

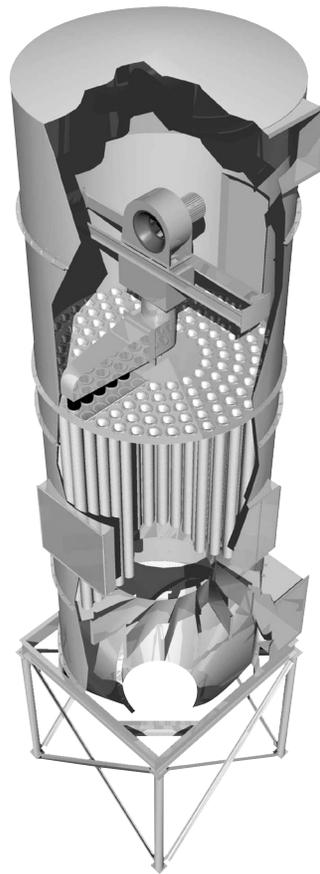


LP Baghouse Dust Collector

All Models

Installation and Operation Manual

Installation, Operation, and Service Information



This manual is property of the owner. Leave with the unit when set-up and start-up are complete. Donaldson Company reserves the right to change design and specifications without prior notice.

Illustrations are for reference only as actual product may vary.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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.

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 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 cylindrical collector housing design on collectors with 312 bags or less will arrive in multiple rings that are to be stacked on top of each other at the job site. Collectors with 378 bags or larger will arrive in sections that are to be bolted together to create rings that will be stacked on top of each other at the job site. The collector housing design includes a tangential inlet with an internal deflection baffle.

The tangential inlet removes heavy materials before they reach the bags, eliminating the need for a separate cyclone precleaner.

The LP 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 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

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 all power before performing service or maintenance work.

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

Turn compressed air supply OFF, bleed and lock out lines before performing service or maintenance work.

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 dust 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.

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.

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

Site Selection

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

Portable collectors may require special installation accommodations.

Note: Collectors with explosion vents are not available in portable configurations.

Hoisting 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 and qualified operator are 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:

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.

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.

Filter Installation

LP with 72 - 312 Bags

Preassembled Units

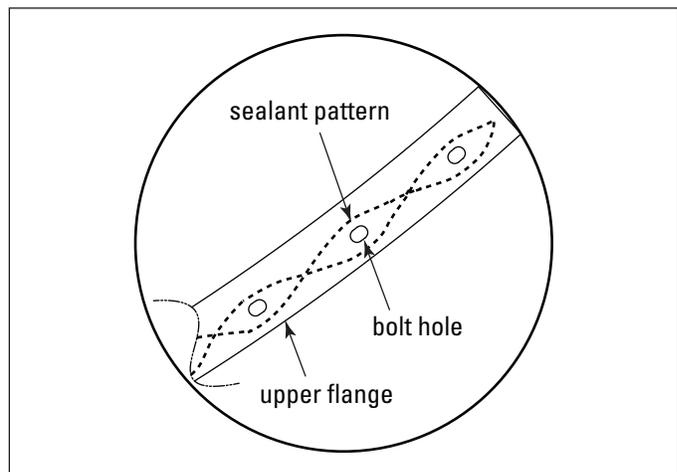
Filter units that arrive fully assembled can be lifted directly into final position. Anchor bolts should be installed and tightened before lifting equipment is disconnected from filter. All bolt connections should be checked and re-tightened if necessary.

1. Connect all ducting using RTV silicone between all mating flanges.
2. Make electrical connections.
3. Connect Magnehelic gauge per Magnehelic Gauge Connection.
4. Install bags and cages per Filter Bag and Cage Installation.

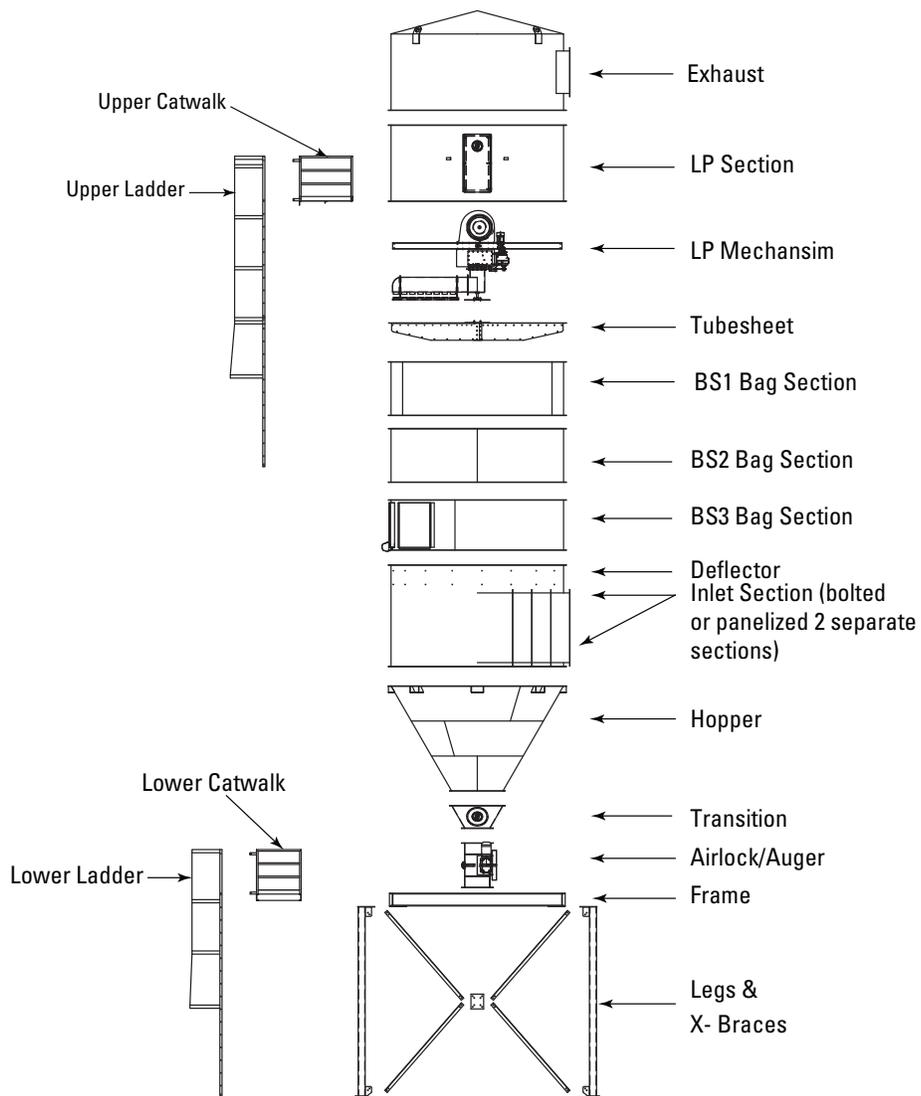
Partially Assembled Units (LP with 312 Bags and Smaller)

The degree of assembly upon arrival may vary on some units. The following steps are typical for assembling a filter that ships in rings (can section collectors).

1. Place hopper on level surface with product discharge flange up (i.e. upside down).
2. Attach legs and cross braces with supplied hardware.
3. Using appropriate lifting equipment (i.e. crane) right the hopper and leg assembly and lift into final position. Secure to foundation. Check all connections, re-tighten if necessary.
4. Right inlet section if not already in righted position. Place a bead of RTV silicone on hopper top flange. Lift inlet onto hopper and secure with provided hardware.
5. Locate upper bag section on level surface. Place a bead of RTV silicone on top flange. Lift tubesheet into position. Place a bead of RTV silicone on the top of the tubesheet.
6. Lift LP section onto tubesheet. Use provided bolts to secure flanges. Place a bead of RTV silicone on top flange.



Sealant application



For LPs with 378 bags or more, each ring and hopper will be assembled from multiple pieces.

Typical LP Assembly

7. Lift LP mechanism into LP section if not already installed. Secure with provided hardware.
8. Lift plenum onto LP section. Use provided bolts to secure flanges.
9. Locate lower bag section on level surface. Place a bead of RTV silicone on top flange. Lift plenum and LP section assembly onto bag section. Secure to bag section using supplied hardware. All bolts should be in place and tightened before attempting to lift plenum and bag section assembly.
10. Bags and cages can be installed at this time if so desired. Refer to Filter Bag and Cage Installation found on page 30. Insert bag into tubesheet hole, fold snap band as shown. Place bag collar groove against hole edge and allow snap band to expand. Push the snap band until it pops into place. Insert cage.
11. Attach catwalk to LP section.
12. Place a bead of RTV silicone on inlet body flange. Lift plenum and bag section assembly onto inlet. Install and tighten all hardware. Do not disconnect lifting equipment until all bolts are in place and tightened.
13. Lift ladder into place and secure with provided hardware.
14. Place a bead of RTV silicone on transition top flange. Lift transition under hopper and secure with provided hardware.
15. Place a bead of RTV silicone on airlock or airlock/auger top flange. Lift airlock or airlock/auger under transition and secure with provided hardware.
16. Make all electrical connections. Consult local building codes. All electrical connections inside the filter must be explosion proof.
17. Install bags and cages if not done so in step 10.

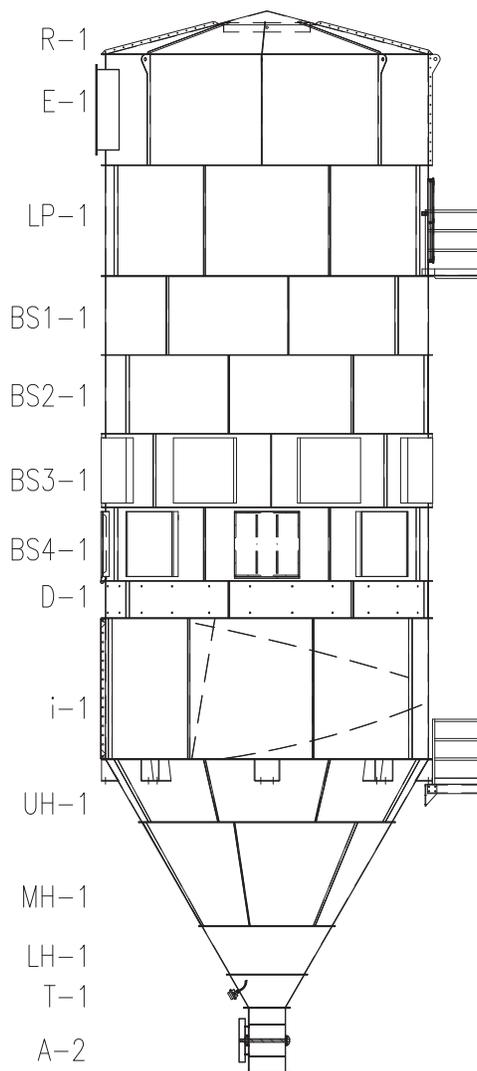
LP with 378 Bags and Larger

The following list summarizes the order in which to assemble the filter. This is a suggested sequence that years of experience have proven to be effective. Depending on your situation a different sequence may be more appropriate. Each of the following steps is explained in detail on the following pages. Please refer to them for clarification and further important details. This list is intended as a summary only.

1. Assemble the channel frames or I-Beam.
2. Erect legs and cross bracing and place channel frame onto legs.
3. Assemble tubesheet. This step is critical because all other sections will be assembled on the tubesheet.
4. Assemble hopper and lift into place.
5. Assemble inlet section and lift into place.
6. Assemble bag sections and lift one onto the other, bolt together and set aside.
7. Assemble exhaust plenum/roof section and set aside.
8. Assemble lower plenum access section and set aside.
9. Lift tubesheet and attach upper support column/pole. Upper support column/pole is provided on collectors with 450 bags or larger. Lift tubesheet onto bag sections.
10. Lift lower plenum access section onto tubesheet and secure. Install internal cleaning mechanism.
11. Install bags and cages in filter.
12. Lift plenum top onto access section. Secure in place.
13. Attach exhaust ducting to plenum
14. Attach access platforms and ladders.
15. Lift filter assembly onto inlet section and bolt together.
16. Install additional ducting and supports as necessary.
17. Install rotary airlock onto collector hopper.
18. Install Magnehelic gauge.
19. Install all electrical connections.
20. Inspect all structural connections for proper torque.
21. Inspect all electrical, and mechanical connections.
22. Place collector into service.

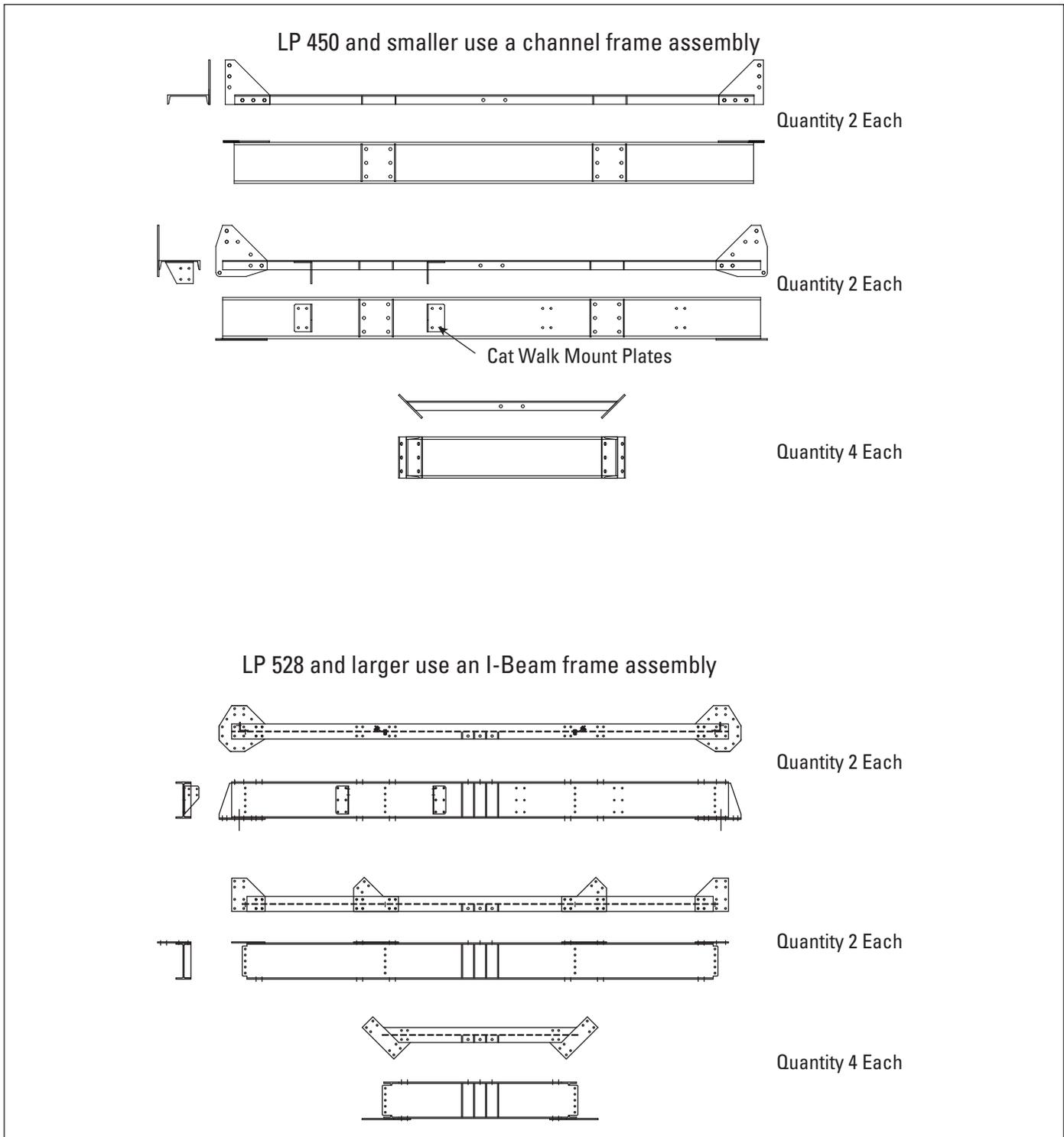
- R = Roof section
- E = Exhaust Plenum
- LP = Lower Plenum Access
- BS1 = Bag Section 1
- BS2 = Bag Section 2
- BS3 = Bag Section 3
- D = Deflector Section
- UI = Upper Inlet (684 and larger only)
- LI = Lower Inlet (684 and larger only)
- I = Inlet (smaller than 684)
- UH = Upper Hopper
- MH = Middle Hopper (if required)
- LH = Lower Hopper

Parts labeled in this illustration are for each ring of the collector and will be packaged in racks with a stamped metal tag denoting which ring it is a part of. For example, there will be a pack labeled BS1 which will have all the panels needed to create the BS1 ring. For shipments with multiple collectors, the "-1" will denote which collector that rack of parts is for.

