



# Sun™ Cooling Door 5200 Installation and User's Guide

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Sun Microsystems, Inc.  
[www.sun.com](http://www.sun.com)

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# Preface

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This document explains how to install the Sun Cooling Door 5200 and provides information about the product. This document is intended for trained technicians who have a high-level of understanding and skill in installing IT equipment.

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## Related Documentation

Sun Microsystems is not responsible for any damage which might result from failure to comply with this installation guide.

All Sun hardware and software documentation is available at:

<http://docs.sun.com/>

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## Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

Sun Function	URL
Support	<a href="http://www.sun.com/support/index.jsp">http://www.sun.com/support/index.jsp</a>
Training	<a href="http://www.sun.com/training">http://www.sun.com/training</a>
Warranty	<a href="http://www.sun.com/service/support/warranty/index.html">http://www.sun.com/service/support/warranty/index.html</a>

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For documentation, please include the title and part number of your document with your feedback:

*Sun Cooling Door 5200 Installation and User's Guide*, 820-7182-11.

# Preparing to Install

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This chapter provides a summary of what is required to prepare your site for installation of the Sun Cooling Door 5200.

The following information is covered in this chapter:

- [“Supported Server Racks” on page 1-1](#)
- [“Humidity Control” on page 1-1](#)
- [“Water Connection” on page 1-4](#)
- [“Floor Requirements” on page 1-4](#)

---

## 1.1 Supported Server Racks

Sun Cooling Door 5200 can be installed onto the Sun Blade 6048 chassis (part number 594-5971-xx). You can distinguish the newer Sun Blade 6048 chassis by the presence of the rear top and bottom covers that allow for greater airflow control.

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**Note** – The Sun Cooling Door 5200 should only be installed onto a server rack that has existing holes at its rear to accept the two Sun Cooling Door 5200 adapter brackets.

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## 1.2 Humidity Control

Your data center must have the necessary humidity control infrastructure to optimize the cooling performance of the Sun Cooling Door 5200.

Condensation is prevented when the temperature of the water flow remains above the dew point. The dew-point depends on the existing ambient temperature and humidity of the air. The dew-point varies among facilities and also can vary locally within a facility. The chilled water inlet temperature must be adjusted according to the ambient dew-point in order to avoid condensation.

The dew-point control strategy depends on the set-up and operation of the complete cooling methodology of the data center. This set-up varies by case and is the responsibility of the customer. ASHRAE environmental guidelines should be followed. The typical Sun Cooling Door 5200 installation would be in an air-conditioned environment conforming to ASHRAE Thermal Guidelines for Data-processing Environments.



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**Caution** – The Sun Cooling Door 5200 does not contain a dew-point control device for avoiding condensation. The dew-point control should be installed as part of the facility infrastructure.

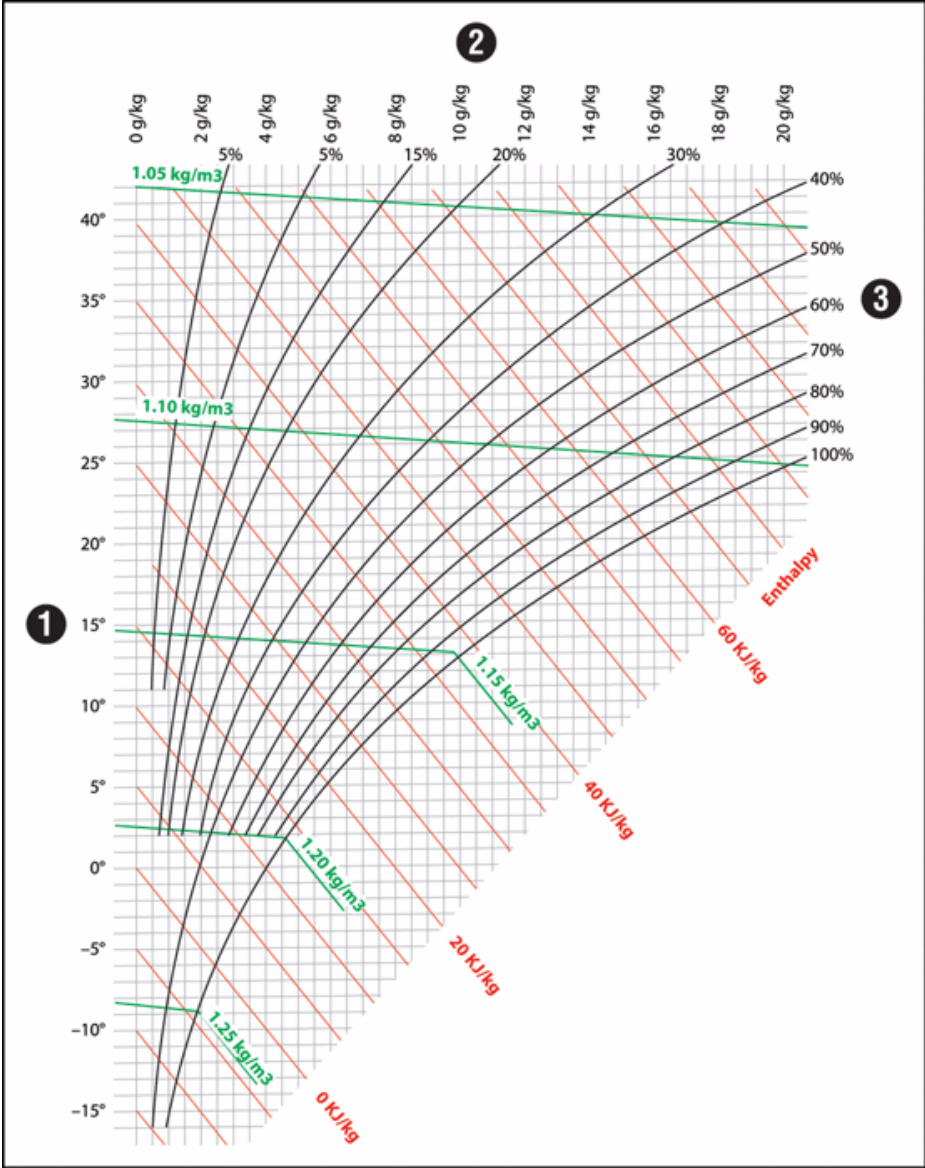
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can be used for determining the dew point. Choose the temperature and the humidity level (e.g. 25°C, 50% humidity) and locate that particular point in this chart. Below this point, you can find the 100% humidity level. To the left of that point is the dew-point temperature of the inlet water.

**Example:** The climate of data center rooms is usually maintained at 72 °F (22 °C) with 50% relative humidity. The dew point temperature is then approximately 48.2 °F (9°C). In this case, the recommended inlet temperature of the cooling water should be approximately 54 °F (12 °C).



**FIGURE 1-1** Mollier-h-x Diagram for Humid Air—pressure 0.950 bar (537.0 m/10.0°C.80.0% rF (relative humidity))



**Figure Legend**

- 1 Temperature in Celsius
- 2 Water
- 3 Relative humidity

---

## 1.3 Water Connection

Your data center must have the necessary water infrastructure to support the Sun Cooling Door 5200 requirements.

The Sun Cooling Door 5200 requires the following cooling water connection properties:

- Inlet temperature above dew point
- Adequate water pressure (See [Section 3.6, “Water-Side Pressure Loss”](#) on page 3-8)
- Adequate water flow (See [Section 3.3, “Cooling Capacity”](#) on page 3-4)
- 1" threaded pipe connection (male thread, BSP or NPT)
- Water quality (See [Section 3.5, “Hydrological Information”](#) on page 3-6)

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**Note** – For detailed information on how to meet the requirements above, see your site planning guide and/or Sun representative.

---

The Sun Cooling Door 5200 must be connected to a chilled water network by two 1" male threaded pipe connections on the inlet and return, located on the lower rear side of the unit. It is possible to have overhead water connections. Refer to [“Sun Cooling Door 5200 Installation for Overhead Water Source”](#) on page 2-20. Connecting the water source to the door must be managed by the customer.



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**Caution** – Experienced or licensed technicians, as appropriate per local regulations, should perform the installation of the water source.

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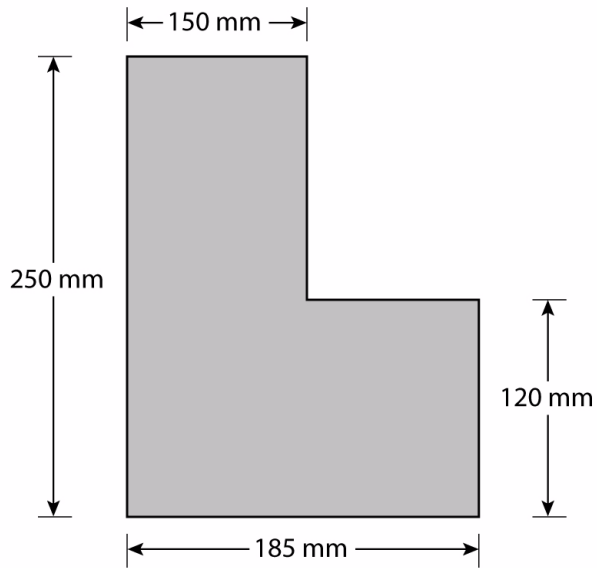
## 1.4 Floor Requirements

If your Sun Cooling Door 5200 will be connected to water lines routed from below the unit, you must allow for flooring space beneath the unit in raised flooring.

