Vertiv™ SmartIT MGX

Installer/User Manual

Supporting NVIDIA GB300 MGX 1.1

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

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1 Important Safety Instructions

This chapter contains safety information that must be read and understood before beginning any installation activities on the Vertiv™ SmartIT MGX Rack. Failure to follow these instructions may result in personal injury, property damage, or equipment malfunction.

1.1 General Safety Warnings



WARNING! Read all safety instructions before operating or servicing this equipment. Failure to follow these instructions may result in serious injury or death.

- Always work with at least one other person when lifting or maneuvering heavy rack components.
- Do not attempt to lift any component that exceeds your safe lifting capacity. Use appropriate lifting equipment.
- Ensure the work area is clear of debris and trip hazards before beginning installation.
- Wear appropriate Personal Protective Equipment (PPE) at all times during installation activities.
- Disconnect all power sources before performing any electrical installation or maintenance work.
- Do not work on live circuits. Verify that power is de-energized using an appropriate meter before touching electrical components.
- Ensure the rack is properly stabilized with leveling feet before beginning component installation.
- Be aware of sharp edges on rack enclosures. Use appropriate cut-resistant gloves when handling sheet metal components.

1.2 PPE Requirements

The following PPE is required during integration activities:

- Safety glasses or goggles
- Cut-resistant gloves for handling sheet metal
- Steel-toed boots
- Hard hat in areas with overhead hazards
- Electrostatic Discharge (ESD) wrist strap when handling sensitive electronic components

1.3 Team Lift Requirements



CAUTION: Risk of improper moving, lifting and handling. Can cause injury. Building and equipment damage may also result. A minimum of two (2) qualified and properly trained personnel wearing appropriate, OSHA-approved PPE should attempt to lift. Use a lift cart, scissor lift, or facility-approved lifting device when bringing heavy components to height. The following components require team lift due to their weight.

- Manifolds: It is recommended that two people complete the manifold installation activities.
- MGX Rack enclosure: Use lift equipment or team lifts when moving the rack from the pallet to the installation location.

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1.4 Electrical Hazard Warnings

WARNING! Arc flash and electric shock hazard. Can cause serious injury or death. Building and equipment damage may also result. Electrical installations must be performed only by qualified electricians wearing appropriate, OSHA-approved personal protective equipment (PPE) per NFPA 70E. Always verify that circuits are de-energized before making electrical connections.

The power shelves operate at voltages that can cause serious injury or death. The DC busbar carries voltage when energized.

1.5 Pressurized Part Warnings

WARNING! Pressurized system hazard. The manifolds and hoses are shipped from the factory under a nitrogen charge. Releasing fittings, disconnecting hoses, or removing caps before safely relieving the pressure can cause a sudden release of gas or movement of components, resulting in injury or equipment damage.

Before beginning installation of the IT equipment, verify that the nitrogen charge has been safely relieved. The nitrogen can be released from the system using the pressure relief valves located at the top of the manifolds when mounted in the rack. Keep personnel clear of all connection points during depressurization. Do not loosen fittings, disconnect hoses, or remove caps until the manifolds and hoses have been confirmed fully depressurized.

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2 Product Overview

This chapter provides an overview of the Vertiv™ SmartIT MGX Rack system, including key components and model number.

2.1 System Overview

The Vertiv SmartIT MGX Rack is a high-density, liquid-cooled server rack platform designed for MGX form-factor compute nodes. The system integrates power distribution, liquid cooling, and monitoring into a single rack enclosure, supporting high-performance AI/ML and cloud computing workloads.

The installation manual applies to the following platform variant:

- MGX Rack: Designed for NVIDIA MGX form factor nodes with pre-installed manifolds and MGX specific component hardware.

2.2 Key Components

The following components are integrated during assembly.

Component	Description
MGX Rack Enclosure	48RU rack chassis with busbars, casters, leveling feet, and integrated grounding
MGX Power Shelves	DC power distribution shelves with Power Supply Units (PSUs) and Power Monitoring Modules (PMMs)
MGX Manifolds	Supply and Return liquid manifolds for direct liquid cooling
MGX Equipment Drip Tray	Drip tray with drain hose for liquid leak capture below equipment rails
MGX Equipment Rails	Slide-in equipment mounting rails for MGX nodes

2.3 Model Number

Refer to the table below for the model number:

Platform	Model Number	Description
MGX Rack	VMGXS64868-BB	MGX rack compatible with manifolds, MGX specific power shelves and equipment rails

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3 Pre-Installation Preparation

This chapter covers all pre-installation activities, including tools required, staging of components, and general workspace preparation.

3.1 Tools Required

The following tools are required for integration. Ensure all tools are available and in good working condition before beginning installation.

Tool Required
Phillips Head Screwdriver
Torx Screwdriver (T-20, T-25, and T-30)
2 Inch Crescent Wrench
9/16 Inch Socket
1/2 Inch Socket
3/4 Inch Socket
19 mm Socket
5/16 Inch Socket
3 mm Hex Key
4 mm Hex Key
13 mm Socket (Long Barrel)
Level
Pliers
Knife/Sharp Blade
Tin Snips
Ladder
Torque Wrench (up to 8.5 N-m)

NOTE: Ensure the installation area is accessible by a lift cart or scissor lift rack unloading/moving. Coordinate with facility management as required.

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3.2 Installation Site Readiness

The following section details the dimensions, weights, and site requirements to ensure that the end user facility is adequately provisioned to support the Vertiv™ SmartIT MGX Rack system.

