

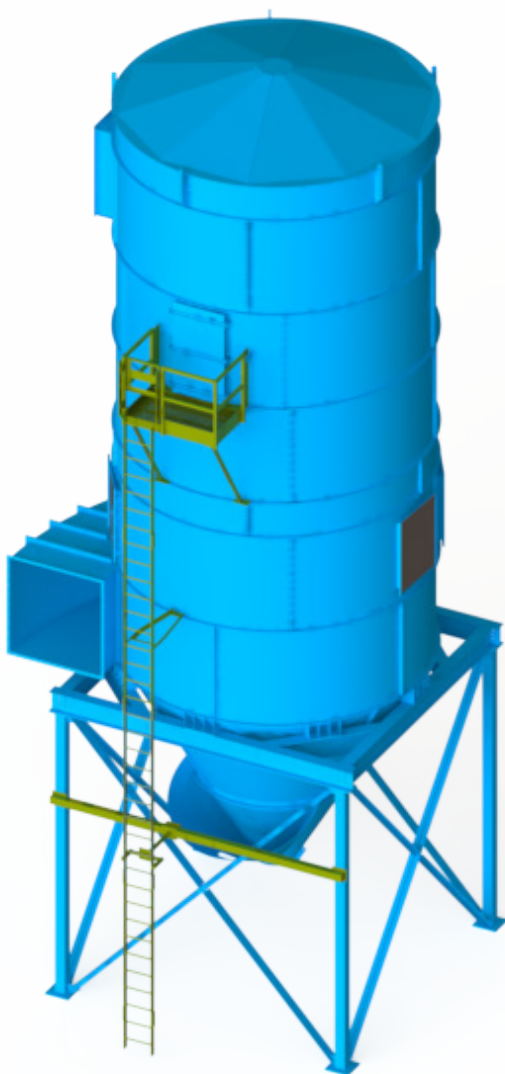
Donaldson
Torit®



LP Panelized Baghouse

312LP - 594LP

Installation, Operation and Maintenance Manual



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

English
Master Language

IOM AG8483201 (ENG)
Revision 2

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 this 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.

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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1 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.

2 Product Description

The LP 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 reverse air cleaned on-line without interrupting airflow through the collector. All bags are cleaned with every revolution of the cleaning arm.

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

Intended Use

The LP Baghouse collector is common in the nut, woodworking and grain industries where it effectively handles high-volume, high dust-load applications.

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

- Heavy dust load
- No compressed air available
- A requirement for a single discharge hopper

Standard Equipment

Filters

The LP collector ships with filter bags and cages. The standard bag media is Dura-Life™ which provides long life and energy savings due to lower pressure drop. Other filter bag media options are available.

Involute Scroll Style Inlet

The inlet develops a cyclonic airflow causing heavier particulate to drop directly into the hopper. The air continues through an internal flow straightener, reduces turbulence and evenly distributes the dust-laden air within the collector cross-section and around the filter bags.

Reverse Air Internal Cleaning System

The cleaning system contains an internal fan with reverse air flow design. The sweep arms have a flow-stop plate which keeps air from flowing through the bag filters before and after cleaning. This feature reduces the chances of dust from cleaned bags being re-entrained onto recently cleaned bags, resulting in lower pressure drop and reduced energy costs due to bags staying cleaner longer. The system does not require any compressed air supply.

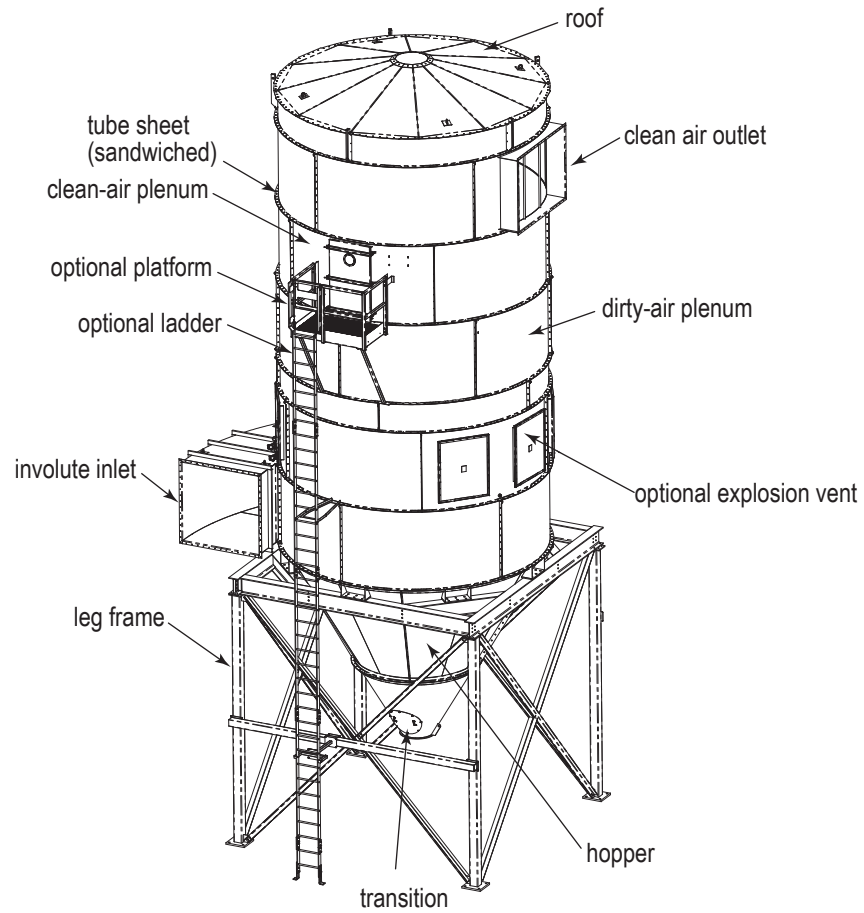
Options and Accessories

Explosion Relief Panels

Collector may be equipped with optional explosion relief panels to support a process owners combustible dust mitigation strategy. Explosion vent sizing follows NFPA-68 formulas assuming outdoor location of collector with no duct or obstruction on the explosion vent panels. Contact Donaldson Torit for explosion venting requirements for other conditions.

Platform/Ladder

Collector may be equipped with a platform/ladder system for gaining access to the clean air plenum for filter bag changeout. For all ladders over 24-ft installed November 19, 2018 or later, OSHA requires a ladder safety system or personal fall arrest system. As a convenience, Donaldson offers ladder safety systems as an option.



3 **Operation**



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

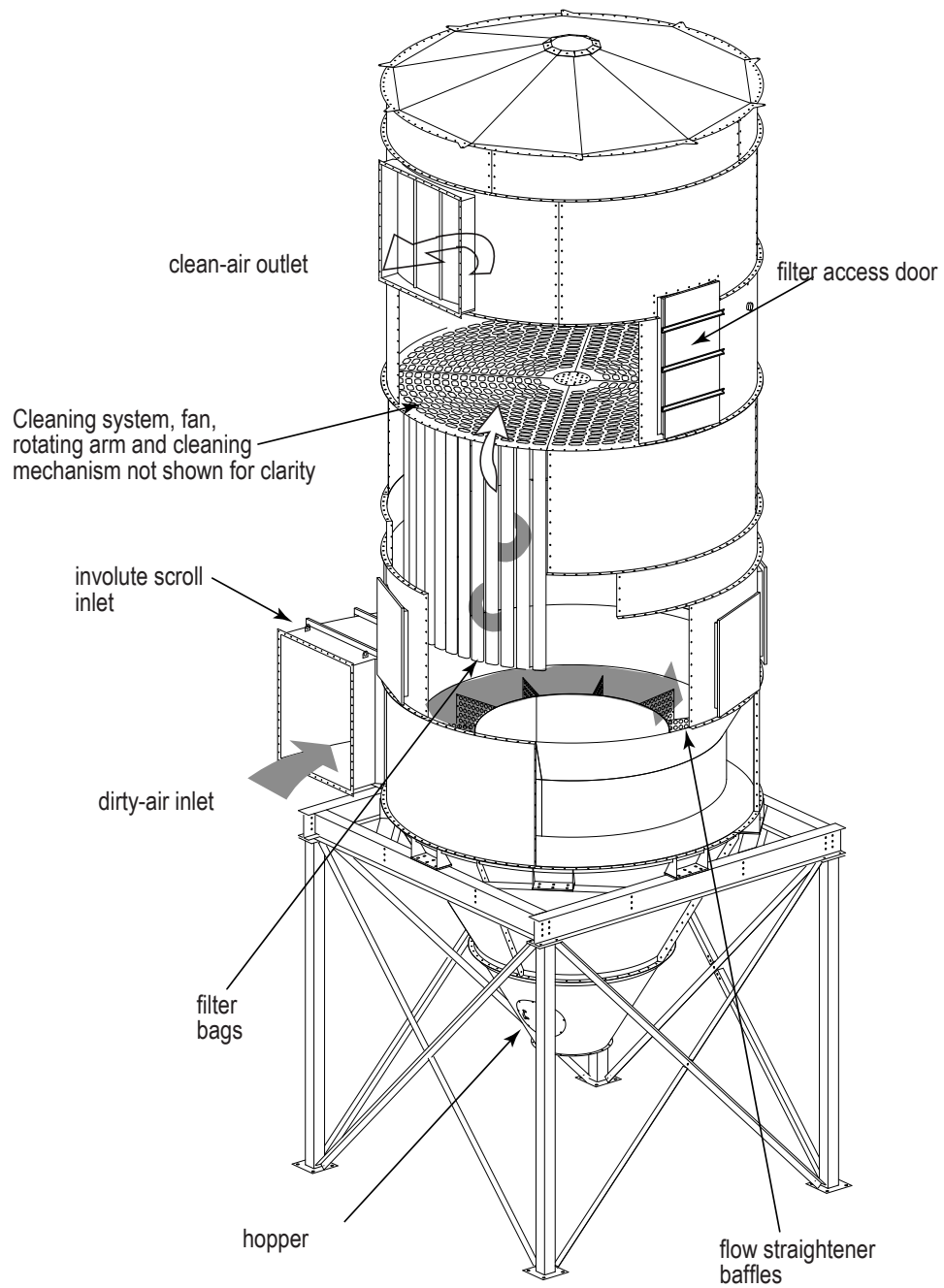
Turn power off and lock out all power before performing service or maintenance work.

Turn compressed air supply off, bleed and lock out lines 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.

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.



Collector Operation

Typical Start-Up Sequence

1. Start rotary airlock (if applicable).
2. Start gear box motor for cleaning arm rotation.
3. Start reverse-air cleaning assembly fan.
4. Start main system fan.
5. Start process equipment.

Typical Shut-Down Sequence

1. Stop process equipment. Allow LP to continue operating for 15-30 minutes. Fan remains running to clear dust from conveying ducts and areas around hoods.
2. Stop main system fan. Allow LP reverse-air fan and gear box motor to continue running for 10-15 minutes. Cleaning remains active after main system fan shuts off to allow for a brief period of enhanced filter bag cleaning.
3. Stop LP reverse-air fan and gear box motor. Allow airlock to run for 15 minutes after reverse-air fan and gear box motor shut off to ensure dust is fully evacuated from the hopper of the LP.
4. Stop airlock.

4 Product Service



During any service activities there is some potential for exposure to the dust in the collector. Most dusts present safety and health hazards that require precautions. Wear eye, respiratory, head and other protection equipment suitable for the type of dust when performing any service activities.

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

LOCK-OUT all energy sources prior to performing any service or maintenance on the equipment.

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

General Maintenance

Donaldson Torit filters require little maintenance in most applications. Bags require replacement on a periodic basis. The severity of the application will dictate the time interval for bag replacement.

1. Monitor the physical condition of the collector and repair or replace any damaged components.
2. Routine inspections will minimize downtime and maintain optimum system performance. This is particularly important on continuous-duty applications.
3. Monitor pressure drop across filters.
4. Abnormal changes in pressure drop may indicate a change in operating conditions and possibly a fault to be corrected.
5. Monitor exhaust for any signs of material emissions/bypass.
6. Monitor dust disposal out of the hopper discharge opening.

Check the following items at the intervals shown below.

Weekly

Check that pressure drop is within normal operational range.

Quarterly

1. Check/monitor drive chain tension and lubrication of upper and lower bearing.
2. Check fan wheel set screw and tighten if necessary.
3. Check LP fan wheel for excessive noise and/or vibration.
4. Check condition of the clean-air plenum. If dust accumulation is present, check filter bags for wear, tears, or loose seals. Replace as necessary.
5. Check the rotating arm drive gear reducer oil level. The gear reducer is filled with AGMA 8c or equivalent oil. See reducer manual for more information.

Annual

1. Verify smooth operation of cleaning arm/skid.
2. Monitor thickness of wear material on the cleaning sled, look for filter cages not fully inserted into tubesheet.
3. Check structural support for any signs of rust or fatigue and take appropriate steps to correct any problems.
4. Inspect explosion vents, if applicable, for signs of wear or cracks.
5. Check door seals and replace as necessary.

Filter Replacement



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

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

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

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

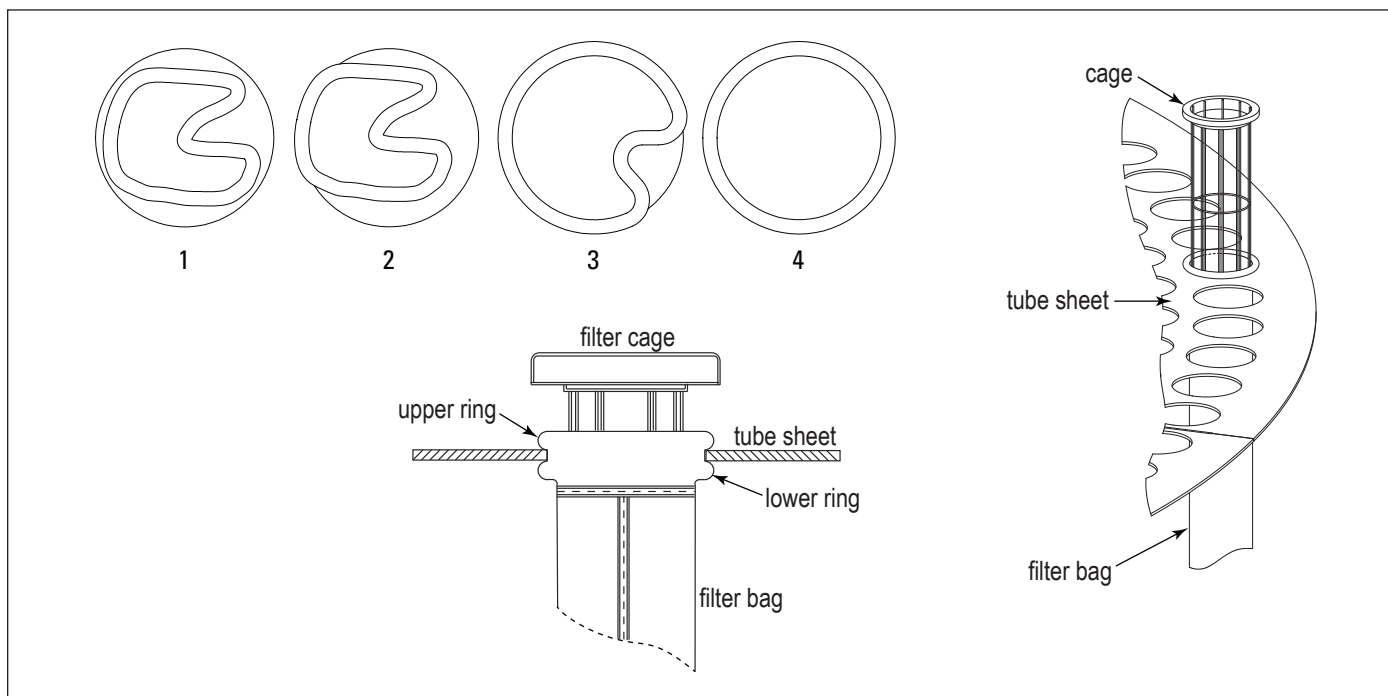
Do not operate with missing or damaged filters

Felt Snap-In Bag Filter Removal

1. Properly shutdown the system and lock out electrical system.
2. Access clean air plenum through access door.
3. Remove cages leaving the bags hanging in dirty air plenum.
4. Push one side of snap band to deform and release from the tube sheet. See Filter Bag Removal and Installation illustration.
5. Push the bag down into the bottom of the dirty air plenum.
6. Repeat steps 4-5 for each bag.

