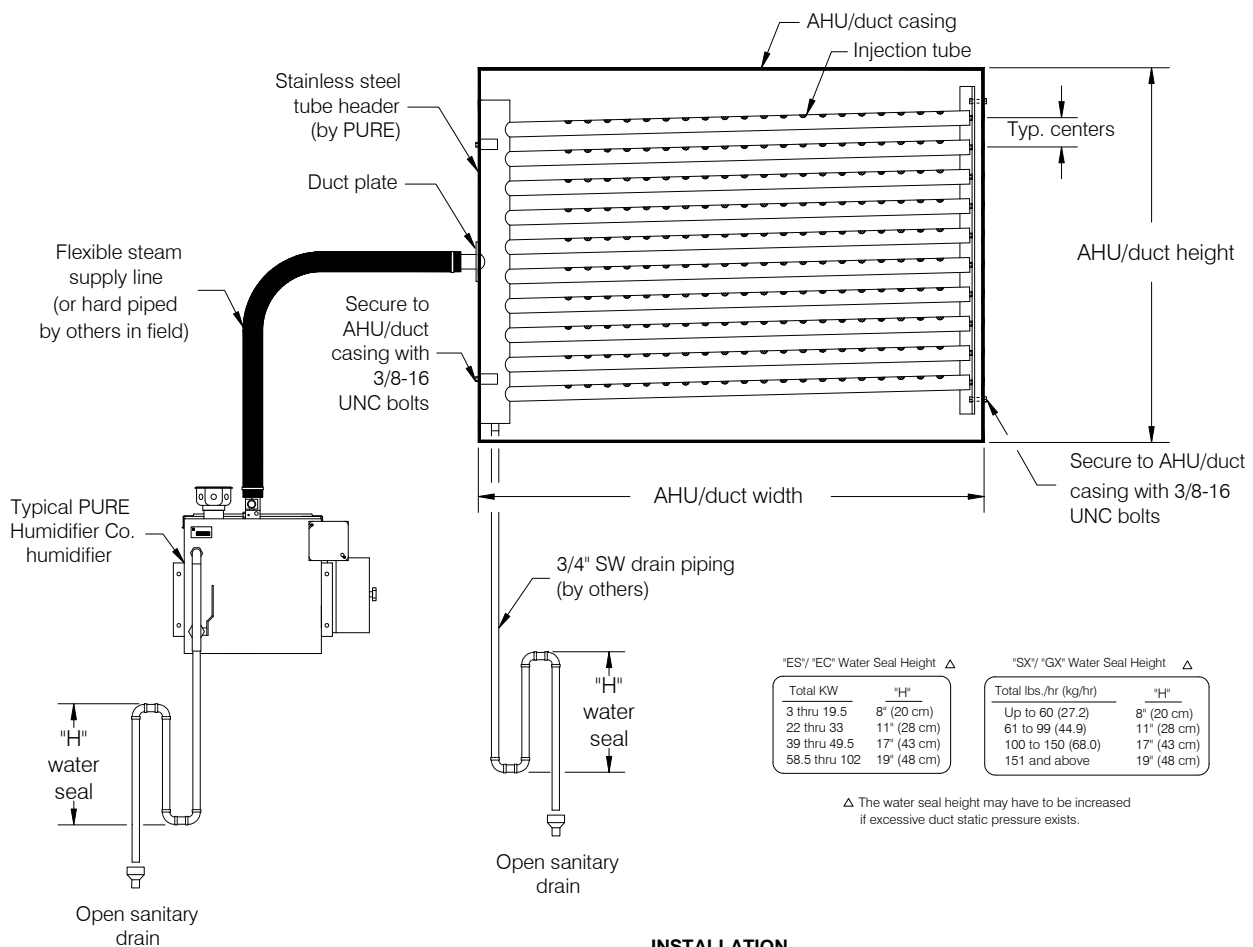




READ AND SAVE THESE INSTRUCTIONS

# WELDED FAST-PAC INTERNAL MOUNT MULTIPLE TUBE ASSEMBLY

## INSTALLATION AND ASSEMBLY INSTRUCTIONS



### INSTALLATION

1. Steam supply piping should be pitched two inches (2") per foot, back to the humidifier.
2. Install tube with orifices injecting steam up.
3. All drain piping is done by others.

## **Welded Multiple Injection Tube Assembly Internal Mounting Instructions**

The Fast-Pac tube assembly supplied with the humidifier(s), is designed for rapid dissipation of steam. The tube assembly is designed for *internal* AHU or duct mounting. ***AHU/duct access must be provided which allows the injection tube assembly to be located internally!*** The injection tube was sized to fit inside the AHU or duct dimensions.

