



we make life better™

2111 Wilson Boulevard Suite 500 Arlington VA 22201-3001 USA
Phone 703 524 8800 | Fax 703 562 1942
www.ahrinet.org

AHRI Air-to-Air Energy Recovery Ventilators Certification Program

Plenum Guidance



Globally Recognized. Industry Respected.

Table of Contents

Introduction.....	3
Standard Hose-end Plates.....	4
Standard Plenum Design.....	5
Heatpipe Plenum Setup.....	7
Wheel Plenum Setup.....	8
Plate Plenum Setup.....	10

AHRI ERV Plenum Guidance

Included are five drawings intended to assist manufacturers in providing plenums for their units submitted to Intertek-Cortland for qualification or annual testing. The four drawings illustrate:

2. Standard Hose-end Plates
3. Standard Plenum Design
4. Heatpipe Plenum Setup
5. Wheel Plenum Setup
6. Plate Plenum Setup

The following chart shows what size plenums you should expect to connect to your unit, based on airflow:

Airflow Range (SCFM)	Diameter (in)
50-550	8
550-3022	18
3000-6722	24

The following should be noted when building plenums:

- If your plenums are not connected to the unit, be sure there is a way for the lab to connect the plenums to the unit and seal the connection with silicon. Mark which airstream the plenum should connect to.
- Plenums should be insulated on the outside, not the inside.
- Do not make the plenums longer than suggested by each plenum design guide.

Should you have any further questions, please contact the Intertek-Cortland laboratory:

Intertek - Cortland

ATTN: Mxlp'Rgem

3933 US Route 11

Cortland, NY 13045

USA

Phone: 829/97:/8652

Email: ngxlp@gen@intertek.com

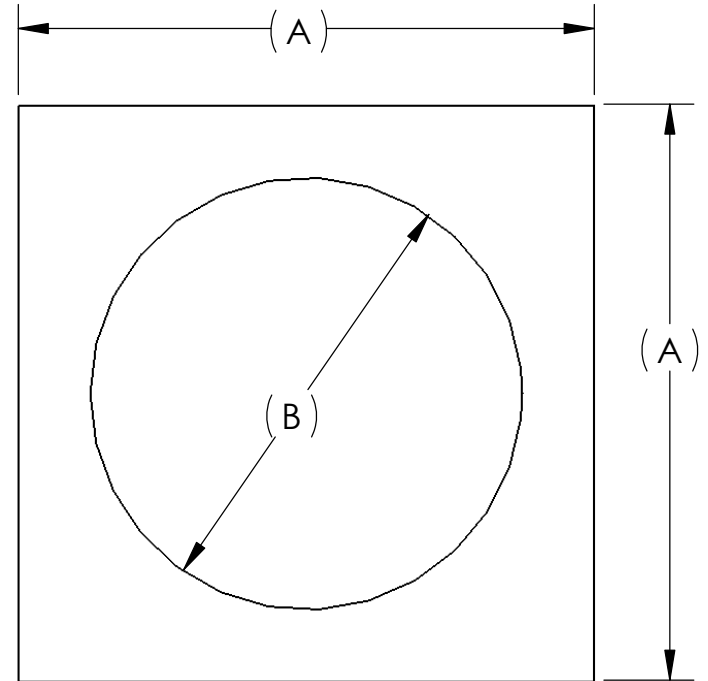
HOSE-END PLATES

Insulated hoses connecting the test stations to the exchanger under test. These hoses terminate in flat plates as shown below.

Three sizes are used depending on tested flow rate (see table below).

Plenums for the exchanger under test must be constructed to connect to the hose-end plates.

Airflow Range	Dimension A	Dimension B
50-550 SCFM	16	8
550-3000 SCFM	24	18
3000-4500 SCFM	32	24



Inlet Plenums:

Included angle should not exceed 40°. For included angle greater than 20°, add Splitter Plate at Hose End, extending half the Plenum Length L.

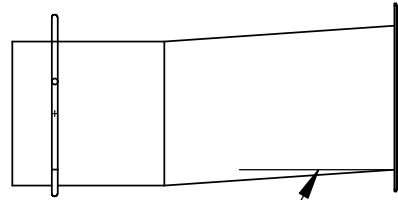
Hose end of Plenums:

Should match the OD and opening size of the appropriate standard Hose-end Plate. See separate drawing.

