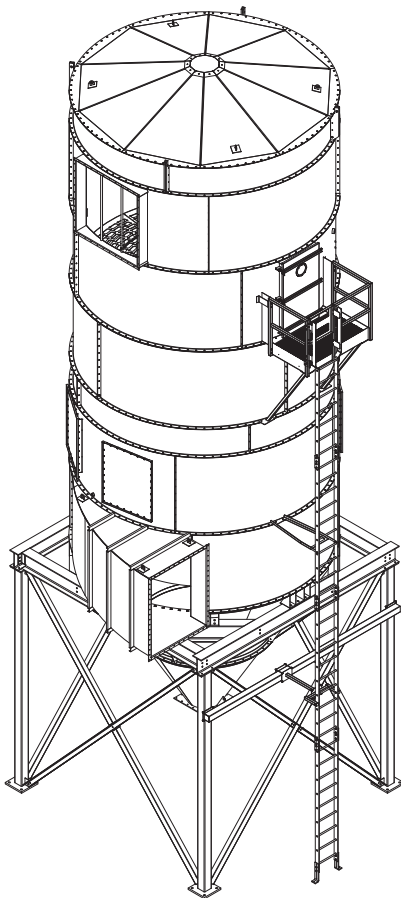


## RF Baghouse Dust Collector

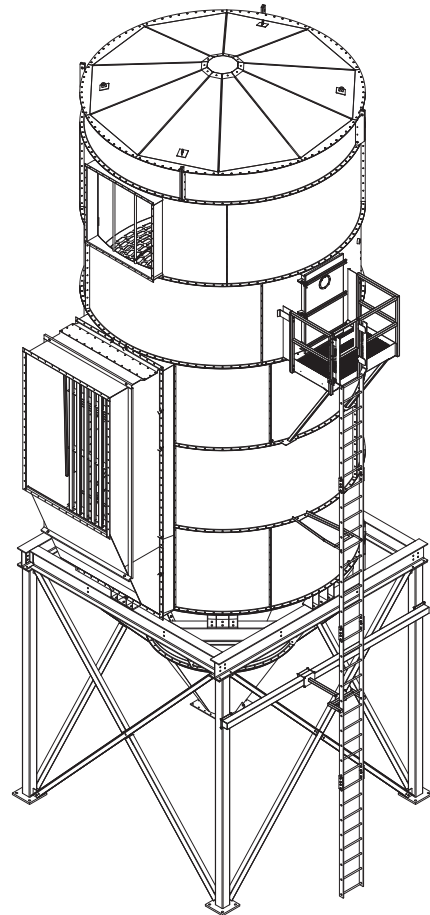
Models RFWP and RFWPH

### Installation and Operation Manual

Installation, Operation, and Service Information



**Model RFWP**



**Model RFWPH**



This manual contains specific precautions related to worker safety. The hazard alert image denotes safety related instructions and warnings in this manual. DO NOT install, operate, or perform maintenance on this collector until you have read and understood the instructions, precautions and warnings contained within this manual.

## IMPORTANT NOTES

This manual has been supplied to assist with the installation, operation and maintenance for the collector purchased. Please read the manual before installing, operating, or performing maintenance on the collector as it contains specific precautions for worker safety. It is the owner's responsibility to ensure that this manual is available for use by installers, operators and maintenance personnel that will be working with this collector. This manual is the property of the owner and should be left with the collector when installation has been completed. **DO NOT** operate this collector until you have read and understood the instructions and warnings located in the installation and operation manual.

For additional copies of this manual, contact Donaldson Torit.



The Safety Alert Symbol indicates a hazardous situation which, if not avoided could result in death or serious injury. Obey all safety messages following this symbol to avoid possible injury or death. The possible hazards are explained in the associated text messages.



**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**

**NOTICE** indicates a potential situation or practice which is not expected to result in personal injury, but which if not avoided, may result in damage to equipment.

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## Safety Communication



Improper operation of dust collectors and/or dust control systems may contribute to conditions in a work area or facility which could result in severe personal injury, and product or property damage. All dust collection equipment should be used only for its intended purpose and should be properly selected and sized for its intended use.

Process owners have important responsibilities relating to identifying and addressing potential hazards in their processes. When the potential for handling combustible dust exists within a process the process owner should include combustion hazards in their risk management activities and should comply with applicable codes and standards related to combustible dust.

Electrical installation must be performed by a qualified electrician.

This equipment is not designed to support site ducts, piping, or electrical services. All ducts, piping, or electrical services must be adequately supported to prevent injury and/or property damage.

Site selection must account for wind, seismic zone, and other load conditions.

Equipment may reach peak sound pressure levels above 80 dB (A). Noise levels should be considered when selecting collector location.

Most dusts present safety and health hazards that require precautions. Wear eye, respiratory, head and other protection equipment suitable for the type of dust.

Some components may be heavier than they appear. Use appropriate lifting methods to avoid personal injury and/or property damage.

## Combustible Dust Hazards

Among other considerations, the current NFPA standards require owners whose processes involve potentially combustible materials to have a current Dust Hazard Analysis, which can serve as the foundation for their process hazard mitigation strategy. Mitigation may include but is not limited to:

- Prevention of all ignition sources from entering any dust collection equipment.
- Selection and implementation of fire and explosion mitigation, suppression, and isolation strategies appropriate for the risks in their process.
- Development and use of work practices to maintain safe operating conditions, and to ensure combustible dust does not accumulate within their plant or process equipment.

Donaldson designs, manufactures, and sells industrial air filtration products for a wide variety of applications. Some applications may include processes or materials with inherent fire and explosion hazards. Donaldson is neither an expert nor a certified consultant in fire, spark, or explosion detection, suppression, or control. Donaldson does not provide engineering consulting services related to process or dust hazard analyses, or code and standard compliance. Complying with applicable codes and standards and managing the risks associated with the process or materials remains the responsibility of the process owner/operator. Donaldson may provide referrals to consultants, suppliers of equipment or services related to the detection and/or mitigation of sparks, fires and/or explosions, but Donaldson does not assume responsibility for any such referrals, nor does Donaldson assume any liability for the fitness of a mitigation strategy or product for a particular installation or application. The process owner's final selection of dust collectors and risk mitigation strategies should be based on the outcome of a Dust Hazard / Process Hazard Analysis performed by the process owner. Although early engagement of a dust collector supplier provides helpful insights on the availability and features of various products, process owners should consult with a combustible dust expert and/or a process safety expert before making actual product and mitigation strategy selections.

Donaldson recommends that all industrial air filtration system designs be reviewed and approved by an expert consultant who is responsible for the integrity of the system design and compliance with applicable codes and standards. It is the process owner's responsibility to understand the risks in their process and mitigate those risks in accordance with all applicable laws, regulations and standards, including those published by the NFPA. Donaldson also recommends that proper maintenance and housekeeping procedures and work practices be evaluated, developed, and followed to maintain any industrial air filtration products in safe operating condition.

Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the Donaldson products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, product specifications, and data (airflow, capacity, dimensions, or availability) are subject to change without notice, and may vary by region or country.

## Description

The RFWP Baghouse is a continuous duty dust collector with bag-style filters designed to handle up to 141,000 cfm depending on the application and dust type. Continuous duty means the filters can be pulse cleaned on-line without interrupting airflow through the collector. A timer energizes the cleaning system to ensure the bag-style filters are cleaned at least once every four minutes.

The cylindrical collectors housing design features a sectional bolt together construction in standard sizes from 570 to 905 filter bags with either 10 or 12-ft long bag-style filters. The collector housing design can include an involute, scroll-type inlet with an internal deflection baffle or a high body inlet.

The involute inlet removes heavy materials before they reach the bags, eliminating the need for a separate cyclone precleaner. The high body inlet is ideal for lighter density materials and may offer better abrasion resistance.

The RFWP features a walk-in clean-air plenum, allowing filter bag service from inside the clean air plenum.

## Purpose and Intended Use



Misuse or modification may result in severe personal injury and/or property damage.

Do not misuse or modify.

The RFWP Baghouse collector is common in the woodworking and grain industries where it effectively handles high-volume, high dust-load applications. Additional applications include cement, chemical, coal, and food processing applications like sugar and other moisture-sensitive materials.

These RFWPs are typically used in applications over 37,000 cfm.

Sizes are available for applications with any of the following conditions or requirements:

- Heavy dust load
- No compressed air available
- A round collector required for sanitary reasons
- High pressure or vacuum requirement
- A requirement for a single discharge hopper

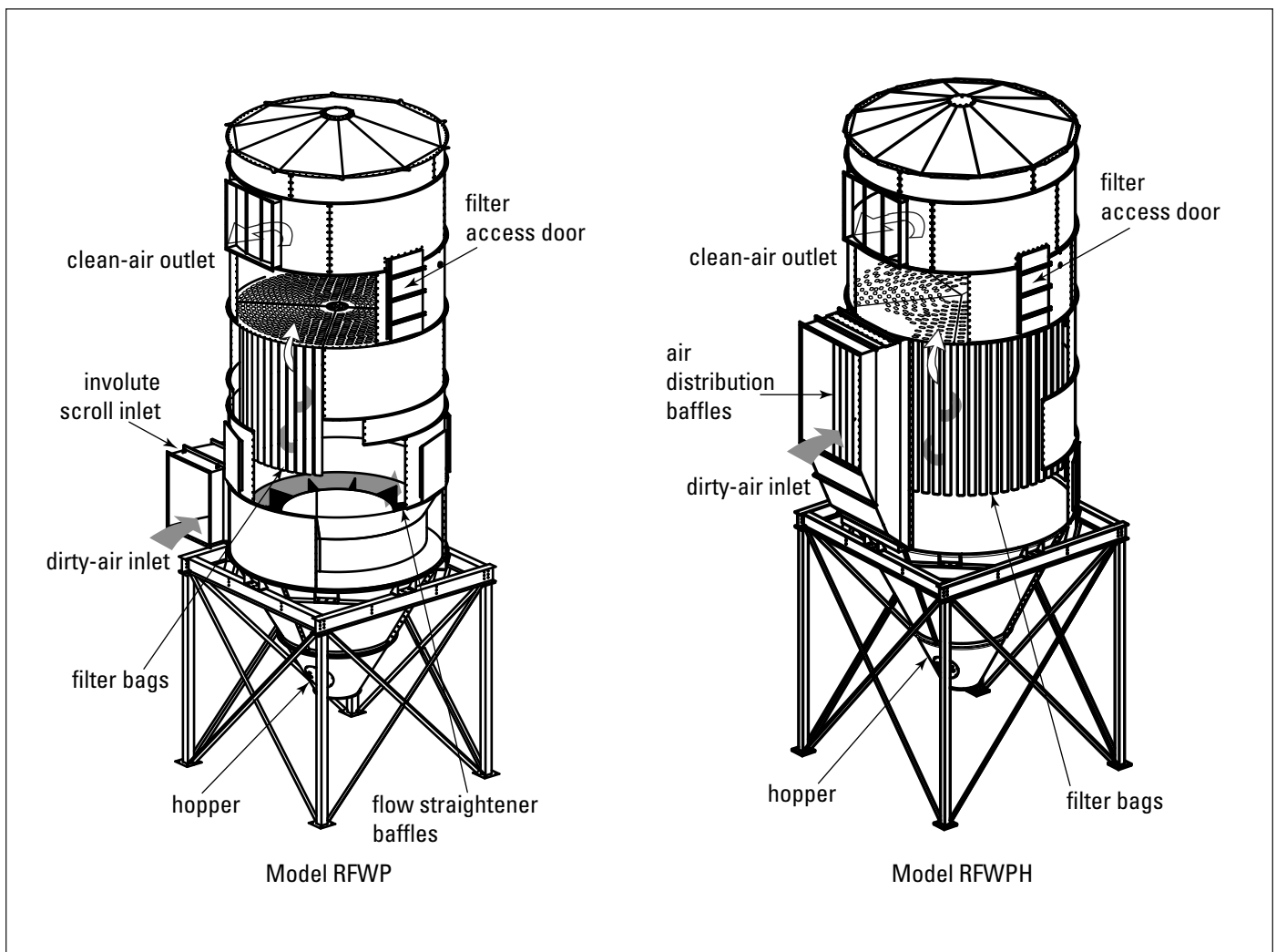
Operations involving higher temperatures, humidity, or air stream chemistry may require special attention. These conditions can usually be supported with custom design modifications to the RFWP Baghouse collectors.

## RFWP Involute Operation

During normal operation, dust-laden air enters the dirty-air inlet. The involute scroll-style inlet develops a cyclonic airflow causing heavier particulate to drop directly into the hopper. The air continues through an internal flow straightener that evenly distributes the dust-laden air within the collector cross-section and around the filter bags. After entering the collector the light dust collects on the outside surface of each filter bag forming a dust cake. Clean, filtered air passes through the filter bags to the clean-air plenum and discharges through the clean-air outlet.

## RFWPH High Inlet Operation

High body inlets are necessary for certain applications including those with lighter density dusts or highly abrasive materials when the collector will run 24 hours a day, 7 days per week. In these cases as the air enters the dirty air plenum it passes through a set of self-sacrificing air distribution baffles that reduce the inertia of the abrasive materials causing much of the dust to fall out of the air stream and into the hopper. The 3/16-in plate heavy duty baffles offer long-term abrasion resistance. Individual baffles are easily replaced through an access door on the inlet housing.



Collector Operation

## Inspection on Arrival

1. Inspect collector upon delivery.
2. Report any damage to the delivery carrier.
3. Request a written inspection report from the Claims Inspector to substantiate any damage claim.
4. File claims with the delivery carrier.
5. Compare collector received with description of product ordered.
6. Report incomplete shipments to the delivery carrier and your Donaldson Torit representative.
7. Remove crates and shipping straps. Remove loose components and accessory packages before lifting collector from truck.
8. Check for hardware that may have loosened during shipping.
9. Use caution removing temporary covers.

## Installation Codes and Procedures



Codes may regulate recirculating filtered air in your facility. Consult with the appropriate authorities

having jurisdiction to ensure compliance with all national and local codes regarding recirculating filtered air.

Safe and efficient operation of the collector depends on proper installation.

Authorities with jurisdiction should be consulted before installing to verify local codes and installation procedures. In the absence of such codes, install collector according to the National Electric Code, NFPA No. 70-latest edition and NFPA 91 (NFPA 654 if combustible dust is present).

A qualified installation and service agent must complete installation and service of this equipment.

All shipping materials, including shipping covers, must be removed from the collector prior to or during collector installation.

### **NOTICE**

Failure to remove shipping materials from the collector will compromise collector performance.

Inspect collector to ensure all hardware is properly installed and tight prior to operating collector.

## Installation



Use proper equipment and adopt all safety precautions needed for servicing equipment.

Electrical service or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Site selection must account for wind, seismic zone, and other load conditions when selecting the location for collectors.

Codes may regulate acceptable locations for installing dust collectors. Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding mist collector installation.

Collectors must be anchored in a manner consistent with local code requirements. Anchors must be sufficient to support dead, live, seismic, and other anticipated loads.

Consult a qualified engineer for final selection of anchorage.

The collector is suitable for either indoor or outdoor installations. Reference the Rating and Specification Information.

Read and follow all instructions and precautionary statements in this manual prior to assembly in order to achieve expected assembly results.



## Foundations or Support Framing

Prepare the foundation or support framing in the selected location. Foundation or support framing must comply with local code requirements and may require engineering.

Foundation and support framing must be capable of supporting dead, live, wind, seismic and other applicable loads. Consult a qualified engineer for final selection of foundation or support framing.

## Collector Location



Donaldson Torit equipment is not designed to support site installed ducts, interconnecting piping, or electrical services. All ducts, piping, or electrical services must be adequately supported to prevent severe personal injury and/or property damage.

When hazardous conditions or materials are present, consult with local authorities for the proper location of the collector.

Dust collection equipment may reach peak sound pressure levels above 80 dB (A). Noise levels should be considered when selecting collector location.

Locate the collector to ensure easy access to electrical and compressed air connections, to simplify solids collection container handling and routine maintenance, and to ensure the straightest inlet and outlet ducts.

Ensure the inlet has at least five diameters of straight duct prior to the collector inlet including a transition to the full inlet dimensions. Inlet transition should have a taper with a maximum of a 90-degree included angle.

Consider the effects of condensation caused by temperature difference between the process airstream and outdoor temperatures.

Consider forklift access for solid collection container removal.

## Site Selection

This collector can be located on a foundation or structural framing.

Provide clearance from heat sources and avoid any interference with utilities when selecting the location.

## Lifting Information



Failure to lift the collector correctly can result in severe personal injury and/or property damage.

Use appropriate lifting equipment and adopt all safety precautions needed for moving and handling the equipment.

A crane or forklift is recommended for unloading, assembly, and installation of the collector.

Location must be clear of all obstructions, such as utility lines or roof overhang.

Use all lifting points provided.

Use clevis connectors, not hooks, on lifting slings.

Use spreader bars to prevent damage to collector's casing.

Check the Specification Control drawing for weight and dimensions of the collector and components to ensure adequate crane capacity.

Allow only qualified crane or forklift operators to lift the equipment.

Refer to applicable OSHA regulations and local codes when using cranes, forklifts, and other lifting equipment.

Lift collector and accessories separately and assemble after collector is in place.

Use drift pins to align holes in section flanges during assembly.

## Standard Equipment

After removing any accessory equipment that may have been stored inside the collector, follow the precautions below during installation:

### CAUTION

Take appropriate precautions to avoid injury (pinching) during leg structure assembly or handling.

Take appropriate precautions to prevent tripping or falling when working on or around the leg structure.

### NOTICE

Follow all assembly instructions and notes and cautions to achieve

expected assembly results. Assembling the structure in the wrong sequence or without following proper procedure can result in structural failure and improper operation.

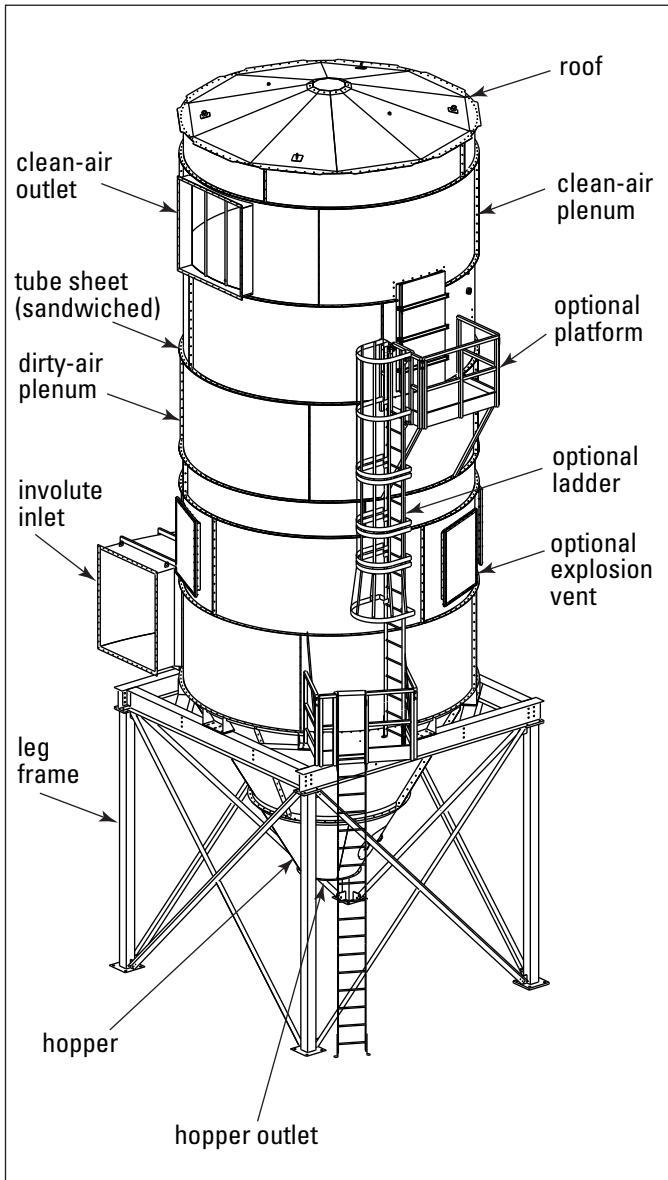
Follow the provided bolting instructions. Using incorrect or insufficient fasteners can compromise structural integrity. Improper tightening of bolt hardware may compromise structural integrity.

Do not assemble the collector in the wrong sequence or using the incorrect components.

Use only provided lifting lugs in the prescribed fashion and do not lift more weight than what is specified.

Lift rings and sections only when the load is balanced.

Typical Installation



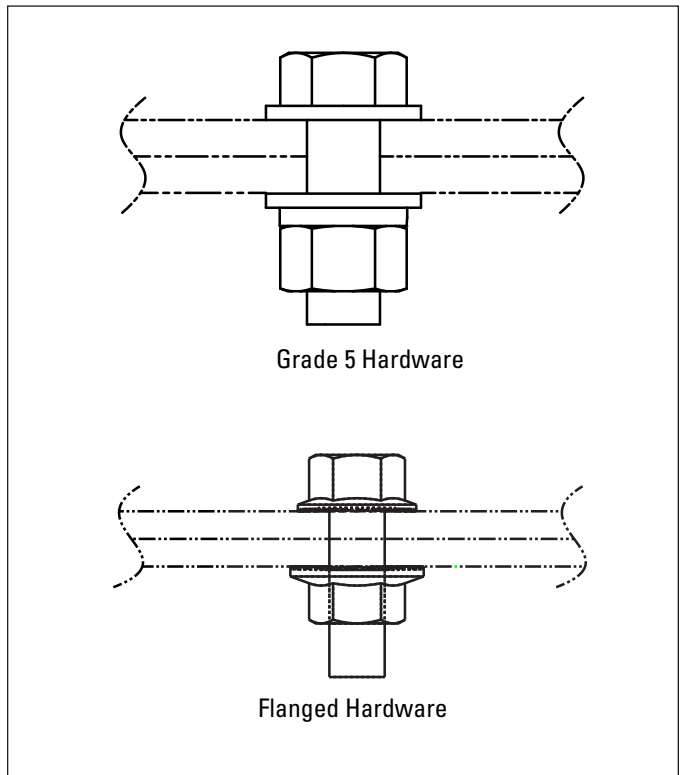
Typical Installation Components, Model RFWP shown

Typical Hardware

- Bolt, Grade 5
- 2-Hardened Washers per ASTM F436
- Lock Washer
- Nut, Grade 5
- Flanged Nut, Case Hardened
- Flanged Bolt, Case Hardened

Hardware Size

Size	Assembly	Recommended Bolt Torque (ft/lbs)
3/8-in	Ladder Platform	25-30
1/2-in	Hopper Body(ies) Involute Inlet High Inlet Roof	55-75
5/8-in	Tube Sheet	110-150
3/4-in	Leg Structure	200-260



Hardware

## Leg Installation

### **CAUTION**

Anchors must comply with local code requirements and must be capable of supporting dead, live, wind, seismic, and other applicable loads.

Anchor sizes shown are provisional, as final anchor sizing will depend on jobsite load conditions, collector location, foundation/framing design variables and local codes.

Consult a qualified engineer for final selection of suitable anchors.

### **NOTICE**

Temporary support is required until all legs and cross-bracing are in place.

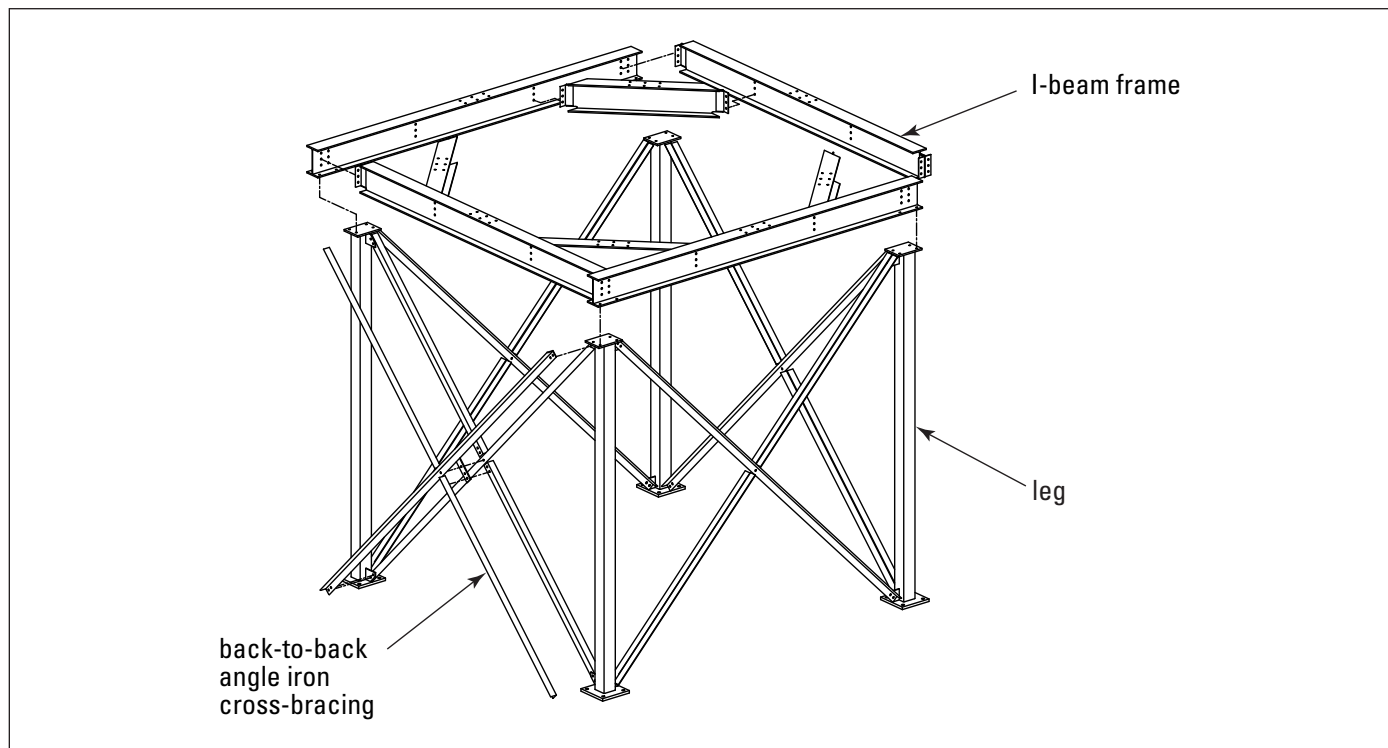
3. Install all cross-braces spanning the legs using the 3/4-in supplied hardware.
4. Keep bolts partially tightened until the I-beam perimeter frame can be set into place.
5. Lay out the I-beam frame at grade level and install hardware hand tight.
6. Lift the I-beam frame onto the leg structure, ensuring frame is level and plumb.
7. Tighten all hardware.

### **CAUTION**

Tighten all hardware before removing crane to prevent personal injury and/or property damage.

Reference Typical Foundation Anchor and leg assembly drawing shipped with the collector prior to starting assembly.

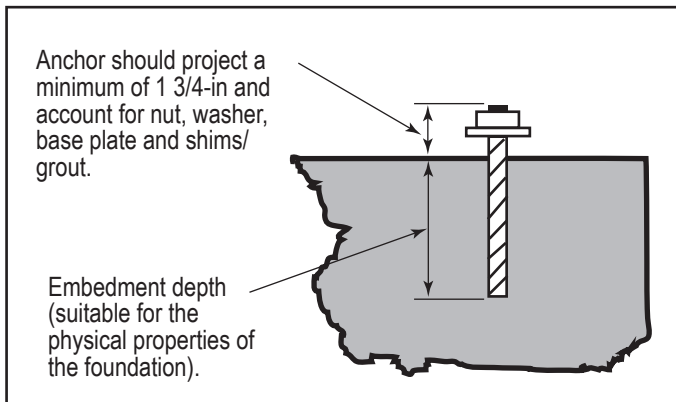
1. Prepare the foundation or support framing in the selected location. Locate and install anchors.
2. Set the legs onto the pre-poured foundation and bolt tight.



Leg Structure Assembly

### Provisional Anchor Bolt Recommendations

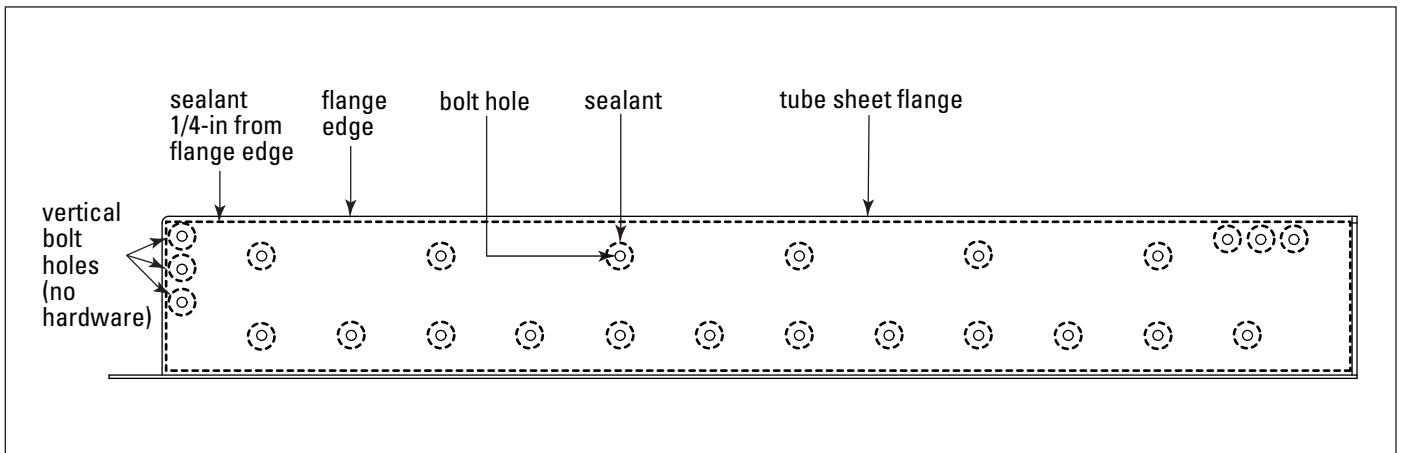
1. Consider Hilti HIT-HY 200 Anchor System or equivalent. Quantity of anchor bolts should match the number of holes provided in the base plates.
2. Anchor diameter is typically 1/8 to 1/2-in less than baseplate hole diameter.
3. Corrosive environment or outdoor installation may require stainless steel anchors.



