Hardware Service Manual

Allen-Bradley

PowerFlex 755 AC Drives

Floor Mount Frame 8 and Larger









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Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

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This manual revision contains the following new and updated information.

Topic	Page
Updated the Remove Power from the Drive procedure for current lock out tag out information.	23
Updated the Spare Part Compatibility with Series A and Series B Drives table to include current drive components and catalog numbers.	28
Updated the Series A, B, and C Converter Components and Drive Input Power Compatibility table to identify series C compatible components and catalog numbers.	29
Added Connected Components Workbench™ software to the list of software tools that support PowerFlex 750-Series drives.	30
Updated the Recommended Drives Maintenance Tasks and Schedule tables to include new parts.	37
Updated the Converter Components Identification table to include current drive components availability.	78
Updated the Converter Assembly Components Diagram 1 to include new components.	81
Updated the Converter Assembly Components Diagram 2 to include new components.	82
Added the new Converter Input Fuse Stirring Fan Removal/Installation procedure.	91
Updated the AC Line Fuse Removal/Installation procedures to include the input fuse stirring fan removal step.	95
Updated the DC Input with Precharge Assembly Components Identification table to include the new DC input with precharge unit catalog number.	154
Updated the DC Input with Precharge Assembly Components Identification table to include the DC precharge control board stirring fan.	154
Updated the DC Input with Precharge Assembly Components Diagram 2 table to include the DC precharge control board stirring fan.	158
Added the new DC Input with Precharge Assembly Left Cover and Interlock Assembly Replacement instructions.	160
Updated the Disconnect Switch Handle Removal/Installation instructions to reflect removing the rotary handle from the front cover.	199
Added the new DC Precharge Control Board Stirring Fan Removal/Installation instructions.	211
Updated the Inverter EMC Capacitor Removal/Installation (AC Input Drive Only) procedure to include new EMC capacitors.	264
Added the IP20, NEMA/UL Type 1 Debris Screen Removal/Installation procedure.	299
Updated the Option-bay Enclosure Components Identification table to include new components and catalog numbers.	340
Updated the Frame 9 Thermostat and Wire Harness Removal/Installation instructions to include an illustration of the new circuit breaker disconnect handle panel.	372
Updated the Frame 9 Main Control-panel Wire Harness Removal/Installation procedures to include a step for the new door interlock connections.	375
Added the new Frame 8 AC Input IP20 Option Bay Without a Control Transformer Schematic Diagram.	424
Added the new Frame 8 AC Input IP20 Option Bay With a Control Transformer Schematic Diagram.	425
Added the new Frame 8 AC Input IP54 Option Bay Schematic Diagram.	426
Added the new Frame 9 AC Input Option Bay Schematic Diagram.	427
Added the new Appendix C Drive-compatible Circuit Breakers, Molded Case Switches, Contactors, and Line Reactors.	445

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This manual provides a recommended preventative maintenance schedule, major component test and hardware replacement procedures, and schematic diagrams for floor mount frame 8 and larger PowerFlex® 750-Series AC drives. See Drive Input Power Configurations on page 26 for information on drive input power configurations and frame sizes.

It is highly recommended that you obtain a copy of the PowerFlex 750-Series AC Drives Programming Manual, publication 750-PM001. This publication contains fault, alarm, and programming information that can help you troubleshoot drive errors and determine if repairs are necessary.

Who Should Use this Manual

This manual is intended for qualified service personnel responsible for frame 8 and larger PowerFlex 750-Series AC drive repairs. You must have previous experience with, and an understanding of, electrical terminology, procedures, required equipment, equipment protection procedures and methods, and safety precautions. See safety-related practices that are contained in publication NFPA 70E, Standard for Electrical Safety in the Work Place.

Additional Resources

Additional drive service and software/firmware support information is available on the Allen-Bradley Drives Service and Support website: http://www.ab.com/support/ abdrives/.

A complete list of spare parts for PowerFlex 755 floor mount frame 8 and larger drives is available on the Allen-Bradley web site at: http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

The following table lists publications that provide general drive-related information.

Resource	Description
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001	Provides basic information that is required to properly wire and ground PWM AC drives.
Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control, publication SGI-1.1	Provides general guidelines for the application, installation, and maintenance of solid-state control.
A Global Reference Guide for Reading Schematic Diagrams, publication 100-2.10	Provides a simple cross-reference of common schematic/ wiring diagram symbols that are used throughout various parts of the world.
Guarding Against Electrostatic Damage, publication 8000-4.5.2	Provides practices for guarding against Electrostatic damage (ESD)
Product Certifications that are provided on the Allen-Bradley website: http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

The following table lists publications that provide information about PowerFlex 750-Series drives.

Resource	Description
PowerFlex 750-Series Drive Installation Instructions, publication 750-IN001	Provides the basic steps that are required to install a PowerFlex 750-Series AC drive.
PowerFlex 750-Series AC Drives Programming Manual, publication 750-PM001	Provides information that is required to start up, program, and troubleshoot PowerFlex 750-Series AC drives.
PowerFlex 755 Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001	Provides information on how to install, configure, and troubleshoot the Embedded EtherNet/IP Adapter for PowerFlex 755 AC drives.
Safe Speed Monitor Option Module for PowerFlex 750-Series AC Drives Safety Reference Manual, publication 750-RM001	Describes how to use PowerFlex 750-Series AC drives in Safety Integrity Level (SIL) CL3, Performance Level [PL(e)], or Category (CAT) 4 applications. This manual provides information on how to install, configure, and troubleshoot the PowerFlex Safe Speed Monitor Option module.
PowerFlex 750-Series AC Drives Technical Data, publication 750-TD001	Provides information on product features and benefits, options, and technical specifications information.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

Before You Begin Tests, Maintenance, or Repairs

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Read the information in this chapter before you begin tests, maintenance, or repairs on drive components.

General Precautions

Read the following precautions before you begin to test components, perform maintenance, or repair the drive.

Qualified Personnel



ATTENTION: Only qualified personnel familiar with adjustable frequency AC drives and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply can result in personal injury and/or equipment damage.

Personal Safety



ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged completely before servicing. Measure the DC bus voltage at the -DC and +DC TESTPOINT sockets on the front of the power module (see Remove Power from the Drive on page 23 for location).



ATTENTION: Potentially fatal voltages can result from improper usage of an oscilloscope and other test equipment. The oscilloscope chassis can be at a potentially fatal voltage if not properly grounded. If an oscilloscope is used to measure high-voltage waveforms, use only a dual channel oscilloscope in the differential mode with X 100 probes. It is recommended that the oscilloscope is used in the A minus B Quasi-differential mode with the oscilloscope chassis correctly grounded to an earth ground.

Product Safety



ATTENTION: This drive contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage can result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference Guarding Against Electrostatic Damage, publication 8000-4.5.2 or any other applicable ESD protection handbook.

Class 1 LED Product



ATTENTION: Hazard of permanent eye damage exists when using optical transmission equipment. This product emits intense light and invisible radiation. Do not look into module ports or fiber-optic cable connectors.

Remove Power from the Drive

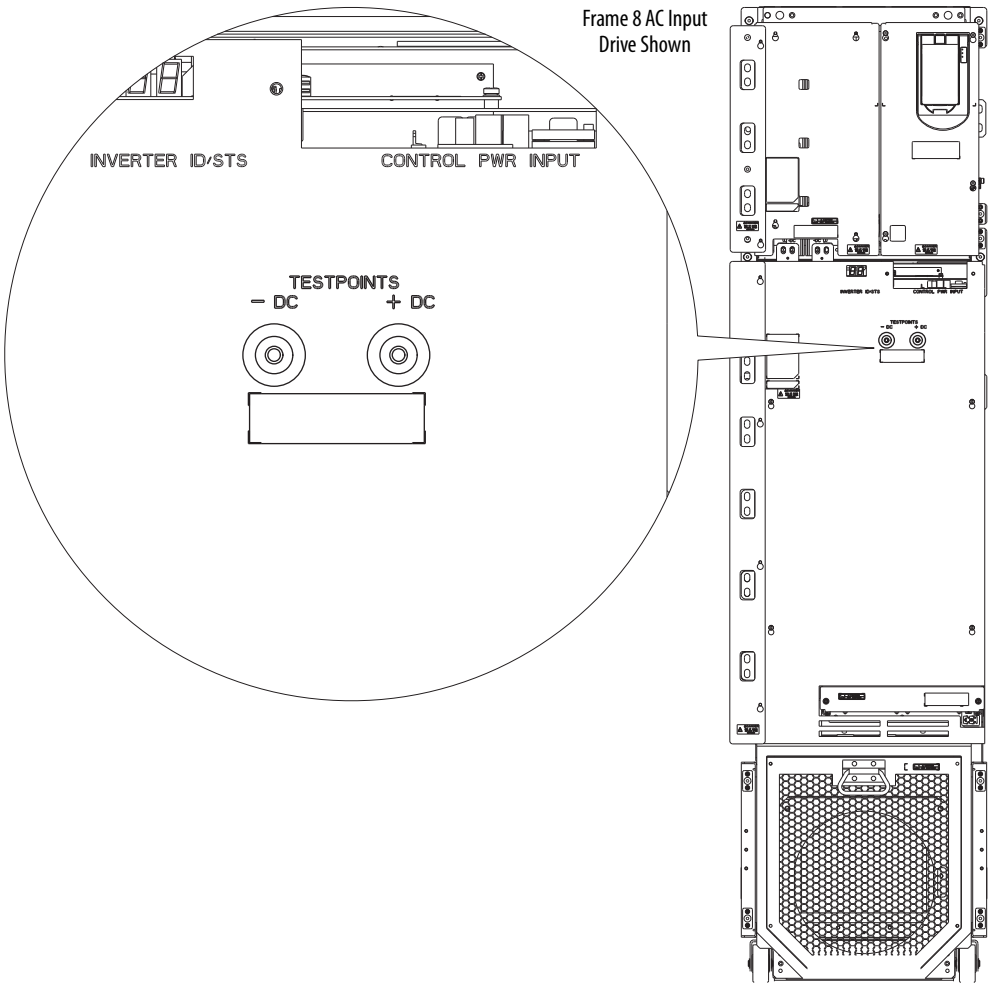
WARNING: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged completely before servicing. Measure the DC bus voltage at the -DC and +DC TESTPOINT sockets on the front of the power module.

Remove power before you remove or make cable connections. When you remove or insert a cable connector with power applied, an electrical arc can occur. An electrical arc can cause personal injury or property damage in theses ways:

- An electrical arc can send an erroneous signal to system field devices, which can cause unintended machine motion
- An electrical arc can cause an explosion in a hazardous environment

Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts can create electrical resistance.

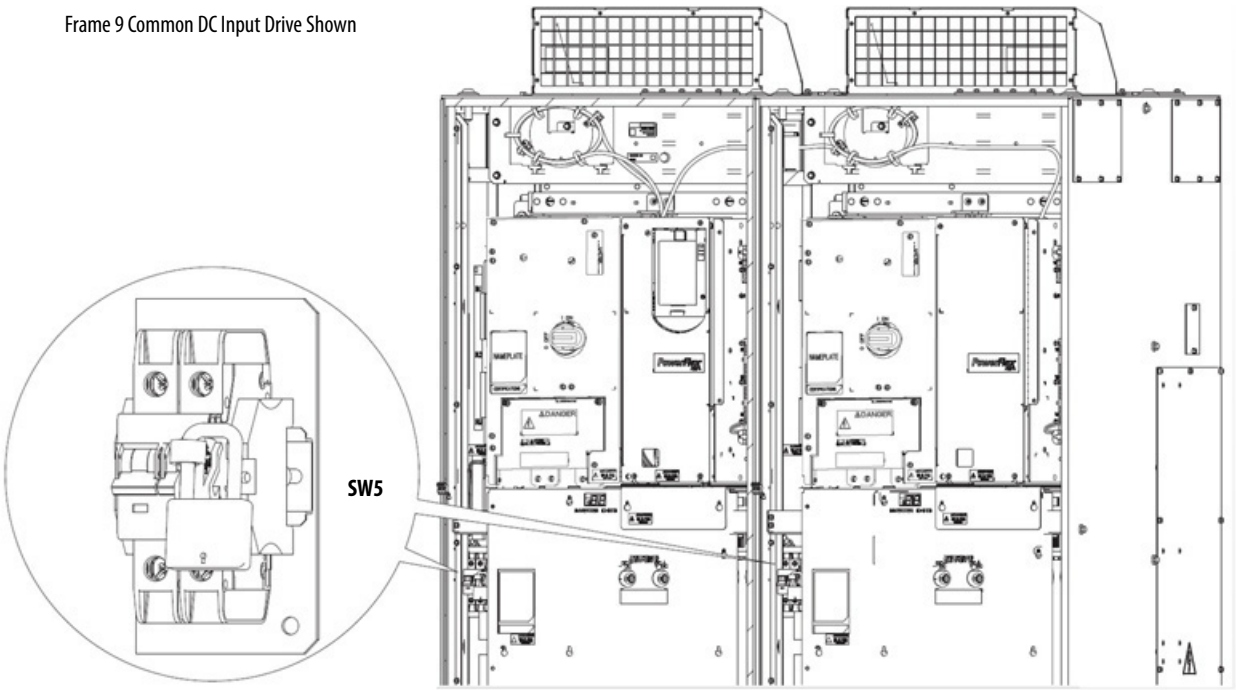
1. Turn off and lock out all input power, including any external power sources (such as an AFE or other DC power source).
2. Wait 15 minutes and verify that there is no voltage at the drive input power terminals.
3. Measure the DC bus voltage at the -DC and +DC TESTPOINT sockets on the front of the power module.



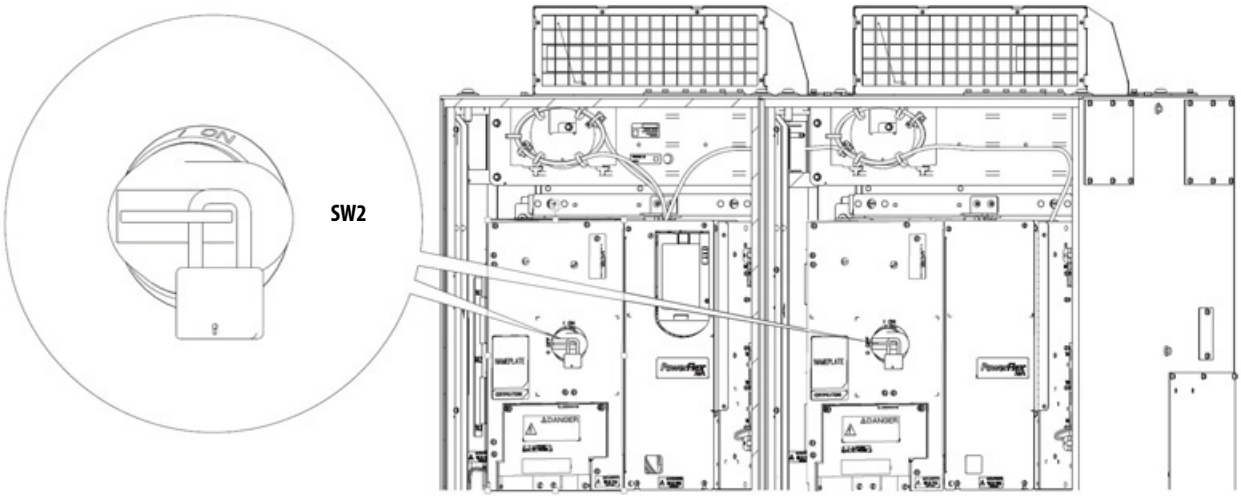
ATTENTION: To avoid an electric shock hazard when servicing the drive, a means for Lockout/Tagout of the external, single-phase 120/240V power source and, if present, external 120V uninterruptible power supply source must be provided.

4. For common DC input drives only, follow steps a...c to turn off and lock out additional input power sources.
   a. Turn off and lock the drive circuit breaker SW5 (if used).

Frame 9 Common DC Input Drive Shown

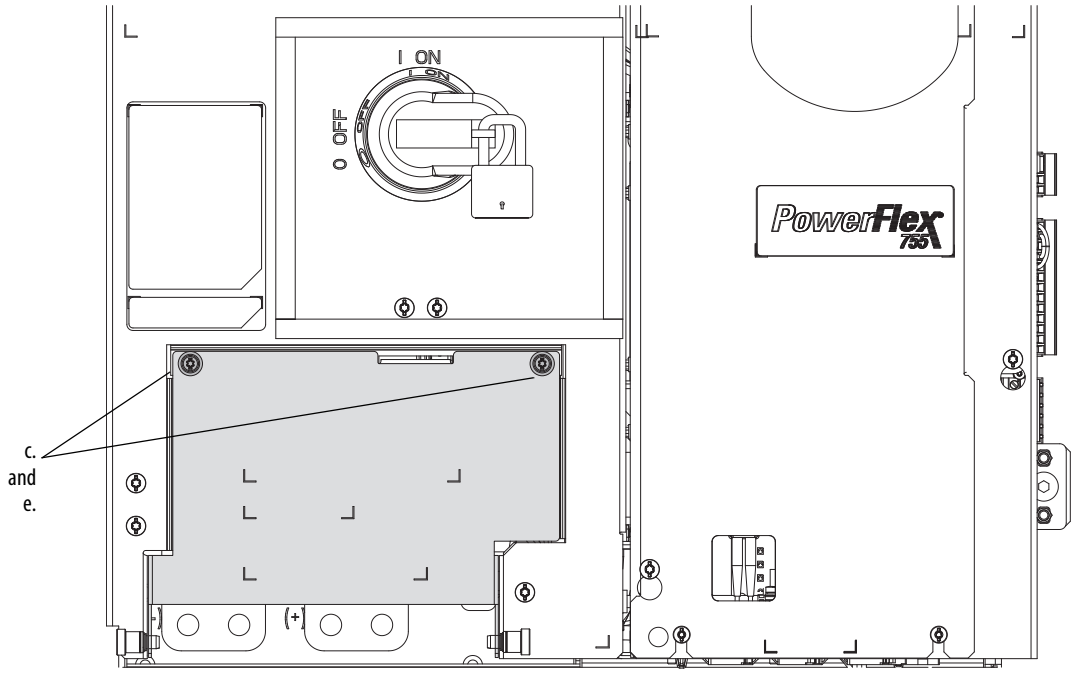


   b. Turn off and lock the drive disconnect switch SW2.

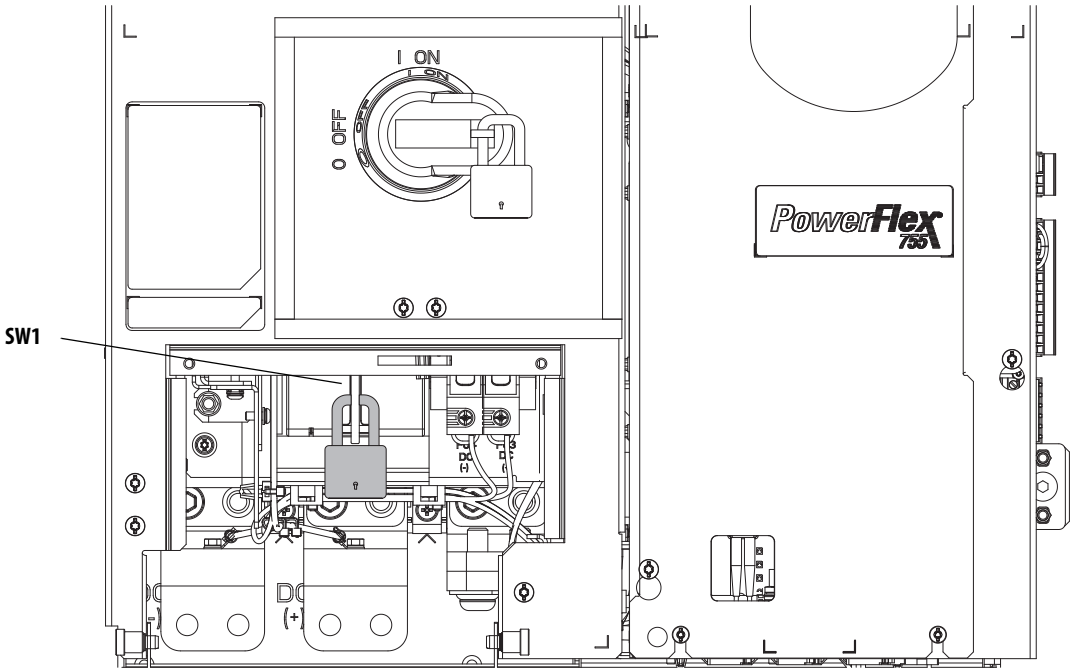


Common DC Input Drives

c. For common DC input drives with a circuit breaker access door (DC input with precharge units 20-750-P6-*xnnnxnnn* and later), loosen the two hexalobular screws that secure the circuit breaker access door to the door panel and lower the door.



d. Close and lock the hasp on the molded case switch SW1.



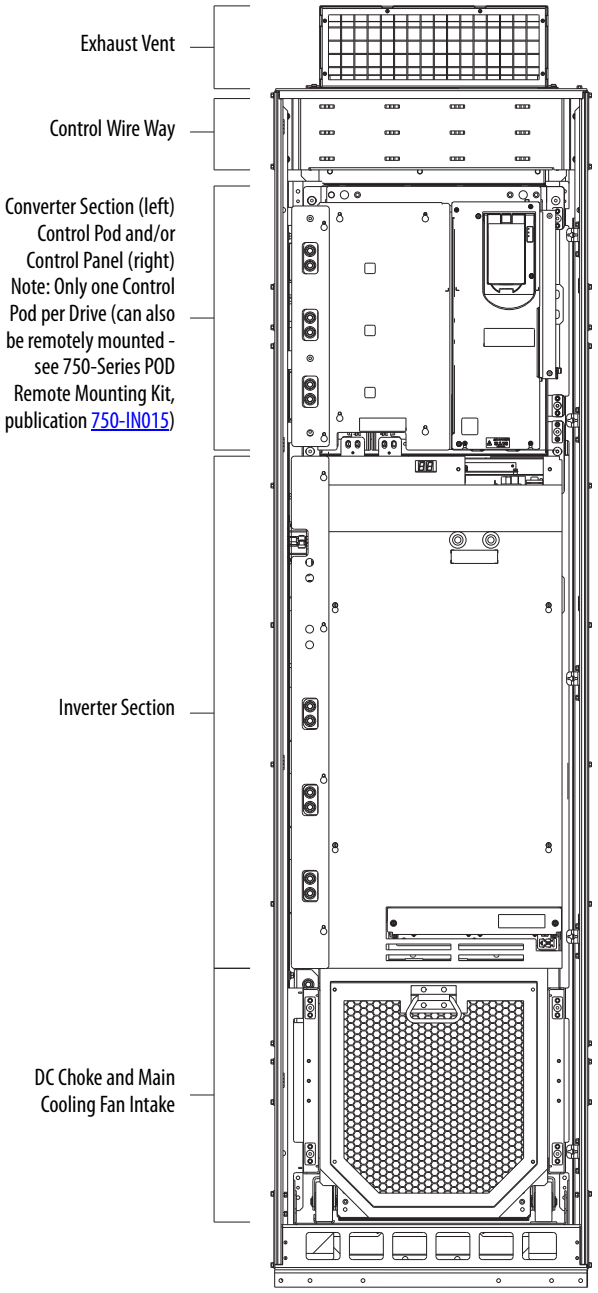
e. If you must remove the drive from the cabinet, close and secure the circuit breaker access door before removal.

Drive Input Power Configurations

The PowerFlex 750-Series drives discussed in this manual are available as floor-mount frame 8, 9, and 10 drives with either AC or common DC input. See Figure 1 and Figure 2 on page 27 to familiarize yourself with AC versus DC input drive configurations and the main drive sections each configuration contains.

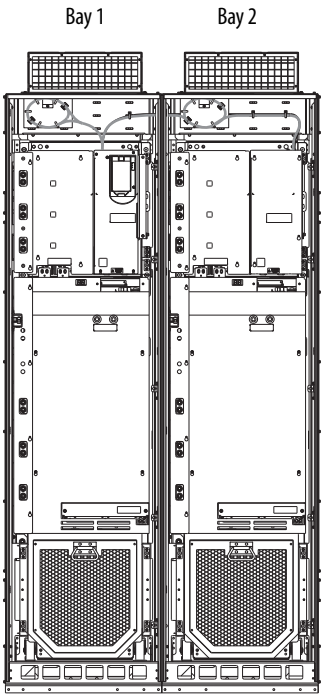
Figure 1 - AC Input Drives

Frame 8



Note: Enclosure doors shown removed.

Frame 9



Frame 10

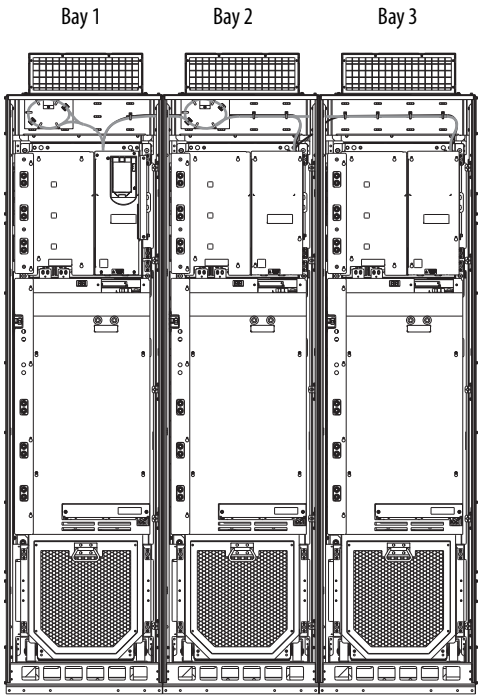
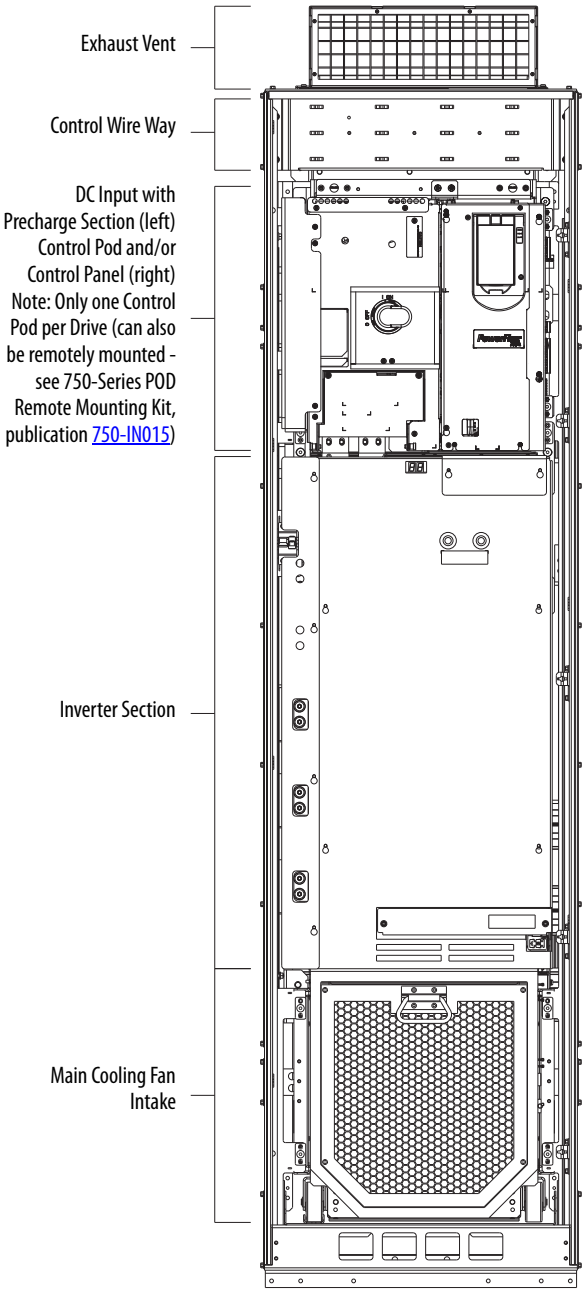


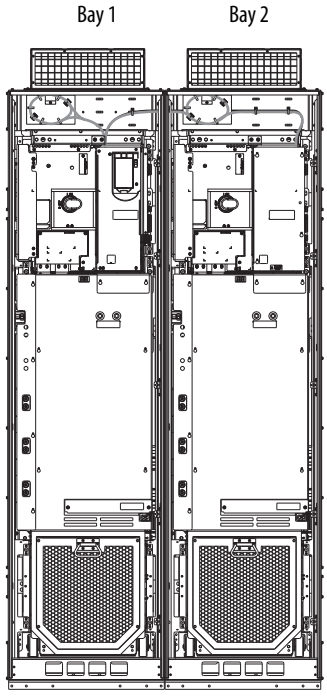
Figure 2 - Common DC Input Drives

Frame 8

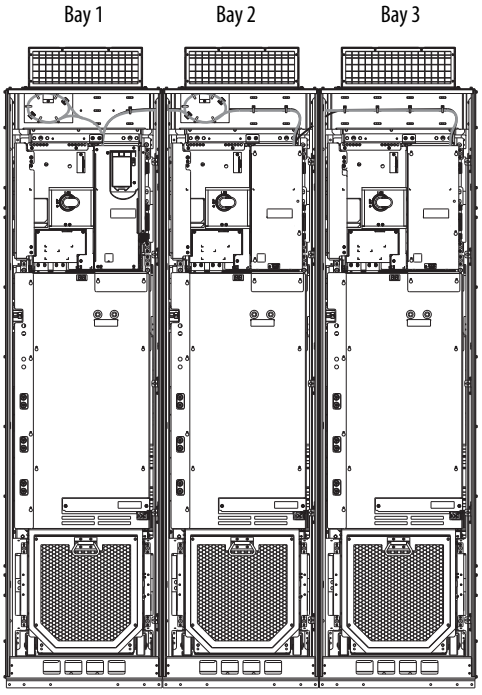


Note: Enclosure doors are shown removed.

Frame 9



Frame 10



Drive Series Components Compatibility

The drive frame size, date of manufacture, and firmware version determine if series A or B components are installed. The following tables identify the drive components that are series-specific and the catalog numbers that can be used based on frame size and firmware version. To avoid improper drive operation, verify the frame size, component series, and firmware version before you purchase and replace any of these components.

Spare Part Compatibility with Series A and Series B Drives

Series A and series B power core components are not compatible with each other and cannot be combined.

- All frame 8 drives that are manufactured before August 31, 2011 contain series A components.
- All frame 8, 9, and 10 drives that are manufactured after August 31, 2011 contain series B and C components.

Series Specific Component	Frame 8 - Series A Drives Compatible Component Part Cat. No.	Frame 8…10 - Series B and C Drives Compatible Component Part Cat. No.
Converter Unit, AC Input 770 A, 400V / 740 A, 480V	20-750-C1-C770D740	20-750-C6-C770D740
Converter Unit, AC Input 510 A, 600V / 500 A, 690V	–	20-750-C6-E510F500
Inverter Unit, AC Input 460 A, 400V / 430 A, 480V	20-750-I1-C460D430	20-750-I1B-C460-D430
Inverter Unit, AC Input 540 A, 400V / 485 A, 480V	20-750-I1-C540D485	20-750-I1B-C540D485
Inverter Unit, AC Input 567 A, 400V / 545 A, 480V	20-750-I1-C567D545	20-750-I1B-C567D545
Inverter Unit, AC Input 650 A, 400V / 617 A, 480V	20-750-I1-C650D617	20-750-I1B-C650D617
Inverter Unit, AC Input 750 A, 400V / 710 A, 480V	20-750-I1-C750D710	20-750-I1B-C750D710
Inverter Unit, AC Input 770 A, 400V / 740 A, 480V	20-750-I1-C770D740	20-750-I1B-C770D740
Converter Gate Board 400V/480V AC Input (1)	SK-R1-CGDB1-CD-F8	SK-R1-CGDB4-CD-F8
Converter Gate Board 600V/690V AC Input (1)	–	SK-R1-CGDB4-EF-F8
Inverter Power Layer Interface Board (2)	SK-R1-PINT1-F8	SK-R1-PINT2-F8

(1) This board is included with a replacement converter unit.

(2) This board is included with a replacement inverter unit.

Firmware Version Compatibility with Series A and B Circuit Boards

Firmware Version	Drive Series	Frame Size	Converter Gate Board SK-R1-CGDB1-CD-F8	Inverter Power Layer Interface Board SK-R1-PINT1-F8	Converter Gate Board SK-R1-CGDB2-CD-F8 SK-R1-CGDB2-EF-F8	Converter Gate Board SK-R1-CGDB4-CD-F8 SK-R1-CGDB4-EF-F8	Inverter Power Layer Interface Board SK-R1-PINT2-F8
2.*xxx*	A	8	Compatible	Compatible	NOT Compatible	NOT Compatible	NOT Compatible
3.*xxx*…5.*xxx*	B	8 and 9	NOT Compatible	NOT Compatible	Compatible	Compatible	Compatible
6.*xxx* or later	B	10	NOT Compatible	NOT Compatible	NOT Compatible	Compatible	Compatible

Series A, B, and C Converter Components and Drive Input Power Compatibility

Series Specific Component	Compatible with 400/480VAC Input Drives	Compatible with 600/690VAC Input Drives
Converter EMC Filter Board SK-R1-EMCFLT1-F8 (Series A)	Yes	No
Converter EMC Filter Board SK-R1-EMCFLT2-F8 (Series B and C)	Yes	Yes
Converter Current Sensor SK-R1-CNVIFB1-F8 (Series A)	Yes	No
Converter Current Sensor SK-R1-CNVIFB2-F8 (Series B and C)	Yes	Yes

Commonly Used Tools

Service Tools

IMPORTANT Care must be taken to be sure that tools and/or hardware components do not fall into open drive assemblies. Do not energize the drive unless all loose tools and/or hardware components have been removed from the drive assemblies and enclosure.

This list includes the tools that are needed for test measurements, basic maintenance, and service repairs.

Tool Description	Details
Allen socket wrench	4 mm, 5 mm (with long extension)
Allen socket wrench extension	254 mm (10 in)
Box wrench	7 mm, 8 mm, 10 mm, 13 mm, 17mm, 19 mm, 22 mm
Crimping tools	For cable terminals 1.5...240
Current clamp	1000A (ac, rms), signal output
ESD-protected place of work	Work surface, Floor cover, seat, and ground connections
ESD-protective clothing	Wrist wrap, shoes, overall clothing (coat)
Flash light	–
Flat-nose screw driver	3 mm (0.12 in.), 5 mm (0.19 in.), 6.4 mm (0.25 in.)
Fuse puller	–
Hexalobular screw driver/bit	#15, #20, #25, #30, #40, #45
Hexagonal socket wrench	2.5 mm, 7 mm, 8 mm, 10 mm, 12 mm, 13 mm, 17 mm, 18 mm
Insulation tester	1000V DC
Lifting strap	5/16 in. J-hook style, 24 in. long, 1000 lb. Minimum
Multi-meter	Digital multi-meter, capable of ac and dc voltage, continuity, resistance, capacitance measurements, and forward diode bias tests. Fluke model 87 III or equivalent.
Nose pliers	–
Oscilloscope	Portable, digitizing, dual channel scope, with isolation
Phillips screwdriver/bit	#1, #2
Roll-out cart	20-750-CART1-F8. Note: The roll-out cart is required to remove the drive assembly from the enclosure.
Torque wrench	1...12 N•m (8.8…106 lb•in)
Torque wrench	6...50 N•m (53…443 lb•in)
Wire cutter	–

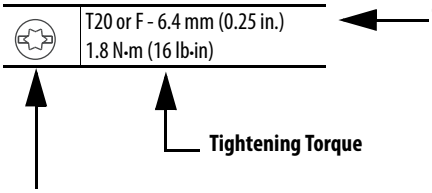
Software Tools

Connected Components Workbench™ software and DriveTools™ SP software are applications that can be used to upload and download parameter configuration and monitor and trend system parameters. Connected Components Workbench version 1.02 and DriveTools SP version 5.3 are required for use with PowerFlex® 750-Series floor mount frame 8 and larger drives and option modules.

Fastener/Tool/Torque Information

The disassembly illustrations in the following chapters identify the type of fastener, tool, and torque that is used for disassembly/assembly of components in the drive.

Fastener/Tool/Torque Information



Tool Type and Size	
F	Flat-nose screwdriver
Px	Phillips screwdriver/bit and size
PZx	POZIDRIV screwdriver/bit and size
Txx	Hexalobular screwdriver/bit and size
xx mm	Hexagonal socket wrench

Fastener Type	
	Flat-head screw
	Hexagonal bolt
	Hexagonal nut or standoff
	Hexagonal screw
	Hexalobular screw
	Phillips screw
	POZIDRIV screw
	Slotted Hexalobular screw

Fastener Torque Sequences

ATTENTION: When mounting components to a drive heat sink, component fastener torque sequences and tolerances are crucial to component-to-heat sink heat dissipation.

Components can be damaged if initial tightening procedure is not performed to specification.

The following illustrates initial and final tightening sequences for components that are fastened to a heat sink by using two, four, and six screws. Initial torque is 1/3 (33%) of final torque, except six-point mountings, which require 0.7 N•m (6 lb•in) initial torque. The numeric illustration labels are for your assistance. Drive components do not contain these labels.

Figure 3 - Two-Point Mounting

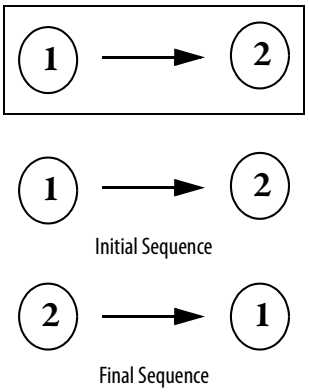


Figure 4 - Four-Point Mounting

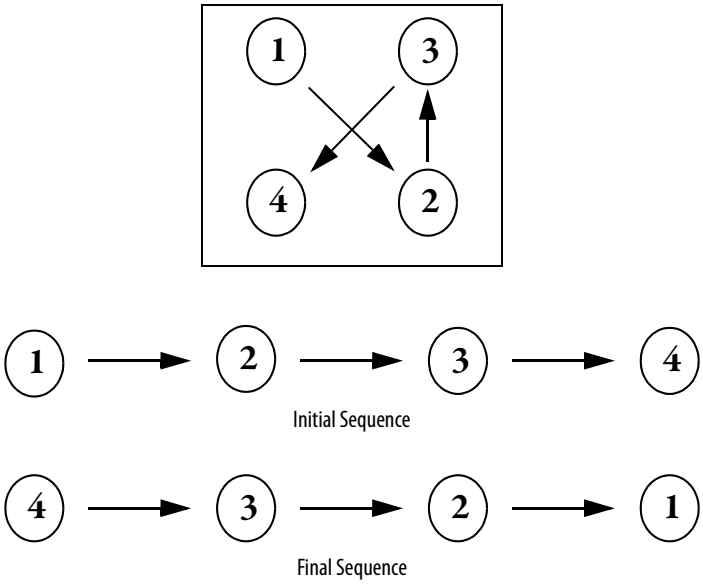
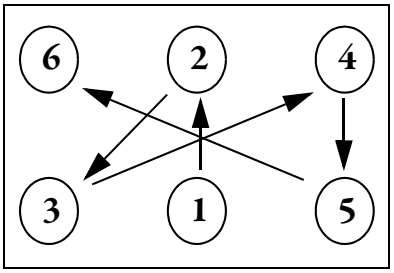
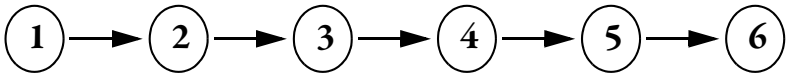


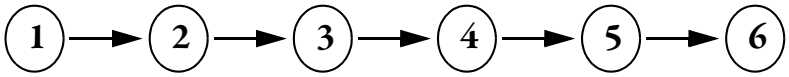
Figure 5 - Six-Point Mounting





Initial Sequence

Do not exceed 0.7 N•m (6 lb•in) on initial torque of all six screws.



Final Sequence

Notes:

Periodic Maintenance

Topic	Page
Recommended Preventative Maintenance	35
Maintenance Of Industrial Control Equipment	39

This chapter provides information on how to perform preventative maintenance on drive and option bay components that can affect the life and operability of the drive.

Recommended Preventative Maintenance

Rockwell Automation recognizes that following a defined maintenance schedule delivers the maximum product availability. By strictly following the maintenance schedule that is provided, you can expect the highest possible uptime.

This annual preventative maintenance program includes the following primary tasks:

- A visual inspection of all drive components visible from the front of the unit
- Resistance checks on the power components
- Power-supply voltage level checks
- General cleaning and maintenance
- Tightness checks on all accessible power connections

See Chapter 3 - Component Inspection and Test Procedures on page 43 for additional information on how to perform these procedures and tests.

The recommended maintenance tasks and schedule for a drive are contained in Table 1 on page 37. The recommended maintenance tasks and schedule for an option bay are contained in Table 2 on page 38. The Schedule Codes Explanations section on page 36 contains an explanation of the codes that are contained in the recommended maintenance tasks and schedule tables.

IMPORTANT Duty cycle, load profile, and other operating/environmental conditions greatly affect reliability of a drive.

Schedule Codes Explanations

The following codes are used to indicate the task associated with the components identified in the recommended tasks and maintenance schedule tables on pages 37 and 38.

Code	Task	Description
I	Inspect	Inspect the component for signs of excessive accumulation of dust, dirt, or external damage. For example, inspect the filter capacitors for bulges in the case, inspect the filters/fan inlet screens for debris that can block the air flow path.
C	Clean	Clean the components that can be reused, specifically the door-mounted air filters and fan inlet screens.
M	Maintain	This type of maintenance task can include an inductance test of line reactors/DC links, or a full test of an isolation transformer, and so on.
R	Replace	This component has reached its mean operational life. Replace the component to decrease the chance of failure. It is likely that components can exceed the designed life in the drive, but component life is dependent on many factors such as usage and heat.
RFB/R	Refurbish/Replace	The parts can be refurbished, at lower cost, or replaced with new ones.
Rv	Review	A discussion with Rockwell Automation personnel is recommended to help determine whether any of the enhancements/changes made to the drive hardware and control could benefit the application.

Table 1 - Recommended Drives Maintenance Tasks and Schedule

	Years >	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Components and Activities																						
Air-Cooling System	Door-mounted Air Filters (1)	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R
	Roof-mounted Assembly Air Filters (1)	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R
	Main Heatsink Cooling Fan(s)		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	Door-mounted Cooling Fans		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	Capacitor Bank Cooling Fans		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	Converter Input Fuse Stirring Fan		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	Converter Gate Board Stirring Fan		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	DC Precharge Control Board Stirring Fan		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
Power Switching Components	Power Devices (IGBTs/SCRs)		I	I	I	I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	I
	Electrolytic Bus Capacitors		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	Capacitor Balance Resistors		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
	Power Supply Circuit Board		I	I	I	I	RFB /R	I	I	I	I	RFB /R	I	I	I	I	RFB /R	I	I	I	I	RFB /R
	Precharge Resistors (Common DC Input Only)		I	I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	I	I	R
	Molded Case Switch (Common DC Input Only)		I	I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	I	I	R
	Undervoltage Delay (Common DC Input Only)		I	I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	I	I	R
Integral Magnetics/ Power Filters	Isolation Transformer/Line Reactor		I	I	I	I	M	I	I	I	I	M	I	I	I	I	M	I	I	I	I	M
	DC Link/Common-Mode Choke		I	I	I	I	M	I	I	I	I	M	I	I	I	I	M	I	I	I	I	M
Control Pod Components	AC/DC and DC/DC Power Supplies		I	I	I	I	RFB /R	I	I	I	I	RFB /R	I	I	I	I	RFB /R	I	I	I	I	RFB /R
	Control Boards		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Batteries (DCBs and CIB)		I	I	R	I	I	R	I	I	R	I	I	R	I	I	R	I	I	R	I	I
	Fiber-Optic Cables		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
Enhancements	Firmware		-	-	Rv	-	-	Rv	-	-	Rv	-	-	Rv	-	-	Rv	-	-	Rv	-	-
	Hardware		-	-	Rv	-	-	Rv	-	-	Rv	-	-	Rv	-	-	Rv	-	-	Rv	-	-
Operational Conditions	Parameters		I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I
	Variables		I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I
	Application Concerns		I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I
Spare Parts	Inventory/Needs		I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I

(1) Inspect and replace filters every 3 months or more frequently, depending on the environment.

Table 2 - Recommended Option Bay Maintenance Tasks and Schedule

Years >		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Components and Activities																						
Air-Cooling System	Door-mounted Air Filters (1)	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R
	Roof-mounted Assembly Air Filters (1)	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R	C/R
	Door-mounted Cooling Fans		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
Control Components	Control Transformer		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Fan Control Relay		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Fiber-Optic Cables		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
Spare Parts	Inventory/Needs		I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I	Rv	I	I

(1) Inspect and replace filters every 3 months or more frequently, depending on the environment.

Maintenance Of Industrial Control Equipment



ATTENTION: Performing service on energized Industrial Control Equipment can be hazardous. Severe injury or death can result from electrical shock, bump, or unintended actuation of controlled equipment. Recommended practice is to disconnect and lockout control equipment from power sources, and release stored energy, if present. See National Fire Protection Association Standard No. NFPA70E, Part II and (as applicable) OSHA rules for Control of Hazardous Energy Sources (Lockout/Tagout) and OSHA Electrical Safety Related Work Practices for safety-related work practices. These publications include procedural requirements for lockout-tagout, and appropriate work practices, personnel qualifications, and training requirements where it is not feasible to de-energize and lockout or tagout electric circuits and equipment before working on or near exposed circuit parts.

Periodic Inspection - Periodically inspect industrial control equipment. Base inspection intervals on the environmental and operating conditions and adjust the intervals as necessary. An initial inspection within 3 to 4 months after installation is suggested. See National Electrical Manufacturers Association NEMA) Standard No. ICS 1.3, Preventive Maintenance of Industrial Control and Systems Equipment, for general guidelines for defining a periodic maintenance program. Some specific guidelines for Rockwell Automation products are listed here.

Contamination - If inspection reveals that dust, dirt, moisture, or other contamination has reached the control equipment, the cause must be eliminated. Contamination can indicate an incorrectly selected or ineffective enclosure, unsealed enclosure openings (conduit or other), or incorrect operating procedures. Replace any improperly selected enclosure with one that is suitable for the environmental conditions. See NEMA Standard No. 250, Enclosures for Electrical Equipment for enclosure type descriptions and test criteria. Replace any damaged or cracked elastomer seals and repair or replace any other damaged or malfunctioning parts (for example, hinges and fasteners). Dirty, wet, or contaminated control devices must be replaced unless they can be cleaned effectively by using a vacuum or clean cloth wipe. Compressed air is not recommended for cleaning because it can displace dirt, dust, or debris into other parts or equipment, or damage delicate parts.

Cooling Devices - Inspect blowers and fans that are used for forced air cooling. Replace any that have bent, chipped, or missing blades, or if the shaft does not turn freely. Apply power momentarily to check operation. If unit does not operate, check and replace wiring, fuse, or blower or fan motor as appropriate. Clean or change air fitters as recommended in the product manual. Also, clean fins of heat exchangers so convection cooling is not impaired.

Operating Mechanisms - Check for proper function and freedom from sticking or binding. Replace any broken, deformed or badly wont parts or assemblies according to individual product renewal-parts lists. Check for and retighten securely any loose fasteners. Lubricate if specified in individual product instructions. Note: Allen-Bradley magnetic starters, contactors, and relays are designed to operate without lubrication. Do not lubricate these Allen-Bradley

devices because oil or grease on the pole faces (mating surfaces) of the operating magnet can cause the device to stick in the "ON" mode. Some parts of other devices are factory lubricated – if lubrication during use or maintenance of these devices is needed, it is specified in their individual instructions. If in doubt, consult your nearest Allen-Bradley Sales Office for information.

Contacts - Check contacts for excessive wear and dirt accumulation. Vacuum or wipe contacts with a soft cloth, if necessary, to remove dirt. Discoloration and slight pitting does not harm contacts. Do not file contacts - this action shortens the life of the contact. Do not use contact spray cleaners because residues on magnet pole faces or in operating mechanisms can cause sticking, and on contacts can interfere with electrical continuity. Replace contacts only after the silver has become badly worn. Always replace contacts in complete sets to avoid misalignment and uneven contact pressure.

Terminals - Loose connections in power circuits can cause overheating that can lead to equipment malfunction or failure. Loose connections in control circuits can cause control malfunctions. Loose bond or ground connections can increase hazards of electrical shock and contribute to electromagnetic interference (EMI). Check the tightness of all terminals and bus bar connections and tighten securely any loose connections. Replace any parts or wiring that is damaged by overheating, and any broken wires or bond straps.

Coils - If a coil is overheated (contains cracked, melted, or burned insulation), it must be replaced. In that event, check for and correct overvoltage or undervoltage conditions, which can cause coil failure. Be sure to dean any residues of melted coil insulation from other parts of the device or replace such parts.

Batteries - Replace batteries periodically as specified in product manual or if a battery shows signs of electrolyte leakage. Use tools to handle batteries that have leaked electrolyte; most electrolytes are corrosive and can cause burns. Dispose of the old battery in accordance with instructions supplied with the new battery or as specified in the manual for the product.

Pilot Lights - Replace any burned out lamps or damaged lenses. Photoelectric Switches-The lenses of photoelectric switches require periodic cleaning with a soft dry cloth. Reflective devices that are used with photoelectric switches also require periodic cleaning. Do not use solvents or cleaning agents on the lenses or reflectors. Replace any damaged lenses and reflectors.

Solid State Devices



ATTENTION: Use of other than factory-recommended test equipment for solid state controls can result in damage to the control or test equipment or unintended actuation of the controlled equipment. See paragraph titled HIGH VOLTAGE TESTING.

Solid state devices require little more than a periodic visual inspection. Discolored, charred, or burned components can indicate the need to replace the component or circuit board. Make necessary replacements only at the PC board or plug-in component level. Inspect printed circuit boards to determine whether they are properly seated in the edge board connectors. Board locking tabs must also be in place. Solid state devices must also be protected from contamination, and cooling provisions must be maintained - refer to paragraphs titled CONTAMINATION and COOLING DEVICES. Do not use solvents on printed circuit boards.

High-Voltage Testing - Do not perform high-voltage insulation resistance (IR) and dielectric withstanding voltage (DWV) tests to check solid state control equipment. When measuring IR or DWV of electrical equipment such as transformers or motors, a solid state device that is used for control or monitoring must be disconnected before performing the test. Even though no damage is readily apparent after an IR or DWV test, the solid state devices are degraded and repeated application of high voltage can lead to failure.

Locking and Interlocking Devices - Check these devices for proper working condition and capability of performing their intended functions. Make any necessary replacements only with Allen-Bradley renewal parts or kits. Adjust or repair only in accordance with Allen-Bradley instructions.

Maintenance After a Fault Condition - An open short-circuit protective device (such as a fuse or circuit breaker) in a properly coordinated motor branch circuit is an indication of a fault condition in excess of operating overload. Such conditions can damage control equipment. Before restoring power, the fault condition must be corrected and any necessary repairs or replacements must be made to restore the control equipment to good working order. See NEMA Standards Publication No. ICS-2, Part ICS2-302 for procedures. For replacements, use only parts and devices that Rockwell Automation recommends to maintain the integrity of the equipment. Make sure that the parts are properly matched to the model, series, and revision level of the equipment.

Final Check Out - After maintenance or repair of industrial controls, always test the control system for proper function under controlled conditions; that avoid hazards in the event of a control malfunction. For additional information, see NEMA ICS 1.3, PREVENTIVE MAINTENANCE OF INDUSTRIAL CONTROL AND SYSTEMS EQUIPMENT, published by the National Electrical Manufacturers Association, and NFPA70B, ELECTRICAL EQUIPMENT MAINTENANCE, published by the National Fire Protection Association.

Notes:

Component Inspection and Test Procedures

Topic	Page
Component Inspection and Maintenance	44
Forward and Reverse Biased SCR/Diode Tests	45
Converter Fuse Tests	49
Converter Gate-lead Resistance Measurements	49
DC Precharge Assembly Fuse Tests	51

This chapter provides details on how to inspect and test the major components of the drive and includes recommendations for repairs.

Component Inspection and Maintenance

Visually inspect the door filters, heatsink fan inlet screen, and major components on the control pod, converter or DC input with precharge assembly, and inverter for dirt and damage. Dirt build-up on some components can lead to component damage or failure. By replacing components and/or circuit boards with burn marks, breakage, or foil delamination, you can prevent damage to the drive. Use this procedure with the Recommended Preventative Maintenance on page 35.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Inspect the door fans for blockage and verify free rotation. Clean or replace as necessary.
   - For AC input drives, see IP20, NEMA/UL Type 1 Enclosure Door Fan Removal/Installation on page 302.
   - For common DC input drives, see Enclosure Door Fan Removal/Installation on page 327.
   - For option bays, see IP20, NEMA/UL Type 1 Door Fan Removal/Installation (Frame 8 Only) on page 345.
4. Remove the filters from the enclosure doors and inspect for blockage. For IP54, NEMA/UL Type 12 enclosures, remove the filters from the cabinet blower and inspect for blockage. Clean or replace all filters as necessary. See IP20, NEMA/UL Type 1 Door Filter Removal/Installation on page 308, and/or IP54, NEMA/UL Type 12 Cabinet Blower Exhaust Filters Removal/Installation on page 307 and IP54, NEMA/UL Type 12 Cabinet Door Filters Removal/Installation on page 309.
5. Open the enclosure door.
6. Inspect the heatsink fan inlet screen for blockage and clean it, if necessary.
7. Inspect the heatsink fan blower for dirt build-up and/or damage and verify free rotation. Clean or replace as necessary. See Heatsink Fan Assembly Removal/Installation on page 232.
8. Remove the protective covers from the control pod, converter or DC input with precharge assembly, and inverter assemblies. See Control Pod Cover Removal/Installation on page 55, Converter Left Cover Removal/Installation on page 83 or DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard Removal/Installation on page 159, and Inverter Front Cover Removal/Installation on page 235.
9. Check all visible major components on the control pod, converter or DC input with precharge assembly, and inverter assemblies. Replace any of these components without further testing if they show evidence of burn marks or breakage.

10. Check all visible circuit boards, wires, and connectors on the control pod, converter or DC input with precharge assembly, and inverter assemblies. Replace any of these circuit boards and/or wires without further testing if they show evidence of burn marks, breakage, or foil delamination.
11. If the inspections performed in steps 3...7 resulted in heavy build-up of dirt and or debris, inspect the cooling tunnels and heatsink fins on the converter and inverter assemblies. Clean the cooling tunnels and heatsink fins, if necessary. To inspect the cooling tunnels and heatsink fins, you must remove the drive from the enclosure and remove the converter. See the PowerFlex® 750-Series AC Drive Installation Instructions, publication number 750-IN001. For instructions on how to remove the converter, refer to Converter Removal/Installation on page 148.

Forward and Reverse Biased SCR/Diode Tests

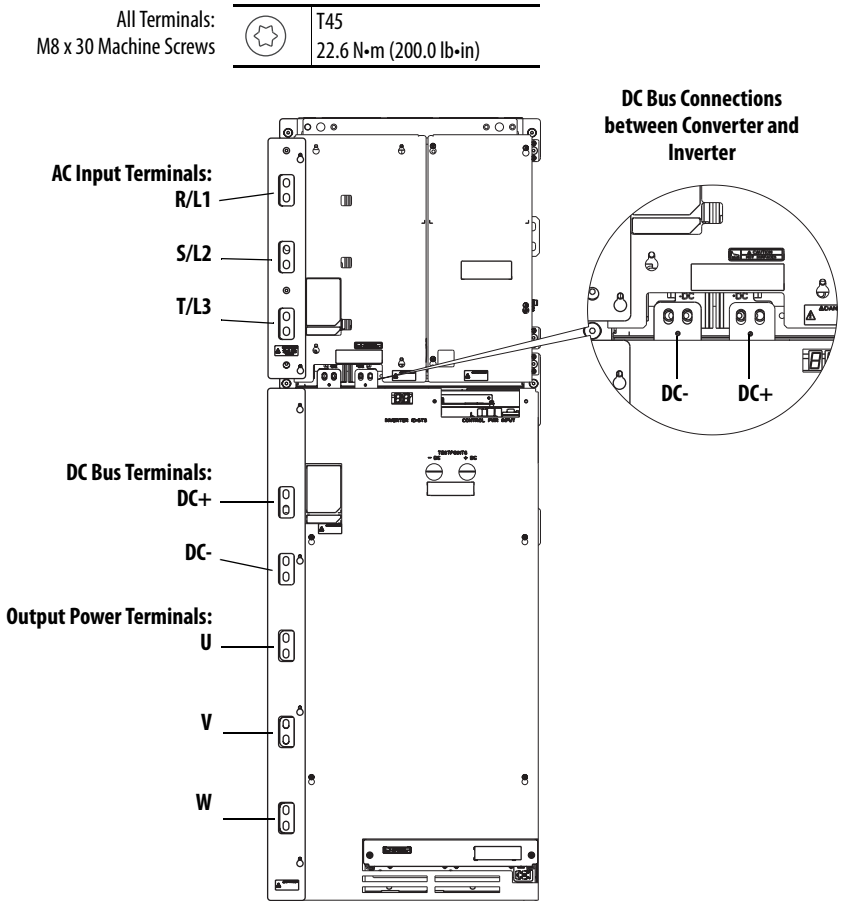
This section contains procedures for performing forward and reverse biased SCR/diode tests on the major power components of the drive. A failed test indicates damage to the components in the converter or inverter and requires replacement.

IMPORTANT The actual voltage readings can vary depending upon your equipment. If your readings are not near the indicated values in Table 3...Table 6, on pages 47...48, verify that the actual voltage measured is consistent for each phase of the converter and inverter.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the control transformer primary fuses (FU4 and FU5). See Remove the Control Transformer Primary Fuses (FU4 and FU5) on page 87.

5. Remove the connection bolts from the output power terminals (U, V, W) and set them aside.
6. Insert an appropriate insulation material between the terminals (U, V, W) on the drive power unit and the enclosure. To receive accurate readings for these tests, the terminals must not make contact.

Figure 6 - Power Terminal Connections



7. Complete the forward biased SCR/diode tests on the converter assembly as identified in Table 3.

Table 3 - Forward Biased SCR/Diode Tests on the Converter SCR Assembly

Meter Leads		
–	+	**Nominal Meter Reading**
DC+	R/L1	".0L" (open circuit) (1)
DC+	S/L2	
DC+	T/L3	
R/L1	DC-	The value should gradually rise to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support. (2)
S/L2	DC-	
T/L3	DC-	

(1) Residual voltage on the DC bus capacitors can affect this reading. If the capacitors are completely discharged (less than 1 volt), the meter initially shows a low voltage. This voltage reading is the residual bus voltage plus the drop through the low side diodes. The meter gradually charges the bus, and the voltage slowly increases, until eventually the meter switches to ".0L". This increase can take several minutes to occur.

(2) The actual voltage reading can vary depending upon your equipment.

8. If performing the Reverse Biased Diode Tests on the Converter SCR Assembly identified Table 4, remove the connection bolts from the DC bus terminals (DC-, DC+) between the converter and inverter assemblies and set them aside. See Figure 6 on page 46 for terminal locations.
9. Insert an appropriate insulation material between the DC bus terminals (DC-, DC+) between the converter and inverter. To receive accurate readings for these tests, the terminals must not make contact.
10. Complete the reverse biased SCR/diode tests on the converter as identified in Table 4.

Table 4 - Reverse Biased Diode Tests on the Converter SCR Assembly

Meter Leads		
+	–	**Nominal Meter Reading**
R/L1	DC-	".0L" (open circuit) (1)
S/L2	DC-	
T/L3	DC-	
DC+	R/L1	
DC+	S/L2	
DC+	T/L3	

(1) Residual voltage on the DC bus capacitors can affect this reading. If the capacitors are completely discharged (less than 1 volt), the meter initially shows a low voltage. This voltage reading is the residual bus voltage plus the drop through the low side diodes. The meter gradually charges the bus, and the voltage slowly increases, until eventually the meter switches to ".0L". This increase can take several minutes to occur.

11. Replace the converter section or converter SCR assembly if it fails these measurements. See Converter Removal/Installation on page 148, or Converter SCR Assembly Removal/Installation on page 107.
12. Install the control transformer primary fuses (FU4 and FU5). See Install the Control Transformer Primary Fuse (FU4 and FU5) on page 87.

13. Complete the forward and reverse biased diode tests on the inverter IGBT assembly as identified in Table 5 and Table 6.

Table 5 - Forward Biased Diode Tests on the Inverter IGBT Assembly

Meter Leads		Nominal Meter Reading
+	–	
DC-	U	The value should gradually rise to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support. (1)
DC-	V	
DC-	W	
U	DC+	
V	DC+	
W	DC+	

(1) The actual voltage reading can vary depending upon your equipment.

Table 6 - Reverse Biased Diode Tests on the Inverter IGBT Assembly

Meter Leads		Nominal Meter Reading
+	–	
U	DC-	".0L" (open circuit) (1)
V	DC-	
W	DC-	
DC+	U	
DC+	V	
DC+	W	

(1) Residual voltage on the DC bus capacitors can affect this reading. If the capacitors are completely discharged (less than 1 volt), the meter initially shows a low voltage. This voltage reading is the residual bus voltage plus the drop through the low side diodes. The meter gradually charges the bus, and the voltage slowly increases, until eventually the meter switches to ".0L". This increase can take several minutes to occur.

14. Replace the inverter section if it fails these measurements. To remove the inverter, see the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001.

15. Complete the procedures in Chapter 12 Drive Start Up After Repairs on page 413 before placing the drive back into service.

Converter Fuse Tests

Follow these steps to perform converter fuse tests.

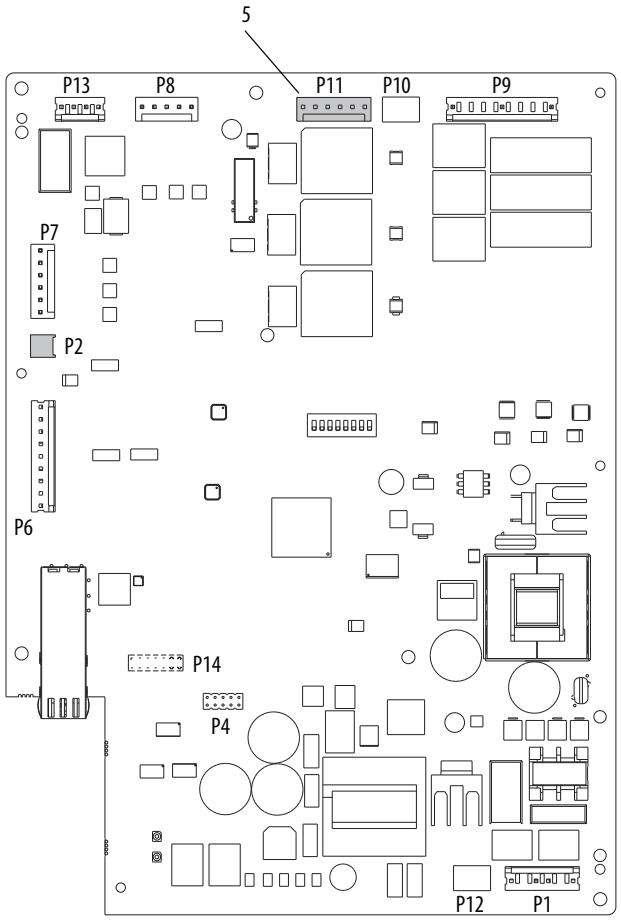
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Test the control transformer secondary fuse (FU6) by removing it from the fuse holder. Replace the fuse as necessary. See Control Transformer Secondary Fuse Removal/Installation on page 88.
5. Test the control transformer primary fuses (FU4 and FU5) by removing them from the fuse holder. See Remove the Control Transformer Primary Fuses (FU4 and FU5) on page 87.
6. Continuity test the AC line fuses (FU1, FU2, and FU3) in circuit. Replace a fuse as necessary. See AC Line Fuse Removal/Installation on page 95.
7. Replace the control transformer primary fuses (FU4 and FU5) as necessary. See Install the Control Transformer Primary Fuse (FU4 and FU5) on page 87.

Converter Gate-lead Resistance Measurements

Follow these steps to perform resistance measurements on the gate leads for the converter.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. To provide access to the converter gate board, open the control pod. See Rotate the Control Pod Forward on page 84.

5. Disconnect the SCR gate harness J11 from P11 on the converter gate board.



6. Complete the gate circuit measurements on the J11 harness as identified in Table 7.

Table 7 - Gate Circuit Measurements

Meter Lead +	Meter Lead -	Nominal Meter Reading
J11-1, SCR Gate L1	J11-2, SCR Cathode L1	12…30 ohms
J11-3, SCR Gate L2	J11-4, SCR Cathode L2	12…30 ohms
J11-5, SCR Gate L3	J11-6, SCR Cathode L3	12…30 ohms

- An “OL” reading can indicate an open wire harness or a disconnected intermediate connector. Verify the harness integrity by making an end-to-end continuity measurement. Replace a faulty harness if indicated by these measurements.
- A “shorted” meter reading can indicate a failed SCR. Replace the converter SCR assembly if it fails these measurements. See Converter SCR Assembly Removal/Installation on page 107.

7. Connect the SCR gate harness to P11 on the converter gate board.

8. Return the control pod to the service position. See Return the Control Pod to the Service Position on page 87.

DC Precharge Assembly Fuse Tests

Follow these steps to test the fuses on the DC precharge assembly.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Test the control transformer 240V secondary fuse (FU5) by removing it from the fuse holder. Replace the fuse as necessary. See Control Transformer Secondary Fuses Removal/Installation on page 168.
5. Test the control transformer 120V secondary fuse (FU6) by removing it from the fuse holder. Replace the fuse as necessary. See Control Transformer Secondary Fuses Removal/Installation on page 168.
6. Test the DC line fuses (FU1 and FU2) in circuit. Replace a fuse as necessary. See DC Line Fuses and Fuse Indicators Removal/Installation on page 176.
7. Test the DC precharge fuses (FU3 and FU4) in circuit. Replace a fuse as necessary. See Precharge Circuit Fuses Removal/Installation on page 178.

Notes:

Control Pod Component Replacement Procedures

Topic	Page
Control Pod Components Identification	53
Control Pod Cover Removal/Installation	55
Control Pod Cables Removal/Installation	56
Fiber-Optic Cable Removal/Installation (Frame 8)	57
Main Control Board Removal/Installation	61
Fiber Interface Board Removal/Installation	69

This chapter provides detailed procedures for how to remove and replace control pod components.

IMPORTANT Complete the procedures in Chapter 12 Drive Start Up After Repairs that begin on page 413 before placing the drive back into service.

Control Pod Components Identification

Table 8 contains the components that comprise the control pod and provides the following information for each component, if applicable:

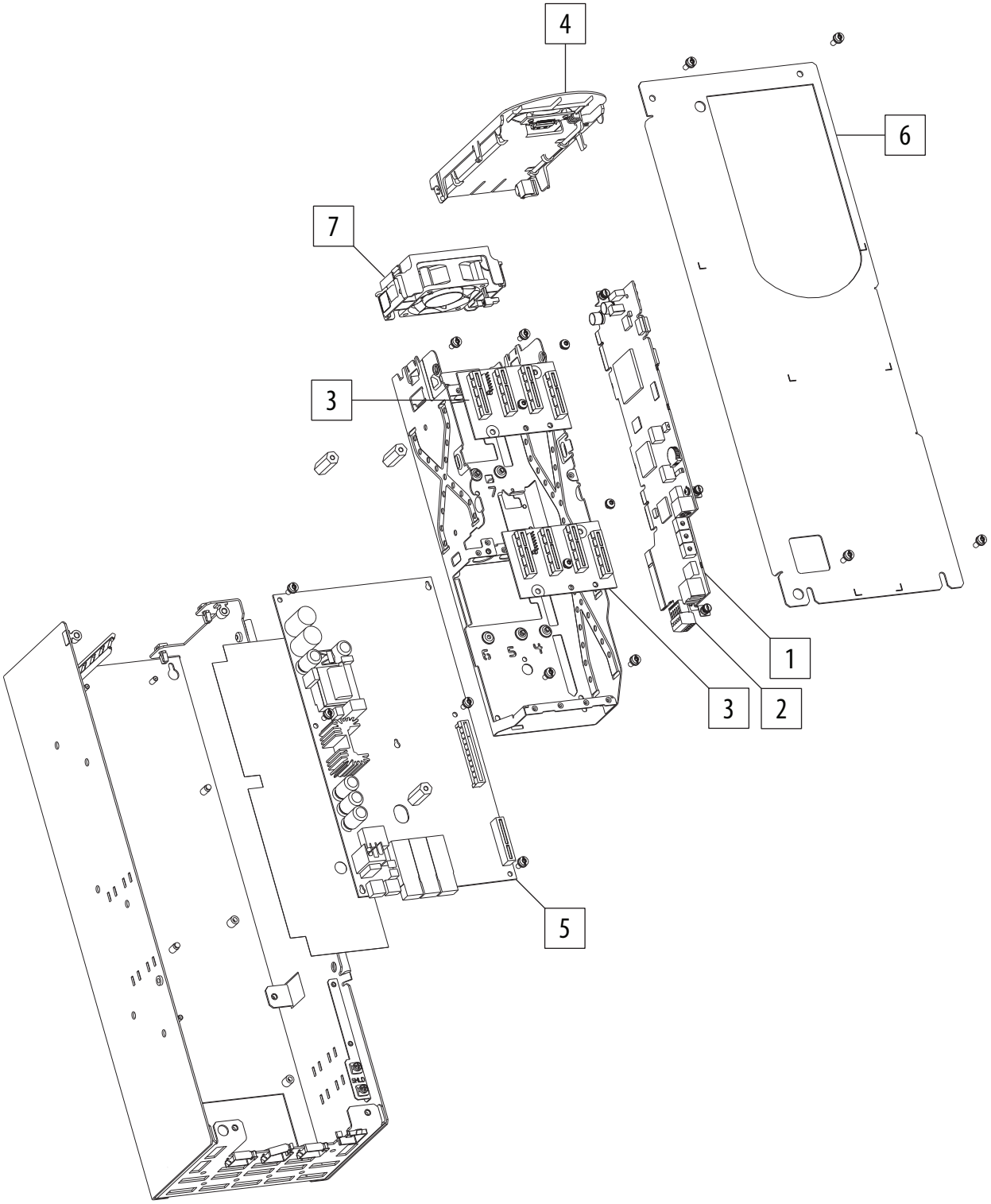
- Kit catalog number or part number
- Quantity that is contained in the kit
- Illustration figure and page number and identification number

A complete list of spare parts for PowerFlex® 755 Frame 8...10 drives is available on the Allen-Bradley web site at:
http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

Table 8 - Control Pod Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
Control Pod	20-750-POD1-F8	1	Figure 7 on page 54	–
Frame 8 Main Control Board	SK-R1-MCB1-F8	1	Figure 7 on page 54	1
Main Control Board Terminal Block	SK-R1-TB-PF755	1	Figure 7 on page 54	2
Backplane Board	SK-R1-BP1	1	Figure 7 on page 54	3
Control Pod HIM Bezel	SK-R1-BZ1	1	Figure 7 on page 54	4
Fiber Interface Board (Includes a fiber-optic transceiver)	SK-R1-FIB1-F8	1	Figure 7 on page 54	5
Control Pod Cover	SK-R1-CVRP1-F8	1	Figure 7 on page 54	6
Internal Cooling Fan	SK-R9-FAN2-F23	1	Figure 7 on page 54	7
Remote Mount Control Pod Kit	20-750-RPD1-F8	1	See publication 750-IN015	–

Figure 7 - Control Pod Components

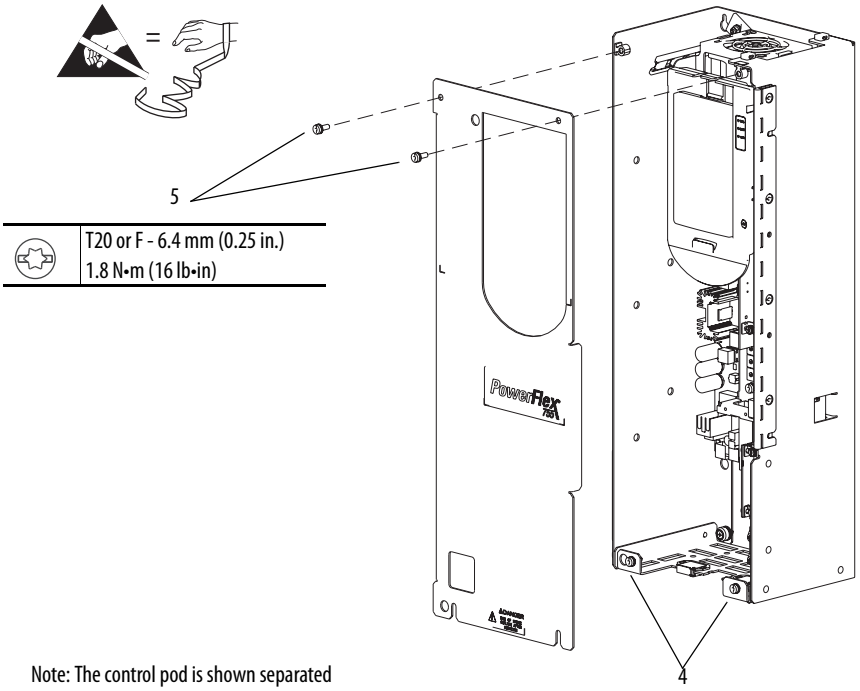


TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

Control Pod Cover Removal/ Installation

Remove the Control Pod Cover

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Loosen, but do not remove, the bottom two M4 x 12-mm slotted hexalobular screws that secure the cover to the assembly.
5. Remove the top two M4 x 12-mm slotted hexalobular screws that secure the cover to the assembly and remove the cover.



Note: The control pod is shown separated from the drive bay to clarify instructions.

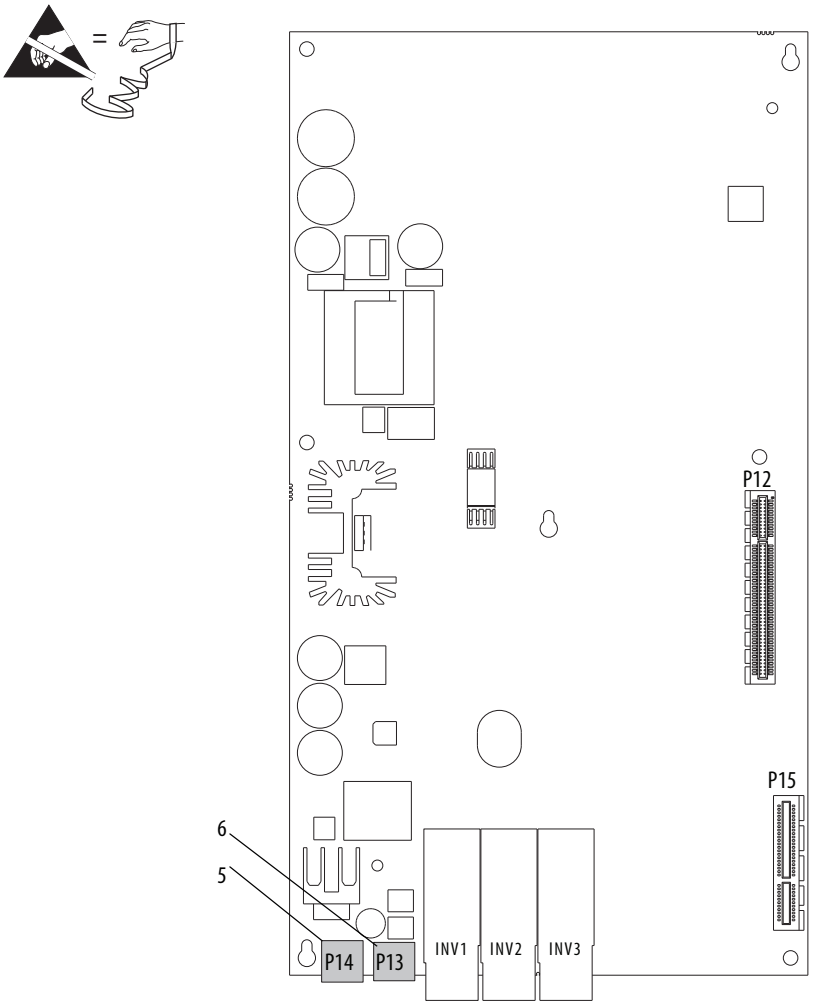
Install the Control Pod Cover

Install the control pod cover in the reverse order of removal. See Control Pod Cover Removal/Installation on page 55.

Control Pod Cables Removal/ Installation

Remove the Control Pod Cables

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the control pod cover. See Control Pod Cover Removal/ Installation on page 55.
5. Disconnect the drive internal 24V wire harness J14 connector from the fiber interface board P14 terminal.
6. If installed, disconnect the customer supplied 24V supply power wiring from the fiber interface board P13 terminal.



Install the Control Pod Cables

Install the control pod cable set in the reverse order of removal. See Remove the Control Pod Cables on page 56.

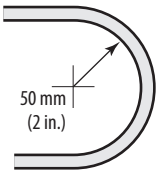
Fiber-Optic Cable Removal/ Installation (Frame 8)

Remove the Fiber-Optic Cable (Frame 8)

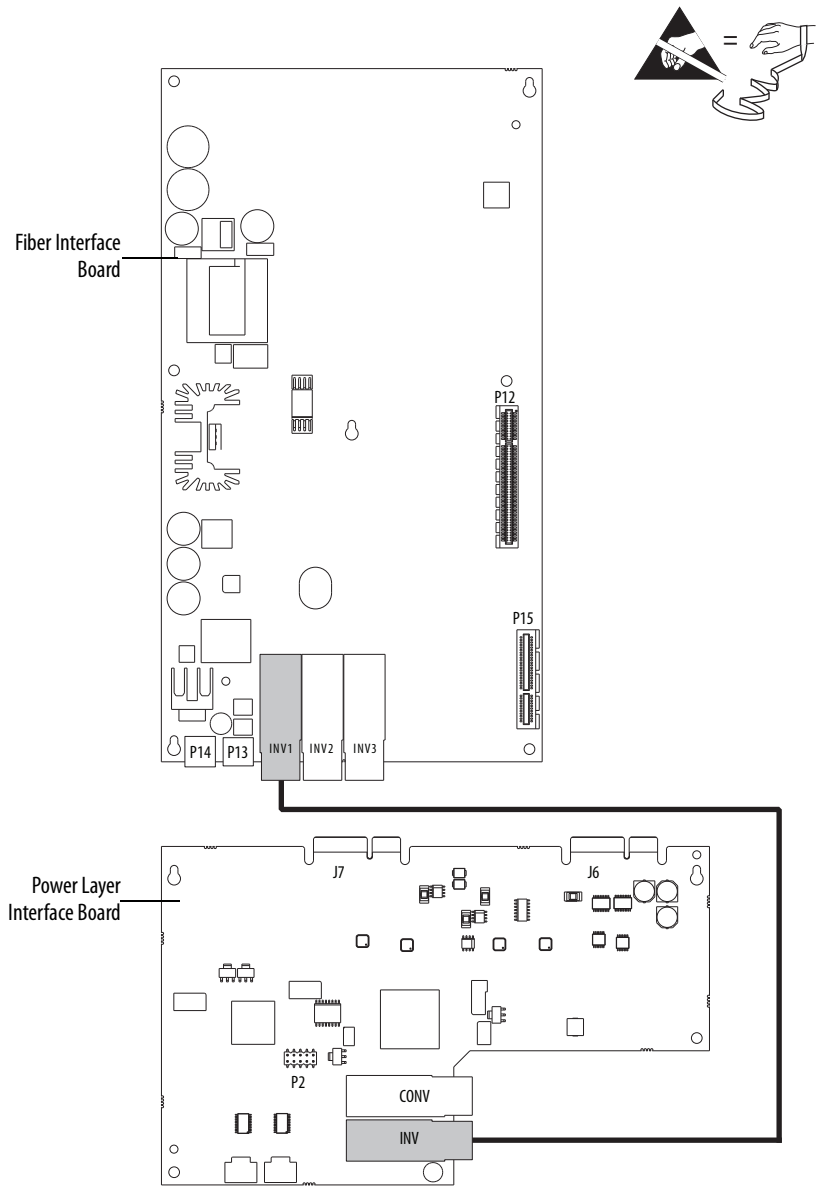
Note: For instructions on how to remove the fiber-optic cables on frame 9 and larger drives, see Chapter 11 - Enclosure Cable Components Replacement Procedures (Frame 9 and Larger Drives) that begin on page 391.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the control pod cover. See Control Pod Cover Removal/ Installation on page 55.
5. Remove the inverter circuit board connections cover from the inverter. See Inverter Circuit Board Connections Cover Removal/Installation on page 234.

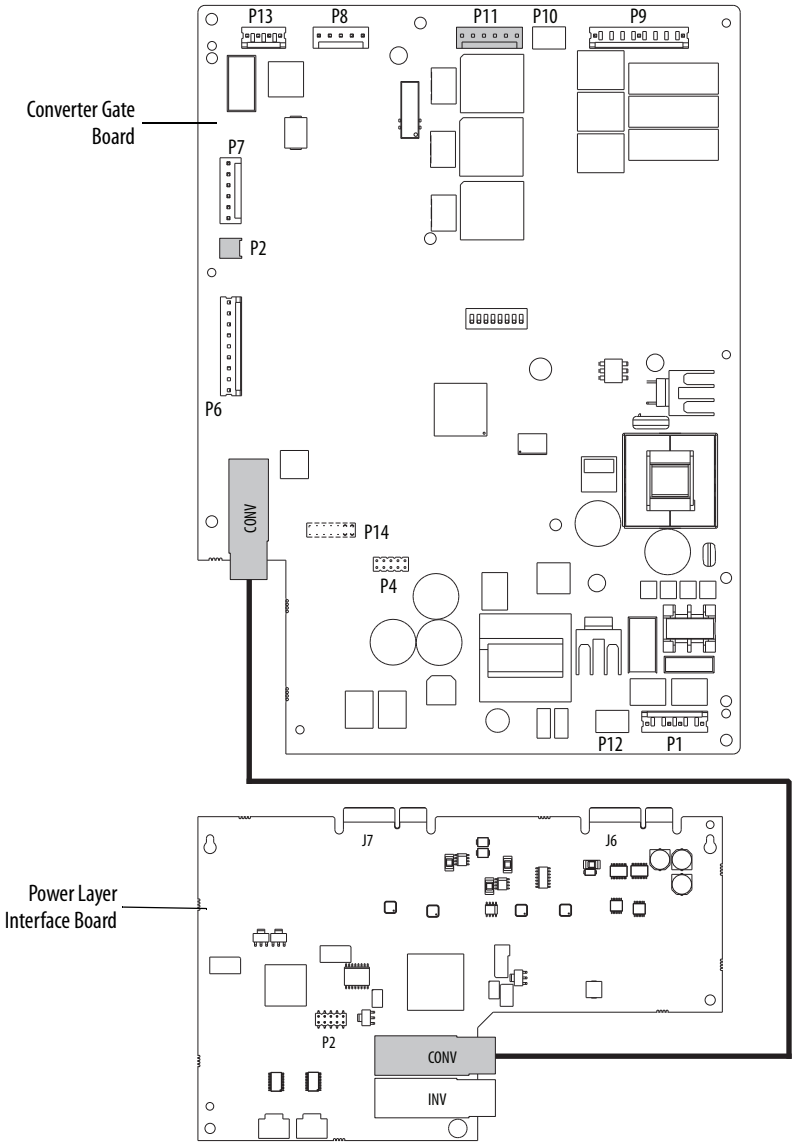
IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



6. Disconnect the fiber-optic cable from INV1 on the fiber interface board and INV on the power layer interface board in the inverter card cage.

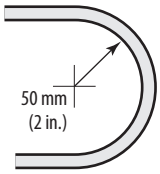


7. Disconnect the fiber-optic cable from CONV on the converter gate board and CONV on the power layer interface board in the inverter card cage.



Install the Fiber-Optic Cable (Frame 8)

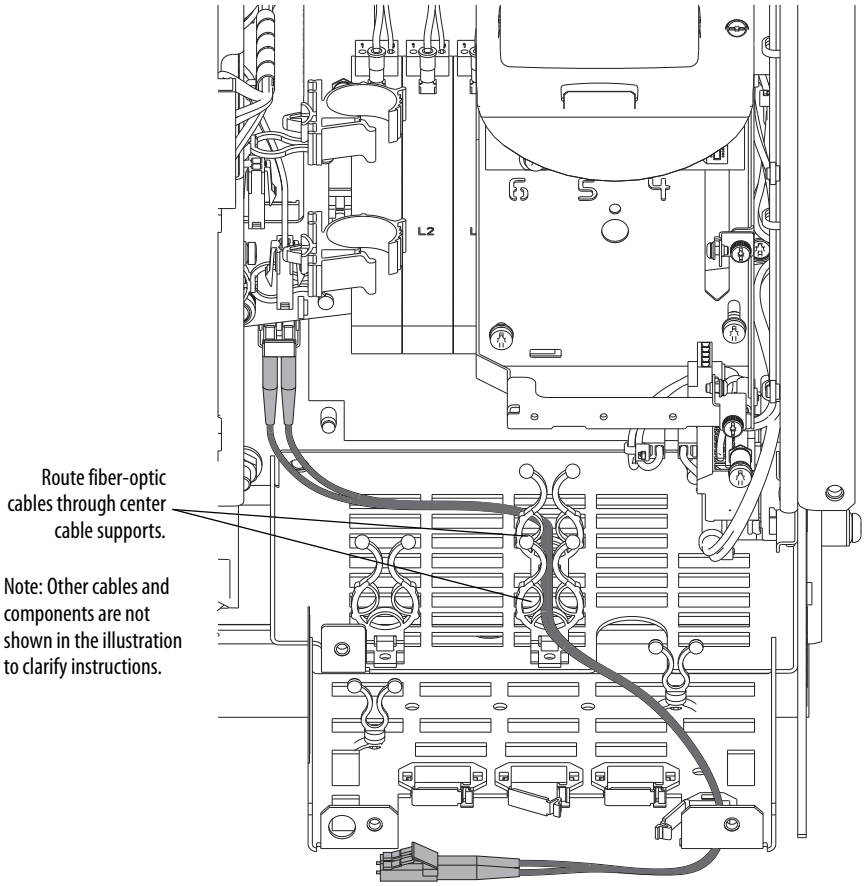
IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



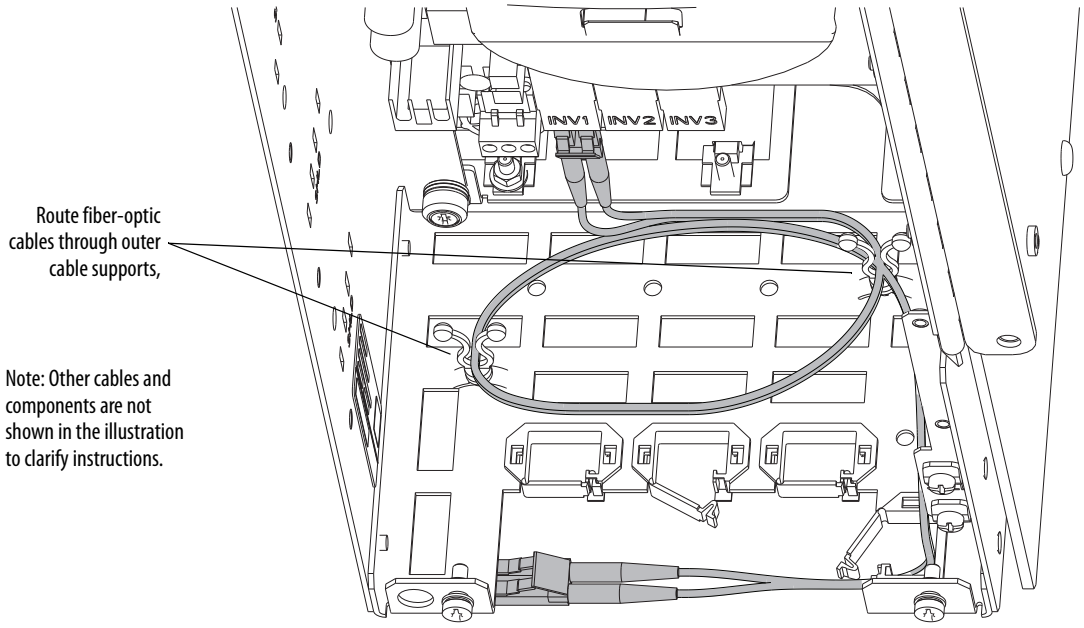
Install the fiber-optic cable set in the reverse order of removal. See Remove the Fiber-Optic Cable (Frame 8) on page 57.

IMPORTANT Frame 8 fiber-optic cables that connect the fiber interface and converter gate boards to the power layer interface board must be the same length. Cables are 560 mm (22 in.) long to meet this requirement.

- Install the new fiber-optic cables from the converter gate board to the power layer interface board by using the two center cable supports provided, as shown in this illustration.



- Install the new fiber-optic cables from the fiber interface board to the power layer interface board by using the two, outer-most cable supports provided, as shown in this illustration.

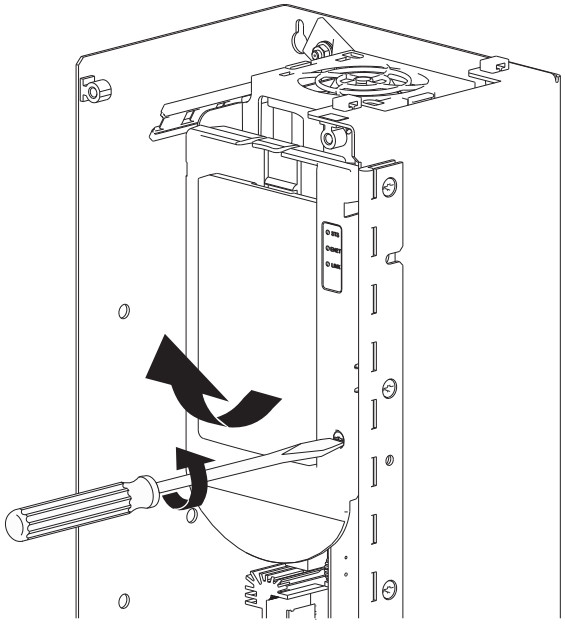


Main Control Board Removal/ Installation

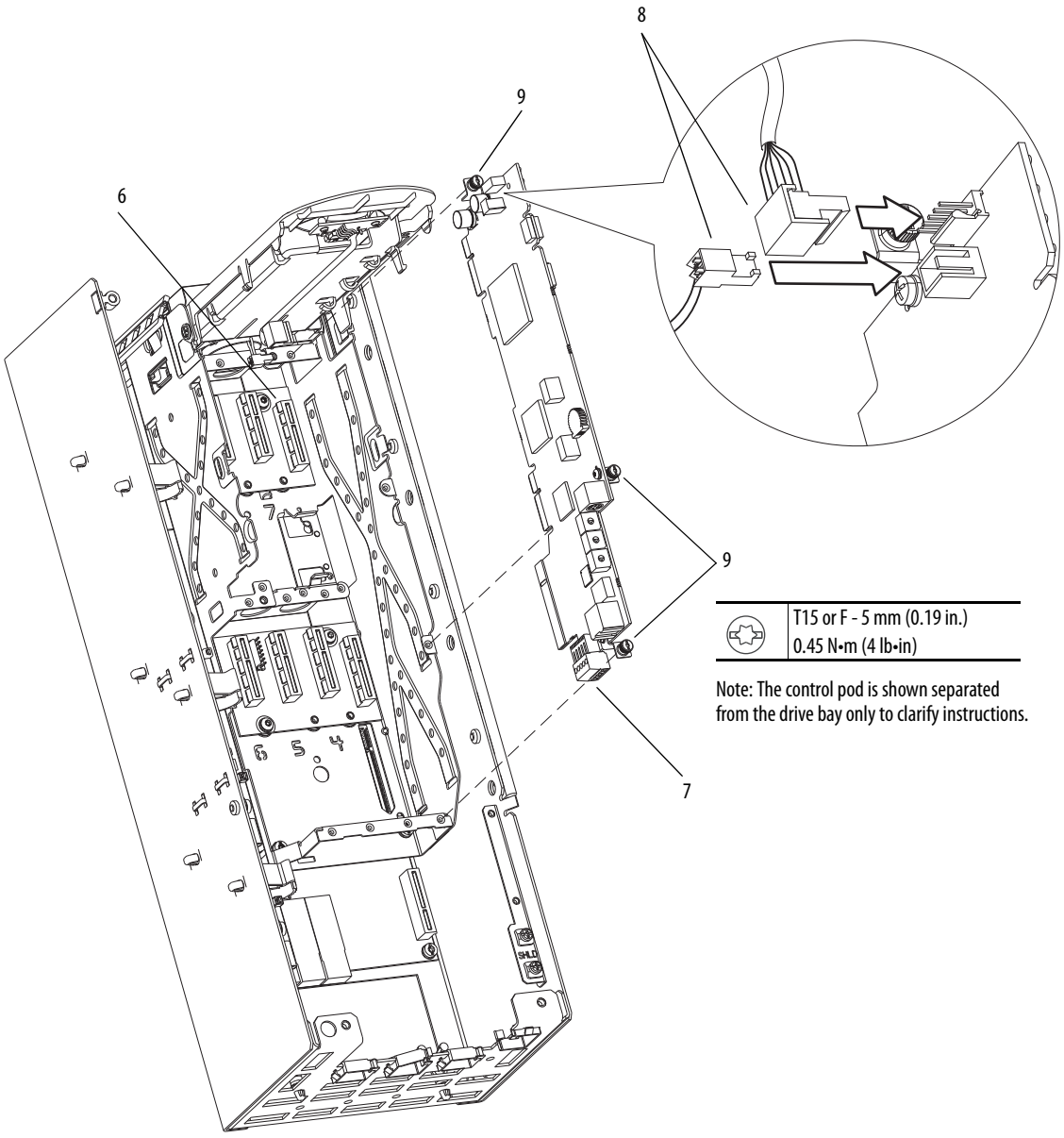
Remove the Main Control Board (Control Pod in Drive Enclosure)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the control pod cover. See Control Pod Cover Removal/ Installation on page 55.

5. Loosen the retention screw that secures the HIM cradle to the control pod frame and swing the cradle upward until the latch engages.



6. If installed, remove the option module in slot 7, by loosening the two captive thumb screws on the module and by pulling the board out of the control pod. The tightening torque for installation is the same as for the main control board.
7. Disconnect the plug-in terminal block (TB1) on the main control board.
8. Disconnect the HIM and stirring fan power wire connectors from the main control board.
9. Loosen the three captive thumb screws and remove the board.



	T15 or F - 5 mm (0.19 in.) 0.45 N•m (4 lb•in)

Note: The control pod is shown separated from the drive bay only to clarify instructions.

Install the Main Control Board

Install the Main Control board in the reverse order of removal. See Remove the Main Control Board (Control Pod in Drive Enclosure) on page 61.

