

## Cold Front™ Heat-Transfer Door (HTD) Installation Guide

**Use liquid cooling to cut power and cooling costs  
in your data center by 50% or more!**

This guide provides installation and maintenance instructions  
for your Cold Front HTD.



## Trademarks Used in this Manual

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### Trademarks Used in this Manual

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### Federal Communications Commission and Industry Canada Radio Frequency Interference Statements

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

## Instrucciones de Seguridad (Normas Oficiales Mexicanas Electrical Safety Statement)

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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# Chapter 1: Specifications

## 1. Specifications

Model	CFD42U#F24	CFD42U#29	CFD47U#F24	CFD47U#F29
<b>Environmental</b>				
Maximum Cooling Capacity *	24 kW (82,000 BTU/hr.)	31 kW (105,800 BTU/hr.)	25 kW (85,325 BTU/hr.)	33 kW (112,630 BTU/hr.)
Nominal Cooling Capacity†	18 kW (61,500 BTU/hr.)	23 kW (78,500 BTU/hr.)	19 kW (64,850 BTU/hr.)	24 kW (82,000 BTU/hr.)
Coolant Type	Chilled Water	Chilled Water	Chilled Water	Chilled Water
Coolant Volume	1.3 Gal	1.8 Gal	1.5 Gal	1.9 Gal
Coolant Flow Rate	Up to 12 GPM			
Coolant Inlet Temperature	Above Dew Point	Above Dew Point	Above Dew Point	Above Dew Point
Maximum Operating Pressure	100 psi	100 psi	100 psi	100 psi
Liquid-Side Pressure Drop	6.7 psi at 10 GPM	7.7 psi at 10 GPM	6.3 psi at 10 GPM	7.2 psi at 10 GPM
Coil Construction	Copper Tube, Aluminum Fin			
Number of Circuits	17	17	19	19
Connection Type	ISO 7241-1 Series B Self-Sealing Quick Connects			
Connection Location	# = B = Bottom Feed # = T = Top Feed	# = B = Bottom Feed # = T = Top Feed	# = B = Bottom Feed # = T = Top Feed	# = B = Bottom Feed # = T = Top Feed
Connection Material	Brass	Brass	Brass	Brass
Connection Size	19 mm / 0.75"			
Air Bleeding Valves	Bottom Feed: (2) Schrader			
Airflow	From Rackmounted Equip.	From Rackmounted Equip.	From Rackmounted Equip.	From Rackmounted Equip.
Noise Level	None	None	None	None
<b>Electrical</b>				
Input Power	None Required	None Required	None Required	None Required
Fan Input Power	No Fans	No Fans	No Fans	No Fans
<b>Physical</b>				
HTD Size (H x W x D) (For Top Feed, Add 5" to Height)	76.6" x 23.5" x 4.2"	76.6" x 29" x 4.2"	85" x 23.5" x 4.2"	85" x 29" x 4.2"
Weight—Empty/Full	68 lb./ 79 lb.	73 lb./88 lb.	77 lb./90 lb.	82 lb./ 97 lb.
Shipping Size (H X W X D)	14.5" x 31.75" x 88.38"	14.5" x 36.75" x 88.38"	14.5" x 31.75" x 97"	14.5" x 36.75" x 97"
HTD Shipping Weight	180 lb.	205 lb.	215 lb.	215 lb.
Max. White Space Consumed	~0.7 ft <sup>2</sup>	~0.85 ft <sup>2</sup>	~0.7 ft <sup>2</sup>	~0.85 ft <sup>2</sup>
Paint Finish	Black Powder Coat	Black Powder Coat	Black Powder Coat	Black Powder Coat
Operating Temperature Range	+41 to +140° F			
Storage Temperature Range	-40 to +140° F			
Max. Operating Rel. Humidity	60%	60%	60%	60%
Maximum Altitude	8200 feet	8200 feet	8200 feet	10,000 feet
<b>Warranty</b>				
Limited Warranty	3 Years Parts Only			

\* Nominal cooling capacities listed are for 100% neutralization of heat load using ASHRAE recommended conditions: air entering rack at 2500 cfm, 80.6° F, 40% RH, and water entering HTD at 55° F, 12 GPM

† Maximum cooling capacities listed are for 100% neutralization of heat load using ASHRAE allowable conditions: Air entering rack at 2500 cfm, 90° F, 30% RH, and water entering HTD at 55° F, (12 GPM)

## 2. Overview

### 2.1 Introduction

This manual contains instructions for installing and setting up the Cold Front Heat-Transfer Door.

It is a water-cooled door that mounts on the rear of an IT enclosure to cool the air that is heated and exhausted by devices mounted inside the IT enclosure. Supply and return water hoses (sold separately) deliver conditioned water to the Heat-Transfer Door and remove the heated water from it. The door can be used on IT enclosures that are deployed on either a raised floor or a non-raised floor.