3.2.1 Dimensions and Weights

Component	Dimensions (H x W x D)	Weight
Packaged MGX Rack	TBD	TBD
Unpackaged MGX Rack	TBD	TBD
Maximum Configured MGX Weight	TBD	TBD

3.2.2 End-User and Site Requirements

Before delivery, the end user must verify that:

- The loading dock, delivery route, doorways, corridors, elevators, ramps, and turning areas can accommodate the packaged dimensions and shipping weight.
- All floors along the delivery route can support the applicable rolling loads, and the final installation location can support the rack's static, concentrated, and point loads.
- The floor is level, structurally sound, and suitable for the rack leveling feet, anchoring hardware, and baying arrangement.
- Adequate working clearance is available around the rack for uncrating, installation, cable routing, piping connections, airflow, operation, and service.
- Approved material-handling equipment is available and rated for the packaged rack weight.
- Required electrical service, overcurrent protection, disconnecting means, grounding, bonding, and cable pathways are installed and ready for connection.
- Facility cooling capacity is available for the maximum planned IT and power-system heat load.
- Liquid-cooling supply, return, drain, vent, isolation, leak-detection, and containment provisions are complete and compatible with the installed system.
- Liquid-cooling supply is capable of providing adequate flow rates and liquid temperatures to the rack.
- The approved coolant and required water-quality parameters have been identified.
- Network, monitoring, emergency-power-off, fire-protection, and facility alarm interfaces are available where required.
- The area is clean, dry, adequately illuminated, and protected from construction debris, water intrusion, condensation, corrosive contaminants, and unauthorized access.
- All installation permits, inspections, engineered approvals, and site-specific safety requirements have been completed.

The delivery route should be established from the loading dock to the final equipment location, including verification of doorway, elevator, floor-loading, and turning-space limitations. Environmental conditioning should also be maintained to prevent condensation when equipment is moved into the installation area.

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3.2.3 System Inputs

The Vertiv™ SmartIT MGX Rack is not provided with power whips due to varying site requirements. Below is a list of system inputs that the end user must be prepared to provide:

Component	Specifications
MGX Electrical Inputs	1 × 60 A MGX Connector per shelf
MGX Liquid Cooling Inputs	2 × 2 Inch FD83 Connectors (1 per manifold)

The option for the input connector is listed below:

Component	Model Number
MGX Input Cord	Refer to PowerDirect Nvidia GB300 Application Guide (Appendix B1)

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4 MGX Rack Installation

This chapter covers all installation procedures specific to the MGX Rack platform, including uncrating, inspection, and installation of all MGX-specific components.

4.1 Rack Uncrating

WARNING! Risk of top-heavy unit falling over when improperly lifted or moved. Can cause serious injury or death. Building and equipment damage may also result. Read all of the following instructions and verify that all lifting and moving equipment is rated for the weight of the unit before attempting to move, lift, remove packaging from or prepare the unit for installation. The rack is heavy. Ensure the ramp is stable and controlled at all times during the uncrating process. A minimum of two (2) personnel are recommended.

1. While ensuring that the ramp does not fall, strip the plastic wrapping from the rack using a sharp blade or similar instrument. Dispose of the plastic wrapping.
2. Lay the ramp down on the floor, being careful not to let it fall uncontrolled.
3. Cut the banding straps fastening the rack to the shock pallet using tin snips or a similar tool. Dispose of the banding straps.
4. Remove the ESD bag by lifting it off of the rack. A ladder may be of use to remove the bag.
5. Using a 5/16 Inch socket, raise all four leveling feet of the rack to their highest position. It may be necessary to remove the accessory bag secured at the bottom of the rack.
6. At the front of the rack, use a 1/2 Inch socket to remove the mounting screws from the bracket going into the front of the rack.
7. At the front of the rack, use a 9/16 Inch socket to remove the mounting screws from the bracket going into the pallet.
8. At the back of the rack, being careful not to apply pressure to the rack such that it starts to roll, use a 3/4 Inch socket to remove the mounting screws from the bracket going into the back of the rack.
9. Carefully, roll the rack down the ramp and onto the floor. Roll the rack to the location intended for integration. Once it is in place, use a 5/16 Inch socket to lower all four leveling feet to the ground so that the rack no longer freely rolls.

4.2 MGX Rack Inspection

The following parts are provided with the MGX rack.

Item	Quantity	P/F
Rack	1	
Baying Bracket	4	
Floor Seal	1	
Screw Kit (3 × M12, 30 × M8, 2 × M5 Screws)	1	

Inspect the MGX rack in accordance with the checklist provided in Table 4.1 on the next page.

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Figure 4.1 MGX Rack Inspection

