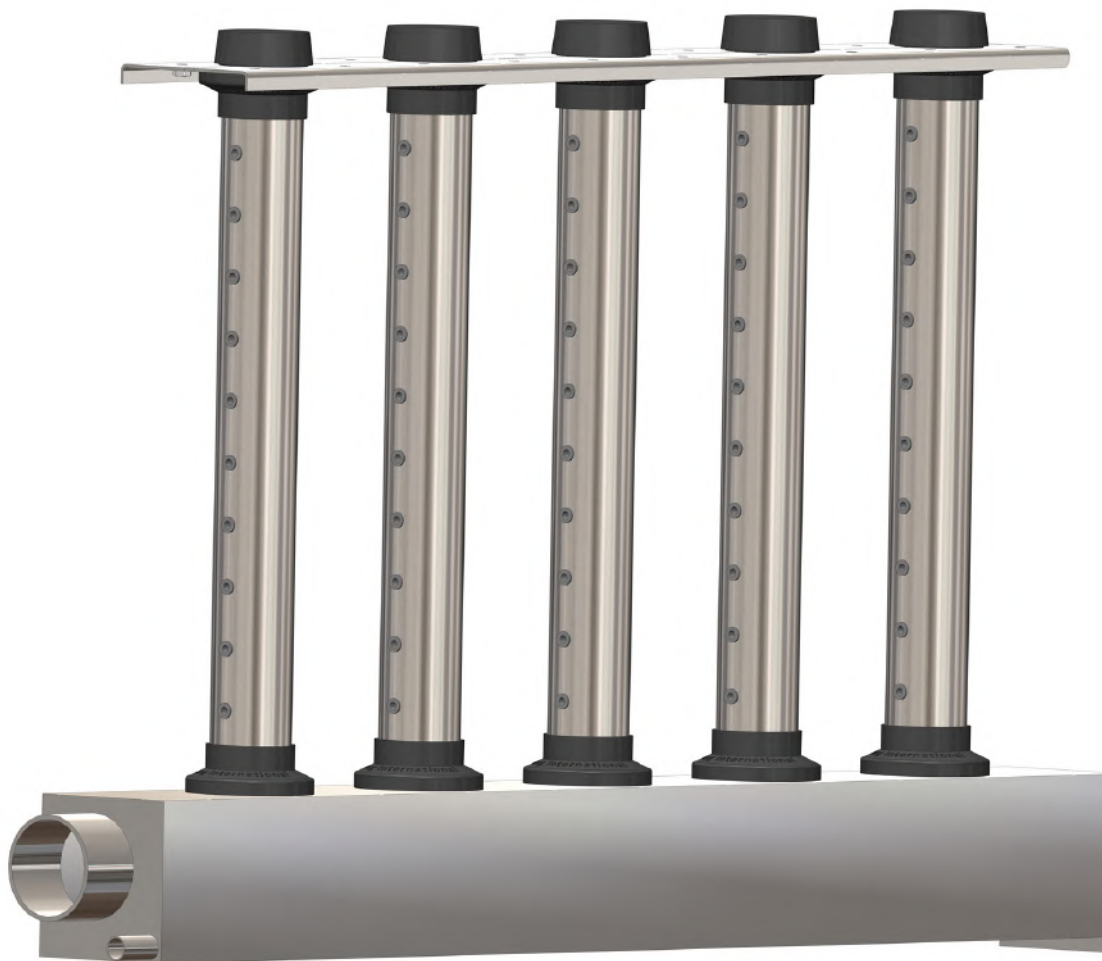


ExpressPack®

Installation and Operation Manual



Armstrong

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General Safety Information

You recently purchased the ExpressPack®, and we hope you enjoy this product. Thank you for the trust you place in us. The safety instructions contained in this manual are intended for qualified personnel which are certified and authorized to commission, operate and maintain the device.

To get the best results from your device, we recommend to:

- Read carefully the assembly and installation instructions in this manual;
- Keep this manual in a safe place for future reference;
- Transmit this manual in case of sale or transfer of the device, in order to guarantee the transmission of information about it;

SAFETY WARNINGS AND SYMBOLS USED IN THE MANUAL



Danger of scalding !

The ExpressPack® uses steam during the operation and therefore surfaces and pipe-work become very hot. Ensure that equipment not sustaining high temperatures be kept away.