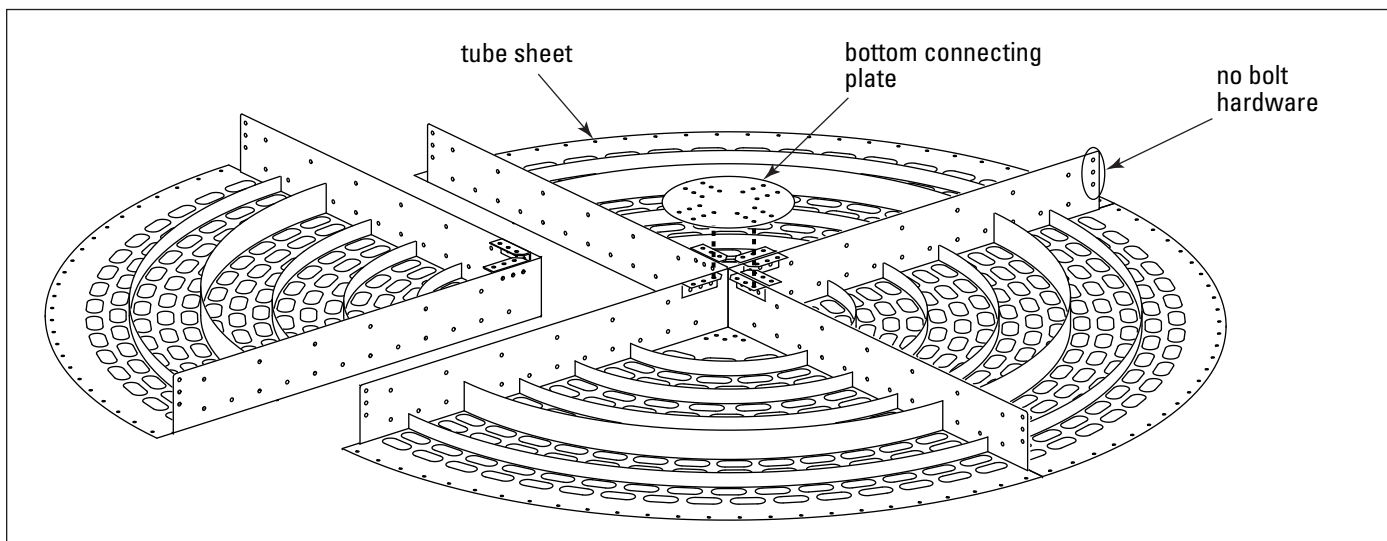
Typical Foundation Anchor

### Tubesheet Assembly

1. Lay out the panels of the tube sheet with flange-side up on a level area using stand-offs to avoid ground contact and to keep the tube sheet surface free from blemishes.
2. Apply sealant to the connecting flanges of the tube sheet prior to aligning bolt holes. Apply sealant around the inside perimeter within 1/4-in of all flange edges and around all bolt holes as shown.
3. Bolt the connecting flanges together using the provided 5/8-in hardware. Keep the last three vertical bolt holes at the perimeter free of hardware as shown.
4. Attach the circular bottom connecting plate to tie in all pieces of the tube sheet as shown. Use the supplied 2 1/2-in length hardware for bolting through the multiple material thicknesses associated with the bottom connecting plate.



Tube Sheet Flange - Sealant Application



Tube Sheet (Upside Down) - Bottom Connecting Plate

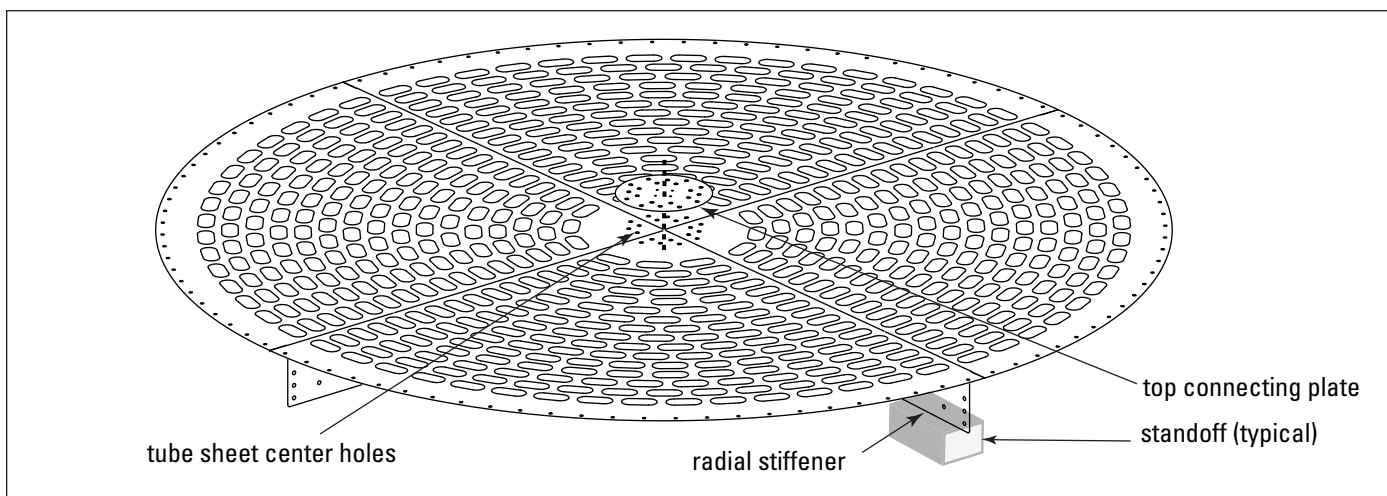
5. Turn the tube sheet over to the upright position. Use stand-offs placed under the radial stiffeners to keep the tube sheet off of grade as shown. Make certain the tube sheet is level.

**CAUTION**

Use appropriate lifting equipment and procedures when turning the tube sheet assembly over to prevent severe personal injury and/or property damage.

6. On the top connecting plate, apply sealant to one side outside the bolt pattern, inside the bolt pattern, and around each bolt hole.

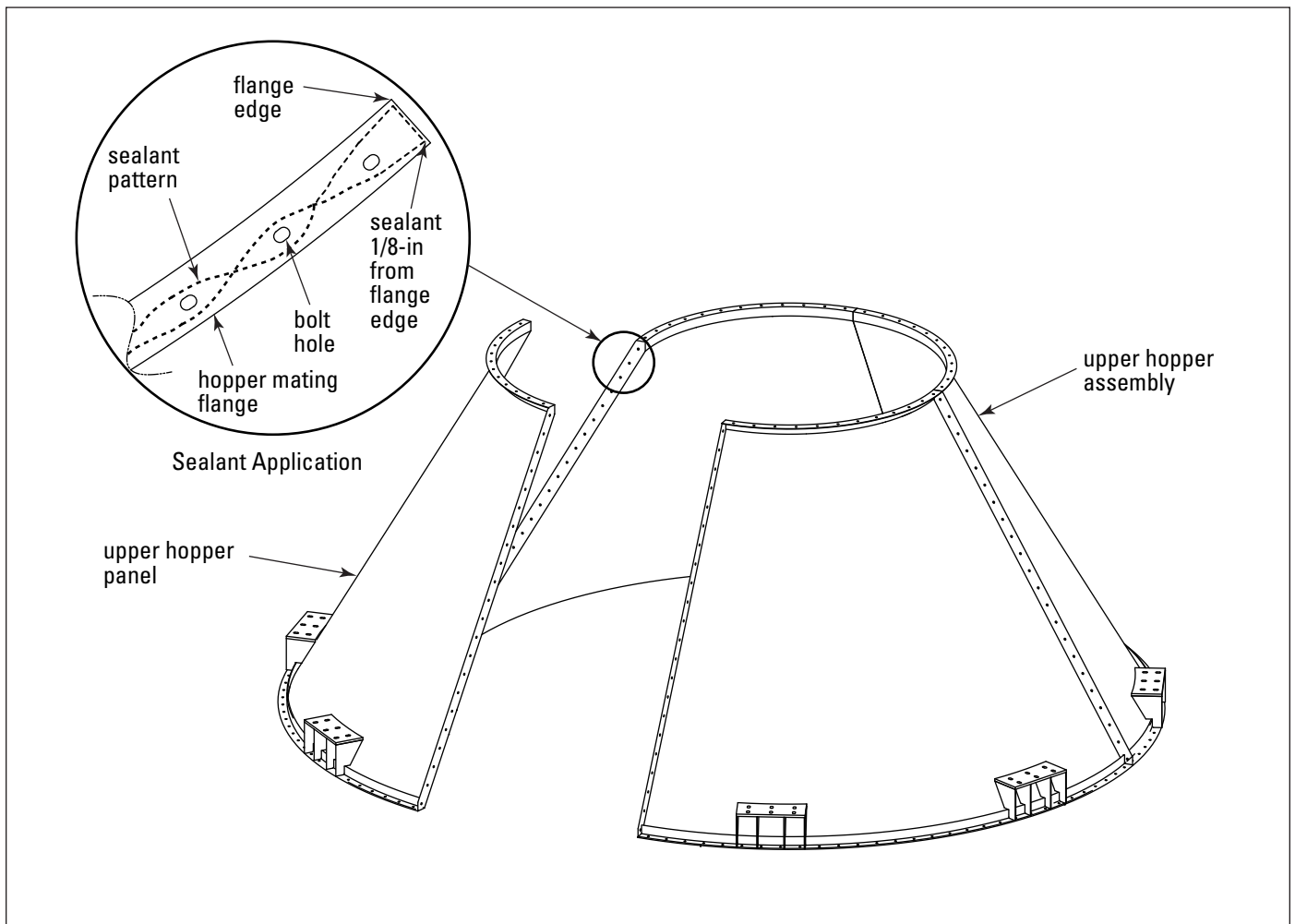
7. Set the top connecting plate onto the tube sheet center and align the holes with the sealant against the tube sheet. Securely bolt plate and tube sheet together.



Tube Sheet (Upright) Top Connecting Plate

## Hopper Assembly

1. Mount the upper hopper panel upside down on a flat, clean surface. Use the tube sheet as a fixture if there is no flat area to work on. Do not apply sealant between the hopper panel and the tube sheet.
2. Temporary supports at the ends of each hopper panel may be required until the upper hopper ring is complete.
3. Before connecting the adjacent hopper panel, apply sealant to the mating flange within 1/8-in of both flange edges as shown.
4. Set the next panel and hand-tighten the hardware (connecting bolts should draw the adjoining flanges together but still allow for some slippage). Repeat steps until upper hopper assembly is complete.



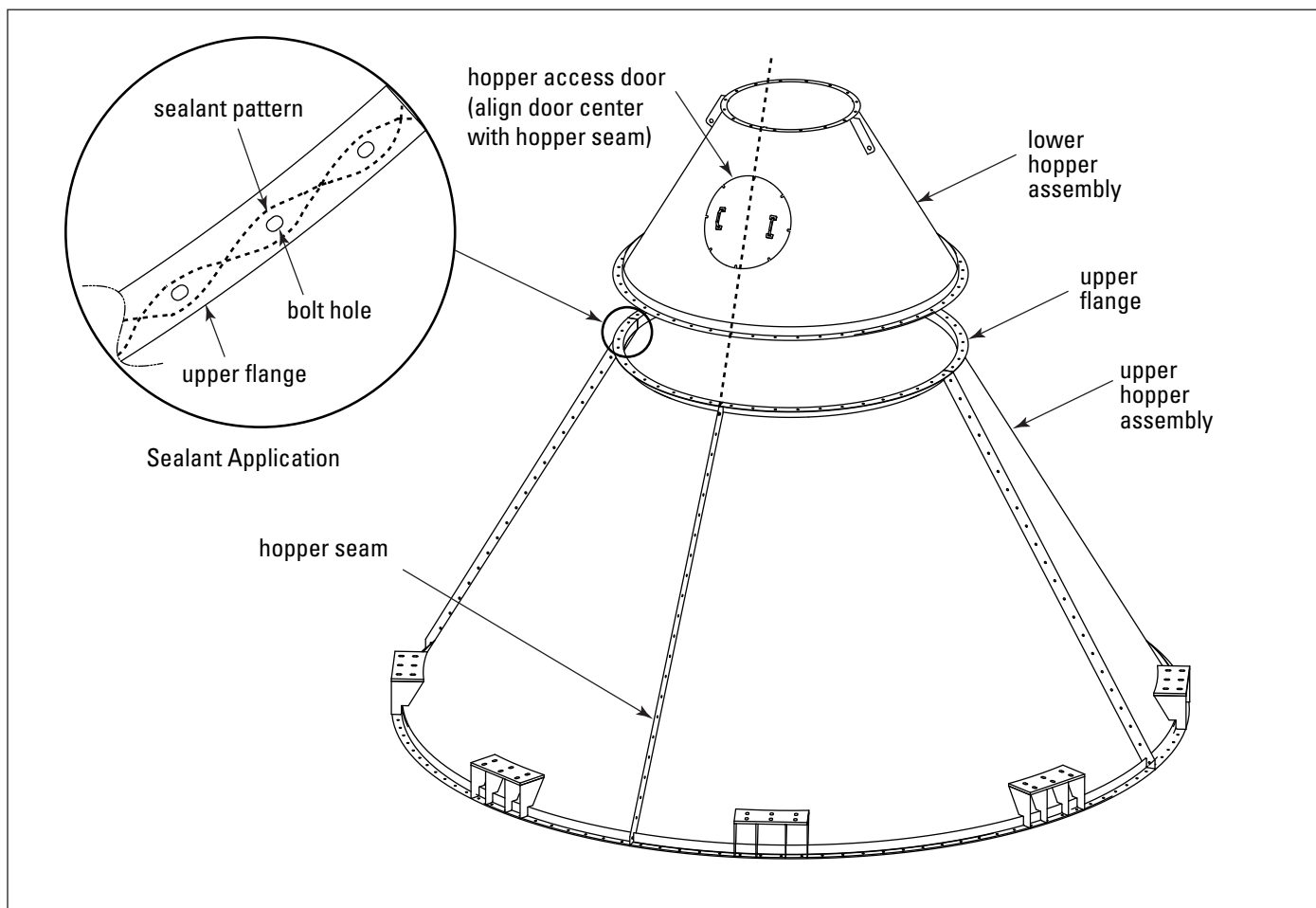
Upper Hopper Assembly (Upside Down)

5. After the upper hopper is assembled, apply sealant to the top of the upper flange as shown to prepare for the lower hopper to be set.
6. Lower the lower hopper assembly onto the upper hopper assembly.
7. Align the hopper access door with a mating seam of the upper hopper assembly. This will force the hopper outlet flange's bolt pattern to straddle the centerline of the collector.
8. Insert all bolts connecting the lower hopper assembly to the upper hopper assembly and then tighten. Proceed by tightening all bolts of the upper hopper assembly.
9. After hopper assembly is completely bolted and tightened, undo any bolts connecting it to the tube sheet (if used).
10. Lift the hopper and rotate it to the upright position.



**CAUTION** Use caution when lifting/rotating hopper. Keep tension on all straps/cables when lifting. Failure to comply may result in personal injury and/or property damage.

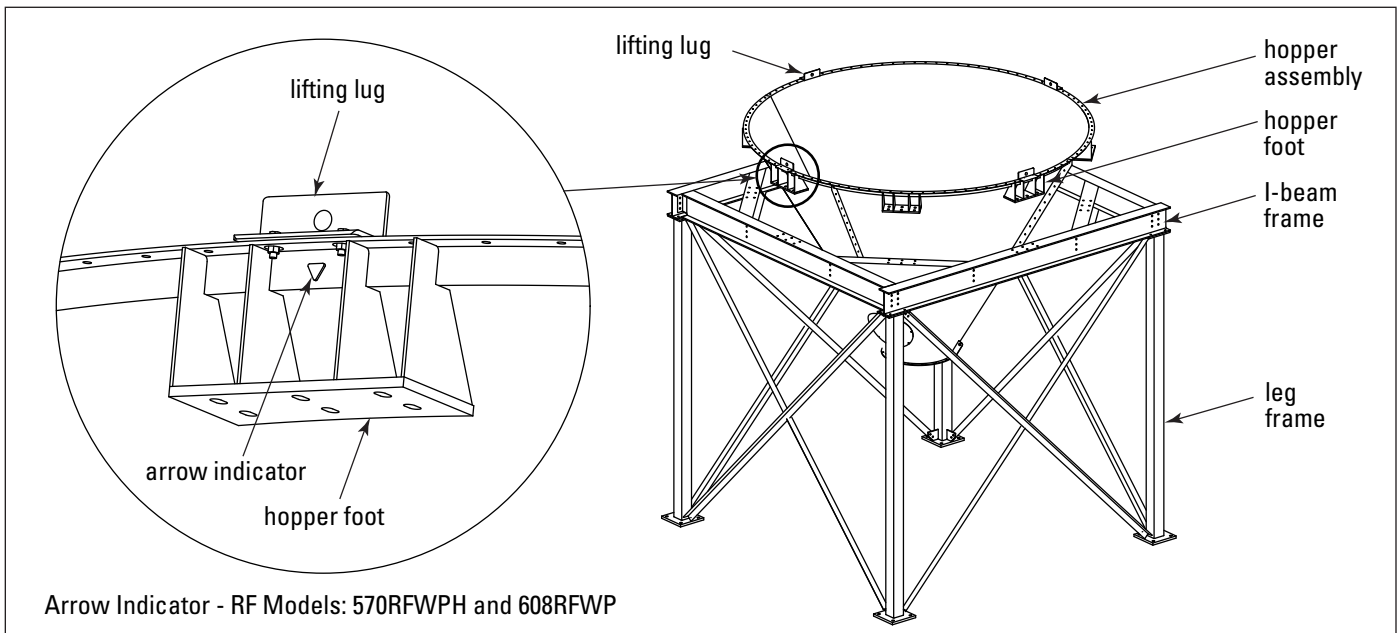
Water overflow drains are required if sprinkler/fire suppression system is installed.



Hopper Assembly (Upside Down)

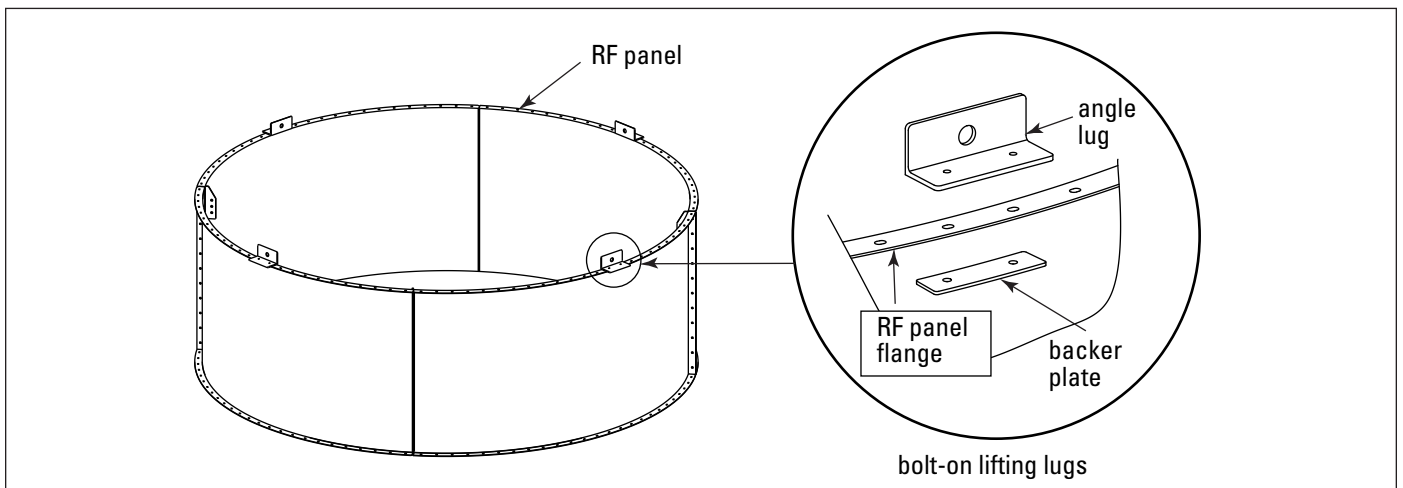


11. Attach lifting lugs 90° apart to the top of the hopper.
12. On RF models 570RFPWH and 608RFPWH only, align the arrow indicators inside the hopper feet in the 0°, 90°, 180°, and 270° positions per the configuration drawing. See illustration below.
13. In this orientation, lower the hopper assembly into the leg frame. Fasten the hopper assembly securely to the I-beam frame with the provided 3/4-in hardware.



Hopper to Leg Frame Installation

Note: Lifting Lugs Bolt-On Usage - Use the provided bolt-on lifting lugs and grade 5 hardware when moving panels into position. Position the lugs such that excess swaying will be minimized. When lifting an assembly, use all four lugs with the backer plates attached. Never lift more than what is recommended in this manual.



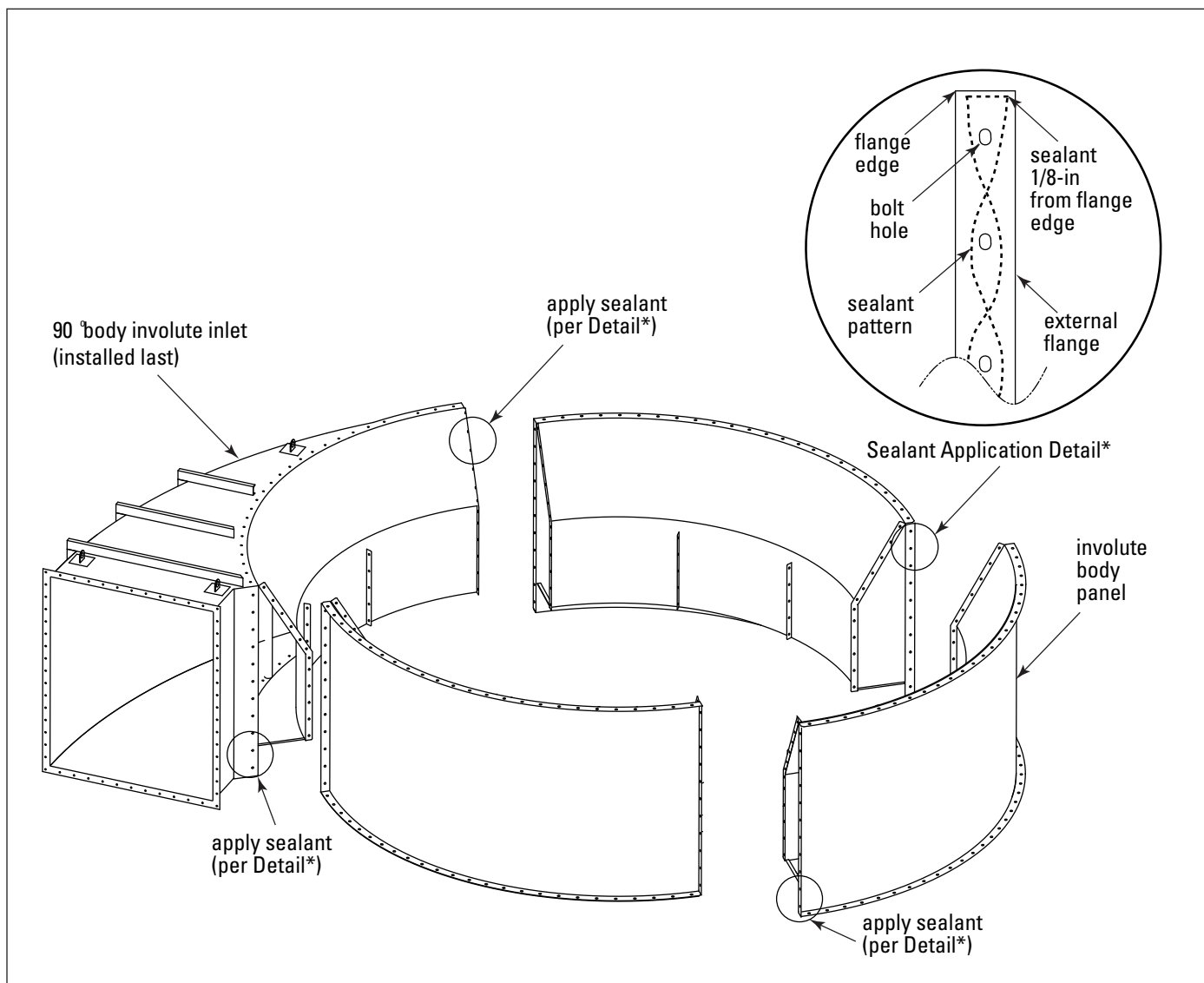
Bolt-On Lifting Lugs

## Involute Inlet Assembly

Note: For High Inlet Models, see “Dirty Air Plenum with High Body Inlet Assembly” section.

1. Place the involute body panels onto a flat, clean surface. If there is no suitable surface, use the tube sheet as a template. Do NOT apply sealant between tube sheet and body panels. The 90° body involute inlet should be reserved and set into position last.

Prior to setting an adjacent panel, apply sealant to all external flanges within 1/8-in from flange edge as shown. Once the body panels are bolted and joined with the 1/2-in hardware, apply sealant to the 90° body involute inlet and set it into place.



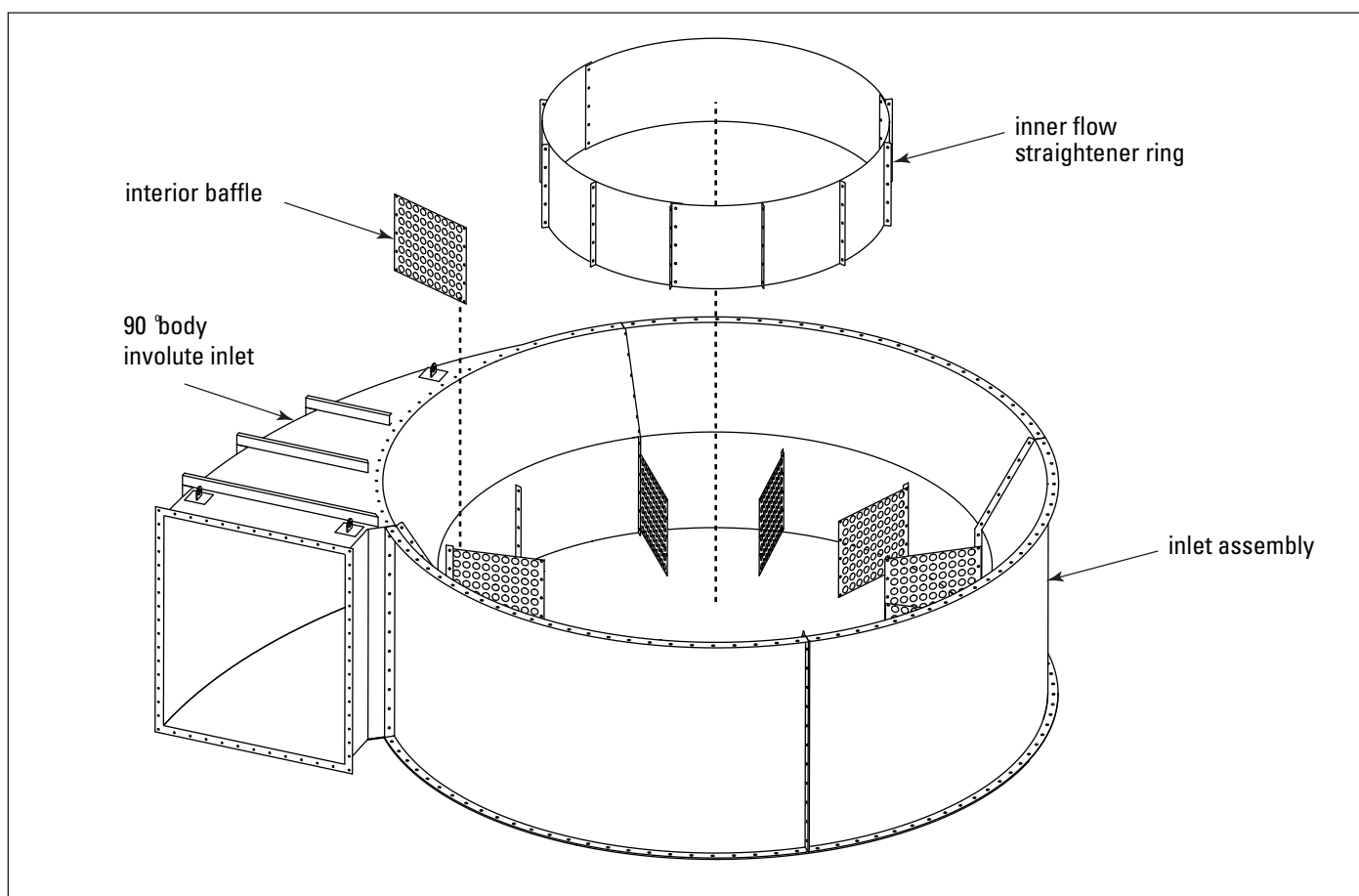
Involute Body Panel Assembly

2. After assembling the perimeter body panel assembly, install the interior baffles by bolting them to the inlet assembly.
3. Off to the side, assemble the inner flow straightener ring. The inner ring panels overlap each other to complete the ring. Orient all hardware bolting from the outside of the ring to the inside of the ring to eliminate any interference in the next step. Lift and then lower the inner flow straightener ring into the center of the inlet as shown.

**NOTICE**

Improper installation of internal baffles and inner flow straightener ring will compromise structural integrity. Ensure proper installation of the internal baffles and inner flow straightener ring.

4. Rotate the inner flow straightener ring until all adjoining flanges make contact. Bolt together and tighten all bolts.



Inner Flow Straightener Ring Installation

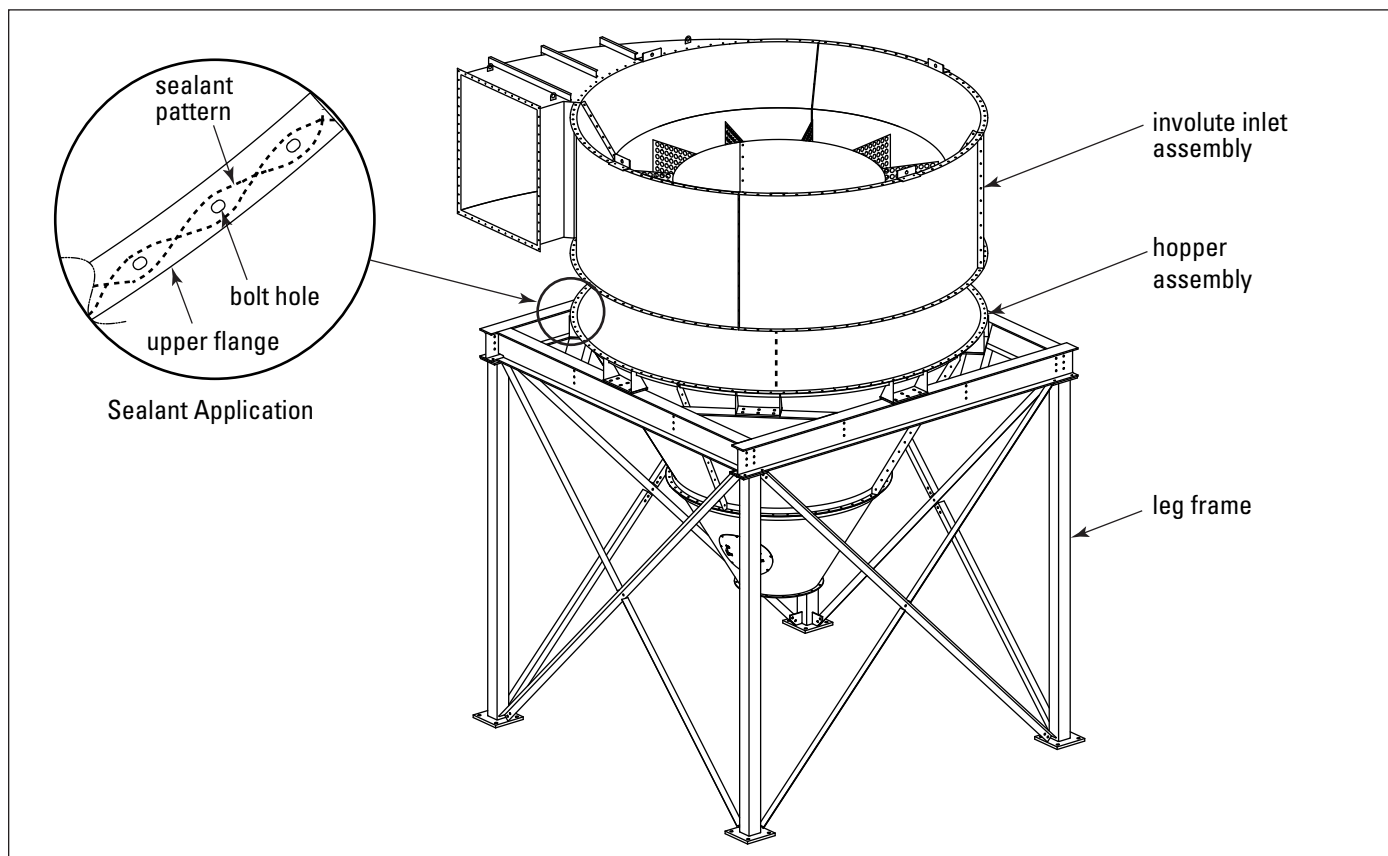
5. Apply sealant to the top of the hopper flange as shown to prepare for the setting of the inlet assembly onto the hopper flange. Properly attach and lift inlet assembly following lifting lugs bolt-on usage instructions previously shown. Lift inlet assembly into position while noting final desired orientation.
6. Inspect the orientation of the inlet ensuring the inlet flange is parallel to the I-beam frame as shown on the configuration drawing. As the inlet is lowered onto the hopper, align all holes and bolt tightly with 1/2-in hardware.