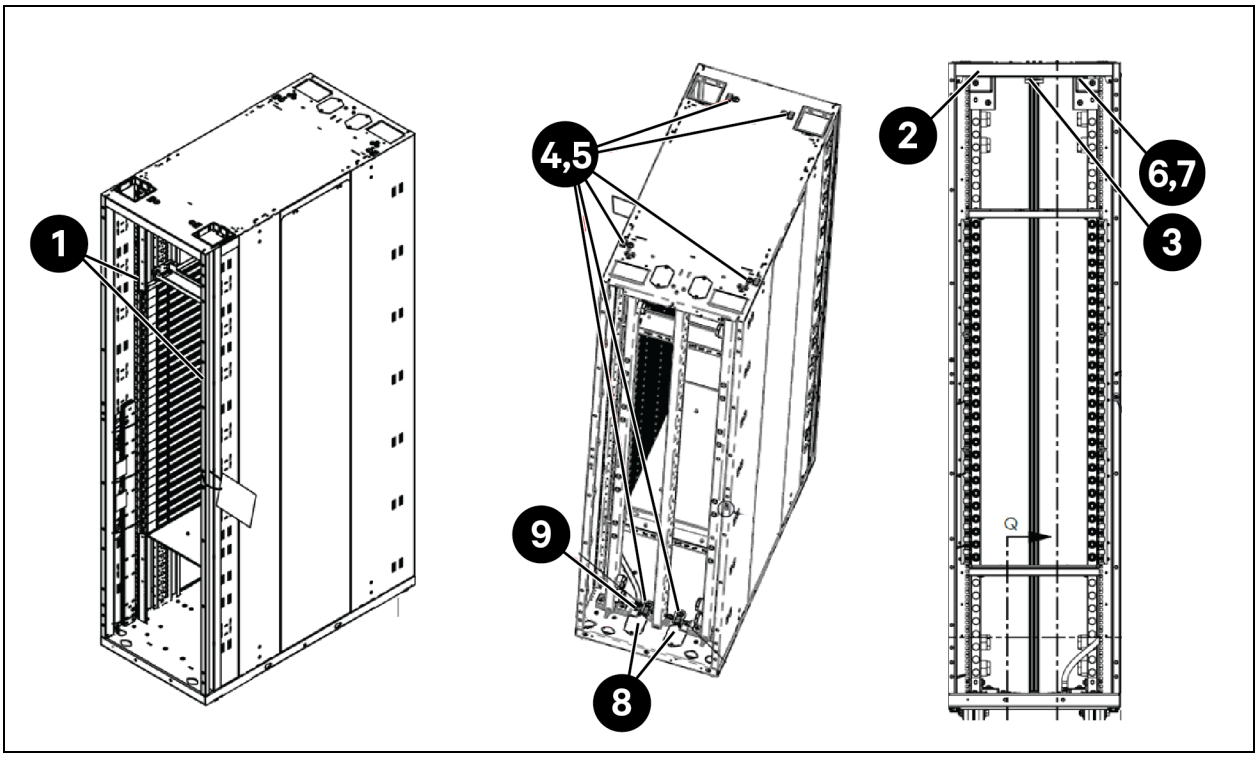


Table 4.1 MGX Rack Inspection Checklist

Reference	Inspection Item	P/F
NA	There are no obvious dents/deformations in the rack enclosure.	
NA	There are no scratches on the surface of the rack.	
NA	The busbar is installed and secure.	
NA	The casters and leveling feet are installed, undamaged, and can thread without catching.	
1	The U space numbers are marked on the left and right at both the front and back of the rack.	
NA	No ingress of water or debris is observed.	
2	The Vertiv branding logo is present – front top left of rack.	
3	The Vertiv nameplate label – front of the rack affixed to the roof.	
4	Grounding labels at each grounding location.	
5	Ground screws are present in all grounding locations.	
6	The user manual QR code label is present.	
7	The tipping warning label is present.	
8	Bottom pass-through plates are in place at the bottom back of the rack and are notched.	
9	Drip tray drain hose connector is present at the bottom of the rack.	
NA	No fasteners are loose or missing.	

The following critical dimensions are provided for reference in Table 4.2 on the facing page.

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Figure 4.2 MGX Rack Dimensions

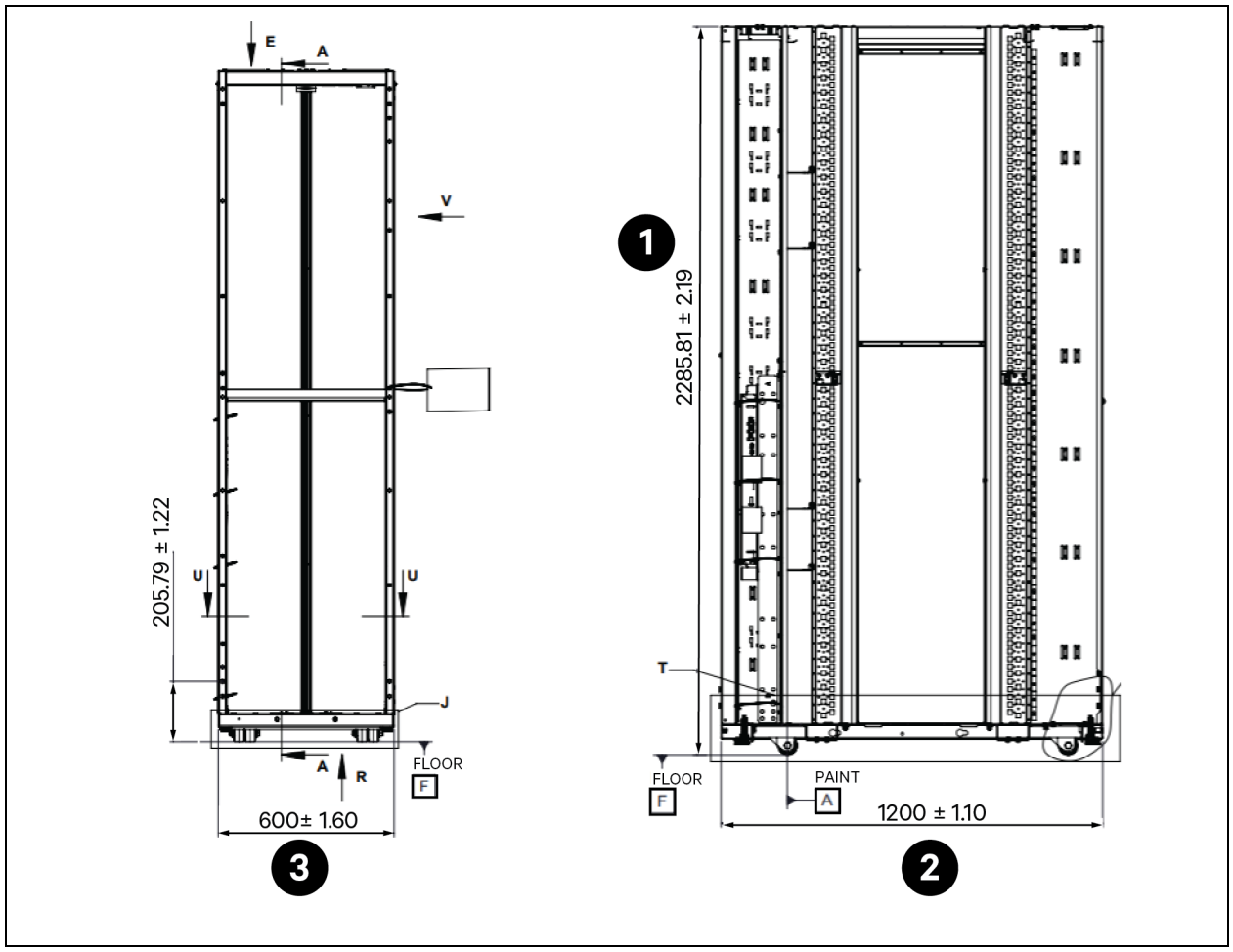


Table 4.2 MGX Rack Dimensions

Reference	Measurement	Maximum (mm)	Minimum (mm)
1	Height (Front Left)	2288	2283.62
	Height (Front Right)		
	Height (Back Left)		
	Height (Back Right)		
2	Depth (Top Left)	1201.1	1198.9
	Depth (Bottom Left)		
	Depth (Top Right)		
	Depth (Bottom Right)		

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Table 4.2 MGX Rack Dimensions (continued)

Reference	Measurement	Maximum (mm)	Minimum (mm)
3	Width (Top Front)	601.6	598.4
	Width (Bottom Front)		
	Width (Top Back)		
	Width (Bottom Back)		

4.3 Equipment Drip Tray

4.3.1 Uncrating

1. The Equipment Drip Tray equipment shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided with the Equipment Drip Tray kit:

Item	Quantity	P/F
Drip Tray Insert	1	
Drip Tray	1	
M3 Screws (Phillips head)	4	
Other comments:		

4.3.2 Inspection

The equipment shall be inspected for damage and quality issues in accordance with the checklist below:

Item	P/F
There are no obvious dents/bends/cracks in the drip tray or drip tray insert.	
Other comments:	

4.3.3 Installation

1. Install the Drip Tray Insert in the back of the rack stiffener in the 10^{th} U-Space.
2. Using the provided M3 Screws, install the Drip Tray in the 10^{th} U-Space.