Möbius strip.

Some components of the device are recyclable, the user is responsible for the removal of these.

- If your package is damaged or missing, please make a complaint to your carrier with a receipt acknowledgment letter within 24 hours, and make a declaration to your Armstrong agent.
- Pictures, graphics, and values may be subject to technical changes without notice.
- Keep this instruction manual carefully, and if you have any questions that are not answered in this manual, do not hesitate to contact us or consult your Armstrong agent.

Our team will be pleased to be of assistance !



General Safety Information

GENERAL	<p>This manual contains all the details concerning the commissioning, operation and maintenance of the ExpressPack®.</p> <p>Maintenance, service, repairs, as well as the study of the risks and dangers associated with these operations must be carried out by qualified, competent and authorized personnel.</p> <ul style="list-style-type: none">- Make sure that all risks or dangers are defined beforehand by an authorized person, especially for works-at-height.- We also recommend installing a security perimeter.- Make sure that the steam output of the humidifier is turned off before any maintenance.- Please screw periodically all the connection terminals of the power cable.
INTENDED USE	<p>The ExpressPack® manufactured by Armstrong - Devatec is intended solely for humidification purpose, in air treatment station or in air flow. The user undertakes to use it according to the safety instructions given in this manual.</p> <p>Improper use could result in serious hazards and damages to the user, third parties and materials.</p>
STORAGE	<p>The device must be stored in a dry, frost-free place, protected from shocks and vibrations.</p>
WARRANTY	<p>The group Armstrong International S.A., guarantees that its devices are one (1) year warranty. Armstrong's liability will be limited exclusively to Armstrong's repair or replacement of the part or product, excluding labor, disassembly or installation costs. Armstrong may also decide to refund the purchase price of the product or part of it, at its discretion. The non-compliance of these above recommendations, additional mounting and/or transformation with components other than those provided with the device or any use other than what is explicitly stated, shall be considered as not in compliance with the prescriptions, and will invalidate the warranty.</p>
LIABILITY	<p>Armstrong shall be not made liable for the consequences of incorrect installation, improper use of the devices and/or their components.</p> <p>We are committed to provide you the most complete manual, although, in the air treatment field, variations are so common that the information found in this document may be subject to changes without notice.</p>



Product Information

The ExpressPack® is a prefabricated multi-tube steam dispersion system, allowing an atmospheric dry steam diffusion into a duct or air handling unit.

This system consists of well positioned tubes, which provide a reduced steam absorption distance, while being more efficient than conventional dispersion tubes.

The ExpressPack® is suitable for any type of humidifier producing atmospheric steam.

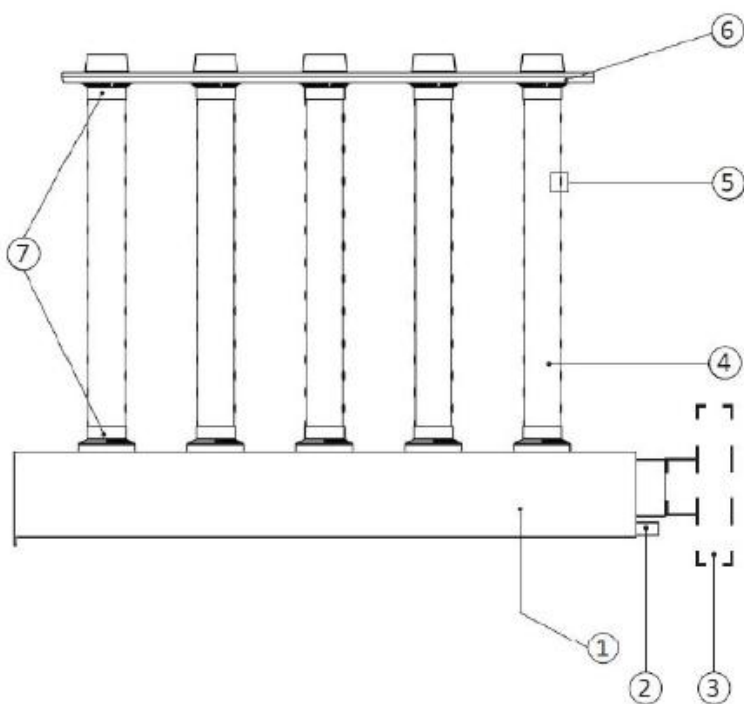
STEAM : the steam produced through our ExpressPack® is dry and uniformly dispersed over the whole evaporation area.

