



eSure™ Power Extend Converter & +27 VDC Vertiv™ eSure™ Bullet Converter

Installation Manual

Kit Specification Number: 60017372

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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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Admonishments Used in this Document



DANGER! Warns of a hazard the reader **will** be exposed to that will **likely** result in death or serious injury if not avoided. (ANSI, OSHA)



WARNING! Warns of a potential hazard the reader **may** be exposed to that **could** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)



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ALERT! Alerts the reader to an action that **must be avoided** in order to protect equipment, software, data, or service. (ISO)



ALERT! Alerts the reader to an action that **must be performed** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)



FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)



SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

Important Safety Instructions

Safety Admonishments Definitions

Definitions of the safety admonishments used in this document are listed under “Admonishments Used in this Document” on page iv.

Safety and Regulatory Statements

Refer to Section 4154 (provided with your customer documentation) for Safety and Regulatory Statements.

Déclarations de Sécurité et de Réglementation

Reportez-vous à la Section 4154 (fourni avec les documents de votre client) pour les déclarations de sécurité et de réglementation.

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1 Vertiv™ eSure™ Power Extend Converter & +27 VDC Vertiv™ eSure™ Bullet Converter Mounting Bracket and Door Kit Installation Instructions

1.1 Kit Description

Mounting bracket kits have been designed to easily install a Vertiv™ eSure™ Power Extend Converter (Model C48/58-1000B, Spec. No. 1C48581000B) or the +27 VDC Vertiv™ eSure™ Bullet Converter (Model C48/27-375B, Spec. No. 1C4827375B) into a distribution position of a Vertiv™ NetSure™ Power System (see UM565050 or UM60147273 for kit part numbers and descriptions). A mounting bracket kit must be used for grounding and mechanical support. See **Table 1** for the kits covered by these instructions.

These instructions provide a step-by-step procedure to field install a Vertiv™ eSure™ Power Extend Converter or a +27 VDC Vertiv™ eSure™ Bullet Converter using one of the kits listed in **Table 1**. Installation of this kit in other systems not listed in **Table 1** should not be attempted.

Table 1: Power System Mounting Bracket and Door Kit Covered by these Instructions

Mounting Bracket Kit P/N	Description
60017372	For use with a P/N 545277 and P/N 520276 stand-alone distribution panel. Includes mounting brackets and door.

1.2 Tools and Material Required

Table 2 lists the items required to install this kit.

Table 2: Tools and Material Required

Description
#1 Flat Blade Screw Driver, insulated
#2 Phillips Blade Screw Driver, insulated
Torque Wrench, insulated (capable of being set from 9.6 in-lbs to 72 in-lbs)
3/8" Drive Ratchet and Socket Set, insulated
Power Extend Converter Kit (P/N 565050) (Model C48/58-1000B, Spec. No. 1C48581000B) or +27 VDC Vertiv™ eSure™ Bullet Converter Kit (P/N 60147273) (Model C48/27-375B, Spec. No. 1C4827375B), quantity as needed

1.3 Mounting Bracket and Door Kit Contents

Table 3 list the items furnished as a part of the mounting bracket and door kit covered by these instructions. Before installing a mounting bracket and door kit, check the items furnished against those listed to ensure that there are no shortages.

Table 3: Mounting Bracket and Door Kit P/N 60017372 Contents

P/N	Description	Qty.
60016960	Left Side Mounting Bracket	1
60016961	Right Side Mounting Bracket	1
60008405	Captive Nut (factory assembled to side brackets)	4
60019268	Washer (factory assembled to side brackets)	4
233362700	6-32 x 3/8" Screw (4 are factory assembled to side brackets)	8
60016951	Front Mounting Bracket	1
152175	Hot Surface Label (factory assembled to front bracket)	2
60016962	Front Door	1
S-0650	Nut (factory assembled to door)	2
560958P2	Product Label (factory assembled to door)	1
514097	Caution Label (factory assembled to door)	1
421121900	Ground Jumper, Door	1
233394000	6-32 x 1/4" Screw	1
223772500	6-32 Nut with Washer	2
214109100	#12 Flat Washer, 0.438" OD, 0.040" thick	1
214109200	#12 Flat Washer, 0.625" OD, 0.063" thick	1
60010906	Panel Position Label, 30-Pos	1
151950	Storage Pouch	1
552423	Hook-and-Loop Fastener (factory attached to storage pouch)	1
566026	Toggle Breaker Guard Kit, includes... (Qty. 27) L-Shaped Guard Brackets (Qty. 27) #6-32 x 3/16" Screws (Qty. 27) M3-0.5 x 5 mm Screws	1

1.4 Mounting Bracket and Door Kit Installation Procedure

THESE INSTRUCTIONS SHOULD BE READ THROUGH COMPLETELY BEFORE INSTALLING THE KIT.

The following is a step-by-step procedure to install the kit. The procedure has been written for ease of use and to minimize the possibility of contact with potentially hazardous energy. This procedure should be performed in the sequence given, and each step should be completely read and fully understood before performing that step. Observe all “Important Safety Instructions” starting on page v and also those presented in the following procedure. As each step of the procedure is completed, the box adjacent to the respective step should be checked. This will minimize the possibility of inadvertently skipping any steps. If the step is not required to be performed for your site, also check the box to indicate that it was read.

1.4.1 Important Safety Instructions



DANGER! Adhere to the “Important Safety Instructions” starting on page v and those listed in the power system manual.



CAUTION! When performing any step in procedures that requires removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise service interruption or equipment damage may occur.



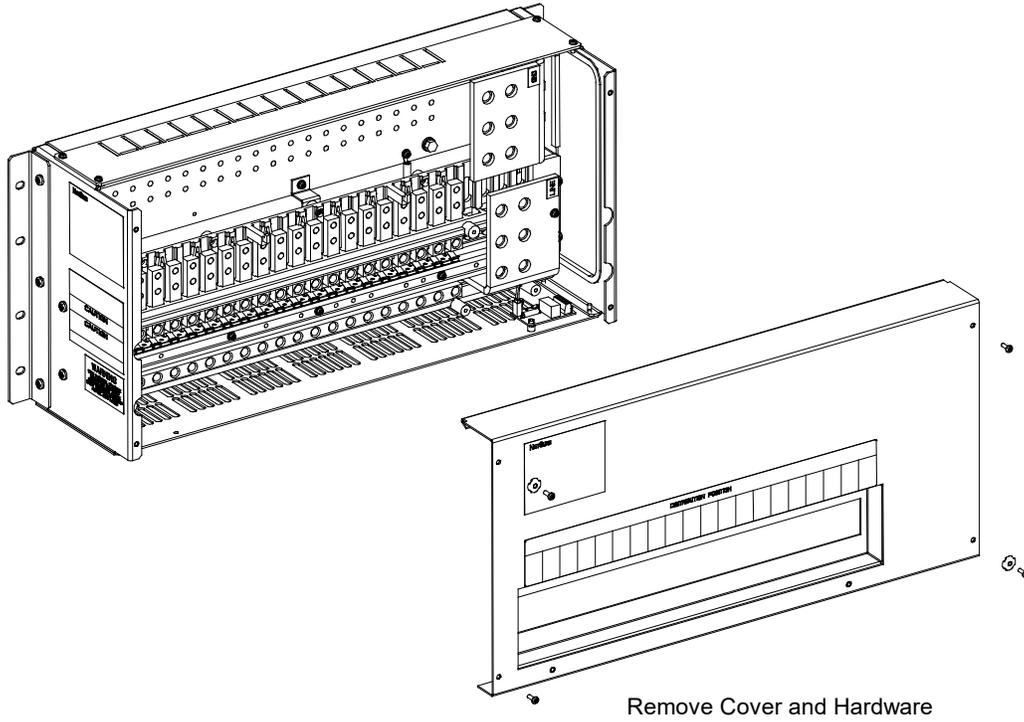
NOTE! When performing any step in this procedure which requires removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise stated.

