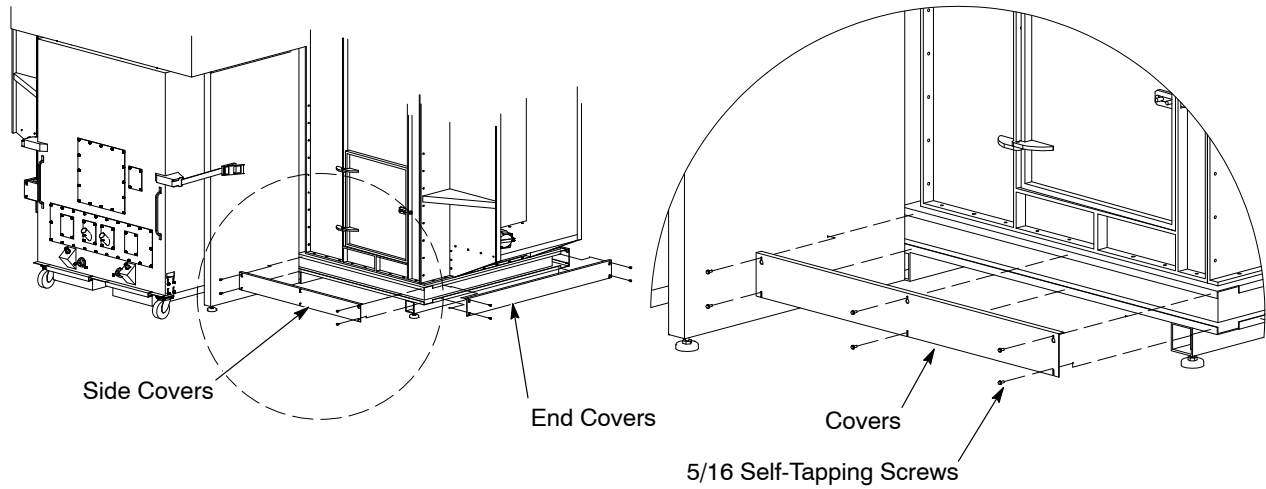


Figure 21 Base Cover Plate Installation

Hose Tray Installation

1. Align the hose tray so that the tabs are flush against the fan support and the end of the tray is against the base cover.
2. Use 5/16–18 hex head self-tapping screws to secure the hose tray to the fan support.
3. Place the long and short covers on the tray and secure with 5/16–18 hex head self-tapping screws.

The outside end of the hose tray determines the location of the system control panel stand.

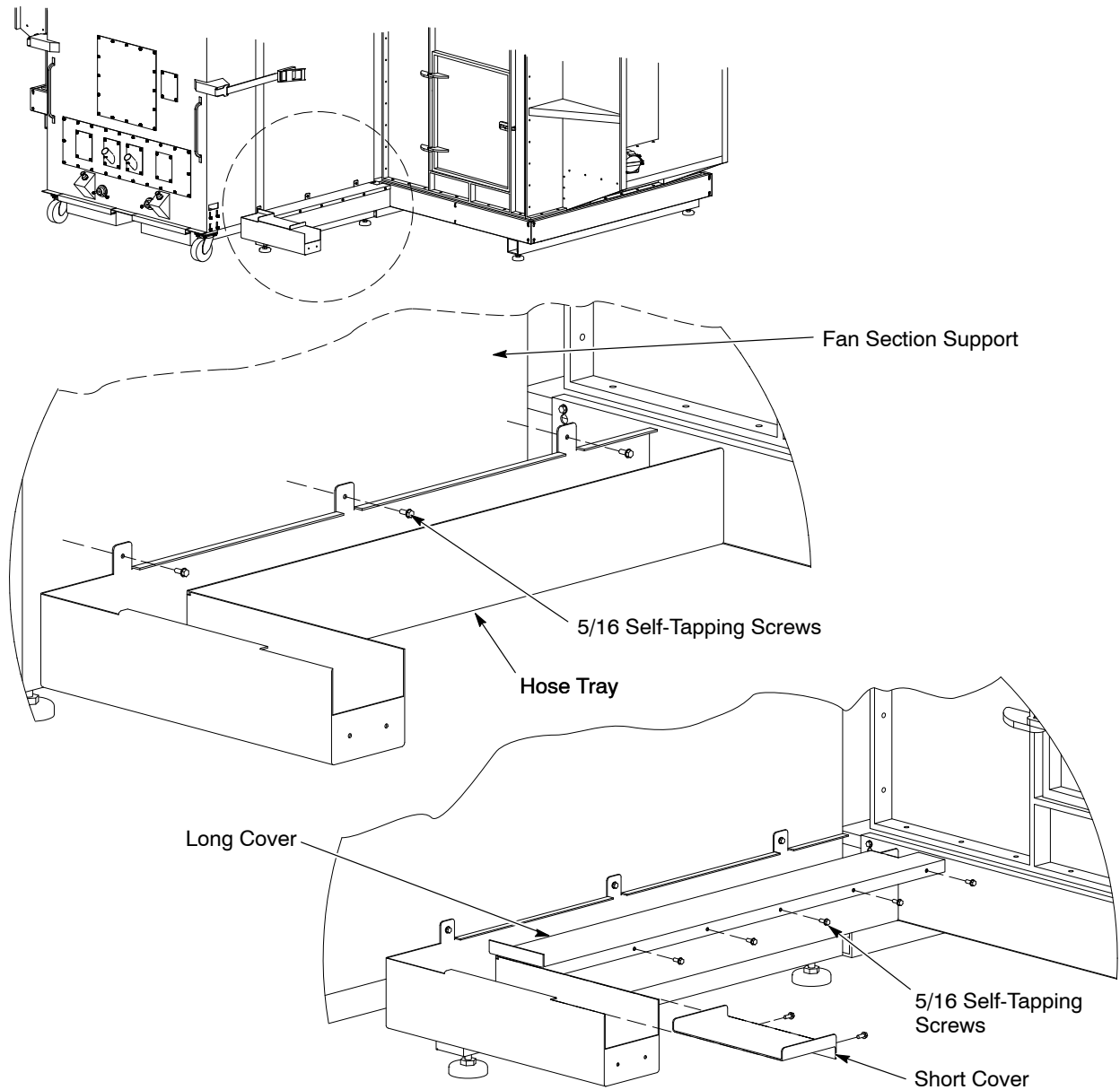


Figure 22 Hose Tray Installation

Control Panel Installation

Stand Location and Installation

1. Move the system panel stand up against the hose tray so the holes in the end of the hose tray line up with the holes in the triangle plate on the system panel stand.
2. Mark the holes in the stand legs on the floor, then drill a minimum 4 inches deep into the floor with a 3/8 masonry bit. Secure the panel stand to the floor with 3/8–16 anchor bolts.
3. Make sure the hose tray is level. Secure the hose tray to the triangle plate with 1/4–20 self-tapping screws.