MATERIAL : the header and dispersion tubes of our ExpressPack® are made in stainless steel. The grommets are made in elastomer.

NOZZLES : each tube includes two rows of diametrically opposed nozzles. Nozzles extend inside the dispersion tube to insure the evacuation of the steam coming from the central part of the tube, where it is the hottest, to avoid condensation and water spitting.

EXPRESSPACK® COMPONENTS COULD BE SHIPPED LOOSE FOR FIELD ASSEMBLY, MINIMIZING INITIAL COST.

Figure 1. ExpressPack® and Bill of Materials



No. ARTICLE	DESCRIPTION
1	Header
2	Condensate outlet
3	Flange (optional)
4	Dispersion tube
5	Nozzles
6	Mounting rail
7	Grommets



Product Installation

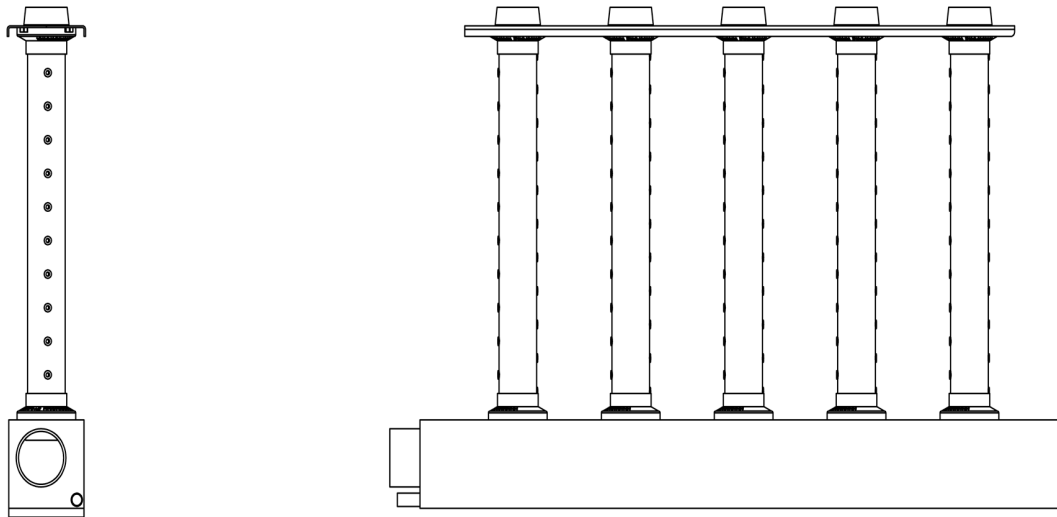
Used only in the case of a horizontal air flow, the collector must be placed horizontally, while the dispersion tubes must be placed vertically. The ExpressPack® can be located in the air handling unit or inside the duct.

For more convenience, we recommend you to install the ExpressPack® near the duct access. Please minimize the distance between the humidifier outlet and the steam inlet of the ExpressPack® (see page 10).

Thanks to the steam injection nozzles, perpendicular to the air flow, the ExpressPack® adapts perfectly to high air speeds (Maximum speed: 15 m/s).

The header is equipped with a Ø13 mm outlet which ensures optimum condensate evacuation.

Figure 2. 2D front view / side view



Do.s & Don.ts of Location and Installation

All recommendations for the application of the Armstrong ExpressPack® are based on tests and field experience, observed with the most common operating conditions. For this reason, these recommendations may differ depending on variations in air speed and temperature. We also reserve the right to modify recommendations without notice if subsequent tests or experiences indicate that a change should be made.

See figures from 3-1 to 3-7 (page 8).

In case of doubt, do not hesitate to contact your Armstrong agent.

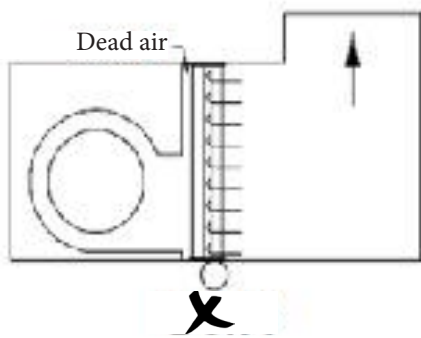


Figure 3-1. The ExpressPack® must be placed at a minimum distance of 500 mm from the fan. To avoid stagnant air, do not place the ExpressPack® directly at the fan outlet.

