Spectra Series™ Power Panelboards & Switchboard Panels

ATVS Tranquell® Transient-Voltage Surge Suppressors

Application

This kits are provided for installation of ATVS Tranquell and Tranquell VII transient-voltage surge suppressors in Spectra bolt-on and plug-in panels and switchboards. The catalog numbers and descriptions of the available units are listed in Table 1. The K suffix denotes field-installable kits. The catalog number for the mounting and cover kit is ATVSHK.

All TVSS units are 7x (9⅝") high and the minimum equipment width is 27-inch wide Spectra panelboard or 35-inch wide Spectra switchboard

Catalog Number	System Voltage, Vac	Configuration	Surge Current per Mode, kA
ATVS0501LACSK	480Y/277	3Ø, 4W	50
ATVS0502LACSK	208Y/120	3Ø, 4W	50
ATVS0503LACSK	480 Δ	3Ø, 3W	50
ATVS0504LACSK	240/120 Δ	3Ø, 4W	50
ATVS0505LACSK	120/240	1Ø	50
ATVS0801LACSK	480Y/277	3Ø	80
ATVS0802LACSK	208Y/120	3Ø	80
ATVS0803LACSK	480 Δ	3Ø, 3W	80
ATVS0804LACSK	240/120 Δ	3Ø, 4W	80
ATVS0805LACSK	120/240	1Ø	80
ATVS1001LACSK	480Y/277	3Ø	100
ATVS1002LACSK	208Y/120	3Ø	100
ATVS1003LACSK	480 Δ	3Ø, 3W	100
ATVS1004LACSK	240/120 Δ	3Ø, 4W	100
ATVS1005LACSK	120/240	1Ø	100
ATVS3004WK	480Y/277	3Ø, 4W	100
ATVS3002WK	208Y/120	3Ø, 4W	100
ATVS3004DK	480 Δ	3Ø, 3W	100
ATVS2002DK	240/120	3Ø, 4W	100
ATVS3002SK	240/120	1Ø, 3W	100

Table 1. Catalog numbers and specifications for Tranquell transient-voltage surge suppressor kits.

Installation

WARNING: Danger of electrical shock or injury. Turn OFF power ahead of the panelboard or switchboard before working inside the equipment or removing any component. Equipment is to be installed and maintained by properly trained and qualified personnel only.

The numbers in brackets in the text and circled in the figures refer to the items in Tables 1 and 2.

1. **Confirm the contents of the kit.** Figure 1 illustrates the contents of the kit, with the parts listed in Table 2. Figure 2 illustrates the hardware included in the kit ([2] in Table 2), with the parts listed in Table 3.

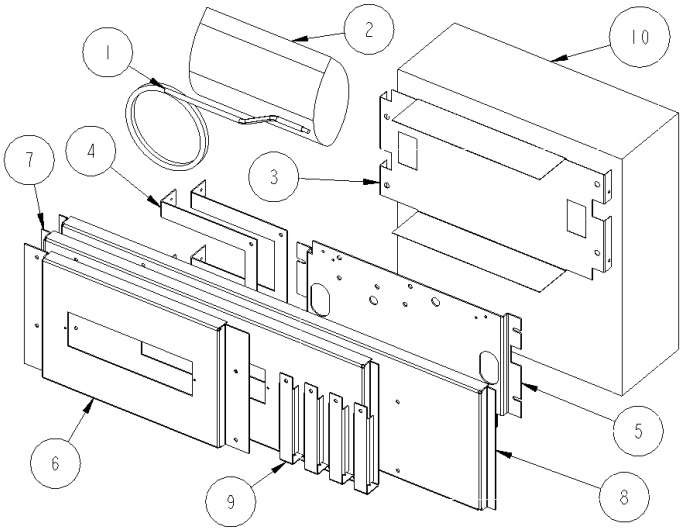

Figure 1. Typical TVSS kit contents.