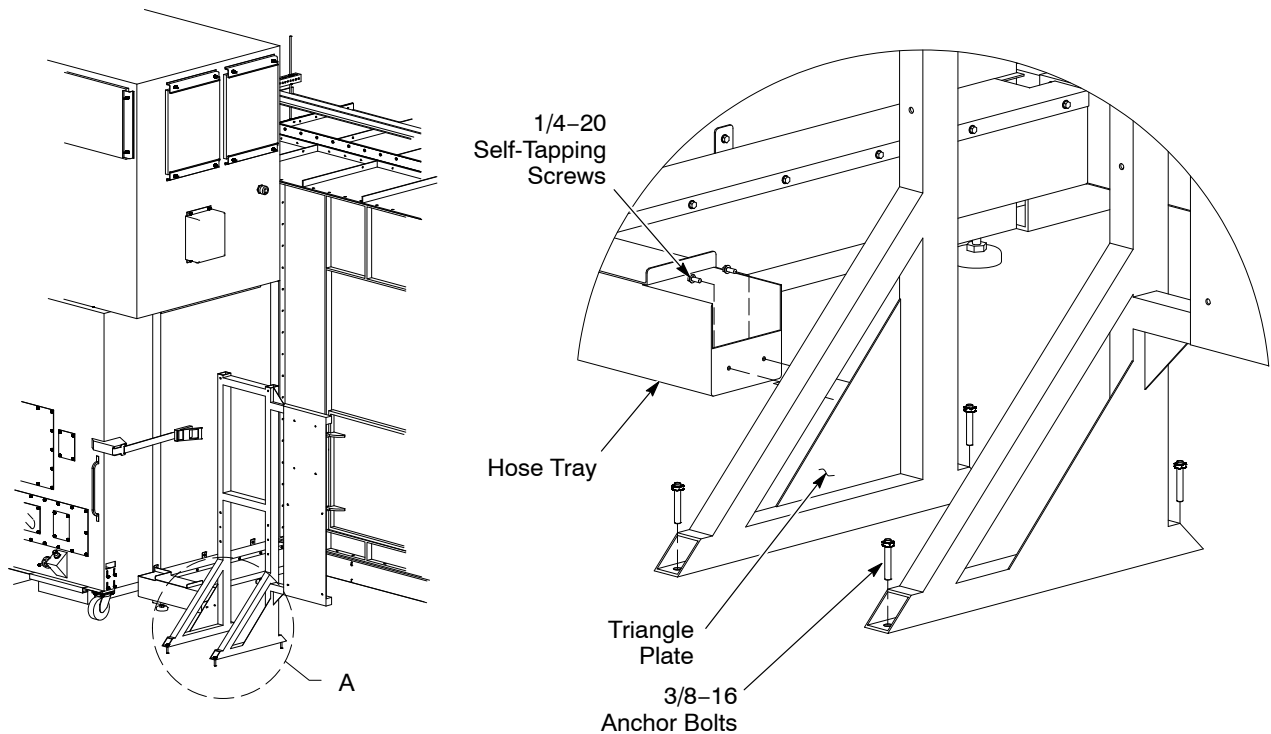


Figure 23 Control Panel Stand Installation

Panel Installation

Install the control panels as shown in Figure 24 with 5/16-18 hex head bolts and hex nuts.