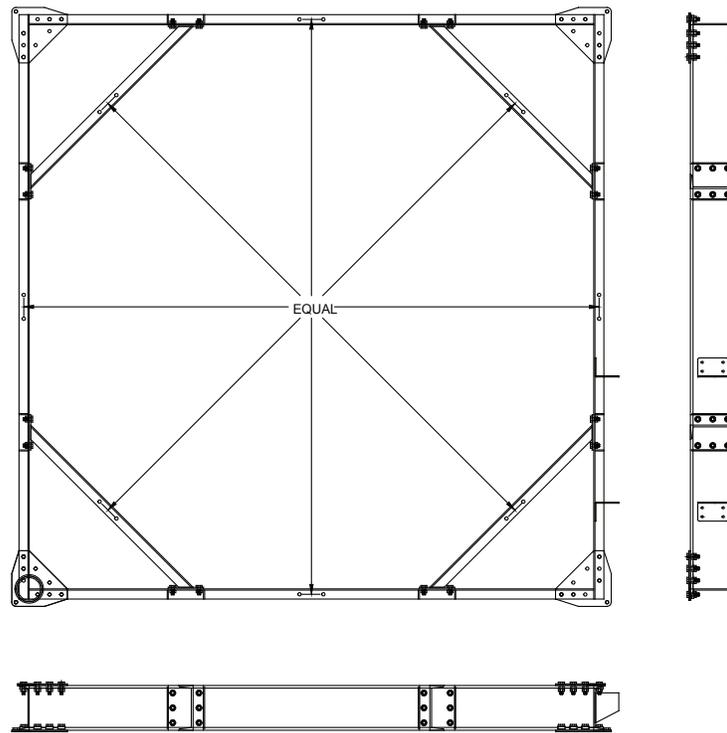


1. Channel and I-Beam Frame Assembly

The channel frame consists of three different pieces in the following quantities:



Place the channel pieces on a flat level surface for assembly. Use the 1" UNC A325 bolts provided for all connections. Locations where bolts pass through channel flanges must have a wedge washer placed on the bolt for proper connection. Note catwalk mounts can be bolted onto any side, however attention must be paid to the orientation of the catwalk entry.



The channel frame as viewed from the top and sides.

Level and square all members of the frame. Tighten all bolts. Note the channel member with the two protruding plates. These plates are mounts for the lower catwalk and it is important that the frame is placed in the correct orientation so that the access ladders will line up.

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.

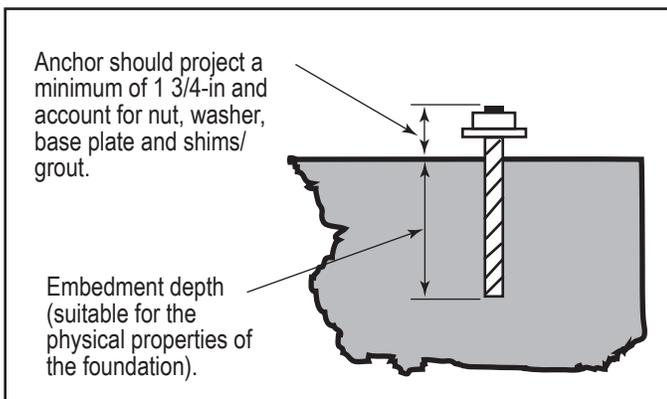
Consult a qualified engineer for final selection of suitable anchors.

NOTICE

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

Provisional Anchor Bolt Recommendations

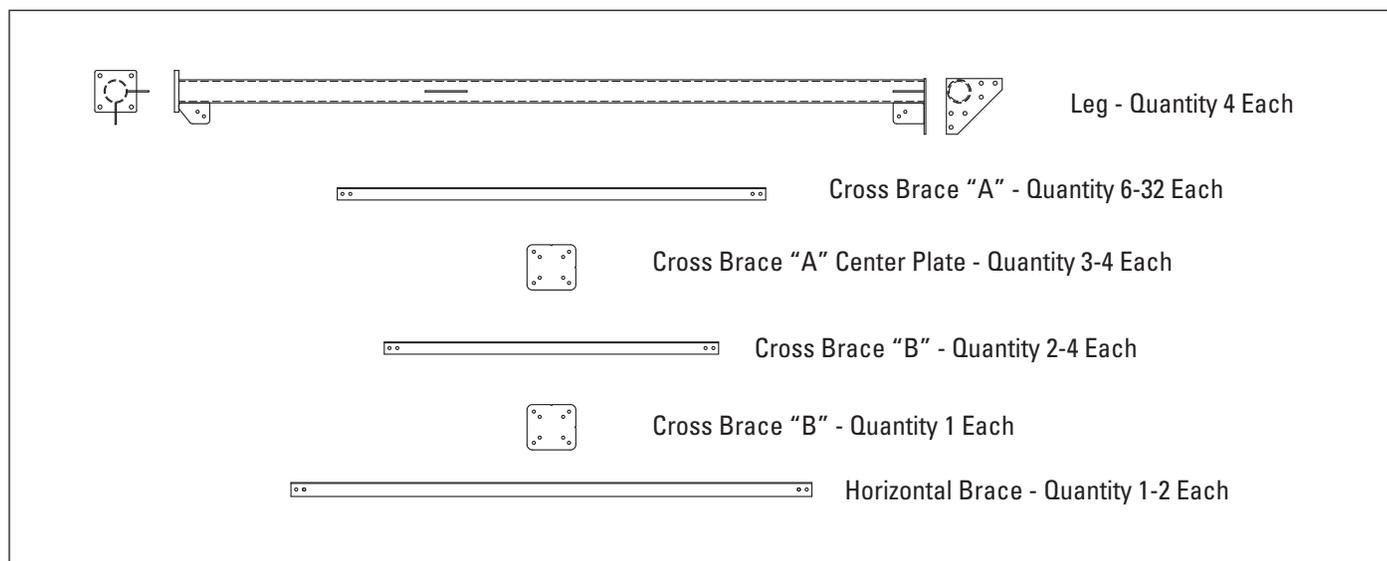
1. Consider Hilti HIT-HY 200 Anchor System or equivalent. Quantity of anchor bolts should match the number of holes provided in the base plates.
2. Anchor diameter is typically 1/8-in less than baseplate hole diameter.
3. Corrosive environment or outdoor installation may require stainless steel anchors.



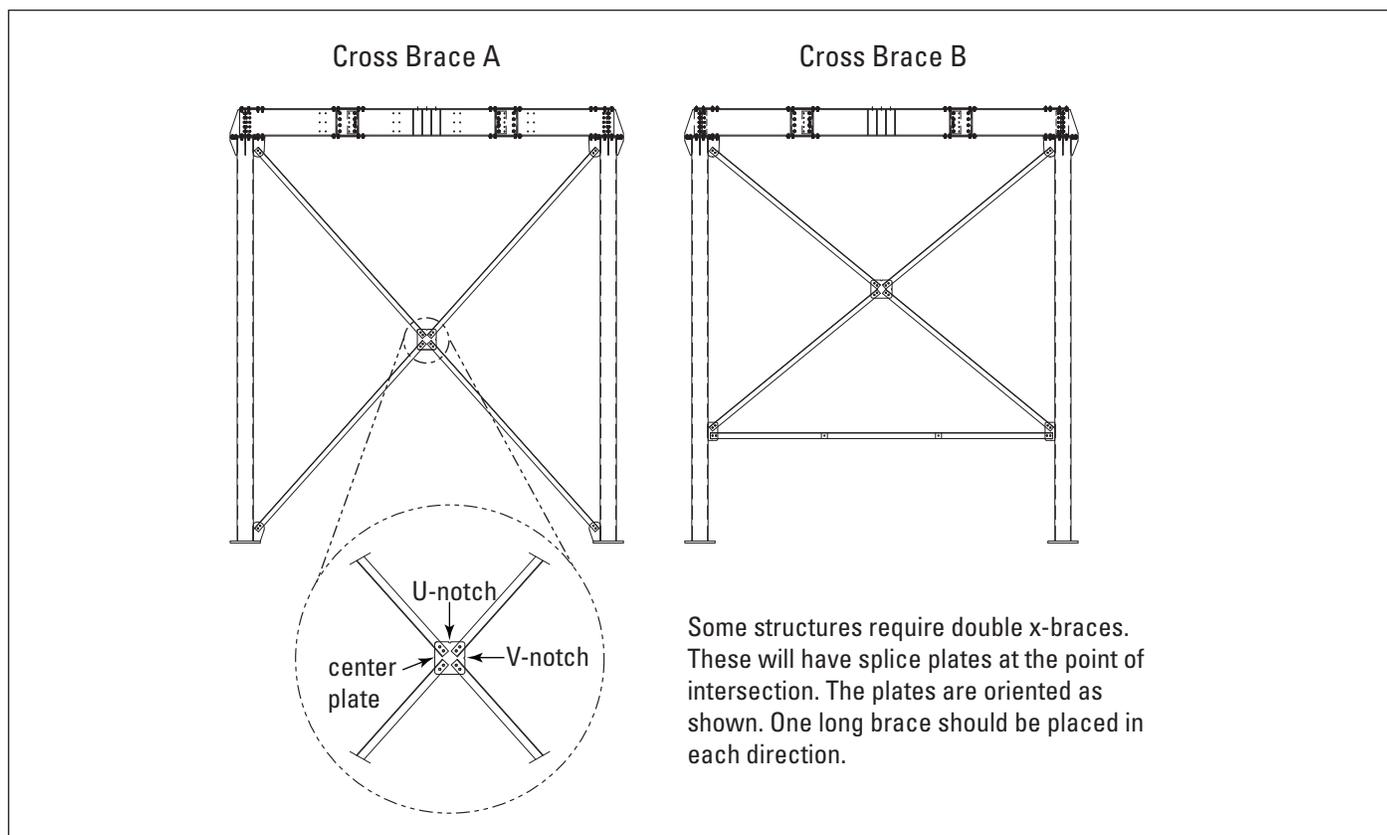
Typical Foundation Anchor

2. Leg and Cross Brace Assembly

The legs and cross braces will vary in size and qty per job. The following example covers typical erection protocol.

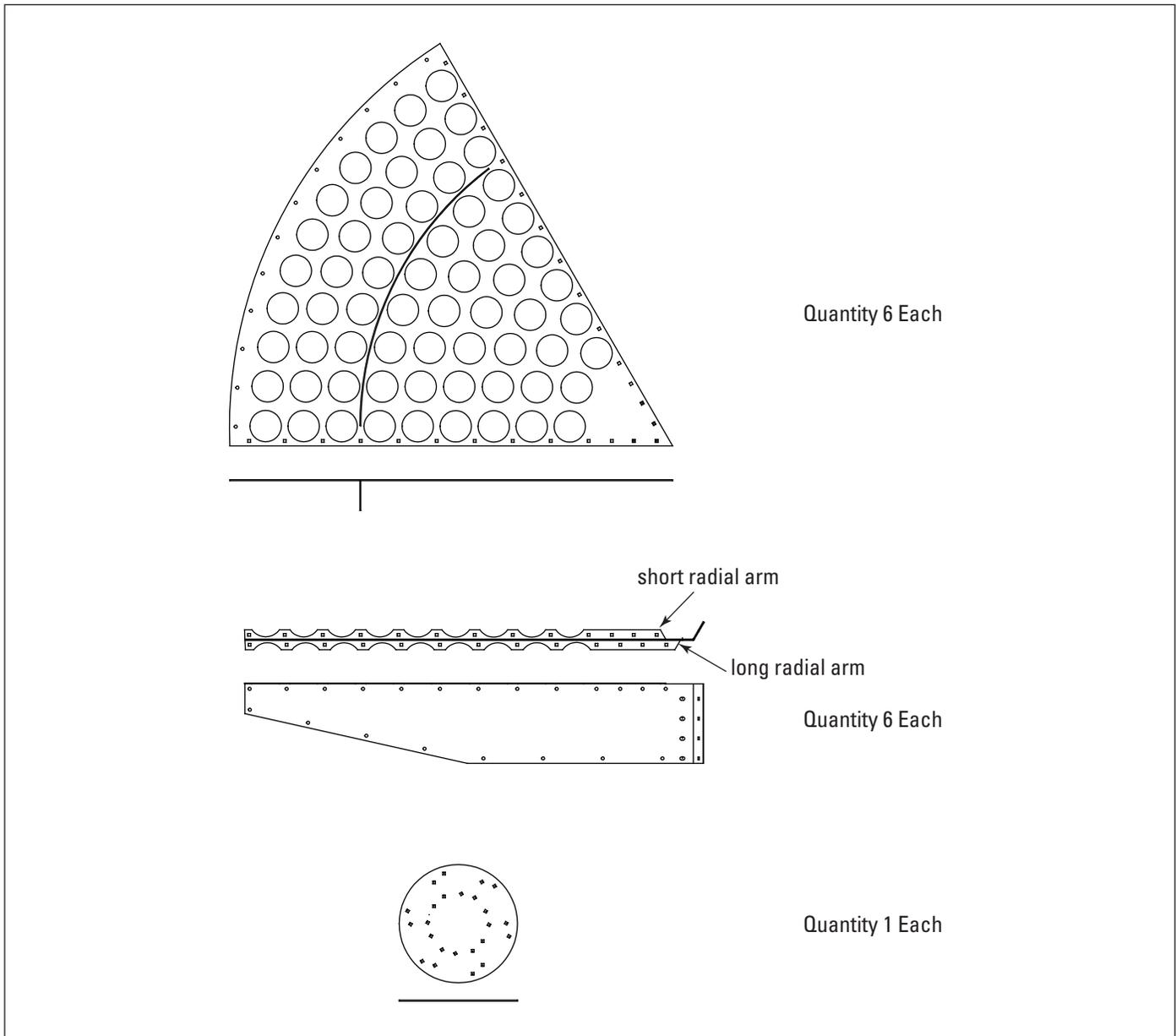


Lift each leg onto the foundation. Temporary supports must be used to stabilize the leg columns. Bolt the cross braces on the legs. See assembly drawing for bolt sizes. Bolt the horizontal brace if provided. Bolts should be hand tight at this point to allow for alignment of the legs to the channel frame. Lift channel frame into place and bolt to legs. Level the top of the frame so that the filter will not lean to any one direction. Tighten all bolts. Some area's building codes require that bolt torque be checked by an approved testing service. Please check your local building codes.