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Figure 4.3 Installing the Drip Tray



4.4 Bottom Drip Tray

4.4.1 Uncrating

The Bottom Drip Tray equipment shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided with the Bottom Drip Tray kit:

Item	Quantity	P/F
Drip Tray	1	
Drip Tray Mounting Bracket	2	
M8 Screw w/ Washer (13 mm Socket)	2	
M5 Screw w/ Flat and Spring Washer (Phillips)	2	
Other comments:		

4.4.2 Inspection

The equipment shall be inspected for damage and quality issues in accordance with the checklist below:

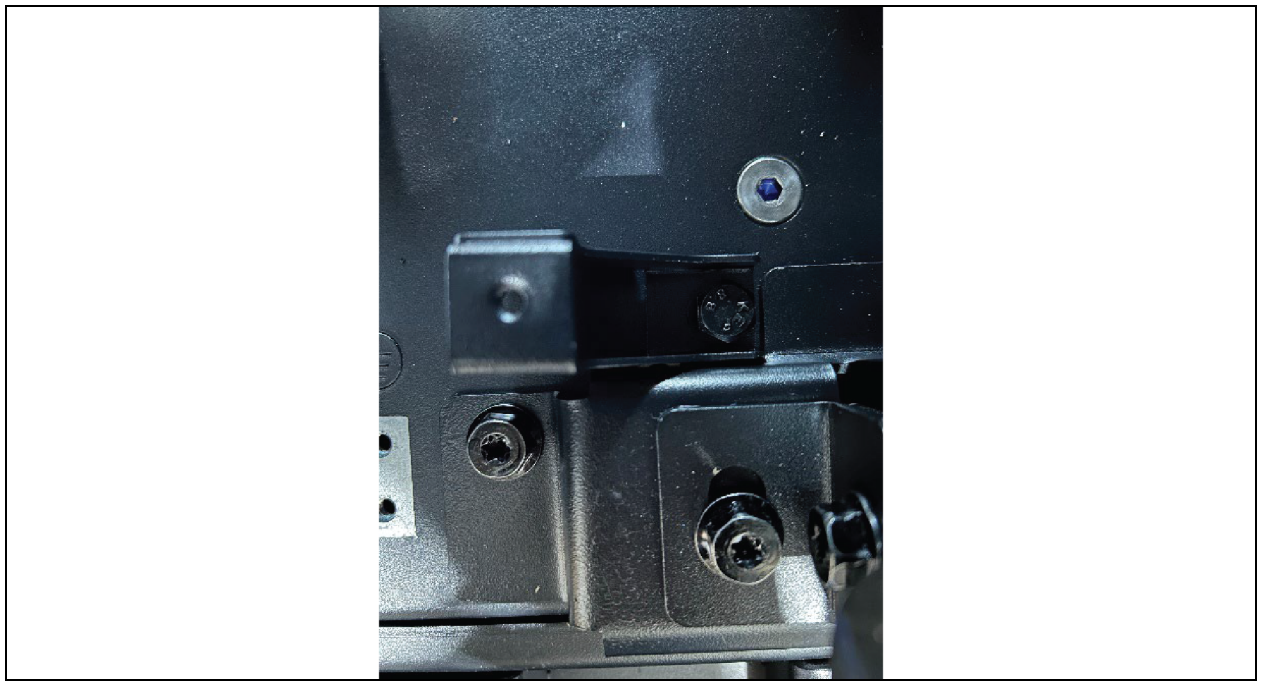
Item	P/F
There are no obvious dents/bends/cracks in the drip tray.	
Other comments:	

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4.4.3 Installation

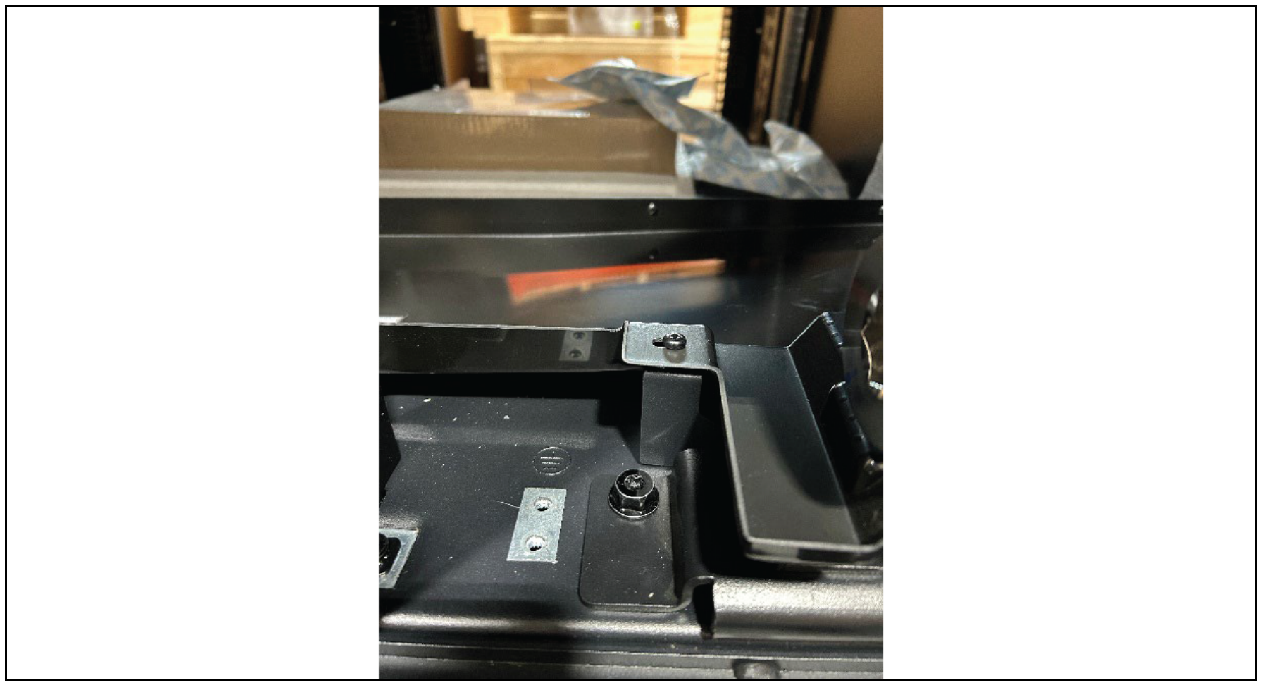
1. At the back of the rack, use the provided M8 screw kit to fasten the Drip Tray Mounting Brackets to the bottom of the Rack.