Item	Description	Part #	Qty.
1	Cable, #6 stranded	10080819P2	1
2	TVSS kit hardware	10082305G2	1
3	Barrier	10082331P1	1
4	Cover support for 36W, 40W, 44W, 45W	10083033P1	2
5	Mounting plate	208C4326P1	1
6	Cover for 27W, 31W, 35W	208C4331P1	1
7	Cover for 36W, 40W	208C4331P2	1
8	Cover for 44W, 45W	208C4331P3	1
9	Cover support for 27W, 31W	252B1477P4	4
10	TVSS in package	TVSS_UNIT	1

Table 2. Parts list for TVSS kit.

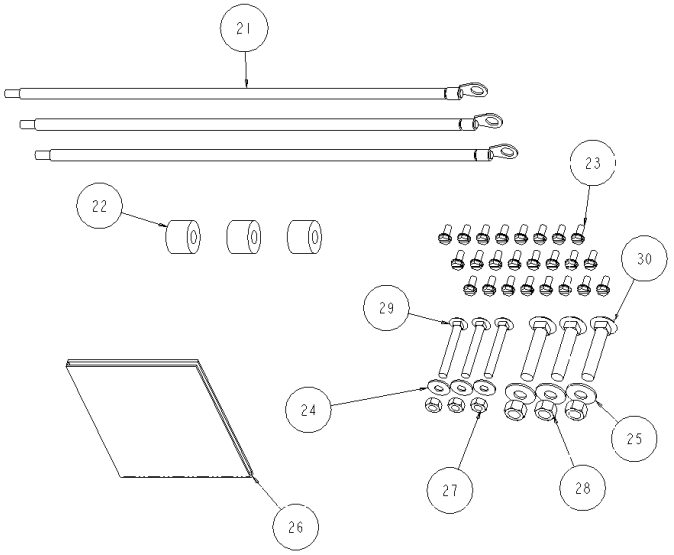

Figure 2. Hardware included in [2].

Item	Description	Part #	Qty.
21	Cable assembly	10080819P2	3
22	Spacer, .70 inch	188A4381P9	3
23	Thread-forming screw, 10-32 x 7/16"	192A6976P189	24
24	Conical spring washer, 1/4"	75A105503P101	3
25	Conical spring washer, 3/8"	75A105503P102	3
26	TVSS instruction sheet	DEH223	1
27	Nut, 1/4-20	N245P21B6	3
28	Nut, 3/8-16	N245P25B6	3
29	Carriage bolt, 1/4-20 x 2"	N657P21032B6	3
30	Carriage bolt, 3/8-16 x 2"	N657P25032B6	3

Table 3. Parts list for the hardware package [2].

2. Install TVSS-bus cable assembly. (For connecting a TVSS to a disconnect, go to step 2.)

- *Bolt-on and single bus of plug-in assemblies, switchboard panels, and powerpanel.* Before installing, locate the side of the panel interior for which the dimension from the nearest vertical bus face to the inner face of the bus support rail is 2.75 inches, as indicated in Figure 3. The cable terminals will be mounted on this side of the bus.

  For each phase install a 1/4-20 x 2" carriage bolt [29] into a .281-inch square hole of the interior vertical bus, as shown in Figure 4. Use the uppermost holes in the 7X (9 5/8") space that the TVSS unit can reach. Slide a terminal of the cable assembly [21] onto each carriage bolt and rotate it so that the terminal barrel is located *below the front edge* of the vertical bus. Install a 1/4" spring washer [24] and a 1/4-20 nut [27] onto each bolt and tighten to 75 in-lb.

- *Plug-in assemblies, switchboard panels, and panelboards with .281-inch square holes available (double bus).* For each phase, slide a spacer [22] between the vertical bus bars and install a 1/4-20 x 2" carriage bolt [29] into a .281-inch square hole located towards the front of interior vertical bus, as shown in Figure 5. Use the uppermost holes in the 7X (9 5/8") space that the TVSS unit can reach.

