

MANUAL – INSTALLATION + SERVICE

Hospital Operating Room Air Curtain

HORD

v100 – Issue Date: 09/06/18

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PRICE[®]

HOSPITAL OPERATING ROOM AIR CURTAIN

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IMPORTANT NOTES ▼

Application Support

For further design or installation assistance, please contact Price Application Engineering at 204.669.4220

HOSPITAL OPERATING ROOM AIR CURTAIN

PRODUCT OVERVIEW

Prior to Installation

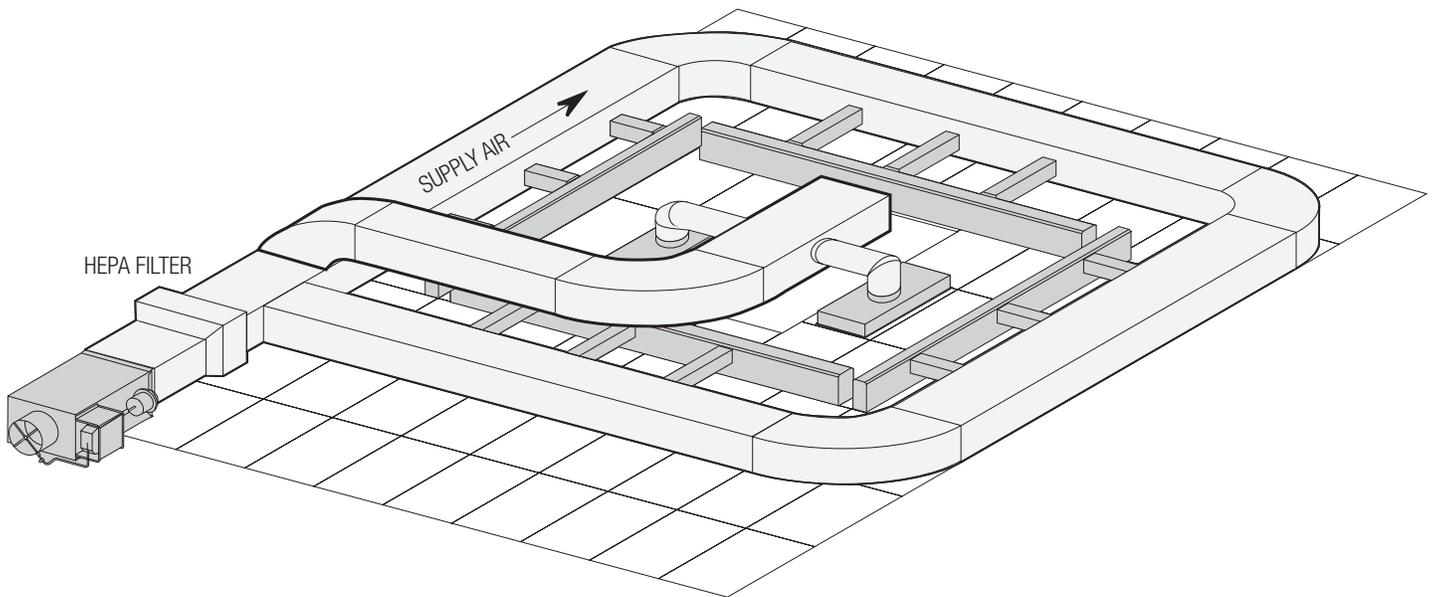
Prior to installation, identify all sections of the HORD Air Curtain System based on the submittal drawings. Determine where each one is to be located in the ceiling using a set of building plans and the Price provided submittal.

Ductwork Layout

The ideal ductwork layout for a Price HORD linear air curtain system consists of a continuous loop around the air curtain perimeter. By pressurizing this loop of ductwork, equalized air supply will be provided to all air curtain inlets ensuring balanced air curtain performance. It is recommended that the laminar flow diffuser ductwork branch be routed back to the main ductwork loop as close to the main supply branch as possible where static pressure is most available.