Figure 4.4 Fastening the Drip Tray Mounting Brackets



2. Using the provided M5 screw kit, fasten the Drip Tray to the Drip Tray Mounting Brackets.

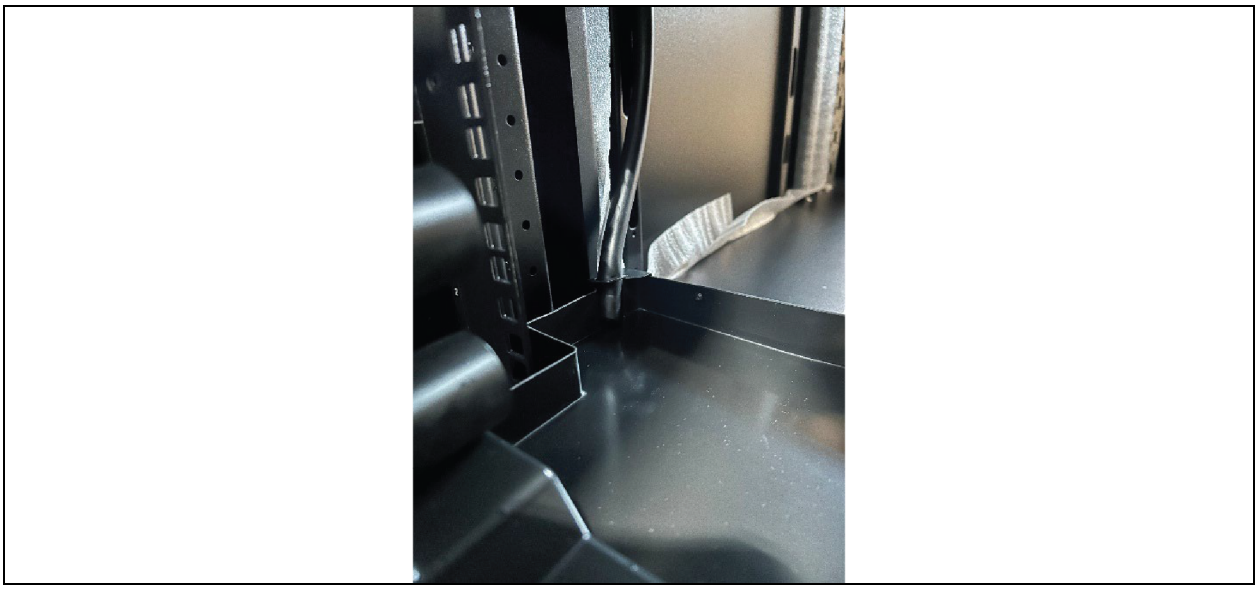
Figure 4.5 Fastening the Drip Tray



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3. Feed the hose from the Equipment Drip Tray through the retaining eyelet to allow drainage from the Equipment Drip Tray into the Bottom Drip Tray.

Figure 4.6 Feeding the Hose



4.5 Rack Extender

4.5.1 Uncrating

The Rack Extender equipment shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided with the Rack Extender kit:

Item	Quantity	P/F
Rack Extender Left	1	
Rack Extender Right	1	
Rack Extender Top	1	
Rack Extender Bottom	1	
M12 Screw (3/8 Allen)	3	
M8 Screw (6 mm Allen)	22	
M6 Screw (Torx T-30)	20	
Other comments:		

4.5.2 Inspection

The equipment shall be inspected for damage and quality issues in accordance with the checklist below:

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Item	P/F
There are no obvious dents/bends/cracks in the rack extender components.	
Other comments:	

4.5.3 Installation

1. Using the provided M8 Screws, install the Left and Right Rack Extenders at the back of the rack. Use 10 Screws for the Left Rack Extender and 10 Screws for the Right Rack Extender. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.
2. Slide the Top Rack Extender over the pins protruding from the Left and Right Rack Extenders and fasten the Top Rack Extender to the Rack using the remaining M8 Screws. Use the M6 Screws to fasten the Top Rack Extender to the Left and Right Rack Extenders. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.
3. Slide the Bottom Rack Extender into place from below the Left and Right Rack Extenders and fasten to the Rack using the provided M12 Screws. Use the M6 Screws to fasten the Bottom Rack Extender to the Left and Right Rack Extenders. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.
4. Tighten all screws in the system.

4.6 Manifolds

CAUTION: The Manifolds are very heavy. Team lift is required when handling.