### 2.2. Related Documentation

This manual provides general information about the Cold Front Heat-Transfer Door, including information about features and how to get help. In addition to this manual, more information on site preparation and secondary loop ancillary items can be found in the Cold Front Heat-Transfer Door Planning Guide. Please call Black Box Technical Support at 724-746-5500 for the Planning Guide. It includes the water-quality and water-supply specifications.

### 2.3 Notices and Statements in This Document

The following notices and statements are used in this document:

*NOTE: These notices provide important tips, guidance, or advice.*

*IMPORTANT: These notices provide information or advice that might help you avoid inconveniences or problem situations.*

*ATTENTION: These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.*

*CAUTION: These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.*

*DANGER: These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.*

### 3. Installing the Heat-Transfer Door

Before you can install the Heat-Transfer Door, you must have prepared the facility according to the Cold Front Heat-Transfer Door Planning Guide for water-cooled data centers. Please call Black Box Technical Support at 724-746-5500 for the Planning Guide. It includes the water-quality and water-supply specifications.

You can install the Heat-Transfer Door while devices in the IT enclosure are operating; however the optimum time for installation is during a scheduled maintenance period.



Figure 3-1. Bottom-feed model.



Figure 3-2. Top-feed model.

### 3.1 Main Tasks

Installing the Heat-Transfer Door consists of the following main tasks:

1. Remove the existing IT enclosure's rear door, hinges, and door latch (if installed).
2. Attach the Transition Frame (if required) as described in the Transition Frame Installation Guide supplied with each Transition Frame.
3. Attach the Heat-Transfer Door hinges directly to the IT enclosure rear frame or to the Transition Frame (if required).
4. Place the Heat-Transfer Door assembly on both hinges.
5. Connect the supply and return hoses from the chilled water source, the Coolant Management System (CMS), or External Manifold to the couplings on the Heat-Transfer Door.
6. Fill the Heat-Transfer Door with treated water and purge remaining air from the coil.
7. Secure the hoses and the Heat-Transfer Door assembly.

*NOTE: Connecting the hoses from a CMS unit to the Heat-Transfer Door creates the required secondary loop in the water-circulation system. See the Cold Front Heat-Transfer Door Planning Guide for information about primary and secondary loops in the water-circulation system.*

### 3.2 Required Components and Tools

1. Heat-Transfer Door assembly
2. Heat-Transfer Door hinge kit (ships with the Heat-Transfer Door [HTD])
3. Heat-Transfer Door documentation package (ships with the HTD)
4. Transition Frame Kit (if required, ships with the HTD)

## Chapter 3: Installing the Heat-Transfer Door

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5. Air purging tool (sold separately). One air purging tool can be used to commission multiple HTDs.
6. Hose Kits (sold separately)
7. Water Treatment (sold separately)
8. Raised Floor Grommet (needed if a raised floor is used; sold separately)

*NOTE: Contact Black Box Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com) to order accessories that are sold separately.*

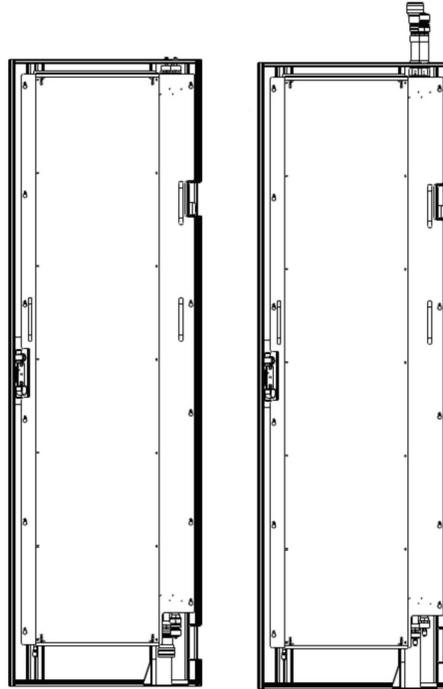


Figure 3-3. Bottom-feed model (left) and top-feed model (right).

The following tools (not included) are required to complete an installation:

1. Tool used to remove the existing IT enclosure rear door hinges and latch (see the Enclosure Installation Manual provided by the enclosure vendor for details).
2. Tool used to attach the Transition Frame (if required) to the IT enclosure rear frame (see the Transition Frame Installation Guide for details).
3. 4-mm hex key to attach the Heat-Transfer Door hinge to the IT enclosure rear frame or Transition Frame (if required).
4. A bucket (approximately 2 quarts/2 liters) to capture water that escapes as you purge air from the system while filling the Heat-Transfer Door with treated water.
5. Tool to cut a hole in the raised floor tile for the hose to pass through (if a raised floor is used).

*NOTE: Water exposure is not likely, but you might prefer to place some water-absorbent material beneath the Heat-Transfer Door as a general practice when performing procedures on the HTD.*

### 3.3 Installation Procedures

Complete the procedures in this section to install the Heat-Transfer Door assembly.