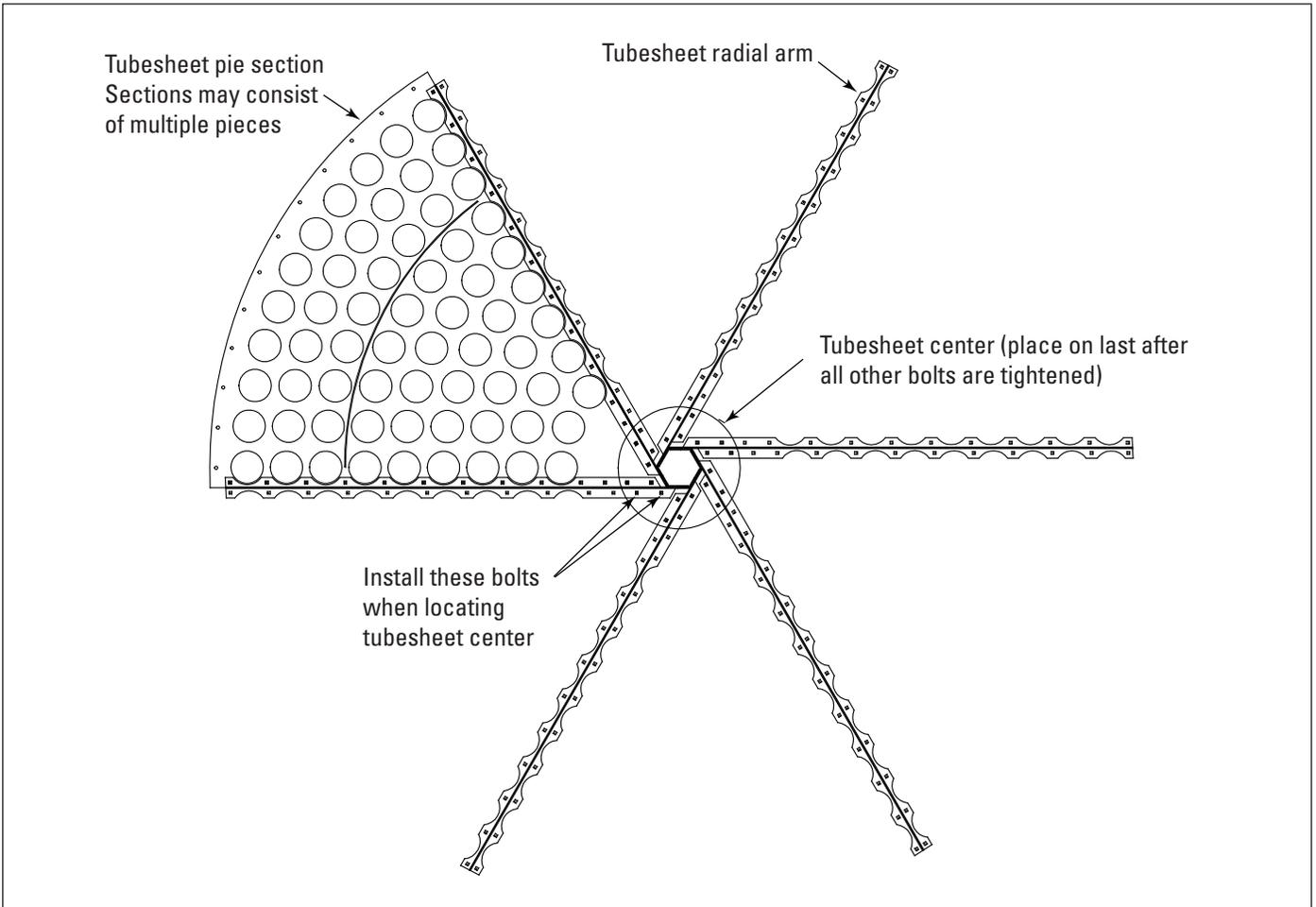
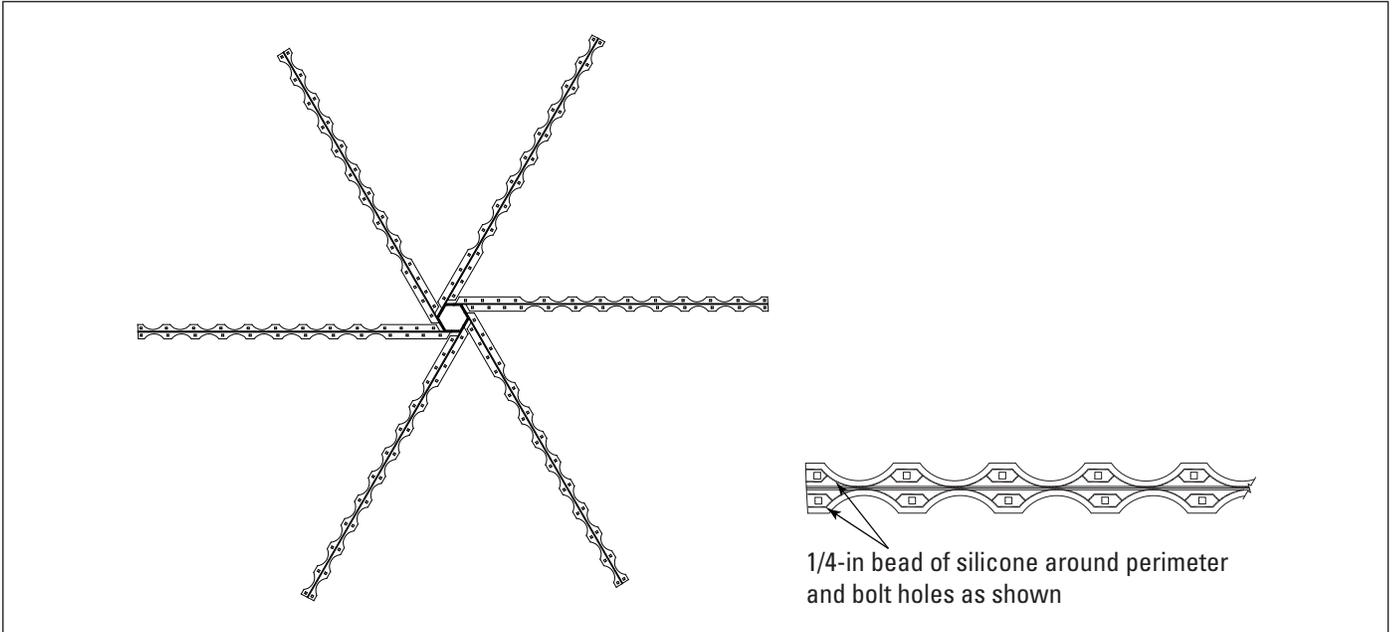


3. Tubesheet Assembly

The tubesheet consists of the following items:

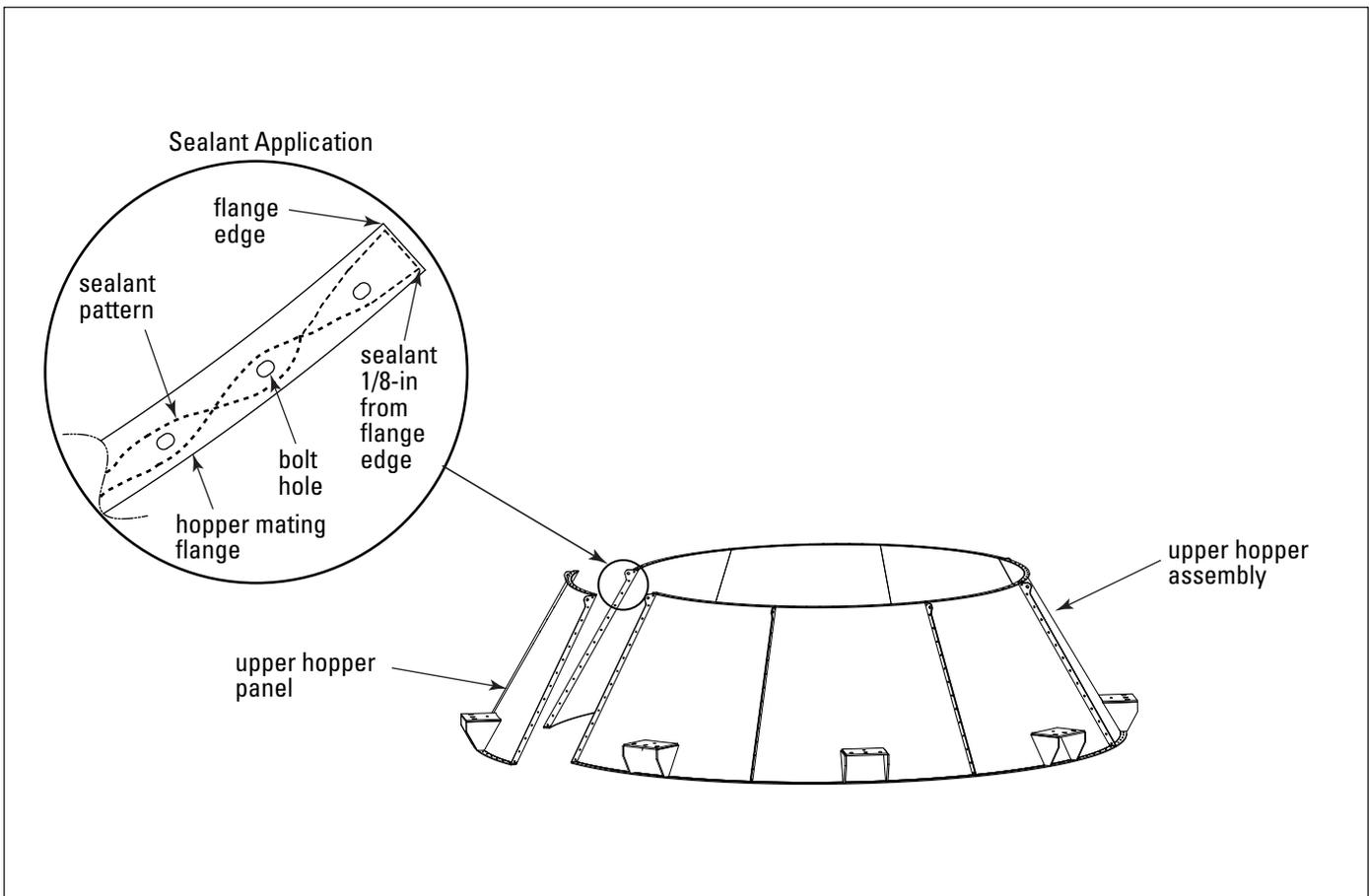


The assembly of the tubesheet is critical because it is used as a template for the assembly of all the other sections. The stiffeners must be bolted together forming a central hexagonal tube (see diagram next page). The bolts should be hand tightened at first so that all the pieces can be aligned before tightening. After the stiffeners are together place a bead of silicone on each side of the stiffener flange so that an air tight seal is developed when the tubesheet pie section is bolted in place. After all the pie sections are in place bolt the center plate with bearing in place. Align and tighten all bolts. Note: on some models the pie sections are in multiple pieces and require splice plates.



4. 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)

Note: number of hopper pieces will vary from size to size. Top section has 6 panels, middle section has 8 panels (if required).

5. If there is a middle hopper assembly, assemble it in the same way as the upper hopper assembly.
6. After the hopper sections are assembled, apply sealant to the top of the upper flange as shown to prepare for the middle hopper to be set.
7. Lower the middle hopper assembly onto the upper hopper assembly and hand tighten the hardware.
8. Once the middle hopper is attached to the upper hopper, apply sealant and attach the lower hopper assembly and hand tighten the hardware.
9. Apply sealant, attach the hopper transition and hand tighten the hardware.