**CAUTION**

Lift the involute inlet ring in a balanced fashion to eliminate any unnecessary swinging, tipping, or uneven lifting.

Lifting with the (3) lifting lugs on the involute inlet will result in uneven lifting and cause damage to the inlet section (fall hazard).

Do not lift the involute inlet section by the perforated flow straightener baffles.



Involute Inlet Assembly Installation

### Dirty Air Plenum Assembly for Involute Inlet

Note: For High Inlet Models, see “Dirty Air Plenum with High Body Inlet Assembly”.

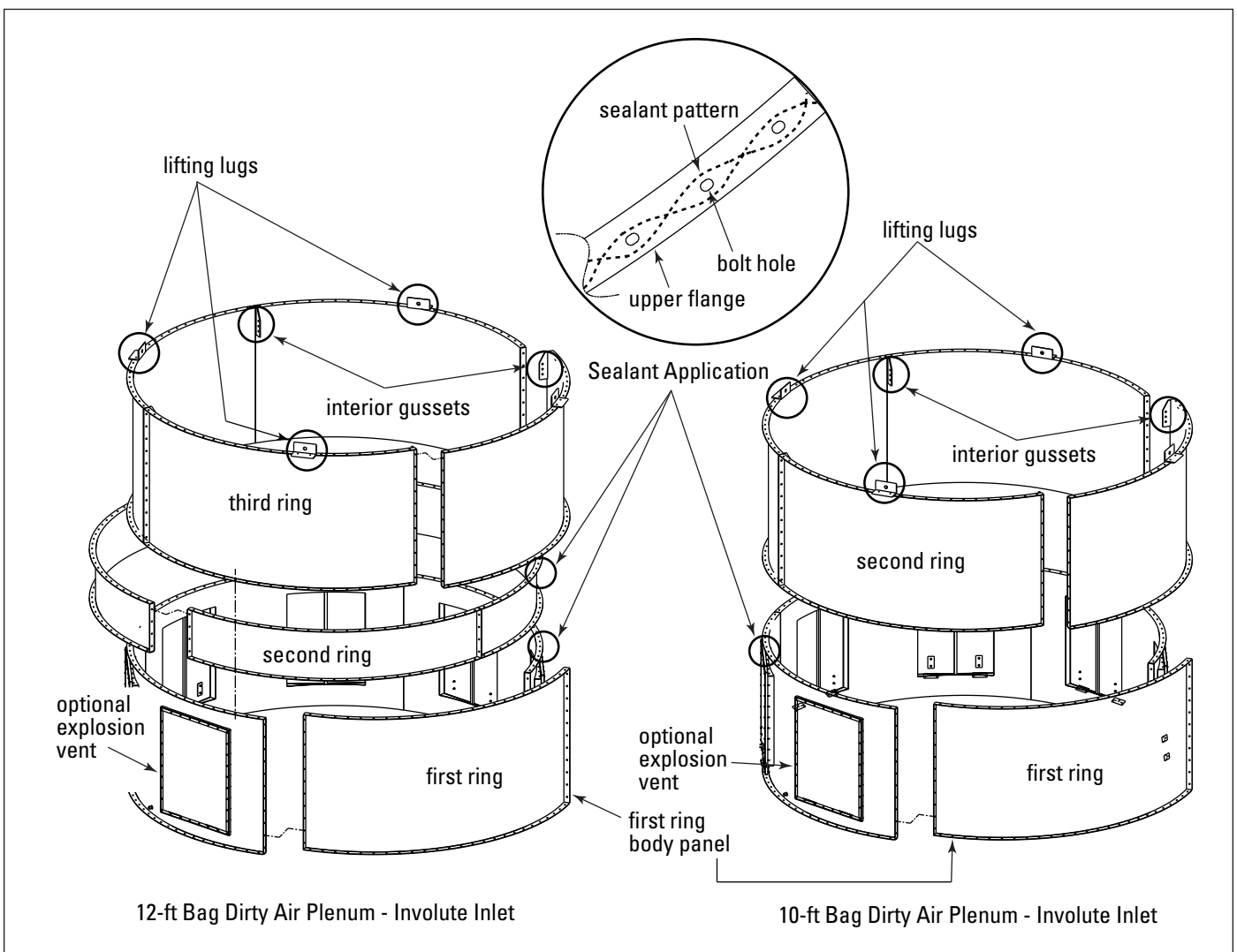
1. Set the 66-in tall first ring body panels onto a clean flat surface. It is recommended that a tube sheet be used as a template. Do not apply sealant to the tube sheet. Do not use panels with interior gussets, which are used for the top ring.



Take precaution against pinching when handling and installing one body panel to the next.



Optional explosion vents must be in the lowest ring. Errors in location of explosion relief panels will reduce their performance potentially causing a risk of severe personal injury and/or death.

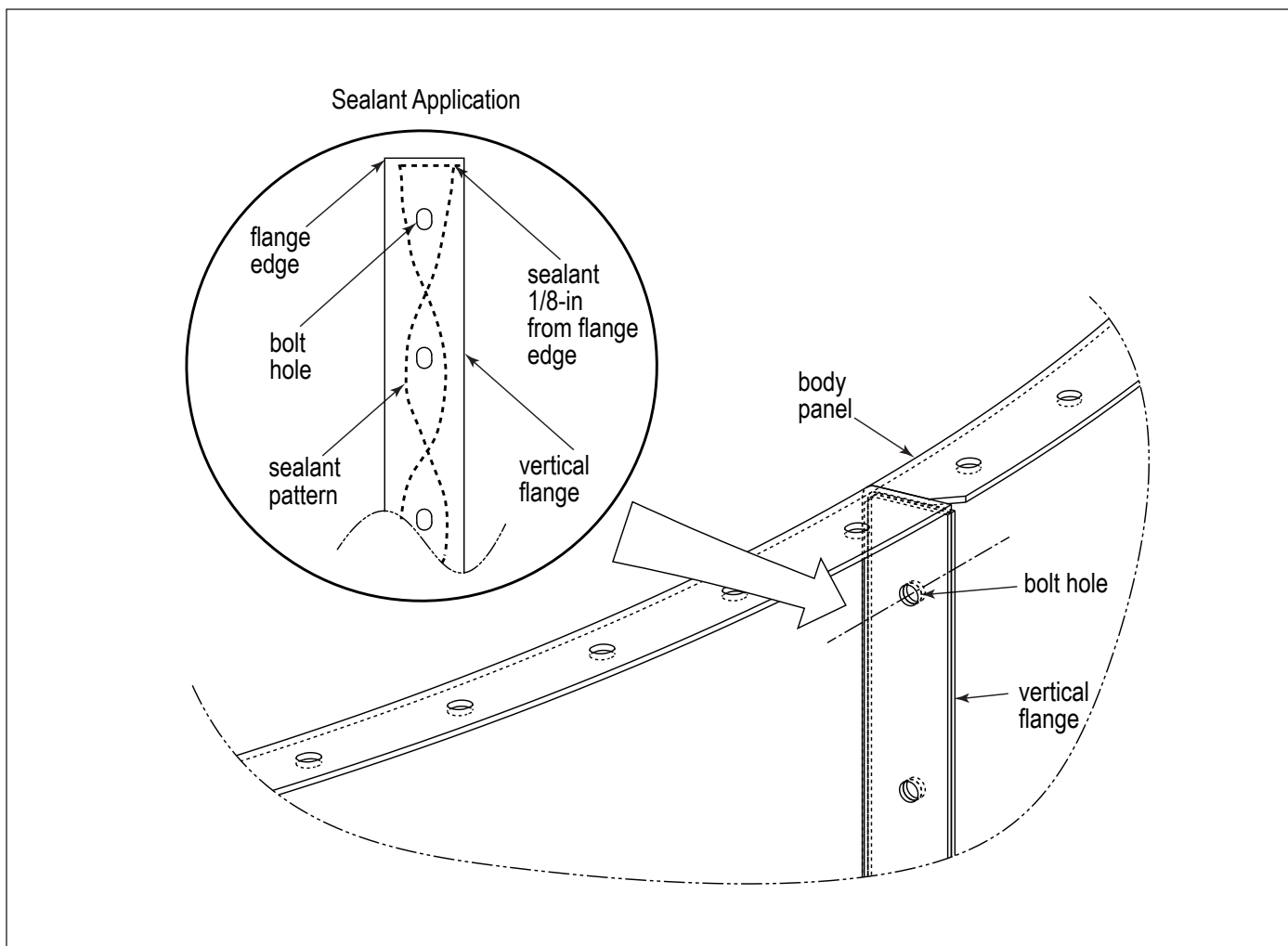


Dirty Air Plenum Assembly - Involute Inlet

2. Once two or more panels are side by side, apply sealant to the vertical flange of the panel within 1/8-in of the vertical flange's top and bottom edge as shown and press up against the adjoining panel. Align the holes and insert the 1/2-in bolt hardware. Keep hardware hand-tightened.
3. Finish joining the body panels until a complete body panel ring is assembled.



Take precaution against pinching when handling and installing one body panel to the next.



Panel Installation

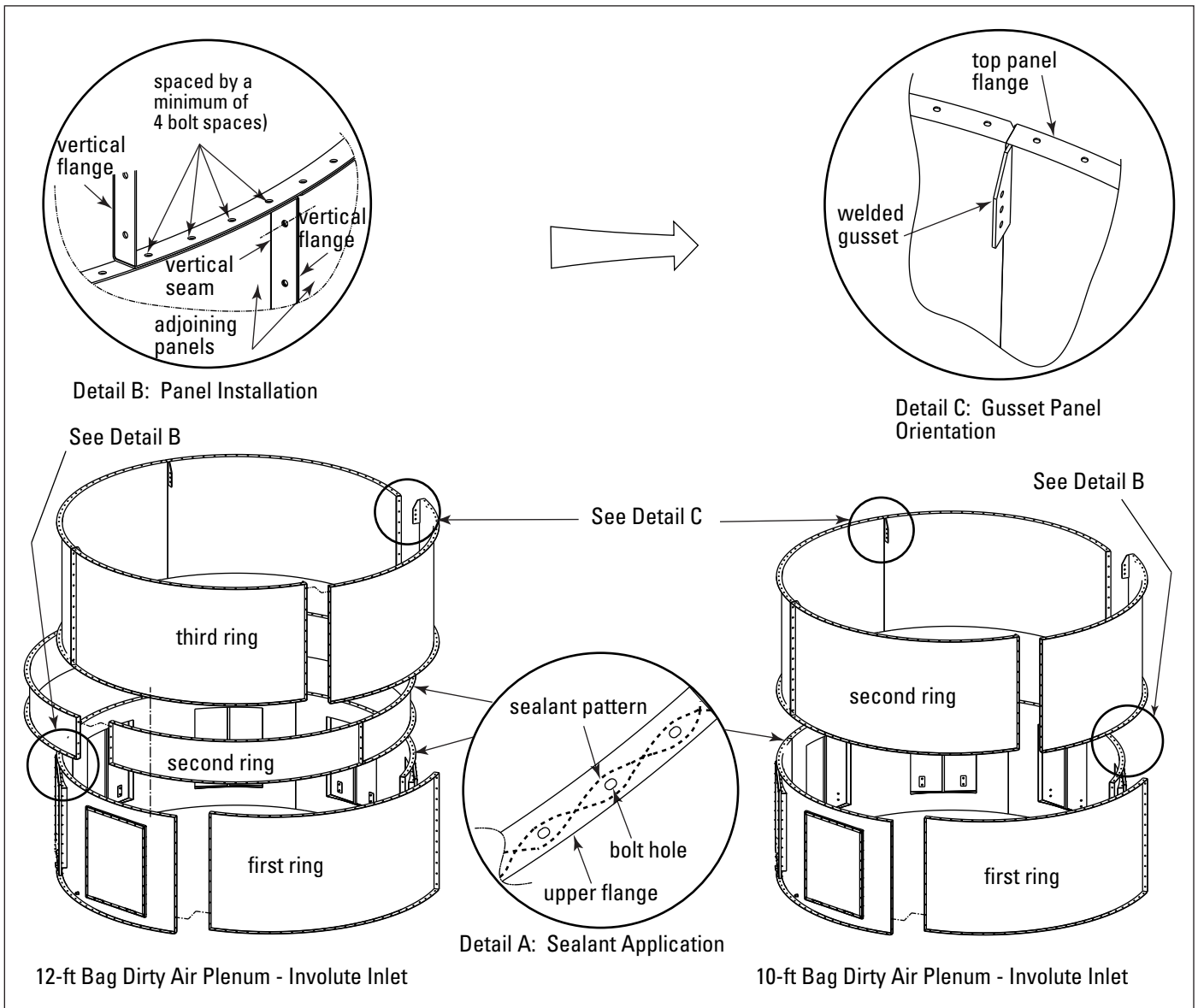
- After completing the first body panel ring assembly, apply sealant to the top flange. See Detail A.

Note: The vertical seams between body panel assemblies must be spaced by a minimum of 4 bolt spaces as shown in Detail B. Insert hardware and hand-tighten.

- Assemble the second ring on top of the first. For a 12-ft bag length collector, the next ring will be a 24-in tall ring. For a 10-ft bag length collector, the next ring will be a 66-in tall ring. This ring of the Dirty Air

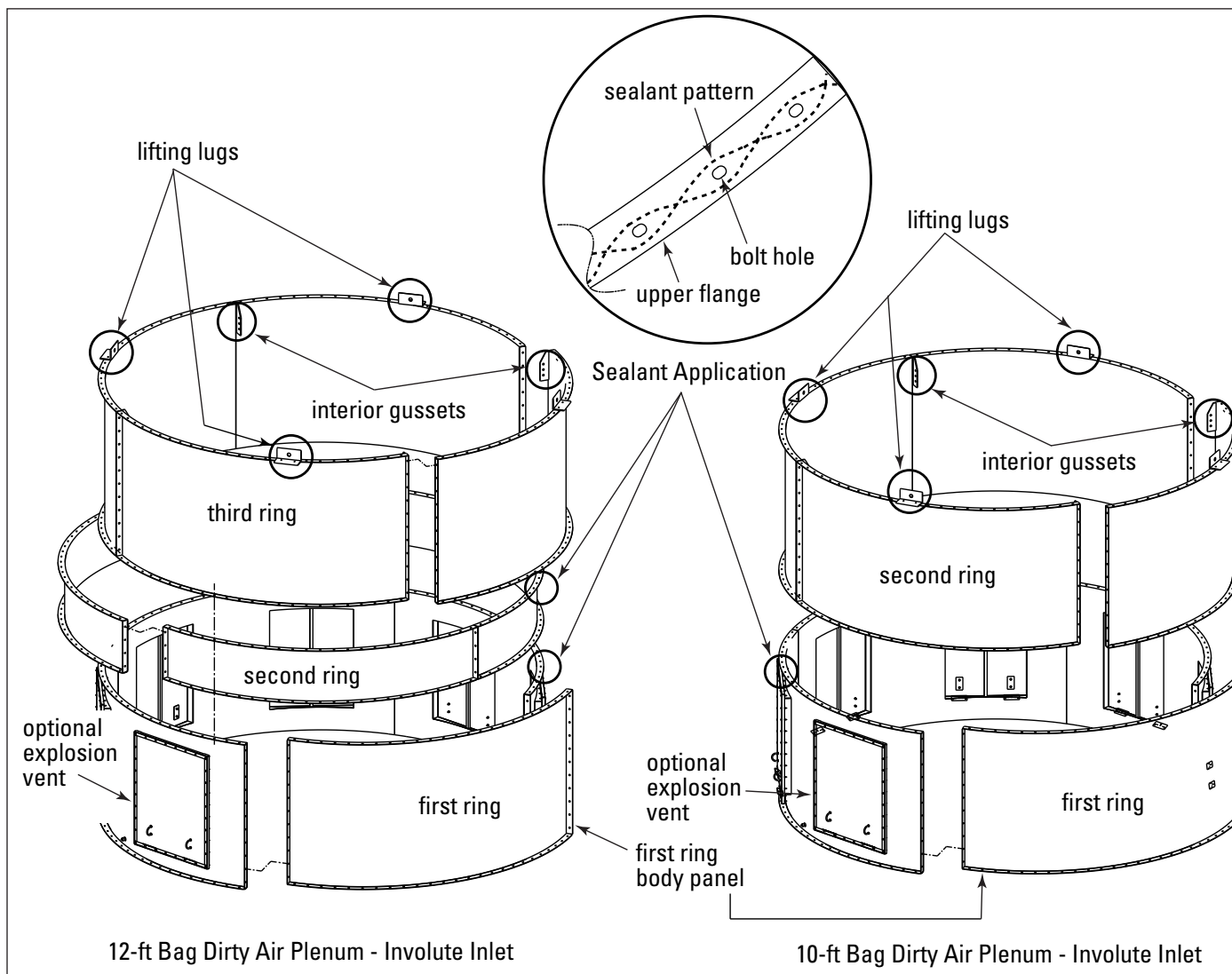
Plenum and additional rings will be assembled using the prior ring as a template. Lift a panel into place taking note that vertical seams must be spaced by a minimum of 4 bolt spaces. See Detail B. Insert hardware and hand tighten.

Note: The upper most ring of the dirty air assembly uses panels with gussets welded to them. Gussets must be oriented to the top of the ring. These will be used to secure the tube sheet in later steps. See Detail C.



Dirty Air Plenum Panel Assembly - Involute Inlet

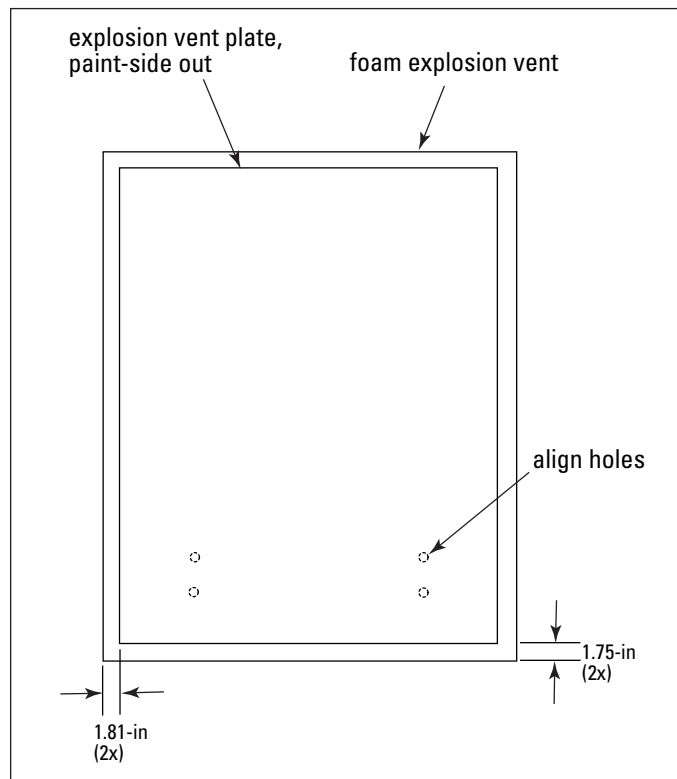
6. As adjacent panels are installed, install the adjacent plate by applying sealant to one face of the vertical flange and pressing it up to the other vertical flange from the outside of the collector. Insert bolts and hand-tighten. See Panel Installation illustration.
7. After completing the second body panel ring, tighten the connections between the first and second body panel rings followed by all the vertical flanges.
8. For 12-ft bag length collector, the third and final dirty air plenum ring will be 66-in tall. Assemble ring following the previous steps 5-7, ensuring the vertical seams overlap each other by a minimum of 4 bolt holes. See Dirty Air Plenum Panel Assembly illustration.
9. Properly attach lifting lugs and lift dirty air plenum with the lifting lugs per lifting lugs bolt-on usage note found previously in this manual.
10. Set the dirty air plenum off to the side but within reach of the crane. Use standoffs under the flanges to keep them off of grade.



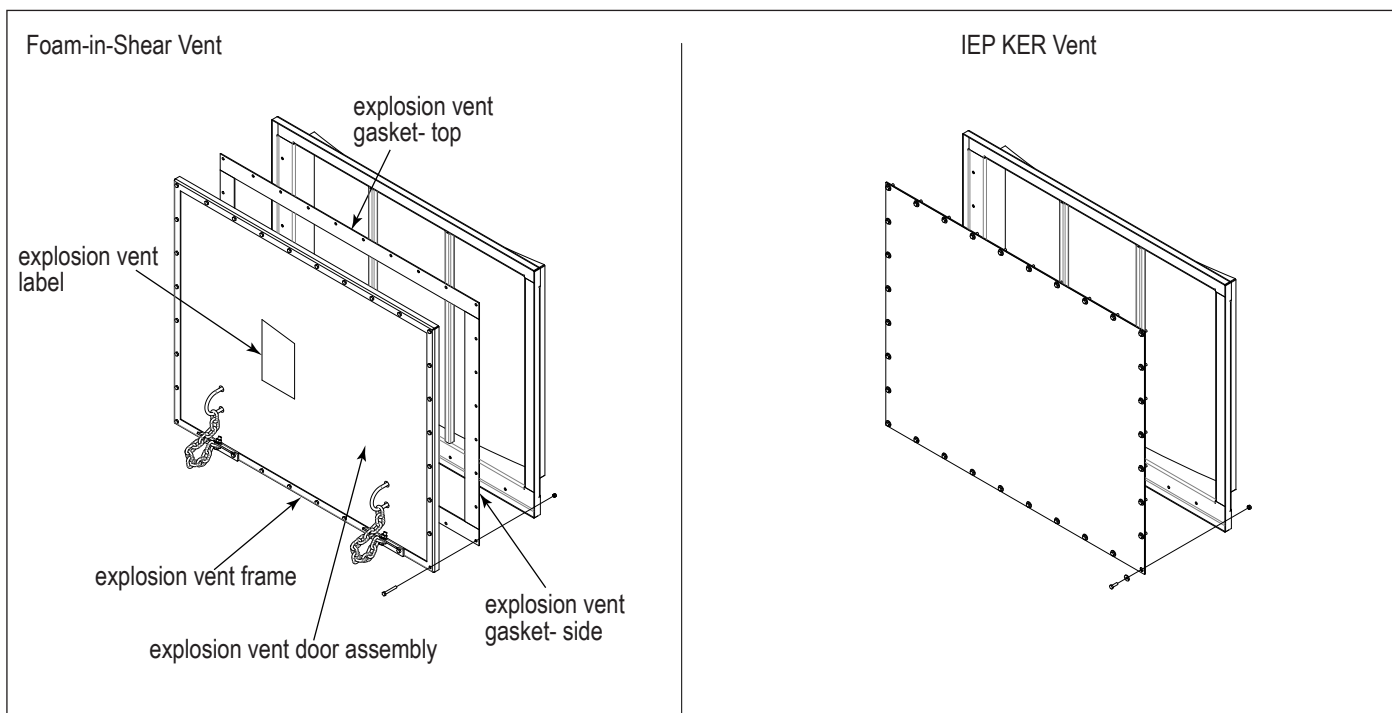
Dirty Air Plenum Assembly - Involute Inlet



- If applicable, install optional explosion vents by referring to the Donaldson-supplied drawing to finish explosion vent assembly and vent installation to the collector.



Explosion Vent Assembly - Sealant Application

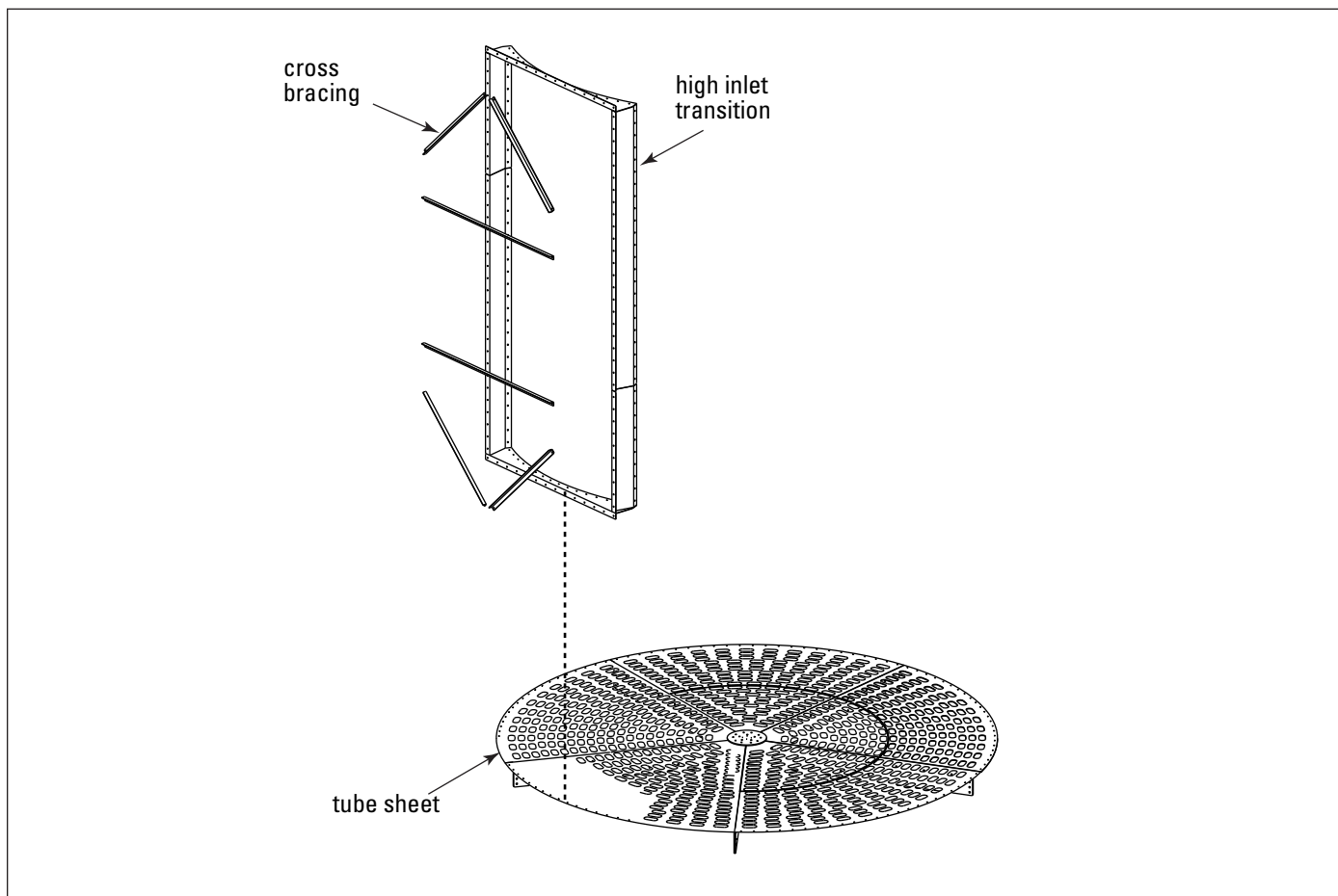


Explosion Vent

## Dirty Air Plenum with High Body Inlet Assembly

1. Locate the high inlet transition and attach the temporary cross bracing with the provided nuts and bolts.
2. Set the high inlet transition on the tubesheet (do not apply sealant to the tubesheet) so it lines up with the blank portion of the tubesheet that will not have bags installed. Use the tube sheet to help align the panels until all is assembled.

Note: Not applicable to involute inlet.