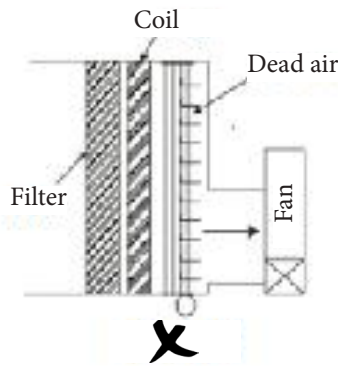


Figure 3-2. Each ExpressPack® tube must be positioned in a flow of air. Please, make sure the absorption distance is met.

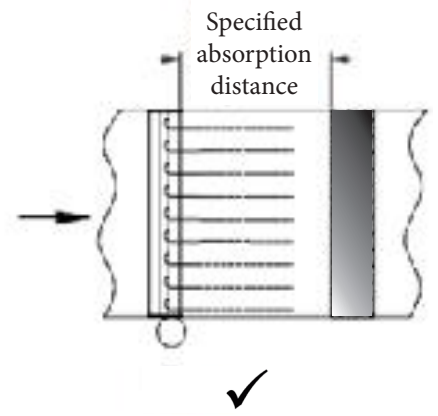


Figure 3-3. Respect the specified absorption distance between the ExpressPack® and the first obstacle or the transition of the duct.

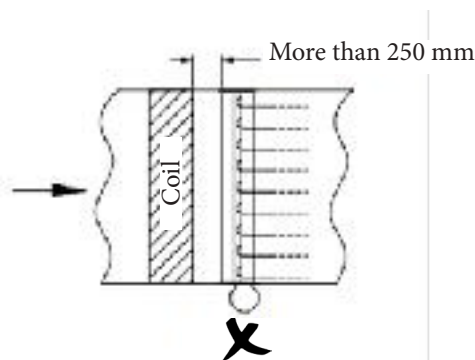


Figure 3-4. A 250 mm distance (Min.) should be maintained from discharge side of coils.

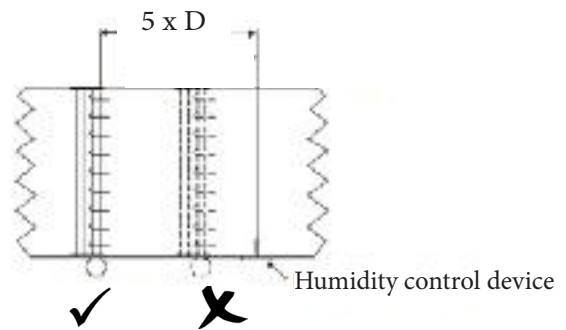


Figure 3-5. If you install a humidity control device, please observe a safety distance of $5 \times D$ between the device and the ExpressPack®. «D» being the absorption distance.

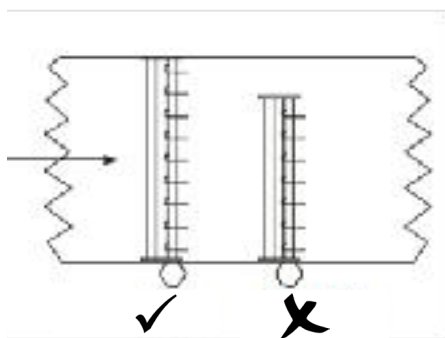


Figure 3-6. All airflow must be directed through ExpressPack®. If ExpressPack® is smaller than the duct cross-section, ExpressPack® should be positioned in the center of the duct and all open areas should be blocked off.

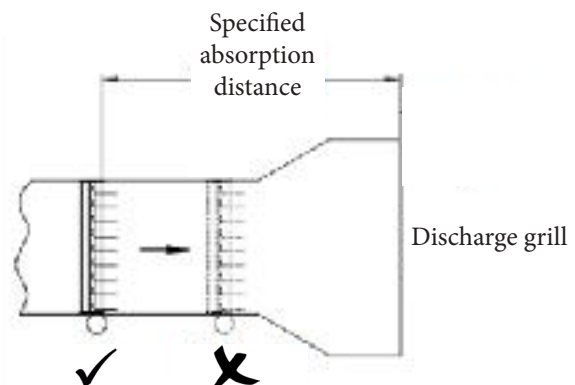


Figure 3-7. When installing the ExpressPack® directly upstream of a discharge grill, respect the absorption distance. It should be noted that «visible steam» could be observed, even if a bigger absorption distance is met. This is normal and this steam will not condense on the grid.