1.4.2 Installing Mounting Bracket and Door Kit P/N 60017372

Procedure

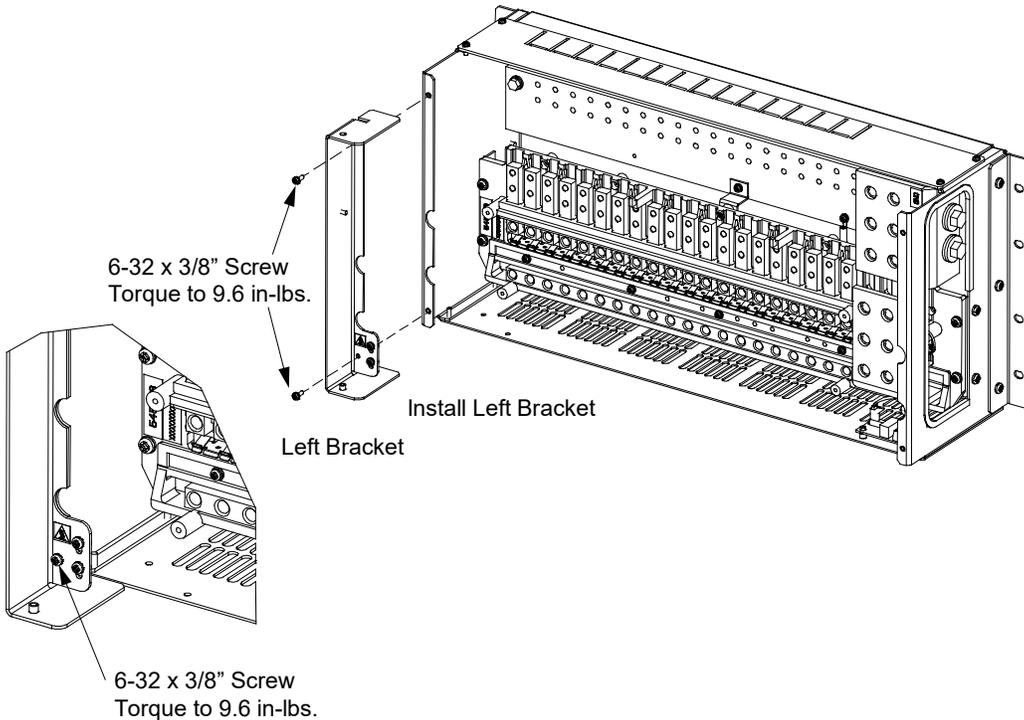
- [] 1. Performing this procedure may activate external alarms. Do one of the following. If possible, disable these alarms. If these alarms cannot be easily disabled, notify the appropriate personnel to disregard any future alarms associated with this system while the procedure is being performed.
- [] 2. Gain access to the distribution panel into which the converter is to be installed.
- [] 3. Remove the front cover from the P/N 545277 distribution panel. See **Figure 1**. The front cover and mounting hardware will not be re-used.

Figure 1: Removing P/N 545277 Distribution Panel Front Cover



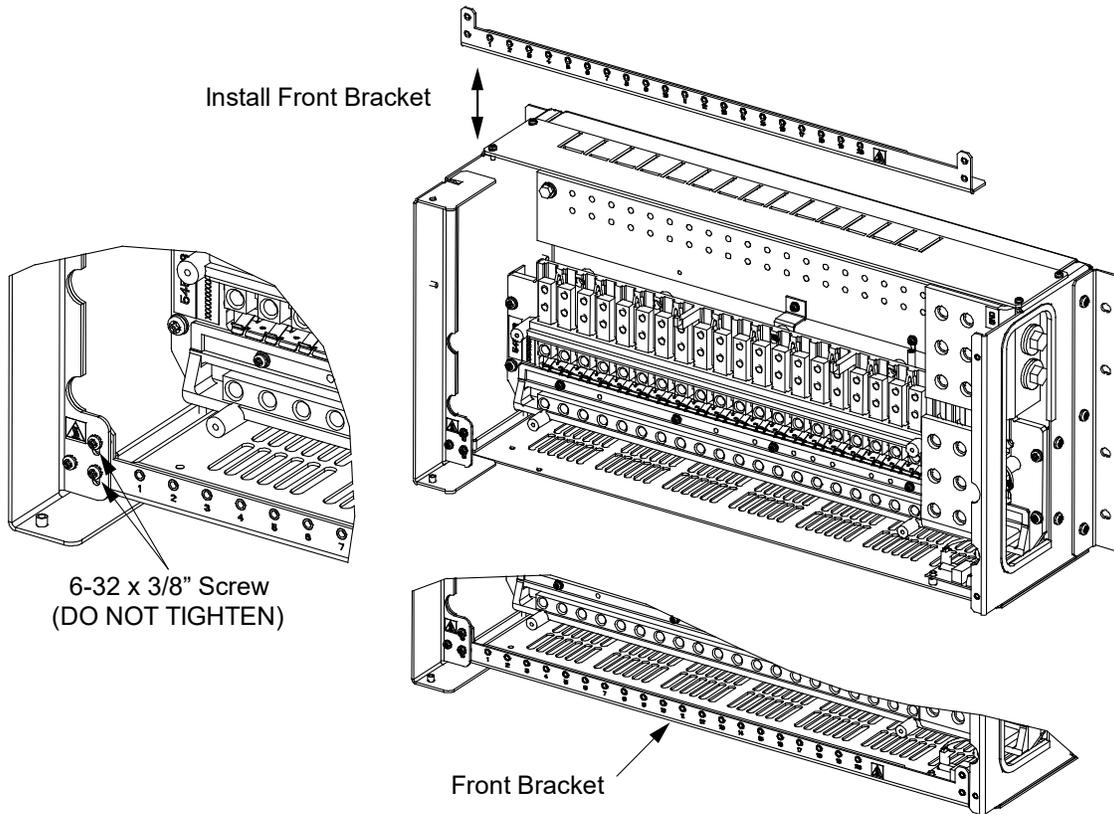
- [] 4. Orient the kit supplied left side mounting bracket as shown in **Figure 2**. Secure to distribution panel with kit supplied hardware as shown in **Figure 2**. Torque hardware as indicated in **Figure 2**.