#### 3.3.1 Attaching the Heat-Transfer Door (HTD) Assembly to the Enclosure or Transition Frame (If Required)

To install the HTD, complete the following steps:

1. Remove the HTD assembly and all components from the packaging.
2. Unlock and open the existing rear door (if one is installed) on the IT enclosure.
3. Remove the existing rear door, hinges and door latch per the instructions in the Enclosure Installation Manual provided by the IT enclosure vendor. Store existing rear door, hinges and door latch for possible future use.
4. Attach the Transition Frame (if required) as described in the Transition Frame Installation Guide.
5. If a Transition Frame is not required, install the HTD hinges on the IT enclosure rear frame using the 4-mm hex key as shown in Figure 3-4.

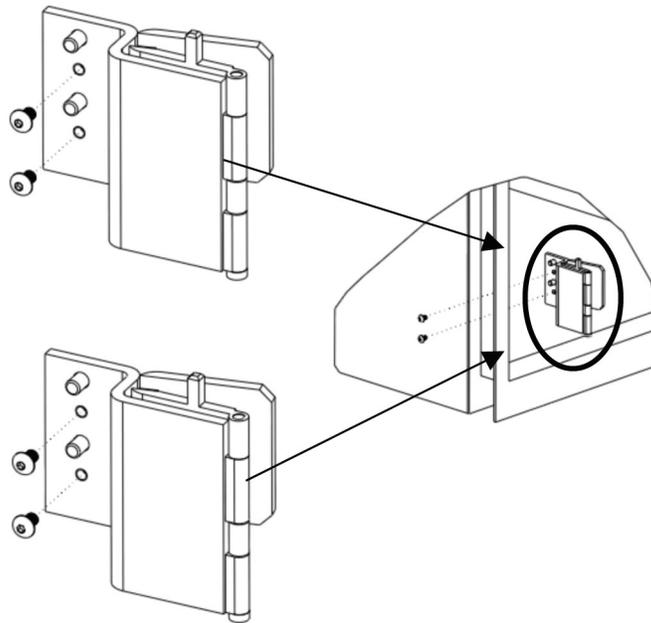


Figure 3-4. Installing the HTD hinges on the IT enclosure rear frame.

6. Using the lift handles, place the HTD so that the hinge pins are aligned with the hinge mounting holes in the door assembly. Slowly lower the HTD assembly onto both hinge pins until the pins are fully engaged in the HTD assembly.

**CAUTION:** We recommend that two people attach the HTD to the hinges to prevent damage to the HTD.

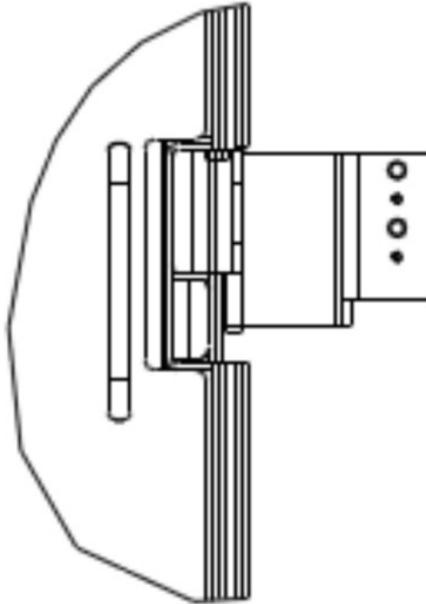


Figure 3-5. Attaching the HTD to the hinges.