Exchanger end of Plenums:

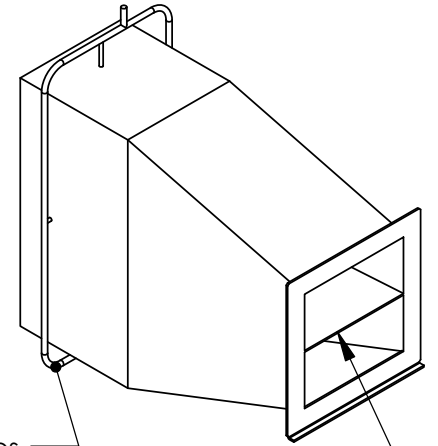
Height (H) and Width (W) of exchanger outlet establish cross-section and length of final straight plenum section.

View from Top

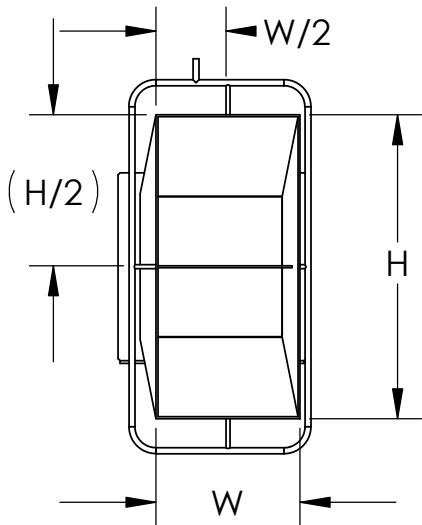


Piezometer Ring ties together (4) static taps.

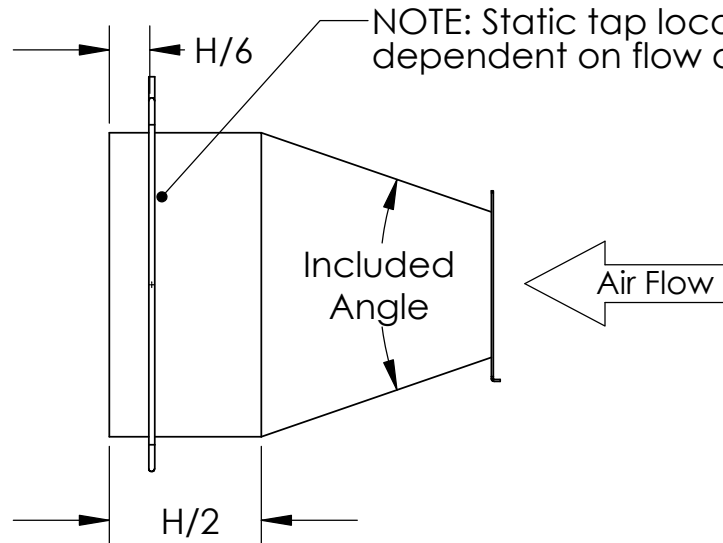
Offset may be needed to prevent interference between inlet/outlet plates.



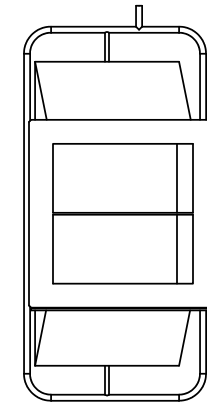
Splitter Plate (only if included angle >20°)



View of Exchanger End



View from Side



View of Hose End

Outlet Plenums:

Included angle should not exceed 40°.

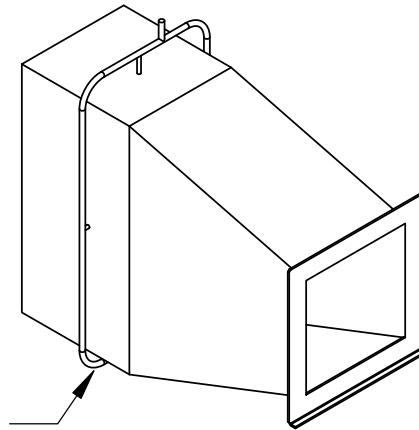
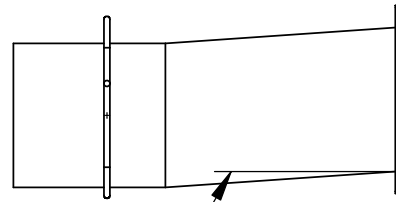
Exchanger end of Plenums:

Height (H) and Width (W) of exchanger outlet establish cross-section and length of initial straight plenum section.