Figure 2: Install Kit Left Side Mounting Bracket



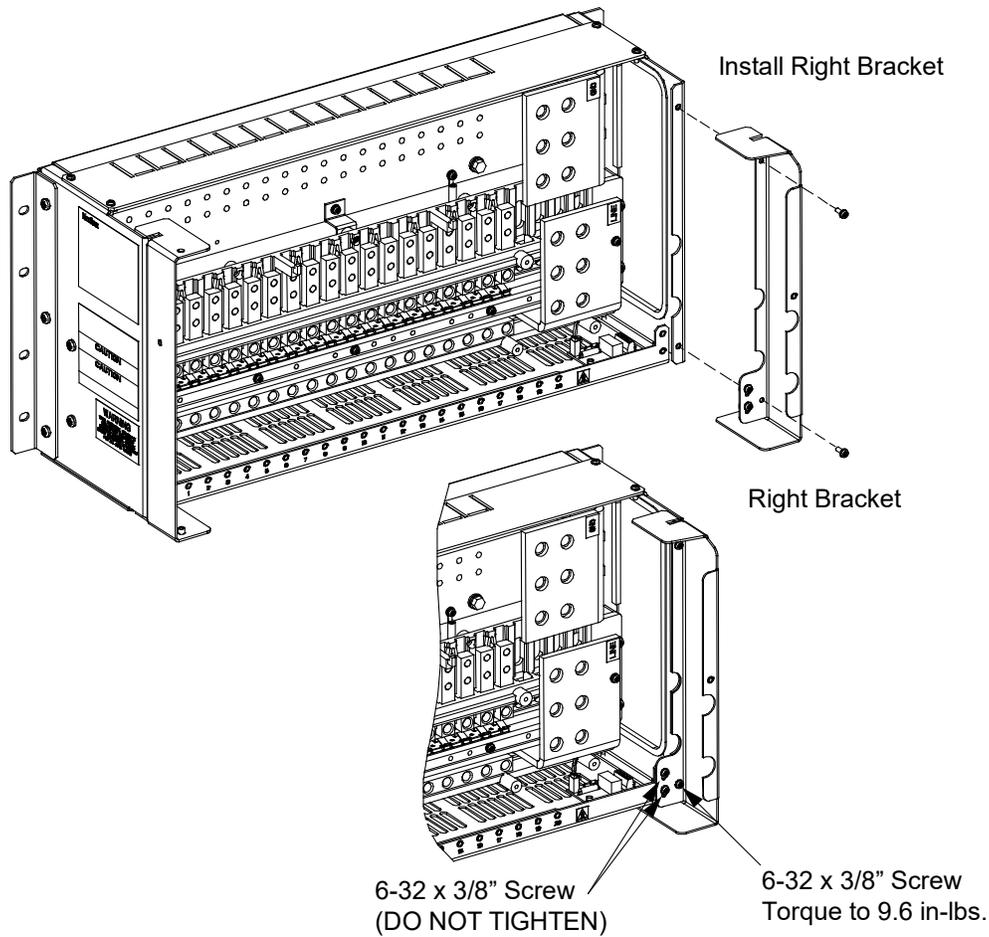
- [] 5. Orient the kit supplied front mounting bracket as shown in **Figure 3**. Secure the front mounting bracket to the left side mounting bracket as shown in **Figure 3**. DO NOT TIGHTEN HARDWARE (hardware will be tightened during converter installation).

Figure 3: Install Kit Front Mounting Bracket



- [] 6. Orient the kit supplied right side mounting bracket as shown in **Figure 4**. Secure the right side mounting bracket to the distribution panel with kit supplied hardware as shown in **Figure 4**. Torque hardware as indicated in **Figure 4**. Secure the front mounting bracket to the right side mounting bracket as shown in **Figure 4**. **DO NOT TIGHTEN HARDWARE** (hardware will be tightened during converter installation).

Figure 4: Install Kit Right Side Bracket

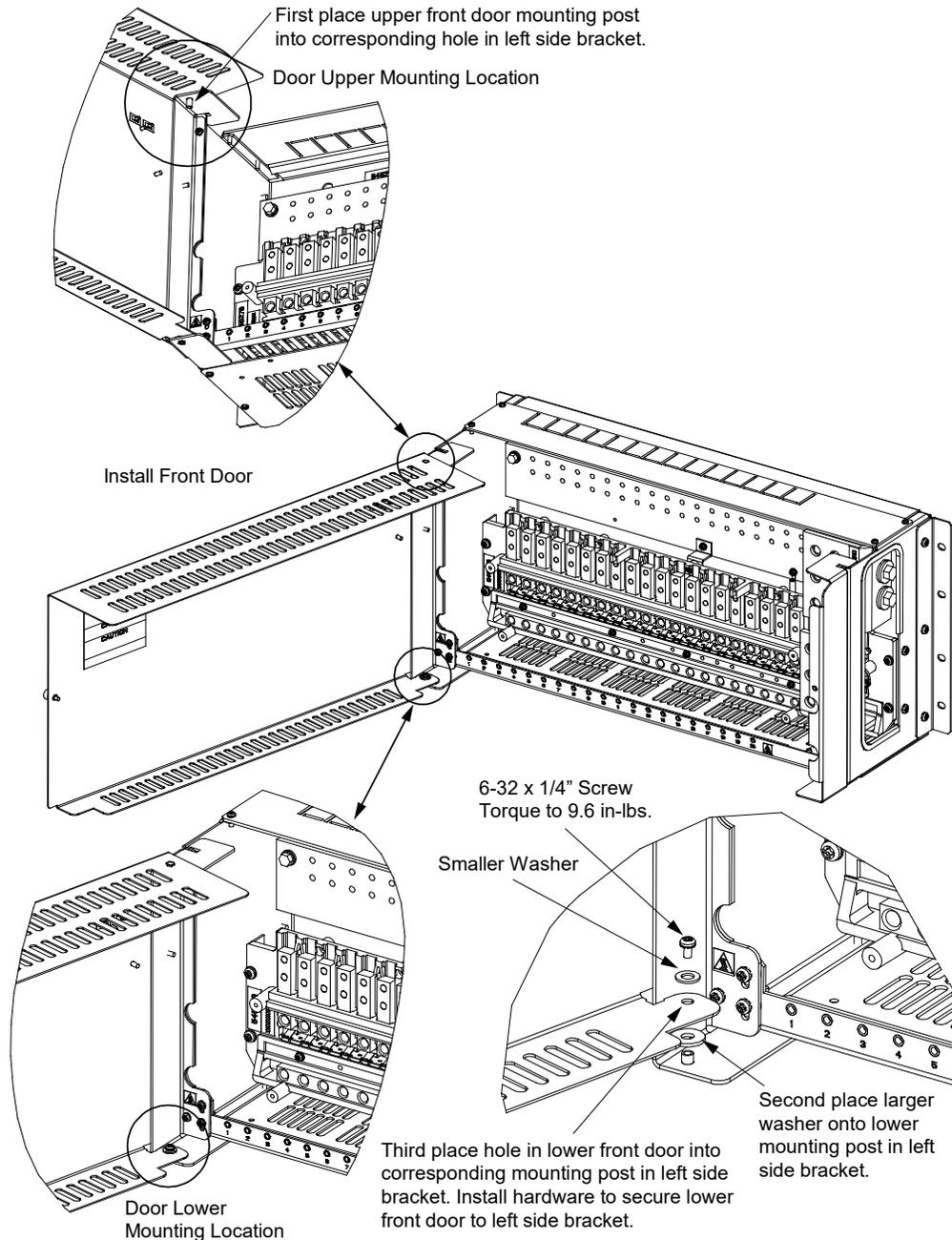


- [] 7. Orient the kit supplied front door as shown in **Figure 5**. Place upper front door mounting post into corresponding hole in left side bracket. Place larger washer on lower post of left side bracket. Place hole in lower front door into corresponding mounting post in left side bracket (over washer just installed). Install hardware to secure lower front door to left side bracket as shown in **Figure 5**. Torque hardware as indicated in **Figure 5**.