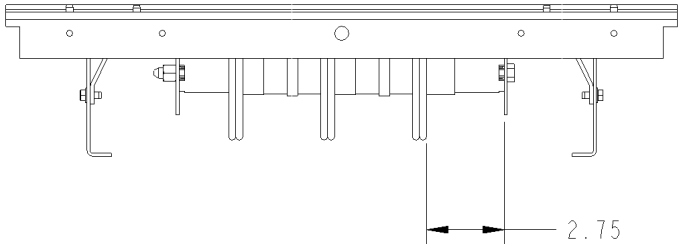

Figure 3. Top view of a bolt-on interior.

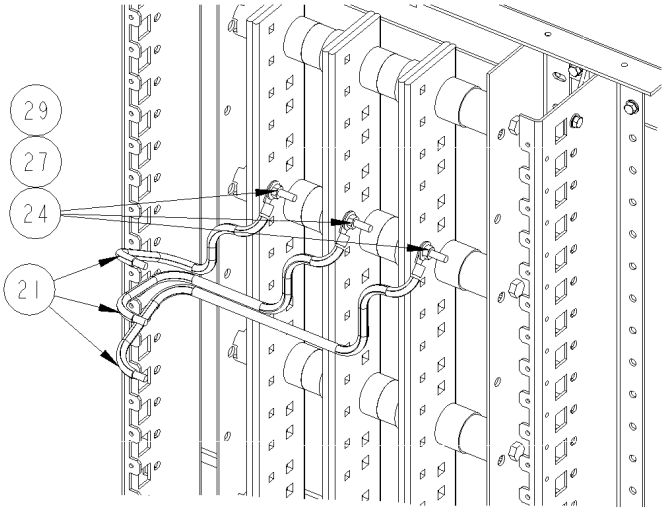

Figure 4. Bolt-on and single-bus plug-in assemblies.

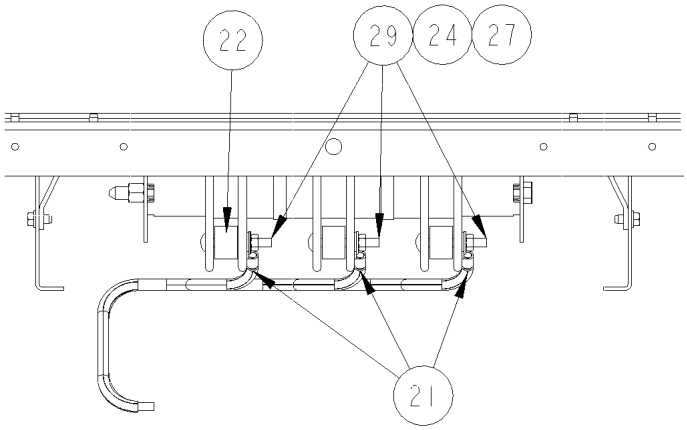

Figure 5. Plug-in assemblies with .281-inch square holes.

Slide a terminal of the cable assembly [21] onto each carriage bolt and rotate it so that the terminal barrel is located *below the front edge* of the vertical bus. Install a 1/4" spring washer [24] and a 1/4-20 nut [27] onto each bolt and tighten to 75 in-lb.

- *Plug-in assemblies and powerpanels without .281-inch square holes (double bus).* For each phase, slide a spacer [22] between the vertical bus bars and install a 3/8-16 x 2" carriage bolt [30] into a .406-inch square hole located towards the rear of interior vertical bus, as shown in Figure 6. Use the uppermost holes in the 7X (9 5/8") space that the TVSS unit can reach. Slide a terminal of the cable assembly [21] onto each carriage bolt. Install a 3/8" spring washer [25] and a 3/8-16 nut [28] onto each bolt and tighten to 200 in-lb.