Hose end of Plenums:

Should match the OD and opening size of the appropriate standard Hose-end Plate. See separate drawing.

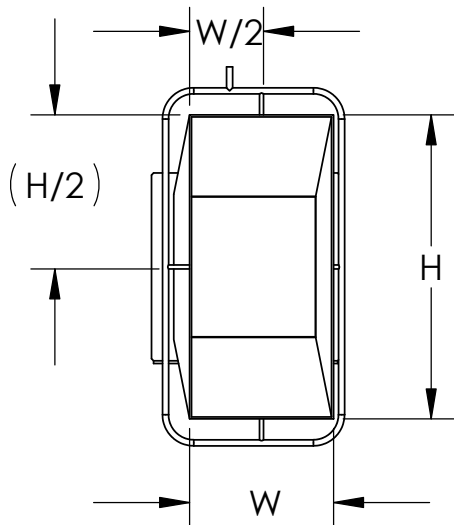
View from Top



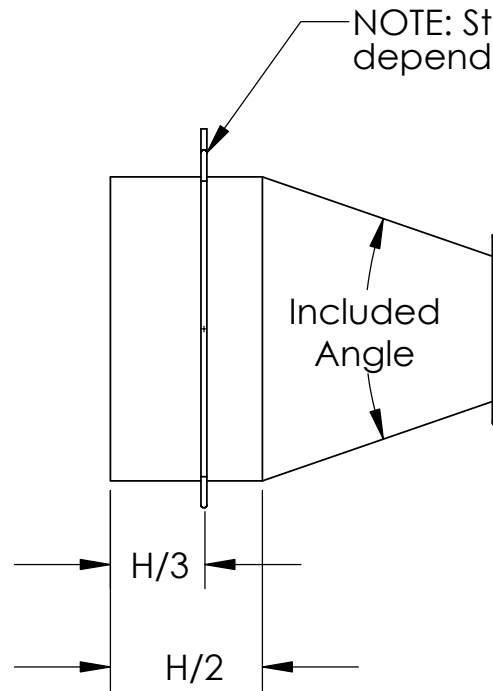
Piezometer Ring ties together (4) static taps.

Offset may be needed to avoid interference between inlet/outlet plates.

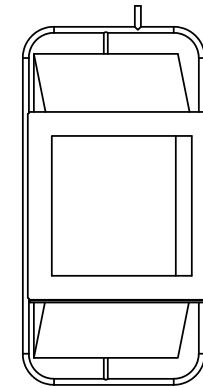
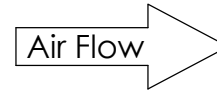
NOTE: Static tap location is dependent on flow direction.