### **VERIFY COMPONENTS**

Unpack the components from the shipping container. Verify all components are checked-off according to the packing list and the *COMPONENTS IDENTIFICATION* drawing (Fig. 2). Report any missing pieces to your local PURE Humidifier Co. representative immediately.

### **LOCATION**

- 1.) Mount the injection tube assembly in the AHU or duct work as shown on the project plans or as indicated by the project engineer.
- 2.) Install the injection tube with the 3/4"-NPT drain connection, located on the tube header, directed towards the bottom of the AHU or duct.
- 3.) Install the tube assembly so that the injection tubes are pitched back towards the header with a minimum of two inches (2") of pitch per foot. (welded assemblies have factory installed pitch).
- 4.) Install the tube assembly with the steam discharge ports facing upwards.
- 5.) The tube assembly should be centered in the AHU or duct height with an even distance between the bottom tube and the casing floor and the top tube and the casing ceiling.

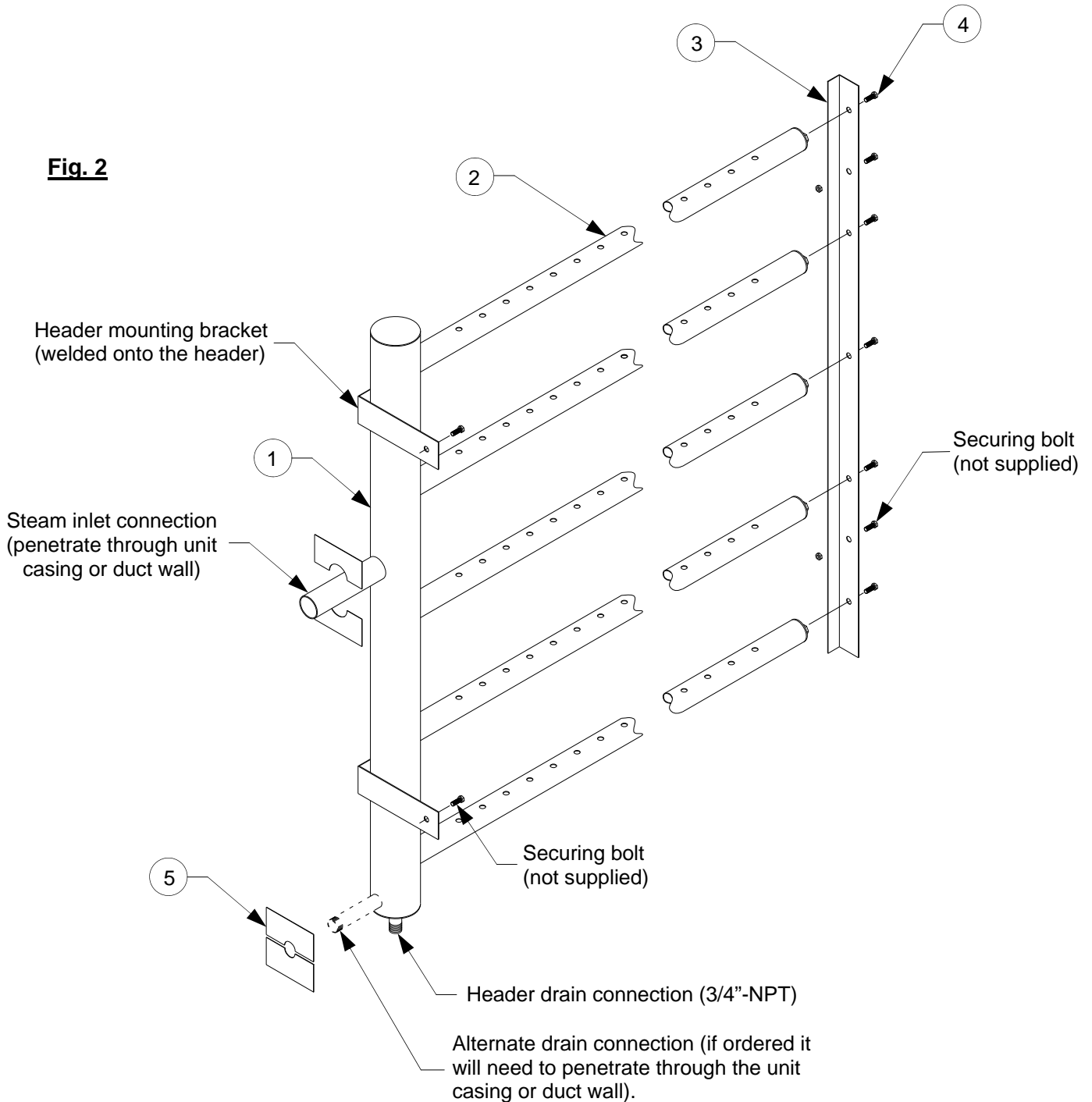
### **MOUNTING**

- 1.) Layout the center lines for the injection tube steam SUPPLY and CONDENSATE connections. The supply connection(s) are 1-1/2" outside diameter and the condensate connection is 1-1/16" outside diameter. Duct plates are provided to seal the opening. The layout should be based on the "Location" instructions listed above (see Fig. 3).