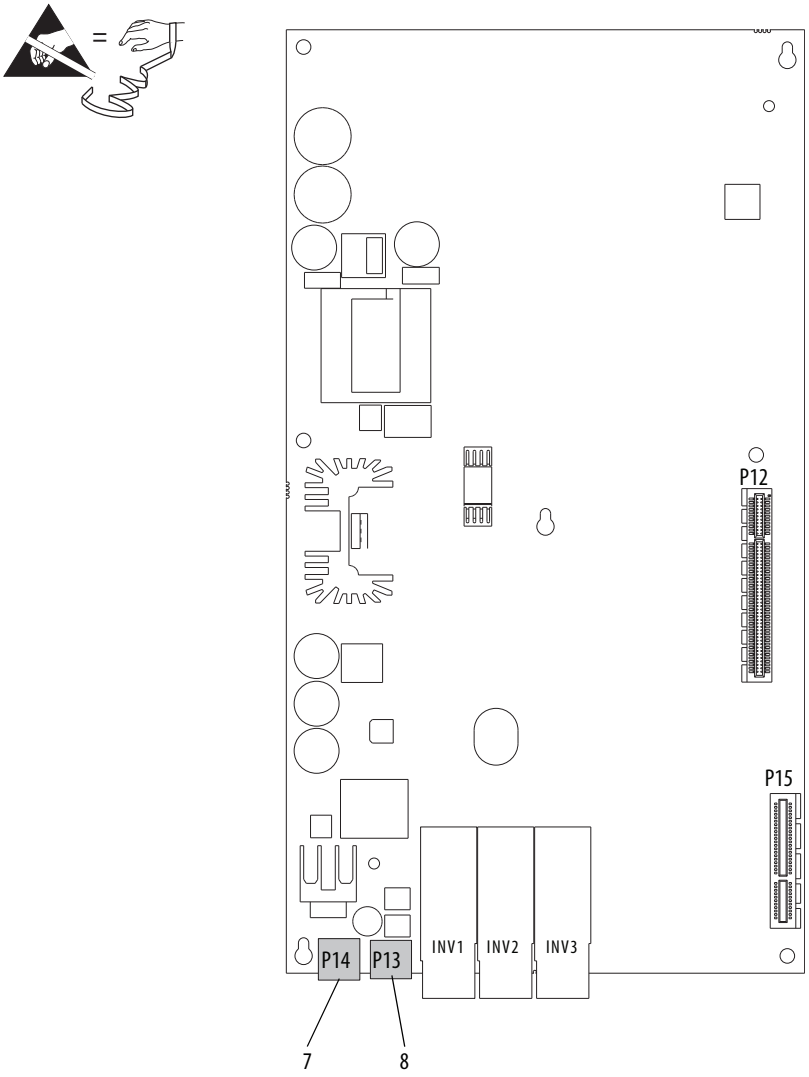
IMPORTANT Verify that the main control board seats properly into the connectors on the backplane and fiber interface boards when installing a new board.

Control Pod Removal/ Installation

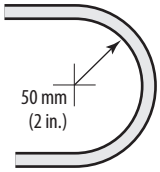
Remove the Control Pod

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the converter left cover. See Remove the Converter Left Cover on page 83.
5. Remove the control pod cover. See Control Pod Cover Removal/ Installation on page 55.
6. Remove the inverter circuit board connections cover from the inverter. See Inverter Circuit Board Connections Cover Removal/Installation on page 234.

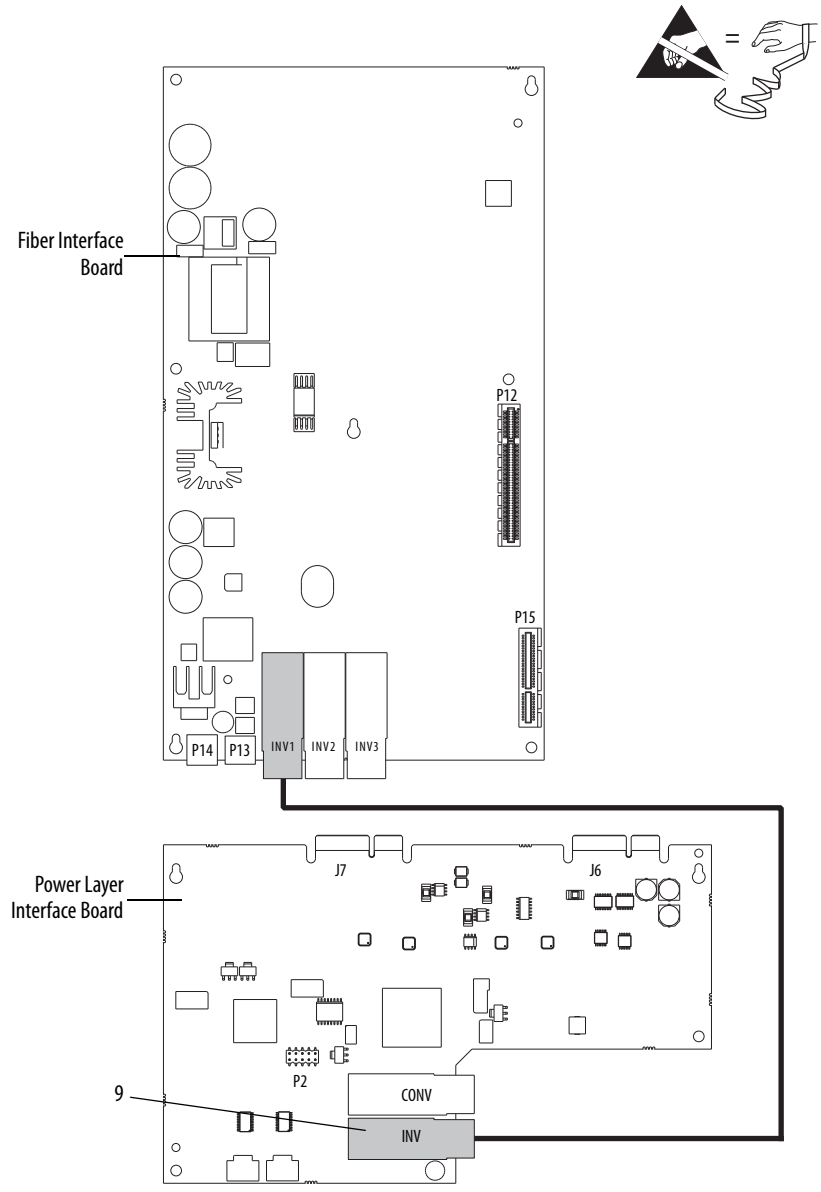
7. Disconnect the J14 connector from the fiber interface board P14 terminal.
8. If installed, disconnect the customer supplied 24V supply power wiring from the fiber interface board P13 terminal.



IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.

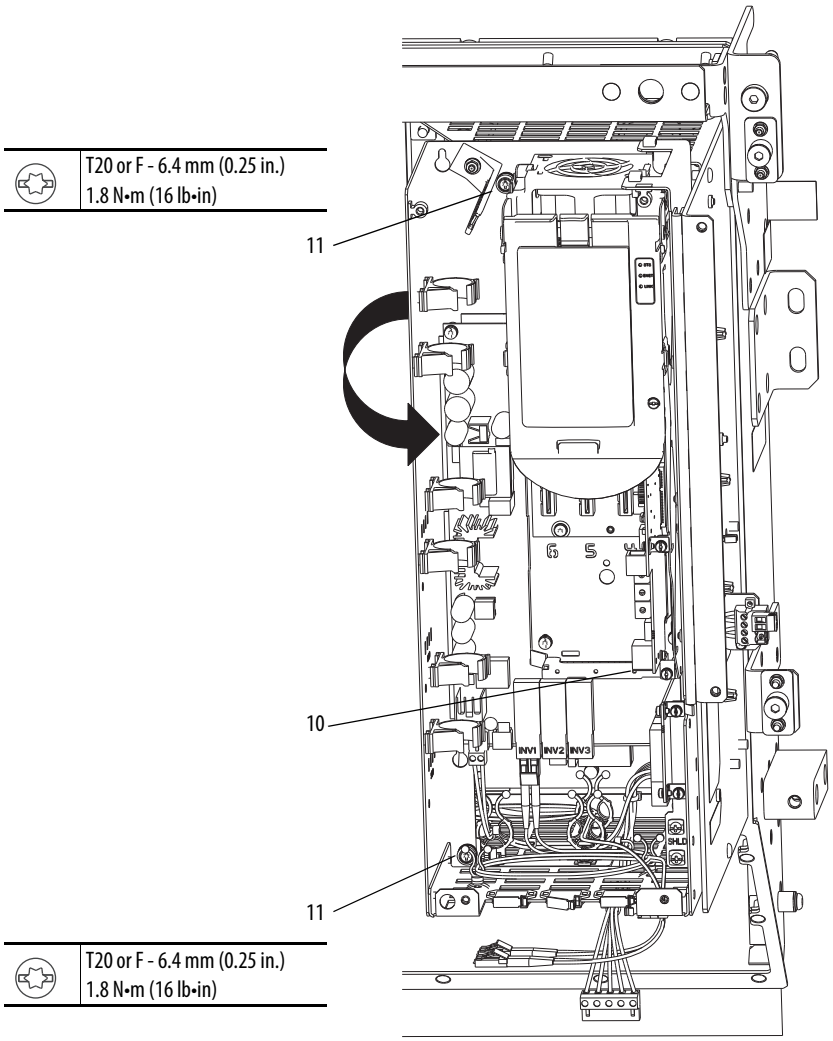


9. Disconnect the fiber-optic cable from INV on the power layer interface board in the inverter card cage. Place the cable ends on the bottom of the control pod and follow the minimum bend radius requirement

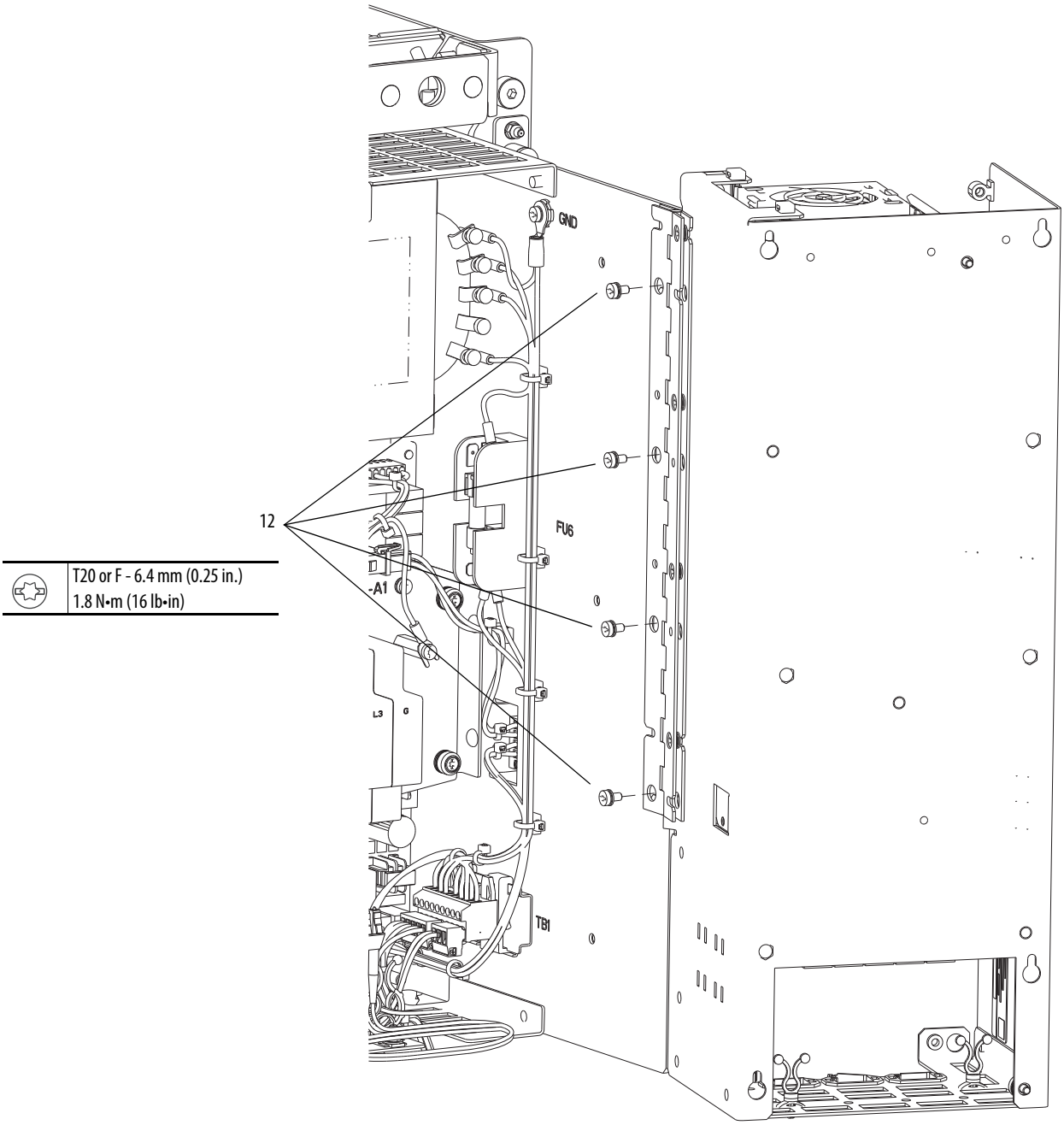


10. If installed, disconnect the plug-in terminal block (TB1) on the main control board.

11. Loosen the two M4 captive panel fasteners that secure the control pod to the converter control panel and rotate the assembly forward to the right.



12. Remove the four M4 x 12-mm screws that secure the control pod to the converter control panel, right-side wall and remove the control pod.



Install the Control Pod

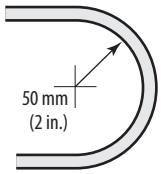
Install the control pod in the reverse order of removal. See Remove the Control Pod on page 64.

Fiber Interface Board Removal/Installation

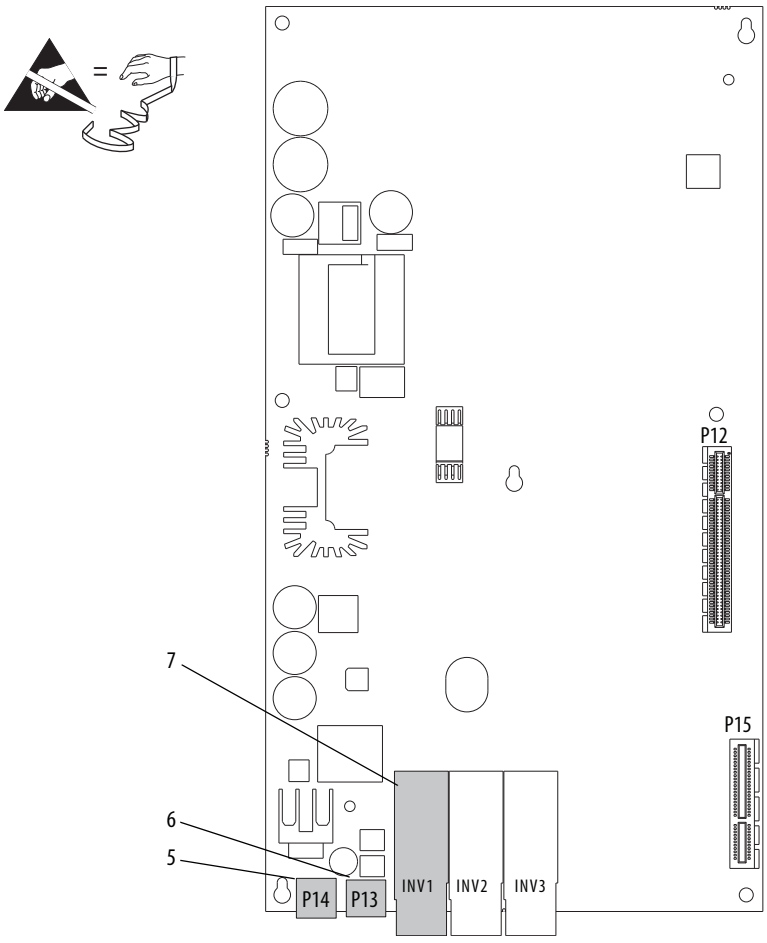
Remove the Fiber Interface Board

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the control pod cover. See Control Pod Cover Removal/ Installation on page 55.
5. Disconnect the J14 connector from the fiber interface board P14 terminal.
6. If installed, disconnect the customer supplied 24V supply power wiring from the fiber interface board P13 terminal.

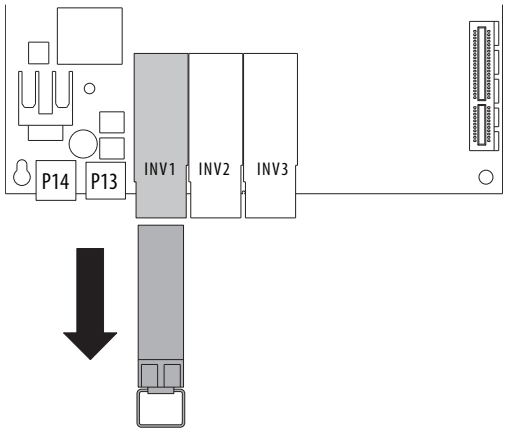
IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



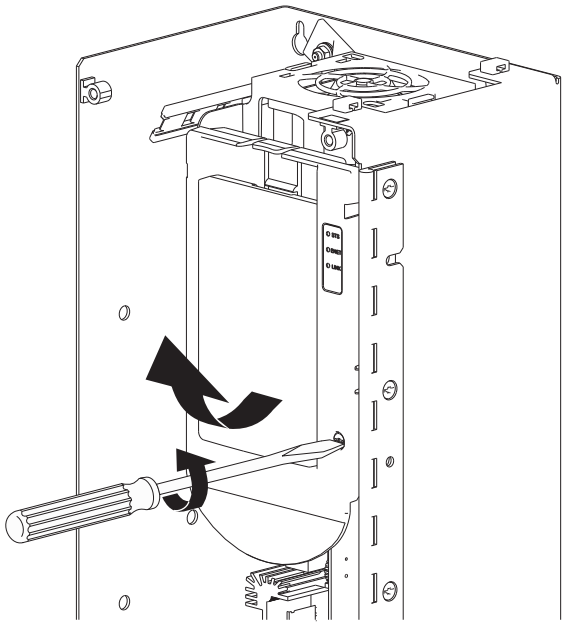
7. Disconnect the inverter fiber-optic cable from INV1 on the fiber interface board, carefully coil the fiber-optic cable and place it in the bottom of the control pod. Follow the minimum bend radius requirement.



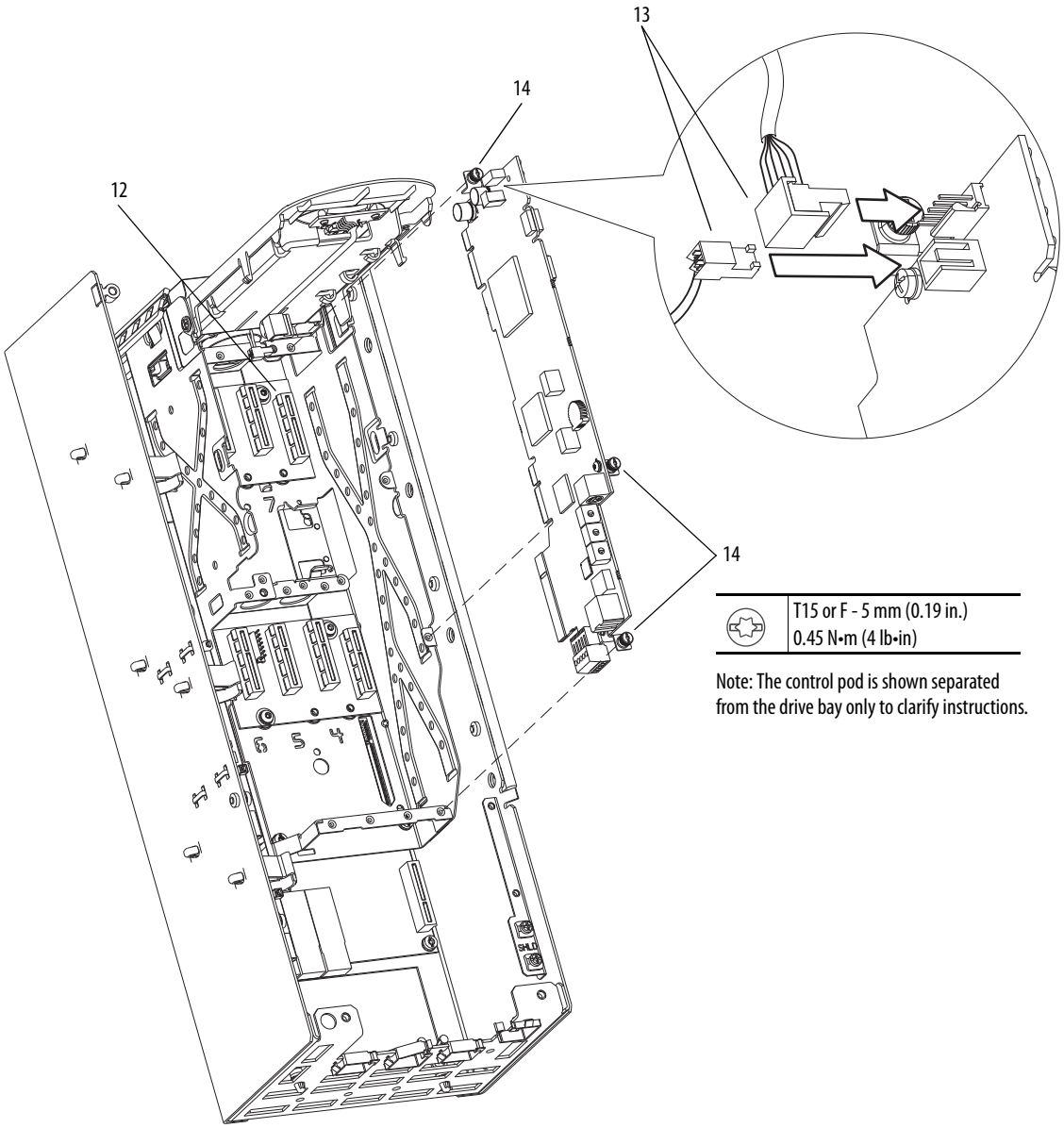
8. From fiber-optic cage INV1 on the fiber interface board, remove the transceiver by pulling its bale wire. Set the transceiver aside and save for reinstallation.



9. Loosen the retention screw that secures the HIM cradle to the control pod frame and swing the cradle upward until the latch engages.
10. Disconnect all wiring to the main control-board terminal block (TB1).
11. If installed, disconnect all wiring to all option module terminal blocks.



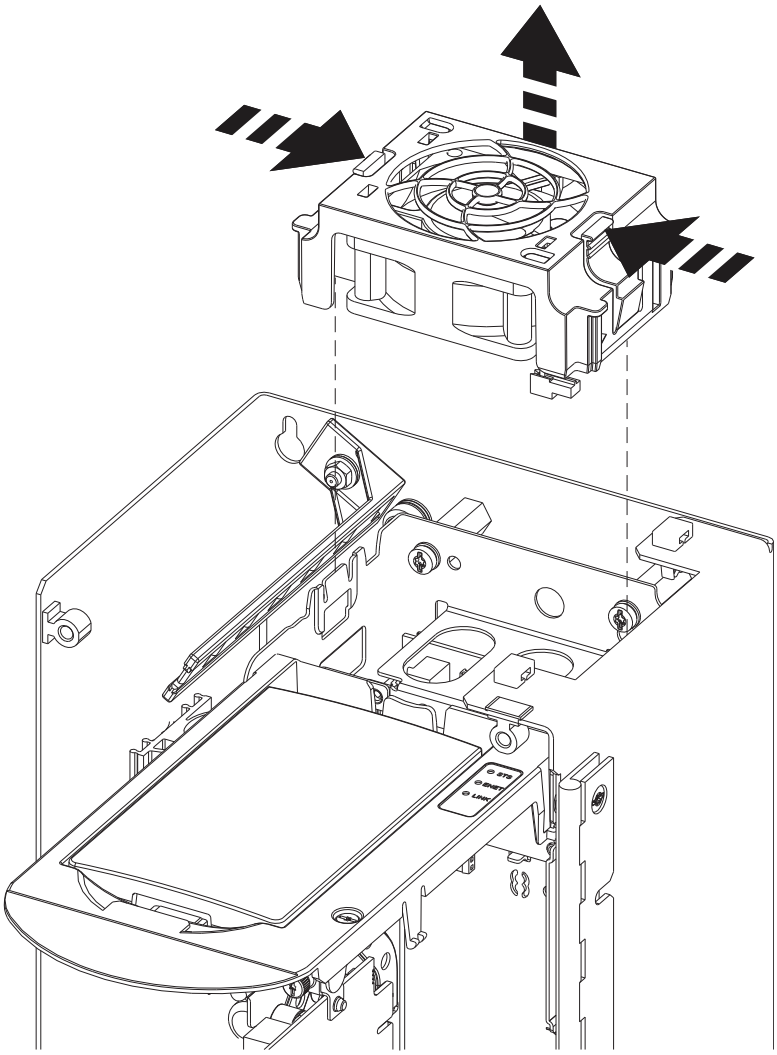
12. If installed, remove the option module in slot 7, by loosening the two captive thumb screws on the module and by pulling the board out of the control pod. The tightening torque for installation is the same as for the main control board.
13. Disconnect the HIM and stirring fan power wire connectors from the main control board.
14. Loosen the three captive thumb screws and remove the board.



	T15 or F - 5 mm (0.19 in.) 0.45 N•m (4 lb•in)

Note: The control pod is shown separated from the drive bay only to clarify instructions.

15. Press the two tabs on the sides of the fan housing inward, and remove the stirring fan assembly from the top of the control pod chassis.

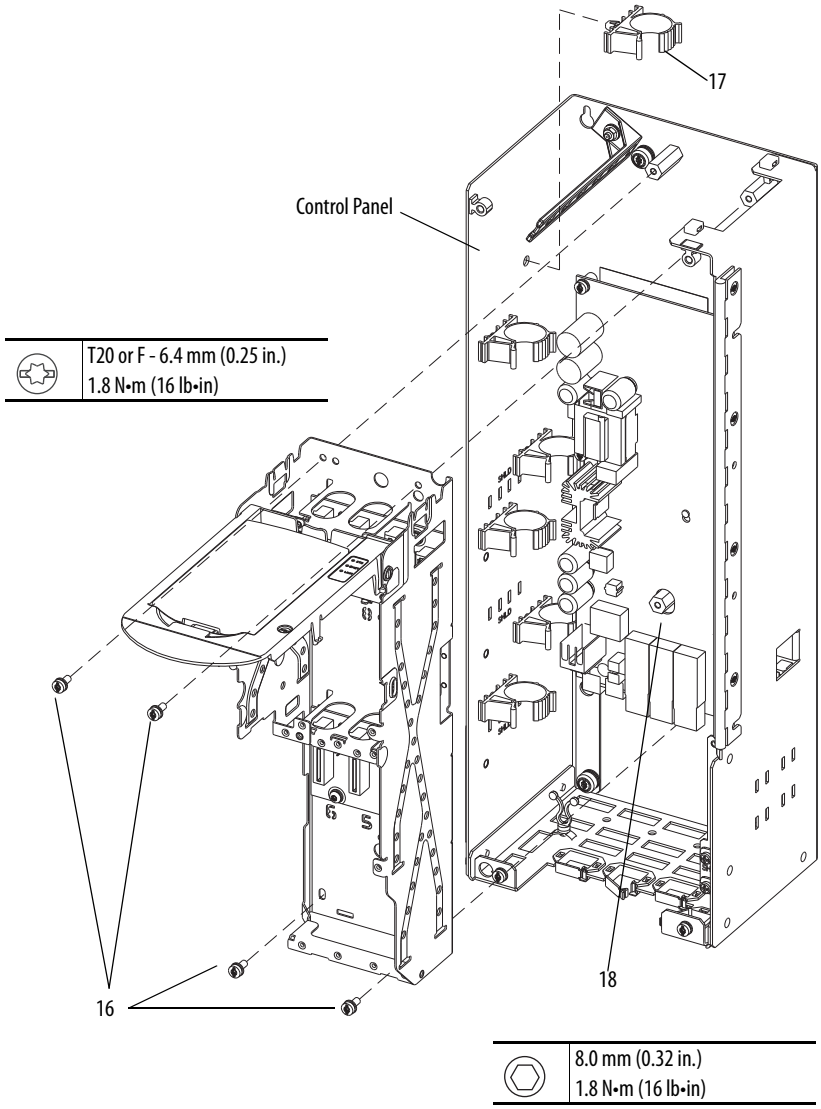


16. Remove the four M4 x 12-mm screws that secure the control pod chassis to the standoffs on the control panel, then remove control pod chassis.

IMPORTANT The four M4 x 12-mm screws that secure the control pod chassis to the control panel are not retentive. Take steps to be sure that the screws do not fall into the drive below.

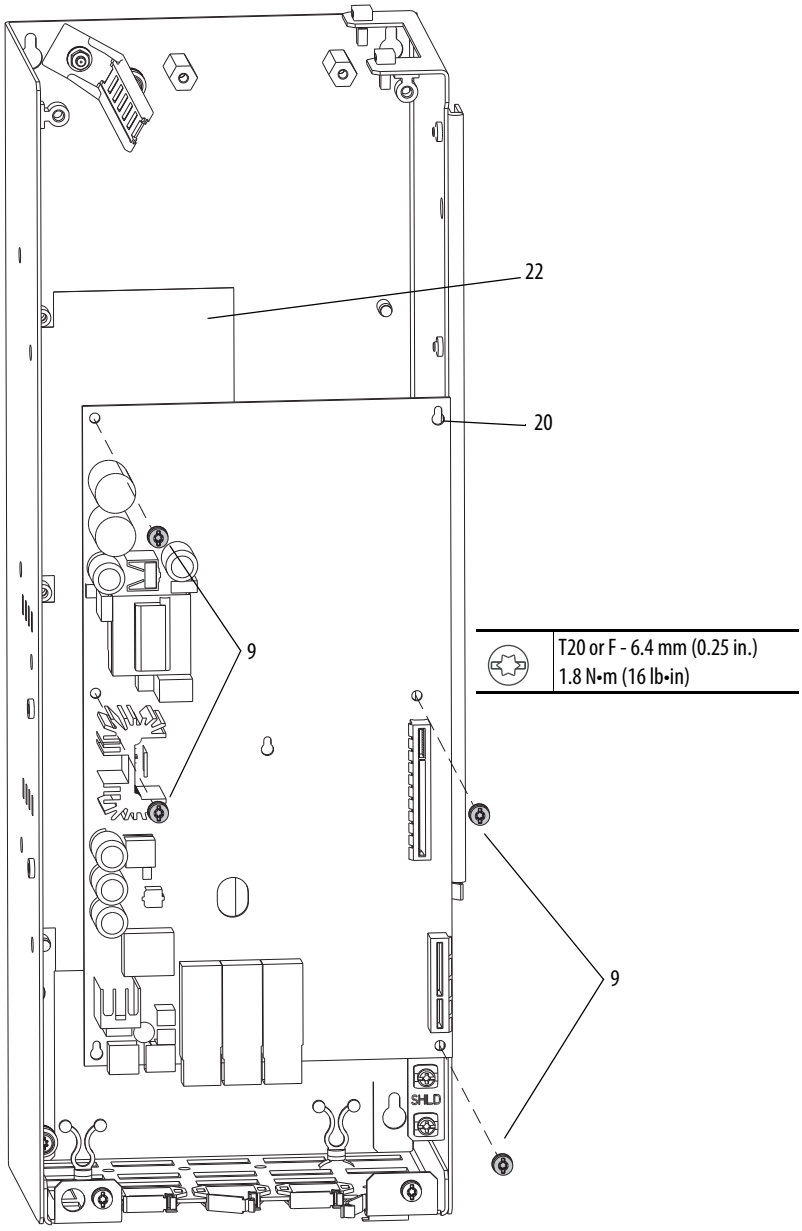
17. Remove all routed wiring and six anchors from the left sidewall of the control panel and move the wiring to the outside of the control panel.

18. Remove the M4 hex stand off from the center of the fiber interface circuit board.



19. Remove the four M4 x 10-mm long screws that secure fiber interface board to the control pod.

20. Move the fiber interface board slightly upward toward top of the control pod, so that keyholes on board clear the mounting posts and lift off the board.

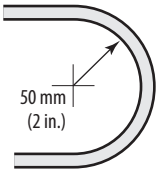


21. Slowly rotate the left side of fiber interface board away from the control pod so that the right side of board clears the mounting tab in right sidewall of the control pod. Remove the board from the control pod.

22. Inspect the fiber interface board-insulator sheet and replace it if damaged.

Install the Fiber Interface Board

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



Install the fiber interface board in the reverse order of removal. See Remove the Fiber Interface Board on page 69.

IMPORTANT The insulator sheet must be installed behind the fiber interface board.

Notes:

Converter Component Replacement Procedures

Topic	Page
Converter Components Identification	78
Converter Left Cover Removal/Installation	83
Converter Right Cover (No Control Pod) Removal/Installation	84
Control Pod Rotation	84
Control Transformer Primary Fuses Removal/Installation	87
Control Transformer Secondary Fuse Removal/Installation	88
Converter EMC Filter Circuit Board Removal/Installation	89
Converter Input Fuse Stirring Fan Removal/Installation	91
AC Line Fuse Sense Wire Harness Removal/Installation	93
AC Line Fuse Removal/Installation	95
DC Bus Sense Wire Harness Removal/Installation	97
Converter Current Sensor Wire Harness Removal/Installation	99
Converter Current Sensors Removal/Installation	101
Converter SCR Gate Wire Harness Removal/Installation	105
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No DC Bus Fuse Wire Harness Removal/Installation (Frame 8 Drives Only)	139
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Control Power Isolator Board Removal/Installation (600/690V AC Input Drives Only)	144
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This chapter provides detailed procedures for how to remove and replace converter components.

TIP In some illustrations in this chapter, the converter and/or control pod are shown removed from the drive to clarify the instructions only. Only remove the converter and/or control pod from the drive if directed to do so.

IMPORTANT Complete the procedures in Chapter 12 Drive Start Up After Repairs that begin on page 413 before placing the drive back into service.

Converter Components Identification

Table 9 contains the components that comprise the converter assembly and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit
- Illustration figure and page number and identification number

A complete list of spare parts for PowerFlex® 755 Frame 8...10 and larger drives is available on the Allen-Bradley web site at: http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

Table 9 - Converter Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
AC Drive Converter Unit, 400V, 770 A / 480V, 740 A	20-750-C1-C770D740 (Series A) 20-750-C6-C770D740 (Series B)	1	–	
AC Drive Converter Unit, 600V, 510 A / 690V, 500 A	20-750-C6-E510F500 (Series B)	1	–	
Control Transformer Fuses for 400/480V AC Input Drives, with Converter Cat. No. 20-750-C1-C770D740…20-750-C5-C770D740	SK-R1-FUSE2-CD-F8	–		
Fuse, 8A, 600V, IEC Class gG/gI, 14 x 51 mm (FU4 / FU5)		2	Figure 8 on page 81	1
Fuse, 5A, 600V, Class CC, Time-Delay (FU6)		1	Figure 9 on page 82	2
Control Transformer Fuses for 400/480V AC Input Drives, with Converter Cat. No. 20-750-C6-C770D740	SK-R1-FUSE4-CD-F8	–		
Fuse, 6A, 600V, IEC Class gG/gI, 14 x 51 mm (FU4 / FU5)		2	Figure 8 on page 81	1
Fuse, 5A, 600V, Class CC, Time-Delay (FU6)		1	Figure 9 on page 82	2
Control Transformer Fuses Kit for 600/690V AC Input Drives with Converter Cat. No. 20-750-C2-E510F500…20-750-C5-E510F500	SK-R1-FUSE2-EF-F8	–		
Fuse, 6A, 690V, IEC Class gG/gI, 14 x 51 mm (FU4 / FU5)		2	Figure 8 on page 81	1
Fuse, 5A, 600V, Class CC, Time-Delay (FU6)		1	Figure 9 on page 82	2
Control Transformer Fuses Kit for 600/690V AC Input Drives with Converter Cat. No. 20-750-C6-E510F500	SK-R1-FUSE4-EF-F8	–		
Fuse, 8A, 690V, IEC Class gG/gI, 14 x 51 mm (FU4 / FU5)		2	Figure 8 on page 81	1
Fuse, 5A, 600V, Class CC, Time-Delay (FU6)		1	Figure 9 on page 82	2

Table 9 - Converter Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
AC Line Fuse Kit 1100A, 400/480V AC Input Drives	SK-R1-FUSE1-CD-F8	–		
Fuse, 690/700V, 1100 A		1	Figure 8 on page 81	3
Fuse Indicator		1	Figure 8 on page 81	4
AC Line Fuse Kit 900A, 600/690V AC Input Drives	SK-R1-FUSE1-EF-F8	–		
Fuse, 690/700V, 900 A		1	Figure 8 on page 81	4
Fuse Indicator		1	Figure 8 on page 81	3
Converter EMC Filter Board, 400/480V and 600/690V AC Input Drives	SK-R1-EMCFLT2-F8 (Series B)	1	Figure 8 on page 81	5
Frame 8 Converter Wire Harness Kit	SK-R1-CNVH1-F8	–		
AC Line Fuse Wire Harness		1	Figure 8 on page 81	6
Control Transformer Primary Wire Harness		1	Figure 8 on page 81	7
DC Bus Sense Wire Harness		1	Figure 8 on page 81	8
No DC Bus Fuse Wire Harness		1	Figure 9 on page 82	9
Surge Suppressor Sense Wire Harness		1	Figure 9 on page 82	10
24V/240V Power Wire Harness		1	Figure 9 on page 82	11
Inverter Power Supply Wire Harness		1	Figure 9 on page 82	12
Assembly, External NTC		1	Figure 8 on page 81	13
Converter SCR Gate Wire Harness		1	Figure 8 on page 81	14
Converter Current Sensor Wire Harness		1	Figure 8 on page 81	15
AC Line Wire Harness		1	Figure 9 on page 82	16
Converter SCR Assembly, 400/480V AC Input Drives	SK-R1-SCR1-CD-F8	1	Figure 8 on page 81	17
Converter SCR Assembly, 600/690V AC Input Drives	SK-R1-SCR1-EF-F8	1	Figure 8 on page 81	17
Converter Current Sensor, 400/480V and 600/690V AC Input Drives	SK-R1-CNVIFB2-F8 (Series B)	1	Figure 8 on page 81	18
Control Transformer	SK-R1-XFMR1-F8	1	Figure 9 on page 82	19
Converter Surge Suppressor, 400/480V AC Input Drives	SK-R1-MOV1-CD-F8	1	Figure 9 on page 82	20
Converter Surge Suppressor, 600/690V AC Input Drives	SK-R1-MOV1-EF-F8	1	Figure 9 on page 82	20
Converter Gate Board, 400/480V AC Input Drives (Includes a fiber-optic transceiver)	SK-R1-CGDB1-CD-F8 (Series A) SK-R1-CGDB4-CD-F8 (Series B)	1	Figure 9 on page 82	21
Converter Gate Board, 600/690V AC Input Drives (Includes a fiber-optic transceiver)	SK-R1-CGDB4-EF-F8	1	Figure 9 on page 82	21
Fiber-optic Cable, 560 mm (22 in.) Long Kit (Frame 8 Drives)	20-750-FCBL1-F8	–		
Fiber-optic Cable, 560 mm (22 in.) Long		2	Figure 9 on page 82	22
Cable Labels (CONV and INV)		2	–	
Fiber-optic Cable, 2.8 m (110 in.) Long Kit (1)	20-750-FCBL1-F10			
Fiber-optic Cable, 2.8 m (110 in) Long		1	(See page 391 for more information)	22
Cable Labels (INV1, INV2, INV3)		3	–	
Fiber-optic Transceiver	SK-R1-FTR1-F8	1	Figure 9 on page 82	23
Converter Left Front Cover with Side Shield	SK-R1-CCVR1-F8	1	Figure 8 on page 81	24

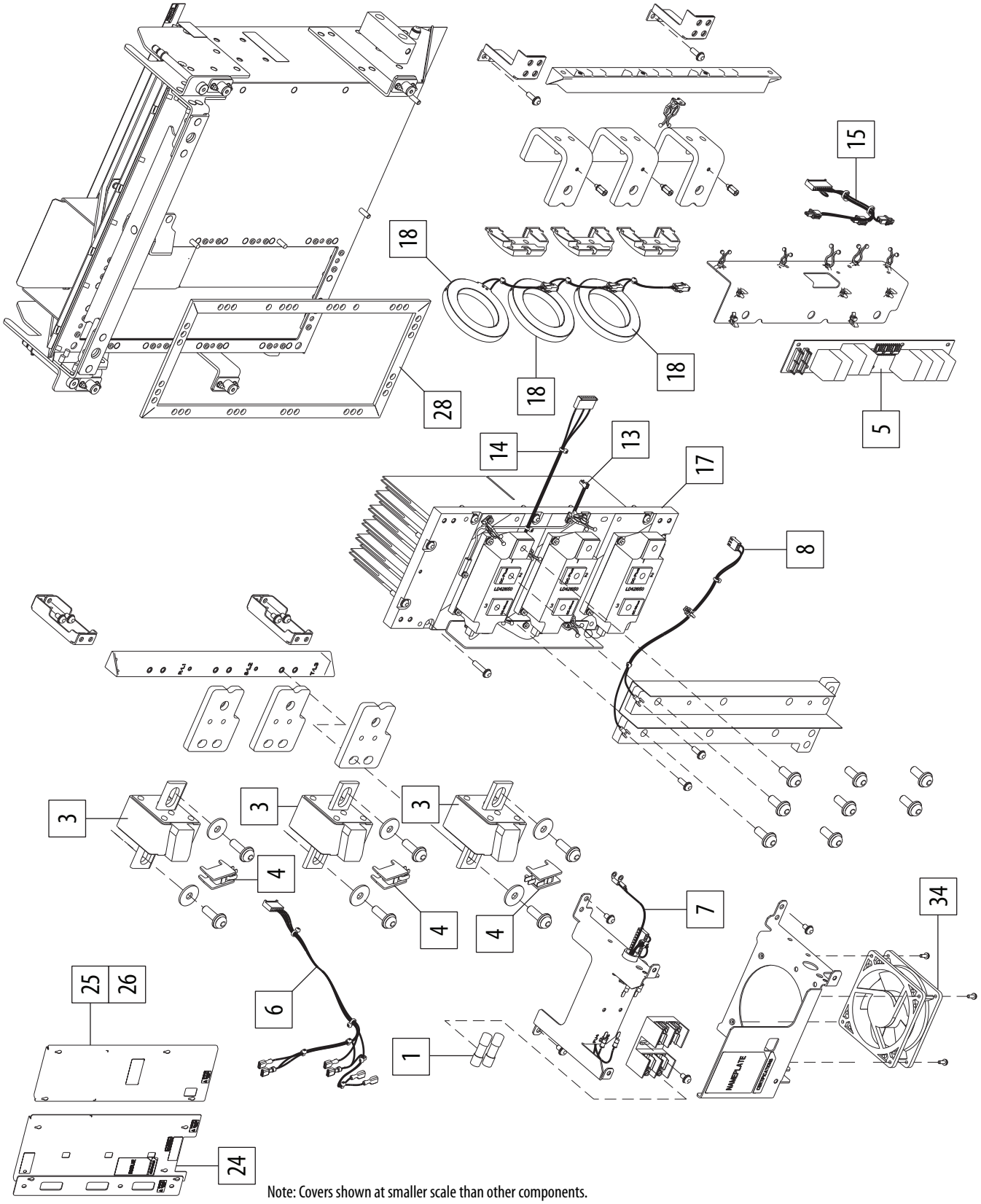
Table 9 - Converter Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
Converter Right Front Cover (No Control Pod) Kit	SK-R1-CCVR2-F8	–		
Right Front Cover		1	Figure 8 on page 81	25
Bracket Cover, 82 mm (3.2 in.) Long		2	Figure 8 on page 81	26
One Bay 24V Wire Harness Kit (Frame 8)	20-750-PH1-F8	1	Figure 9 on page 82	27
Two Bay 24V Wire Harness Kit (Frame 9)	20-750-PH2-F9	1	Figure 9 on page 82	27
Three Bay 24V Wire Harness Kit (Frame 10)	20-750-PH3 -F10	1	Figure 9 on page 82	27
Frame 8 Gasket Kit	20-750-G1-F8	–		
Gasket, Converter, Heatsink		1	Figure 8 on page 81	28
Gasket, Converter/DC Input with Precharge Assembly, Duct		1	Figure 9 on page 82	29
Gasket, Inverter, Heatsink		1	(2)	–
Gasket, Inverter, Door Interface		1	(1)	–
Gasket, Inverter, Exhaust Interface		1	(1)	–
Gasket, Inverter, Inlet Ring		1	(1)	–
Gasket, Inverter, No Choke		1	(1)	–
Gasket, Inverter, Blower Box Bottom		1	(1)	–
Gasket, Inverter, Choke		1	(1)	–
DC Bus Fuse Wire Harness Kit (Frame 9 AC Input Drives Only)	SK-R1-DCBUSH1-F9	1	Figure 9 on page 82	30
Control Power Isolator Board Kit, 600/690V AC Input Drives	SK-R1-CPIB1-F8	1	Figure 8 on page 81	31
Control Power Isolator 24V Wire Harness Kit, 600/690V AC Input Drives	SK-R1-CPIH1-F8	1	Figure 8 on page 81	32
Converter Gate Board Stirring Fan	20-750-CFANKIT-F8	1	Figure 9 on page 82	33
Converter Input Fuse Stirring Fan	SK-R1-FUSEFAN-F8	1	Figure 8 on page 81	34

(1) Order 2 kits for frame 9 drives. Order 3 kits for frame 10 drives.

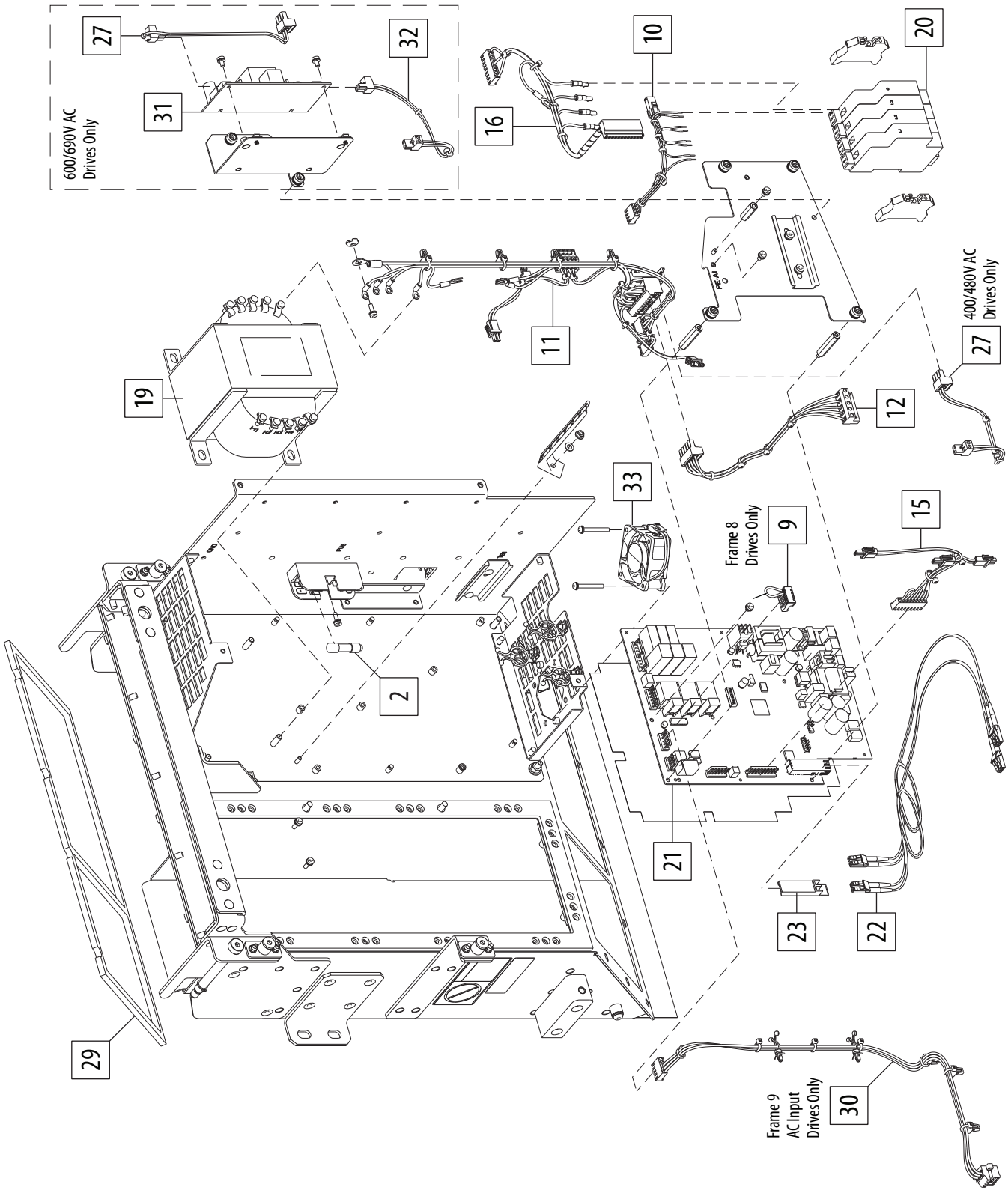
(2) This gasket is included in the Frame 8 Gasket Kit (20-750-G1-F8), but is identified in Chapter 7 - Inverter Component Replacement Procedures on page 77.

Figure 8 - Converter Assembly Components Diagram 1



Note: Covers shown at smaller scale than other components.

Figure 9 - Converter Assembly Components Diagram 2

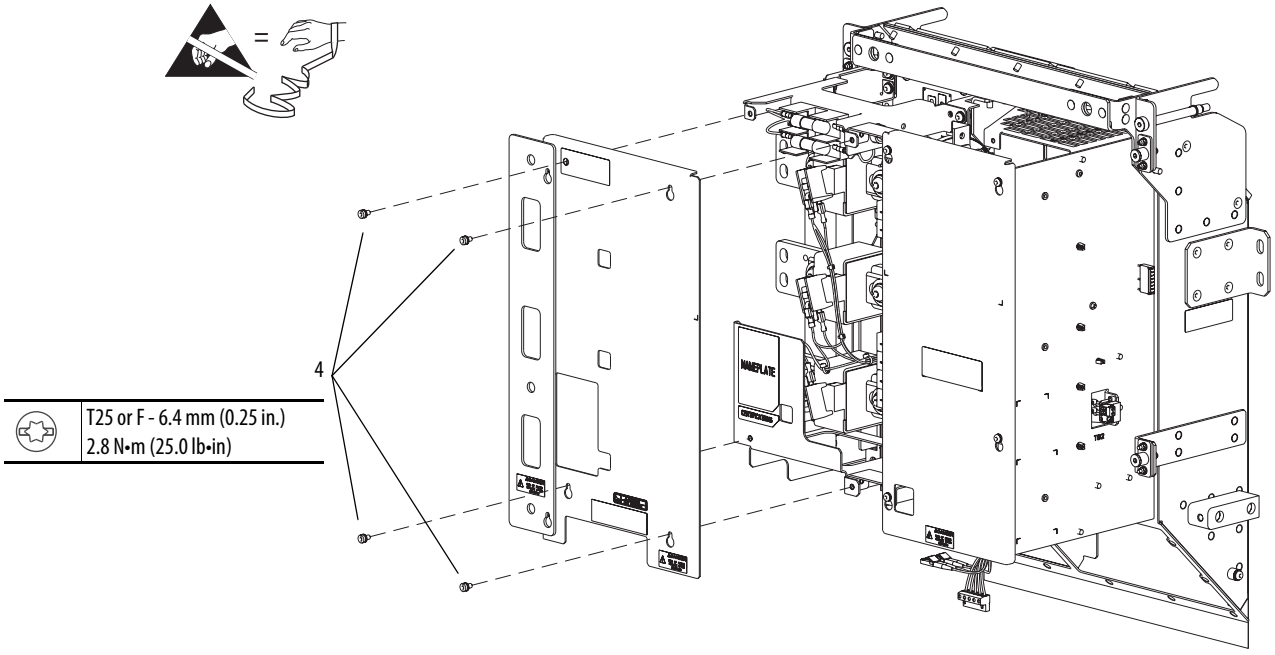


TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

Converter Left Cover Removal/Installation

Remove the Converter Left Cover

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the four M5 x 14-mm screws that secure the cover to the assembly and remove the cover.



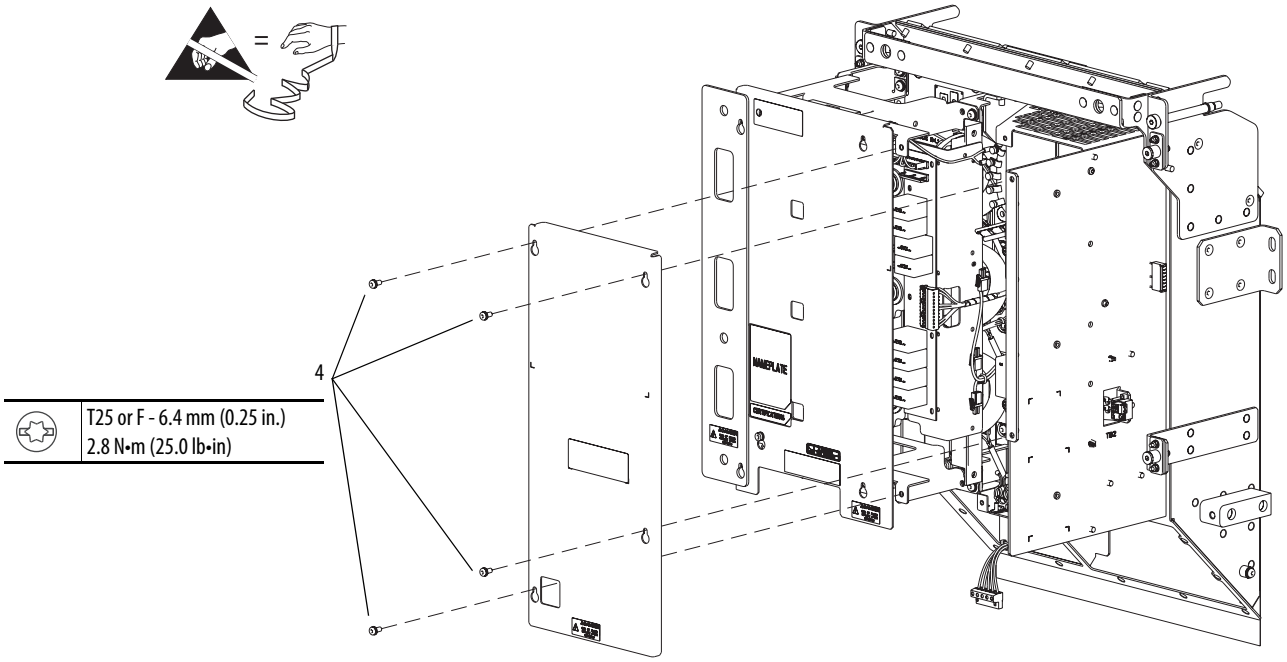
Install the Converter Left Cover

Install the converter cover in the reverse order of removal. See Remove the Converter Left Cover.

Converter Right Cover (No Control Pod) Removal/ Installation

Remove the Converter Right Cover (No Control Pod)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the four M5 x 14-mm screws that secure the cover to the assembly and remove the cover.



Install the Converter Right Cover (No Control Pod)

Install the converter cover (no control pod) in the reverse order of removal. See Remove the Converter Right Cover (No Control Pod).

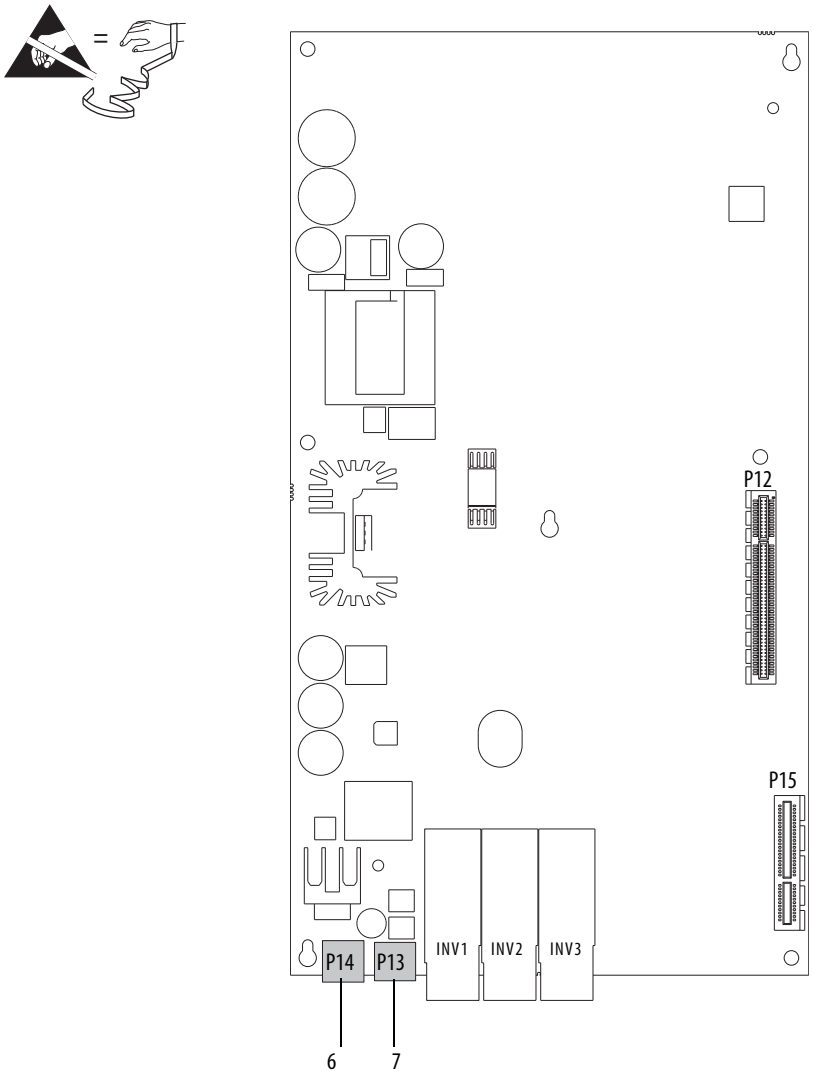
Control Pod Rotation

Rotate the Control Pod Forward

Use this procedure to move the control pod, when it is installed on the converter assembly, to access other components behind it.

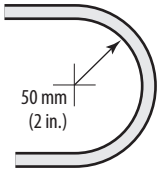
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. Remove the converter left cover or DC input with precharge assembly left cover, top guard, and left guard. See Remove the Converter Left Cover on page 83 or Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Remove the control pod cover. See Remove the Control Pod Cover on page 55.
6. Disconnect the drive internal 24V wire harness J14 connector from the fiber interface board (in the control pod) P14 terminal.
7. If installed, disconnect the customer supplied 24V supply power wiring from the fiber interface board P13 terminal.

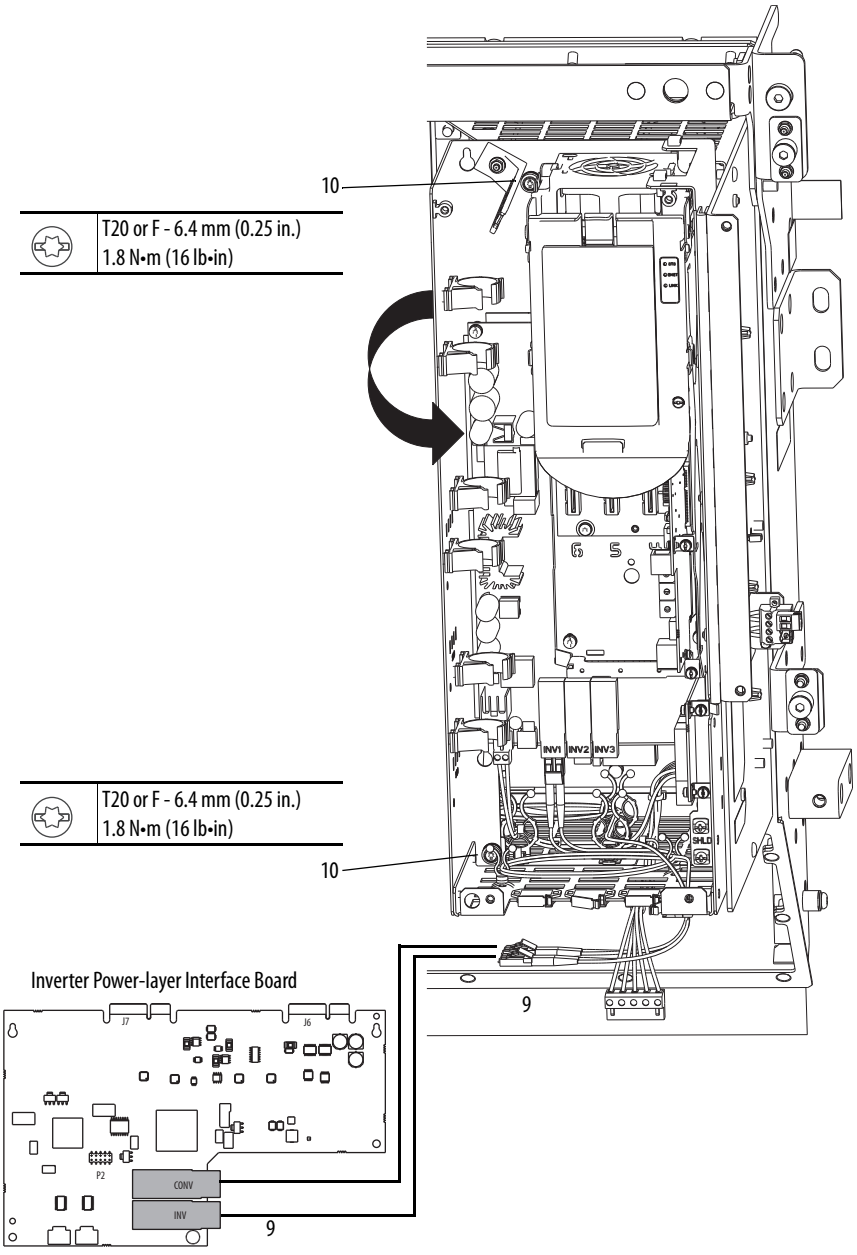


8. Remove the inverter circuit board connections cover from the inverter. See Inverter Circuit Board Connections Cover Removal/Installation on page 234.

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



9. Disconnect the inverter fiber-optic cable from INV and the converter fiber-optic cable from CONV on the inverter power-layer interface board in the inverter card cage assembly. Place the cables on the bottom of the control pod and follow the minimum bend radius requirement. Verify that cable damage does not occur when moving the control pod.
10. Loosen the two M4 captive panel fasteners that secure the control pod to the converter control panel and rotate the control pod forward.



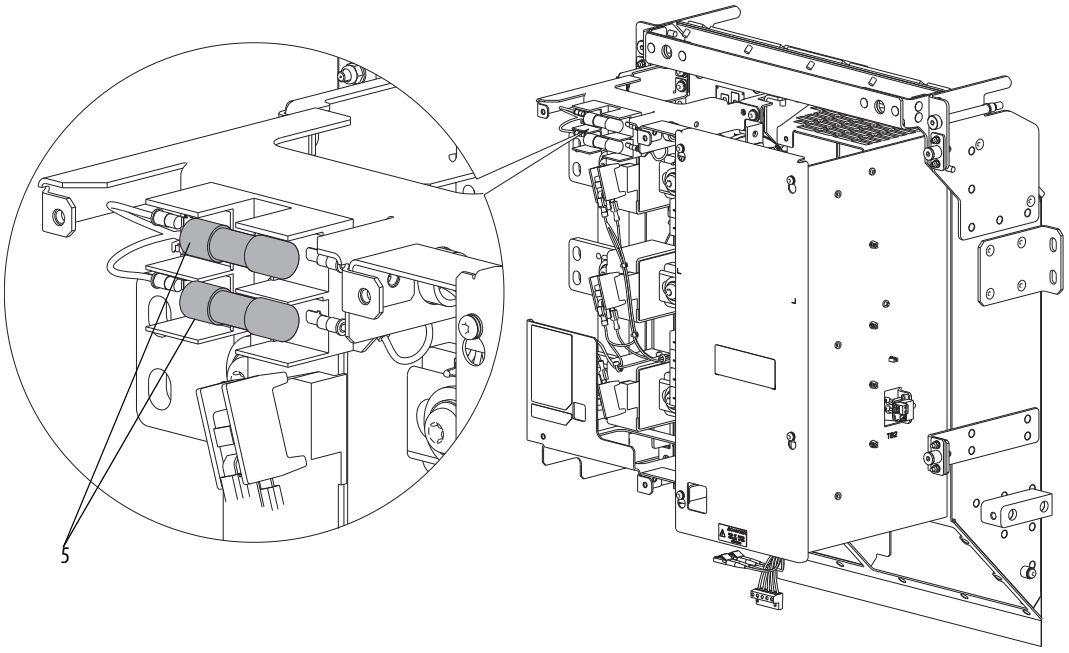
Return the Control Pod to the Service Position

Return the control pod to the service position in the reverse order. See Rotate the Control Pod Forward on page 84.

Control Transformer Primary Fuses Removal/Installation

Remove the Control Transformer Primary Fuses (FU4 and FU5)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the converter left cover. See Remove the Converter Left Cover.
5. Remove the fuse from the two-position fuse holder by using a fuse puller.



Install the Control Transformer Primary Fuse (FU4 and FU5)

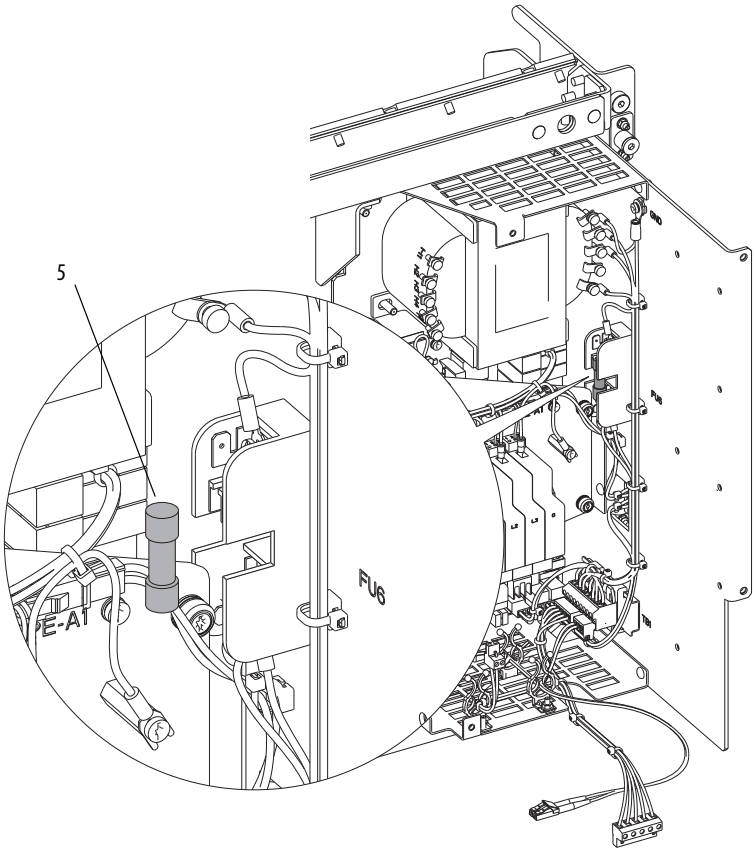
Install the control transformer primary fuse (FU4 and FU5) in the reverse order of removal. See Remove the Control Transformer Primary Fuses (FU4 and FU5).

Control Transformer Secondary Fuse Removal/ Installation

Remove the Control Transformer Secondary Fuse (FU6)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Remove the fuse from the one-position fuse holder by using a fuse puller.



Install the Control Transformer Secondary Fuse (FU6)

Install the control transformer secondary fuse (FU6) in the reverse order of removal. See Remove the Control Transformer Secondary Fuse (FU6) on page 88.

Converter EMC Filter Circuit Board Removal/Installation

Remove the Converter EMC Filter Circuit Board

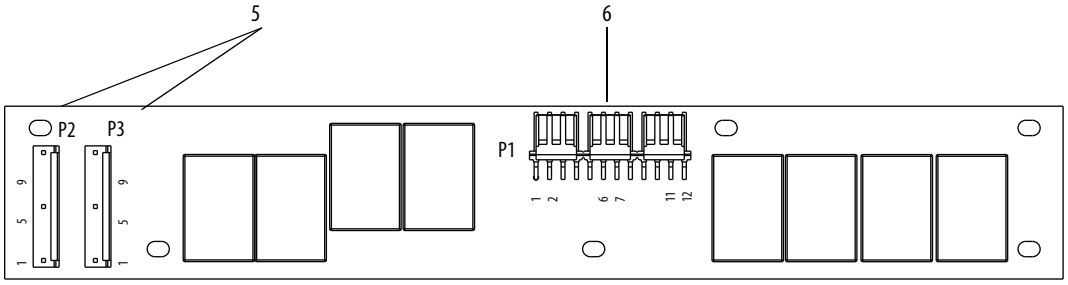
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.

IMPORTANT Before you disconnect the J2/J3 connector from the EMC filter board, note the J2/J3 location. The P3 (PE-A2) terminal is grounded. The P2 terminal is not grounded.

The jumper settings are provided in the PowerFlex 750-Series Power Jumpers Installation Instructions, publication 750-IN011, available at http://www.rockwellautomation.com/literature/.

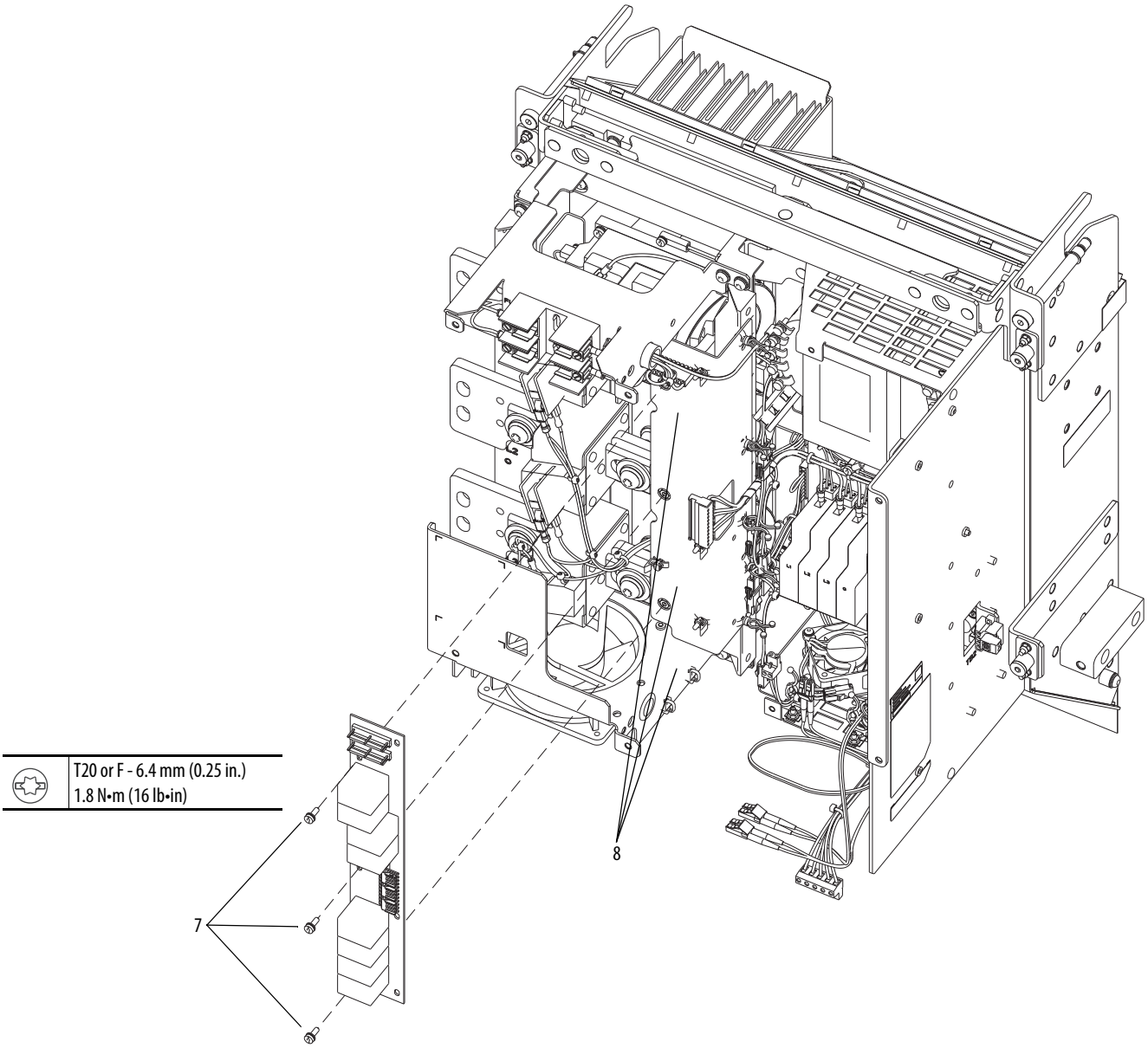
5. Remove the J2/J3 connector from the P2 or P3 connector on the EMC filter board.
6. Remove the AC line wire harness J1 connector from the P1 connector on the EMC filter board P1 terminal.





Note: Board shown rotated 90° from actual installation position.

7. Remove the three M4 x 8-mm screws that secure the EMC filter board to the AC line bus bar.
8. Release the three board mounting clips along the right edge of the EMC filter board and remove the board.



Install the Converter EMC Filter Circuit Board

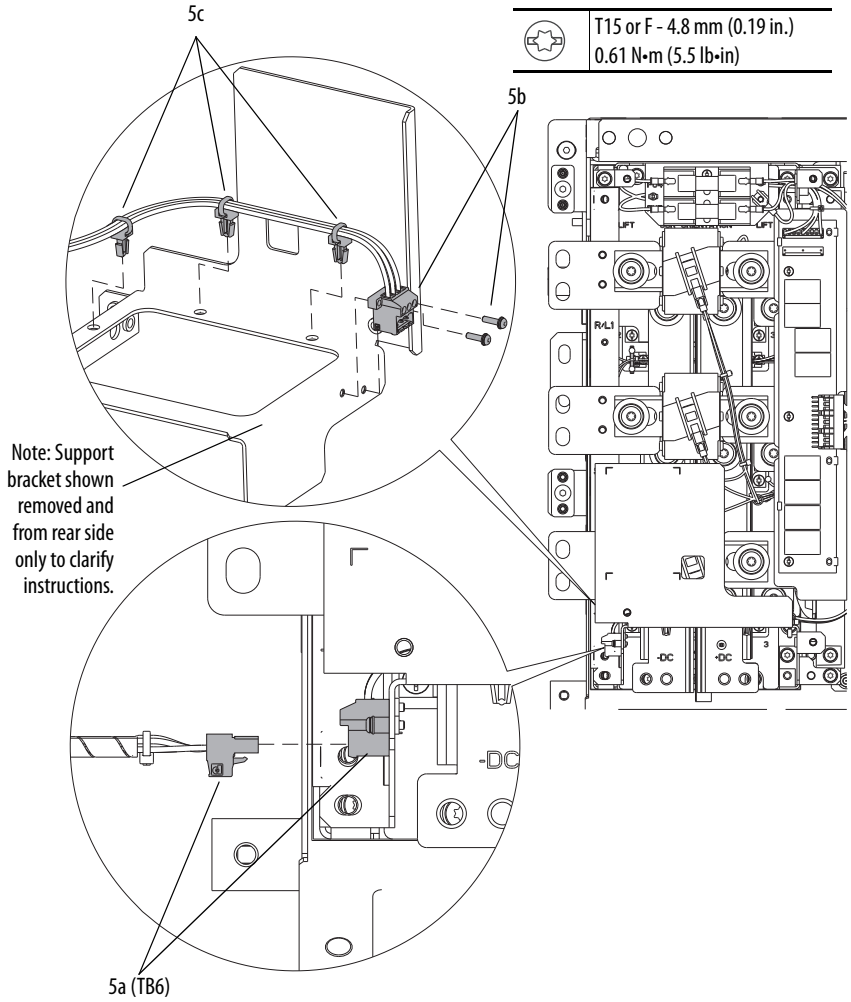
Install the EMC filter board in the reverse order of removal. See Remove the Converter EMC Filter Circuit Board on page 89.

IMPORTANT Be sure that the J2/J3 connector is reassembled in the correct location (P2 or P3) on the EMC filter board.

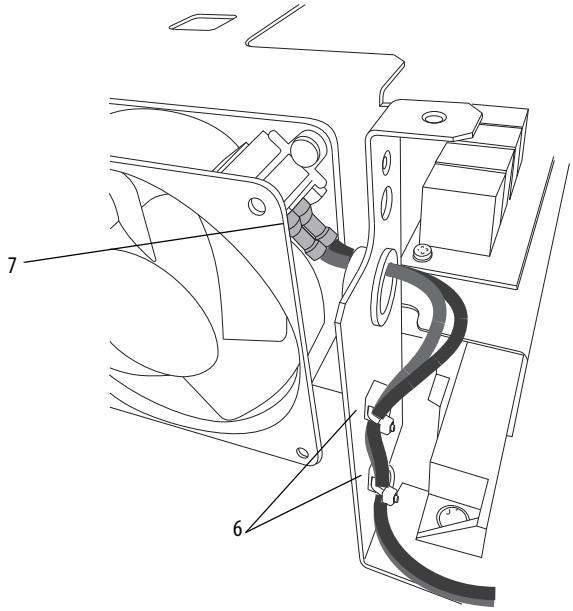
Converter Input Fuse Stirring Fan Removal/Installation

Remove the Converter Input Fuse Stirring Fan

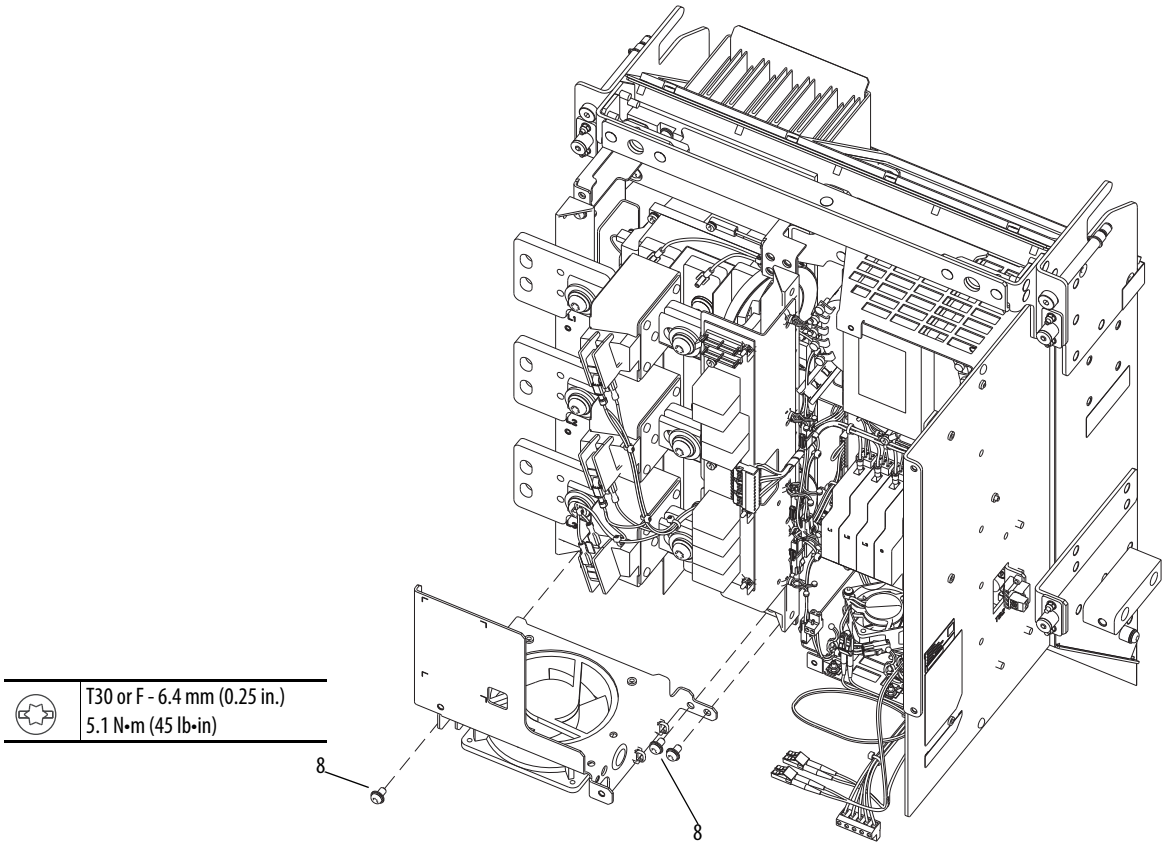
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. For frame 8 drives, continue with step 6 on page 92. For frame 9 and larger drives only, complete these steps.
   a. Disconnect the cabinet-side, three-position DC bus fuse wire harness connector from terminal block TB6 on the lower left side of the converter.
   b. Remove the two M3 x 12-mm screws that secure the harness terminal block TB6 to the cover support bracket.
   c. Disengage the three cable tie push mounts that secure the harness to the cover support bracket, and remove the harness.



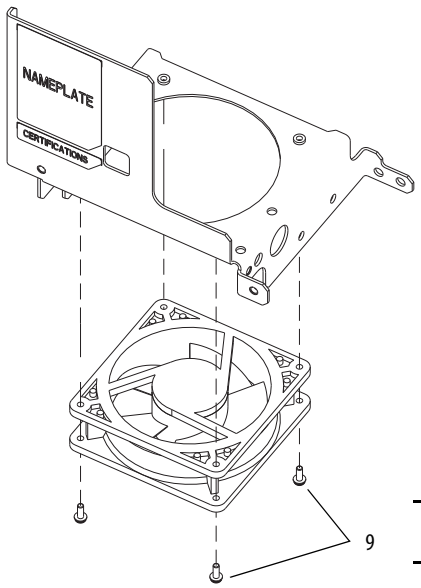
6. Disengage the two cable tie push mounts that secure the fan harness to the bracket.
7. Disconnect the Fan (+) and Fan (-) power wires from the fan terminals and pull the terminal wires through the hole in the bracket.



8. Remove the three M6 x 14-mm screws that secure the label bracket and stirring fan to the rail support and remove the bracket.



9. Remove the four M4 x 12-mm hexalobular screws that secure the stirring fan to the support bracket and remove the stirring fan.



	T20 1.8 N•m (16.0 lb•in)

Install the Converter Input Fuse Stirring Fan

Install the stirring fan in the reverse order of removal. See Remove the Converter Input Fuse Stirring Fan on page 91.

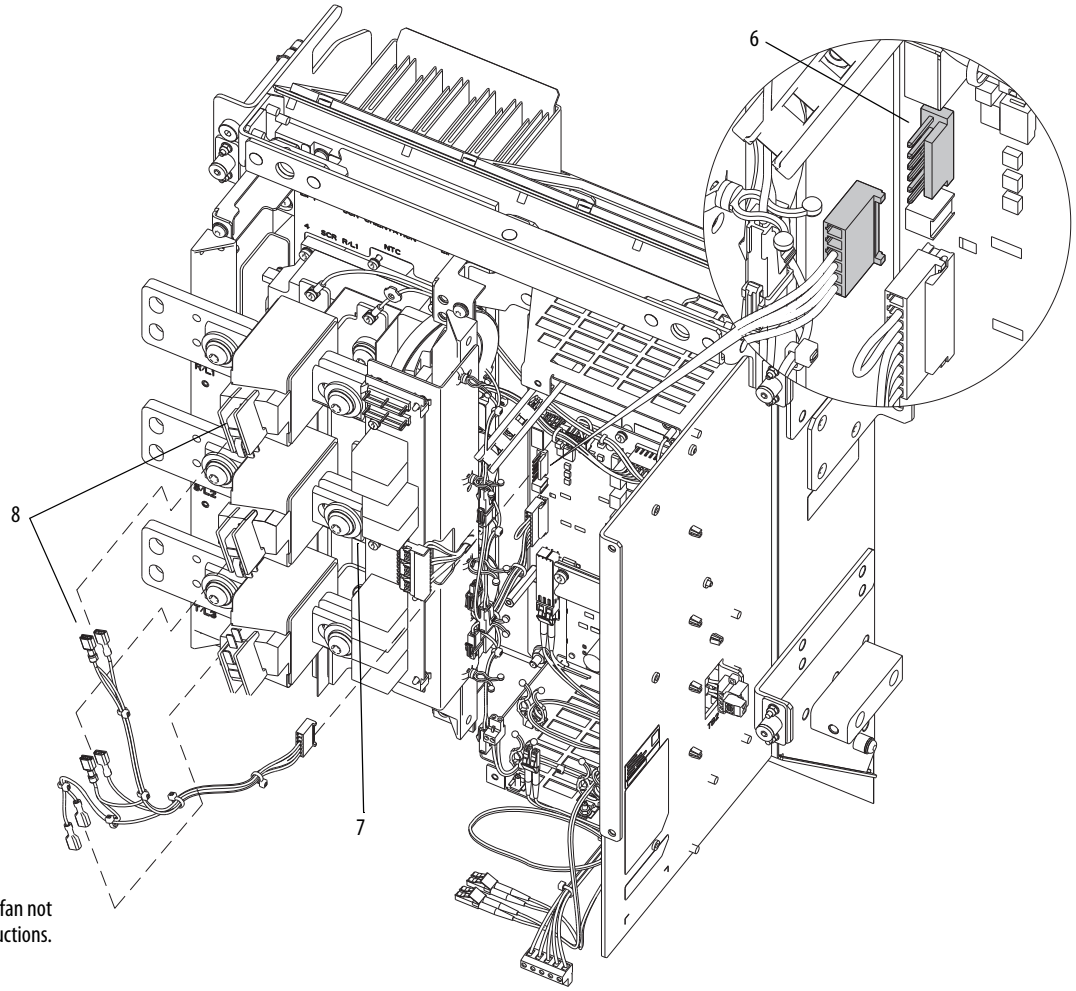
AC Line Fuse Sense Wire Harness Removal/ Installation

Remove the AC Line Fuse Sense Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

6. Disconnect the AC line fuse sense wire harness J7 connector from the converter gate board P7 terminal.
7. Release the AC line fuse sense wire harness from the cable support on the left side of the bus bar support rail.
8. Disconnect the AC line fuse sense wire harness from the six AC line fuse indicator terminals and remove the AC line fuse sense wire harness.



Note: The label bracket and fan not shown only to clarify instructions.

Install the AC Line Fuse Sense Wire Harness

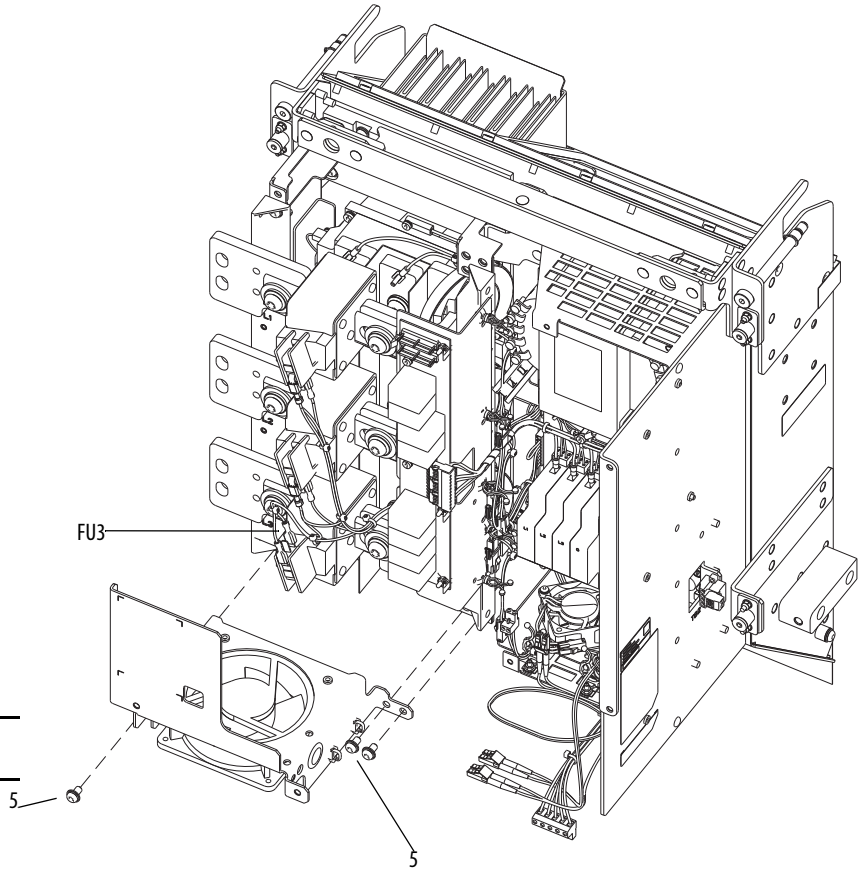
Install the AC line fuse sense harness in the reverse order of removal. See Remove the AC Line Fuse Sense Wire Harness on page 93.

AC Line Fuse Removal/ Installation

Remove the AC Line Fuses (FU1, FU2, and FU3)

IMPORTANT It is recommended that you replace all three AC line fuses.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. If replacing FU3, remove the three M6 x 14-mm screws that secure the label bracket and input fuse stirring fan to the rail support and remove the bracket.

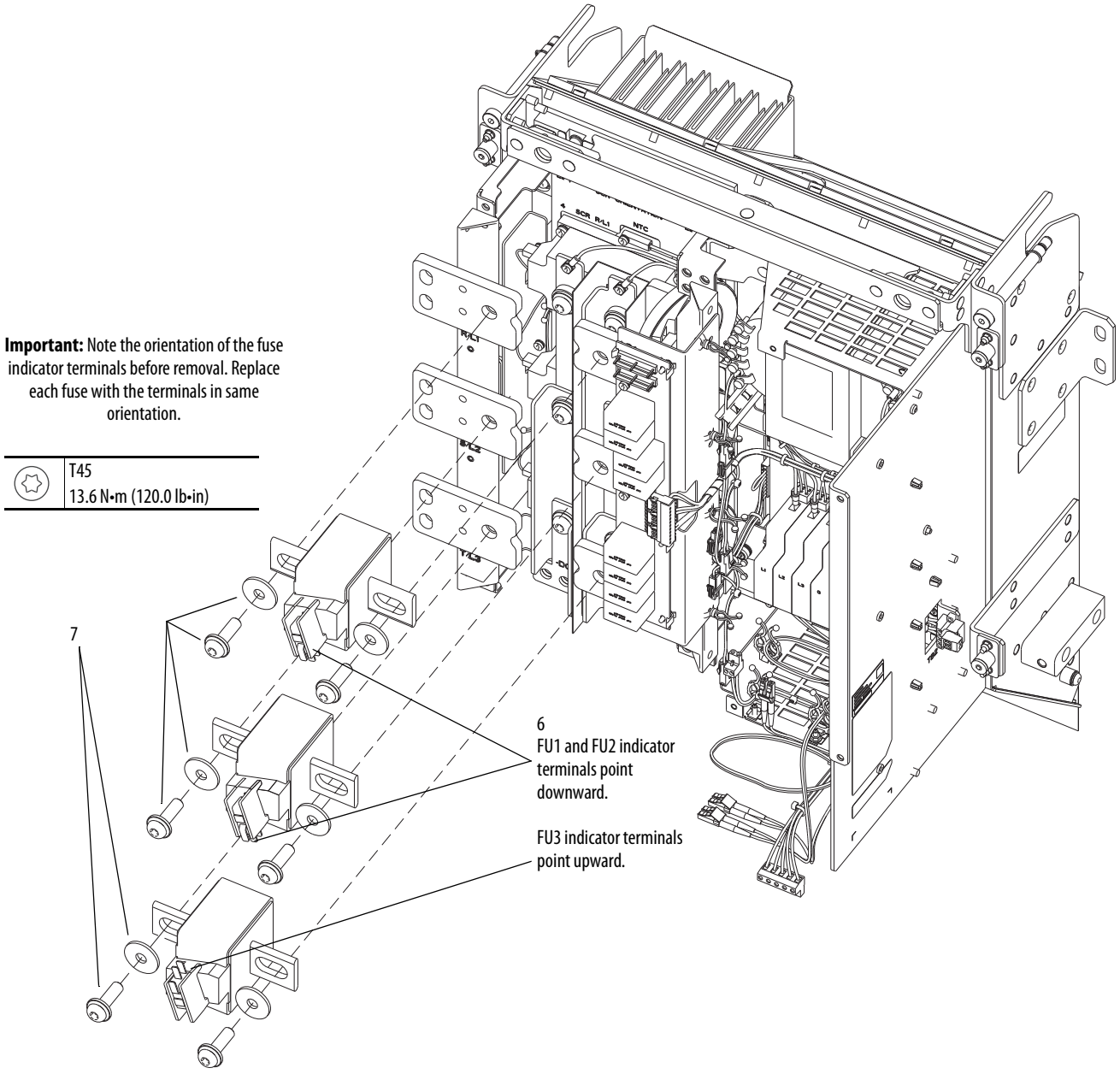


	T30 or F - 6.4 mm (0.25 in.) 5.1 N•m (45 lb•in)

6. Remove the AC line fuse sense wire harness leads from the fuse indicator terminals for the fuse being replaced. See Remove the AC Line Fuse Sense Wire Harness on page 93.

IMPORTANT	Note the orientation of the fuse indicator terminals before removal. Replace each fuse with the terminals in same orientation.

7. Remove the two M10 x 35-mm screws and two flat washers for the fuse being replaced and remove the AC line fuse. Remove the fuse indicator from the AC line fuse, if necessary.



Install AC Line Fuse (FU1, FU2, and FU3)

Install the AC line fuse in the reverse order of removal. See Install AC Line Fuse (FU1, FU2, and FU3) on page 97.