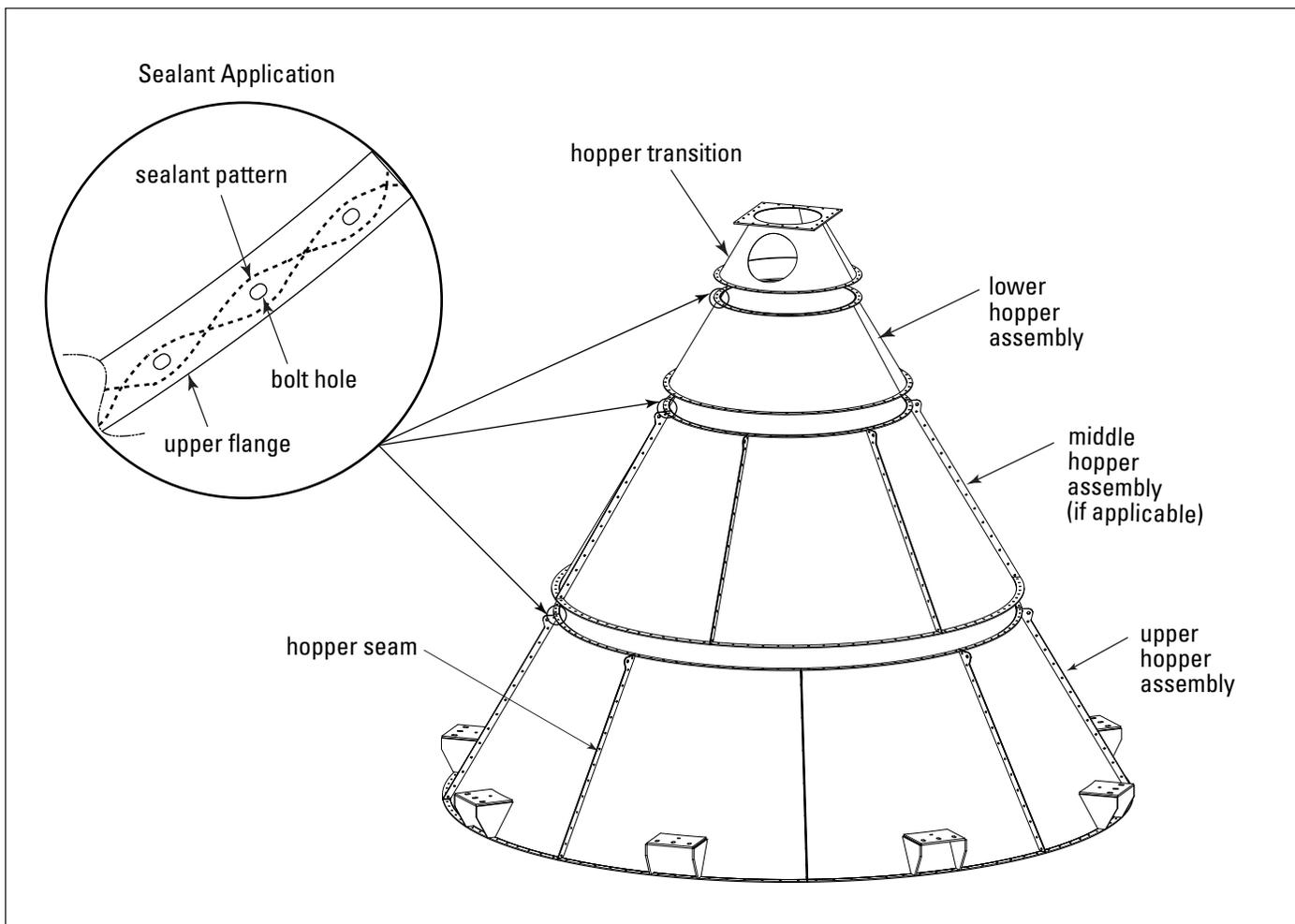
10. Tighten all bolts.
11. After hopper assembly is completely bolted and tightened, undo any bolts connecting it to the tube sheet (if used).
10. Lift the hopper and rotate it to the upright position.



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.

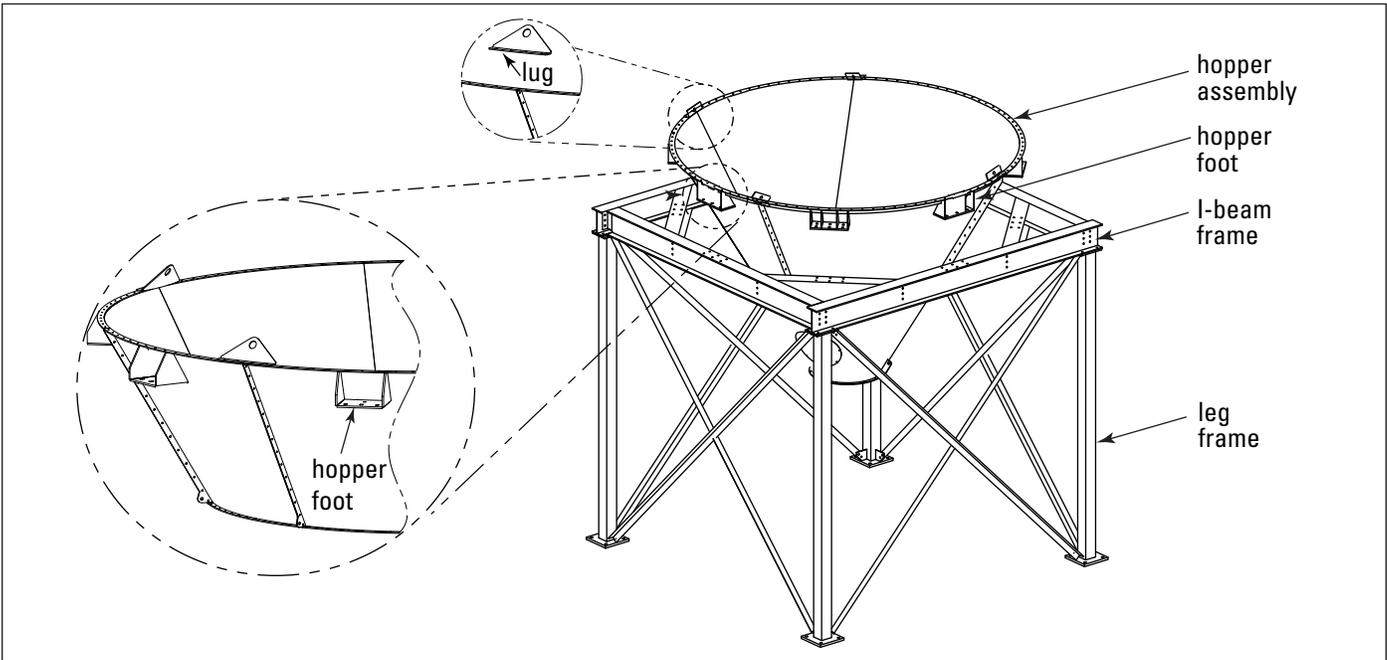
Water overflow drains are required if sprinkler/ fire suppression system is installed.



Hopper Assembly (Upside Down)

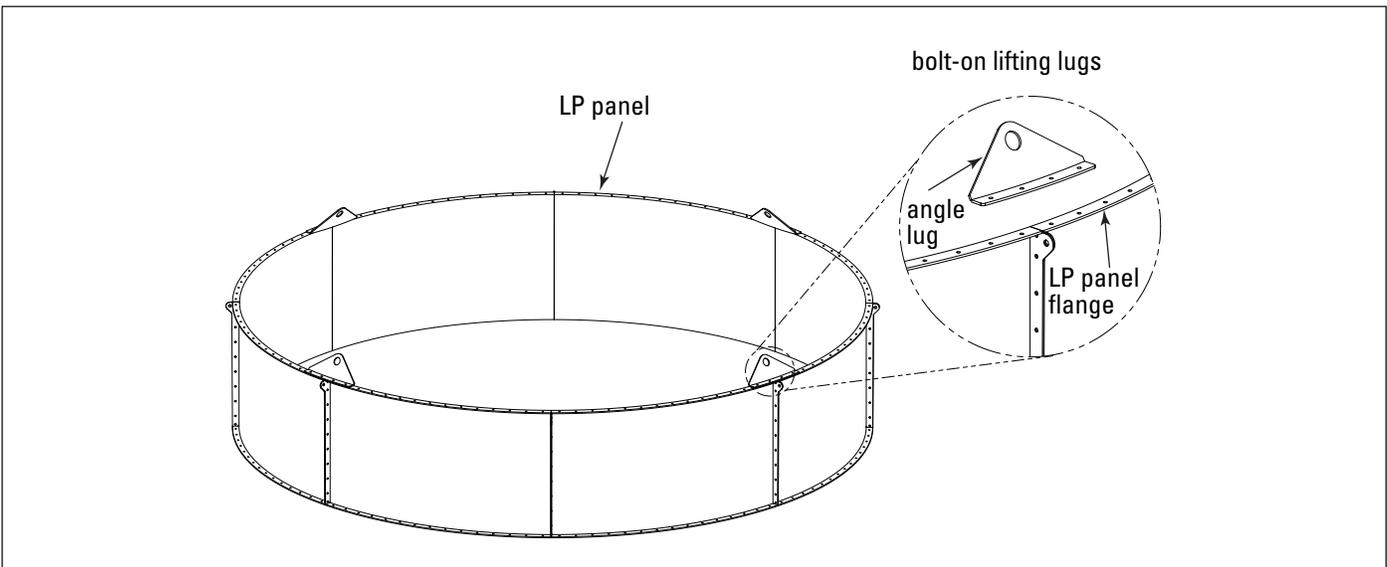
Note: number of hopper pieces will vary from size to size. All sizes have 8 panel top sections, middle section has 6 panels if middle section is required.

11. Attach lifting lugs 90° apart to the top of the hopper.
12. Align 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 1-in hardware.



Hopper to Leg Frame Installation

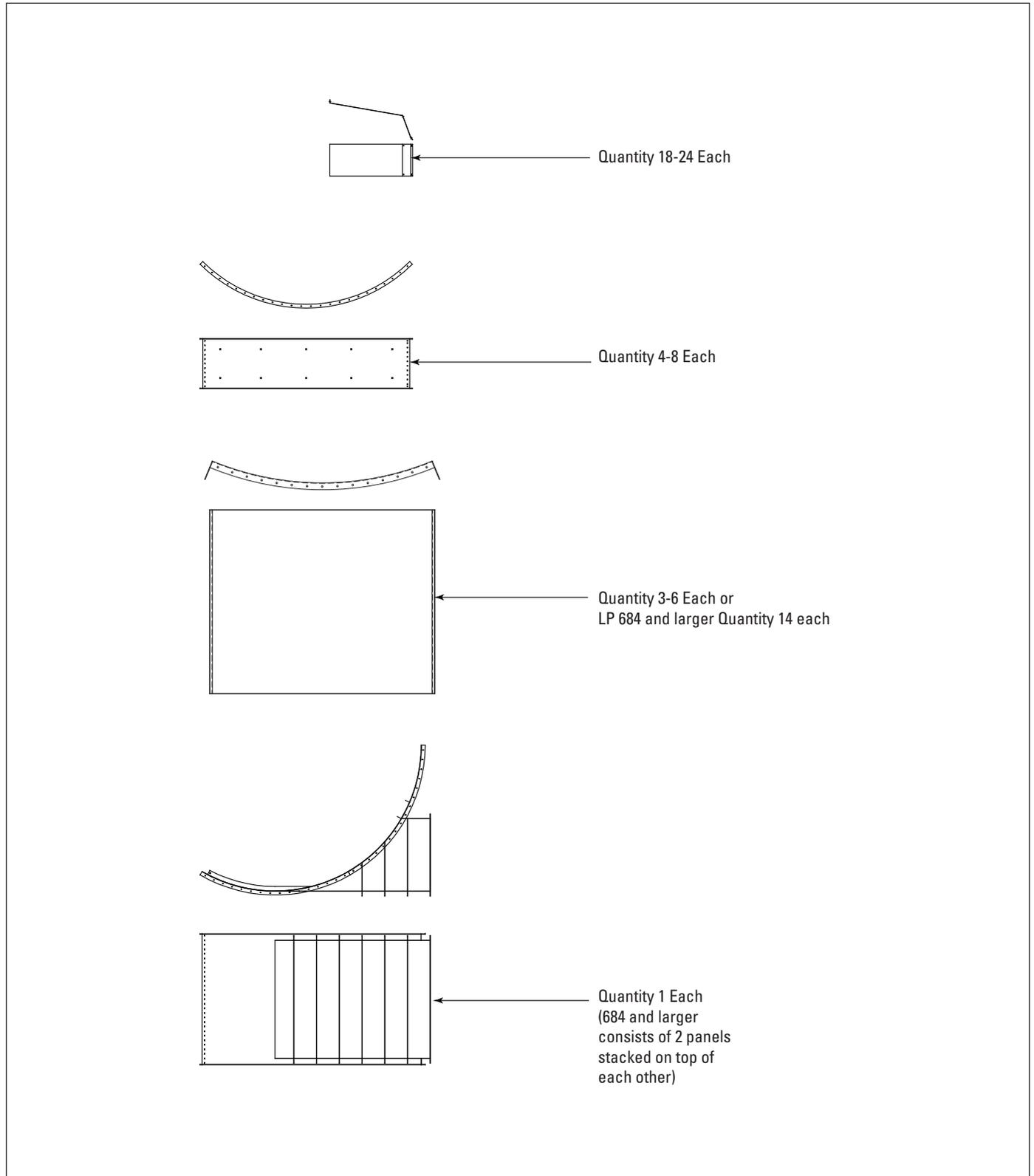
Note: Lifting Lugs Bolt-On Usage - Use the provided bolt-on lifting lugs and grade 5 hardware when moving panels into position. Position the lugs so they straddle a seam with 2 bolts on each panel, 4 lifting lugs should be evenly distributed around the entire assembly. When lifting an assembly, use all four lugs. Never lift more than what is recommended in this manual.



Bolt-On Lifting Lugs

5. Inlet Assembly - Tangential

The tangential inlet consists of the following items:

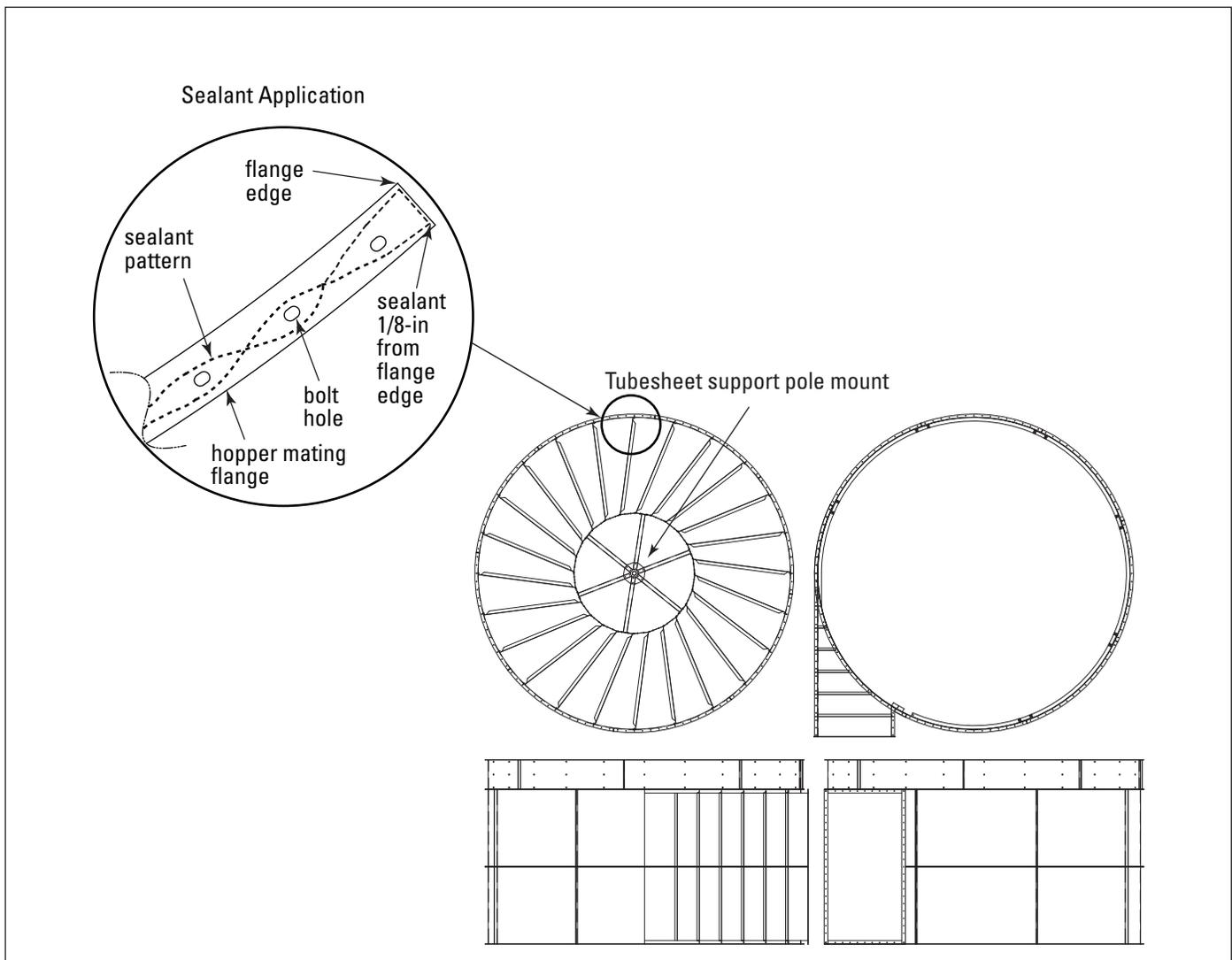


Place the short panels which make up the walls of the deflector section onto the tubesheet and align flange holes. Place silicone on flanges and position into place. Bolt deflector plates to wall and each other. Deflectors can be installed for clockwise rotation (shown) or counter clockwise (opposite of shown). Tighten deflector plate bolts. Lift deflector assembly from tubesheet and set aside.