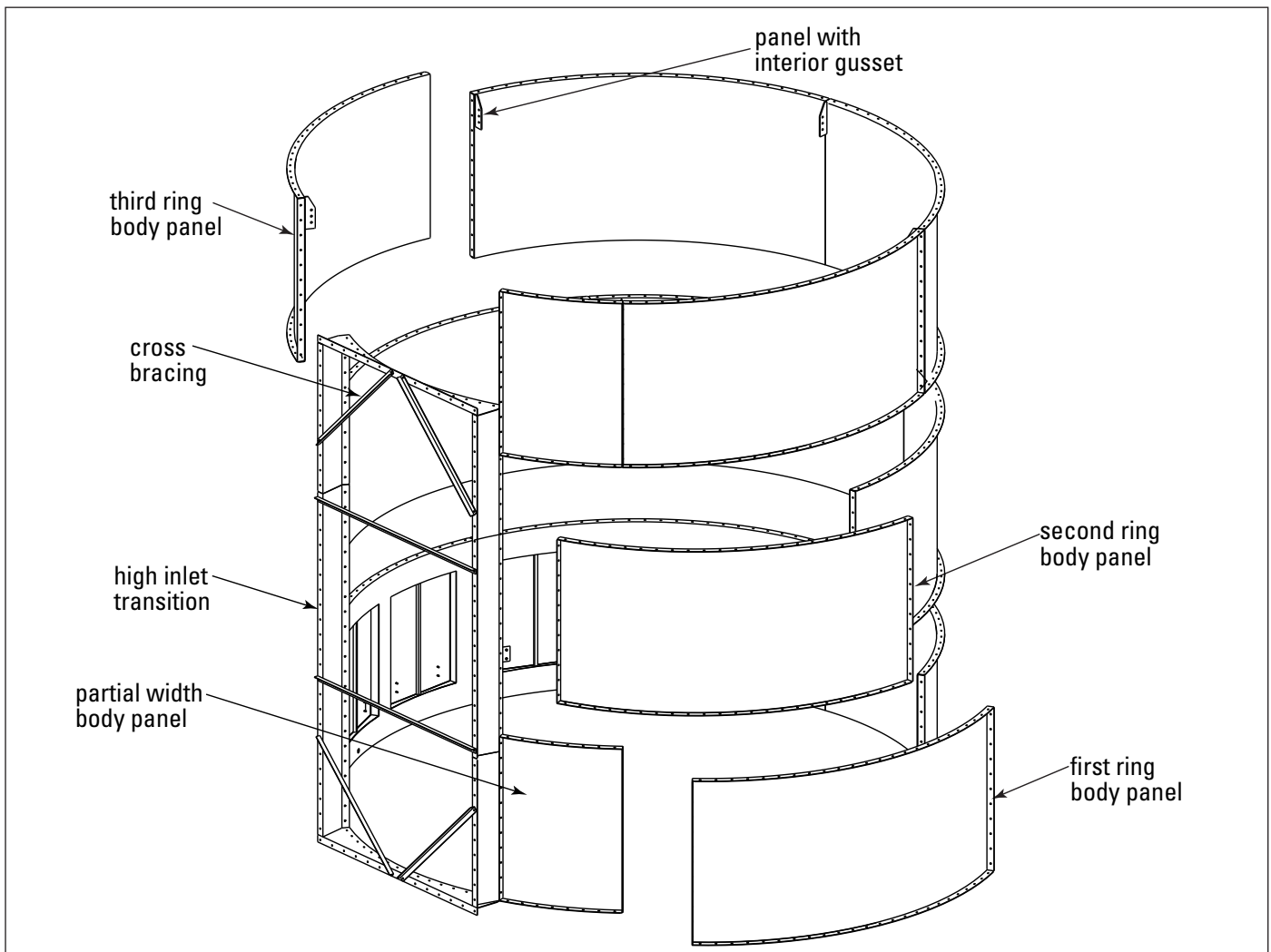
High Inlet Transition Installation

3. Locate the three 66-in tall partial width body panels. Do not use panels with interior gussets, which are used for the top ring.
4. Set the first 66-in partial width body panel onto the tube sheet (do not apply sealant to the tube sheet) to the right of the inlet transition.
5. For Non-Explosion Vented Dirty Air Plenum: Locate a standard 66-in tall panel and place it in the next, counter-clockwise position relative to the first partial width panel. Join panels following instructions below. Continue placing standard panels until the space for the high inlet is all that remains.

**CAUTION**

Take precaution against pinching when handling and installing one body panel to the next.

For Explosion Vented Dirty Air Plenum: For the 570RFP model, locate a standard 66-in tall panel and place it in the next, counter-clockwise position relative to the first partial panel. Join following

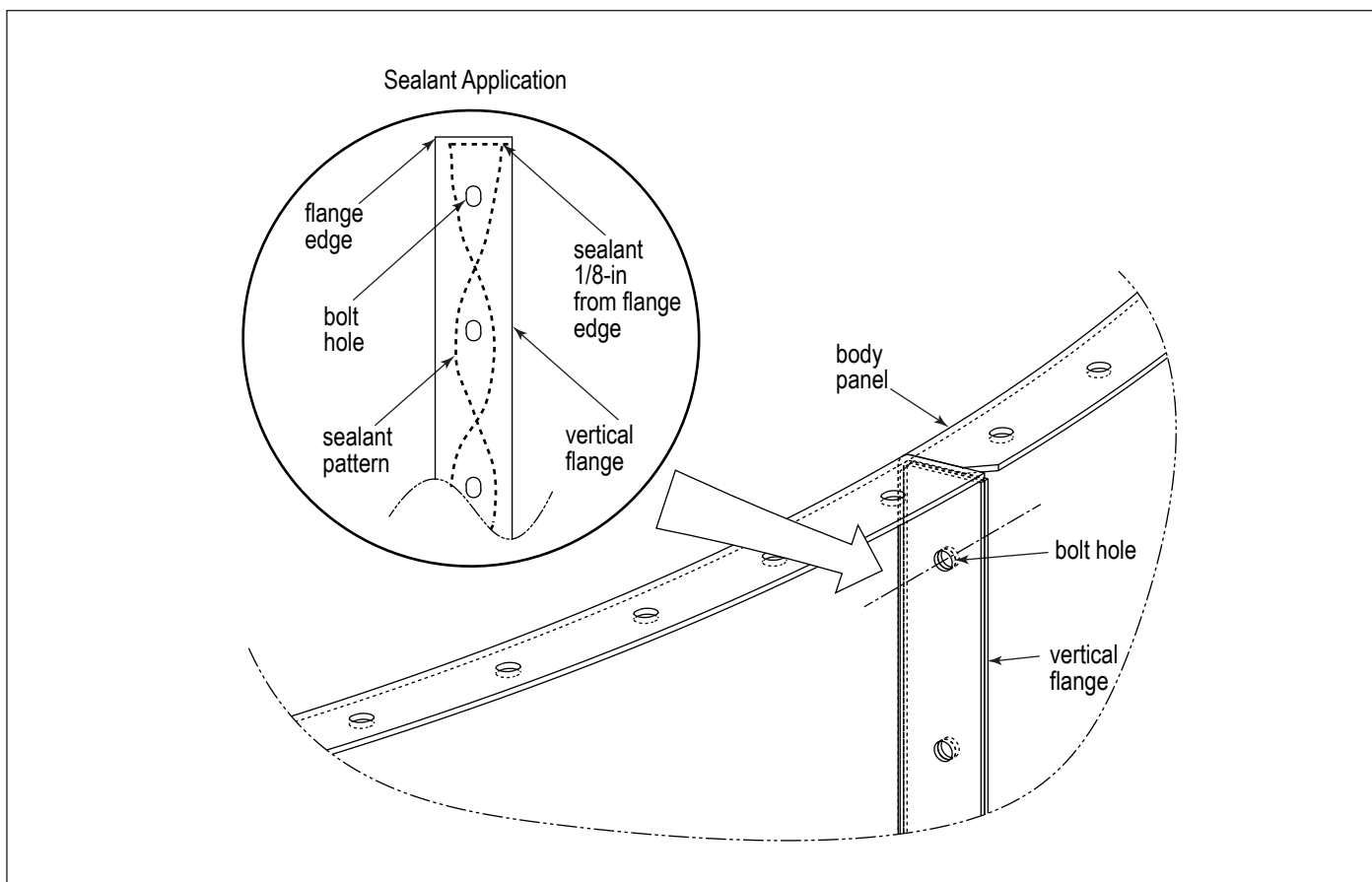


Dirty Air Plenum Assembly (776/851 Size shown)

instructions below. Continue by placing explosion vent panels until reaching the high inlet. Donaldson-supplied customer drawing takes precedence over these manual instructions.

For the 776RFWPH and 851RFWPH, the next (2) panels will be standard, non-explosion vent panels. The remaining (2) panels in that ring will have (3) explosion vents each. Donaldson-supplied customer drawing takes precedence over these manual instructions.

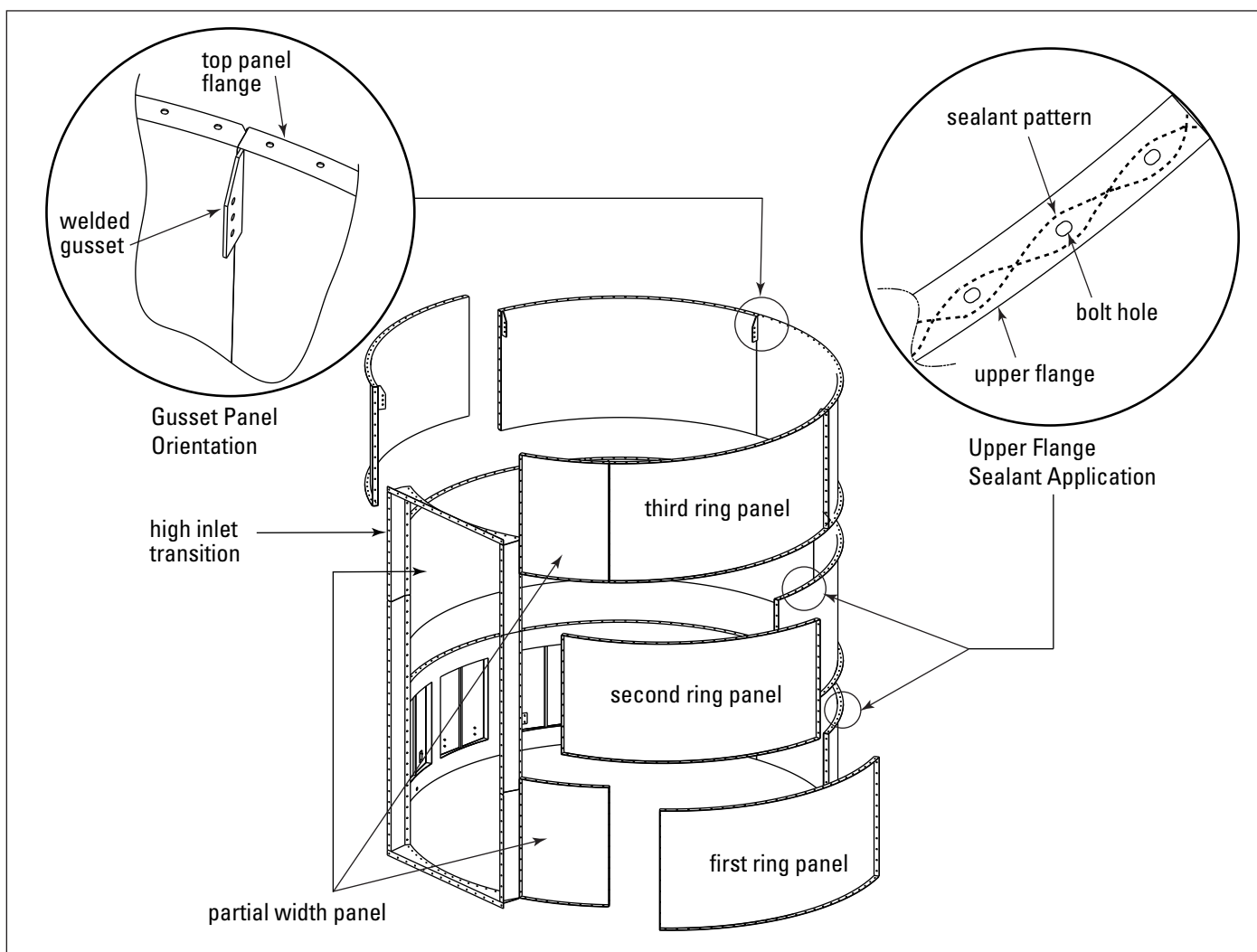
6. Once two or more panels are side by side, apply sealant to the vertical flange of the panel within 1/8-in of the vertical flange's top and bottom edge as shown and press it up against the adjoining panel. Align the holes and insert the 1/2-in bolt hardware. Keep hardware hand-tightened.



Panel Installation

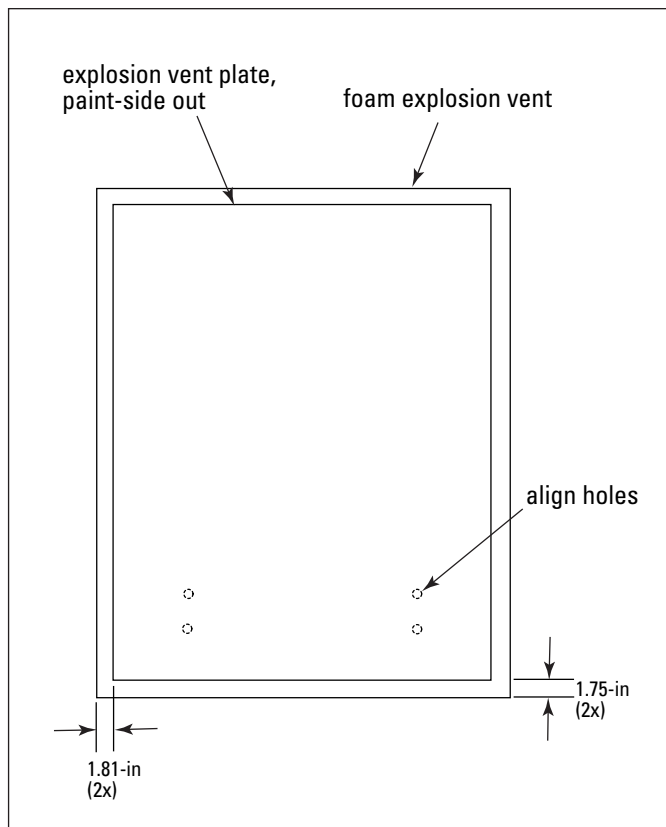
7. Upon completing the first ring of panels, apply sealant to the top of the first ring's flange.
8. Install a second ring of panels by placing a full sized 66-in tall panel on top of the partial/full panel seam by following step 6.
  - Note: The vertical seams between body panel assemblies must be spaced by a minimum of 4 bolt spaces. Insert hardware and hand tighten.
9. Continue setting panels around the circle counter-clockwise. Another partial width panel will complete this ring. Attach the panels as previously described.

10. Assemble the third ring of panels starting with spanning the partial/full panel seam from the second ring (ensure two partial width panels do not stack on top of one another). Then attach the gusseted panels in a similar manner to the first ring. Install and hand-tighten hardware on the Dirty Air Plenum from top to bottom.
  - Note: The panels used for this ring contain a welded gusset, which will be used to position and bolt the tube sheet into place at a later time.

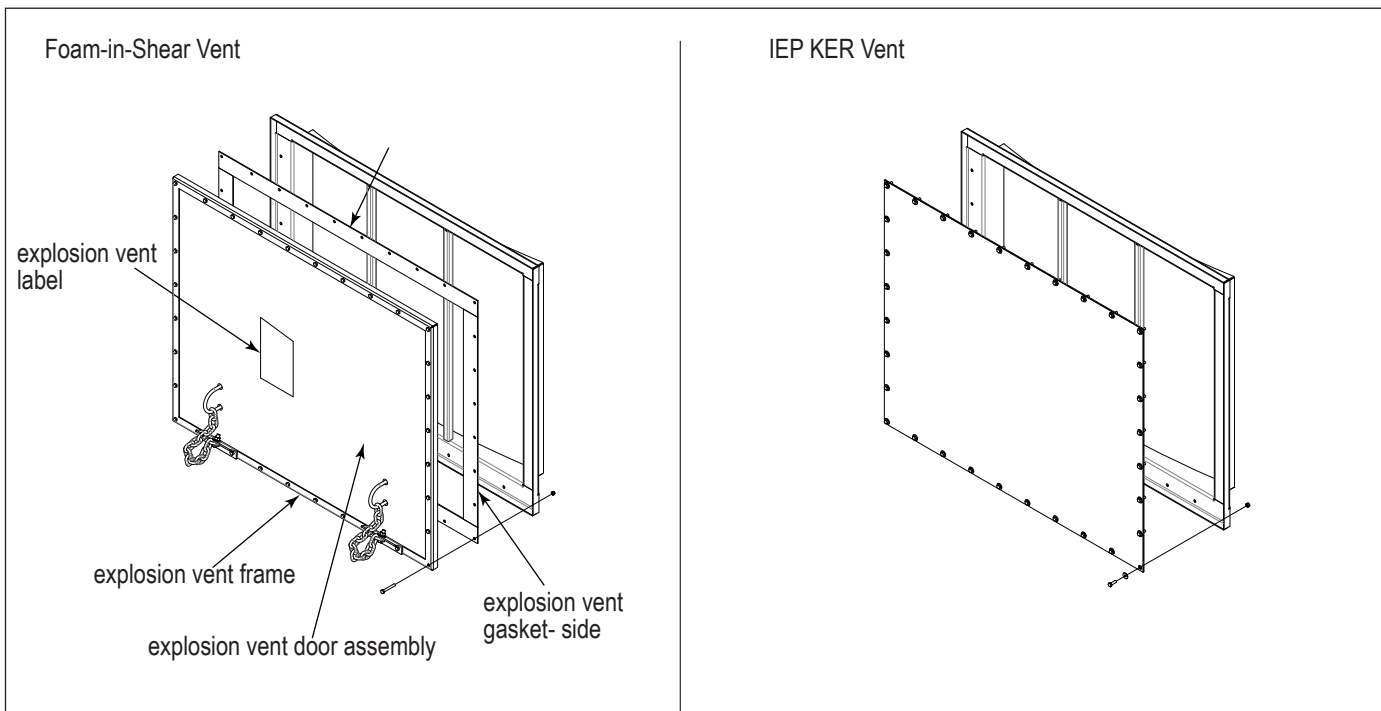


Dirty Air Plenum Assembly - Sealant Application (776/851 Size shown)

11. Properly attach lifting lugs and lift dirty air plenum with the lifting lugs per note on page 13.
12. Set the dirty air plenum off to the side but within reach of the crane. Use standoffs under the flanges to keep the plenum off of grade.
13. If applicable, install optional explosion vents by referring to the Donaldson-supplied drawing to finish explosion vent assembly and vent installation to the collector.



Explosion Vent Assembly - Sealant Application



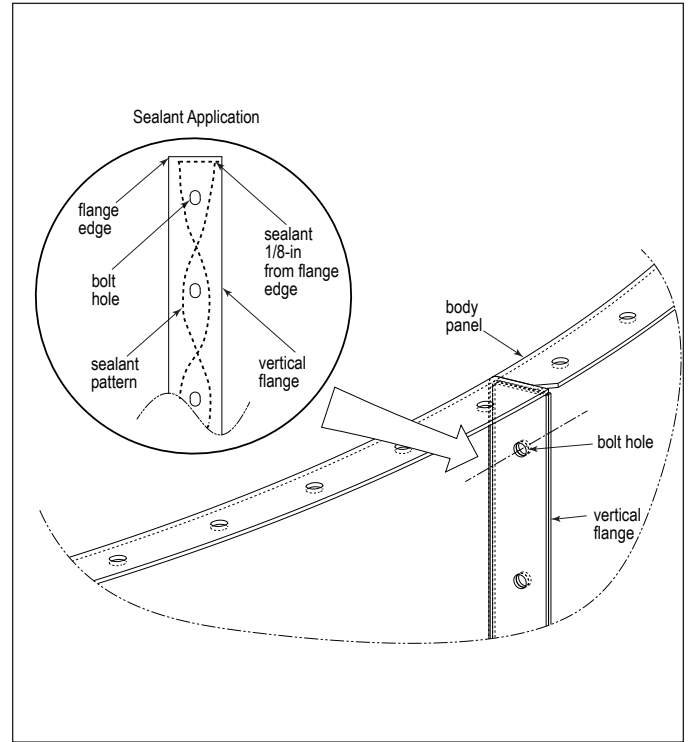
Explosion Vent

### Clean Air Plenum Assembly

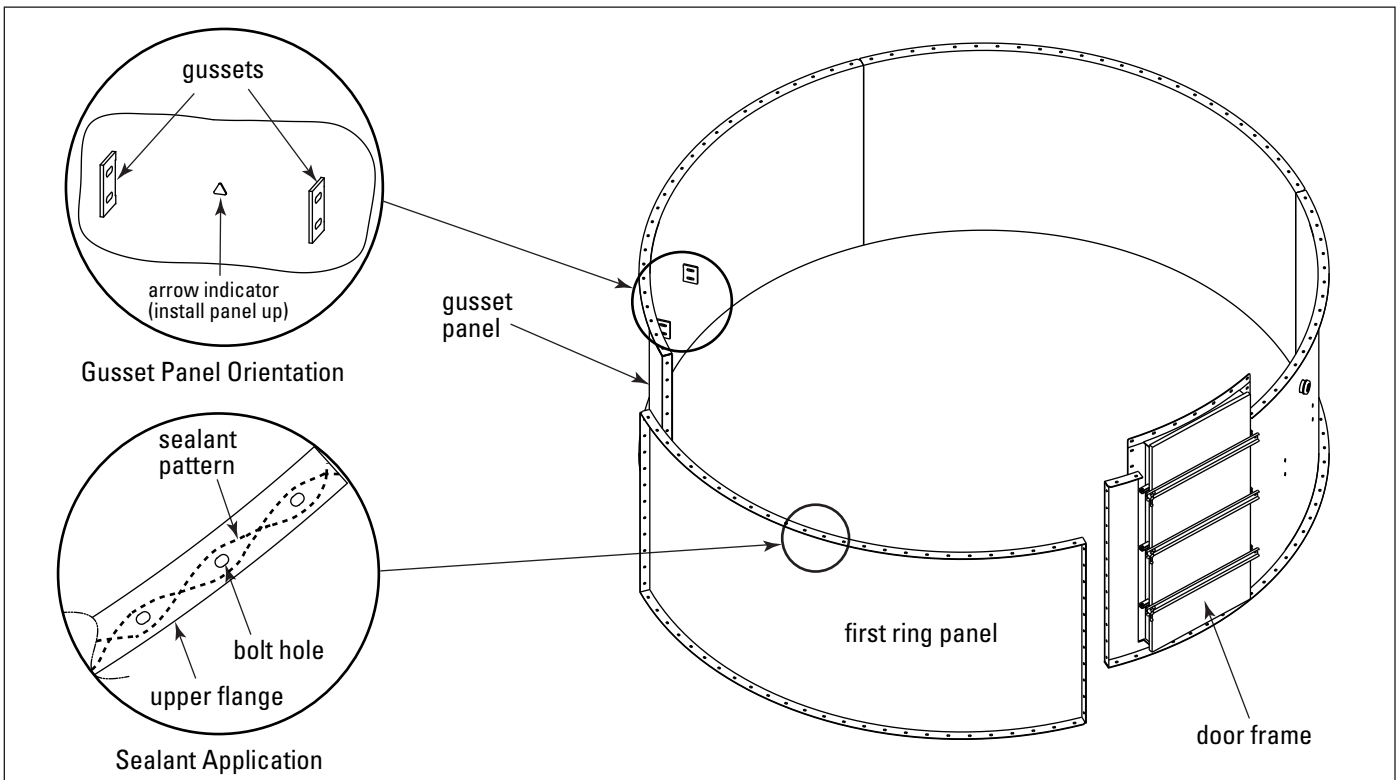
1. Set the 66-in tall clean air first ring body panels onto a flat clean surface. The tube sheet may be used as a template if no other suitable surface is available. Do not apply sealant to the tube sheet.
2. Once two panels are side by side, apply sealant to the vertical flange of the panel within 1/8-in of the vertical flange's top and bottom edge as shown and press up against the adjoining panels. Align the holes and insert the 1/2-in bolt hardware. Keep hardware hand-tightened. The first ring of clean air plenum includes the door frame panel and the cleaning system's H-frame gusset panel.

**Note:** The panel containing the welded gussets must be opposite the door frame as shown. This will be used for the cleaning drive H-frame for later installation. There is an arrow indicator denoting which direction is up as shown.

3. After assembling first ring, apply sealant to the top flange of the first ring as shown and to the door frame flange.



Panel Installation



First Ring Assembly - Clean Air Plenum

4. Prepare to assemble the second ring. The second ring has unique panels, which includes the outlet panel and door frame panel as shown.

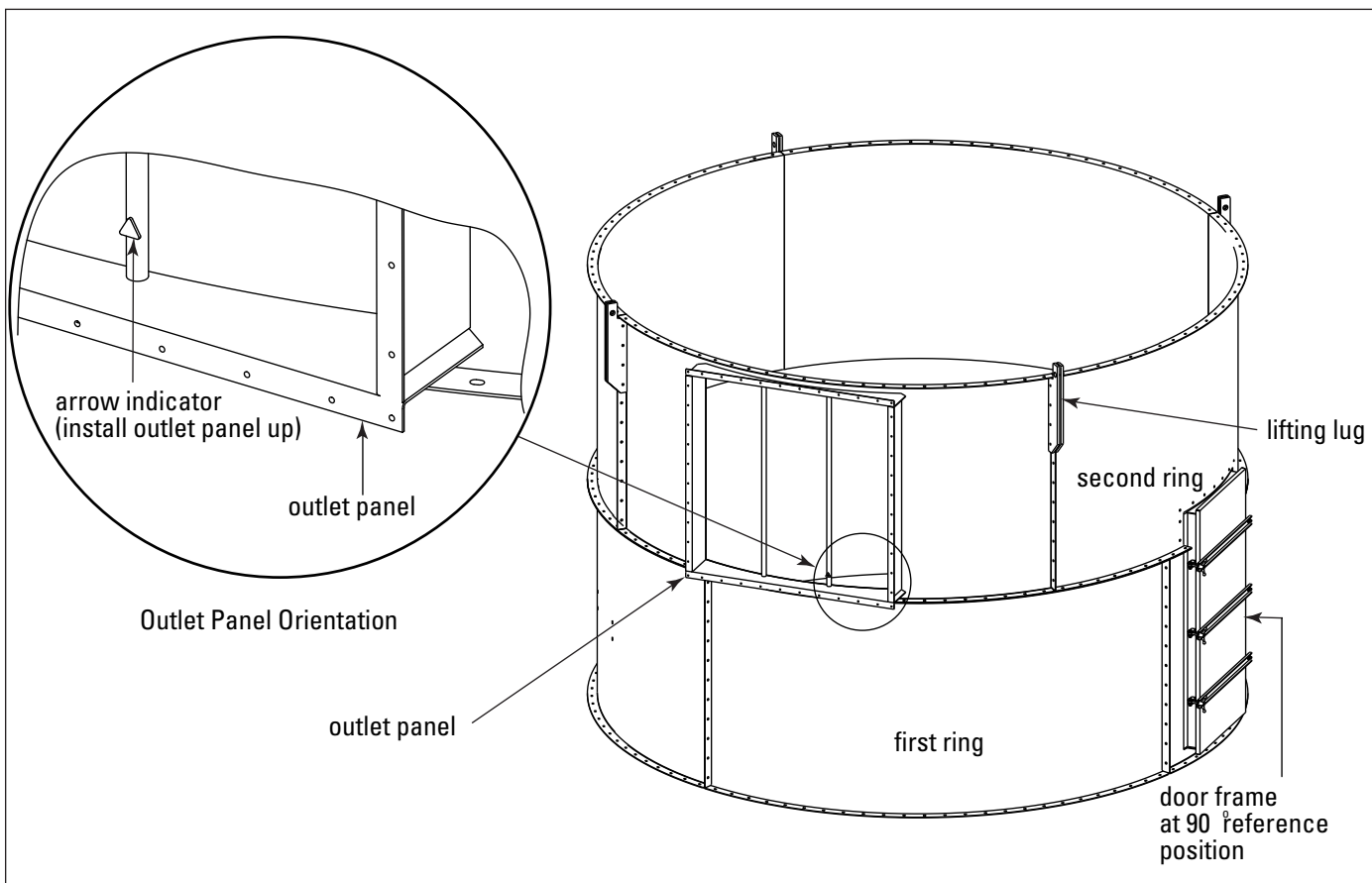
Note: The placement of the outlet is critical to ensure proper orientation. Consult the original order or Donaldson-supplied customer drawing to determine where to position the outlet (0°, 180°, or 270°) while noting the door access is always at the 90° position. The arrow indicator on the outlet panel denotes which direction is up as shown.



Lifting lug attachment requires the supplied grade 8, 1/2-in diameter hardware. Using any other grade may result in lifting lug failure.

Note: The vertical seams between body panel assemblies must be spaced by a minimum of 4 bolt spaces. Insert hardware and hand-tighten.

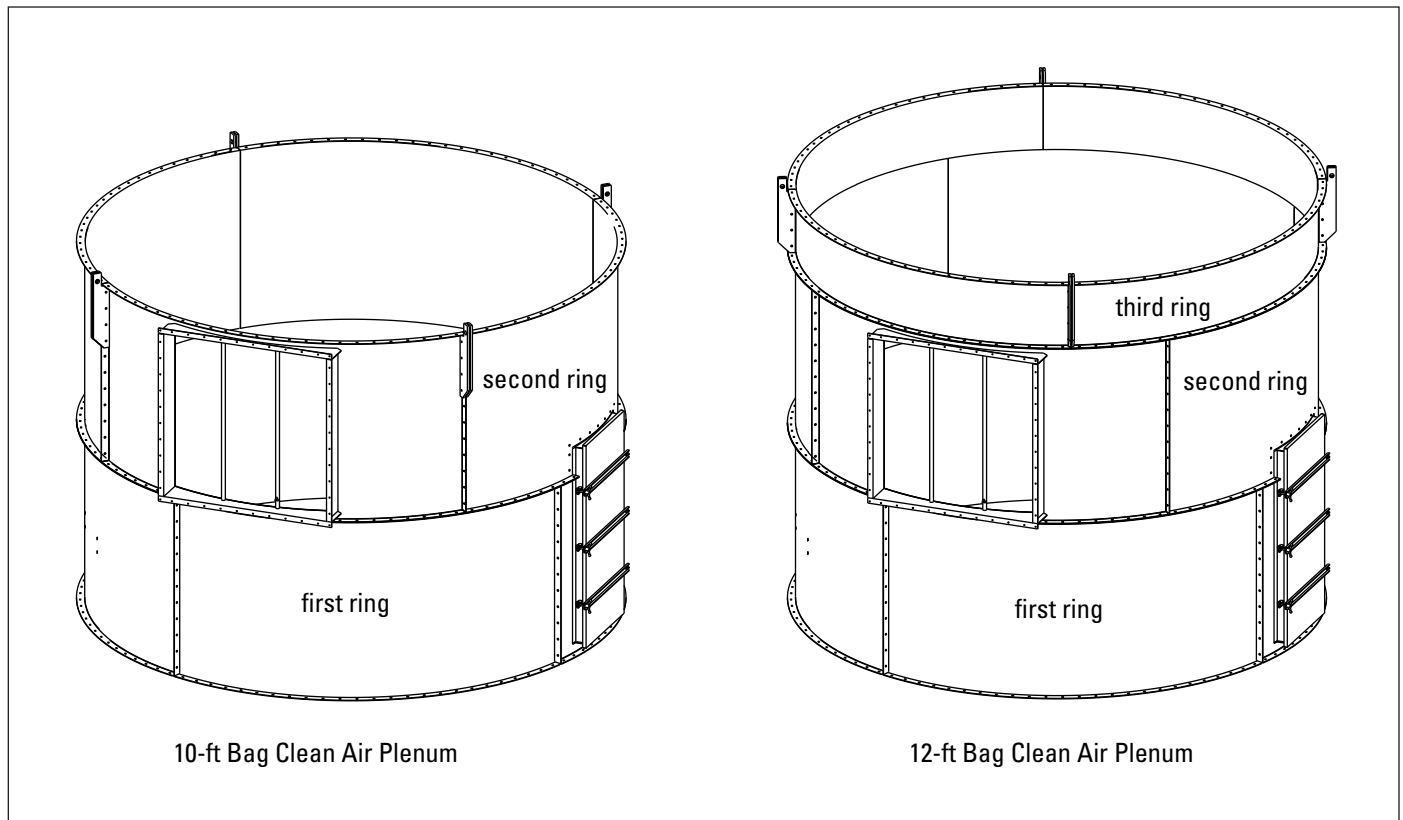
5. Assemble panels for the second ring. Install the panels by applying sealant and then pressing it up to the adjacent panel. Insert bolts and hand-tighten. See Panel Installation illustration on page 27.
6. For a 10-ft bag length collector, attach the 4 hole, 3/4-in plate lifting lugs on the outside of the collector using the grade 8, 1/2-in hardware per print. Attach the lifting lugs to the (4) upper most set of bolt holes.