Note: The cleaning arm will need to be manually rotated to access some bags.

7. Remove all dirty bags through hopper access door.



Filter Bag Installation

Felt Snap-In Bag Filter Installation

1. From the clean-air plenum, carefully insert the snap-in filter bag through the tube sheet with the closed end oriented downward.
2. Snap the bag in place with the tube sheet between the upper and lower rings on the filter bag collar. See Filter Bag Installation illustration.
3. Slide the filter cage into the filter bag and seat firmly.
4. Repeat steps 1-3 for all bags.

Note: The cleaning arm will need to be manually rotated to access some bags.

5. Once all bags are installed, ensure the cleaning arms rotate smoothly.
6. Verify material is being removed from the collector.

Troubleshooting

Problem	Probable Cause	Remedy
Fan blower and motor do not start	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.
Fan blower and motor start, but do not stay running	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.
	Hopper discharge open	Check that dust container is installed and properly sealed.
	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.
Clean-air outlet discharging dust	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.
	Access cover(s) loose	Tighten access doors securely. See Filter Installation.
Insufficient airflow	Fan rotation backwards	Proper fan rotation is clockwise when viewed from the motor side or counterclockwise when viewed through the inlet cone. 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
Pressure drop not in normal operational range	Collector overloaded at dust source	Check for excessive or unusual dust loading at the dust source.
	Hopper bridging	Check for proper flow at product discharge flange on filter hopper.
	Cleaning system	Check operation of LP fan. Check operation of LP gear box and drive.
		Verify no debris or condensation in tube length running to gauge
Power circuit for sweep arm motor trips	Interference between sweep arms and cages	Ensure all filter cages are fully seated.
		Ensure skid material is in good condition and arms rotate freely. Replace if necessary.

Appendix A - Installation

Installation



Electrical Installation (including bonding and grounding of the collector) 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.

Duct fabrication and installation must be performed by a qualified tinsmith or contractor.

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

Service must be performed by trained and qualified maintenance personnel.

This equipment may start or stop unexpectedly from a remote location

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

Location and Site Selection



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.

Equipment location must conform to all codes and standards, should be suitable for the type of dust being handled and should ensure easy access for service and utility connections. Site selection must account for wind, seismic zone and other load conditions.

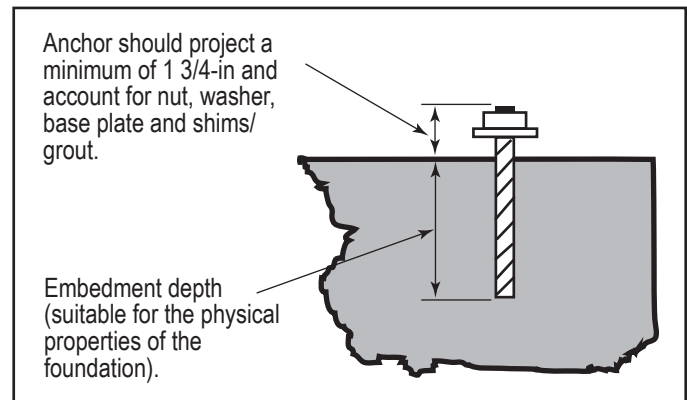
The equipment must be anchored once in final position. Anchors must comply with local code requirements. Anchors, foundation or support framing must be capable of supporting dead, live, wind, seismic, and other applicable loads. Consult a qualified engineer for final selection of foundation or support framing.

Note: 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.

Follow industry practice relative to clean air velocity into a fan.

Provisional Anchor Bolt Recommendations

The quantity of anchor bolts should match the number of holes provided in the base plates of the collector. Anchor diameter is typically 1/8-inch less than the baseplate hole diameter. Anchors should project a minimum of 1 3/4 -inch and account for nut, washer, baseplate, and shims/grout.



Typical Foundation Anchor

Delivery and Inspection

Upon arrival inspect equipment and report any damage to delivery carrier. File any damage claims with the delivery carrier. Request a written inspection report from the Claims Inspector to substantiate all damage claims.

Compare the equipment received with the description of product ordered. Report any incomplete shipments to the delivery carrier and your Donaldson Torit representative.

Unloading and Positioning



Equipment should be lifted only by qualified crane or fork truck operators.

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

1. Remove any crates or shipping straps.
2. Lift the packaged collector from transport container.
3. Inspect for any damage and/or missing parts and report to freight carrier.
4. Check for any hardware which may have become loose during shipment and tighten as necessary.

Lifting Information

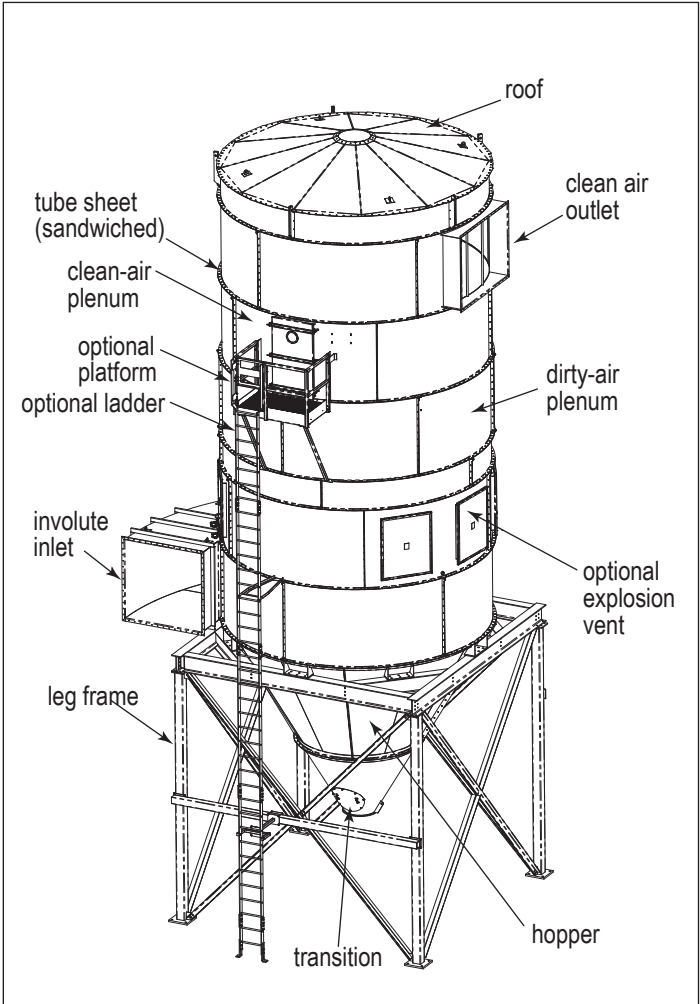


Failure to lift the equipment or sub-assemblies correctly can result in severe personal injury and/or property damage.

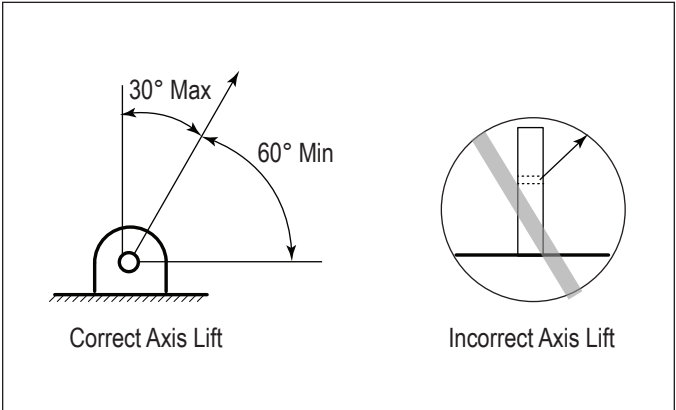
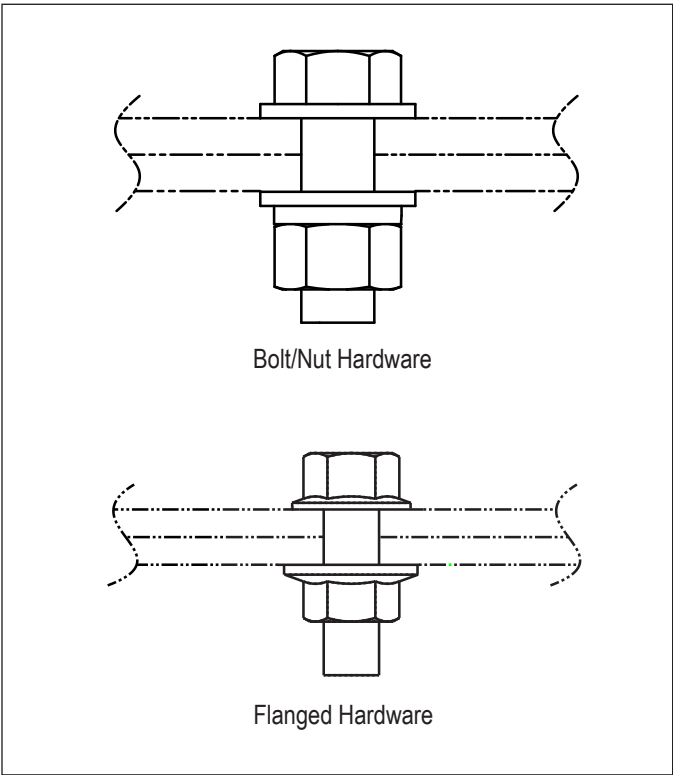
Only qualified crane or forklift operators should be allowed to lift equipment.

1. Use all lifting points provided.
2. Use clevis connectors, not hooks, on lifting slings.
3. Use spreader bars to prevent damage to equipment.
4. Check the Specification Control drawing for weight and dimensions of the collector and components to ensure adequate crane capacity.
5. Lift collector and accessories separately and assemble after collector is in place.
6. Use drift pins to align holes in section flanges during assembly.

Typical Lifting Guidance



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



Lifting

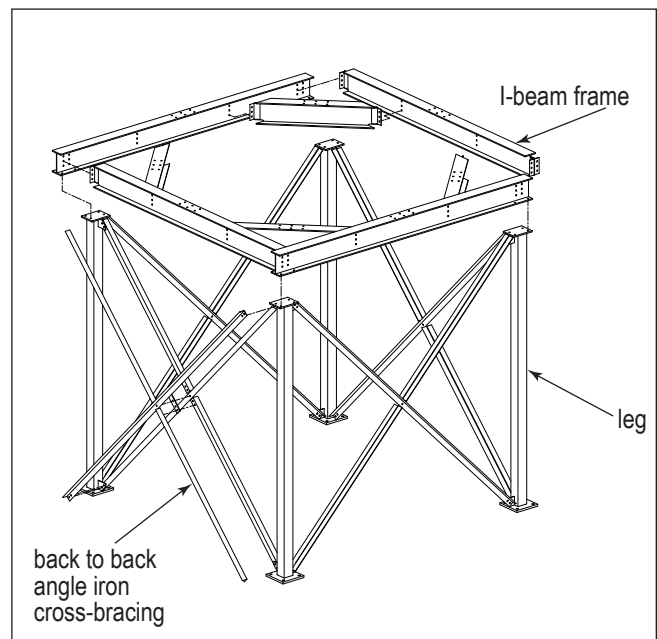
Leg Structure Assembly

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.
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.



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

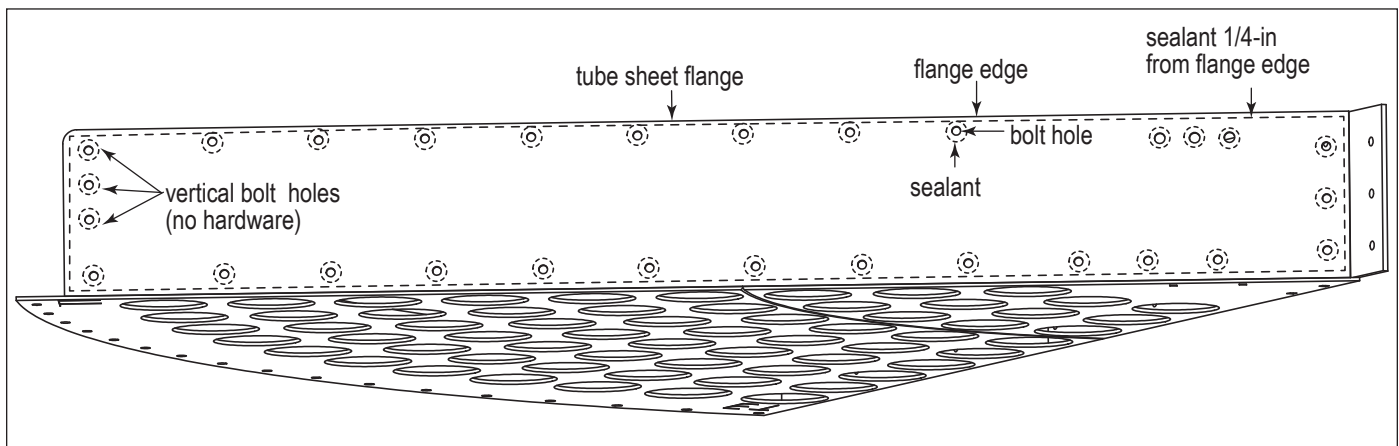


Tubesheet Assembly

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.