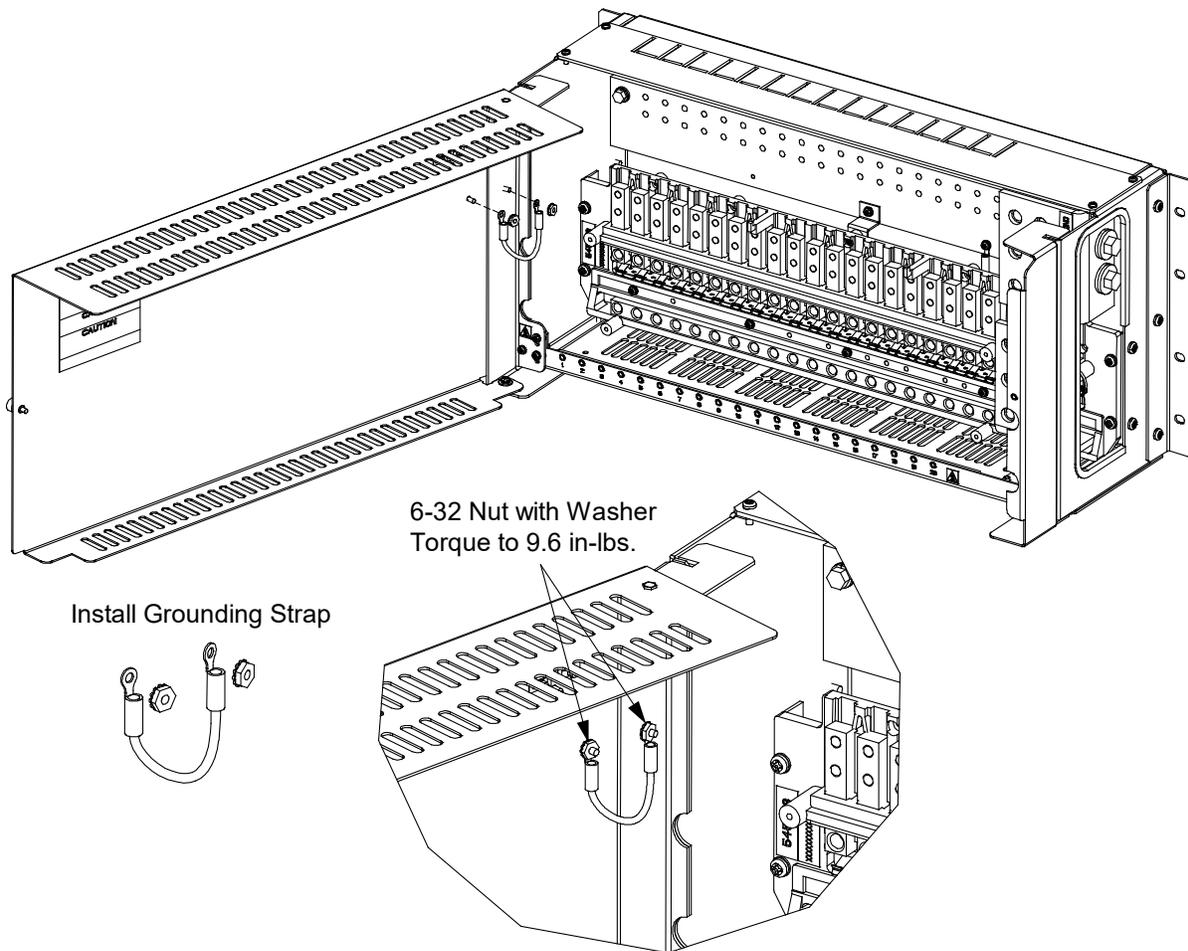
NOTE! When installing a converter mounting bracket kit covered by these instructions onto a stand-alone distribution cabinet installed in an outside plant enclosure, leave the front door off the stand-alone distribution cabinet when complete with the installation.

Figure 5: Install Kit Front Door



- [] 8. Install the door grounding strap as shown in **Figure 6**. Torque hardware as indicated in **Figure 6**.

Figure 6: Install Door Grounding Strap



- [] 9. Remove the kit supplied distribution position label (see **Figure 7**) from the kit supplied storage pouch and (using the label on the front cover removed from the distribution panel as a guide) record the distribution positions onto the kit supplied label.
- [] 10. Place the kit supplied distribution position label (see **Figure 7**) back into the kit supplied storage pouch or remove the backing from the label and adhere it to a suitable surface near the power system. If the kit supplied distribution position label is placed back into the storage pouch, remove the backing from the hook-and-loop fastener factory attached to the storage pouch and adhere the storage pouch to a suitable surface near the power system.

Figure 7: Distribution Position Label

Distribution Position Label

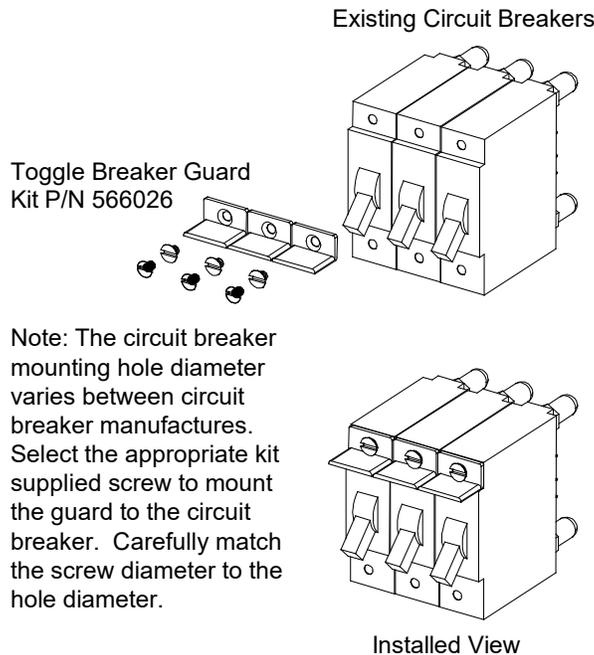

 VERTIV™

ROW 2 ROW 4
 ROW 1 ROW 3

POS.	DETAIL	POS.	DETAIL
1		16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

- [] 11. Install the toggle breaker guard kit (P/N 566026) as required per site requirements. See **Figure 8**.

