

Process Unit for stripping dissolved volatile organic chemicals (VOCs) and gases from water using ambient air. For professional use only.

Not approved for use in European explosive atmosphere locations.

Not approved for use in explosive atmospheres or hazardous locations.

Some areas of this manual may not apply to all applications.

Models: EZ-4.4HF, EZ-4.6HF, EZ-6.4HF, EZ-6.6HF, EZ-8.4HF, EZ-8.6HF, EZ-12.4HF, EZ-12.6HF, EZ-16.4HF, EZ-16.6HF, EZ-24.4HF, EZ-36.4HF, EZ-48.4HF, EZ-48.6HF, EZ-72.4HF, EZ-72.6HF, EZ-96.4HF AND EZ-96.6HF

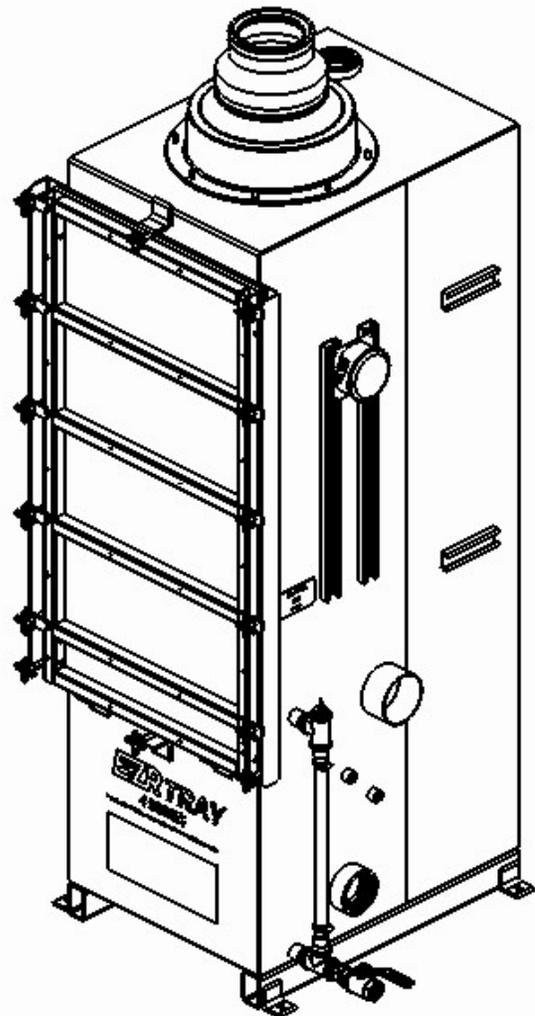
50 inch-H₂O Maximum Working Pressure

See page 2 for model information, including maximum working pressure and approvals.



Important Safety Instructions

Read all warnings and instructions in this manual and in the E-Z Tray Systems Manual before using the equipment. Save all instructions.



Contents

Product Models.....	2
Related Manuals.....	3
Installation Setup.....	3
Startup Operation.....	6
Maintenance.....	6
Cleaning the E-Z Tray.....	7
QED Air Stripper Cleaning Solution Recommendations.....	9
Troubleshooting.....	10
Spare Parts.....	10
Specifications.....	11
Equipment Warranty.....	22

Figures

Figure 1 Typical Example	4
Figure 2 Typical Example	4
Figure 3 Piping examples for pressure and induced draft modes	5
Figure 4 Demsiter Cone Installation	13
Figure 5 Tray Weir Installation	16
Figure 6 Door Removal	17

Product Models

Model Number	Maximum Working Pressure Inch-H ₂ O (cmH ₂ O)	Description	Nominal Air Flow: cfm (m ³ /min)	Max. Flow: gpm (Lpm)
EZ-4.4HF	50	VOC Treatment process unit	210 (5.95)	1-120 (4-454)
EZ-4.6HF	50	VOC Treatment process unit	210 (5.95)	1-120 (4-454)
EZ-6.4HF	50	VOC Treatment process unit	320 (9.06)	1-120 (4-454)
EZ-6.6HF	50	VOC Treatment process unit	320 (9.06)	1-120 (4-454)
EZ-8.4HF	50	VOC Treatment process unit	420 (11.9)	1-120 (4-454)
EZ-8.6HF	50	VOC Treatment process unit	420 (11.9)	1-120 (4-454)
EZ-12.4HF	50	VOC Treatment process unit	600 (17.0)	1-120 (4-454)
EZ-12.6HF	50	VOC Treatment process unit	600 (17.0)	1-120 (4-454)
EZ-16.4HF	50	VOC Treatment process unit	850 (24.1)	10-250 (37-946)
EZ-16.6HF	50	VOC Treatment process unit	850 (24.1)	10-250 (37-946)
EZ-24.4HF	50	VOC Treatment process unit	1,300 (36.8)	10-250 (4-946)
EZ-24.6HF	50	VOC Treatment process unit	1,300 (36.8)	10-250 (37-946)
EZ-36.4HF	50	VOC Treatment process unit	1,900 (53.8)	10-375 (37-1419)
EZ-36.6HF	50	VOC Treatment process unit	1,900 (53.8)	10-375 (37-1419)
EZ-48.4HF	50	VOC Treatment process unit	2,600 (73.6)	10-500 (37-1892)
EZ-48.6HF	50	VOC Treatment process unit	2,600 (73.6)	10-500 (37-1892)
EZ-72.4HF	50	VOC Treatment process unit	3,800 (107)	10-750 (37-2839)
EZ-72.6HF	50	VOC Treatment process unit	3,800 (107)	10-750 (37-2839)
EZ-96.4HF	50	VOC Treatment process unit	5,200 (147)	10-1000 (37-2839)
EZ-96.6HF	50	VOC Treatment process unit	5,200 (147)	10-1000 (37-2839)

Related Manuals

95168 EZ-Tray Manual -Full
95167 EZ Tray Manual - Box Only
95293 EZ Tray Manual Large Strippers
95165 EZ-2.XP
95166 EZ-4.XP
95164 EZ-Stacker (Box Only)
95167 EZ-Tray (Spanish)

Installation Setup



For QED supplied turn-key systems with components by other manufacturers, refer to the project specific **Approval Package** and supporting information. A typical example QED turn-key skid package is shown in Figure 1.

Referring to Figure 2. – install system on a level pad and secure with anchor points located on lower edge of the unit base.

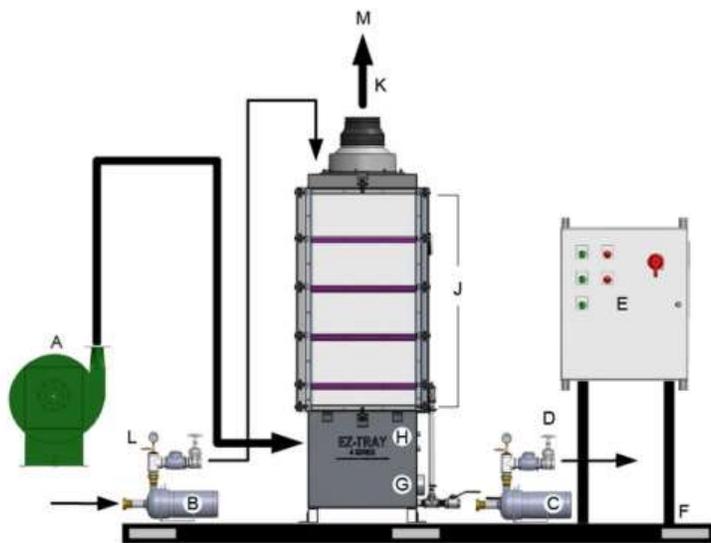
Pipe influent water into the inlet port located at the top rear of the E-Z Tray process unit. Pipe effluent water to transfer pump or gravity drain into the outlet port located on the front lower right of the E-Z Tray process unit. The E-Z Tray unit has internal water flow stilling baffles, a low exit location and integral vortex eliminator to ensure steady water flow to the transfer pump.

When used gravity drains must include a water seal to prevent air exiting from the pressurized clear water sump. The water seal normally requires the addition of 2-3 ft horizontal u-section in the drain. Best height of the u-section depends on water flow rate and number of tray levels (4-tray stage units or 6-tray stage units). Gravity drain piping packages are available from QED.

For pressure air inlet systems (Figure 3.), pipe blower discharge air to air inlet port located at the side of the unit. Blower piping should include an inverted U to ensure water never drains into the blower. Blower piping should be sized to minimize losses due to pipe ID and fittings.

For induced draft air systems (Figure 3.), pipe blower air intake air exit port located on top of the stripper process unit. An open pipe inlet with a high opening should be also piped to the air inlet port located at side of the unit.