Installation methods

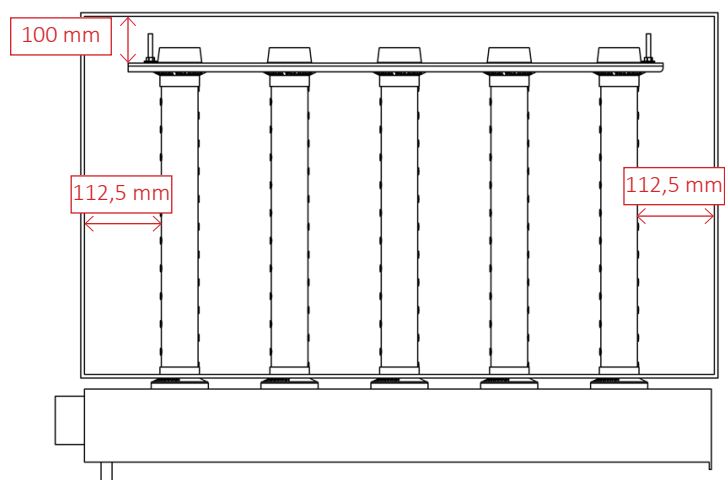
According to the purchased ExpressPack® standard, there are two different installation methods:

Header located outside the duct*

Mount the header with grommets under the duct.

If the ExpressPack® is located outside the AHU, the dispersion tubes have to be assembled directly into the AHU/duct.

Figure 4-1. Header located outside the duct

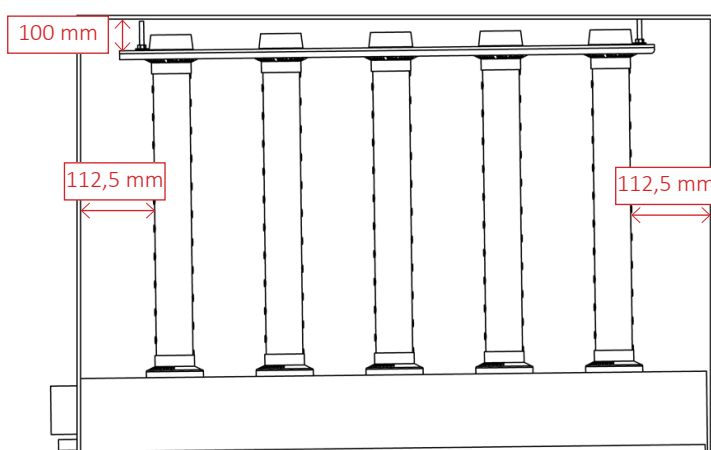


* It is necessary to support the manifold adequately to the weight of the installation (by using a «U» shaped support bracket, mounting rails...).

Header located inside the duct

It is necessary to introduce the ExpressPack® previously assembled, before fixing its upper part.

Figure 4-2. Header located inside the duct



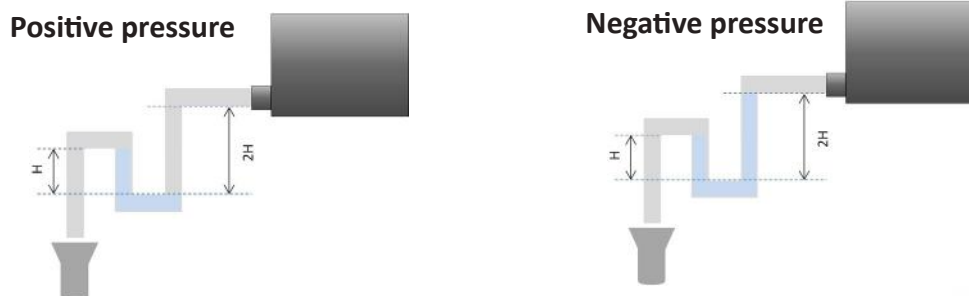
Water seal for condensate drain

In order to avoid any water spitting or steam leakage problem, make sure that there is a water seal with a siphon, like in the example below.