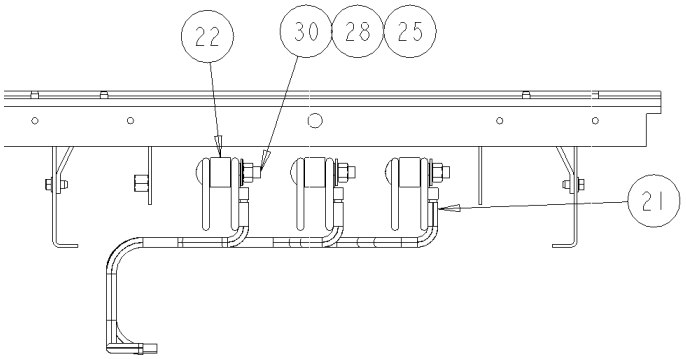

Figure 6. Plug-in assemblies without .281-inch square holes. (Interior spools are not shown for clarity.)

3. **Install barrier.** Route the cable assemblies through the rectangular holes in the barrier [3]. Secure the barrier to the side of the "Z" rail with 10-32 x 7/16" thread-forming screws [23], as shown in Figure 7 and tighten to 22 in-lb.
4. **Mounting plate.** Route the cable assemblies through the oblong slot in the mounting plate [5]. Secure the mounting plate to the interior "Z" rail with 10-32 x 7/16" thread-forming screws [23], as shown in Figure 8 and tighten to 22 in-lb.
5. **Mount the TVSS unit.** Remove the two screws securing the plastic cover to the TVSS unit and lift off the cover. Save the screws for later reinstallation. Mount the unit to the mounting plate with six 10-32 x 7/16" thread-forming screws [23] and tighten to 22 in-lb.
6. **Make cable connections to the TVSS.** Trim the cable assemblies to the minimum required and strip 1/2 inch from the end of the cable. Connect the cable assemblies to the lugs provided in the TVSS unit and tighten the lug screws to 110 in-lb. Insure that the A location is connected to the top lug, the B location (if required) to the middle lug, and the C location to the bottom lug, as shown in Figure 9.
   a. **Install ground (and neutral cable if required).** Measure the length required for the ground and neutral cables and cut from the cable [1]. Strip 1/2 inch from the end of the cable and connect to the TVSS ground and neutral lugs and panel lugs, as shown in Figure 9. Tighten the lug screws to 110 in-lb. Reinstall the plastic cover on the TVSS.
   b. **Install the cable connections from the circuit breaker to the TVSS.** Trim the cable [21] to the length required and strip the ends as required. Connect the cable to the appropriate connection points on the circuit breaker and the TVSS, as shown in Figure 10. Install the ground and neutral cables as in step a. above.

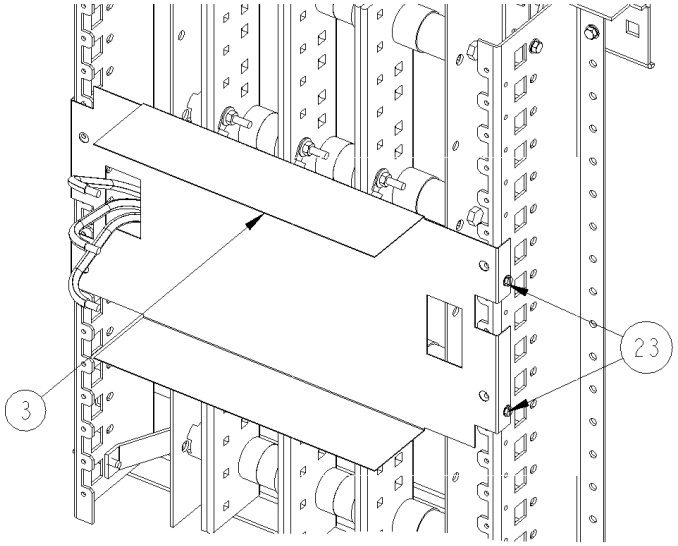

Figure 7. Barrier installation.