4.6.1 Uncrating

The brackets shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided in the Bracket Kit:

Item	Quantity	P/F
M8 Screws (Torx T-30 / 13 mm Socket)	26	
Supply Top Bracket	1	
Return Top Bracket	1	
Supply Bottom Bracket	1	
Return Bottom Bracket	1	
Top Side Support Bracket	2	
Top Hood Bracket	2	
Bottom Side Support Bracket	4	
Other comments:		

4.6.2 Inspection

The brackets shall be inspected for damage and quality issues in accordance with the checklist below:

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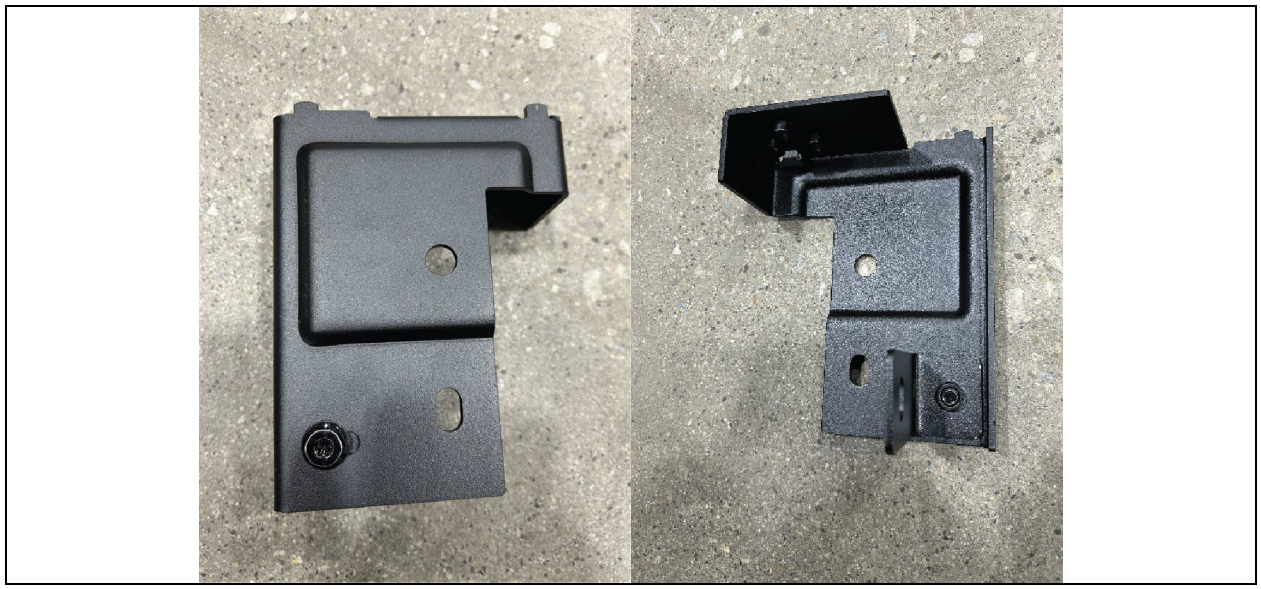
Item	P/F
If the manifold is discharged when received there might be cracks associated with this. May need to be flushed and filled.	
No obvious cracks or damage.	
The ports 9th from the bottom (the 10th U-Space) and 9th from the top (the 38th U-Space) are installed with blanks.	
All other positions are fitted with Universal Quick Disconnect Blind-Mate (UQDB) coupling.	
Other comments:	

4.6.3 Installation

CAUTION: DO NOT TORQUE FASTENERS TIGHTLY until the manifold is fully integrated and leveled. Final tightening occurs in the last step.

1. Using one of the provided M8 Screws, attach the Top Side Support Brackets to the Supply and Return Brackets. This will allow easier and safer installation of the manifolds.

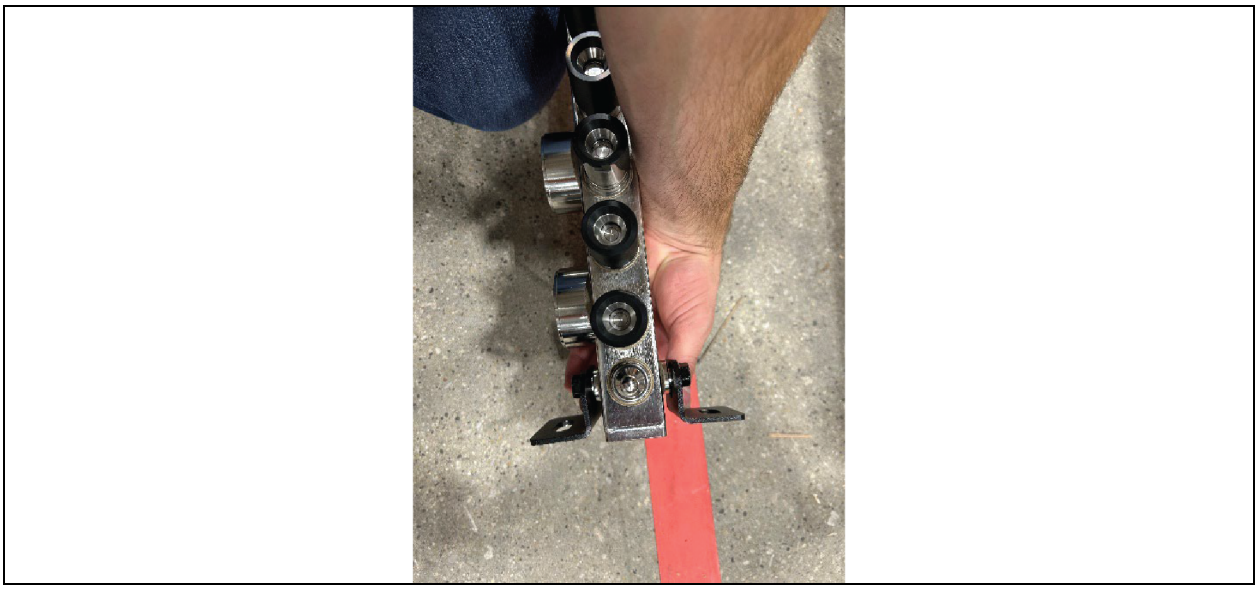
Figure 4.7 Top Side Support Brackets



2. Using the provided M8 Screws, install the Bottom Side Support Brackets at the bottom of the unintegrated manifolds.

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Figure 4.8 Installing the Bottom Side Support Brackets



3. Ensure that the plastic wrapping around the air bleeder valve at the top of the manifolds is removed and that the hoses have been rotated such that they are not protruding in the direction of the UQDBs.