- The floor must be even, rigid, level, and have no steps.
- All server racks are positioned according to this document.
- All relevant floor panels have cut-out section supporting the door opening.

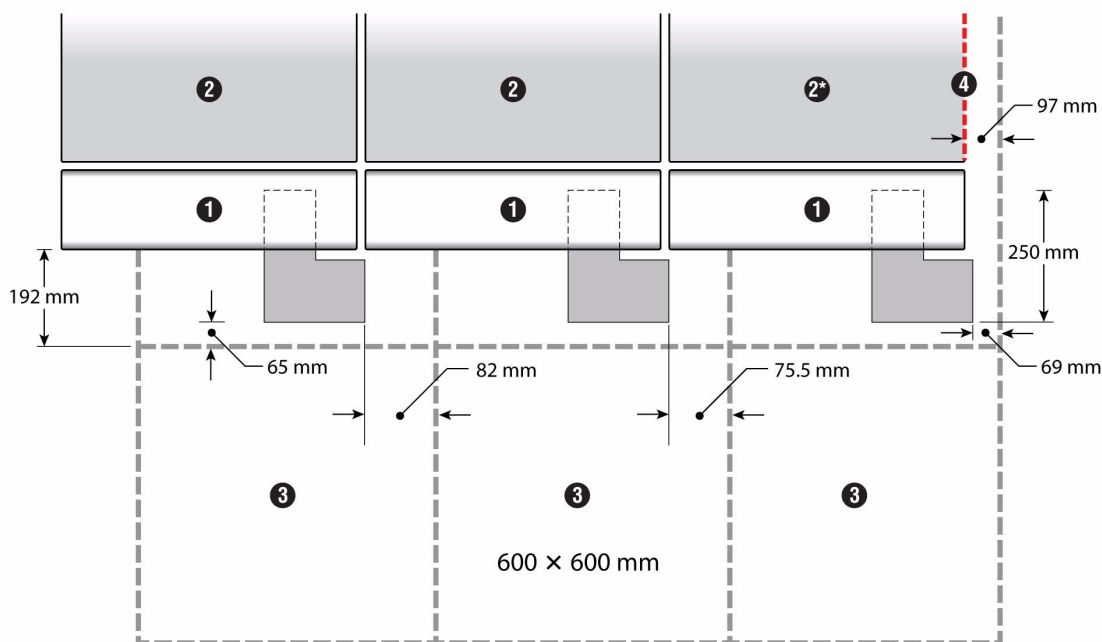
The floor tile cut-outs need to be prepared for the rack/chassis as follows:

**FIGURE 1-2** Floor Tile Cut-out



When installing the Sun Cooling Door 5200 onto a chassis, follow the dimensions outlined by [FIGURE 1-3](#) for planning rows of racks greater than one rack wide.

**FIGURE 1-3** Tile Cut-outs



**Figure Legend**

- 1 Sun Cooling Door 5200  
Server chassis (Sun Blade 6048 Chassis is 606.5 mm in width)
  - 2 2\* denotes the first Sun Blade 6048 in row
  - 3 Floor tiles
  - 4 First rack is 97mm from edge of first tile
- (Drawing not to scale)

**Note** – The above configuration is recommended. This diagram applies to 600mm x 600mm tile configuration.

Begin the placement of the first rack at the right side of the last tile. The space between the cut-out and the edge of the tile increases with each tile, right to left: The first cut for the first chassis on the right is 69mm from the edge of the tile, for the second tile it is 75.5mm, and for the third tile it is 82mm. Follow this position strategy for each additional rack.

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**Note** – Tile cut-outs for cable management might need to be considered and are not included in both sketches above.

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**Note** – There should be enough space available at the rear of the rack to allow for the installation of the Sun Cooling Door 5200 as well as for opening the door after installation.

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# Sun Cooling Door 5200 Installation Procedures

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This chapter contains information and procedures for installing your Sun Cooling Door 5200. The procedures in this document are intended for technicians who have a high-level of understanding and skill in installing IT equipment.

Follow the procedures in the order they appear in this document.

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**Note** – Installing the Sun Cooling Door 5200 must be completed by Sun Microsystems approved service personnel.

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**Note** – The illustrations in this document show the Sun Cooling Door 5200 being installed into the Sun Blade 6048 Modular System. Contact your Sun representative about other supported racks.

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To install in data centers with overhead water source, see [“Sun Cooling Door 5200 Installation for Overhead Water Source”](#) on page 20.

---

## 2.1 Sun Cooling Door 5200 Installation

These installation procedures are for data centers with under-floor water source.

The following procedures are covered in this section:

- [“Step 1: Check Inventory” on page 2-2](#)
- [“Step 2: Secure the Server Rack/Chassis to the Floor” on page 2-3](#)
- [“Step 3: Remove the Existing Door” on page 2-4](#)
- [“Step 4: Install the Stabilization Pegs” on page 2-5](#)
- [“Step 5: Adjust the Leveling Feet” on page 2-7](#)
- [“Step 6: Install the Adapter Brackets to the Server Rack/Chassis” on page 2-8](#)
- [“Step 7: Install the Sun Cooling Door 5200 onto the Server Rack” on page 2-11](#)

### ▼ Step 1: Check Inventory

To install the Sun Cooling Door 5200, ensure the following conditions are true:

1. **Check that the shipping crate or packaging is not damaged.**
2. **Check that the following items are shipped with the Sun Cooling Door 5200:**



**TABLE 2-1** Shipping Inventory for the Sun Cooling Door 5200

Quantity	Item Description
1	Sun Cooling Door 5200
1	Unpacking instructions
1	<i>Sun Cooling Door 5200 Installation and User's Guide</i>
1	Adapter bracket, right
1	Adapter bracket, left
1	Air baffle
3	Stabilization pegs (for door stabilization during installation)
1	Stabilization strap
1	Sun logo magnetic badge
1	Sun Cooling Door equipped magnetic badge
1	Grounding cord
1	Contact washer NZ/5.1 (for grounding)
1	Flat washer 5.3 (for grounding)
1	M5 nut (for grounding)
26	M6x12 screws Torx-30 (extras may be provided)
1	Multitool wrench (for leveling feet)

## ▼ Step 2: Secure the Server Rack/Chassis to the Floor

Be sure that the server rack/chassis is secured to the floor and cannot move. One option is to adjust the leveling feet so that they make enough contact with the floor to prevent the server rack/chassis from moving during the Sun Cooling Door 5200 installation.

## ▼ Step 3: Remove the Existing Door

To install the Sun Cooling Door 5200, you first need to remove the existing door that is installed with the server rack/chassis.

The following procedure is for the Sun Blade 6048 Chassis rear door.

---

**Note** – The Sun Cooling Door 5200 does not fit on the early Sun Blade 6048 chassis. It fits on the newer Sun Blade 6048 chassis only (manufacturing part number 594-5971-xx). You can distinguish the newer Sun Blade 6048 chassis by looking for the rear top and bottom cover for greater airflow control.

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### 1. Unlock the rear door and open.

Locate the door keys that was shipped with the server rack/chassis and unlock the rear door.

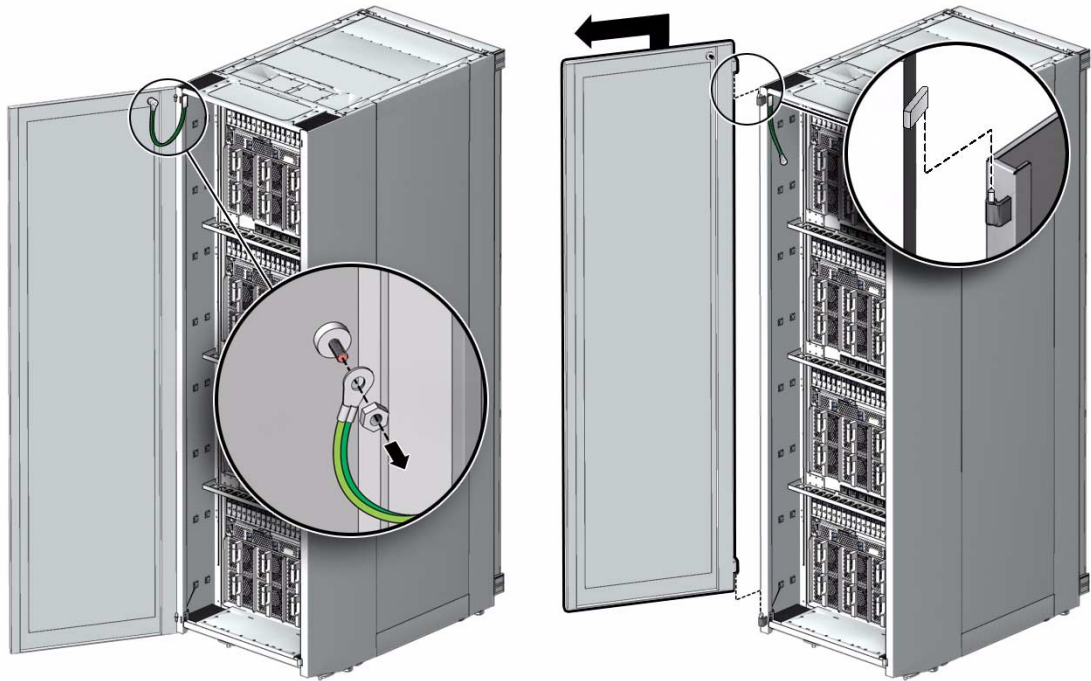
### 2. Detach the grounding straps that are connected to the door.