Figure 8: Toggle Breaker Guard Kit (P/N 566026)



- [] 12. Continue with the “Installing the Converter into a Distribution Position” procedure starting on page 10.

2 Installing the Converter into a Distribution Position

2.1 Important Safety Instructions



DANGER! Adhere to the “Important Safety Instructions” starting on page v and those listed in the power system manual.



ALERT! Only install the converter into a -48 VDC or -58 VDC distribution position. Non-repairable damage will occur if the converter is plugged into a +24 VDC distribution position.



NOTE! The converter can be inserted or removed with power applied (hot swappable) as long as the converter is inserted/removed with the enable/disable switch in the disabled position (see **Figure 12** on page 16).



WARNING! The converter and front mounting bracket becomes very hot during converter operation at heavy load. Wear heat resistant gloves or allow the converter to cool down before removing.



NOTE! It is recommended that the +27 VDC Vertiv™ eSure™ Bullet Converters be installed in the side of the panel opposite from where the larger breakers are recommended to be installed to minimize heat concentration.

2.2 Restrictions

Refer to the converter instruction manual (UM565050 or UM60147273) for wire sizing restrictions.

For the Power Extend Converter, refer to **Table 4** for spacing and power restrictions. This table shows how many converters can be placed side by side before skipping a single space at certain average power levels. These power levels pertain to the average output power (busy hour average power) drawn by the load including any power loss in the cable. The peak power available from each unit remains at 1000 watts regardless of spacing or location. Use the calculator tool that can be obtained at <https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/esure-power-extend-converter-c4858-1000/#/downloads> to determine the necessity, quantity and spacing requirement of the Power Extend Converter based on the RRU type (or peak load), use application (host power system), trunk and jumper cable size and length, minimum source voltage and minimum RRU operating voltage.



NOTE! When installing a 565050 power extend converter mounting bracket kit covered by these instructions onto a stand-alone distribution cabinet installed in an outside plant enclosure, leave the front door off the stand-alone distribution cabinet when complete with the installation. You do not need to remove the front door if you are only installing a +27 VDC Vertiv™ eSure™ Bullet Converter.

Table 4: eSure™ Power Extend Converter Spacing and Power Restrictions: Spec. No. 545277 and 520276 Operating in a 40°C Ambient

Distribution Row	Watts Per Power Extend Converter				
	No Spaces	1 Pole / Space	2 Pole / Space	3 Pole / Space	4 Pole / Space
Row 1 Only	375 W	900 W	750 W	600 W	500 W



ALERT! When circuit breaker(s) and Power Extend Converter(s) (Model C48/58-1000B, Spec. No. 1C48581000B) are deployed in the same enclosure, circuit breaker(s) can only be loaded to 70% of rated value.

For the +27 VDC Vertiv™ eSure™ Bullet Converter, no spacing is required between units. A total of three (3) units can be paralleled together for a total output power of 750 W at 40 °C and 600 W at 65°C. It is recommended that the +27 VDC Vertiv™ eSure™ Bullet

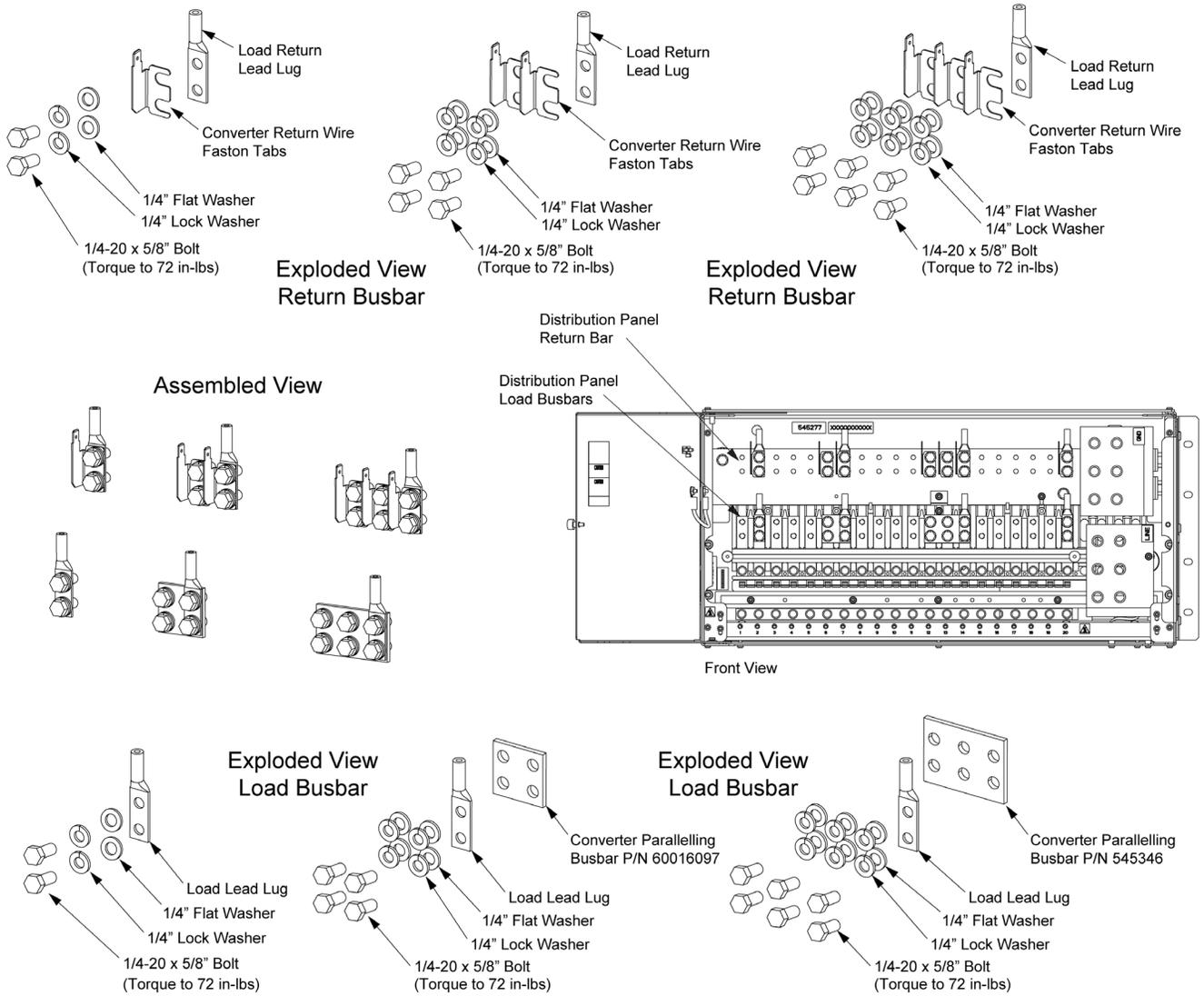
Converters be installed in the side of the panel opposite from where the larger breakers are recommended to be installed to minimize heat concentration. As an example, for this 545277 panel, the larger breakers are recommended to be installed on the right-hand side of the panel. Therefore, the +27 VDC Vertiv™ eSure™ Bullet Converter is recommended to be installed on the left-hand side of the panel.