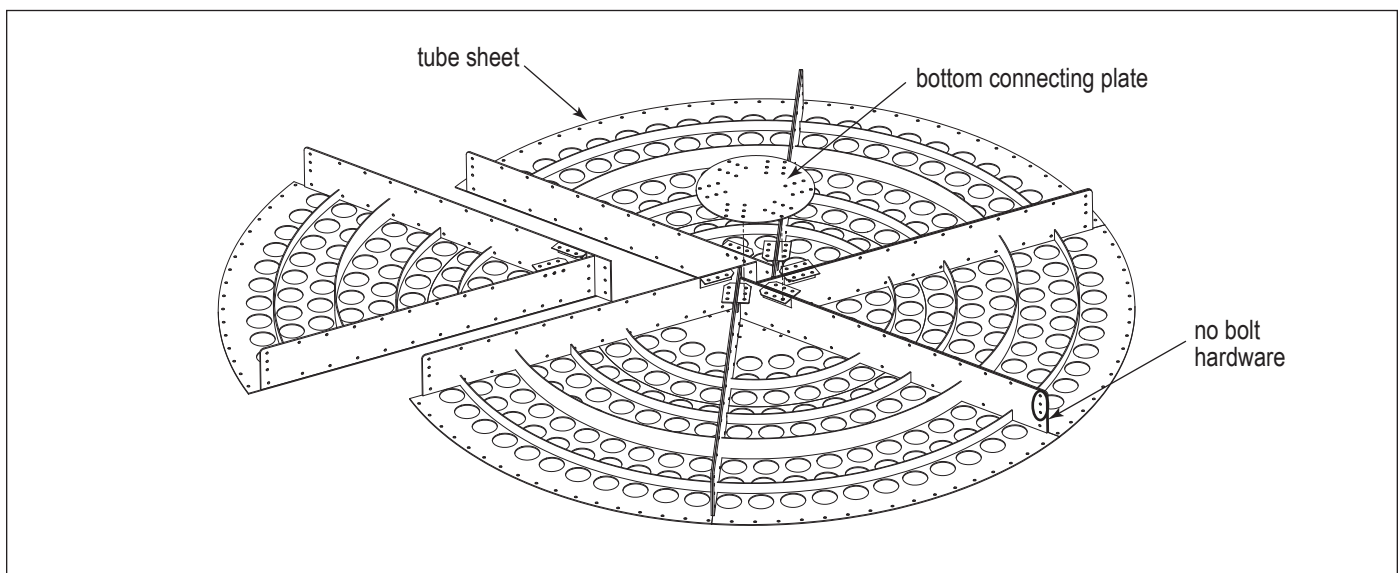
Note: For models 312 and 378, tubesheet panels must be arranged as shown in Step 8 with matching T1, T2, and T3 designations.

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.



Tube Sheet Flange - Sealant Application

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 2½-in length hardware for bolting through the multiple material thicknesses associated with the bottom connecting plate.



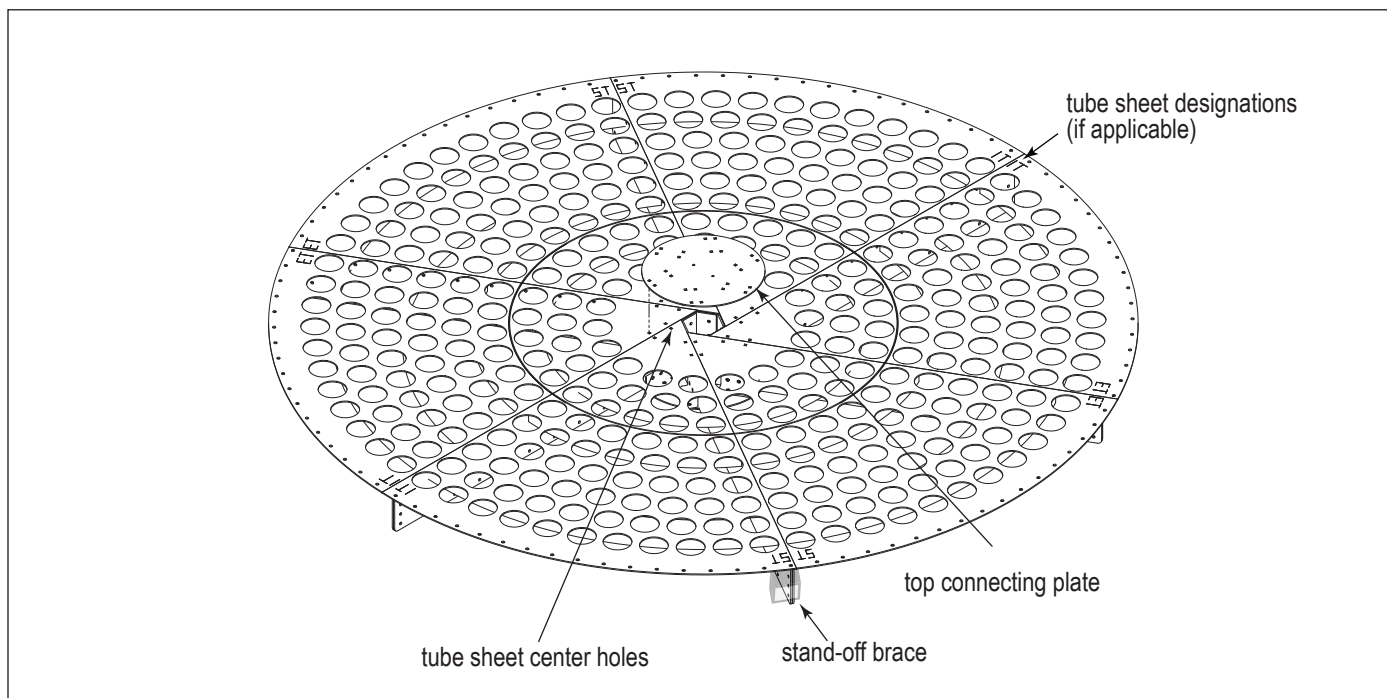
Tube Sheet (Upside Down) Bottom Connecting Plate

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.



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

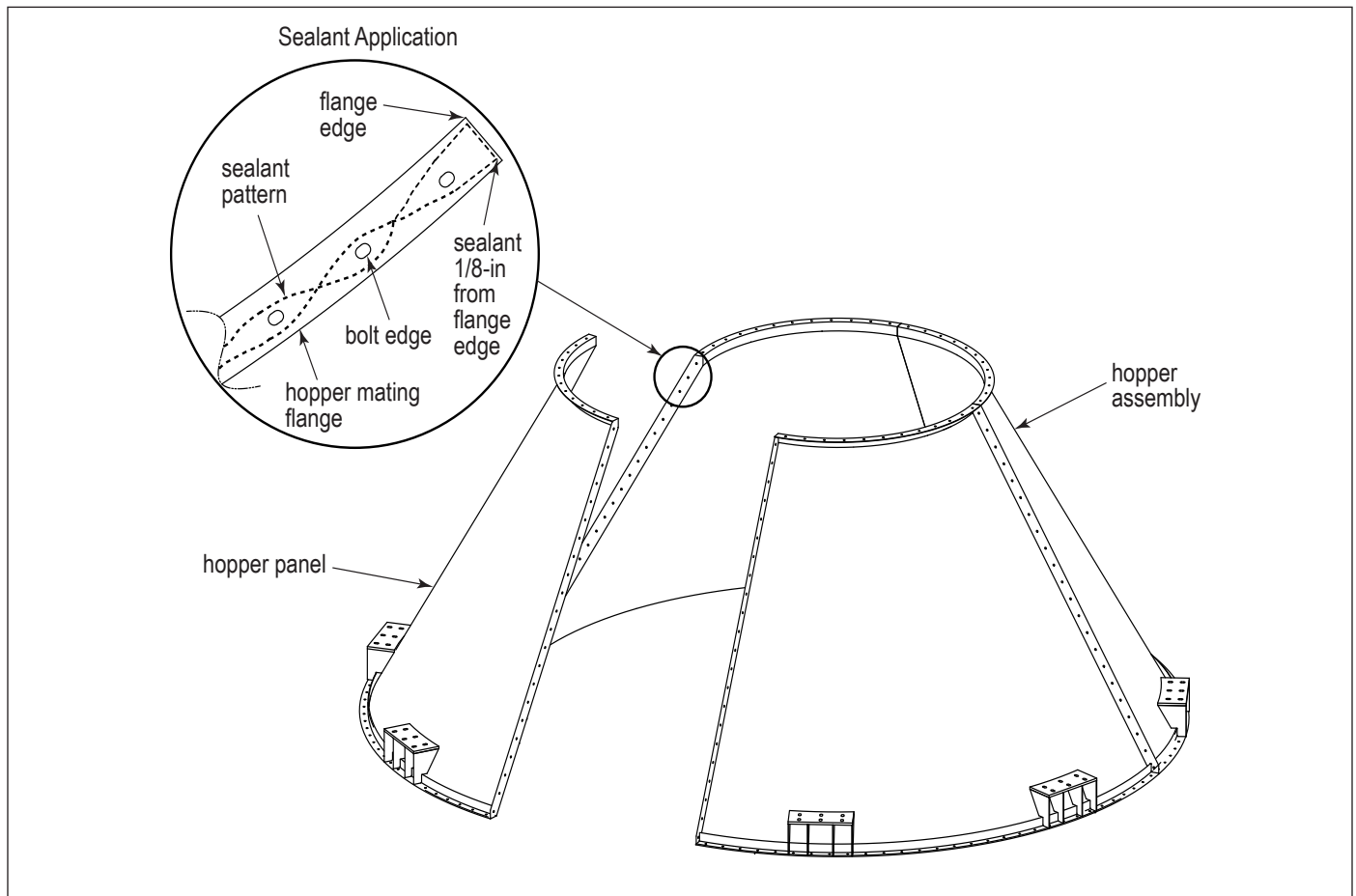
6. On the top connecting plate, apply sealant to one side outside the bolt pattern, inside the bolt pattern and around each bolt hole.
7. Set the top connecting plate onto the tube sheet center and align the holes with the sealant against the tube sheet. Securely bolt plate and tube sheet together.
8. Attach lower bearing from cleaning assembly to top connecting plate.



Tube Sheet (Upright) Top Connecting Plate

Hopper/Transition Assembly

1. Mount the first hopper panel upside down on the tubesheet. In this step and subsequent steps, the tubesheet will be used as a template to ensure correct alignment when joining subassemblies together. Align the outer bolt pattern of the hopper panel with the corresponding pattern on the tubesheet. Do not apply sealant between the hopper panel and the tubesheet.
2. Temporary supports at the ends of each hopper panel may be required until the 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 hopper assembly is complete.
5. After the hopper is assembled, apply sealant to the top of the upper flange as shown to prepare for the transition assembly to be set.
6. Lower the transition assembly onto the upper flange.
7. Align the hopper access door with a mating seam of the hopper assembly. This will force the transition flange's bolt pattern to straddle the centerline of the collector.



Hopper Assembly (Upside Down)

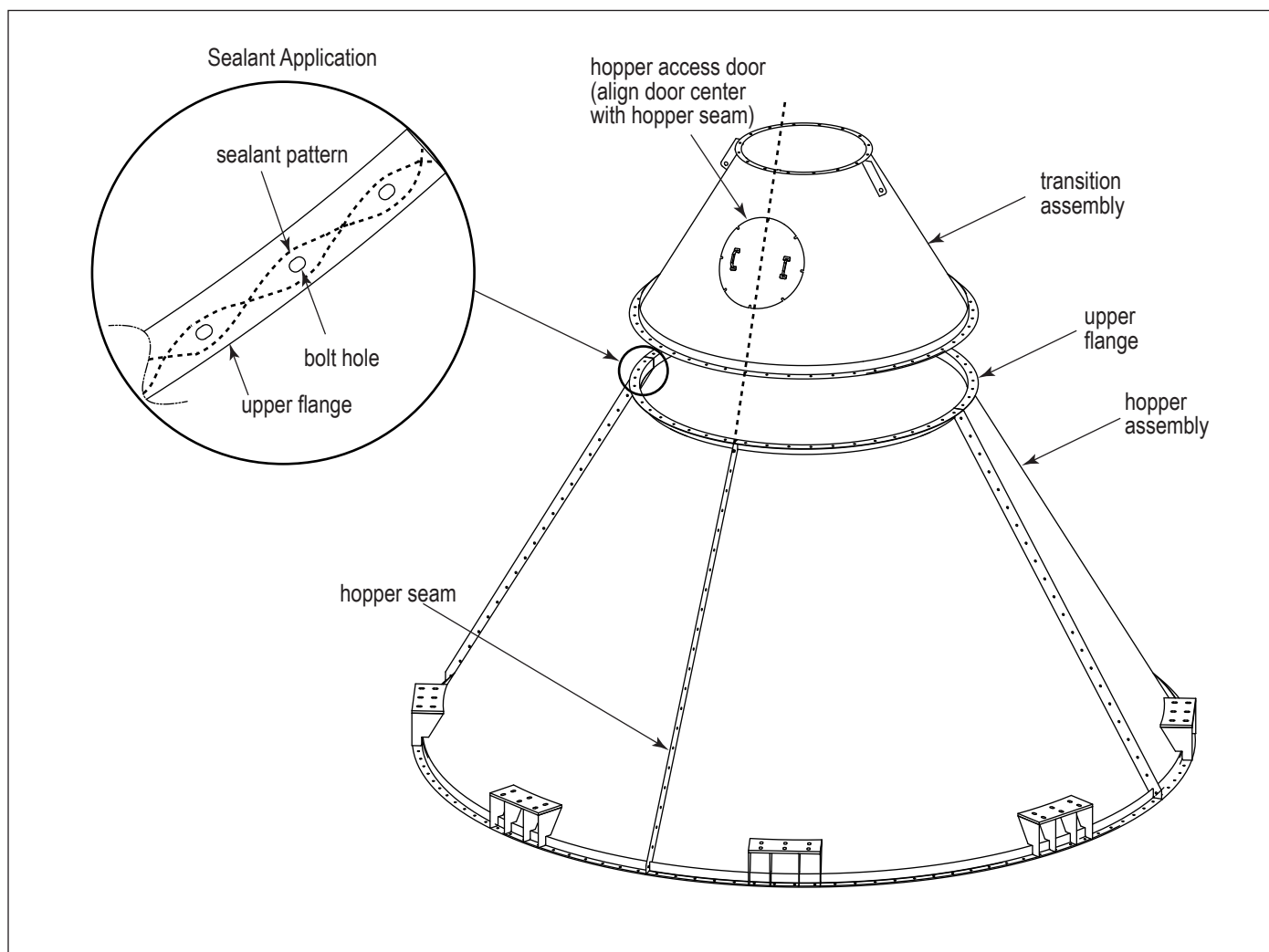
8. Insert all bolts connecting the transition assembly to the hopper assembly and tighten. Proceed by tightening all bolts of the hopper assembly.
9. After hopper assembly is completely bolted and tightened, undo any bolts connecting it to the tube sheet (if used).
10. Lift the hopper and rotate it to the upright position.



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.