Press down on the tabs on the grounding straps quick-release connectors. Pull the straps away from the frame.

### 3. Lift the door up and off of its hinges. See [FIGURE 2-1](#).

### 4. Remove the hinges and latch using a #2 Phillips screwdriver.

**FIGURE 2-1** Removing the Rack/Chassis Door



## ▼ Step 4: Install the Stabilization Pegs

The procedure described in this section enables the door to stand upright without a tipping hazard while other Sun Cooling Door 5200 installation procedures occur.

---

**Note** – Due to the weight of the door, this procedure has been implemented to ensure that the Sun Cooling Door 5200 is held safely upright when it is being secured to the adapter brackets.

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**Note** – The stabilization pegs and stabilization strap are removed after installation. They may be stored and reused for other Sun Cooling Door 5200 installations.

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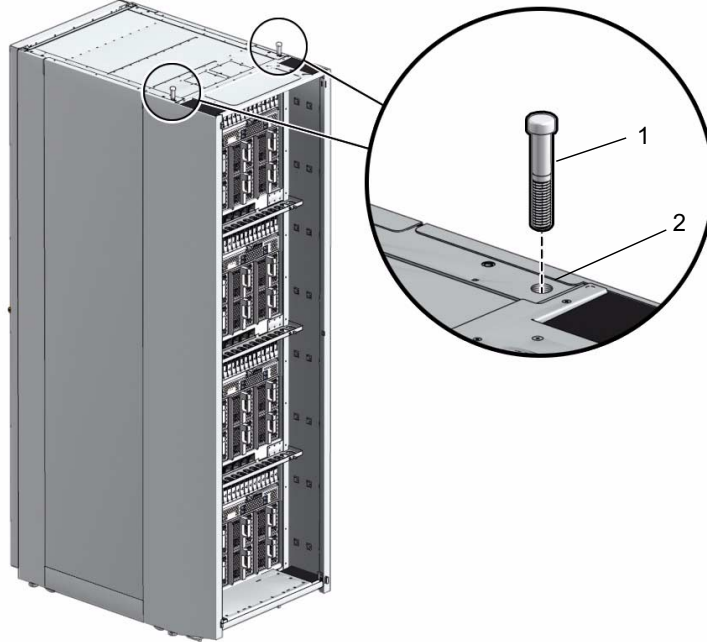
A step stool is required for this procedure.

1. Stand on a step stool and locate the peg holes at the top of the open server rack.

2. Insert a stabilization peg into each of the rear-most holes of the server rack. See [FIGURE 2-2](#).

Install the peg so that the peg is installed fully (to the top of the thread). Finger tighten or use a wrench.

**FIGURE 2-2** Attaching Stabilization Pegs to the Server Rack



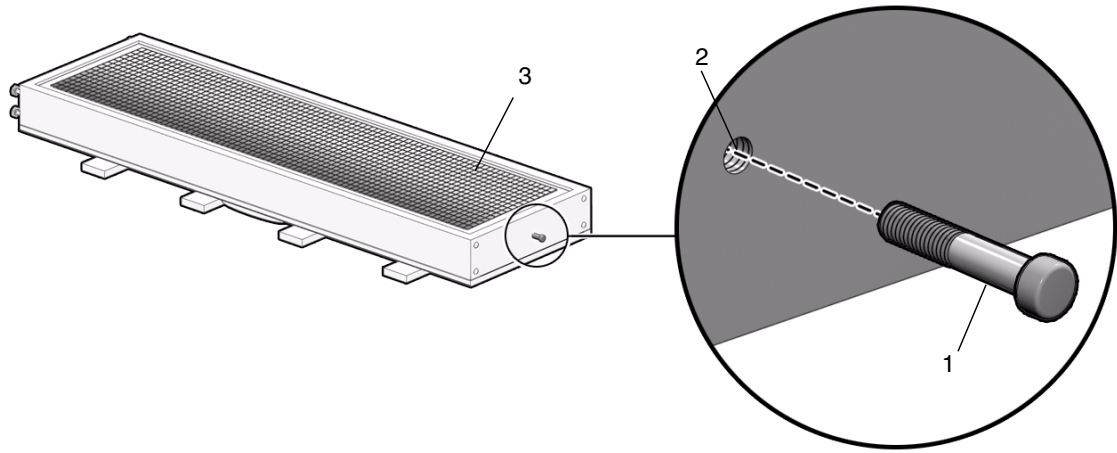
**Figure Legend**

- |   |  |
|---|--|
| 1 | Stabilization peg                            |
| 2 | Hole (use hole nearest the rear of the rack) |

**Note** – If your data center has an overhead water source, see [“Sun Cooling Door 5200 Installation for Overhead Water Source”](#) on page 20.

3. At the top of the Sun Cooling Door 5200, insert the stabilization peg into the peg hole at the center of the top frame. See [FIGURE 2-3](#).

**FIGURE 2-3** Attaching the Stabilization Pegs to the Sun Cooling Door 5200



**Figure Legend**

- 
- |   |                       |
|---|-----------------------|
| 1 | Stabilization peg     |
| 2 | Peg hole in top panel |
| 3 | Sun Cooling Door 5200 |
- 

## ▼ Step 5: Adjust the Leveling Feet

---

**Note** – If your data center has an overhead water source, see [“Sun Cooling Door 5200 Installation for Overhead Water Source”](#) on page 20.

---

Adjust the leveling feet on the Sun Cooling Door 5200 so they extend far enough from the frame so when the door stands upright next to the server rack, the holes in the door frame align with the holes on the adapter brackets on the server rack.

---

**Note** – For the Sun Blade 6048 chassis it is recommended that the leveling feet are adjusted to extend approximately 68 mm from the bottom of the door.

---

## ▼ Step 6: Install the Adapter Brackets to the Server Rack/Chassis

Before installing the door onto the server rack/chassis, you must first install two adapter brackets onto the rear of the server rack. For this procedure, you must have the following tools and parts:

- Left and right adapter brackets
- 12 silver Torx-30 head screws
- Torx-30 screwdriver

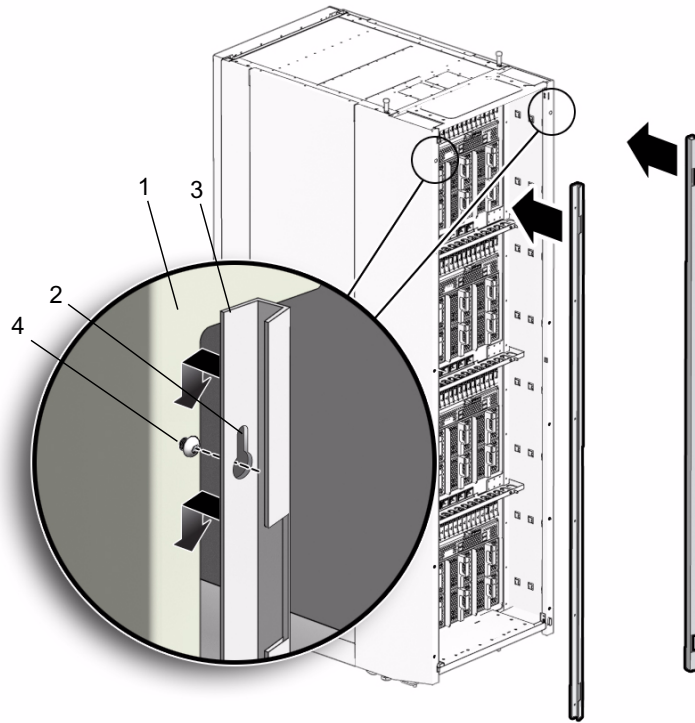
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**Note** – The Sun Cooling Door 5200 can only be installed onto a server rack that has pre-existing installation holes on the rear frame.