### 3.3.2 Connecting the Water Supply

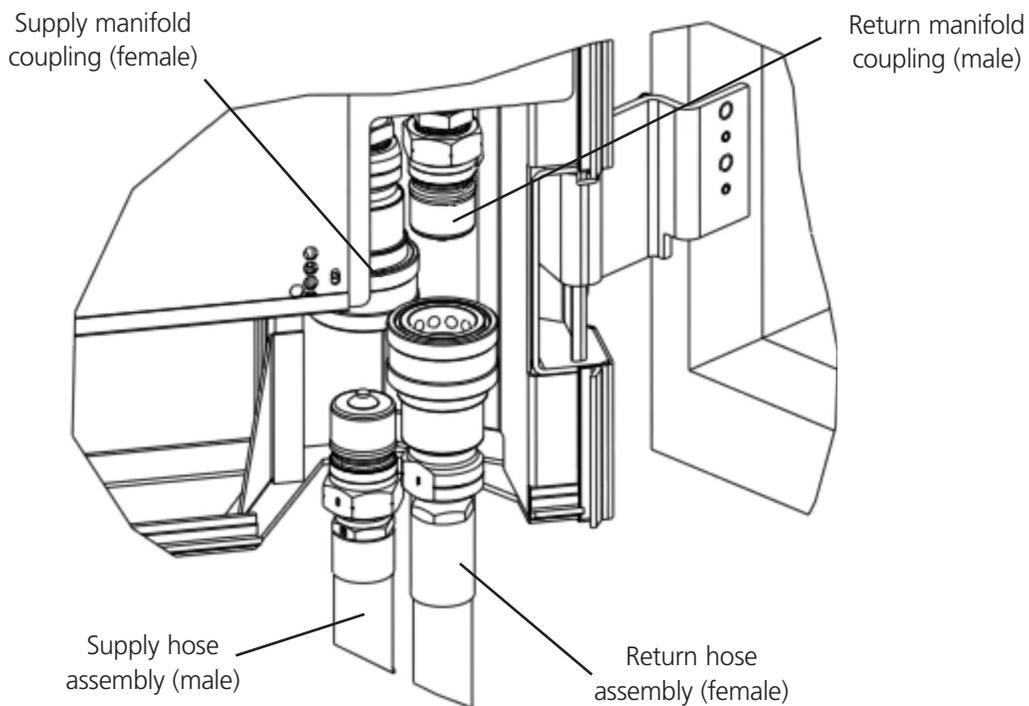


Figure 3-6. Connecting the water supply to the HTD.

To connect the chilled water supply to the Heat-Transfer Door, complete the following steps:

1. Open the HTD so it's at a 90° angle from the enclosure.
2. If the IT enclosure is on a raised floor, remove the raised floor tile that the supply and return water hoses will pass through and pull up the hoses to provide slack.

*NOTE: We recommend that you place the hose cut-out in the raised floor tile on the tile edge so that the tile can be removed without having to disconnect the hoses. If this is not possible, then make a hose cut-out in the interior of the raised floor tile. The raised floor tile will remain in place and the supply and return hoses must route through the hose cut-out in the interior of the raised floor tile before attaching to the HTD.*

*CAUTION: When using the External Right-Angle Hose Kits to pass the hose under the enclosure frame, the clearance between the bottom of the HTD and the floor must be at least 2.125" (5.4 cm).*

3. Attach the male supply hose coupling to the female supply coupling on the HTD. To attach the supply hose, complete the following steps:

- a. Align the male supply hose coupling with the female supply coupling on the HTD.

*NOTE: If you misalign the couplings, it will be difficult to connect the hose.*

- b. Move the collar on the female coupling on the HTD upward.

- c. Insert the male supply hose coupling. Exert upward pressure until the female collar moves downward and locks in place with an audible click.

*NOTE: After the couplings are engaged but before the collar has locked into place, you can let go of the collar and use both hands to push the hose upward to lock the couplings.*

4. Attach the female return hose coupling to the male coupling on the HTD. To attach the return hose, complete the following steps:

- a. Align the female return hose coupling with the male return coupling on the HTD.

*NOTE: If you misalign the couplings, it will be difficult to connect the hose.*

- b. Move the collar on the female return hose coupling downward and raise the female coupling to the male coupling on the HTD.

- c. Exert upward pressure until the female collar moves upward and locks in place with an audible click.

*NOTE: After the couplings are engaged but before the collar has locked into place, you can let go of the collar and use both hands to push the return hose upward to lock the couplings.*

### 3.3.3 Filling the HTD with Water

To fill the HTD with water for the first time, complete the following steps.

*CAUTION: Wear safety goggles or other eye protection whenever filling, draining, or purging air from the HTD.*

1. Unscrew and retain the caps from both air-purging valves (on bottom-feed models only).

*NOTE: The valves (see Figure 3-7) are similar to the valves on bicycle tires. Figure 3-8 shows the air-purging tool (sold separately) consisting of a long hose (72"/184 cm) and a short extension hose (6"/16 cm).*

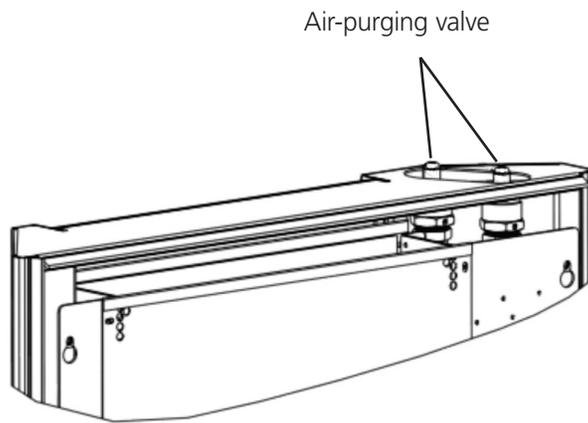


Figure 3-7. Air-purging valve.



Figure 3-8. Air-purging tool.

2. Place one end of the long hose of the air-purging tool into a bucket to catch the water that escapes during the filling procedure.
3. Attach the other end of the long hose to the leftmost (supply) air-purging valve. As the air-purging tool is screwed onto the valve, air will begin to escape.