- 2.) Cut a minimum of a 1-1/2" diameter hole, through the AHU or duct wall, for each steam supply connection. If the alternate horizontal condensate drain connection is supplied, cut a 1-1/6" diameter hole through the AHU or duct wall, for the drain connection (see Fig. 3).
- 3.) Install the tube HEADER onto the inside of the AHU or duct wall with the steam supply connections installed through the access holes (cut in the steps above). Secure the HEADER to the AHU or duct wall with 1/4"-20 fasteners (by others). The HEADER is provided with header mounting brackets welded onto the header (see Fig. 2).
- 4.) Secure the TUBE SUPPORT BRACKET to the AHU or duct wall with 1/4"-20 fasteners (by others). The TUBE SUPPORT BRACKET must be located so that a minimum of 2" of pitch back towards the header exists (see FIG. 3). (welded assemblies have factory installed pitch).
- 5.) Seal the openings where the STEAM SUPPLY and CONDENSATE connections penetrate through the AHU or duct wall with the duct plates provided (see Fig. 3).
- 6.) Connect steam supply and condensate piping to the humidifier as illustrated on Fig. 1.

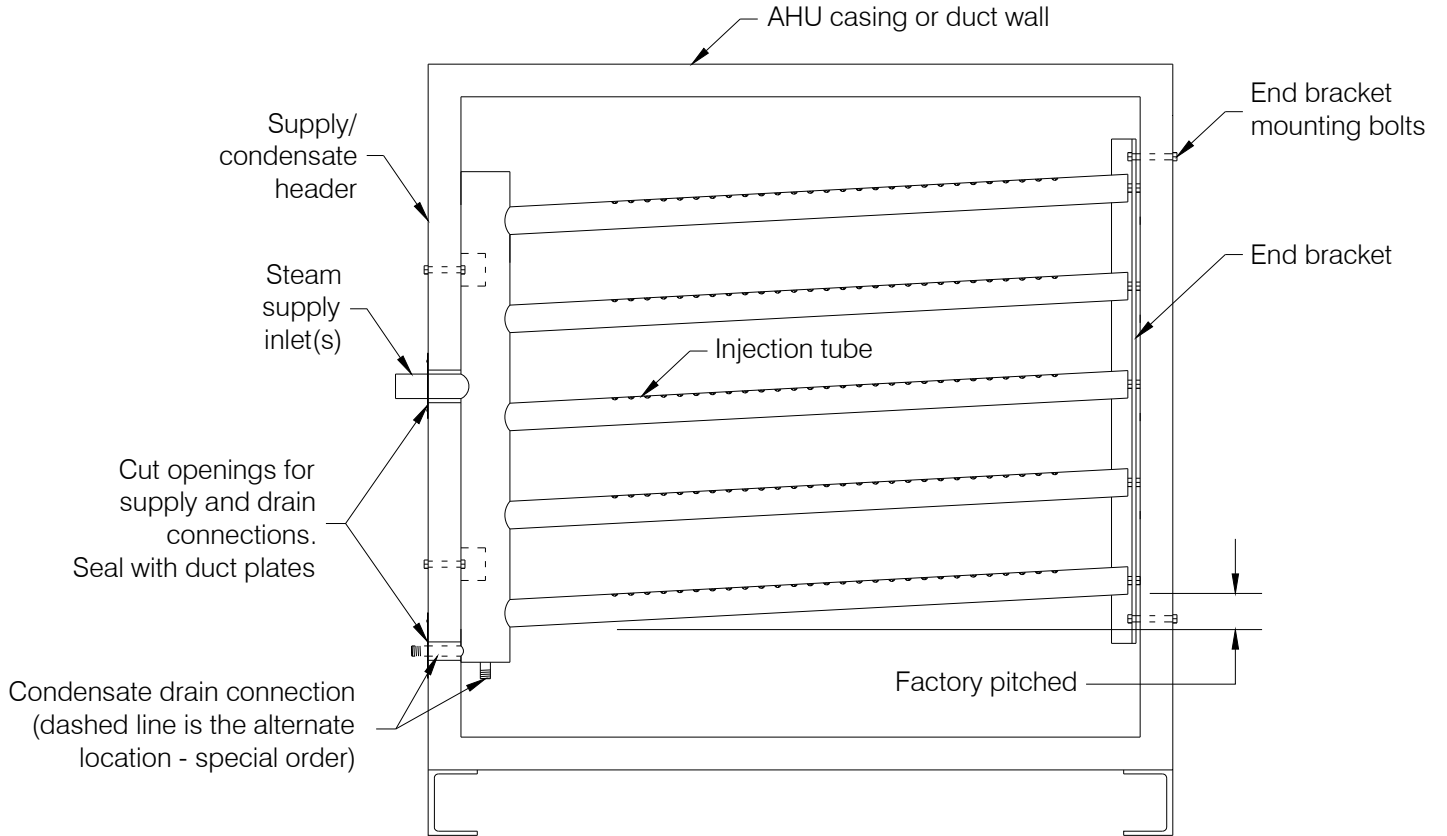
**Internal Mount Multiple Injection Tube Assembly**  
**Component Identification**