Second Ring Assembly - Clean Air Plenum



7. Once the second ring assembly is complete, tighten the bolts between the first and second ring, followed by the vertical flanges and lifting lugs.
8. For a 12-ft bag length collector, the third and final clean air plenum ring will be 24-in tall. Assemble ring following step 2. Attach the 4 hole 3/4-in lifting lugs on the outside of the collector using the grade 8, 1/2-in diameter hardware per print.

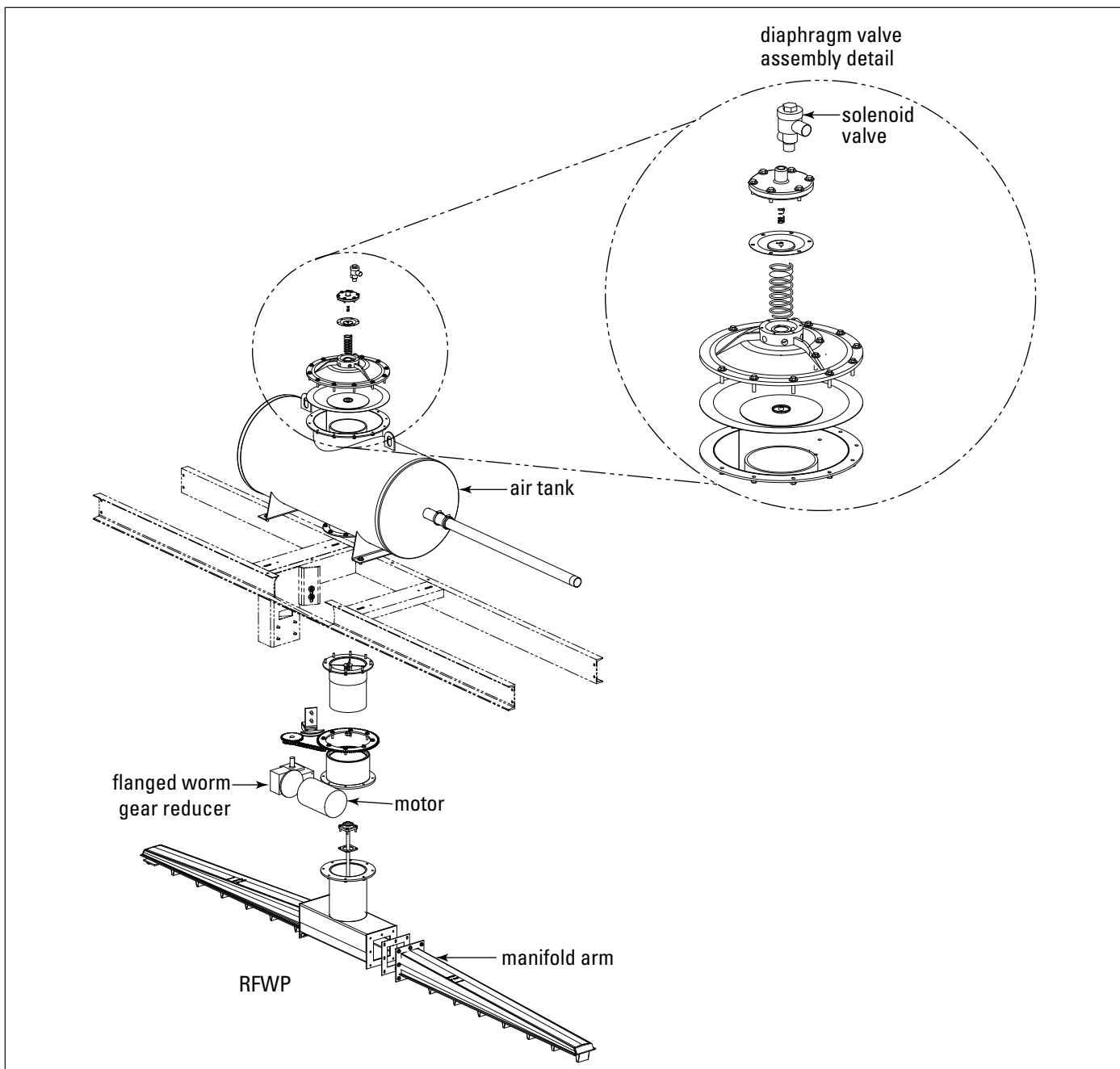


Clean Air Plenum

### Cleaning System Operation

The RF cleaning system automatically cleans each bag at least once every four minutes. During the filter cleaning cycle, a solid-state timer is used to energize a solenoid valve and controls the open and close time of the diaphragm valve. An air reservoir stores the pressurized air. When the solenoid is activated,

the diaphragm valve opens and a high volume of pressurized air is directed through the manifold arms and into the filter bags dislodging the dust cake. The dislodged dust cake then falls into the hopper where it is discharged into a drum or bin, rotary valve, screw conveyor, or pneumatic conveying system.



Cleaning Mechanism

## Cleaning Mechanism Installation

The H-frame for the cleaning system can now be installed into the Clean Air Plenum.

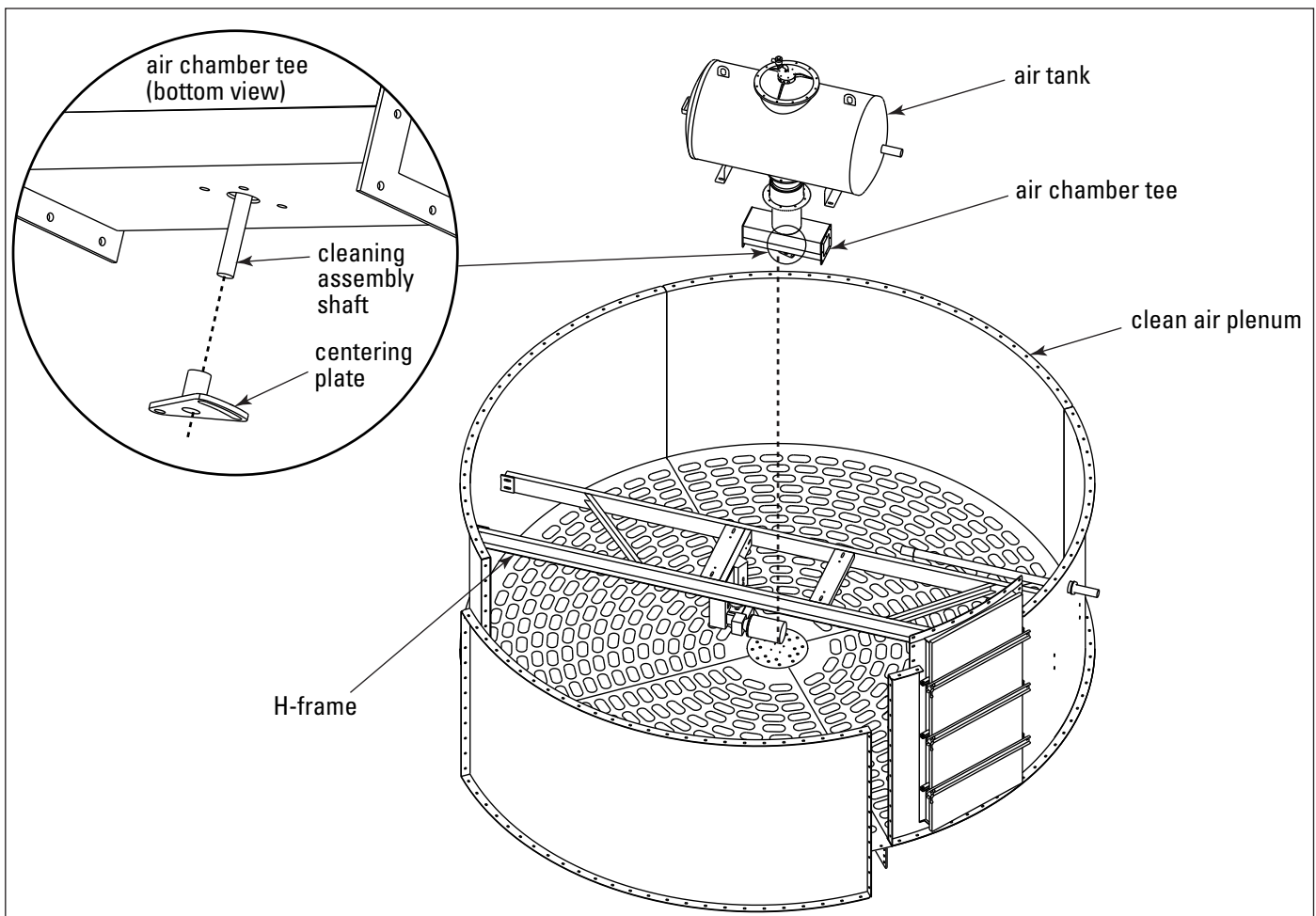
1. Lift the H-frame into position, ensuring it remains horizontal throughout the lifting and lowering process. Lower the H-frame into the Clean Air Plenum.

### **CAUTION**

Lowering the H-frame into position can create pinch points. Take proper precautions to avoid personal injury.

2. Bolt the H-frame into position using 1/2-in hardware, ensuring it is parallel relative to the Clean Air Plenum body flanges.
3. Apply sealant to the bottom bolt flange of the air tank.

4. Bolt the Air Chamber Tee to the Air Tank with 3/8-in hardware per the provided print.
5. Lower the Air Tank assembly into the clean air plenum and into the H-frame as shown.
  - a. Slide the centering plate onto the cleaning assembly shaft and temporarily secure it to the shaft with tape. Failure to do so will result in re-lifting the air tank at a later time.
  - b. Square the air tank assembly and connect the (4) 1/2-in corner bolts, which holds the air tank assembly to the H-frame. Leave connecting hardware hand-tightened at this time.



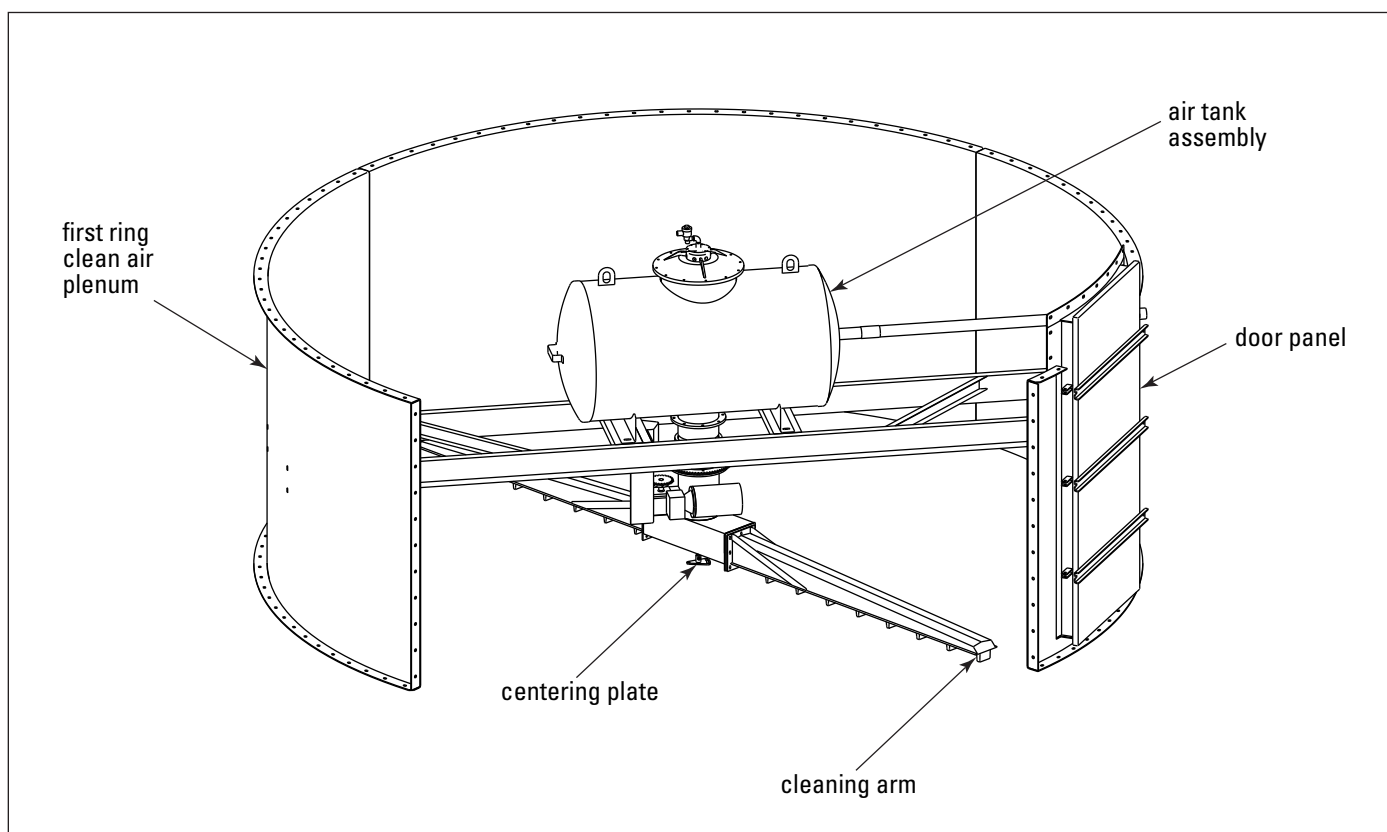
Cleaning Mechanism Installation

6. Install the cleaning arms to the Air Tank Assembly (reference the included Cleaning Assembly drawing AD3627301 or AD3627302 depending on size). The Centering Plate found at the bottom of the shaft of the rotating Air Chamber Weld will later be installed to the tube sheet (after collector installation).



Damage may occur to the rotating arms if interference is made while lifting or assembling body sections.

Take precaution against pinching when handling and installing the cleaning system components.

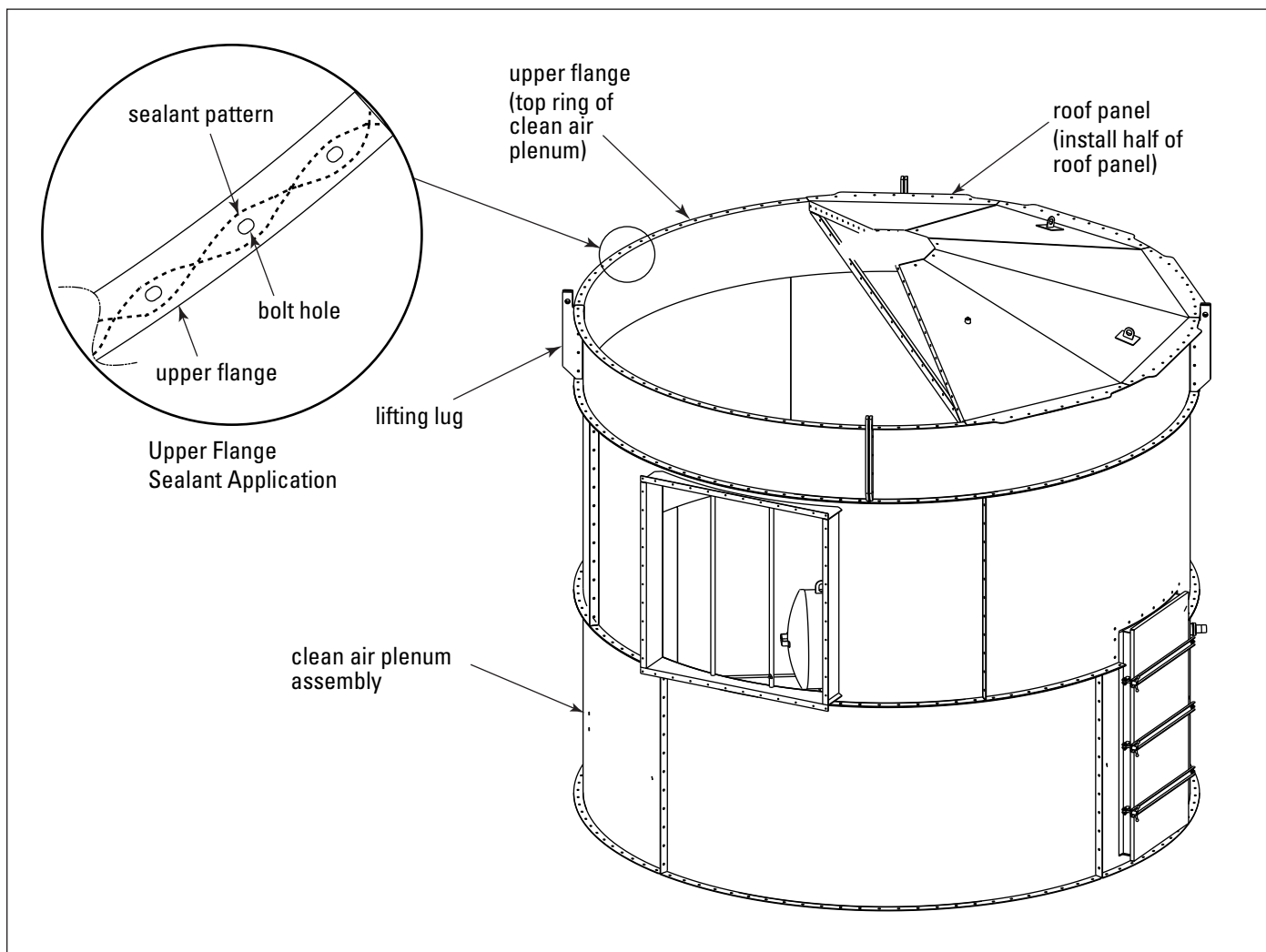


Cleaning Arm Installation

## Roof Installation

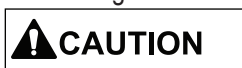
Note: The entire roof can be assembled prior to installing it on the collector.

1. Apply sealant to the top bolt flange of the clean air plenum assembly.
2. Lift the first half roof panel into position as shown and insert the 1/2-in hardware around the perimeter and hand-tighten it.

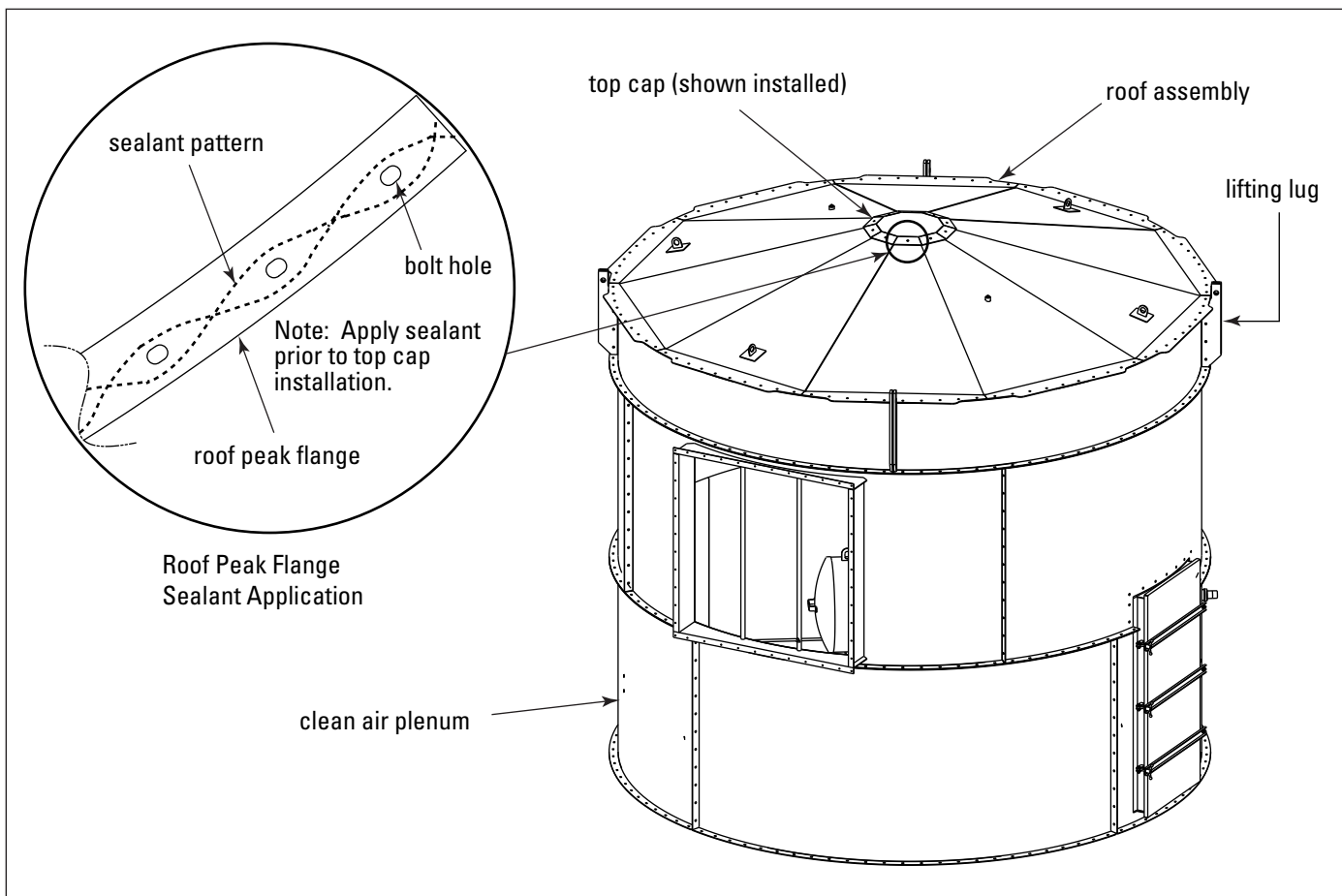


Roof Installation, 12-ft Bag Clean Air Plenum shown

3. On the second half roof panel, apply sealant liberally to the adjoining roof panel flange prior to lifting.
4. Lift the second half roof panel into position.
5. Insert hardware around the perimeter and hand-tighten.
6. Locate personnel to the inside and insert all hardware joining the two half roof panels.
7. Once all the hardware is hand-tightened, begin final tightening with the internal adjoining flanges between the two half roof panels. Then move to the outside and tighten the perimeter bolt hardware.
8. Prepare to set the top cap into the opening at the peak of the roof. Apply a liberal ring of sealant to the inside of the bolt hole pattern, and around each individual bolt hole. Set the top cap into place as shown and bolt tight.
9. Properly attach and lift clean air plenum with the lifting lugs per note with Bolt-On Lifting Lugs illustration on page 14.
10. Lift and relocate the clean air plenum with cleaning mechanism and roof. Use standoffs to keep the collector off of grade.



Do not lift assembly by roof lugs or personal injury and/or property damage may ensue. Use provided lift hardware.



Roof Top Cap Installation, 12-ft Bag Clean Air Plenum shown

### Collector Body Assembly for Higher Crane Capacity: Rated to Lift Combined Load of Dirty Air Plenum, Tube Sheet, Clean Air Plenum, and Roof

Note: Ensure the crane capacity is rated for the combined load of the Dirty Air Plenum, Tube Sheet, Clean Air Plenum, and Roof before following the below collector body assembly procedure. If a lower crane capacity is used, follow collector body assembly instructions.



Do not lift collector body assemblies from any flanges found on the inlet, outlet, or doorways.

Use the provided bolt-on lifting lugs in the appropriate manner and do not lift more than the specified weight.

Only lift rings and sections when the load is balanced.

1. Apply sealant to the top flange of the dirty air plenum collector body assembly as shown.

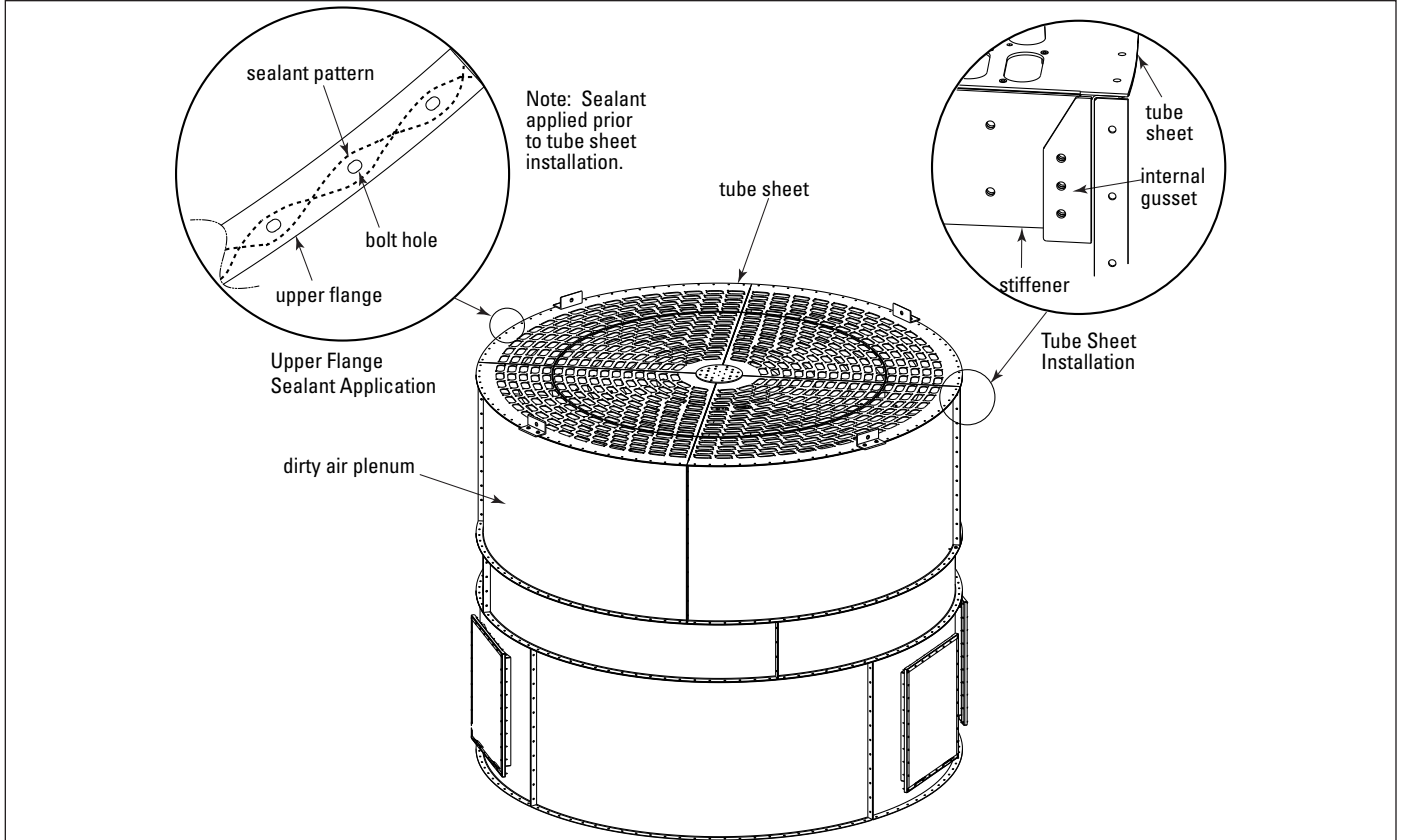
2. Lift the tube sheet onto the dirty air plenum and slowly lower the tube sheet into position. Tube sheet stiffeners will be facing down.

Note: If installing a RF with high inlet, make sure blank area of tubesheet is aligned with the high inlet opening of the dirty air plenum.

3. While the tube sheet is still off the flange but the radial stiffeners are in the dirty air plenum body, rotate the tube sheet clock-wise (from top) until the stiffeners make contact with the internal gussets of the dirty air plenum as shown.
4. Lower the tube sheet into position. Insert only the 5/8-in hardware required to connect the tube sheet radial stiffeners to the internal gussets and tighten.



Take precaution against pinching when handling and installing the tube sheet into the Dirty Air Plenum.

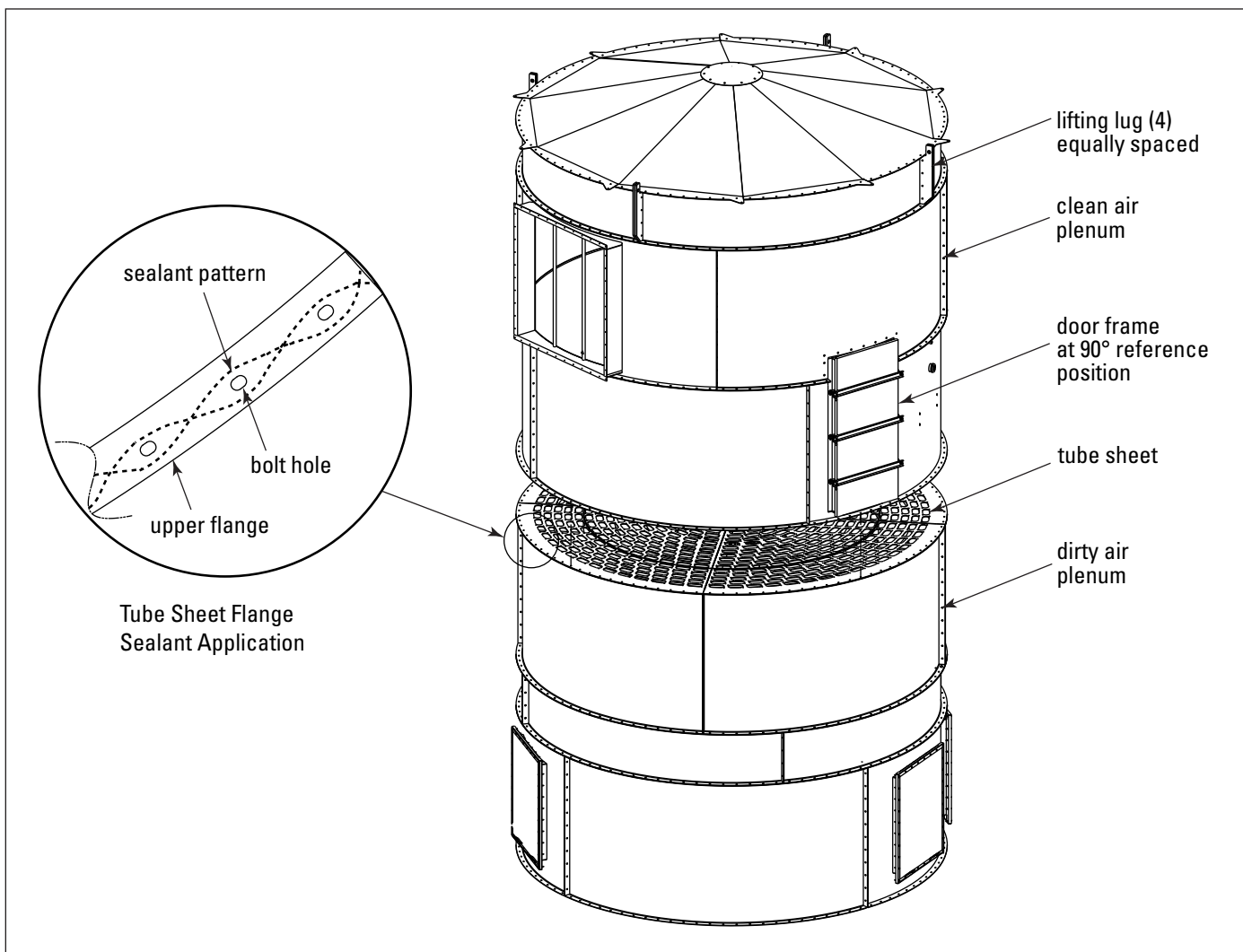


Tube Sheet Installation, Model RFWP shown

5. Apply sealant to the perimeter of the tube sheet as shown to prepare it for the clean air plenum installation.

Note: Ensure the crane capacity is rated for the combined load of the Dirty Air Plenum, Tube Sheet, Clean Air Plenum, and Roof for the next steps. If desired, the major components can be lifted individually following the Collector Body Assembly instructions.