*NOTE: The 6"/16-cm extension hose is used for draining the Heat-Transfer Door; it is not required for this procedure.*

4. Turn on the flow of water to the HTD. Water that is mixed with air will begin to spit into the bucket when the HTD coil is almost full.
5. When there is a steady stream of water from the air-purging tool into the bucket, unscrew the air-purging tool from the valve.

*ATTENTION: If water drips from the air-purging valve after you remove the air-purging tool, reattach the tool and disconnect it again to exercise and seat the seal.*

6. With one end of the air-purging tool inside the bucket, attach the other end of the air-purging tool to the rightmost (return) air-purging valve. As the air-purging tool is screwed on to the valve, air will begin to escape. When there is a steady stream of water from the air-purging tool into the bucket, unscrew the air-purging tool from the valve.

*NOTE: Water will spray or spit into the bucket during this procedure. If air remains in the coil, it will cause a splashing or gurgling sound. Repeat the air-purging procedure on both valves if this sound is present.*

7. Feel the tops and bottoms of the HTD manifold (the vertical copper supply and return pipes on the HTD). If they are cool to the touch, the chilled water is flowing correctly through the HTD.

8. Screw the valve caps onto the air-purging valves and hand-tighten them to provide a secondary seal.

### 3.3.4 Completing the Installation

Complete the following steps:

1. Install the raised floor tile (on a raised floor) that was removed or route the hoses away from the IT enclosure (on a non-raised floor).
2. Close and latch the Heat-Transfer Door.

*NOTE: If the IT Enclosure is on a non-raised floor, you might have to manually keep the hoses parallel and move them back into position as you close the door.*

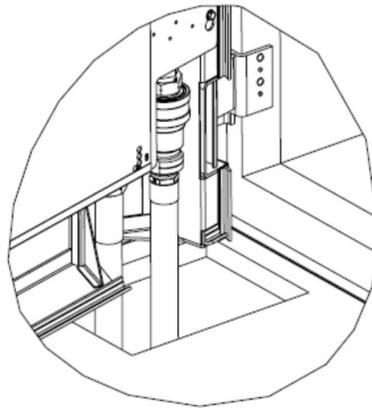


Figure 3-9. Straight-angle hose kit.

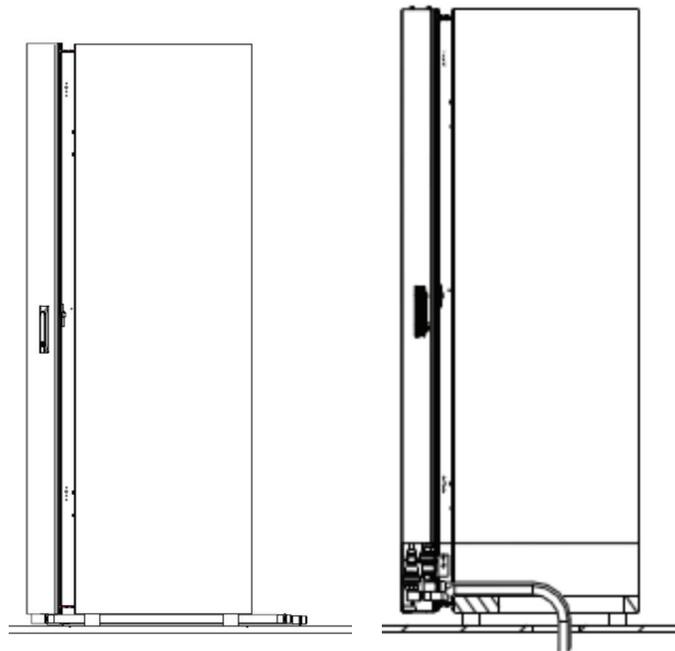


Figure 3-10. External right-angle hose kit (left) and Internal right-angle hose kit (right).

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*CAUTION: When using the External Right-Angle Hose Kits to pass the hose under the enclosure frame, the clearance between the bottom of the HTD/IT enclosure and the floor must be at least 2.125" (5.4 cm).*

3. Check the HTD after several hours of operation. If there is a splashing or gurgling sound, repeat the air-purging procedure on both air purging valves (trapped air from the hoses might have migrated to the HTD).
4. Check the HTD for air in the coil again after one month of operation, to ensure that the HTD is filled correctly.

### 3.3.5 Airflow Management

IT enclosures should be configured to maximize the airflow through the HTD. Exact configurations will vary based on selection of IT equipment, enclosure models, and site-specific conditions. Consult your enclosure supplier for further guidance on available accessories and best practices for enclosure-level airflow management. Optimal cooling performance can be achieved when industry-accepted best practices are used such as the following:

1. Any open U spaces on the front mounting rails should be covered using horizontal blanking panels and any open spaces along the side of the front mounting rails (particularly in enclosures over 24"/60 cm wide) should be covered using vertical blanking panels.
2. Side panels or divider panels should be used on both sides of each enclosure to contain the exhaust air within each enclosure.
3. Solid roof panels and bases should be used to contain the exhaust air within each enclosure. Any cable/cord penetrations should be blocked as much as possible using devices such as brush strips.
4. Any penetrations through raised floor tiles should use raised floor brush strip grommets to block as much of the opening as possible.