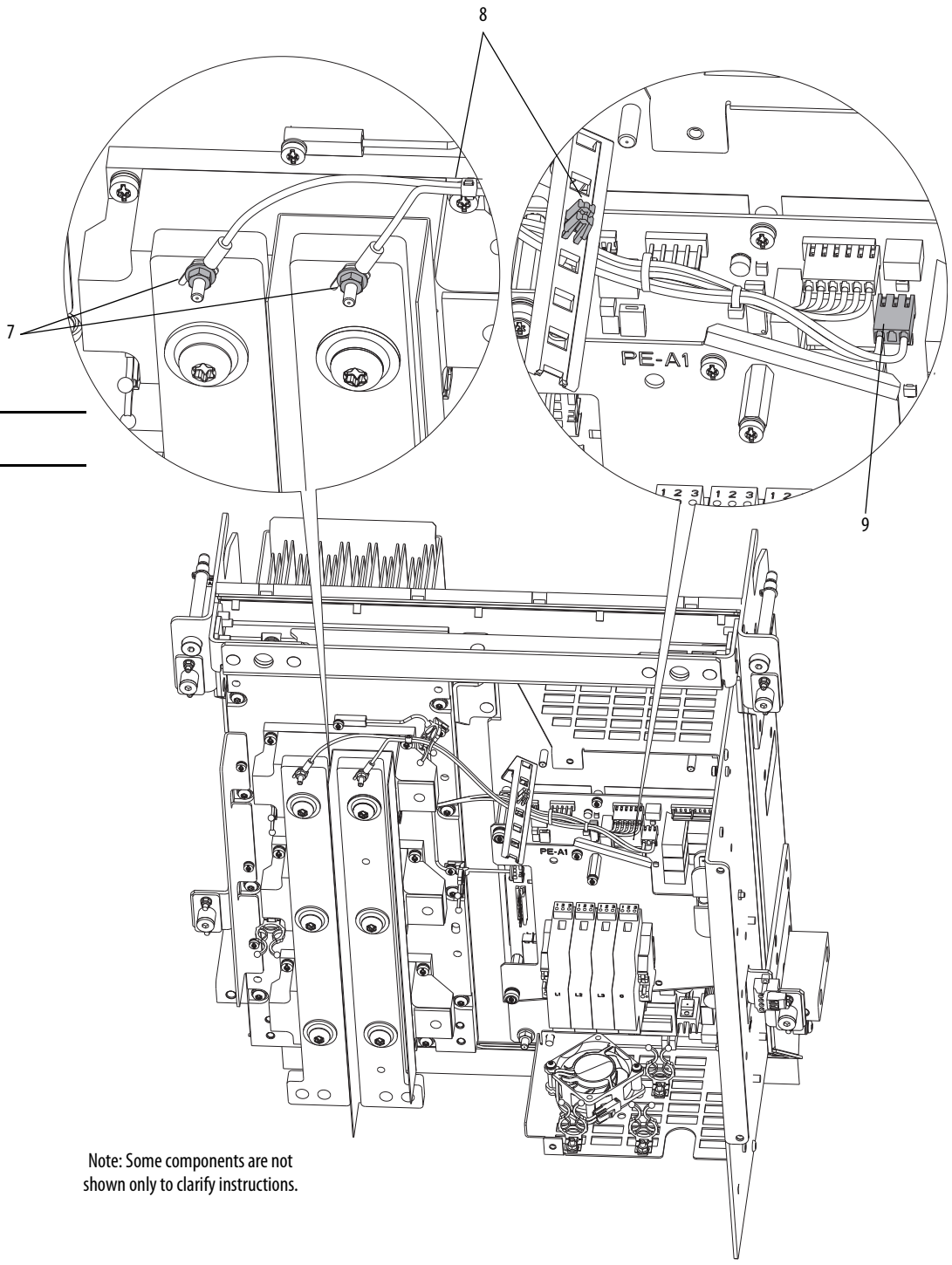
DC Bus Sense Wire Harness Removal/Installation

Remove the DC Bus Sense Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
6. To gain access to the DC bus sense wire harness connections at the top of the –DC and +DC bus bars, remove the AC line fuse FU1 (from Phase R/L1). See Remove the AC Line Fuses (FU1, FU2, and FU3) on page 95.

7. Loosen, but do not remove, the two M4 hex nuts that secure the wire harness to the top of the –DC and +DC bus bars. Slide the wire harness fork terminals off the bus bars.
8. Release the cable supports that secure the DC bus sense wire harness to the converter SCR assembly and support bracket.
9. Disconnect the DC bus sense wire harness J10 connector from the converter gate board P10 terminal and remove the wire harness.



	7 mm 1.8 N•m (16 lb•in)

Note: Some components are not shown only to clarify instructions.

Install the DC Bus Sense Wire Harness

Install the DC bus sense wire harness in the reverse order of removal. See Remove the DC Bus Sense Wire Harness on page 97.

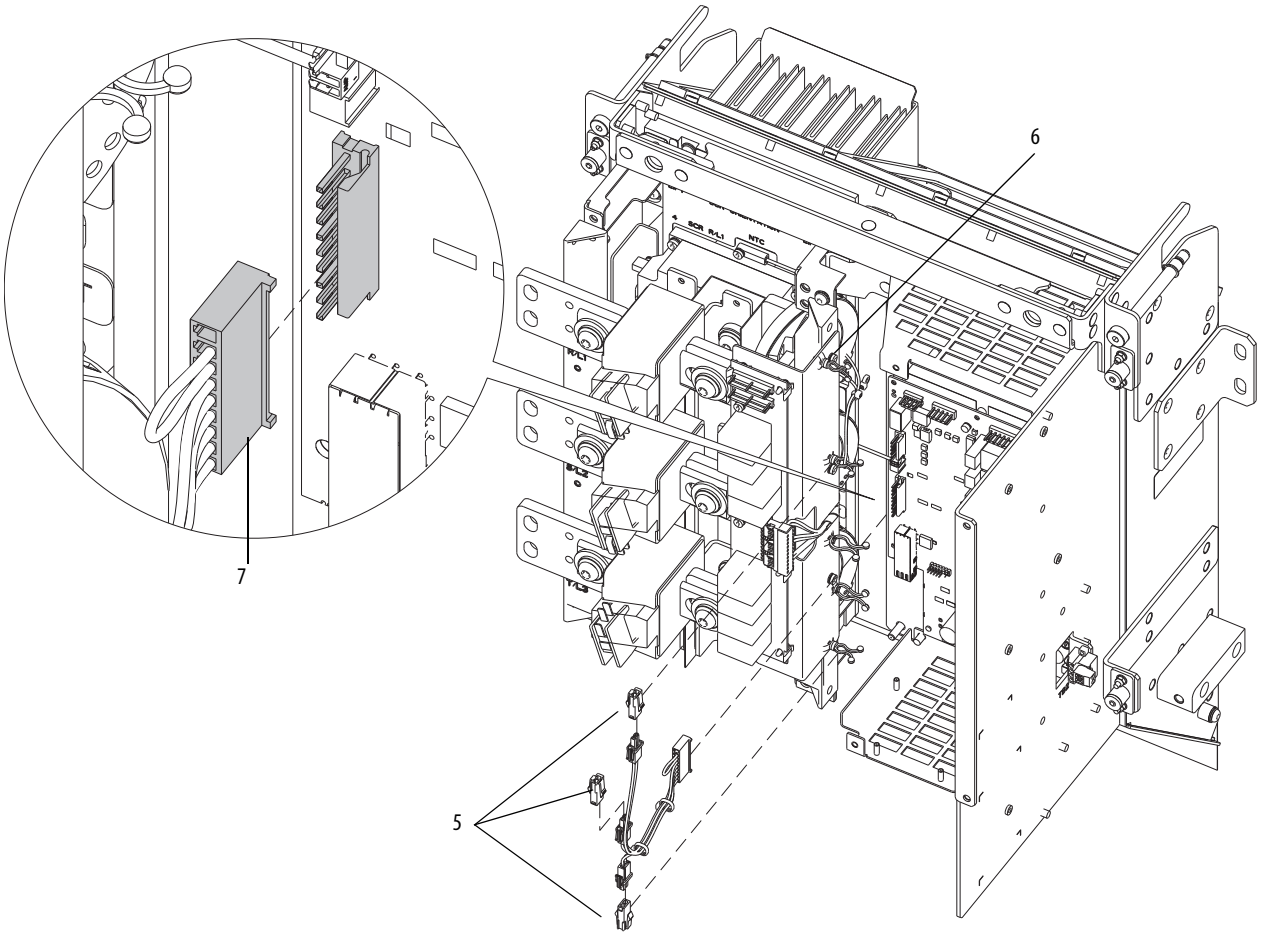
Converter Current Sensor Wire Harness Removal/ Installation

Remove the Converter Current Sensor Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

5. Disconnect the converter current-sensor wire harness CT1, CT2, and CT3 connectors from the three converter current sensor connectors.
6. Release the cable supports from the right side of the bus bar support rail.
7. Disconnect the converter current-sensor wire harness J6 connector from the converter gate board P6 terminal and remove the converter current-sensor wire harness.



Install the Converter Current Sensor Wire Harness

Install the converter current-sensor wire harness in the reverse order of removal. See Remove the Converter Current Sensor Wire Harness on page 99.

Converter Current Sensors Removal/Installation

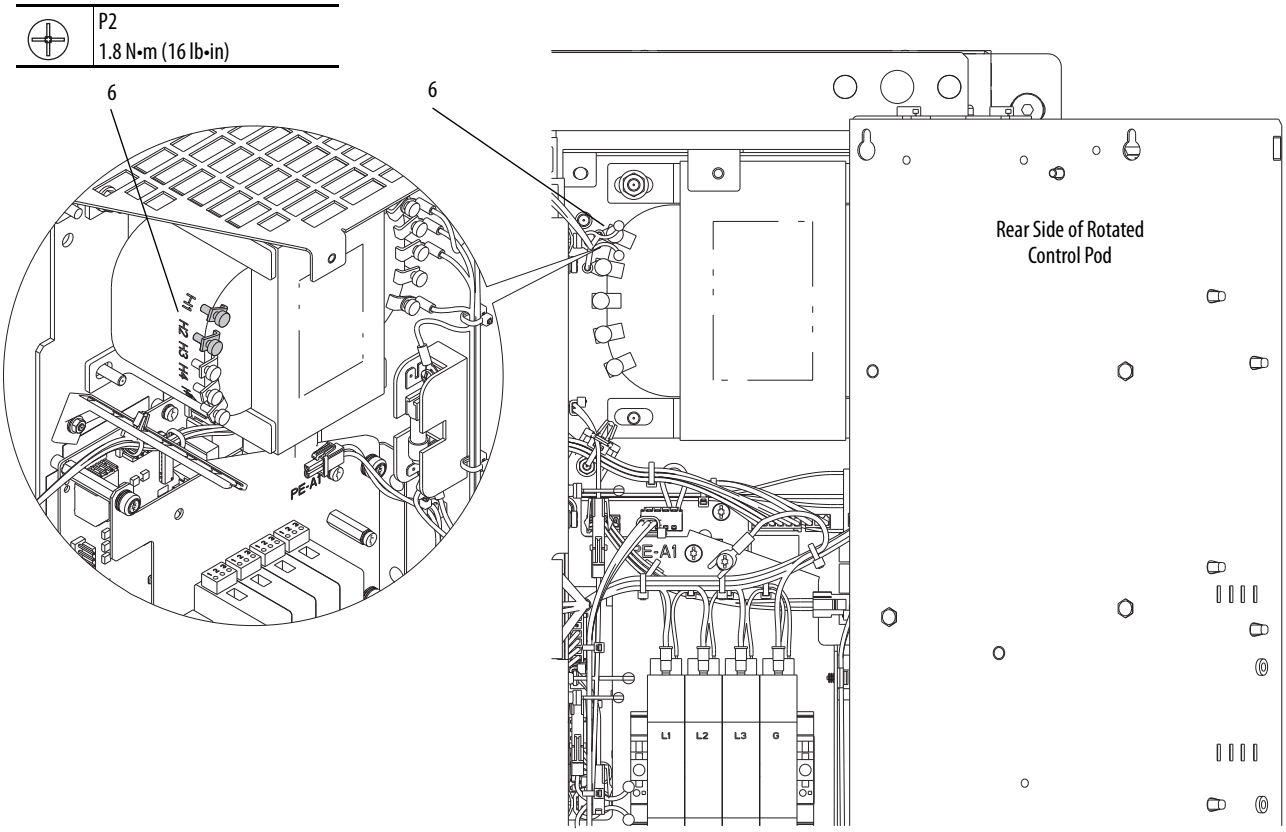
Remove the Converter Current Sensors

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

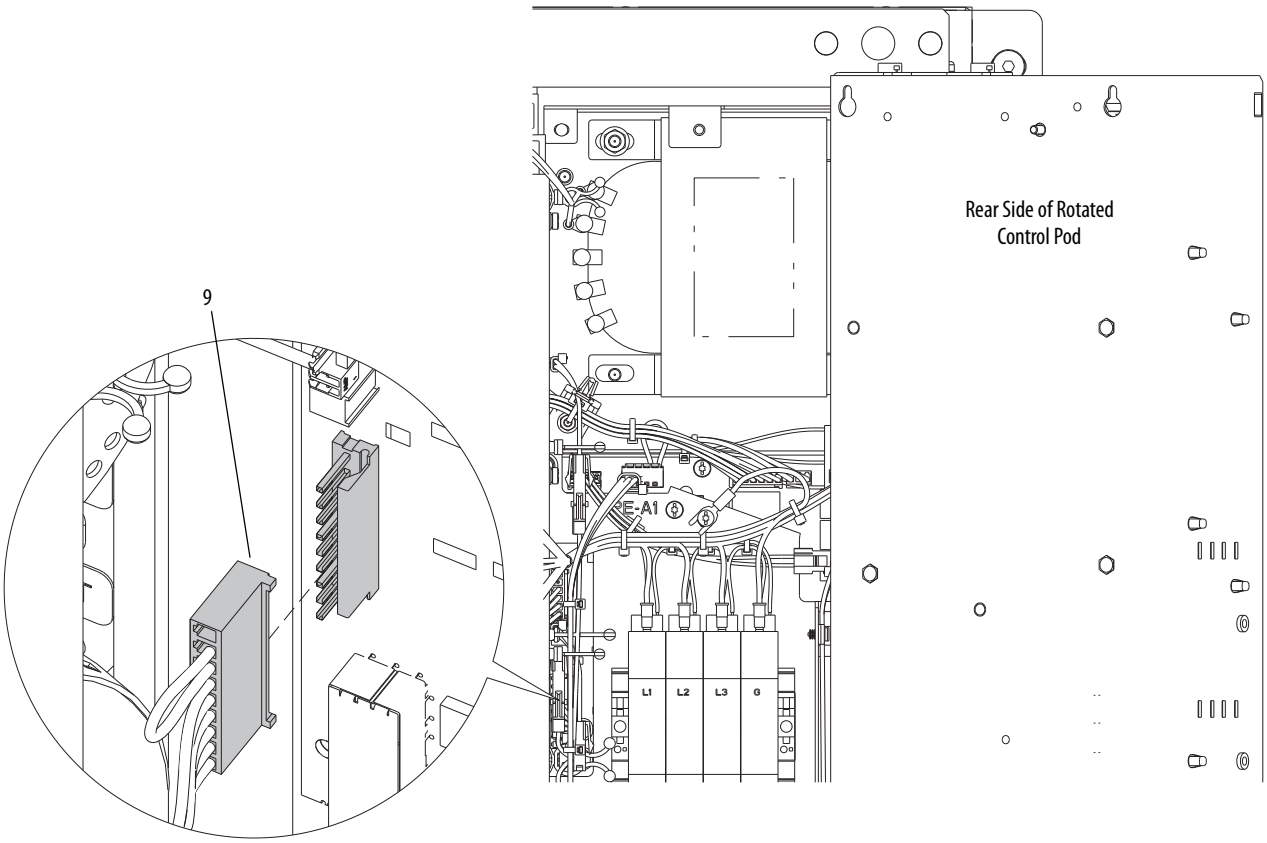
   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

IMPORTANT Before you disconnect the control-transformer primary wire harness, note the terminal connections. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information.

6. Disconnect the control-transformer primary wire harness lead wires H1 and Hx from the control transformer input terminals. Release the cable support securing the harness to the EMC filter plastic support.



7. Remove the AC line fuse sense wire harness. See Remove the AC Line Fuse Sense Wire Harness on page 93.
8. Remove the three AC line fuses with fuse indicators. See Remove the AC Line Fuses (FU1, FU2, and FU3) on page 95.
9. Disconnect the converter current-sensor wire harness J6 connector from the converter gate board P6 terminal.



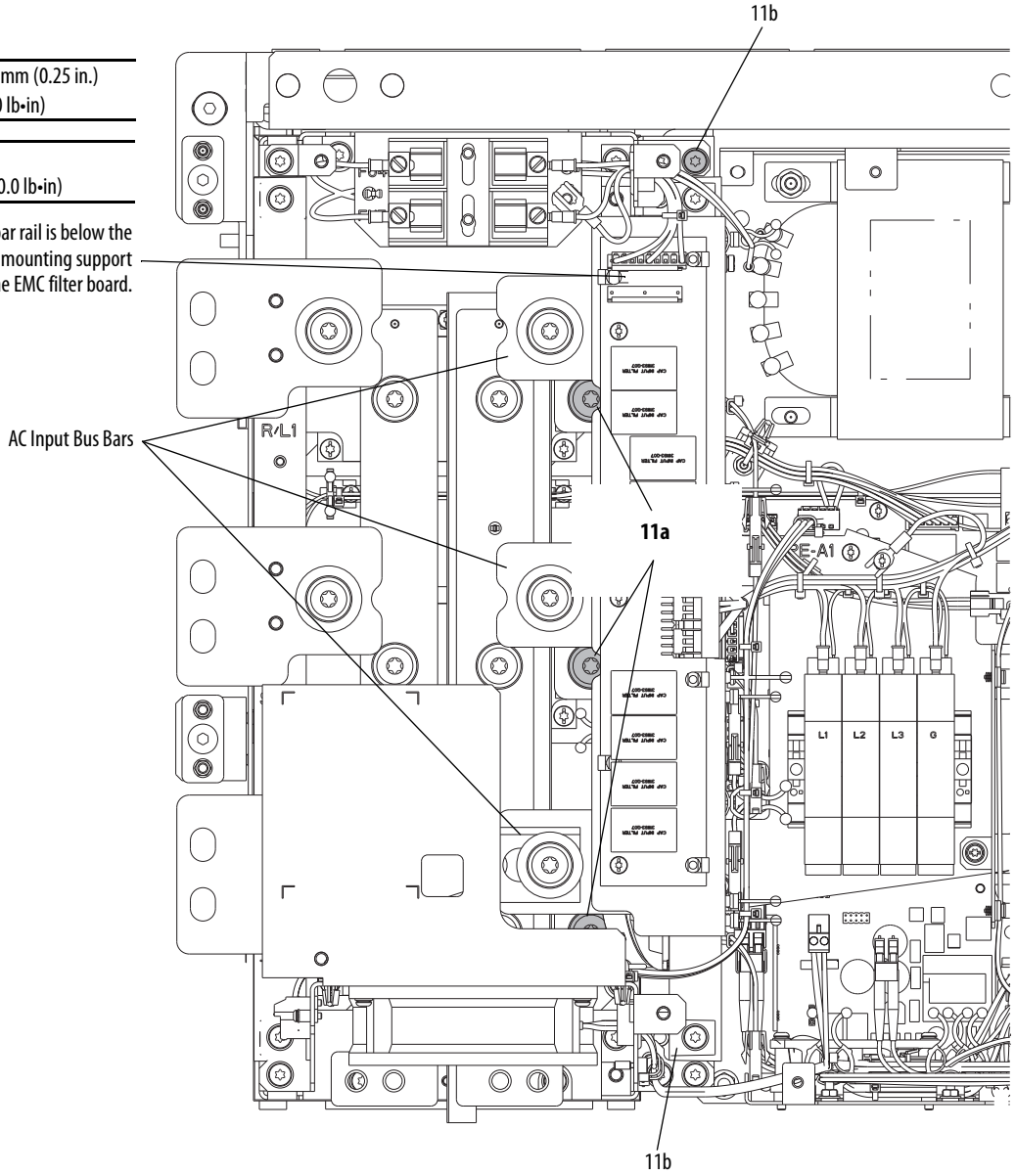
10. Remove the EMC filter board. See Remove the Converter EMC Filter Circuit Board on page 89.

11. Remove the right (DC+) bus bar rail:

a. Remove the three M10 x 30-mm screws that secure the AC input bus bars to the SCR.

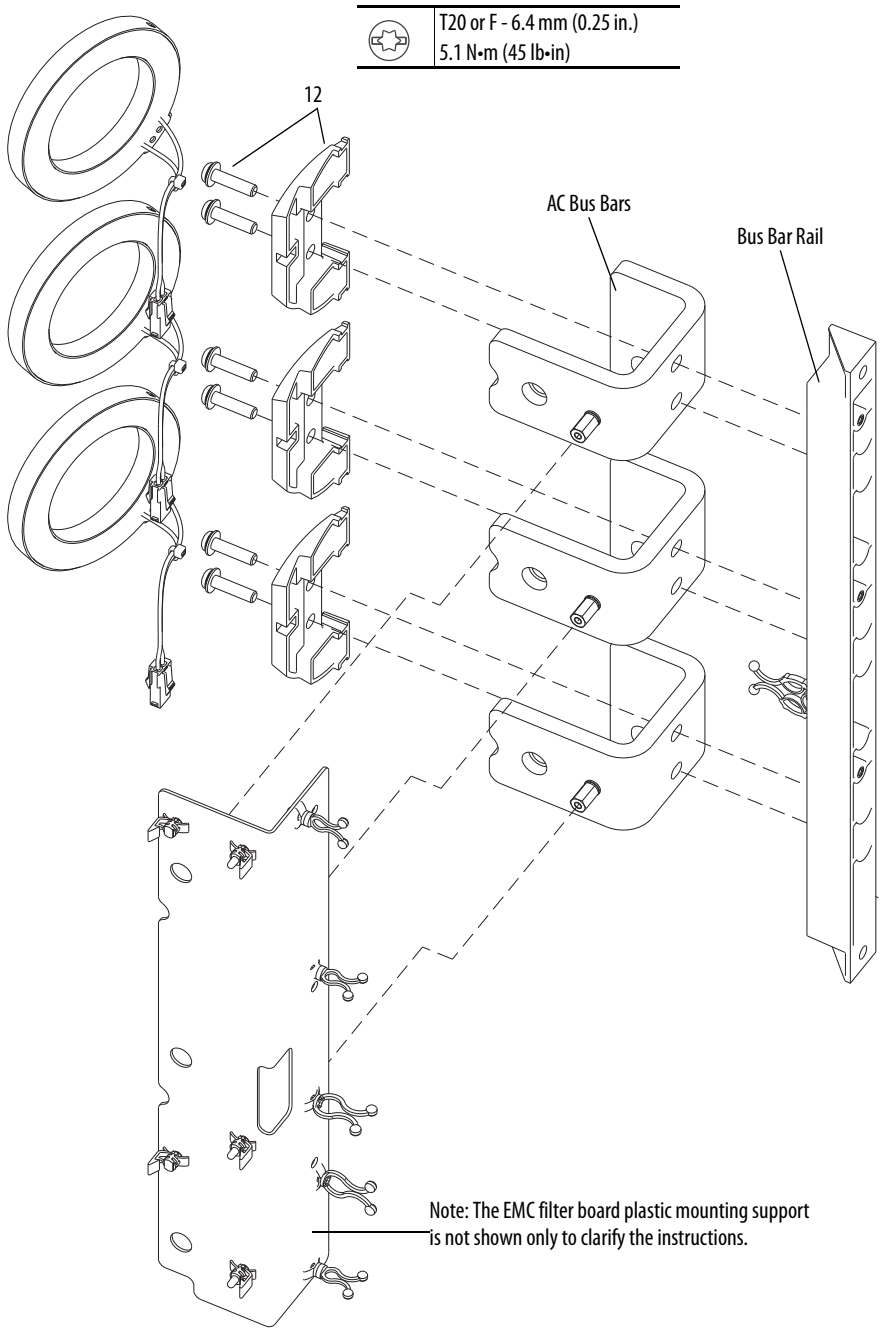
b. Remove the two M6 x 14-mm screws that secure the right bus bar rail to the rail support. Remove the right bus bar rail with three AC input bus bars, three current sensors, current sensor wire harness, and EMC filter board plastic support attached.

M6	T20 or F - 6.4 mm (0.25 in.) 5.1 N•m (45.0 lb•in)
M10	T45 11.3 N•m (100.0 lb•in)



12. For the phase being replaced, remove the two M6 x 25-mm screws that connect the AC bus bar to the right bus bar rail.

13. Cut the three cable ties that connect the current sensor to the plastic support and remove the current sensor.



Install the Converter Current Sensors

Install the current sensors in the reverse order of removal. See Remove the Converter Current Sensors on page 101.

IMPORTANT Verify that the control-transformer primary wire harness lead wires H1 and Hx are connected to the correct input terminals. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information. If the wires are connected to the wrong terminals, drive damage can occur.

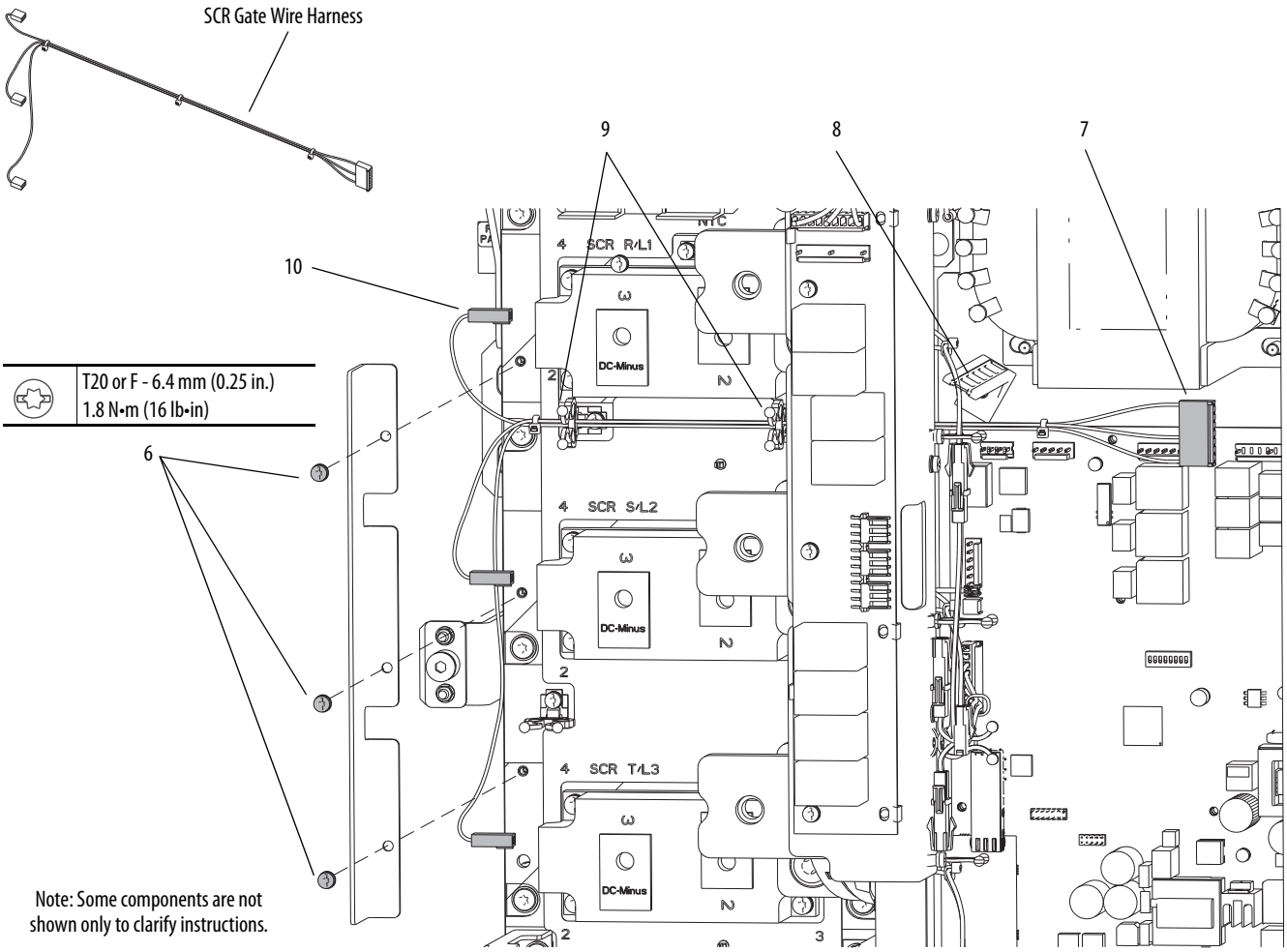
Converter SCR Gate Wire Harness Removal/ Installation

Remove the Converter SCR Gate Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

6. Remove the three M4 x 12-mm screws that secure the shield to the converter heatsink and remove the shield.
7. Disconnect the SCR gate wire harness J11 connector from the converter gate board P11 terminal.
8. Disengage the cable tie from the cable tie mount on the wire harness ladder.
9. Release the wire harness from the two cable supports securing the harness to the converter heatsink.
10. Remove the three SCR gate connectors from the SCR modules and remove the SCR gate wire harness from the drive.



Install the Converter SCR Gate Wire Harness

Install the converter SCR gate wire harness in the reverse order of removal. See Remove the Converter SCR Gate Wire Harness on page 105.

Converter SCR Assembly Removal/Installation

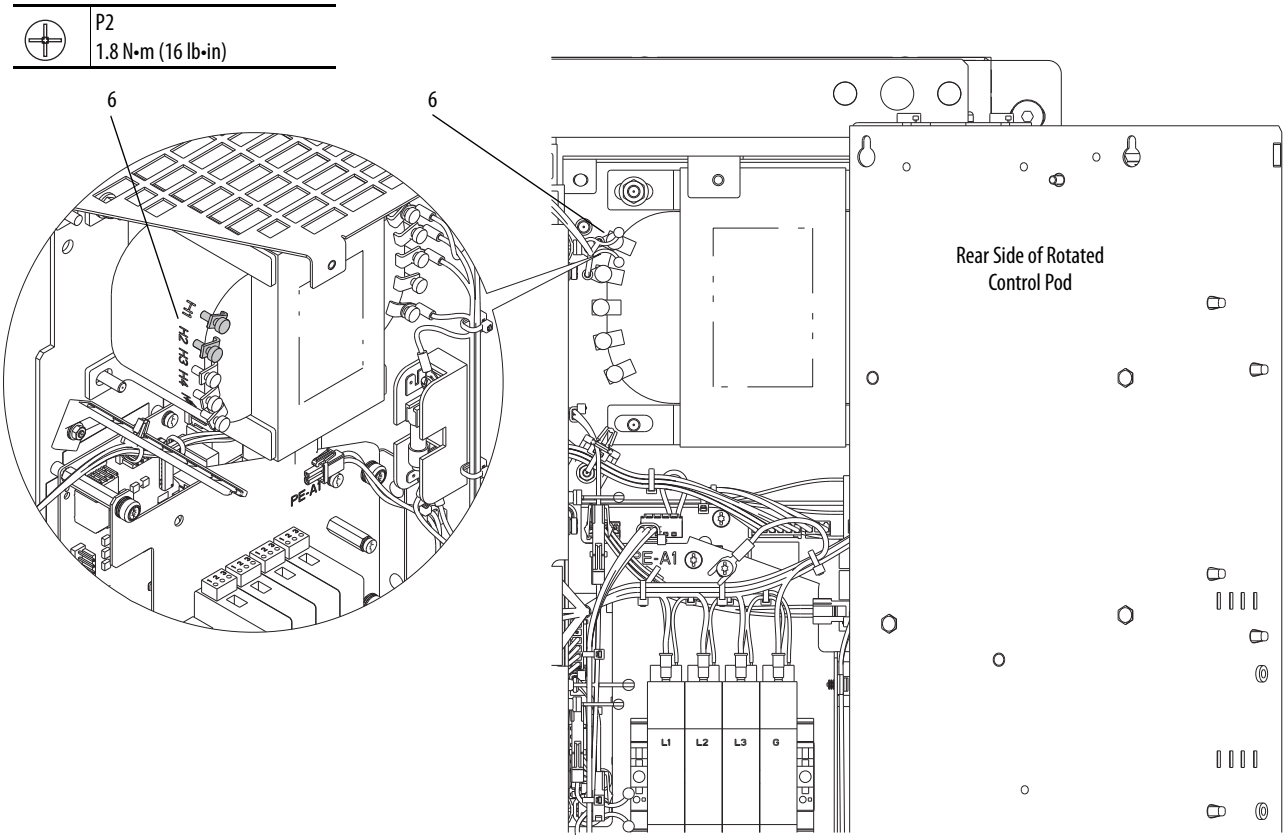
Remove the Converter SCR Assembly

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left converter cover. See Remove the Converter Left Cover on page 83.
5. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

IMPORTANT Before you disconnect the control-transformer primary wire harness, note the terminal connections. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information.

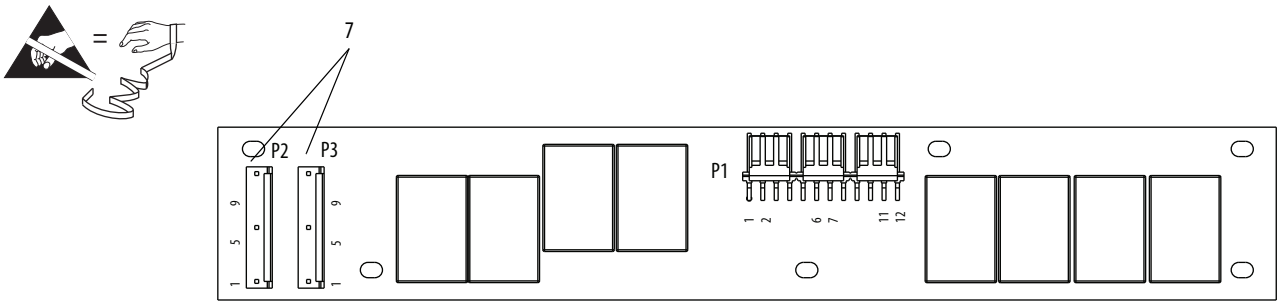
6. Disconnect the control-transformer primary wire harness lead wires H1 and Hx from the control transformer input terminals. Release the cable support securing the harness to the EMC filter plastic support.



IMPORTANT Before you disconnect the control-transformer primary wire harness J2/J3 connector from the EMC filter board, note the J2/J3 location. The P3 (PE-A2) terminal is grounded. The P2 terminal is not grounded.

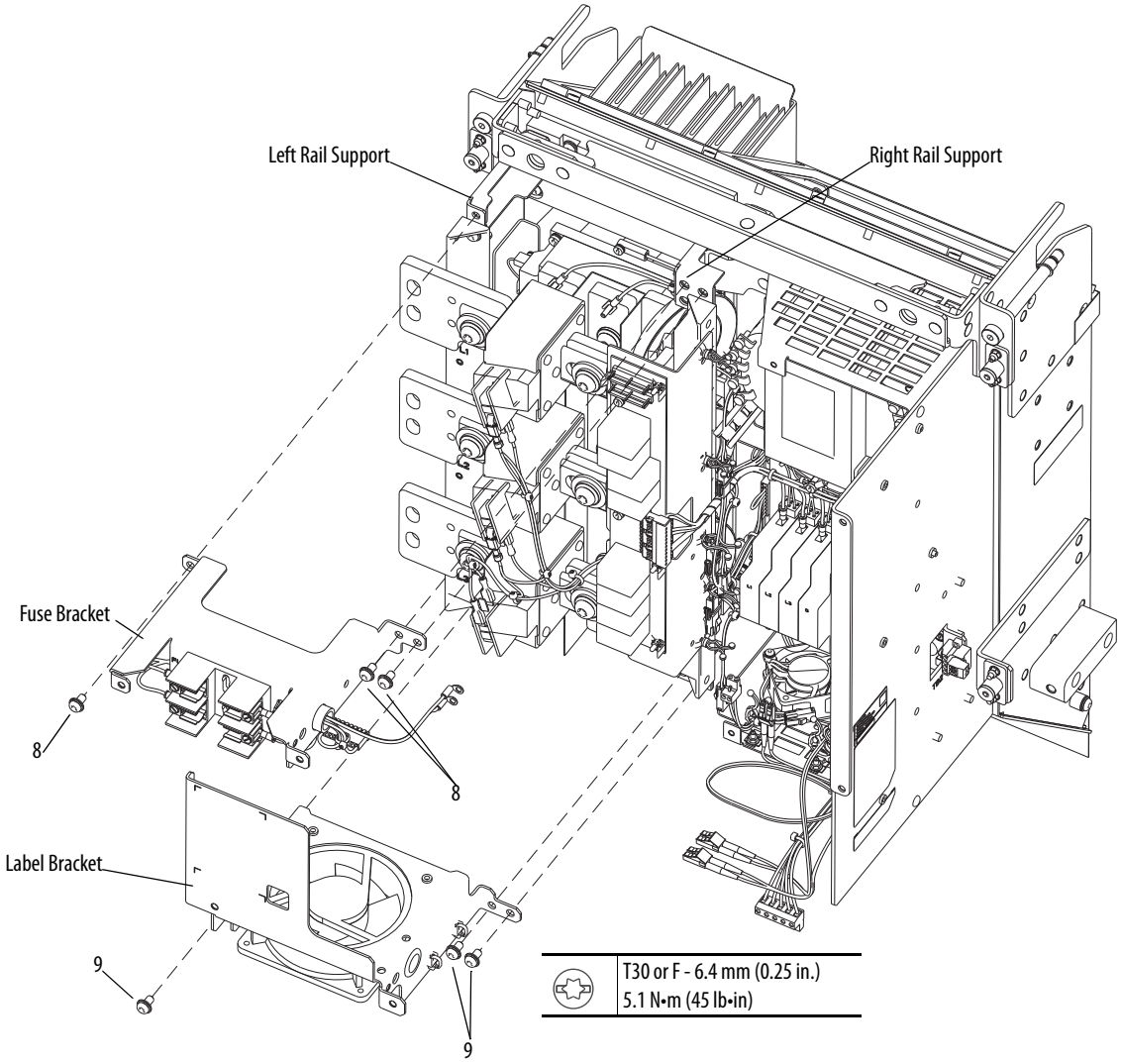
The jumper settings are provided in the PowerFlex 750-Series Power Jumpers Installation Instructions, publication 750-IN011, available at http://www.rockwellautomation.com/literature/.

7. Remove the J2/J3 connector from connector P2 or P3 on the EMC filter board.



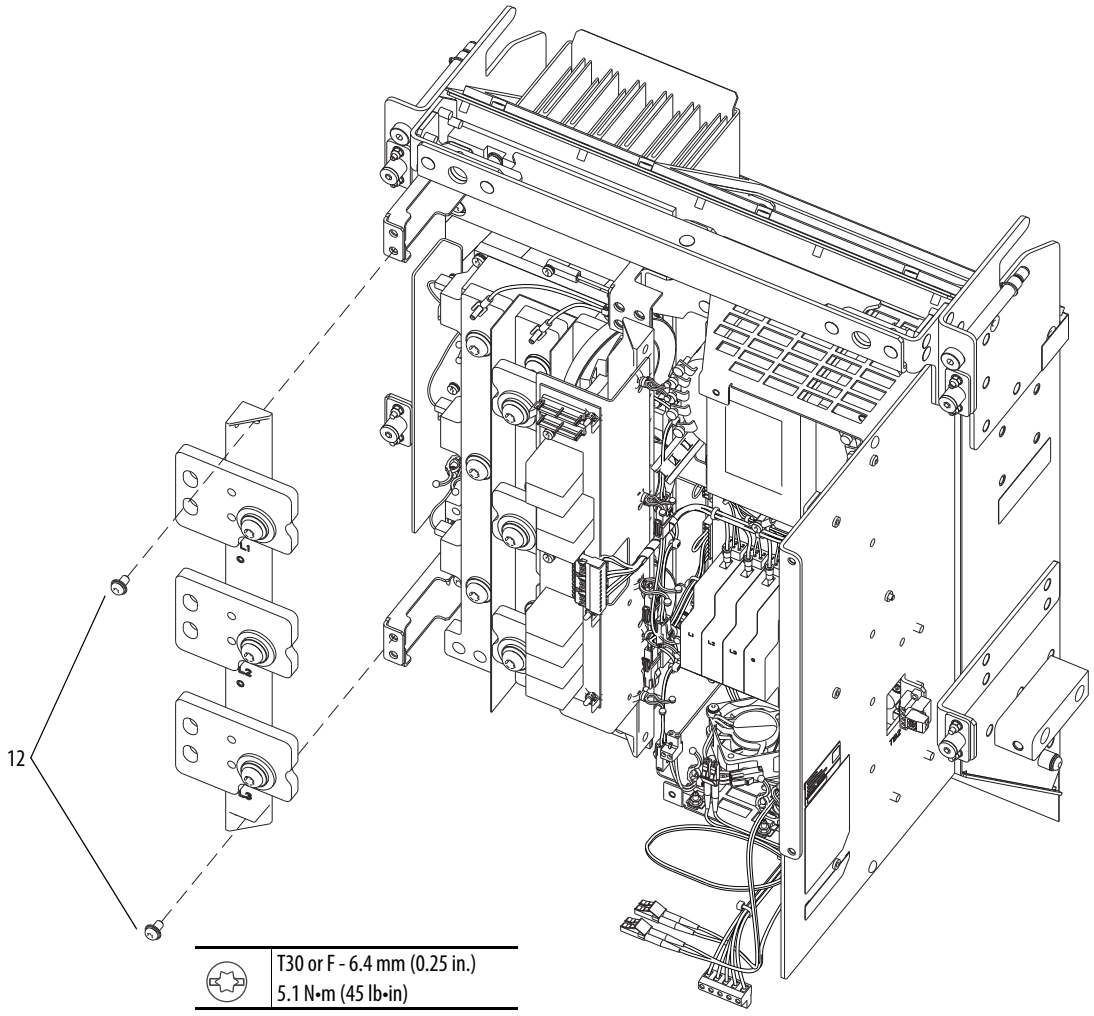
Note: Board shown rotated 90° from actual installation position.

8. Remove the three M6 x 14-mm screws that secure the fuse bracket to the left and right rail supports. Remove the fuse bracket with the control-transformer primary wire harness attached.
9. Remove the three M6 x 14-mm screws that secure the label bracket to the rail support and remove the label bracket.



10. Remove the AC line fuse sense wire harness. See Remove the AC Line Fuse Sense Wire Harness on page 93.
11. Remove the three AC line fuses with fuse indicators. See Remove the AC Line Fuses (FU1, FU2, and FU3) on page 95.

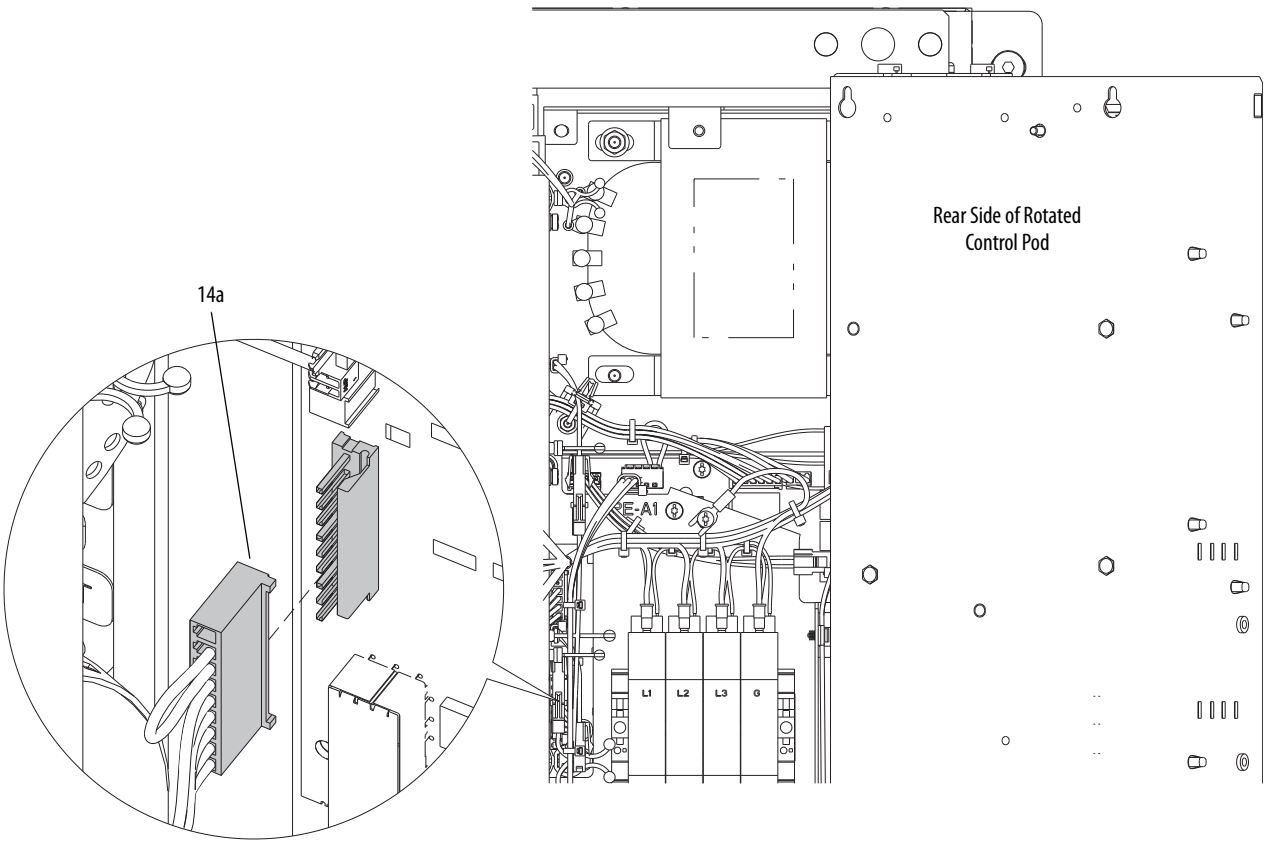
12. Remove the two M6 x 14-mm screws that secure the left bus bar rail to the left rail supports. Remove the left rail with the three AC input bus bars attached.



13. Remove the EMC filter board. See Remove the Converter EMC Filter Circuit Board on page 89.

14. For the right bus bar rail:

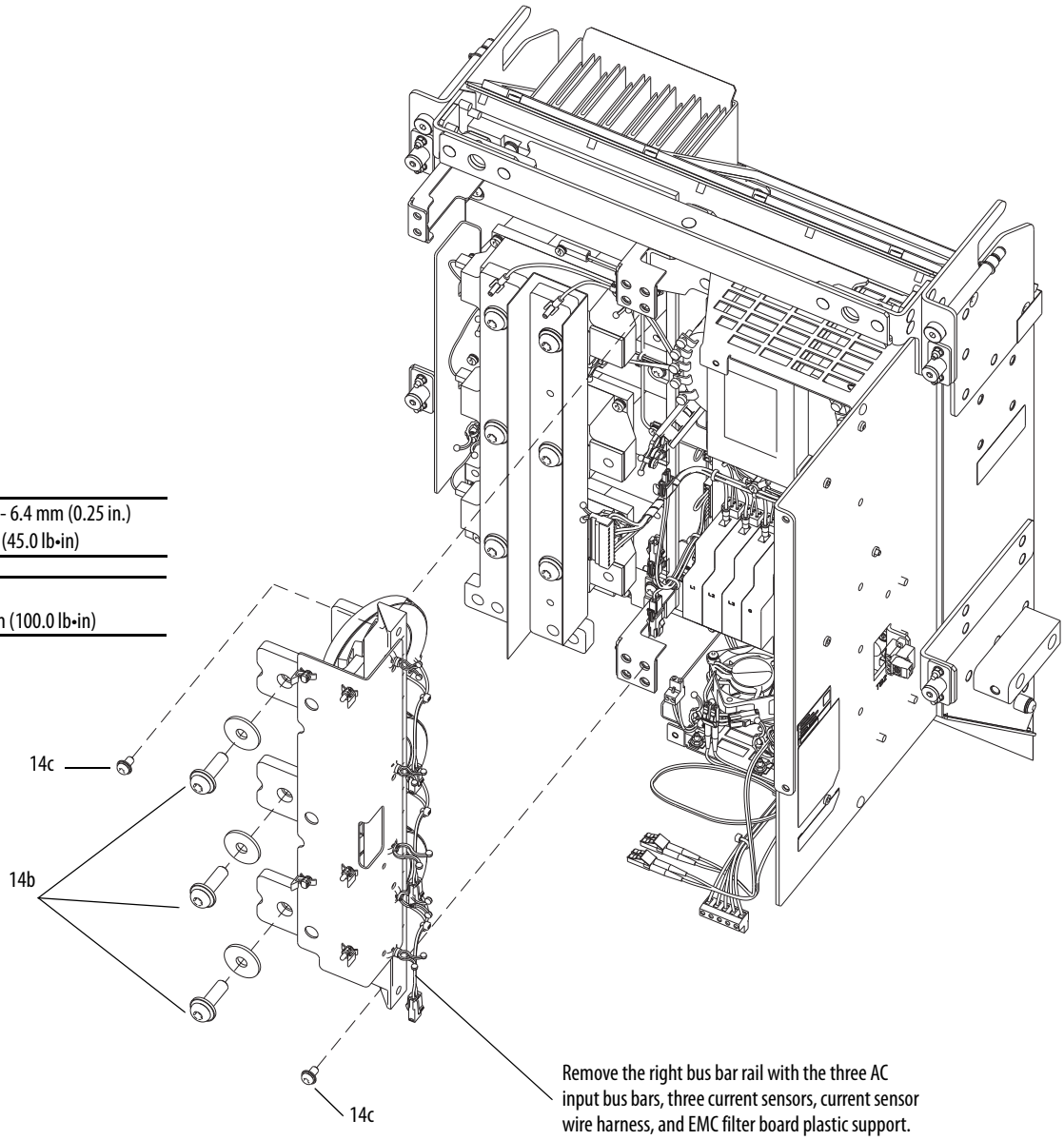
a. Disconnect the current sensor wire harness J6 connector from the converter gate board P6 terminal.



b. Remove the three M10 x 30-mm screws and flat washers that secure the AC input bus bars to the SCRs.

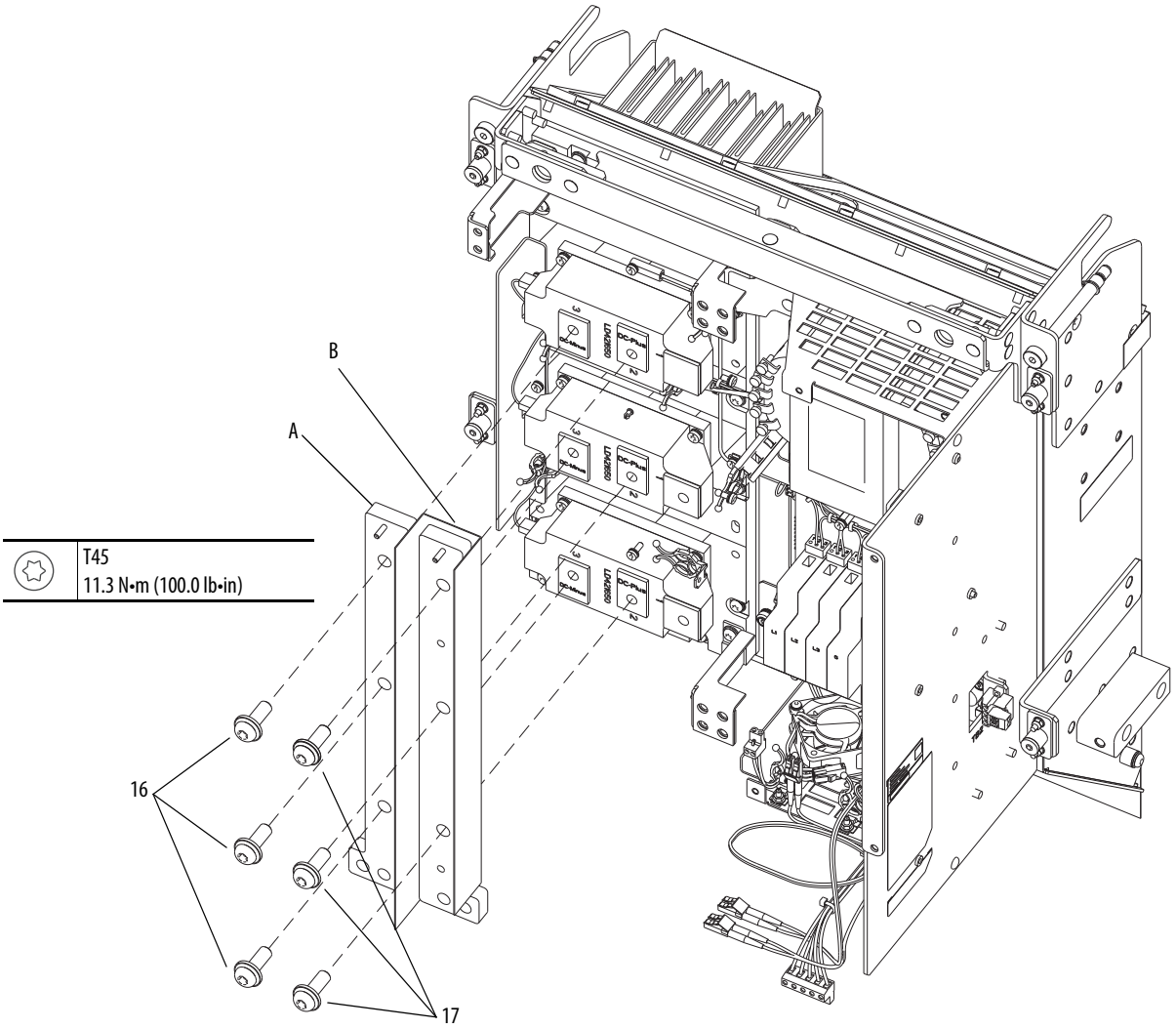
c. Remove the two M6 x 14-mm screws that secure the right bus bar rail to the right rail supports. Remove the right bus bar rail with three AC input bus bars, three current sensors, current sensor wire harness, and EMC filter board plastic support attached.

M6	T20 or F - 6.4 mm (0.25 in.) 5.1 N•m (45.0 lb•in)
M10	T45 11.3 N•m (100.0 lb•in)



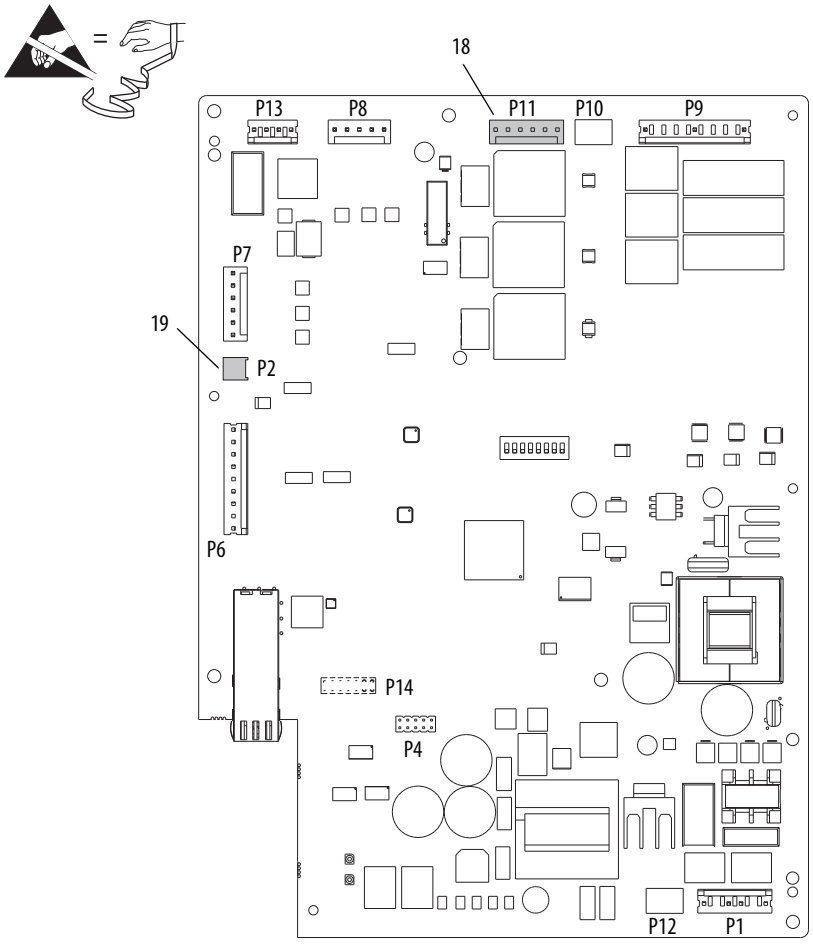
15. Remove the DC bus wire harness. See Remove the DC Bus Sense Wire Harness on page 97.

16. Remove the three M10 x 30-mm screws that secure the –DC bus bars (A) to the SCRs and remove the -DC bus bars.
17. Remove the three M10 x 30-mm screws that secure the +DC bus bars with insulation sheet attached (B) to the SCRs and remove the +DC bus bars and insulation sheet.



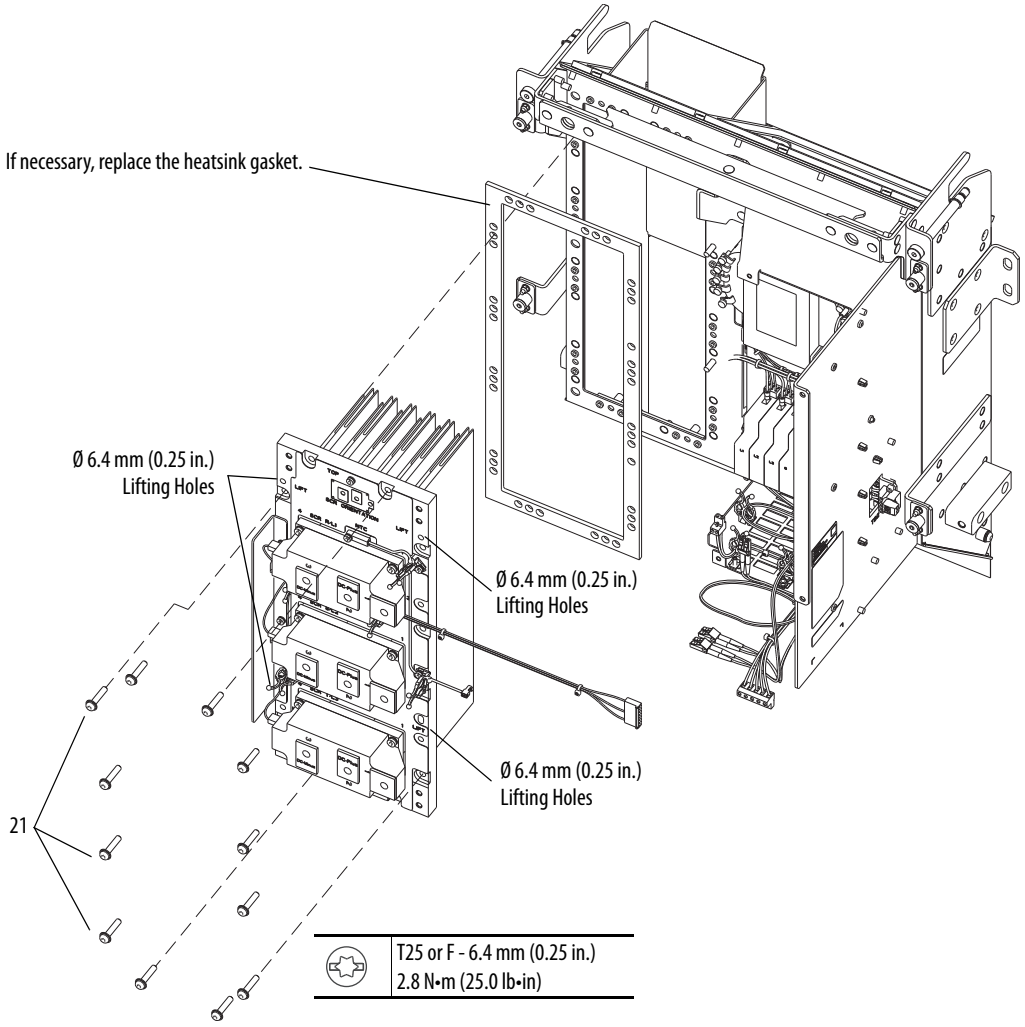
18. Disconnect the SCR wire harness J11 connector from the converter gate board P11 terminal.

19. Disconnect the NTC wire harness connector from the converter gate board P2 terminal.



20. Secure equipment and hardware capable of lifting 17 kg (37 lb) to the lifting holes identified on the SCR assembly.
21. Remove the 12 M5 x 20-mm screws that secure the assembly to the converter duct.
22. Remove the converter SCR assembly.

IMPORTANT Do NOT remove the SCRs from the assembly.



Install the Converter SCR Assembly

1. Inspect the converter heat sink gasket on the converter duct for damage and replace it if necessary. See Converter Heat Sink Gasket Replacement on page 116.
2. Install the converter SCR assembly in the reverse order of removal.

IMPORTANT Verify that the J2/J3 connector is reassembled in the appropriate location (P2 or P3) on the EMC filter board.

IMPORTANT Verify that the control-transformer primary wire harness lead wires H1 and Hx are connected to the correct input terminals. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information. If the wires are connected to the wrong terminals, drive damage can occur.

IMPORTANT If you replace the external NTC, you must apply thermal grease to the bottom of the NTC before securing it to the SCR assembly heatsink.

Converter Heat Sink Gasket Replacement

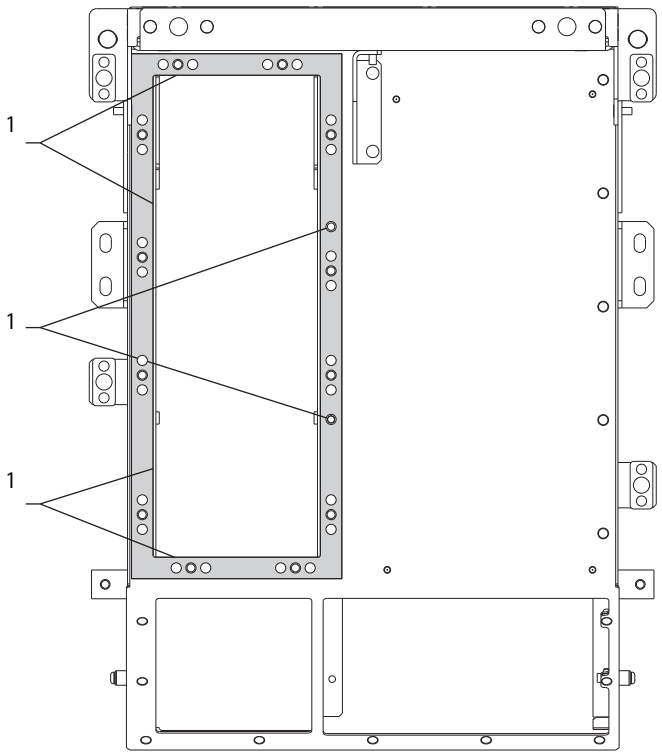
Remove the Converter Heat Sink Gasket

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the converter SCR assembly. Remove the Converter SCR Assembly on page 107.
5. Carefully remove the gasket and any gasket material that can be stuck to the sealing surface.
6. Clean the converter duct surface with a 50% isopropyl alcohol / 50% water mixture.

Install the Converter Heat Sink Gasket

Note: One side of the heat sink gasket is coated with an adhesive. Take care to align the gasket properly before fully removing the paper liner and exposing the adhesive.

1. Begin removing the paper liner as you align the replacement gasket with the duct edges and cutouts as shown here and press the gasket into place on the duct.



2. Install the converter SCR assembly in the reverse order of removal. See Install the Converter SCR Assembly on page 116.

Inverter Power-supply Wire Harness Removal/ Installation

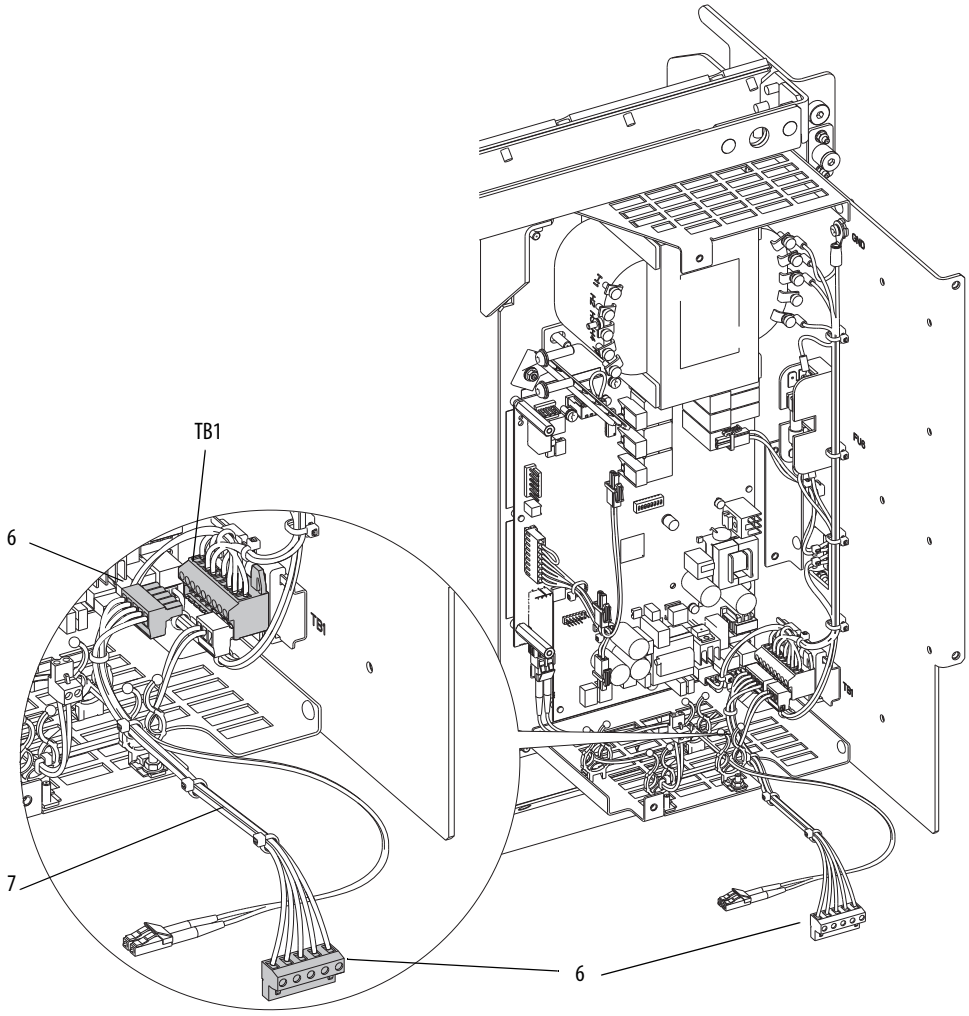
Remove the Inverter Power-supply Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

5. Remove the inverter circuit board connections cover from the inverter. See Inverter Circuit Board Connections Cover Removal/Installation on page 234.
6. Disconnect the inverter power-supply wire harness from the inverter power supply board P6 terminal and converter terminal block TB1.
7. Remove the inverter power supply harness.



Install the Inverter Power-supply Wire Harness

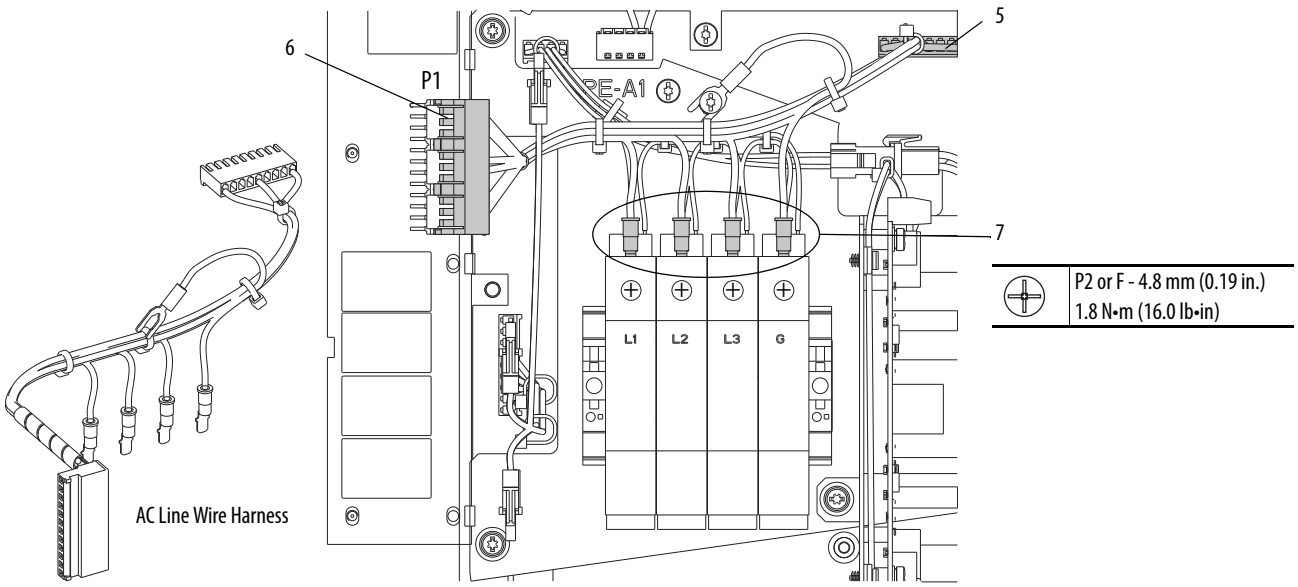
Install the inverter power-supply wire harness in the reverse order of removal. See Remove the Inverter Power-supply Wire Harness.

AC Line Wire Harness Removal/Installation

Remove the AC Line Wire Harness

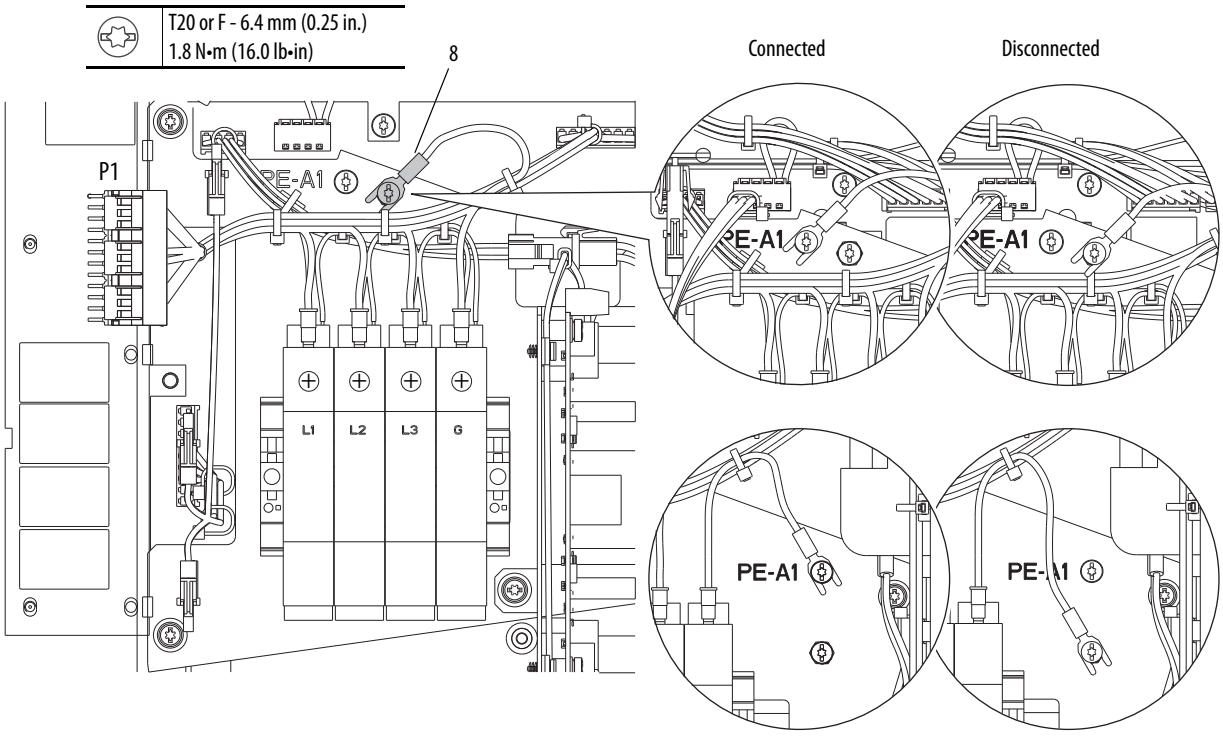
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Disconnect the J9 connector from P9 on the converter gate board.
6. Disconnect the J1 connector from P1 on the EMC filter board.
7. Loosen the Phillips head screws that secure the wires to the surge suppressor L1, L2, L3, and G terminals and remove the wires.



IMPORTANT Before you disconnect the jumper wire of the AC line wire harness, note the wire location (PE-A1 or GND terminal) on the surge suppressor mounting plate.

8. Loosen the screw that secures the jumper wire to the PE-A1 or GND terminal and remove the wire.
9. Remove the AC line wire harness.



PE-A1 and GND terminal positions on early production drives.

Install the AC Line Wire Harness

Install the AC line wire harness in the reverse order of removal. See Remove the AC Line Wire Harness on page 119.

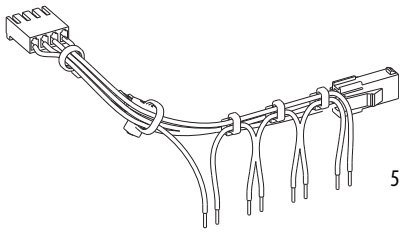
IMPORTANT Be sure that the jumper wire is reassembled in the appropriate location (PE-A1 or GND terminal) on the surge suppressor mounting plate.

Surge-suppressor Sense Wire Harness Removal/ Installation

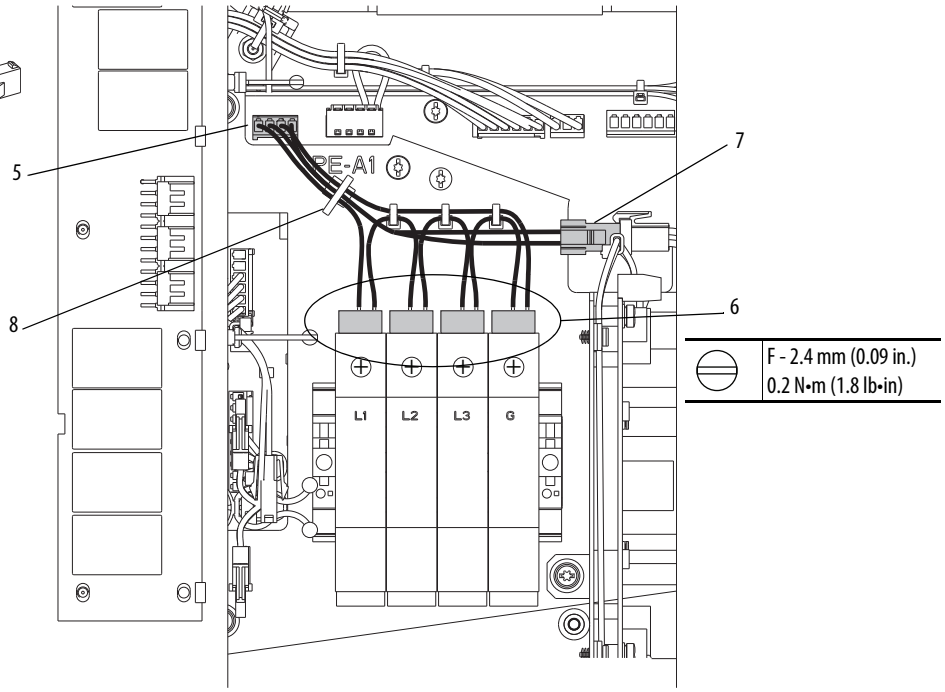
Remove the Surge-suppressor Sense Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Disconnect the J13 connector from P13 on the converter gate board.
6. Remove the four three-position surge suppressor sense wire terminal blocks from the surge suppressor.
7. Disconnect the connector from the shunt trip ST terminal.
8. Release the cable support on the surge suppressor mounting plate and remove the surge-suppressor sense wire harness.



Surge Suppressor Wire Harness



Install the Surge-suppressor Sense Wire Harness

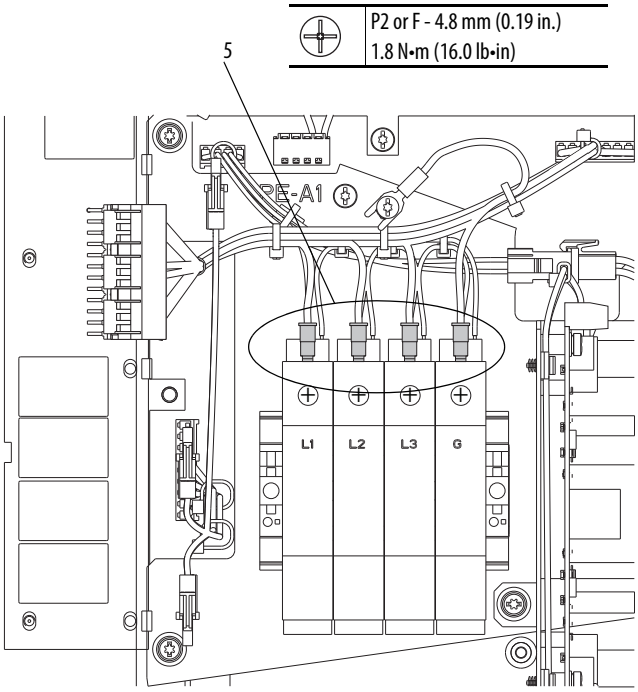
1. Remove the four three-position plug terminals from the original wire harness and install them on the replacement wire harness.
2. Install the surge-suppressor sense wire harness in the reverse order of removal. See Remove the Surge-suppressor Sense Wire Harness on page 121.

Surge Suppressor Removal/ Installation

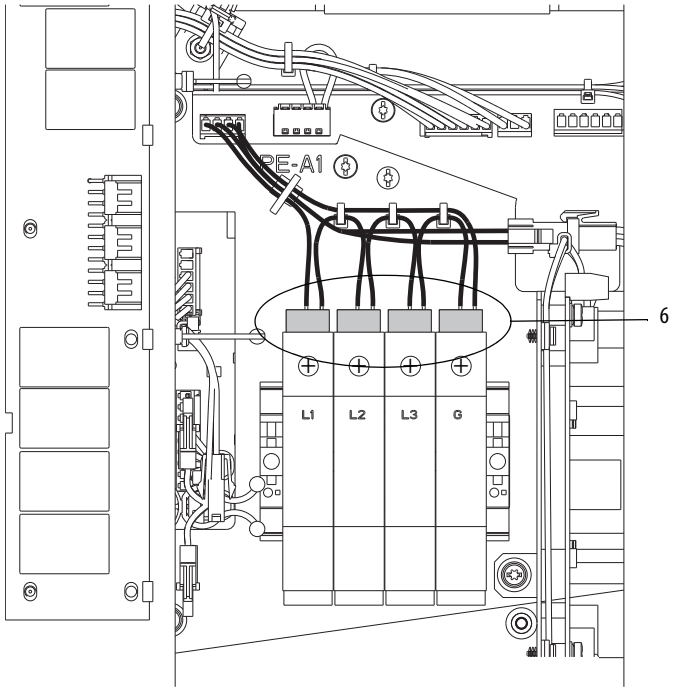
Remove the Surge Suppressor

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Loosen the Phillips head screws that secure the wires to the surge suppressor L1, L2, L3, and G terminals and remove the wires.



6. Remove the four, three-position surge suppressor sense wire terminal blocks from the surge suppressor.



7. Release the surge suppressor from the DIN rail and remove the surge suppressor.

Install the Surge Suppressor

Install the surge suppressor in the reverse order of removal. See Remove the Surge Suppressor on page 122.

Surge Suppressor Assembly Removal/Installation

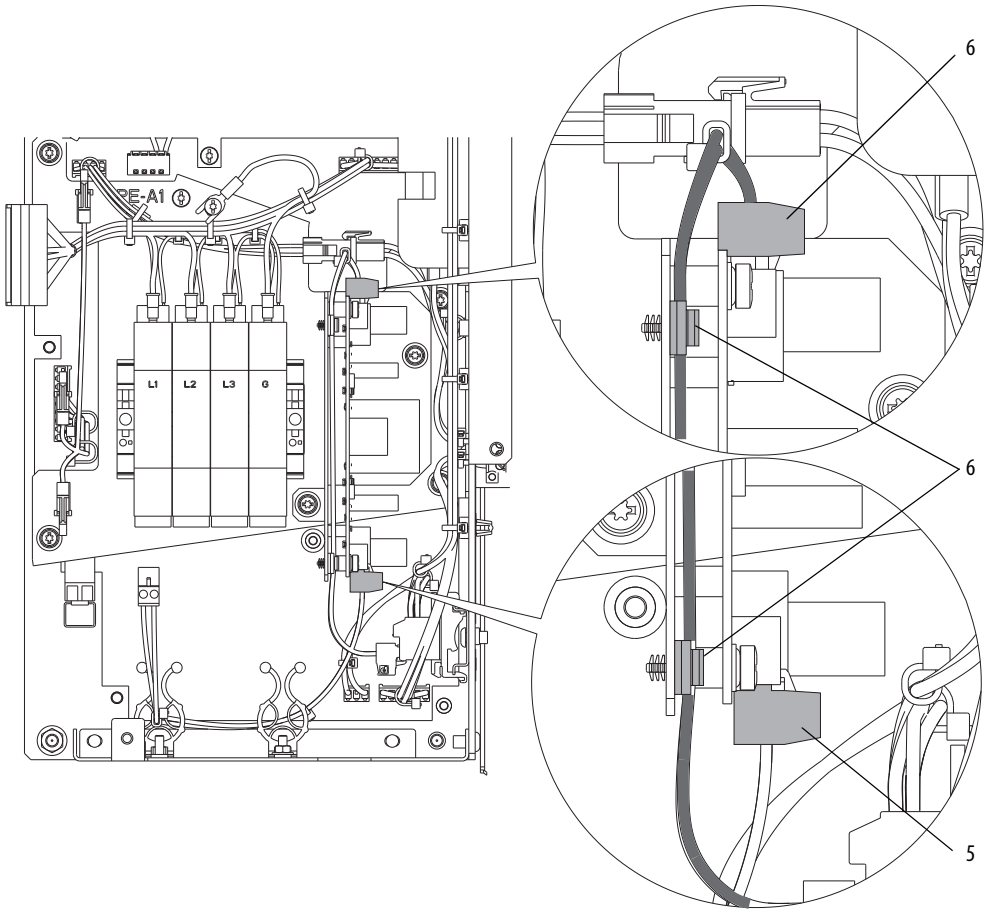
Remove the Surge Suppressor Assembly

Note: This procedure is used only to gain access to the converter gate board.

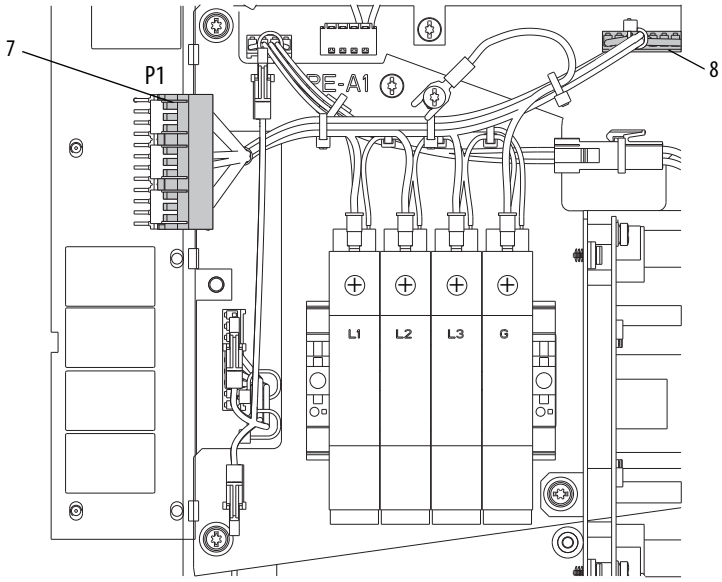
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

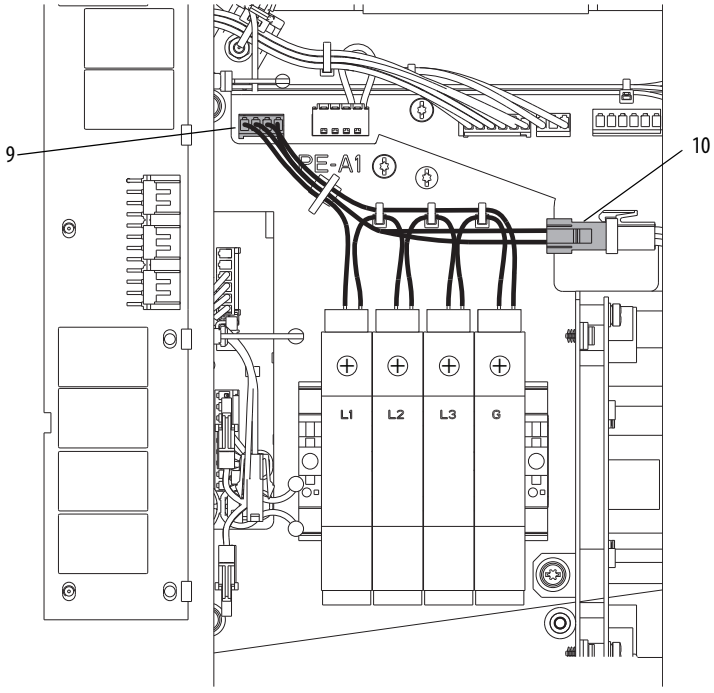
5. For 600/690V AC input drives only, disconnect the 24-V wire harness two-position connector from the bottom of the control power isolator board.
6. For 600/690V AC input drives only, disconnect the upper 24V wire harness two-position connector from the top of the control power isolator board. Disengage the harness from the two side entry cable supports.



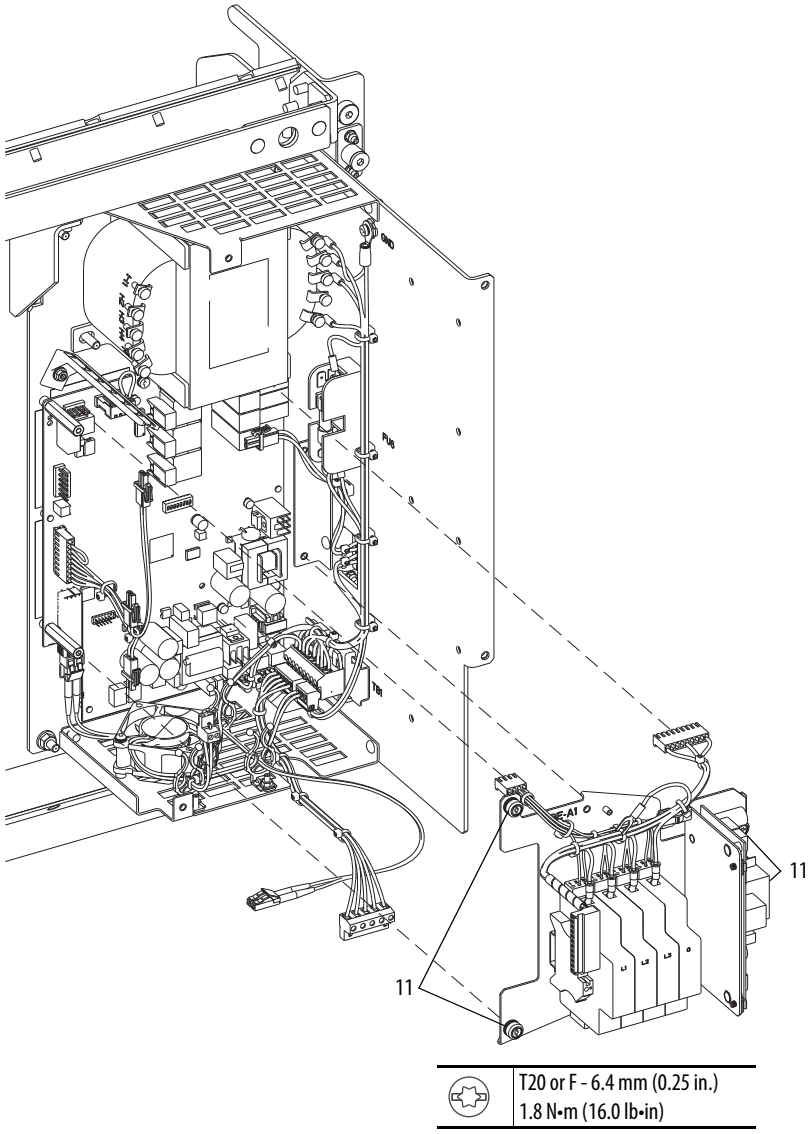
7. Disconnect the J1 connector from the P1 terminal on the EMC filter board.
8. Disconnect the J9 connector from the P9 terminal on the converter gate board.



9. Disconnect the J13 connector from the P13 terminal on the converter gate board.
10. Disconnect the connector from the ST connector on the 24V/240V wire harness.



11. Loosen the four, captive M4 panel fasteners on the surge suppressor mounting plate and remove the surge suppressor assembly.



Install the Surge Suppressor Assembly

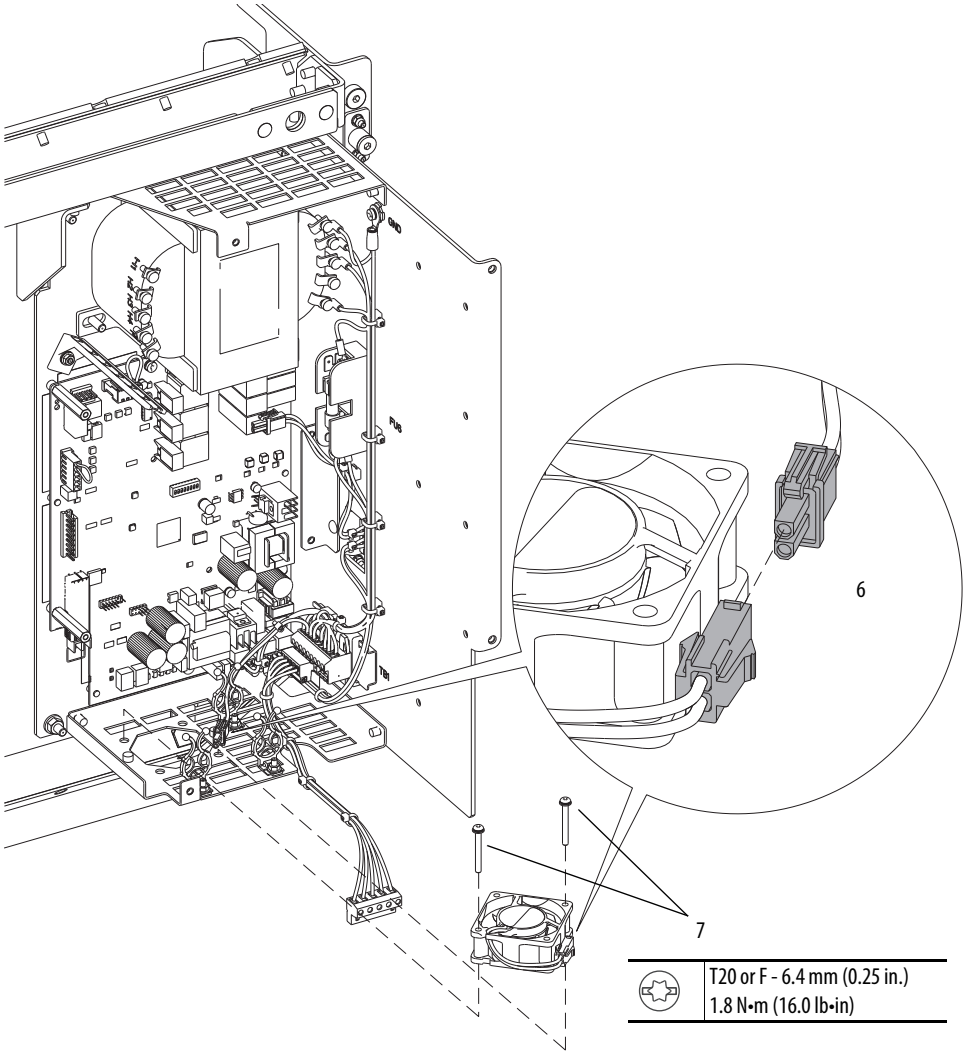
Install the surge suppressor assembly in the reverse order of removal. See Remove the Surge Suppressor Assembly on page 123.

Converter Gate Board Stirring Fan Removal/ Installation

Remove the Converter Gate Board Stirring Fan

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Remove the surge suppressor assembly. See Remove the Surge Suppressor Assembly on page 123.
6. Disconnect the two-position fan connector from the stirring fan to the 24V/240V wire harness.
7. Remove two M4 x 35-mm long screws that secure the stirring fan to the control panel and remove the stirring fan.



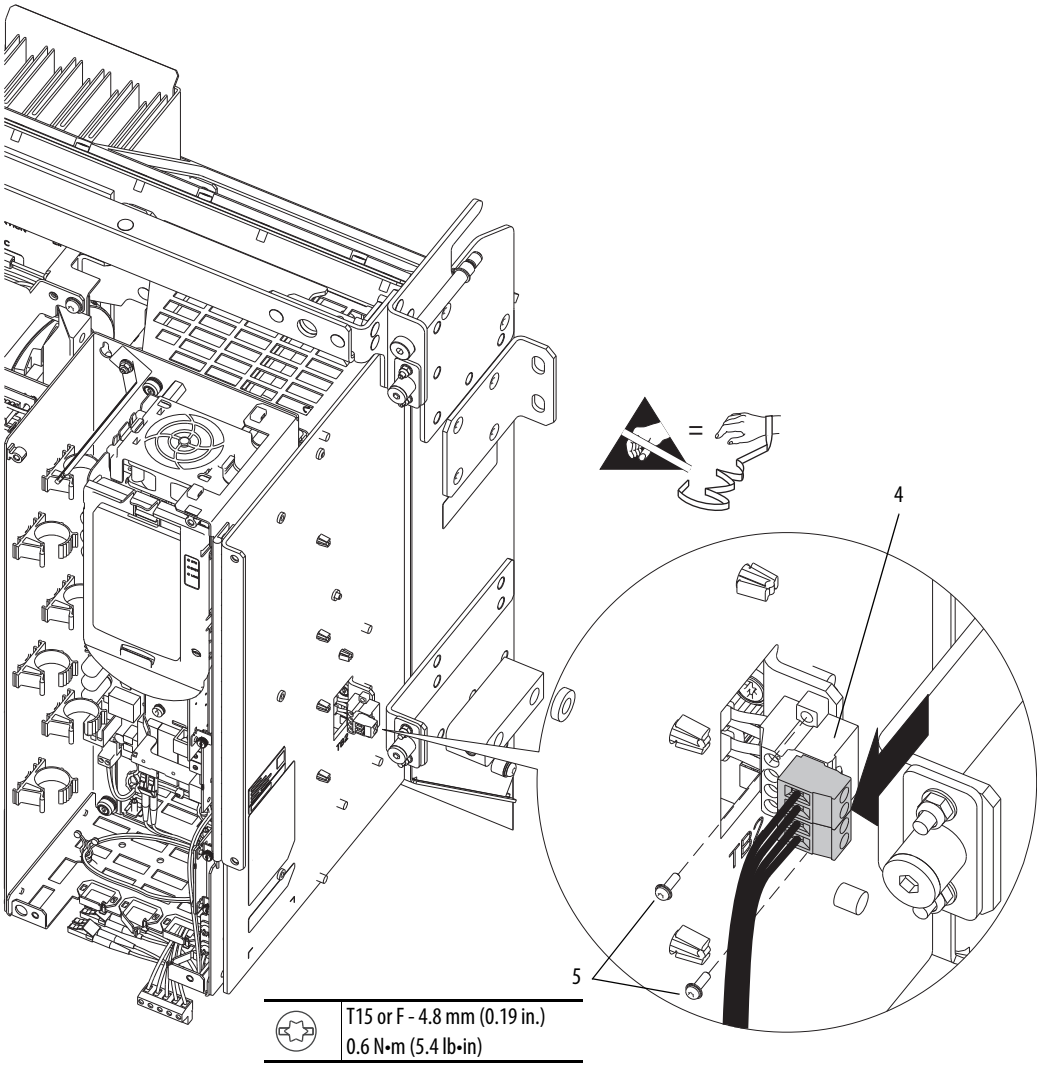
Install the Converter Gate board Stirring Fan

Install the stirring fan in the reverse order of removal. See Remove the Converter Gate Board Stirring Fan on page 127.