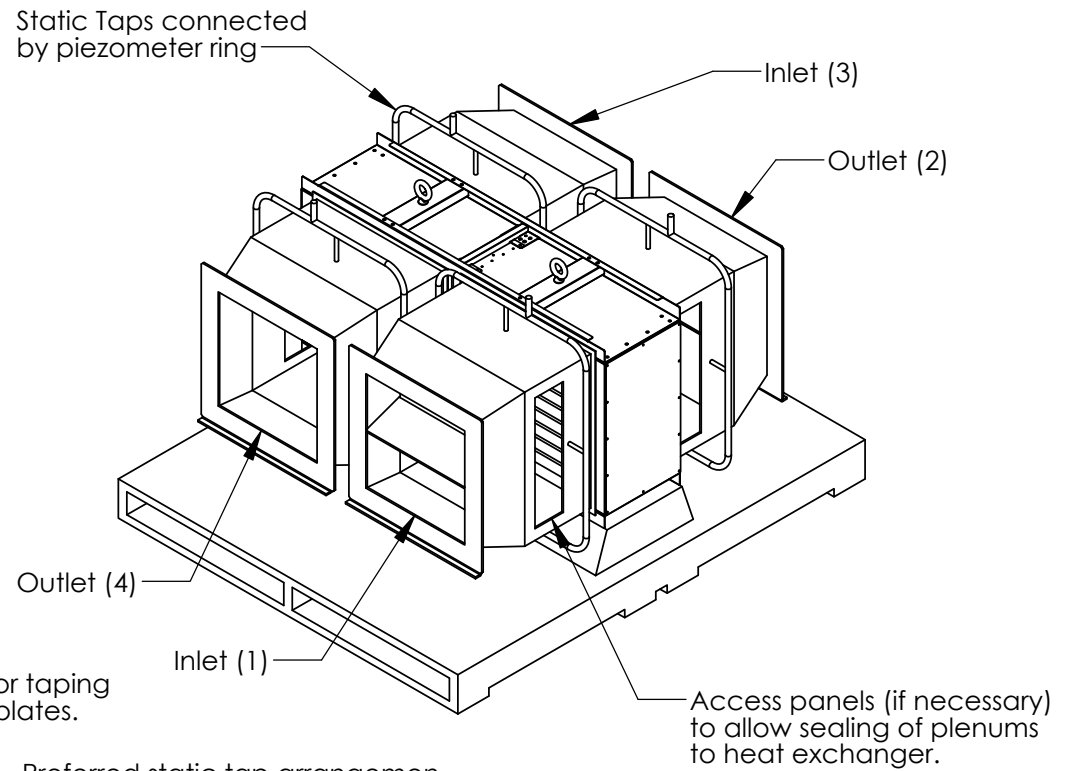
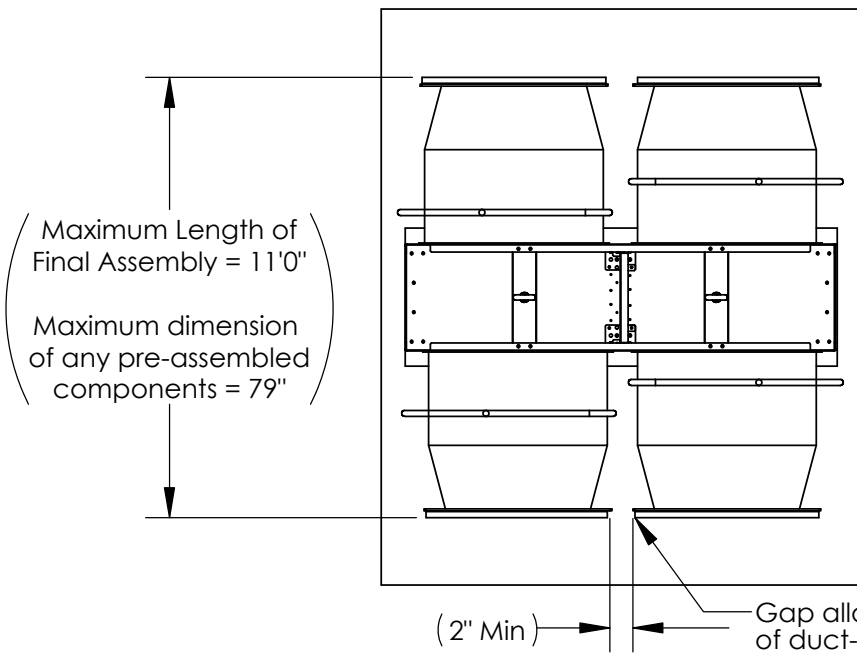
View from Exchanger end



View from Side



View from Hose-end Plate

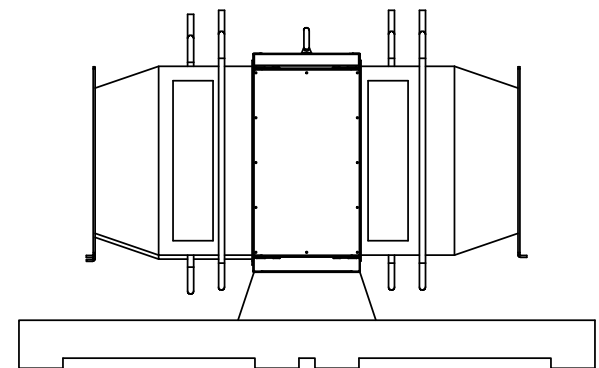
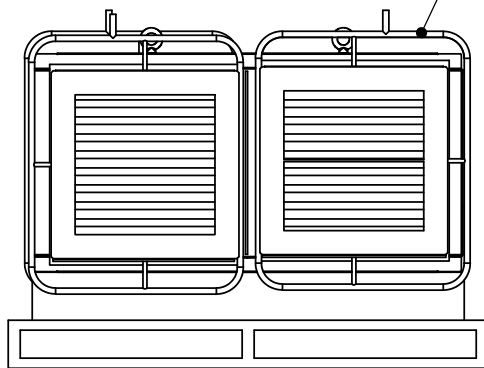


See separate drawings for standard sizes of inlet/outlet plates and proportions of plenums.

NOTE: location of static taps in plenum is dependent on flow direction.