6. Lift the clean air plenum with the existing attached lifting lugs onto the tube sheet ensuring that the doorway is in the 90° position per the specification drawing. Insert the 1/2-in hardware and then tighten the bolt perimeter.
7. Apply sealant to the top of the involute inlet flange as shown. For a high body inlet, apply sealant directly to the top of the hopper flange.

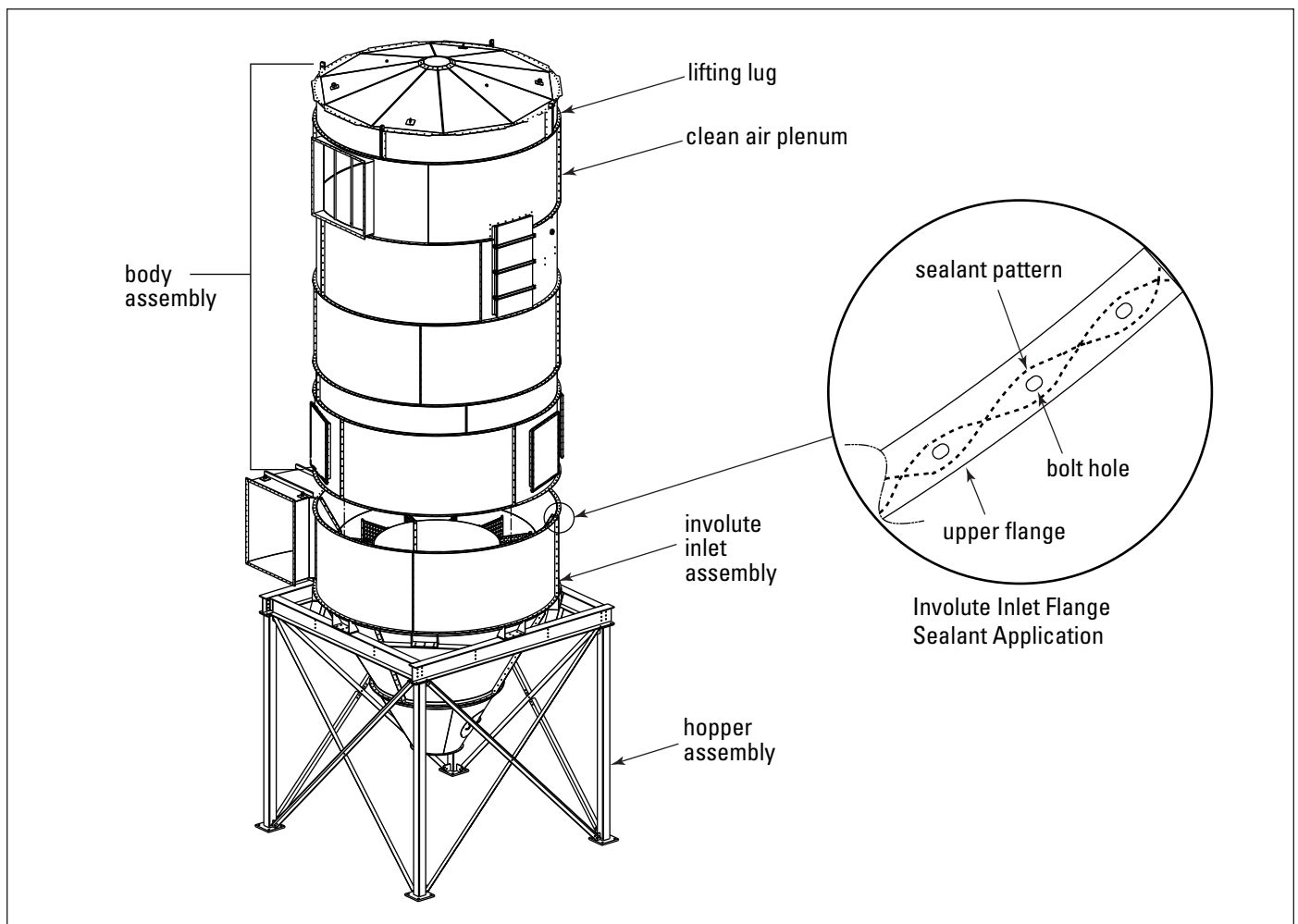


Clean Air Plenum Installation, Model RFWP shown



8. Lift the body assembly with the main lifting lugs attached to the clean air plenum. Position the body over the involute inlet. For the high body inlet, this assembly lifts directly onto the hopper flange. Properly orient the body per the Donaldson-supplied customer drawing or specification drawing and lower into position.
9. Insert all the 1/2-in hardware and tighten the entire connecting perimeter.

**Note:** It is critical that the orientation matches the specification drawing to ensure there will be NO interference with ladder and platform locations or explosion vent locations.



Dirty Air Plenum Installation, Model RFWP shown

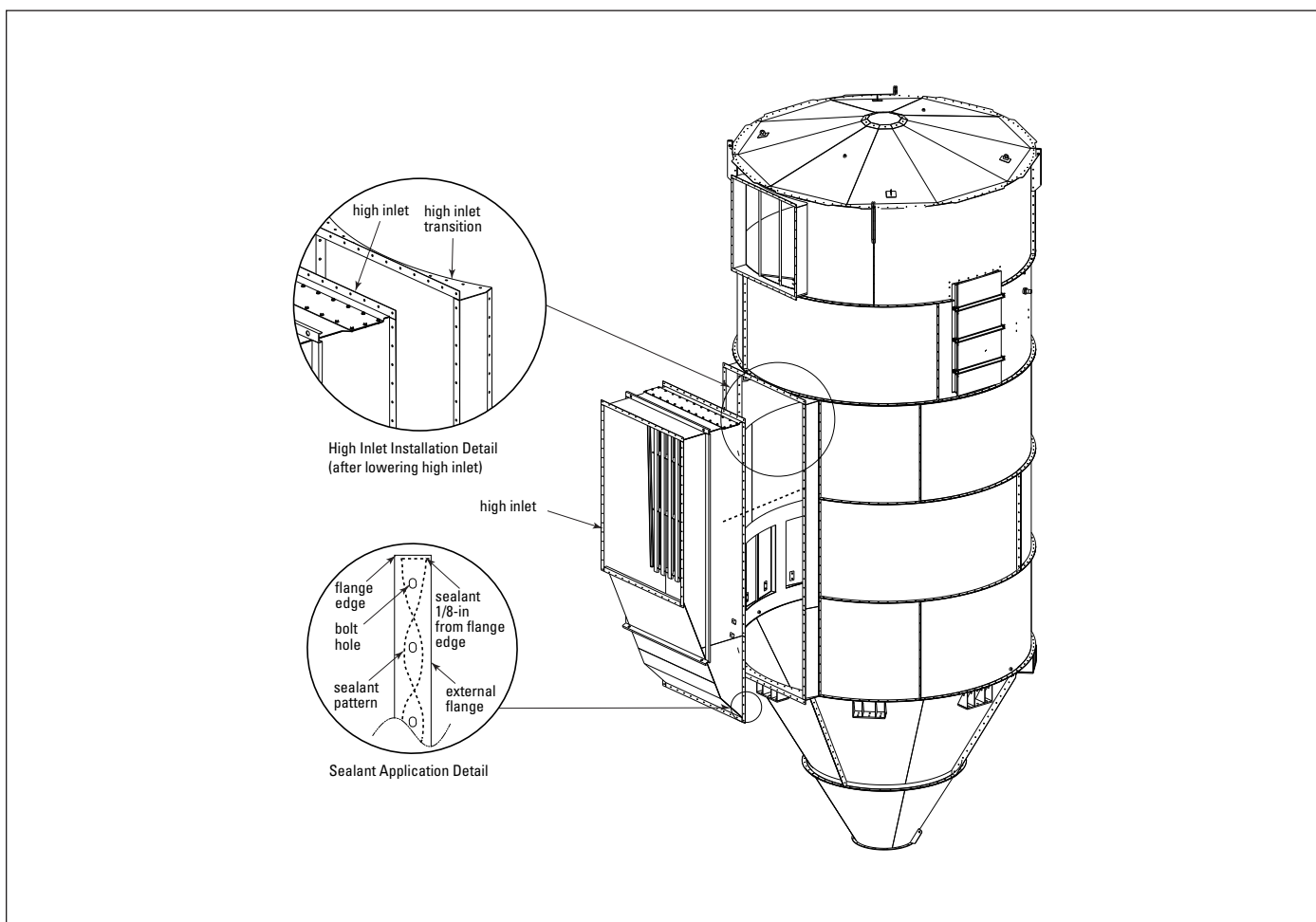
10. To prepare for high inlet installation, apply sealant to both connecting flanges of the high inlet within 1/8-in from the flange edge as shown. High inlet will press up against the high inlet transition from the outside of the high inlet transition.

Note: Sealant application must be done before lowering into position.

11. Lift the inlet assembly into the proper orientation and lower it into place as shown. Press the flanges up against the outside of the high inlet transition. Align the holes and then insert and tighten hardware.



Take precaution against pinching when lowering the High Inlet into the Dirty Air Plenum body.



High Inlet Installation

## Collector Body Assembly for Lower Crane Capacity

Note: Ensure the crane capacity is rated for the Dirty Air Plenum plus the Tube Sheet load or the Clean Air Plenum plus Roof load (whichever is greater) before proceeding with the below collector body assembly procedure.

### **CAUTION**

Do not lift collector body assemblies from any flanges found on the inlet, outlet, or doorways.

Use the provided bolt-on lifting lugs in the appropriate manner and do not lift more than the specified weight.

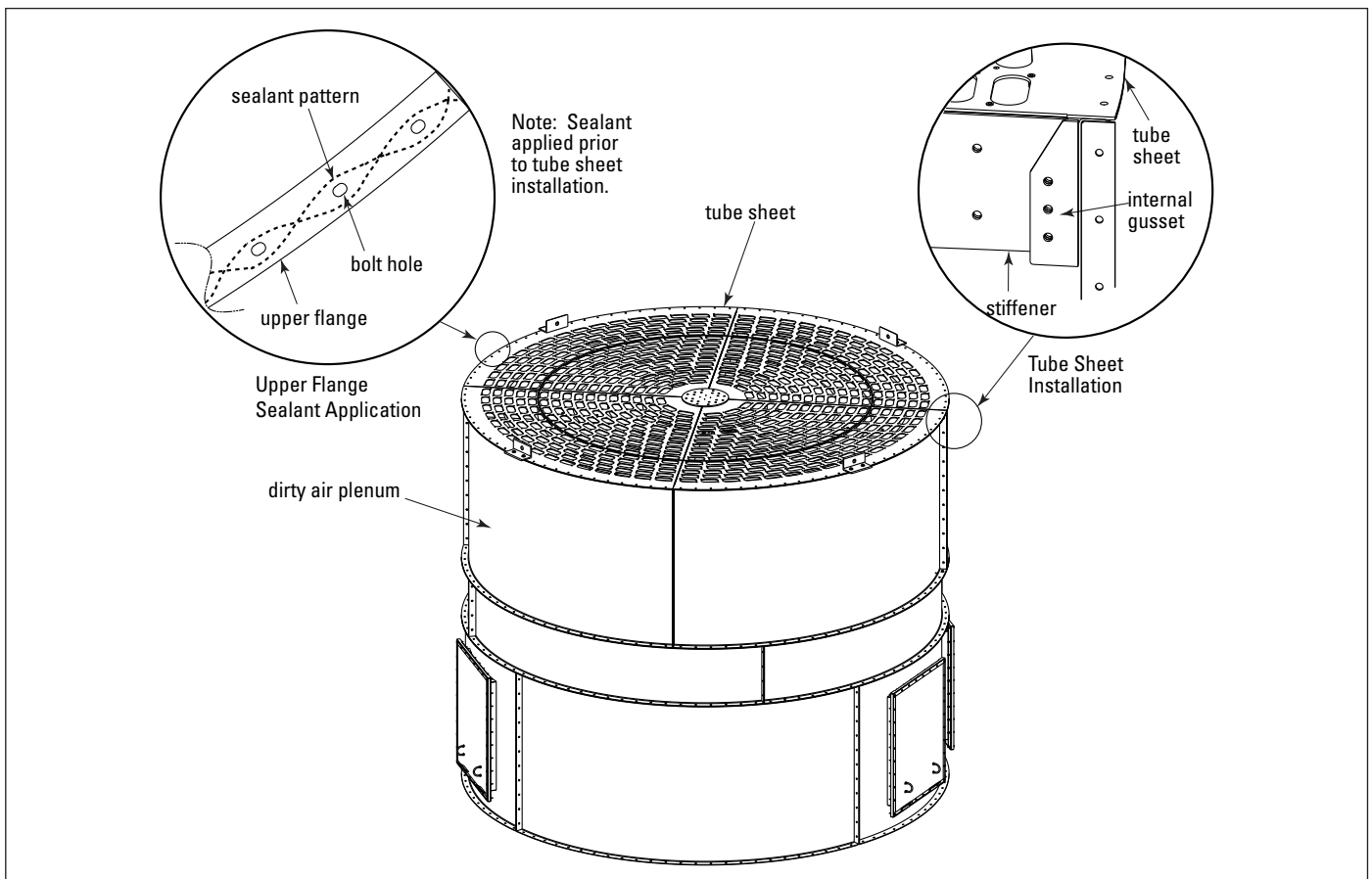
Only lift rings and sections when the load is balanced.

1. Apply sealant to the top flange of the dirty air plenum collector body assembly as shown.

2. Lift the tube sheet into the dirty air plenum and slowly lower the tube sheet into position. Tube sheet stiffeners will be facing down.

Note: If installing a RF with high inlet, make sure blank area of tubesheet is aligned with the high inlet opening of the dirty air plenum.

3. While the tube sheet is still off the flange but the radial stiffeners are in the dirty air plenum body, rotate the tube sheet clock-wise (from top) until the stiffeners make contact with the internal gussets of the dirty air plenum as shown.



Tube Sheet Installation, Model RFWP shown

- Lower the tube sheet into position. Insert only the 5/8-in hardware required to connect the tube sheet radial stiffeners to the internal gussets and tighten.

**CAUTION**

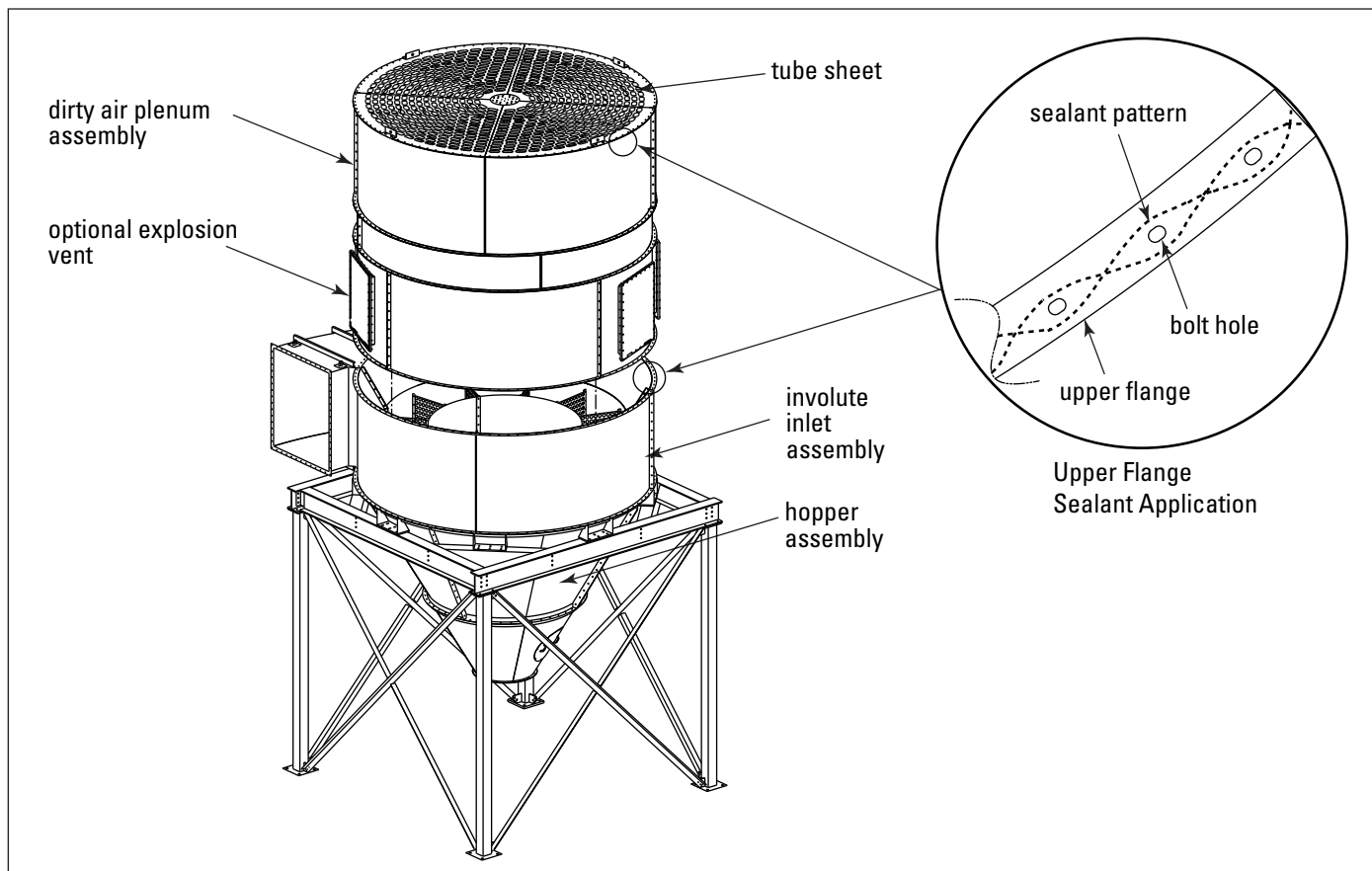
Take precaution against pinching when handling and installing the tube sheet into the Dirty Air Plenum.

- Apply sealant to the top of the involute inlet flange as shown. For a high body inlet, apply sealant directly to the top of the hopper flange.
- Properly attach and lift dirty air plenum assembly with the lifting lugs per note with Bolt-On Lifting Lugs illustration.

- Lift the dirty air plenum assembly with tube sheet onto the involute inlet assembly. For the high body inlet, this assembly lifts directly onto the hopper flange. Properly orient the dirty air plenum assembly to the hopper inlet assembly and lower into place.

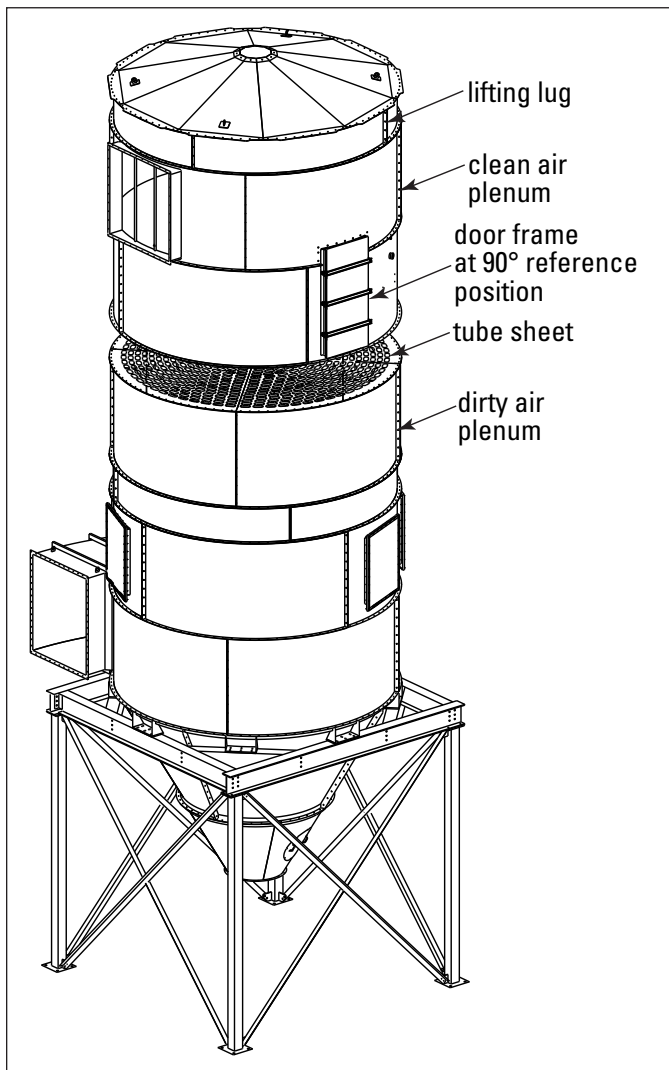
Note: It is critical that the orientation matches the specification drawing to ensure there will be NO interference with ladder and platform locations.

- Insert all hardware and then tighten the entire connecting perimeter.
- Remove the angle iron lifting lugs.
- Apply sealant to the perimeter of the tube sheet as shown to prepare it for the clean air plenum installation.



Dirty Air Plenum Installation, Model RFWP shown

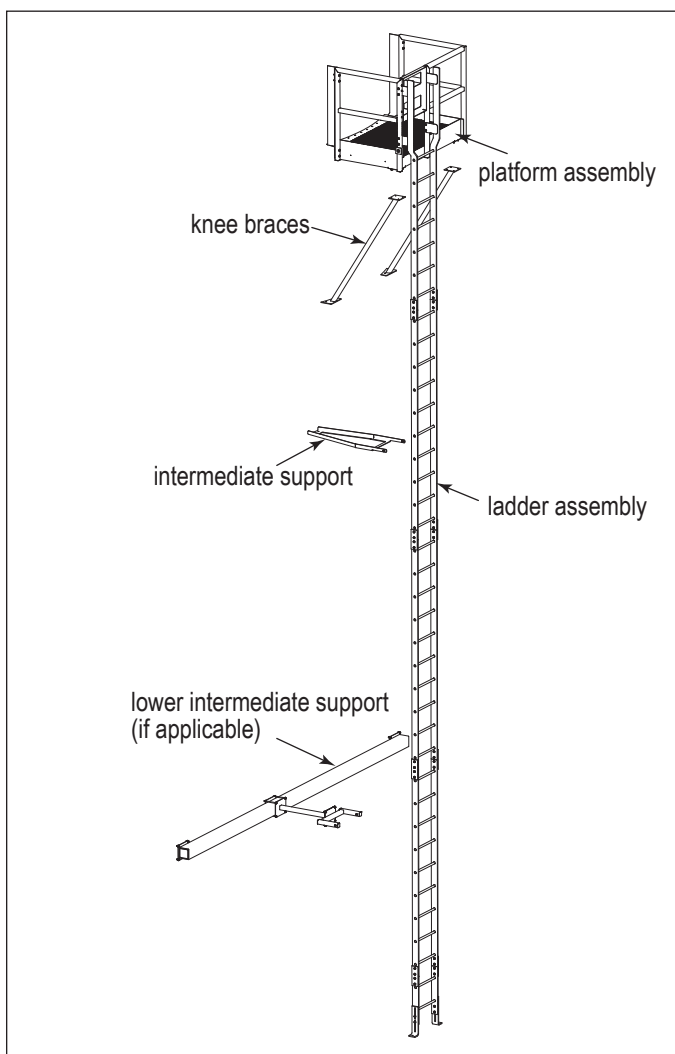
11. Lift the clean air plenum by the previously attached lifting lugs onto the tube sheet ensuring that the doorway is in the 90° position per the specification drawing. Insert all hardware and then tighten the bolt perimeter.



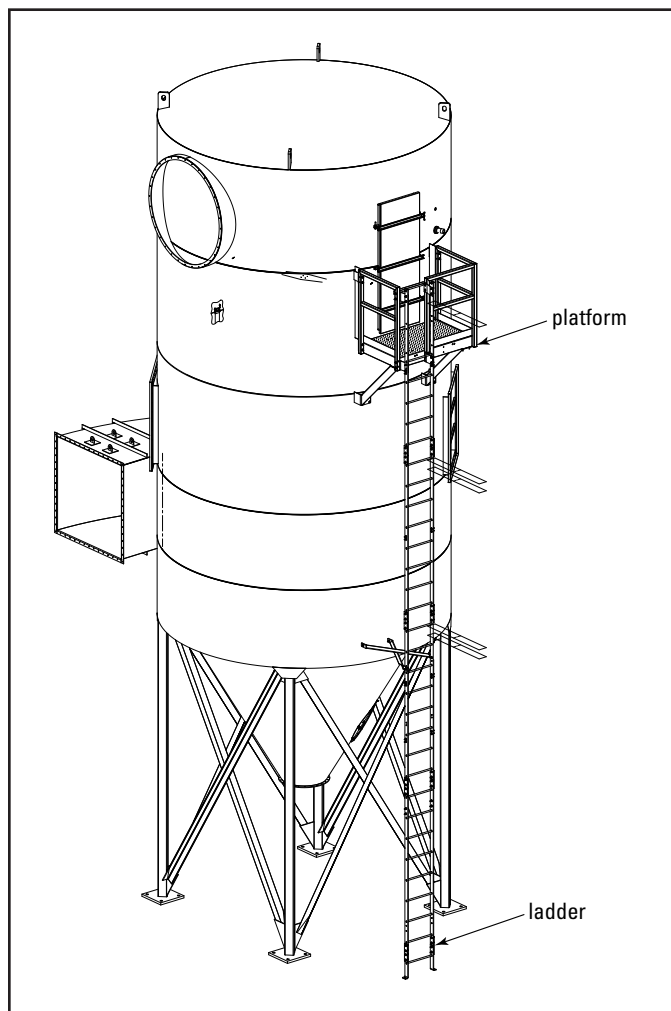
Clean Air Plenum Installation, Model RFWP shown

### Ladder/Platform Installation

1. Attach the knee braces to the platform assembly shown on drawings shipped with collector.
1. Lift the platform assembly into position.
2. Remove the hardware located where the platform assembly and knee braces will connect to the body panel flanges.
3. Position the platform assembly, then reinstall and tighten the existing hardware including the bolted connections for the platform railing and knee braces.
4. Assemble the entire ladder sub-assembly per the drawing provided. Temporarily bolt the adjustable, bottom angle anchors at the highest position.
5. If applicable, install the lower intermediate ladder support to the leg pack following the drawing provided.
6. Lift the completed ladder assembly into position and fasten to the platform assembly.
7. Install the remaining intermediate support. Match drill the ladder assembly per the drawing provided and attach to the support.
8. If applicable, match drill the ladder assembly and attach to the lower intermediate support.
9. Loosen the bottom ladder section and position it to touch the collector foundation. Concrete anchors will be required to complete this connection.



Platform Installation

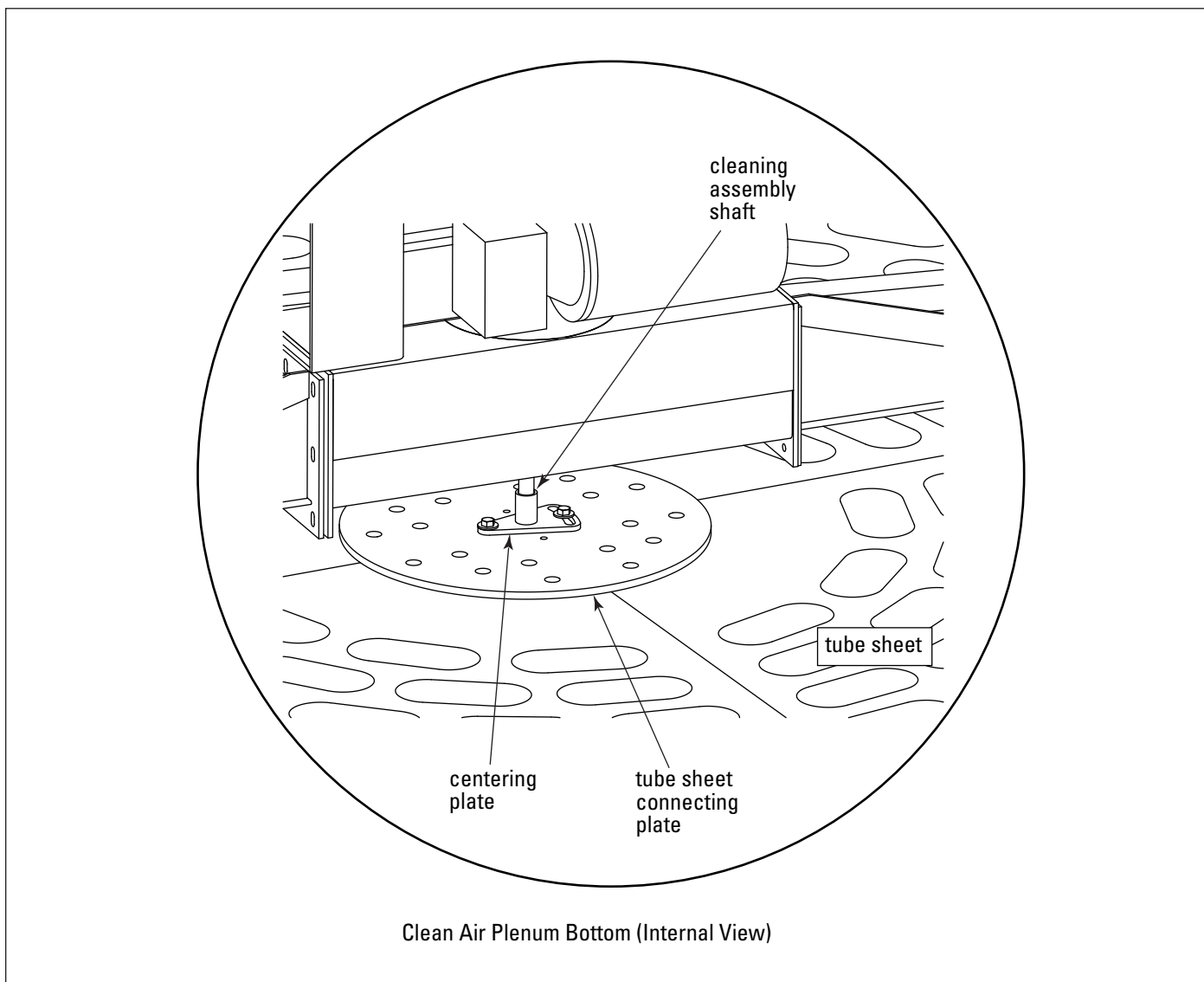


Ladder Installation

## Cleaning System Assembly and Adjustment

1. With the cleaning arms attached, check the cleaning arms for free rotation. If rotation is difficult, ensure that the H-frame is parallel to the tube sheet by measuring the distance from the H-frame to the tube sheet at all 4 corners - all 4 measurements should be the same. Adjust the H-frame by moving it in its mounts to the Clean Air Plenum body.
2. Ensure the air tank is parallel to the tubesheet. If necessary, use leveling screws in the threaded holes found on the underside of the H-frame to level the air tank.
3. Check alignment of the Centering Plate to the pre-drilled and tapped holes in the tube sheet plate. If the Centering Plate holes do not align with the tube sheet plate in any orientation, slide the air tank until it aligns. Check for free rotation of the cleaning arms and tighten the air tank to the H-frame.