Place the inlet walls onto tubesheet and align flange holes. Place silicone on flanges and position into place. When placing the inlet sections next to each other, make sure the the spiral deflector inside of the inlet section is continuous. Bolt the inlet section together.

Prepare the top hopper flange with a bead of silicone placed between the flange holes and the interior of the hopper. Remove inlet section from tubesheet and lift onto hopper using the bolt-on assembly lift ears provided. It is helpful to stagger flange seams as the filter is stacked up if orientation allows. Therefore it is recommended that each succeeding section be rotated so that maximum overlap is achieved.

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 so they straddle a seam with 2 bolts on each panel, 4 lifting lugs should be evenly distributed around the entire assembly. When lifting an assembly, use all four lugs. Never lift more than what is recommended in this manual.

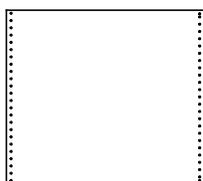


6. Bag Section Assembly

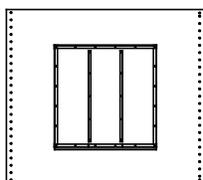
The bag section consists of the following items:

NOTICE

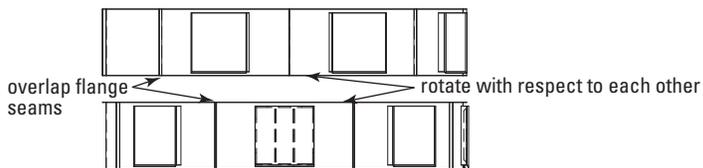
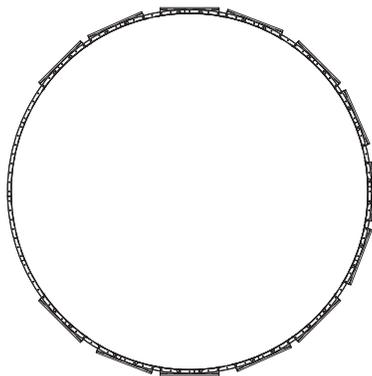
When ring with explosion vent is completely assembled, replace all corner fasteners with supplied blue fasteners. This must be done for explosion vents to perform properly. Refer to Explosion Panel Fastener Detail illustration.



Quantity 8 panels for each ring



Quantity 8 panels for each ring



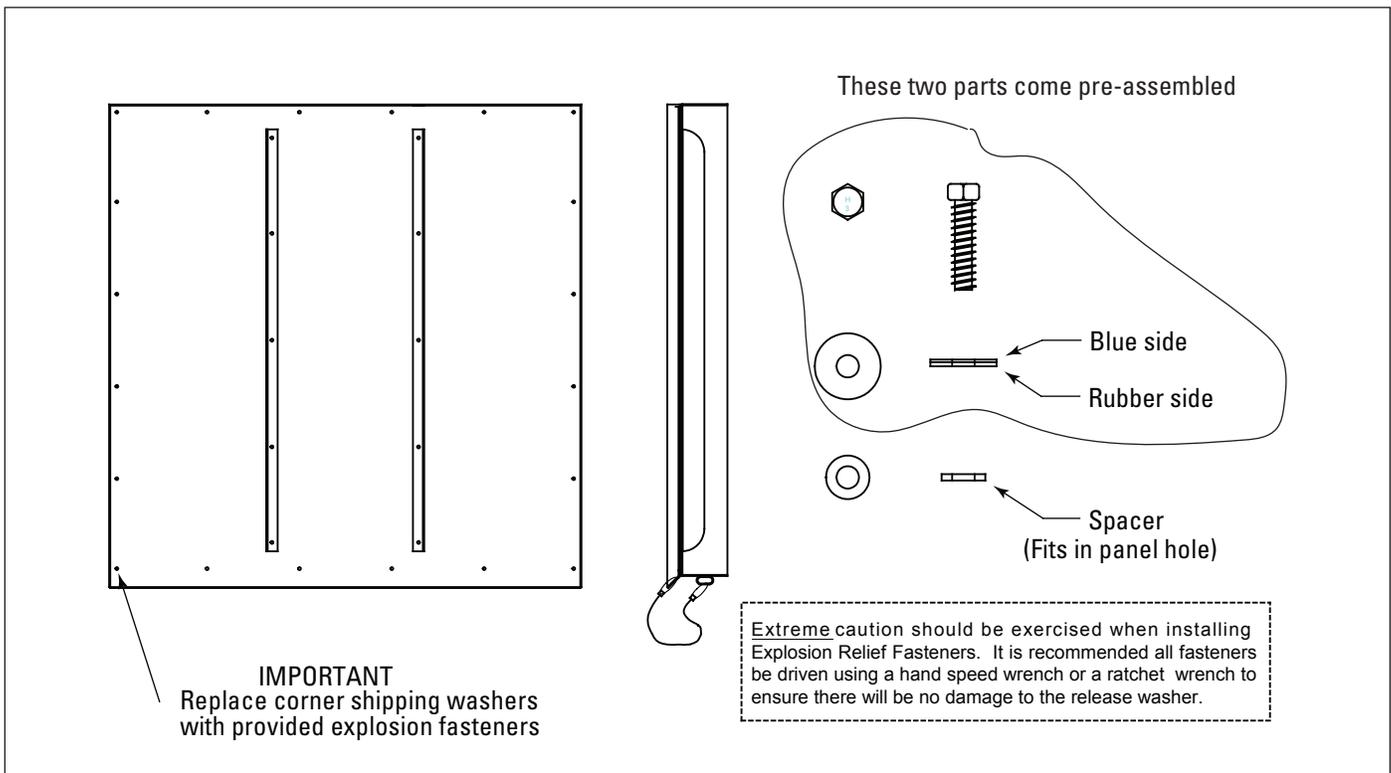
Note: Lifting Lugs Bolt-On Usage - Use the provided bolt-on lifting lugs and grade 5 hardware when moving panels into position. Position the lugs so they straddle a seam with 2 bolts on each panel, 4 lifting lugs should be evenly distributed around the entire assembly. When lifting an assembly, use all four lugs. Never lift more than what is recommended in this manual.

The bag section consists of two or three barrel/ring sections. BS3 and BS4 will have 1-14 explosion relief panels. The bag sections will be marked BS1, BS2 and BS3. When fully assembled, BS3 will be on the bottom, BS2 will be next and BS1 will be on top. Place the panels for BS3 on the tubesheet, apply sealant on the flanges and bolt together as explained in previous sections. When BS3 is completely assembled, lift it off the tubesheet and set it on eight evenly spaced 4-in x 4-in blocks. This section is being placed to the side for easier bag and cage installation later on.

Next, assemble BS2 on the tubesheet in the same way that BS3 was assembled. When completely assembled, apply sealant to the top flange of BS3, lift BS2 and place it on top of the flanges of BS3. Be certain to stagger the vertical flanges of BS3 and BS2 so they are NOT directly on top of each other. Bolt BS3 and BS2 together.

Follow the same procedure to assemble BS1 and bolt it on top of BS2.

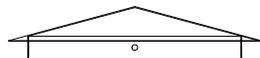
The next step is install the bag section on top of the deflector section. Apply sealant on the top flange of the deflector section and lift the bag section on top of the deflector section. Be certain to stagger the flanges so they are not directly on top of each other. Bolt the bag section and deflector section together



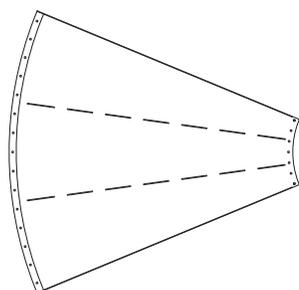
Explosion Panel Fastener Detail

7. Exhaust Plenum/Roof Section Assembly

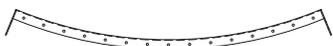
The plenum top consists of the following items:



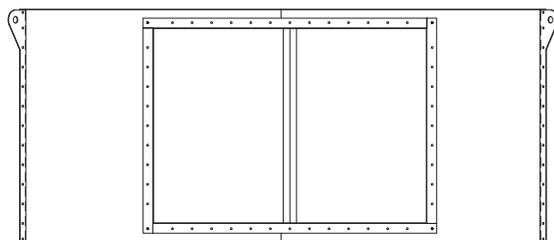
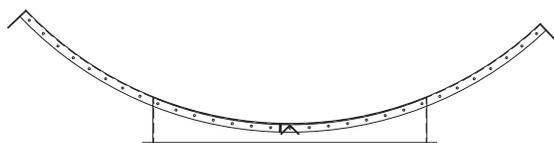
Quantity 1 Each