Remember to connect the condensate drain to the waste water system.

Illustration 4-3. Example of the siphon installation

The drain must be equipped with a siphon with water seal (see diagram) or be disconnected from the network and be drained off through a tunnel:



$$H \text{ min. (mm)} = P \text{ (Pa)} / 10$$

with P = absolute pressure of the air handling unit or the ventilation duct
The drain hose must not be directly connected to the public sewerage network.

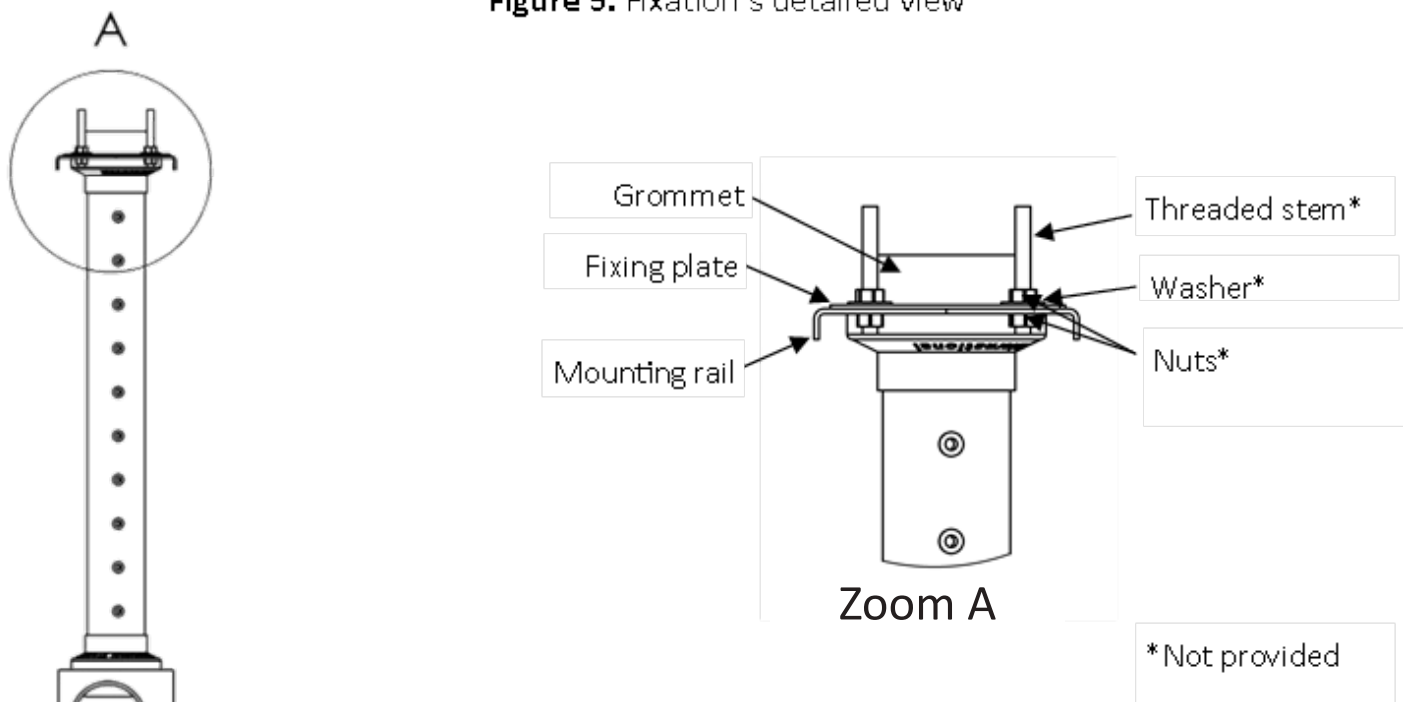
The ExpressPack® is only to be used with atmospheric steam.

So when installing for use with an atmospheric steam generator, minimize the length of piping between the humidifier and the ExpressPack® in order to avoid too much condensation (see the humidifier technical manual).

Piping: For the steam pipe installation, according to your environment, respect the recommendations below and use suitable clamps.

- Flexible steam hose Ø40 or Ø60 mm: length 3 m max.
- Stainless steel or copper tube of a slightly bigger diameter connected to the ground. Use a flexible steam hose cuff to connect the humidifier to the steam distribution pipe. The length of the hose must not exceed 6 m and must be insulated.