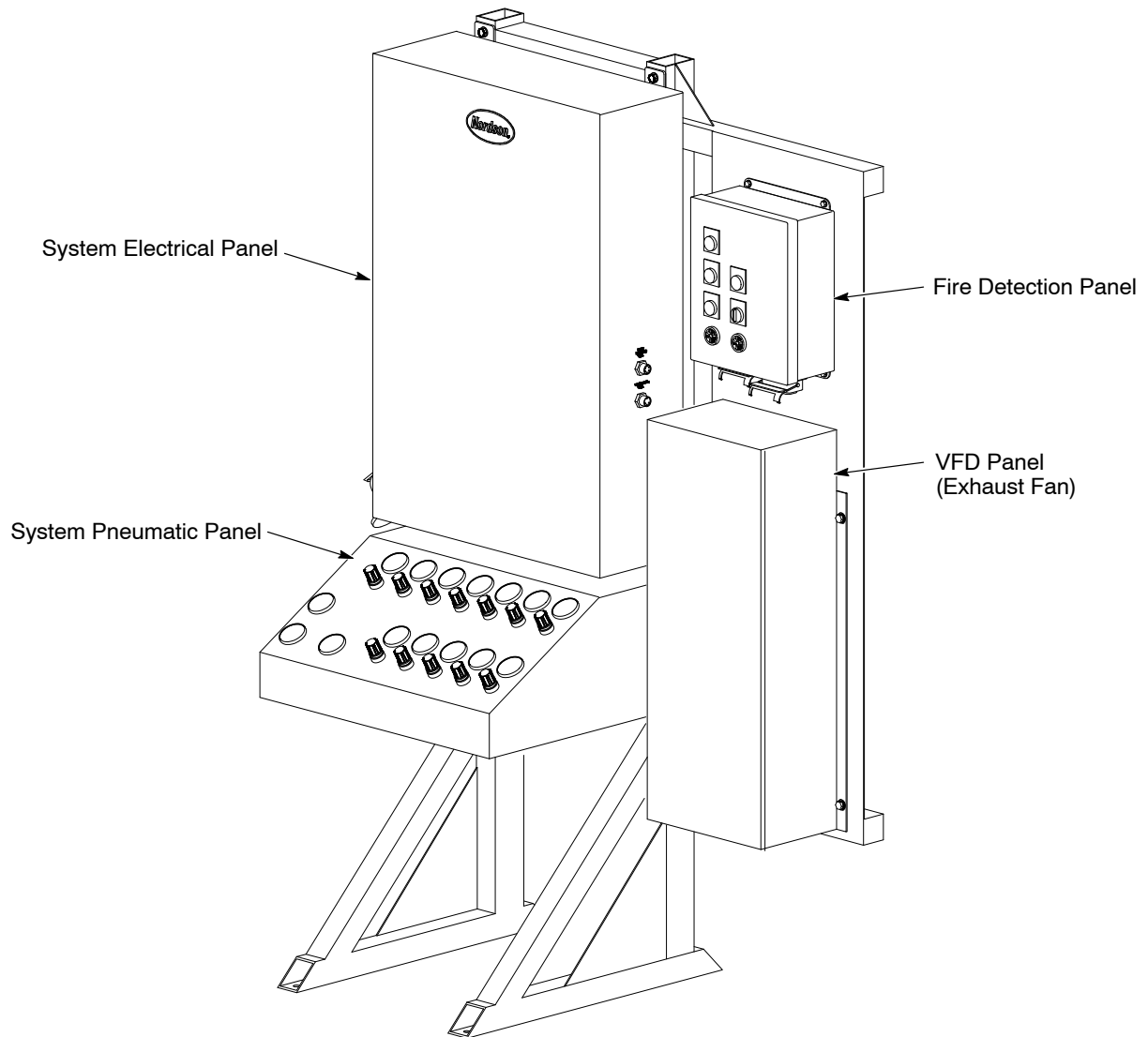


Figure 24 Control Installation

Gun Mover and Automatic Gun Installation

Automatic powder spray guns can be mounted on fixed gun stands, oscillators, or reciprocators. These can be mounted directly to the floor, on a manual in/out positioner, or an automatic in/out positioner. See Figure for a typical installation.

1. Move the in/out positioners so that the front of the positioner base is at least 10 inches from the booth base and square with the base.
2. Install the fixed gun stand, oscillator, or reciprocator on the base. Install gun bars shipped with the system.
3. Mount the automatic guns on the gun bars, and evenly space the guns. Make sure the guns are centered in the gun slots horizontally.
4. Move the gun positioner all the way forward to the stop or forward limit switch.
5. Adjust the gun mounting bars so that the tips of the guns are 6 inches from the conveyor centerline.
6. Move the positioner in and out to verify gun clearance.
7. Secure the positioner to the floor with 3/8-16 x 3 inch anchor bolts.

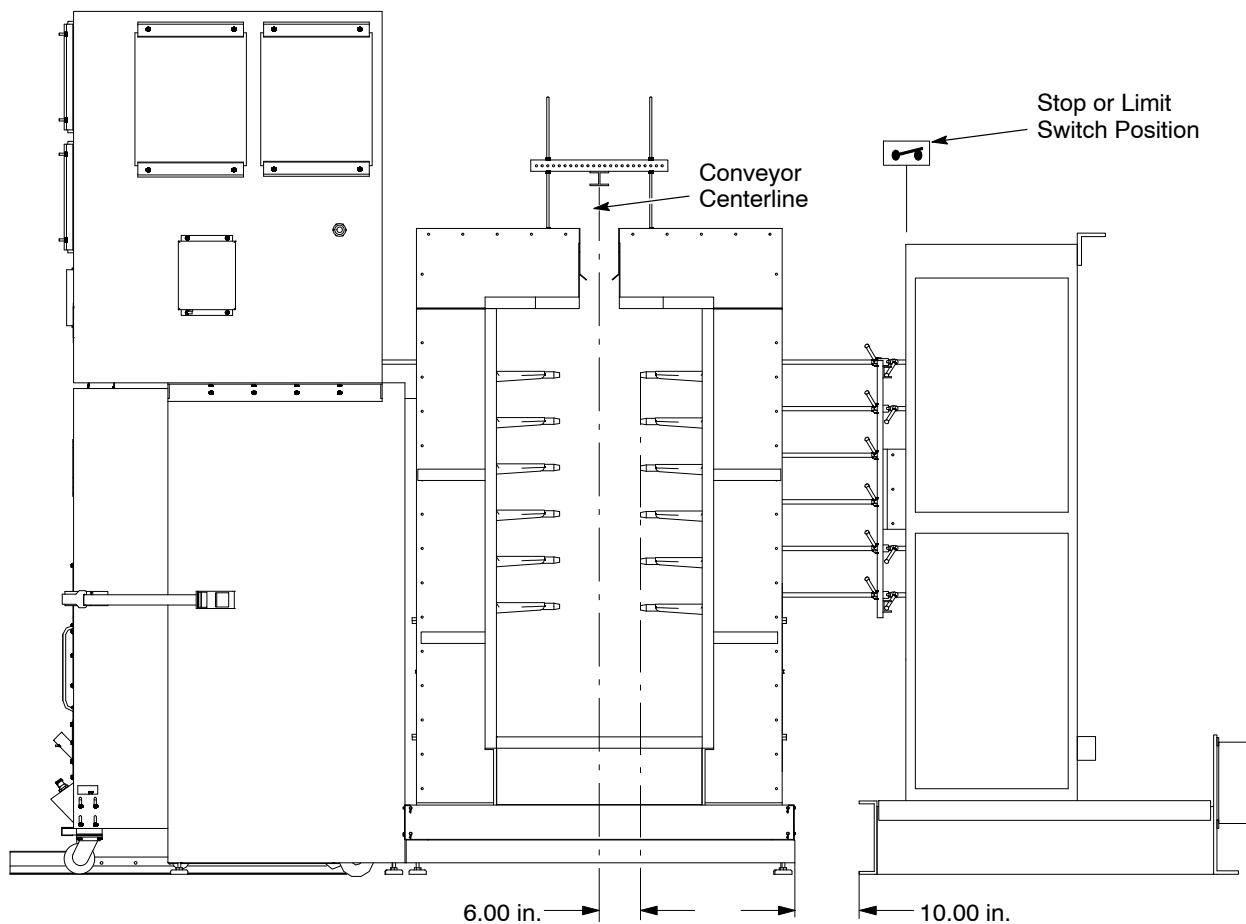


Figure 25 Gun Mover and Automatic Gun Installation

Manual Operator Platform Installation

Place the manual operator platforms in front of the operator openings in the canopy. Use the platform leveling pads to adjust the platform height and level the platforms. The platforms should be level with the top of the booth floor.