Quantity 8 Each

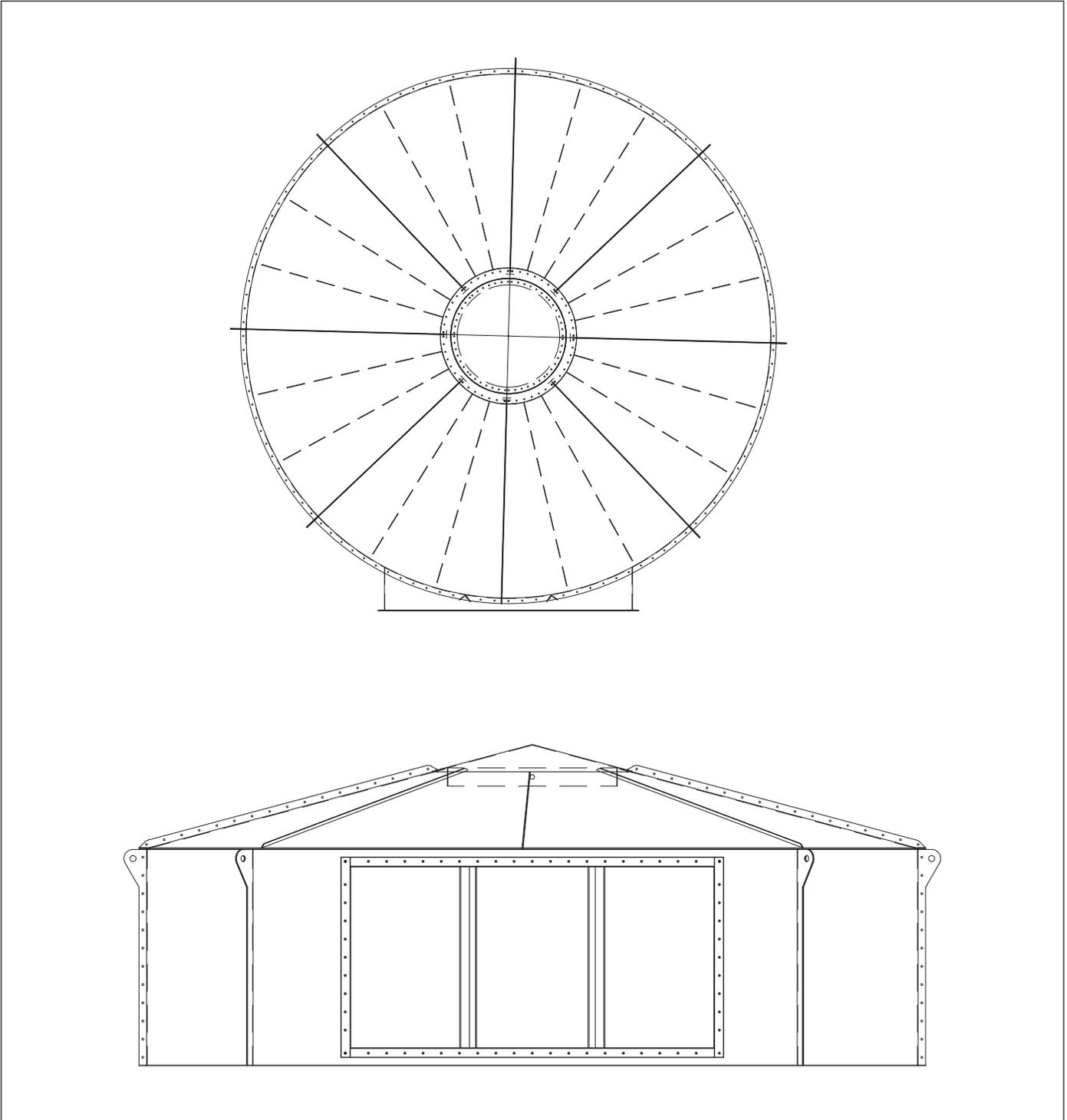


Quantity 3 or 6 Each



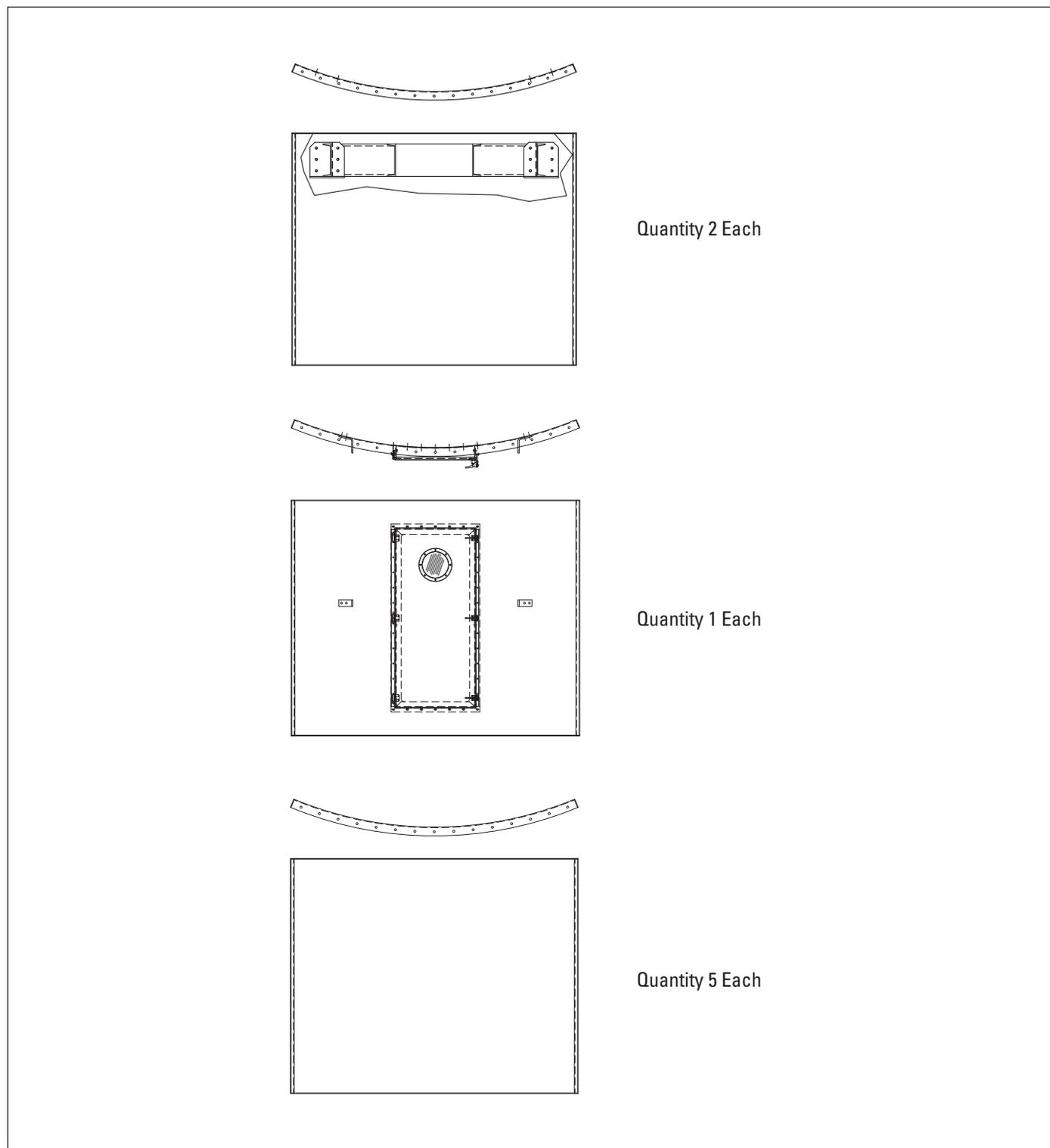
Quantity 1 Each

Place the wall panels onto the tubesheet and assemble flanges as discussed in previous sections. Apply silicone and tighten. After applying silicone to the flanges, place one of the eight top panels onto the top wall flange and bolt in place. Temporarily support the other end of the panel. Install the remaining seven panels applying silicone to the flanges. Place top cap piece onto top panels, silicone and bolt in place. It is imperative that sufficient silicone be used to create an air tight seal. Set aside.



8. Lower Plenum Access Assembly

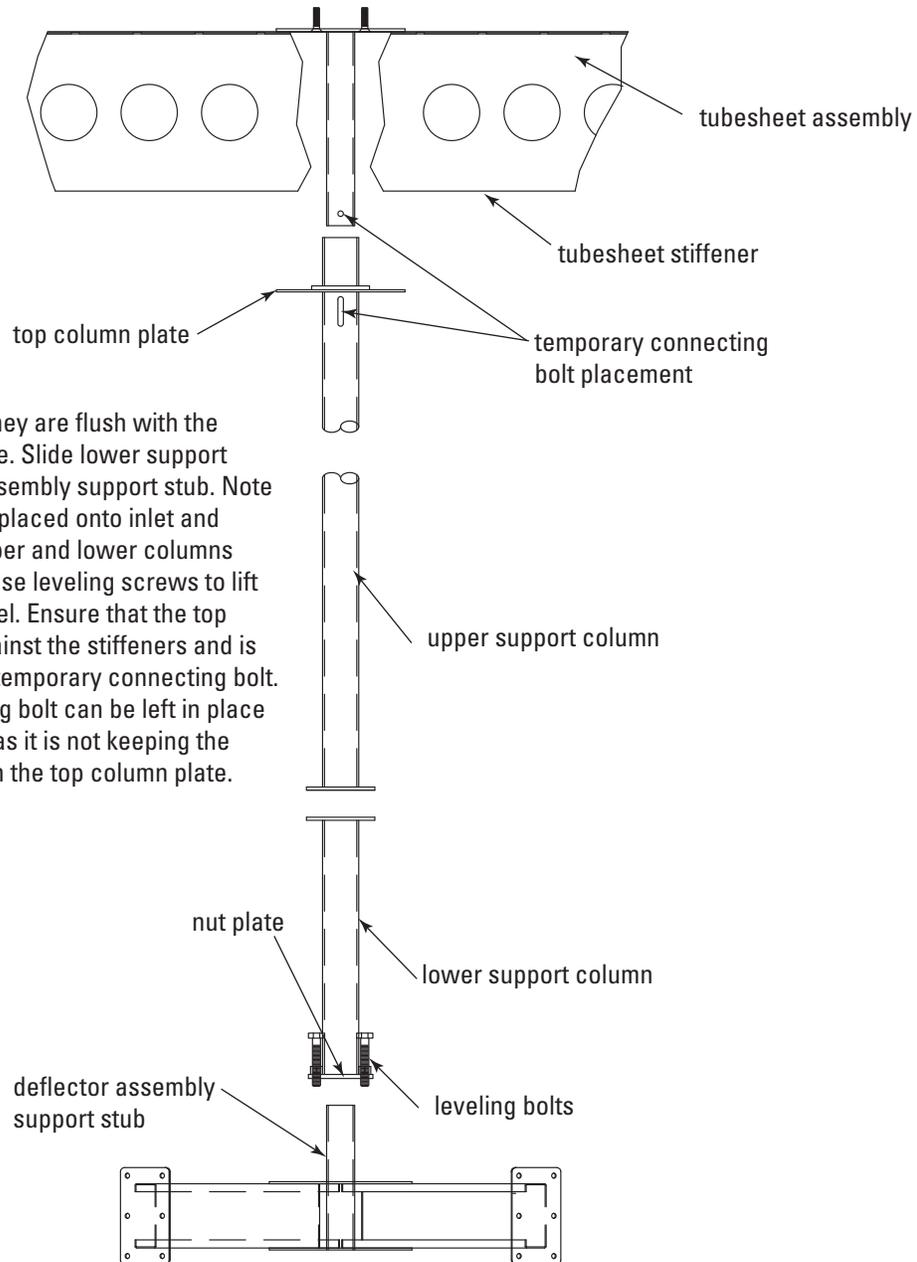
The plenum access assembly consists of the following items:



Assemble access section walls onto tubesheet. Bolt wall sections together as in previous sections. Set section aside.

9. Install Tubesheet and Support Column

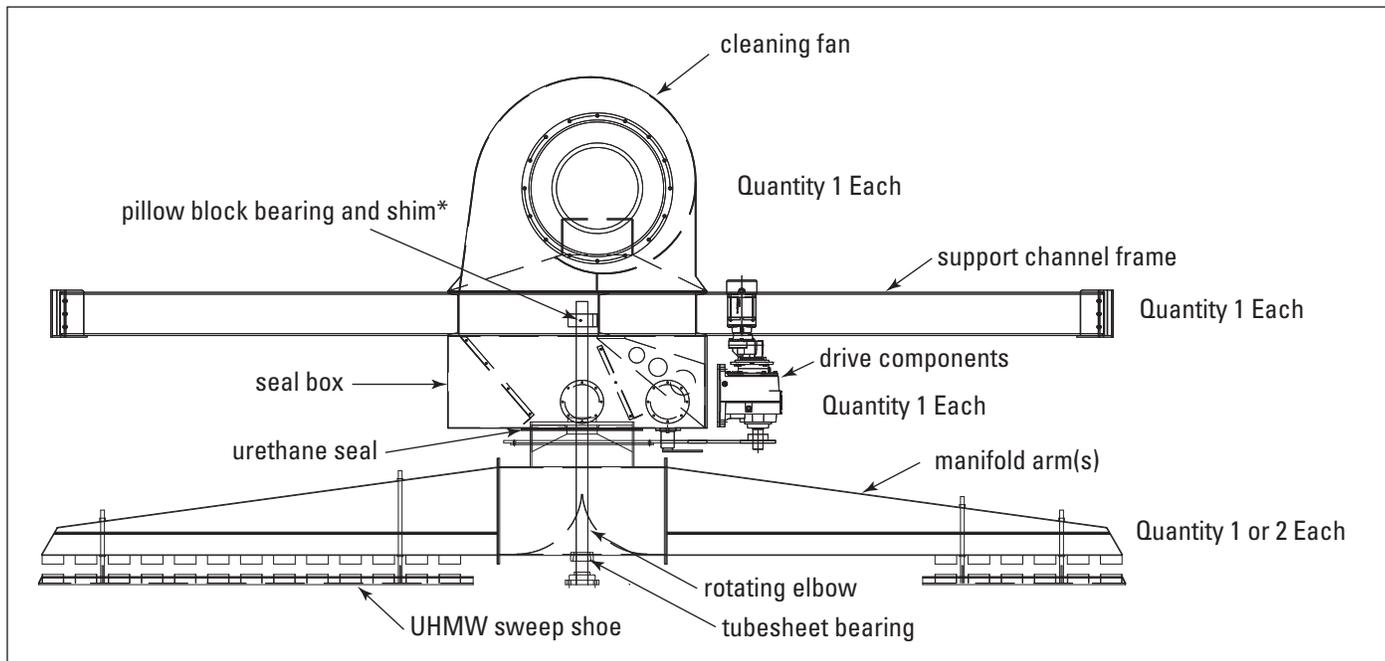
At this point the tubesheet can be installed. Large models (450 bags and larger) have a tubesheet support column that allows for leveling the tubesheet. The following procedure should be followed on these models. Lift the tubesheet with the crane and attach the upper portion of the support column to the tubesheet center pipe using the provided 5/8 UNC by 6 all-thread bolt (see image below). The holes are slotted so that tubesheet stiffeners will come to rest onto the column plate. Lift the tubesheet with column onto the prepared bag section assembly.



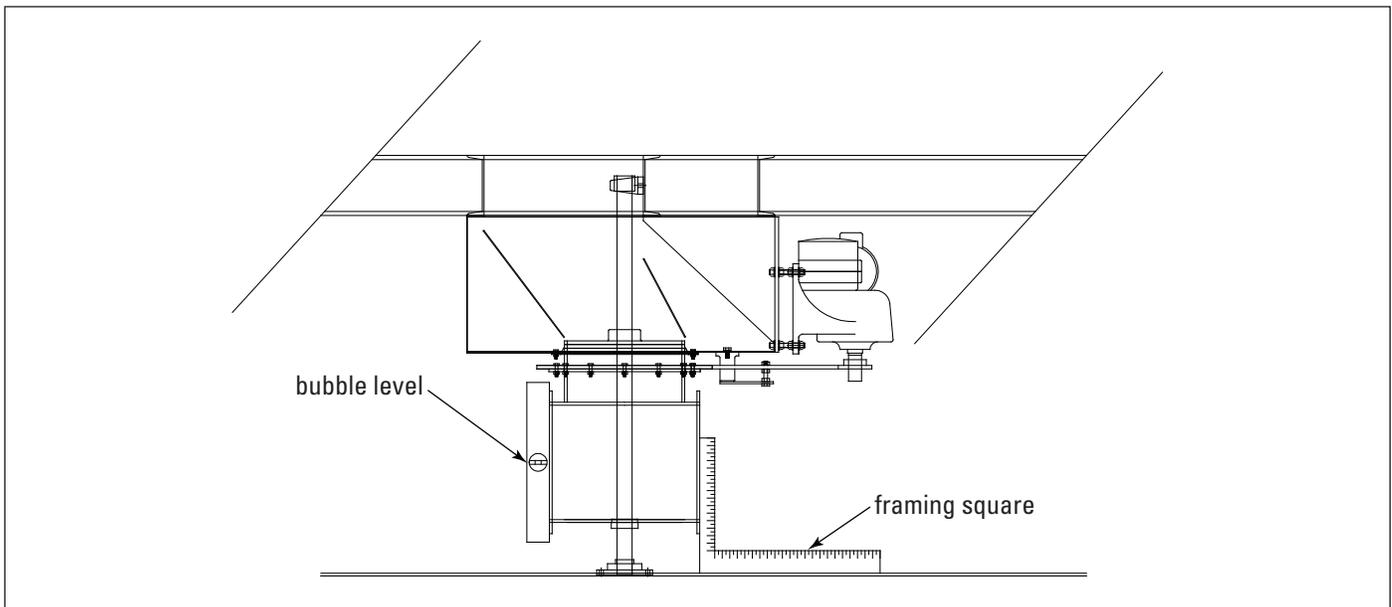
Adjust leveling bolts so they are flush with the under side of the nut plate. Slide lower support column onto deflector assembly support stub. Note that after filter section is placed onto inlet and secured, connect the upper and lower columns with the bolts provided. Use leveling screws to lift tubesheet so that it is level. Ensure that the top column plate is firmly against the stiffeners and is not pressing against the temporary connecting bolt. The temporary connecting bolt can be left in place after installation as long as it is not keeping the tubesheet from resting on the top column plate.