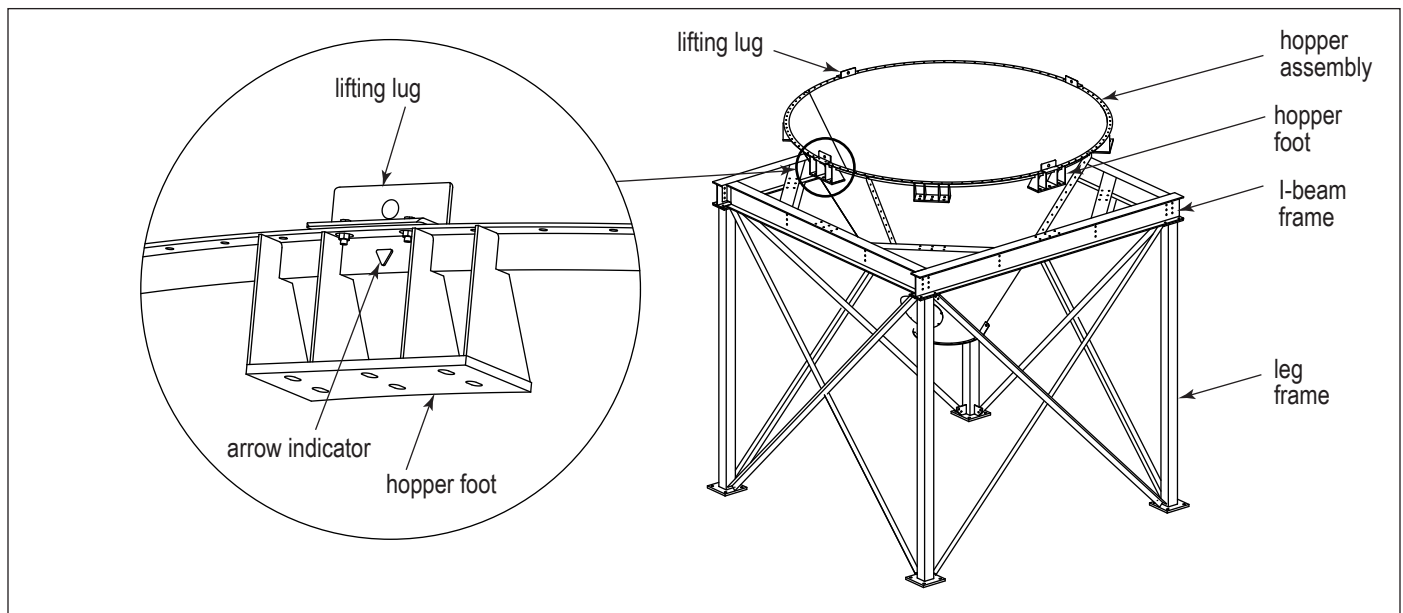
Water overflow drains are required if sprinkler/fire suppression system is installed.

11. Attach the four temporary lifting points with Grade 5 hardware at the marked locations (0, 90, 180 and 270) to the top of the hopper.



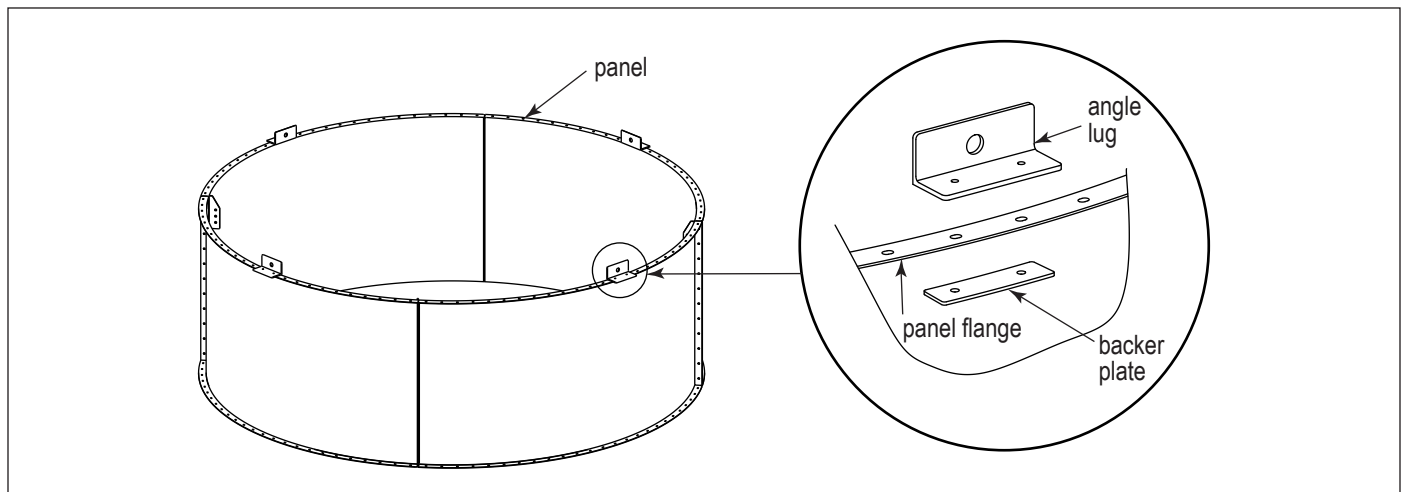
Hopper Assembly (Upside Down)

12. 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.
14. Remove and retain the four temporary lifting points and their mounting hardware for use on other sub-assemblies



Hopper to Leg Frame Installation

Note: Lifting points Bolt-On Usage - Use the provided bolt-on lifting points 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.

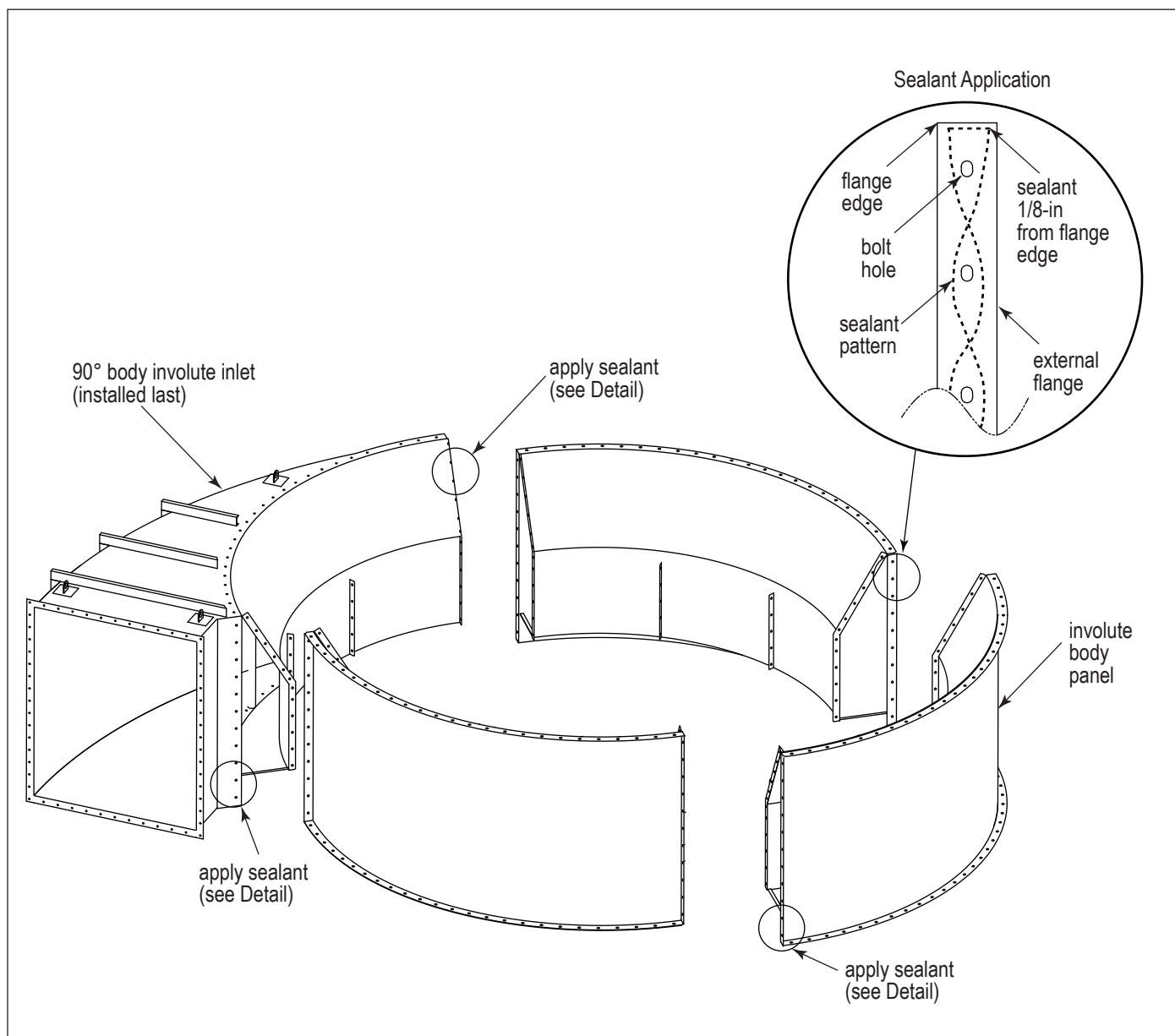


Bolt-On Lifting Points

Involute Inlet Assembly

1. Place the involute body panels on top of the tubesheet. The tubesheet is used to align the panels. 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.



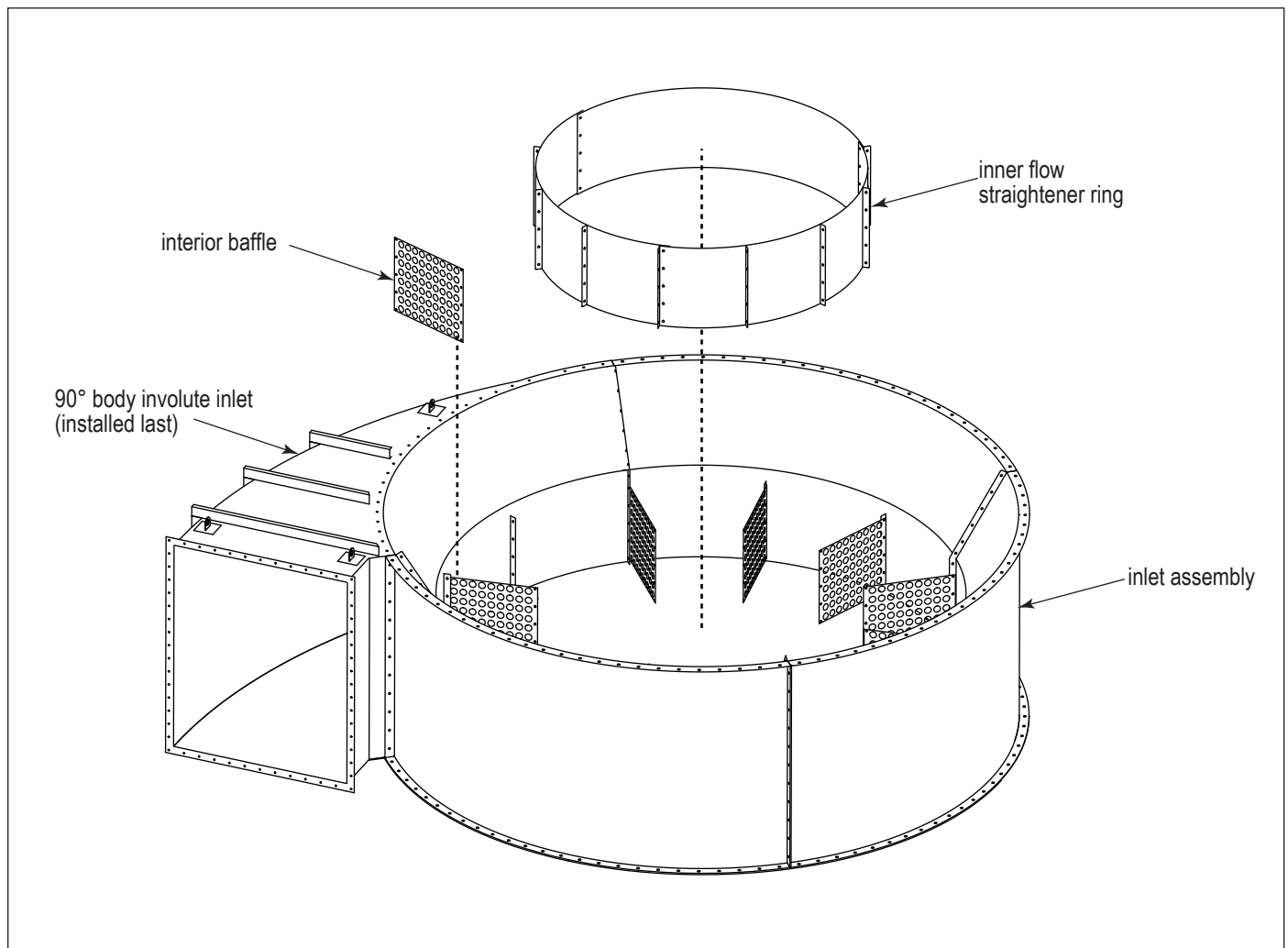
Involute Body Panel Assembly

2. After assembling the perimeter body panel assembly, install the interior baffles by bolting them to the inlet assembly.
3. 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 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

Note: Lifting points Bolt-On Usage - Use the provided bolt-on lifting points 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.

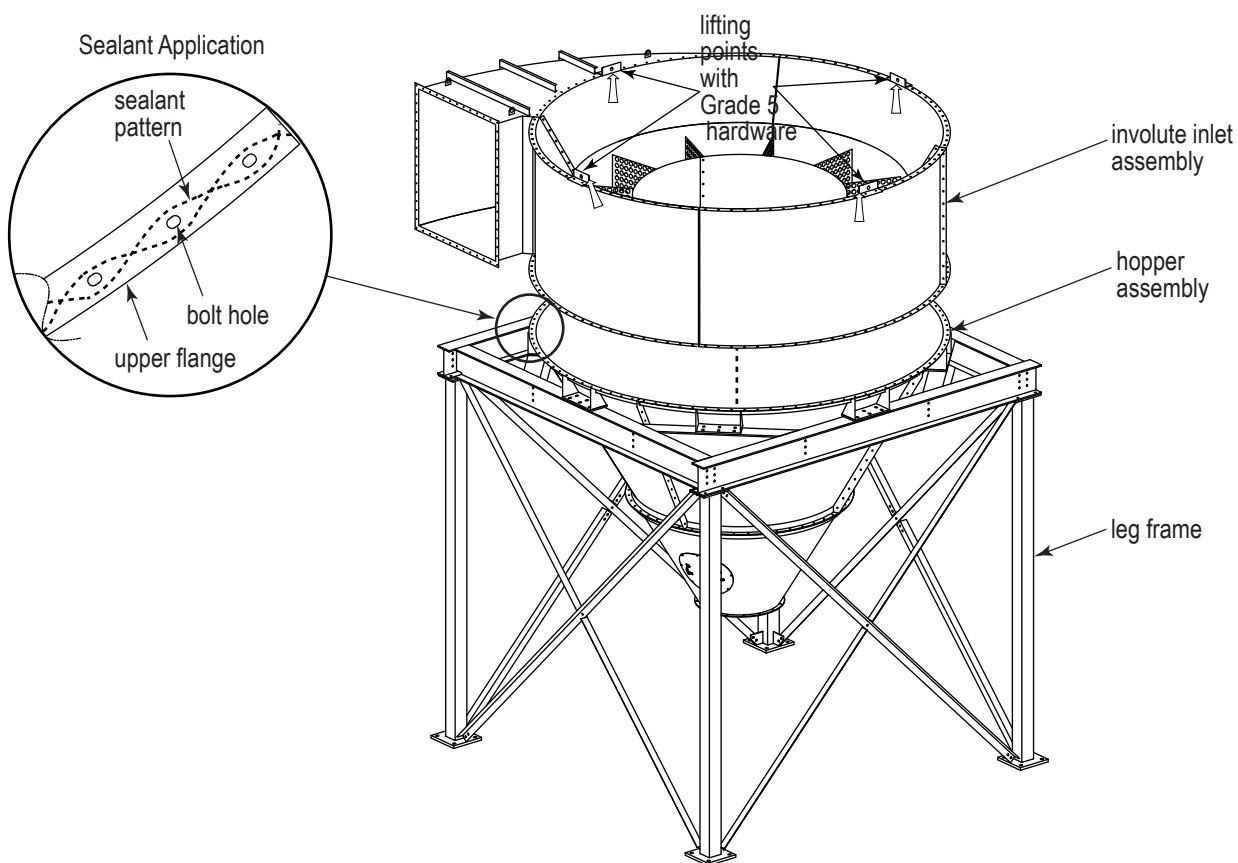
5. Attach the four temporary lifting points with Grade 5 hardware at the marked locations (0, 90, 180 and 270) to the top of the hopper.
6. Apply sealant to the top of the hopper flange as shown. Properly attach and lift inlet assembly following lifting points bolt-on usage instructions previously shown. Lift inlet assembly into position while noting final desired orientation.