Figure 5. Fixation's detailed view



Grommet

Depending on the application, you have two different kinds of elastomer grommets. You will find the «PLUG» grommet (**Figure 6-1. n°4**), positioned on the top of the dispersion tube, and the «STANDARD» grommet (**Figure 6-2. n°2**), always positioned between the lower part of the dispersion tube and the header.

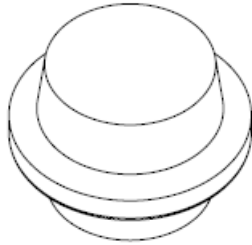


Figure 6-1. « Plug » grommet

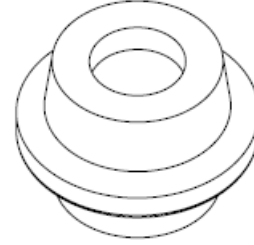


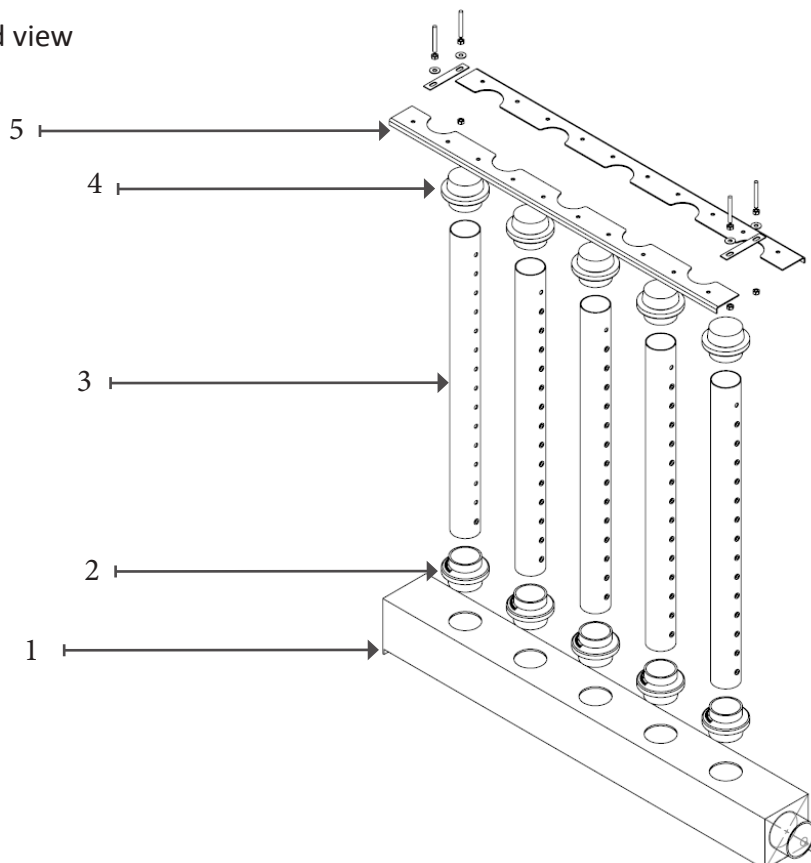
Figure 6-2. « Standard » grommet

Assembly Process

If the ExpressPack® is delivered disassembled, please follow the steps listed below to assemble it:

1. Place the header of the ExpressPack® on a plate surface
2. Put the standard grommets in the header, each grommet in a hole
3. Put the dispersion tube in each standard grommet
4. Put the plug grommets on each dispersion tube
5. Place the fixation rails on each side and lock them out with the fixation brackets