---

1. Secure a Torx-30 head screw into the top hole on either side of the server rack. Do not fully tighten.
2. Install the adapter bracket onto the screw as shown in [FIGURE 2-4](#).

**FIGURE 2-4** Mounting Adapter Bracket Onto Server Rack/Chassis

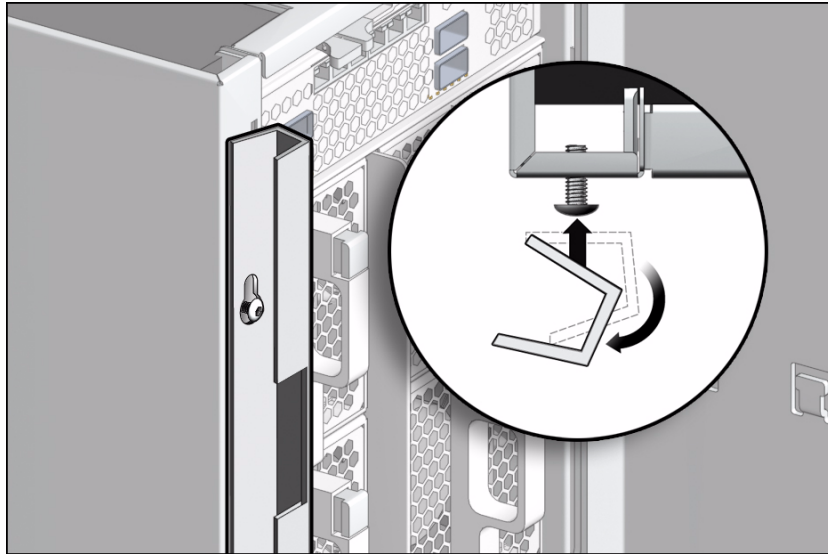


**Figure Legend**

- 
- |   |                               |
|---|-------------------------------|
| 1 | Server rack frame (left side) |
| 2 | Slotted (keyed) top hole      |
| 3 | Left adapter bracket          |
| 4 | Installation holes            |
-

In some instances, the tophole on the rail might have a tight fit over the screw head, in which case you should rotate or tilt the rail so that the screw head passes through the hole. See [FIGURE 2-5](#).

**FIGURE 2-5** Fitting Adapter Bracket Over Screw Head



**3. Install the remaining Torx-30 head screws.**

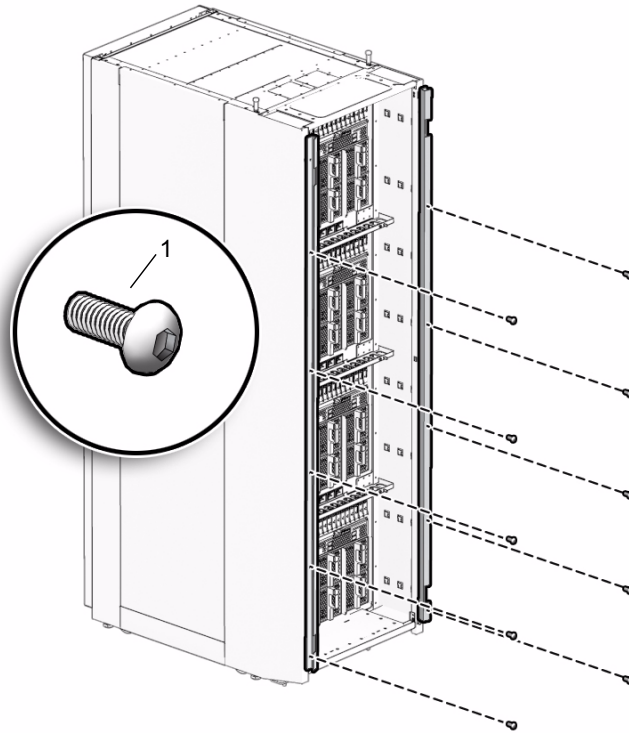
The top-most hole is slotted to allow for bracket movement to help secure the remaining screws when the first Torx-30 head screw is not fully tightened.

**4. Fully tighten all screws.**

**5. Install the other adapter bracket using the same procedure as above.**



**FIGURE 2-6** Securing the Adapter Brackets to the Ser2-24ver Rack/Chassis



**Figure Legend**

---

1 Torx-30 screws (12x)

---

## ▼ Step 7: Install the Sun Cooling Door 5200 onto the Server Rack



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**Caution** – Two service personnel are required for this installation and three are recommended. The Sun Cooling Door 5200 weighs approximately 198 lbs (90 kg).

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**Caution** – Improper installation can cause equipment damage.

---

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**Note** – If your site has an overhead water source, you must invert the door before installing. See [“Sun Cooling Door 5200 Installation for Overhead Water Source” on page 20.](#)

---

**1. Position the Sun Cooling Door 5200 at the rear of the prepared server rack.**



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**Caution** – Handling the Sun Cooling Door 5200 requires extreme caution especially on smooth surfaces like linoleum or vinyl. Take extreme care when handling the door.

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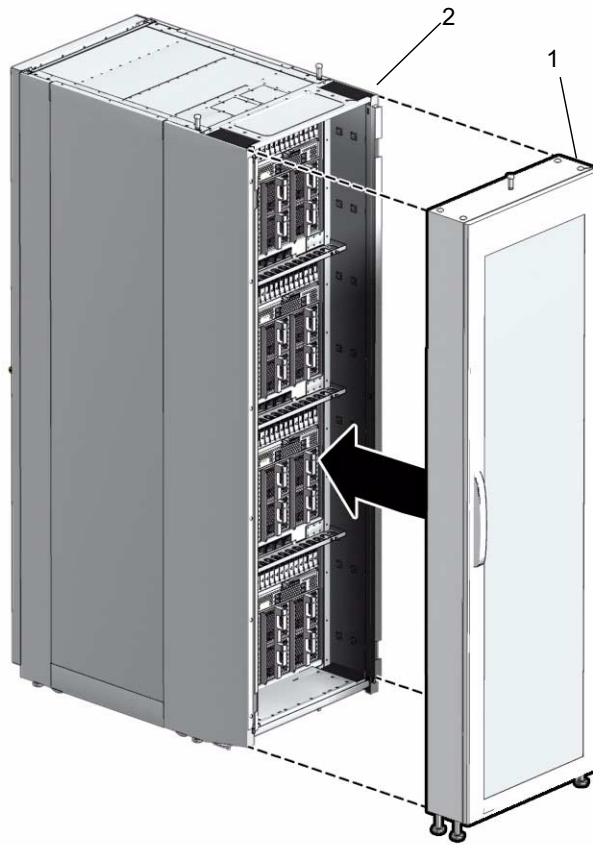
**Caution** – Do not use the stabilization peg to lift the Sun Cooling Door 5200.

---

Depending on your site, it might be necessary to stand the door upright and “walk” the door to the rear of the server rack. You do this by alternately moving one side, then the other side, into position.

**2. Align top of the Sun Cooling Door 5200 to the top of the server rack.**

**FIGURE 2-7** Aligning the Sun Cooling Door 5200 to the Server rack



**Figure Legend**

- 
- |   |                                    |
|---|------------------------------------|
| 1 | Sun Cooling Door 5200              |
| 2 | Align tops of door and server rack |
- 

3. Route the stabilizing strap around the stabilizing pegs on top of the server rack and the Sun Cooling Door 5200 frame as shown in [FIGURE 2-8](#).

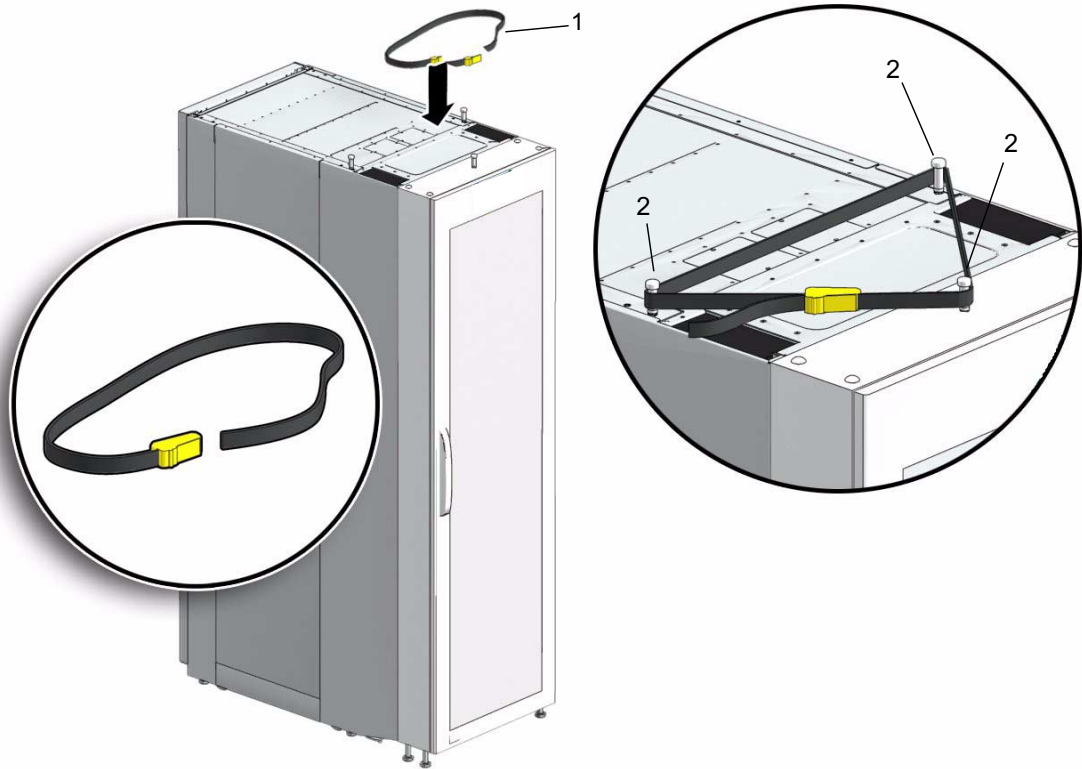


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**Caution** – Be sure there is one service personnel holding the door in place while another service personnel attaches the stabilizing strap.