Lift the involute inlet assembly 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).

7. Inspect the orientation of the inlet ensuring the inlet flange is parallel to the I-beam frame as shown



Involute Inlet Assembly

Dirty Air Plenum Assembly for Involute Inlet

1. Mount the first dirty air plenum body panel on the tubesheet. In this step and subsequent steps, the tubesheet will be used as a template to ensure correct alignment when joining subassemblies together. Align the outer bolt pattern of the dirty-air plenum body panel with the corresponding pattern on the tubesheet. Do not apply sealant between the dirty-air plenum body panel and the tubesheet.

Note: For collectors containing explosion vents, follow the panel arrangement as shown on the included dirty air plenum 2SG Assembly Drawing.



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

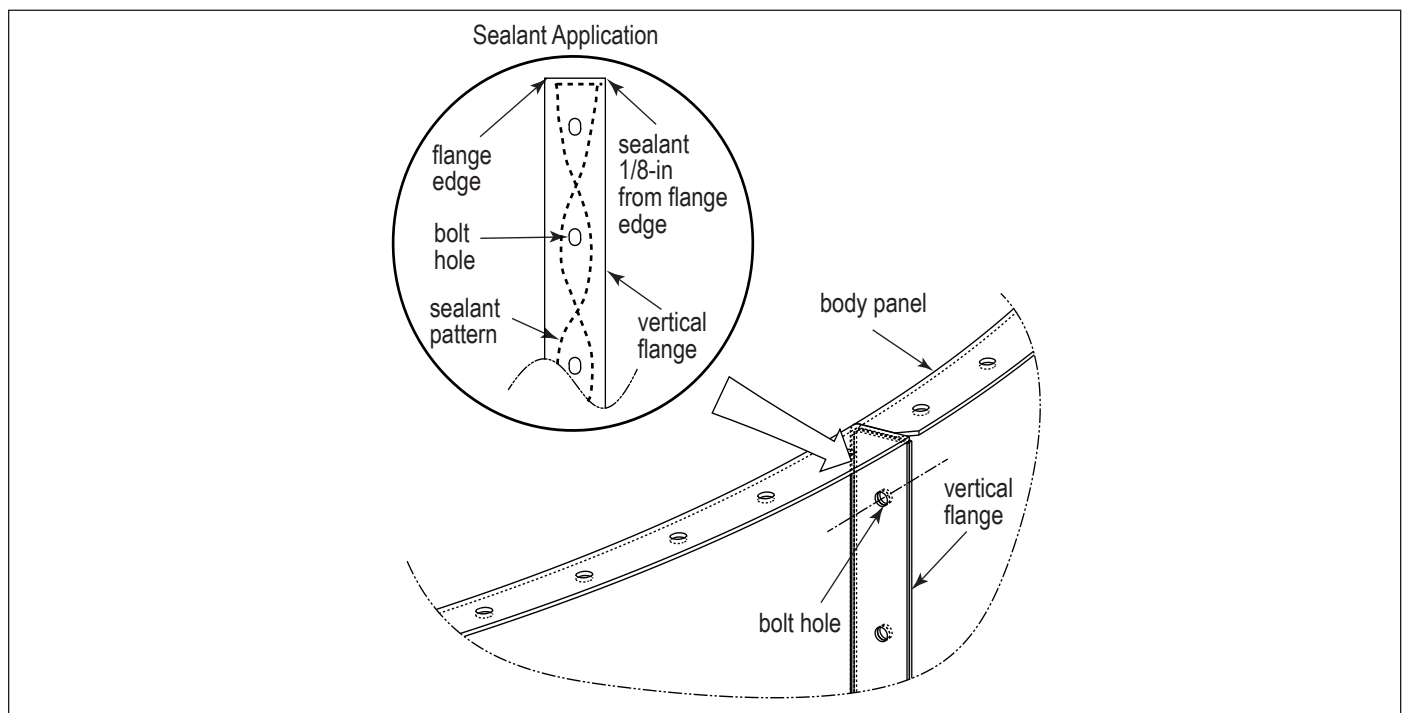
2. Once two or more panels are side by side, apply sealant to the vertical flange of the panel within 1/8-in of the vertical flange's top and bottom edge as shown and press up against the adjoining panel. Align the holes and insert the 1/2-in bolt hardware. Keep hardware hand-tightened.



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

3. Finish joining the body panels until a complete body panel ring is assembled.
4. Move the completed first body panel ring assembly (with hand-tightened hardware) off the tubesheet onto a level area using stand-offs to avoid ground contact.

Note: Lifting points Bolt-On Usage - Use the provided bolt-on lifting points 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.



Body Panel Assembly

5. Assemble the second ring on top of the tubesheet. Similar to the first ring, the tubesheet will serve as a template. 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. Use the long locating bolts included with the lifting point kit to LOOSELY JOIN the panel rings. Install one bolt near the bottom of the vertical flange and one bolt near the top for each connection. Do not apply sealant between the vertical flanges at this point.

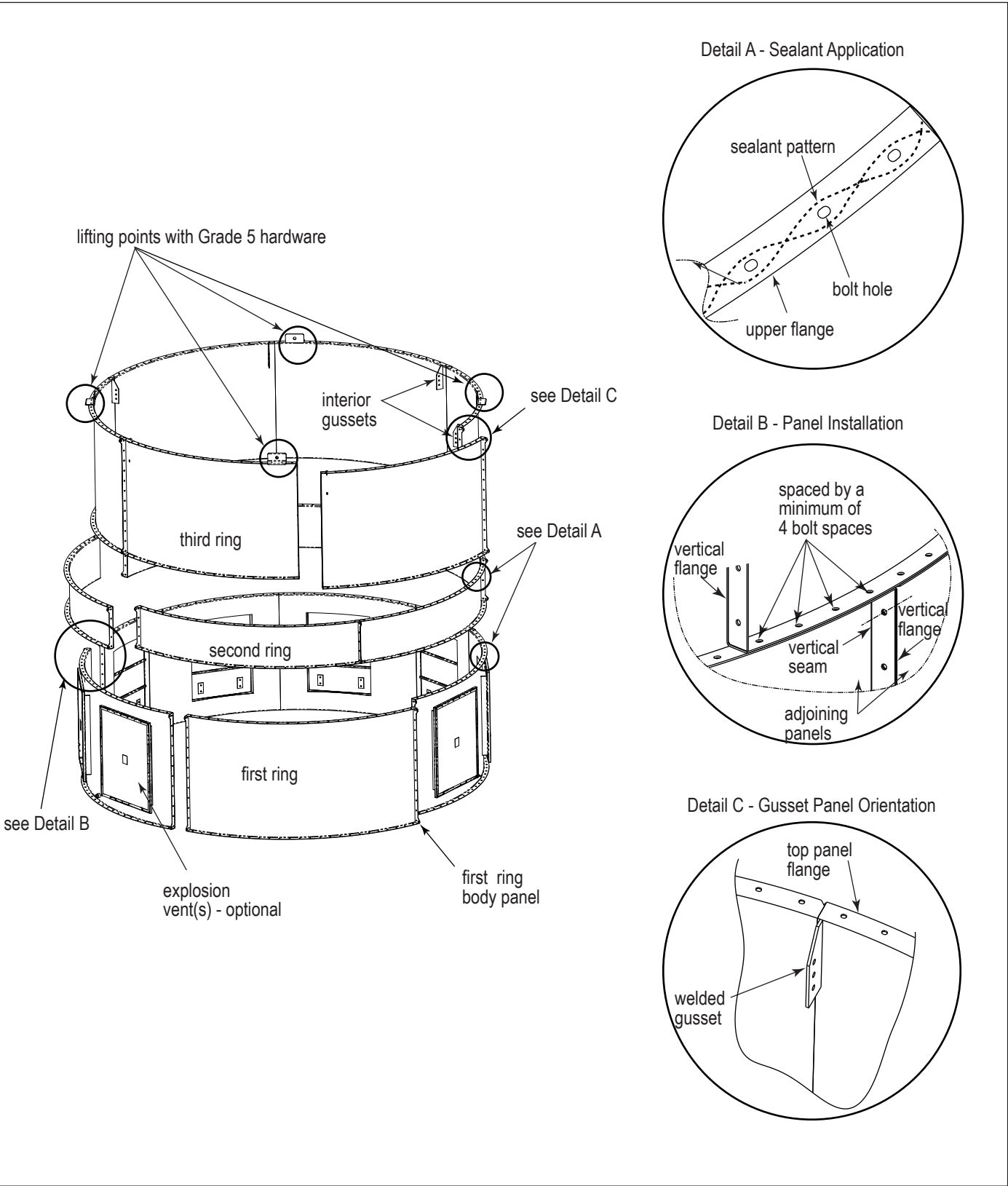
Note: The upper most ring of the dirty air assembly uses panels with gussets welded to them. Gussets must be oriented to the top of the ring. These will be used to secure the tube sheet in later steps. See Detail C. 312 and 378LP collectors required specific arrangement for top ring.

6. Apply sealant to the top flange of the first body panel ring. See Detail A.
7. Properly attach the lifting points with the Grade 5 hardware to the second ring. Lift the second ring and set on top of the first ring.

Note: Lifting points Bolt-On Usage - Use the provided bolt-on lifting points 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.

Vertical seams on each section must be spaced apart by a minimum of 4 bolt spaces. See Detail B.

8. Align all bolt holes between the first and second rings as necessary. Before bringing together vertical flanges on adjacent panels, apply sealant following detail A. Once aligned, install the standard hardware, hand tighten and remove the long locating bolts.
9. For a 12-ft bag length collector, the third and final dirty air plenum ring will be 66-in tall. Assemble the ring following previous steps 5-8. See Dirty Air Plenum Assembly illustration.
10. Tighten all hardware per the specification on page XX.
11. Set the completed dirty air plenum assembly off to the side. Use standoffs under the flanges to keep them off grade.



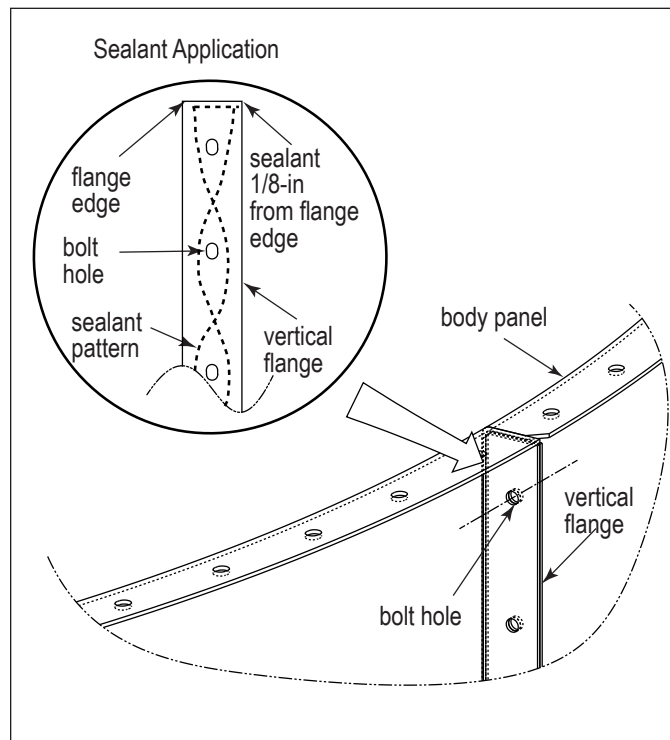
Dirty Air Plenum Assembly 12-ft Involute Inlet Shown

Clean Air Plenum Assembly

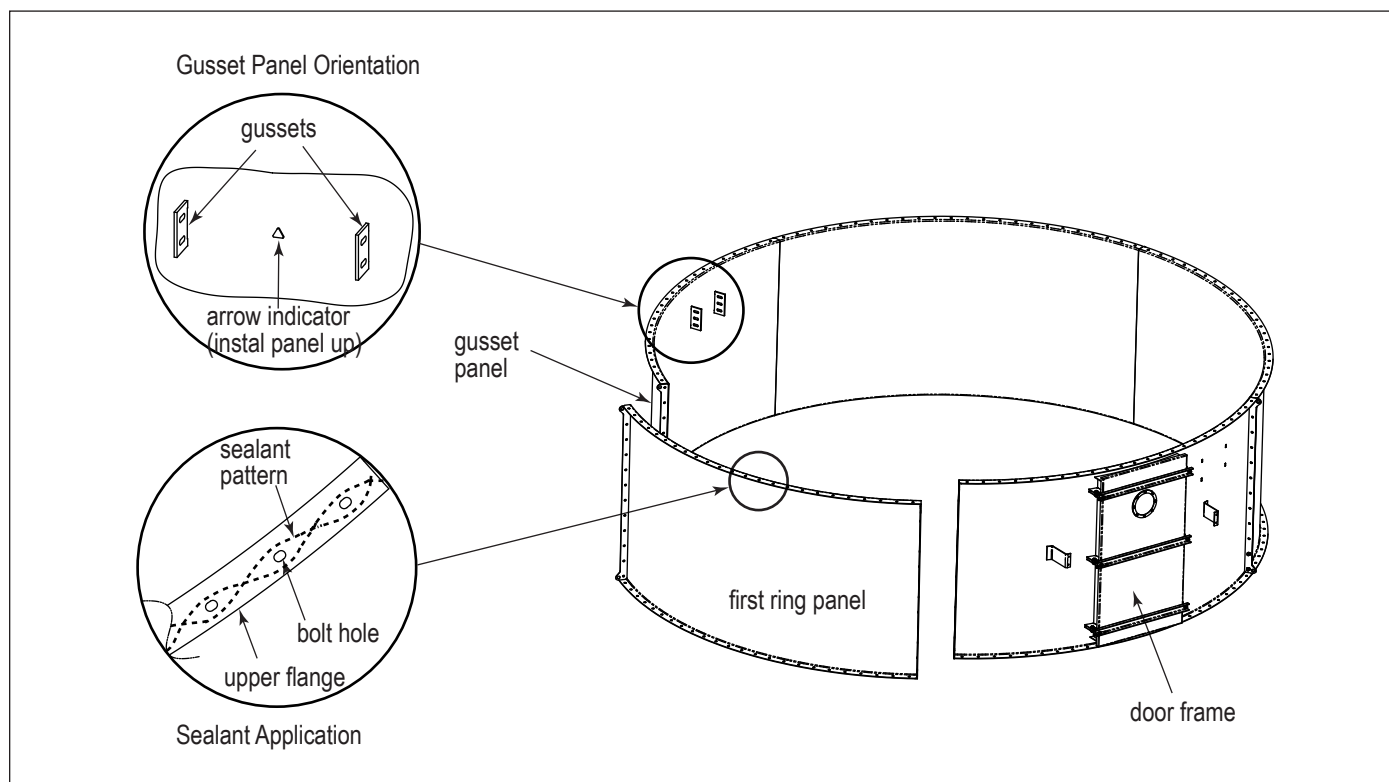
1. Set the 66-in tall clean air first ring body panels onto the tubesheet. The tubesheet will be used to align the panels. Do not apply sealant to the tubesheet.
2. Once two panels are side by side, apply sealant to the vertical flange of the panel within 1/8-in of the vertical flange's top and bottom 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.