Figure 1 Typical Example



A	Aeration Blower
B	Transfer Pump
C	Discharge Pump
D	Discharge control valve
E	Control Panel
F	Skid
G	Air Stripper Discharge Port
H	Level Switch Couplings
J	Air Stripper Tray Area
K	Air Discharge Connection
L	Pressure Gauge
M	Air Discharge

Figure 2 Typical Example

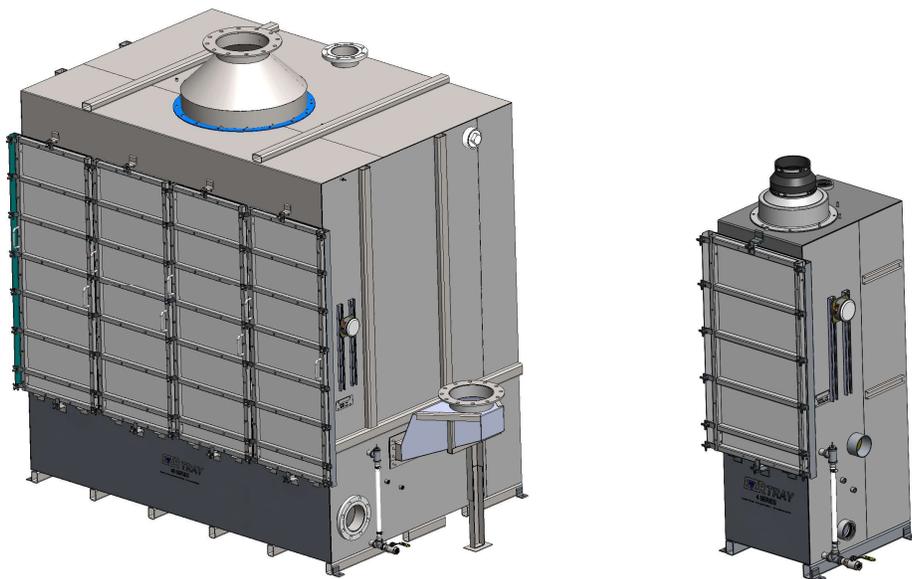
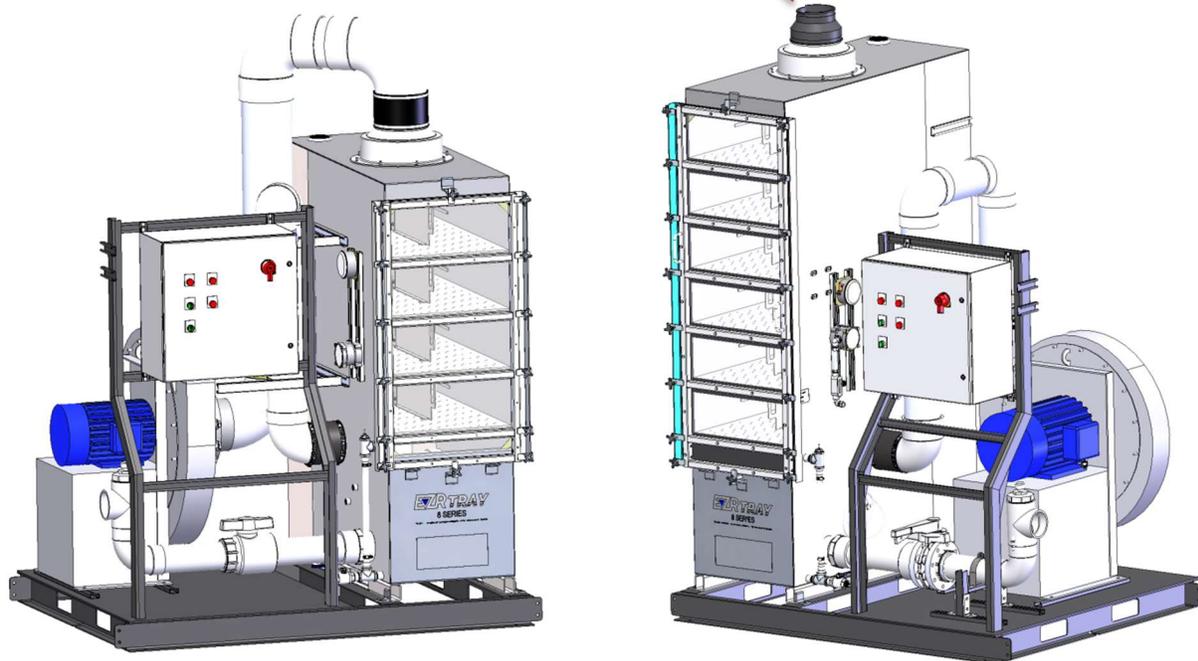


Figure 3 Piping examples for pressure and induced draft modes.

Notice
The air stripper discharge port can not support off-gas piping. Off-gas piping needs to be supported using pipe hangers or similar independent supporting means.



Startup Operation

The blower is started before water inflow to the E-Z Tray process unit. Ensure that the blower flow throttle or air flow control valving (by QED or other) is set to deliver the appropriate air flow rate to the stripper. QED supplied blowers include an integral flow throttle in the blower discharge throat. Sump pressure is also a good indicator of proper air flow rate. In general sump pressure should range between 4-6 inch H₂O per tray stage (16-24 inch H₂O for 4-tray units and 24-36 inch H₂O for 6-tray units). The lower end of the range is typical when a unit is clean and the high end is typical for a fouled stripper.

Most applications will require periodic air flow adjustments as the stripper fouls. Fouling increases the back pressure on the blower (delta-P across the trays), so the air throttle can be opened to offset this and maintain the required air flow rate. At some point the stripper will need to be cleaned to return to the clean delta-P across the trays. Once cleaned the blower is again throttled back as described at the start.

When shutting the stripper down it is necessary to maintain blower air flow for about 5-10 minutes to ensure that the partially treated water on the upper trays has extra contact time to strip target VOCs and/or dissolved gases. QED supplied control panels with the intermittent operation option have a shutdown timer that automatically maintains blower operation after a shutdown (including alarm driven shutdowns).

Notice – When taking the stripper off-line for extended periods of time, the sump, pumps and other water piping elements shall be completely drained. Also, the interior of the stripper should be allowed to dry (open/remove the doors to encourage drying). If flow testing (followed by a shutdown period of more than several days) is done with the process water (wastewater) or other aggressive water, a flush with clean water (including but not limited to, low chlorides, total dissolved solids, etc.) shall be done before draining and drying to minimize stagnant water areas that can encourage corrosion. Draining is especially important if the stripper is located where freezing is possible. During normal operation the thermal mass of the water prevents freezing even with very cold air.

Maintenance

The most common maintenance issue with an air stripper is tray fouling due to scales and inorganic metal oxides. Bio-slimes, algae and collected solids can also cause issues. The air stripper process relies on maintaining the design air to water ratio (A/W). As stripper trays foul, built up material increases the air flow head loss across the trays. The resulting increased back pressure on the blower lowers the air flow if the blower flow throttle is not adjusted (as described, above). When the blower “turn-up” range is exhausted the stripper trays need to be cleaned to return the system to the clean stage. Periodic cleanings can be expected at a similar interval if fouling factors remain consistent.

A main design feature of the E-Z Tray is the ease of tray access using the removable front door. Cleaning approaches will vary depending on the material that is fouling the trays. Some trays can be cleaned in place by lightly power washing the tray active areas (areas of the trays with air holes). Some fouling is harder to remove and benefits from soaking in dilute recommended acids and/or cleaning solutions.

Additional steps to make cleaning easier or less frequent can include:

- Chemical anti-fouling feeds, such as sequestering agents
- Spare tray sets to allow for cleaning or longer time soaking of fouled trays
- pH adjustment to prevent the formation of metal oxides

Cleaning the E-Z Tray

The most common method used for tray cleaning is to use a pressure washer with washer wand. 2 GPM is the recommended minimum water flow at a 900 PSI maximum pressure. Equipment rental companies can usually supply this type of washer on a daily rental basis.

Washer should use a clean water supply with a capacity of at least 2 GPM at 20 PSI, connected to the pressure washer by means of an ordinary garden hose.

The QED air stripper is designed for easy cleaning. Trays can either be removed for cleaning or left in the unit and cleaned. Another option is the purchase of a spare set of trays. Spare trays can quickly be used to replace the fouled trays, reducing air stripper down-time and allowing maintenance personnel to clean the trays at their convenience.

Cleaning Steps

Step 1. Turn Off Equipment, Perform Electrical Lockout Procedure

Turn off the feed water supply and all associated electrical equipment.

Step 2. Provide for Waste Disposal

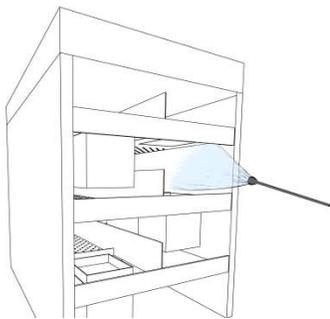
Make provisions for disposing of the sludge and waste generated during cleaning.

Step 3. Remove Stripper Door

Either remove the trays from the air stripper unit or leave them in for cleaning.

Step 4. Turn On Water and Pressure Washer

Turn on the water supply to the pressure washer. Then, turn on the pressure washer itself. Wear recommended protective goggles while spraying.

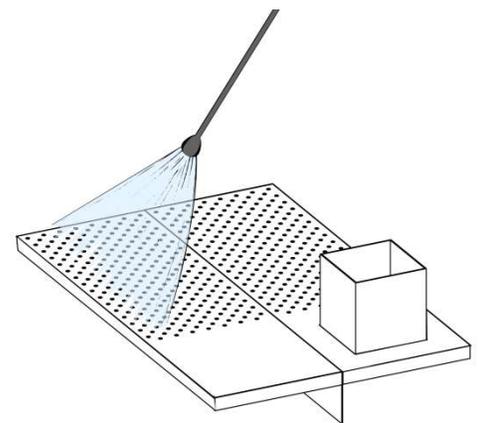


Step 5. Insert Wand into Air Stripper

(This step is for cleaning trays while they remain in the air stripper unit. If trays have been removed for cleaning, skip step 5 and proceed to step 6.) Insert the wand all the way into the door opening. Point the spray nozzle up towards the bottom of the lowest tray.

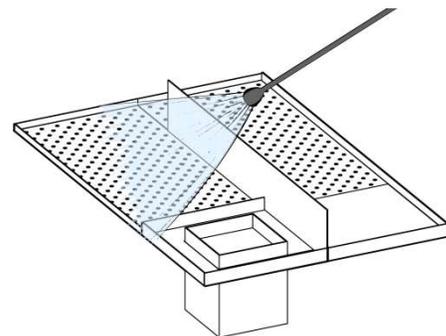
Step 6. Clean Bottom Side of Tray

Holding the wand tightly, pull the trigger to start the pressurized water flow. Expect the wand to kick back as flow starts. Move the wand side to side at a rate of about 1" per second. Be sure to cover the entire tray bottom area. The tray holes must be cleaned of all deposits. Periodically stop the cleaning operation and inspect the cleaned area. The area is clean when there are no deposits around the aeration holes. Be sure to not remove or loosen the felt when doing this.