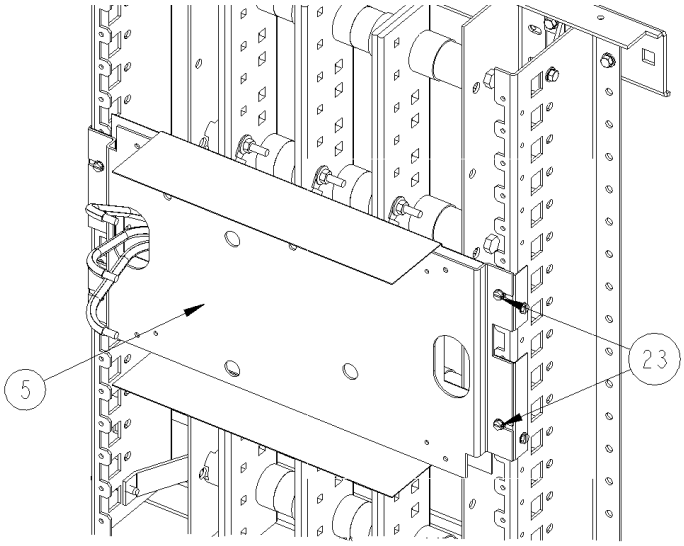

Figure 8. Mounting plate installation.

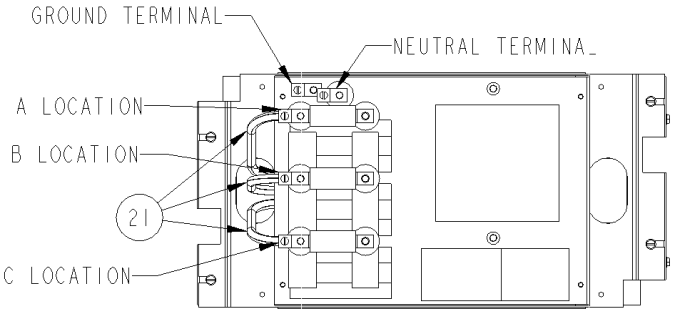

Figure 9. Installing the cable connections to the TVSS.

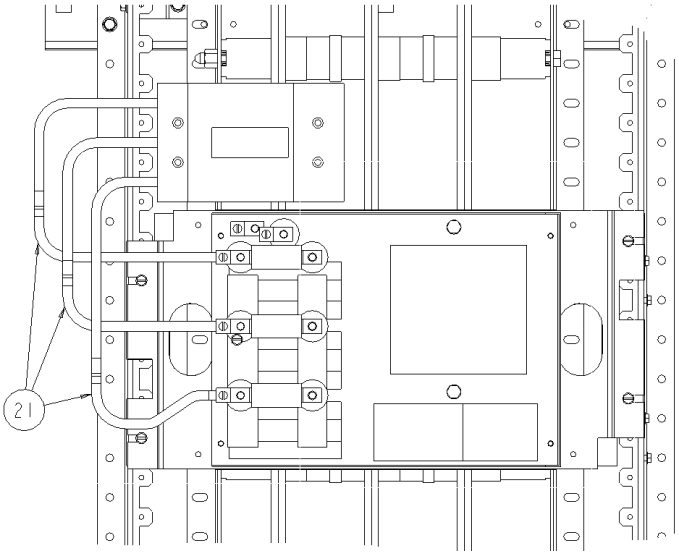

Figure 10. TVSS with a circuit breaker disconnect.

7. **Install the TVSS monitor plate to the filler plate.** Mount the monitor plate, provided with the TVSS, to the cover plate [6, 7, or 8], as shown in Figure 11. Secure with two 10-32 x 7/16" thread-forming screws [23] and tighten to 22 in-lb.
8. **Install the filler supports.** For 27W, 31W, and 35W panels, mount four filler supports [9] to the Z rail of the vertical bus interior, as shown in Figure 12. For 36W, 40W, 44W, and 45W panels, mount two filler supports [4] to the Z rail, as shown in Figure 13. Secure the supports with 10-32 x 7/16" thread-forming screws [23] and tighten to 22 in-lb.
9. **Install the filler plate assembly.** Plug the cable harness into the TVSS and monitor panel. Mount the filler plate assembly to the filler supports, as shown in Figure 14. Secure with four 10-32 x 7/16" thread-forming screws [23] and tighten to 22 in-lb.