24V/240V Power Wire Harness Removal/ Installation

Remove the 24V/240V Power Wire Harness

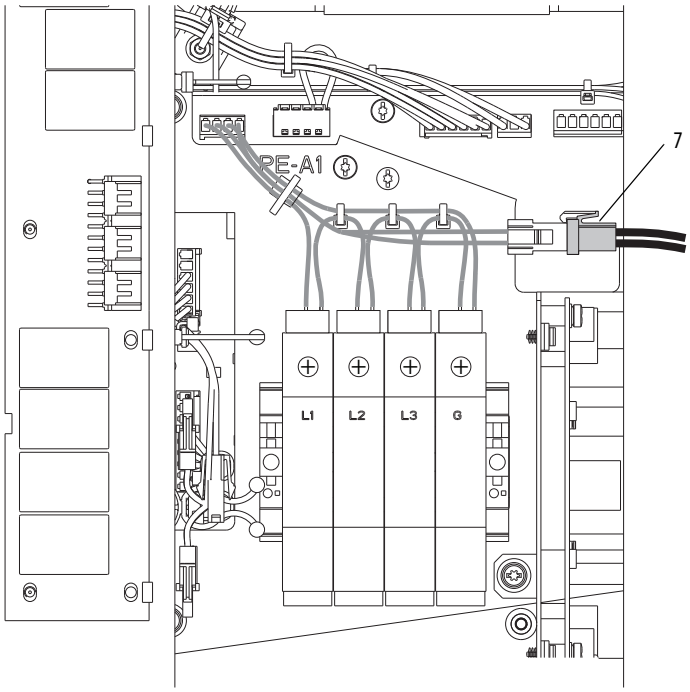
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Disconnect the enclosure fan harness and enclosure shunt trip harness from TB2.
5. Remove the two M3 screws from TB2.



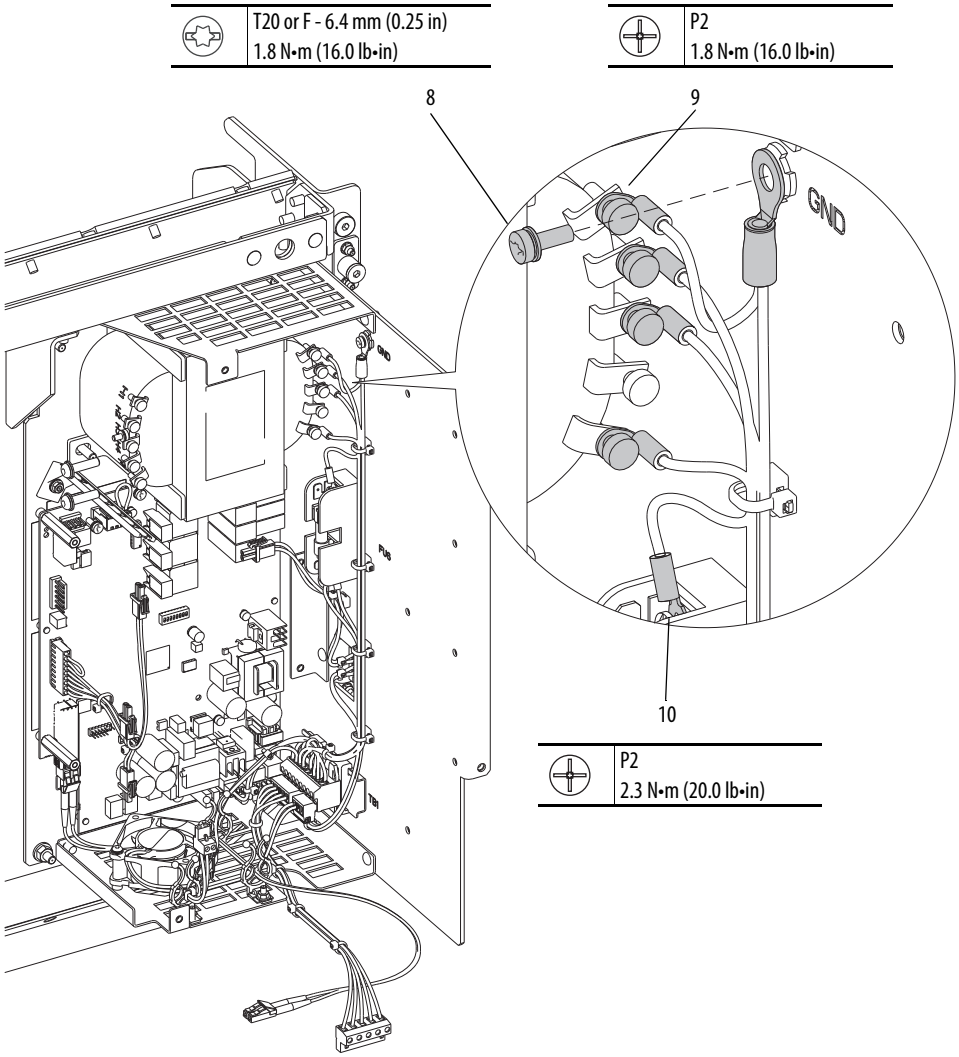
6. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

7. Disconnect the connector from the shunt trip ST terminal.

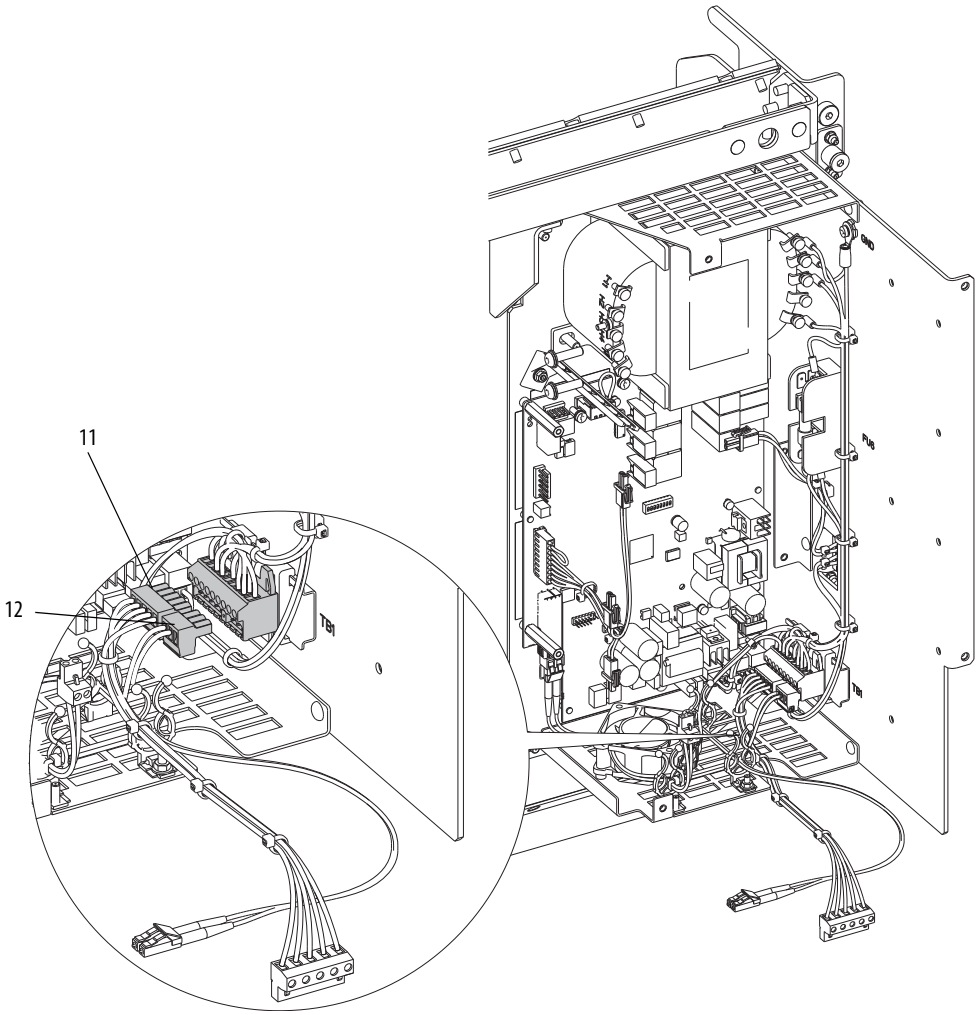


8. Remove the M4 screw that secures the ground wire lug to the converter control panel and remove the ground wire lug.
9. Loosen the M4 screws that secure the four X1 and X2 lead wires to the control transformer and remove the leads.
10. Loosen the captive screws that secure the two X2 lead wires from the FU6 fuse block and remove the leads.

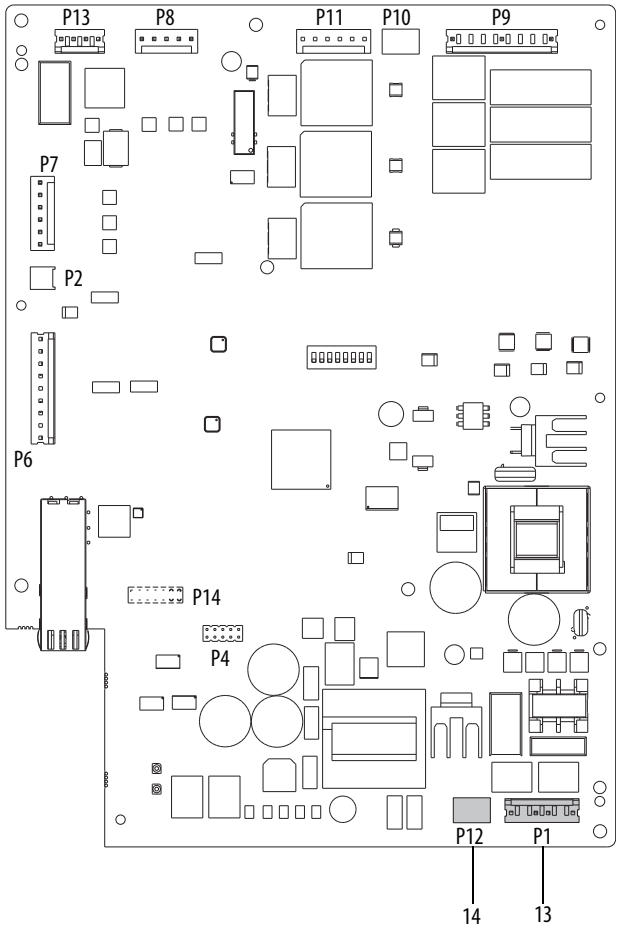


11. Disconnect the five-position inverter power supply wire harness connector from TB1.

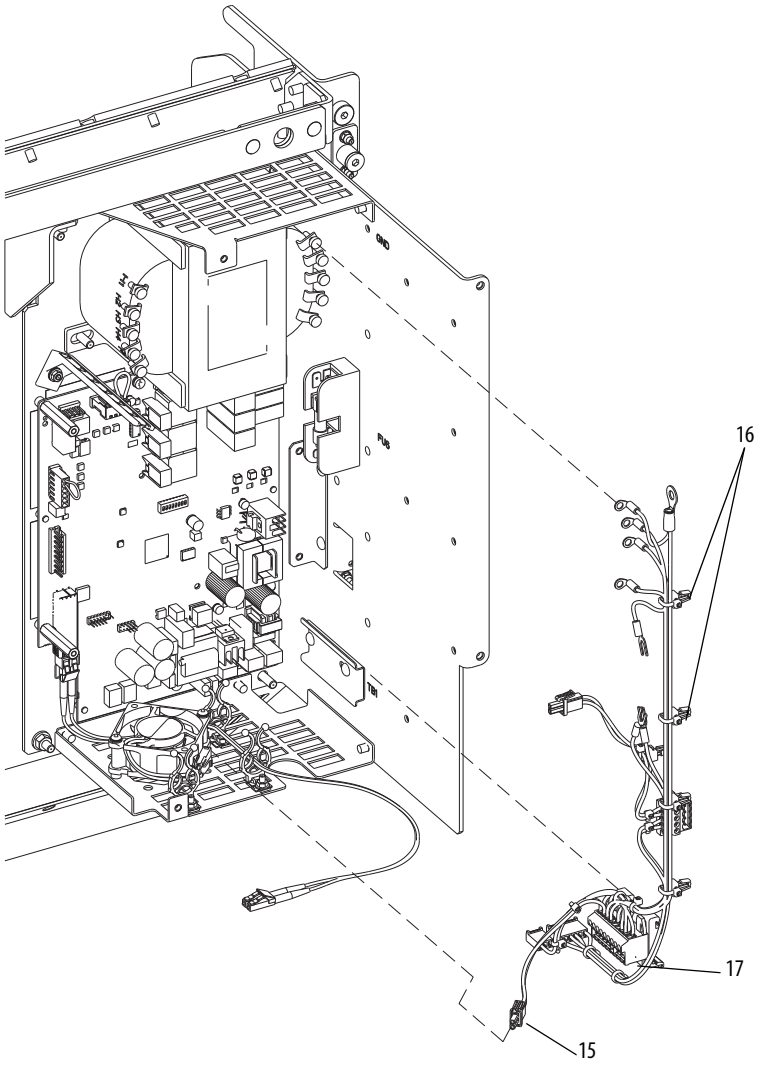
12. Disconnect the three-position 24V wire harness connector from TB1.



13. Disconnect the enclosure fan six-position connector from converter gate board P1.
14. Disconnect the system 24 V three-position connector from converter gate board P12.



15. Disconnect the two-position connector from the stirring fan.
16. Loosen the four cable tie mounts along the outside right surface of the converter control panel by using a pliers.
17. Release terminal block TB1 from the DIN rail and remove the 24V/240V power wire harness from the converter control panel.



Install the 24V/240V Power Wire Harness

Install the 24V/240V power wire harness in reverse order of removal. See Remove the 24V/240V Power Wire Harness on page 128.

Control-transformer Primary Wire Harness Removal/ Installation

Remove the Control-transformer Primary Wire Harness

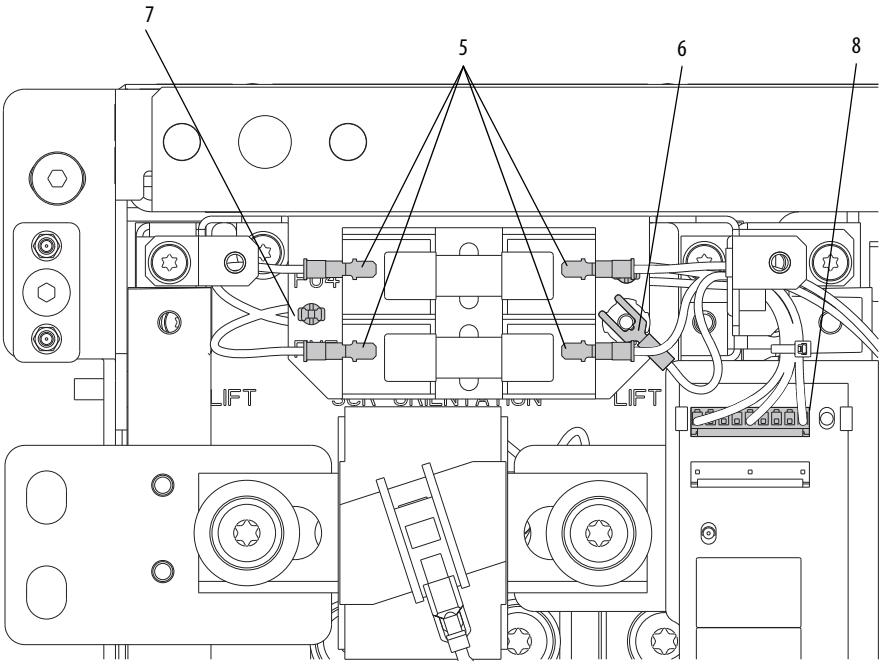
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Disconnect the wire harness FU4-1, FU4-2, FU5-1, and FU5-2 connectors from the FU4/FU5 fuse block.
6. Disconnect the ground wire from the fuse bracket by loosening the screw.
7. Release the two cable tie supports from the fuse bracket.

IMPORTANT Before you disconnect the control-transformer primary wire harness J2/J3 connector from the EMC filter board, note the J2/J3 location. The P3 (PE-A2) terminal is grounded. The P2 terminal is not grounded.

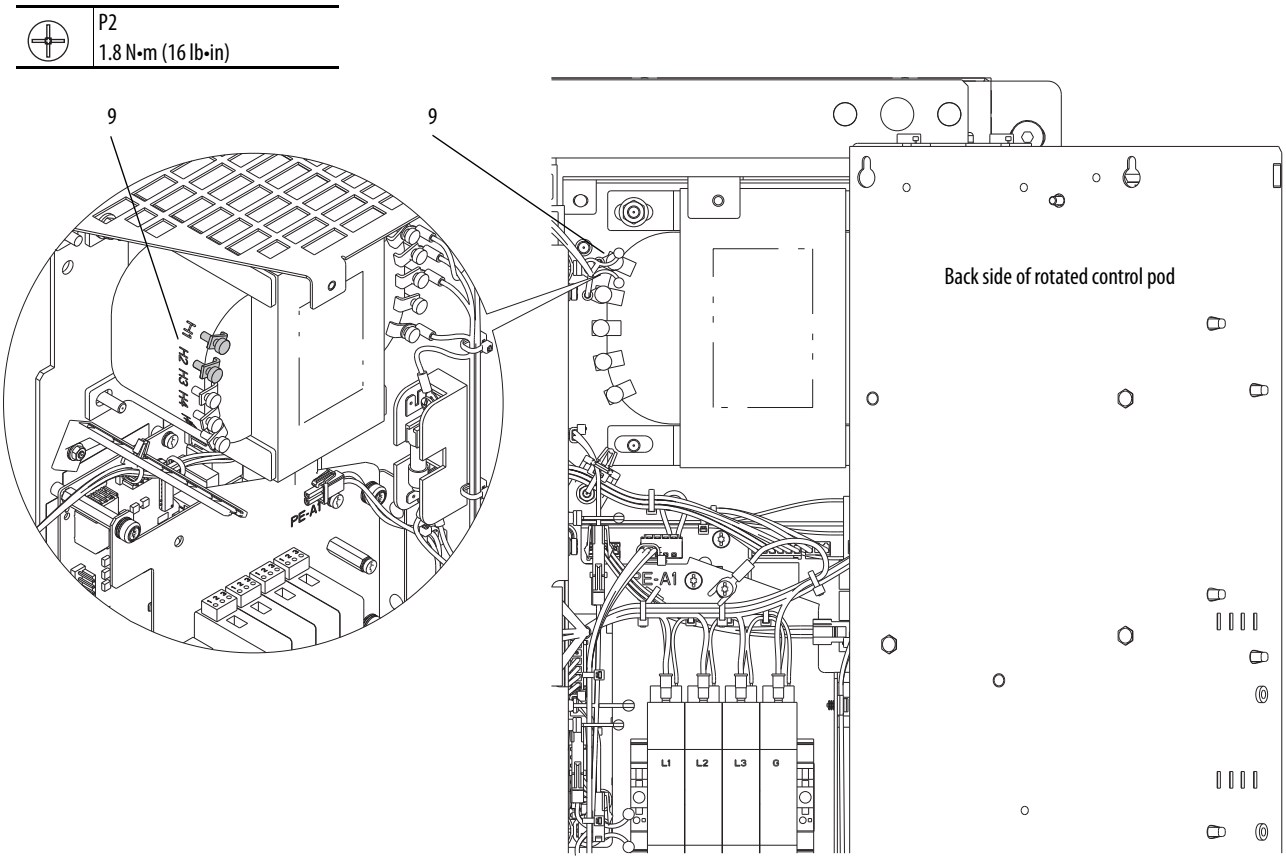
The jumper settings are provided in the PowerFlex 750-Series Power Jumpers Installation Instructions, publication 750-IN011, available at http://www.rockwellautomation.com/literature/.

8. Remove the J2/J3 connector from the P2 or P3 connector on the EMC filter board.



IMPORTANT Before you disconnect the control-transformer primary wire harness, note the terminal connections. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information.

9. Disconnect the control-transformer primary wire harness lead wires H1 and Hx from the control transformer input terminals. Release the cable support securing the harness to the EMC filter plastic support.



10. Slide one end of the wire harness through the fuse bracket and remove the control-transformer primary wire harness.

Install the Control-transformer Primary Wire Harness

Install the control-transformer primary wire harness in the reverse order of removal. See Remove the Control-transformer Primary Wire Harness on page 134.

IMPORTANT	Verify that the PE-A2 connector is reassembled in the appropriate location (P2 or P3) on the EMC filter board.

IMPORTANT	Verify that the control-transformer primary wire harness lead wires H1 and Hx are connected to the correct input terminals. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information. If the wire are connected to the wrong terminals, drive damage can occur.

Control Transformer Removal/Installation

Remove the Control Transformer

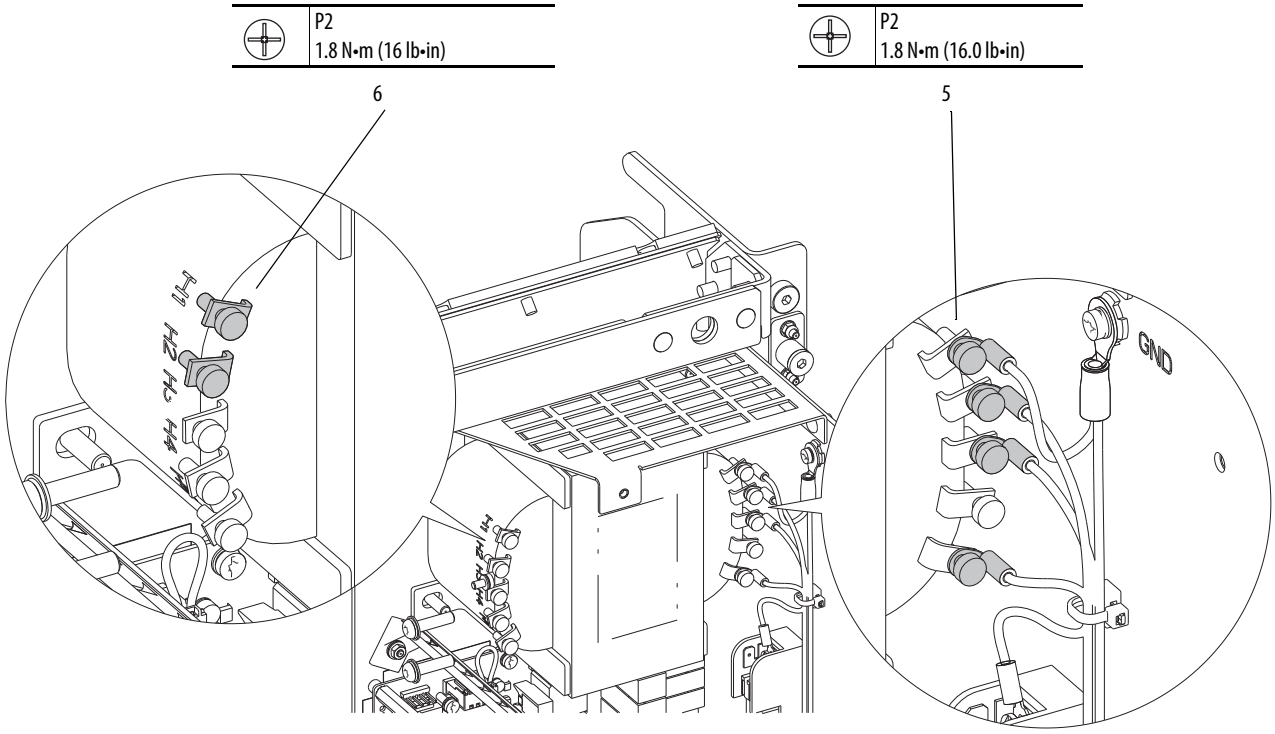
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

5. Loosen the M4 screws that secure the four X1 and X2 lead wires to the control transformer and remove the leads.

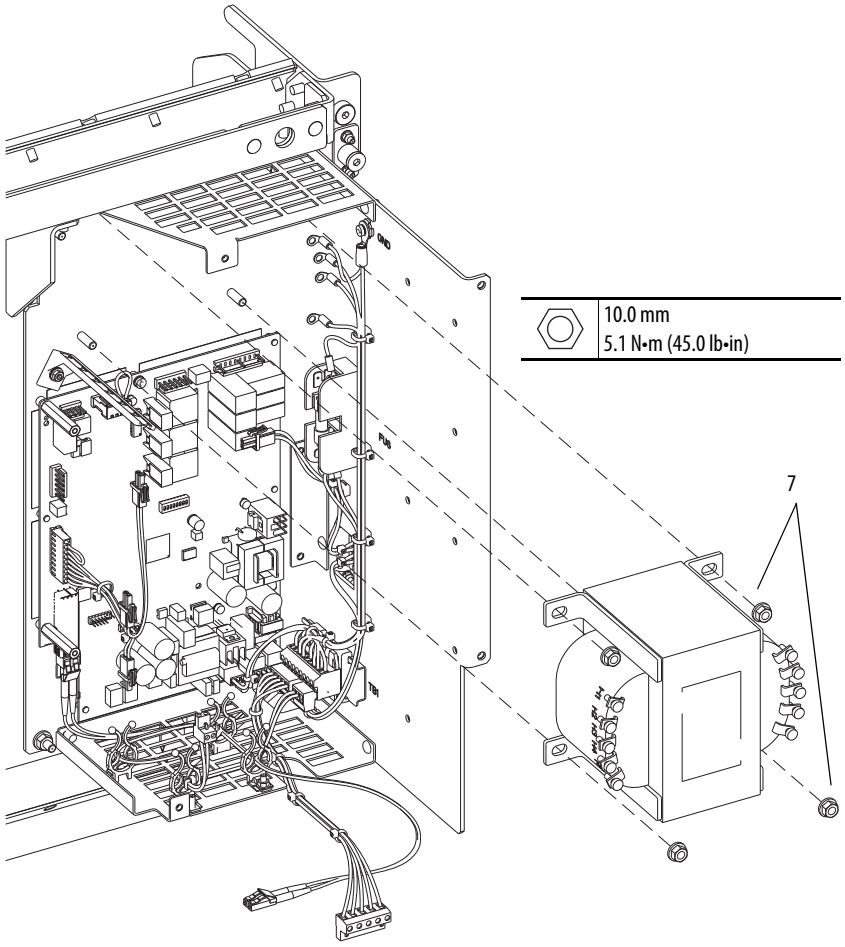
IMPORTANT	Before you disconnect the control-transformer primary wire harness, note the terminal connections. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information.

6. Disconnect the control-transformer primary wire harness lead wires H1 and Hx from the control transformer input terminals. Release the cable support securing the harness to the EMC filter plastic support.



IMPORTANT The control transformer is heavy. Be sure to support it as you remove the screws, so it does not fall and damage other components.

7. Remove four M6 hex nuts that secure the control transformer to the chassis and slide the control transformer forward off the control panel mounting studs.



Install the Control Transformer

Install the control transformer in the reverse order of removal. See Remove the Control Transformer. See AC Input Drive Control Transformer Schematic Diagram on page 436 for more information.

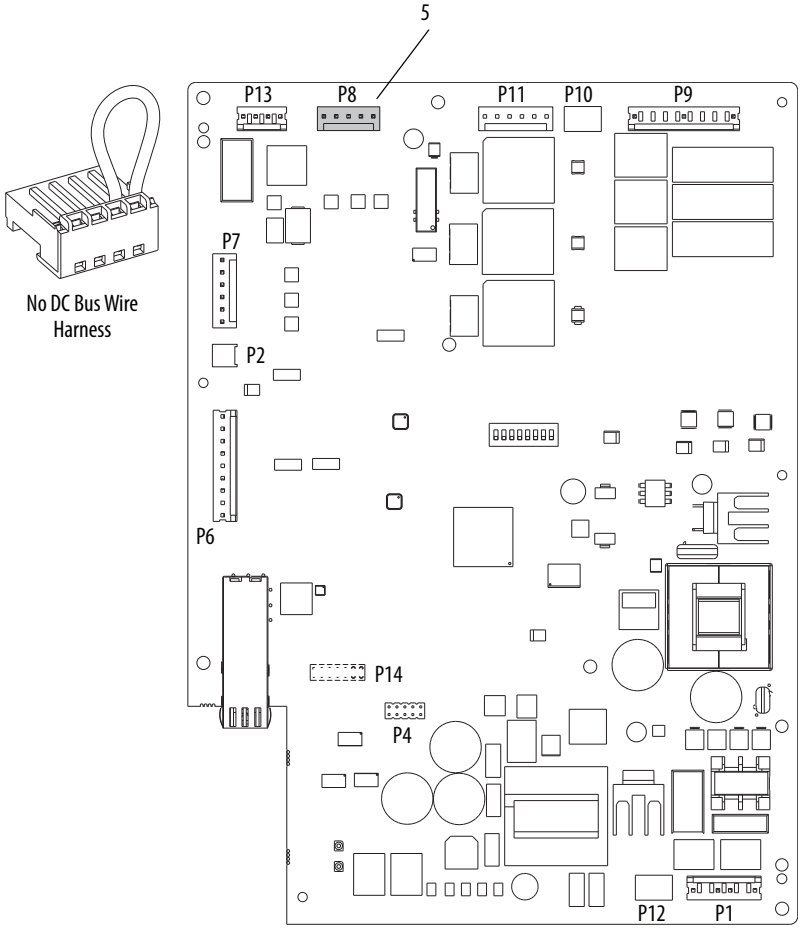
IMPORTANT Verify that the control-transformer primary wire harness lead wires H1 and Hx are connected to the correct input terminals. The control transformer has multiple input phase terminals. See the AC Input Drive Control Transformer Schematic Diagram on page 436 for more information. If the wires are connected to the wrong terminals, drive damage can occur.

No DC Bus Fuse Wire Harness Removal/Installation (Frame 8 Drives Only)

Remove the No DC Bus Fuse Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Remove the no DC bus fuse wire harness from the converter gate board P8 terminal.



Install the No DC Bus Fuse Wire Harness

Install the No DC bus fuse wire harness in the reverse order of removal. See Remove the No DC Bus Fuse Wire Harness on page 139.

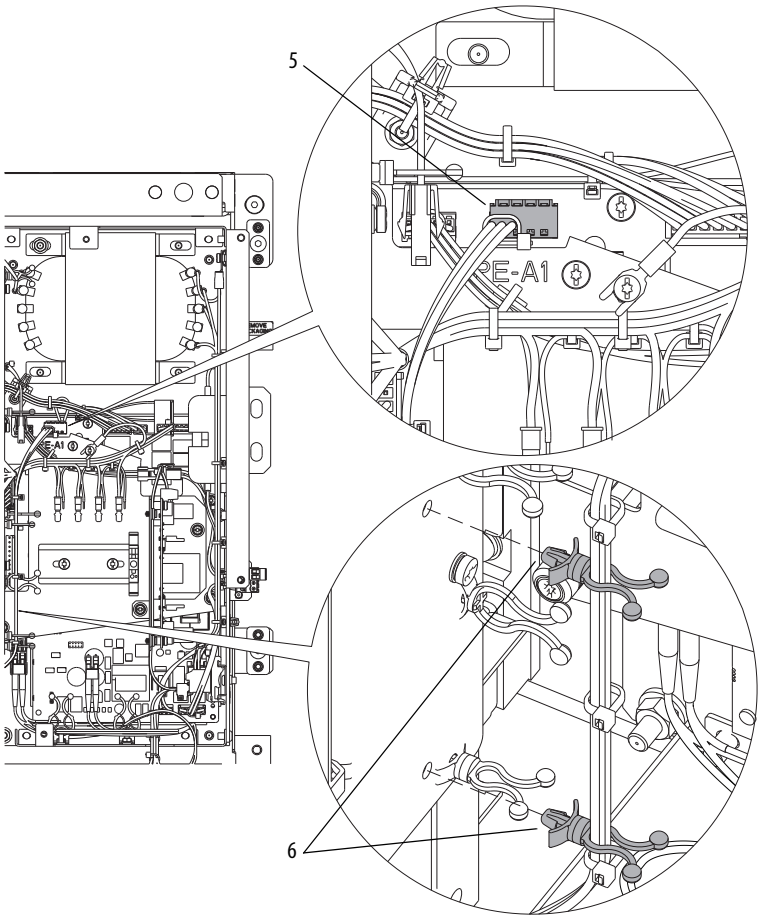
DC Bus Fuse Wire Harness Removal/Installation (Frame 9 and Larger Drives Only)

Remove the DC Bus Fuse Wire Harness

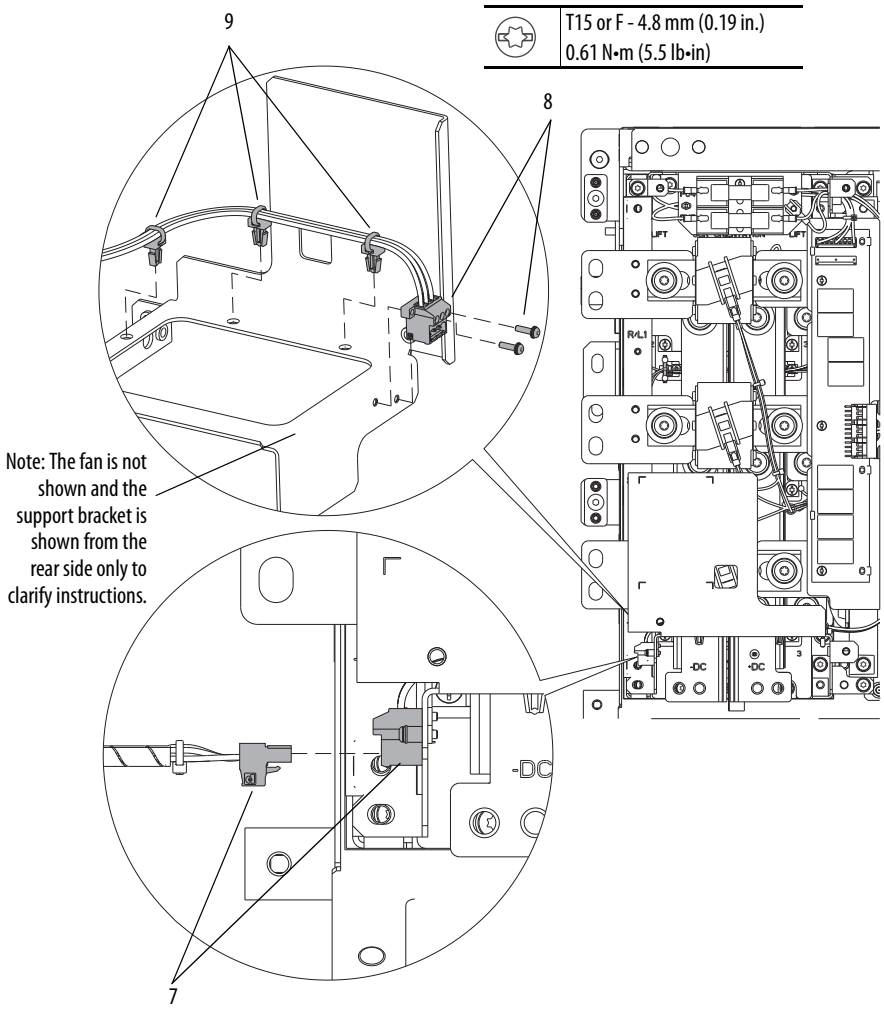
Note: This procedure is applicable to frame 9 and larger drives only.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.
5. Disconnect the four-position DC bus fuse wire harness connector J8 from P8 on the converter gate board.
6. Unlatch the two twist-lock cable supports on the AC line filter board support.



7. Disconnect the cabinet-side, three-position DC bus fuse wire harness connector from terminal block TB6 on the lower left side of the converter.
8. Remove the two M3 x 12-mm screws that secure the harness terminal block TB6 to the cover support bracket.
9. Disengage the three cable tie push mounts that secure the harness to the cover support bracket, and remove the harness.



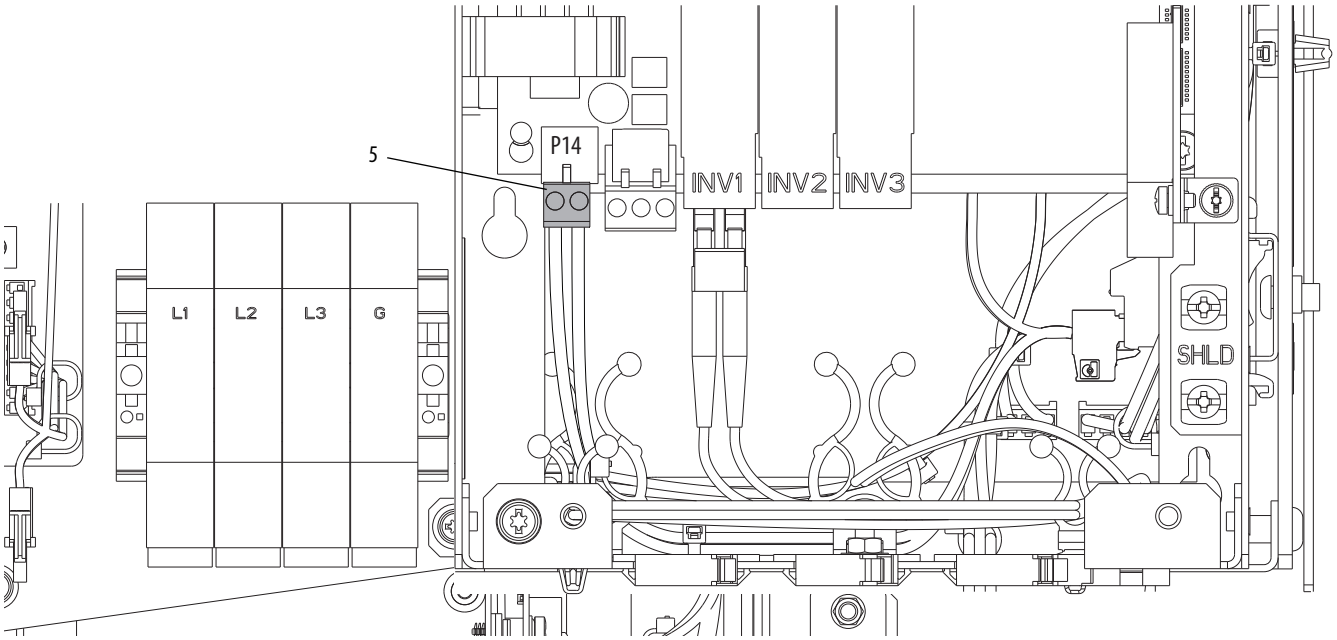
Install the DC Bus Fuse Wire Harness

Install the DC bus fuse wire harness in the reverse order of removal. See Remove the DC Bus Fuse Wire Harness on page 140.

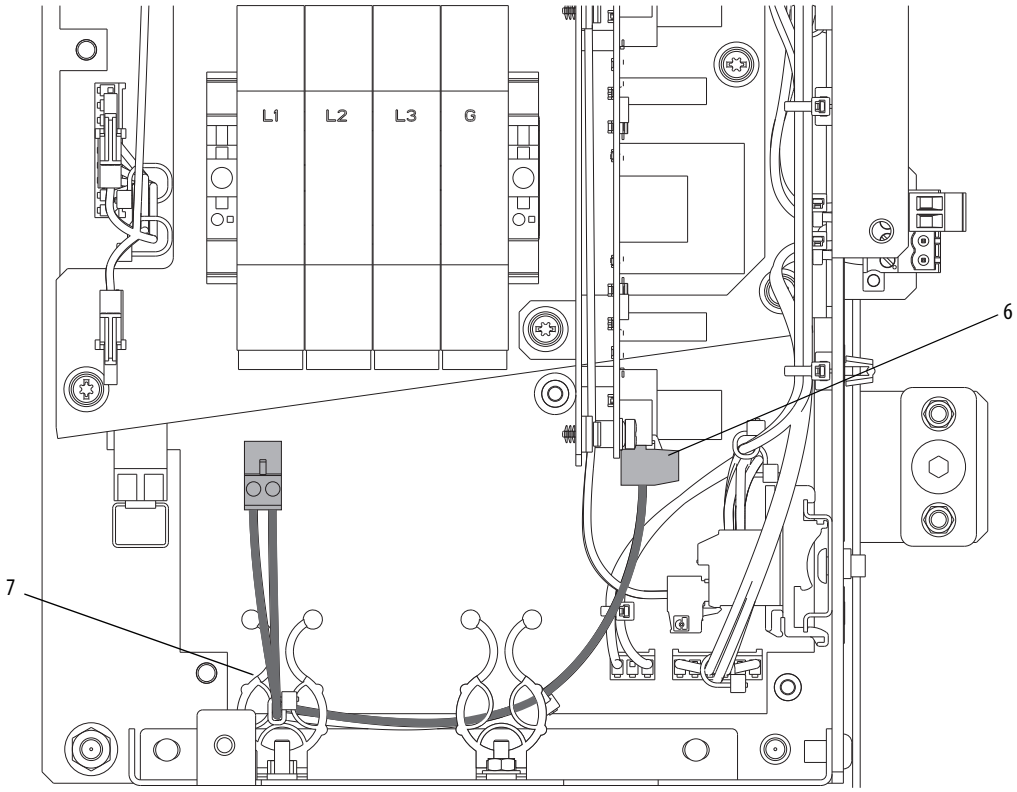
Control Power Isolator Board 24V Wire Harness Removal/ Installation (600/690V AC Input Drives Only)

Remove the Control Power Isolator Board 24V Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the door of the enclosure that contains the control pod.
4. To gain access to the converter control panel, rotate the control pod. See Rotate the Control Pod Forward on page 84.
5. If necessary, disconnect the 24-V wire harness two-position connector from P14 on the fiber interface board in the control pod.



6. Disconnect the 24-V wire harness two-position connector from the terminal block on the bottom of the control power isolator board.
7. Open the twist-lock cable support that secures the wire harness to the bottom of the control frame and remove the wire harness.



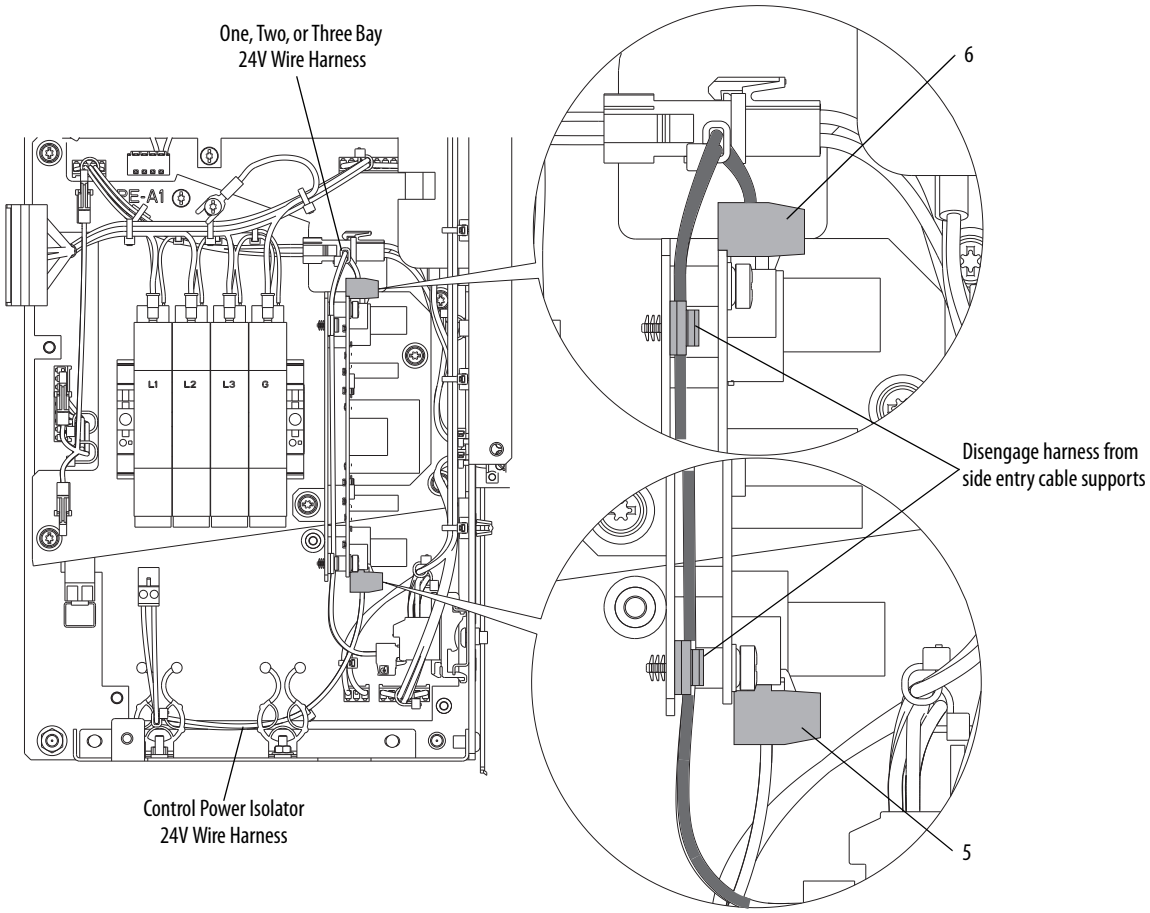
Install the Control Power Isolator Board 24V Wire Harness

Install the control power isolator board 24V wire harness in the reverse order of removal. See Remove the Control Power Isolator Board 24V Wire Harness on page 142.

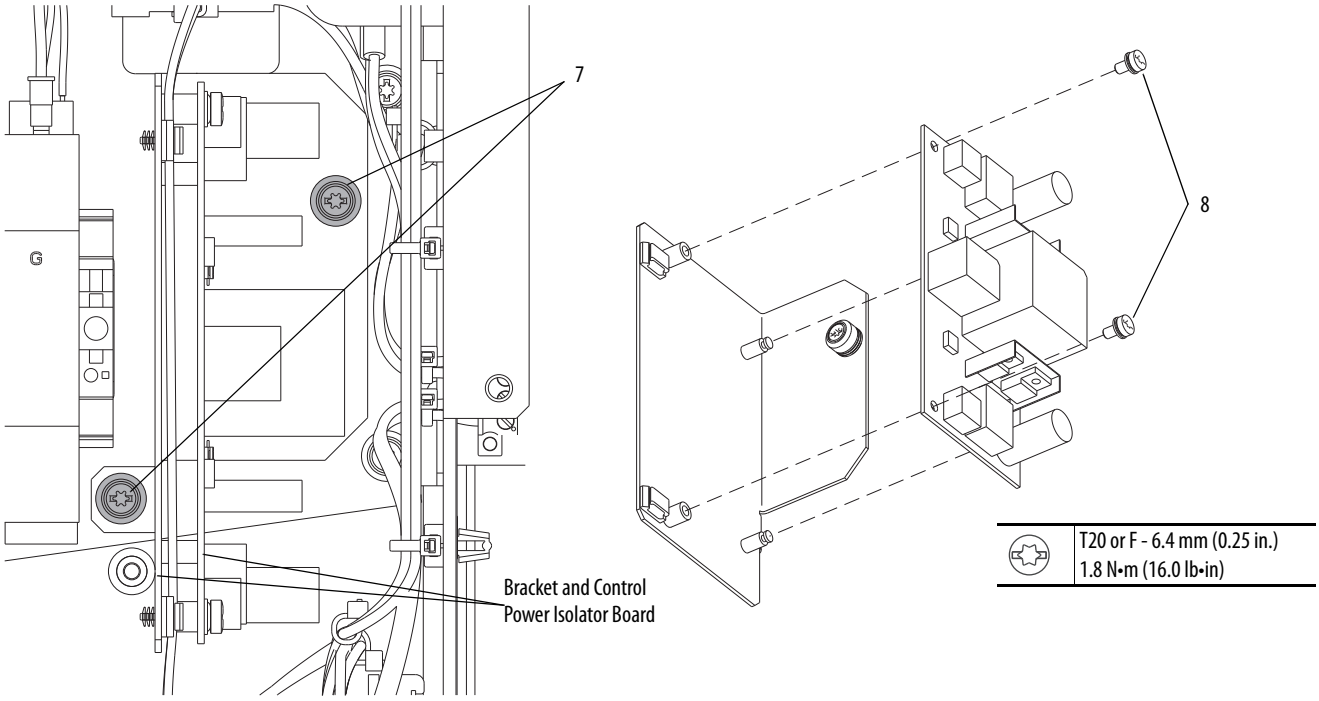
Control Power Isolator Board Removal/Installation (600/690V AC Input Drives Only)

Remove the Control Power Isolator Board

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the door of the enclosure that contains the control pod.
4. To gain access to the converter control panel, rotate the control pod. See Rotate the Control Pod Forward on page 84.
5. Disconnect the 24-V wire harness two-position connector from the bottom of the control power isolator board.
6. Disconnect the upper one, two, or three bay 24V wire harness two-position connector from the top of the control power isolator board. Disengage the harness from the two side-entry cable supports.



7. Loosen the two M4 captive screws that secure the control-power isolator board mounting bracket to the MOV mounting plate and remove the bracket with the board attached.
8. Remove the two M4 x 12-mm screws that secure the control power isolator board to the mounting bracket. Pull the board out to disengage it from two non-threaded standoffs and remove the board.



Install the Control Power Isolator Board

Install the control power isolator board in the reverse order of removal. See Remove the Control Power Isolator Board on page 144.

Converter Gate Circuit Board Removal/Installation

Remove the Converter Gate Circuit Board

IMPORTANT Determine if the existing converter gate board is series A or series B, and verify that you have ordered/received a compatible board before replacement. See Drive Series Components Compatibility on page 28 for details.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

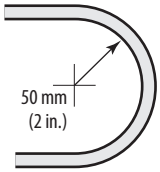
4. If the control pod is installed, then rotate the control pod to gain access to the converter control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the converter right cover. See Remove the Converter Right Cover (No Control Pod) on page 84.

5. Remove the surge suppressor assembly. See Remove the Surge Suppressor Assembly on page 123.

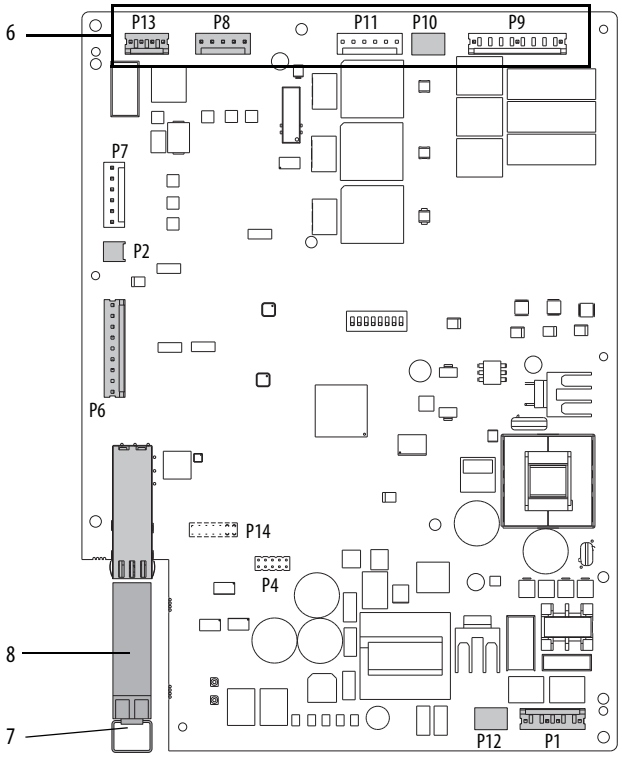
6. Disconnect all wire harnesses from the converter gate board.

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



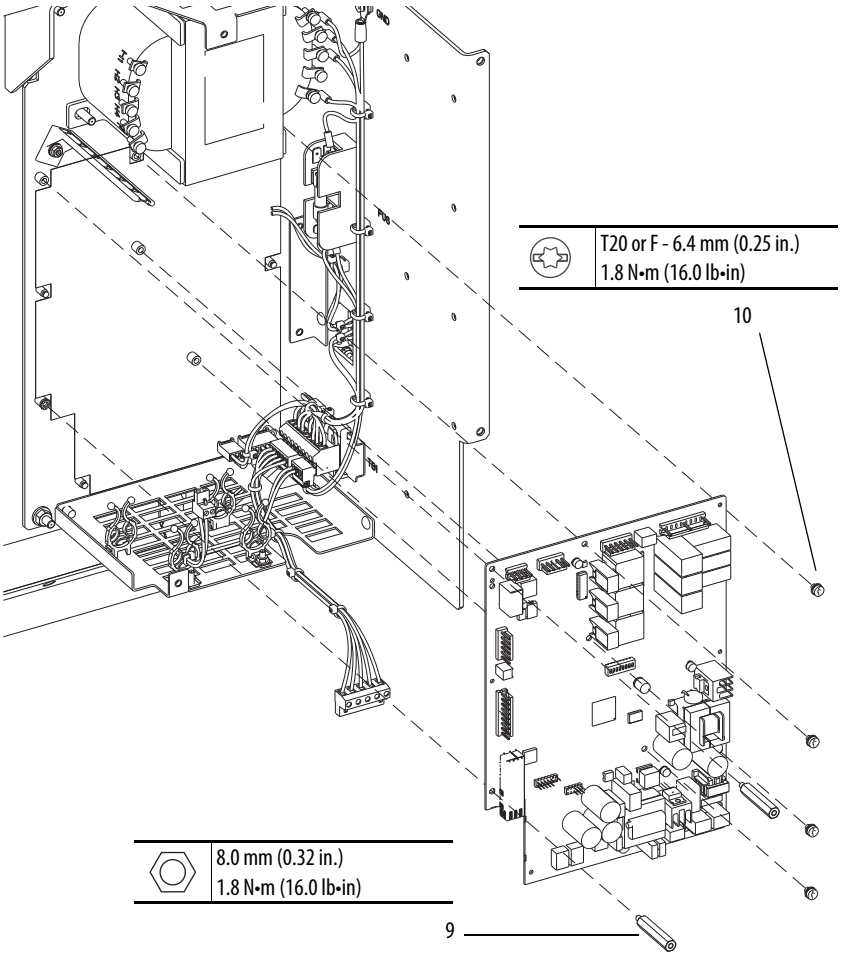
7. Disconnect the fiber-optic cable from the port in the lower left corner of the gate board.

8. From the fiber-optic cage in the lower left corner of the converter gate board, remove the fiber-optic transceiver by pulling its bale wire. Set the transceiver aside and save for reinstallation.



9. Remove the two M4 x 40-mm hex standoffs.
10. Remove the four M4 x 6-mm screws that secure the converter gate board to the converter control panel. Slide the converter gate board up to disengage its four keyhole slots and remove the board.

IMPORTANT Do not remove the insulation sheet that is attached to the converter duct.



Install the Converter Gate Circuit Board

1. Verify that the insulation sheet is attached to the converter duct.
2. Install the converter gate board in the reverse order of removal. See Remove the Converter Gate Circuit Board on page 145.

Converter Removal/ Installation

ATTENTION: Only perform a field replacement of the converter section of the power core (the converter is attached to the inverter) as part of the drive assembly removal procedure. Otherwise, equipment damage can result.

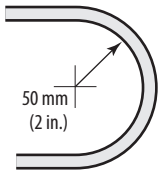
Remove the Converter from the Inverter Assembly

IMPORTANT Determine if the existing converter is series A or series B, and verify that you have ordered/received a compatible unit before replacement. See Drive Series Components Compatibility on page 28 for details.

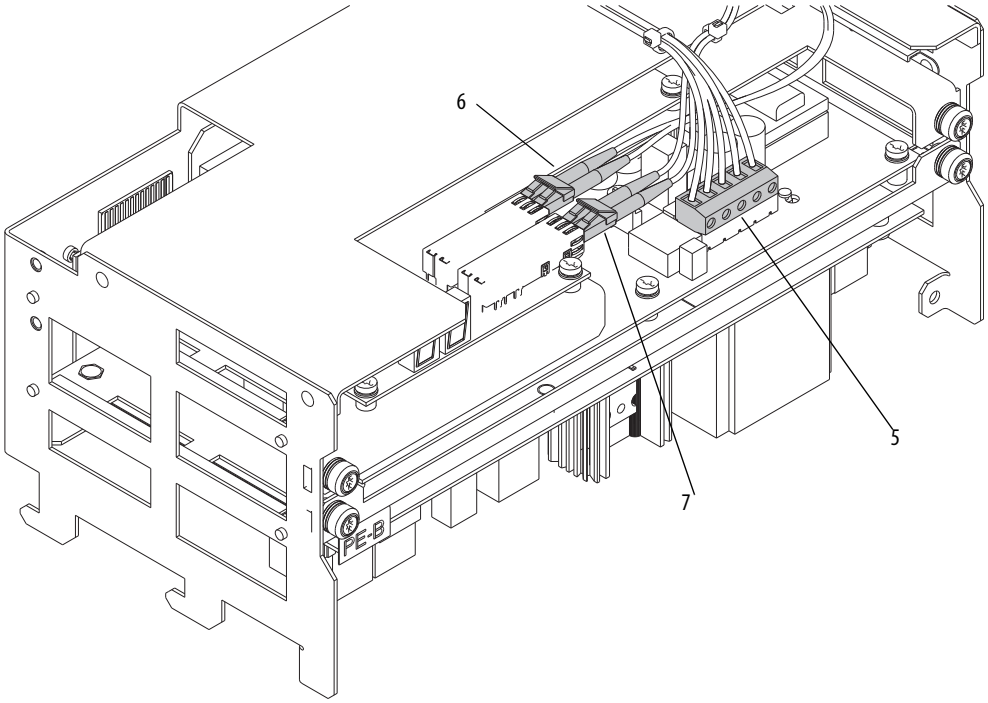
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
4. Remove the inverter circuit board connections cover from the inverter. See Inverter Circuit Board Connections Cover Removal/Installation on page 234.

5. Disconnect the inverter power-supply wire harness connector from terminal P6 on the inverter power control board.

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



6. Disconnect the converter fiber-optic cable from CONV on the inverter power-layer interface board and secure it to the converter. Do not remove the fiber-optic transceiver.
7. If the control pod is assembled on the converter, disconnect the inverter fiber-optic cable from INV on the inverter power-layer interface board and secure it to the control pod. Do not remove the fiber-optic transceiver.



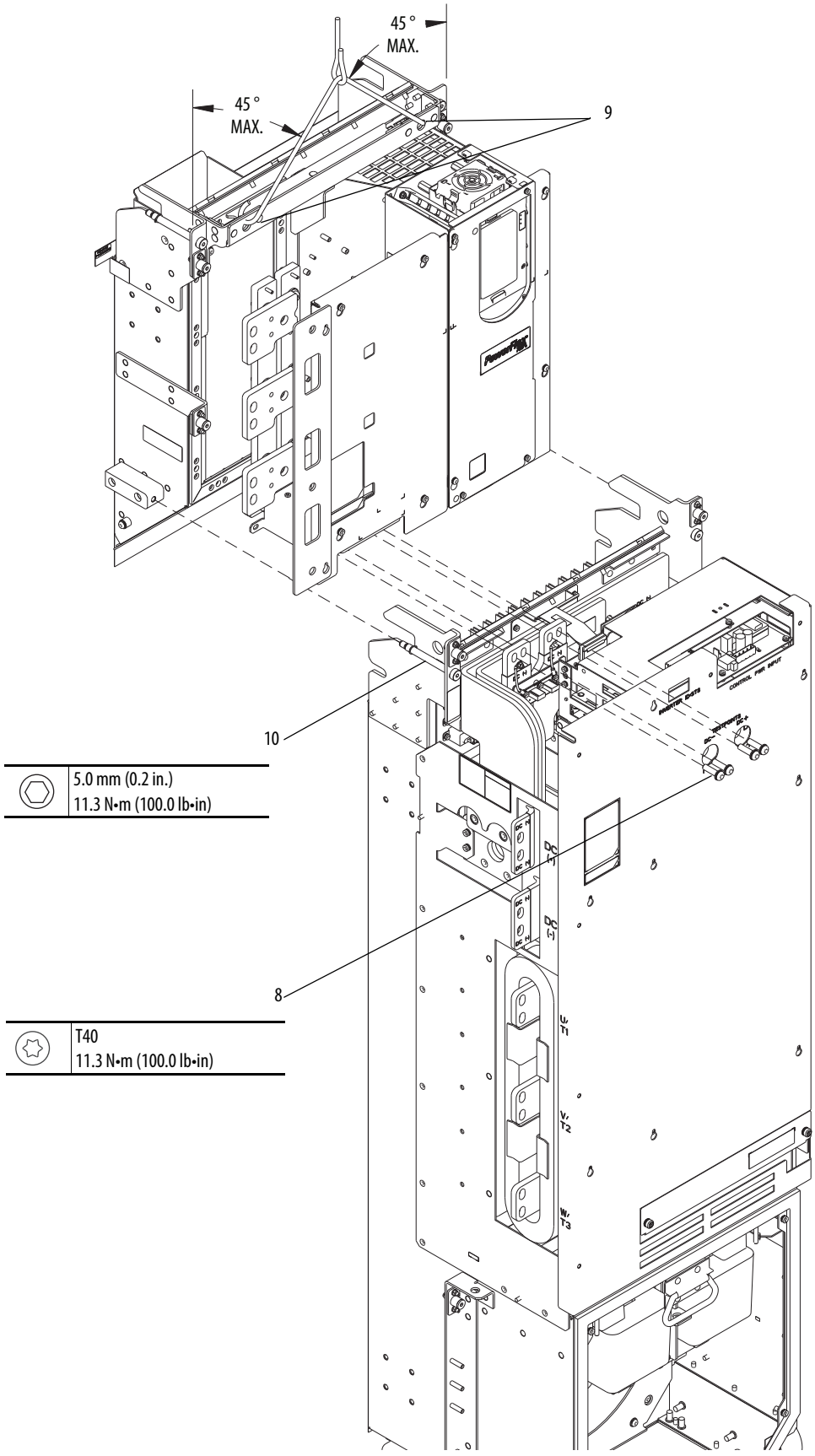
8. Remove the four M8 x 30-mm machine screws that secure the inverter DC bus bars to the converter DC bus bars.

IMPORTANT A load capacity of 80 kg (175 lb) minimum is required for all lifting equipment and hardware that is used for this procedure.

Verify that the angle of attachment of the lifting hardware is no more than 45° from vertical.

9. Connect the lifting hardware to the two lifting holes on the lifting bar at the top of the converter section.
10. Loosen the two M8 screws that secure the converter duct to the inverter duct.

11. Lift and slide the converter away from the inverter assembly.



Install the Converter on the Inverter Assembly

1. Inspect the gasket at the top of the converter duct for damage and replace it if necessary. See Converter Duct Gasket Replacement on page 151.
2. Inspect the gasket at the top of the inverter duct for damage and replace it if necessary.
3. Install the converter on the inverter assembly in the reverse order of removal. See Remove the Converter from the Inverter Assembly on page 148.

Converter Duct Gasket Replacement

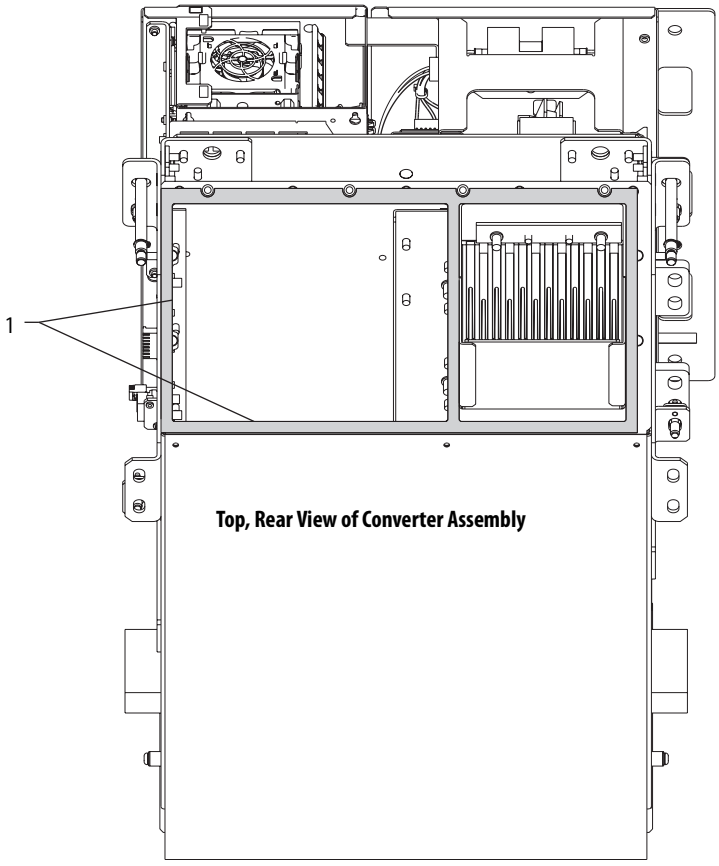
Remove the Converter Duct Gasket

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
4. Remove the converter. Remove the Converter from the Inverter Assembly on page 148.
5. Carefully remove the gasket and any gasket material that can be stuck to the sealing surface.
6. Clean the duct surface with a 50% isopropyl alcohol/ 50% water mixture.

Install the Converter Duct Gasket

Note: One side of the duct gasket is coated with an adhesive. Take care to align the gasket properly before fully removing the paper liner and exposing the adhesive.

1. Begin removing the paper liner as you align the replacement gasket with the duct edges as shown here and press the gasket into place on the duct.



Top, Rear View of Converter Assembly

2. Install the converter on the inverter assembly in the reverse order of removal. See Remove the Converter from the Inverter Assembly on page 148.

DC Input with Precharge Assembly Component Replacement Procedures

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This chapter provides detailed procedures for how to remove and replace DC input with precharge assembly components.

Note: In some illustrations in this chapter, the DC input with precharge assembly and/or control pod are shown removed from the drive for clarity only. Only remove the DC input with precharge assembly and/or control pod from the drive if directed to do so.

IMPORTANT Complete the procedures in Chapter 12 Drive Start Up After Repairs that begin on page 413 before placing the drive back into service.

DC Input with Precharge Assembly Components Identification

Table 10 contains the components that comprise the DC input with precharge assembly and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit
- Illustration figure and page number and identification number

A complete list of spare parts for PowerFlex® 755 Frame 8...10 and larger drives is available on the Allen-Bradley web site at: http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

Table 10 - DC Input with Precharge Assembly Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
DC Input with Precharge Unit for 540V, 770 A / 650V, 740 A DC Input Drives	20-750-P6-C770D740	1	–	
DC Input with Precharge Unit for 810V, 510 A / 932V, 500 A DC Input Drives	20-750-P6-E510F500	1	–	
DC Line Fuse Kit, 1600A, 540/650V DC Input Drives	SK-R1-CBPFUSE1-F8	–		
Fuse, 690/700V, 1600 A (FU1 and FU2)		1	Figure 10 on page 157	1
Fuse Indicator		1	Figure 10 on page 157	2
DC Line Fuse Kit, 1000A, 810/932V DC Input Drives	SK-R1-CBPFUSE3-F8	–		
Fuse, 1250/1300V, 1000 A (FU1 and FU2)		1	Figure 10 on page 157	1
Fuse Indicator		1	Figure 10 on page 157	2
Precharge and Control Transformer Fuse Kit, 540/932V DC Input Drives	SK-R1-CBPFUSE2-F8	–		
Fuse, 5 A, 600V, Class CC, Time Delay (FU5)		1	Figure 11 on page 158	3
Fuse, 1 A, 600V, Class CC, Time Delay (FU6)		1	Figure 11 on page 158	4
Fuse, Ferrule, Special Purpose, 1000 VDC, 20 A (FU3 and FU4)		2	Figure 10 on page 157	5

Table 10 - DC Input with Precharge Assembly Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
Frame 8 DC Input with Precharge Wire Harness Kit	SK-R1-CBPH1-F8	–		
Wire Harness, 24V/120V/240V		1	Figure 11 on page 158	6
Wire Harness, Digital I/O		1	Figure 11 on page 158	7
Wire Harness, Door Lock		1	Figure 11 on page 158	8
Wire Harness, 120V/240V		1	Figure 11 on page 158	9
Wire Harness, DC Bus Output/Sense		1	Figure 10 on page 157	10
Wire Harness, Undervoltage		1	Figure 11 on page 158	11
Wire Harness, 24V Control		1	Figure 11 on page 158	12
Wire Harness, Molded Case Switch Control		1	Figure 11 on page 158	13
Wire Harness, DC Bus Input		1	Figure 10 on page 157	14
Wire Harness, Disconnect Switch Jumper		1	Figure 10 on page 157	15
Wire Harness, Resistor Jumper		1	Figure 10 on page 157	16
Wire Harness, Inverter Power Supply		1	Figure 11 on page 158	17
Precharge Resistor Assembly Kit, 540/650V DC Input Drives	SK-R1-CBPRES-F8	–		
Bracket, Resistor		1	Figure 10 on page 157	18
Resistor, 10 Ohm, Metal Case, Ceramic Collar		4	Figure 10 on page 157	19
Screw, M4 x 12 mm, Pan Head Sems		8	Figure 10 on page 157	20
Precharge Resistor Assembly Kit, 810/932V DC Input Drives	SK-R1-CBPRES2-F8	–		
Bracket, Resistor		1	Figure 10 on page 157	18
Resistor, 20 Ohm, Metal Case, Ceramic Collar		4	Figure 10 on page 157	19
Screw, M4 x 12 mm, Pan Head Sems		8	Figure 10 on page 157	20
Precharge Disconnect Assembly Kit, 540/932V DC Input Drives	SK-R1-CBPSW-F8	–		
Switch, 8-Pole, 32 A, 750V		1	Figure 10 on page 157	21
Shaft, Extended, 6-mm Dia., 70 mm Long		1	Figure 10 on page 157	22
Handle, Pistol Type, Padlockable, 6 mm Shaft, Indication I-O; On-Off		1	Figure 10 on page 157	23
Auxiliary Contact Block, IP20, Normally Open, Right Side Mountable		1	Figure 10 on page 157	24
Control Transformer, 120/240VAC In, 120/240VAC Out, 1000 VA @240VAC	SK-R1-CBPXFMR1-F8	1	Figure 11 on page 158	25
Undervoltage Delay	SK-R1-CBPDELAY-F8	1	Figure 11 on page 158	26
Frame 8 Gasket Kit	20-750-G1-F8	–		
Gasket, Converter, Heatsink		1	(1)	-
Gasket, Converter/DC Input with Precharge Assembly, Duct		1	Figure 10 on page 157	27
Gasket, Inverter, Heatsink		1	(2)	-
Gasket, Inverter, Door Interface		1	(2)	-
Gasket, Inverter, Exhaust Interface		1	(2)	-
Gasket, Inverter, Inlet Ring		1	(2)	-
Gasket, Inverter, No Choke		1	(2)	-
Gasket, Inverter, Blower Box Bottom		1	(2)	-
Gasket, Inverter, Choke		1	(2	-

Table 10 - DC Input with Precharge Assembly Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
DC Input Control Board Kit, 540/650V DC Input Drives	SK-R1-CBPCTRL-F8	–		
DC Precharge Control Board, 540/650V		1	Figure 11 on page 158	28
Fiber Optic Transceiver		1	Figure 11 on page 158	29
DC Input Control Board Kit, 810/932V DC Input Drives	SK-R1-CBPCTRL2-F8	–		
DC Precharge Control Board, 810/932V		1	Figure 11 on page 158	28
Fiber Optic Transceiver		1	Figure 11 on page 158	29
One-Bay Fiber Optic Cable Kit	20-750-FCBL1-F8	–		
CONV Fiber Optic Cable, 560 mm Long		1	Figure 11 on page 158	30
INV Fiber Optic Cable, 560 mm Long		1	Figure 11 on page 158	30
Fiber Optic Transceiver	SK-R1-FTR1-F8	1	Figure 11 on page 158	32
One Bay 24V Wire Harness Kit (Frame 8)	20-750-PH1-F8	1	Figure 11 on page 158	33
Two Bay 24V Wire Harness Kit (Frame 9)	20-750-PH2-F9	1	Figure 11 on page 158	33
Three Bay 24V Wire Harness Kit (Frame 10)	20-750-PH3-F10	1	Figure 11 on page 158	33
Left Front Cover with Shields Kit	SK-R1-CBP-CVR1-F8	–		
Left Front Cover		1	Figure 10 on page 157	34
Top Guard		1	Figure 10 on page 157	35
Left Guard		1	Figure 10 on page 157	36
Left Front Cover and Interlock Assembly Retrofit Kit	20-750-CBPPANEL	–		
Left Front Cover with Access Panel		1	Figure 10 on page 157	34
DC Bus Guard		1	–	
Interlock Assembly		1	–	
L-bracket and Screws		1	–	
Right Front Cover (No Control POD) Kit	SK-R1-CCVR2-F8	–		
Right Front Cover		1	Figure 10 on page 157	37
Bracket, Cover, 59 mm (2.3 in.) Long		2	Figure 11 on page 158	38
Control Power Isolator Board Kit, 600/690V AC and 810/932V DC Input Drives	SK-R1-CPIB1-F8	1	Figure 10 on page 157	39
Control Power Isolator 24V Wire Harness Kit, 600/690V AC and 810/932V DC Input Drives	SK-R1-CPIH1-F8	1	Figure 10 on page 157	40
DC Precharge Control Board Stirring Fan	20-750-CFANKIT-F8	1	Figure 11 on page 158	41

(1) This gasket is included in the Frame 8 Gasket Kit (20-750-G1-F8), but is identified in the table in Converter Components Identification on page 78.

(2) This gasket is included in the Frame 8 Gasket Kit (20-750-G1-F8), but is identified in the table in Inverter Components Identification on page 224.

Figure 10 - DC Input with Precharge Assembly Components Diagram 1

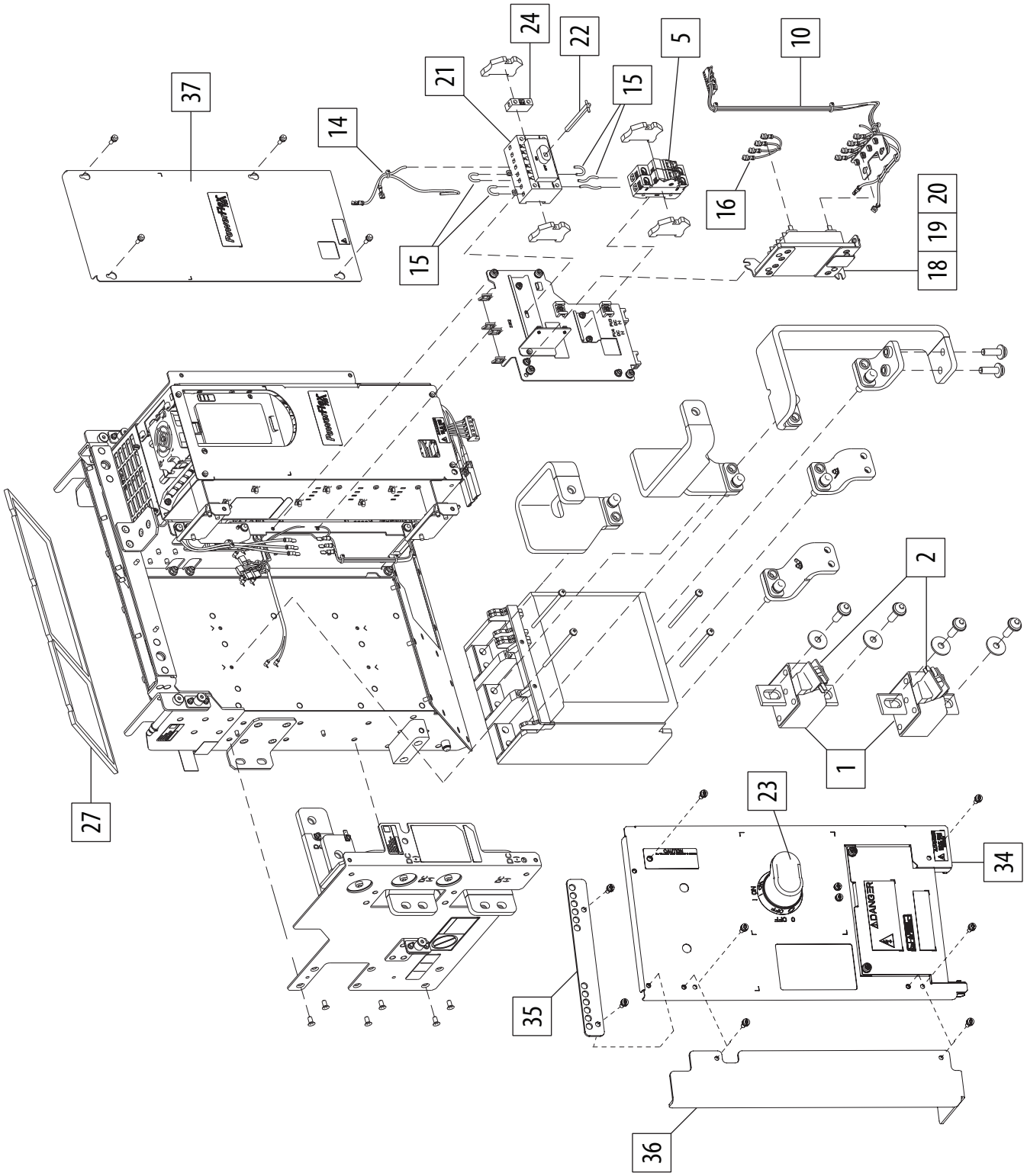
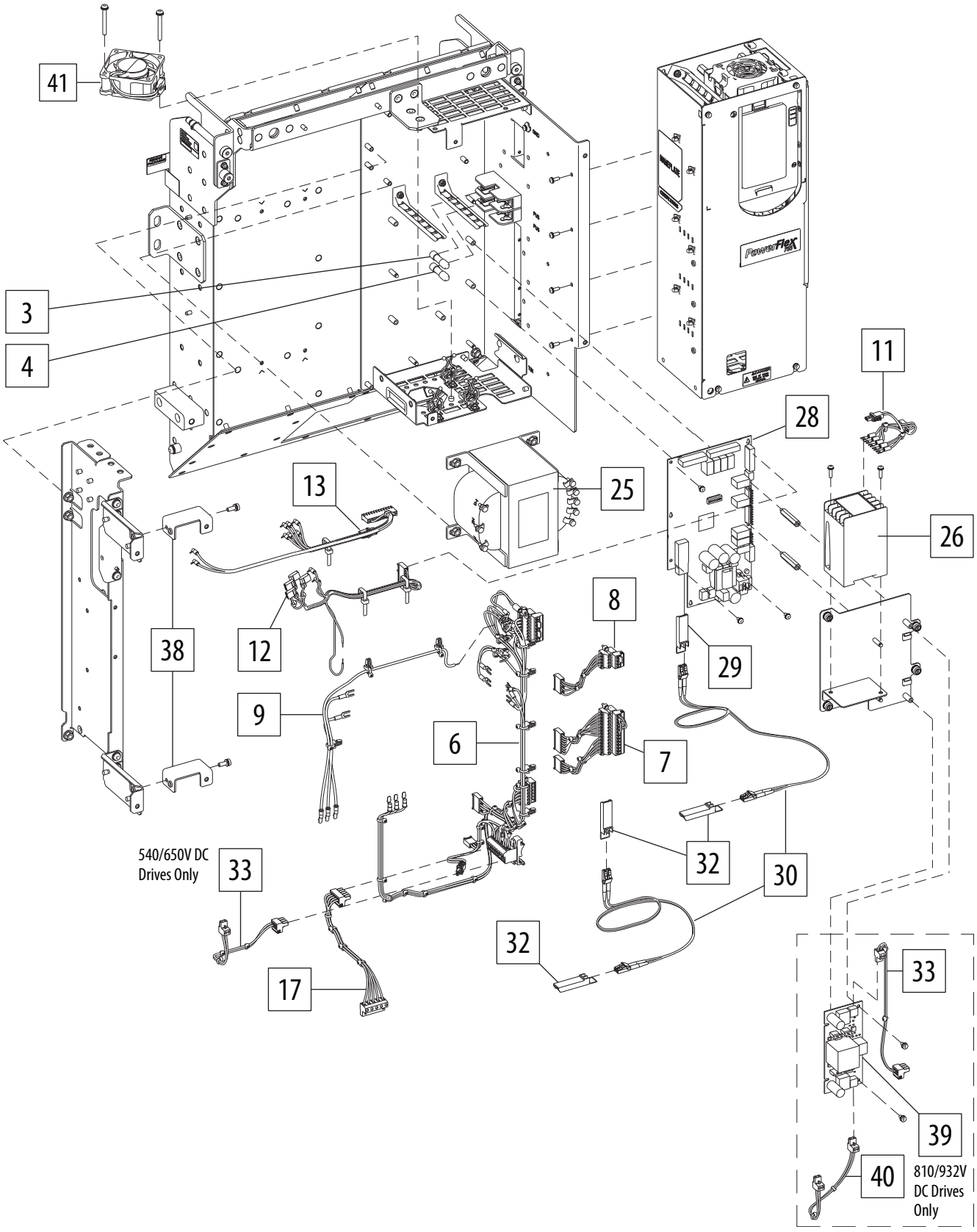


Figure 11 - DC Input with Precharge Assembly Components Diagram 2

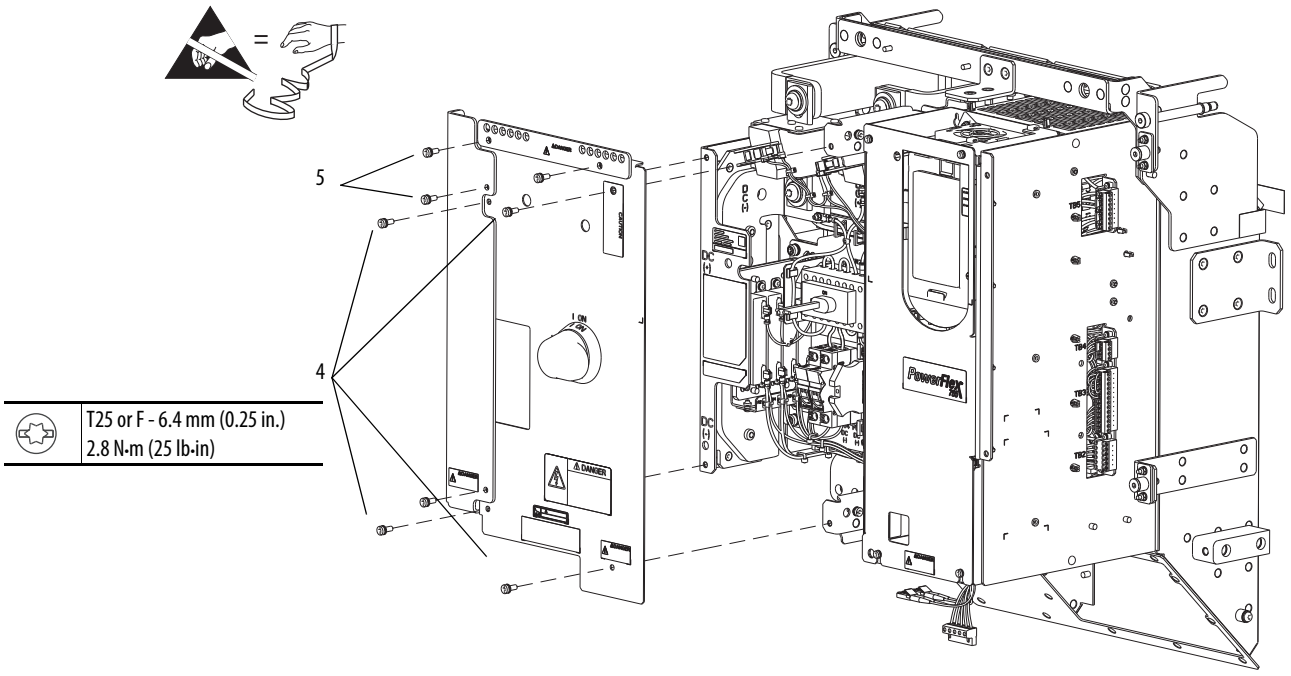


TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard Removal/Installation

Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove only the four M5 x 14-mm screws that secure the cover to the assembly and remove the cover with the top and left guards attached.
5. If necessary, remove the four M5 x 14-mm screws that secure the top and left guards to the cover; and remove the guards.



Install the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard

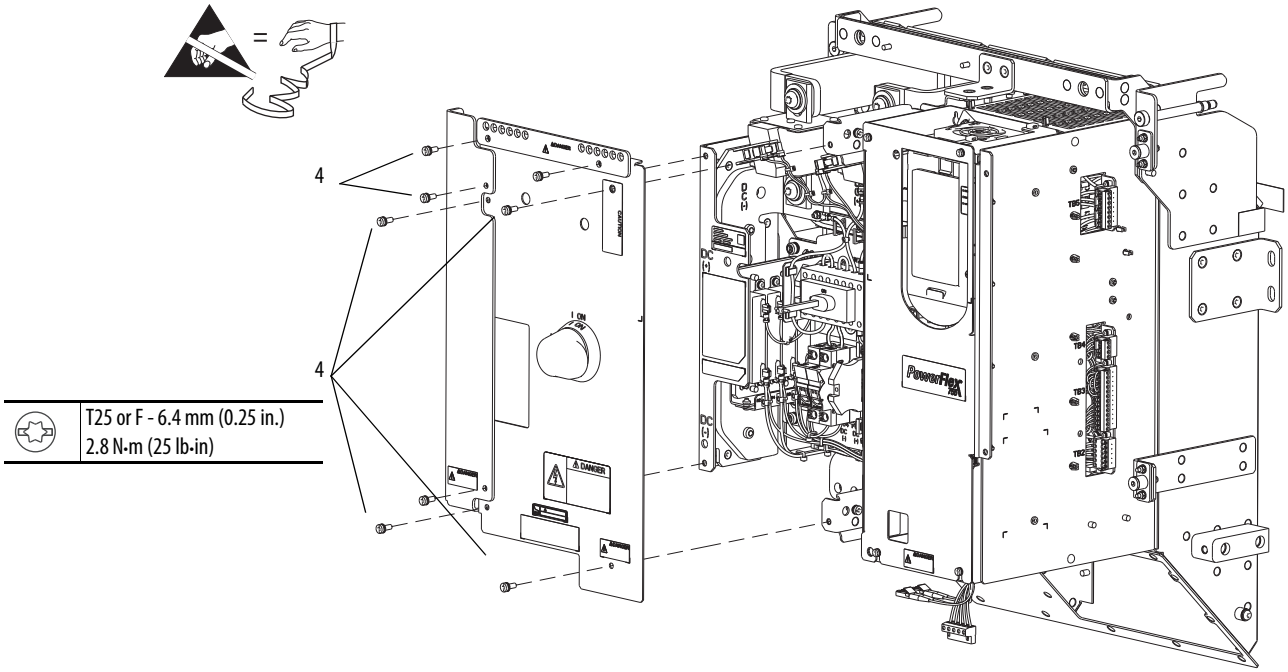
Install the left cover, top guard, and left guard in the reverse order of removal. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard.

DC Input with Precharge Assembly Left Cover and Interlock Assembly Replacement

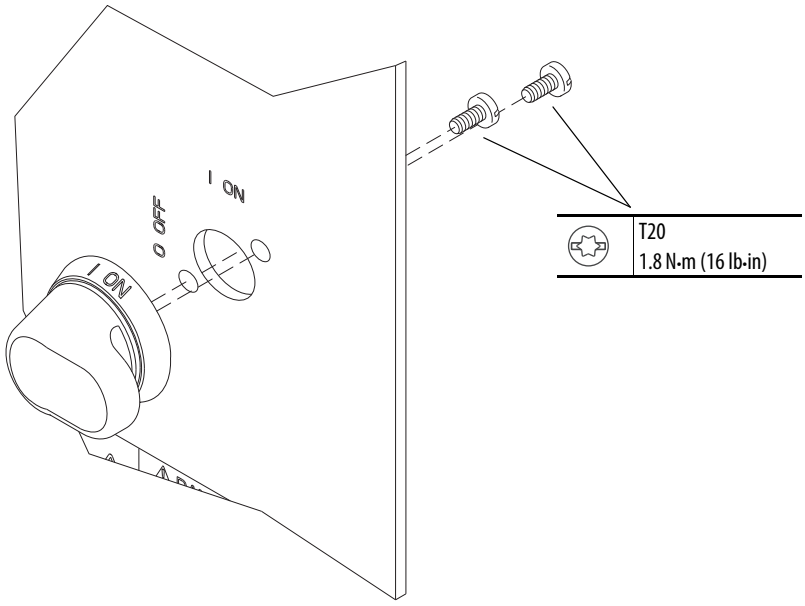
This retrofit kit (cat. no. 20-750-CBPPANEL) can be used to improve the access to the molded case switch (SW1) on common DC input drives for lock-out, tag-out procedures. Install this kit only on DC input with precharge modules with catalog numbers
20-750-P5-C770D740 and 20-750-P5-E510F500.

Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard and Disconnect Handle

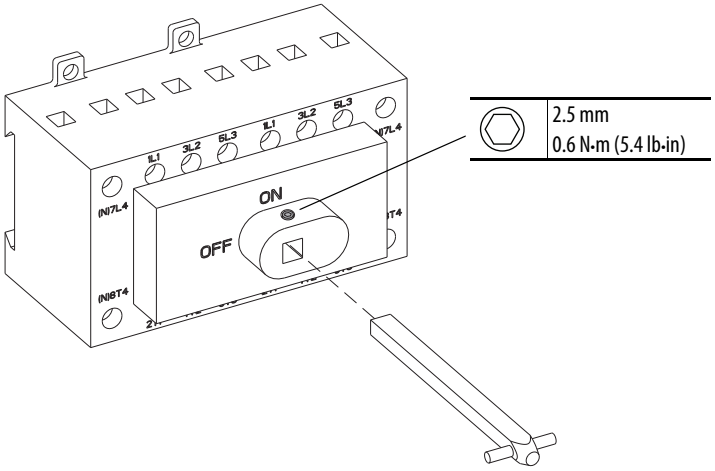
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove only the four M5 x 14-mm screws that secure the cover to the assembly and remove the cover with the top and left guards attached.
5. Remove the four M5 x 14-mm screws that secure the top and left guards to the cover, and remove the guards. Retain the guards and screws for reuse.



6. Remove the two M4 x 12-mm hexalobular screws and washers that secure the rotary disconnect on/off handle to the front cover and remove the handle. Retain the handle, screws, and washers for reuse.

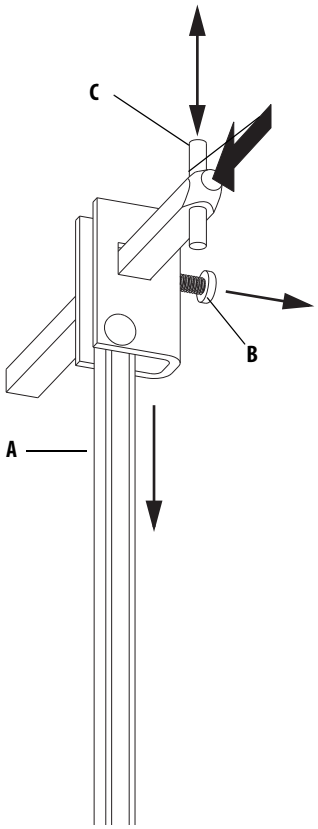


7. Loosen the hexagonal screw that secures the disconnect handle shaft to the disconnect switch and remove the handle.

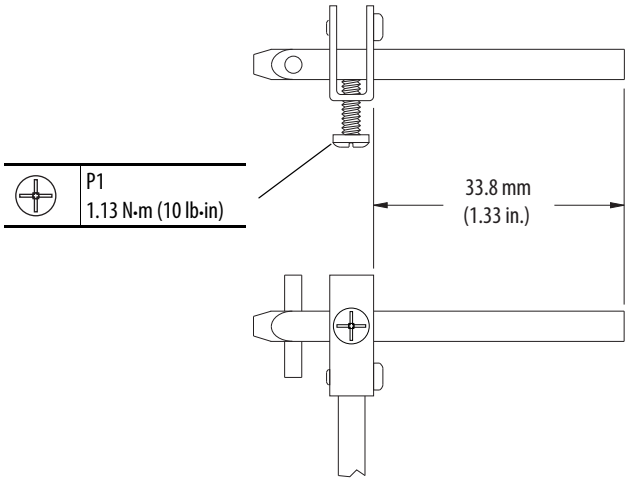


Install the New Disconnect Switch Interlock and Front Cover Assemblies

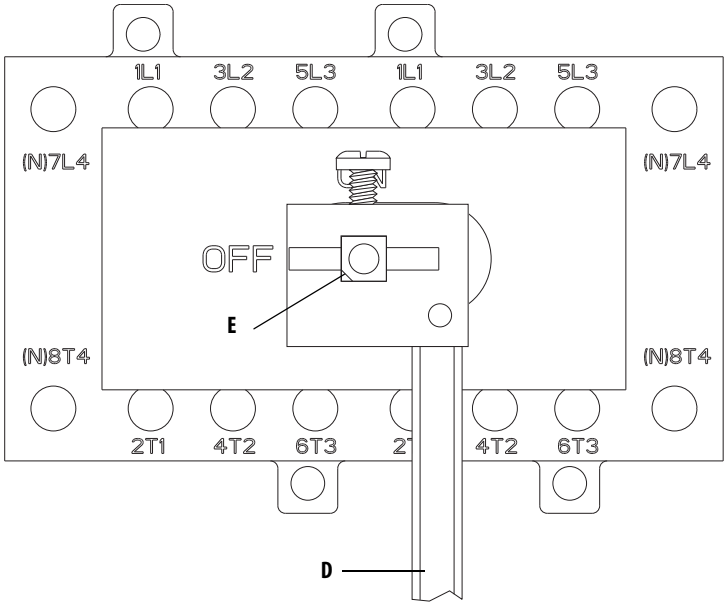
1. Complete steps a....d to install the interlock assembly on the disconnect handle shaft.
   a. Position the interlock rod (**A**) under the clamp assembly (as shown in the illustration).
   b. Position the set screw (**B**) to the right of the clamp assembly.
   c. Position the pins (**C**) on the disconnect handle shaft vertically and slide the base of the shaft through the square opening in the clamp assembly.



d. Position the back of the interlock clamp assembly 34 mm (1.33 in.) from the base of the shaft and tighten the M3 x 1.5 mm set screw.

