



Multi-Tube Steam Dispersion Panel Assembly and Installation Instructions

This bulletin should be used by experienced personnel as a guide to the installation and maintenance of the Armstrong ExpressPack. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or its local representative if further information is required.



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Preliminary Procedures

The following instructions cover the assembly and installation of the Armstrong ExpressPack®. The ExpressPack is a short absorption steam dispersion panel used in conjunction with an atmospheric steam generator (Armstrong's HumidiClean® Series HC-6000 series, Series CS-10, Series GFH, and/or Series EHU-700). When shipped, all sizes of the ExpressPack will come disassembled with the following:

ExpressPack (duct mounted or if steam header is mounted outside duct or tunnel) Contents:

- Header Assembly
- Dispersion Tube Assembly
(qty depends on number of tubes)
- Cover Plates (2 cover plates required per tube assembly)*
- Outboard Tube Support Plate
- Hose Cuff (1 required per tube assembly)
- Hose Clamps (2 required per hose cuff)
- Bolts ((1) for each tube assembly, (2) for attaching tube support plate to roof of duct along with (2) nuts)
- Flat & Lock washers (1 for each tube)

**If mounting in air handler (or mounting with header inside of air flow) then the cover plates are not included.*

Step 1: Check Shipment Against Packing List.

All components are listed on the packing slip. Report any shortages immediately. If the ExpressPack components have been damaged in transit, notify us and file a claim with the transportation company. If your order covers more than one package, segregate each complete assembly. Equipment tagging will be the same as shown on the packing list.

Note: ExpressPack is shipped disassembled.

Step 2: Check Local Codes.

The Armstrong ExpressPack should be installed in accordance with all applicable building, plumbing, and electrical codes.

Step 3: Find ExpressPack Panel Location.

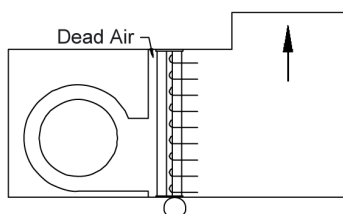
Locate all ExpressPack equipment according to the engineer's layout or as indicated by your Armstrong Representative. If you must locate the ExpressPack yourself, be sure to read and observe the "Do's and Don'ts" to follow. If locating the ExpressPack in the existing duct work it is best to locate it near a joint so that it can be easily accessible.

Step 4: Steam piping from steam generating humidifier.

If the ExpressPack steam header is to be located below the steam discharge of the humidifier, please install a "P" trap in the steam supply just prior to the ExpressPack inlet. Please consult the Installation, Operation and Maintenance bulletin for your specific humidifier for detail concerning the "P" trap, suggested steam supply piping length, diameter, pitch, trapping and installation.

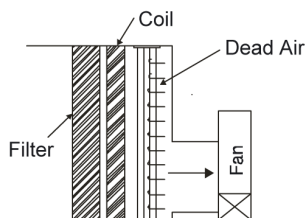
Do's & Don'ts of Location and Installation

All recommendations for the application of the Armstrong ExpressPack® are based on tests and field experience. However, these recommendations are based on duct air velocities and temperatures that are most commonly encountered, and the recommendations may have to be modified when air flow velocities are very high and/or air temperatures unusually low. We also reserve the right to modify recommendations without notice if subsequent tests or experience indicate that a change should be made. For these reasons, we urge you to check all applications with your Armstrong Representative before installation.



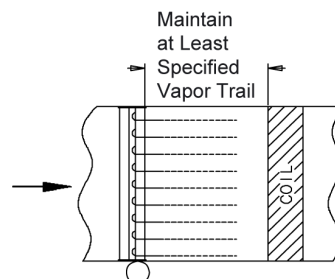
Don't

Figure 2-1. The ExpressPack must have airflow across the entire cross-section. Avoid fan discharges without gradually transitioning the duct to the ExpressPack.