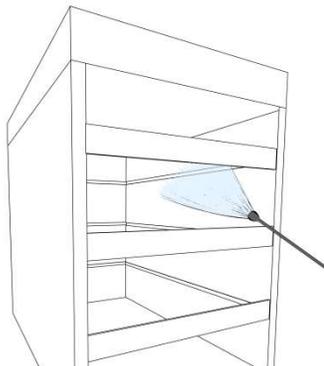
Step 7. Clean Top Side of Tray

Move the wand to the top side of the tray. Continue spraying with the nozzle pointed down onto the top surface of the tray. For older model E-Z Tray units, also clean the downcomer and sealpot areas. Remove all visible deposits from the tray baffles and the walls of the unit. Inspect the cleaned area for deposits.



Step 8. Repeat for all Trays

Repeat the procedure for all trays, working up to the top-most tray.



Step 9. Spray the Ceiling and Walls of the Air Stripper (optional).

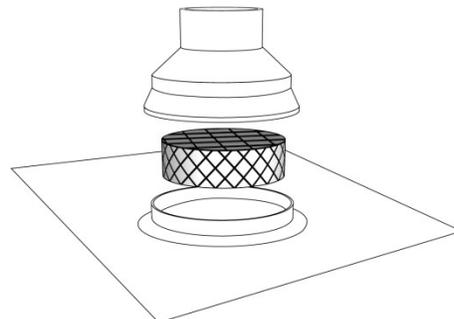
Cleaning the walls and ceiling are not necessarily required for proper air stripper operation.

Step 10. Rinse

After the cleaning operation is finished, rinse the ceiling, trays, baffles and walls with the pressure washer. Work down from the top down to the sump tank. Make sure the surfaces are clean and the holes are not blocked by loosened debris.

Step 11. Check the Demister Pad and Replace as Necessary

Inspect the demister pad and clean as needed. Use the pressure sprayer to remove debris, deposits and gummy residues sometimes found on the demister pad. Demister pads that are excessively plugged should be replaced.



Step 12. Inspect the Air Stripper

Visually inspect the air stripper box for the following:

1. Door gasket integrity
2. Inspect the air stripper for any damage and repair as necessary.
3. Aeration tray integrity. Inspect trays for structural damage.
4. Inspect any internal piping (on some units, typically PVC piping) and replace as necessary.

Note: Door gaskets will need to be replaced after 5-10 door openings and closings. The gasket loses some amount of sealing compression on each cycle. Tray sealing felt (located on the underside of each tray along the edges) is serviced at a lower frequency than the door gasket. Tray felt wear is based on tray removal frequency and how carefully the trays are removed and re-installed. See spare parts section for QED part numbers.

QED Air Stripper Cleaning Solution Recommendations

While pressure washing is often effective at removing scales and other solids from around stripper tray sieve holes, sometimes the scale is tightly adhered and requires a chemical solution to soften and/or re-dissolve the solids. Care needs to be exercised in selecting cleaning chemicals to avoid damage to the stripper metal enclosure.

General Precautions – Use adequate personal protection and recommended procedures when handling cleaning chemicals (eye shields, gloves of appropriate resistance, vented area, etc.). Consult with your company's health and safety coordinator for recommendations prior to attempting cleaning activities. An example PPE for citric acid is shown, below.

Citric Acid – QED's general recommendation is the use of a dilute citric acid solution for scale cleaning. Dilute citric acid can be used with the standard 304 stainless steel used in the E-Z Tray systems and additionally with both 316 stainless steel and marine grade aluminum versions. Citric is also safe to use with the HDPE E-Z Stacker.

Citric acid can be purchased in powder or granular form and is added to water to create a cleaning solution. A solution of 20-30% can be made by using the following weight to volume guide –

Citric Solution	Ratio (gm/ml)	Ratio (lbs/gal)
20%	250 gm / 1000ml	2lbs / 1gal
30%	430 gm / 1000ml	3.6 lbs / 1gal

Other Acids – For more aggressive scales stronger acid solutions may be tested. The following is a general guide for dilute solutions in the 10-20% range. It is suggested that a small area be tested with the acid solution to evaluate effectiveness and observe any impacts on the stripper materials. **Do not use hydrochloric (muriatic) acid on stainless steel (E-Z Tray version of strippers).**

304 stainless steel (standard E-Z Tray) – Solutions of nitric or phosphoric acid can be used.

316 stainless steel – Solutions of nitric, phosphoric or sulfuric acid can be used.

Marine grade aluminum – Solutions of phosphoric acid can be used.

HDPE (Plastic E-Z Stacker) – Solutions of hydrochloric, nitric, phosphoric or sulfuric acid can be used.

Example MSDS PPE for a 20% citric acid solution

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Troubleshooting

Problem	Cause	Solution
Leaks around door	Worn door gasket Door knobs not tight	Replace door gasket Tighten knobs
Air blowing up tray edges	Worn or damaged tray felt Tray not installed correctly	Replace tray felt Reseat tray
Water raining through air holes in trays (weeping)	Air flow rate is too low	Open blower air throttle Clean trays
Water blowing from stripper air discharge	Air flow rate is too high Demister is fouled Water flow rate too high	Close blower air throttle Clean or replace demister Lower water flow rate
Erratic or unstable operation	Air flow rate is too high Water flow rate exceeds unit maximum	Close blower air throttle Lower water flow rate
Unit not meeting expected removal targets	Numerous	Confirm air flow rate Investigate – surfactants, free-phase organics, organic solids, other polar organics Contact QED Technical Support

Repair

For structural damages, spare trays and other major air stripper component issue, **contact QED Technical support.**

Spare Parts

Air Stripper Felt kits needed

Air stripper	Felt Kits Needed	Air stripper	Felt Kits Needed
EZ-4.4HF	1	EZ-72.4HF	4
EZ-4.6HF	1	EZ-72.6HF	6
EZ-6.4HF	1	EZ-96.4HF	8
EZ-6.6HF	1	EZ-96.6HF	12
EZ-8.4HF	1		
EZ-8.6HF	1		
EZ-12.4HF	1		
EZ-12.6HF	2		
EZ-16.4HF	2		
EZ-16.6HF	2		
EZ-24.4HF	2		
EZ-24.6HF	2		
EZ-36.4HF	2		
EZ-36.6HF	3		
EZ-48.4HF	4		
EZ-48.6HF	6		

All Models:

Item	Part Number	Quantity
Door Gasket	808084 4 high	1
Door Gasket	808085 6 high	1
Sight tube	807580	1
Door knob	805042	as needed
Channel Flap	808074	as needed
Door Latch	807100	as needed
Door Latch middle	807101	as needed

Models: EZ-4.4HF,EZ-4.6HF,EZ-6.4HF,EZ-6.6HF,EZ-8.4HF,EZ-8.6HF,EZ-12.4HF, EZ-12.6HF, EZ-16.4HF, EZ-16.6HFEZ-24.4HF, EZ-24.6HF, EZ-36.4HF, EZ-36.6HF, EZ-48.4HF, EZ-48.6HF, EZ-72.4HF, EZ-72.6HF, EZ-96.4HF and EZ-96.6HF.

Item	Part Number	Quantity
Demister pad	808093	1

Models: EZ-16.4HF,EZ-16.6HF,EZ-24.4HF,EZ-24.6HF

Item	Part Number	Quantity
Demister pad	805082	1

Models: EZ-36.4HF,EZ-36.6HF,EZ-48.4HF,EZ-48.6HF

Item	Part Number	Quantity
Demister pad	807290	1

Models: EZ-72.4HF, EZ-72.6HF, EZ-96.4HF,EZ-96.6HF

Item	Part Number	Quantity
Demister pad	807181	1

Specifications

Model Number	Max. Flow: gpm (Lpm)	Dry Weight: lbs (Kg)	Maximum Oper. Weight lbs. (Kg)	Maximum Operating Gallons (L)	Number of Trays	Tray Weight lbs. (Kg)	Max Sump Working Volume: Gal (L)	Active Area: ft2 (m2) Per Level	Nominal Air Flow: cfm (m3/min)
EZ-4.4HF	1-120 (4-454)	600 (272)	1,250 (567)	76 (287)	4	15 (6.8)	43 (162)	2.8 (.26)	210 (5.95)
EZ-4.6HF	1-120 (4-454)	800 (362)	1,545 (700)	87 (329)	6	15 (6.8)	43 (162)	2.8 (.26)	210 (5.95)
EZ-6.4HF	1-120 (4-454)	750 (340)	1,710 (775)	106 (401)	4	22(10)	61 (230)	4.63 (.43)	320 (9.06)
EZ-6.6HF	1-120 (4-454)	960 (435)	2,004 (909_)	122 (461)	6	22(10)	61 (230)	4.63 (.43)	320 (9.06)
EZ-8.4HF	1-120 (4-454)	910 (412)	2,080 (944)	125 (473)	4	38 (17.23)	78 (295)	6.45 (.60)	420 (11.9)
EZ-8.6HF	1-120 (4-454)	1,170 (530)	2,512 (1140)	145 (548)	6	38 (17.23)	78(295)	6.45 (.60)	420 (11.9)
EZ-12.4HF	1-120 (4-454)	1,240 (562)	2,587 (1174)	158 (598)	4	51 (23.13)	98(370)	8.55 (.79)	600 (17.0)
EZ-12.6HF	1-120 (4-454)	1,580 (716)	3,144 (1426)	183 (692)	6	51 (23.13)	98 (370)	8.55 (.79)	600 (17.0)
EZ-16.4HF	10-500 (4-1892)	1,650 (748)	2,119 (961)	254 (961)	8	38 (17.23)	154(582)	14.16 (1.32)	850 (24.1)
EZ-16.6HF	10-500 (4-1892)	2,150 (975)	2,486 (1127)	298 (1128)	12	38 (17.23)	154 (582)	14.16 (1.32)	850 (24.1)
EZ-24.4HF	10-500 (4-1892)	2,300 (1043)	5,012 (2273)	325 (1230)	8	51 (23.13)	153 (579)	18.76 (1.73)	1,300 (36.8)