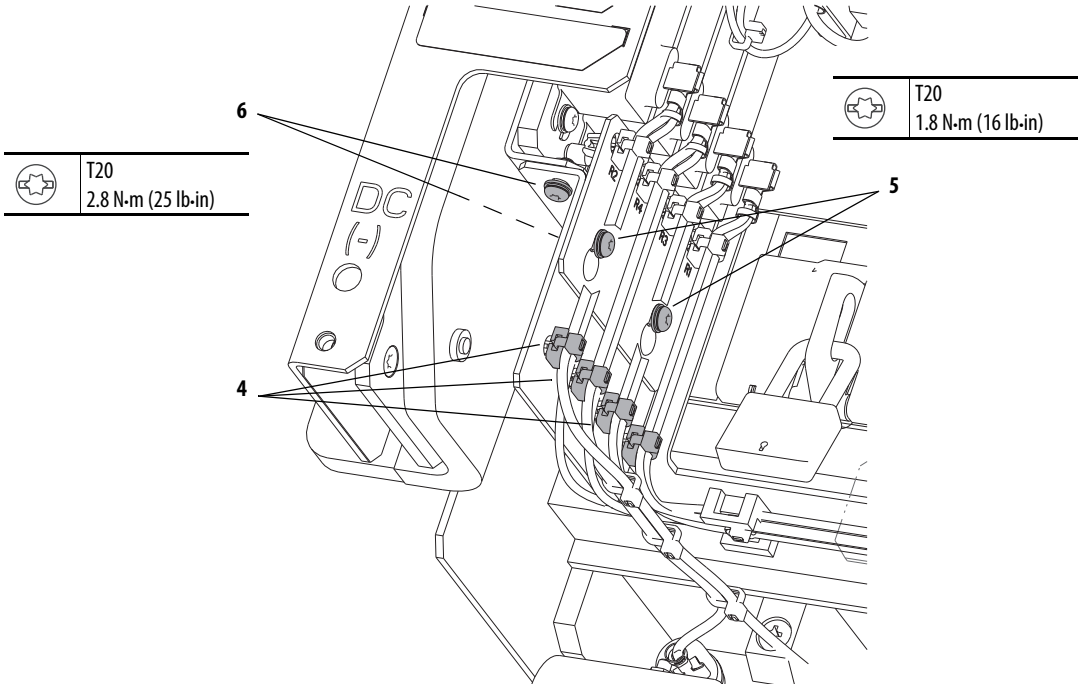


2. With the interlock rod (**D**) positioned below the handle shaft, fully insert the handle shaft (**E**) into the receptacle on the disconnect switch.

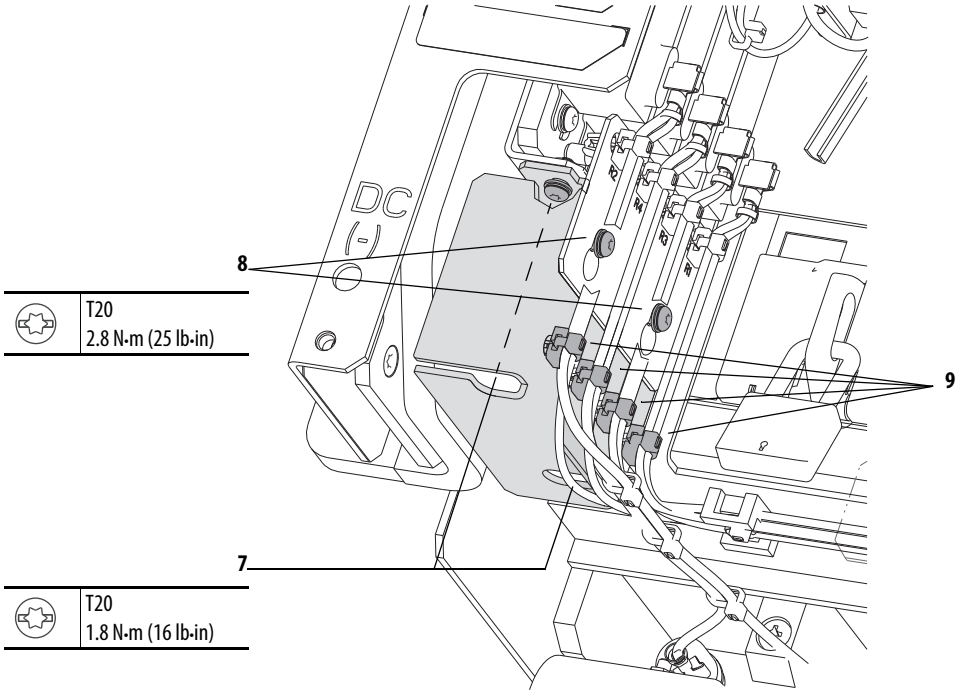


3. Secure the handle shaft in place by using the set screw on the disconnect switch. Tightening torque is 0.6 N•m (5.4 lb•in).

4. By using a pliers, remove the four cable tie mounts, which secure the resistor wires, from the back of the existing DC bus guard.
5. Loosen the two M4 x 12-mm hexalobular screws that secure the clear, plastic shield to the front of the DC bus guard and remove the plastic panel. Retain this panel for reuse.
6. Loosen the two M4 x 12-mm hexalobular screws that secure the sheet metal DC bus guard to the resistor assembly and remove and discard the guard.



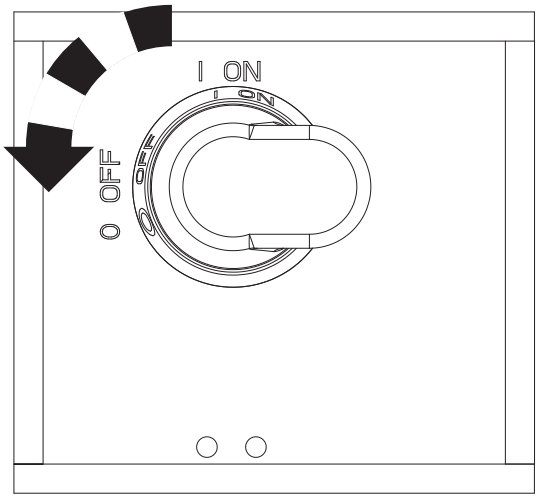
7. Place the new sheet metal DC bus guard on the resistor assembly and secure the guard by tightening the two existing screws.
8. Place the clear, plastic shield on the new DC bus guard and secure the shield by tightening the existing screws.
9. Fully insert the four cable tie mounts, which secure the resistor wires, into the holes on the new DC bus guard.

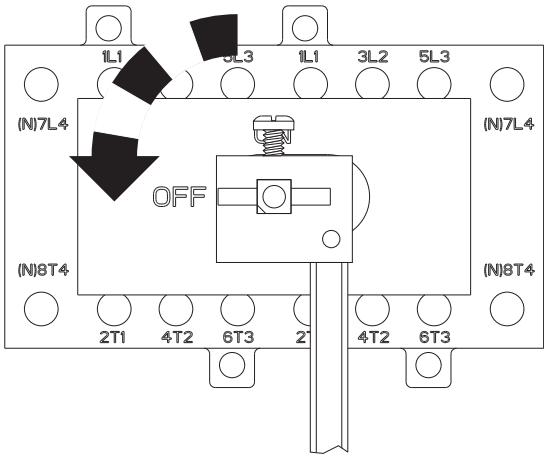


10. Secure the existing rotary on/off disconnect handle to the new DC precharge assembly left front cover by using the two M4 x 8-mm long screws and washers. Tightening torque is 1.8 N•m (16 lb•in).
11. Secure the two clear plastic guards to the new DC precharge assembly left front cover by using the four existing M5 x 14-mm screws. Tightening torque is 2.8 N•m (25 lb•in).

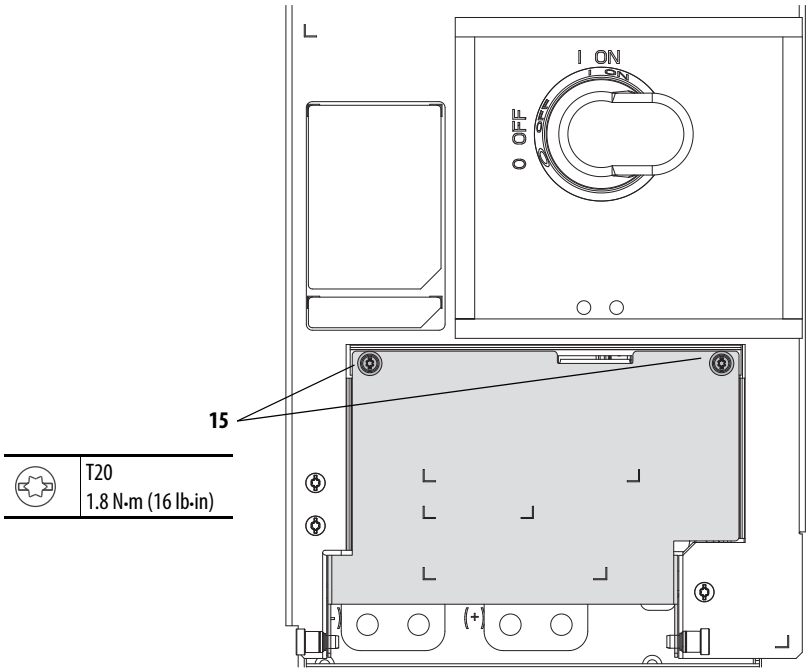
12. Set the rotary on/off handle and the disconnect handle shaft to the "off" position.

    The disconnect handle shaft is in the "off" position when the pins on the end of the shaft are oriented horizontally.



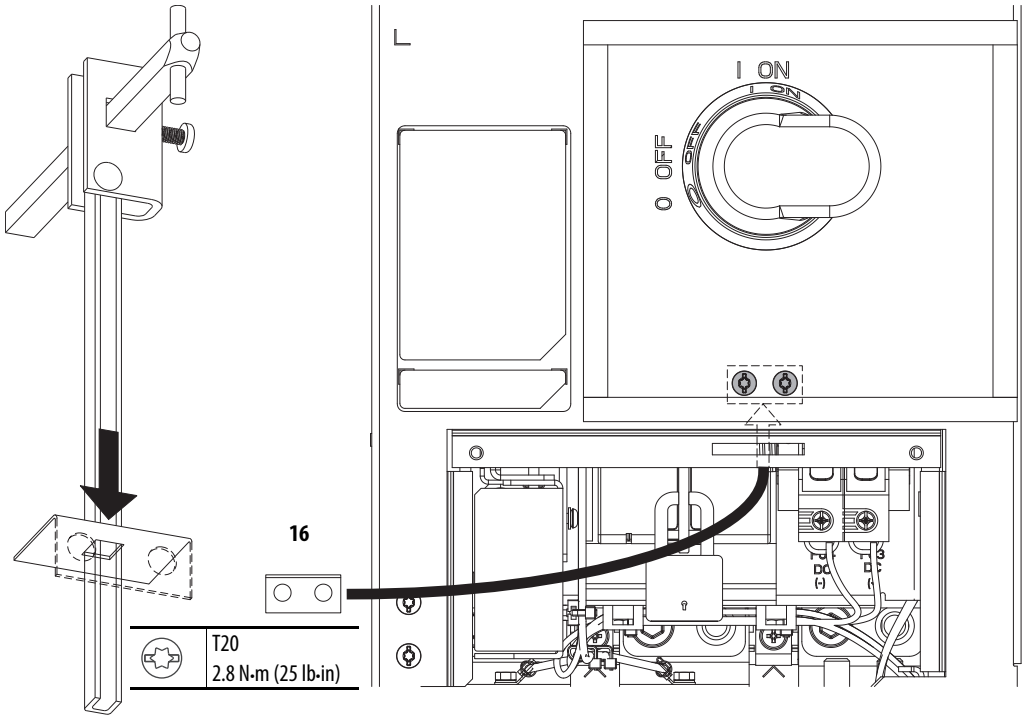


13. Align the rotary disconnect handle and shaft and place the new front cover on the DC precharge unit.
14. Secure the front cover by using the existing screws. Tightening torque is 2.8 N•m (25 lb•in).
15. Loosen the two hexalobular screws that secure the circuit-breaker access door to the left front cover and lower the door.



16. Position the L-bracket with the square opening on top and the screw holes to the front and flush with the back of the cover.

IMPORTANT	The interlock rod behind the cover must fit into the square opening on the top of the L-bracket (as shown in the illustration).

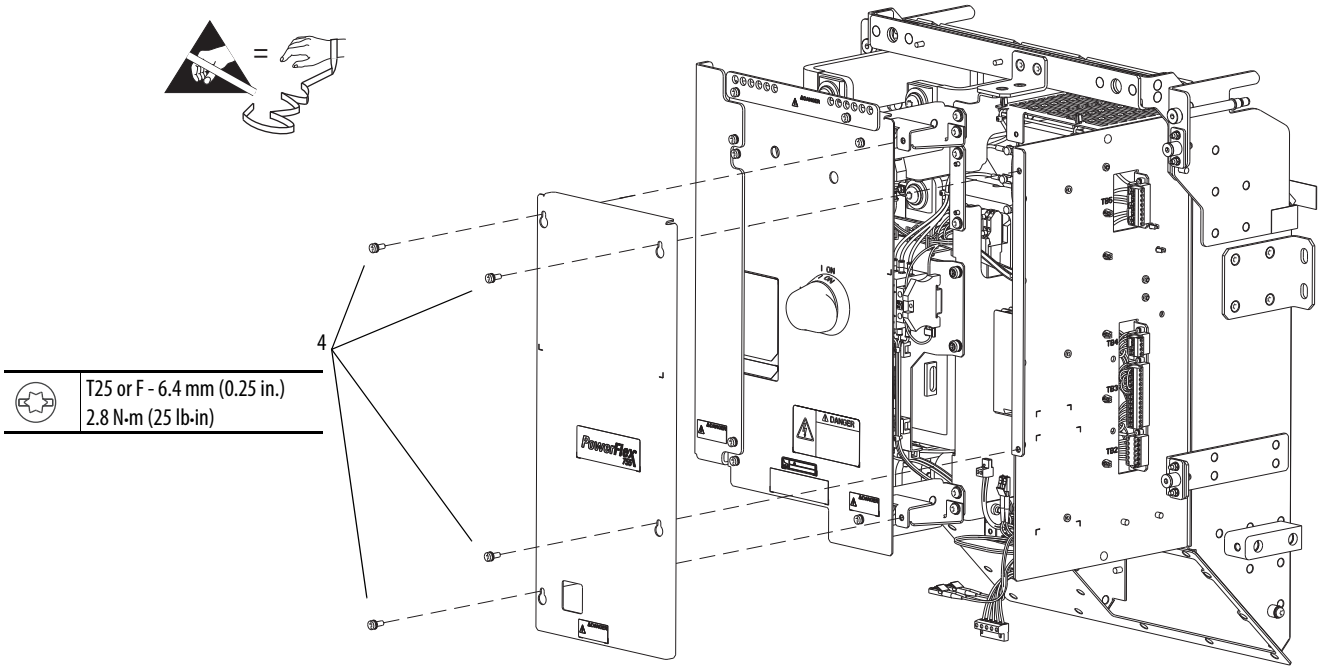


17. Secure the L-bracket by using the two M5 x 14-mm hexalobular screws that are provided in the kit.
18. Close and secure the circuit-breaker access door.
19. Move the disconnect handle to the “ON” position.
20. Verify that the circuit- breaker access door cannot be opened.
21. Secure the circuit-breaker access door by tightening the two hexalobular screws.

DC Input with Precharge Assembly Right Cover (No Control Pod) Removal/ Installation

Remove the DC Input with Precharge Assembly Right Cover (No Control Pod)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the four M5 x 14-mm screws that secure the cover to the assembly and remove the cover.



Install the DC Input with Precharge Assembly Right Cover (No Control Pod)

Install the right cover in the reverse order of removal. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod).

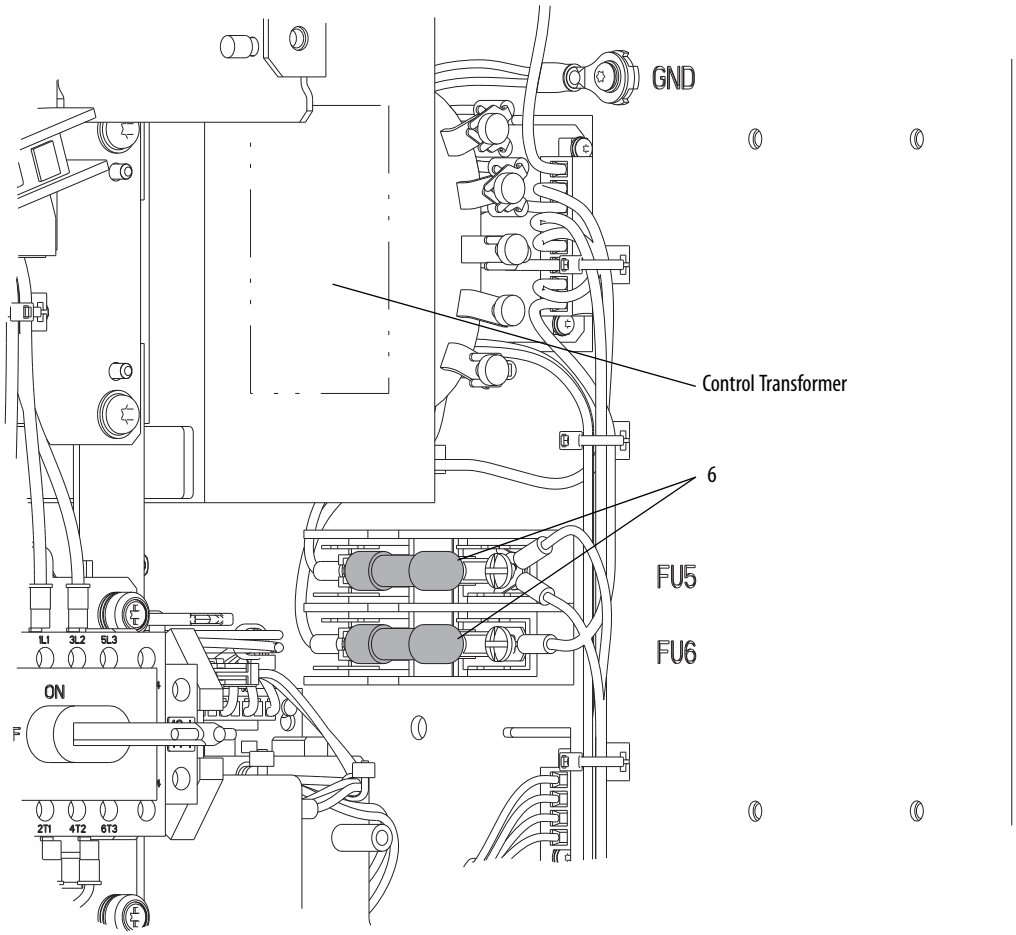
Control Transformer Secondary Fuses Removal/ Installation

Remove the Control Transformer Secondary Fuses (FU5 and FU6)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
6. Remove the fuse from the one-position fuse holder by using a fuse puller. The fuses are on the right wall of the control panel next to the control transformer.



Install the Control Transformer Secondary Fuses (FU5 and FU6)

Install the control transformer secondary fuses (FU5 and FU6) in the reverse order of removal. See Remove the Control Transformer Secondary Fuses (FU5 and FU6) on page 168.

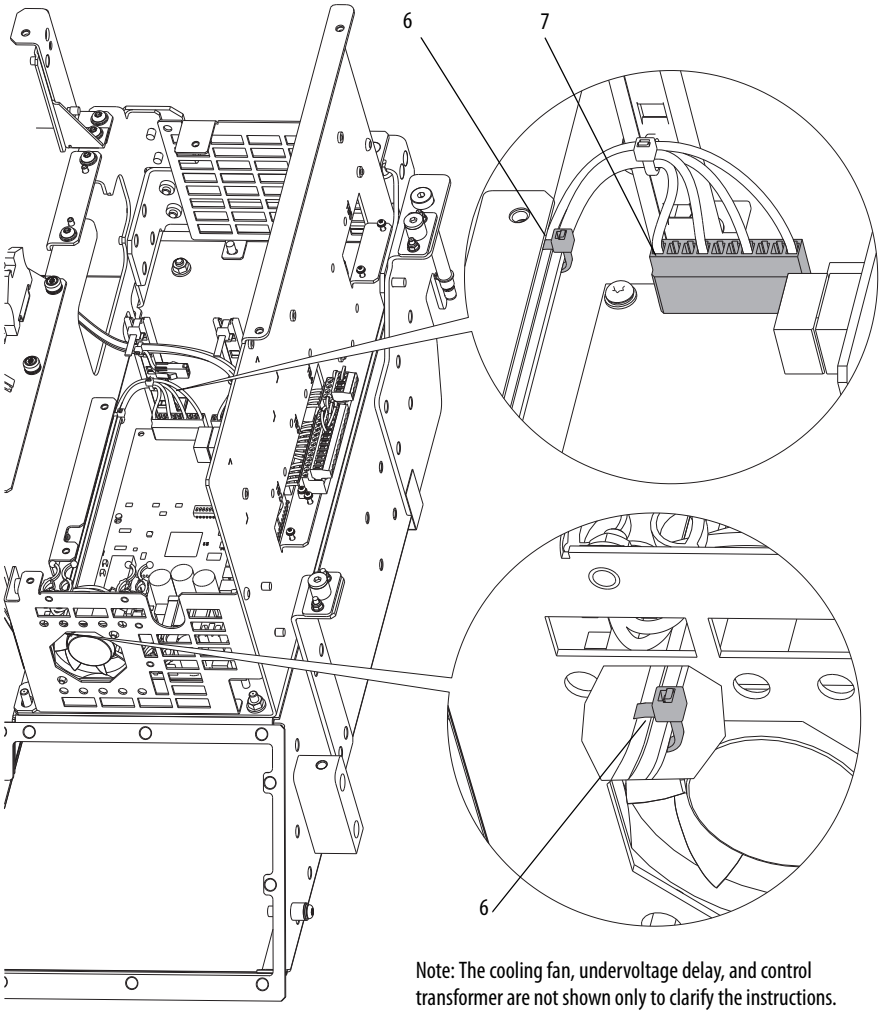
DC Bus Output/Sense Wire Harness Removal/ Installation

Remove the DC Bus Output/Sense Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

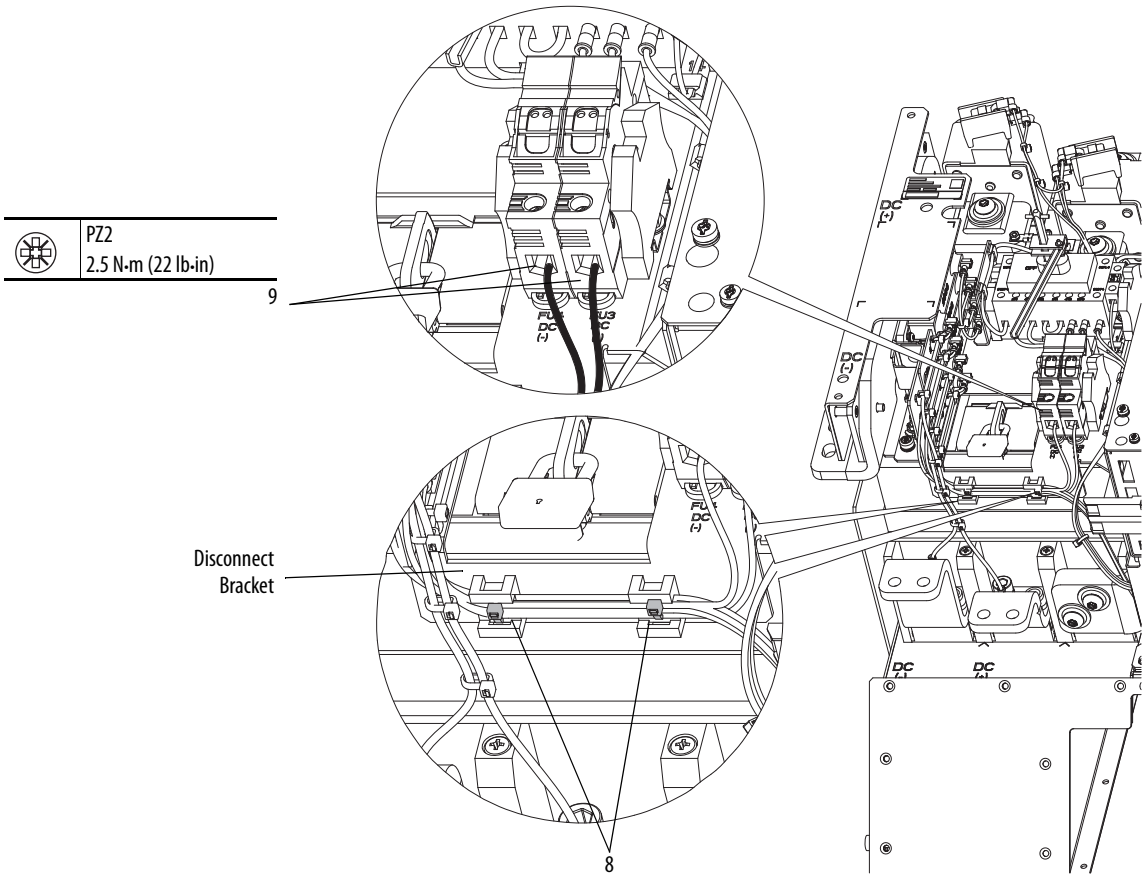
   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.

6. Remove the two cable ties that secure the wire harness to the center wall.
7. Disconnect the connector from P1 on the DC input control board.

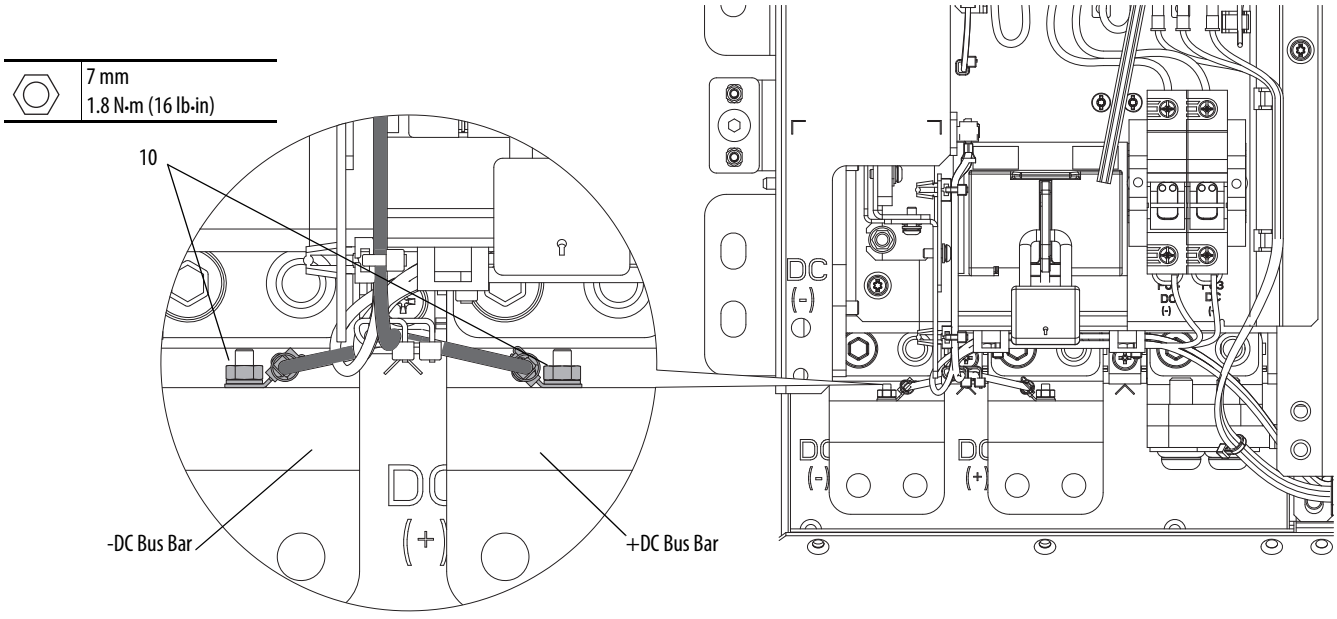


Note: The cooling fan, undervoltage delay, and control transformer are not shown only to clarify the instructions.

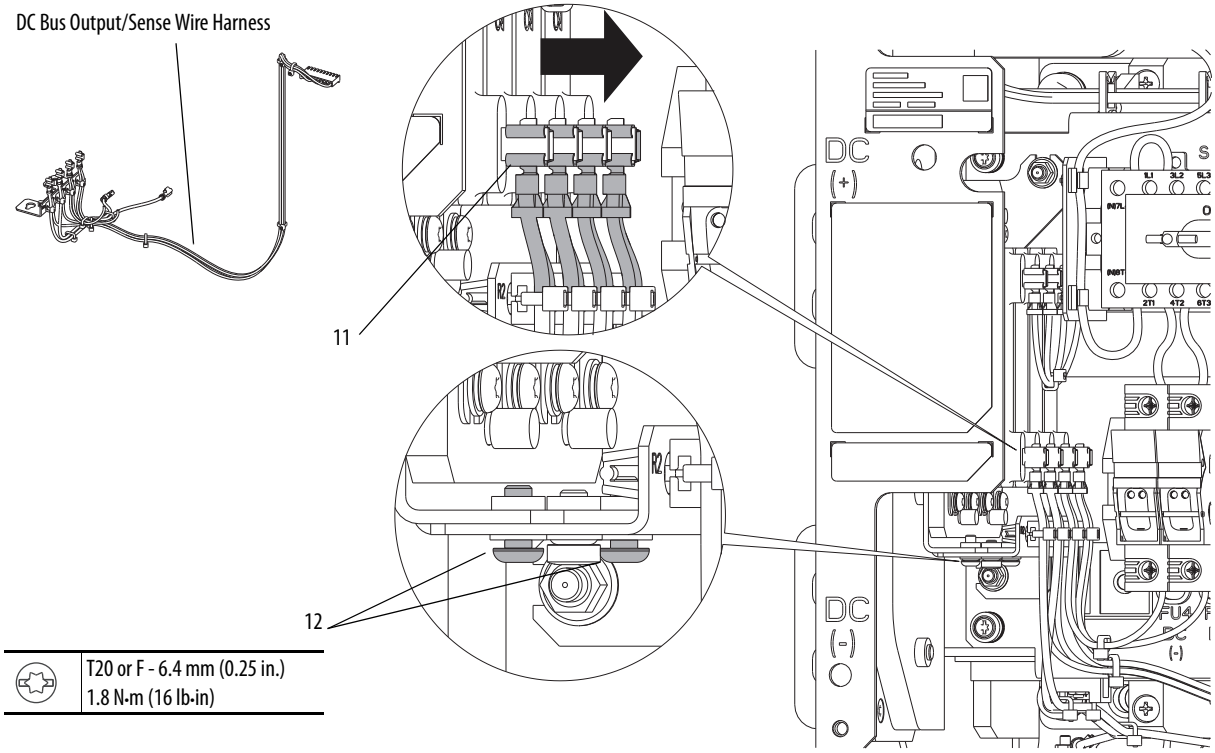
8. Remove the two cable ties that secure the wire harness to the disconnect bracket and the 24/120/240V wire harness.
9. Loosen the screws that secure the +DC and -DC wires to the fuseholder terminals and remove the wires.



10. Remove the M4 hex nuts that secure the +DC and -DC wires to the +DC and -DC output bus bars and remove the wires.



11. Disconnect the connectors from the R1, R2, R3 and, R4 precharge resistor terminals.
12. Loosen, but do not remove, the two M4 x 12-mm hexalobular screws that secure the wire harness support to the bottom of the precharge resistor assembly and remove the harness.



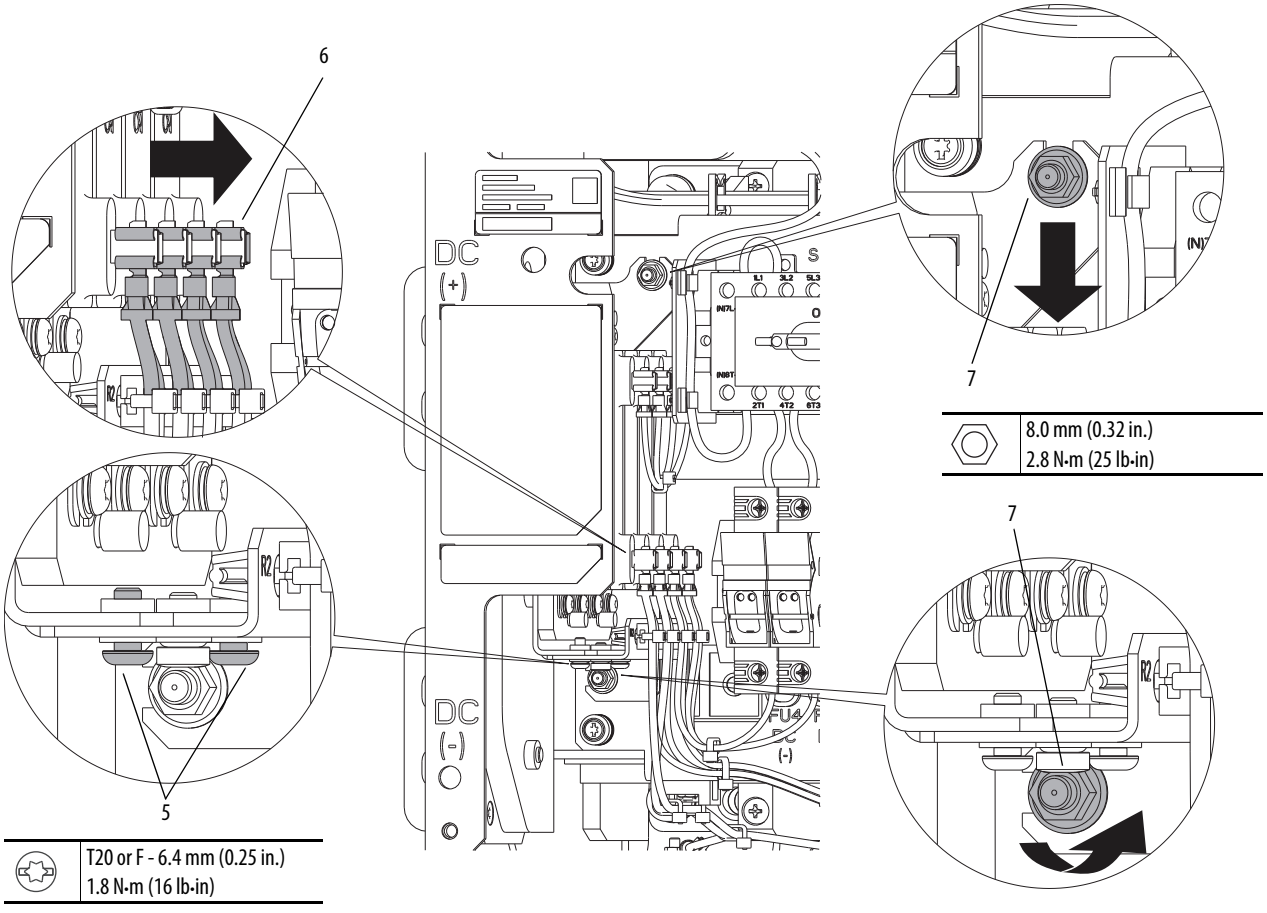
Install the DC Bus Output/Sense Wire Harness

Install the DC bus output/sense wire harness in the reverse order of removal. See Remove the DC Bus Output/Sense Wire Harness on page 170.

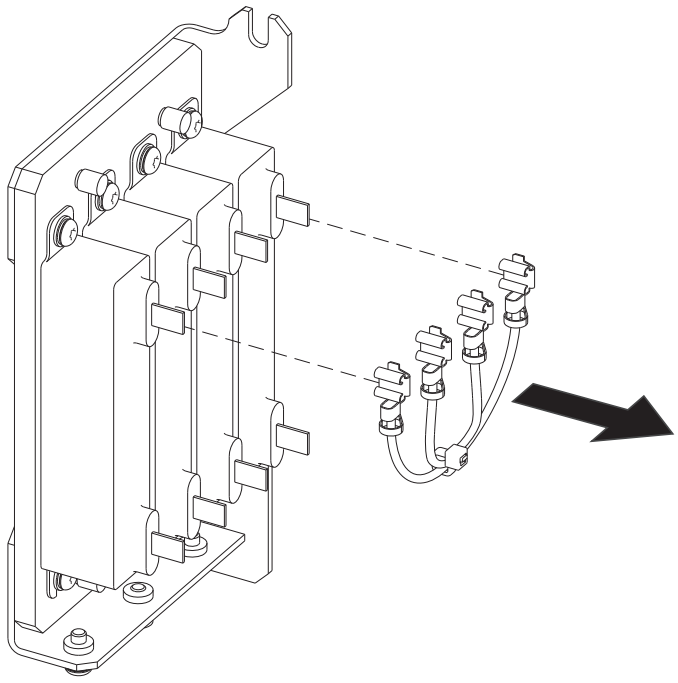
Precharge Resistor Assembly Removal/Installation

Remove the Precharge Resistor Assembly

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Loosen but do not remove the two M4 x 12 mm long hexalobular screws that secure the DC bus output/sense harness wire support to the resistor assembly.
6. Remove the four wire connectors of the DC bus output/sense harness from the R1, R2, R3 and, R4 precharge resistor terminals.
7. Loosen but do not remove the two M5 nuts that secure the resistor assembly to the mounting bracket.
8. Remove the resistor assembly by completing the following steps.
   a. Disengage the bottom bracket slot by rotating the bottom of the assembly to the right.
   b. Slide the assembly down to disengage the top bracket slot.



9. Remove the resistor jumper harness from the top four terminals.



Install the Precharge Resistor Assembly

Install the precharge resistor assembly in the reverse order of removal. See Remove the Precharge Resistor Assembly on page 174.

Precharge Resistor Jumper Wires Removal/Installation

Remove the Precharge Resistor Jumper Wires

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Remove the precharge resistor assembly. See Remove the Precharge Resistor Assembly on page 174.

Install the Precharge Resistor Jumper Wires

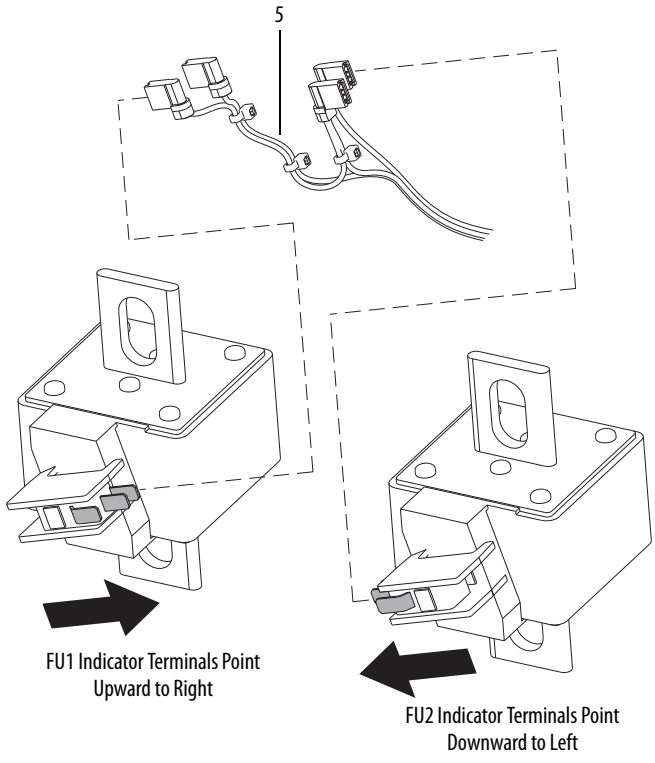
Install the precharge resistor jumper wires in the reverse order of removal. See Remove the Precharge Resistor Jumper Wires.

DC Line Fuses and Fuse Indicators Removal/ Installation

Remove the DC Line Fuses (FU1 and FU2) and Fuse Indicators (SW3 and SW4)

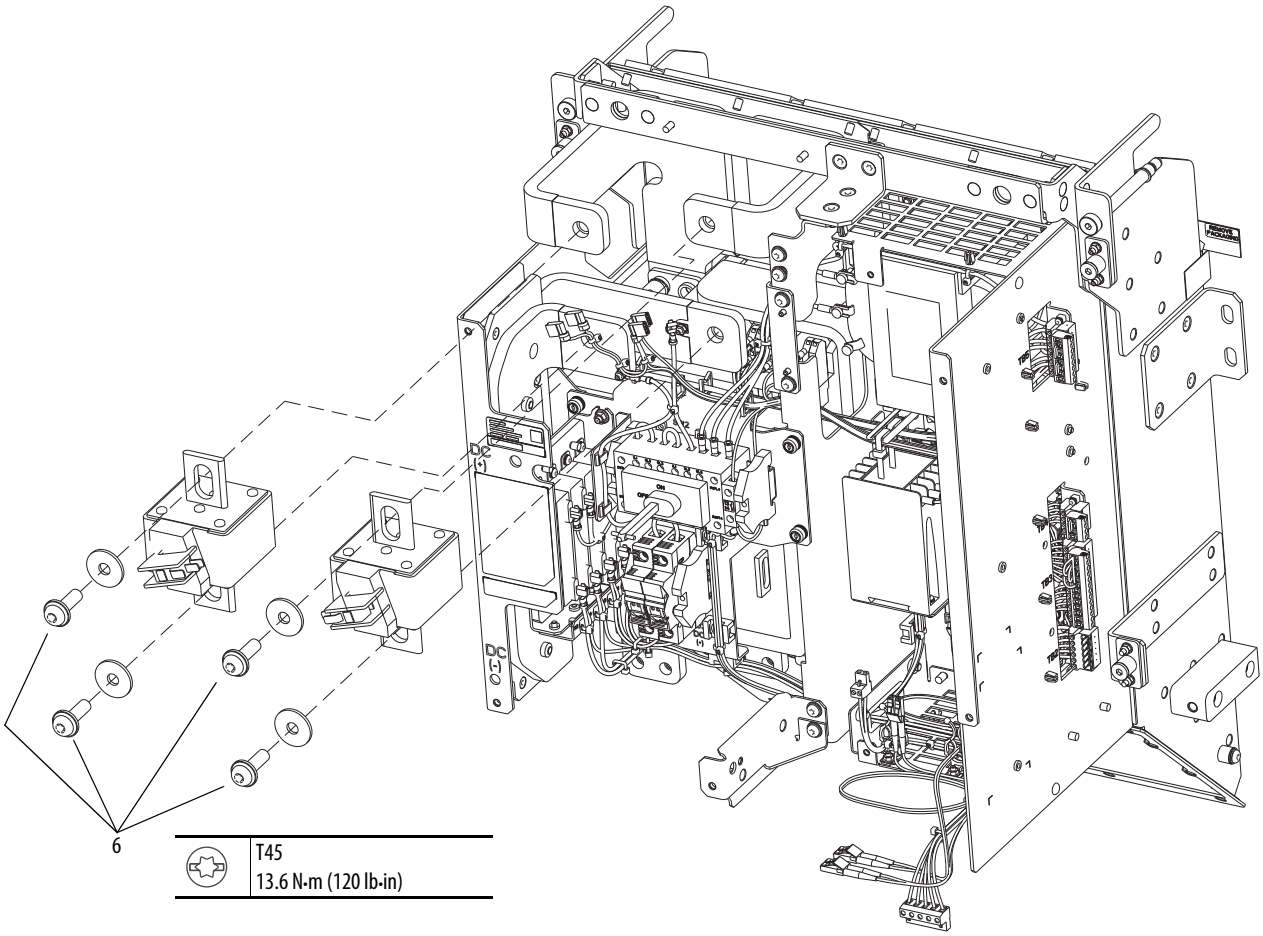
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Remove the 24-V control wire harness leads from the fuse indicator (SW3 or SW4) terminals for the fuse being replaced (FU1 or FU2).

IMPORTANT	Note the orientation of the fuse indicator terminals before removal. Replace each fuse with the terminals in the same orientation as shown here.



Note: Fuses shown removed in this illustration only to clarify the instructions.

6. Remove the M10 x 35-mm hexalobular screw and flat washer for the fuse being replaced and remove the DC line fuse. Remove the fuse indicator from the DC line fuse for reuse, if necessary.



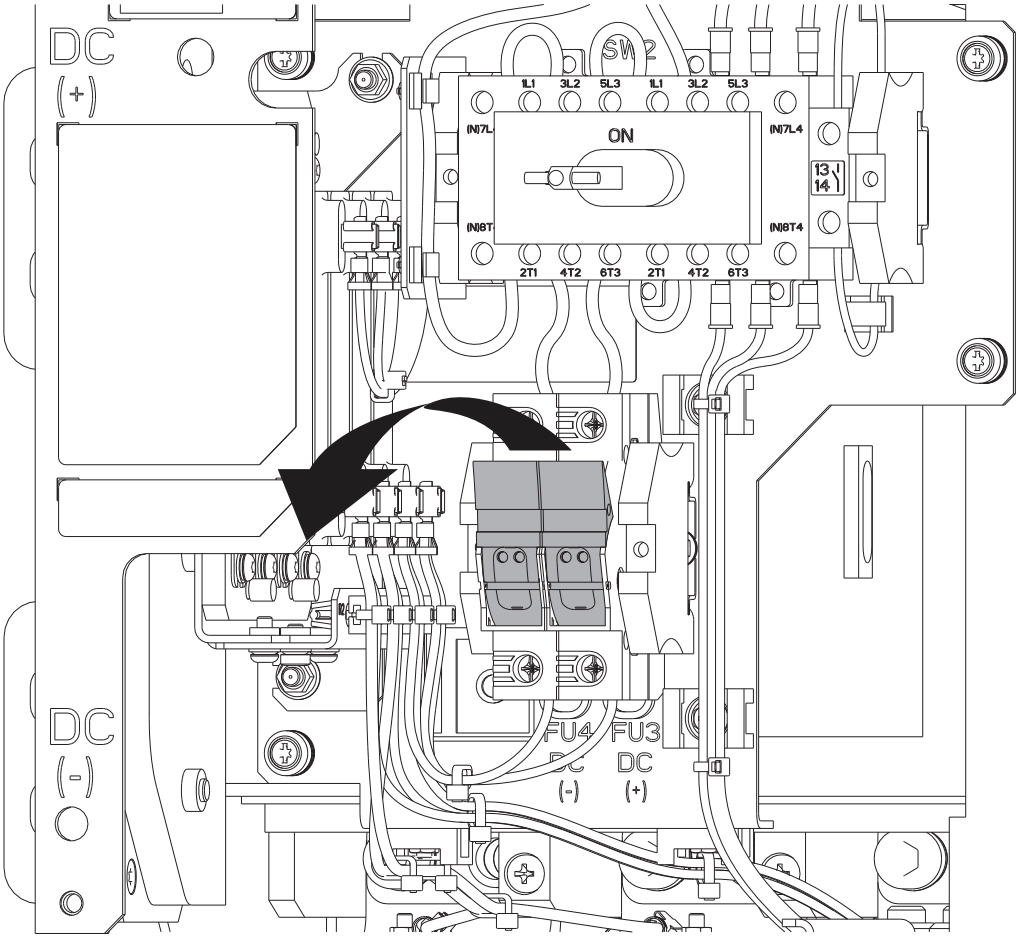
Install the DC Line Fuses (FU1 and FU2) and Fuse Indicators (SW3 and SW4)

Install the DC line fuses and fuse indicators in the reverse order of removal. See Remove the DC Line Fuses (FU1 and FU2) and Fuse Indicators (SW3 and SW4) on page 176.

Precharge Circuit Fuses Removal/Installation

Remove the Precharge Circuit Fuses (FU3 and FU4)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Pull down on the tabs at the top of the fuse holder and remove the fuse.



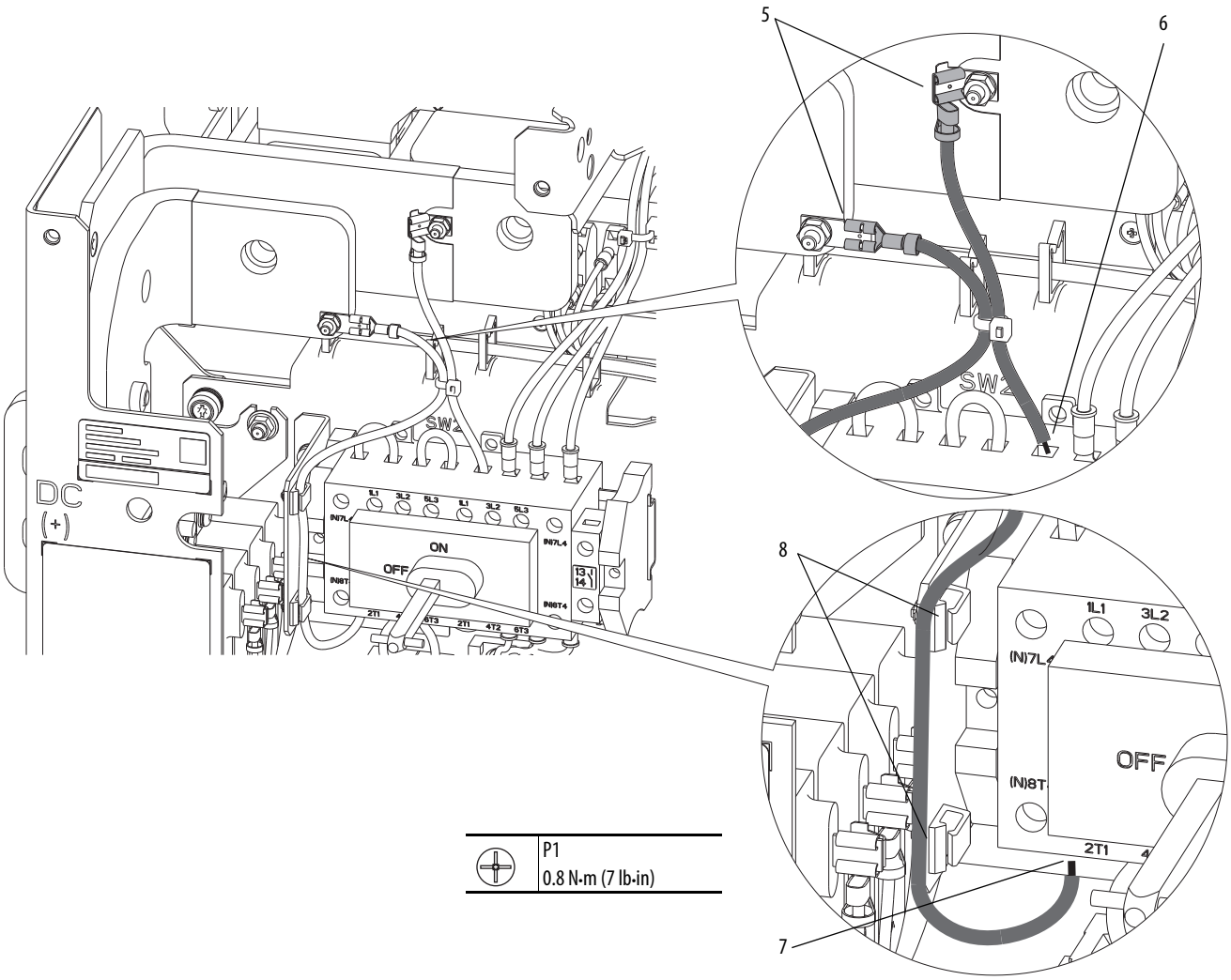
Install the Precharge Circuit Fuses (FU3 and FU4)

Install the precharge circuit fuses in the reverse order of removal. See Remove the Precharge Circuit Fuses (FU3 and FU4) on page 178.

DC Bus Input Wire Harness Removal/Installation

Remove the DC Bus Input Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Disconnect the +DC and -DC wires from the +DC and -DC bus bars, respectively.
6. Loosen the screw that secures the +DC wire to terminal SW2-5 on the disconnect switch, and remove the wire.
7. Loosen the screw that secures the -DC wire to terminal SW2-1 on the disconnect switch and remove the wire.
8. Remove the -DC wire from the two supports on the disconnect bracket and remove the wire harness.



	P1 0.8 N·m (7 lb·in)

Install the DC Bus Input Wire Harness

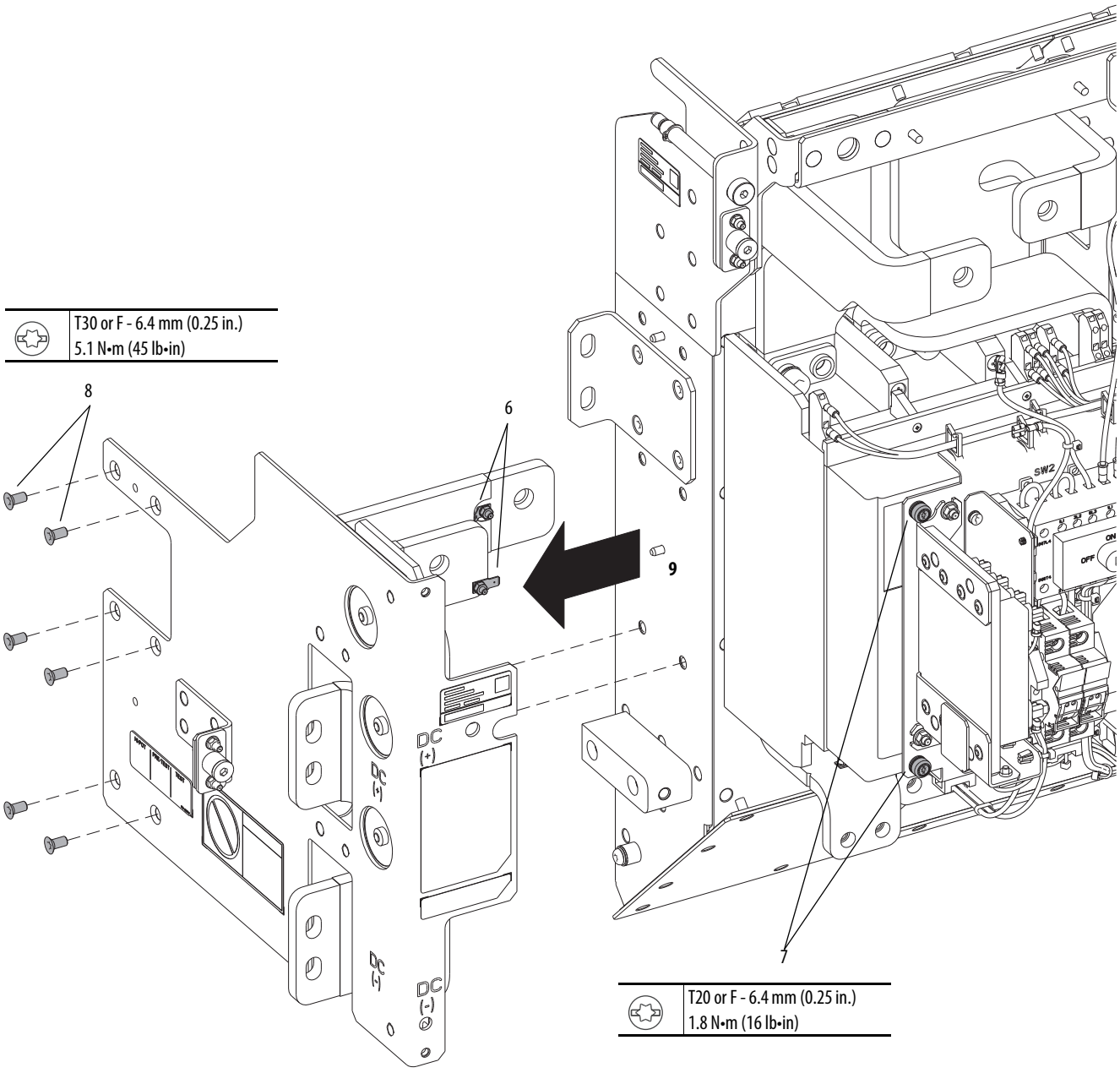
Install the DC bus input wire harness in the reverse order of removal. See Remove the DC Bus Input Wire Harness on page 179.

Left Wall Removal/ Installation

Remove the Left Wall

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the DC line fuses and fuse indicators. See Remove the DC Line Fuses (FU1 and FU2) and Fuse Indicators (SW3 and SW4) on page 176.
6. Disconnect the +DC wire (of the DC bus input wire harness) from the +DC bus bar.
7. Disconnect the -DC wire (of the DC bus input wire harness) from the -DC bus bar.
8. Loosen the two captive M4 panel fasteners that secure the disconnect bracket to the left wall.
9. Remove the six M6 x 12-mm flat head screws that secure the left wall to the drive.

10. Slide the left wall (with input bus bar assembly) off the two mounting pins and remove the left wall.



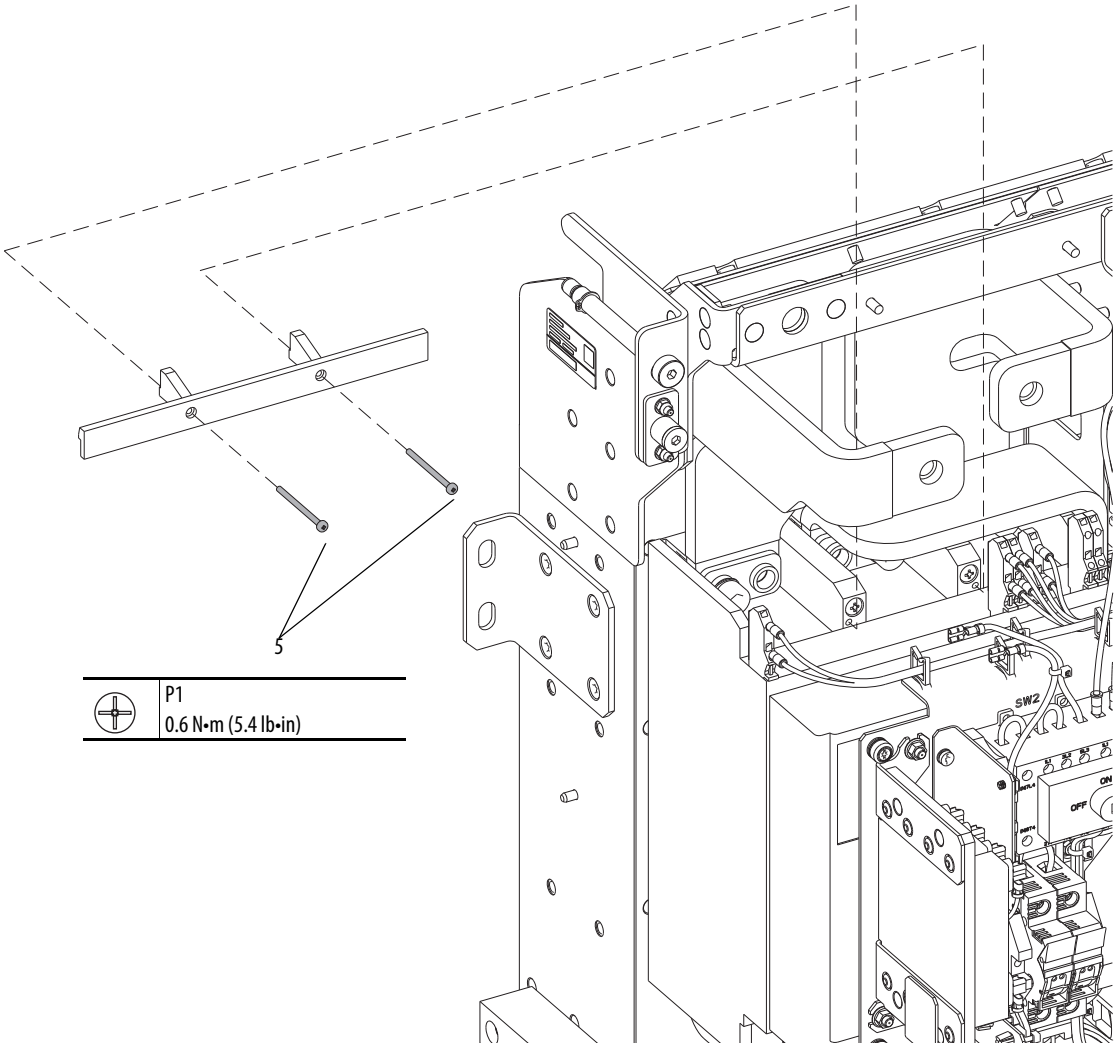
Install the Left Wall

Install the left wall in the reverse order of removal. See Remove the Left Wall on page 180.

Molded Case Switch Wire Terminal Support Removal/ Installation

Remove the Molded Case Switch Wire Terminal Support

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left wall. See Remove the Left Wall on page 180.
5. Remove the two M3 x 45 mm Phillips head screws that secure the wire terminal support to the molded case switch and remove the support.



Install the Molded Case Switch Wire Terminal Support

Install the molded-case switch wire terminal support in the reverse order of removal. See Remove the Molded Case Switch Wire Terminal Support.

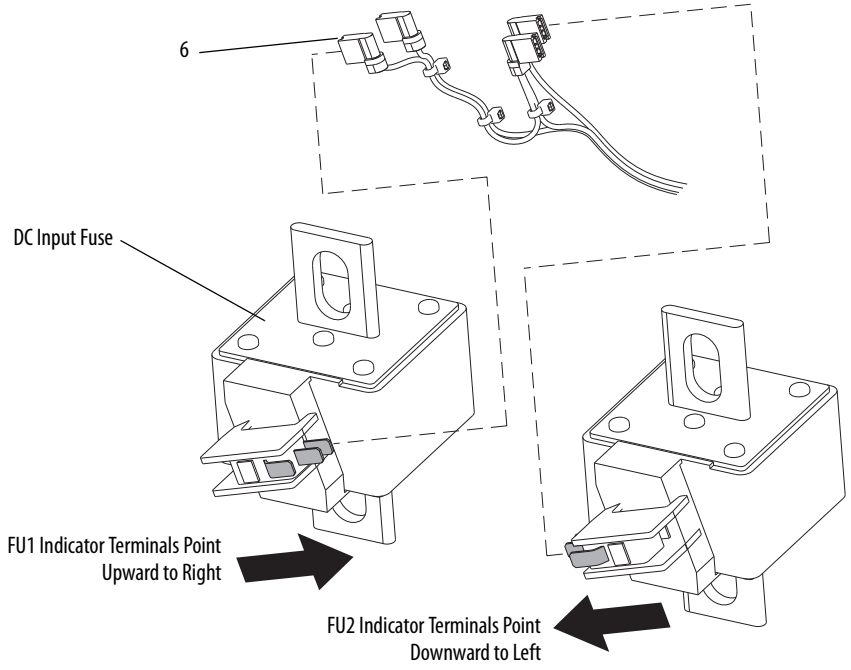
24V Control Wire Harness Removal/Installation

Remove the 24V Control Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
6. Remove the 24-V control wire harness leads from the fuse indicators SW3 (on FU1) and SW4 (on FU2).

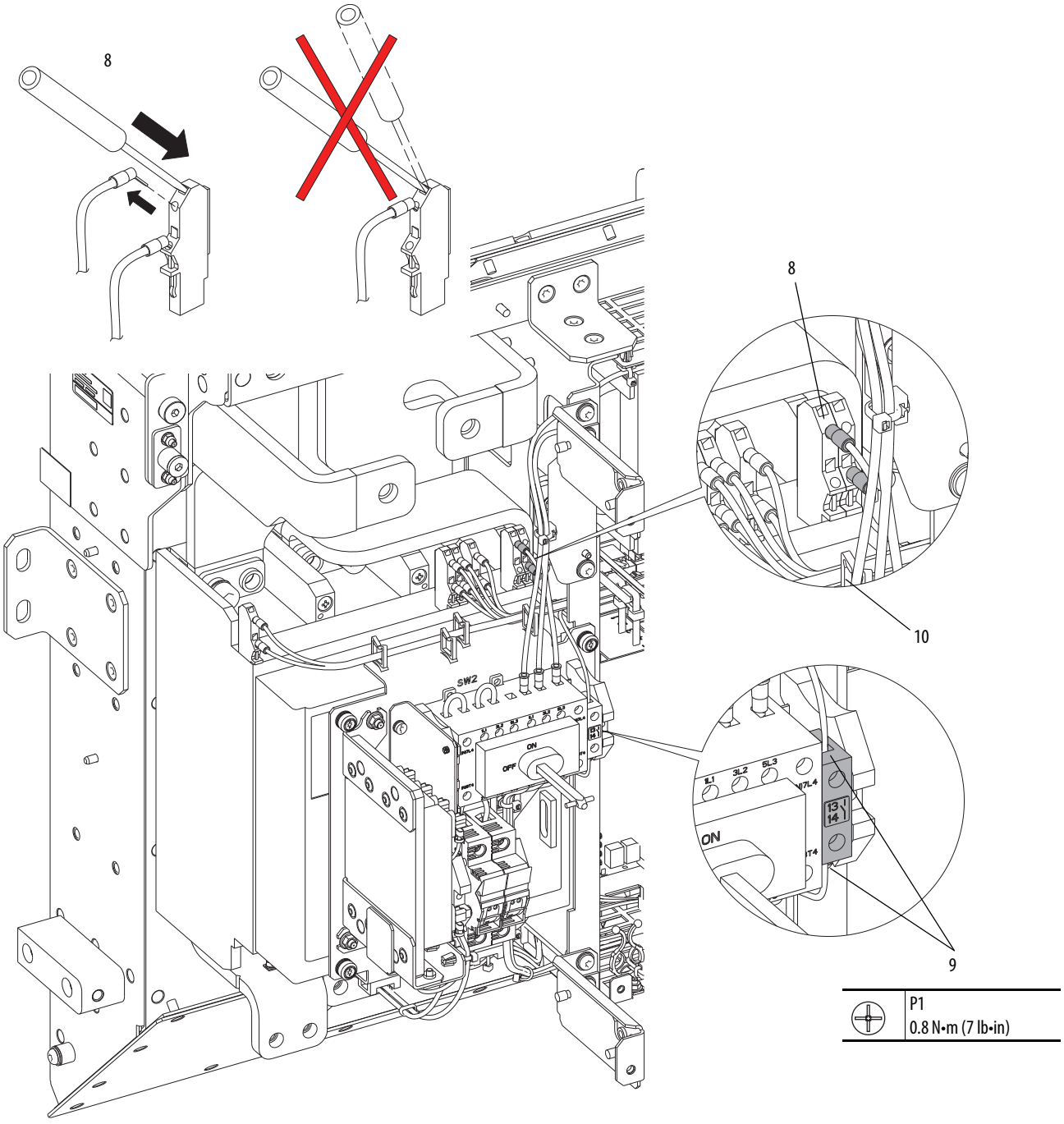
IMPORTANT	Note the orientation of the fuse indicator terminals before removal. Replace each fuse with the terminals in the same orientation as shown here.



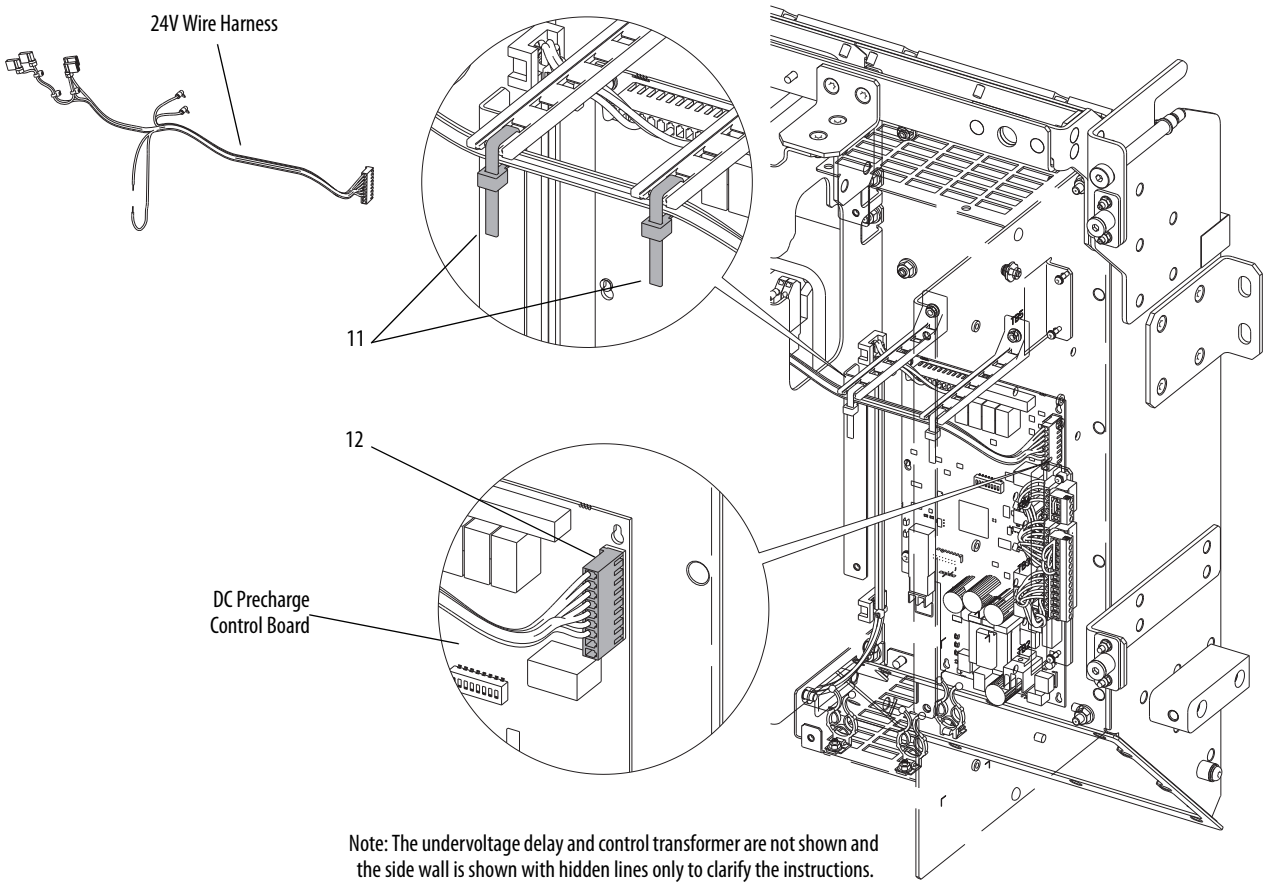
Note: Fuses shown removed in this illustration only to clarify the instructions.

7. Remove the molded-case switch wire terminal support. See Remove the Molded Case Switch Wire Terminal Support on page 182.

8. Disconnect the 24-V wire harness connector from terminals 31/21 and 32/34 on the molded case switch by using a flat nose screw driver (as shown in the illustration).
9. Loosen the Phillips head screws that secure the 24-V wire harness wires to terminals 13 and 14 on the disconnect switch auxiliary contact and remove the wires.
10. Release the 24-V wire harness from the cable support on the top, front of the disconnect switch.



11. Release, but do not remove, the two releasable cable ties from the top rungs of two cable support ladders on the control panel.
12. Disconnect the 24-V control wire harness connector from terminal P3 on the DC precharge control board. Pull the 24-V wire harness to the right through the gap in the center wall and remove the wire harness.



Note: The undervoltage delay and control transformer are not shown and the side wall is shown with hidden lines only to clarify the instructions.

Install 24V Control Wire Harness

Install the 24-V control wire harness in the reverse order of removal. See Install 24V Control Wire Harness on page 185.

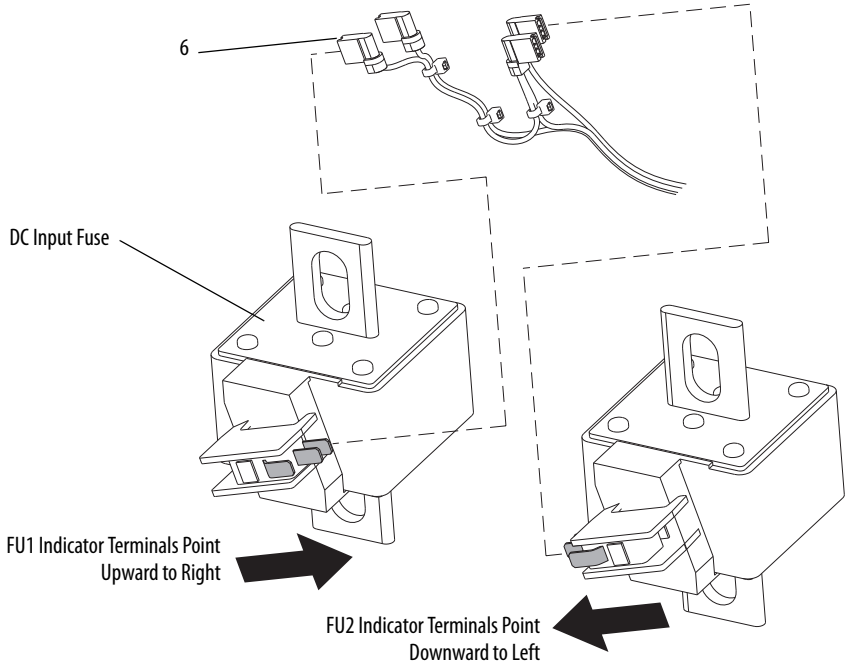
Molded-case Switch Control Wire Harness Removal/ Installation

Remove the Molded-case Switch Control Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
6. Remove the 24-V control wire harness leads from the fuse indicators SW3 (on FU1) and SW4 (on FU2).

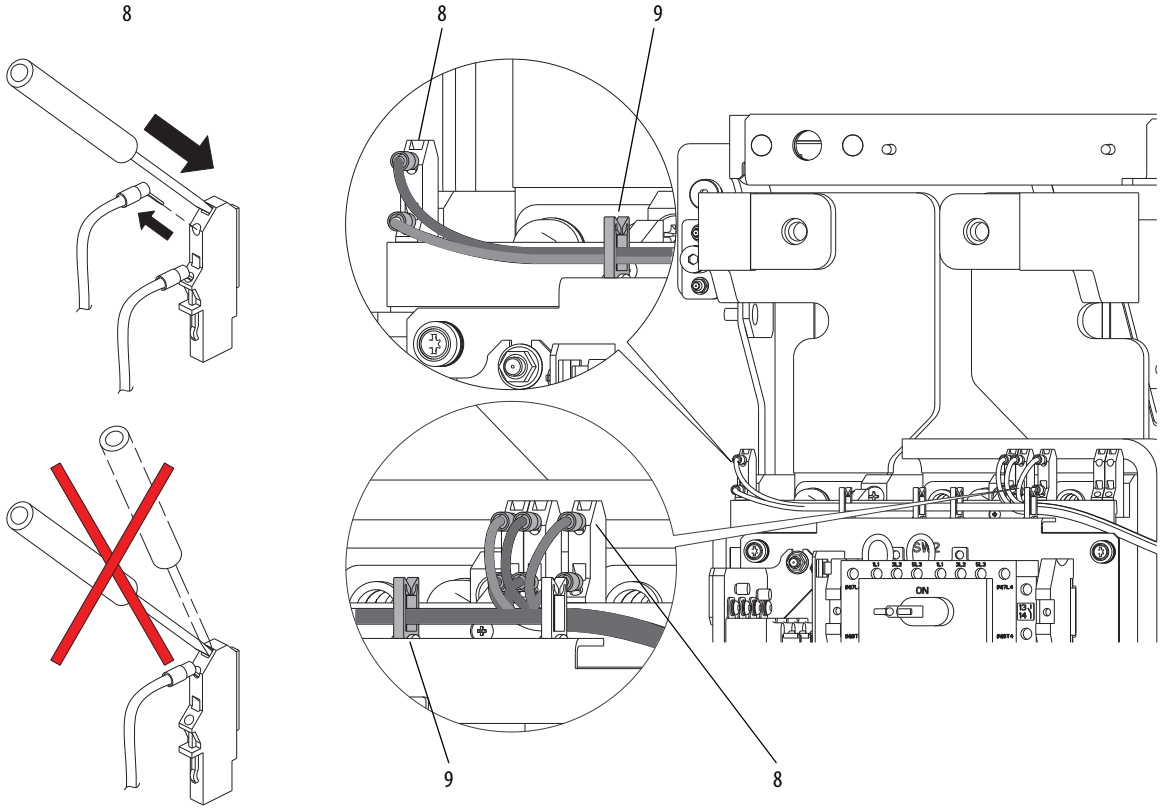
IMPORTANT	Note the orientation of the fuse indicator terminals before removal. Replace each fuse with the terminals in the same orientation as shown here.



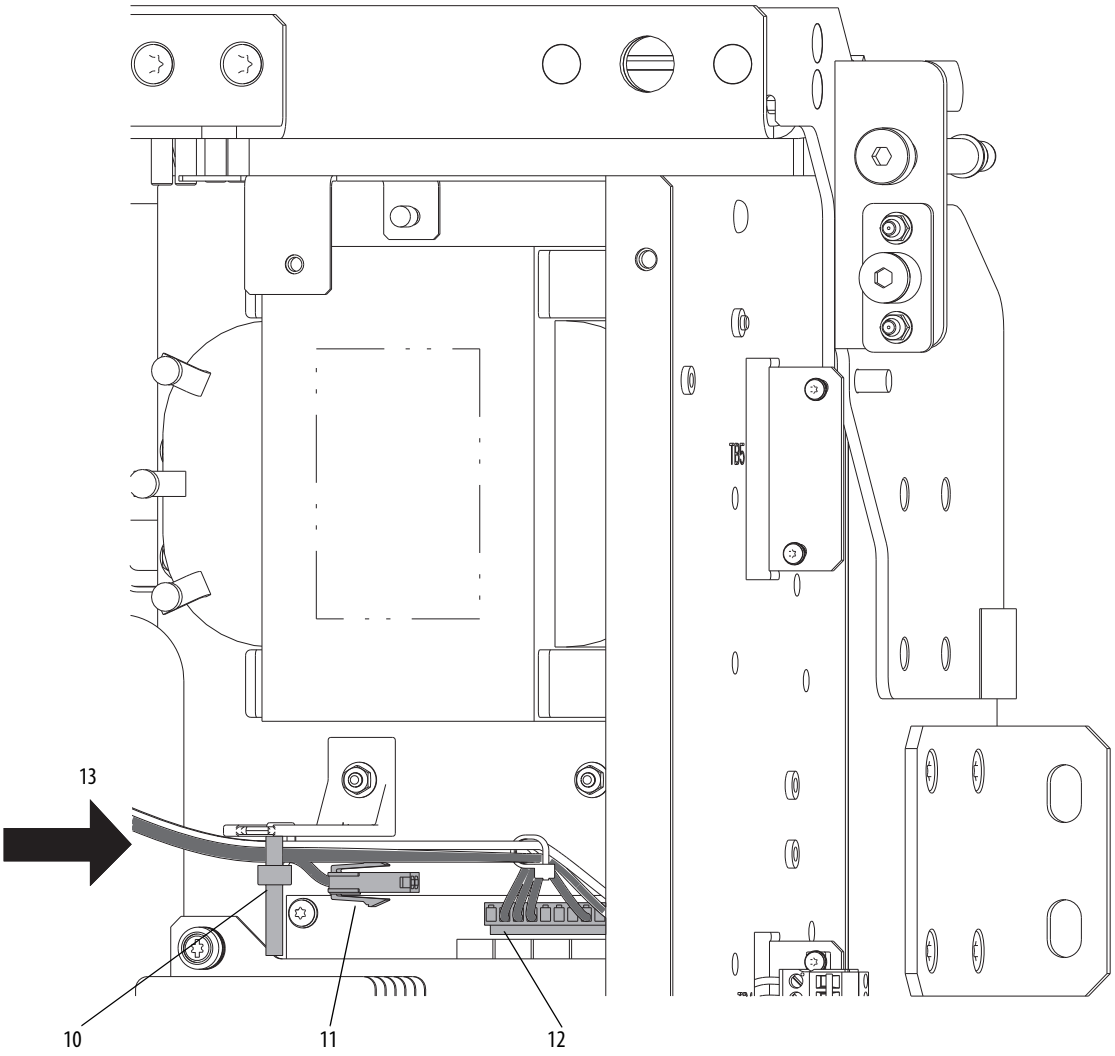
Note: Fuses shown removed in this illustration only to clarify the instructions.

7. Remove the molded-case switch wire terminal support. See Remove the Molded Case Switch Wire Terminal Support on page 182.

8. Disconnect the molded-case switch (MCS) control wire harness connector from terminals U1/U2, D1/D2, C1/C2, and C12/C11 on the molded case switch by using a flat nose screw driver (as shown in the illustration).
9. Release the harness from two supports on the top, rear of the disconnect switch.



10. Release, but do not remove, the cable tie from the second rung of the left cable support ladder on the control panel.
11. Disconnect the MCS control wire harness from the UV connector for the undervoltage delay.
12. Disconnect the MCS control wire harness connector from terminal P2 on the DC precharge control board.
13. Pull the MCS control wire harness to the right and remove the wire harness.



Install the Molded-case Switch Control Wire Harness

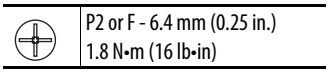
Install the molded-case switch control wire harness in the reverse order of removal. See Remove the Molded-case Switch Control Wire Harness on page 186.

Transformer Primary Wire Harness Removal/ Installation

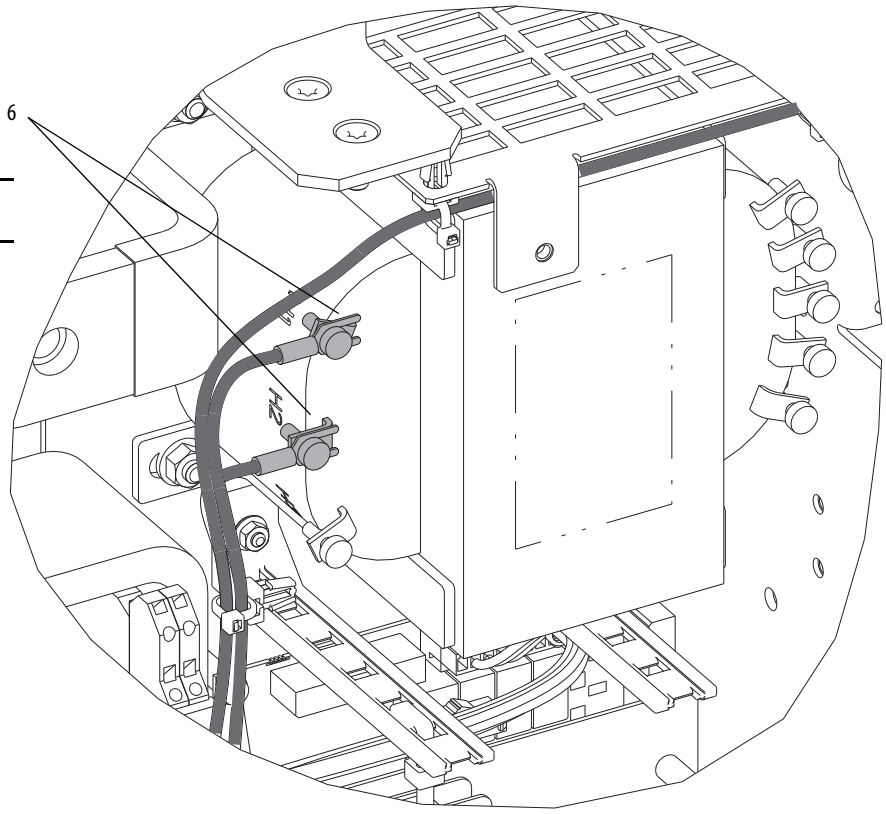
Remove the Transformer Primary Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
6. Loosen, but do not remove, the captive screws that secure the control-transformer primary lead wires to terminals H1 and HX and remove the wires.

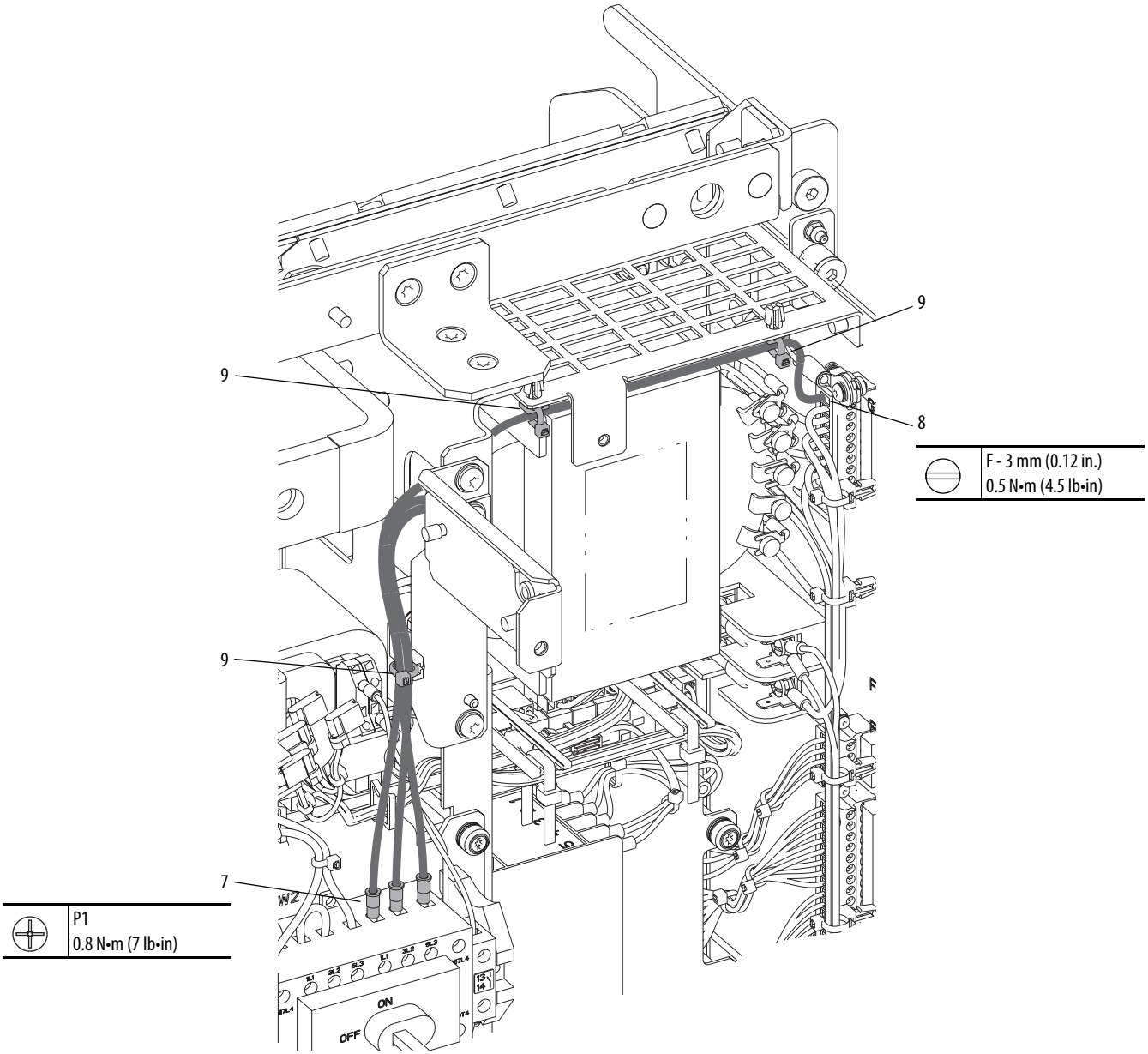


Note: Transformer wiring for 120V AC input shown.



Note: Center wall shown removed only to clarify the instructions.

7. Loosen the screws that secure the three wires to terminals SW2-6, SW2-7, and SW2-8 on the disconnect switch and remove the wires.
8. Loosen the captive screw that secures the wire to TB5-1 on right side of control panel, and remove the wire.
9. Loosen the two cable tie mounts on the center wall and the cable tie mount on the top of the control panel and remove the harness by using a pliers.



Installing the Transformer Primary Wire Harness

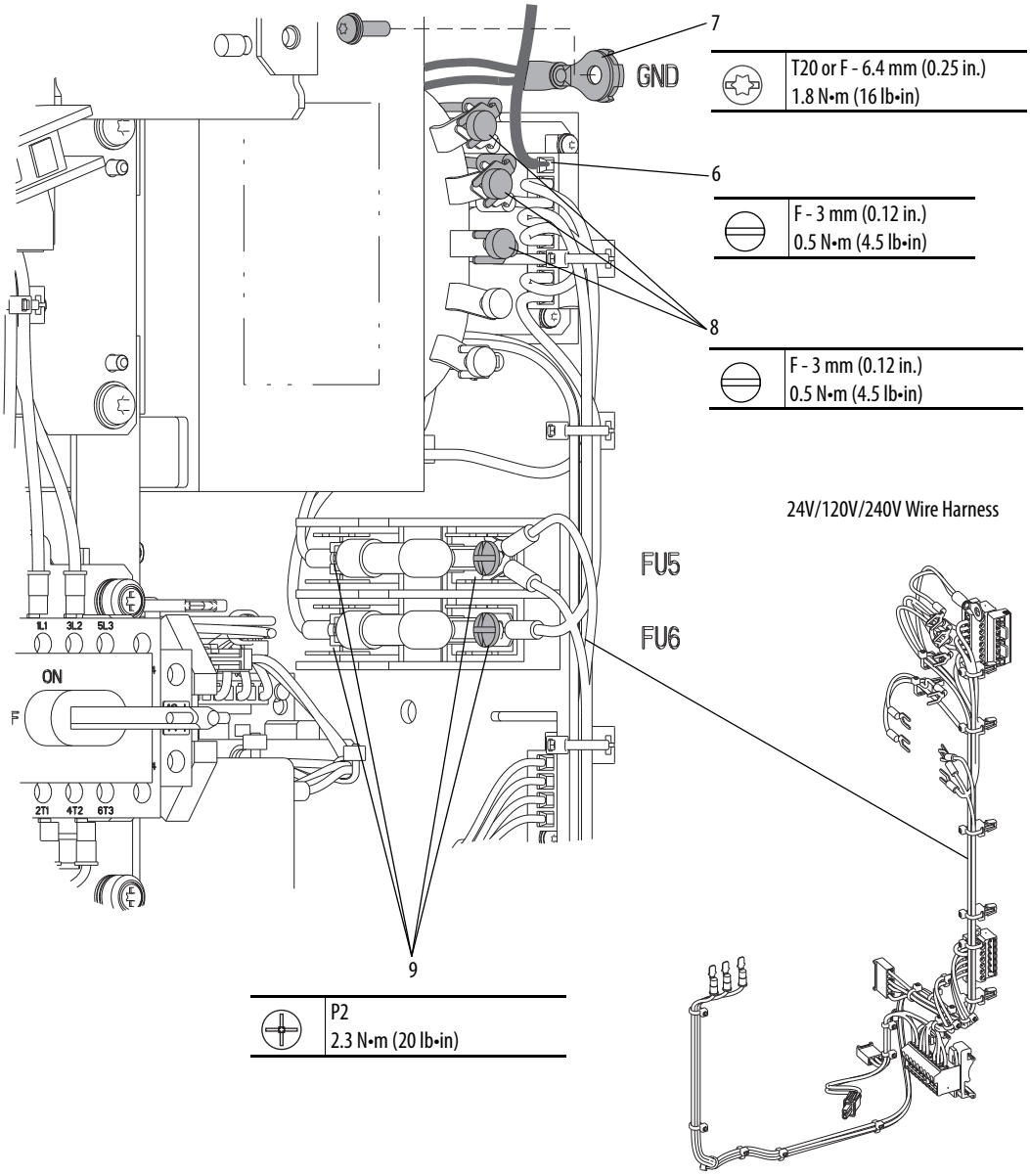
Install the transformer primary wire harness in the reverse order of removal. See Remove the Transformer Primary Wire Harness on page 189.

24V/120V/240V Wire Harness Removal/Installation

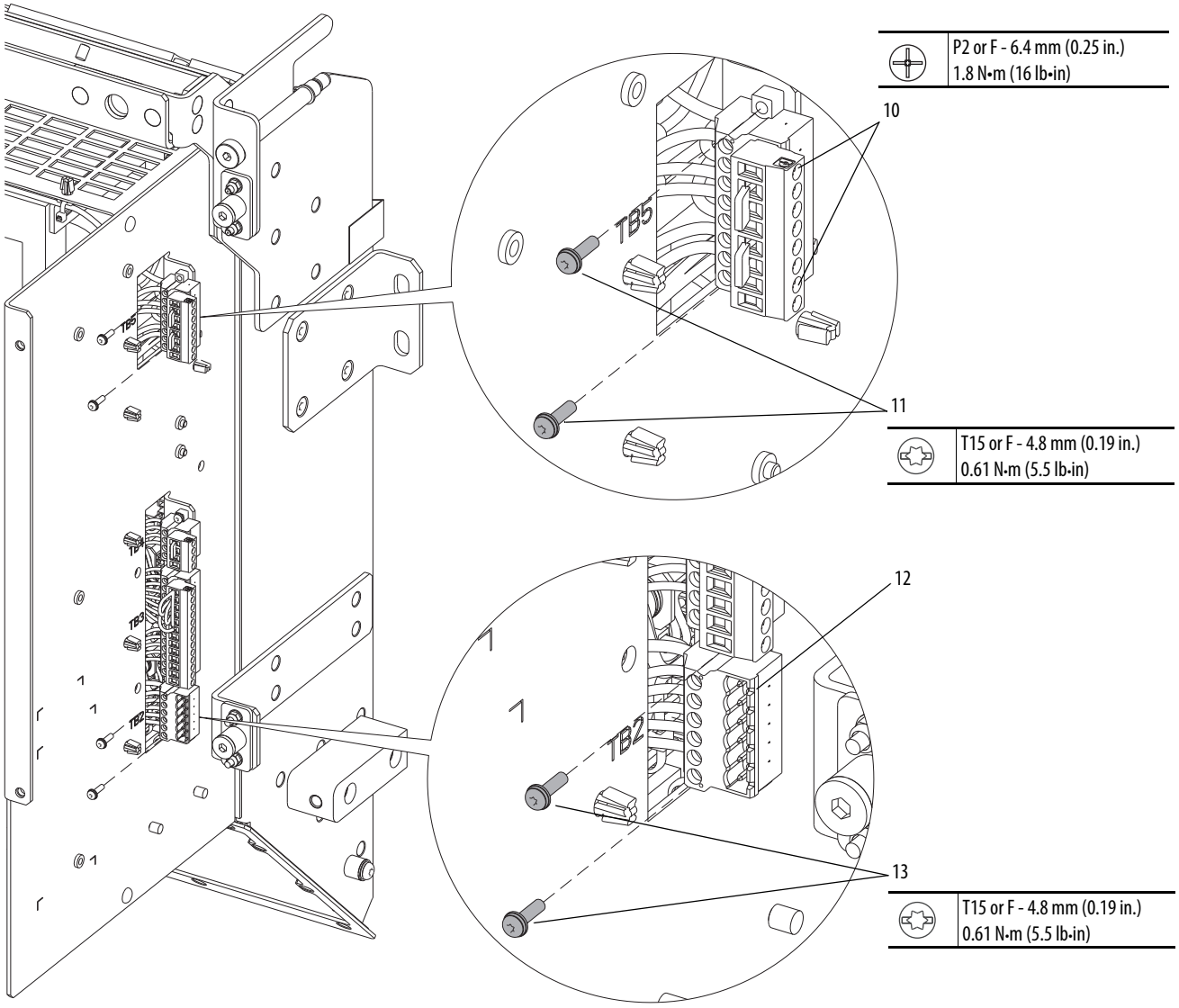
Remove the 24V/120V/240V Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
6. Loosen the screw that secures the transformer primary wire harness to terminal 1 on terminal block TB5, and remove the wire.
7. Remove the M4 x 12-mm screw and grounding washer that secure the ground wire lug to the control panel; and remove the ground wire lug.
8. Loosen, but do not remove, the M4 screws that secure the secondary lead wires to terminals X1, X2, and X3 on the control transformer; and remove the leads.
9. Loosen, but do not remove, the captive screws that secure the four leads wires to FU5 and FU6 fuse blocks; and remove the leads.