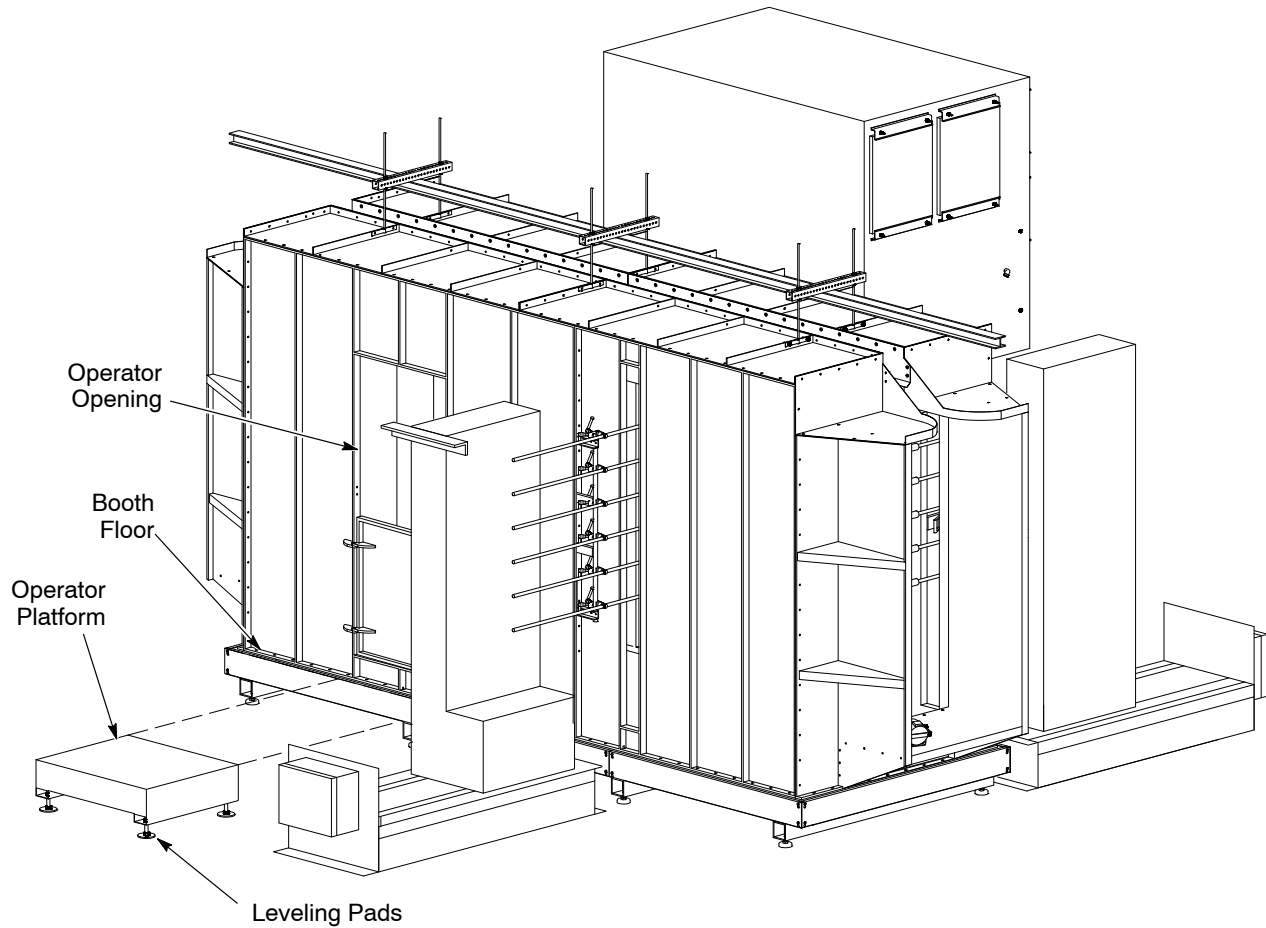


Figure 26 Operator Platform Installation

Encore Manual Gun Controller and Stand Installation

1. Locate the manual gun controller stand next to the operator platform so that the operator can easily access it. Secure the stand to the floor with 5/16-18 x 3 inch anchor bolts.
2. Secure the power unit bracket to the stand with 1/4-20 x .75 inch self-tapping screws.
3. Secure the power unit to the bracket with 1/4-20 x .75 inch pan head screws.
4. Attach the Encore interface panel to the top bracket 1/4-20 x .75 pan head screws.