Preferred static tap arrangement provides (4) taps, one on top of plenum, one on the bottom, and one on each side.

If this is not possible, provide (1) tap on top of plenum and (1) tap on a side of the plenum.

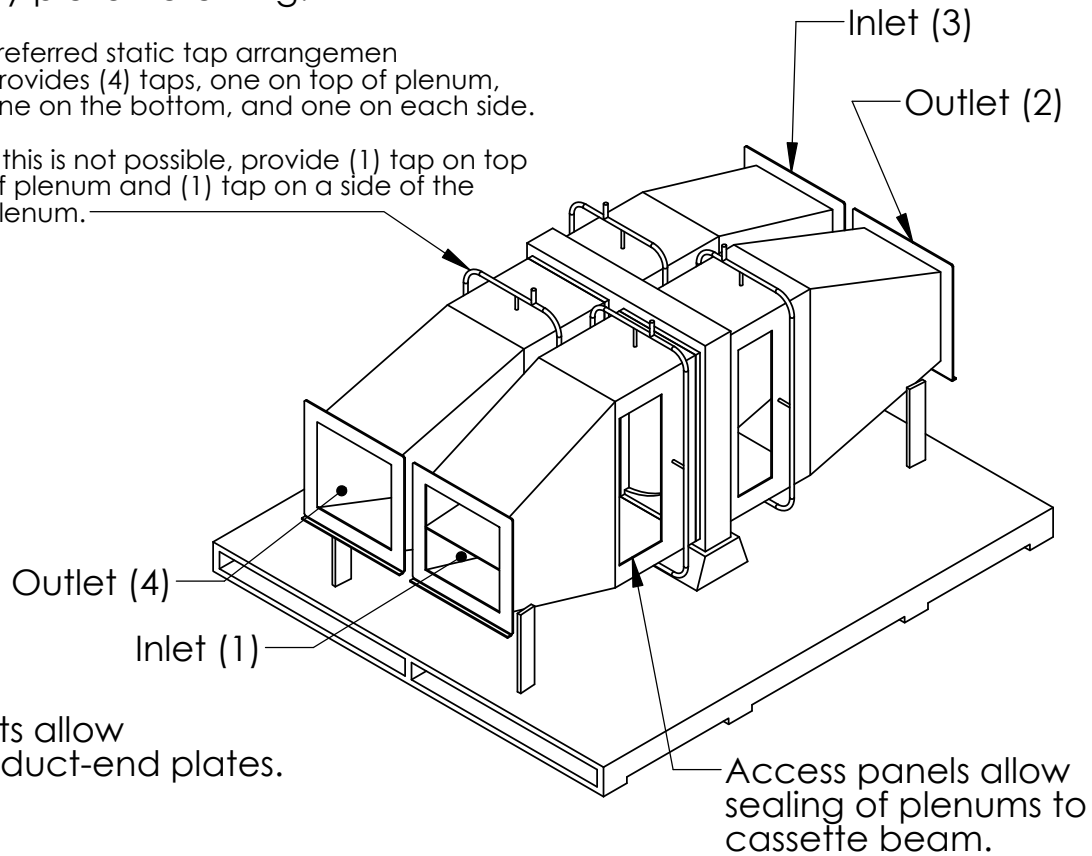


Attach exchanger to Pallet.
Support Plenums.