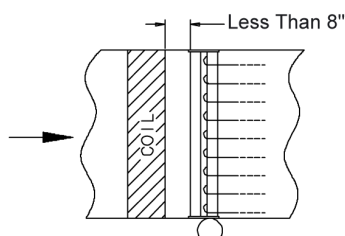
Don't

Figure 2-2. The ExpressPack cannot have dead air space off the discharge side. When discharging into a fan intake plenum, allow for vapor trail length then gradually transition the duct.



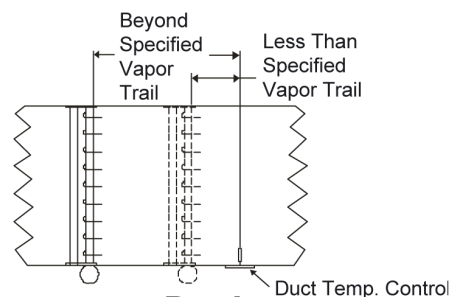
Do

Figure 2-3. Coils, duct transitions and other obstructions must be kept at least the specified vapor trail (non-wetting distance) length downstream from the ExpressPack. This does not apply to high efficiency filters. Consult factory on these applications. Also, please note that smoke detectors should be located outside of the visible vapor.



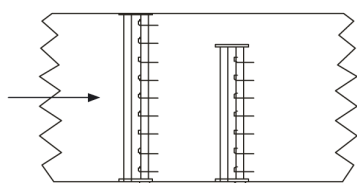
Don't

Figure 2-4. Eight inch clearance (Min.) should be maintained on discharge side of coils.



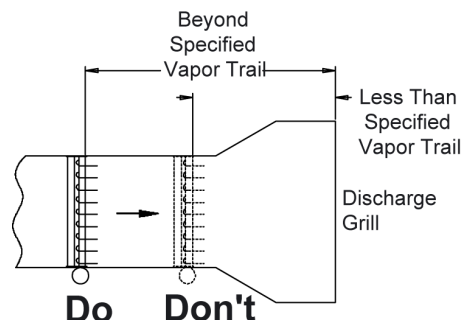
Do Don't

Figure 2-5. If temperature controlling devices must be placed directly downstream from the ExpressPack, all visible vapor must be absorbed. This may be a longer distance than just the specified vapor trail (non-wetting distance). Consult factory if questionable applications arise.



Do Don't

Figure 2-6. All airflow must be directed through ExpressPack. If ExpressPack is smaller than the duct cross-section, ExpressPack should be positioned in center of duct and all open area should be blocked off.



Do Don't

Figure 2-7. When installing the ExpressPack directly upstream from a discharge grill, the minimum distance shall be the specified vapor trail. It should be noted that visible wisps of vapor can still be seen even though the length is beyond the vapor trail. This vapor will not condense on the grill, but may be seen in the room space.

Assembly and Installation

Step 5: ExpressPack® Panel Insertion & Assembly

The ExpressPack consists of the header, tubes, support plate, cover plates and hose cuffs. All of the components will be shipped loose. So following these detailed instructions becomes very important for proper installation.

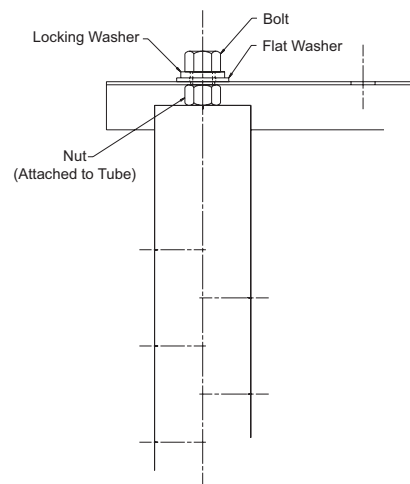
If mounting the ExpressPack in an application with steam header outside the face area, please follow these instructions.