#### 4. Maintenance Procedures

The following illustration shows the locations of components on the HTD.

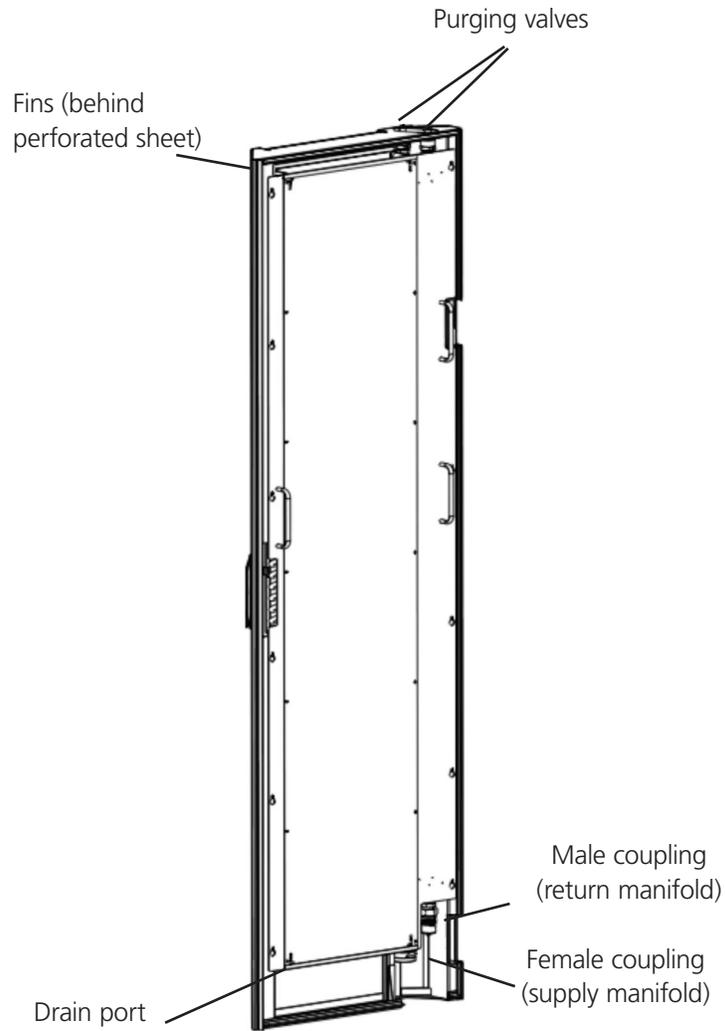


Figure 4-1. Bottom-feed model.

