

# AC Line Disconnect Kits for FlexPak 3000 Digital DC Drives 400 HP to 600 HP @ 460 VAC

Model Numbers 901FK2401 and 901FK2501

Instruction Manual D2-3422



**ATTENTION:** Only qualified personnel familiar with the construction and operation of this equipment and the hazards involved should install, operate, and/or service this equipment. Read and understand this instruction manual in its entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

**ATTENTION:** All interconnecting wiring must be sized and installed in conformance with applicable local, national, and international codes. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

## Product Description

This instruction manual describes optional AC input line disconnect kits that can be installed on FlexPak 3000 drives rated at 400 HP to 600 HP @ 460 VAC. Each kit includes a molded case switch and mounting hardware.

The kits provide a positive disconnect of AC input leads for the FlexPak 3000 drive. The 400 HP to 500 HP @ 460 VAC disconnect is rated for 800 A @ 600 VAC. The 600 HP @ 460 VAC disconnect is rated for 1000 A @ 600 VAC. To be in compliance with NEC code, neither disconnect should be used for more than 85% of its rated amps at equipment rated load.

Both disconnect switches are equipped with a small, yellow test button located on the switch's lower left front. The button can be used to check a switch's mechanical operation and for quick disconnect. When pressed, the button immediately trips the switch open.

## Verifying the Kit Model Number Matches the Drive

The disconnect kits are rated for use with FlexPak 3000 drives rated 400 HP to 600 HP @ 460 VAC. To ensure the kit is properly rated for your application, use the kit only with FlexPak 3000 drives and only as listed in the table 1.

Table 1 – AC Line Disconnect Kits

Disconnect Amps	Drive Horsepower	Kit Model Number
800	400 HP to 500 HP @ 460 VAC	901FK2401
1000	600 HP @ 460 VAC	901FK2501



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## Checking the Contents of the Kit

Tables 2 and 3 list the contents of the AC Line Disconnect kits. Note that the item numbers refer to the circled numbers in figures 2, 3, and 4.

Table 2 – 400 HP to 500 HP Disconnect Kit

<b>Model 901FK2401 (800 Amp)</b>			
<b>Item No.</b>	<b>Description</b>	<b>Qty</b>	<b>Reliance Part Number</b>
1	800 Amp Disconnect	1	65242-500LSX
2	M8 x 130 mm Bolt (SHCS)	4	419062-10AKY
3	M8 Split Lockwasher	4	419064-100SK
4	7/16 x 1" Bolt (HHCS)	12	601741-104C
5	7/16" Split Lockwasher	12	601748-3M
6	7/16" Flat Washer	12	601748-14F
7	Bus Bar	3	802276-73A
8	Spacer	1	802276-923A
9	Adapter	1	802276-922R
10	M5 x 20mm Phillips Head Screw	1	419062-2PHL
11	M5 Ext. Tooth Lock Washer	1	419064-101SH
12	AC Line Input Cover	1	802276-909A

Table 3 – 600 HP Disconnect Kit

<b>Model 901FK2501 (1000 Amp)</b>			
<b>Item No.</b>	<b>Description</b>	<b>Qty</b>	<b>Reliance Part Number</b>
1	1000 Amp Disconnect	1	65242-500NSX
2	M8 x 130 mm Bolt (SHCS)	4	419062-10AKY
3	M8 Split Lockwasher	4	419064-100SK
4	7/16 x 1" Bolt (HHCS)	12	601741-104C
5	7/16" Split Lockwasher	12	601748-3M
6	7/16" Flat Washer	12	601748-14F
7	Bus Bar	3	802276-73A
8	Spacer	1	802276-923A
9	Adapter	1	802276-922R
10	M5 x 20mm Phillips Head Screw	1	419062-2PHL
11	M5 Ext. Tooth Lock Washer	1	419064-101SH
12	AC Line Input Cover	1	802276-909A

# Installation



**ATTENTION:** Do not install modification kits with power applied to the drive. Disconnect and lock out incoming power before attempting such installation. Failure to observe this precaution could result in severe bodily injury or loss of life.

Refer to figures 1 through 4 while performing this installation. The numbers in the circles on the figures refer to the item numbers listed in tables 2 and 3. These item numbers are also referenced in the installation procedure.

**Important:** This procedure assumes that the drive is wired and operational, and that incoming power is connected to the drive at input line fuse terminals 181, 182, and 183. During kit installation, terminals 181, 182, and 183 are disconnected from incoming power and connected to the load side of the AC line disconnect. Incoming power is then connected to the line side of the AC line disconnect, which is then labeled terminals 81, 82, and 83.