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FIGURE 1 - PRICE HORD LINEAR AIR CURTAIN DUCTWORK LAYOUT ▼



HOSPITAL OPERATING ROOM AIR CURTAIN

INSTALLATION & MOUNTING INSTRUCTIONS

T-Bar Ceiling

1. Each HORD Linear Air Curtain includes:

- A. Four plenums; if module length is greater than 96 inches, the plenum will be in two or more flanged sections.
- B. Mounting frames
- C. Four factory installed flanged elbows (continuous plenum style only)
- D. Two or more double slot diffuser faces with quick release fasteners per side
- E. Stainless Steel dampers (optional, typically factory installed)
- F. Factory installed hanger brackets + hardware

2. Getting Started

- A. Snap chalk line to mark location and sizes of HORD diffuser outline.
- B. Unpack and layout the HORD air curtain plenums on the floor beneath the point where they are to be installed. Using a plumb line or a laser, project where the hanger rods will connect with the hanger bracket and the structure above.

NOTE: Whatever structural member the hanger rods are attached to must be able to support the weight of the air curtain.

NOTE: Ensure floor surface is clean and free of debris that could damage the finish.

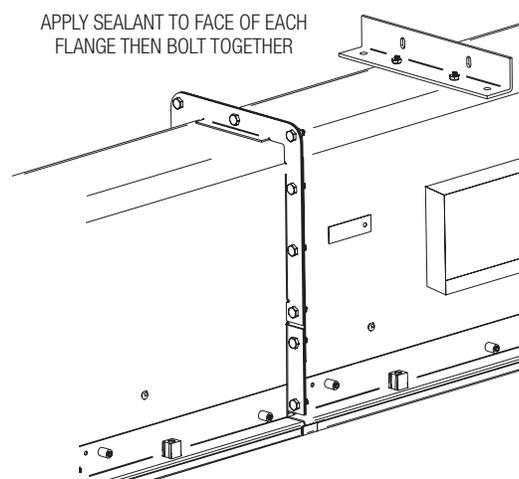
- C. Install hanger rods.

3. Install Linear Slot Plenum in Ceiling

- A. The ceiling grid should be installed before installing the HORD system.
- B. Thread a nut onto each hanger rod installed in step 2c. (This nut is what the hanger bracket on the diffuser plenum will back up against).
- C. If the HORD module is greater than 16 feet it will have shipped in multiple sections (96" maximum single section but factory will ship up to 192" sections). These sections are assembled using a flanged connection. Apply a continuous bead of silicone sealant to the face of each flange then bolt the sections together using ten of the 1/4"-20x3/4" hex bolts, nuts and washers supplied. Tighten the nuts to seal the flange and minimize the chance of air leakage.

NOTE: This step can be done on the floor prior to putting the sections in the ceiling space if preferred (fig. 1).