Panel Installation



First Ring Assembly - Clean Air Plenum

4. Prepare to assemble the second ring. The second ring includes a unique outlet 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. The arrow indicator on the outlet panel denotes which direction is up as shown.

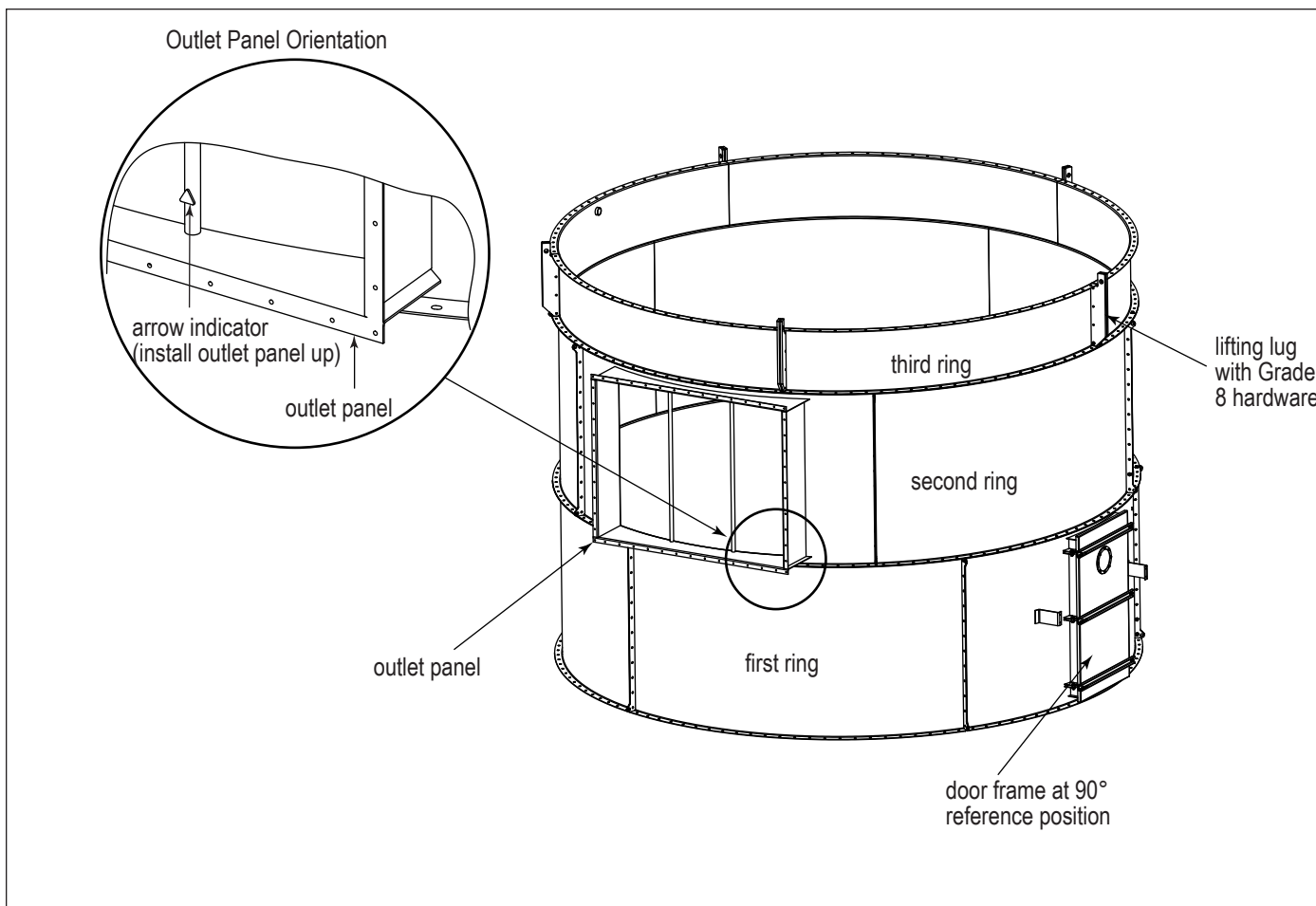


Lifting lugs installed to the Clean Air Plenum require Grade 8, 1/2-in diameter hardware supplied with collector. Using any other grade may result in lifting lug failure.

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

5. Follow the same procedure on as the Dirty Air Plenum Assembly section for installing the remaining ring sections on the Clean Air Plenum.

6. For a 12-ft bag length collector, the third and final clean air plenum ring will be 24-in tall. Assemble ring following the same procedure as previous rings. 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 drawing.
7. Ensure all hardware is tightened per the specification given previously in this manual.
8. Set the clean air plenum off to the side but within reach of the crane. Use standoffs under the flanges to keep them off of grade.



Clean Air Plenum (12-ft Bag Clean Air Plenum Shown)

Collector Body Assembly

Note: Ensure the rated crane capacity is sufficient for the combined load of the dirty air plenum, tube sheet, clean air plenum, cleaning assembly and roof before following the collector body assembly procedure below. If a lower crane capacity is used, lift components individually.



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

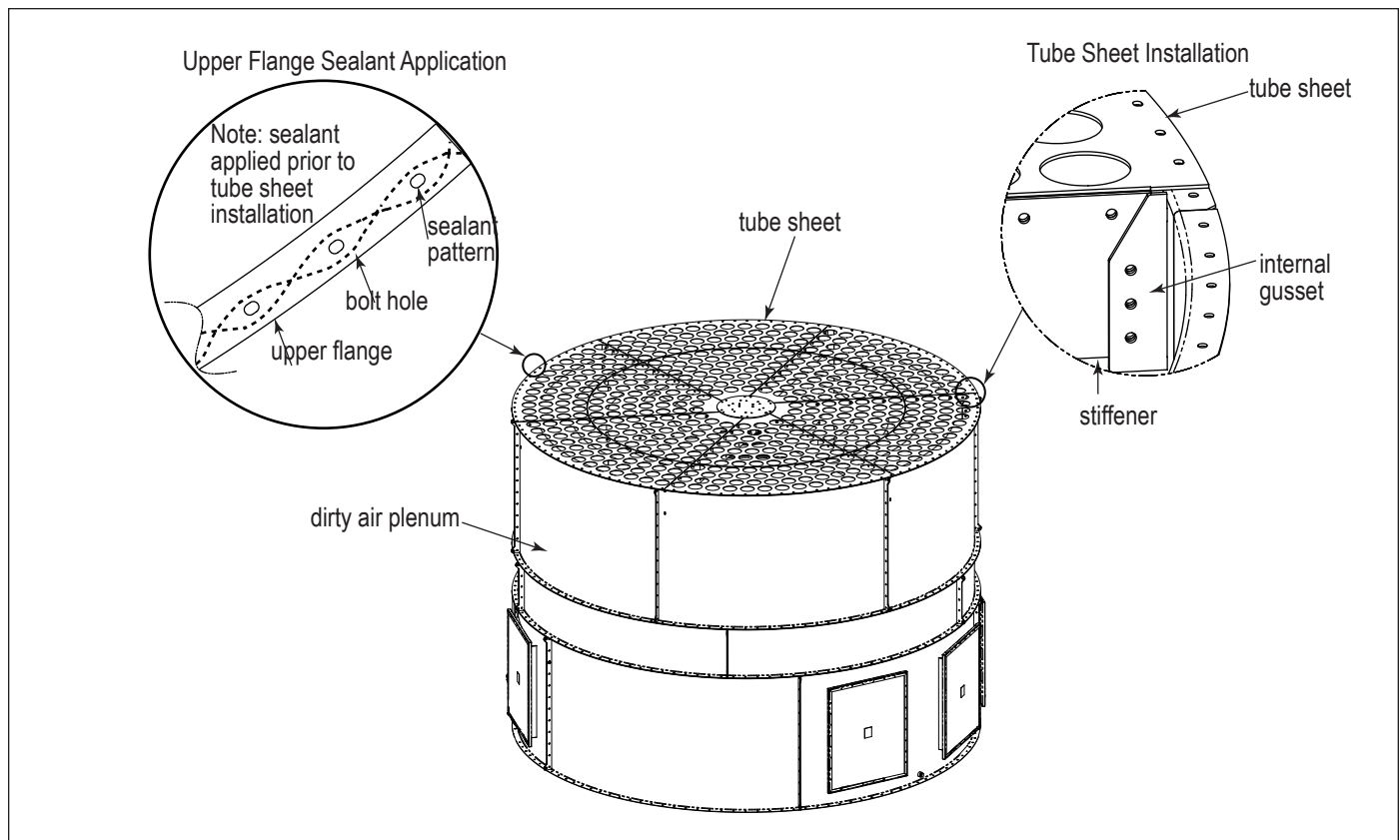
Use the four temporary lifting points with Grade 5 hardware provided in the appropriate manner and do not lift more than the specified weight.

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: Lifting points Bolt-On Usage - Use the provided bolt-on lifting points 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.

3. As the tube sheet is lowered onto the dirty-airy plenum body sub-assembly, 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

- 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.

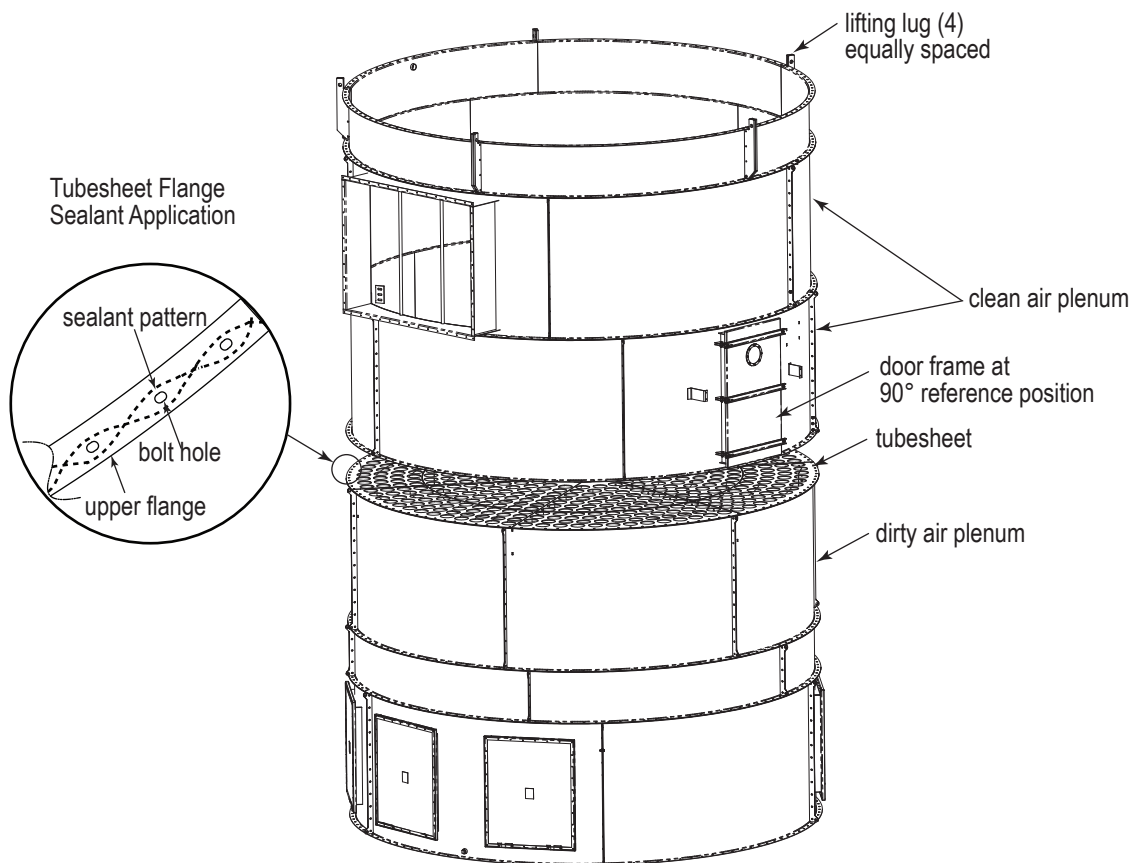


Take precaution against pinching when handling and installing the tube sheet into the Dirty Air Plenum.