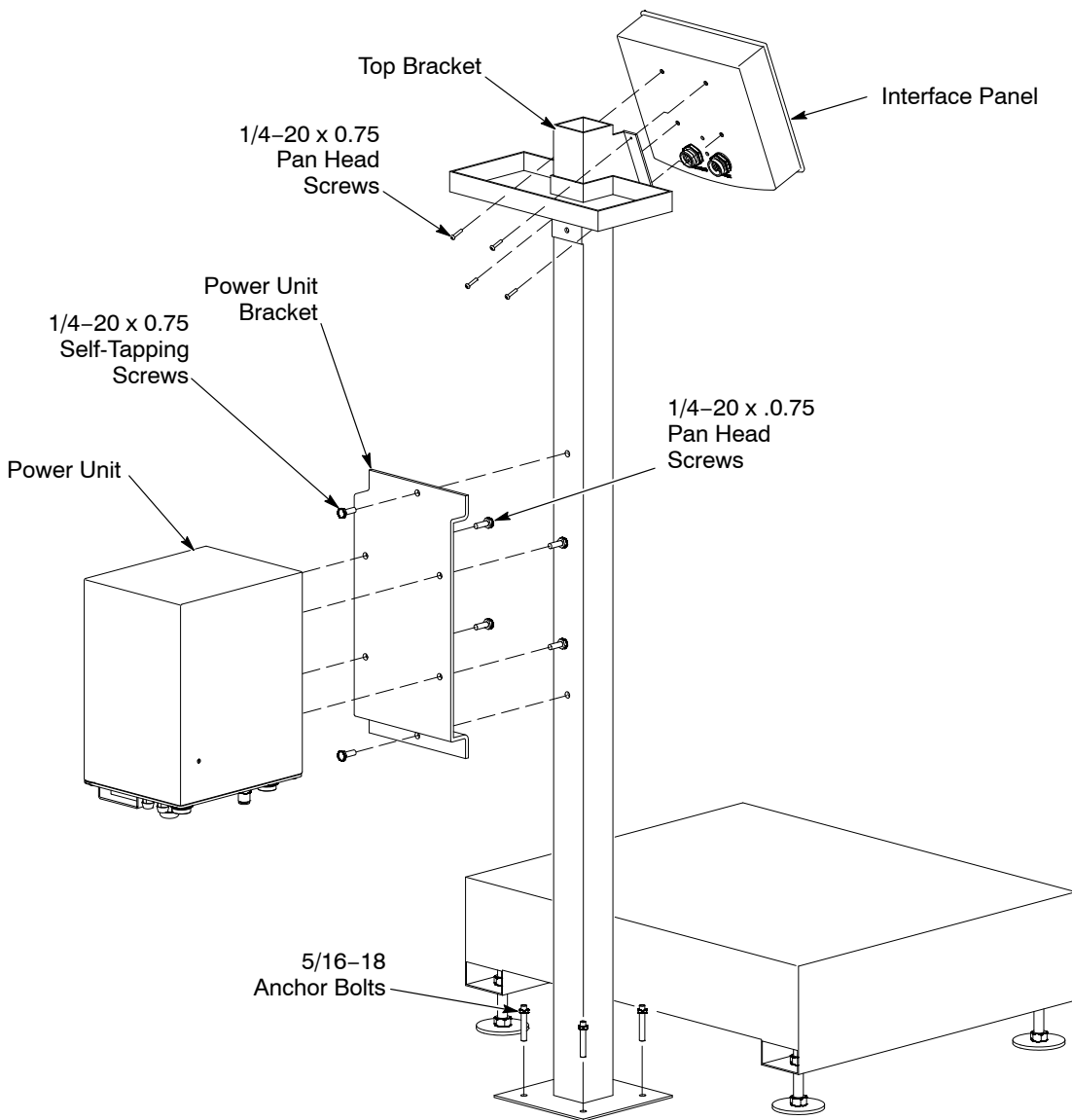


Figure 27 Manual Gun Controller and Stand Installation

Part ID Stand Installation

Assembly

Assemble the part ID stand by installing the crossbars on the left and right bracket assemblies with the nuts and bolts taped to the stand. Mounting channels are installed at the factory.

NOTE: Assemble stand in front of booth, so that top crossbar can be installed over the conveyor.

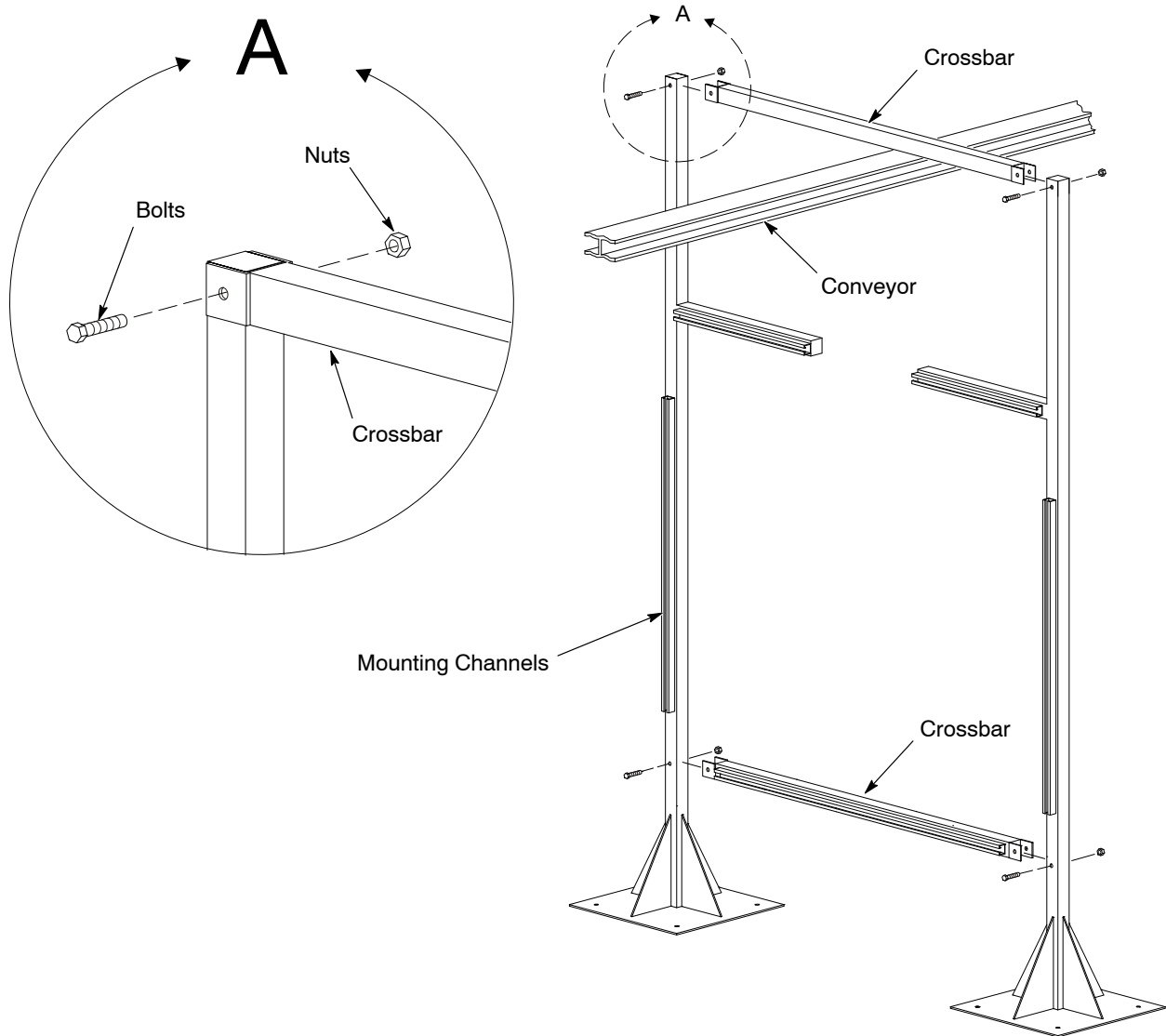


Figure 28 Part ID Stand Assembly

Photocell or Scanner Installation

Install the photocells or scanners on the mounting channels. Scanner installation is shown in Figure 29. When installing scanners, make sure they are oriented with cable ends to the outside or down as shown.