ITEM NO.	DESCRIPTION	QUANTITY
1	Supply/condensate header	1
2	Injection tubes	varies with order
3	Tube support bracket	1
4	Tube mounting bolts	1 per tube
5	Duct plate (condensate)	1

**Fig. 2**



## Header & Support Bracket Mounting Detail



**Fig. 3**

### Notes:

- 1.) Center the Fast-Pac injection tube assembly in the duct height.
- 2.) Install the Fast-Pac injection tube assembly so that the header is plumb.
- 3.) Install injection tubes with the orifices injecting upwards.
- 4.) All condensate drain piping is by others.

## Installation Tips

### **Condensate Return Line**

Condensate from the header cannot be elevated. Do not connect water seals to pressurized condensate return lines. **The drain piping should be copper or stainless steel. The use of PVC piping is not recommended; the humidifier temperature will cause the PVC to soften and fail.**

### **Laminar air flow**

Tube assembly must be installed in a location that allows for laminar air flow across entire grid. A minimum velocity of 300 feet per minute is required to avoid saturation and excessive fog travel.

### **Plug fan installations**

Install tube assembly as close as possible to the upstream coil to ensure laminar airflow and proper absorption.

### **Insulated ducts**

Internally insulated ducts must be lined with a non-absorbent material to avoid saturation. If the duct is lined it must be removed three feet (3') upstream and ten feet (10') downstream of tube assembly.

### **Final Filters**

Tube assembly must be installed a minimum of ten feet (10') upstream of final filters.

### **VAV Systems**

Low velocity will cause long fog trails and steam will rise wetting the top of the AHU/duct casing. Modulating VAV high-limit humidistat is required. A minimum velocity of 300 feet per minute is required to avoid saturation and excessive fog travel.

## Controls

### **Fan Interlock Switch**

PURE Humidifier Co. recommends the use of an air flow proving switch or fan interlock to prove air flow prior to humidifier cooperation. Humidifier operation without air flow will result in over-saturation of the air stream. Air flow proving switches are available as optional equipment from your PURE Humidifier Co. representative.

### **High-Limit Humidistat**

PURE Humidifier Co. recommends the use of a duct high-limit humidistat to prevent humidifier operation when the duct humidity level exceeds 85% relative humidity. Humidifier operation above 85% relative humidity can result in over-saturation of the air stream. High-limit humidistats are available as optional equipment from your PURE Humidifier Co. representative. The high limit humidistat should be 8 to 10 feet (244-305 cm) downstream from the humidifier injection tube. Installing the high-limit closer than 8 feet (244 cm) from the humidifier may cause erratic control.

### **Smoke Alarms and Temperature Sensors**

Smoke alarms should be located 12 to 14 feet (365-427 cm) upstream from the humidifier injection tube.

Temperature sensors should be located 12 to 14 feet (365-427 cm) downstream from the humidifier injection tube, or past any visible fog travel that may be greater than this distance.