---

**FIGURE 2-8** Attaching the Stabilizing Strap to the Stabilization Pegs



**Figure Legend**

- 
- |   |                         |
|---|-------------------------|
| 1 | Stabilizing strap       |
| 2 | Stabilization pegs (3x) |
- 

4. Tighten the strap into a complete loop using the buckle fastener.



---

**Caution** – The door must be in the open position in order to install it onto the server rack. The weight of the door can make handling difficult and cause a tipping hazard if the stabilization strap is not installed correctly.

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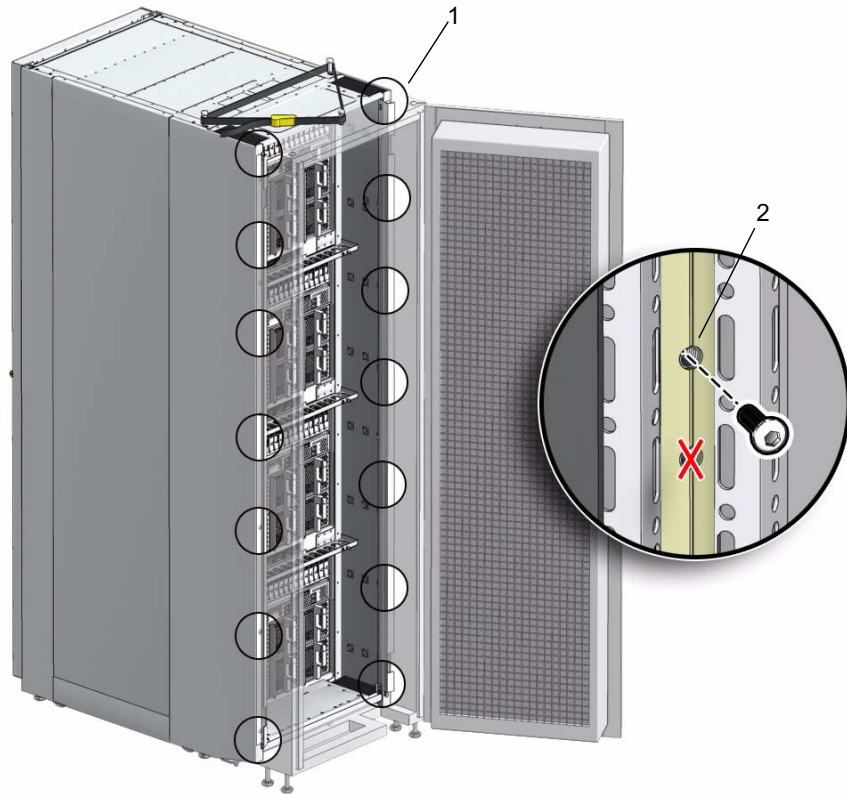
5. Unlock the Sun Cooling Door 5200 and slowly open.

**6. Align the Sun Cooling Door 5200 installation holes with the server rack holes.**

Using the leveling feet, vertically adjust the height of the Sun Cooling Door 5200 so that its installation holes align with the holes on the adapter brackets. The multitool wrench is provided to adjust the levelling feet.

Use the top hole of each pair of installation holes available. See [FIGURE 2-9](#).

**FIGURE 2-9** Securing Sun Cooling Door 5200 onto the Server Rack



**Figure Legend**

- 
- |   |  |
|---|--|
| 1 | Installation holes (14x)                 |
| 2 | Install screw into top installation hole |
- 

**7. Insert an M6x12 screw into each of the top installation holes using a Torx-30 screwdriver. Do not fully tighten.**

**8. Insert the remaining M6x12 screws into the remaining installation holes.**

Once all screws have been inserted, tighten all screws.

9. Check that the leveling feet all have contact with the floor to ensure stability of Sun Cooling Door 5200.



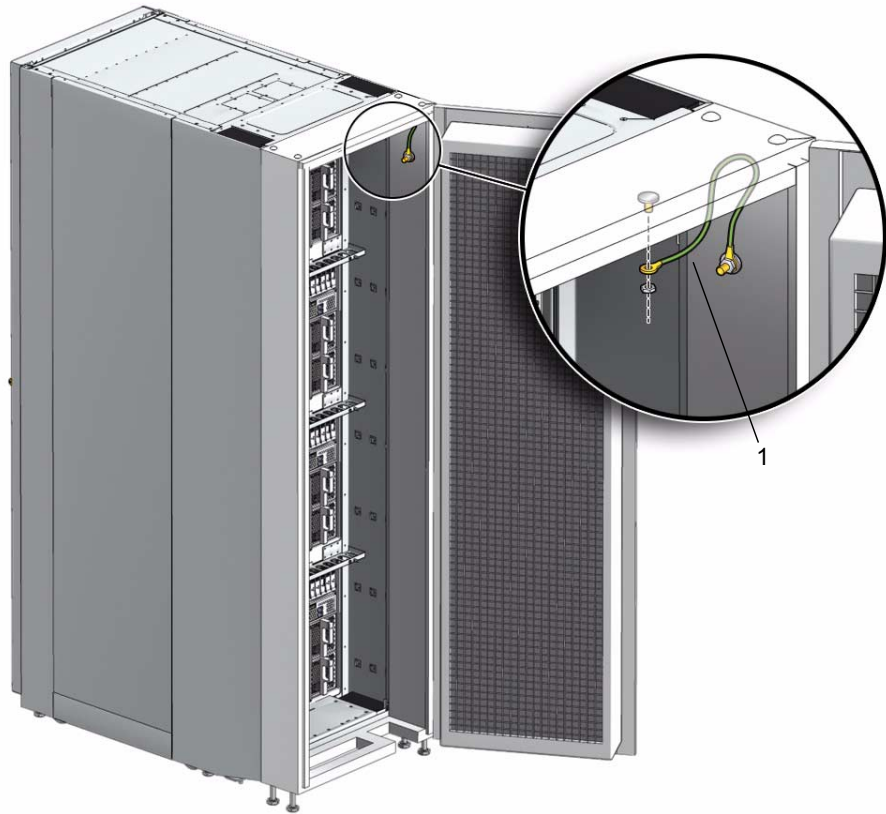
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**Caution** – A Sun Blade 6048 chassis should not be moved after the Sun Cooling Door 5200 has been installed onto it.

---

10. Remove the three stabilization pegs and stabilizing strap.  
Store them for use in another Sun Cooling Door 5200 installation.
11. Ground the Sun Cooling Door 5200 between the door and the server rack.  
Use the grounding cable and the fixing materials (contact washer, flat washer, M5 nut) included with the door. See [FIGURE 2-10](#).

**FIGURE 2-10** Grounding the Sun Cooling Door 5200 to the Server Rack



#### Figure Legend

---

1	Grounding cable
---	-----------------

---

12. **Ground the Sun Cooling Door 5200 between the cooling door and the data center grounding.**

Use the M8 ground stud and washer at the bottom frame section for grounding.

13. **Install the air baffle at the rear of the open rack, on the pre-installed bottom cover.**

Insert the four tabs into the four slots on the bottom cover as shown in [FIGURE 2-11](#).