EZ-24.6HF	10-500 (4-1892)	2,850 (1292)	6,012 (2726)	380 (1438)	12	51 (23.13)	153 (579)	18.76 (1.73)	1,300 (36.8)
EZ-36.4HF	10-500 (4-1892)	3,400 (1542)	7,957 (3609)	612 (2316)	12	51 (23.13)	350 (1324)	28.55 (2.65)	1,900 (53.8)
EZ-36.6HF	10-500 (4-1892)	4,200 (1905)	8,666 (3930)	697 (2638)	16	51 (23.13)	350 (1324)	28.55 (2.65)	1,900 (53.8)
EZ-48.4HF	10-500 (4-1892)	4,500 (2041)	9,734 (4415)	825 (3122)	24	51 (23.13)	473 (1790)	38.73 (3.60)	2,600 (73.6)
EZ-48.6HF	10-500 (4-1892)	5,500 (2494)	10,694 (4850)	940 (3558)	36	51 (23.13)	473(1790)	38.73 (3.60)	2,600 (73.6)
EZ-72.4HF	10-750 (4-2839)	8,600(3,900)	9,636(4,370)	1,036 (3921)	24	51 (23.13)	740 (2801)	57.6(5.35)	3,800 (107)
EZ-72.6HF	10-750 (4-2839)	9,500(4309)	10,950(4,966)	1,234 (4671)	36	51 (23.13)	740 (2801)	57.6(5.35)	3,800 (107)
EZ-96.4HF	10-100 (4-3785)	9,300(4,218)	10,698(4,852)	1,398 (5292)	36	51 (23.13)	1049(3970)	78 (7.24)	5,200 (147)
EZ-96.6HF	10-1000 (4-3785)	12,00(5,443)	13,503(6,124)	1,503 (5689)	72	51 (23.13)	1049(3970)	78 (7.24)	5,200 (147)

* chart for reference only, volume calculations vary by operating conditions.

Removal performance is predicted with the QED Air Stripper performance model. The model can be found here –

<https://www.qedenv.com/en-us/tools/air-stripper-online-modeler/>

Model use:

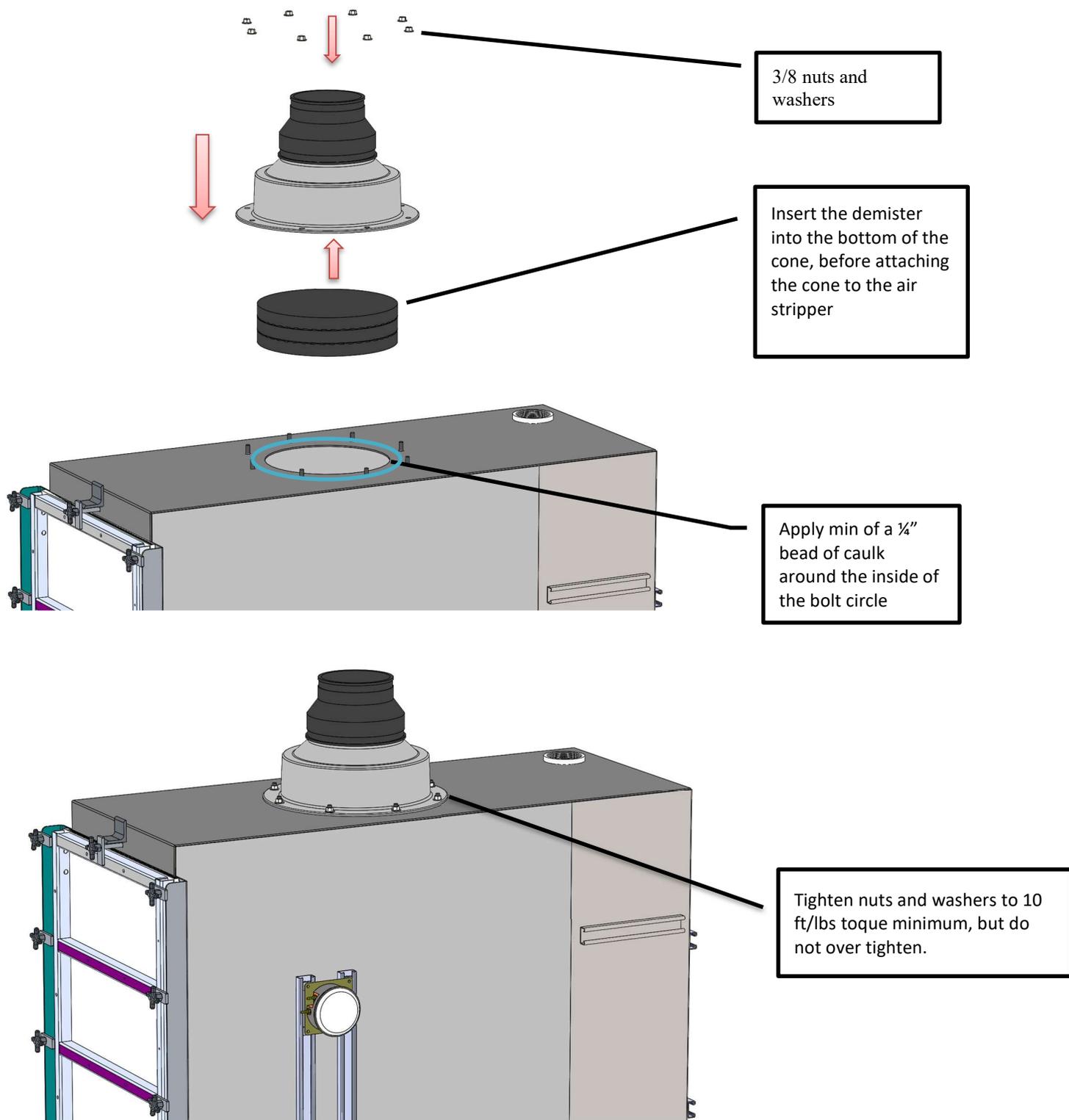
1. Select the way you want the contaminants to be sorted (alphabetic or by Henry's constant) on this page and then hit the Run Model button.
2. Select the units (metric or English) that you wish to use for data input and reporting and check all the contaminants you wish to model. Hit the Next button.
3. Enter the required data and the contaminant levels required. Hit the Next button.
4. View the output report. Use your browser's back button to change conditions and re-model.

Model results assume -

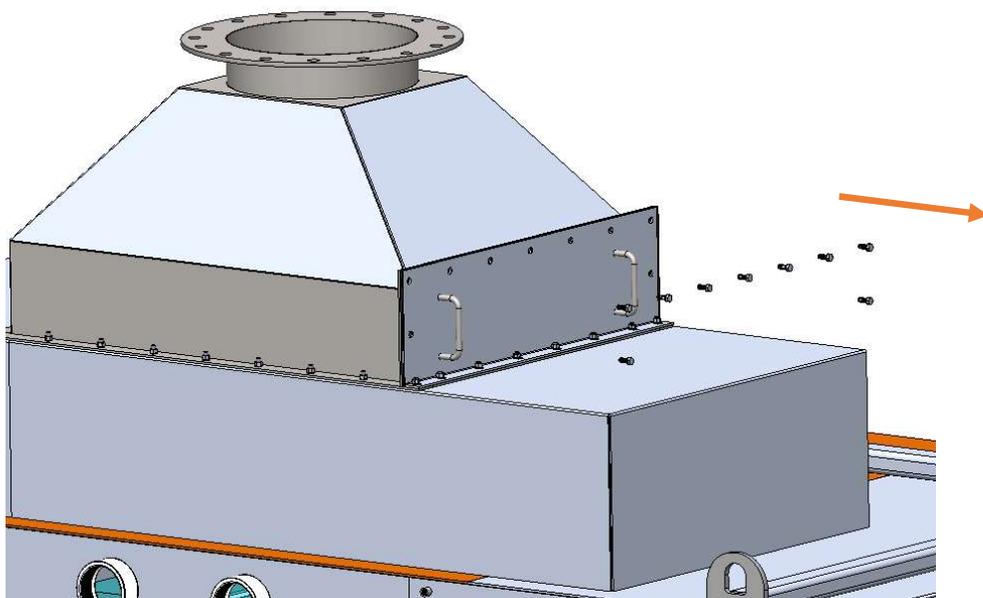
- Contaminants are in the dissolved-phase, within a water matrix
- Stripper Influent air is contaminant-free
- Influent liquid does not have surfactants, oil, grease, other immiscible phase(s) or other Henry's constant altering additions present, such as dissolved phase polar organic contaminants
- The air stripper is operated within the given parameters listed above and as instructed in the E-Z Tray O&M manual

The model report includes a URL that can be saved to quickly reconstruct your data form for future remodeling with changes.