10. Lower Plenum Access Section Attachment and Internal Cleaning Assembly

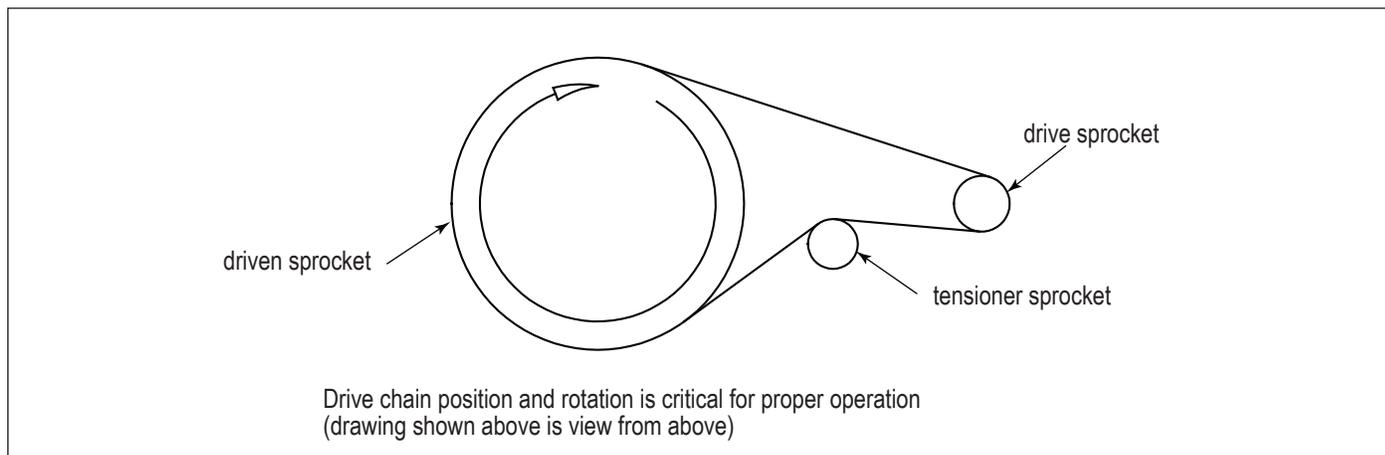
The next step is to attach LP (lower plenum) to tubesheet and install filter cleaning system components. The cleaning assembly consists of the following items:



Prepare the tubesheet with sealant around its perimeter. Lift access section into place. When setting the Lower Plenum Access Section on the tubesheet, make sure that the door is in the proper position and that the Magnehelic Gauge connection in the plenum access section is close to the Magnehelic Gauge connection in the BS1 panel. Install all bolts and tighten. Lift rotating elbow into the lower plenum and slip shaft into bearing on tubesheet. Temporarily support rotating elbow by placing wooden blocks between the tubesheet and the elbow base. Lift the support channel frame with seal box into plenum. Align internal bearing with rotating elbow shaft and lower channel frame onto wall mounts. Install all bolts in wall mounts hand tight. 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. Lift sweep arm(s) into access section and place on tubesheet. Attach the arm(s) to the rotating elbow. 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. Now measure how much the rod extends in the other 3 quadrants. If the difference between these four measurements are less than 1/2 an inch, no further adjustments are required. If these measurements are greater than 1/2", 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.



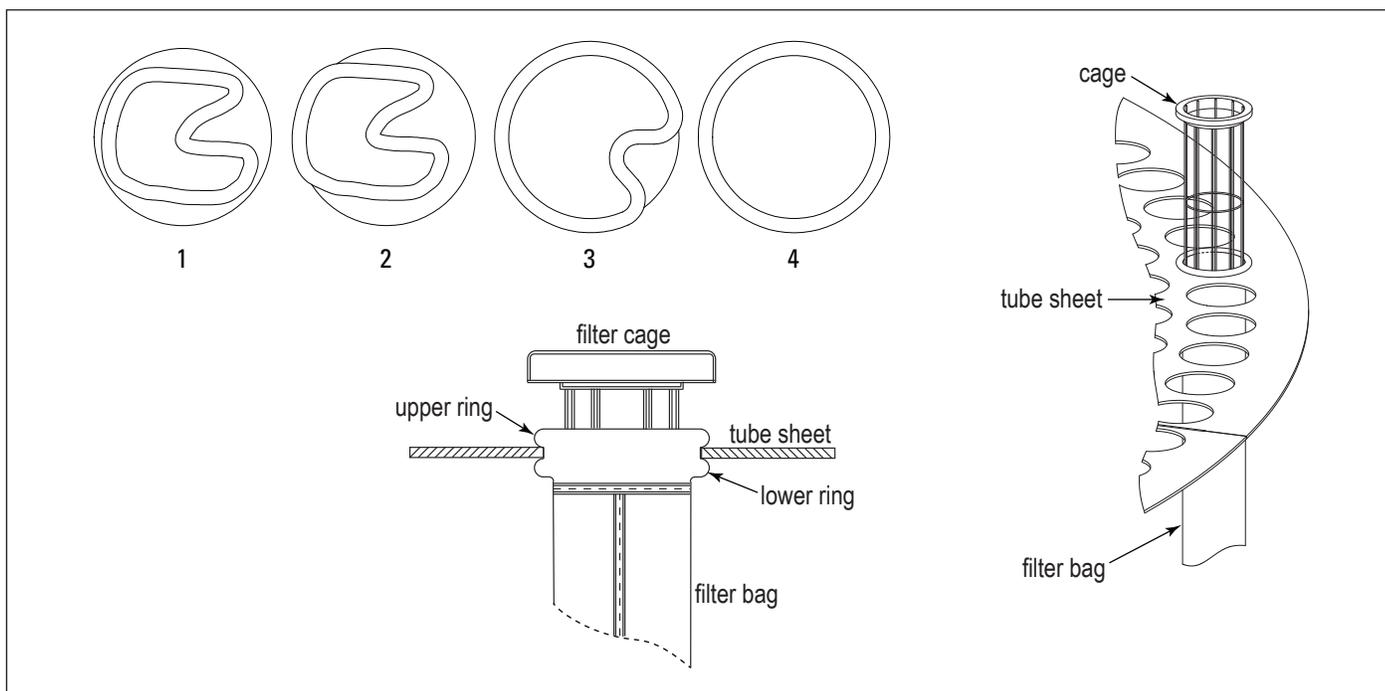
Once shaft is correctly aligned tighten all mount bolts and bearing set screws. Install the drive chain on the sprocket as shown in the diagram below.



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.

11. Install Bags and Cages

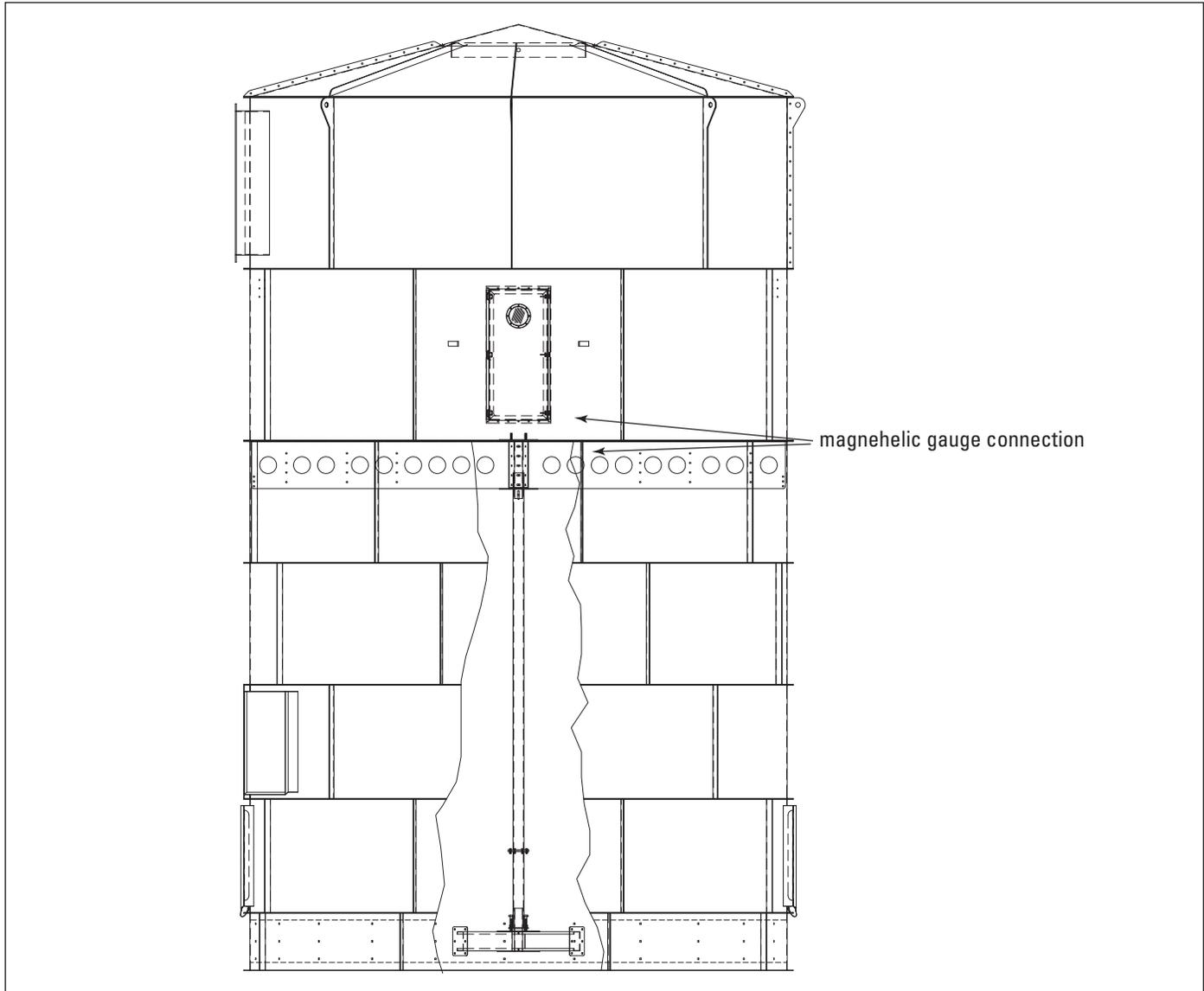
At this point it is recommended that the bags and cages be installed because of ease of handling. The bags and cages can be lifted in over the open top of the access section and installed as follows. The filter bags are held in place by a snap band that is incorporated in the bag collar. The closed end of the bag is lowered into the bag section through the tubesheet and the collar is snapped into place. The cage is then lowered into the bag. If the bag section is resting on the ground the cages will not seat completely at this time. However when the filter is lifted into place the cages will have clearance to be seated.



Filter Bag and Cage Installation

12. Exhaust Plenum Access and Roof Section Attachment

The exhaust plenum access assembly is now ready for the roof section. Prepare the mating flange with silicone and place the roof section onto exhaust plenum access assembly. Place roof in desired orientation with respect to the access door. After the roof section has been secured, apply sealant to the top flange of the Lower Plenum Access section. Lift and secure the combined exhaust/roof section to the Lower Plenum Access section. Bolt into place. Install all flange bolts and tighten. Install the Magnehelic Gauge filter (see next page for details). At this point the filter is ready to be lifted into position.



13. Attach Exhaust Ducting

Depending on the ducting configuration some of the pieces of ducting can be attached to the exhaust flange and lifted at the same time. Any ducting that is attached to the exhaust must be sufficiently supported along its length so as not to damage the filter.

14. Attach Ladders and Platforms

The upper platform mounts to the plenum access section. The lower platform mounts to the main structural support frame. The ladders are bolt together and are marked as being upper or lower.

15. Lift Plenum and Ducting

If not already done in one of the previous two steps prepare the inlet section flange with silicone and lift the top/plenum/bag section onto the filter. Align the flange holes and bolt in place.

16. Install Additional Ducting

After filter is completely erected the rest of the ducting may be connected. It is important to insure that the ducting is adequately supported and that the weight is not entirely on the filter.

17. Install Rotary Airlock

The rotary airlock flange should be prepared with silicone to insure an air tight seal. Lift the airlock into position and bolt into place. Depending on any accessory equipment attached to the airlock outlet, additional support may be required.

18. Install Magnehelic Gauge

The Magnehelic Gauge is provided with a mounting plate and is typically located near the access ladder at face level. Run two lines of the 1/4" poly tubing provided from the plenum connections down to the gauge. Attach the tubing to the filter at the section flanges with the clips provided to keep it in place.

19. Install Electrical Connections

All electrical connections are the responsibility of the customer. Follow all local and national electrical codes when installing service. Any wiring on the interior of the filter may need to be rated for explosive environments. Consult your local codes.

20. Inspect Structural Connections

Before placing filter into service it is important that all structural connections be inspected for proper torque. It is recommended that all structural bolts be checked and re-tightened if necessary.

21. Inspect Electrical and Mechanical Connections

Before placing filter into service it is important that all electrical connections are inspected and approved. The internal fan was checked before shipping however before starting the fan it is recommended that the fan wheel is checked for proper clearance. This is done by locking out the power source to the fan and then spinning the fan wheel by hand. Listen for any sounds of the wheel rubbing against the inlet cone. If there is no apparent rubbing then bump start the fan and listen for rubbing while fan is at operational speed. If no rubbing is present then the fan set screws should be checked and re-tightened and the fan is ready for service. It is also important to check that the fan is rotating in the correct direction as indicated by the rotation sticker on the housing.

The gear drive boxes are shipped with the proper amount of oil. However before starting the rotating arm drive check the oil level in the gearbox and place vent cap into proper position. Consult the manufacturer's tags that are attached to the gearbox. Visually inspect that there are no obstructions in the drive chain or in the path of the sweep arm assembly. Bump start the drive and note the rotation of the arm. The rotation must be in the direction in which the chain tensioner is on the slack side of the drive (see illustration on page 27 or 38).

22. Place Collector into Service

The collector should now be ready for service.

Electrical Wiring

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 all power before performing service or maintenance work.

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

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.