Note: The Centering Plate allows for movement to help align the cleaning mechanism. It is able to bolt in any of four orientations allowing a wide range of movement.



Cleaning System Installation

4. Apply hardware adhesive to the 3/8-in hardware and tighten the Centering Plate to the tube sheet plate. If the Centering Plate will not align with a bolt location on the tube sheet plate, the assembly is out of alignment and needs to be fixed by repeating step 3. Check rotation of the arms and repeat this step if necessary.  
  
Note: Repositioning of the air tank assembly may be required for this step to ensure the cleaning arms can rotate freely.
5. Install the gear reducer and sprocket along with the chain tensioner to the H-Frame (reference the included Cleaning Assembly drawing AD3627301 or AD3627302 depending on size).  
  
Note: Drive sprocket, tensioner, and idler sprocket must lie in the same plane. Adjust driver sprocket and chain tensioner to achieve results.
6. Connect the chain from the drive sprocket to the rotating assembly using the master link.
7. Install motor to the gear reducer. Check that the motor shaft key is in place and enters the keyway in the gear drive correctly. Fasten the motor flange to the gear reducer housing using the four hex head cap screws supplied.
8. Ensure the gearbox has been prefilled with lubricant.
9. Remove the top pipe plug and install the breather.
10. Remove the plastic exhaust-port plug from the bottom of the solenoid valve.
11. Adjust the drive sprocket, tensioner sprocket and idler so they are in the same horizontal plane.
12. Wire the motor to a customer-supplied motor starter with overload and short circuit protection.

## Electrical Wiring



Electrical installation, service, or maintenance work must be performed by a qualified electrician

and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

If the collector was supplied with an electrical control panel, the wiring diagram supplied with the control panel takes precedence over the general diagrams shown in this manual.

All electrical wiring and connections, including electrical grounding, should be made in accordance with the National Electric Code (NFPA No. 70-latest edition).

Check local ordinances for additional requirements that apply.

The appropriate wiring schematic and electrical rating must be used. See collector's rating plate for required voltage.

An electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code (NFPA No. 70-latest edition). Check collector's rating plate for voltage and amperage ratings.

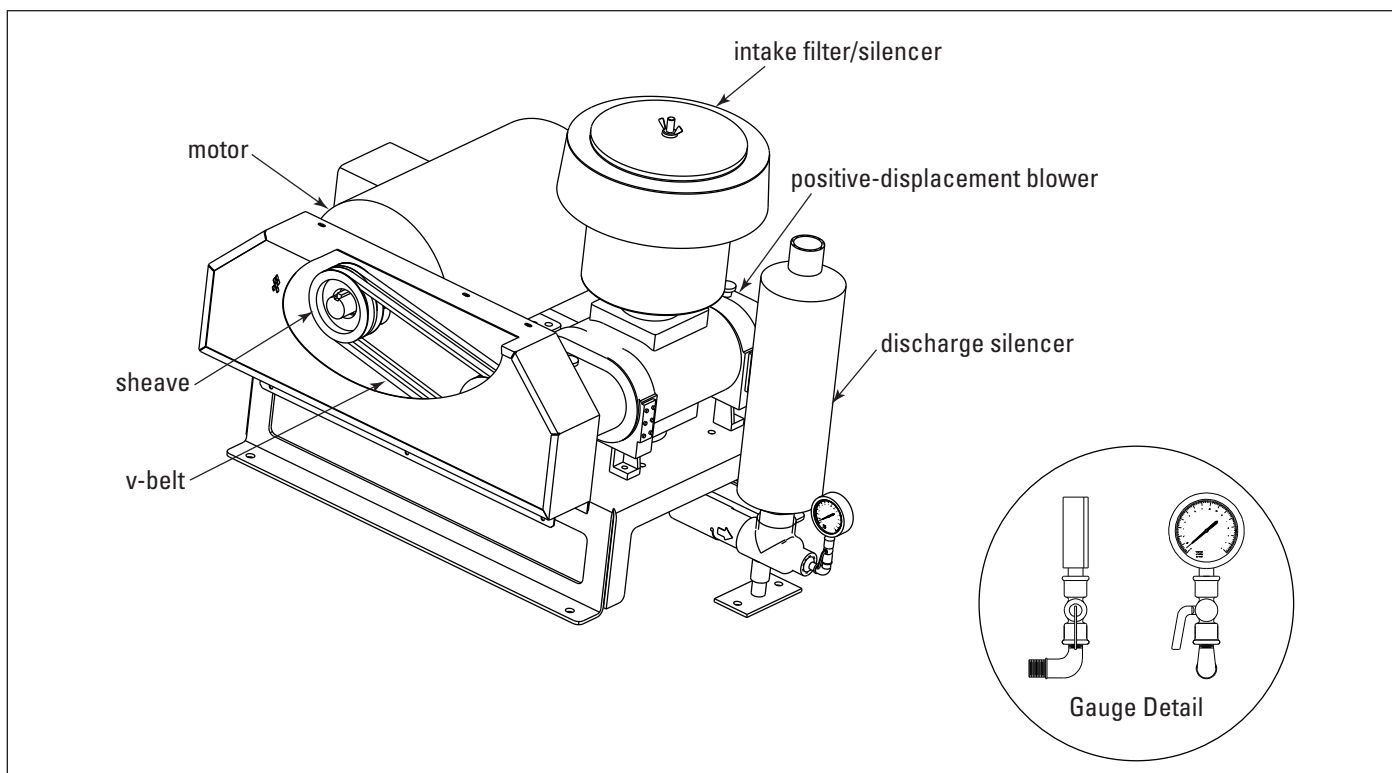
Refer to the wiring diagram for the number of wires required for main power wiring and remote wiring.



### Air Supply

A positive-displacement (PD) blower provides the air used for filter cleaning and is sized for each model's cleaning air requirements. The PD blower should be installed on a level surface. Follow the installation instructions provided with the positive-displacement blower.

Air Supply Pipe Sizing	
Model	Pipe Diameter
570-905	2-in



Positive-Displacement Blower Assembly (Isometric View)

## Solid-State Timer Installation

### **CAUTION**

Electrical installation, service or maintenance work during installation must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing installation, service, or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

The solid-state timer is used to control the filter cleaning system.

1. Choose a location convenient for accessibility and maintenance.
2. Using the wiring diagram supplied, wire the blower motor, blower-motor starter, solid-state timer, and solenoid valve. Use appropriate wire gauge for rated amp load as specified by the local codes.

### **NOTICE**

The solid-state timer requires a 105 to 135-Volt, customer-supplied power supply.

Do not mount the solid-state timer directly to the collector or the positive displacement blower as mechanical vibration can damage the timer.

## Solenoid Connection

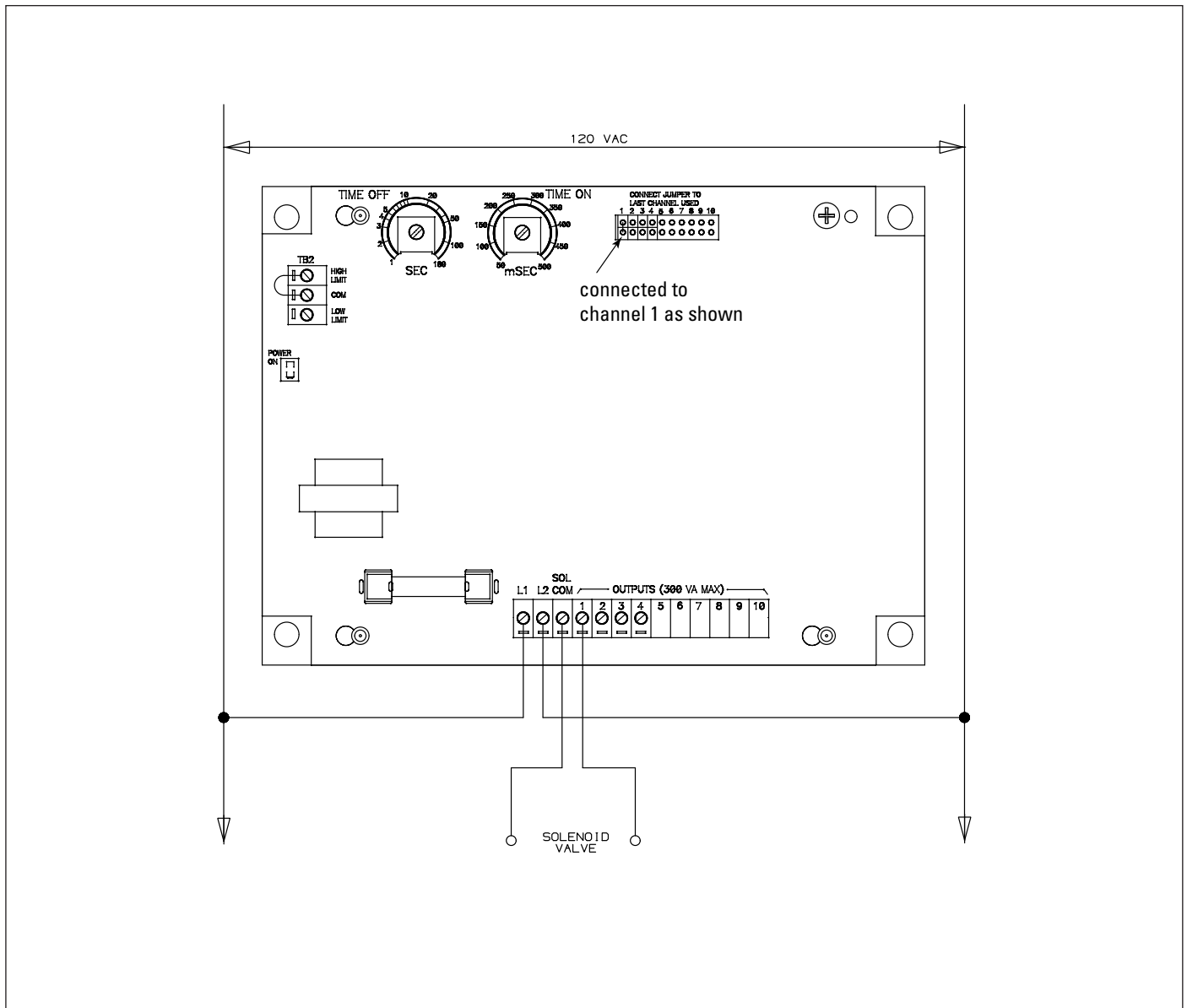
The collector is equipped with a solenoid valve (typically 120V) that controls the pulse-cleaning valve, which cleans the filters.

Wire the solenoids to the solid-state timer following the wiring diagram supplied with the collector. Filter life and cleaning operation will be affected if not wired correctly.

## Timer and Solenoid Specifications

Power to the solid-state timer is supplied to Terminals L1 and L2, which are intended to operate in parallel with the positive displacement blower starter's low-voltage coil. On fan start-up, power is supplied to the timer and the preset OFF time is initiated. At the end of the OFF time, the timer energizes the solenoid valve to provide the ON time cleaning pulse for the diaphragm valve and repeats this cycle until the system is shut down. The timer can also be wired for on demand cleaning with an external pressure switch. If this option is selected, the high and low limit pressure switch relays will be connected to the TB2 corresponding terminals. Otherwise, the common and high limit terminals on TB2 are jumpered to provide continuous operation.

**Note:** If the collector was supplied with an electrical control panel, the wiring diagram supplied with the control panel takes precedence over the general diagrams shown in this manual.



Input  
102-132V/50-60Hz/1Ph

Output Solenoids  
2-3A max per channel

Pulse ON Time  
Factory set at 100-milliseconds, or 1/10-second.

**NOTICE** Do not adjust pulse ON time unless the proper test equipment is available. Too much or too little ON time can cause shortened filter life.

Pulse OFF Time  
Factory set at 10-seconds, the OFF time must be field adjusted such that the pressure at the air reservoir peaks at 8-9 psig just before the next pulse. Make final adjustments by observing the LOAD ON light flashing on the timer.

**NOTICE** Open the valve to the air reservoir gauge only when adjusting OFF time.

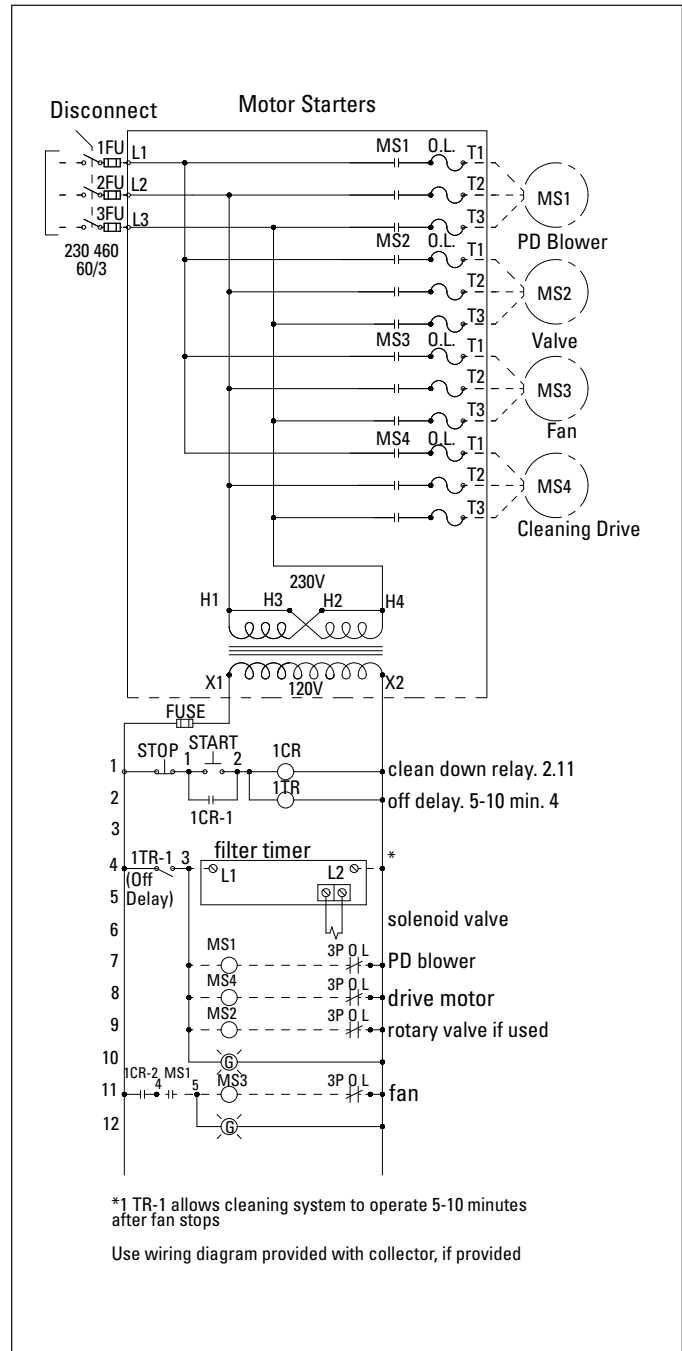
Operating Temperature Range  
-20° F to 130° F

Solenoid Valves  
120V/60 Hz intermittent duty @ 20.9 watts

Interlocking  
To ensure proper operation of the system the main blower should not start unless the cleaning mechanism, positive-displacement blower, and dust removal system are all operating. It is recommended that an interlock device is installed between these motors. Failure of interlocked devices should generally not shut down the main blower, but should activate an alarm system, if available. Failure of either a rotary airlock or screw conveyor with separate drives should shut down all other drives and alarm the operator. This will avoid filling the collector with dust.

Time Delay, Start-Up  
Starting motors at 3-second intervals is recommended to minimize inrush current and to allow interlocking.

Time Delay, Shut-Down  
A sequenced shut down approach is recommended for optimal performance of the collector. After the main blower shuts down, the remaining components should continue to run for several minutes to empty the hopper and dust removal system of all dust that drops from the filter bags after the primary airflow stops.



Collector Wiring

### Felt Bag and Cage with Boltsafe™ Hardware Filter Installation

1. Slide the filter bag onto the filter cage until the top edge of the bag reaches the top flange of the filter cage.

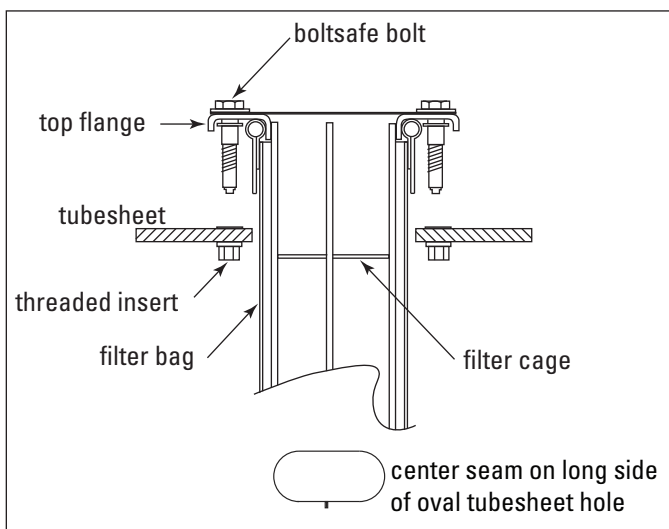
Note: Place the bottom seam of the bag parallel to the long side of the oval.

2. From the clean-air plenum, insert the filter bag and filter cage assembly through the tubesheet aligning the two bolts with the two threaded inserts factory installed in the tubesheet.

3. Secure with Boltsafe bolts provided.

#### NOTICE

Hand-start each bolt before tightening either bolt. Do not use a power or impact driver to tighten bolts. A speed wrench using a maximum of 20 ft-lbs is recommended.



Felt Bag and Cage and Pleated Bag with Boltsafe Hardware Filter Installation

### Pleated Bag with Boltsafe™ Hardware Filter Installation

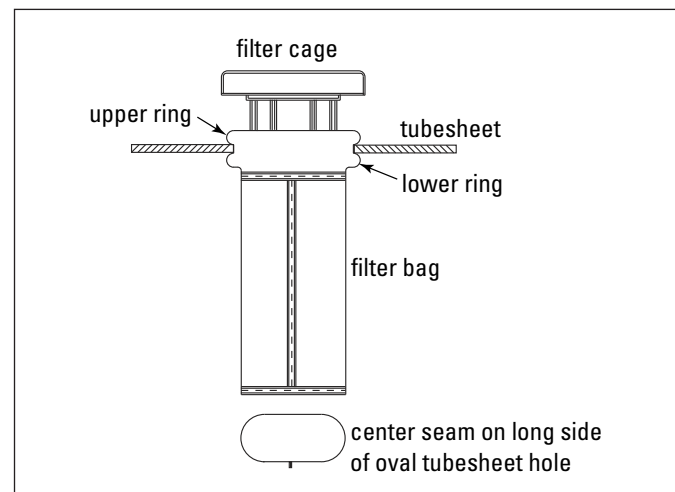
1. From the clean air plenum, insert pleated bag assembly through the tubesheet aligning the two bolts with the threaded inserts in the tubesheet. It may be necessary to squeeze the pleated bag as it is inserted into the tubesheet.
2. Secure with Boltsafe bolts provided.

#### NOTICE

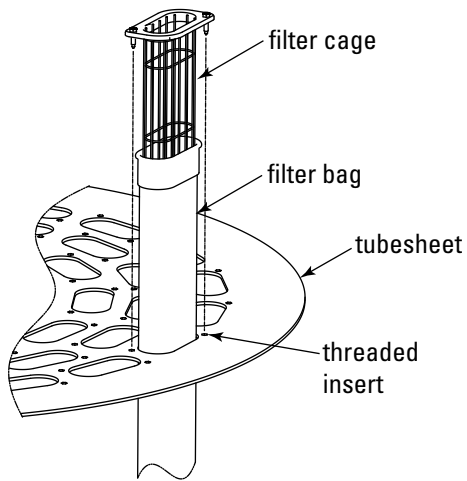
Hand-start each bolt before tightening either bolt. Do not use a power or impact drive to tighten bolts. A speed wrench using a maximum of 20 ft-lbs is recommended.

### Felt Snap-In Bag Filter Installation

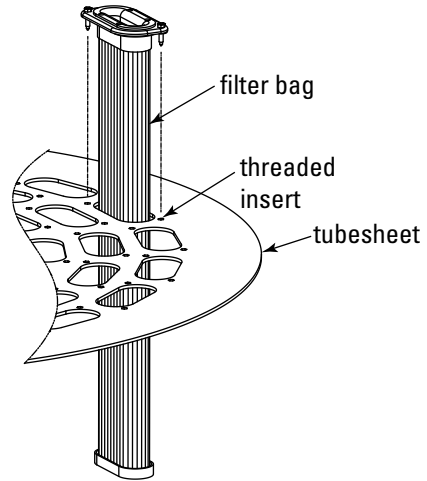
1. From the clean-air plenum, carefully insert the snap-in filter bag aligning the seam with the long edge of the oval in the tube sheet.
2. Snap the bag in place with the tube sheet between the upper and lower rings on the filter bag collar.
3. Slide the filter cage into the filter bag and seat firmly.



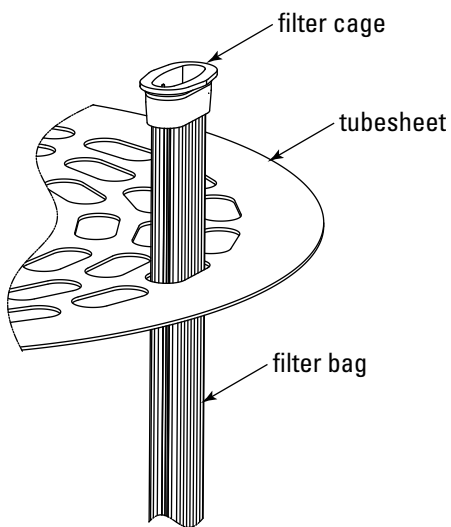
Felt Snap-In Bag Filter Installation



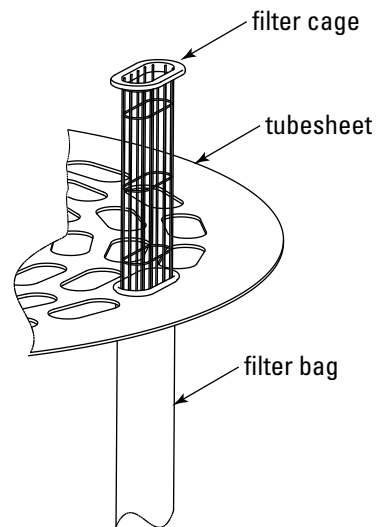
Bag and Cage with Boltsafe Hardware



Pleated Bag with Boltsafe Hardware



Pleated Bag Snap-In



Felt Bag Snap-In

Filter Bag Installation

## Preliminary Start-Up Check

Instruct all personnel on safe use and maintenance procedures.

### CAUTION

Electrical work during installation, service or maintenance must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Check that the collector is clear and free of all debris before starting.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

1. Check all electrical connections for tightness and contact.
2. Check for proper rotation on all motors as described below.

To reverse rotation, single-phase power supply:  
Follow manufacturer's instructions on the motor's nameplate.

To reverse rotation, three-phase power supply:  
Switch any two leads on the motor junction box.

### CAUTION

Do not look into fan outlet to determine rotation. View the fan rotation through the back of the motor.

Check that the exhaust plenum is free of tools or debris before checking blower/fan rotation.

Stand clear of exhaust to avoid personal injury.

Do not interchange a power lead with the ground wire. Severe personal injury and/or property damage may result.

3. All access panels should be sealed and secure.

4. Check that the hopper discharge gate is open and the storage container is properly sealed, if equipped
5. Check that the fan exhaust damper is set to the fully-closed position.
6. Check and remove all loose items in or near the inlet and outlet of the collector.
7. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
8. Check that all optional accessories are installed properly and secured.
9. Turn power ON at source.
10. Turn the cleaning air blower ON.
11. Adjust fan airflow with the exhaust damper.

### **NOTICE**

Excess airflow can shorten filter life, cause electrical system failure and fan motor failure.

12. Check arm rotation by observing from outside the collector with main fan and positive displacement pump locked out.

## Operation

### Start-Up

1. Start the positive-displacement cleaning blower and check for proper blower rotation.
2. Turn power to timer and solenoid ON.
3. Check solenoid and diaphragm valve operation.
4. Adjust the timer to allow the cleaning system pressure to rise to 8-9 psig between pulses. Too short of an OFF time results in inadequate cleaning pressure; too long of an OFF time will result in the pressure relief valve discharging cleaning air.
5. Close the isolation petcock between the positive-displacement blower and the gauge.
6. Start the system as shown in Start-Up Sequence.
7. Adjust fan for proper airflow with the volume control damper, if equipped.
8. Measure initial pressure drop across the tube sheet and filter bags during normal process operation with dust actively generated. Pressure drop will gradually rise until an equilibrium pressure drop is achieved, generally 3 to 4 "wg for seasoned filters, although anything between 1 to 6 "wg is considered normal.

### Start-Up/Shut-Down Sequences

The recommended sequences for motor start-up and shut-down are outlined below. These sequences assure minimal material build-up in the hopper of the collector.

#### **NOTICE**

Not following these sequences can adversely impact the life of the filters and may result in equipment damage.

#### **Start-Up Sequence**

1. Pneumatic conveyor or transfer blower, if equipped.
2. Rotary airlock and screw conveyor - start simultaneously.
3. Manifold drive and pulse timer.
4. Positive-displacement cleaning blower.
5. Main blower.

#### **Shut-Down Sequence**

1. Main blower.
2. Positive-displacement cleaning blower.
3. Manifold drive and pulse timer.
4. Rotary airlock and screw conveyor - shut-down simultaneously.
5. Pneumatic conveyor or transfer blower, if equipped.



## Maintenance Information

Instruct all personnel on safe use and maintenance procedures.



Use proper equipment and adopt all safety precautions needed for servicing equipment.

Use appropriate access equipment and procedures. Note the standard collector is not equipped with access platforms unless noted on the specification drawings.

Electrical service or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Turn positive displacement pump OFF and bleed lines and tank before performing service or maintenance work.

### Operational Checklist

1. Monitor the physical condition of the collector and repair or replace any damaged components.

Routine inspections will minimize downtime and maintain optimum system performance. This is particularly important on continuous-duty applications.

Periodically check the positive displacement pump components and replace filters as required to maintain blower pressure rating. Check rotation of cleaning arms.

2. Monitor pressure drop across filters.

Abnormal changes in pressure drop may indicate a change in operating conditions and possibly a fault to be corrected.

4. Monitor exhaust.
5. Monitor dust disposal.

### Weekly

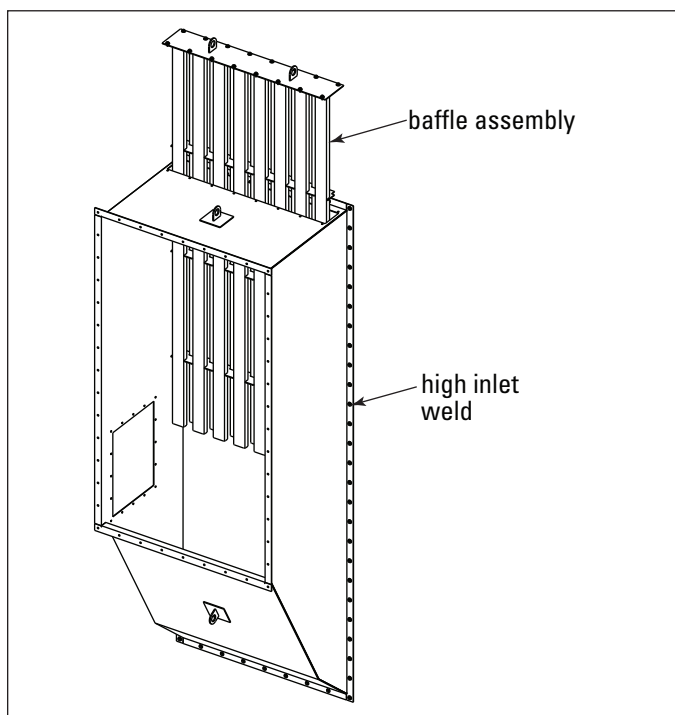
1. Check that pressure drop is within normal operational range (from 1 to 6 "wg).
2. Check for proper air pressure at reservoir (8 psi for 570-608 collectors and 9 psi for all larger collectors).
3. Check for proper lubricant level in positive-displacement blower.

### Quarterly

1. Check condition of the clean-air plenum. If dust accumulation is present, check filter bags for wear, tears or loose seals. Replace as necessary.
2. On high inlet collectors, check the condition of the removable baffle weld assembly by removing the side access cover on the baffle housing. Replace significantly worn baffle assemblies to prevent damage to the filter tubes and housing section.
3. Check solenoid and diaphragm valve operation.
4. Check door seals and replace as necessary.
5. Check cleaning arm drive chain and positive-displacement blower belt tension.
6. Check positive-displacement blower and gear reducer oil levels. Add oil through breather mounting holes or other oil fill locations. Reference the blower owner's manual for proper lubricant.
  - 0°F-32°F - use ISO 68 lubricant
  - 32°F-90°F - use ISO 100 lubricant
  - 90°F-120°F - use ISO 150 lubricant
7. Inspect explosion vents, if applicable, for signs of wear or cracks.
8. Check the rotating arm manifold drive gear reducer oil level. Add oil through breather mounting holes or other oil fill locations. The gear reducer is filled with synthetic oil. See reducer manual for recommended lubrication type and quantity. When checking or replacing the oil, make sure to check both housings of the double reduction reducer. Each housing has its own vent, fill and drain plug.

## Inlet Baffle Assembly Replacement

1. Shut down the system following the recommended Shut Down sequence found in this manual.
2. Wear appropriate protective clothing, safety glasses, dust masks, etc. to avoid contact with hazardous dust if applicable.
3. Following all installation and hoisting precautions found in this manual, remove the top cover perimeter bolts and use a crane to lift and remove the assembly.
4. Inspect the baffle housing for wear and repair or replace as required.
5. Clean the top of the housing and re-apply sealer to the perimeter opening as required.
6. Carefully hoist and install the new baffle assembly into the baffle housing. When the assembly is lowered into the housing, it will be guided into a vertical position by the side angle rails and lower bottom guides attached to the housing. The baffle spacer plate will be on or just above the two side support gussets when properly installed.
7. Tighten bolts, start system, and inspect for leaks.