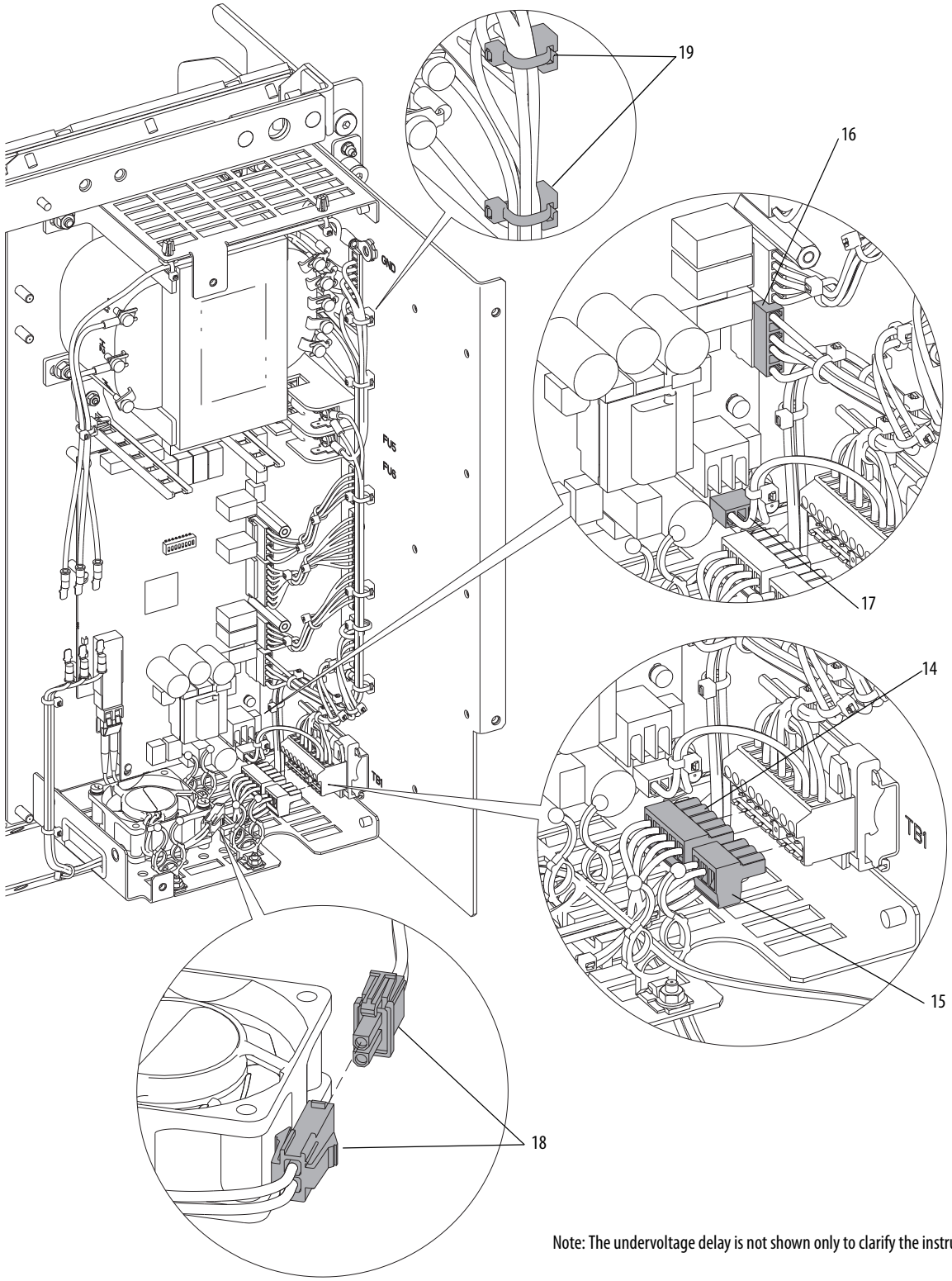

7
GND
T20 or F - 6.4 mm (0.25 in.)
1.8 N•m (16 lb•in)
6
F - 3 mm (0.12 in.)
0.5 N•m (4.5 lb•in)
8
F - 3 mm (0.12 in.)
0.5 N•m (4.5 lb•in)
24V/120V/240V Wire Harness
FU5
FU6
5L1 3L2 5L3
ON
2T1 4T2 6T3
9
P2
2.3 N•m (20 lb•in)

10. Loosen the screws that secure the 120-V control power output wiring (if used) to terminals 7 and 8 on terminal block TB5, and remove the wires.
11. Remove the two M3 x 12-mm screws that secure terminal block TB5 to the control panel and remove the terminal block.
12. Remove the plug-in terminal block for the enclosure fan harness, 120/240V control power input harness, and 120V UPS harness from terminal block TB2.
13. Remove the two M3 x 12-mm screws that secure terminal block TB2 to the control panel and remove the terminal block.



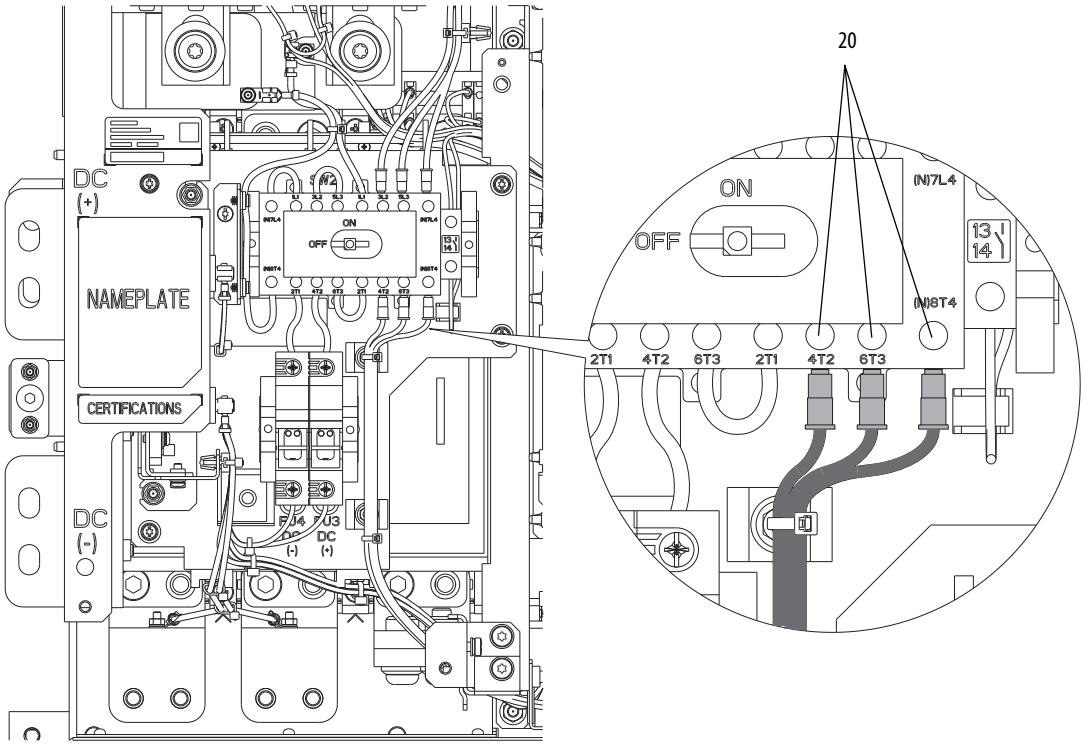
14. Disconnect the five-position inverter power supply harness connector from terminal block TB1 (see following illustration).
15. Disconnect the three-position 24V wire harness connector from terminal block TB1 (see following illustration).
16. Disconnect the enclosure fan six-position connector from P9 on the DC precharge control board (see following illustration).

17. Disconnect the system 24V three-position connector from P10 on the DC precharge control board.
18. Disconnect the two-position connector from the stirring fan.
19. Loosen and remove the seven cable tie mounts along the right surface of the control panel by using a pliers.

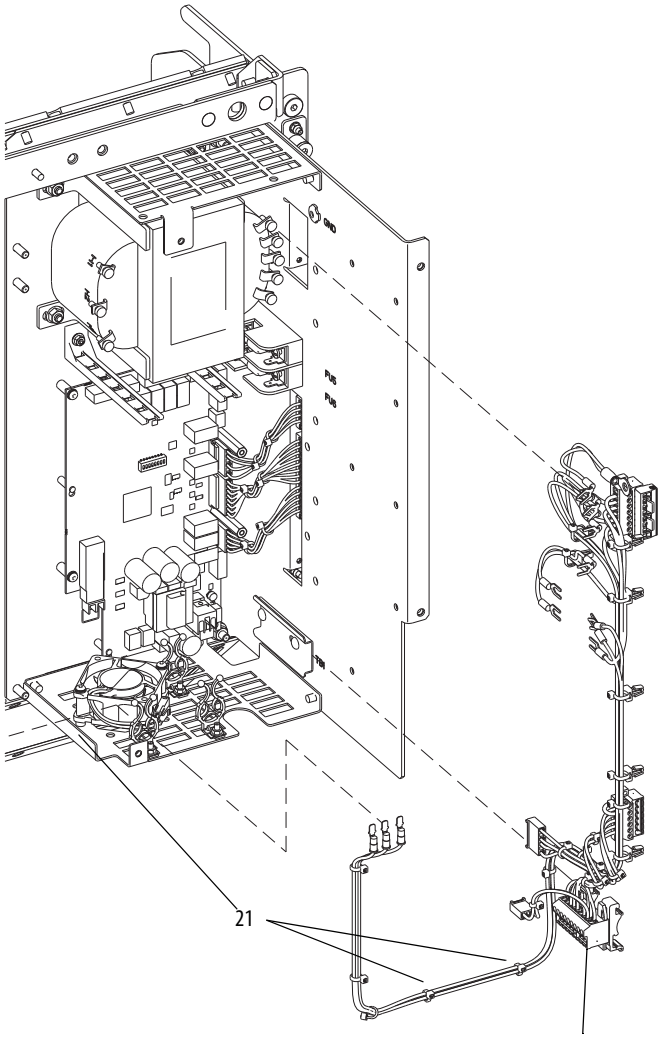


Note: The undervoltage delay is not shown only to clarify the instructions.

20. Loosen the screws that secure the input wires to terminals SW2-6, SW2-7, and SW2-8 on the disconnect switch and remove the wires.



21. Cut four cable ties between the disconnect switch and terminal block TB1. Pull the three disconnect switch wires SW2-6, SW2-7, and SW2-8 through the opening in the bottom, center wall of the control panel.
22. Release terminal block TB1 from the DIN rail and remove the 24V/120V/240V wire harness from the control panel.



Note: The undervoltage delay is not shown only to clarify the instructions.

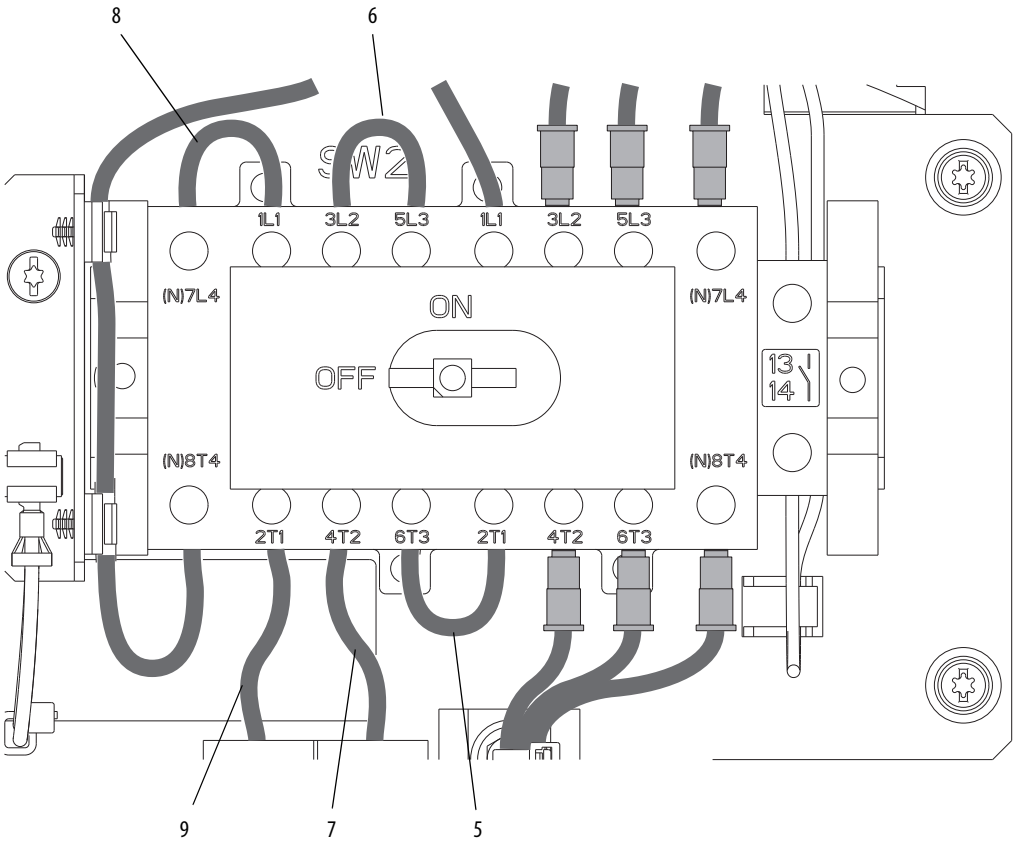
Install the 24V/120V/240V Wire Harness

Install the 24V/120V/240V wire harness in the reverse order of removal. See Remove the 24V/120V/240V Wire Harness on page 191.

Disconnect Switch Jumper Wires Removal/Installation

Remove the Disconnect Switch Jumper Wires

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Disconnect the +DC jumper wire from terminals SW2-5 and SW2-4 on the bottom of the disconnect switch.
6. Disconnect the +DC jumper wire from terminals SW2-4 and SW2-3 on the top of the disconnect switch.
7. Disconnect the +DC jumper wire from terminal SW2-3 on the bottom of the disconnect switch and the top of fuse block FU3.
8. Disconnect the -DC jumper wire from terminals SW2-1 and SW2-2 on the top of the disconnect switch.
9. Disconnect the -DC jumper wire from terminal SW2-2 on the bottom of the disconnect switch and the top of fuse block FU4.



Disconnect Terminals:

	P1 0.8 N•m (7 lb•in)

Fuse Block Terminals:

	PZ2 2.5 N•m (22 lb•in)

Install the Disconnect Switch Jumper Wires

Install the disconnect switch jumper wires in the reverse order of removal. See Remove the Disconnect Switch Jumper Wires on page 197.

Disconnect Switch (SW2), Auxiliary Contact, and Handle Shaft Removal/ Installation

Remove the Disconnect Switch, Auxiliary Contact and Handle Shaft

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Remove the DC bus input harness +DC wire from the disconnect switch terminal SW2-5 and the DC bus input harness -DC wire from the disconnect switch terminal SW2-1. See Remove the DC Bus Input Wire Harness on page 179.
6. Remove the 24-V control harness wires from terminals 13 and 14 on the disconnect switch auxiliary contact. See Remove the 24V Control Wire Harness on page 183.
7. Remove the transformer primary wire harness from the disconnect switch terminals SW2-6, SW2-7, and SW2-8. See Remove the Transformer Primary Wire Harness on page 189.
8. Remove the 24V/120V/240V wire harness from the disconnect switch terminals SW2-6, SW2-7, and SW2-8. See Remove the 24V/120V/240V Wire Harness on page 191.
9. Remove the five disconnect switch jumper wires from the disconnect switch SW2. See Remove the Disconnect Switch Jumper Wires on page 197.
10. Extend the two release tabs near poles 4 and 7 on the bottom of the disconnect switch. Remove the disconnect switch, auxiliary contact, and handle shaft from the mounting rail.

    Note: The auxiliary contact snaps fits onto the disconnect switch.

    Note: If removed, fully insert the handle shaft to the bottom of the disconnect switch before set screw tightening. A 2.5-mm hex key and tightening torque of 0.6 N•m (5.4 lb•in) is recommended for the set screw.

Install the Disconnect Switch, Auxiliary Contact and Handle Shaft

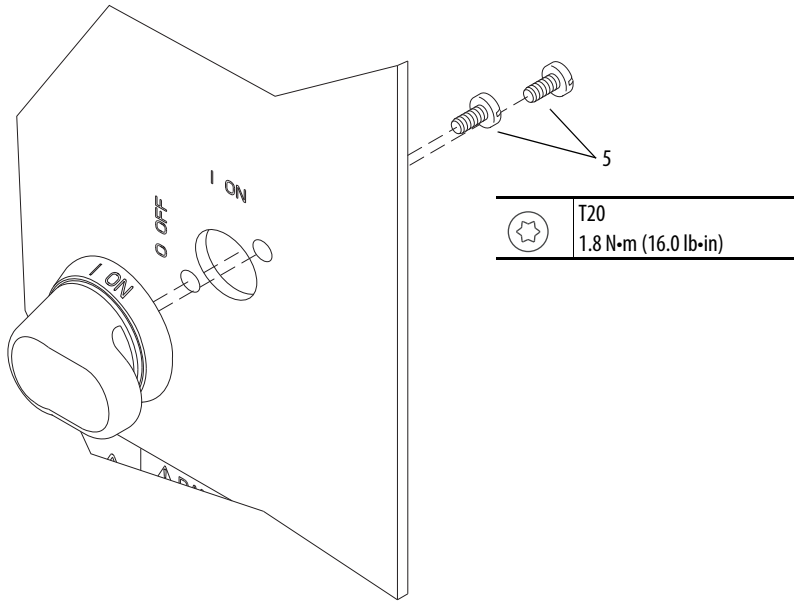
Install the disconnect switch, auxiliary contact, and handle shaft in the reverse order of removal. See Remove the Disconnect Switch, Auxiliary Contact and Handle Shaft on page 198.

Wiring must be installed as shown in the DC Input with Precharge Assembly Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes Common DC Input Drives) on page 436.

Disconnect Switch Handle Removal/Installation

Remove the Disconnect Switch Handle

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. Remove the two M4 x 12-mm long screws and washers that secure the handle to the front cover and remove the handle.



Install the Disconnect Switch Handle

Install the disconnect switch handle in the reverse order of removal. See Remove the Disconnect Switch Handle on page 199.

IMPORTANT The disconnect switch handle must be installed in the orientation that is shown in the illustration.

Control Transformer Removal/Installation

Remove the Control Transformer

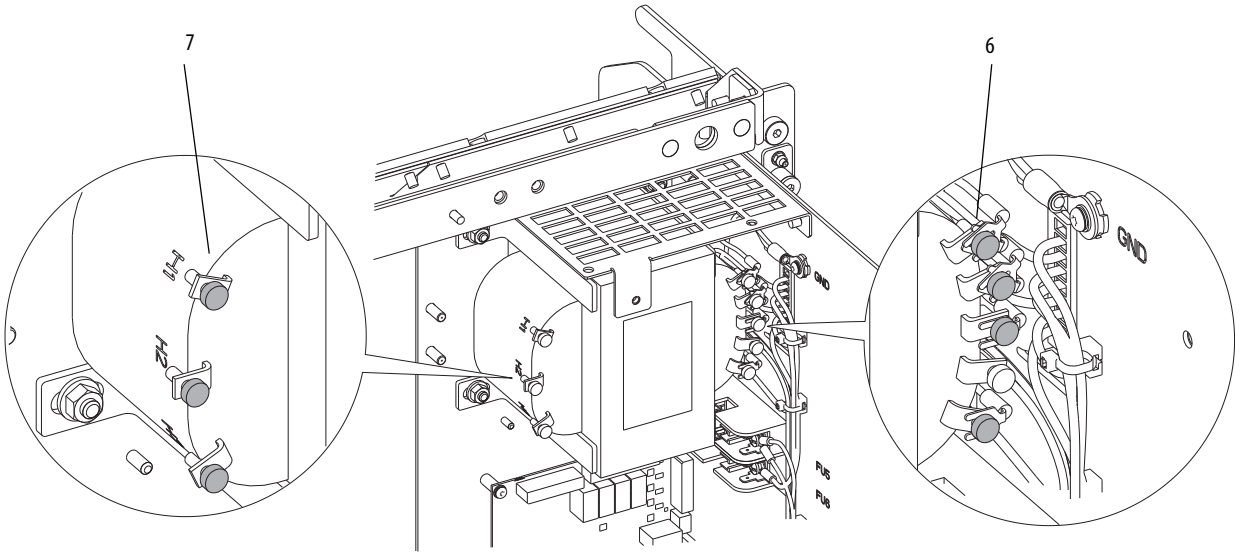
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.

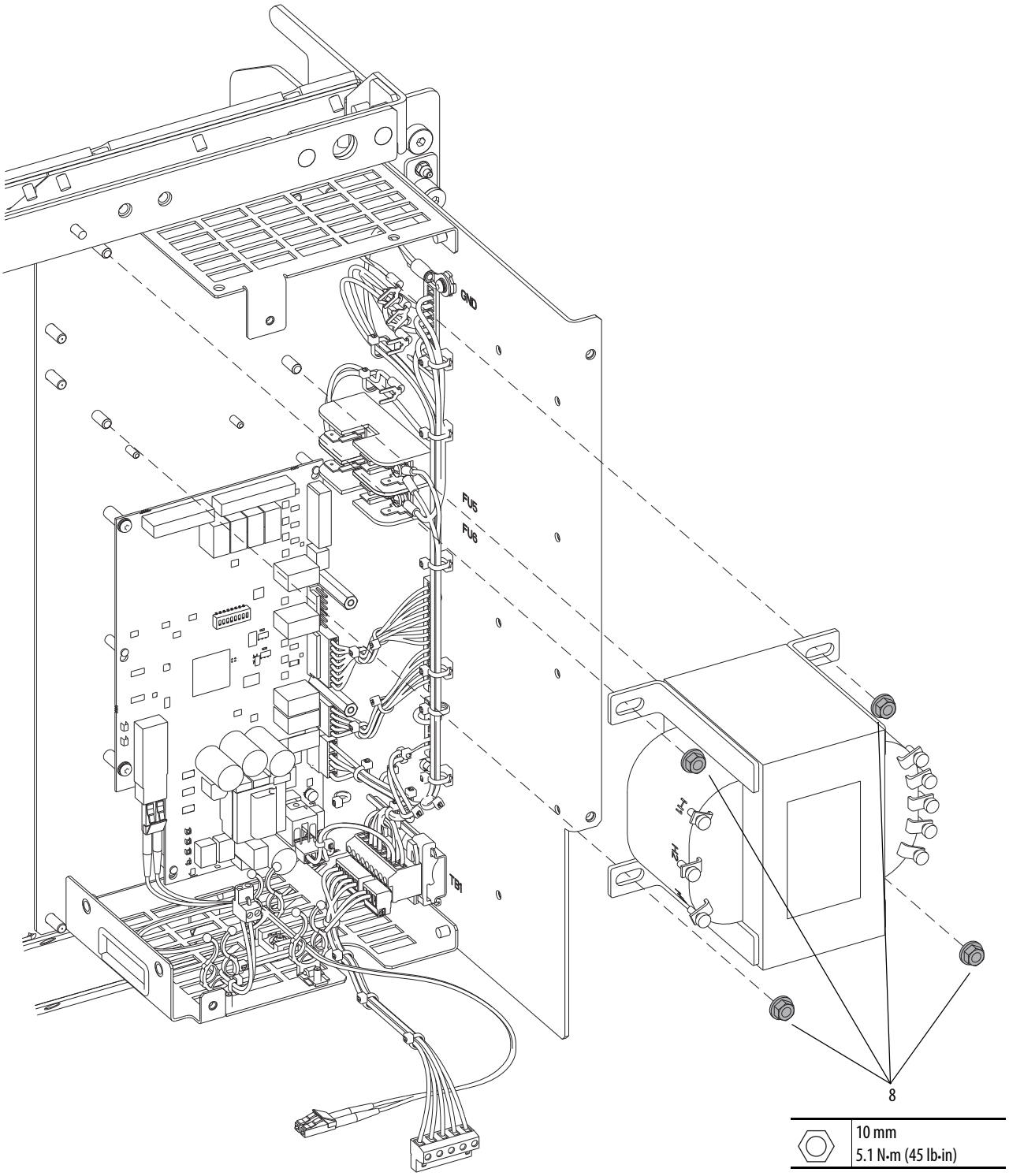
6. Loosen, but do not remove, the M4 screws that secure the X1, X2, X3, and X4 secondary lead wires to the control transformer and remove the wires.

IMPORTANT	Before you disconnect the control-transformer primary wire leads, note the terminal locations. The control transformer has both 120V and 240V input phase terminals. See the DC Input with Precharge Assembly Control Transformer Schematic Diagram on page 436 for more information.

7. Loosen, but do not remove, the M4 screws that secure the H1 and HX primary lead wires to the control transformer and remove the wires.



8. Remove the four M6 hex nuts that secure the control transformer to the control panel and slide the control transformer forward off the control panel studs.



Note: The undervoltage delay is not shown only to clarify the instructions.

Install the Control Transformer

Install the control transformer in the reverse order of removal. See Remove the Control Transformer on page 200.

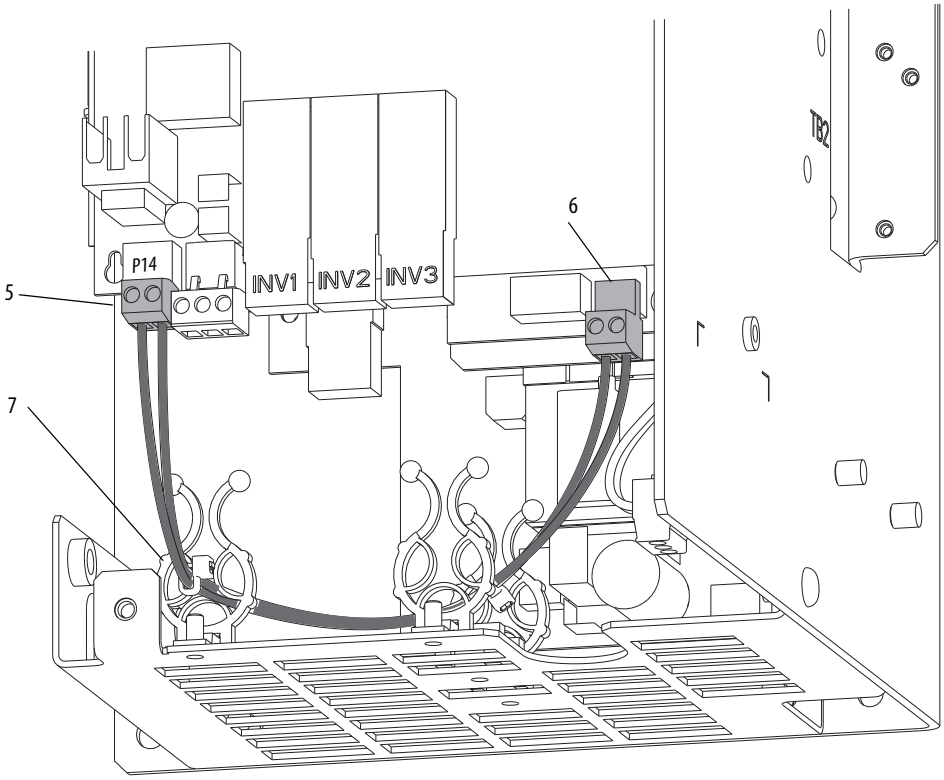
IMPORTANT Be sure that the control-transformer primary wire harness lead wires H1 and HX are connected to the proper input terminals. The control transformer has both 120V and 240V input phase terminals. See the DC Input with Precharge Assembly Control Transformer Schematic Diagram on page 436 for more information. If the wires are connected to the wrong terminals, drive damage can occur.

Control Power Isolator Board 24V Wire Harness Removal/ Installation (810/932V DC Input Drives Only)

Remove the Control Power Isolator Board 24V Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the door of the enclosure that contains the control pod.
4. To gain access to the DC input with precharge assembly control panel, rotate the control pod. See Rotate the Control Pod Forward on page 84.

5. If necessary, disconnect the 24-V wire harness two-position connector from P14 on the fiber interface board in the control pod.
6. Disconnect the 24-V wire harness two-position connector from the bottom of the control power isolator board.
7. Untwist one twist-lock cable support and remove the harness.



Install the Control Power Isolator Board 24V Wire Harness

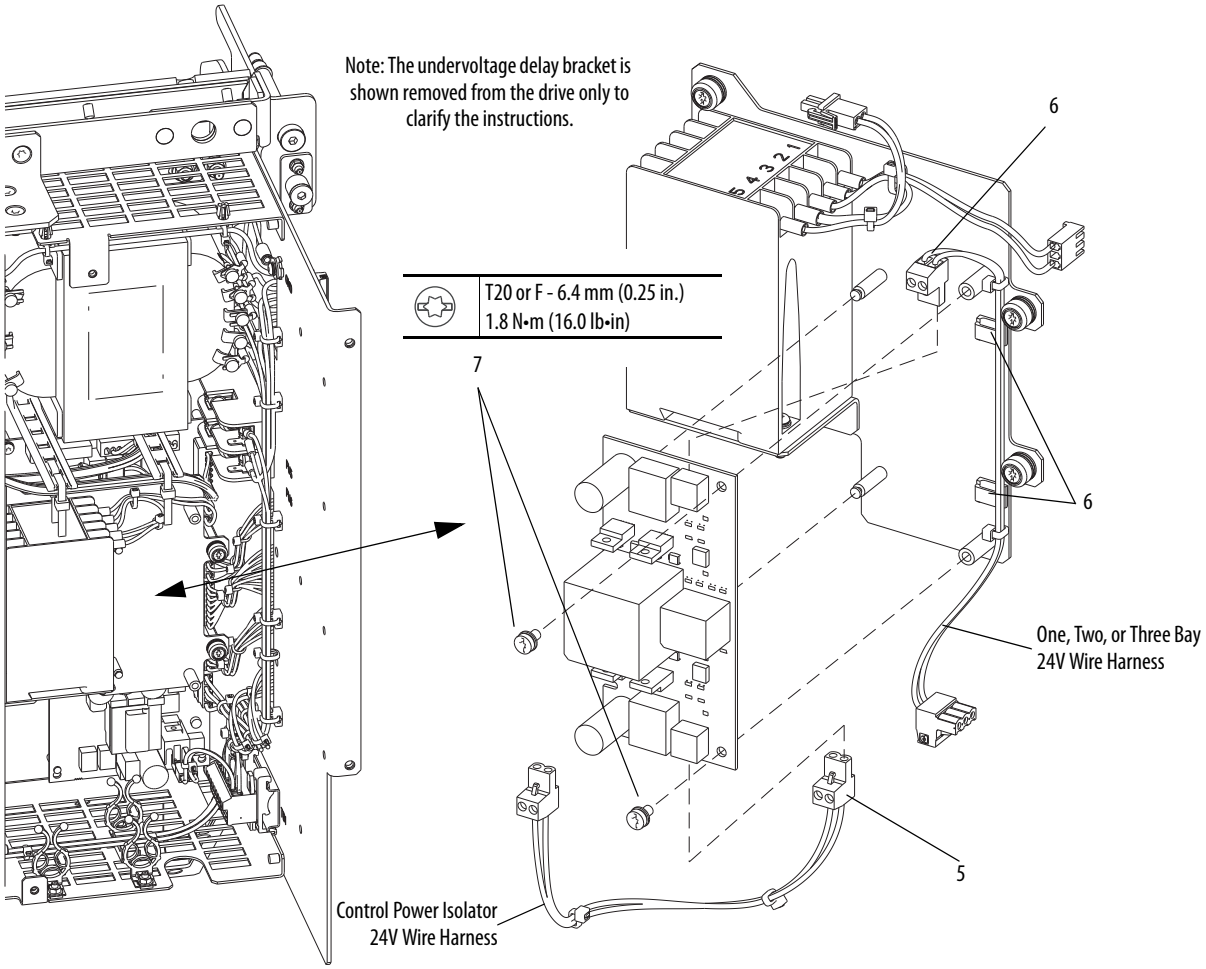
Install the control power isolator board 24V wire harness in the reverse order of removal. See Remove the Control Power Isolator Board 24V Wire Harness on page 203.

Control Power Isolator Board Removal/Installation (810/932V DC Input Drives Only)

Remove the Control Power Isolator Board

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the door of the enclosure that contains the control pod.
4. To gain access to the DC input with precharge assembly control panel, rotate the control pod. See Rotate the Control Pod Forward on page 84.

5. Disconnect the 24-V wire harness two-position connector from the bottom of the control power isolator board.
6. Disconnect the one, two, or three bay 24V wire harness two-position connector from the top of the control power isolator board. Disengage the harness from the two side-entry cable supports.
7. Remove the two M4 x 12-mm screws that secure the control power isolator board to the mounting bracket, slide the board to the right to disengage it from the two keyhole standoffs, and remove the board.



Install the Control Power Isolator Board

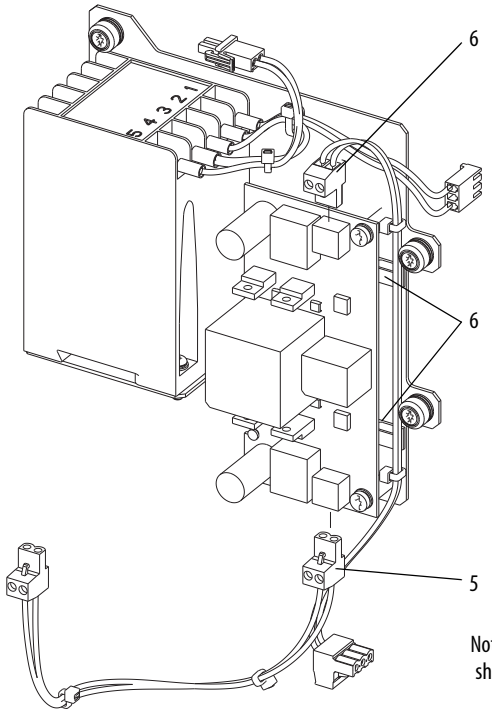
Install the control power isolator board in the reverse order of removal. See Remove the Control Power Isolator Board on page 204.

Undervoltage Delay Bracket Removal/Installation

Remove the Undervoltage Delay Bracket

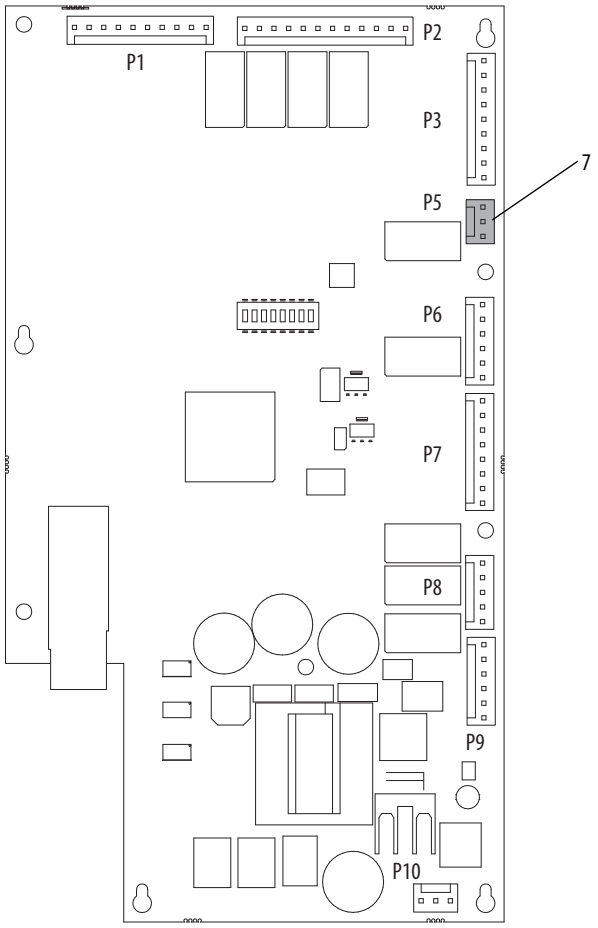
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
5. For 810/932V DC input drives only, disconnect the 24-V wire harness two-position connector from the bottom of the control power isolator board.
6. For 810/932V DC input drives only, disconnect the upper 24V wire harness two-position connector from the top of the control power isolator board. Disengage the harness from the two side entry cable supports.

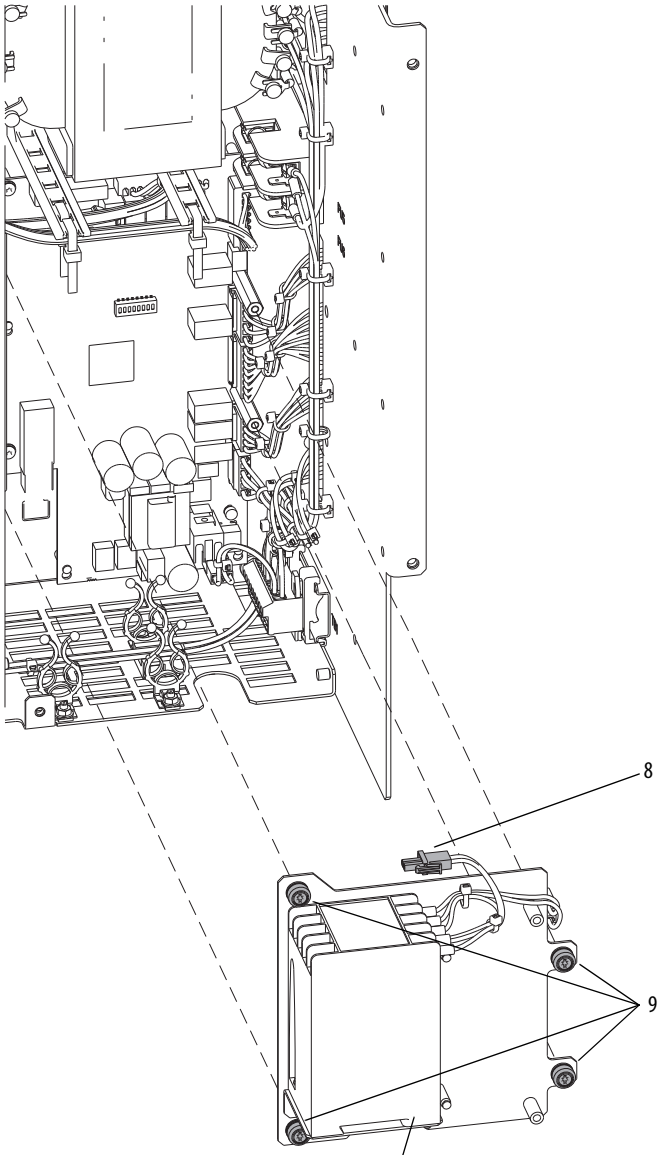


Note: The undervoltage delay bracket is shown removed from the drive only to clarify the instructions.

7. Disconnect the undervoltage wire harness connector from terminal P5 on the DC precharge control board.



8. Disconnect the undervoltage wire harness connector from connector UV on the molded-case switch control wire harness.
9. Loosen the four M4 captive panel fasteners on the undervoltage delay bracket and remove bracket.



Note: The control power isolation board is not shown only to clarify the instructions.

Install the Undervoltage Delay Bracket

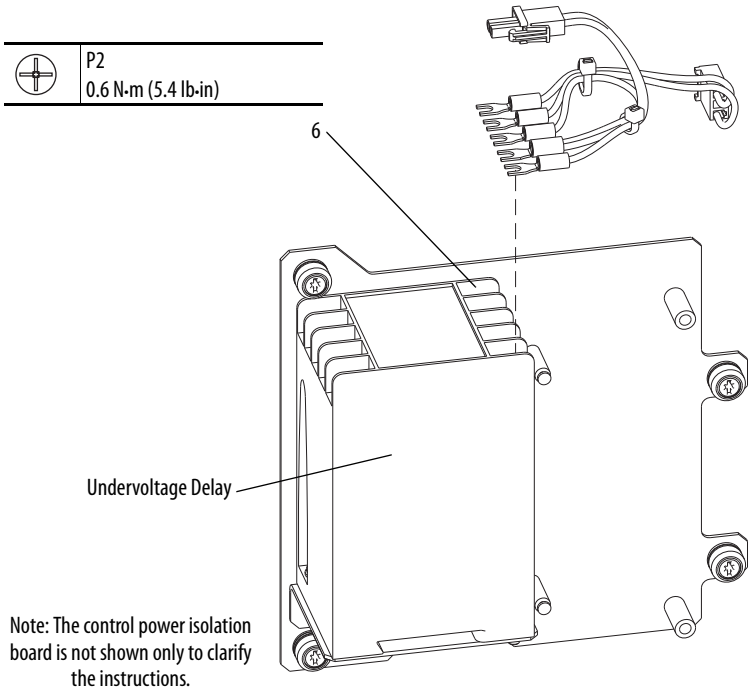
Install the undervoltage delay bracket in the reverse order of removal. See Remove the Undervoltage Delay Bracket on page 206.

Undervoltage-delay Wire Harness Removal/ Installation

Remove the Undervoltage Delay Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
5. Remove the undervoltage delay bracket from the control panel. See Remove the Undervoltage Delay Bracket on page 206.
6. Loosen the captive screws that secure the five harness wires to the undervoltage delay terminals and remove the wire harness.



Install the Undervoltage Delay Wire Harness

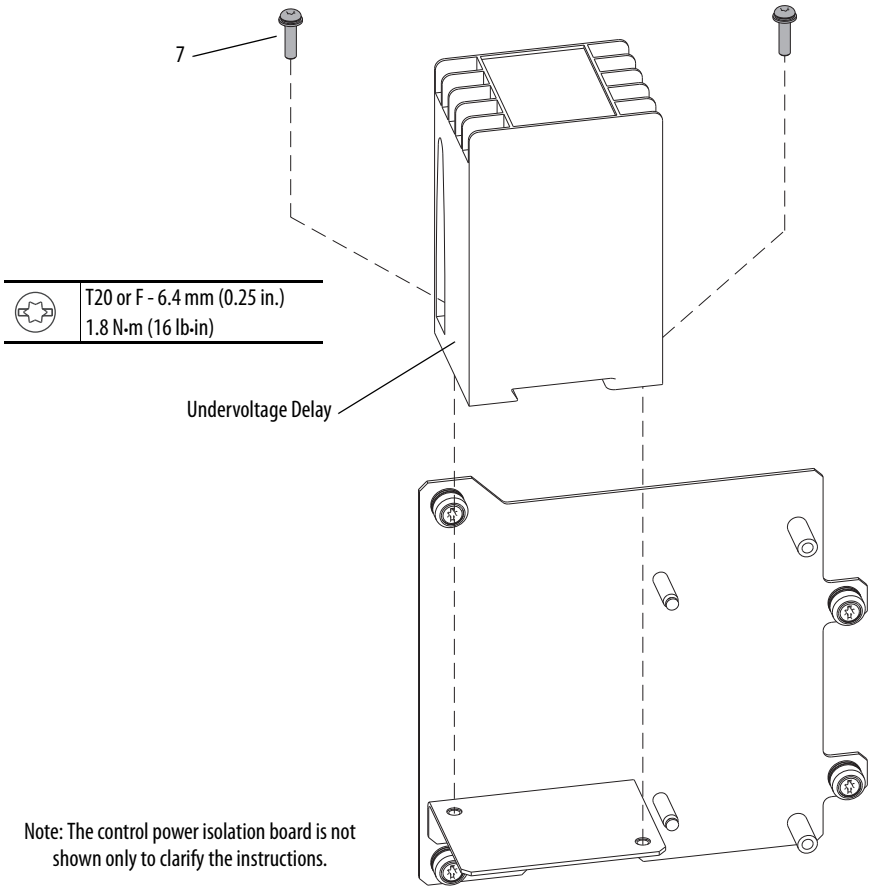
Install the undervoltage delay wire harness in reverse order of removal. See Remove the Undervoltage Delay Wire Harness on page 209.

Undervoltage Delay Removal/Installation

Remove the Undervoltage Delay

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
5. Remove the undervoltage delay bracket from the control panel. See Remove the Undervoltage Delay Bracket on page 206.
6. Remove the undervoltage delay wire harness. See Remove the Undervoltage Delay Wire Harness on page 209.
7. Remove two M4 x 16-mm screws that secure the undervoltage delay to its mounting bracket, and remove the undervoltage delay.



Note: The control power isolation board is not shown only to clarify the instructions.

Install the Undervoltage Delay

Install the undervoltage delay in the reverse order of removal. See Remove the Undervoltage Delay on page 210.

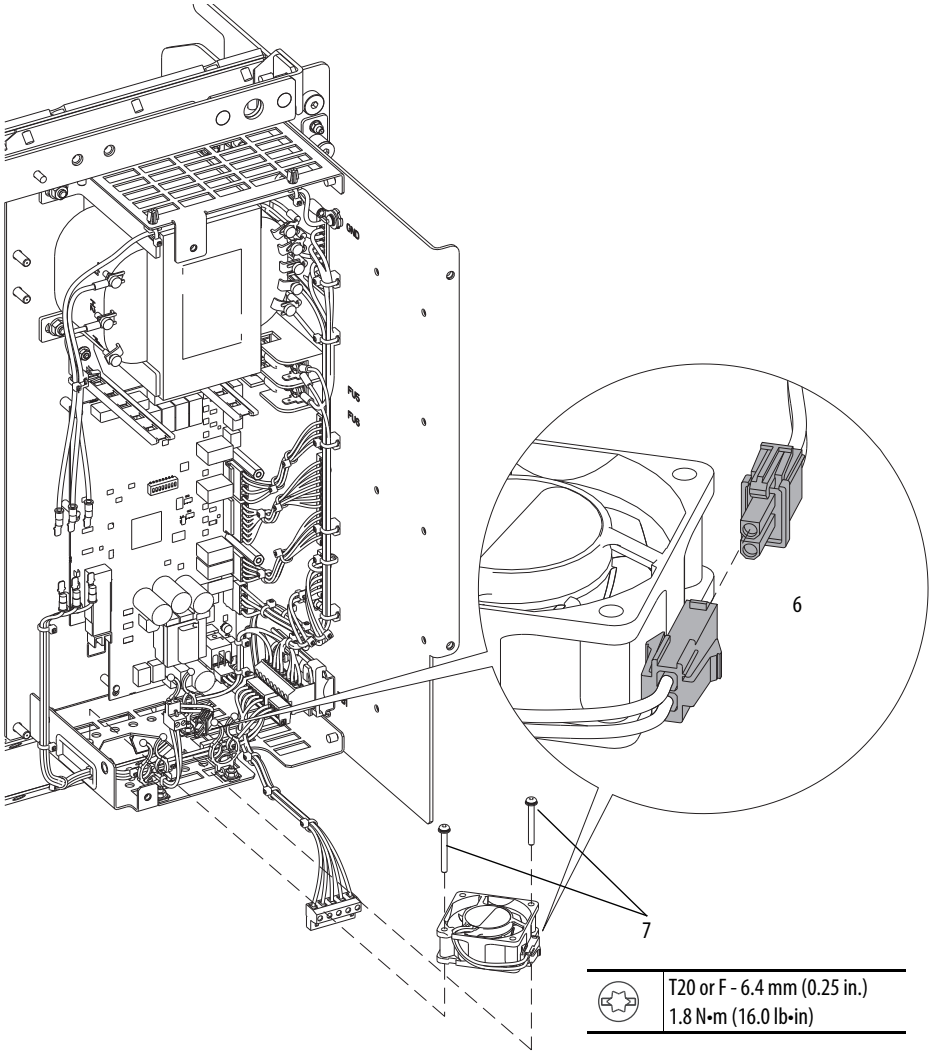
DC Precharge Control Board Stirring Fan Removal/ Installation

Remove the DC Precharge Control Board Stirring Fan

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
5. Remove the undervoltage delay bracket. See Remove the Undervoltage Delay Bracket on page 206.

6. Disconnect the two-position fan connector from the stirring fan to the 24V/120V/240V wire harness.
7. Remove two M4 x 35-mm long screws that secure the stirring fan to the control panel and remove the stirring fan.



Install the DC Precharge Control Board Stirring Fan

Install the stirring fan in the reverse order of removal. See Remove the DC Precharge Control Board Stirring Fan on page 211.

Door-interlock Wire Harness Removal/Installation

Removing the Door Interlock Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

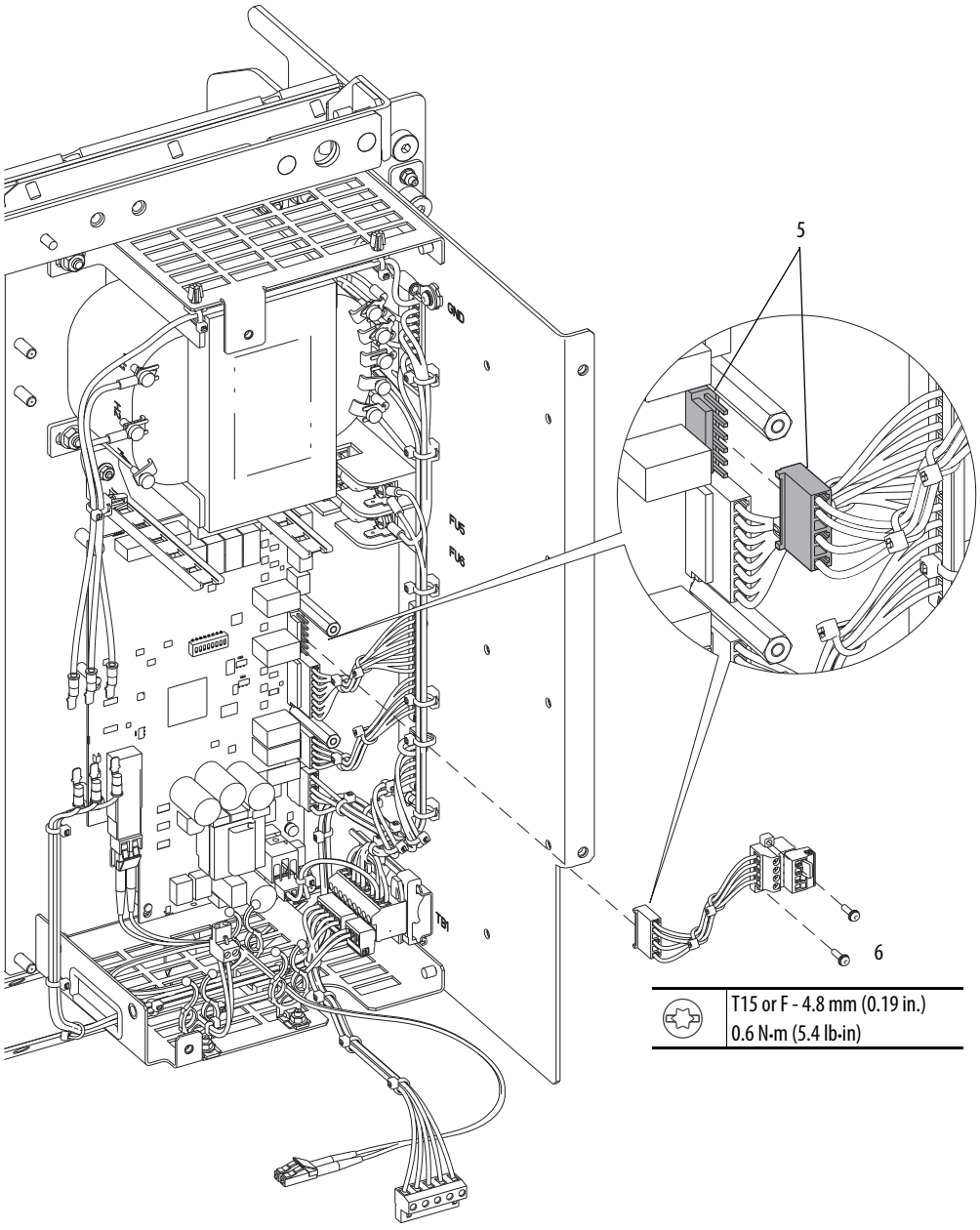
4. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.

5. Disconnect the door-interlock wire harness connector J6 from the connector P6 on the DC precharge control board.

6. Remove the two M3 x 12-mm hexalobular screws that secure the terminal block TB4 to the control panel and remove the wire harness from the control panel.

Note: The control pod and undervoltage delay are shown removed only to clarify the instructions.



Install the Door Interlock Wire Harness

Install the door interlock wire harness in the reverse order of removal. See Removing the Door Interlock Wire Harness on page 212.

Digital I/O Wire Harness Removal/Installation

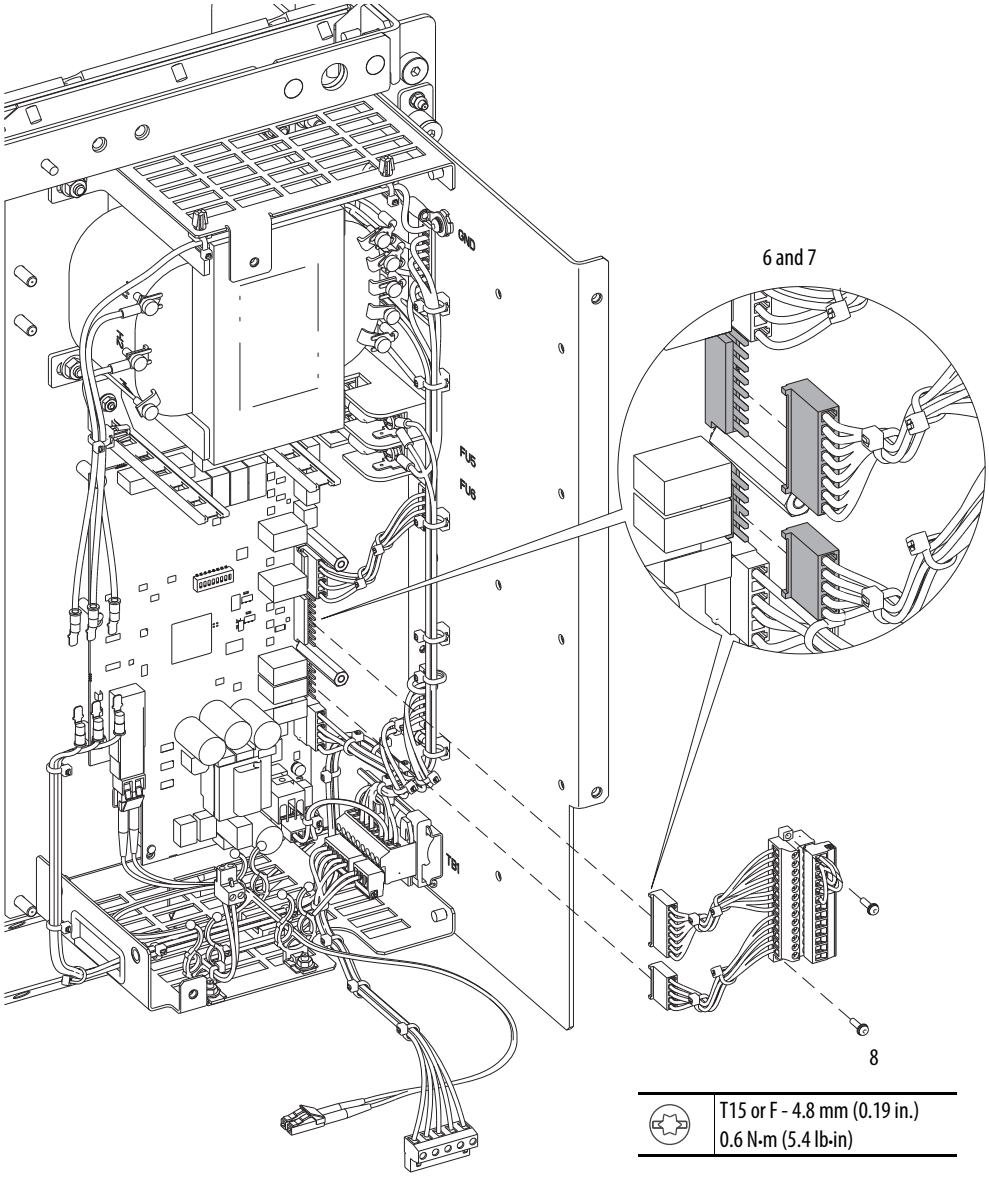
Remove the Digital I/O Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.

6. Disconnect the digital I/O wire harness connector from connector P7 on the DC precharge control board.
7. Disconnect the digital I/O wire harness connector from connector P8 on the DC precharge control board.
8. Remove the two M3 x 12-mm hexalobular screws that secure the terminal block TB3 to the control panel and remove the wire harness from the control panel.

Note: The control pod and undervoltage delay are shown removed only to clarify the instructions.



Install the Digital I/O Wire Harness

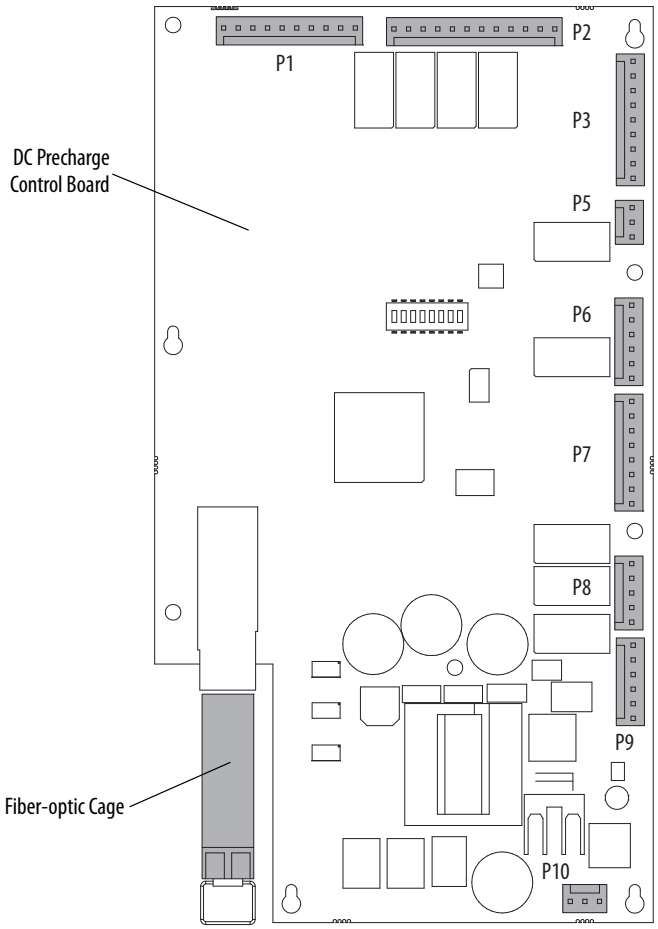
Install the digital I/O wire harness in the reverse order of removal. See Remove the Digital I/O Wire Harness on page 214.

DC Precharge Control Circuit Board Removal/Installation

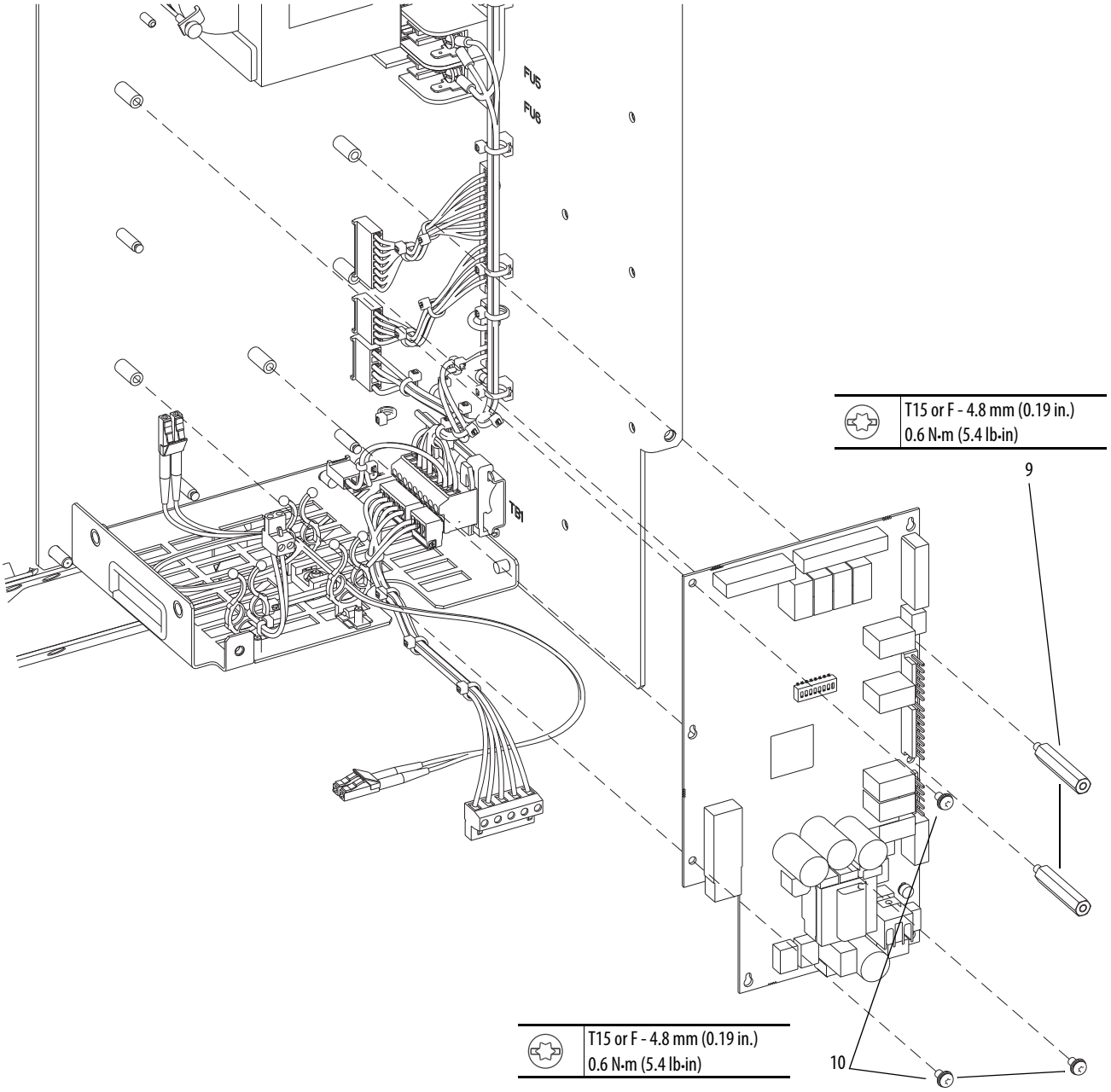
Remove the DC Precharge Control Circuit Board

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the left cover, top guard, and left guard assembly. See Remove the DC Input with Precharge Assembly Left Cover, Top Guard, and Left Guard on page 159.
5. If the control pod is installed, then rotate the control pod to gain access to the DC input with precharge assembly control panel. See Rotate the Control Pod Forward on page 84.

   If the control pod is not installed, then remove the right cover. See Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
6. Remove the undervoltage delay bracket. See Remove the Undervoltage Delay Bracket on page 206.
7. Disconnect the wire harnesses from the DC precharge control board.
8. From the fiber-optic cage in the lower left corner of the DC precharge control board, remove the fiber-optic transceiver by pulling its bale wire. Set the transceiver aside and save for reinstallation.



9. Remove the two M4 x 40-mm hex standoffs.
10. Remove the three M4 x 8-mm screws that secure the DC precharge control board to the DC input control panel, slide the DC precharge control board up to disengage its four keyhole slots, and remove the board.



Install the DC Precharge Control Circuit Board

Install the DC precharge control board in the reverse order of removal. See Remove the DC Precharge Control Circuit Board on page 216.

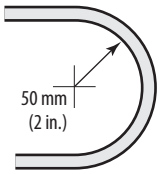
DC Input with Precharge Assembly Removal/ Installation

ATTENTION: Only perform a field replacement of the DC input with precharge assembly of the power core as part of the drive assembly removal procedure. Otherwise, equipment damage can result.

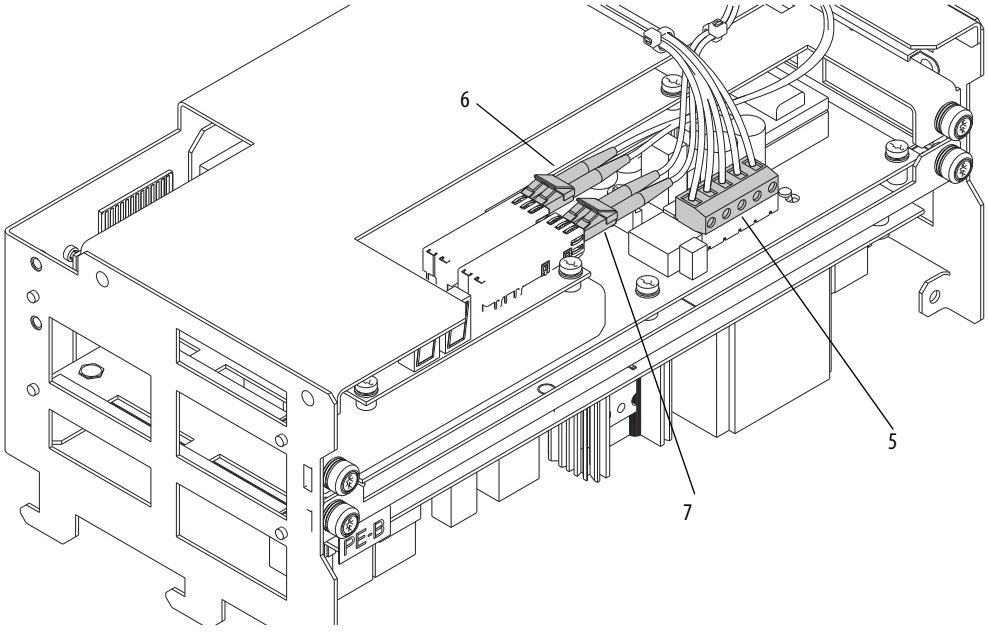
Remove the DC Input with Precharge Assembly

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
4. Remove the inverter circuit board connections cover from the inverter. See Inverter Circuit Board Connections Cover Removal/Installation on page 234.
5. Disconnect the inverter power-supply wire harness connector from terminal P6 on the inverter power control board.

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



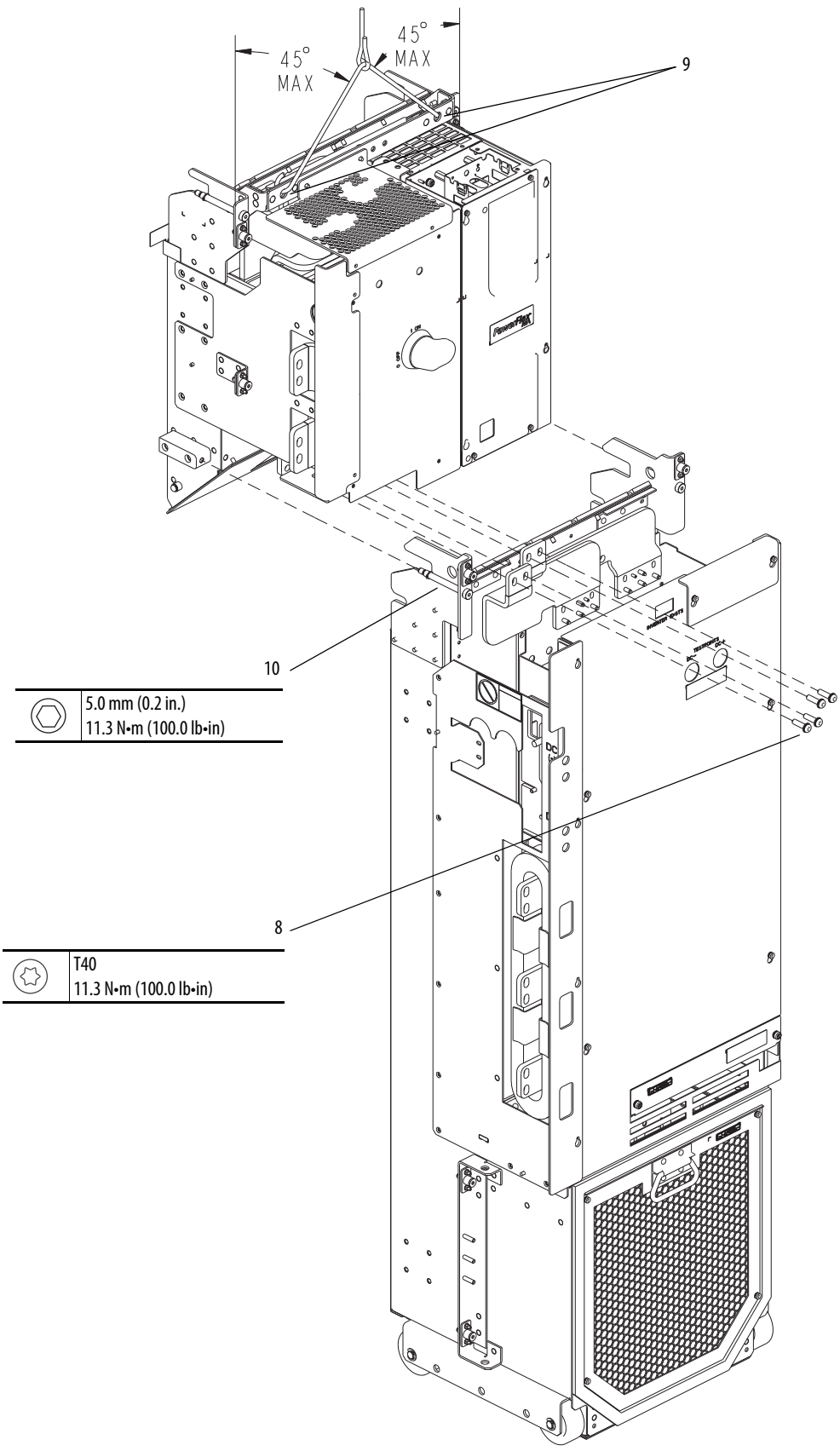
6. Disconnect the fiber-optic cable from CONV on the inverter power-layer interface board and secure it to the DC input with precharge assembly. Do not remove the fiber-optic transceiver.
7. If the control pod is assembled on the DC input with precharge assembly, disconnect the fiber-optic cable from INV on the inverter power-layer interface board and secure it to the control pod. Do not remove the fiber-optic transceiver.



8. Remove the four M8 x 30-mm machine screws that secure the inverter DC bus bars to the DC input with precharge assembly bus bars.

IMPORTANT	A load capacity of 80 kg (175 lb) minimum is required for all lifting equipment and hardware that is used for this procedure. Verify that the angle of attachment of the lifting hardware is no more than 45° from vertical.

9. Connect the lifting hardware to the two lifting holes on the lifting bar at the top of the DC input with precharge assembly.
10. Loosen the two M8 screws that secure the DC input with precharge assembly duct to the inverter duct.
11. Lift and slide the DC input with precharge assembly away from the inverter assembly.


45°
MAX
45°
MAX
9
10
8
5.0 mm (0.2 in.)
11.3 N•m (100.0 lb•in)
T40
11.3 N•m (100.0 lb•in)

Install the DC Input with Precharge Assembly

1. Inspect the gasket at the top of the DC input with precharge assembly duct for damage and replace if necessary. See Remove the DC Input with Precharge Assembly Duct Gasket on page 221.
2. Inspect the gasket at the top of the inverter duct for damage and replace if necessary.
3. Install the DC input with precharge assembly on the inverter assembly in the reverse order of removal. See Remove the DC Input with Precharge Assembly on page 218.

DC Input with Precharge Assembly Duct Gasket Replacement

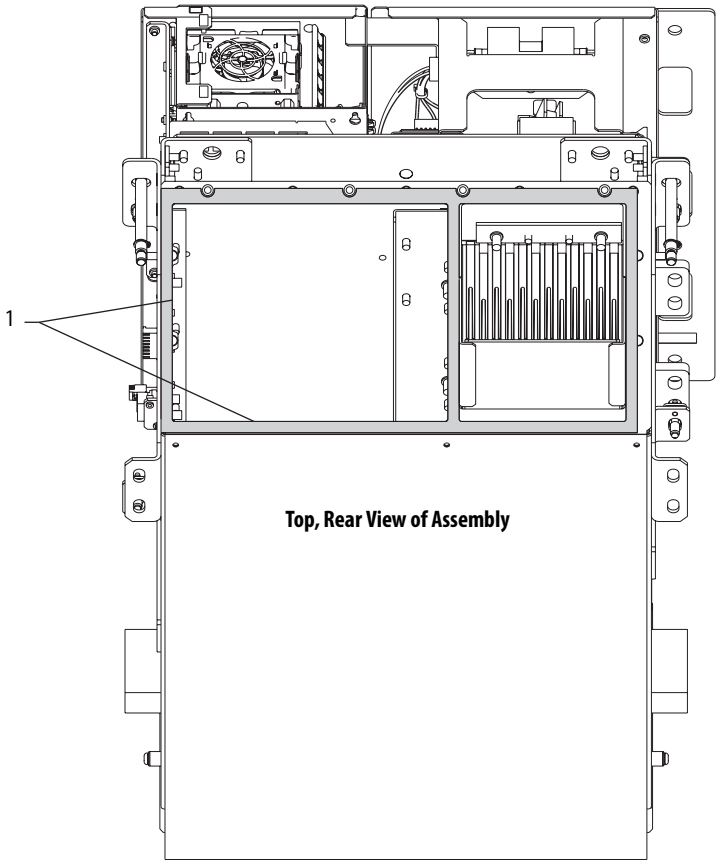
Remove the DC Input with Precharge Assembly Duct Gasket

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
4. Remove the DC input with precharge assembly. Remove the DC Input with Precharge Assembly on page 218.
5. Carefully remove the gasket and any gasket material that can be stuck to the sealing surface.
6. Clean the duct surface with a 50% isopropyl alcohol/ 50% water mixture.

Install the DC Input with Precharge Assembly Duct Gasket

Note: One side of the duct gasket is coated with an adhesive. Take care to align the gasket properly before fully removing the paper liner and exposing the adhesive.

1. Begin removing the paper liner as you align the replacement gasket with the duct edges as shown and press the gasket into place on the duct.



Top, Rear View of Assembly

2. Install the DC input with precharge assembly on the inverter assembly in the reverse order of removal. See Remove the DC Input with Precharge Assembly on page 218.

Inverter Component Replacement Procedures

Topic	Page
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Heatsink Fan Inlet Screen Removal/Installation	231
Heatsink Fan Assembly Removal/Installation	232
Inverter Circuit Board Connections Cover Removal/Installation	234
Inverter Front Cover Removal/Installation	235
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Inverter Capacitor Bank Assembly Removal/Installation	242
Capacitor Balance Resistor Assembly Removal/Installation	244
IGBT Flex Bus Bars Removal/Installation	246
Inverter Gate Board Connection Ribbon Cables Removal/Installation	247
Inverter Gate Circuit Board Removal/Installation	249
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Power Layer Interface Circuit Board Removal/Installation	252
Power Supply Circuit Board Removal/Installation	254
Power Control Circuit Board Removal/Installation	258
Inverter Backplane Circuit Board Removal/Installation	261
Inverter EMC Capacitor Removal/Installation (AC Input Drive Only)	264
Inverter Side DC Bus Bar Removal/Installation (AC Input Drive Only)	268
Inverter Top DC Bus Bar Removal/Installation (Common DC Input Drive Only)	276
DC Choke Removal/Installation (AC Input Drives Only)	281
Inverter Wire Harness Removal/Installation	283
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Inverter Heatsink Fan Inlet Bottom Cover Removal/Installation	294
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This chapter provides detailed procedures for how to remove and replace inverter components.

IMPORTANT Complete the procedures in Chapter 12 Drive Start Up After Repairs that begin on page 413 before placing the drive back into service.

Inverter Components Identification

Table 11 contains the components that comprise the inverter assembly and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit
- Illustration figure and page number and identification number

A complete list of spare parts for PowerFlex® 755 Frame 8...10 drives is available on the Allen-Bradley web site at:
http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

Table 11 - Inverter Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
Inverter Unit for 400V, 460 A / 480V, 430 A AC Input Drives	20-750-I1-C460D430 (Series A) 20-750-I1B-C460D430 (Series B)	1	–	
Inverter Unit for 400V, 540 A / 480V, 485 A AC Input Drives	20-750-I1-C540D485 (Series A) 20-750-I1B-C540D485 (Series B)	1	–	
Inverter Unit for 400V, 567 A / 480V, 545 A AC Input Drives	20-750-I1-C567D545 (Series A) 20-750-I1B-C567D545 (Series B)	1	–	
Inverter Unit for 400V, 650 A / 480V, 617 A AC Input Drives	20-750-I1-C650D617 (Series A) 20-750-I1B-C650D617 (Series B)	1	–	
Inverter Unit for 400V, 750 A / 480V, 710 A AC Input Drives	20-750-I1-C750D710 (Series A) 20-750-I1B-C750D710 (Series B)	1	–	
Inverter Unit for 400V, 770 A / 480V, 740 A AC Input Drives	20-750-I1-C770D740 (Series A) 20-750-I1B-C770D740 (Series B)	1	–	
Inverter Unit for 600V, 295 A / 690V, 265 A AC Input Drives	20-750-I1B-E295F265 (Series B)	1	–	
Inverter Unit for 600V, 355 A / 690V, 330 A AC Input Drives	20-750-I1B-E355F330 (Series B)	1	–	
Inverter Unit for 600V, 395 A / 690V, 370 A AC Input Drives	20-750-I1B-E395F370 (Series B)	1	–	
Inverter Unit for 600V, 435 A / 690V, 415 A AC Input Drives	20-750-I1B-E435F415 (Series B)	1	–	
Inverter Unit for 600V, 460 A / 690V, 460 A AC Input Drives	20-750-I1B-E460F460 (Series B)	1	–	
Inverter Unit for 600V, 510 A / 690V, 500 A AC Input Drives	20-750-I1B-E510F500 (Series B)	1	–	
Inverter Unit for 540V, 460 A / 650V, 430 A AC Input Drives	20-750-I2-C460D430 (Series A) 20-750-I2B-C460D430 (Series B)	1	–	
Inverter Unit for 540V, 540 A / 650V, 485 A AC Input Drives	20-750-I2-C540D485 (Series A) 20-750-I2B-C540D485 (Series B)	1	–	
Inverter Unit for 540V, 567 A / 650V, 545 A AC Input Drives	20-750-I2-C567D545 (Series A) 20-750-I2B-C567D545 (Series B)	1	–	
Inverter Unit for 540V, 650 A / 650V 617 A AC Input Drives	20-750-I2-C650D617 (Series A) 20-750-I2B-C650D617 (Series B)	1	–	
Inverter Unit for 540V, 750 A / 650V, 710 A AC Input Drives	20-750-I2-C750D710 (Series A) 20-750-I2B-C750D710 (Series B)	1	–	
Inverter Unit for 540V, 770 A / 650V, 740 A AC Input Drives	20-750-I2-C770D740 (Series A) 20-750-I2B-C770D740 (Series B)	1	–	

Table 11 - Inverter Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
Inverter Unit for 810V, 295 A / 932V, 265 A AC Input Drives	20-750-I2B-E295F265	1	–	
Inverter Unit for 810V, 355 A / 932V, 330 A AC Input Drives	20-750-I2B-E355F330	1	–	
Inverter Unit for 810V, 395 A / 932V, 370 A AC Input Drives	20-750-I2B-E395F370	1	–	
Inverter Unit for 810V, 435 A / 932V, 415 A AC Input Drives	20-750-I2B-E435F415	1	–	
Inverter Unit for 810V, 460 A / 932V, 460 A AC Input Drives	20-750-I2B-E460F460	1	–	
Inverter Unit for 810V, 510 A / 932V, 500 A AC Input Drives	20-750-I2B-E510F500	1	–	
Inverter Capacitor Bank, 400V 770A, 480V 740A	SK-R1-CP1-C770D740	1	Figure 12 on page 227	1
Inverter Capacitor Bank, 400V 567A, 480V 545A	SK-R1-CP1-C567D545	1	Figure 12 on page 227	1
Inverter Capacitor Bank, 600V 395A, 690V 370A	SK-R1-CP1-E395F370	1	Figure 12 on page 227	1
Inverter Capacitor Bank, 600V 510A, 690V 500A	SK-R1-CP1-E510F500	1	Figure 12 on page 227	1
Capacitor Balance Resistors, 400/480V AC Input Drive (includes mounting tray)	SK-R1-RB1-CD-F8	1	Figure 12 on page 227	2
Capacitor Balance Resistors, 600/690V AC Input Drive (includes mounting tray)	SK-R1-RB1-EF-F8	1	Figure 12 on page 227	2
Discharge Resistor Assembly, 400/480V AC Input Drive	SK-R1-RD1-F8	1	Figure 12 on page 227	3
Discharge Resistor Assembly, 600/690V AC Input Drive	SK-R1-RD2-F8	1	Figure 12 on page 227	3
Inverter IGBT Flexbus, 400V 567A, 480V 545A	SK-R1-BS1-C567D545	3	Figure 12 on page 227	4
Inverter IGBT Flexbus, 400V 770A, 480V 740A	SK-R1-BS1-C770D740	3	Figure 12 on page 227	4
Inverter Current Sensor	SK-R1-INVIFB1-F8	1	Figure 12 on page 227	5
Inverter Heatsink Fan Kit	SK-R1-FAN1-F8	1	Figure 12 on page 227	6
Inverter Internal Stir Fans w/Tray	SK-R1-FAN2-F8	1	Figure 12 on page 227	7
DC Choke, 33 mH, 400V 770A, 480V 740A	SK-R1-DCCHK1-F8	1	Figure 12 on page 227	8
DC Choke, 50 mH, 400V 567A, 480V 545A	SK-R1-DCCHK2-F8	1	Figure 12 on page 227	8
DC Choke, 69 mH, 600V 510A, 690V 500A	SK-R1-DCCHK3-F8	1	Figure 12 on page 227	8
Inverter Power Control Board	SK-R1-PC1-F8	1	Figure 13 on page 228	10
Inverter Heatsink Power Supply Board, 400/480V	SK-R1-PWRS1-CD-F8	1	Figure 13 on page 228	11
Inverter Heatsink Power Supply Board, 600/690V	SK-R1-PWRS1-EF-F8	1	Figure 13 on page 228	11
Inverter Power Layer Interface Board (Includes two fiber-optic transceivers)	SK-R1-PINT1-F8 (Series A) SK-R1-PINT2-F8 (Series B)	1	Figure 13 on page 228	12
Inverter Gate Board, 400V 770A, 480V 740A	SK-R1-IG1-C770D740	1	Figure 12 on page 227	14
Inverter Gate Board, 400V 567A, 480V 545A	SK-R1-IG1-C567D545	1	Figure 12 on page 227	14
Inverter Gate Board, 600V 510A, 690V 500A	SK-R1-IG1-E510F500	1	Figure 12 on page 227	14
Inverter Gate Board, 600V 395A, 690V 370A	SK-R1-IG1-E395F370	1	Figure 12 on page 227	14
Inverter Ribbon Cable	SK-R1-ICBL1-F8	1	Figure 12 on page 227	15
Inverter Front Cover with Side Shield	SK-R1-IFCVR1-F8	1	Figure 12 on page 227	16
Inverter Heatsink Fan Inlet Screen	SK-R1-IFCVR2-F8	1	Figure 12 on page 227	17
Inverter Heatsink Fan Inlet Bottom Cover	SK-R1-IBCVR1-F8	1	Figure 12 on page 227	18
Inverter Wire Harness Kit	SK-R1-INVH1-F8	1	Figure 12 on page 227	19
EMC Capacitors	SK-R1-EMCCAP1-F8	3	Figure 12 on page 227	21

Table 11 - Inverter Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Quantity	Figure and Page	ID No.
Frame 8 Gasket Kit	20-750-G1-F8	–		
Gasket, Converter, Heatsink		1	(1)	–
Gasket, Converter/DC Input with Precharge Assembly, Duct		1	(1)	–
Gasket, Inverter, IGBT Assembly Heatsink		1	Figure 12 on page 227	22
Gasket, Inverter, Door Interface		1	Figure 12 on page 227	23
Gasket, Inverter, Exhaust Interface		1	Figure 12 on page 227	24
Gasket, Inverter, Inlet Ring		1	Figure 12 on page 227	25
Gasket, Inverter, No Choke		1	Figure 12 on page 227	26
Gasket, Inverter, Fan Inlet Bottom Cover		1	Figure 12 on page 227	27
Gasket, Inverter, Choke		1	Figure 12 on page 227	28

(1) This gasket is included in the Frame 8 Gasket Kit (20-750-G1-F8), but is identified in the table in Converter Components Identification on page 78.

TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

Figure 12 - Inverter Main Assembly Components Diagram

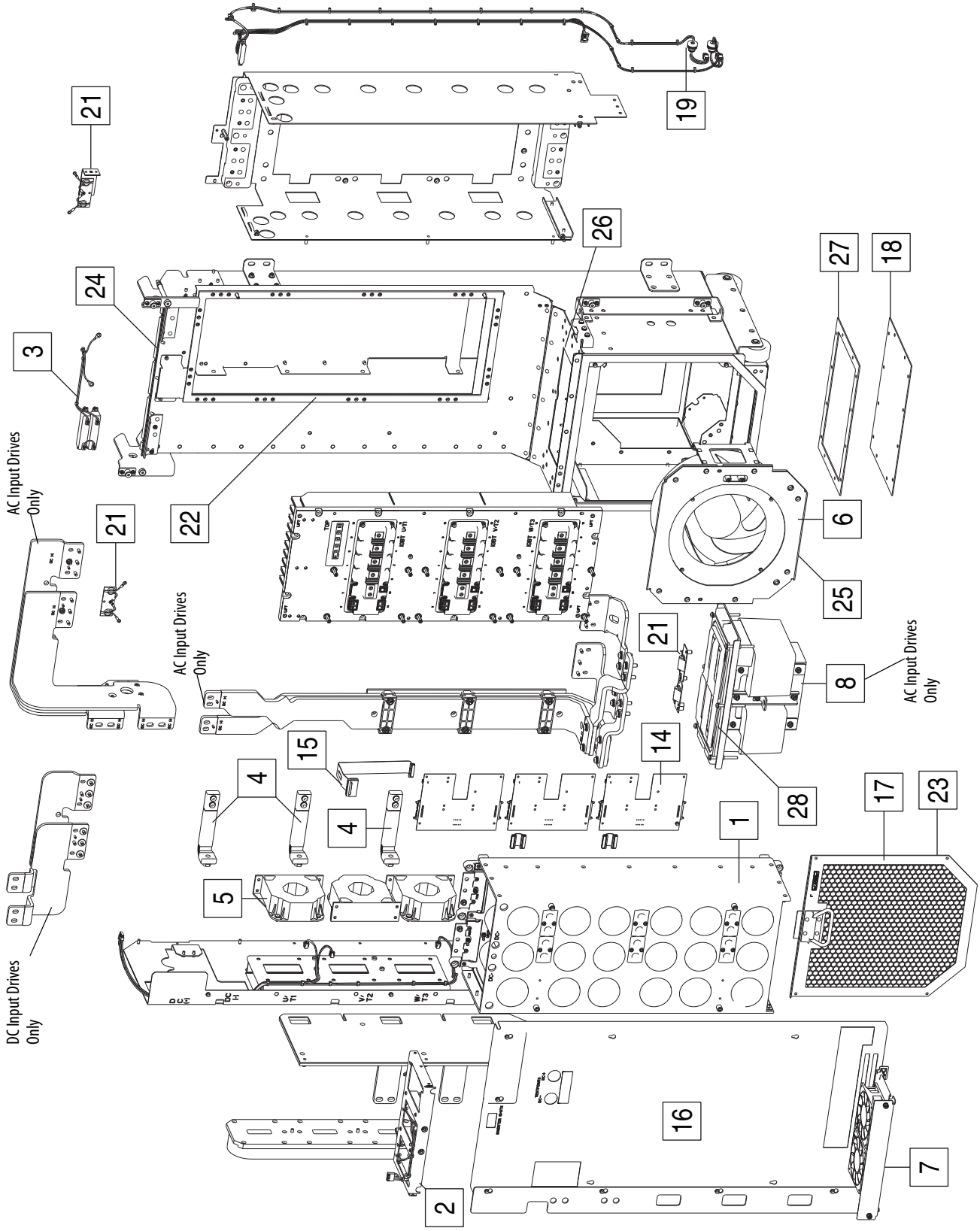
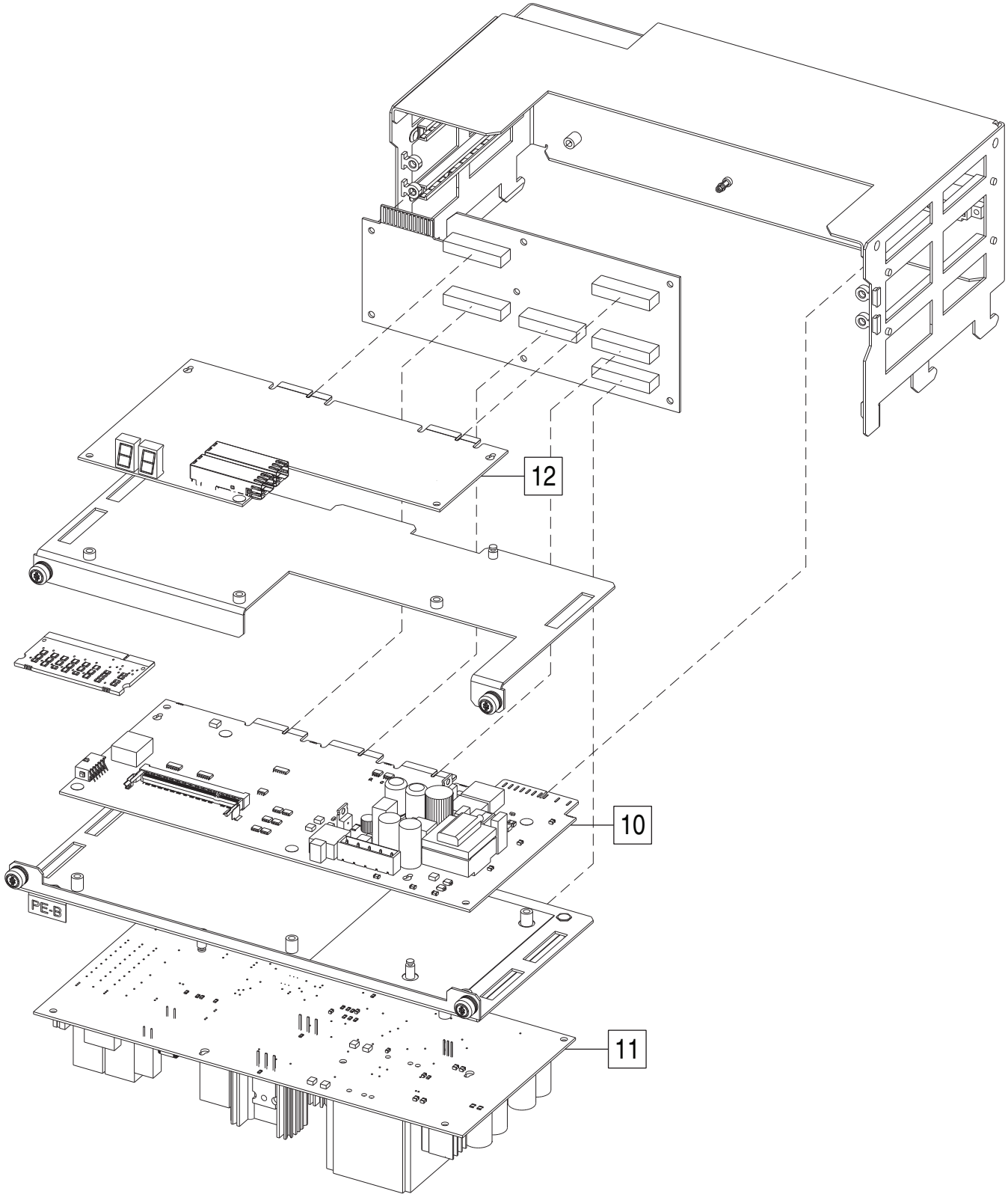


Figure 13 - Inverter Card Cage Assembly Components Diagram

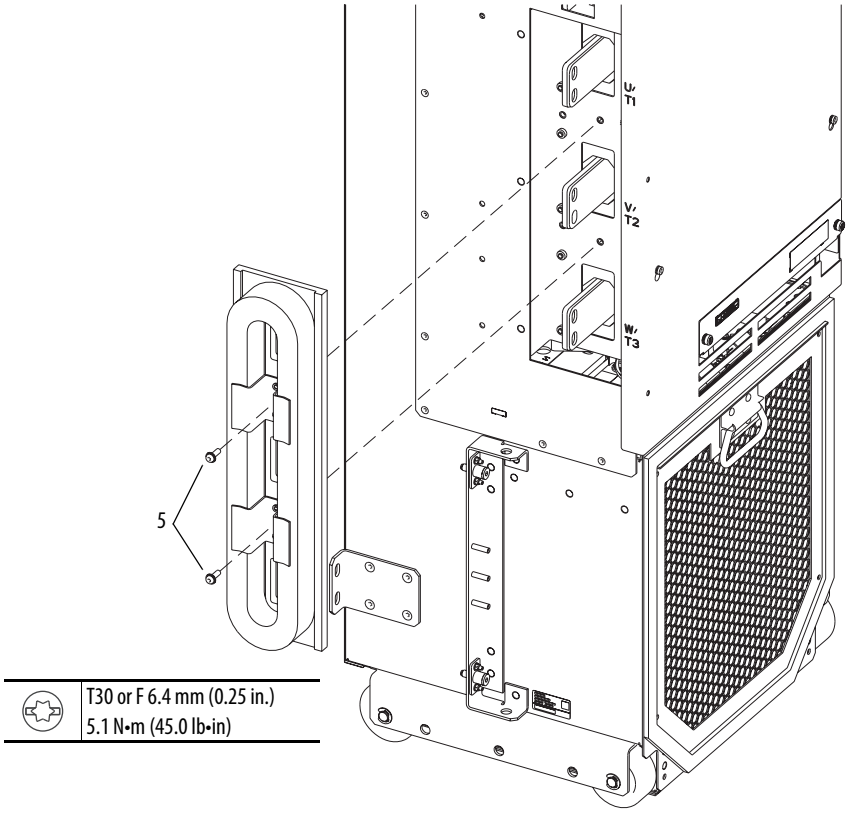


Common-mode Core Assembly Removal/ Installation

Remove the Common Mode Core Assembly

Note: This assembly is installed in the field only.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the two M6 x 25-mm screws that secure the common mode core assembly to the drive frame and slide the assembly off the AC output bus terminals.