1. Use Header Assembly as a guide to trace the location and size of the holes needed for the tubes of the assembly to slide through the bottom of the duct. The holes should be centered in the airflow so that the distance from the side of the duct to first tube and the side of the duct to the last tube is equal.
2. Slide the tubes through those holes and connect to the support plate using the supplied 3/8 - 16 x 1/2" bolts, washers and locking washers. Be sure when attaching the tubes to the support plate **that the holes on tubes stay perpendicular to the air flow**. See Figure 3-1.
3. Attach the support plate to the top of the duct using the two mounting holes shown in Figure 3-2. A level may be used here to insure that the tubes are plumb.
4. With the open end of the tubes exposed **through the bottom of the duct** the header assembly can be attached to the tubes using the supplied hose cuffs. Depending on the application these hose cuffs may need to be cut in order to fit properly.
5. Securely mount the header assembly in place using the support bracket on the opposite end as the inlet. The inlet side of the header can be secured to the bottom of the duct using galvanized slotted strap. Make sure that the header is mounted level horizontally.
6. With everything securely assembled the cover plates can be added to cover the open area around the bottom of each tube. There will be (2) plates for each tube and each plate will require (2) zip screws to hold in place. Refer to Figure 3-3 to see final assembly.

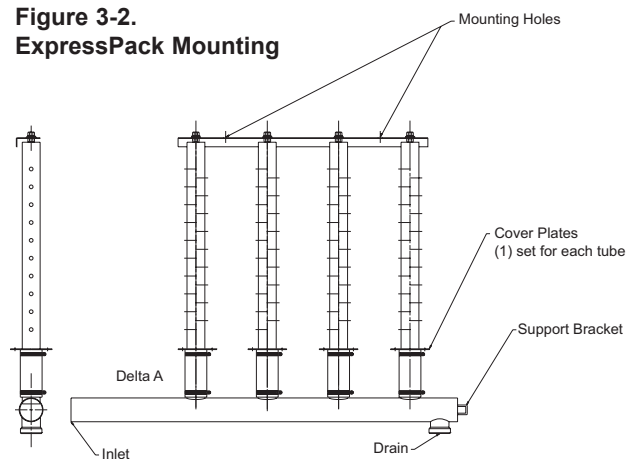
If mounting the ExpressPack in an Air Handler or in an application where the header is required to be inside the face area please follow these instructions:

1. Assembling the ExpressPack. This may have to be done inside the face area because of the final size of the panel. Connect the tubes to the support plate using the 3/8 - 16 x 1/2" bolts, washers, and locking washers supplied. Be sure when attaching the tubes to the support plate that the holes on tubes stay perpendicular to the air flow.
2. Attach the header assembly to the tubes using the provided hose cuffs. Depending on the application these hose cuffs may need to be cut down in order to fit properly.

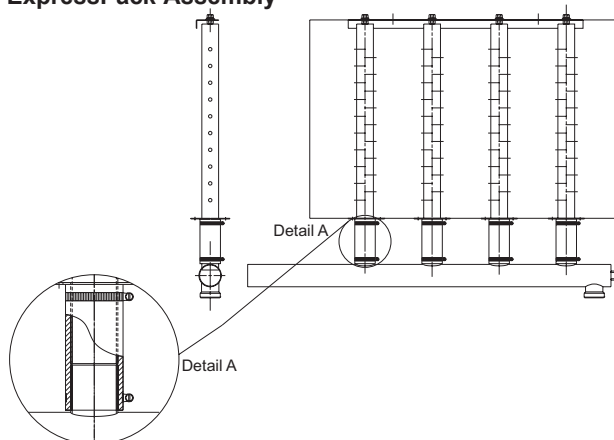
**Figure 3-1.
ExpressPack Bolt Assembly**



**Figure 3-2.
ExpressPack Mounting**



**Figure 3-3.
ExpressPack Assembly**



3. Stand the panel up and mount in the center of the air flow. See Figure 3-2 for mounting hole locations. Threaded rod can be used to hang the panel from the mounting holes in the support plate as well as for the attaching to the support bracket. It is recommended by the factory to also support the inlet end of the header with some sort of block or channel to hold it up in place.
4. For installation with the steam header inside the tunnel or duct, cover plates are not required.