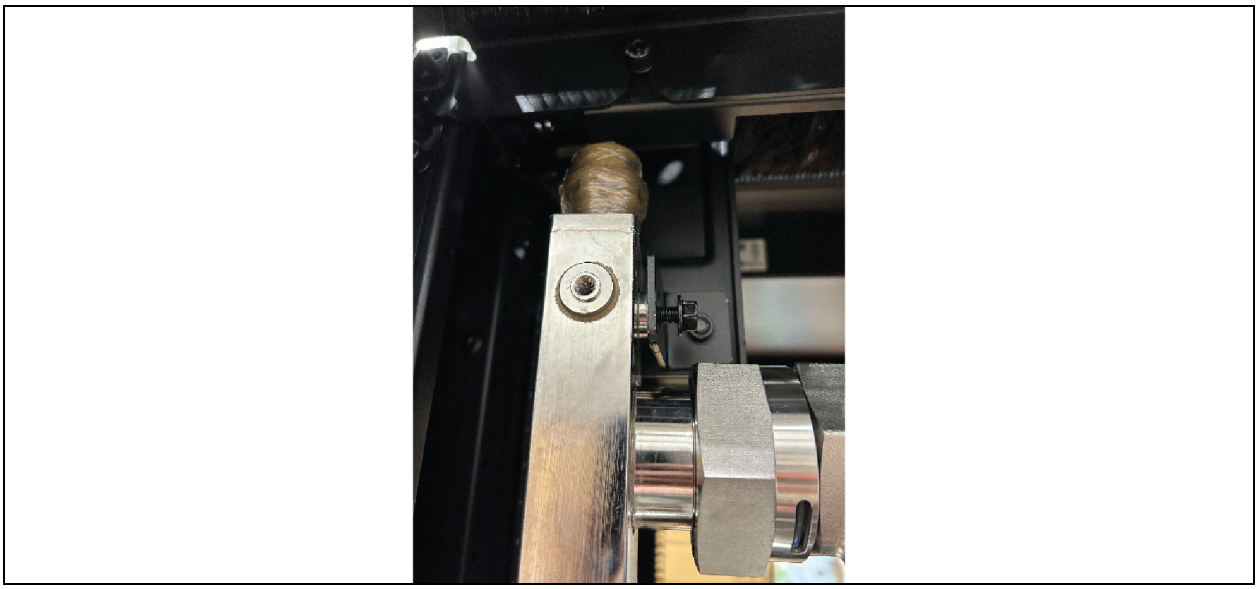
Figure 4.9 Air Bleeder Valve



4. Install the Supply Top Bracket, Return Top Bracket, Supply Bottom Bracket, and Return Bottom Bracket using the provided M8 Screws.
5. Carefully lift the manifold into place, ensuring the hanger pin at the top of the manifold sits in the top manifold bracket and the bottom of the manifold rests in the bottom bracket. While ensuring the manifold does not fall out of place, start one of the M8 screws through the Top Side Support Bracket into the manifold to hold the manifold in place during the rest of the installation. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.

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Figure 4.10 Lifting the Manifold



6. Using the provided M8 Screws, install the Top Hood Bracket. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.
7. Use the remaining M8 Screws to fasten the Bottom Side Support Bracket to the Bottom Brackets.
8. Once all fasteners have been started, you may fully tighten all screws in the system. Use a level to ensure that the manifolds are level. If the manifolds are not level, it may be necessary to loosen all fasteners and then re-tighten all fasteners while ensuring that the manifolds remain level.

4.7 Equipment Rails

4.7.1 Uncrating

1. The Equipment Rails shall be removed from their packaging and staged for inspection and installation.
2. The Mounting Blocks shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided with the Equipment Rail kit:

Item	Quantity	P/F
Equipment Rail	54	
Ejector Bar	6	
M5 Screw (4 mm Allen)	54	
Other comments:		

4.7.2 Inspection

The rails shall be inspected for damage and quality issues in accordance with the checklist below:

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Item	P/F
There are no obvious dents/bends in the brackets.	
Rails slide smoothly without catching or obstruction.	
Ejector Bars are undamaged.	
Other comments:	

4.7.3 Installation

1. Install the equipment rails in U-spaces 11 to 37. Each spring-loaded rail can be installed on either the left or right side. From the front of the rack, insert the rear of the rail into the desired U-space at the back of the rack. Apply pressure to compress the rail, then pivot the front of the rail into the same U-space at the front of the rack. Ensure the rail extends out of the front of the rack. Repeat for all equipment rails.
2. In the front of the rack, position the Ejector Bars in front of the rails and fasten with the provided M5 screws.

4.8 Power Shelves

CAUTION: Power shelves are very heavy. Team lift is required when handling.

4.8.1 Uncrating

The Power shelves, PSUs, and PMMs shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided with the Power Shelves:

Item	Quantity	P/F
Vertiv 1PSS503319N3L Left Side Input Power Shelf	4	
Vertiv 1PSS503319N3R Right Side Input Power Shelf	4	
Vertiv 1R505500V3 Power Supply Unit	48	
Vertiv 1PMC1S3 Power Management Module	8	
10250067 Rail Kit	8	
Other comments:		

4.8.2 Inspection

The Power Shelves and associated components shall be inspected for damage and quality issues in accordance with the checklist below:

Item	P/F
There are no obvious dents or damage to the Power shelves, PSUs, or PMMs.	
All parts are provided.	
No parts are loose.	
Other comments:	

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4.8.3 Power Shelves Installation

1. Install the Left and Right Power Shelf Rails using the provided hardware at the 6th to 9th and 39th to 42nd U-Spaces. This is done by holding the rails in place from the front to the back of the rack and installing two M6 screws at the top and bottom position of the U-Space at the front and back of the rack. It may be helpful to have a second person hold the rail at the rear of the rack for easier installation. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.

Figure 4.11 Installing the Left and Right Power Shelf Rails



2. Alternating between left and right rear input Power Shelves, slide an unintegrated Power Shelf shell into each slot created by the installation of the Power Shelf Rails. Work from the bottom up for easier installation.
3. Ensure that the DC Busbar Connectors have made solid connection with the DC Busbar.
4. Install the M6 screws to mount the Power Shelf shell to the rail. DO NOT TORQUE TIGHTLY UNTIL FULLY INTEGRATED.
5. Once all Power Shelves are in place, torque all fasteners in the system.
6. Install the Power Supply Units in the Power Shelf shells.
7. See the Power Shelf manuals for further instruction regarding the interconnection and communication of the Power Shelves.

4.9 MGX Cage

CAUTION: Equipment is very heavy. Team lift is required when handling.