Install the Common Mode Core Assembly

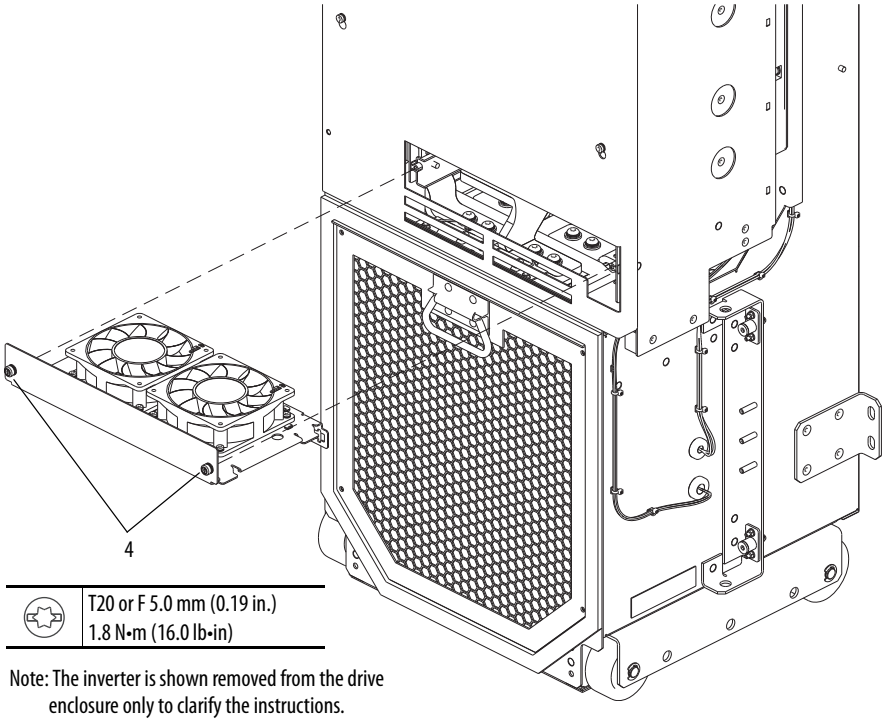
Install the common mode core assembly in the reverse order of removal. See Remove the Common Mode Core Assembly.

IMPORTANT Grounding and Power Jumper configuration must be appropriate for EMC applications. See "Drive Power Jumper Configuration" in the Powerflex 750-Series Installation Instructions (Publication 750-IN001) for detailed information.

Internal Stirring Fan Tray Removal/Installation

Remove the Internal Stirring Fan Tray

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Loosen the two captive screws on the face of the fan tray and pull the tray straight out from the inverter frame.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

Install the Internal Stirring Fan Tray

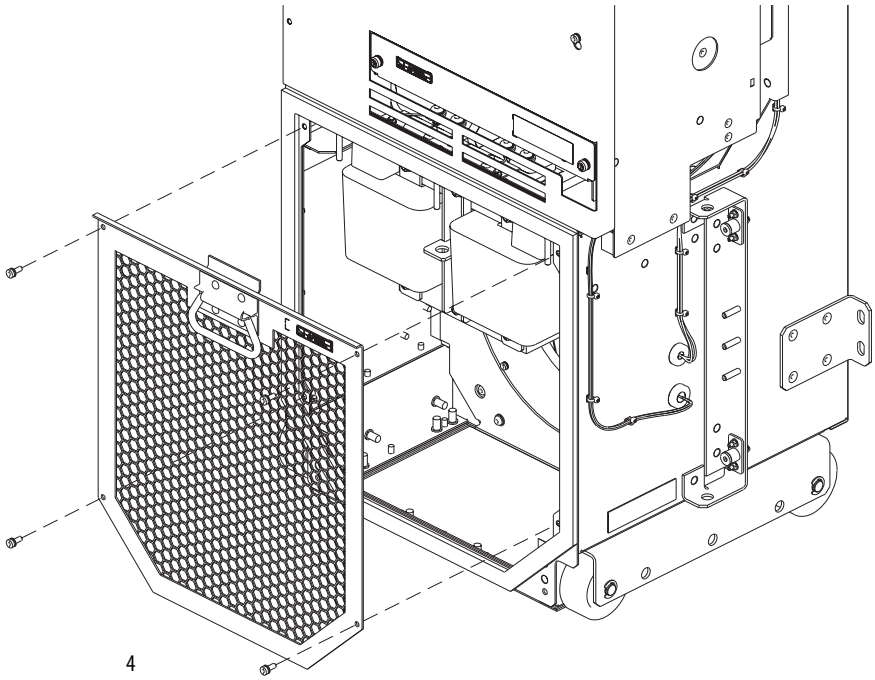
Install in the internal stirring fan tray in the reverse order of removal. See Remove the Internal Stirring Fan Tray.

IMPORTANT The power wire connector for the fans is at the right, rear of the fan mounting tray. Verify that the connector mates with the socket at the back of the enclosure when sliding the tray into the inverter frame.

Heatsink Fan Inlet Screen Removal/Installation

Remove the Heatsink Fan Inlet Screen

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the four M5 x 14-mm screws that secure the screen to the drive frame pull down and out on the bottom screen.



	T20 or F - 6.4 mm (0.25 in.) 2.8 N•m (25 lb•in)

Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

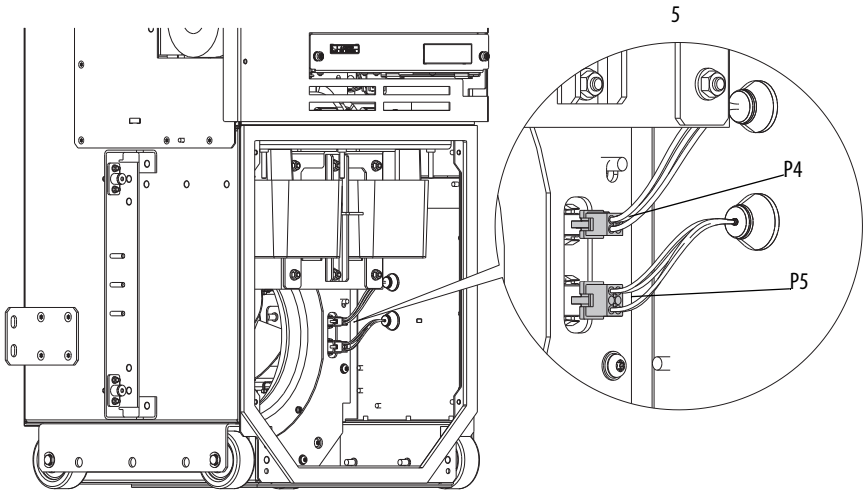
Install the Heatsink Fan Inlet Screen

Install the heatsink fan inlet screen in the reverse order of removal. See Remove the Heatsink Fan Assembly.

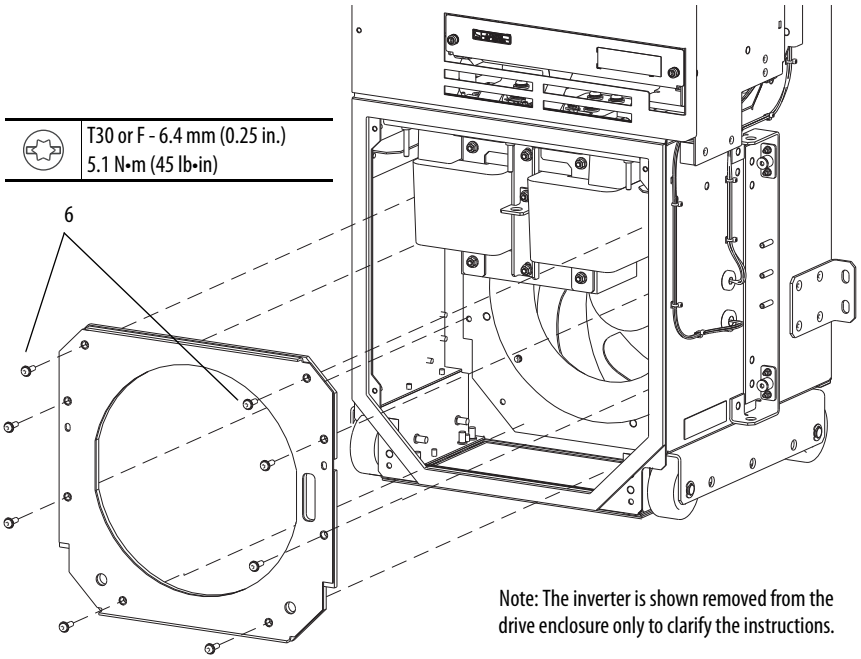
Heatsink Fan Assembly Removal/Installation

Remove the Heatsink Fan Assembly

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the heatsink fan inlet screen. See Remove the Heatsink Fan Inlet Screen on page 231.
5. Disconnect the control and power wire connectors P4 and P5 from the front, right side of the fan assembly.

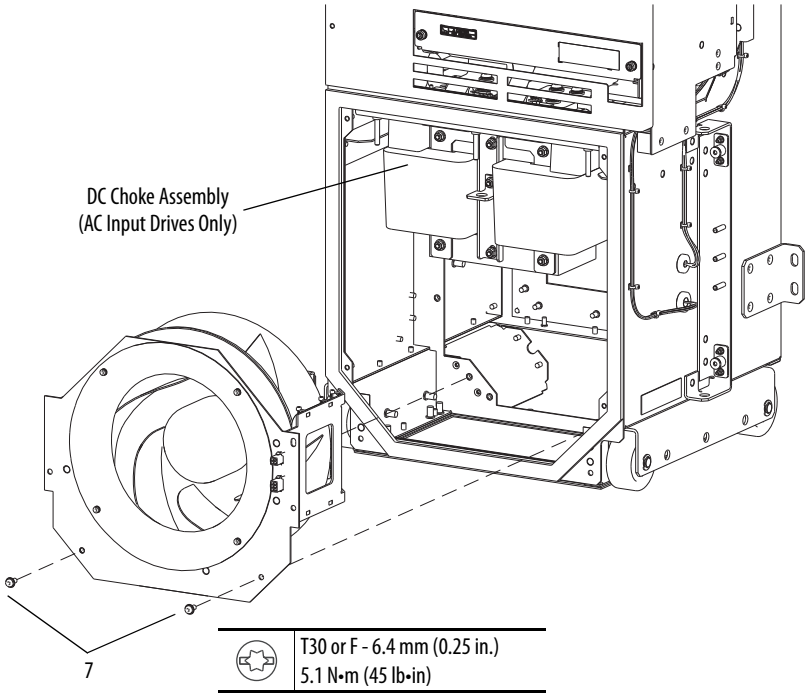


6. Remove the eight M6 x 20-mm screws that secure the inlet seal mounting plate to the chassis and remove the plate.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

7. Remove the two M6 x 20-mm screws from the fan assembly. The assembly rests on two guide pins on the back wall.
8. Remove the fan assembly:
   a. By using both hands, pull the assembly slightly forward until it comes off the guide pins.
   b. Pull the bottom of the assembly toward the front of the inverter chassis and tilt the top backward so it clears the DC choke assembly (if installed). Remove the assembly.



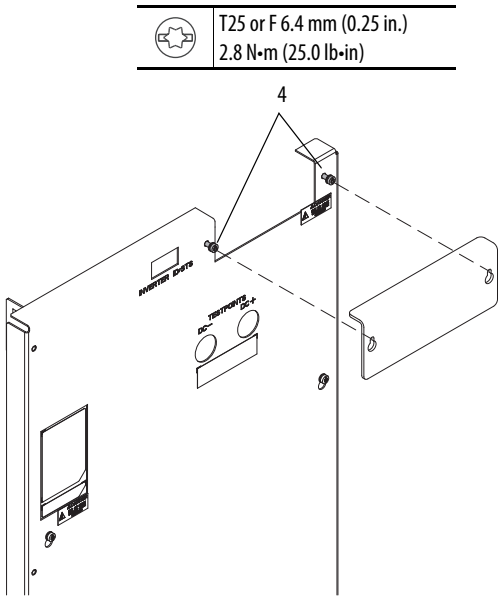
Install the Heatsink Fan Assembly

Install the heatsink fan assembly in the reverse order of removal. See Install the Heatsink Fan Assembly on page 233.

Inverter Circuit Board Connections Cover Removal/ Installation

Remove the Inverter Circuit Board Connections Cover

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Loosen the two M5 x 14-mm screws that secure the clear cover to the inverter front cover and remove the cover.



Install the Inverter Circuit Board Connections Cover

Install the inverter circuit board connections cover in the reverse order of removal. See Remove the Inverter Circuit Board Connections Cover.

Inverter Front Cover Removal/Installation

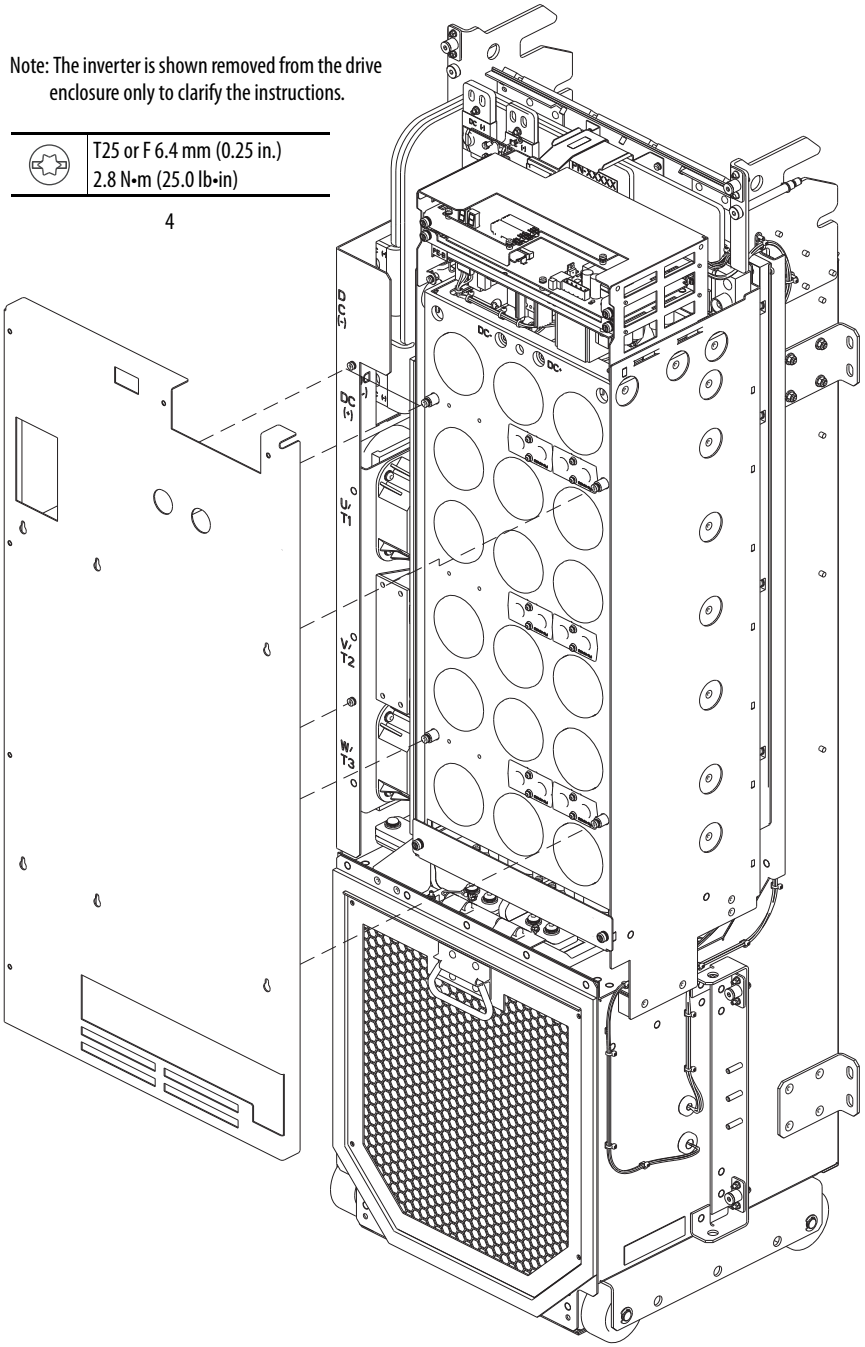
Remove the Inverter Front Cover

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Loosen the six M5 x 14-mm screws, raise the front cover vertically, and lift it off the screws.

Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

	T25 or F 6.4 mm (0.25 in.) 2.8 N•m (25.0 lb•in)

4



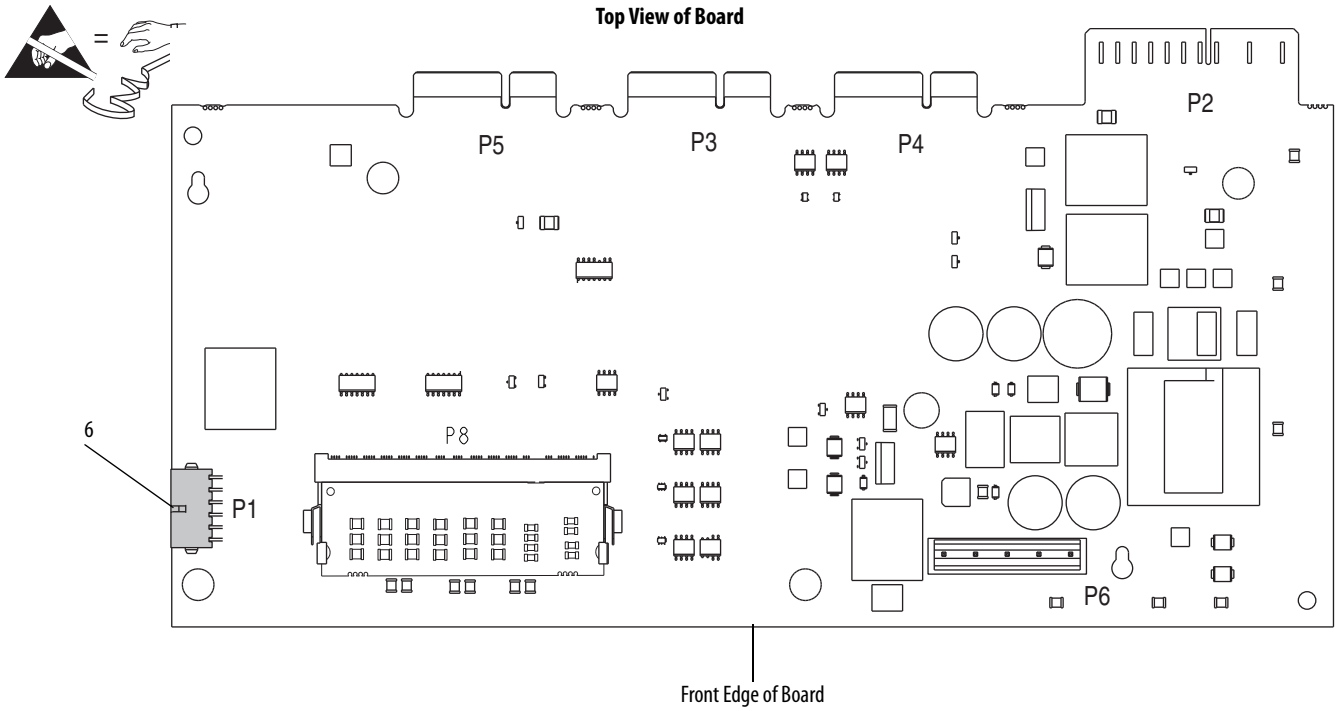
Install the Inverter Front Cover

Install the inverter front cover in the reverse order of removal. See Remove the Inverter Front Cover on page 235.

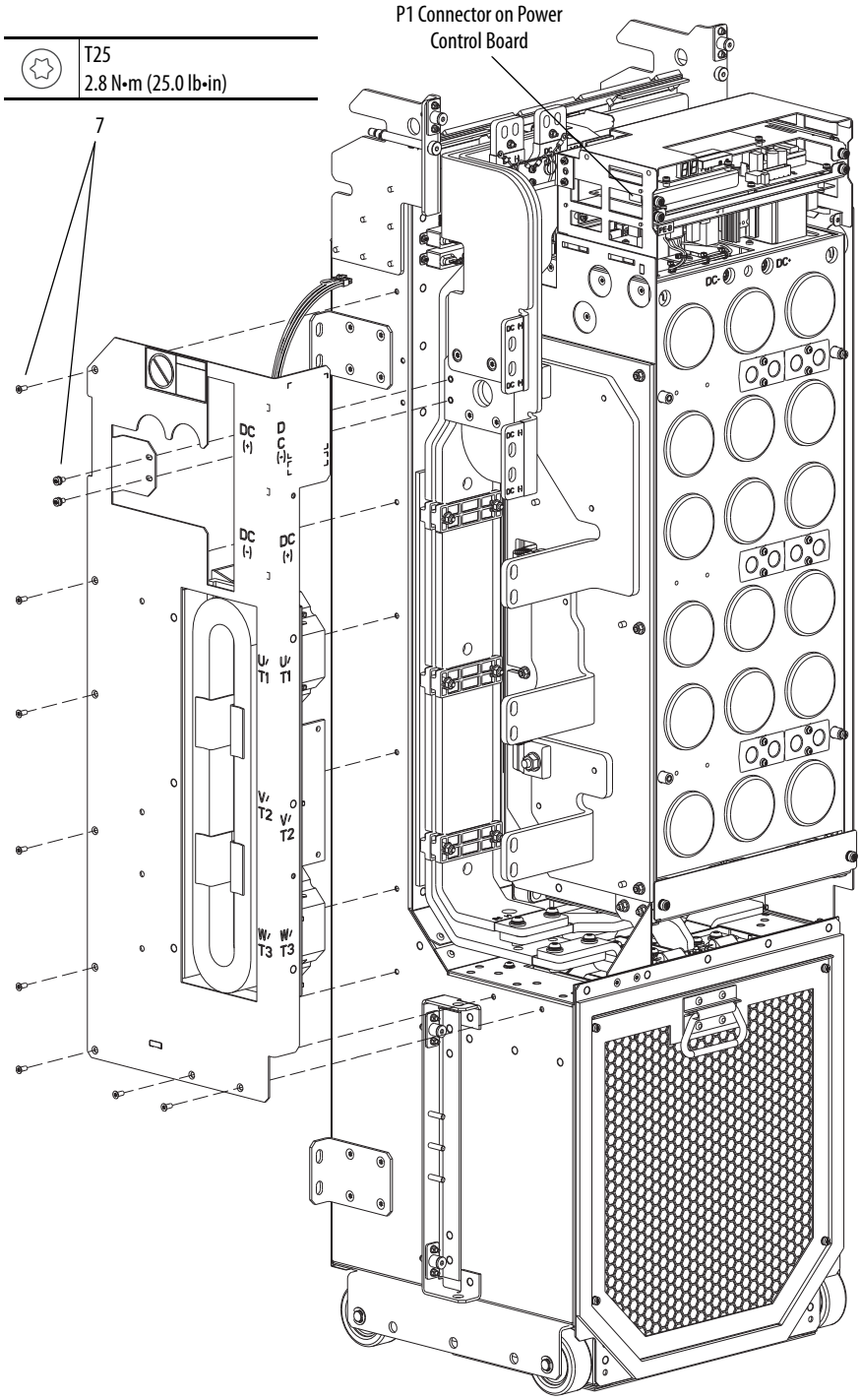
Inverter Current Sensors Removal/Installation

Remove the Inverter Current Sensors

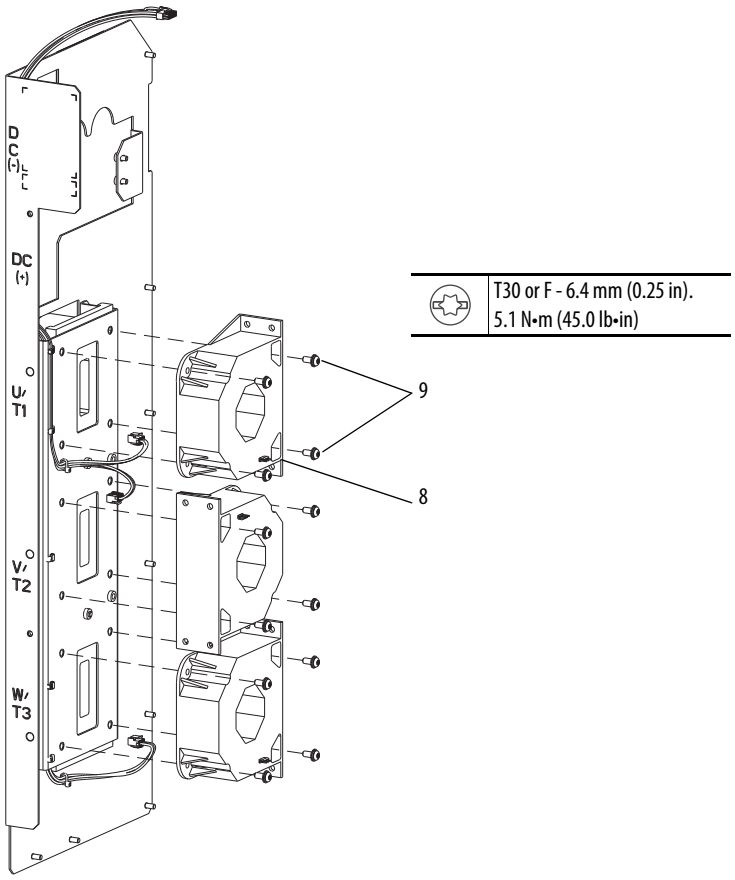
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
6. Disengage the locking tabs and disconnect the wire connector from P1 on the power control board.



7. Remove the eight M5 x 12-mm screws and the two M5 x 10-mm screws from the current sensor mounting panel on the left side of the inverter.



8. Disengage the locking tabs and disconnect the connector that is labeled U, V, or W attached to the current sensor and remove the current sensor.
9. Remove the four M6 x 14-mm screws that secure each of the current sensors to the mounting panel.



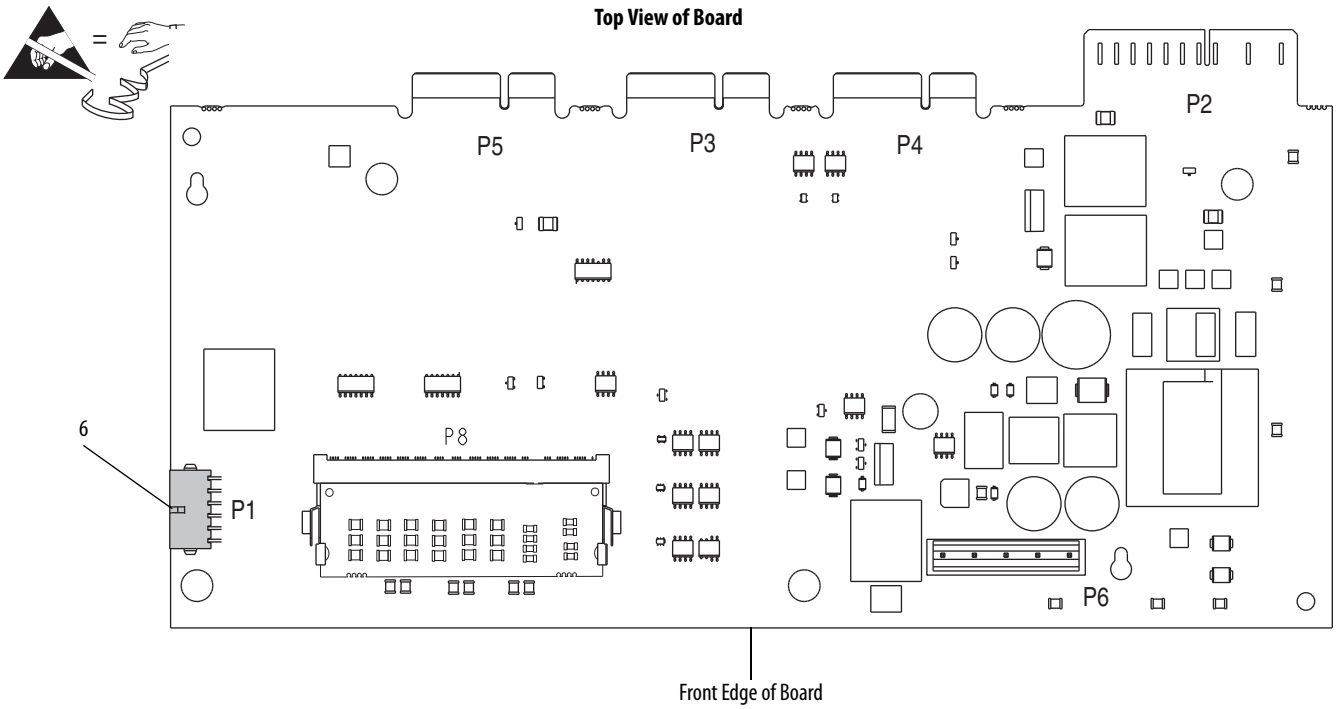
Install the Inverter Current Sensors

Install the inverter current sensor in the reverse order of removal. See Remove the Inverter Current Sensors on page 236.

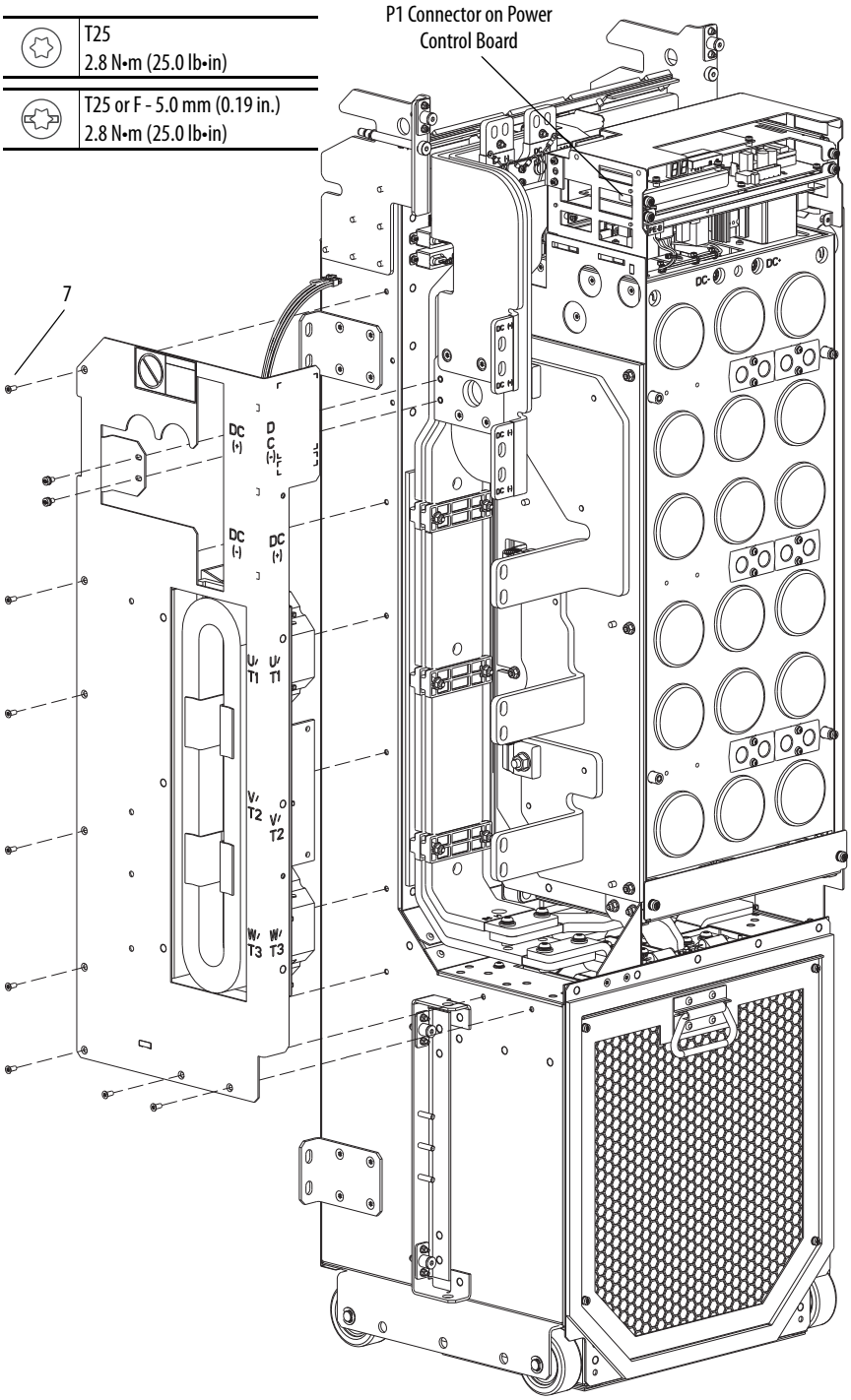
Inverter Current Sensor Wire Harness Removal/ Installation

Remove the Inverter Current Sensor Wire Harness

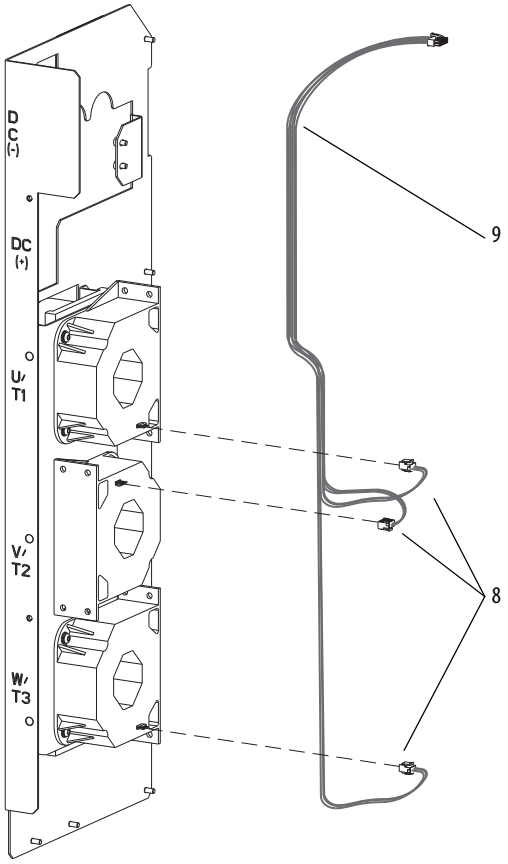
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
6. Disengage the locking tabs and disconnect the wire connector from P1 on the power control board.



7. Remove the eight M5 x 12-mm screws and the two M5 x 10-mm screws from the current sensor mounting panel on the left side of the inverter.



8. Disengage the locking tabs and disconnect the connector that is labeled U, V, or W attached to the current sensor and remove the current sensor.
9. Cut all wire ties from the tie locations and remove the harness.



Install the Inverter Current Sensor Wire Harness

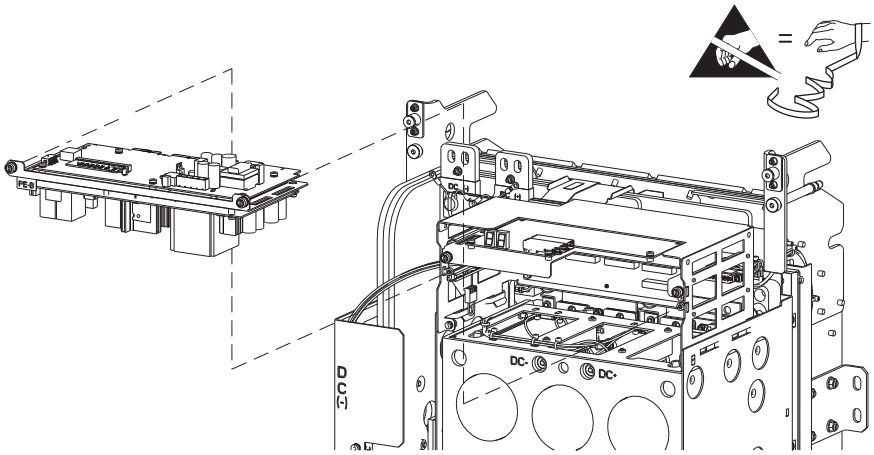
Install the inverter current-sensor wire harness in the reverse order of removal. See Remove the Inverter Current Sensor Wire Harness on page Remove the Inverter Current Sensor Wire Harness.

Inverter Capacitor Bank Assembly Removal/ Installation

Remove the Inverter Capacitor Bank Assembly

IMPORTANT A load capacity of 80 kg (175 lb) minimum is required for all lifting equipment and hardware that is used for this procedure.

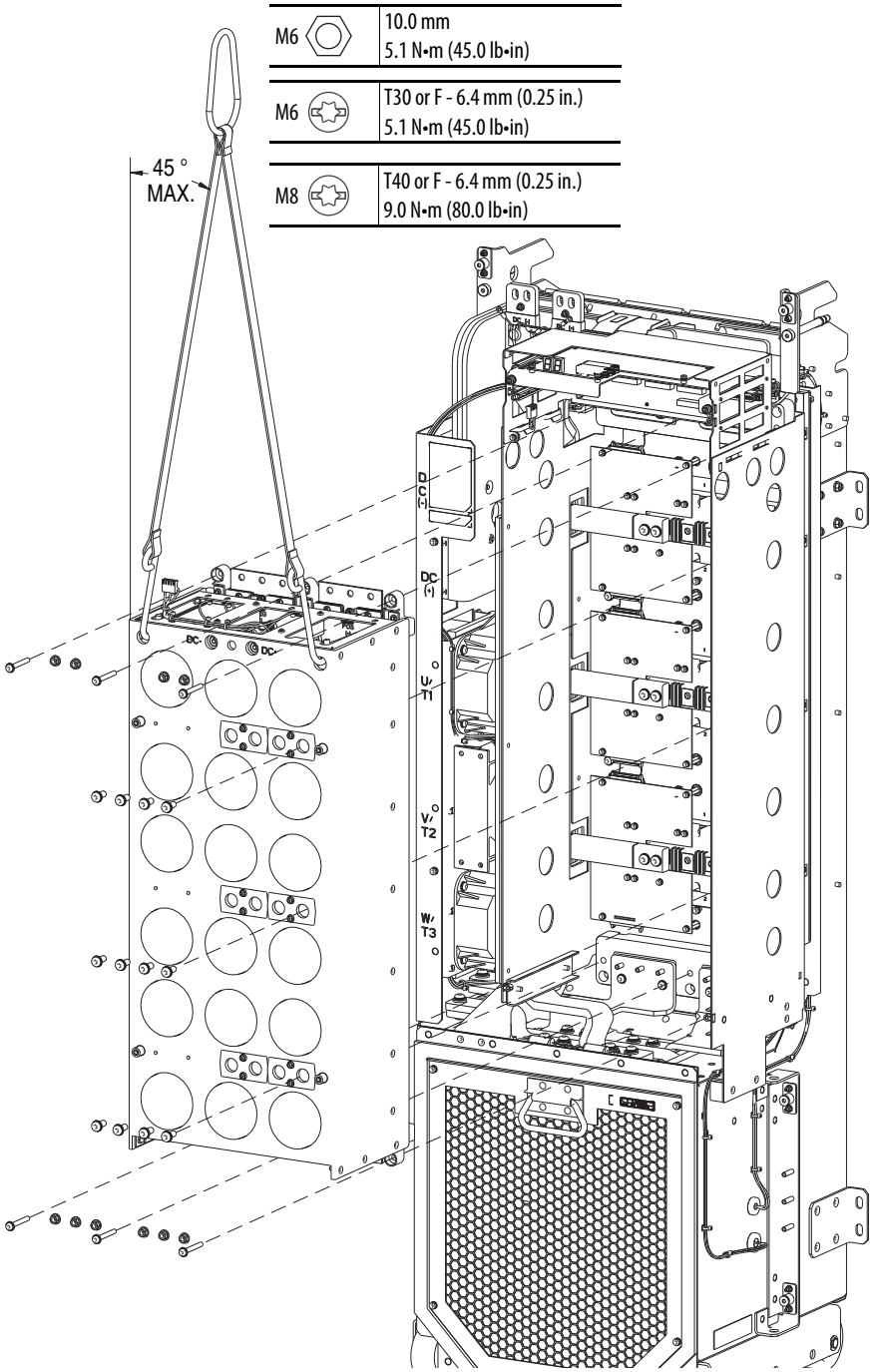
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
5. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
6. Remove the lower tray in the card cage that contains the power control and power supply circuit boards and store it in a dry, protected, static-free location. See Remove the Power Control Circuit Board on page 258. Note, it is not necessary to remove the power control board from the tray for this procedure.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

IMPORTANT Verify that the angle of attachment of the lifting hardware is no more than 45° from vertical.

7. Connect the lifting hardware to the two lifting holes on the front of the capacitor bank assembly.
8. Remove the 12 M6 hex nuts and washers from the bus connection tabs at the top and bottom of the capacitor bank assembly.
9. Remove the six or 12 M8 x 20-mm IGBT connection screws from the capacitor bank assembly. Use lifting equipment to pull the assembly forward and out of the inverter.
10. Remove the six M6 x 50-mm screws (three at the top, three at the bottom), from the capacitor bank assembly.



Install the Inverter Capacitor Bank

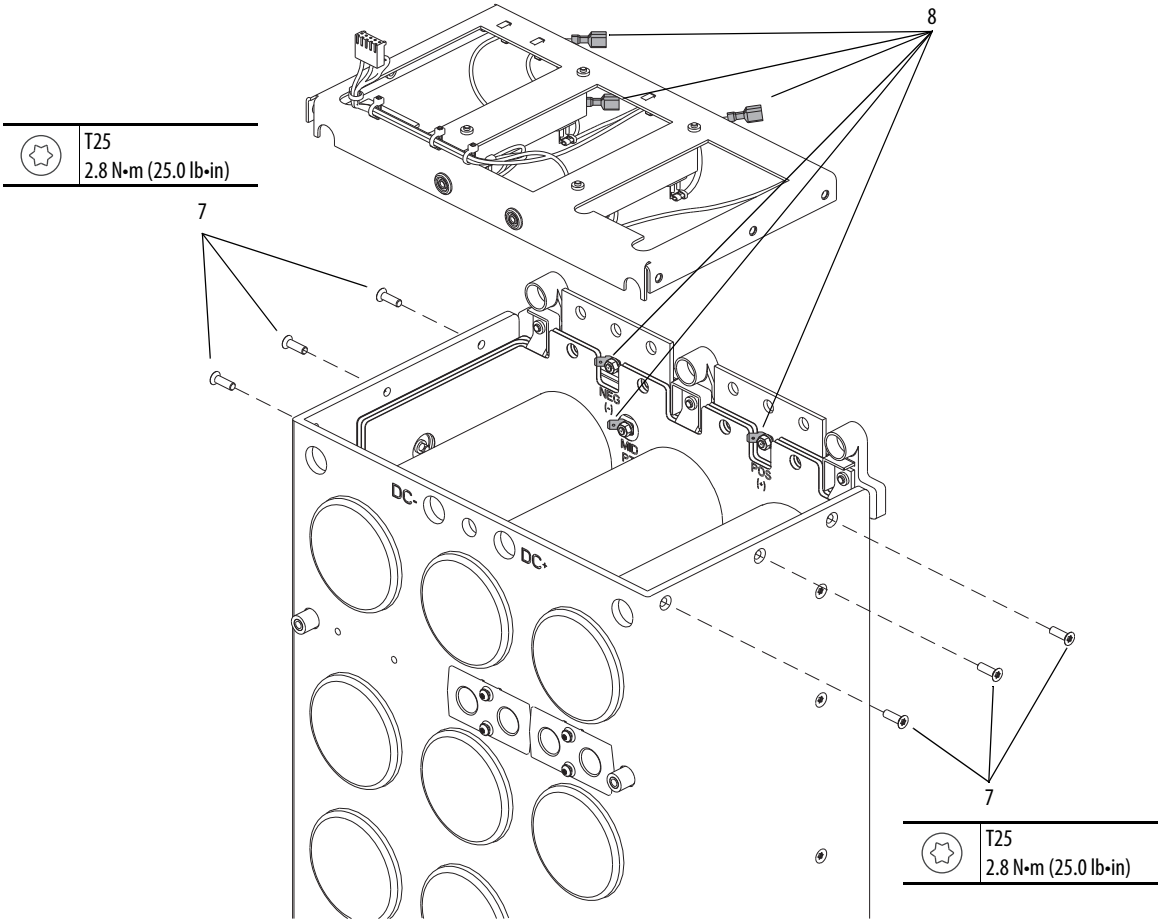
Install in the reverse order of removal. See Remove the Inverter Capacitor Bank Assembly on page 242.

Capacitor Balance Resistor Assembly Removal/ Installation

Remove the Capacitor Balance Resistor Assembly

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
5. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
6. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.

7. Remove the six M5 x 16-mm screws from the sides of the capacitor balance resistor mounting tray.
8. Disconnect the POS, NEG, and MIDP wire connections from the three faston terminals on the capacitor bank assembly.
9. Slide the capacitor balance resistor mounting tray up and out of the capacitor bank assembly.



Install the Capacitor Balance Resistors

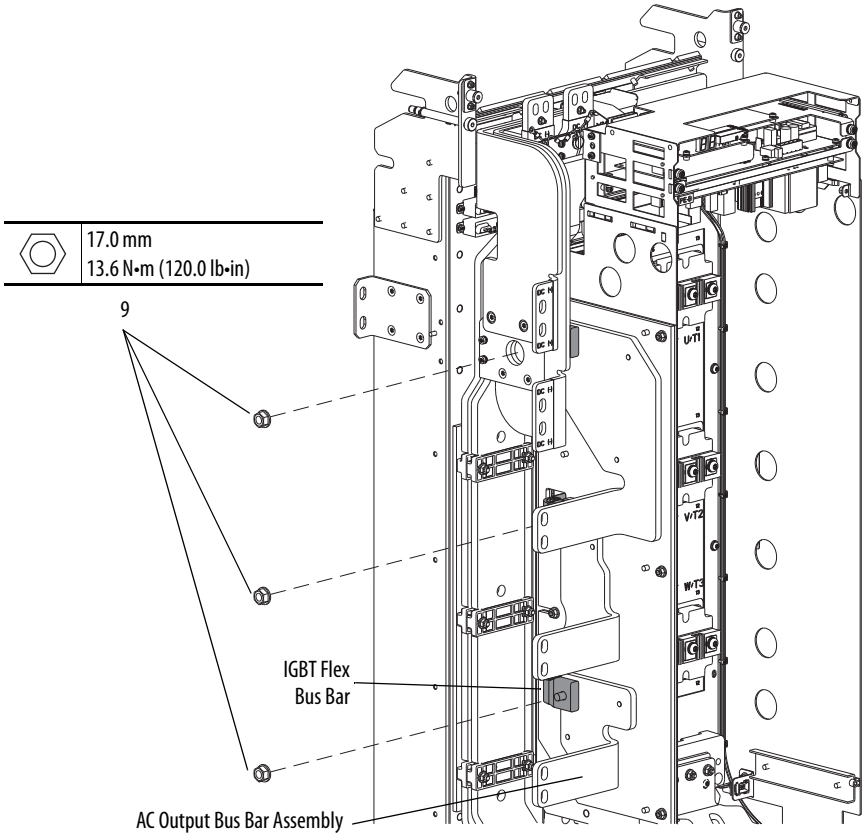
Install the capacitor balance resistors (on mounting tray) in the reverse order of removal. See Remove the Capacitor Balance Resistor Assembly on page 244.

IGBT Flex Bus Bars Removal/ Installation

Remove the IGBT Flex Bus Bars

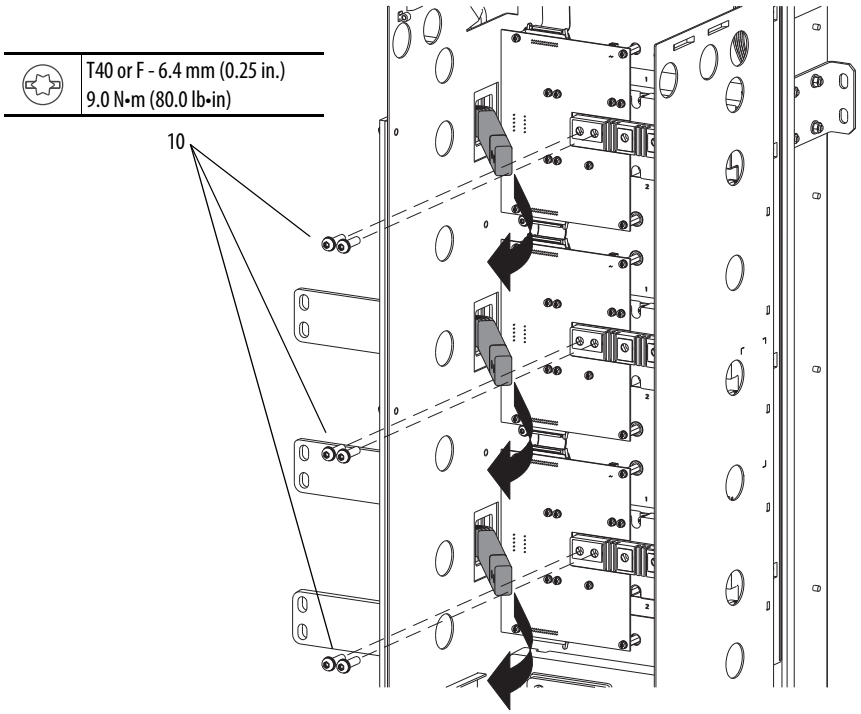
Note: This assembly is installed in the field only.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
7. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
8. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
9. Remove the M10 hex nut that secures each IGBT flex bus bar to the AC output bus bar assembly.



10. Remove the two M8 x 30-mm screws that secures each IGBT flex bus bar to the IGBT connections.
11. Slide each of the IGBT flex bus bars out of the front of the inverter.

IMPORTANT Remove the IGBT flex bus bars carefully, so as not to damage the inverter gate boards.



Install the IGBT Flex Bus Bars

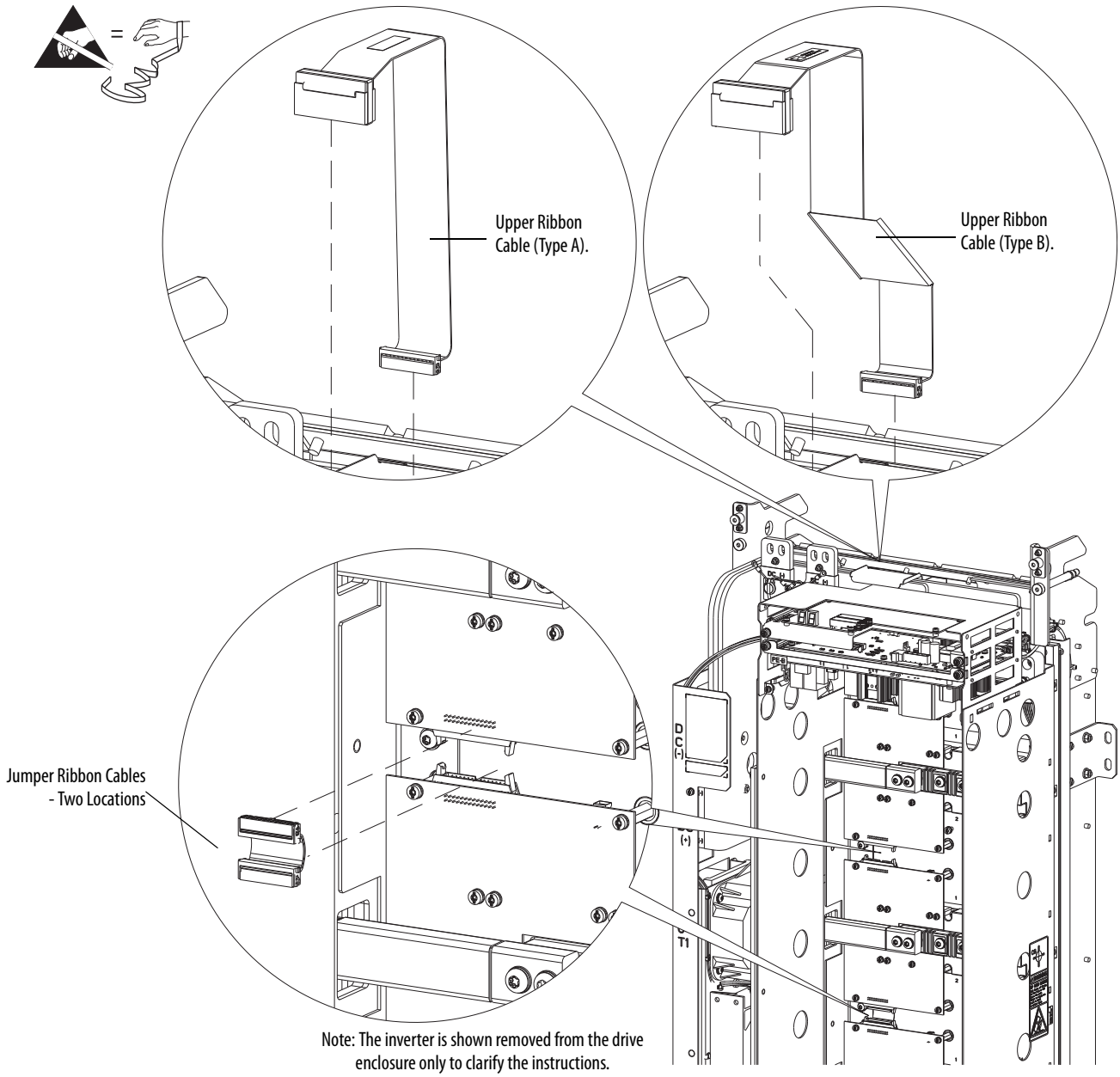
Install the IGBT flex bus bars in the reverse order of removal. See Remove the IGBT Flex Bus Bars on page 246.

Inverter Gate Board Connection Ribbon Cables Removal/Installation

Remove the Inverter Gate Board Connection Ribbon Cables

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
5. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.

6. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
7. Disengage the locking tabs and disconnect each end of the jumper ribbon cable from the inverter gate board and remove the ribbon cable.
8. Disengage the locking tabs and disconnect one end of the upper ribbon cable from the gate board and disconnect the opposite end of the ribbon cable from the backplane in the card cage. Remove the upper ribbon cable by pulling it vertically out of the top of the inverter.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

Install the Inverter Gate Board Connection Ribbon Cables

Install the inverter gate board connection ribbon cables in the reverse order of removal. See Remove the Inverter Gate Board Connection Ribbon Cables on page 247.

- The gate board connection ribbon cables kit contains one each of the straight (type A) and folded (type B) upper ribbon cables. Only use the cable in the kit that matches that cable type that you have removed from the drive. Use the following drive sizing information for verification of the appropriate cable type to use with your drive.

Table 12 - Gate Board Upper Ribbon Cable Type

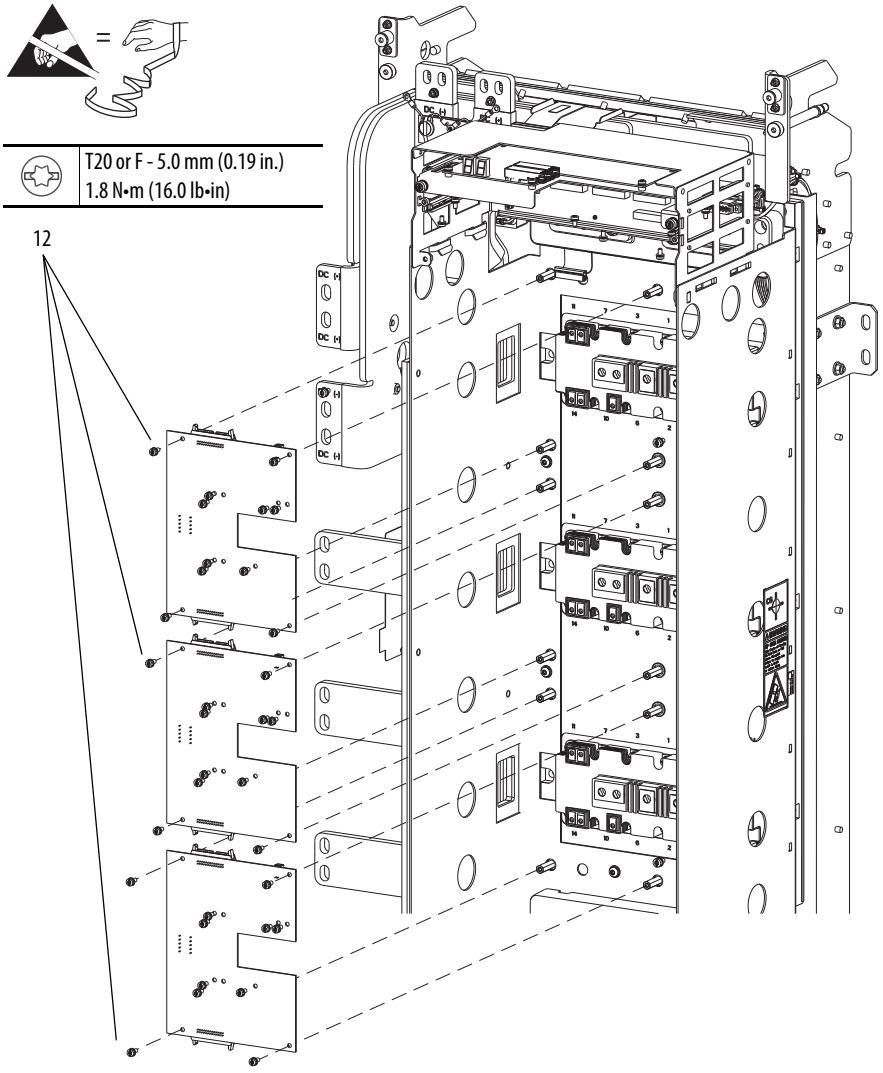
Upper Ribbon Cable Type	Drive Cat. No. Pos. 7	and	Drive Cat. No. Pos. 8…10
A (straight)	C		460, 540, or 567
	D		430, 485, or 545
B (folded)	C		650. 750, or 770
	D		617, 710, or 740

Inverter Gate Circuit Board Removal/Installation

Remove the Inverter Gate Circuit Board

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
7. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
8. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
9. Remove the IGBT flex bus bars. See Remove the IGBT Flex Bus Bars on page 246.
10. Remove the inverter ribbon cables. See Remove the Inverter Gate Board Connection Ribbon Cables on page 247.
11. Remove the seven M4 x 10-mm screws that secure the gate board to the IGBT (E1, E2, G1, G2, C1, NTC1, NTC2 connections).

12. Remove the four M4 x 10-mm screws that secure the gate board to the standoffs and remove the board.



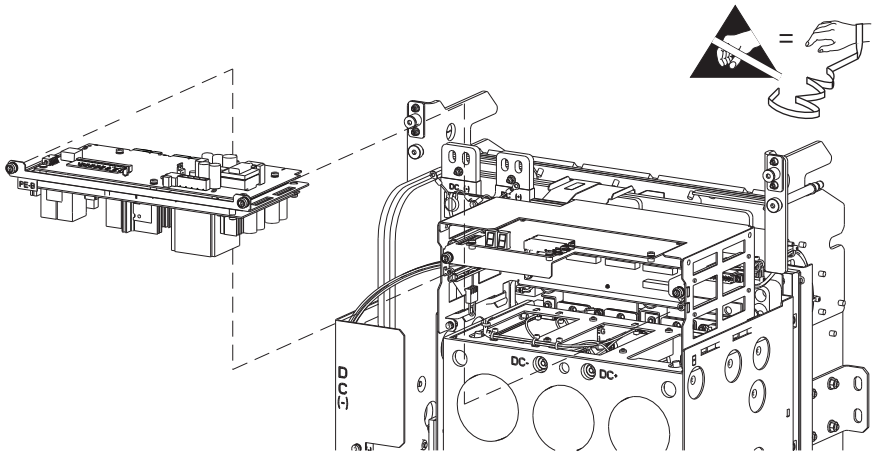
Install the Inverter Gate Circuit Board

Install the inverter gate board in the reverse order of removal. See Remove the Inverter Gate Circuit Board on page 249.

Rating Plug Removal/ Installation

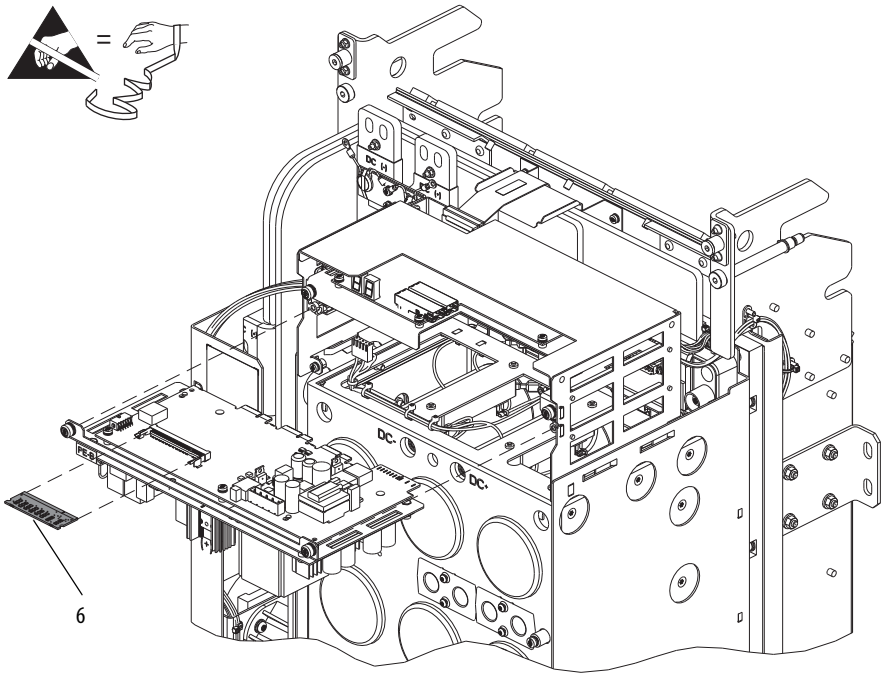
Remove the Rating Plug

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
5. Remove the lower tray in the card cage that contains the power control and power supply circuit boards and store it in a dry, protected, static-free location. See Remove the Power Control Circuit Board on page 258. Note, it is not necessary to remove the power control board from the tray for this procedure.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

6. Unlatch the two metal clips that secure the rating plug in the slot, tilt slightly upward, and gently pull forward to remove the plug.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

Install the Rating Plug

Install the rating plug in the reverse order of removal. See Remove the Rating Plug on page 251.

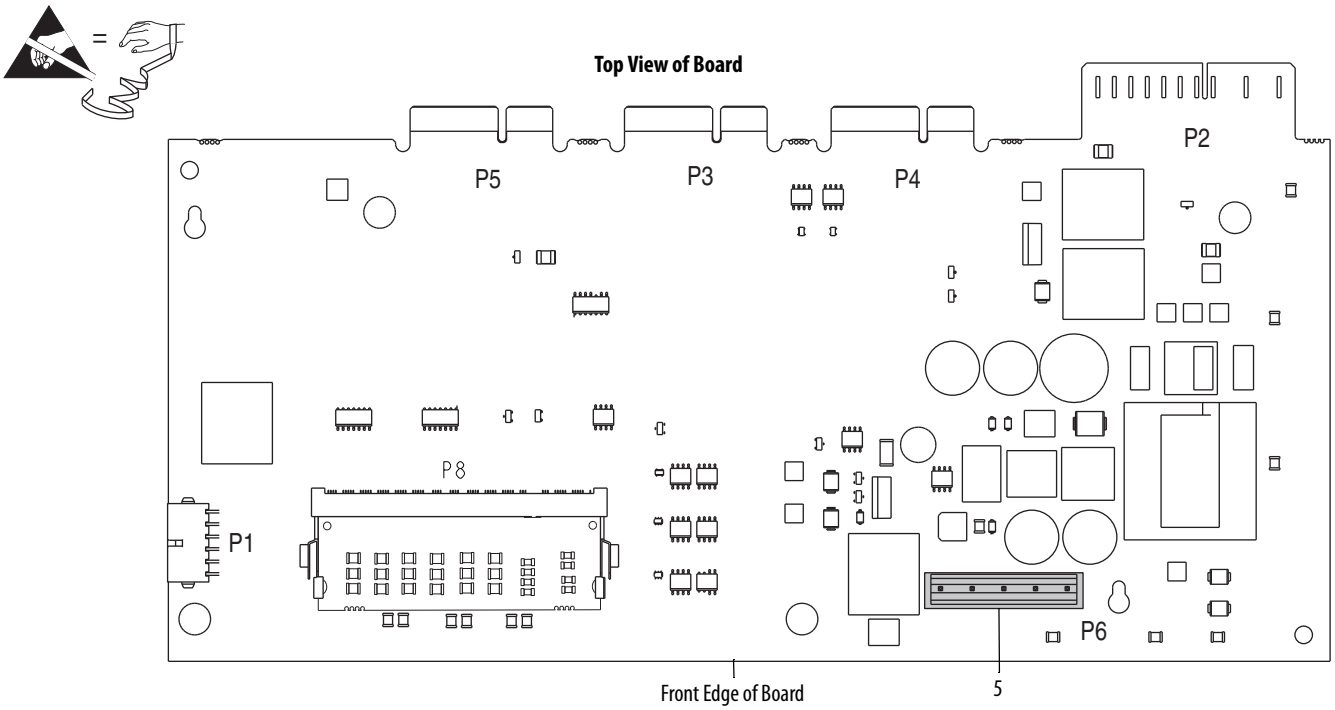
Power Layer Interface Circuit Board Removal/Installation

Remove the Power-layer Interface Circuit Board

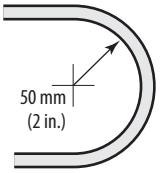
IMPORTANT Determine if the existing inverter power-layer interface board is series A or series B, and verify that you have ordered/received a compatible board before replacement. See Drive Series Components Compatibility on page 28 for details.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.

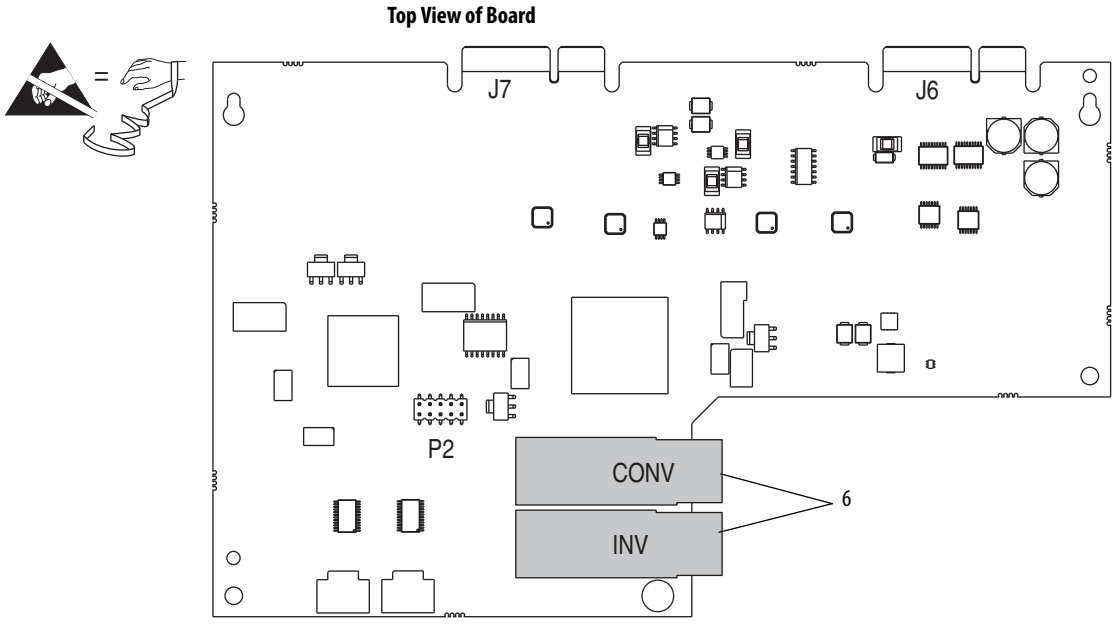
5. Disconnect the terminal block from P6 on the power control board.



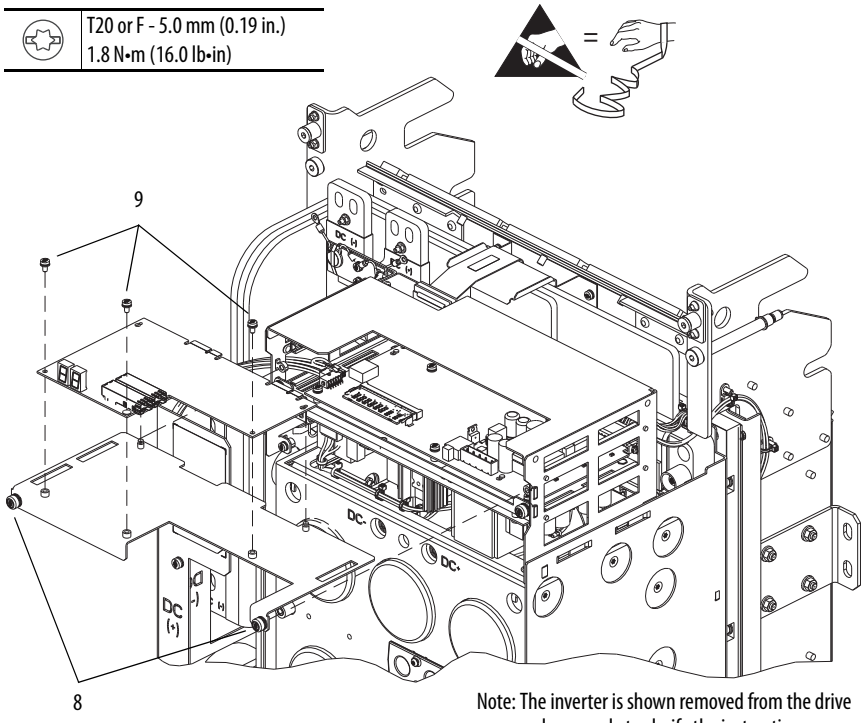
IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



6. Disconnect the fiber-optic cables from CONV and INV on the power layer interface board.



7. From the INV and CONV fiber-optic cages on the power layer interface board, remove each fiber-optic transceiver by pulling its bale wire. Set the transceivers aside and save for reinstallation.
8. Completely loosen the two captive screws on the face of the top tray in the card cage, pull forward, and remove the tray. Note, the right front corner of the power layer interface board may not clear the card cage frame. Lift the tray up to clear the card cage.
9. Remove the three M4 x 8-mm screws that secure the power layer interface board to the tray, push the board slightly back and then up to remove it from the two keyhole standoffs on the tray.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

Install the Power-layer Interface Circuit Board

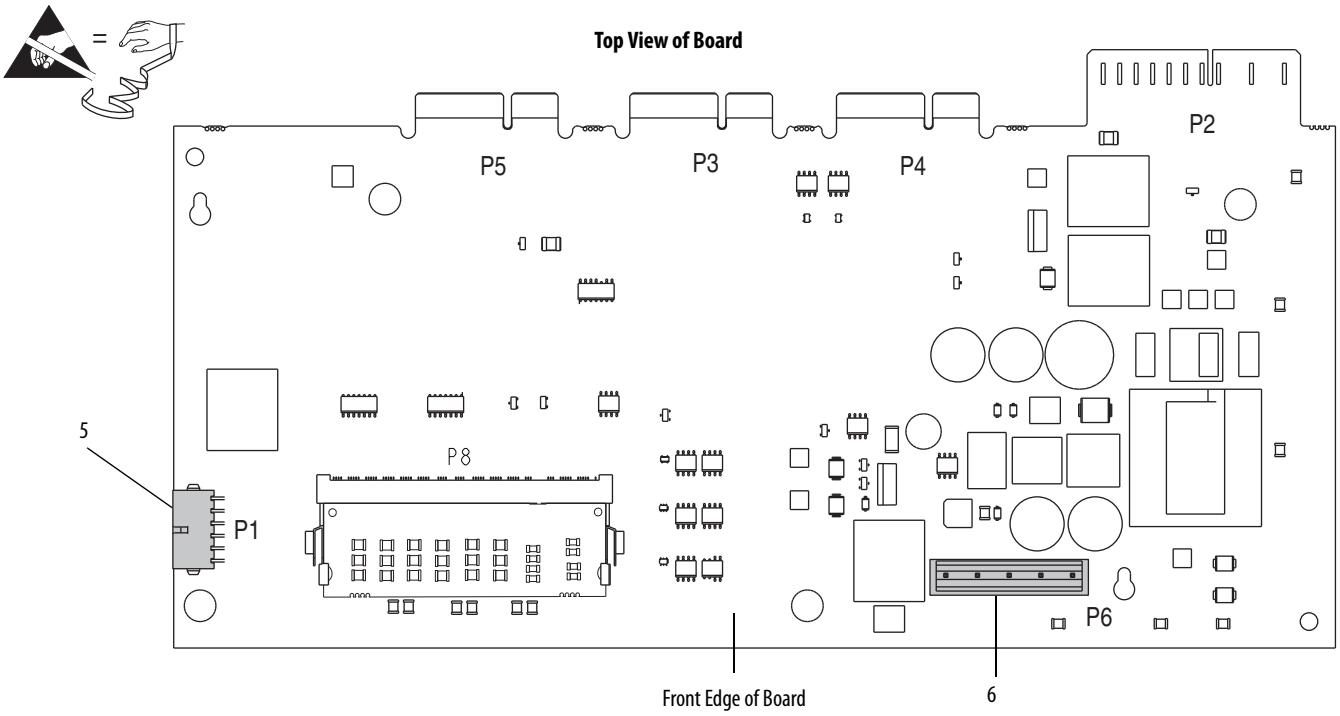
Install the power layer interface board in the reverse order of removal. See Remove the Power-layer Interface Circuit Board on page 252.

Power Supply Circuit Board Removal/Installation

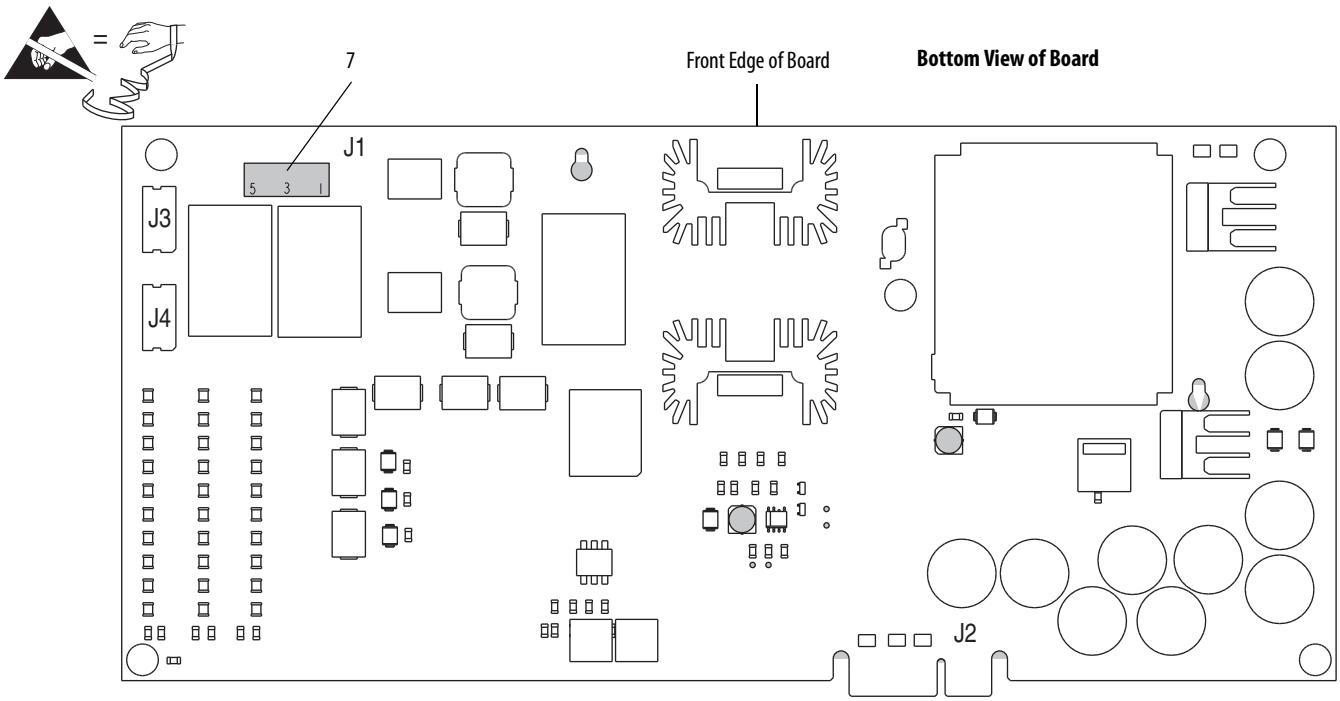
Remove the Power Supply Circuit Board

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.

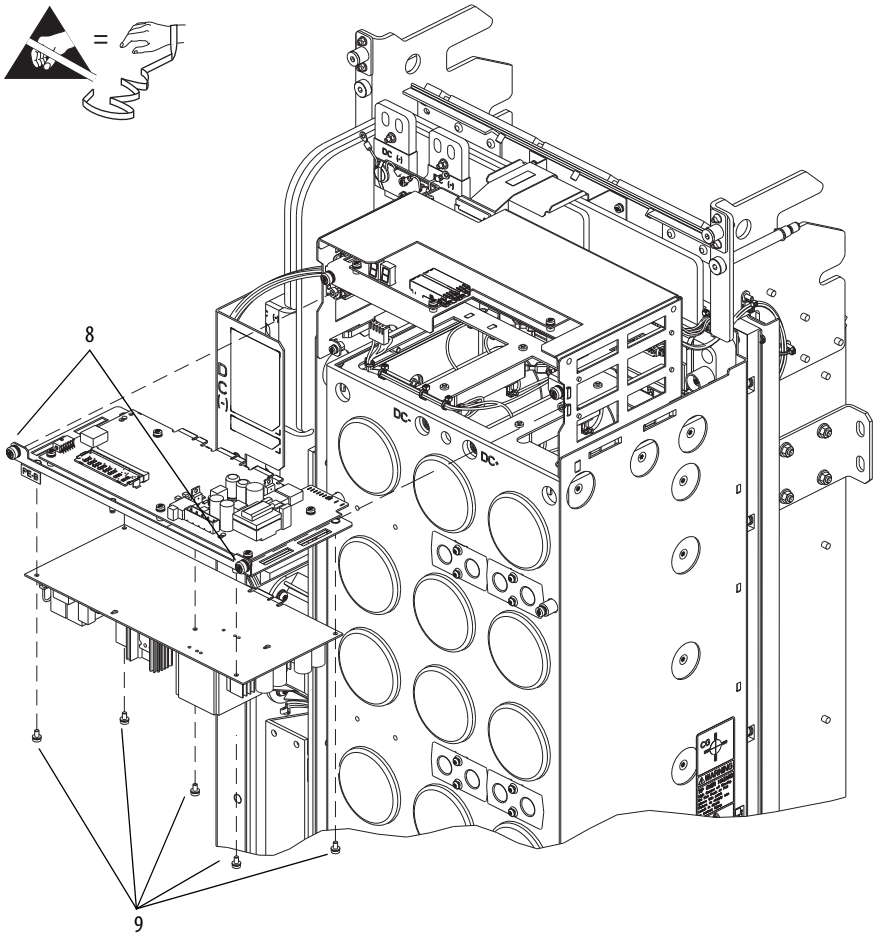
4. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
5. Disengage the locking tabs and disconnect the wire connector from P1 on the power control board.
6. Disconnect the terminal block from P6 on the power control board.



7. Disengage the locking tabs and disconnect the wire connector from J1 on the power supply board.



8. Completely loosen the two captive screws on the face of the bottom tray in the card cage and pull the tray out of the cage.
9. Remove the five M4 x 8 mm screws that secure the power supply board to the tray, pull the board slightly forward and then down to remove it from the two keyhole standoffs on the tray.



	T20 or F - 5.0 mm (0.19 in.) 1.8 N•m (16.0 lb•in)

Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

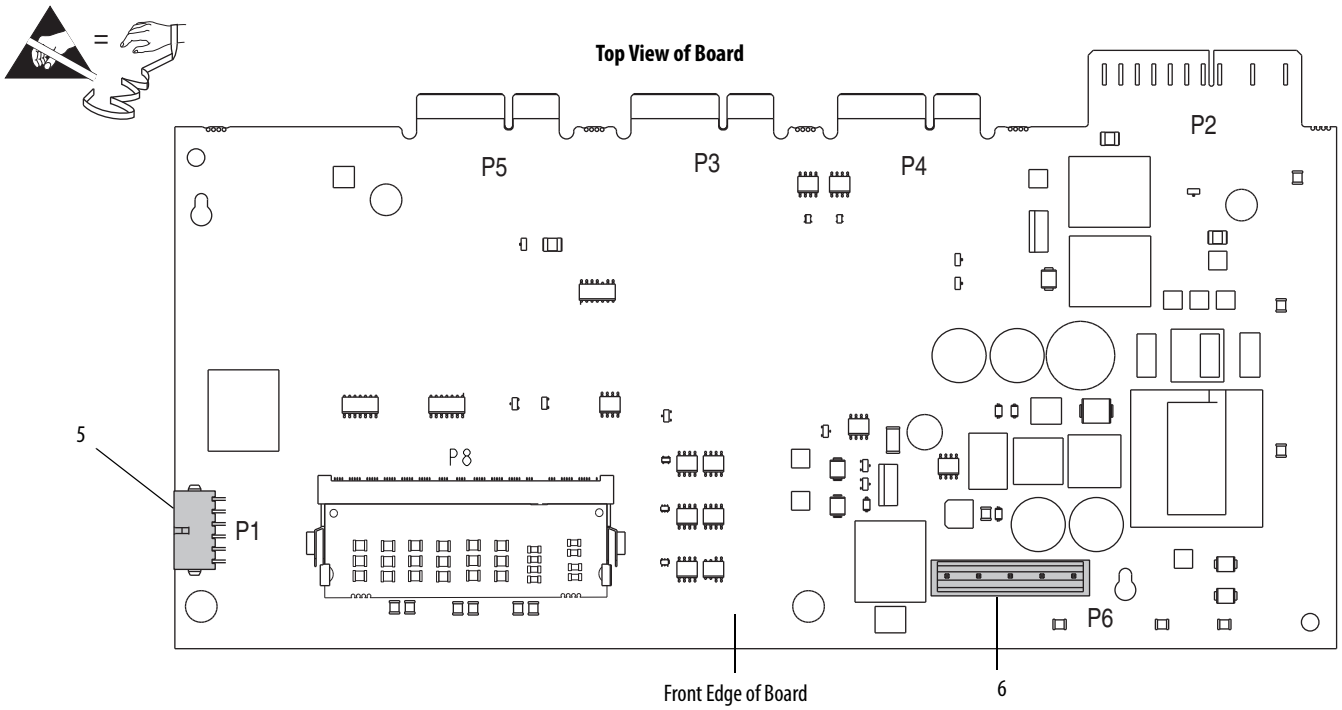
Install the Power Supply Circuit Board

Install the power supply board in the reverse order of removal. See Remove the Power Supply Circuit Board on page 254.

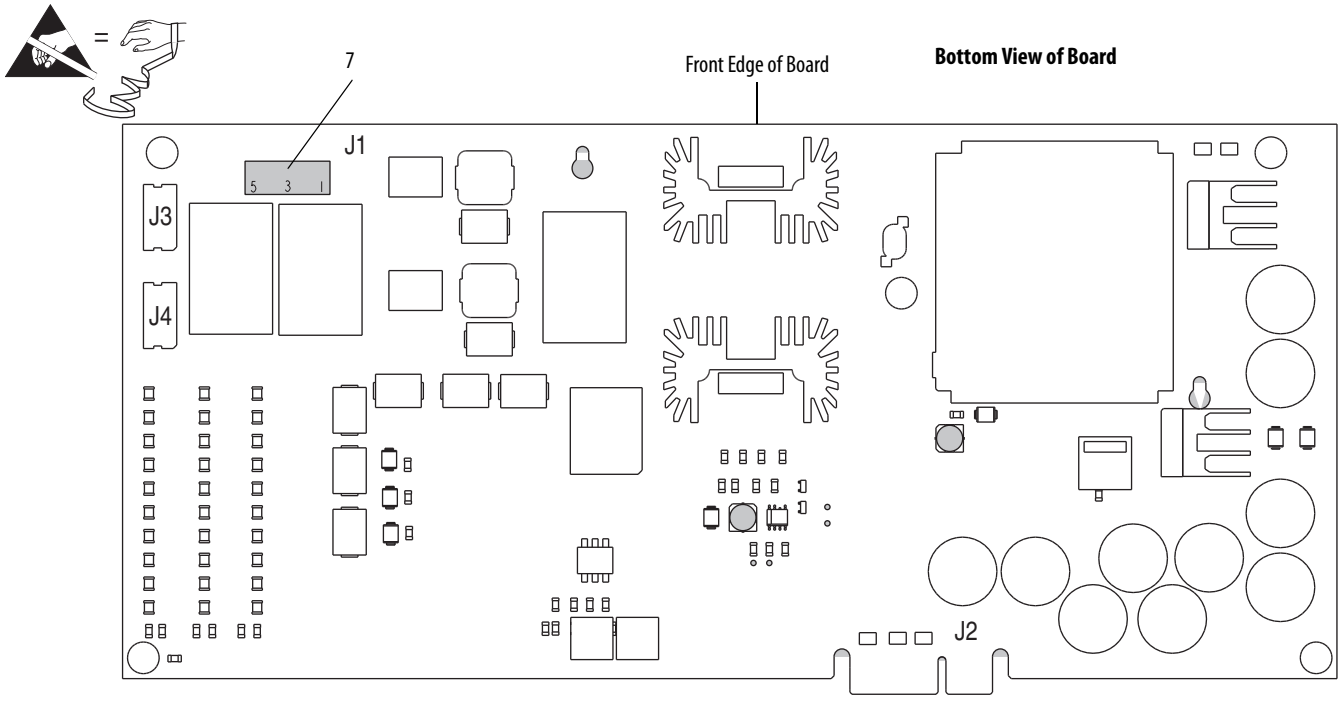
Power Control Circuit Board Removal/Installation

Remove the Power Control Circuit Board

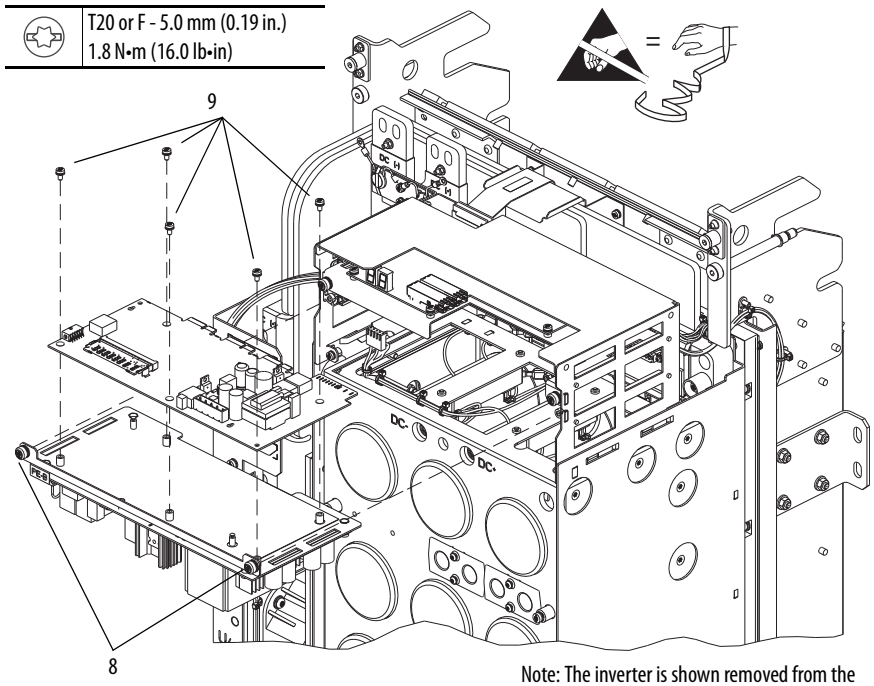
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
5. Disengage the locking tabs and disconnect the wire connector from P1 on the power control board.
6. Disconnect the terminal block from P6 on the power control board.



7. Disengage the locking tabs and disconnect the wire connector from J1 on the power supply board.



8. Completely loosen the two captive screws on the face of the bottom tray in the card cage and pull the tray out of the cage.
9. Remove the five M4 x 8 mm screws that secure the power control board to the tray, pull the board slightly back and then up to remove it from the two keyhole standoffs on the tray.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

Install the Power Control Circuit Board

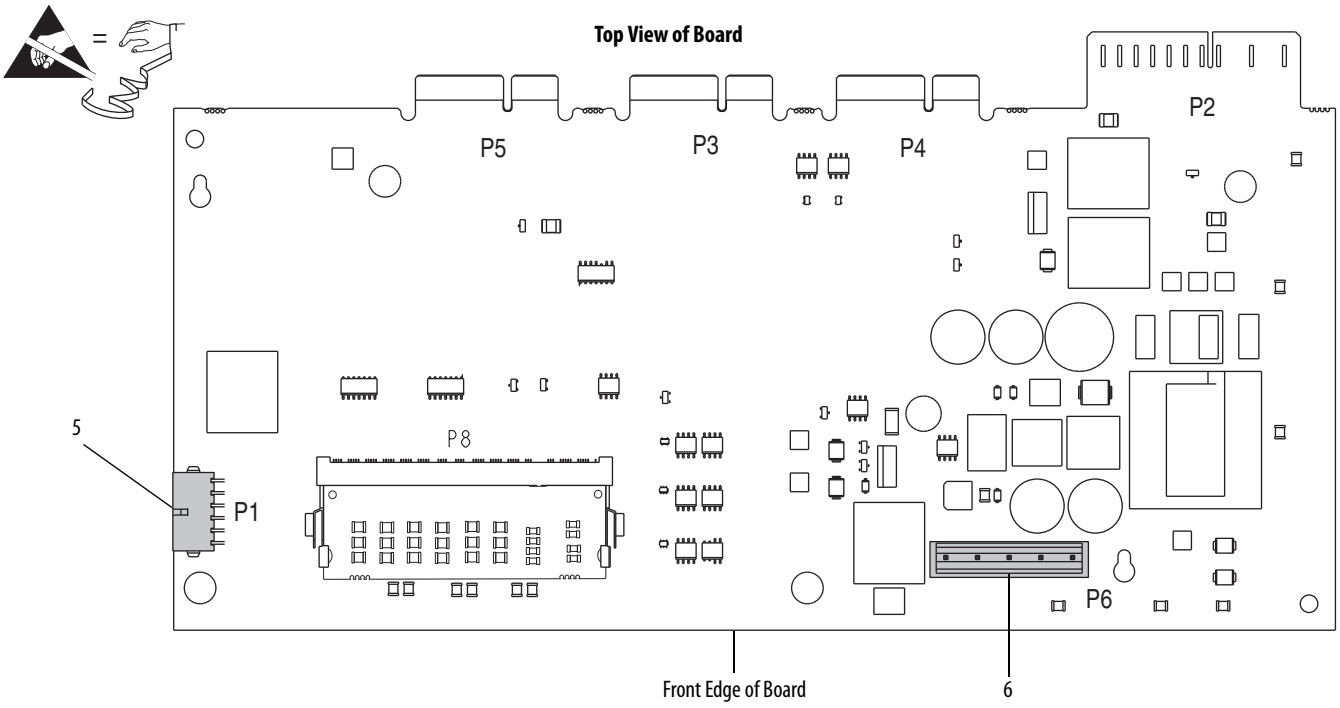
Install the power control board in the reverse order of removal. See Remove the Power Control Circuit Board on page 258.

Inverter Backplane Circuit Board Removal/Installation

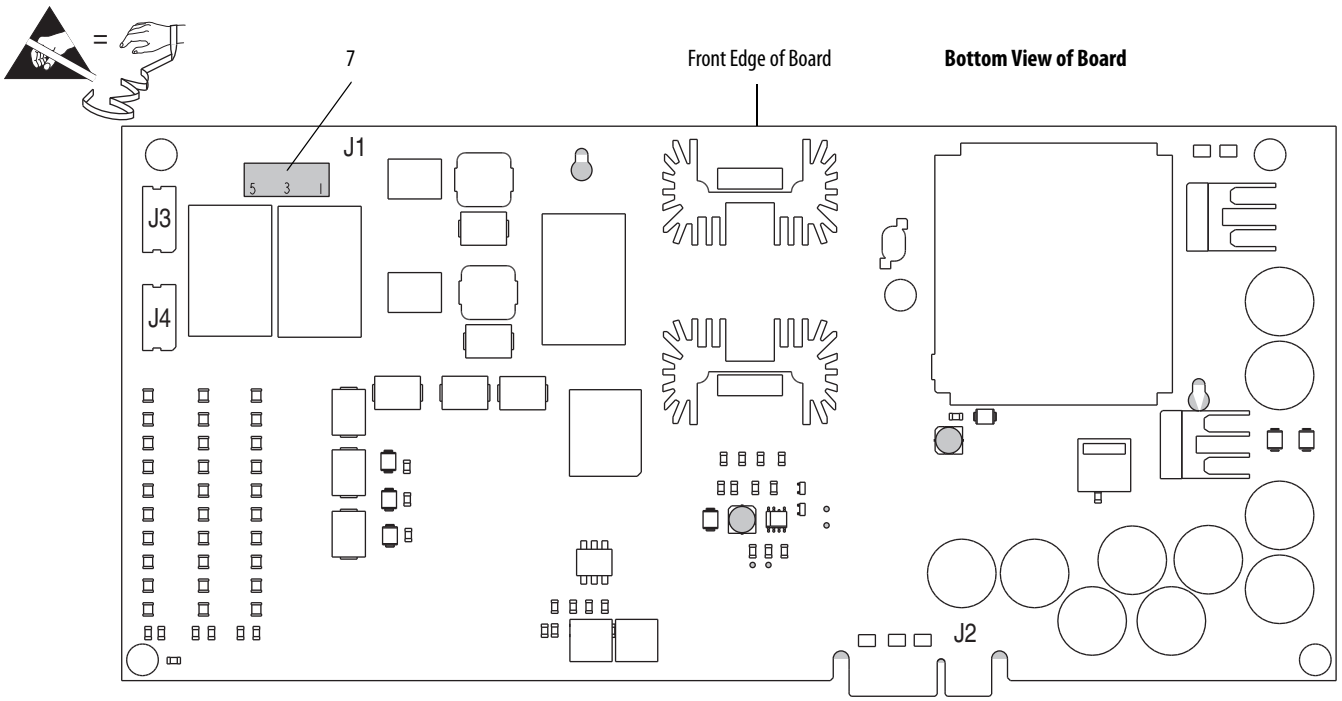
Remove the Inverter Backplane Circuit Board

IMPORTANT Firmware must be loaded into the inverter backplane circuit board by qualified Rockwell Automation service personnel in order for this board to be operational.