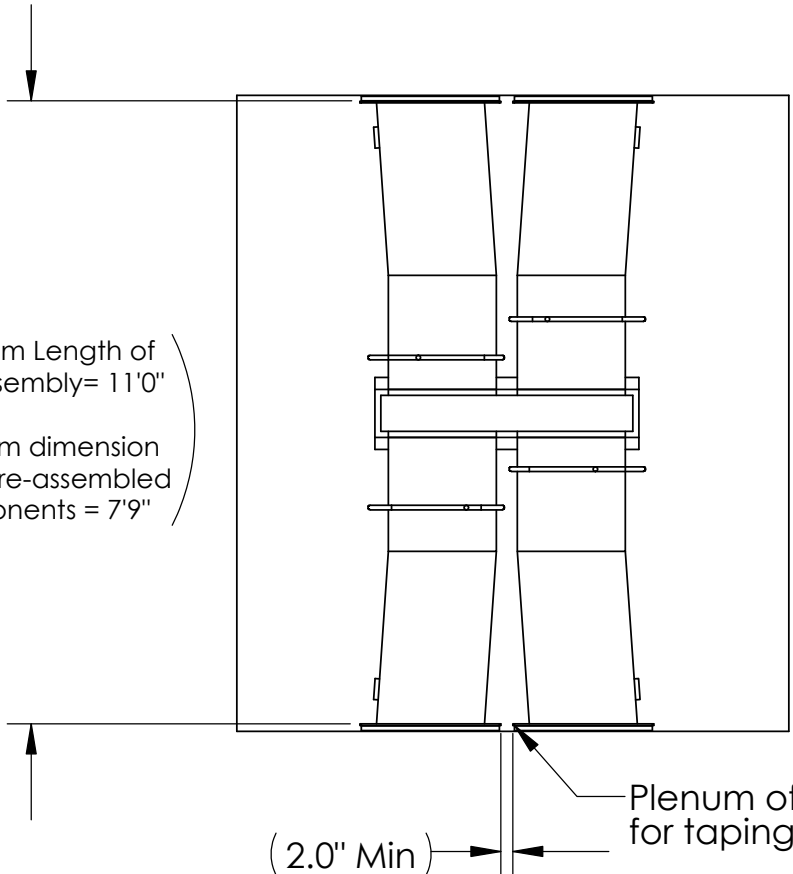
Static taps connected by piezometer ring.

Preferred static tap arrangement provides (4) taps, one on top of plenum, one on the bottom, and one on each side.

If this is not possible, provide (1) tap on top of plenum and (1) tap on a side of the plenum.

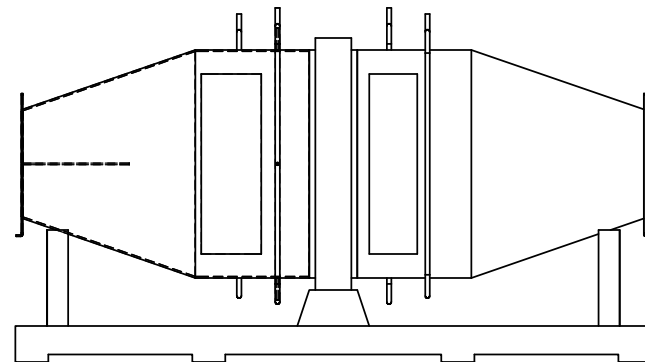
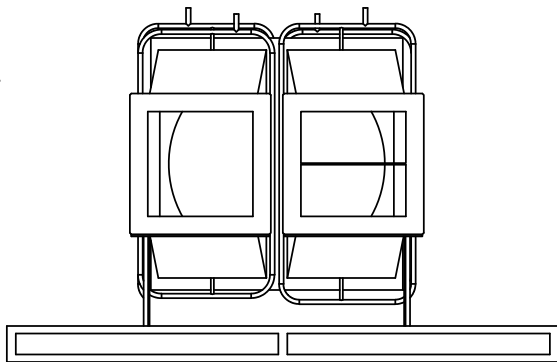


(Maximum Length of Final Assembly = 11'0")
(Maximum dimension of any pre-assembled components = 7'9")