0.1 Uncrating

The MGX Cage and Ladder shall be removed from their packaging and staged for inspection and installation.

The following parts shall be provided with the MGX Cage:

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Item	Quantity	P/F
MGX Cage	1	
MGX Cage Ladder	1	
Other comments:		

4.9.1 Inspection

The equipment shall be inspected for damage and quality issues in accordance with the checklist below:

Item	P/F
There are no obvious dents or damage to the equipment.	
Other comments:	

4.9.2 Installation

1. Position the MGX Cage Ladder on the back of the MGX Cage and use a Torx T-25 to fasten the Ladder to the Cage utilizing the Ladder's captive screws.
2. UTILIZING TEAM LIFT, lift the Cage assembly and place it on the back of the Rack utilizing the posts provided by the Rack stiffeners at the 10th and 38th U-Spaces for spacing and support. It may be necessary to secure the manifold hoses up and out of the way prior to lifting the cage onto the rack.

Figure 4.12 Lifting the Cage Assembly



3. Use a Torx T-25 to begin to fasten the MGX Cage to the Rack utilizing the MGX Cage's captive screws along the top, bottom, and sides. It is recommended to install these captive screws in a spiraling pattern inwards rather than sequentially to prevent difficult installation. DO NOT TORQUE ANY CONNECTORS TIGHTLY UNTIL FULLY INTEGRATED.
4. Once all captive screws have been successfully started, torque down all connectors.

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Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2778

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

A.2 Locations

United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH, 43082, USA

Europe

Victor-von-Bruns Strasse 21,

8212 Neuhausen am Rheinfall, Switzerland

Asia

Singapore

151 Lorong Chuan, Lobby D #05-04

New Tech Park, Singapore 556741

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India

Vertiv Energy Private Limited

Plot No. C 20, Road No. 19

Wagle Industrial Estate, MIDC

Thane (West), Maharashtra 400604, India

China

Vertiv Technology Co., Limited

Floors 1–4 and 6–10,

Building B2, Nanshan I Park

No. 1001 Xueyuan Road, Nanshan District

Shenzhen, Guangdong 518055, China

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Appendix B: Component Specifications

This appendix provides reference for all major components included in Vertiv™ SmartIT MGX Rack.

B.1 Components to be Integrated

NOTE: Consult manuals for components mounted in rack for detailed instructions.

Component	Documents Description
MGX DC Power System	Vertiv™ PowerDirect 3000 33 kW for Nvidia GB300 - Application Guide*
	Vertiv™ PowerDirect 3000 33kW for Nvidia GB300 - User Manual
	Vertiv™ PowerDirect 3000 33kW for Nvidia GB300 (PSU) - User Manual
	Vertiv™ PowerDirect 3000 33kW for Nvidia GB300 (PMC) - User Manual
NOTE: Click the document description to access the corresponding document. **NOTE: * TBD**	

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Appendix C: Flush/Fill Instruction

C.1 Flush/Fill Instruction

The end user is responsible for engaging qualified service providers to perform all flushing, filling, venting, pressure testing, water-quality verification, and commissioning activities. All of these tasks are required before the system can be put into service.

Vertiv can provide these services. Contact your representative for details.

Vertiv recommends the use of PG25 in the Vertiv™ SmartIT MGX Rack.

The MGX manifolds are shipped with a 25-micron cleanliness specification. MGX hose kits are not shipped with a cleanliness specification and must be flushed before mating with the manifolds. If the manifolds are required to meet a tighter cleanliness requirement, a qualified service provider must flush the manifolds before IT equipment is mated to prevent component damage.

The service provider must be trained and experienced with liquid-cooling systems and must use procedures, equipment, coolant, treatment chemicals, and personal protective equipment appropriate for the installed system. All work must comply with applicable codes, site requirements, and the requirements of the cooling-system and IT-equipment manufacturers.

Before work begins, the service provider must verify that:

- The rack, manifolds, hoses, and connected equipment are completely installed and properly supported.
- The factory nitrogen charge has not been relieved prior to the start of the qualified service provider's work.
- The selected coolant and water quality meet the requirements of all connected equipment.
- Appropriate containment and spill-response materials are available.
- Electrical equipment is protected from exposure to liquid.

The service provider must establish the flushing and filling sequence based on the site piping arrangement and installed equipment. After flushing, the system must be filled with the approved coolant, fully vented, and inspected for trapped air, leakage, abnormal pressure loss, and proper flow.

Following completion, the service provider must verify system pressure, flow, coolant concentration, water quality, and leak-free operation. The end user must retain the service report, including the coolant used, test results, final operating conditions, deficiencies identified, corrective actions completed, and the date of commissioning.

Do not place the liquid-cooling system into operation until the qualified service provider has completed the flush/fill process and confirmed that the system is ready for service.

C.2 Vertiv Flush/Fill Services

Vertiv Flush/Fill Services Email: TBD

Vertiv Flush/Fill Services Phone: TBD

Vertiv Flush/Fill Services Link: TBD

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Appendix D: Preventative Maintenance Schedule

D.1 Preventative Maintenance

The following periodic inspections are recommended to maintain system performance and safety:

Component	Inspection Item	Frequency	Responsibility
Drip trays and liquid connectors	Evidence of coolant leakage	Weekly and after servicing	Customer/Service PM
Manifold brackets	Evidence of cracking or sagging	Annually	Customer/Service PM
Busbar and electrical connectors	Evidence of corrosion, charring, or pitting	Annually	Customer/Service PM
Ground path	Ground continuity must remain <0.1 Ohm	Annually	Service PM
Drain pan	Obstruction or pinching of drain hose	Monthly	Customer/Service PM

D.2 Troubleshooting Guidelines

The following guidelines address common issues identified during validation testing:

Issue	Possible Cause	Corrective Action
Ground continuity > 0.1 ohm	Loose or missing ground screw; corroded contact surface.	Clean contact surface, re-tighten or replace ground fasteners, retest.
Power shelf not detected	Busbar connection not fully seated.	Remove and reseat power shelf, verify latch engagement.
Caster brake failure	Damaged or worn brake mechanism.	Replace caster assembly per Vertiv service instructions.

D.3 Referenced Component Manuals

For maintenance procedures specific to individual components, refer to manuals listed in Appendix B.1 .

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