2.3 Preparing the Distribution Cabinet

Procedure

- [] 1. If the converter is to be installed for a newly connected load, connect the load and load return cables to the distribution position to be occupied by the converter. The connection for the load cable can be one of the busbar lug landing points directly behind the converter or to the positive side of the terminal block on the +27 VDC Bullet Nose 6-Position GMT Fuse Board (only used with the +27 VDC Vertiv™ eSure™ Bullet Converter). The connection for the return lead can be on the Return bar of the plant or the negative side of the terminal block on the +27 VDC Bullet Nose 6-Position GMT Fuse board. At the same time, connect the converter return wire faston tab provided with the converter to the cabinet's return busbar (if present, use the same location as the return lead to the load). At the same time (if required), connect the separately ordered converter paralleling busbar to the distribution panel load busbars using the same location as the load lead to the load. If two or three converters are to be connected in parallel or if a +27 VDC Bullet Nose 6-Position GMT Fuse Board Kit (10062803) is used along with the converters, a two-position (60016097), three-position (545346), four-position (10078650), or five-position (10078651) lug adapter busbar plate should be installed first, as shown in the installation instructions in UM10062803. See **Figure 9** and **Figure 14**. Torque as indicated in **Figure 9**.
- [] 2. If the converter is to replace an existing circuit breaker, remove the circuit breaker and verify the load and return cables for the position are wired and labeled correctly. At the same time, connect the converter return wire faston tab provided with the converter to the cabinet's return busbar (use the same location as the return lead to the load). At the same time (if required), connect the separately ordered converter paralleling busbar to the distribution panel load busbars (using the same location as the load lead to the load). If two or three converters are to be connected in parallel, a two-position (60016097), or three-position (545346), or four-position (10078650), or five-position (10078651) lug adapter busbar plate should be installed first. See **Figure 9** and **Figure 14**. Torque as shown **Figure 9**.

Figure 9: Connecting Converter Load Return Cables to the Return Bar with the Converter Return Wire Faston Tab and Connecting Converter Load Cables to the Distribution Panel with Converter Paralleling Busbar (P/N 60016097 or 545346) (cont'd from previous page)



2.4 Installing the Converter(s)

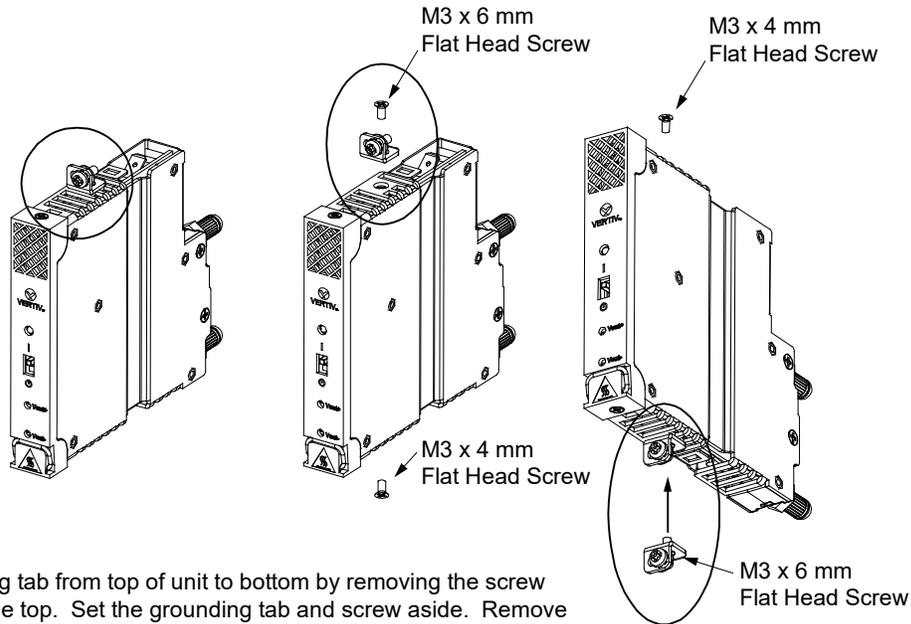


NOTE! See also “Restrictions” on page 10.

Procedure

- [] 1. Move the grounding tab from the top of the converter to the bottom per **Figure 10**. Repeat for each converter to be installed.

Figure 10: Moving Grounding Tab from Top of Unit to Bottom



Move grounding tab from top of unit to bottom by removing the screw securing it to the top. Set the grounding tab and screw aside. Remove the bottom screw. Secure the screw removed from the bottom location into the top location (note that it is a different length than the screw used to secure the grounding tab). Orient the grounding tab in the bottom location as shown in the illustration and secure with the screw removed from the top location (longer screw). Torque both screws to 5.8 in-lbs.

- [] 2. Connect the return wire (P/N 564330) provided with the converter to a converter return wire faston tab installed on the cabinet's return bar in a previous step. See **Figure 11**. Repeat for each converter to be installed.