Please Note: Ceramic coated tubes are an option for the ExpressPack®. If included, care must be taken during installation to prevent damage to the coating.

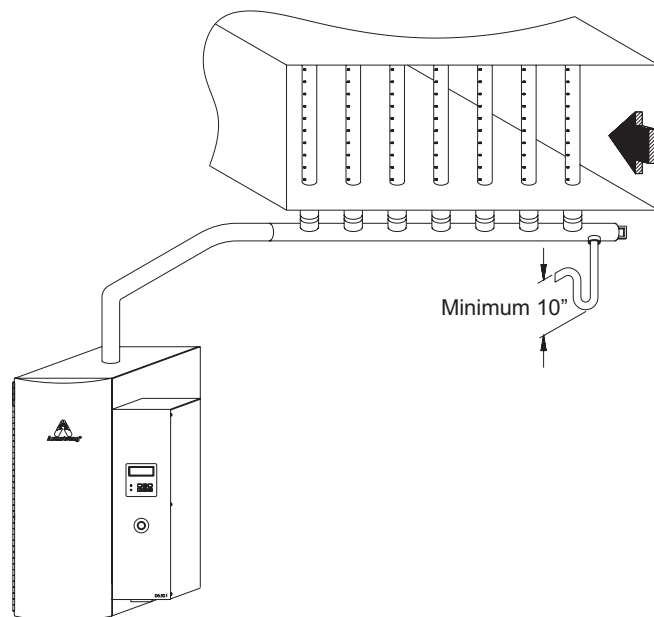
Installation Concepts

Condensate Drainage Options

Condensate discharge from the ExpressPack is at atmospheric pressure. Thus the condensate must be discharged to a drain or pumped. On any application, an attempt to lift condensate even a few inches will lead to potential flooding or spitting problems from the multiple tube bank.

The ExpressPack is to only be use with atmospheric steam. So when installing for use with an atmospheric steam generator, minimize the length of piping run from the humidifier to ExpressPack. Piping should not extend longer than 40 equivalent feet and should be sized according to the output of the steam generator. Slope piping back towards humidifier or toward a drainage point. Pipe a loop "P" trap to an atmospheric drain at any low points in piping run. Install, at a minimum, a 10" loop seal from the ExpressPack header drain connection. Please consult the installation manual for the steam generator or the factory with questions.

Figure 4-1.
ExpressPack Vertical Installation with Series HC-6000
(please refer to Bulletin 539 for detailed installation information)



Troubleshooting Guide

1. ExpressPack "Spitting"

- A. Lift or back pressure after "P" trap is causing the panel to flood.
- B. Supply steam not properly dripped.
- C. Top of loop seal is above the header of the panel.
- D. Condensate is not discharged to an atmospheric drain or a vented receiver.
- E. Carry over from steam generator.

2. Low or no steam output

- A. Loop seal on drain is not big enough and steam is blowing through.
- B. Supply piping is not trapped properly.
- C. Panel is undersized for required steam output - consult factory.
- D. Pipe run from steam generator is longer than 40 equivalent feet.
- E. High static pressure in the duct.
- F. Steam Generator not putting out required steam; consult the steam generating humidifiers Installation, Operation and Maintenance manual.
- G. Holes must be perpendicular to the airflow.

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Limited Warranty and Remedy

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Special Warranty Periods are as follows:

Series EHU-700 Electric Steam Humidifier, Series HC-6000 HumidiClean Humidifier and
GFH Gas Fired Humidifier with Ionic Beds:

Two (2) years after installation, but not longer than 27 months after shipment from Armstrong's factory.