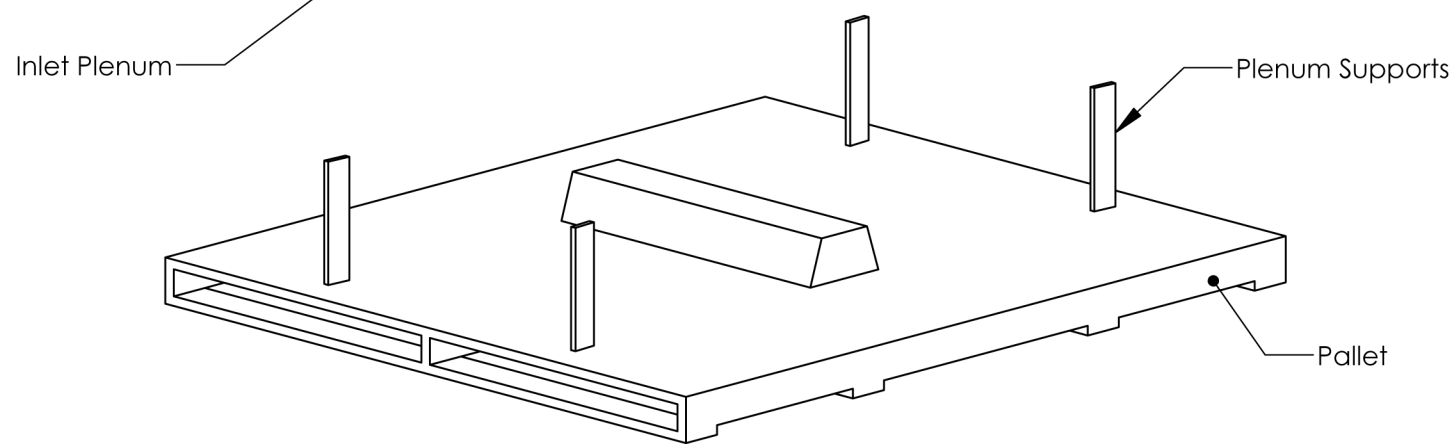
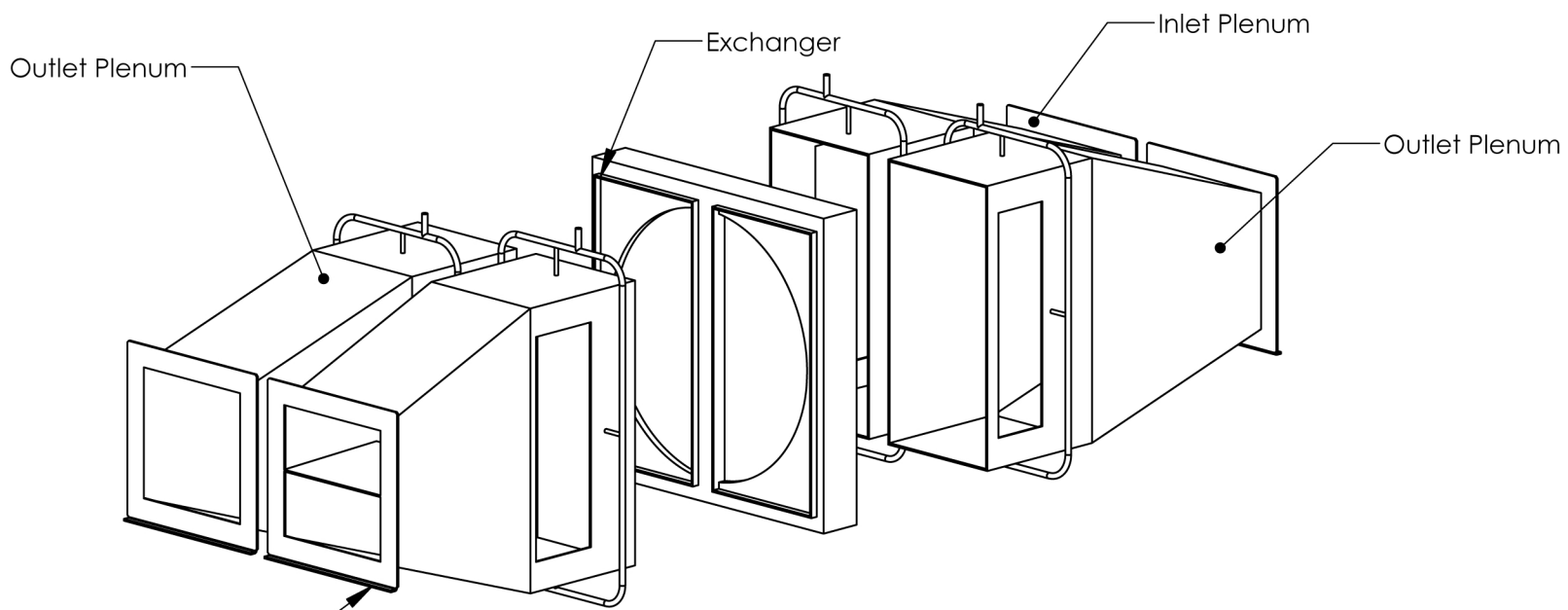