- Step 1. Turn off, lock out, and tag power to the drive.
- Step 2. Set the switch on the disconnect to OFF.
- Step 3. Remove the clear plastic line fuse cover. This is held in place by tabs inserted in slots and by two screws on the bottom of the auxiliary chassis panel. See figure 1.
- Step 4. If drive power has already been installed, disconnect the incoming power lines from the drive by removing the nuts that fasten these lines to AC line terminals 181, 182, and 183 (see figure 1). Disconnect the lines (cables). Set the hardware aside for use later.
- Step 5. Remove AC line terminals, 181, 182, and 183 by removing the M12 nuts as shown in figure 3. Set these terminals and nuts aside for re-installation later.
- Step 6. If drive power has not already been installed, determine whether your wiring application calls for the existing compression terminals on the line side of the disconnect switch, or the AC line bus bar terminals removed in step 5. Each compression terminal can accept three (3) wires in the range from 3/0 to 500 MCM. Each AC line bus bar terminal can accept up to four (4) user-supplied 1/2-inch ID wire lugs.  
  
If you will be using the AC line bus bar terminals, you must remove the compression terminals before mounting the disconnect switch. Access the underside of the disconnect switch, remove the six (6) bolts that secure the terminals in place, and remove the compression terminals.
- Step 7. Ten screws fasten the red insulating mounting panel to the metal frame of the drive. Remove the second from the top right screw illustrated in figure 1. Discard this screw. It will be replaced by an M5 x 20 mm Phillips head screw and an M5 ext. tooth lock washer [items 10 and 11] later. Stand the disconnect switch [Item 1] so that it faces you as it will after it is mounted (see figure 2).
- Step 8. Put one split lockwasher [Item 3] onto each of the M8 x 130 mm bolts [Item 2].
- Step 9. With the front of the disconnect facing you, insert one M8 x 130 mm bolt with lockwasher into one of the disconnect's upper bolt holes. Then insert another bolt with lockwasher into the bottom bolt hole diagonally opposite the upper bolt hole. See figure 2.
- Step 10. Place the spacer [Item 8] over the studs on the adapter plate [Item 9]. Orient this adapter so that the wide tab with the hole is on the right. As shown, the studs on this adapter must face the front of the disconnect. The holes on the mounting plate go over the ends of the bolts inserted in step 9. Refer to figure 2 for the correct orientation.

- Step 11. Push the spacer and adapter plate flush against the back of the disconnect.
- Step 12. While holding the adapter plate [Item 9] and the spacer [Item 8] in place, pick up the disconnect and position it over the bolt holes on the drive's mounting panel. See figures 2 and 3.
- Step 13. Attach the disconnect by hand tightening the top and bottom bolts inserted in step 9.
- Step 14. After the bolt threads catch the threads in the bolt holes, insert the remaining two mounting bolts with lockwashers into the disconnect's empty bolt holes and initially hand-tighten them.
- Step 15. Tighten all four mounting bolts to 14 Nm (125 in-lb).
- Step 16. Install the Phillips screw and lock washer [Items 10 and 11] in the place the screw was removed in step 6. See figure 4, Detail A. Tighten to 2.8 Nm (25 in-lb). This establishes a ground connection.
- Step 17. Remove the disconnect's lower lug cover by loosening the two captive screws that hold it in place. See figure 3.
- Step 18. Put one split lockwasher [Item 5] and one flat washer [Item 6] onto each of the bolts [Item 4]. These will fasten the bus bars [Item 7] to the disconnect.
- Step 19. Attach one bus bar [Item 7] to the drive's right-side line fuse connector and to the disconnect's right-side load connector. Use two of the bolt, lockwasher, and flat washer assemblies from step 18 to attach the bus bar to the disconnect. See figure 3.
- Step 20. Fasten the bus bar to the drive's line fuse terminals with the nuts and washers removed in step 5.
- Step 21. Repeat this procedure to attach the remaining two bus bars, center and left, to the line fuse terminals and to the disconnect's load connectors.
- Step 22. Tighten the bolts fastening the bus bars to the disconnect to 39 Nm (346 in-lb).
- Step 23. Tighten the nuts fastening the bus bars to the line fuse terminals to 24 Nm (210 in-lb).
- Step 24. Replace the disconnect's lower lug cover and tighten the screws that hold it in place.
- Step 25. Replace the plastic line fuse cover and tighten the two screws at the bottom.
- Step 26. Remove the disconnect's top lug cover by loosening the two captive screws that hold it in place.
- If you are using the AC line compression terminals, skip to step 30. Otherwise, proceed with step 27.**
- Step 27. If you are using the AC line bus bar terminals (removed in step 5 from terminals 181, 182, and 183), connect them to the disconnect switch's line connections using items 4, 5, and 6. Tighten to 39 Nm (346 in-lb).
- Step 28. Connect (or re-connect) the incoming power cables removed in step 4 to the AC line terminals that you installed in the previous step. See figure 3 for the cable connection order.
- Step 29. Tighten the power cable fasteners to 24 Nm (210 in-lb). Skip to step 32.
- Step 30. If you are using the AC line compression terminals, connect the incoming power cables, using figure 3 for the correct cable connection order.
- Step 31. Using a 1/4-inch Allen wrench, tighten the screws on the compression terminals to 33.9 Nm (300 in-lb).