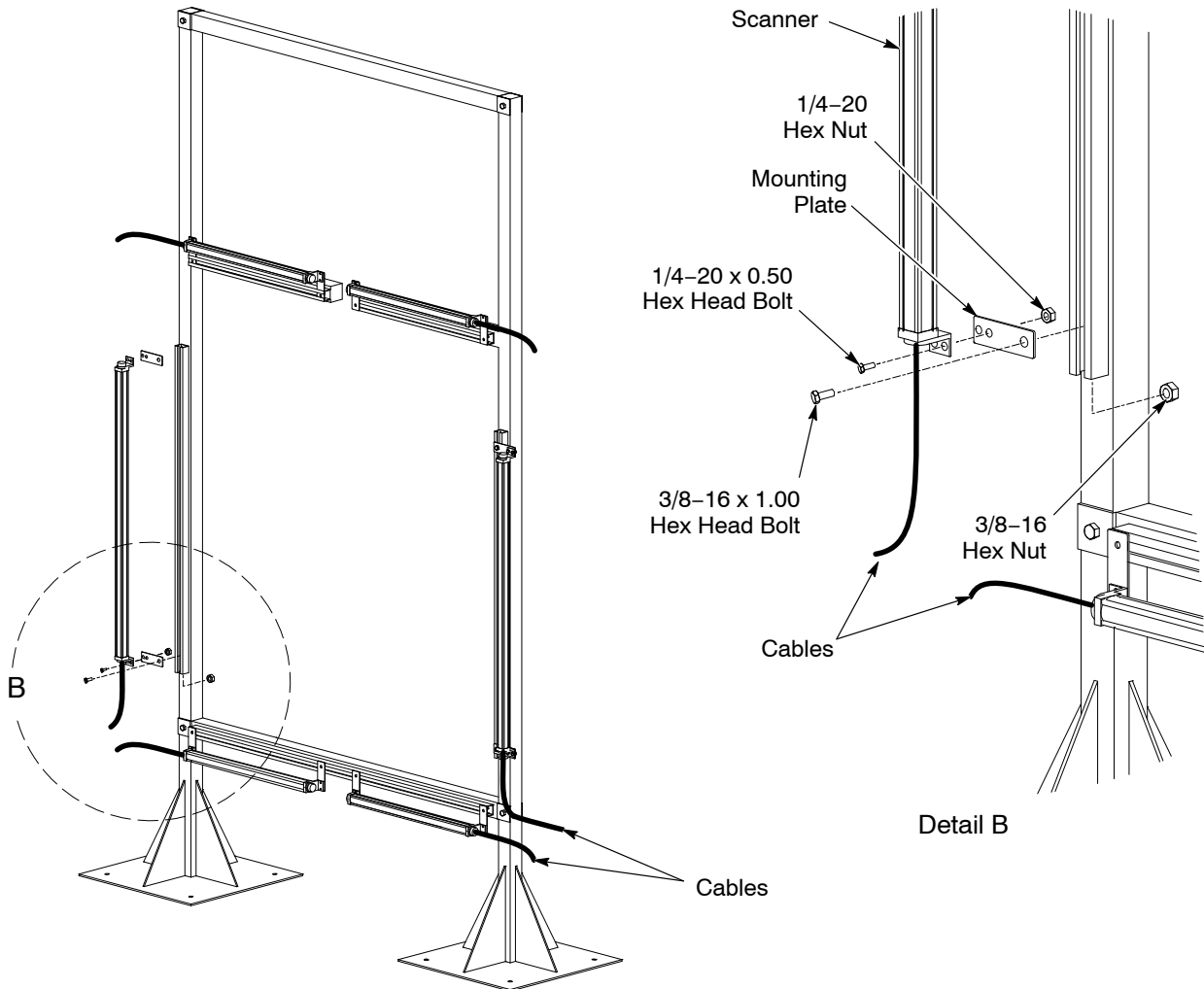


Figure 29 Scanner Installation

Positioning and Installing the Part ID Stand

1. Refer to your system plan view drawings for the distance away from the booth entrance to locate the stand.
2. Align the center of the stand with the center of the conveyor and the center of the booth so that part hangers will clear the upper scanner brackets.
3. Secure the stand to the floor with 3/8-16 x 3 inch anchor bolts.

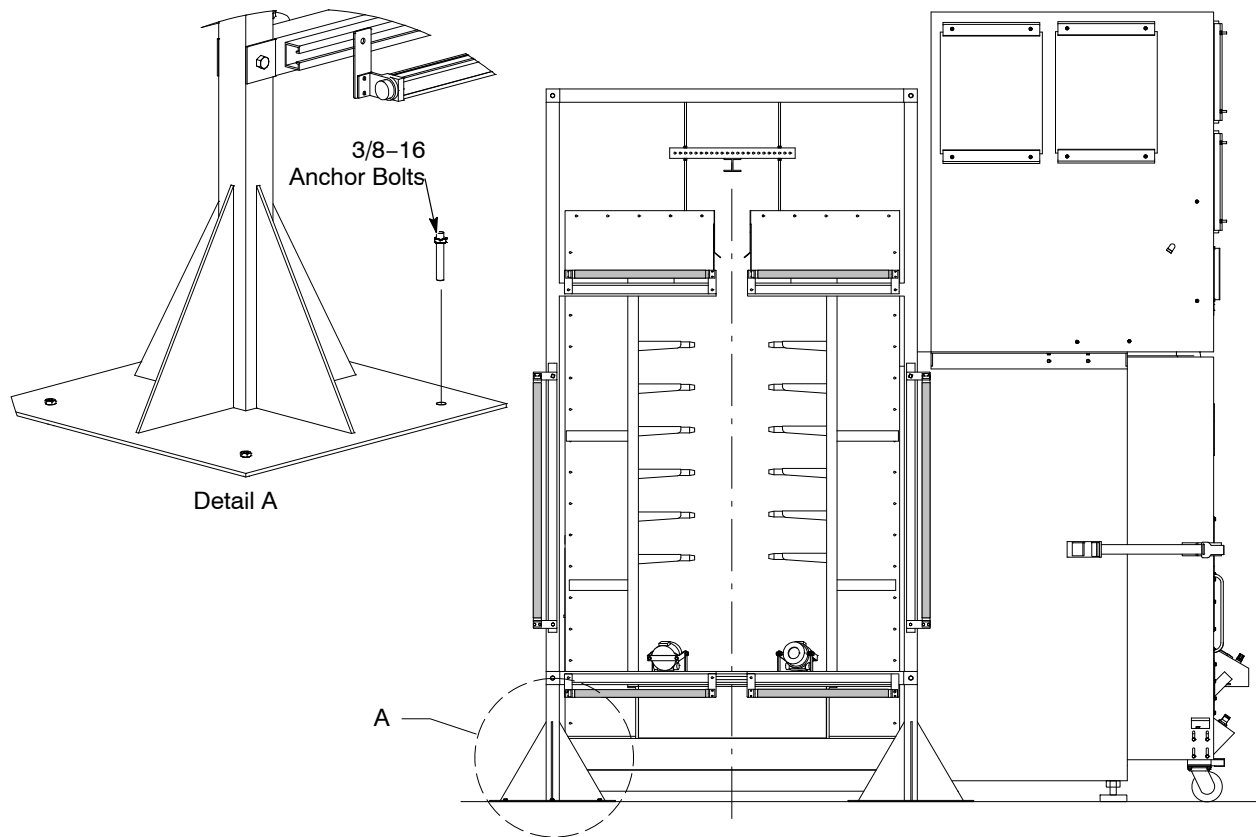


Figure 30 Positioning and Installing Part ID Stand

Sieve Accumulator Installation

Install the sieve accumulator on the sieve. For AZO sieves, use 5/16–18 x 1.50 hex head bolts and hex nuts.