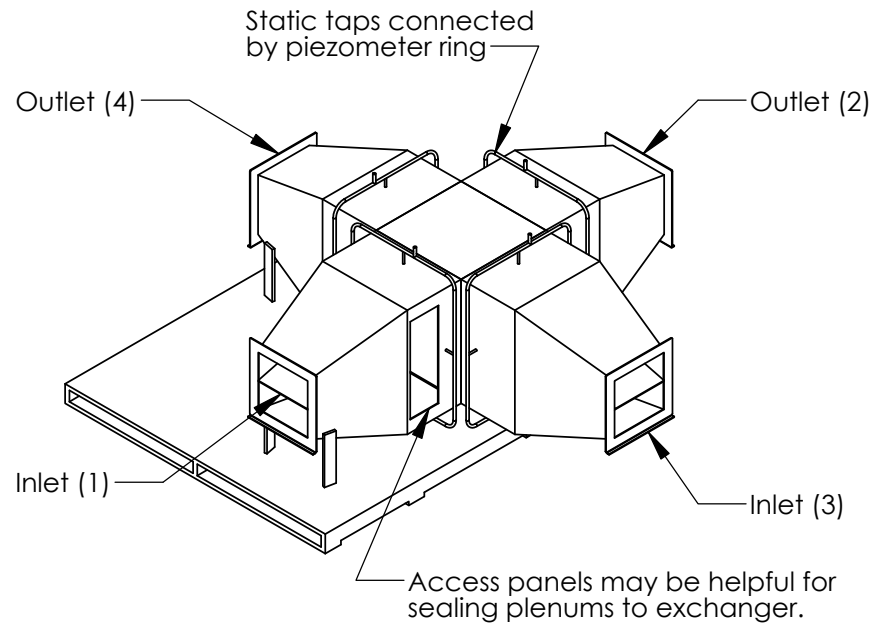
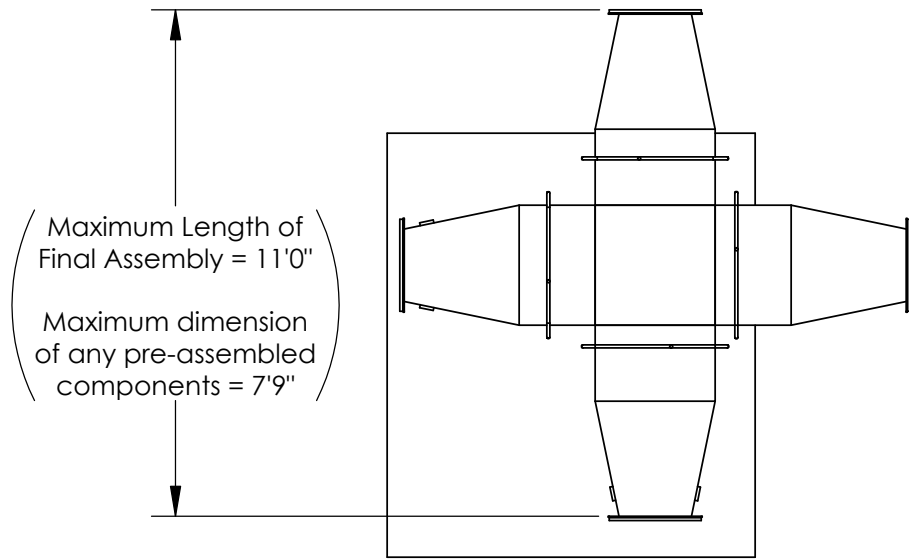
See separate drawings for standard sizes of inlet/outlet plates and proportions of plenums.

NOTE: location of static taps in plenum is dependent on flow direction.



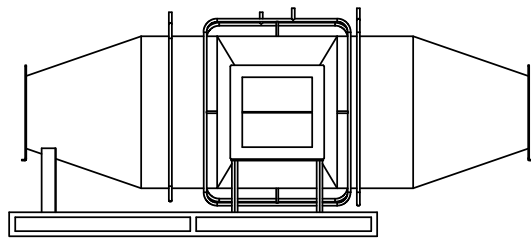
Attach exchanger to Pallet.
Support Plenums.





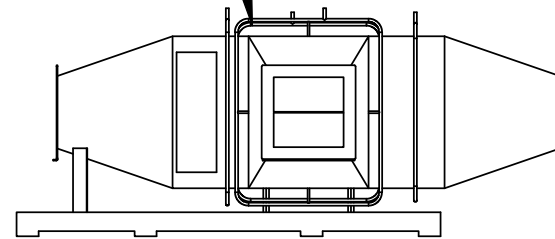
See separate drawings for standard sizes of inlet/outlet plates, recommended proportions of plenums, and locations of static taps.

NOTE: location of static taps in plenum is dependent on flow direction.



Preferred static tap arrangement provides (4) taps, one on top of plenum, one on the bottom, and one on each side.

If this is not possible, provide (1) tap on top of plenum and (1) tap on a side of the plenum.



Attach exchanger and plenums to pallet. Support plenums. With large samples (as shown) it may be necessary to ship some of the plenums separately.