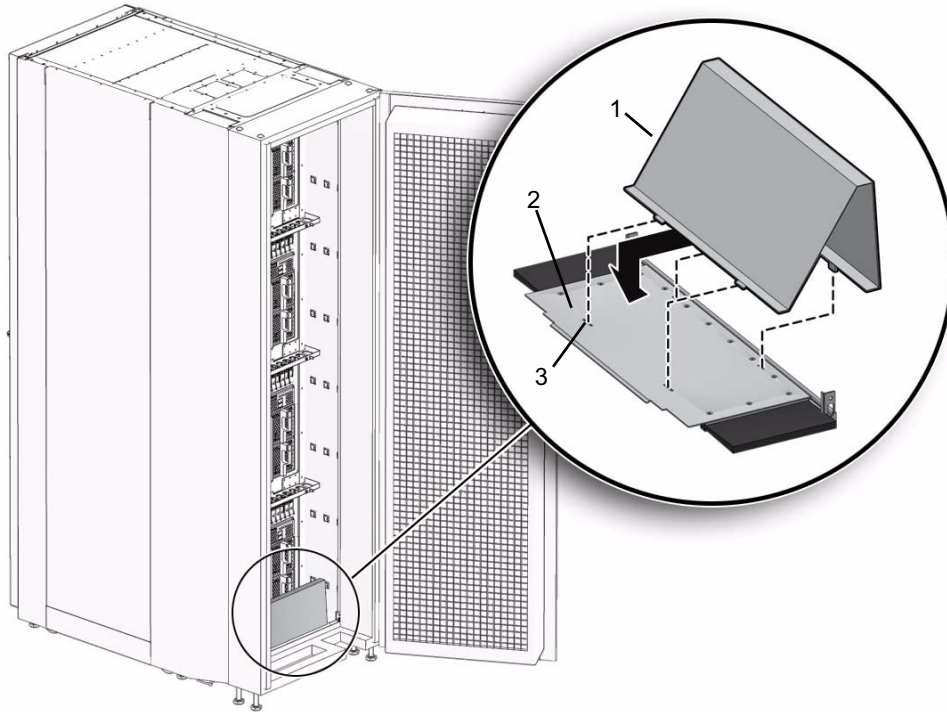
The air baffle ensures that the exhaust airflow from the system is directed to the Sun Cooling Door 5200.

---

**Note –** The air baffle is required to be used with the Sun Cooling Door 5200 when bottom water connections are used. It is not necessary to use when overhead water connections are in place.

---

**FIGURE 2-11** Installing the Air Baffle



**Figure Legend**

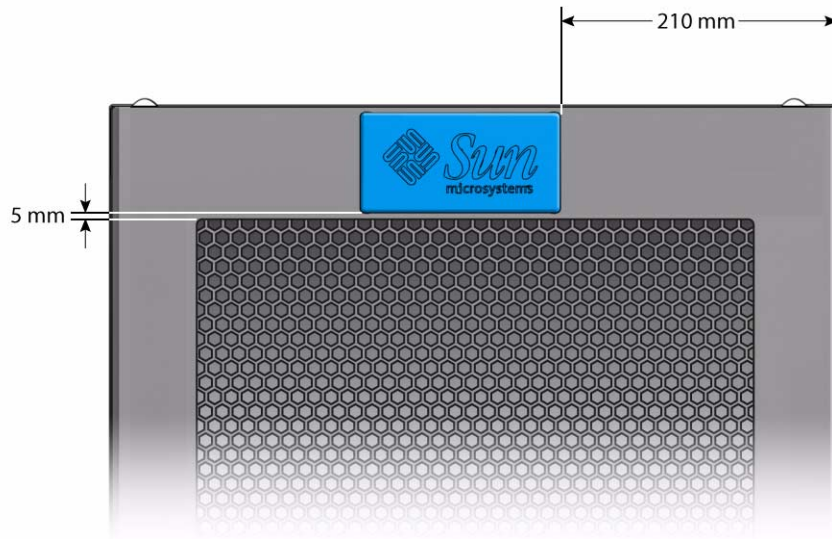
- 
- |   |                      |
|---|----------------------|
| 1 | Air baffle           |
| 2 | Bottom cover of rack |
| 3 | Slots (4x)           |
-



#### 14. Apply the Sun logo magnetic badge

Refer to the outlined dimensions for applying and positioning the Sun logo magnetic badge onto the Sun Cooling Door 5200.

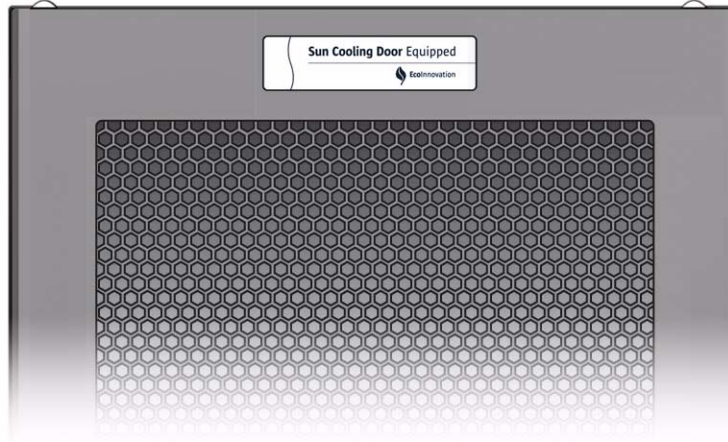
**FIGURE 2-12** Applying the Sun Logo Magnetic Badge to the Sun Cooling Door 5200



### 15. Apply the Sun Cooling Door 5200 magnetic badge

Refer to the outlined dimensions for applying and positioning the magnetic logo badge onto the server rack/chassis.

**FIGURE 2-13** Applying the Sun Cooling Door Equipped Magnetic Badge to the Front Door of the Server Rack/Chassis



---

## 2.2 Sun Cooling Door 5200 Installation for Overhead Water Source

The Sun Cooling Door 5200 supports overhead water connections. The installation procedure is the same, however additional steps are required:

- Switching the location of the levelling feet prior to installing the door.
- Reversing the position of the door handle after door installation.

---

**Note** – The Sun Cooling Door 5200 comes pre-configured for bottom water connections.

---

This section explains the following procedures:

- [“Step 1: Switch the Leveling Feet and End Panel Screws”](#) on page 21
- [“Step 2: Install the Sun Cooling Door 5200 onto the Rack”](#) on page 21
- [“Step 3: Reverse the Handle”](#) on page 22

## ▼ Step 1: Switch the Leveling Feet and End Panel Screws

1. **Remove two screws on the end panel of the Sun Cooling Door 5200 frame by using a Torx-30 screwdriver.**

The other two screws hold the panel in place. This end will become the bottom of the door.

2. **Remove two of the leveling feet which hold the bottom panel by using the multitool.**

Once removed, screw in the two screws from the top panel using the Torx-30 screwdriver. This end will become the top of the door.

3. **Install the leveling feet to the two open screw holes on the top of the door.**

---

**Note** – For the Sun Blade 6048 chassis it is recommended that the leveling feet are adjusted to extend approximately 68 mm from the bottom of the door.

---

4. **Repeat the previous steps to complete the leveling feet repositioning.**

## ▼ Step 2: Install the Sun Cooling Door 5200 onto the Rack

1. **Follow installation procedures in [“Sun Cooling Door 5200 Installation”](#) on page 2.**

---

**Note** – When installing the stabilization pegs in [“Step 4: Install the Stabilization Pegs”](#) on page 5, be sure the peg for the door is installed on the water connection side (top of door).

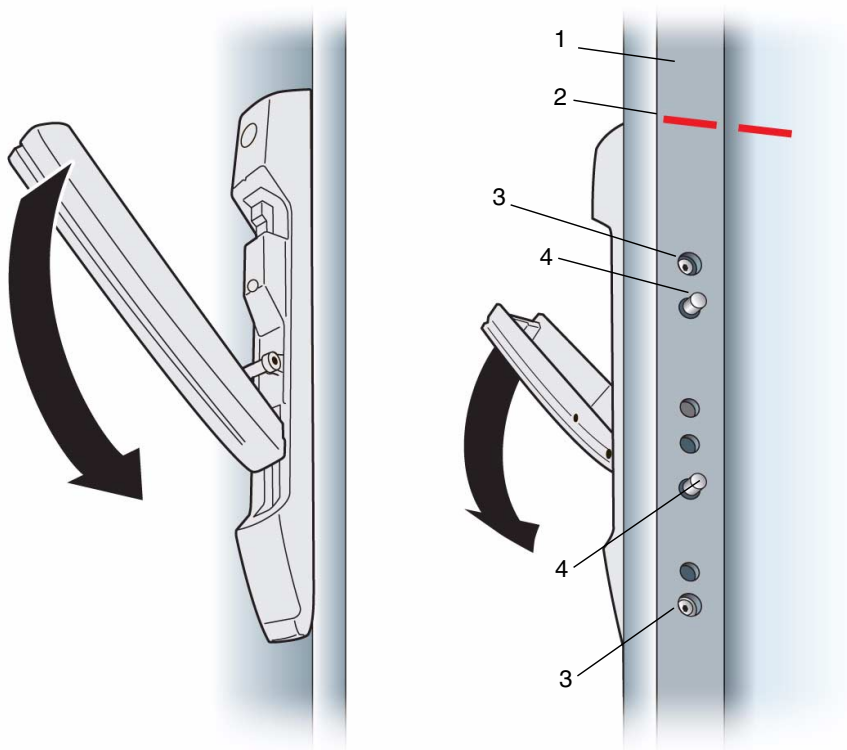
---

## ▼ Step 3: Reverse the Handle

1. With the door in the open position, hold the locking mechanism in place. When the installation screws are visible, use a felt-tipped marker to mark the location of the locking mechanism in relationship to the door.