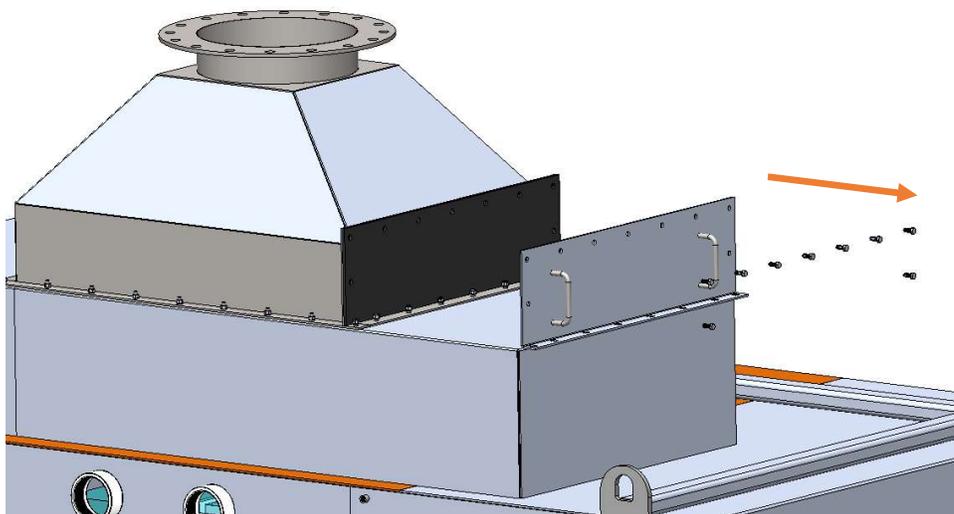
Figure 4 Demister Cone Installation for 4 thru 48 series



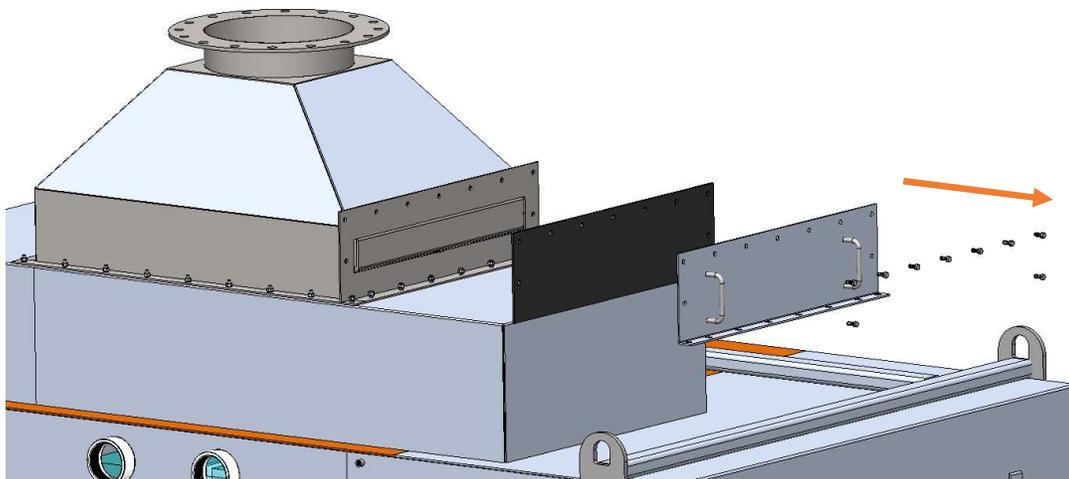
EZ-72 and EZ-96 Air Stripper Demister Removal



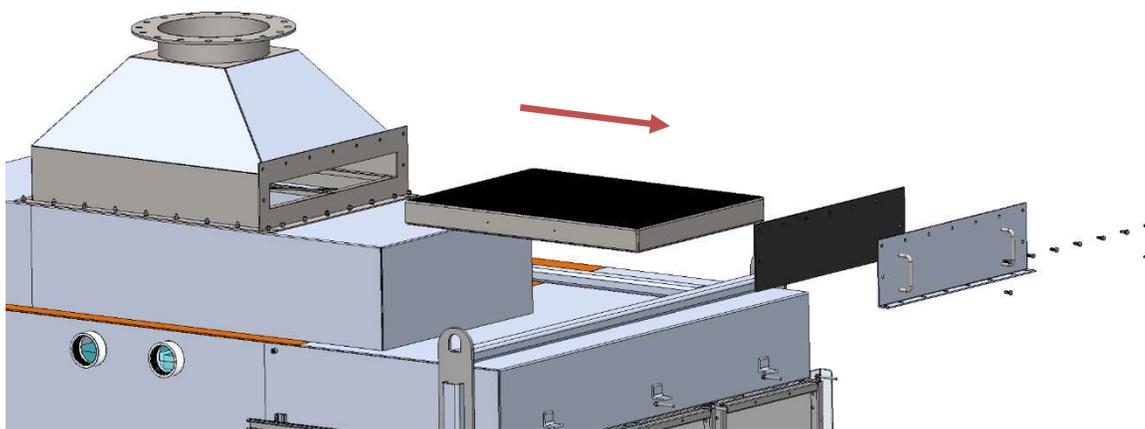
Remove bolts and nuts holding cover plate in place.



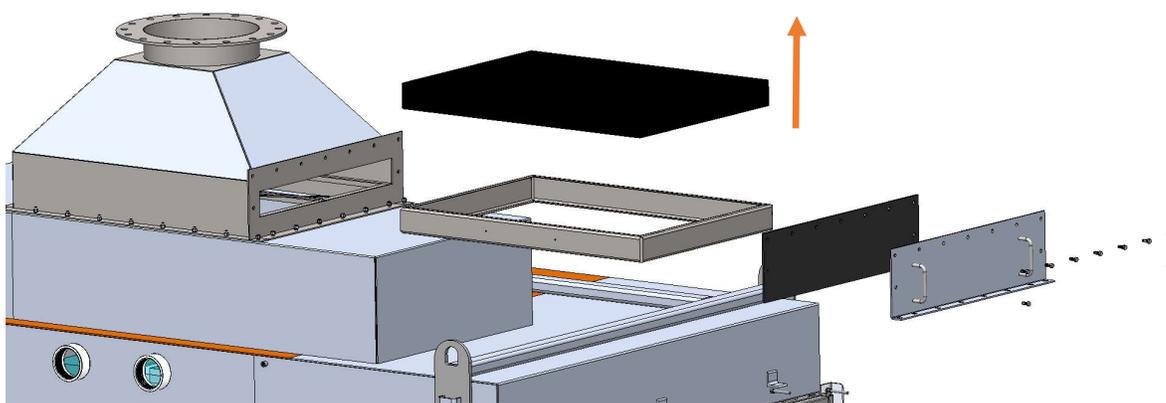
Remove cover plate.



Remove the gasket.

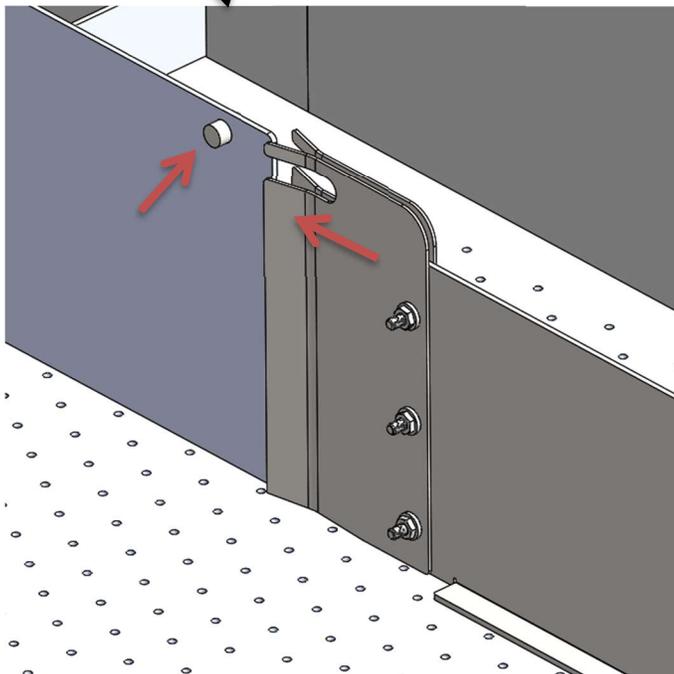
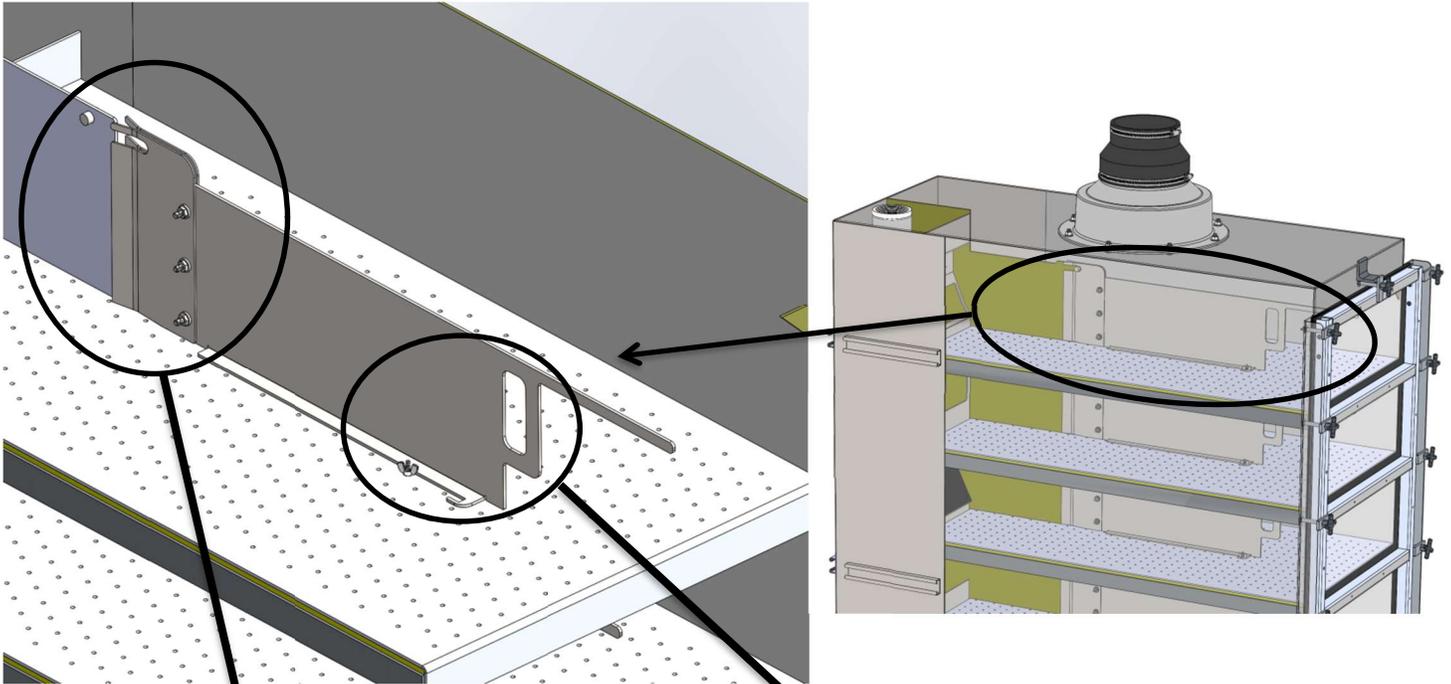


Pull out demister frame out of the housing.