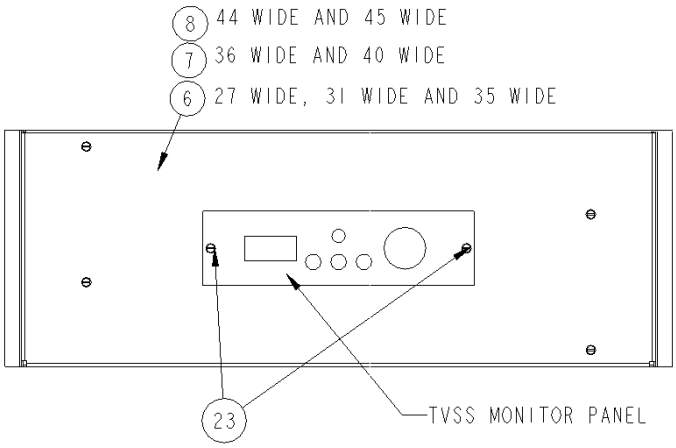

Figure 11. TVSS monitor plate mounted to the cover.

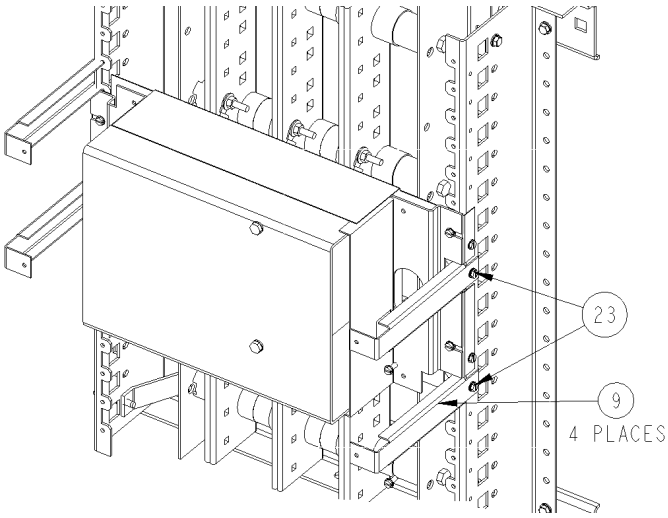

Figure 12. Filler supports for 27 and 31 wide panelboard or 35 wide switchboard.

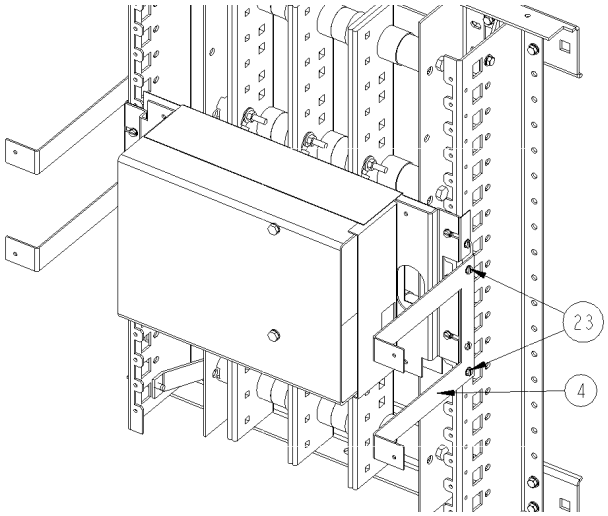

Figure 13. Filler supports for 36, 40, and 44 wide panelboard or 40 and 45 wide switchboard.