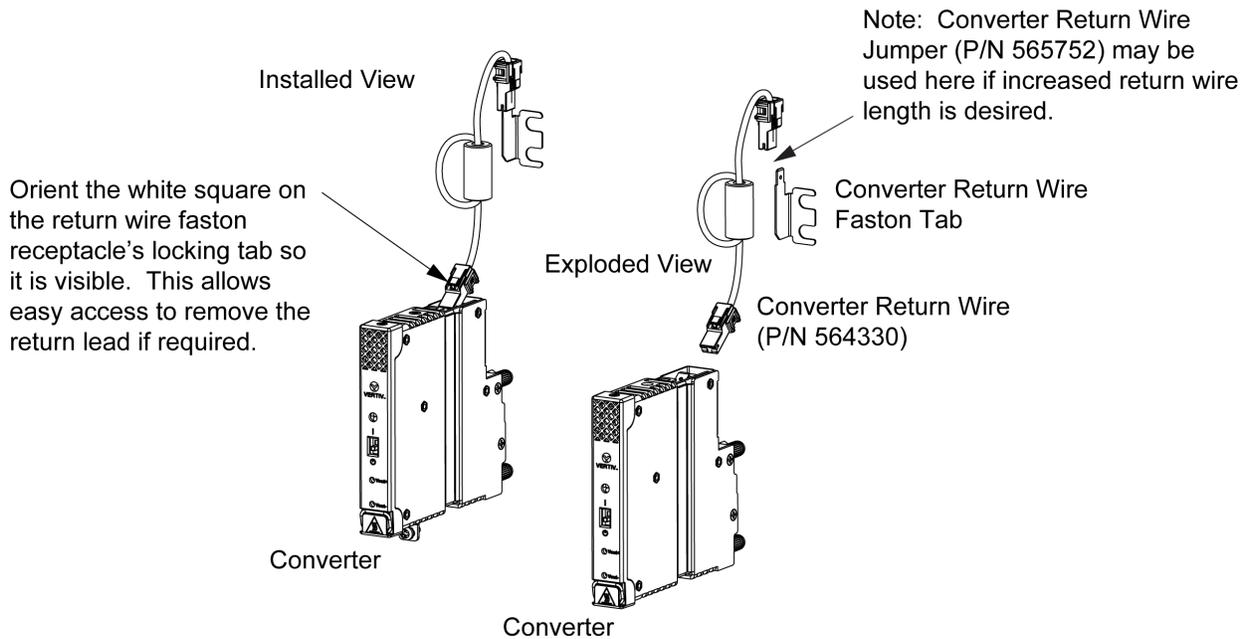
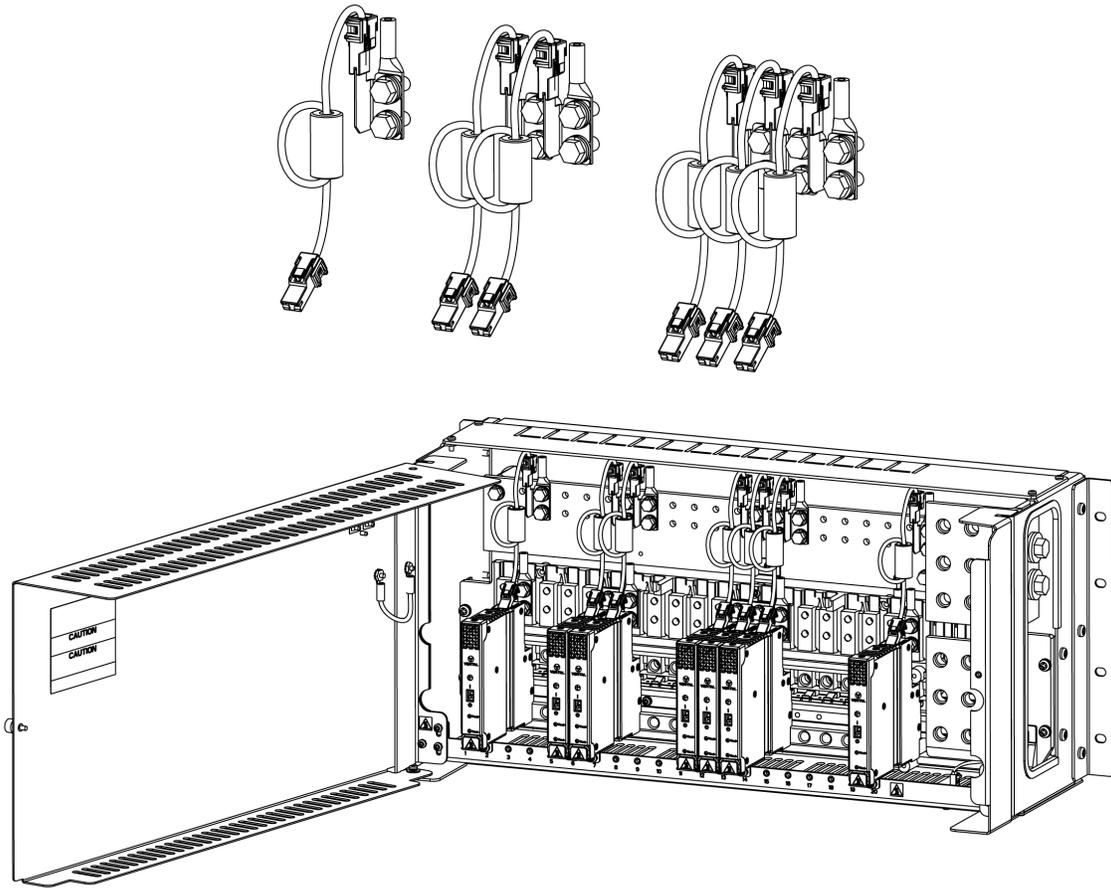


NOTE! The furnished 4-inch long return wire jumper (P/N 565752) may be installed with the P/N 564330 return wire if additional return wire length is preferred.



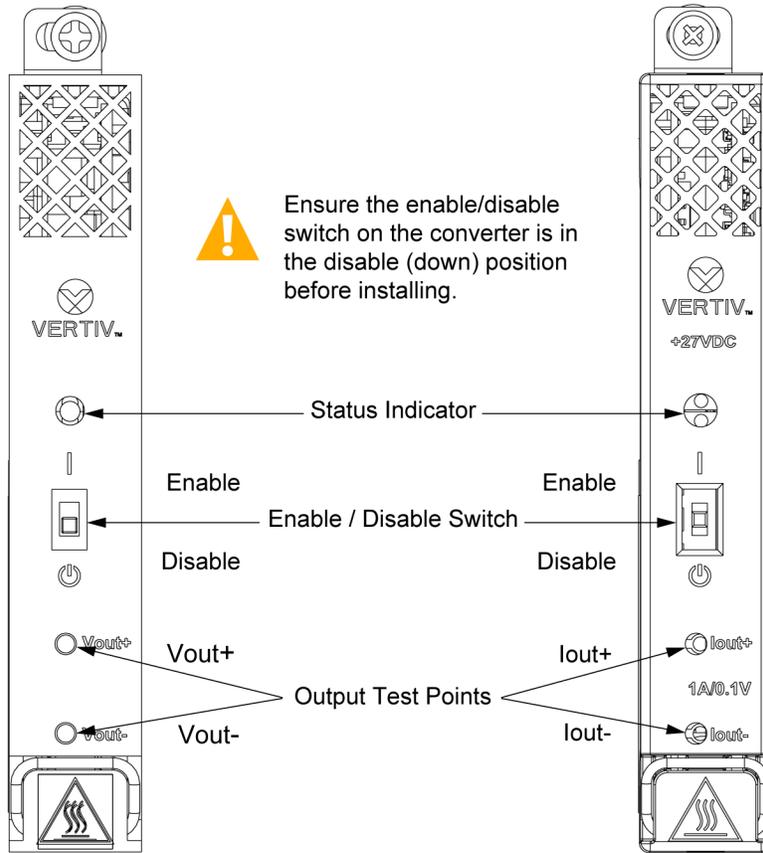
NOTE! The converter is also furnished with an 8-inch long return wire jumper P/N 566207. The 8-inch long return wire jumper is not used with this mounting bracket kit. It is used in other kits.

Figure 11: Connecting Converter Return Wire(s) (P/N 564330) to a Converter Return Wire Faston Tab and to a Converter



- [] 3. Ensure the enable/disable switch on the converter is in the disable (down) position. See **Figure 12**. Repeat for each converter to be installed.