## **Troubleshooting**

### **Too Much Humidity**

1. Humidity controller out of calibration.
2. Humidifier oversized.
3. Check humidifier (GX, SX, ES, EC) for proper operation.

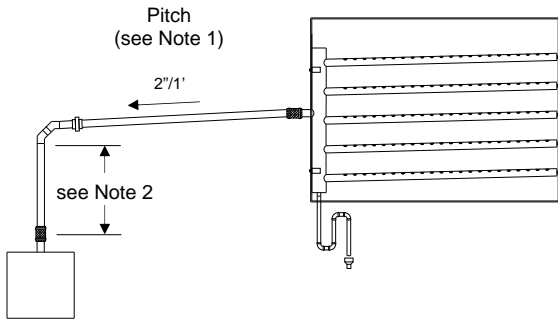
### **Too Little Humidity**

1. Humidity controller out of calibration.
2. Undersized humidifier.
3. Check humidifier (GX, SX, ES, EC) for proper operation.
4. Water seals are not primed.
5. Water seals are blown due to improper supply piping.

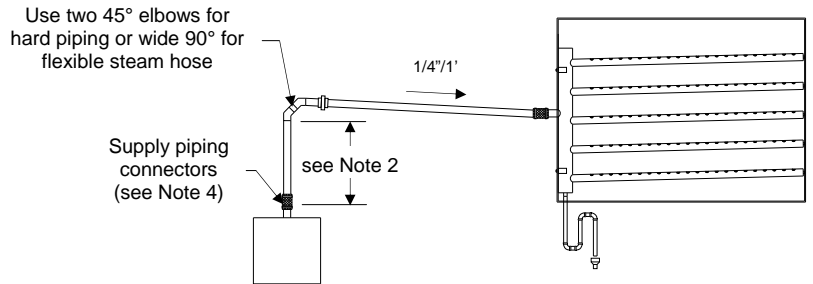
### **Humidifier Discharges Water**

1. Faulty drainage:
  - A) Return line pressure greater than humidifier pressure.
  - B) Return line flooded.
  - C) Vertical lift.

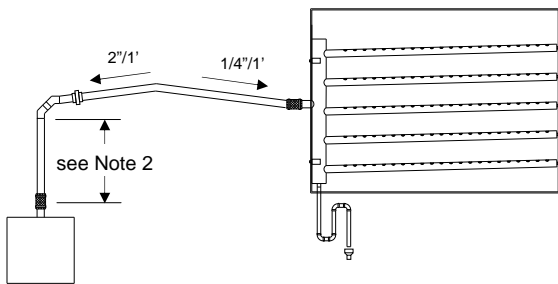
## Steam Supply Piping Examples



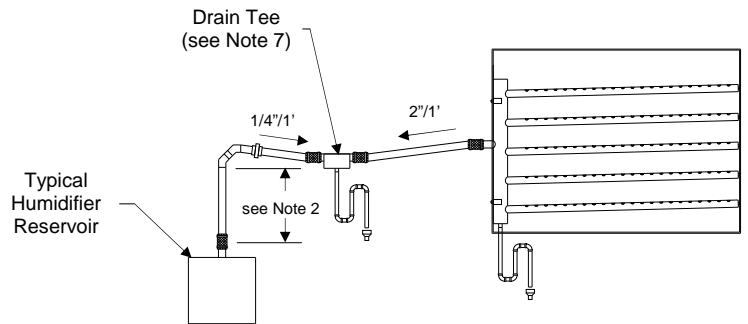
**Pitched Towards Steam Generator**



**Pitched Towards Tube Assembly**



**Pitched Towards Steam Generator and Tube Assembly**



**Pitched Towards Drain Tee**

### Notes:

1. Pitch hard piping or flexible hose 2" per foot if steam is flowing uphill, 1/4" per foot if the steam is flowing downhill. Reference piping examples shown.
2. When feasible to do so, install a minimum one-foot riser from the top of the tank to reduce condensate carryover.
3. Use flex connectors or unions to allow for easy removal of cover.
4. Support flexible hose every 18" to avoid sagging.
5. Hard piping or flexible hose must match reservoir outlet size. Do not use supply piping with a smaller inside diameter than the reservoir outlet.
6. Failure to follow the piping recommendation on this page may result in blown water seals, leaking cover gasket, or dispersion tubes spitting.
7. Install a Drain Tee at any low spots in supply piping run where condensate will accumulate. **All horizontal to vertical up transitions require a water-sealed drip leg.**
8. Reference job specific tube assembly O&M included with your order for complete details.

## DISCLAIMER

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