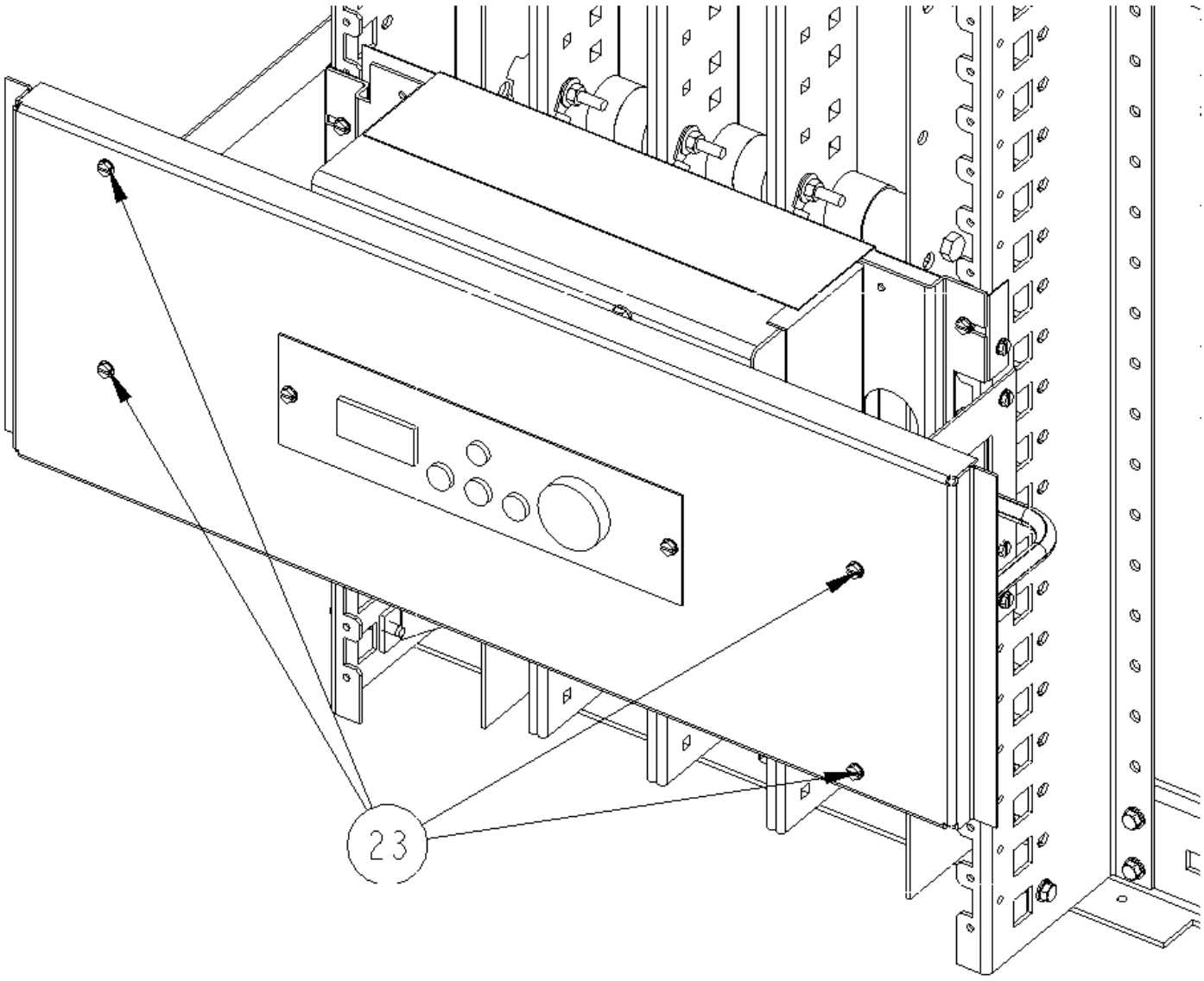

Figure 14. Mounting the filler plate assembly on the supports.

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the GE Company.

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