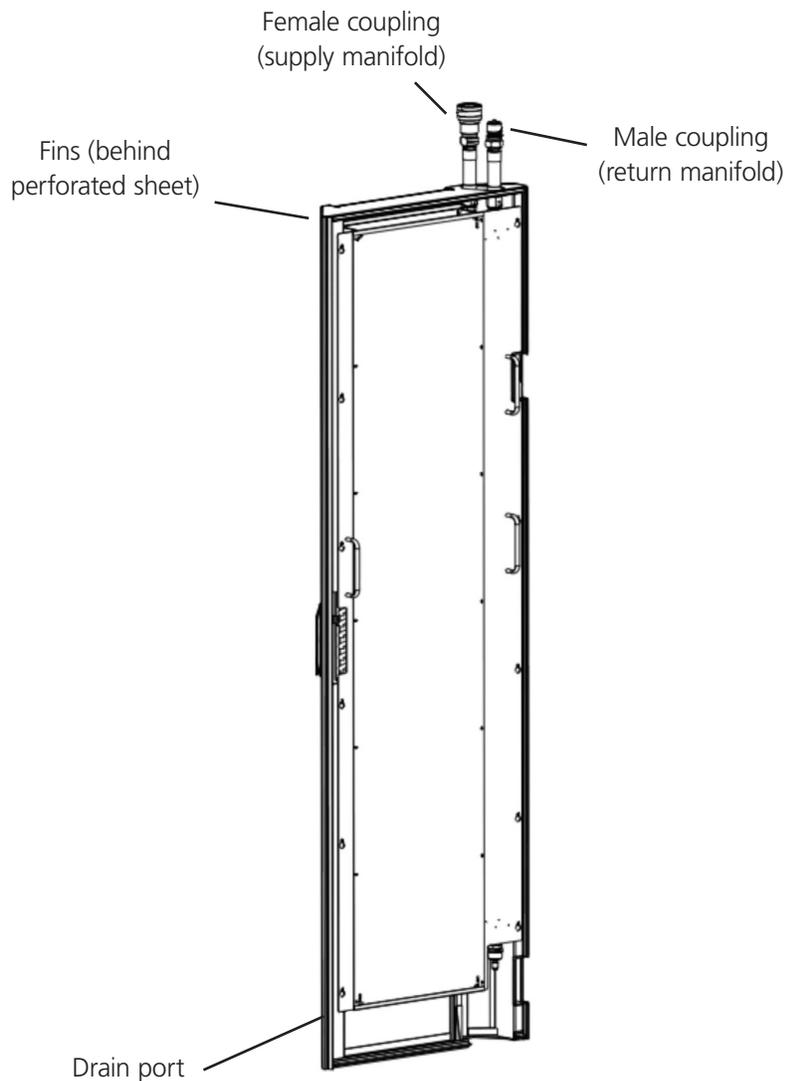


Figure 4-2. Top-feed model.

*NOTE: Although water exposure is not likely, you might prefer to place some water-absorbent material beneath the HTD as a general practice when performing procedures on the HTD.*

### 4.1 Purging Air from the HTD

Perform this procedure as part of regular maintenance and when you hear a splashing or gurgling sound from the manifolds.

*CAUTION: Wear safety goggles or other eye protection whenever filling, draining, or purging air from the HTD.*

1. Unscrew and retain the caps from both air-purging valves (on bottom feed models only).

*NOTE: The valves are similar to the valves on bicycle tires.*

2. Place one end of the long hose of the air-purging tool into the bucket to catch the water that escapes during the purging procedure.
3. Attach the other end of the long hose to the leftmost (supply) air-purging valve. As the air-purging tool is screwed on to the valve, water that is mixed with air will begin to spit into the bucket.

*NOTE: The 6"/16 cm extension hose is used for draining the HTD; it is not required for this procedure.*

4. When there is a steady stream of water from the air-purging tool into the bucket, unscrew the air-purging tool from the valve.

*ATTENTION: If water drips from the air-purging valve after you remove the air-purging tool, reattach the tool and disconnect it again to exercise and seat the seal.*

5. With one end of the air-purging tool inside the bucket, attach the other end of the air-purging tool to the rightmost (return) air-purging valve. As the air-purging tool is screwed on to the valve, water that is mixed with air will begin to spit into the bucket. When there is a steady stream of water from the air-purging tool into the bucket, unscrew the air-purging tool from the valve.

*NOTE: Air in a coil causes a splashing or gurgling sound. Repeat the air-purging procedure on both valves if this sound is present.*

6. Screw the valve caps onto the air-purging valves and hand-tighten them to provide a secondary seal.

### 4.2 Draining the HTD

Perform this procedure before having the HTD removed from the IT enclosure or when directed to do so by Black Box Technical Support. The drain port is at the bottom of the HTD, near the supply and return couplings (see Figures 4-1 and 4-2).

*CAUTION: Wear safety goggles or other eye protection whenever filling, draining, or purging air from the HTD.*

*NOTE: Water exposure not likely, but you might prefer to place some water-absorbent material beneath the HTD as a general practice when draining the HTD.*

To drain water from the HTD, complete the following steps.

1. Shut off the flow of water to the HTD at the source.

*NOTE: Depending on your facility, this might mean turning off the CMS unit, closing a valve at the CMS unit, or a similar action.*

2. Open the Heat-Transfer Door assembly so it's at a 90° angle from the enclosure.
3. Disconnect the return hose and the supply hose from the HTD and move them out of the way.
4. Remove the valve caps from the air-purging valves (on bottom-feed models only) and from the drain port.
5. Place one end of the long hose of the air-purging tool into a bucket (minimum 1.5 gallons/5.7 liters capacity) to catch the water that escapes during the draining procedure.
6. Attach the other end of the long hose to the drain port. As the air-purging tool is screwed on to the port, water that is mixed with air will begin to spit into the bucket.
7. Attach the 6"/16-cm extension hose to one of the air-purging valves at the top of the HTD (on bottom-feed models only) to allow air to enter the manifolds.

*NOTE: Instead of using the 6"/16-cm extension hose, if filtered and oil-free compressed air is available, you can attach the compressed-air hose to the air-purging valve to force water out of the HTD. Keep the air pressure at 50 psi (3.4 Bar) or less to avoid excessive spray at the drain port.*

8. When the water flow at the drain port stops, move the 6"/16-cm extension hose or compressed-air hose to the other air-purging valve (on bottom-feed models only) and repeat the process.
9. When the water has drained completely from the coil, complete the following steps:
  - a. Remove the 6"/16-cm extension hose or compressed-air hose from the air-purging valve.
  - b. Remove the long hose from the drain port.
  - c. Screw the valve caps onto the air-purging valves (on bottom-feed models only) and drain port valve and hand-tighten them to provide a secondary seal.