Figure 12: Enable/Disable Switch



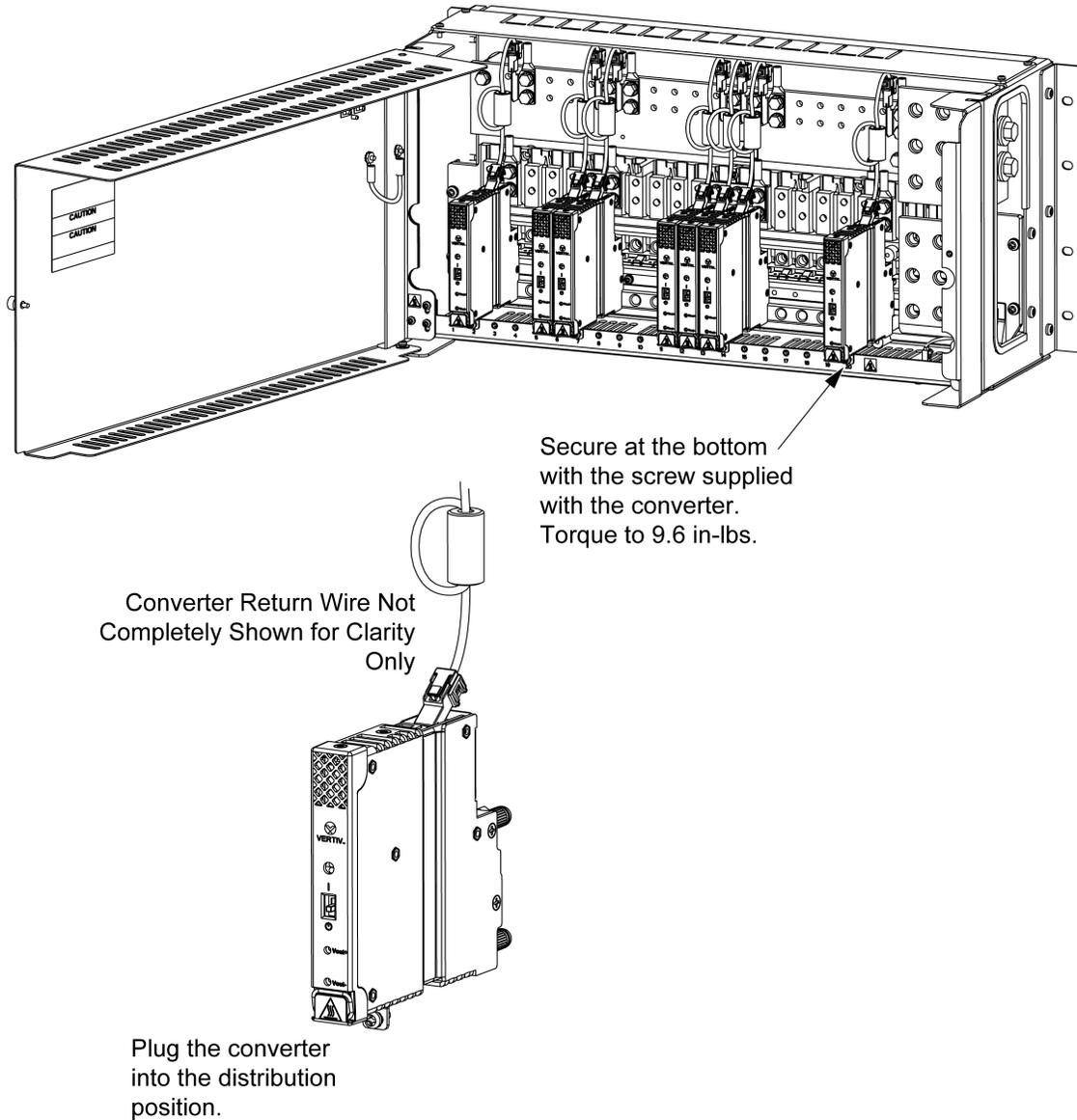
Note: Output Voltage measurement on the +27 VDC Vertiv™ eSure™ Bullet Converter represents output current. 1A/0.1V

- [] 4. Connect the return wire (P/N 564330) to a converter. See **Figure 11**. Orient the white square on the return wire faston receptacle's locking tab as shown in **Figure 11**. Plug the converter into the distribution panel. See **Figure 13**. Repeat for each converter to be installed.
- [] 5. Secure the converter(s) to the mounting bracket with the screw provided with the converter. Torque as shown in **Figure 13**. Repeat for each converter to be installed.



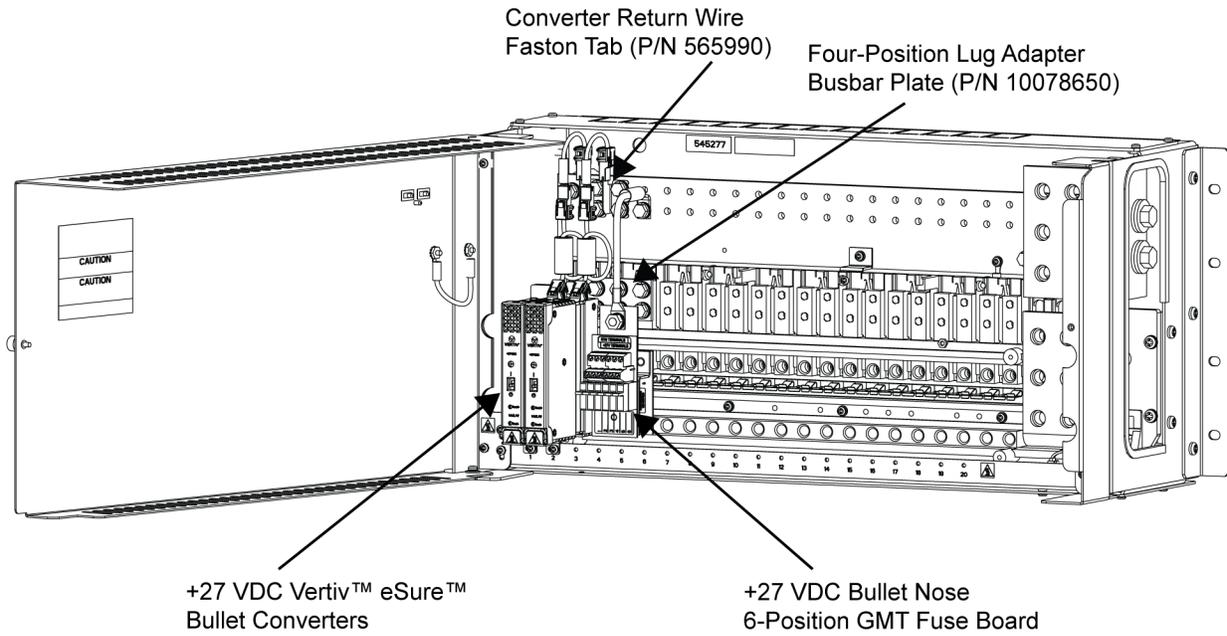
NOTE! The front mounting bracket can be adjusted up and down as needed for converter installation.

- [] 6. Once all converters are installed, tighten the front mounting bracket to the left and right side mounting brackets. See **Figure 3** and **Figure 4**. Torque hardware to 9.6 in-lbs.

Figure 13: Installing Converter(s)

- [] 7. Place the enable/disable switch on the converter to the enable position. See **Figure 12** on page 16. If two or three converters are connected in parallel to a load that exceeds the peak load rating for a single converter, they should be switched on simultaneously.
- [] 8. Observe the status of the converter front panel local indicator. If operating normally, this indicator should be illuminated green. See **Figure 12** on page 16.
- [] 9. Close and secure the door.
- [] 10. Ensure that there are no local or remote alarms active on the power system.
- [] 11. Enable the external alarms or notify appropriate personnel that this procedure is finished.

Figure 14: Installing +27 VDC Vertiv™ eSure™ Bullet Converters and +27 VDC Bullet Nose 6-Position GMT Fuse Board



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