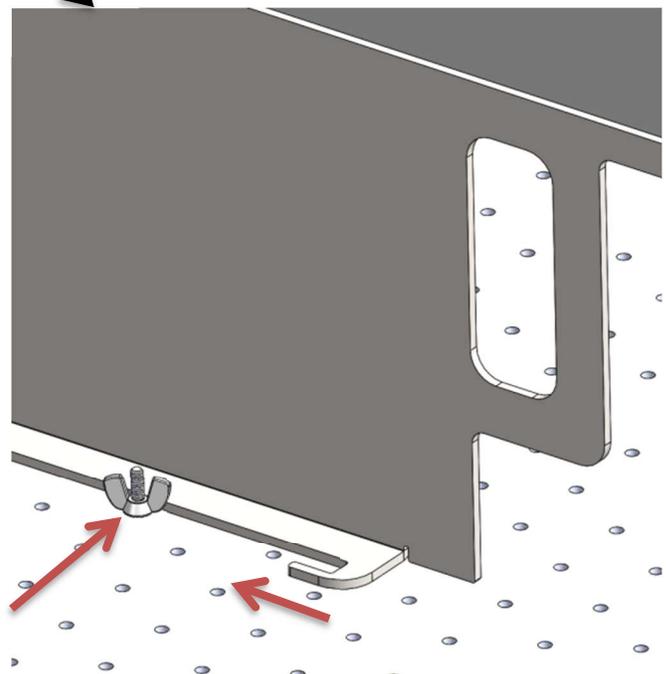


Remove demister from demister frame. Clean and replace or replace with a new one (807181)

Figure 5 Tray Weir Installation

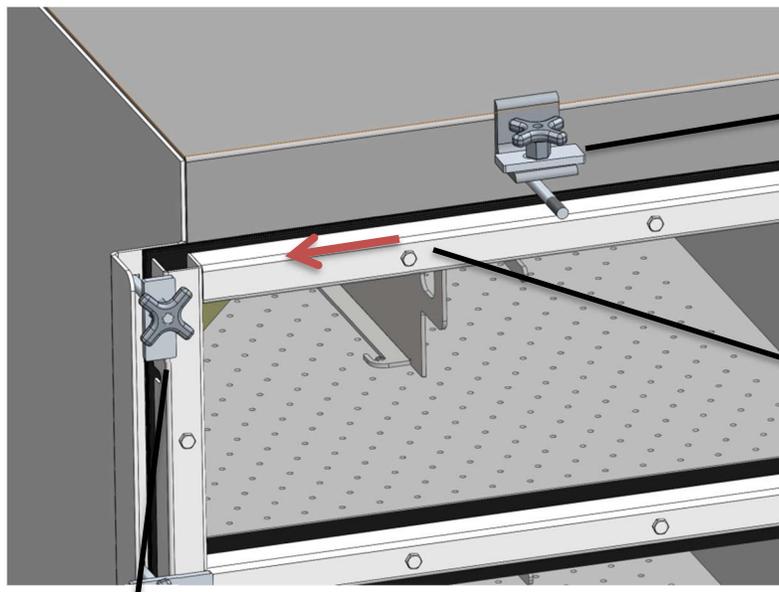


Slide the weir in so that the fixed weir slides in between the two plates and onto the weir pin. Used only on the 6, an up series units.



Continue to slide the weir in so that the slot engages the wing nut. Used only on 6, and up series units. Wing nut should be parallel with the weir.

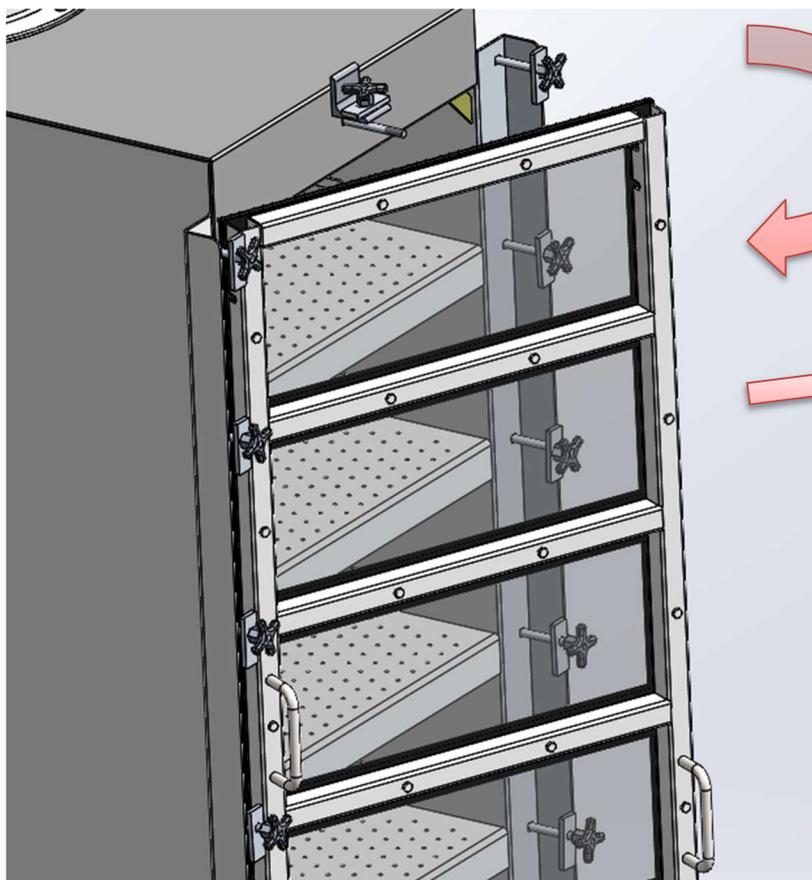
Figure 6 Door Removal



1. Loosed all knobs to allow latches to hang vertical

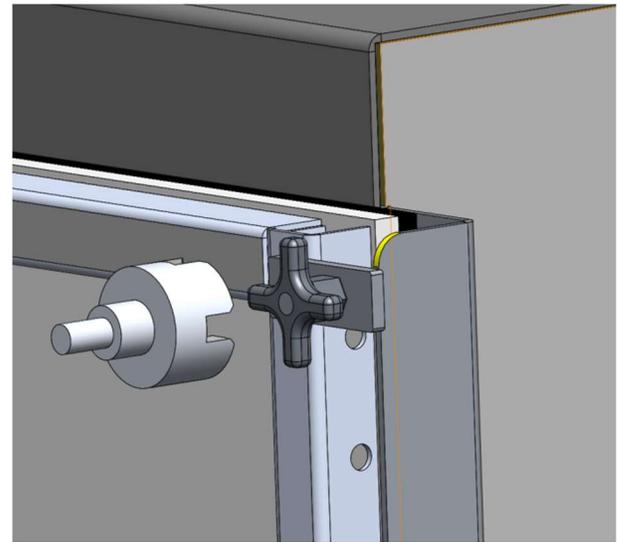
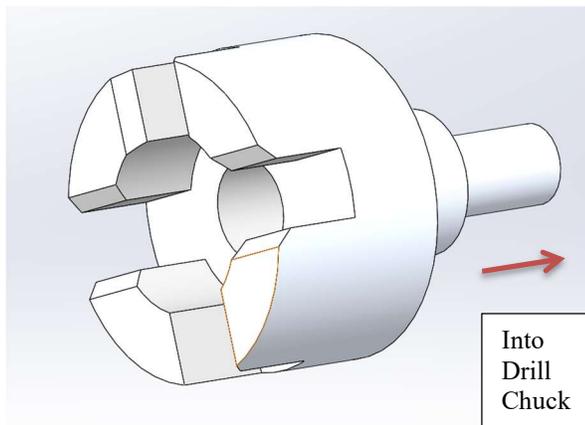
2. Remove top and bottom knob and latch.