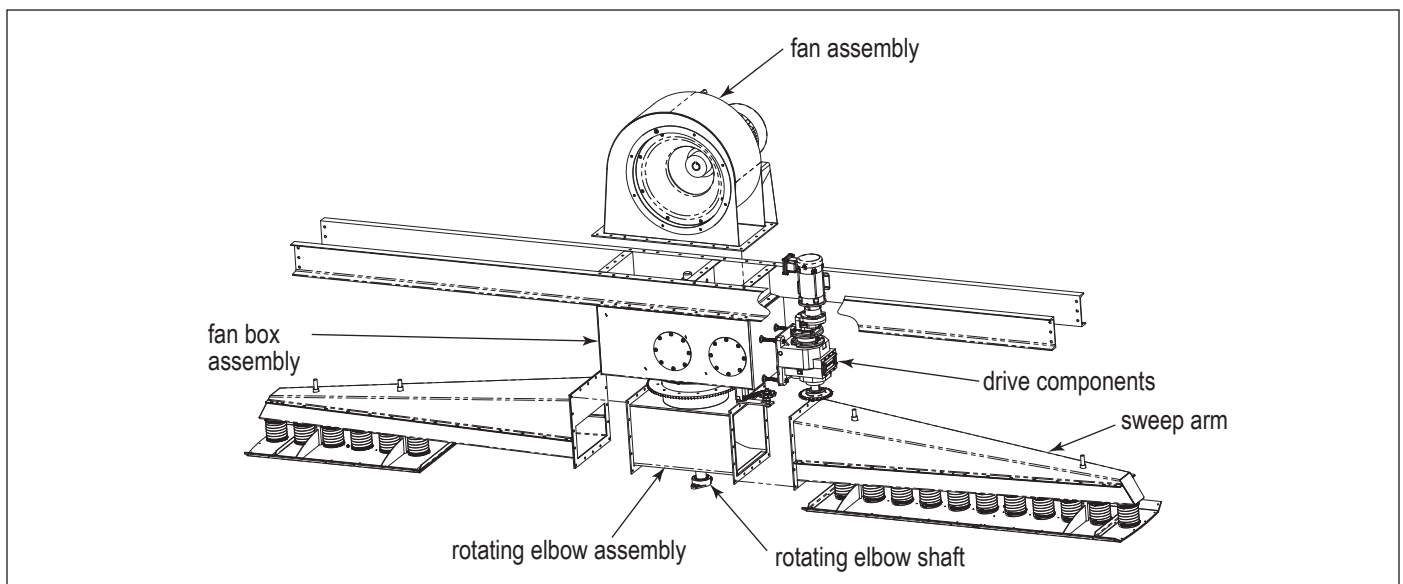
- Apply sealant to the perimeter of the tube sheet as shown to prepare it for the clean air plenum installation.

Note: Lifting points Bolt-On Usage - Use the provided bolt-on lifting points 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.

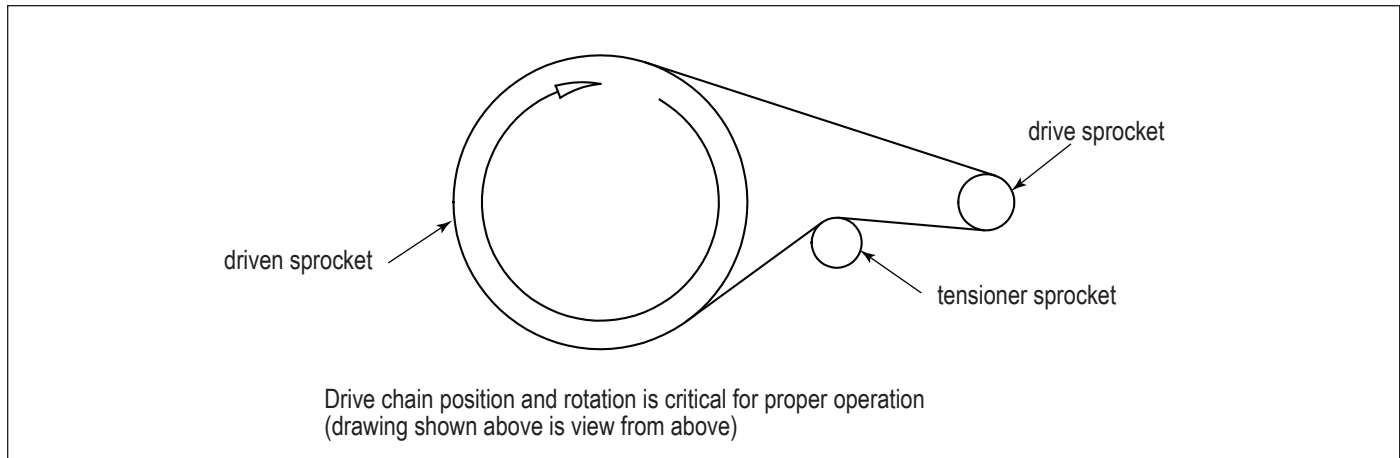
- Lift the clean air plenum with the existing attached lifting lugs onto the tube sheet ensuring that the doorway is in the 90° position per the specification drawing. Insert the 1/2-in hardware and tighten the bolt perimeter.
- Lift the rotating elbow assembly inside the clean air plenum and lower onto tube sheet. Align and insert the rotating arm shaft into the bearing on the tube sheet. Temporarily support the rotating elbow by placing wooden blocks between the tube sheet and elbow base.



8. Install the fan box assembly and drive components onto the H-frame per the cleaning drive assembly drawings.
9. Lift the H-frame assembly and lower into the clean air plenum. Align and insert the rotating elbow shaft into the internal bearing on the H-frame. Install hardware to secure frame to the clean air plenum and hand tighten.
10. Using a level or a framing square on the rotating elbow flange check that the shaft is vertical in all quadrants. Check that elbow is centered in seal box opening. Rotate elbow by hand and check for any obstructions. The urethane seal should drag on elbow pipe.
11. Lift sweep arm(s) into access section and place on tubesheet. Attach the arm(s) to the rotating elbow.
12. Rotate assembly by hand and check for obstructions before putting chain on. In addition, check to make sure that the cleaning arm has the same separation from the tubesheet in all four quadrants of 3 o'clock, 6 o'clock, 9 o'clock and 12 o'clock. To do this, place the cleaning arm in the 3 o'clock position. Measure the amount of sweep shoe rod that is extending above the cleaning arm. Next measure how much the rod extends in the other 3 quadrants. If the difference between these four measurements are less than 1/2-in, no further adjustments are required. If these measurements are greater than 1/2-in, check to make sure the tubesheet is level and properly supported in the middle. If this is not the remedy, adjust the pillow block bearing or pillow block bearing shim.



13. Once shaft is correctly aligned tighten all mount bolts and bearing set screws. Install the drive chain on the sprocket as shown in the diagram below.



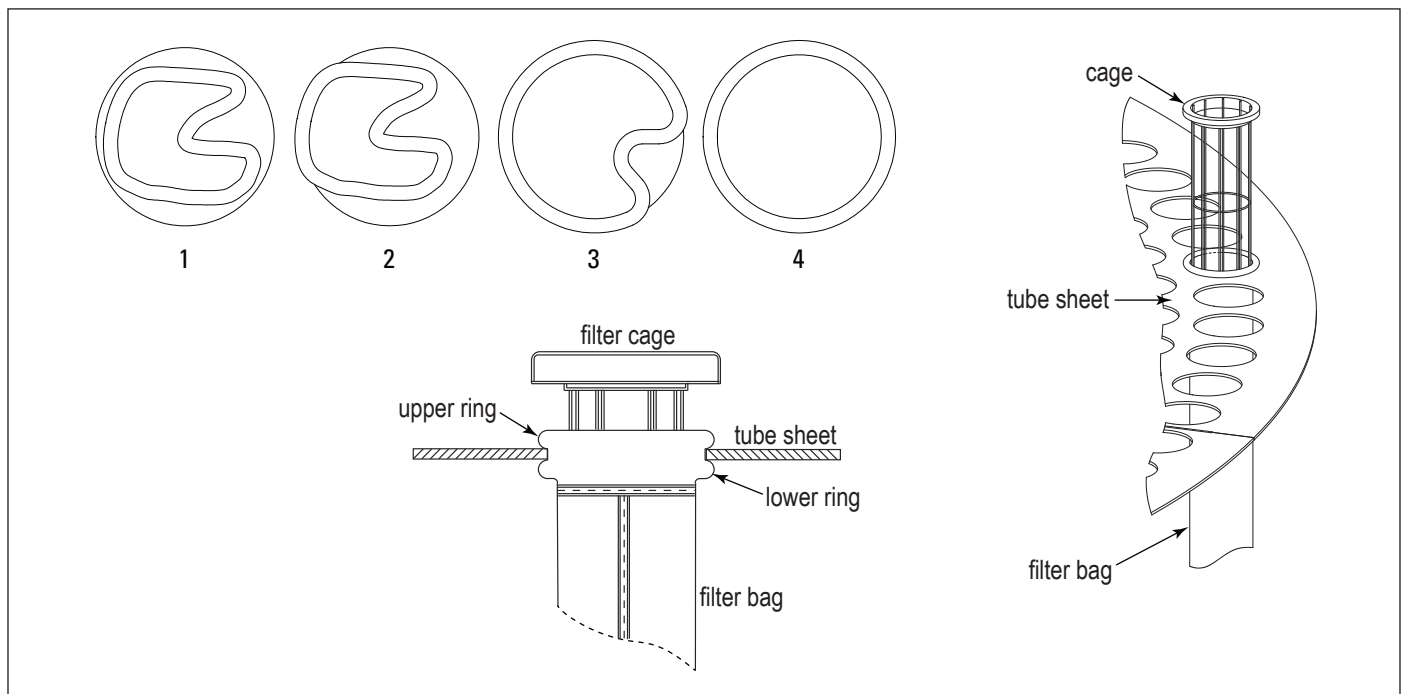
14. Prepare channels for placement of fan by applying a bead of silicone on the mating surface. Lift fan into place and secure with provided bolts making sure to use the wedge washers on the channels.

Filter Bag and Cage Installation

1. From the clean-air plenum, carefully insert the snap-in filter bag through the tube sheet with the closed end oriented downward.
2. Snap the bag in place with the tube sheet between the upper and lower rings on the filter bag collar. See Filter Bag Installation illustration.
3. Lower the filter cage into the bag. If the bag section is resting on the ground, the cages will not drop (seat) completely at this time. When the dirty air plenum is lifted into place, the cages will drop to the correct position (fully seat).
4. Repeat steps 1-3 for all bags.

Note: The cleaning arm will need to be manually rotated to access some bags.

5. Once all bags are installed, ensure the cleaning arms rotate smoothly.

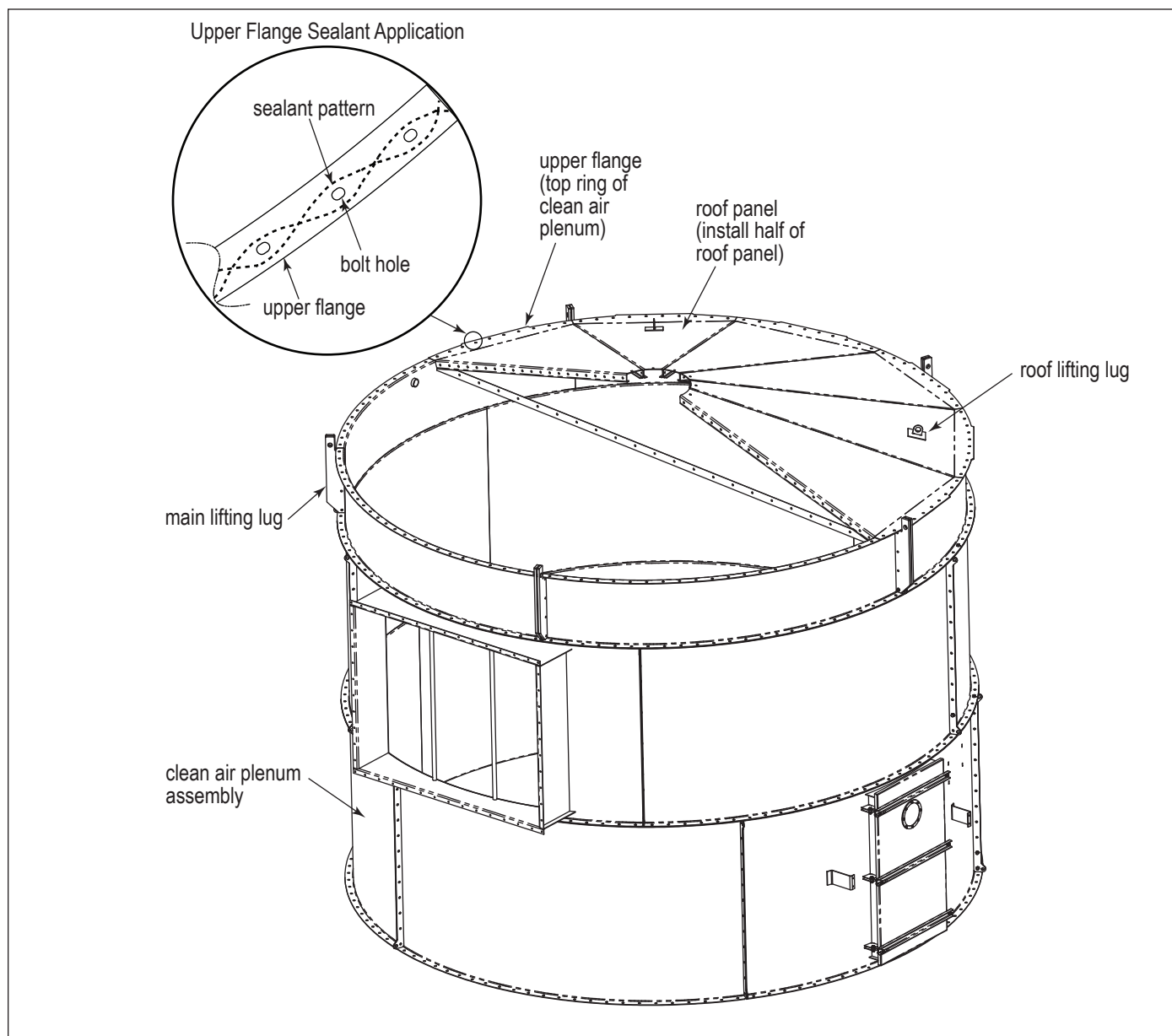


Filter Bag and Cage Installation

Roof Installation

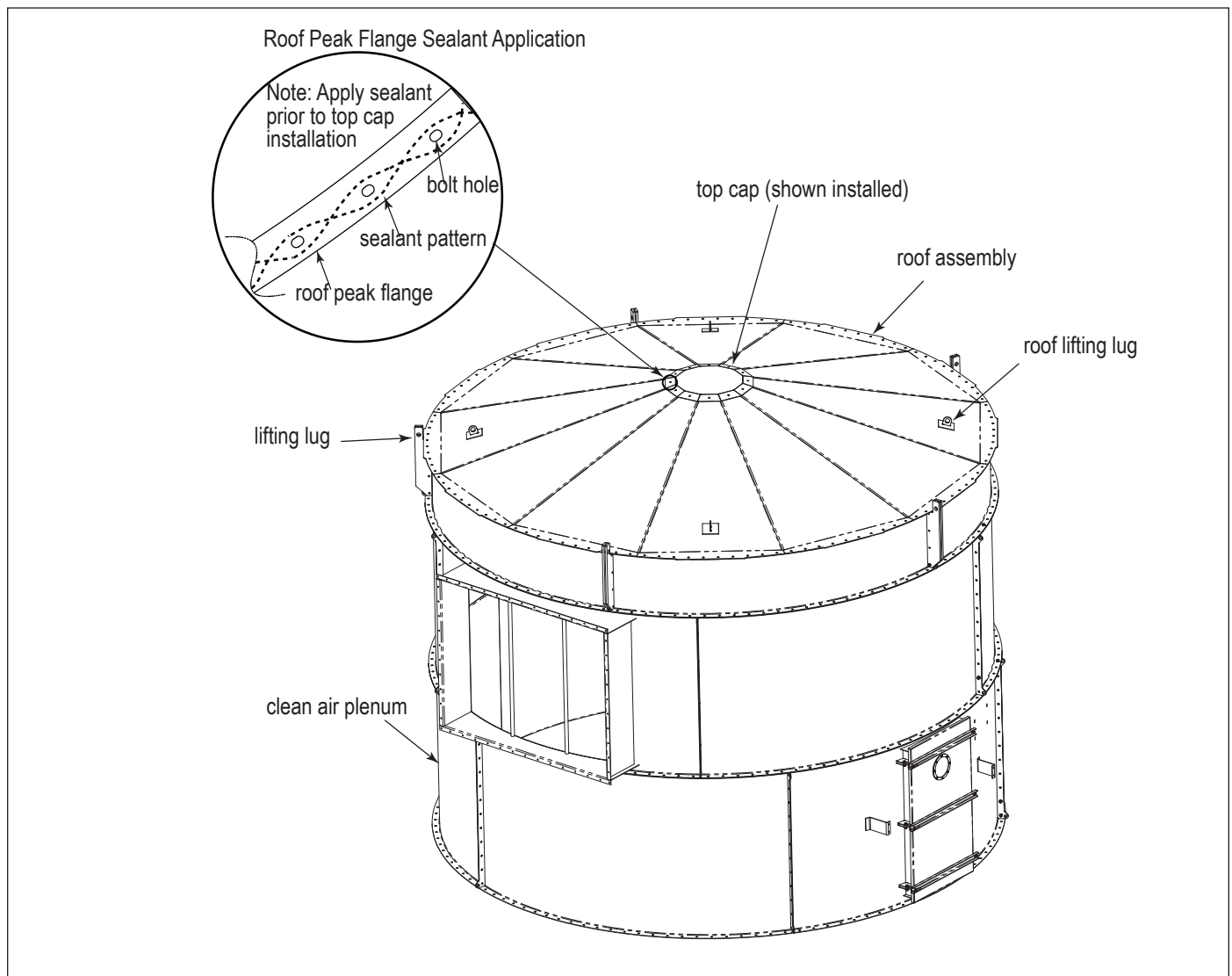
Note: The roof subassembly can be assembled prior to installing the roof on the collector.