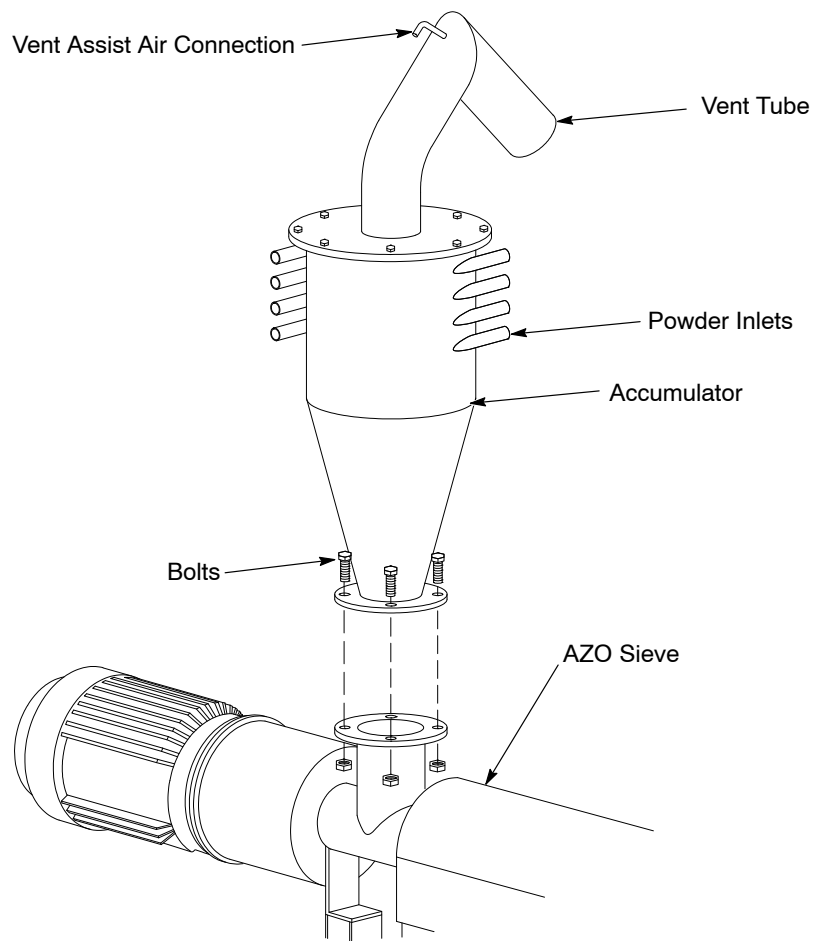


Figure 31 Installing the Sieve Accumulator

HTM-16 Feed Hopper/Color Module Connections

See Figure 32. This hopper is used when reclaiming powder.

1. Install the color module cover plates and vent stubs included with the system with 5/16–18 hex head bolts.
2. If supplied with your system, install the angled hopper vent on the HTM-16 feed hopper.
3. Move the hopper in front of the color module and connect the hopper vent to the vent cover with 5/16–18 hex head bolts.
4. Connect one end of the 3 in. vent hose to the vent stub plate and the other end to the accumulator vent tube. Secure the vent hose with the included hose clamps.
5. Install the transfer pumps and connect transfer hose from the pumps to the sieve accumulator powder inlets.
6. Connect air tubing for vent assist, hopper fluidizing, and sieve air controls. Air is normally supplied from the system pneumatic panel.

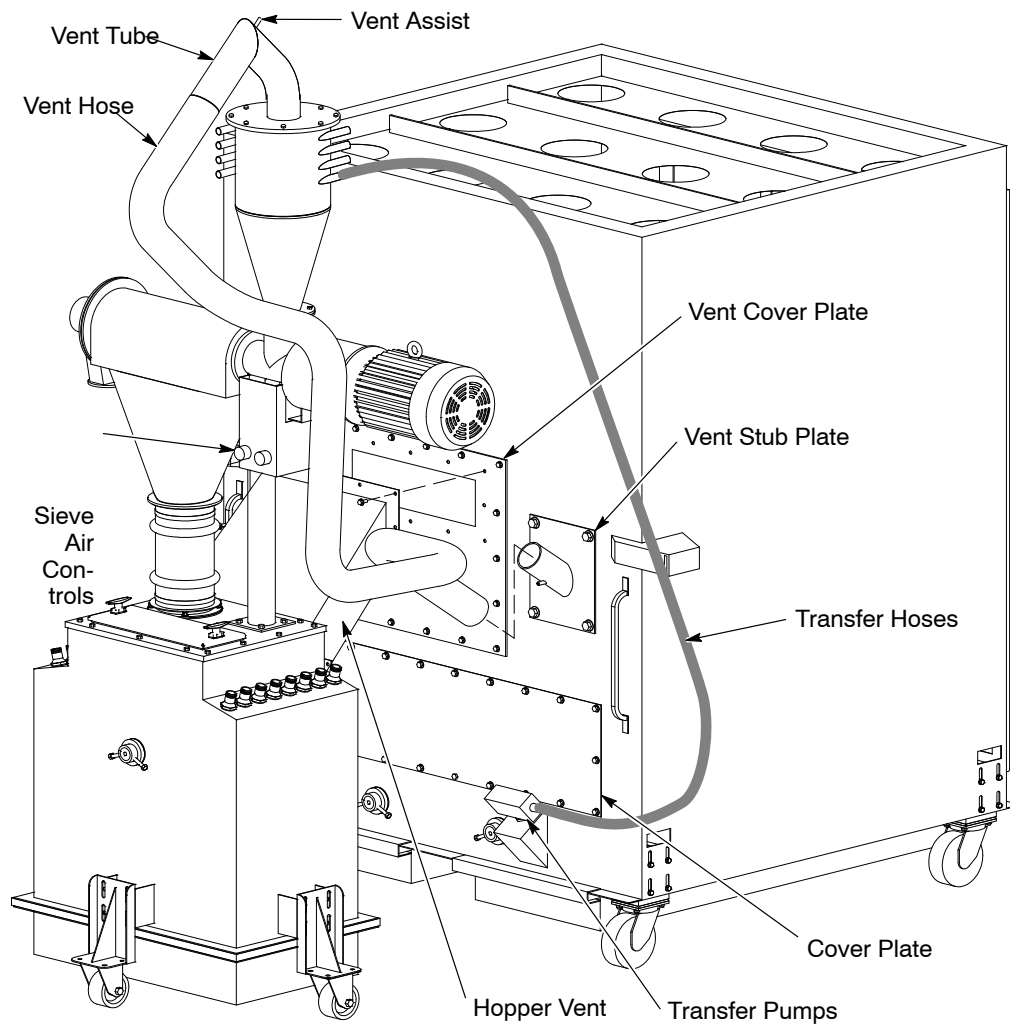


Figure 32 HTM-16 Feed Hopper Connections to Color Module

Spray to Waste Connections

Figure 33 shows the typical connections for a spray to waste system.