3. Slide the door to the left under the latches



Rotate door and pull out to remove the door

Knob Removal Tool (807200)



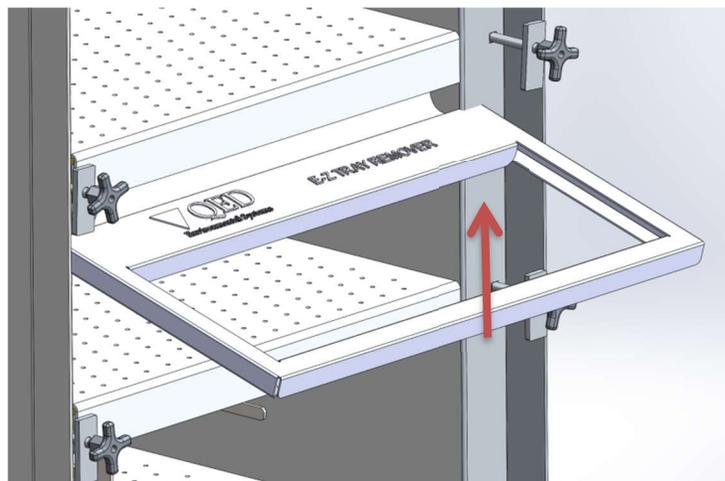
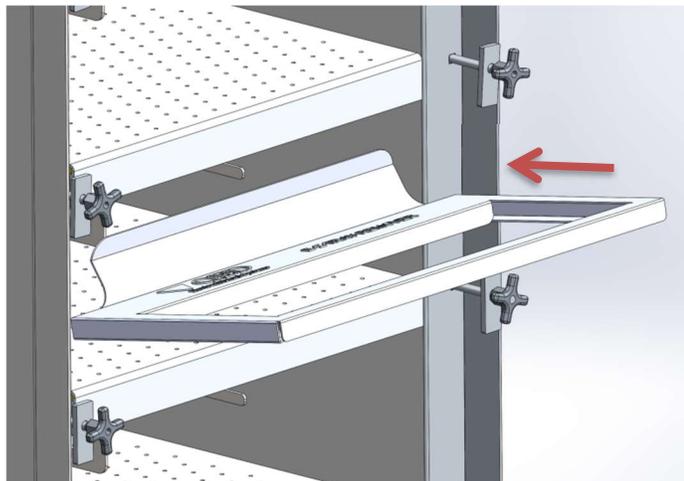
KNOB REMOVAL:

1. Use a power drill with reverse settings and preferably use one that has a variable speed and adjustable torque settings.
2. Keep in mind that drive tools such as these have a lot of power and torque. Refer to, understand, and follow all safety precautions and operation instructions of such power tools prior to use.
3. Install Knob Removal Tool in appropriate drill chuck and tighten securely.
4. Set torque setting on highest setting (if equipped).
5. Set rotation of drill to counterclockwise rotation.
6. Place tool over each knob, begin certain that the tool is squarely on the knob.
7. Begin by operating the drill as you normally would and spin off each knob. Work from the bottom of the each access door up, and leave one knob at the top of each access door on so that the door will not fall off suddenly.
8. If stuck for stubborn knobs cannot be loosened using this method, use a wrench first and loosen slightly. If rust or corrosion is present or suspected, spray each knob/stud with a light penetration oil first and let it set for some time prior to removal.

KNOB INSTALLATION:

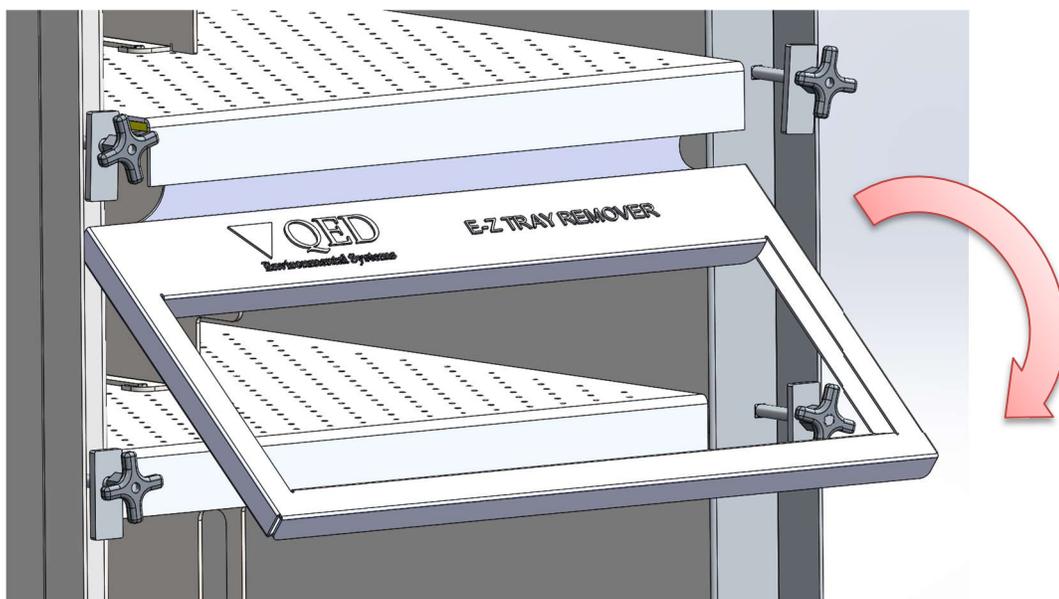
1. Be sure all knobs are started on each stud by hand prior to using the tool.
2. Set drill to clockwise rotation.
3. Set torque setting (if equipped) to approximately 50% of maximum torque. The drill is used only to speed up the process of putting the knobs on, not to be the final setting of the knob.
4. Once all knobs are on, by hand alternate from side to side, top to bottom, and diagonally to provide even sealing pressure across entire door surface. Be careful not to over tighten any knob, which could cause damage to the access door and /or damage (strip) the internal threads of the knob.
5. Knobs should only be hand tight at the beginning, only if leaks are seen should a wrench be used to tighten the knob and stop the leak.
6. If knobs are not tight enough to provide adequate sealing pressure, slightly tighten the knob and repeat as necessary. If knobs are still not tight enough, use a wrench to tighten.

TRAY REMOVER (807201)



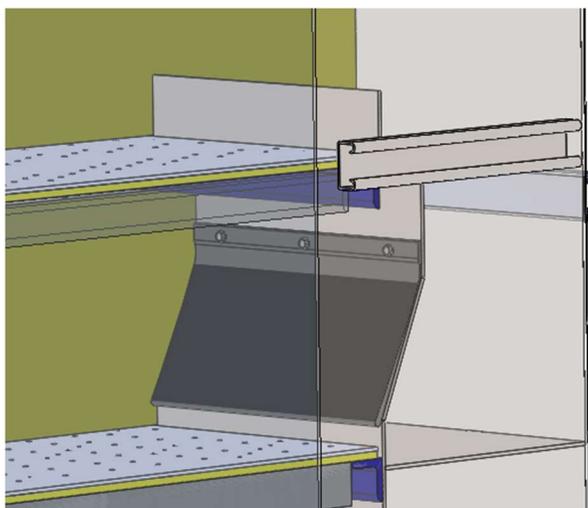
Using the tray remover (807201) insert behind
Tray front lip

Slide up under the tray

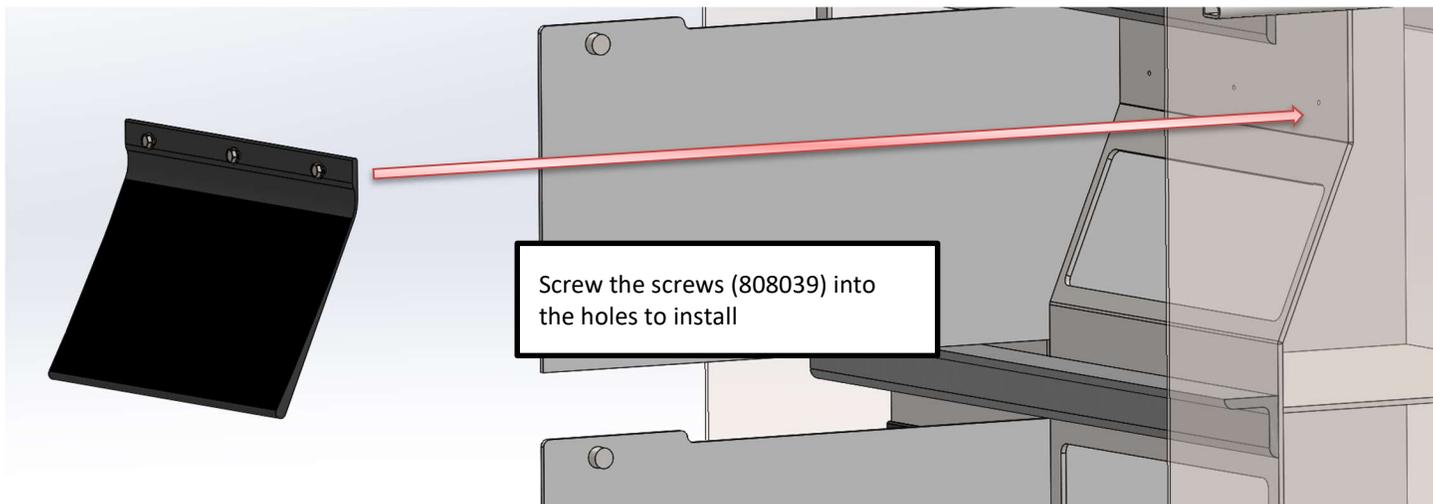
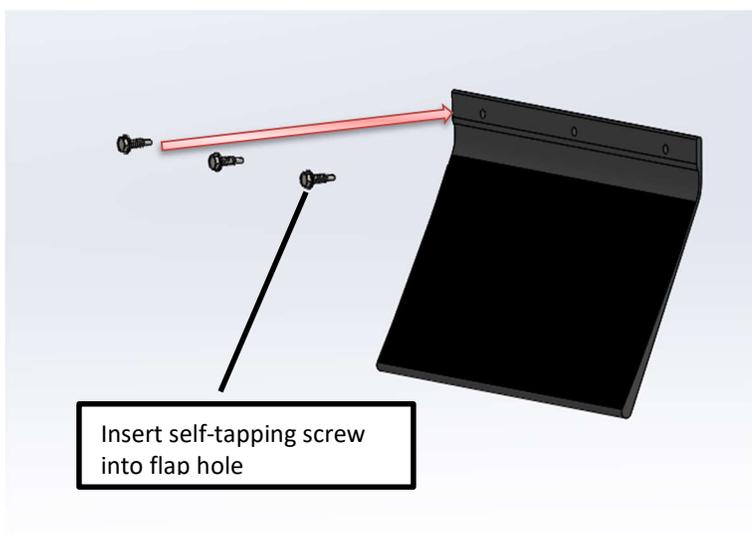


Rotate the tray remover down to loosen the tray. Once the tray is
loose the remover is no longer needed and the tray can be pulled out by hand.