FIGURE 1 - MULTIPLE PIECE PLENUM ▼

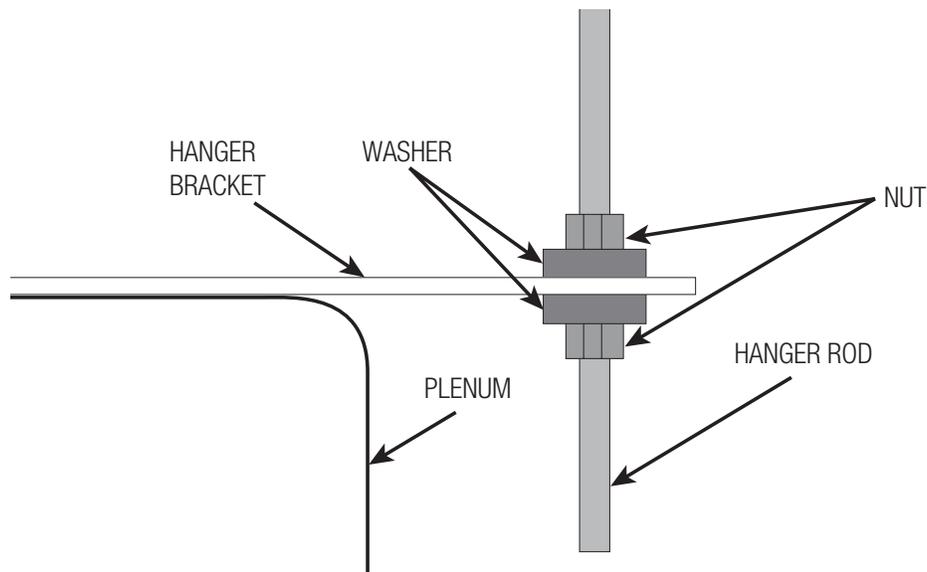


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INSTALLATION & MOUNTING INSTRUCTIONS

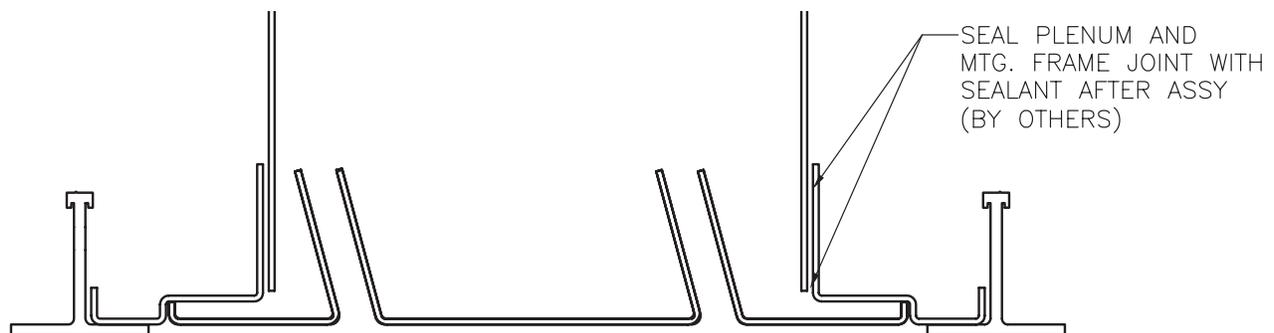
- D. Pass the plenum sections up through a large opening in the ceiling grid such as the openings for light fixtures.
- E. Put the hanger rods through the holes in the plenum hanger brackets; be sure to install a washer on the hanger rod above the hanger bracket. Install a second washer and nut on the threaded rod to hold the hanger bracket in place (fig. 2).

FIGURE 2 - HANGER ROD DETAIL ▼



- F. Adjust the nuts on the threaded rods to ensure the linear slot plenum is resting on the gasketed ceiling tee and level in the ceiling grid.
- G. For continuous plenums, attach an open end of a plenum to the open end of a factory mounted elbow. These sections are attached to the plenums using a flanged connection. Apply a continuous bead of silicone sealant to the face of each flange then bolt the sections together using ten of the 1/4"-20x3/4" hex bolts, nuts and washers supplied. Tighten the nuts to seal the flange and minimize the chance of air leakage.
- H. Seal all penetrations through the plenum with silicone sealant. Please note the sealant must be applied only on the exterior surface of the plenum, DO NOT APPLY SEALANT ON THE PLENUM INTERIOR.
- I. Seal Plenum and mounting frame joint with sealant after assembly (fig. 3).