### 4.3 Removing the HTD

Perform this procedure before removing the HTD from the IT enclosure or when directed to do so by Black Box Technical Support.

*CAUTION: We recommend that two people attach the HTD to the hinges to prevent the HTD from falling down.*

## Chapter 4: Maintenance

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1. While the HTD can be removed from the IT enclosure when filled with water, we recommend draining water from the HTD as described in Section 4.2 before removing the HTD.
2. Open the Heat-Transfer Door assembly so it's at a 90° angle from the enclosure.
3. Disconnect the return hose and the supply hose from the HTD and move them out of the way.
4. The hinge retention spring in the top hinge pocket on the HTD assembly must be depressed toward the lifting handle to allow the HTD assembly to be lifted off the hinges. While grasping two lifting handles, use one finger to pull the spring toward the lifting handle (Figure 4-3).
5. Gently lift up the HTD assembly, making sure the hinge retention spring clears the upper hinge. Continue to lift up the HTD assembly until the door assembly has cleared the hinge pins and the door assembly can be physically removed.
6. We recommend storing the HTD on its back for stability.

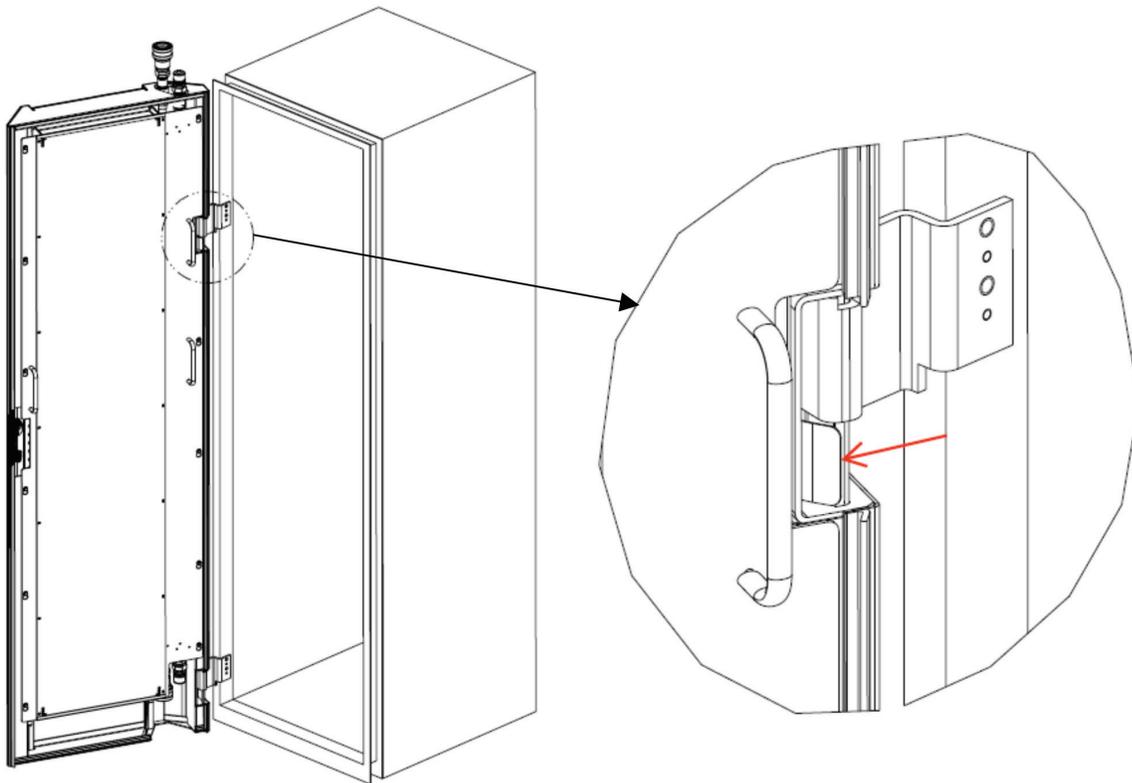


Figure 4-3. Removing the door assembly.

## 4.4 Maintenance Schedule

Perform the following maintenance tasks at the indicated intervals.

Table 4-1. Maintenance schedule.

Task	Frequency
Inspect the HTD coil fins for blockage (from dust, dirt, debris, etc.)	Annually
Check the coil for temperature (make sure that the top of the coil is cool) and sounds of air in the system, to make sure that the HTD is filled correctly.	One month after installation and then annually
Inspect the entire length of the supply hose and return hose for damage, age cracks, and kinks. Be sure to inspect the door and outside of the IT enclosure for any signs of damage.	Annually

### 5. Troubleshooting

#### 5.1 Contacting Black Box

If you determine that your Cold Front Heat-Transfer Door is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com).

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

#### 5.2 Shipping and Packaging

If you need to transport or ship your Cold Front Heat-Transfer Door:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.



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