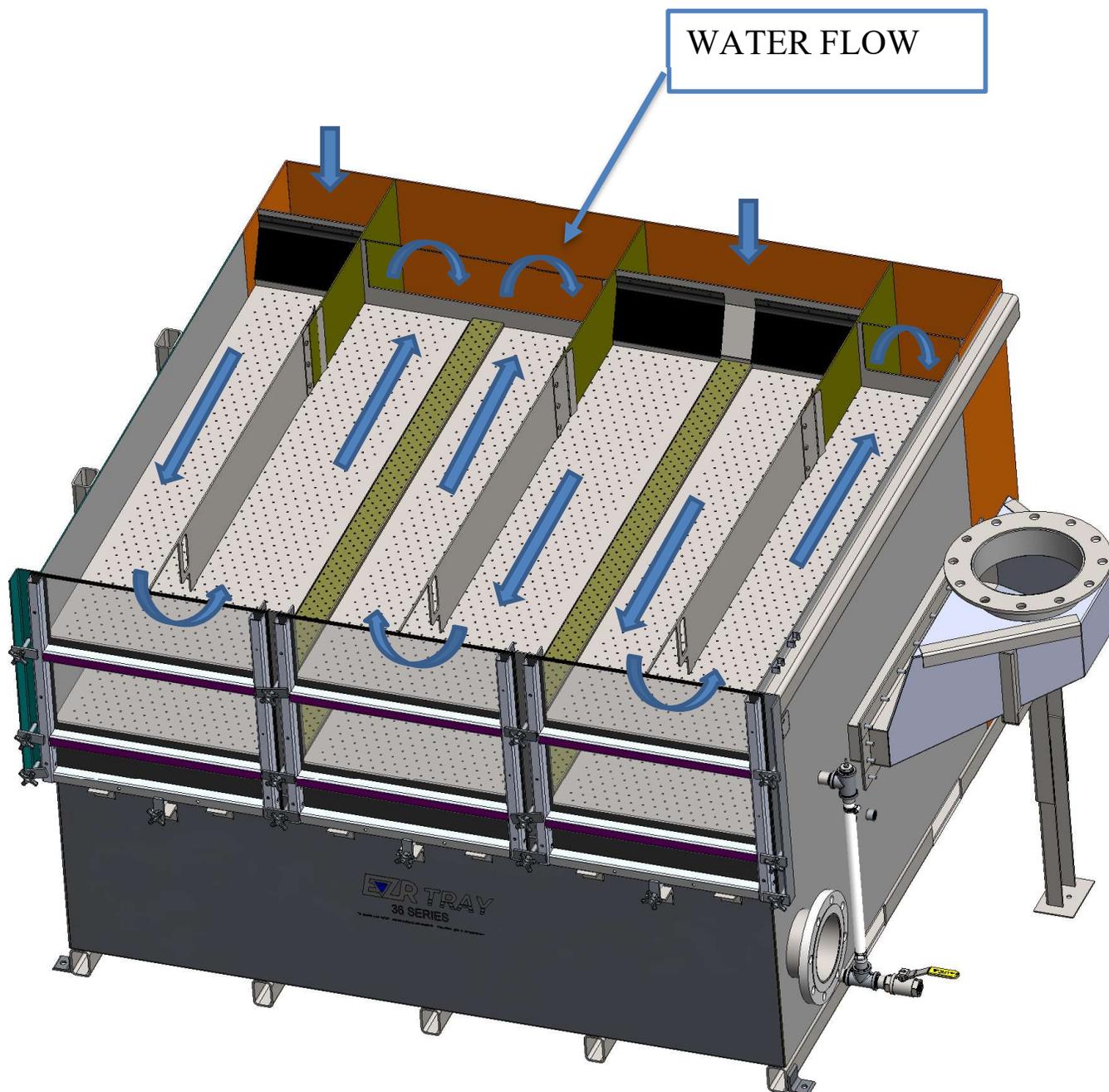
Downcomer Flap Installation (808074)



Installed flap (808074)
with screws (808039)



This is the typical water flow pattern for a single level of the air stripper. When the water drops to the next level the water flow in the opposite direction.



Equipment Warranty

QED Environmental Systems Inc. (QED) warrants to the original purchaser of its products that, subject to the limitations and conditions provided below, the products, materials and/or workmanship shall reasonably conform to descriptions of the products and shall be free of defects in materials and workmanship. Any failure of the products to conform to this warranty will be remedied by QED in the manner provided herein.

QED warrants the equipment components of its manufacture for a period of one (1) year from date of delivery. Our sole obligation during this warranty will be to repair or replace (at our option) the defective components. We are not responsible for consequential damages. Labor costs are not included.

Purchaser's exclusive remedy for breach of said warranty shall be as follows: if, and only if, QED is notified in writing within the applicable warranty period of the existence of any such defects in the said products, and QED upon examination of any such defects, shall find the same to be within the term of and covered by the warranty running from QED to Purchaser, QED will, at its option, as soon as reasonably possible, replace or repair any such product, without charge to Purchaser. If QED for any reason, cannot repair a product covered hereby within four (4) weeks after receipt of the original Purchaser's notification of a warranty claim, then QED's sole responsibility shall be, at its option, either to replace the defective product with a comparable new unit at no charge to the Purchaser, or to refund the full purchase price. In no event shall such allegedly defective products be returned to QED without its consent, and QED's obligations of repair, replacement or refund are conditioned upon the Purchaser's return of the defective product to QED.

IN NO EVENT SHALL QED ENVIRONMENTAL SYSTEMS INC. BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF SAID WARRANTY.

The foregoing warranty does not apply to major subassemblies and other equipment, accessories, and other parts manufactured by others, and such other parts, accessories, and equipment are subject only to the warranties supplied by their respective manufacturers. In the event of failure of any such product or accessory, QED will give assistance to Purchaser in obtaining from the respective manufacturer whatever adjustment is reasonable in light of the manufacturer's own warranty.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY (INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE), WHICH OTHER WARRANTIES ARE EXPRESSLY EXCLUDED HEREBY, and of any other obligations or liabilities on the part of QED, and QED neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with said products, materials and/or workmanship.

It is understood and agreed that QED shall in no event be liable for incidental or consequential damages resulting from its breach of any of the terms of this agreement, nor for special damages, nor for improper selection of any product described or referred to for a particular application.

This warranty will be void in the event of unauthorized disassembly of component assemblies. Defects in any equipment that result from abuse, operation in any manner outside the recommended procedures, use and applications other than for intended use, or exposure to chemical or physical environment beyond the designated limits of materials and construction will also void this warranty. Extended storage with stagnant water voids material corrosion warranty.

The equipment is warranted to perform as specified under the conditions specified here and within the air stripper model or QED will make the necessary changes at no cost to the owner. Some restrictions apply. Requirements for warranty consideration include, (but are not limited to):

1. Current operating conditions do not differ from the previously-modeled conditions.
2. The system should be cleaned regularly to maintain system performance.
3. The equipment is installed, operated and maintained according to QED's instruction or non-QED manufactured subassembly manufacturer's instructions.
4. Air stripper influent air is not "dirty" (does not contain VOC's, etc.).
5. No surfactants, oils, greases, immiscible phases or other Henry's constant altering water additions present in the water.
6. Each influent contaminant does not exceed 25% of its maximum solubility under modeled conditions.



QED shall be released from all obligations under all warranties if any product covered hereby is repaired or modified by persons other than QED's service personnel unless such repair by others is made with the consent of QED. If any product covered hereby is actually defective within the terms of this warranty, Purchaser must contact QED for determination of warranty coverage. If the return of a component is determined to be necessary, QED will authorize the return of the component, at owner's expense. If the product proves not to be defective within the terms of this warranty, then all costs and expenses in connection with the processing of the Purchaser's claim and all costs for repair, parts and labor as authorized by owner hereunder shall be borne by the Purchaser.

In the event of air stripper performance issues, QED may require customer to conduct a variety of troubleshooting steps. These include, but are not limited to, modifying operational parameters, cleaning air stripper system, modifying (temporarily or permanently) process piping, and obtaining reasonable and necessary influent/effluent samples. These steps are the responsibility of the customer and will be conducted by customer prior to consideration by QED for a site visit. These steps and the associated costs incurred are the responsibility of the customer, regardless of future action. Should customer request a site visit by QED or accept a site visit offer by a QED-trained technician, the visit and associated costs: a) will be the responsibility of the customer at CURRENT COST/day, plus travel, lodging, and meals, if the visit finds improper sampling, process piping installation, or equipment operation inconsistent with QED's Operation and Maintenance Manual; or b) will be the responsibility of QED if the visit finds QED responsible for the performance issue(s) raised.

The original Purchaser's sole responsibility in the instance of a warranty claim shall be to notify QED of the defect, malfunction, or other manner in which the terms of this warranty are believed to be violated. You may secure performance of obligations hereunder by contacting the Customer Service Department of QED and:

1. Identify the product or system involved by job number or QED order number.
2. Specifying where, when, and from whom the product was purchased.
3. Describing the nature of the defect or malfunction covered by this warranty.
4. If applicable, send the malfunctioning component, after receiving a Return Authorization Code (RAC) Number from the QED Service Department, to:

**QED Environmental Systems Inc.
2355 Bishop Circle West
Dexter, MI 48130
Attn: RAC Number
(RAC provided by QED Service Dept.)**

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
QED reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English.

QED Headquarters: Michigan

- **USA Copyright All Graco manufacturing locations are registered to ISO 9001.**

www.qedenv.com
www.graco.com
Revision B, Aug 2023