FIGURE 3 - APPLY SEALANT TO MOUNTING FRAME ▼



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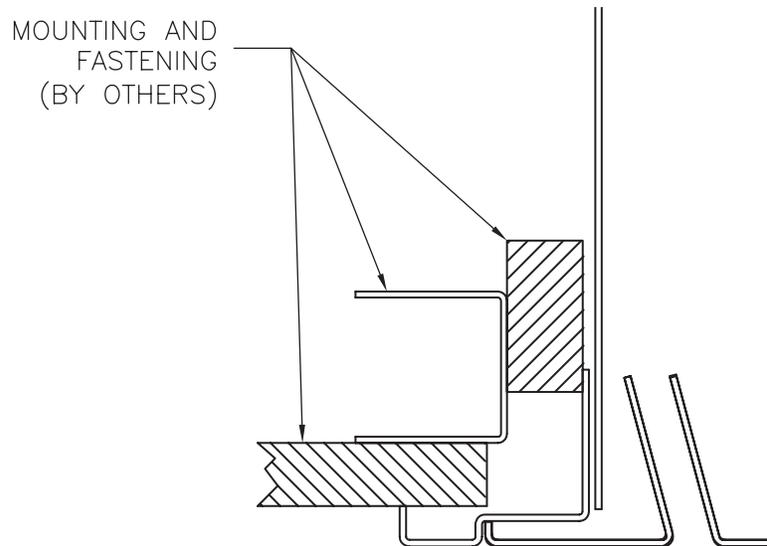
INSTALLATION & MOUNTING INSTRUCTIONS

Drywall Ceiling

1. Install Linear Slot Plenum in Ceiling

- A. Mount a 1"x2" 16 GA galvanized channel (supplied and installed by others) along both long sides of each air curtain ceiling opening (fig. 4).

FIGURE 4 - GALVANIZED CHANNEL ▼



- B. Remove factory mounted mounting frame and use as a template, mark the locations of the quarter turn fasteners on the ceiling. Notch the ceiling at these locations to allow for the quarter turn fastener receptacles.
- C. If the HORD module is greater than 16 feet it will have shipped in multiple sections (96" maximum single section but factory will ship up to 192" sections). These sections are assembled using a flanged connection. Apply a continuous bead of silicone sealant to the face of each flange then bolt the sections together using the 1/4"-20x3/4" hex bolts, nuts and washers supplied. Tighten the nuts to seal the flange and minimize the chance of air leakage. Note: This step can be done on the floor prior to putting the sections in the ceiling space if preferred.
- D. Carefully place the HORD plenum into the ceiling opening. You will need to angle the plenum through the opening as the inlet will be wider than the opening. The plenum should be supported by the factory installed hanger brackets from the structure above using hanger rods.
- E. Install the diffuser mounting frame into the ceiling opening. Install sufficient blocking media between the mounting frame and plenum to keep plenum centered in mounting frame.
- F. Pull the mounting frame/plenum assembly up snug to the ceiling.
- G. Reattach the mounting frame the plenum using the factory supplied well nuts.
- H. For continuous plenums, attach an open end of a plenum to the open end of a factory mounted elbow. These sections are attached to the plenums using a flanged connection. Apply a continuous bead of silicone sealant to the face of each flange then bolt the sections together using ten of the 1/4"-20x3/4" hex bolts, nuts and washers supplied. Tighten the nuts to seal the flange and minimize the chance of air leakage.
- I. Seal all penetrations through the plenum with silicone sealant. Please note the sealant must be applied only on the exterior surface of the plenum, DO NOT APPLY SEALANT ON THE PLENUM INTERIOR.
- J. Apply a bead of silicone between the mounting plate and the plenum on the room side to seal between these two pieces.

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INSTALLATION & MOUNTING INSTRUCTIONS

2. Install the Face(s) in the Mounting Frame

- A. Locate the diffuser face with the two slots.
- B. Carefully raise the HORD face section up to the plenum making sure that the slots are directed outwards from the operating table. Secure in place using the quick release fasteners on the diffuser face.
- C. Repeat steps above for all remaining face sections.

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INSTALLATION & MOUNTING INSTRUCTIONS