Baffle Assembly Installation

## Filter Removal and Installation



Use proper safety and protective equipment when removing contaminants and filters.

Dirty filters may be heavier than they appear.

Use care when removing filters to avoid personal injury and/or property damage.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not operate with missing or damaged filters.

### NOTICE

To access bags under the cleaning manifold arm, it is necessary to remove the chain on manifold drive sprocket to rotate pulse arms for bag and cage removal.

## Felt Bag and Cage with Boltsafe Hardware Filter Removal

1. Turn off power to the collector.
2. Release compressed air in cleaning system.
3. Access clean air plenum through door.
4. Loosen bolts (2) from each filter cage flange.
5. Remove cage leaving the bag suspended in dirty air plenum.
6. Push the bag through the tubesheet into the dirty air plenum.
7. Repeat steps 4-6 for each bag.  
Note: The cleaning arm may need to be manually rotated to access some bags.
8. Remove all dirty bags through hopper access door.

### Felt Bag and Cage with Boltsafe™ Hardware Filter Installation

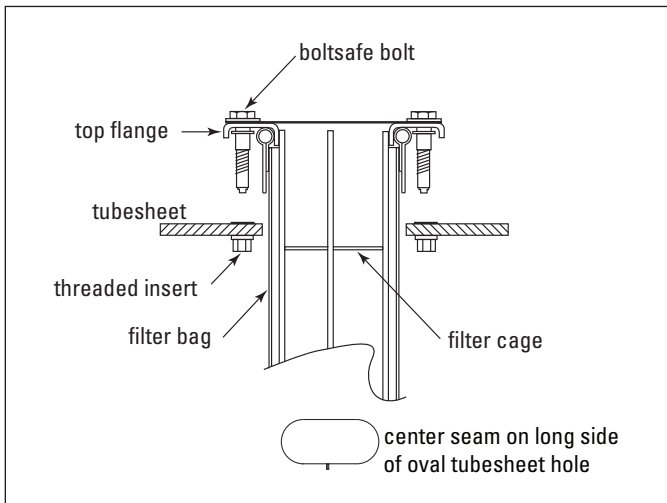
1. Slide the filter bag onto the filter cage until the top edge of the bag reaches the top flange of the filter cage.

Note: Place the bottom seam of the bag parallel to the long side of the oval.

2. From the clean-air plenum, insert the filter bag and filter cage assembly through the tubesheet aligning the two bolts with the two threaded inserts factory installed in the tubesheet.
3. Secure with Boltsafe bolts provided.

#### NOTICE

Hand-start each bolt before tightening either bolt. Do not use a power or impact driver to tighten bolts. A speed wrench using a maximum of 20 ft/lb is recommended.



Felt Bag and Cage and Pleated Bag with Boltsafe Hardware Filter Installation

### Pleated Bag with Boltsafe™ Hardware Filter Removal

1. Properly shutdown the system and lock out electrical system.
2. Access clean air plenum through door.
3. Unscrew bolts (2) from each pleated bag.
4. Remove pleated bag.

### Pleated Bag with Boltsafe™ Hardware Filter Installation

1. From the clean air plenum, insert pleated bag assembly through the tubesheet aligning the two bolts with the threaded inserts in the tubesheet. It may be necessary to squeeze the pleated bag as it is inserted into the tubesheet.
2. Secure with Boltsafe bolts provided.

#### NOTICE

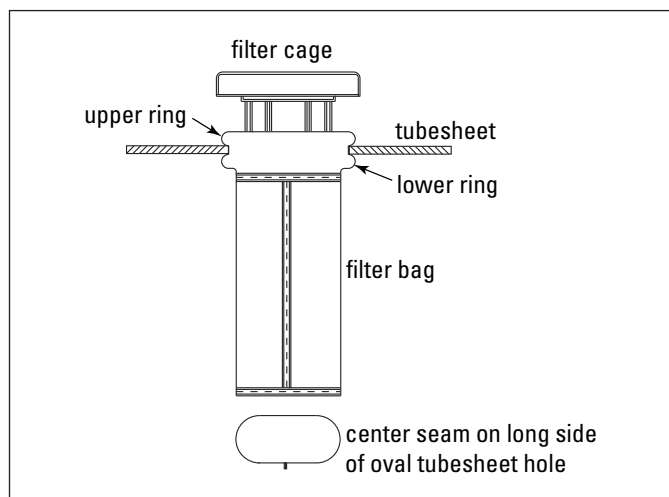
Hand-start each bolt before tightening either bolt. Do not use a power or impact drive to tighten bolts. A speed wrench using a maximum of 20 ft/lb is recommended.

### Felt Snap-In Bag Filter Removal

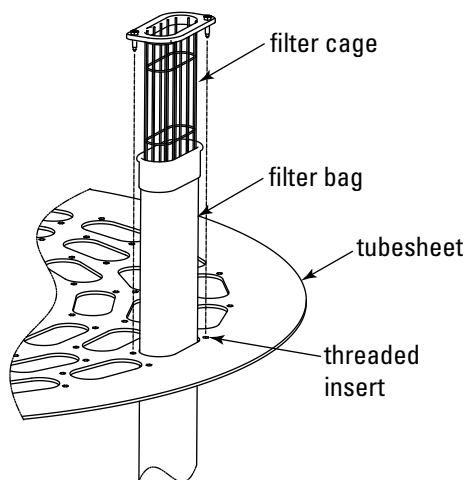
1. Turn off power to collector.
2. Release compressed air in cleaning system.
3. Access clean air plenum through door.
4. Remove cage leaving the bag hanging in dirty air plenum.
5. Push one side of snap band to deform and release from the tube sheet.
6. Push the bag down into the bottom of the dirty air plenum.
7. Repeat steps 4-6 for each bag.  
Note: The cleaning arm may need to be manually rotated to access some bags.
8. Remove all dirty bags through hopper access door.

### Felt Snap-In Bag Filter Installation

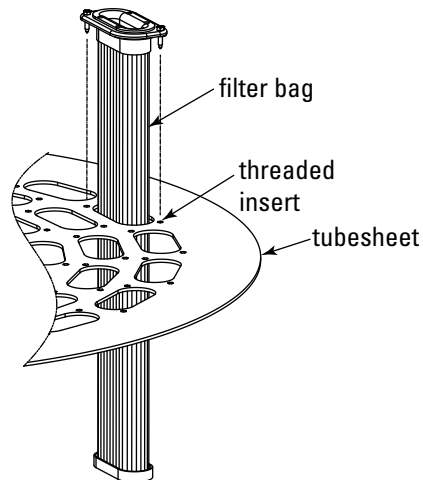
1. From the clean-air plenum, carefully insert the snap-in filter bag aligning the seam with the long edge of the oval in the tube sheet.
2. Snap the bag in place with the tube sheet between the upper and lower rings on the filter bag collar.
3. Slide the filter cage into the filter bag and seat firmly.



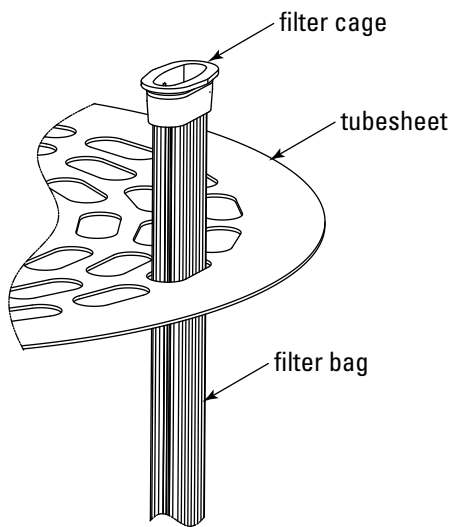
Felt Snap-In Bag Filter Installation



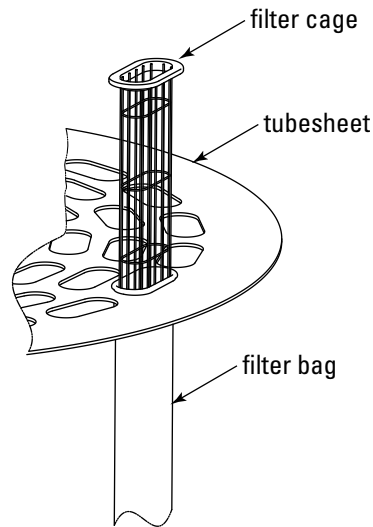
Bag and Cage with Boltsafe Hardware



Pleated Bag with Boltsafe Hardware



Pleated Bag Snap-In



Felt Bag Snap-In

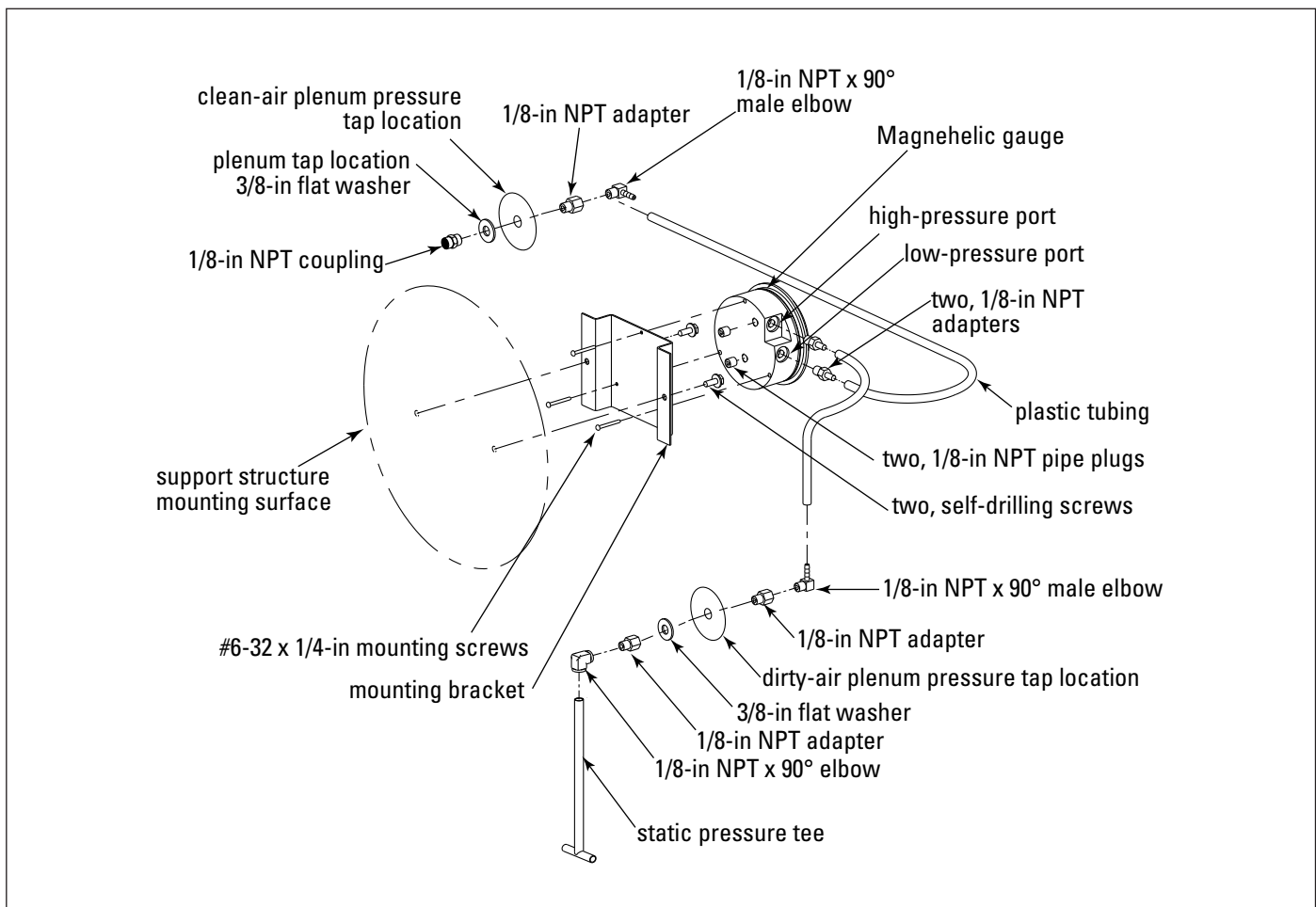
Filter Bag Installation

## Optional Equipment

### Magnehelic® Gauge

The Magnehelic is a differential pressure gauge used to measure the pressure difference between the clean-air and dirty-air plenums and provides a visual display of filter change requirements. The high-pressure tap is located in the dirty-air plenum and the low-pressure tap is located in the clean-air plenum.

1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.
2. Plug the pressure ports on the back of the gauge using two, 1/8-in NPT pipe plugs supplied. Install two, 1/8-in NPT male adapters supplied with the gauge into the high- and low-pressure ports on the side of the gauges.
3. Attach the mounting bracket using three, #6-32 x 1/4-in screws supplied.
4. Mount the gauge and bracket assembly to the supporting structure using two, self-drilling screws.
5. Thirty-five feet of plastic tubing is supplied and must be cut in two sections. Connect one section of tubing from the gauge's high-pressure port to the pressure fitting located in the dirty-air plenum. Connect remaining tubing from the gauge's low-pressure port to the fitting in the clean-air plenum. Additional tubing can be ordered from your representative.
6. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.



Magnehelic Gauge Installation

## Photohelic® Gauge

### CAUTION

Electrical installation, service, or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

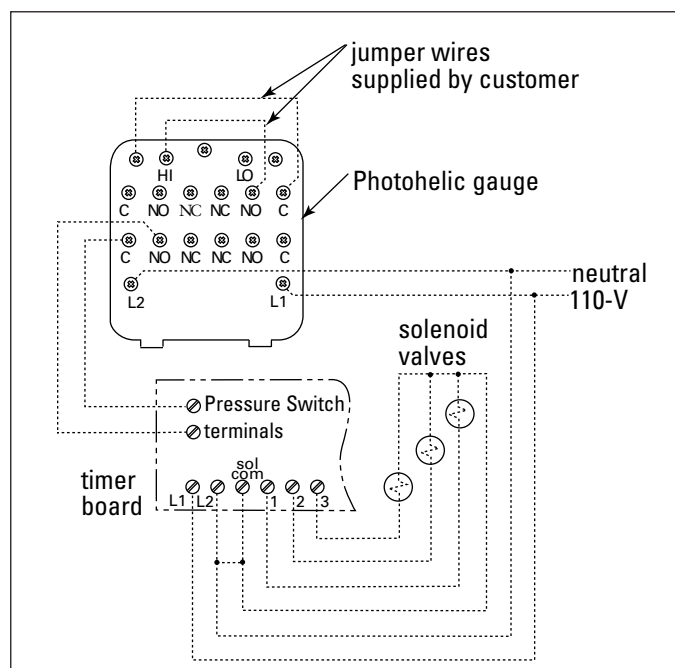
Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

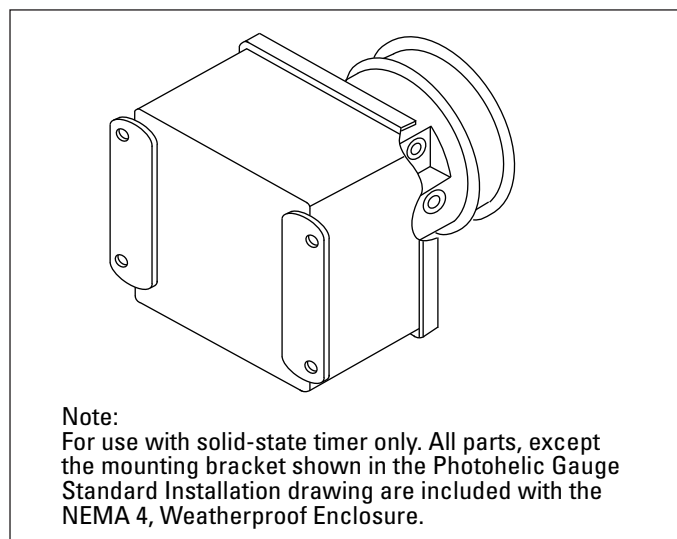
The Photohelic combines the functions of a differential pressure gauge and a pressure-based switch. The gauge function measures the pressure difference between the clean-air and dirty-air plenums and provides a visual display of filter condition. The high-pressure tap is located in the dirty-air plenum and a low-pressure tap is located in the clean-air plenum. The pressure-based switch function provides high-pressure ON and low-pressure OFF control of the filter cleaning system.

1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.

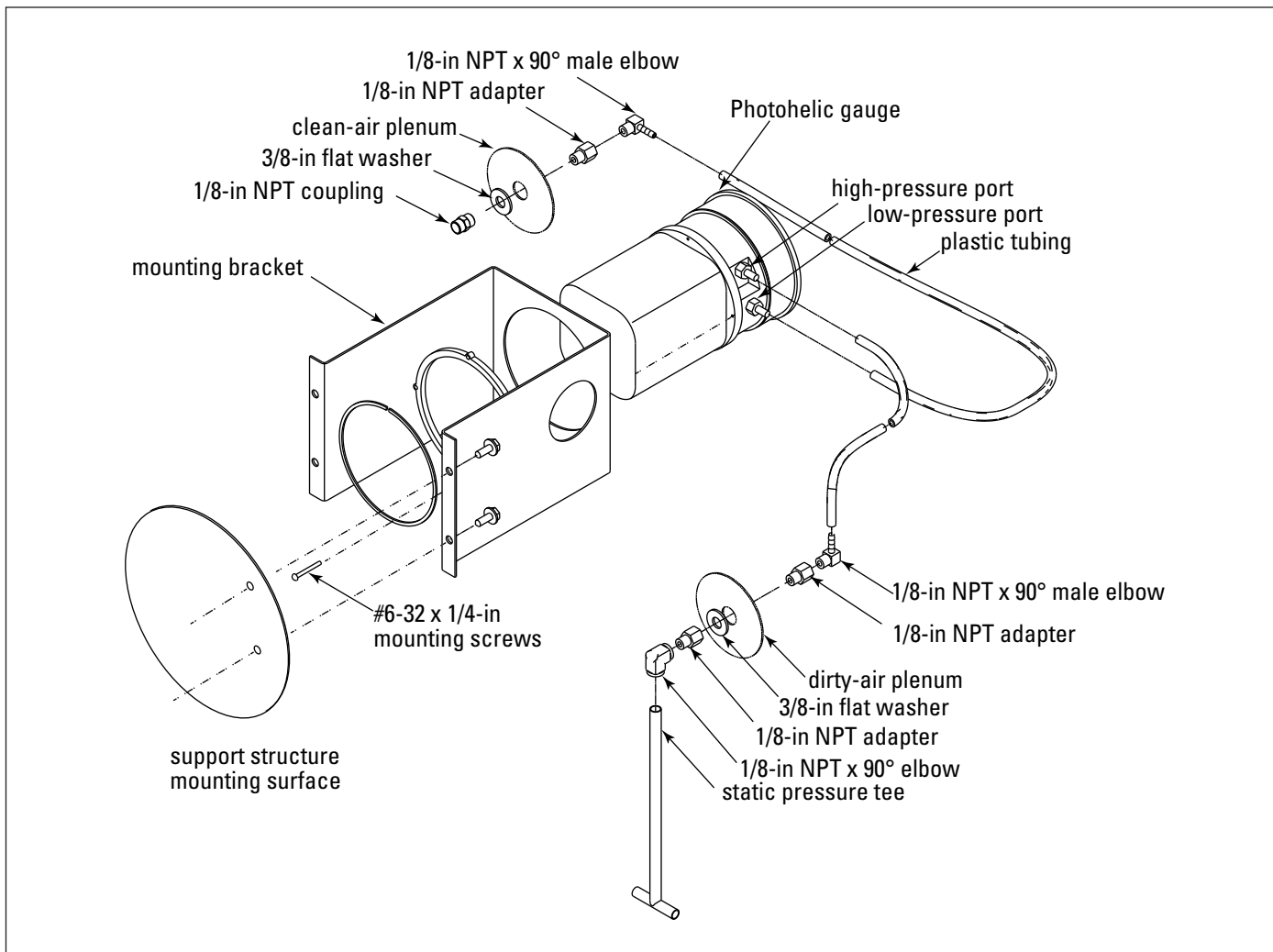
2. Mount the gauge to the remote panel or door using the mounting ring, retaining ring, and four #6-32 x 1 1/4-in screws. Do not tighten screws. Connect two, 1/8-in NPT x 1/4-in OD male adapters to the gauge's high- and low-pressure ports. Tighten screws.
3. On the back of the gauge, remove four #6-32 x 5/16-in screws and plastic enclosure. Set aside. Add two jumper wires supplied by customer. Remove the jumper from the pressure switch located on the timer board, if equipped. Using the 3/4-in conduit opening, wire the gauge as shown. Reassemble and fasten enclosure securely.
4. Thirty-five feet of plastic tubing is supplied and must be cut in two sections. Connect one section of tubing from the gauge's high-pressure port to the pressure fitting located in the dirty-air plenum. Connect remaining tubing from the gauge's low-pressure port to the fitting in the clean-air plenum. Additional tubing can be ordered from your representative.
5. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.
6. To install the Photohelic Gauge mounted in a NEMA 4, Weatherproof Enclosure, follow Steps 4 and 5.



Photohelic Gauge Wiring Diagram



Photohelic Gauge in Optional NEMA 4 Weatherproof Enclosure



Photohelic Gauge Installation



## Explosion Vent

**CAUTION**

Personal injury, death, and/or property damage can result from material discharge during venting.

The material discharged during the venting of an explosion must be safely directed outdoors away from areas occupied by personnel to reduce risk of personal injury and/or property damage.

The risk of personal injury and/or property damage can be minimized or avoided by locating vented equipment outside buildings and away from normally occupied areas.

Explosion vents should be inspected regularly to confirm physical and operational condition. Replace any damaged parts immediately.

Standard explosion vents are intended for outdoor installations only.

**NOTICE**

Remove all shipping materials, including covers, from the explosion relief vents prior to installation. Failure to remove shipping covers will seriously compromise explosion vent operation.

Unless otherwise noted, the explosion venting calculations are based on formulas from NFPA-68 for outdoor applications only, with no duct or obstructions on the explosion vent panel.

Contact Donaldson Torit for assistance in calculating specific venting requirements for equipment.

NFPA 68 can provide guidance on both the frequency of and appropriate details for inspections.

## Troubleshooting

Problem	Probable Cause	Remedy
<b>Fan blower and motor do not start</b>	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Collector not wired for available voltage	Correct wiring for proper supply voltage.
	Input circuit down	Check power supply to motor circuit on all leads.
	Electrical supply circuit down	Check power supply circuit for proper voltage. Check for fuse or circuit breaker fault. Replace as necessary.
	Damaged motor	Replace damaged motor.
<b>Fan blower and motor start, but do not stay running</b>	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors. See Filter Installation.
	Damper control not adjusted properly	Check airflow in duct. Adjust damper control until proper airflow is achieved and the blower motor's amp draw is within the manufacturer's rated amps.
	Electrical circuit overload	Check that the power supply circuit has sufficient power to run all equipment.
<b>Clean-air outlet discharging dust</b>	Filters not installed correctly	See Filter Installation.
	Filter damage, dents in the end caps, gasket damage, or holes in media	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Installation.
<b>Insufficient airflow</b>	Fan rotation backwards	Proper fan rotation is shown by arrow on fan housing. The fan can be viewed through the back of the motor. See Preliminary Start-Up Check.
	Access doors open or not closed tight	Check that all access doors are in place and secured. Check that the hopper discharge opening is sealed and that dust container is installed correctly.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris. Adjust damper flow control.
	Filters need replacement	Remove and replace using genuine Donaldson replacement filters. See Filter Removal and Installation.

Problem	Probable Cause	Remedy
<b>Insufficient airflow continued</b>	Pulse cleaning not energized	Use a voltmeter to check the solenoid valve. Make sure the solenoid valve exhaust port weather cap is removed.
	Solenoid valve failure, constant air leakage	Replace solenoid valve. Lock out all electrical power to the collector and bleed the compressed air system before removing the valve.
	Solenoid valve failure, failure to open	Check voltage output from Solid-State Timer. If output voltage is present, replace the solenoid valve. Lock out all electrical power to the collector and bleed the compressed air system before removing the valve. Make sure the solenoid valve exhaust port weather cap is removed.
	Diaphragm valve failure	Replace the primary and secondary diaphragms and springs. Note: To reassemble the smaller secondary diaphragm, remove the solenoid valve and pipe fittings and push down on the top of the diaphragm to hold it in the closed position while tightening the retaining bolts. Lock out all electrical power to the collector and bleed the compressed air system before any component repair work is completed.
	Solid-State timer failure	Using a voltmeter, check supply voltage to the timer board. Check and replace the fuse on the timer board if necessary. If the fuse is good and input power is present but output voltage to the solenoid is not, replace the timer board. See Solid-State Timer Installation.
	Solid-State timer out of adjustment	See Solid-State Timer and Solid-State Timer Wiring Diagram.

## Troubleshooting

Problem	Probable Cause	Remedy
<b>Pulse cleaning never stops</b>	Pressure switch not wired to the timer board correctly	Connect the pressure switch on the timer board to Terminals 7 and 8 on TB3.
	Pressure switch terminals on the timer board jumpered	Remove jumper wire on Solid-State Timer board before wiring to the timer.
	High Pressure On or Low Pressure Off setpoint not adjusted for system conditions	Adjust setpoints to current conditions.
	Pressure tubing disconnected, ruptured, plugged, or kinked	Check tubing for kinks, breaks, contamination, or loose connections.
<b>Alarm light is ON</b>	Alarm setpoint too low	Adjust to a higher value.
	Excess pressure drop	Check cleaning system and compressed air supply. Replace filters if filters do not clean down.
	Pressure tubing disconnected, ruptured, plugged, or kinked	Check tubing for kinks, breaks, contamination, or loose connections.
<b>Cleaning light is ON, but cleaning system not functioning</b>	Improper wiring	Check wiring between the timer board and between the timer board and solenoid valve coils.
	Defective solenoids	Check all solenoid coils for proper operation.
	Timer board not powered	Check power ON light on timer board's LED display. If not illuminated, check the supply voltage to the timer board. Check the fuse on the timer board. Replace if necessary.
	Timer board defective	If LED is illuminated, observe the output display. Install a temporary jumper across the pressure switch terminals. Output levels should flash in sequence. Check output using a multimeter set to 150-Volt AC range. Measure from SOL COM to a solenoid output. The needle will deflect when LED flashes for that output if voltage is present. If LED's do not flash, or if no voltage is present at output terminals during flash, replace the board.

### Product Information

Model Number _____	Serial Number _____
Ship Date _____	Installation Date _____
Filter Type _____	
Collected Dust _____	
Dust Properties: Kst _____	Pmax _____ MIE _____ MEC _____
Accessories _____	
Other _____	
_____	



## Donaldson Industrial Air Filtration Warranty

Donaldson warrants to the original purchaser only that the Goods will be free from defects in material and manufacture for the applicable time periods stated below: (1) Major structural components for a period of ten (10) years from the date of shipment; (2) Non-Structural, Donaldson-built components and accessories including Donaldson Airlocks, TBI Fans, TRB Fans, Fume Collector products, Donaldson built electrical control components, and Donaldson-built Afterfilter housings for a period of twelve (12) months from date of shipment; and (3) Donaldson-built filter elements for a period of eighteen (18) months from date of shipment.

Buyer is solely responsible for determining if goods fit Buyer's particular purpose and are suitable for Buyer's process and application. Seller's statements, engineering and technical information, and recommendations are provided for the Buyer's convenience and the accuracy or completeness thereof is not warranted. If, after Seller receives written notice, within the warranty period, that any goods allegedly do not meet Seller's warranty, and Seller, in its sole discretion, determines that such claim is valid, Seller's sole obligation and Buyer's exclusive remedy for breach of the foregoing warranty or any Seller published warranty, will be, at Seller's option, either: (i) repair or replacement of such goods or (ii) credit or refund to Buyer for the purchase price from Seller. In the case of repair or replacement, Seller will be responsible for the cost of shipping the parts but not for labor to remove, repair, replace or reinstall the allegedly defective goods. Refurbished goods may be used to repair or replace the goods and the warranty on such repaired or replaced goods shall be the balance of the warranty remaining on the goods which were repaired or replaced. Any repair or rework made by anyone other than Seller is not permitted without prior written authorization by Seller, and voids the warranty set forth herein. Seller warrants to Buyer that it will perform services in accordance with the Sales Documents using personnel of required skill, experience and qualifications and in a professional and workmanlike manner in accordance with generally recognized industry standards for similar services. With respect to any services subject to a claim under the warranty set forth above, Seller shall, in its sole discretion, (i) repair or re-perform the applicable services or (ii) credit or refund the price of such services at the pro rata contract rate and such shall be Seller's sole obligation and the exclusive remedy for breach of the foregoing warranty on services. Products manufactured by a third party ("Third Party Product") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the goods. Buyer agrees that: (a) Third Party Products are excluded from Seller's warranty in this Section 7 and carry only the warranty extended by the original manufacturer, and (b) Seller's liability in all cases is limited to goods of Seller's design and manufacture only. EXCEPT FOR SELLER'S WARRANTY OF TITLE TO THE GOODS, SELLER EXPRESSLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES WHATSOEVER, WHETHER, EXPRESSED OR IMPLIED, ORAL, STATUTORY, OR OTHERWISE, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY AND ANY WARRANTIES ARISING FROM TECHNICAL ADVICE OR RECOMMENDATIONS, COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE. Seller's obligations do not cover normal wear and tear or deterioration, defects in or damage to any goods resulting from improper installation, accident or any utilization, maintenance, repair or modification of the goods, or any use that is inconsistent with Seller's instructions as to the storage, installation, commissioning or use of the goods or the designed capabilities of the goods or that, in its sole judgment, the performance or reliability thereof is adversely affected thereby, or which is subjected to abuse, mishandling, misuse or neglect or any damage caused by connections, interfacing or use in unforeseen or unintended environments or any other cause not the sole fault of Seller, and shall be at Buyer's expense. Seller's warranty is contingent upon the accuracy of all information provided by Buyer. Any changes to or inaccuracies in any information or data provided by Buyer voids this warranty. Seller does not warrant that the operation of the goods will be uninterrupted or error-free, that the functions of the goods will meet Buyer's or its customer's requirements unless specifically agreed to, or that the goods will operate in combination with other products selected by Buyer or Buyer's customer for its use.

The terms of this warranty may only be modified by a special warranty document signed by a Director, General Manager or Vice President of Donaldson. To ensure proper operational performance of your equipment, use only genuine Donaldson replacement parts.

**This Product is provided subject to and conditioned upon Donaldson's Terms of Sale ("Terms"), a current copy of which is located at [termsofsale.donaldson.com](http://termsofsale.donaldson.com). These Terms are incorporated herein by reference. By purchasing or using this Product, the user accepts these Terms. The Terms are available on our website or by calling our customer service line at 1-800-365-1331.**

Significantly improve the performance of your collector with genuine Donaldson Torit replacement filters and parts. **Call Donaldson Torit at 800-365-1331.**

**Important Notice:** Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, product specifications, availability and data are subject to change without notice, and may vary by region or country.



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