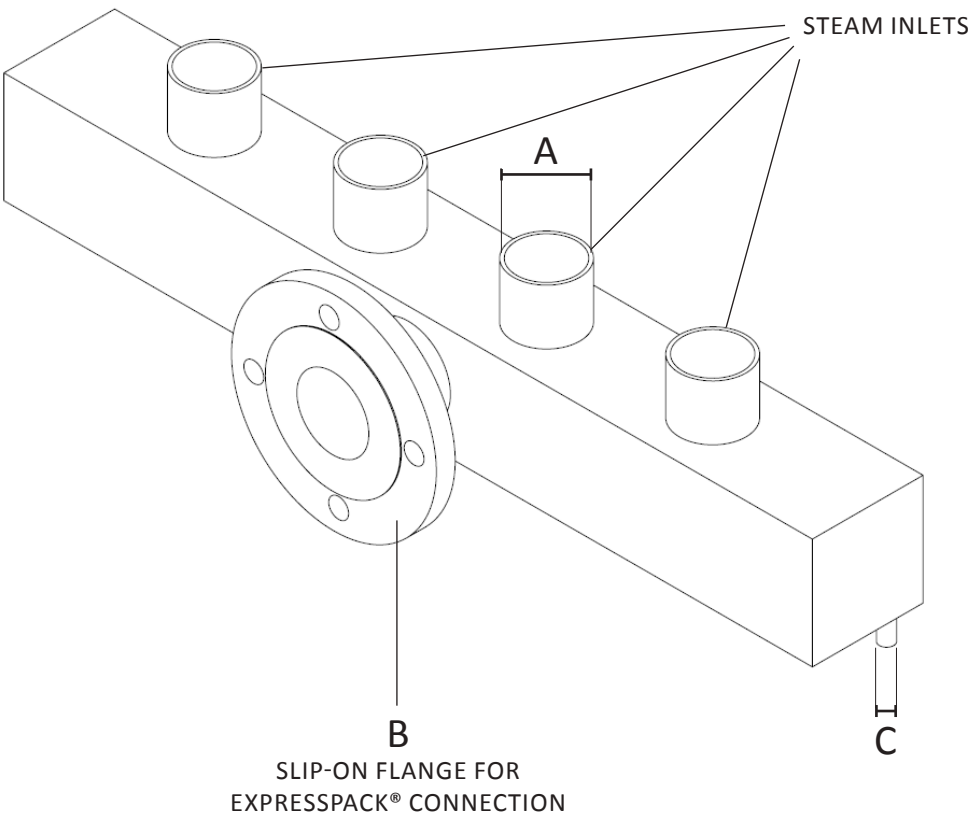
Figure 6-3. Exploded view



Options

If there are many steam outlets or if you want to connect many humidifiers on the same ExpressPack®, you can use a tailor-made flanged steam supply manifold (optional and provided with clamps) in order to collect the steam before it's dispersed by the ExpressPack®

Figure 7. Flanged steam supply manifold



By using a flanged steam supply manifold you can connect between 3 and 8 steam inlets. Remember to choose the «flanged connection» option when you make your order.

REFERENCE POINT	NAME	CHARACTERISTICS
A	steam inlet	Ø 25, 40, 60 mm
B	flange	ND 65 / PN 16
C	condensate	Ø 13 mm



Troubleshooting

1. Water «spitting» from the ExpressPack®

The causes can be :

A. Lift or back pressure after siphon is causing the system to flood.	See chapter «Water seal for condensate drain» - page 9.
B. Top of water seal is above the header of the system.	
C. Condensate is not properly evacuated.	
D. Supply steam is not properly connected.	See the technical manual of the humidifier.
E. Water is carried over from the steam generator.	

2. Low or no steam output

The causes can be :

A. Incorrect realization of the siphon: steam blows through.	See chapter «Water seal for condensate drain» - page 9.
B. High static pressure in the duct.	
C. Supply piping is not connected properly.	
D. Nozzles must be perpendicular to the airflow.	Check and correct.
E. The length of the steam generator hose is bigger than the recommended distances.	See the technical manual of the humidifier.
F. Steam generator not putting out required steam.	
G. The system is undersized for required steam output.	Contact the Armstrong representative.



Limited Warranty and Remedy

Armstrong International, Inc. or the Armstrong division that sold the product (“Armstrong”) warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory, [unless a Special Warranty Period applies, as listed below]. This warranty does not extend to any product that has been subject to misuse, neglect or alteration after shipment from the Armstrong factory. Except as may be expressly provided in a written agreement between Armstrong and the user, which is signed by both parties, Armstrong **DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

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- (i) within 30 days of last day of the applicable warranty period, or
- (ii) within 30 days of the date of the manifestation of the condition or occurrence giving rise to the claim, whichever is earlier. **IN NO EVENT SHALL ARMSTRONG BE LIABLE FOR SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF USE OR PROFITS OR INTERRUPTION OF BUSINESS.**

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