Step 32. Replace the disconnect's top lug cover and tighten the screws to hold it in place.

Step 33. If the disconnect is the main disconnect, attach a label reading MAIN.

Step 34. Install the clear plastic AC line input cover [Item 12] by inserting its feet into the slots on the mounting panel. Squeeze in slightly to seat the upper feet. After inserting, pull down to secure this cover in place. See figure 4.

Step 35. Make sure the disconnect switch is in the OFF position.

Step 36. Remove the lock out and tag, and turn on power to the drive. The motor should not be operating at this time.

Step 37. Set the line disconnect switch to the ON position. To set the switch, first move it into position 0 (down) and then move it to position 1 (up). The drive should power up.

Step 38. Test the installation by setting the line disconnect to OFF (position 0) and measuring the voltage at terminals 181, 182, and 183. All three terminals should be at approximately zero volts (0 VAC), line-to-line and line-to-ground.

Step 39. After verifying correct installation, set the line disconnect to ON for normal operation.

Kit installation is now complete.

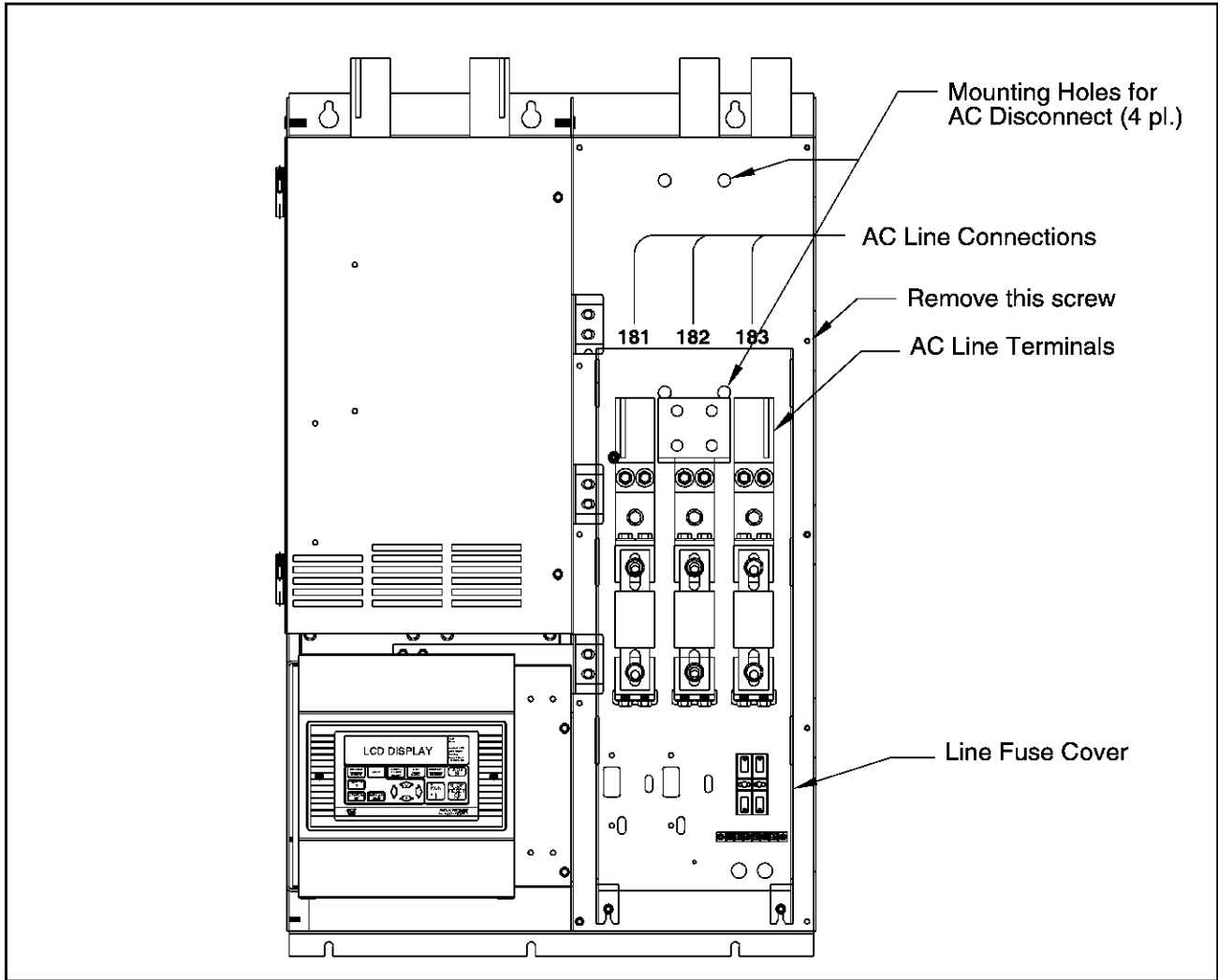