Note the two lock pegs that protrude through the locking mechanism.

**FIGURE 2-14** Marking the Position of the Locking Mechanism

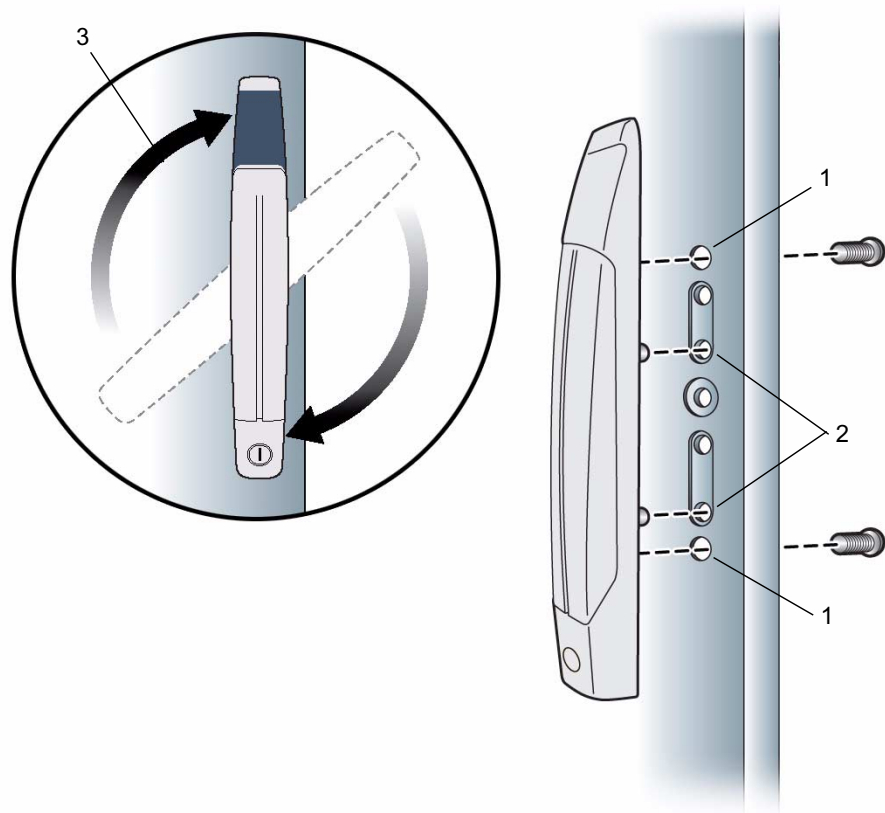


**Figure Legend**

- 
- |   |                                      |
|---|--------------------------------------|
| 1 | Locking mechanism                    |
| 2 | Felt-tipped pen marking for location |
| 3 | Door handle screws (2x)              |
| 4 | Locking pegs                         |
-

2. Stabilize the door to keep it from moving. From the inside of the door, use a Torx-25 screwdriver to unscrew the two door handle screws that secure the handle to the door. Hold onto the handle to keep it from falling.
3. Close the handle and invert its position.
4. From the inside of the door, move the locking mechanism to the position you marked with a felt pen in [Step 1](#). Hold this position.
5. Insert the door handle so that its lock pegs are inserted into the lower two peg holes as shown in [FIGURE 2-15](#).

**FIGURE 2-15** Inserting Door Handle Lock Pegs



#### Figure Legend

- 
- |   |  |
|---|--|
| 1 | Installation screw holes                                       |
| 2 | Insert door handle lock pegs into two lower holes of each pair |
| 3 | Invert handle position   |
- 

- 6. From the inside of the door, insert and tighten the two Torx-25 screws to secure the handle to the door.**

---

**Note –** You might need to open the door handle fully to view the two screw holes.

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## Product Information

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This chapter contains the following information:

- [“Overview” on page 3-1](#)
- [“Air Flow Routing” on page 3-2](#)
- [“Cooling Capacity” on page 3-4](#)
- [“Technical Specifications” on page 3-6](#)
- [“Hydrological Information” on page 3-6](#)
- [“Water-Side Pressure Loss” on page 3-8](#)
- [“Maintenance” on page 3-8](#)

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### 3.1 Overview

The Sun Cooling Door 5200 is a highly efficient air-to-water heat exchanger. It is installed onto the rear of the server chassis/rack and has a high cooling capacity. Its slim design and proximity to the heat load provides considerable floor space savings. It is a 100-percent passive system, allowing for minimal operation and maintenance costs.

**FIGURE 3-1** Sun Cooling Door 5200



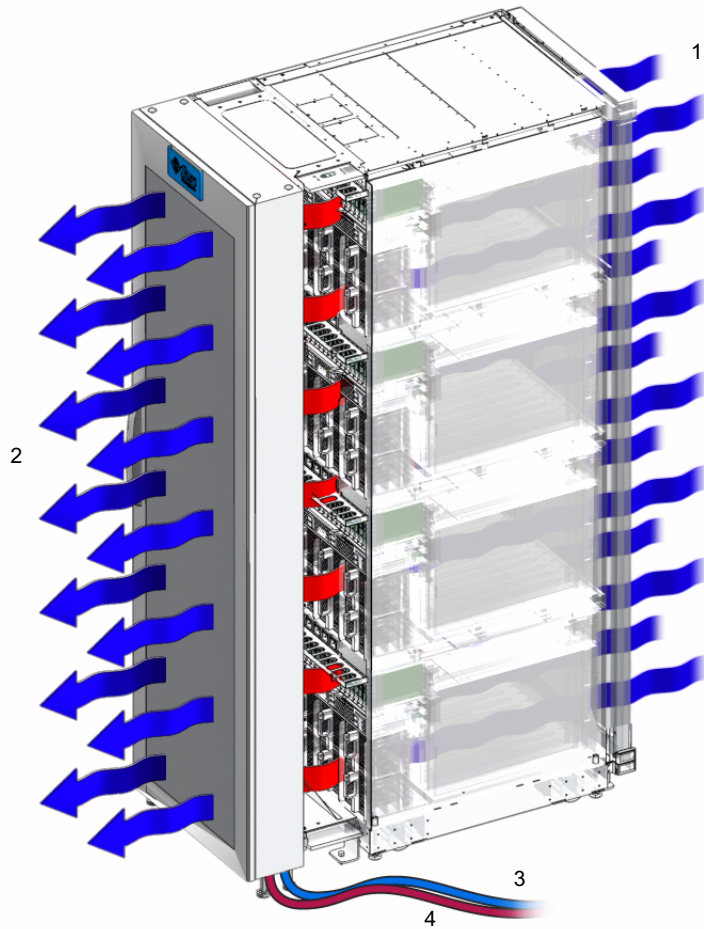
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## 3.2 Air Flow Routing

The Sun Cooling Door 5200 requires front-to-back air flow routing. The server fans push the warm air exhausted from the devices in the server chassis/rack into the rear door heat exchanger. The air is then cooled and exhausted out of the Sun Cooling Door 5200. See [FIGURE 3-2](#).



**FIGURE 3-2** Air Routing Through the Sun Cooling Door 5200



**Figure Legend**

- 
- |   |                     |
|---|---------------------|
| 1 | Air input           |
| 2 | Exhaust air         |
| 3 | Cooling water inlet |
| 4 | Warm water outlet   |
-

## 3.3 Cooling Capacity

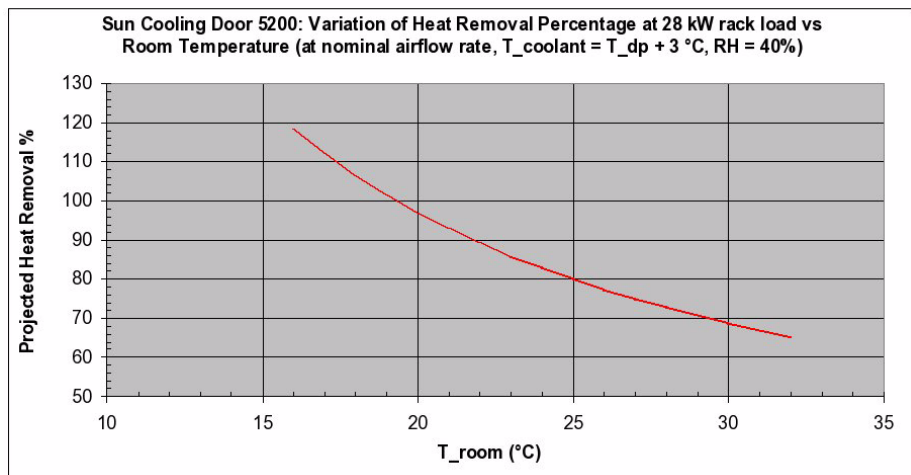
The cooling capacity of Sun Cooling Door 5200 depends on:

- Room environmental conditions
- Inlet temperature and flow rate of the water
- Air flow rate achieved by the server fans
- Heat load generated by the servers

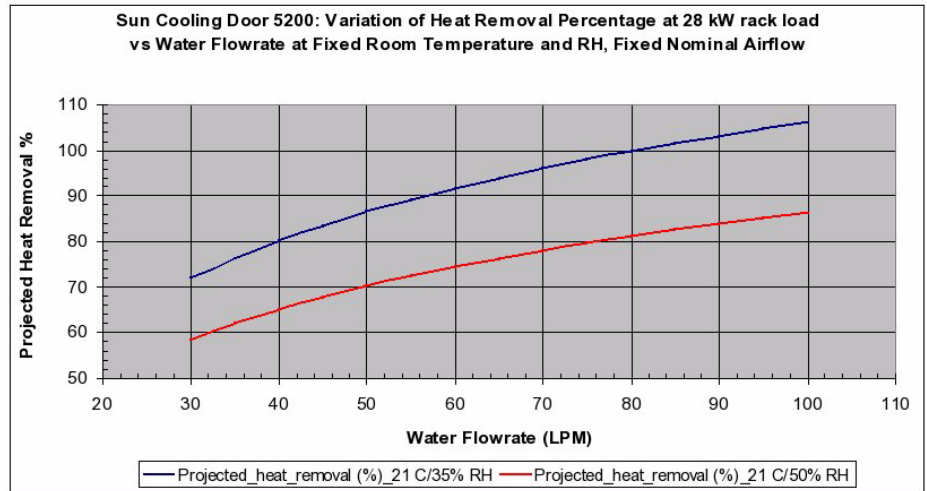
There is no fixed cooling performance number that applies to all racks or installations.

Depending on the environmental conditions, the Sun Cooling Door 5200 attains approximately 75% to 100% cooling for heat loads of up to 35 kW. If 100% cooling is not met, the exhaust air temperature can be higher than the air inlet temperature of the chassis/rack.

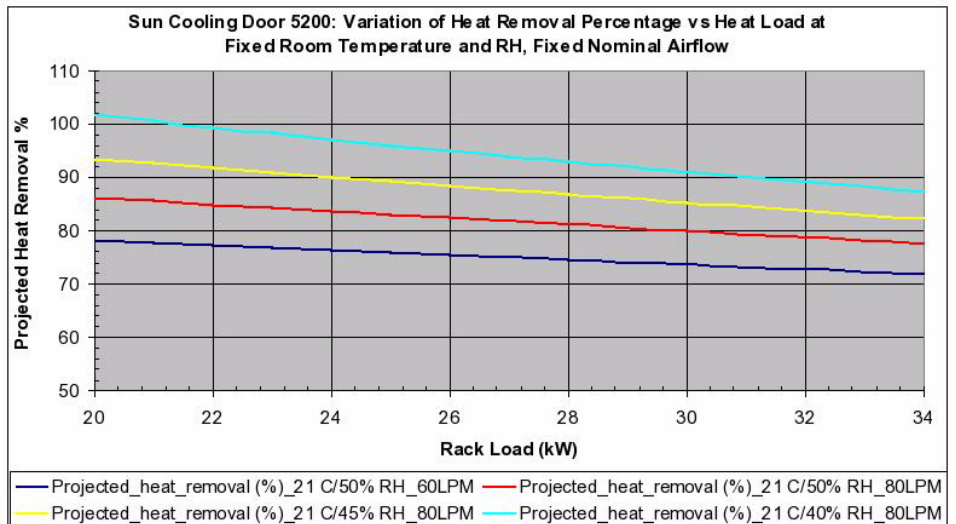
**FIGURE 3-3** Variation of Heat Removal vs. Room Temperature



**FIGURE 3-4** Variation of Heat Removal vs. Water Flow Rate



**FIGURE 3-5** Variation of Heat Removal Percentage vs. Heat Load



**Note** – Contact your Sun Microsystems representative for further details and performance projections related to a specific installation.

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## 3.4 Technical Specifications

The following are the technical specifications of the Sun Cooling Door 5200:

**TABLE 3-1** Technical Specifications of the Sun Cooling Door 5200

Technical Specifications	Sun Cooling Door 5200
Water flow (l/min)	Max. 100
Coolant	Water
Coolant inlet temperature (°C)	3 °C above dew point (recommended)
Permissible water operating pressure $p_{\max}$ (bar)	2 to 5 max.
Ambient temperature range (°C)	+10 up to +32 (non-condensing)
Width	23.7 in. (602.5 mm)
Height	81.6 in. (2073.0 mm)
Depth	6.3 in. (160 mm)
Weight (without water)	198.4 lbs (90 kg)
Weight (with water)	213.9 to 216.0 lbs (97 kg to 98 kg)

---

## 3.5 Hydrological Information

To avoid system damage and to ensure safe operation, use system water or an additive whose composition does not differ from that presented in the following summary:

**TABLE 3-2** Hydrological Data

pH value	7 – 8.5
Carbonic acid	> 3 < 8 °dH
Free carbonic acid	8 – 15 mg/dm <sup>3</sup>
Accompanying carbonic acid	8 – 15 mg/dm <sup>3</sup>
Corrosive carbonic acid	0 mg/dm <sup>3</sup>
Sulfides	Free

**TABLE 3-2** Hydrological Data

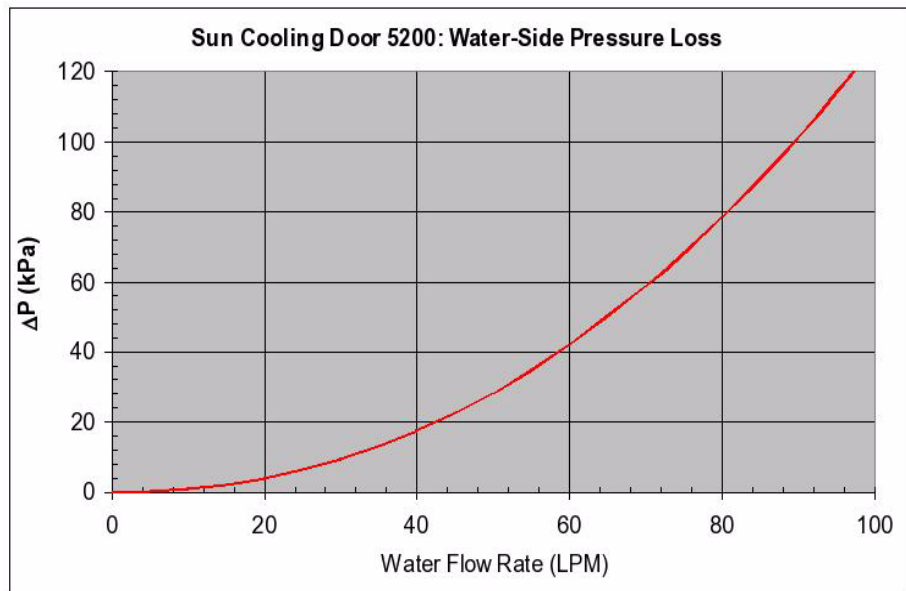
Oxygen	<10 mg/dm <sup>3</sup>
Chloride ions	< 50 mg/dm <sup>3</sup>
Sulfate ions	< 250 mg/dm <sup>3</sup>
Nitrates and nitrites	< 10 mg/dm <sup>3</sup>
COD	< 7 mg/dm <sup>3</sup>
Ammonia	< 5 mg/dm <sup>3</sup>
Iron	< 0.2 mg/dm <sup>3</sup>
Manganese	< 0.2 mg/dm <sup>3</sup>
Conductivity	< 2200 S/cm
Residue on evaporation	< 500 mg/dm <sup>3</sup>
Potassium permanganate consumption	< 25 mg/dm <sup>3</sup>
Suspended matter	< 3 mg/dm <sup>3</sup>
	> 3 < 15 mg/dm <sup>3</sup> Partial flow purification recommended
	> 15 mg/dm <sup>3</sup> Continuous purification recommended

**Note** – The Sun Cooling Door 5200 does not have a built-in water filter. If the input water is not free of debris, an external water filter should be used.

## 3.6 Water-Side Pressure Loss

The following diagram shows the water-side pressure loss of the Sun Cooling Door 5200 as a function of water flow rate. It is provided to help you determine the water pressure of the cold water supply system necessary for the system.

**FIGURE 3-6** Sun Cooling Door 5200 Water-side Pressure Loss



## 3.7 Maintenance

The Sun Cooling Door 5200 is a low-maintenance unit. All components are designed with an extremely long life span.

If an in-line filter to the water inlet is used, it should be serviced regularly.

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**Note** – Visually inspect the door and filters, if any, at regular intervals.

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**Caution** – Before removing the Sun Cooling Door 5200, it must be drained of water.

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