1. Apply sealant to the top bolt flange of the clean air plenum assembly.
2. Lift the first half roof panel into position using the roof lift lugs 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 using roof lifting lugs.
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. Apply sealant to the top of the involute inlet flange as shown in Collector Body Assembly illustration.



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

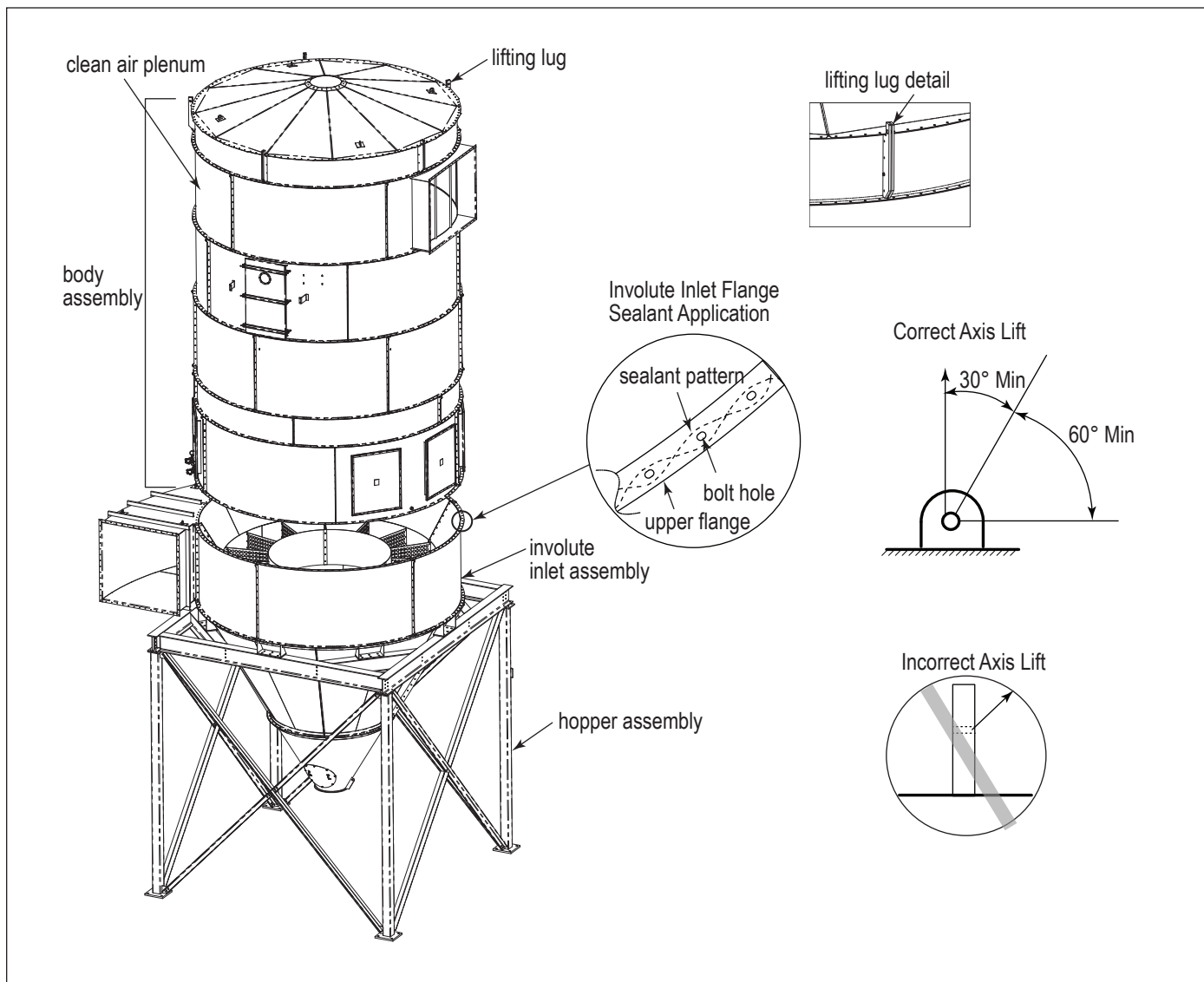
10. Lift the body assembly with the lifting lugs attached to the clean air plenum as shown below. Position the body over the involute inlet. Properly orient the body per the Donaldson-supplied customer drawing or specification drawing and lower into position.



Do not lift assembly by roof lifting lugs or personal injury and/or property damage may ensue. Use provided Grade 8 hardware.

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.

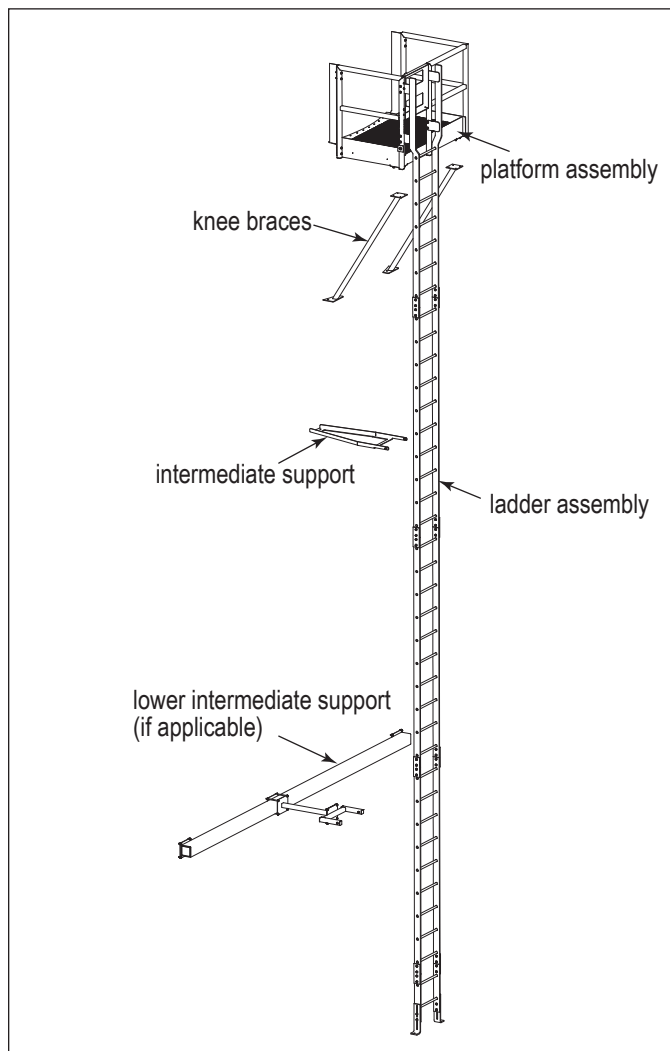
11. Insert all the 1/2-in hardware and tighten the entire connecting perimeter.



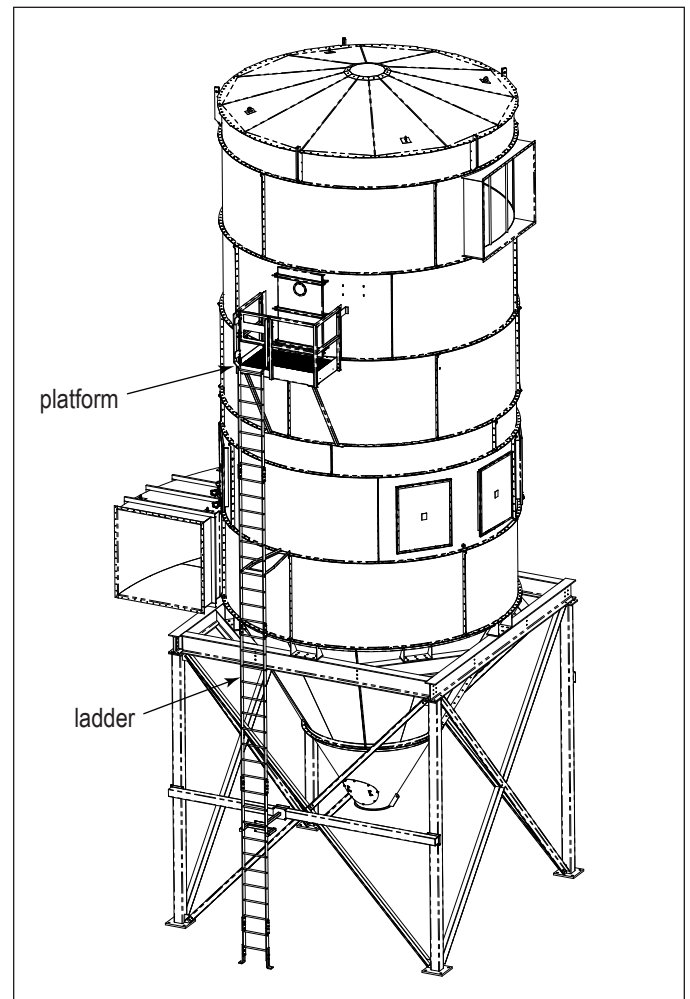
Collector Body Assembly

Ladder/Platform Installation

1. Attach the knee braces to the platform assembly shown on drawings shipped with collector.
2. Lift the platform assembly into position.
3. Remove the hardware located where the platform assembly and knee braces will connect to the body panel flanges.
4. Position the platform assembly, then reinstall and tighten the existing hardware including the bolted connections for the platform railing and knee braces.
5. Assemble the entire ladder sub-assembly per the drawing provided. Temporarily bolt the adjustable, bottom angle anchors at the highest position.
6. If applicable, install the lower intermediate ladder support to the leg pack following the drawing provided.
7. Lift the completed ladder assembly into position and fasten to the platform assembly.
8. Install the remaining intermediate support. Match drill the ladder assembly per the drawing provided and attach to the support.
9. If applicable, match drill the ladder assembly and attach to the lower intermediate support.
10. 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

Initial Start-up / Commissioning

Once the LP has been placed, anchored, connected to electrical power and ducts attached to the appropriate equipment, the collector is ready for initial start and commissioning.

Typical commissioning sequence:

1. Ensure there are no obstructions or foreign objects (tools, lifting equipment, etc.) near the reverse air fan.
2. Confirm the cleaning system fan rotation is correct.
 - a. "Bump" the fan to initiate rotation.
 - b. As the fan is winding down (unpowered), compare fan rotation to the rotation label (located on fan housing) direction.
3. If the fan rotation is reversed, correct the rotation.
 - a. Turn off the collector and Lock-Out all energy sources.
 - b. Within the junction box, swap the connection location of two power leads on the terminal block, making certain not to swap a power lead and the ground wire.



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

4. Confirm the cleaning arm rotation is correct.
 - a. Activate the cleaning arm drive motor to initiate rotation.
 - b. Observe arm rotation relative to the rotation label located on top of the sweep arm.
5. If the arm rotation is reversed, correct the rotation.
 - a. Turn off the collector and Lock-Out all energy sources.
 - b. Within the junction box, swap the connection location of two power leads on the terminal block, making certain not to swap a power lead and the ground wire.



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

6. Ensure the Magnehelic or Photohelic gauge is properly installed and functioning. Refer to the included print for additional instruction.
7. Ensure all collector access panels and doors are sealed and secure.
8. Check that the hopper discharge gate is open and the storage container is properly sealed, if equipped.
9. Check and remove all loose items in or near the inlet and outlet of the collector.
10. Check that all remote controls are properly wired and all service switches are in the OFF position.
11. Ensure all bags and cages are installed and secure.
12. Check that all optional accessories are installed properly and secured.

Decommissioning Collector

Once the collector has reached the end of operational life it will need to be decommissioned.



During decommissioning, there is potential for exposure to the dust in the collector. Most dusts present safety and health hazards that require precautions. Wear eye, respiratory, head, and other protection equipment suitable for the type of dust when performing any decommissioning activities.

LOCK-OUT all energy sources prior to performing any decommissioning activities on the equipment.

Electrical service must be performed by a qualified electrician.

Disconnection of ducts must be performed by a qualified tinsmith or contractor.

1. Follow the typical shut-down sequence steps located in the operation section to remove as much contaminant from collector as possible.
2. Lock-Out all energy sources.
3. Remove all filters from the collector and dispose of in a suitable fashion for the dust in the collector. (See Filter Replacement for removal instructions).
4. Disconnect electrical power from the collector and remove any associated conduit or hardware from the exterior of the collector.
5. Disconnect all ducts from the collector.
6. Proceed to disassemble collector by removing sub-assemblies in the reverse order of the steps given in Appendix A.
Note: The clean air plenum, dirty air plenum, tube sheet, H-frame and cleaning assembly may be removed in separate steps instead of as one unit.
7. Once all cross-bracing has been taken down, remove anchor bolts and lower leg pack columns.
8. Secure all collector components to a suitable transport carrier and transport to a disposal site suitable for the dust in the collector.

Product Information (Process Owner to complete and retain for your records)

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

Service Notes

[illegible]

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. 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.

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.