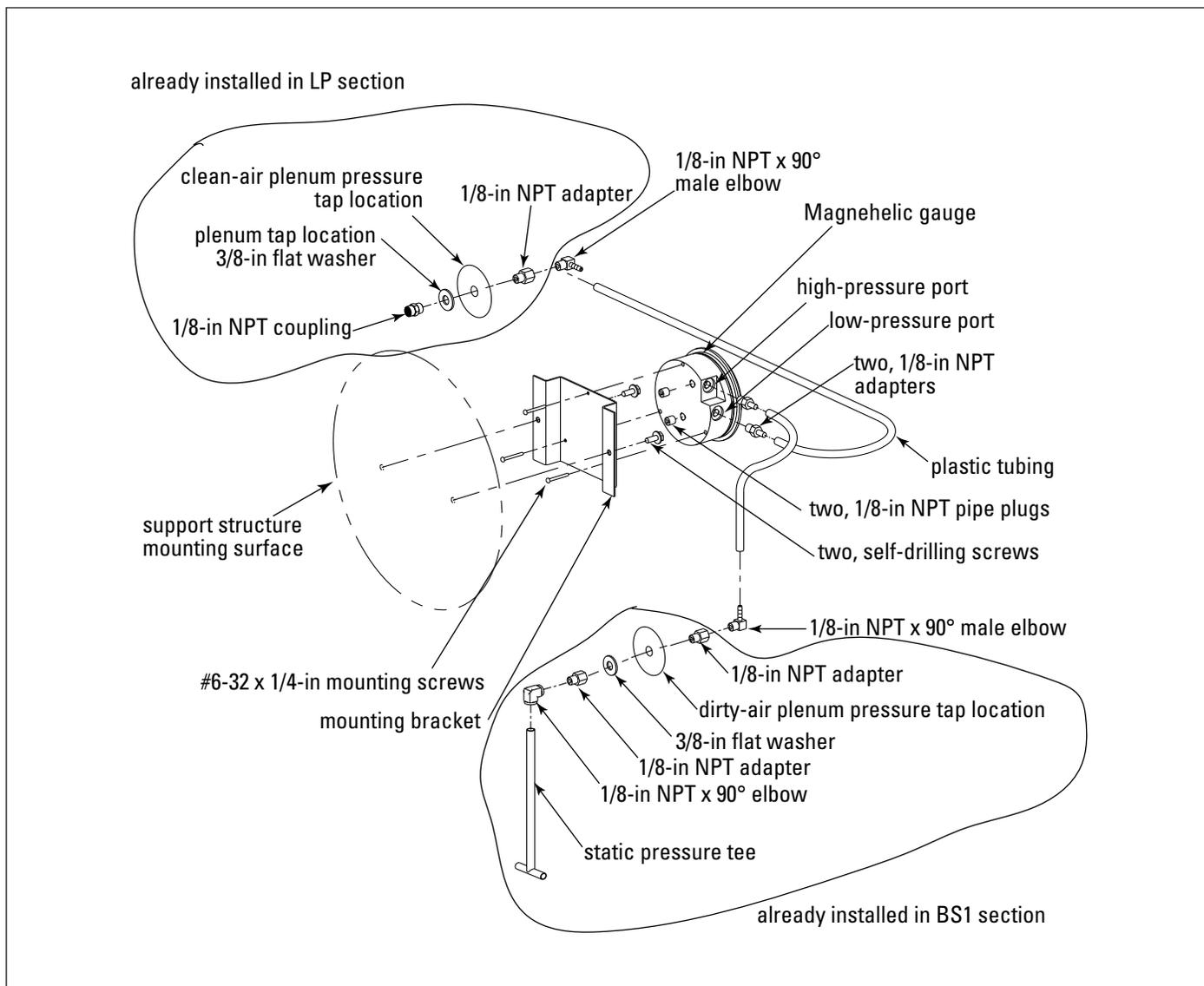
An electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code (NFPA No. 70-latest edition). Check collector's rating plate for voltage and amperage ratings.

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

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

Optional Equipment

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 all power before performing service or maintenance work.

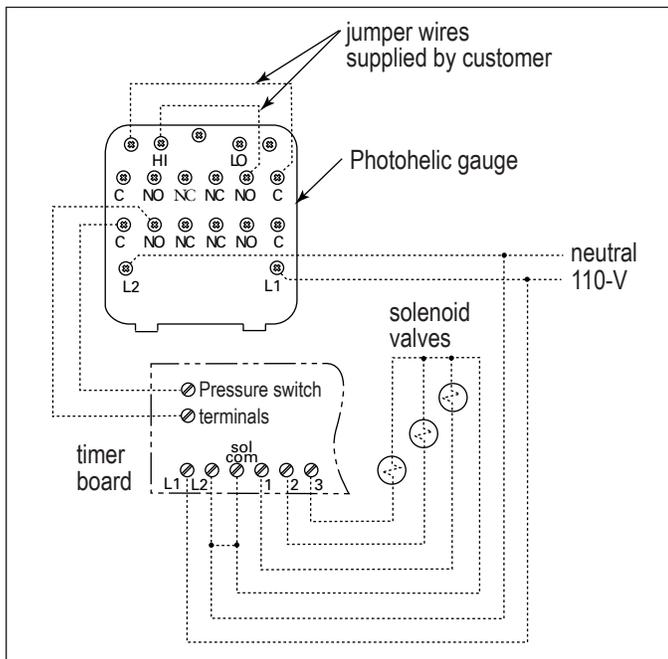
Do not install in classified hazardous atmospheres without an enclosure rated for the application.

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.

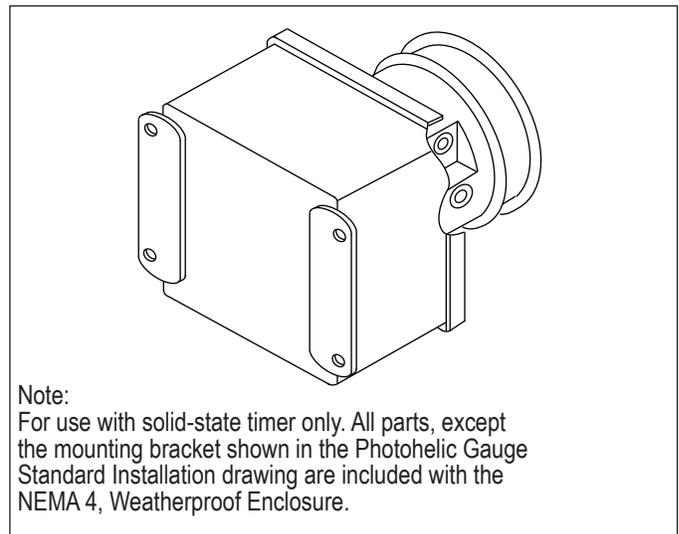
1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.
2. Mount the gauge to the remote panel or door using the mounting ring, retaining ring, and four #6-32 x 1

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.

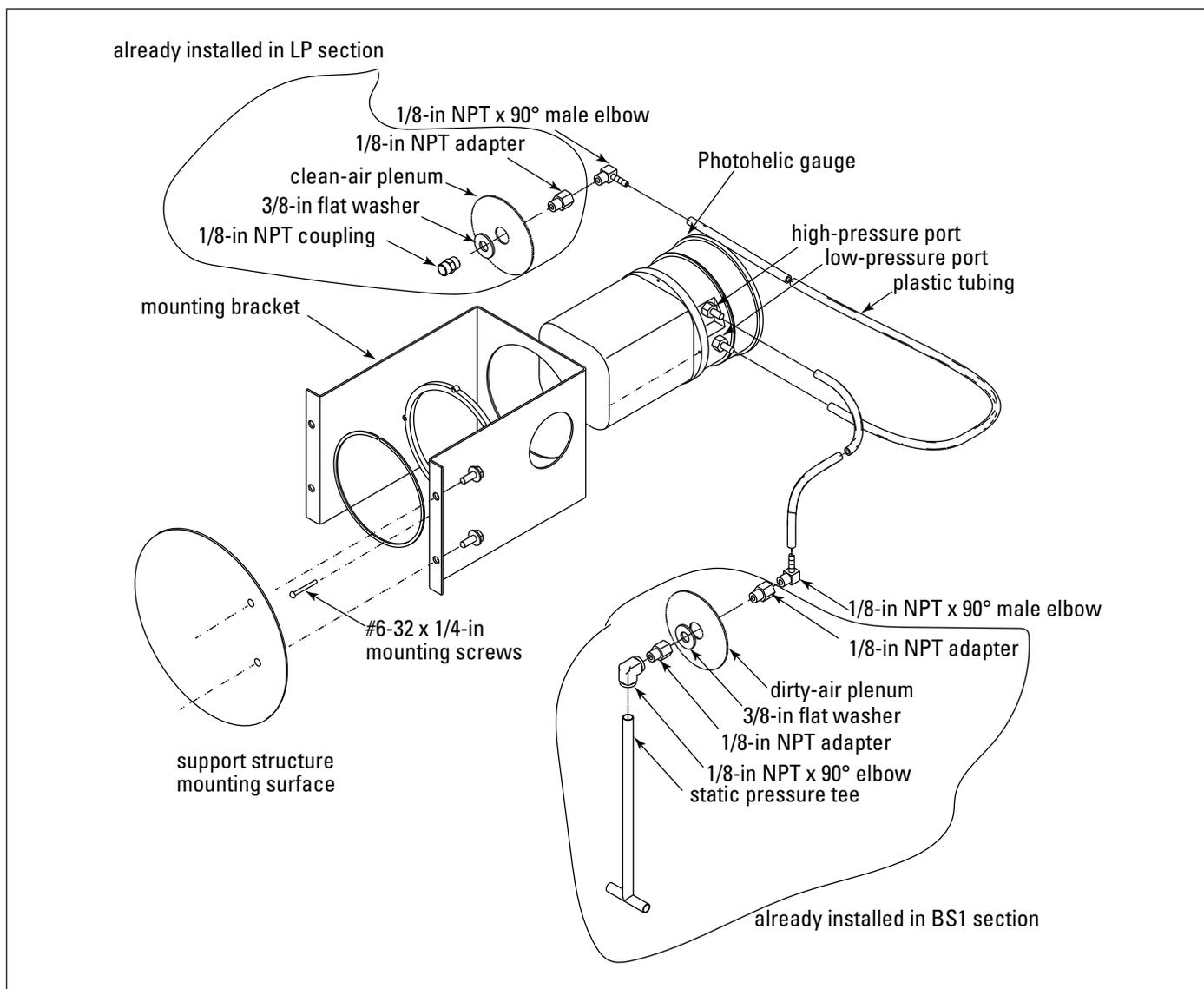
3. On the back of the gauge, remove four #6-32 x 5/16-in screws and plastic enclosure. Set aside. Add two jumper wires supplied by customer. Remove the jumper from the pressure switch located on the timer board, if equipped. Using the 3/4-in conduit opening, wire the gauge as shown. Reassemble and fasten 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

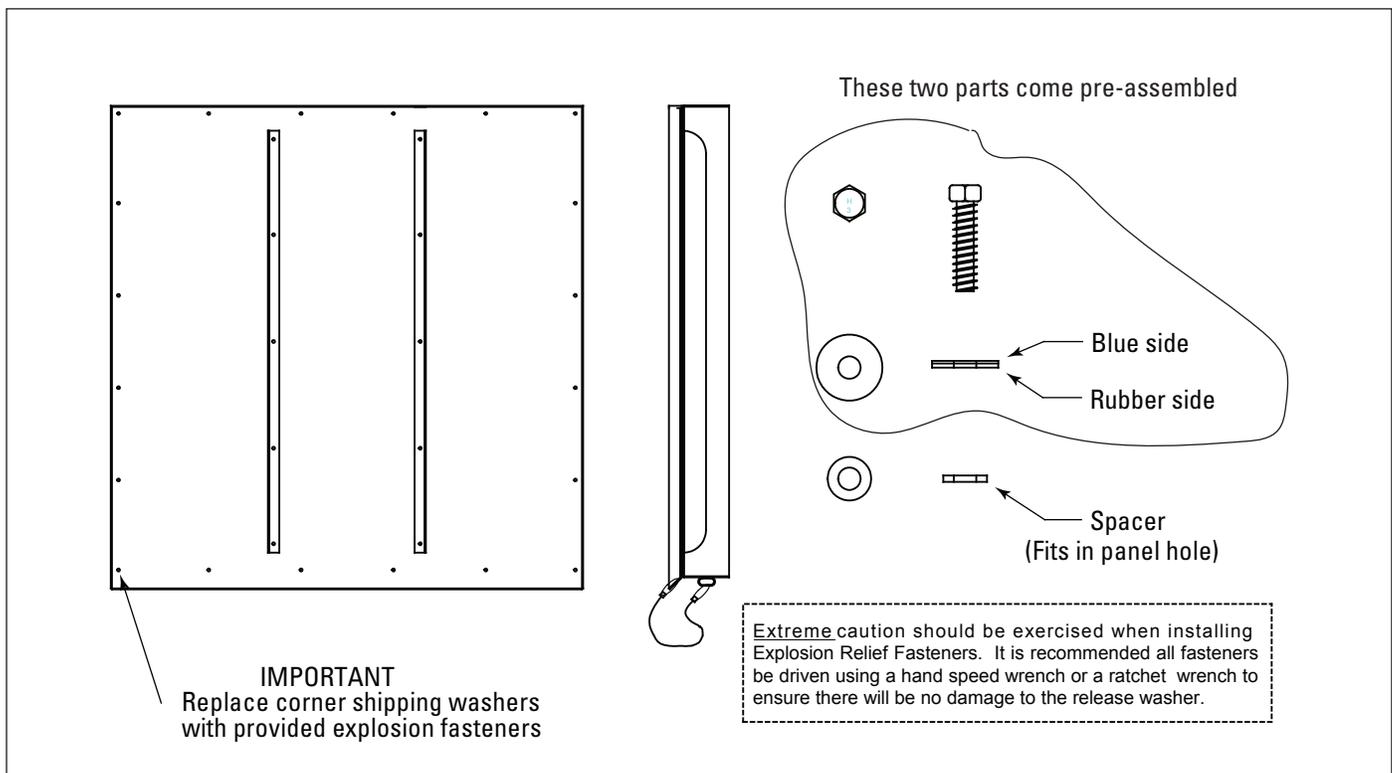


Photohelic Gauge Installation

Operation

Pre-Start-Up Checklist

- All bolt connections tightened.
- All electrical connections made.
- Magnehelic gauge connected.
- LP mechanism unobstructed (i.e. no tools, lifting equipment, etc).
- Bags and cages installed.
- Ducting slide gates set/no obstructions in ducting.
- Filter access door(s) sealed.
- Product discharge gate or rotary air lock operational.
- Blower unobstructed and operational.



Explosion Panel Fastener Detail

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.

Start up Sequence - Typical

- 1) Start rotary airlock (if applicable).
- 2) Start LP gear box motor.
- 3) Start LP fan.
- 4) Start main system fan.
- 5) Start process equipment.

Shut down Sequence - Typical

- 1) Stop process equipment. Allow filter to continue operating for 15-30 minutes.
- 2) Stop main system fan. Allow LP fan and gear box to continue running for 10-15 minutes.
- 4) Stop LP fan and gear box. Allow airlock to run for 15 min.
- 5) Stop airlock.

Maintenance Information

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

The LP mechanism should be checked weekly to ensure proper operational status. Drive chain tension and lubrication of upper and lower bearing should be monitored. Check LP gear box oil level every 3 months. Top off gear box with AGMA 8C or equivalent.

Check LP fan wheel for noise and or vibration. Check fan wheel set screw and tighten if necessary.

Models equipped with slave drive airlock refer to airlock manual for maintenance instructions.

Bolt connections should be checked for integrity on a bimonthly basis. Also check the structural support for any signs of rust or fatigue and take appropriate steps to correct any problems.

Troubleshooting

Occasionally problems arise in dust control systems that require attention. Following are some tips for troubleshooting typical reverse air filter problems.

- 1) Monitor Magnehelic gauge readings - in most applications the gauge will indicate 0.5" - 6" of static pressure drop.
- P) If pressure drop is consistently higher than 6" then the filter is either plugged or the LP mechanism is not functioning (i.e. LP fan or gear reducer are off or have failed).
- S) Check for excessive or unusual dust loading at the dust source. Check for proper flow at product discharge flange on filter hopper. Check operation of LP fan. Check operation of LP gear box and drive. Check dust source for unusually low dust loading.

Some filter applications have third party timer sequencer panels that allow the LP mechanism to be turned on only when the static pressure reaches a preset level. If this is the case, then the interval between cleaning can be increased.

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 _____	

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. **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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