Figure 1 – Drive without an AC Disconnect

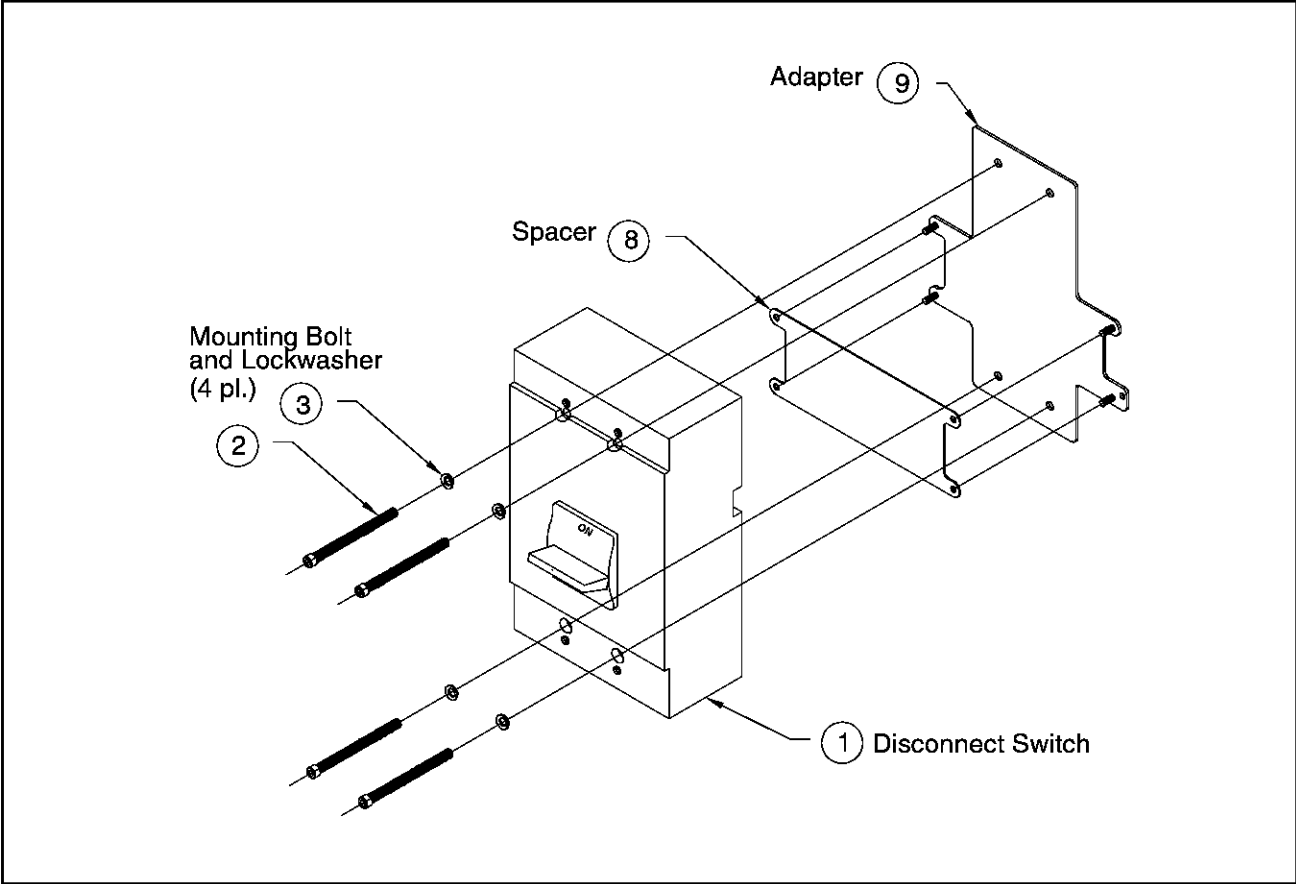


Figure 2 – Orientation of Spacer and Adapter behind the AC Disconnect

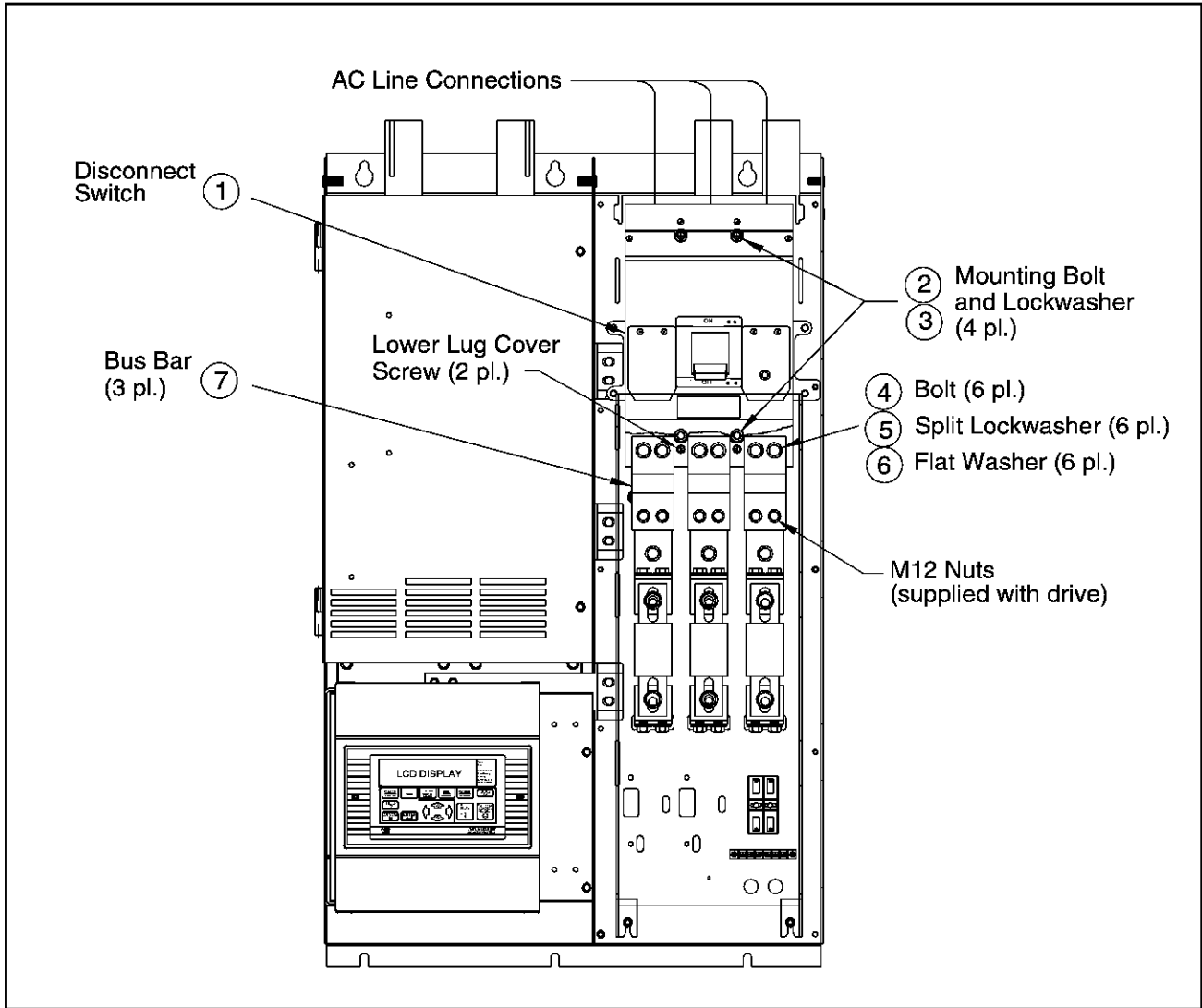


Figure 3 – Drive with an AC Disconnect

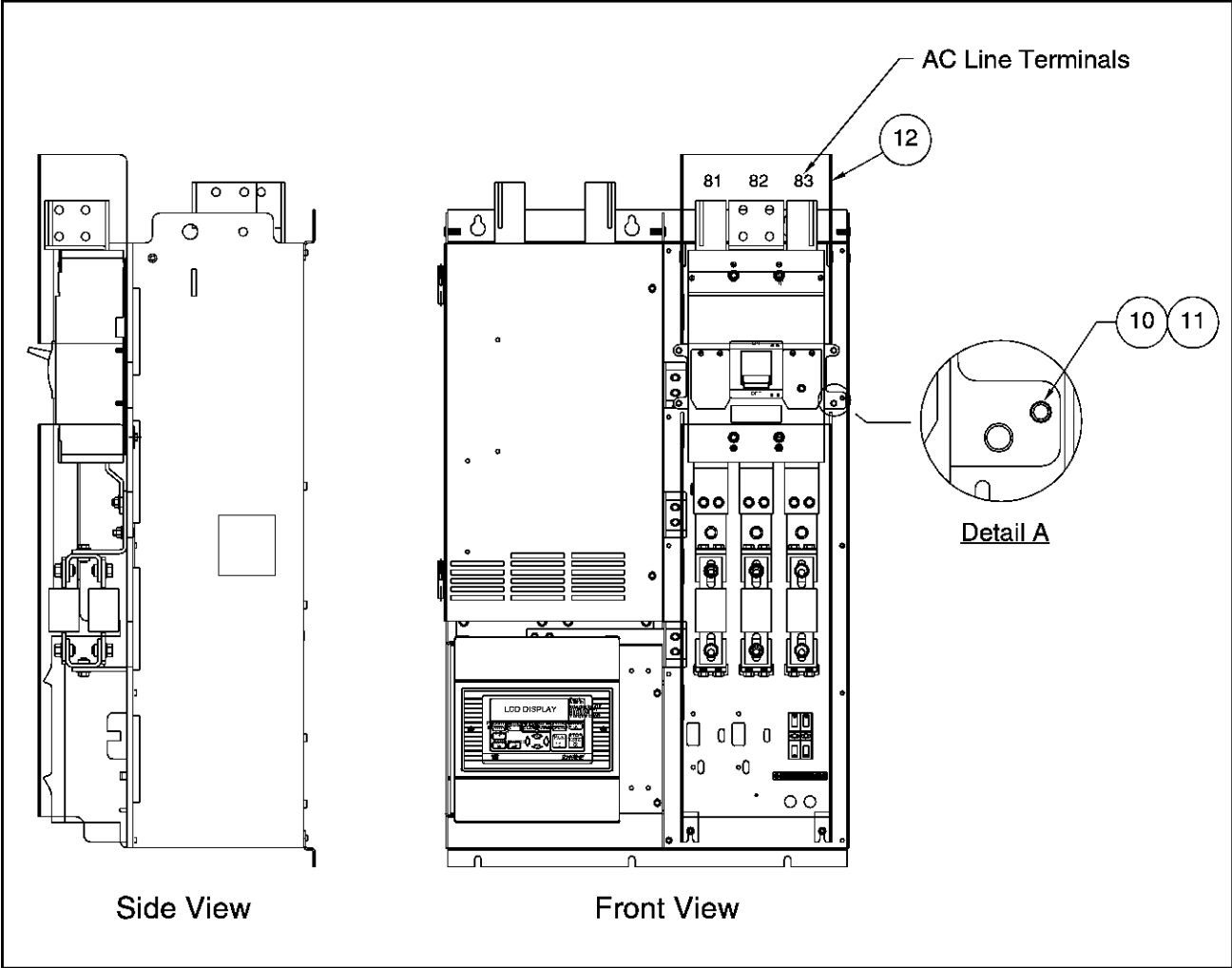


Figure 4 – AC Disconnect Installed with AC Line Terminals and AC Line Cover Re-installed

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