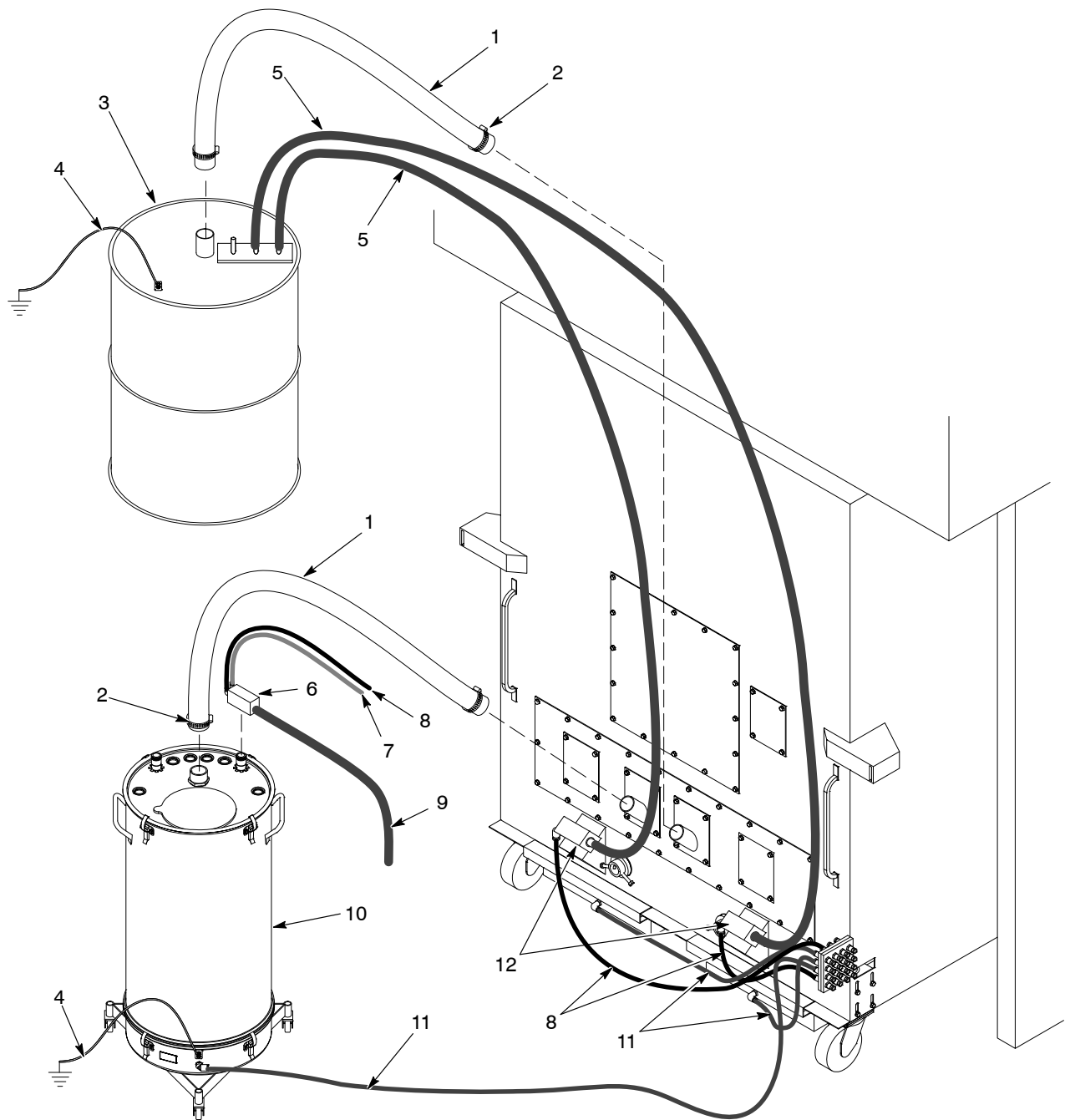


Figure 33 Spray to Waste Connections

- | | | |
|---------------------------|--------------------------------------|-----------------------------|
| 1. Vent hoses | 5. Transfer hoses | 9. Feed hose (to spray gun) |
| 2. Hose clamps | 6. Feed pumps | 10. Feed hopper |
| 3. Waste container | 7. Atomizing air (to gun controller) | 11. Fluidizing air |
| 4. Ground cable and clamp | 8. Flow-rate air (to gun controller) | 12. Transfer pumps |

Booth Seam Sealing

NOTE: This procedure should only be done under the direction of a Nordson representative.

1. Clean and vacuum the inside corners and seams of the canopy panels and stainless steel floor. Leave the plastic film on the stainless steel to protect it while sealing the seams.
2. Apply blue masking tape to both sides of all vertical, horizontal, and floor seams, maintaining a 1/8 inch gap on either side of the seam.
3. Apply two-component Pro-Set sealer to all seams, making sure none of the sealer gets on the canopy panels or stainless steel surfaces.
4. Remove excess sealer from the seams before it sets up.
5. Remove the blue masking tape from the seams after the sealer sets up.
6. Let the sealer stand for 24 hours before preparing the booth for production.

Completing the Installation

1. Position the iControl console as shown in your system plan view drawings. The typical location is to one side of the booth entrance.
2. Install pneumatic and electrical drops as shown on your system drawings. Make the remaining pneumatic connections shown on the system drawings, using the tubing provided.
3. Install the remaining electrical panels, control panels, and junction boxes as shown on the drawings.

NOTE: Make the electrical connections shown on the system drawings, using the cables provided. Plug and Spray Wiring Diagrams and electrical panels are included in the Excel 3000 Powder Coating System manual (p/n 1095480A). All field wiring must be done by a qualified electrician according to code.

Your Nordson installer and field engineers will help you complete the rest of the system installation and startup the system.