Air Curtain Balancing

1. Verify the total supply air to the HORD Air Curtain System by performing a pitot tube traverse of the main supply duct. Once the total supply air volume is verified, the outlets must be balanced.
2. The LFD laminar flow diffusers should be balanced first. Due to the low outlet velocities generated by the LFD face the most accurate means of air measurement is a flow hood.
3. The remainder of the supply air should be evenly distributed in the linear slot air curtain. Main balancing should be done using duct mounted dampers located in the branch duct as close to the main duct as possible.
4. By adjusting the dampers mounted in the inlets to the air curtain plenums equalize the airflow along all slots. Even distribution can be determined in several ways, two of which are as follows:
 - A. Travers the air curtain face with a Velometer or Anemometer. Adjust the inlet dampers until each air curtain section has a relatively equal average velocity.
 - B. With a 1 ft x 4 ft or 1 ft x 5 ft flow hood, take readings along the length of each air curtain section. Divide each reading by the length of the hood to obtain cfm/ft and average for each air curtain section. Adjust the inlet dampers until each air curtain section has a relatively equal average cfm/ft.
 - C. After balancing is complete, the dampers in the air curtain inlets should be locked in position using the locknut provided and the damper blade marked for future reference. In addition, if there is an inlet damper on the laminar diffusers, the laminar diffuser damper position should be recorded in the event it is accidentally changed during cleaning.

HOSPITAL OPERATING ROOM AIR CURTAIN

COMMISSIONING

Commissioning

Commissioning is not included as standard but can be purchased. If factory commissioning is purchased, prior to commissioning, the following items should be completed:

- All air distribution equipment for the hospital surgical suite has been installed. This includes, but is not limited to the HORD hospital operating room diffuser linear sections, LFD laminar flow diffusers and 700 Series exhaust grilles;
- Supply, return fans and VAV boxes installed, tested and verified;
- Supply and return ductwork installed, complete with balancing dampers;
- Ceiling system has been installed and painted;
- Balancing Contractor has verified and set the amount of airflow supplied to the surgical suite, including the HORD linear sections and LFD laminar flow diffusers;
- Balancing Contractor has verified and set the amount of air returned from the surgical suite;
- A draft copy of the balancing information must be provided to the factory personnel.

Once the above items are complete, the commissioning of the hospital operating room system shall include, but not be limited to the following items:

- Review of the installation of the HORD linear air curtain sections, laminar flow diffusers and exhaust grilles;
- Review of the balancing procedure with Balancing Contractor;
- Confirm the functionality of removable diffuser and grille faces;
- Inspection of plenum interiors;
- Inspection of supply ductwork, if accessible;
- Verification of the airflow rate and proportion to the HORD air curtain outlets through field measurements; Balancing Contractor shall adjust airflow accordingly
- Verification of the air pattern of the HORD air curtain sections using a smoke generating device;
- Verification of the airflow rate and proportion to the laminar flow diffusers through field measurements; Balancing Contractor shall adjust airflow accordingly;
- Verification of the air pattern of the laminar flow diffuser using a smoke generating device;
- Verification of the air flow into the exhaust grilles using a smoke generating device; Balancing Contractor shall adjust airflow accordingly;
- Verification of the room pressurization using a smoke generating device;
- Complete report of all findings;
- Allow for 1 hour on-site training by factory personnel in the operation and maintenance of the HORD system.

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MAINTENANCE

Maintenance & Cleaning/Sterilization

As there are no moving parts to the HORD air curtain system, there is no periodic maintenance required.

Regular cleaning/sterilization is recommended as defined by the Owners or facility's cleaning schedule. The following steps can be taken to disassemble the HORD air curtain system for cleaning/sterilization:

1. Remove air curtain face by releasing the quarter turn fasteners.
2. Place face assembly in a bath of cleaning solution.
3. If the air curtain plenums are equipped with dampers:
 - A. Ensure that the damper's blade position is locked by tightening the hex operator. Allowing the damper blade position to change will require the HORD air curtain system to re-balanced.
 - B. Remove wing-nuts that hold the damper to the plenum.
 - C. Remove damper making sure to note which inlet it belongs to.
 - D. Wash damper and wing-nuts with cleaning solution.
 - E. Dry thoroughly with a soft cloth.
4. Wash the plenum interior with cleaning solution and thoroughly dry the plenum interior with a soft cloth.
5. Remove the face assembly from the cleaning solution bath, rinse and dry thoroughly with a soft cloth.
6. If dampers were removed earlier, re-install the dampers into their respective inlets.
7. Re-install the face assembly.

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