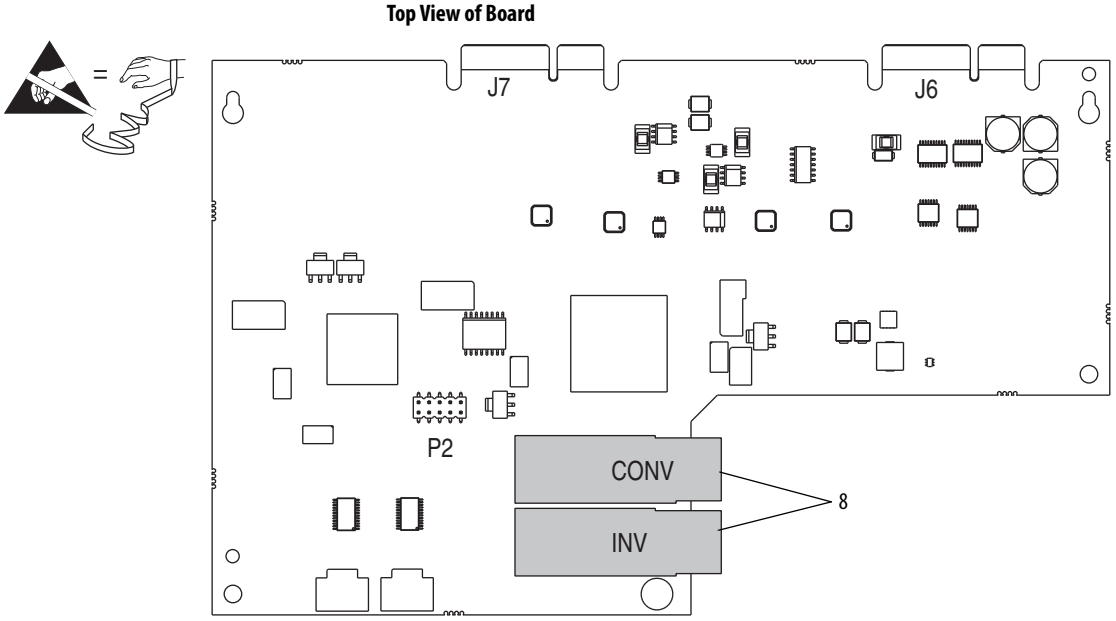
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
5. Disengage the locking tabs and disconnect the wire connector from P1 on the power control board.
6. Disconnect the terminal block from P6 on the power control board.



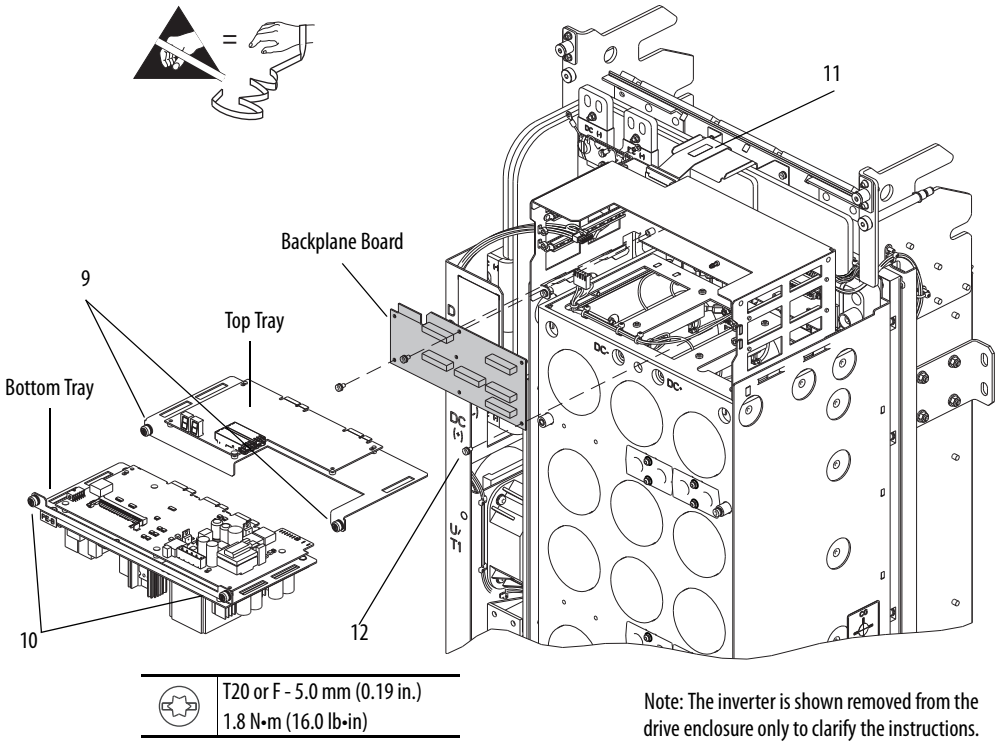
7. Disengage the locking tabs and disconnect the wire connector from J1 on the power supply board.



8. Disconnect the fiber-optic cables from CONV and INV on the power layer interface board.



9. Completely loosen the two captive screws on the face of the top tray in the card cage, pull forward, and remove the tray.
10. Completely loosen the two captive screws on the face of the bottom tray in the card cage and pull the tray out of the cage.
11. Disconnect the ribbon cable that is connected to the top edge of the backplane board.
12. Remove the three M4 x 8-mm screws that secure the backplane board to the tray and pull the backplane gently forward to release it from the four snap-top standoffs.



Note: The inverter is shown removed from the drive enclosure only to clarify the instructions.

Install the Inverter Backplane Circuit Board

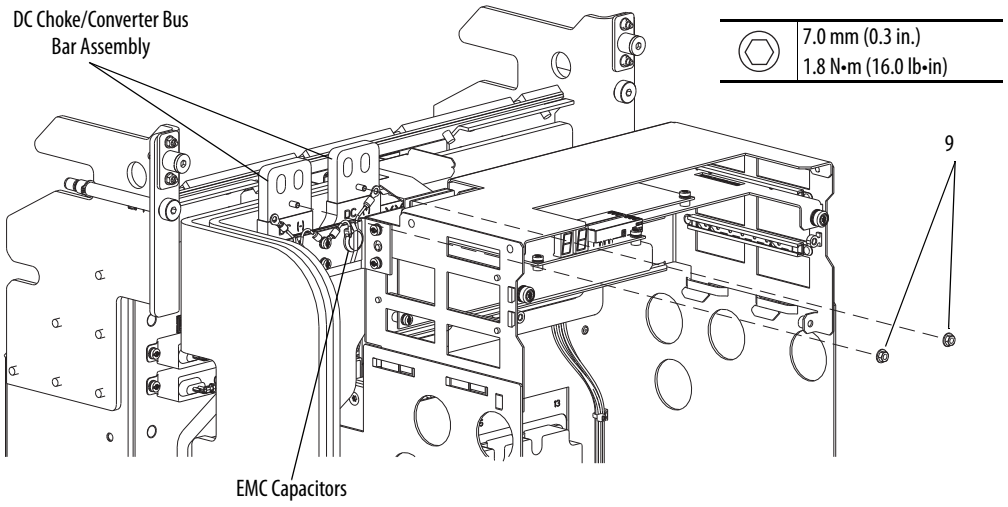
Install the inverter backplane board in the reverse order of removal. See Remove the Inverter Backplane Circuit Board on page 261.

Inverter EMC Capacitor Removal/Installation (AC Input Drive Only)

Remove the Inverter EMC Capacitors (AC Input Drive Only)

Note: There are three sets of EMC capacitors on the inverter. One set is to the left of the card cage, a second set is behind the card cage, and a third set is below the capacitor bank.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
7. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
8. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
9. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to DC choke/converter bus bar assembly.

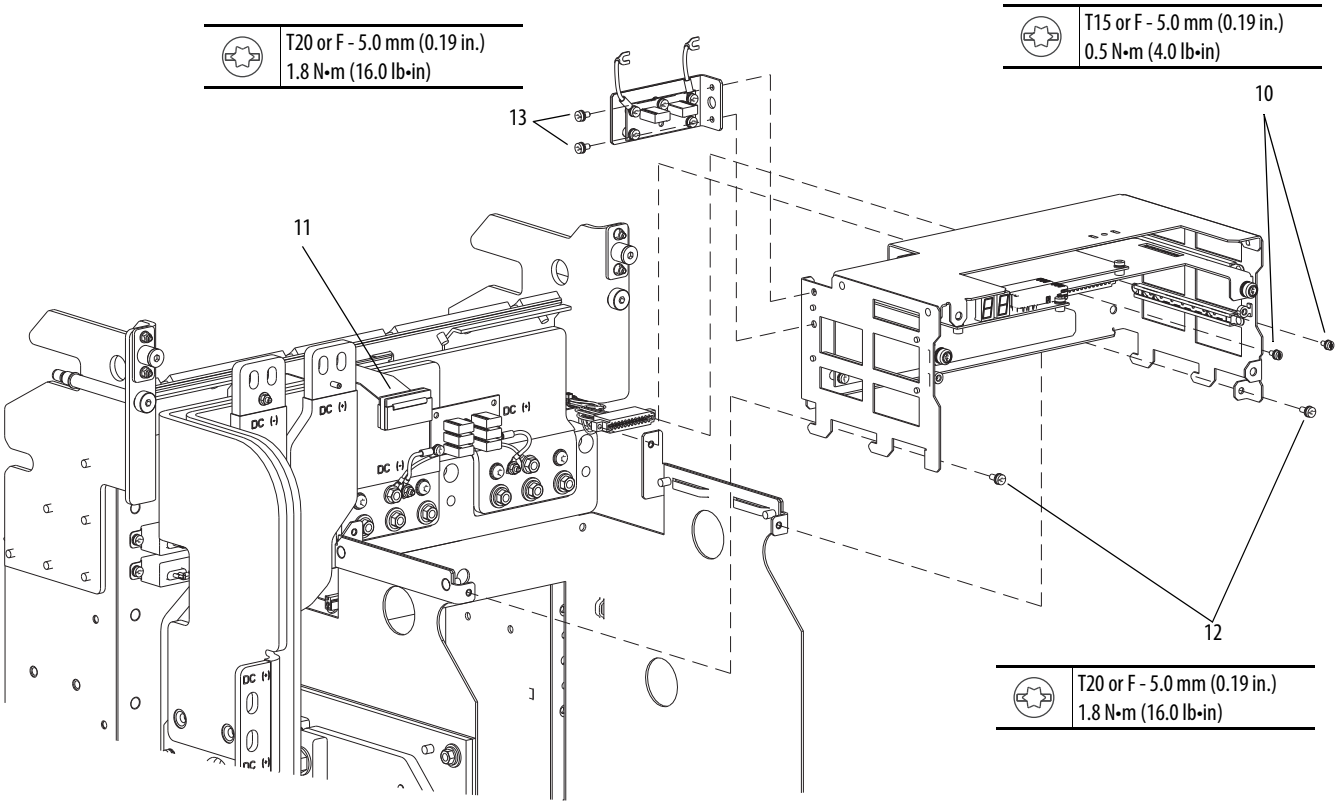


10. Remove the two M3 x 12-mm screws that secure the inverter wire harness to the backplane in the card cage.

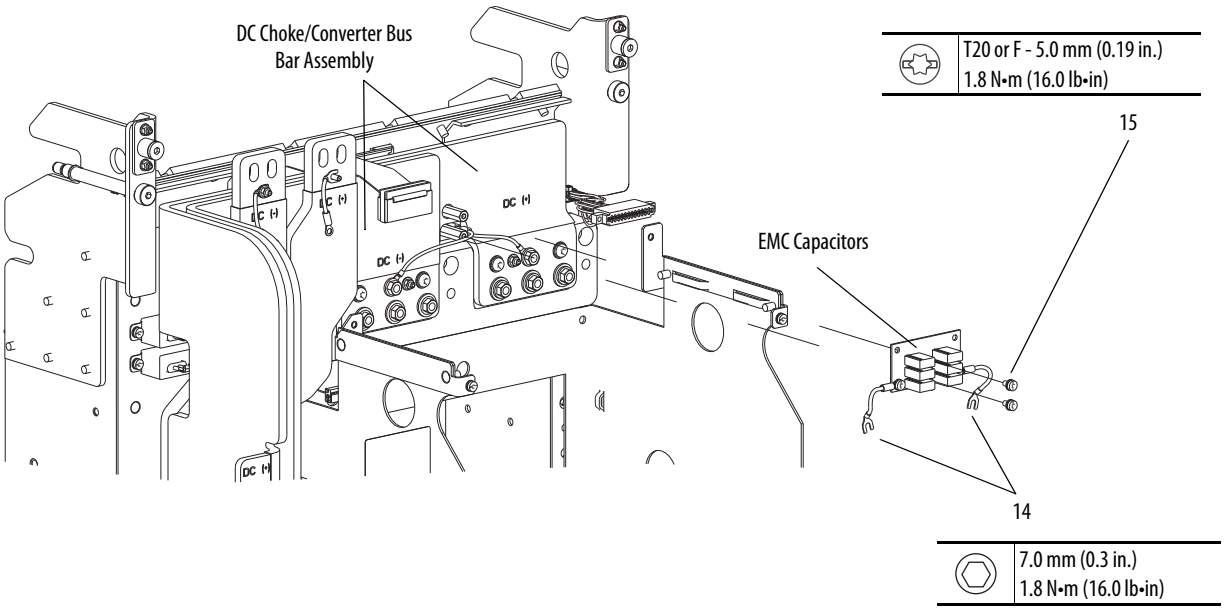
11. Disconnect the ribbon cable that is connected to the top edge of the backplane board.

12. Remove the two M4 x 10-mm screws that secure the card cage to the inverter frame and slide the card cage out and up to remove it.

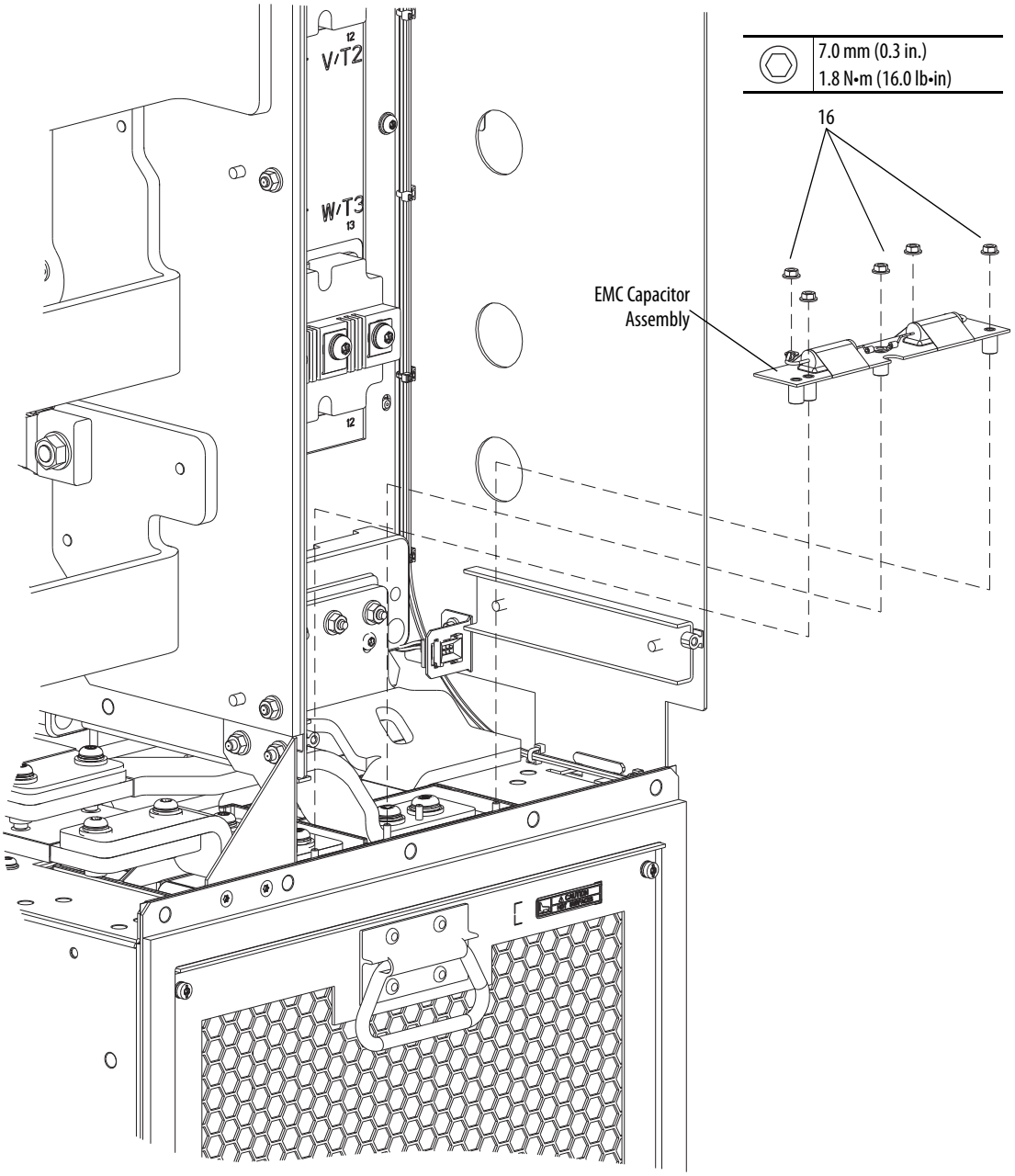
13. Remove the two M4 x 8 mm screws that secure the EMC capacitor assembly to the card cage and remove the capacitor assembly.



14. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to DC choke/converter bus bar assembly.
15. Remove the two M4 x 8 mm screws that secure the EMC capacitor assembly to the standoffs on the capacitor bank support and remove the EMC capacitor assembly.



16. Remove the five M4 hex nuts that secure the connections from the EMC capacitors to the DC choke input positive and negative bus bars and the EMC capacitor assembly to the drive chassis and remove the EMC capacitor assembly.



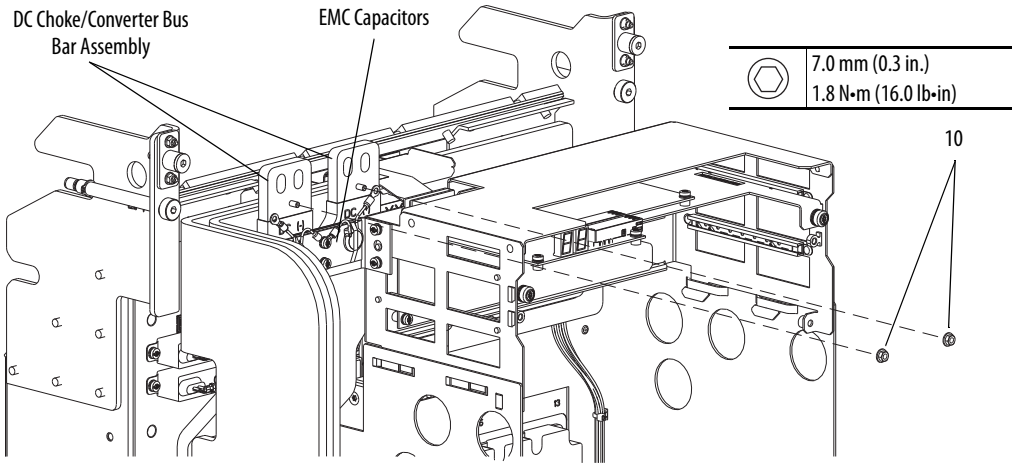
Install the Inverter EMC Capacitors (AC Input Drive Only)

Install the Inverter EMC Capacitors in the reverse order of removal. See Remove the Inverter EMC Capacitors (AC Input Drive Only) on page 264.

Inverter Side DC Bus Bar Removal/Installation (AC Input Drive Only)

Remove the Inverter Side DC Bus Bars (AC Input Drive Only)

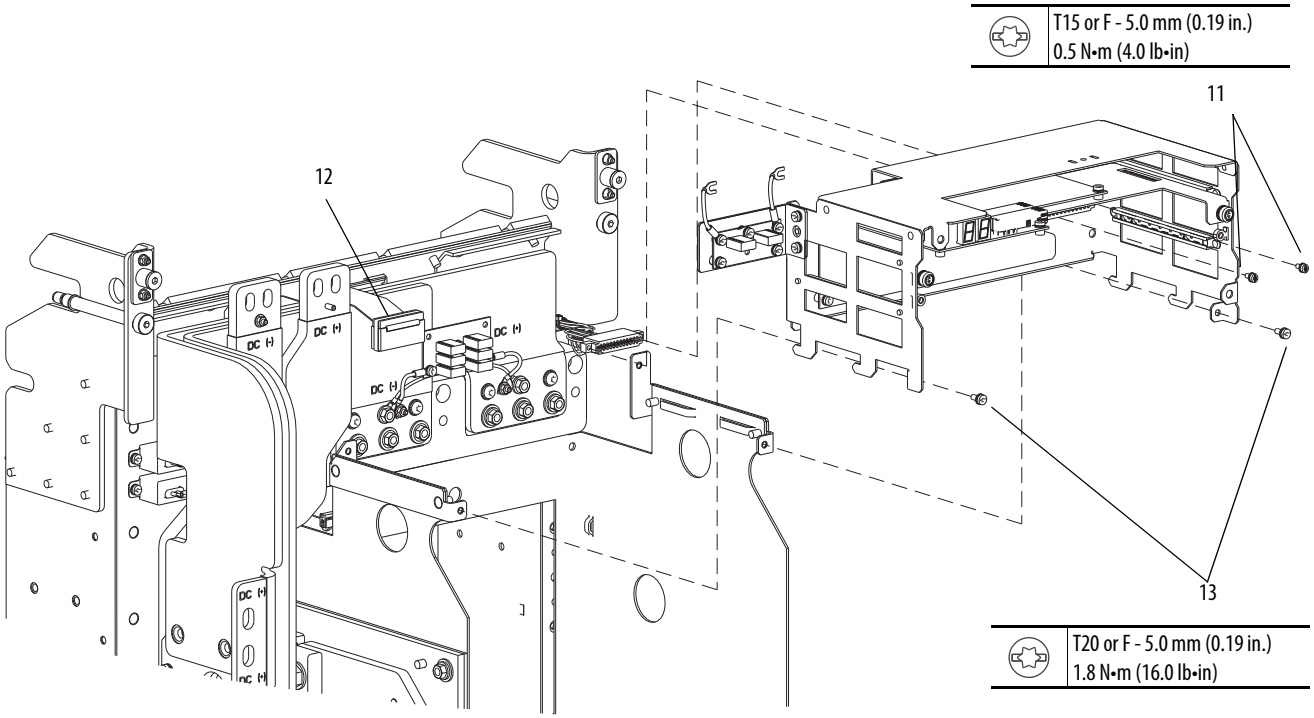
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
7. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
8. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
9. Remove the IGBT flex bus bars. See Remove the IGBT Flex Bus Bars on page 246.
10. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to DC choke/converter bus bar assembly.



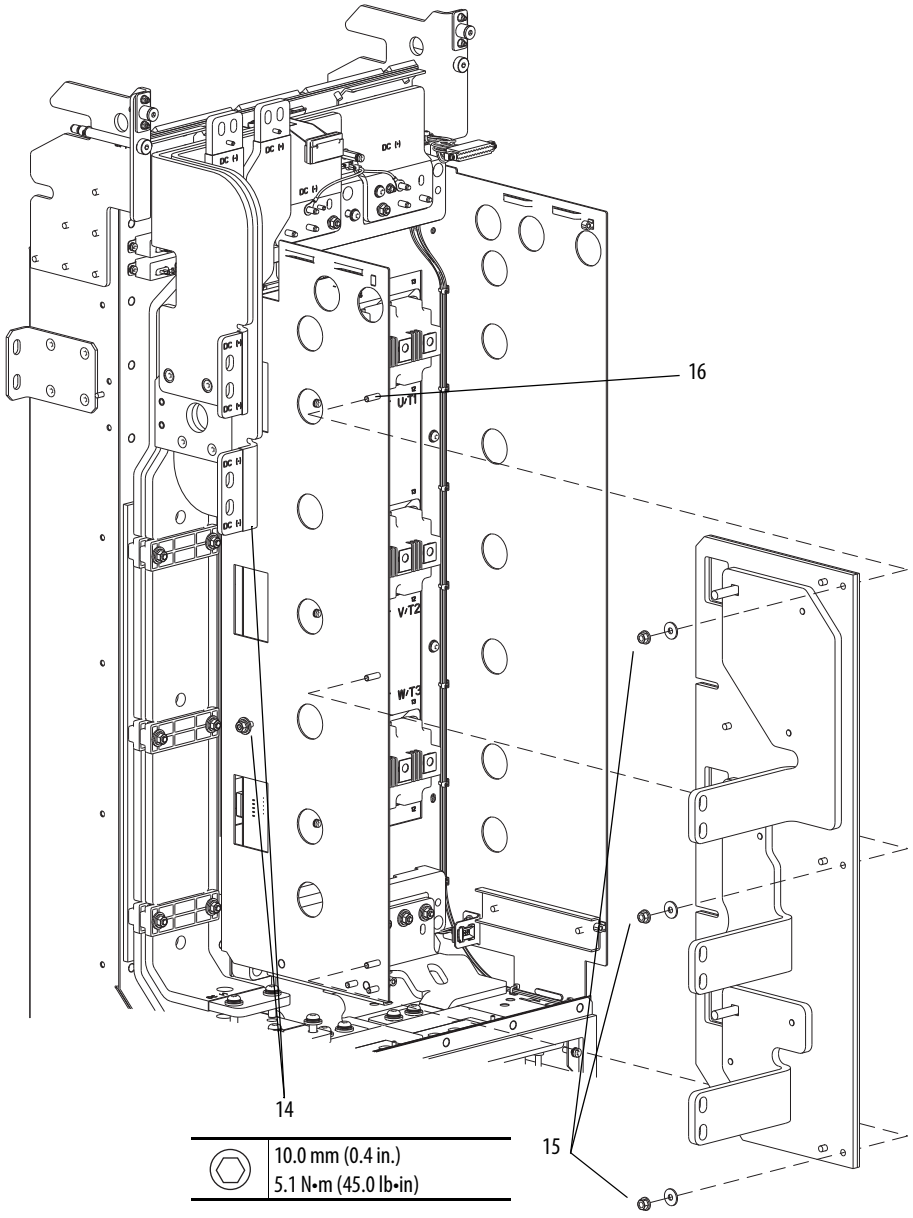
11. Remove the two M3 x 12-mm screws that secure the inverter wire harness to the backplane in the card cage.

12. Disconnect the ribbon cable that is connected to the top edge of the backplane board.

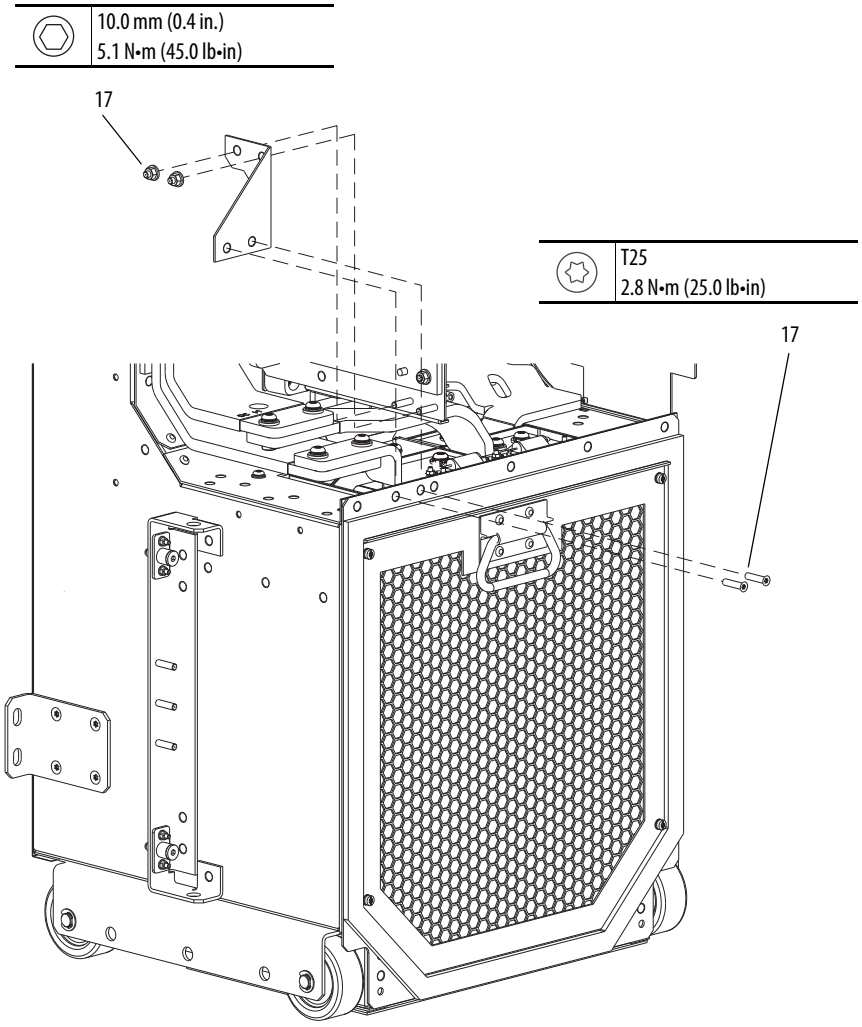
13. Remove the two M4 x 10-mm screws that secure the card cage to the inverter frame and slide the card cage out and up to remove it.



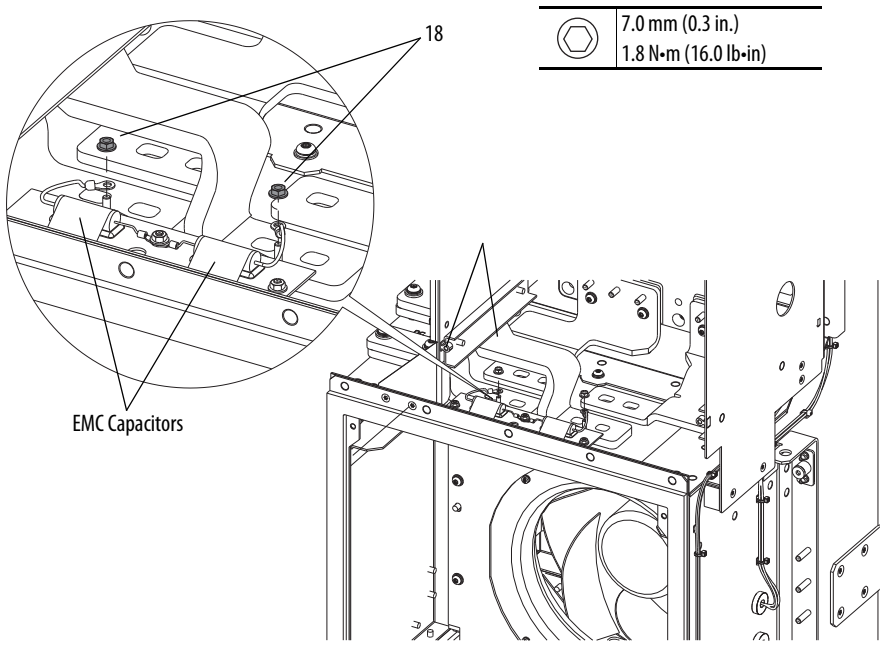
14. Completely loosen, but do not remove, the two M6 hex nuts at the back edge of the AC output bus bar assembly.
15. Remove the three M6 hex nuts and washers that secure the front of the AC output assembly to the capacitor bank support.
16. Lift the assembly off the front three bolts and pull forward to remove the AC output assembly.



17. Remove the two M6 hex nuts and two M5 x 10-mm screws that secure the capacitor bank gusset to the capacitor bank support and drive chassis and remove the gusset.

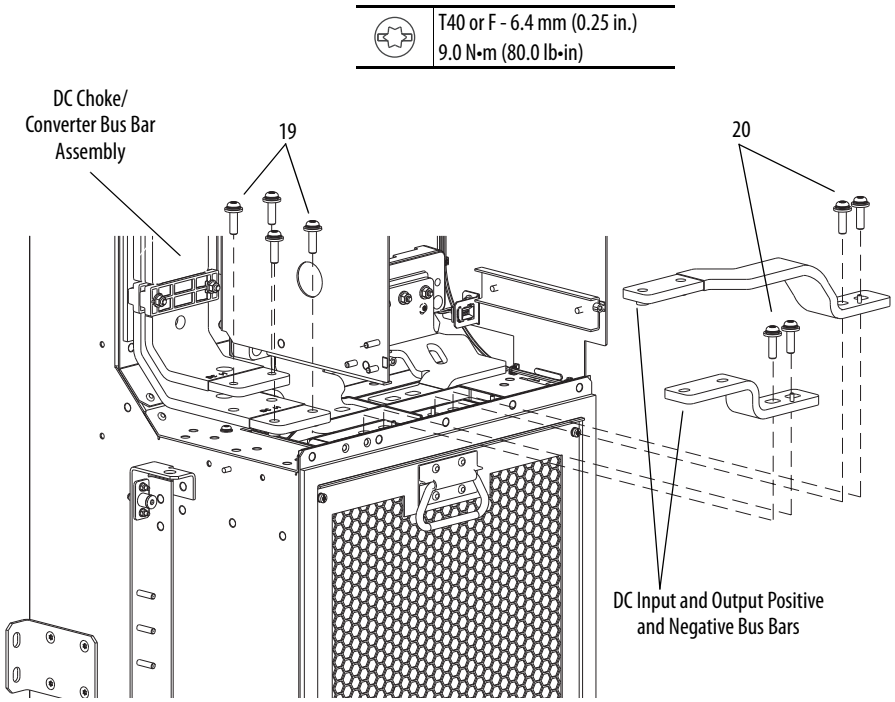


18. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to the DC choke input positive and negative bus bars.

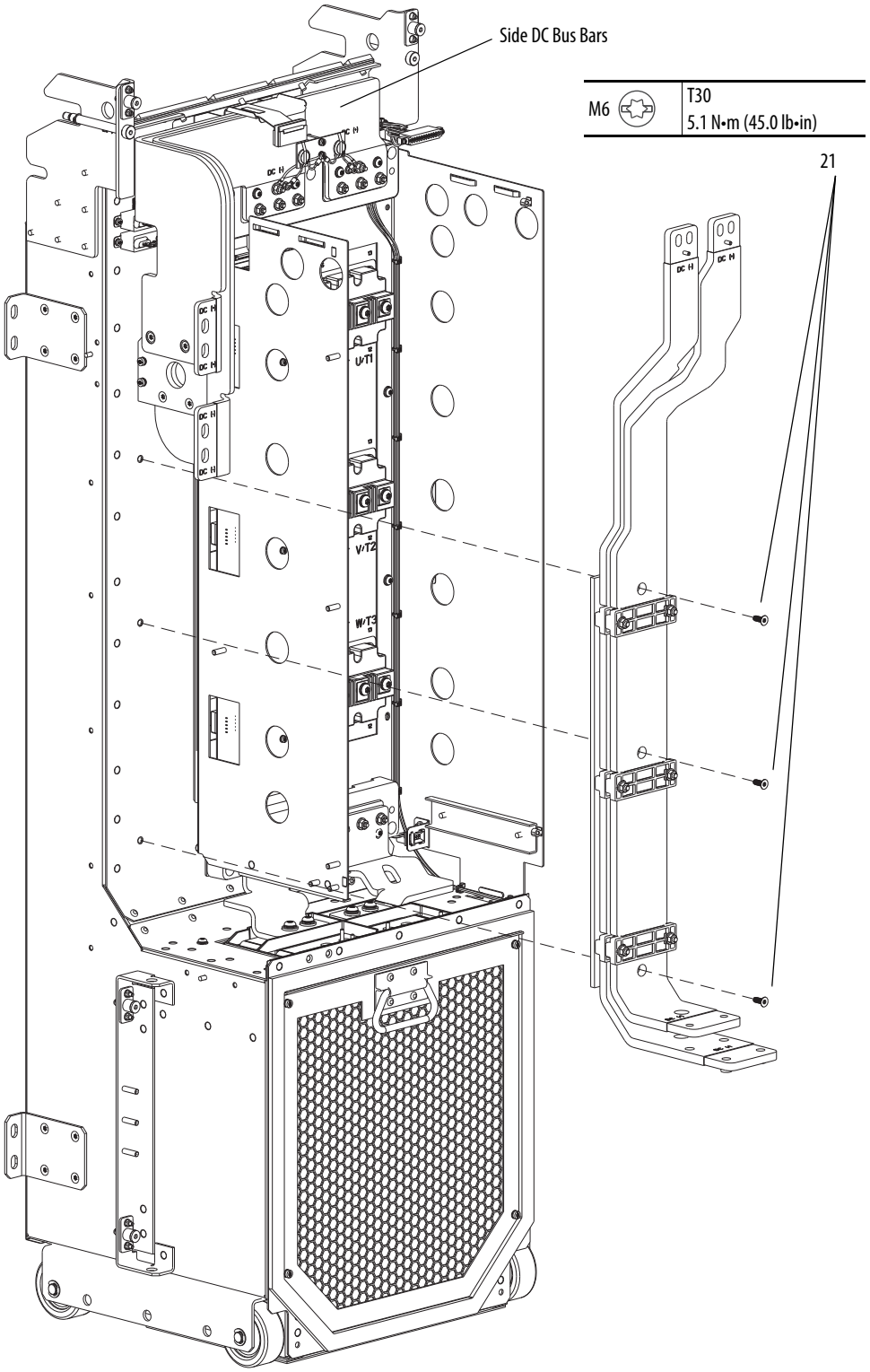


19. Remove the four M8 x 30-mm screws and four M8 flat washers that secure the bottom of the DC choke/converter bus bar assembly to the DC choke input positive and negative bus bars.

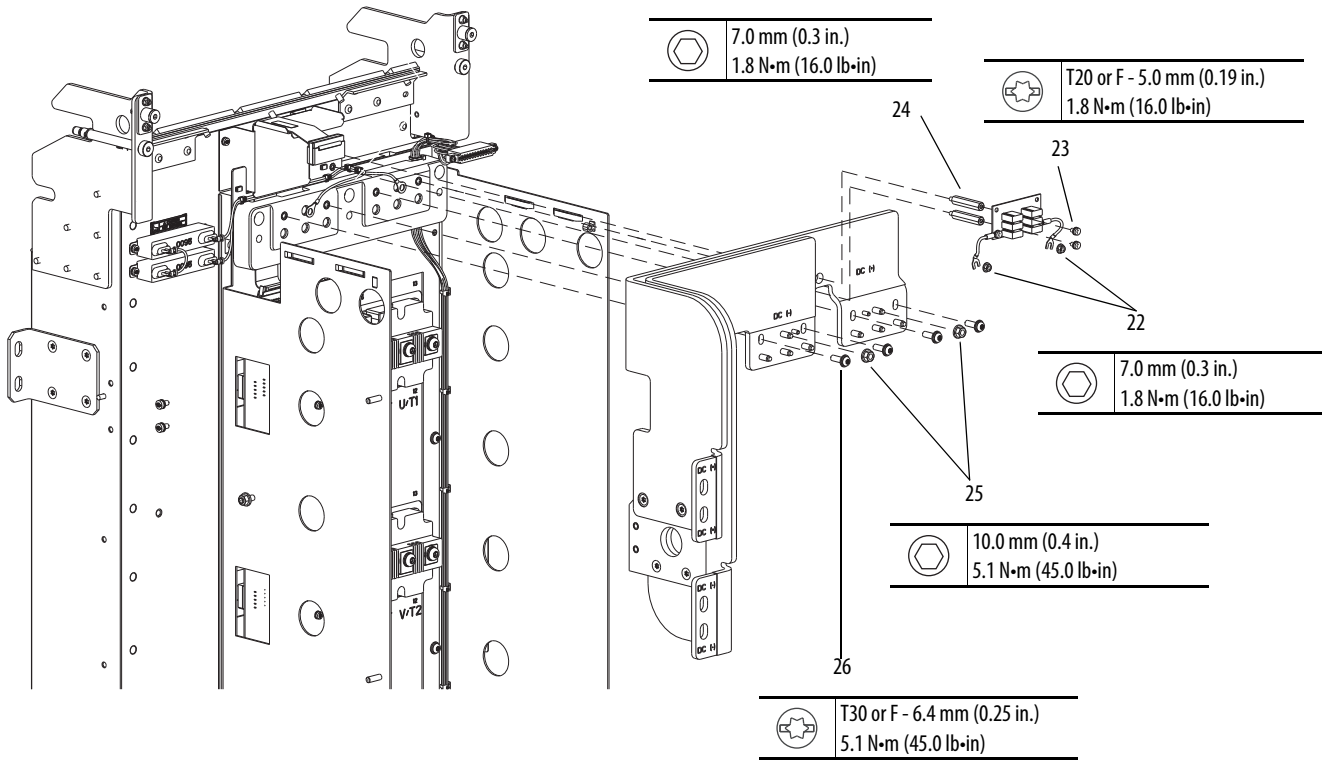
20. Remove the four M8 x 30-mm screws and M8 flat washers from the DC input and output positive and negative bus bars where they connect to the top of the DC choke and remove the bus bars.



21. Remove the three M6 x 16-mm screws that secure the DC choke/converter bus bar assembly to the chassis and remove the DC choke/converter bus bar assembly.



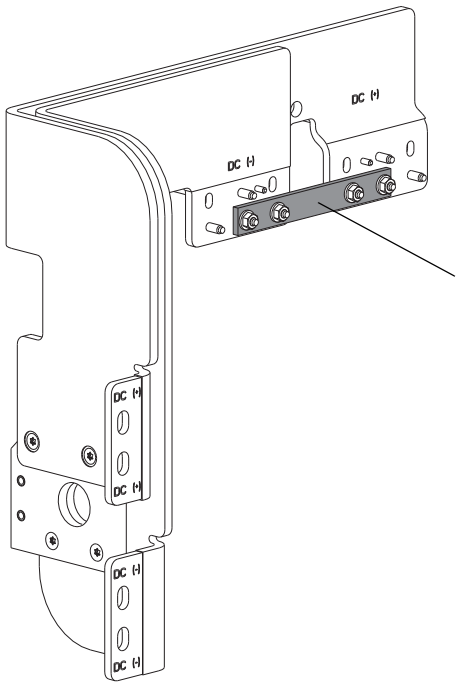
22. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to side DC bus bars.
23. Remove the two M4 x 8 mm screws that secure the EMC capacitor assembly to the standoffs on the capacitor bank support and remove the EMC capacitor assembly.
24. Remove the two M4 x 40-mm standoffs secured to the capacitor bank support.
25. Remove the two M6 hex nuts that secure the two discharge resistor wires to the inverter side DC bus bars. Move the wires out of the way to allow for removal of the side DC bus bars.
26. Remove the four M6 x 20-mm screws that secure the side DC bus bars to the chassis and remove the bus bars.



Install the Inverter Side DC Bus Bars (AC Input Drive Only)

Install the inverter side DC bus bars in the reverse order of removal. See Remove the Inverter Side DC Bus Bars (AC Input Drive Only) on page 268.

IMPORTANT The new side DC bus bar assembly is shipped with a stabilizer bar secured to the upper connection bolts. This stabilizer bar must be removed before installing the new assembly.

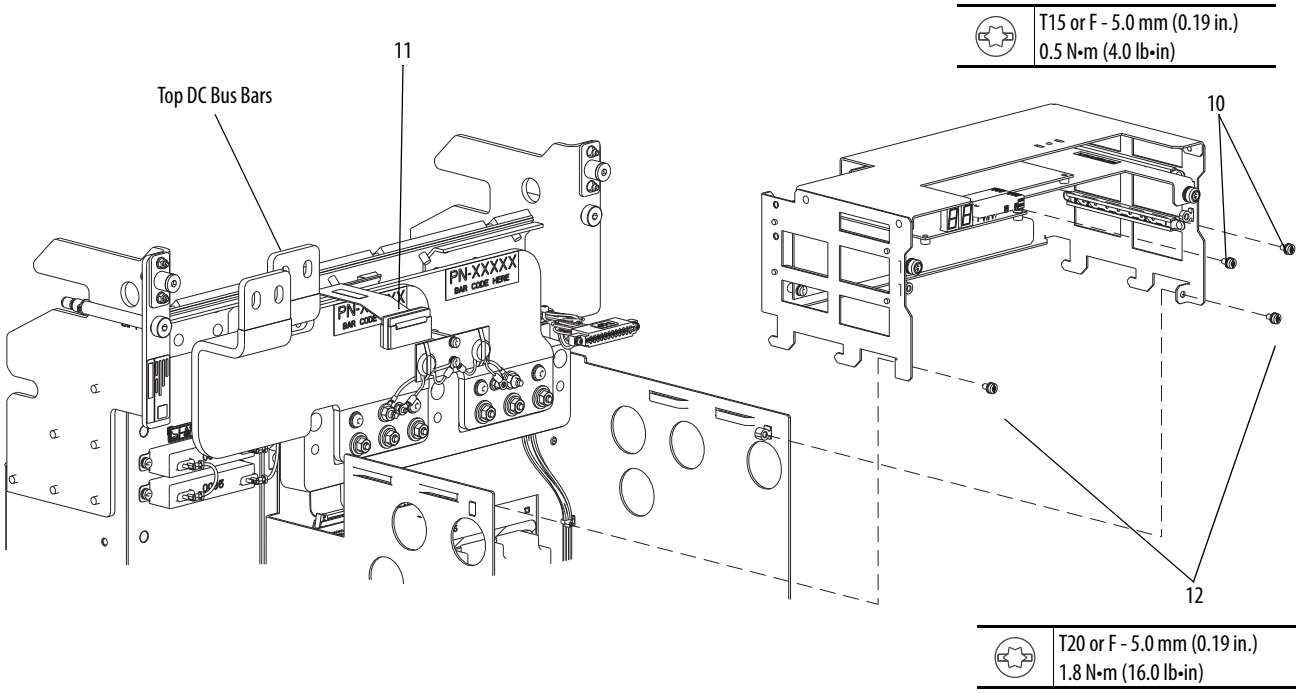


Inverter Top DC Bus Bar Removal/Installation (Common DC Input Drive Only)

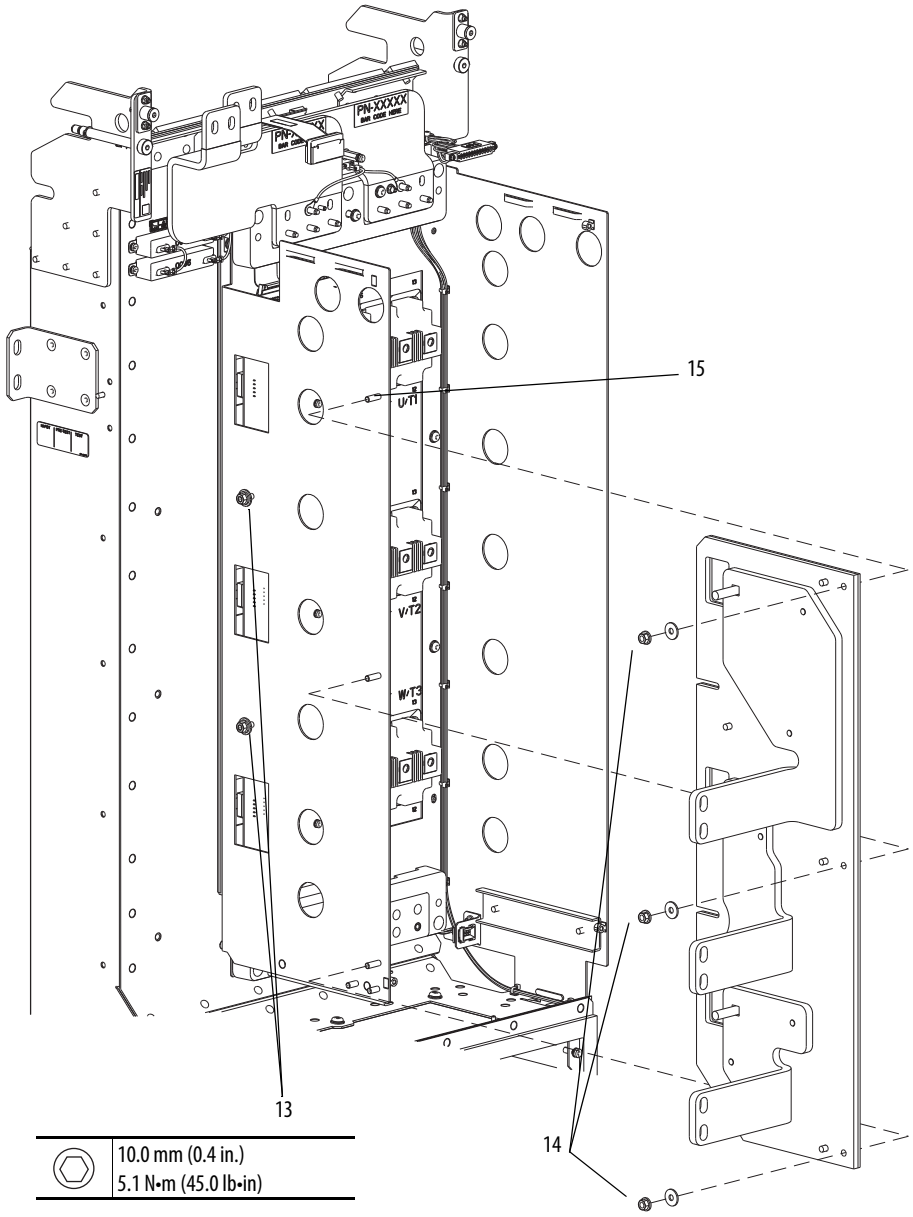
Remove the Inverter Top DC Bus Bars (Common DC Input Drive Only)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
7. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
8. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
9. Remove the IGBT flex bus bars. See Remove the IGBT Flex Bus Bars on page 246.

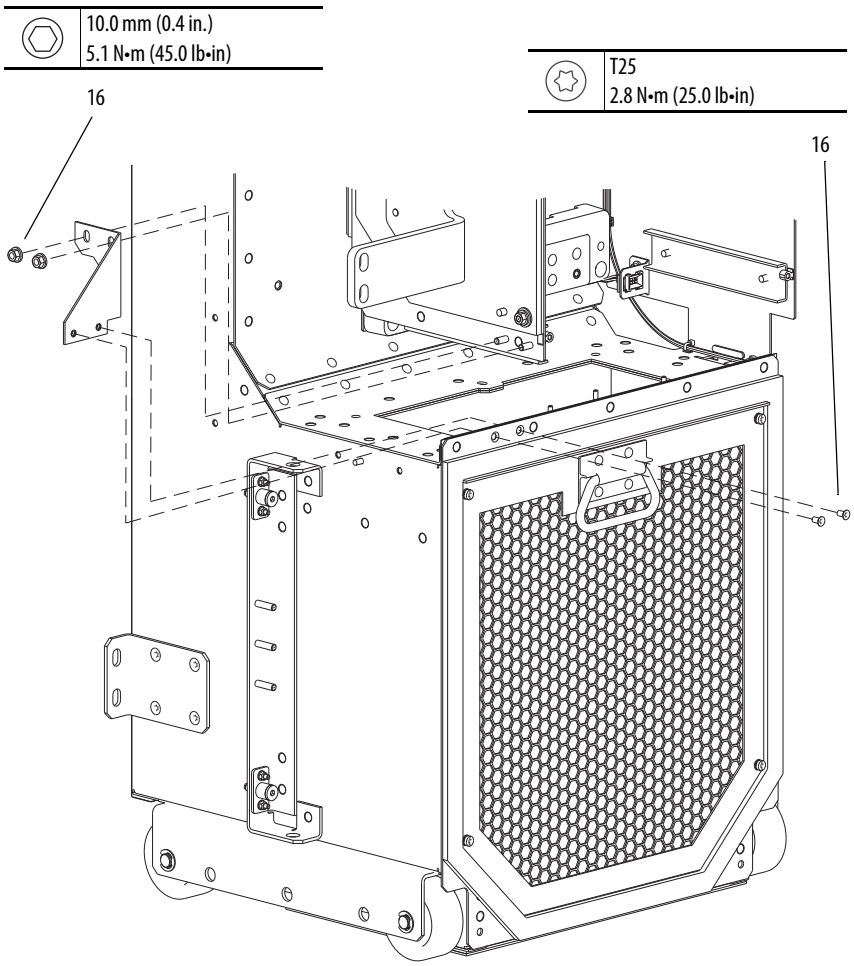
10. Remove the two M3 x 12-mm screws that secure the inverter wire harness to the backplane in the card cage.
11. Disconnect the ribbon cable that is connected to the top edge of the backplane board.
12. Remove the two M4 x 10-mm screws that secure the card cage to the inverter frame and slide the card cage out and up to remove it.



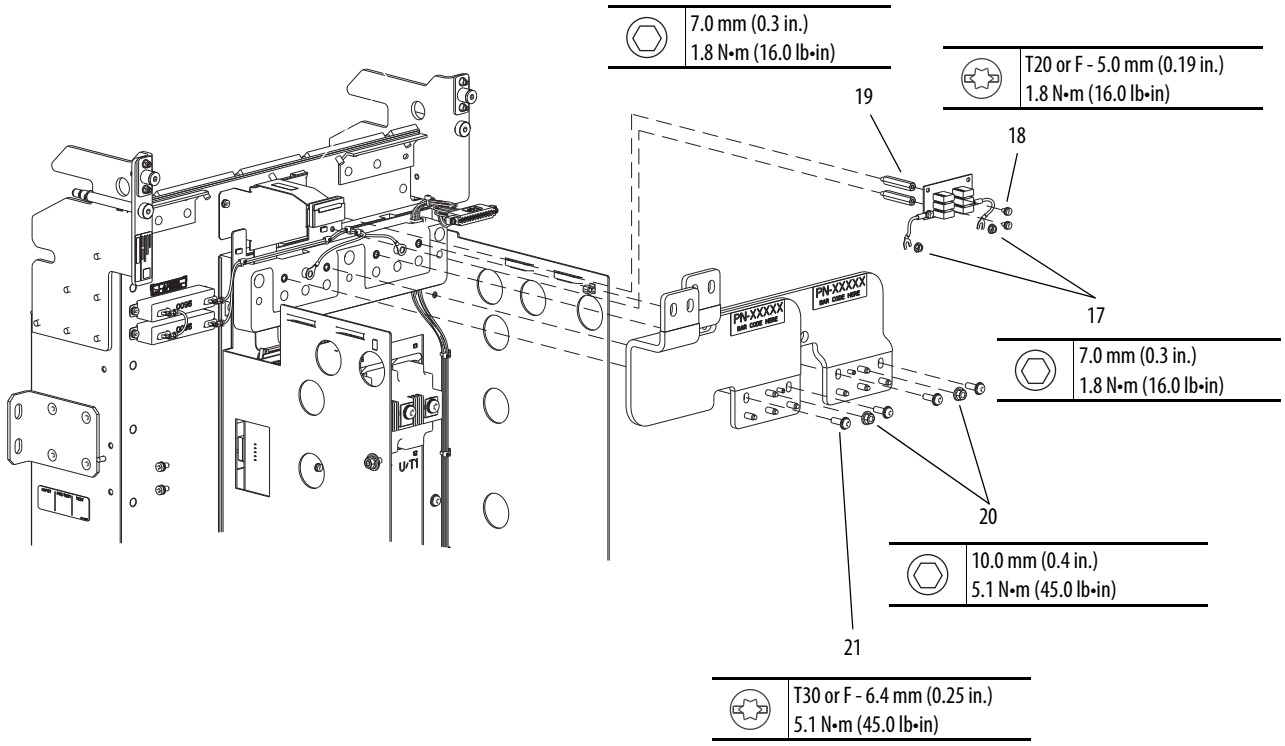
13. Completely loosen, but do not remove, the two M6 hex nuts at the back edge of the AC output bus bar assembly.
14. Remove the three M6 hex nuts and washers that secure the front of the AC output assembly to the capacitor bank support.
15. Lift the assembly off the front three bolts and pull forward to remove the AC output assembly.



16. Remove the two M6 hex nuts and two M5 x 10-mm hexalobular screws that secure the capacitor bank gusset to the capacitor bank support and drive chassis and remove the gusset.



17. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to top DC bus bars.
18. Remove the two M4 x 8 mm screws that secure the EMC capacitor assembly to the standoffs on the capacitor bank support and remove the EMC capacitor assembly.
19. Remove the two M4 x 40-mm standoffs secured to the capacitor bank support.
20. Remove the two M6 hex nuts that secure the two discharge resistor wires to the inverter top DC bus bars. Move the wires out of the way to allow for removal of the top DC bus bars.
21. Remove the four M6 x 20-mm screws that secure the top DC bus bars to the chassis and remove the bus bars.



Install the Inverter Top DC Bus Bars (Common DC Input Drive Only)

Install the inverter top DC bus bars in the reverse order of removal. See Remove the Inverter Top DC Bus Bars (Common DC Input Drive Only) on page 276.

DC Choke Removal/ Installation (AC Input Drives Only)

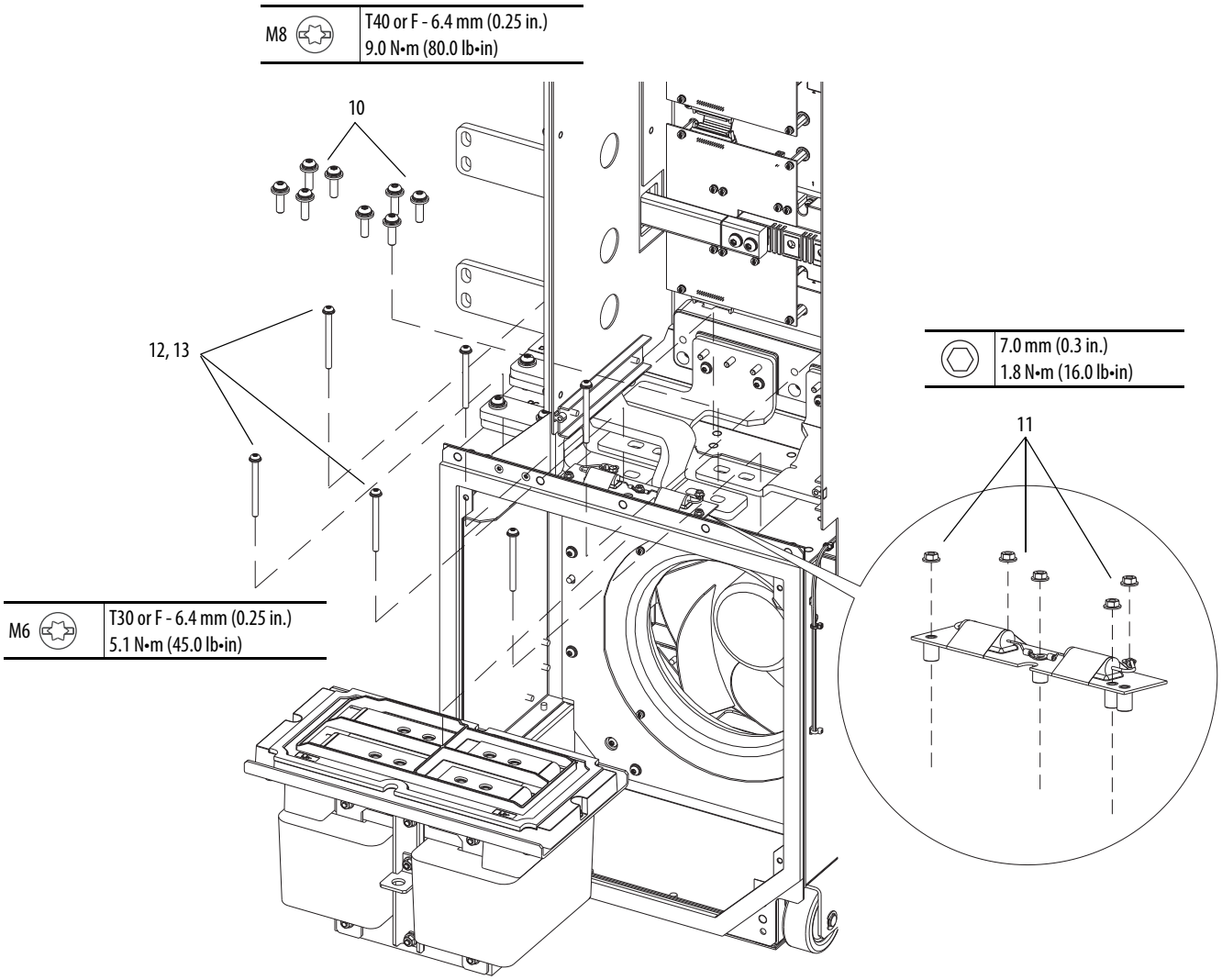
Remove the DC Choke (AC Input Drives Only)



ATTENTION: The DC choke weighs 42 kg (93 lb). To guard against possible personal injury, do not place any part of your person below the DC choke when removing it from the drive.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the heatsink fan inlet screen. See Remove the Heatsink Fan Inlet Screen on page 231.
7. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
8. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
9. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.

10. Remove the eight M8 x 30-mm screws and eight M8 flat washers from the DC input and output positive and negative bus bars where they connect to the top of the DC choke.
11. Remove the five M4 hex nuts that secure the connections from the EMC capacitors to the DC choke input positive and negative bus bars and the EMC capacitor assembly to the drive chassis and remove the EMC capacitor assembly.
12. Loosen only, the six M6 x 70-mm screws that secure the DC choke to the inverter.
13. Remove the four corner screws that were loosened in the previous step and then slowly loosen the remaining two screws to lower the DC choke onto the two angle brackets on either side of the fan inlet. Once the DC choke is resting on the two angle brackets, the remaining two screws can be removed.
14. Pull the DC choke forward through the fan inlet opening and remove the choke.



Install the DC Choke (AC Input Drives Only)

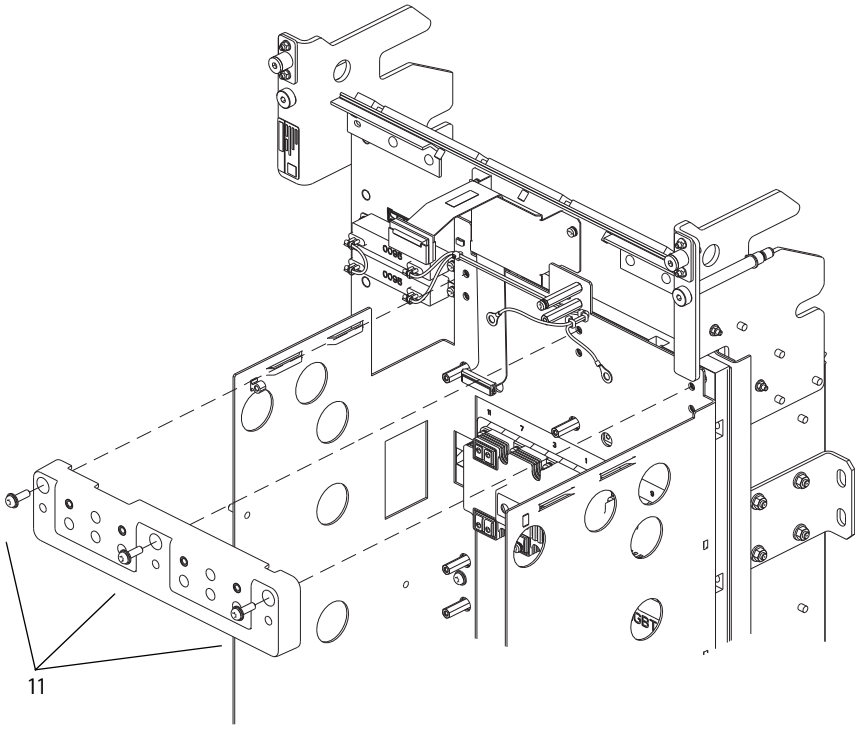
Install the DC choke in the reverse order of removal. See Remove the DC Choke (AC Input Drives Only) on page 281.

Inverter Wire Harness Removal/Installation

Remove the Inverter Wire Harness

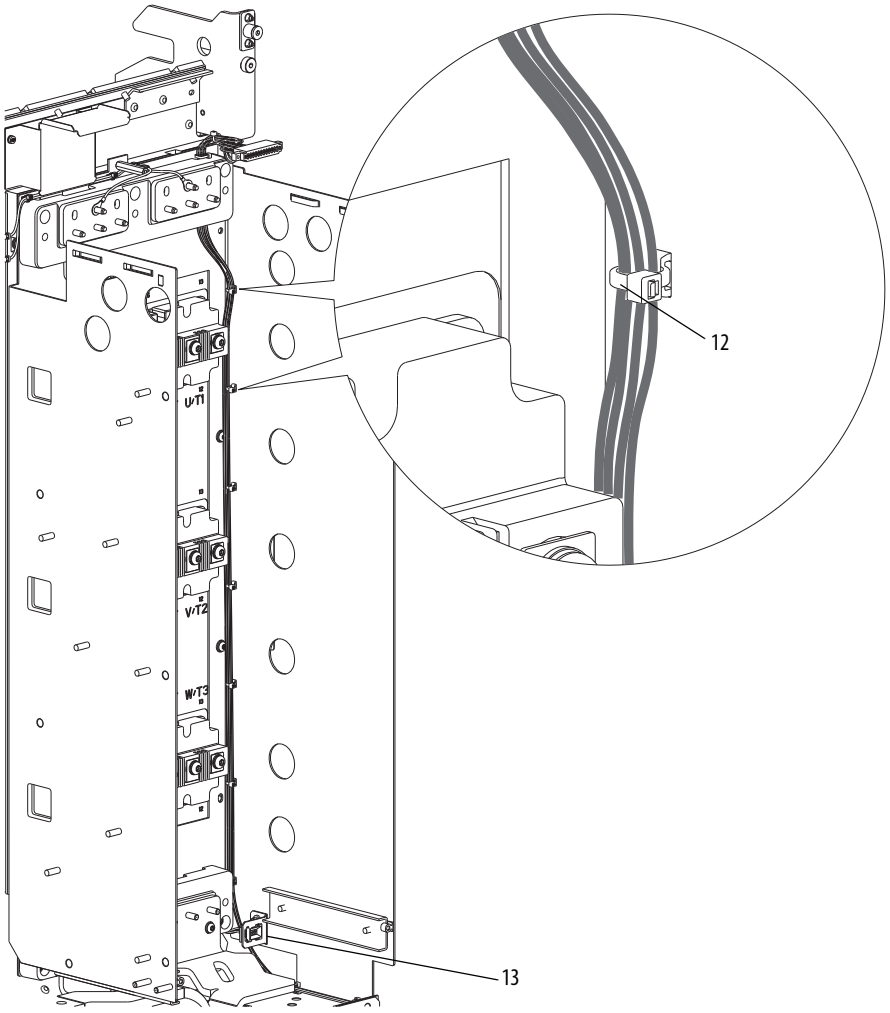
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the internal stirring fan tray. See Remove the Internal Stirring Fan Tray on page 230.
6. Remove the heatsink fan inlet screen. See Remove the Heatsink Fan Inlet Screen on page 231.
7. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
8. Remove the inverter current-sensor mounting panel only. Do not remove the current sensors from the mounting panel. See Remove the Inverter Current Sensors on page 236.
9. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
10. For AC input drives, remove the side DC bus bar assembly. See Remove the Inverter Side DC Bus Bars (AC Input Drive Only) on page 268. For common DC input drives, remove the top DC bus bar assembly. See Remove the Inverter Top DC Bus Bars (Common DC Input Drive Only) on page 276.

11. Remove the three M6 x 20-mm screws that secure the top bus bar support to the capacitor bank support and remove the bus bar support.



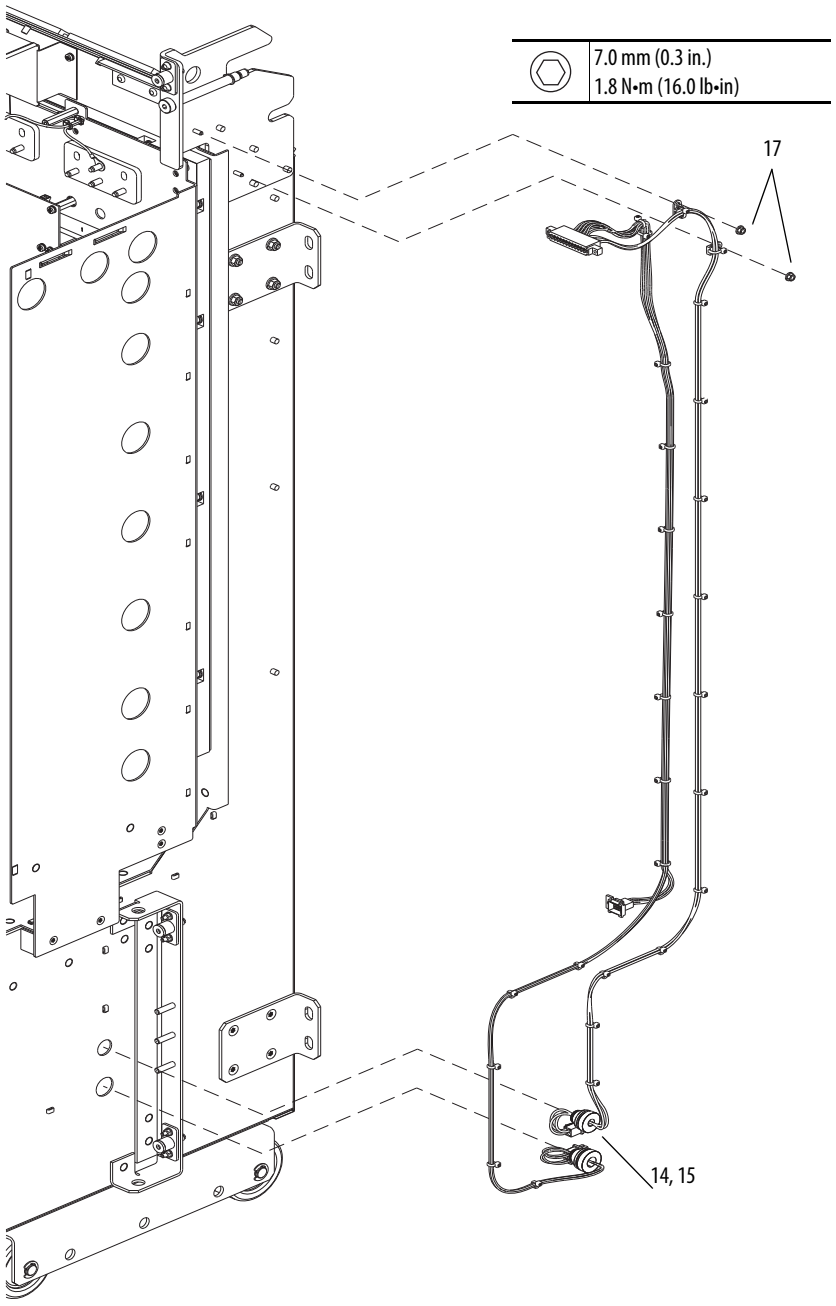
	T30 or F - 6.4 mm (0.25 in.) 5.1 N•m (45.0 lb•in)

12. Cut the wire ties from the group of blue control wires on the inside, right-rear corner of the capacitor bank support.
13. Depress the tabs on the stirring fan connector and disconnect it from the mounting bracket.



14. Cut the two final cables ties where the blue fan control wires are routed through the right side of the heatsink fan inlet.
15. Remove the bushing and blue wires from the heatsink fan-inlet side plate.
16. On the inside of the heatsink fan inlet, depress the tabs on the blue control wire connector to remove it from the heatsink fan connection.
17. Remove the two M4 hex nuts that secure the black power wires at the top of the inverter.
18. Cut the remaining wire ties where the wires are routed down the outside of the inverter.
19. Remove the bushing and black wires from the heatsink fan-inlet side plate.

20. On the inside of the heatsink fan inlet, depress the tabs on the black power wire connector to remove it from the heatsink fan connection.



Install the Inverter Wire Harness

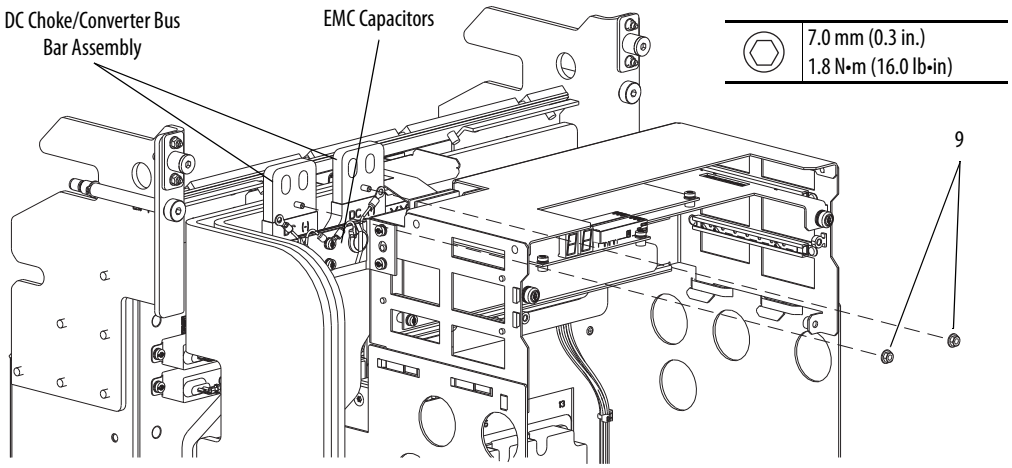
Install the inverter wire harness in the reverse order of removal. See Remove the Inverter Wire Harness on page 283.

Discharge Resistor Assembly Removal/Installation

Remove the Discharge Resistor Assembly

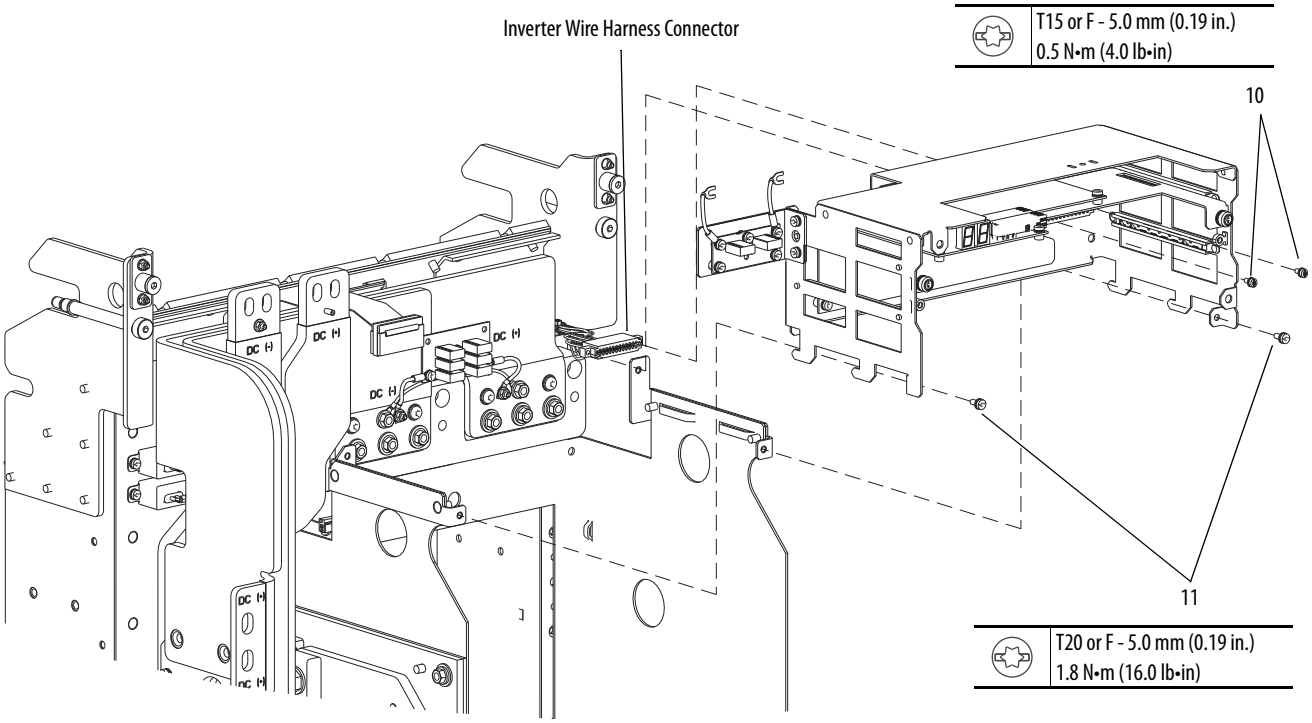
Note: The discharge resistor assembly includes the resistors, harness, and screws.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the inverter front cover. See Remove the Inverter Front Cover on page 235.
6. Remove the current sensor mounting panel. See Remove the Inverter Current Sensors on page 236.
7. Remove the capacitor bank. See Remove the Inverter Capacitor Bank Assembly on page 242.
8. Remove the IGBT flex bus bars. See Remove the IGBT Flex Bus Bars on page 246.
9. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to DC choke/converter bus bar assembly.

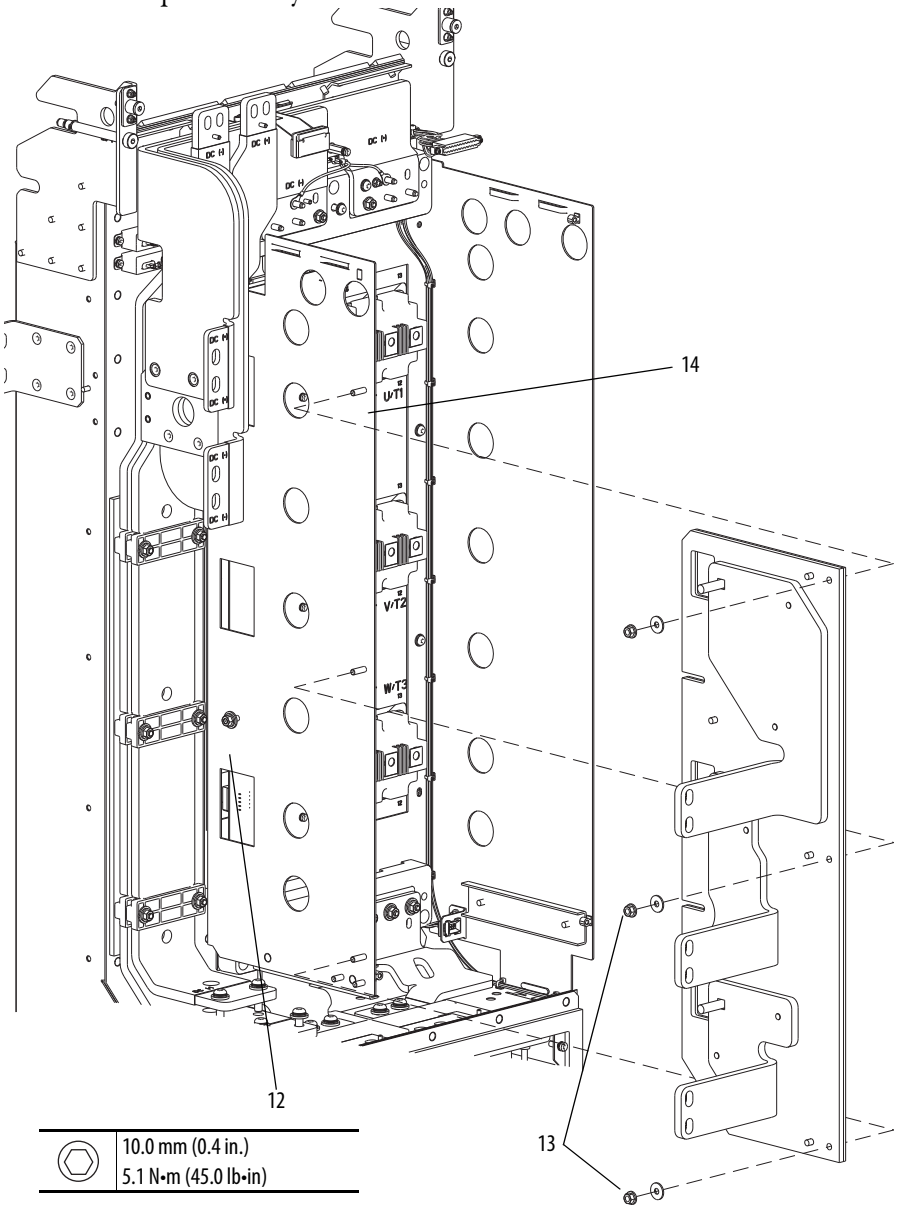


10. Remove the two M3 x 12-mm screws that secure the inverter wire harness connector to the backplane in the card cage.

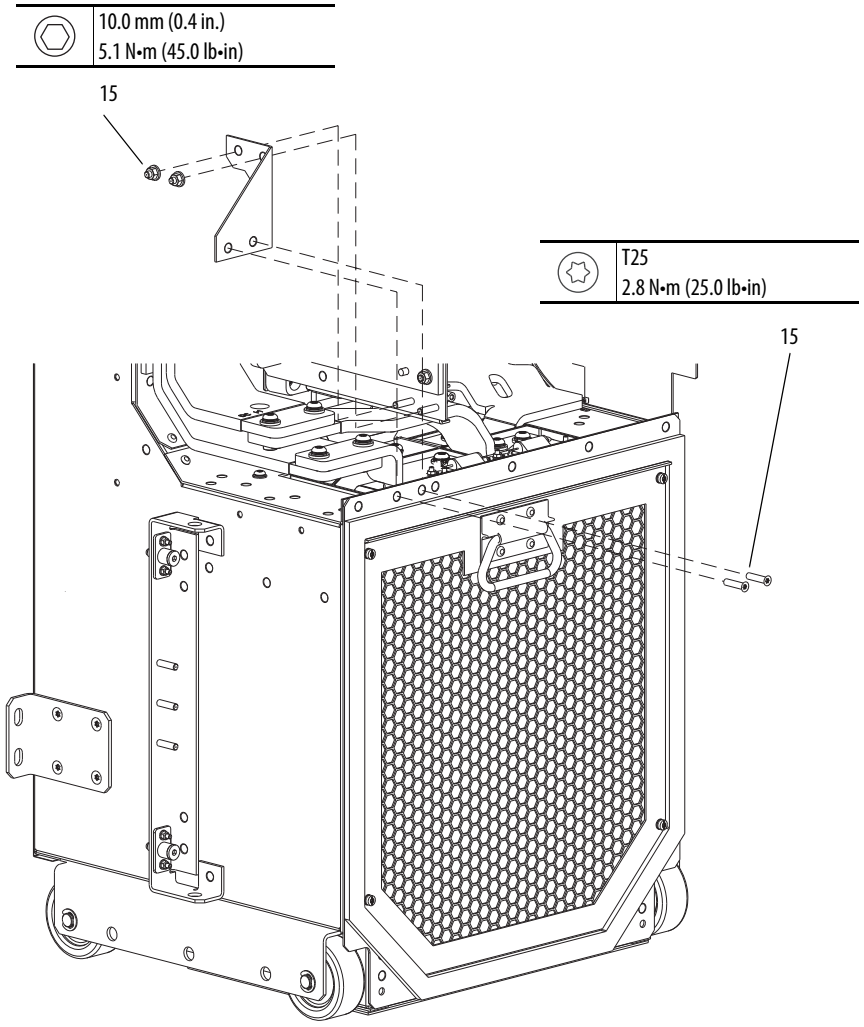
11. Remove the two M4 x 10-mm screws that secure the card cage to the inverter frame and slide the card cage out and up to remove it.



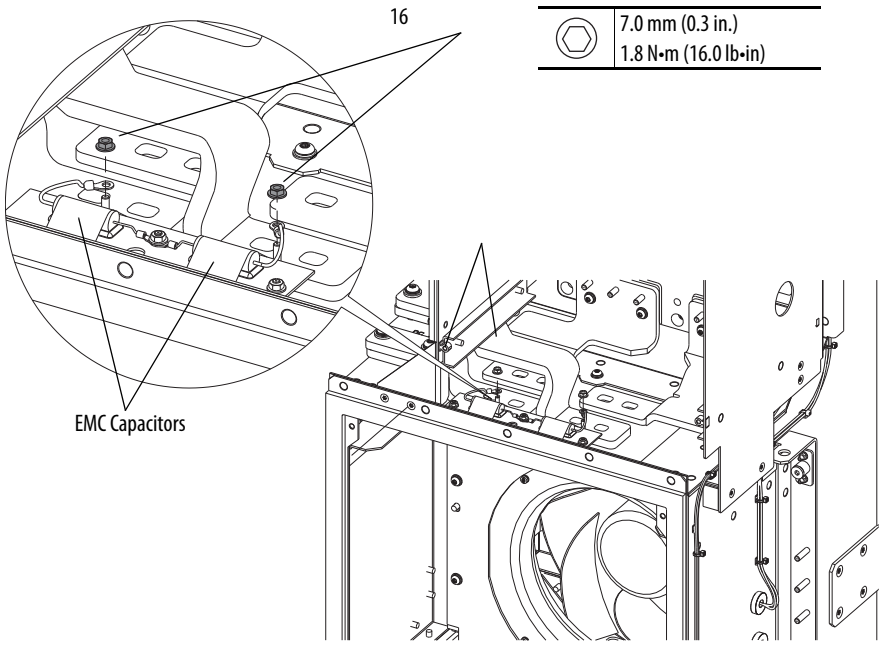
12. Completely loosen, but do not remove, the two M6 hex nuts at the back edge of the AC output bus bar assembly.
13. Remove the three M6 screws that secure the front of the AC output assembly to the capacitor bank support.
14. Lift the assembly off the front three bolts and pull forward to remove the AC output assembly.



15. Remove the two M6 hex nuts and two M5 x 10-mm screws that secure the capacitor bank gusset to the capacitor bank support and drive chassis and remove the gusset.

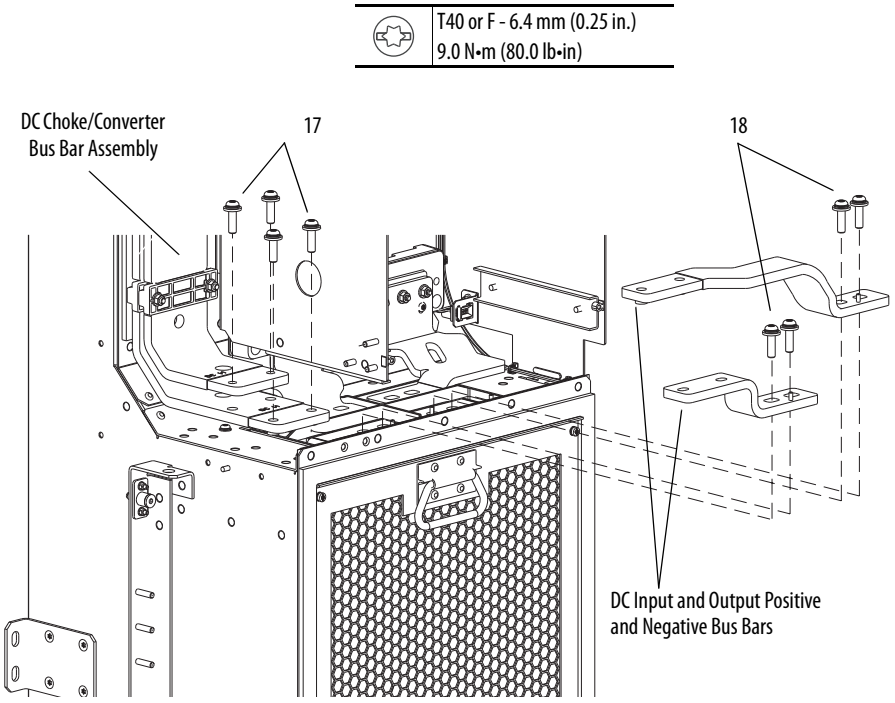


16. Remove the two M4 hex nuts that secure the connections from the EMC capacitors to the DC choke input positive and negative bus bars.

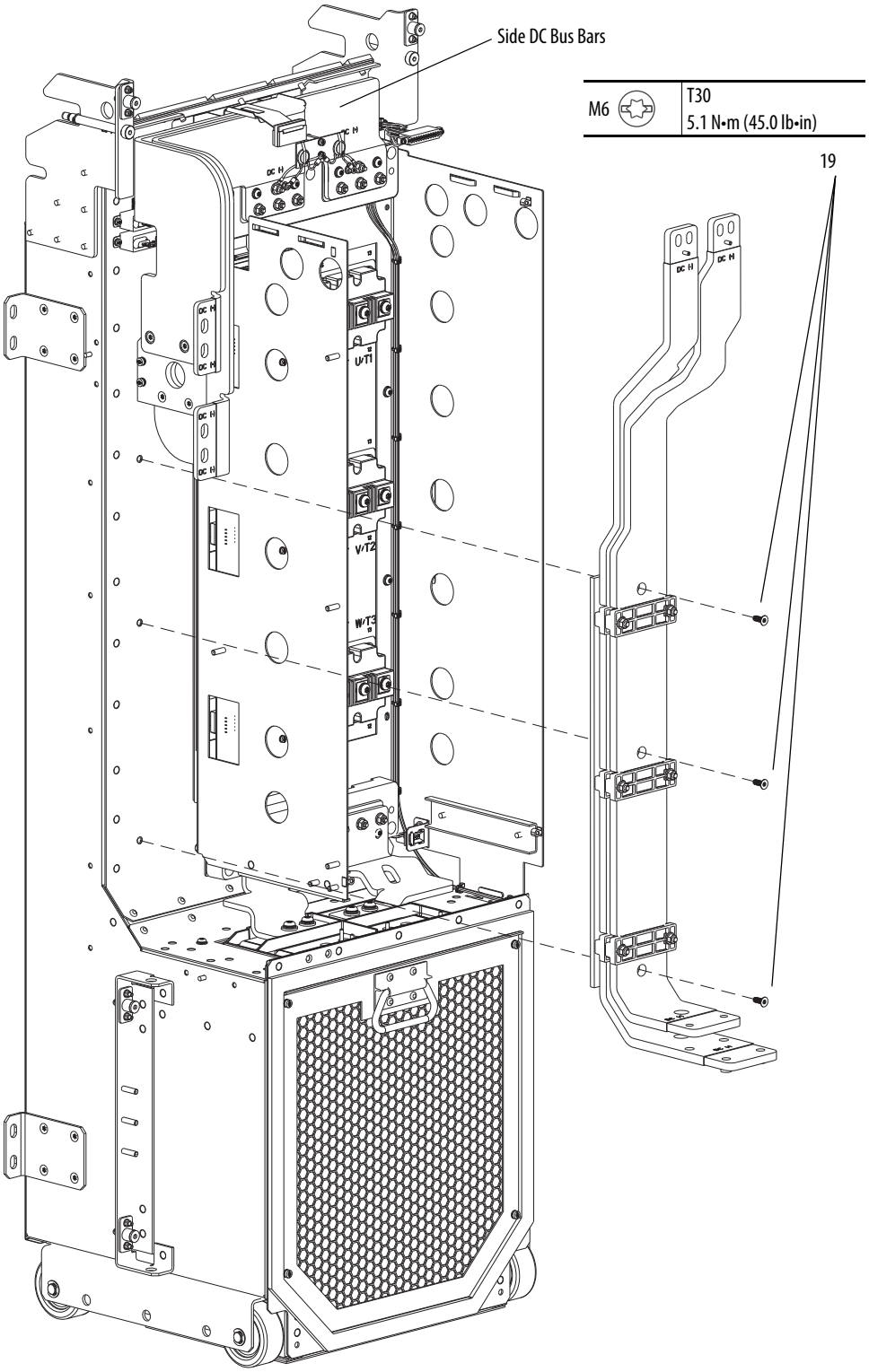


17. Remove the four M8 x 30-mm screws and four M8 flat washers that secure the bottom of the DC choke/converter bus bar assembly to the DC choke input positive and negative bus bars.

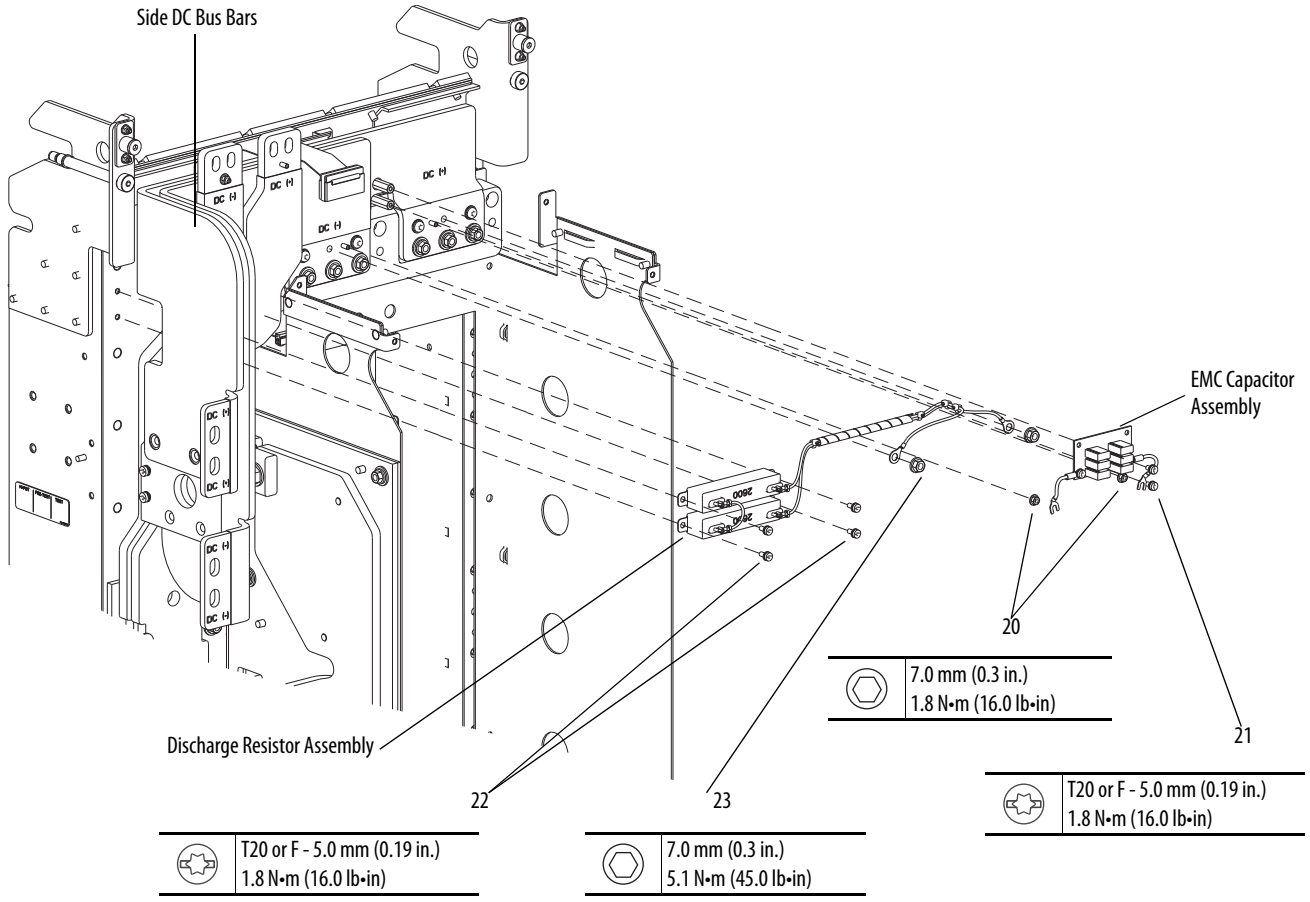
18. Remove the four M8 x 30-mm screws and M8 flat washers from the DC input and output positive and negative bus bars where they connect to the top of the DC choke and remove the bus bars.



19. Remove the three M6 x 16-mm screws that secure the DC choke/ converter bus bar assembly to the chassis and remove the DC choke/ converter bus bar assembly.



20. Remove the two M4 hex nuts that are used to secure the connections from the EMC capacitors to the side DC bus bar assembly.
21. Remove the two M4 x 8-mm screws that secure the EMC capacitor assembly to the standoffs on the capacitor bank support.
22. Remove the four M4 x 8-mm screws from the discharge resistors.
23. Remove the two M6 hex nuts from the wire connections on the side DC bus bars and remove the discharge resistor assembly.



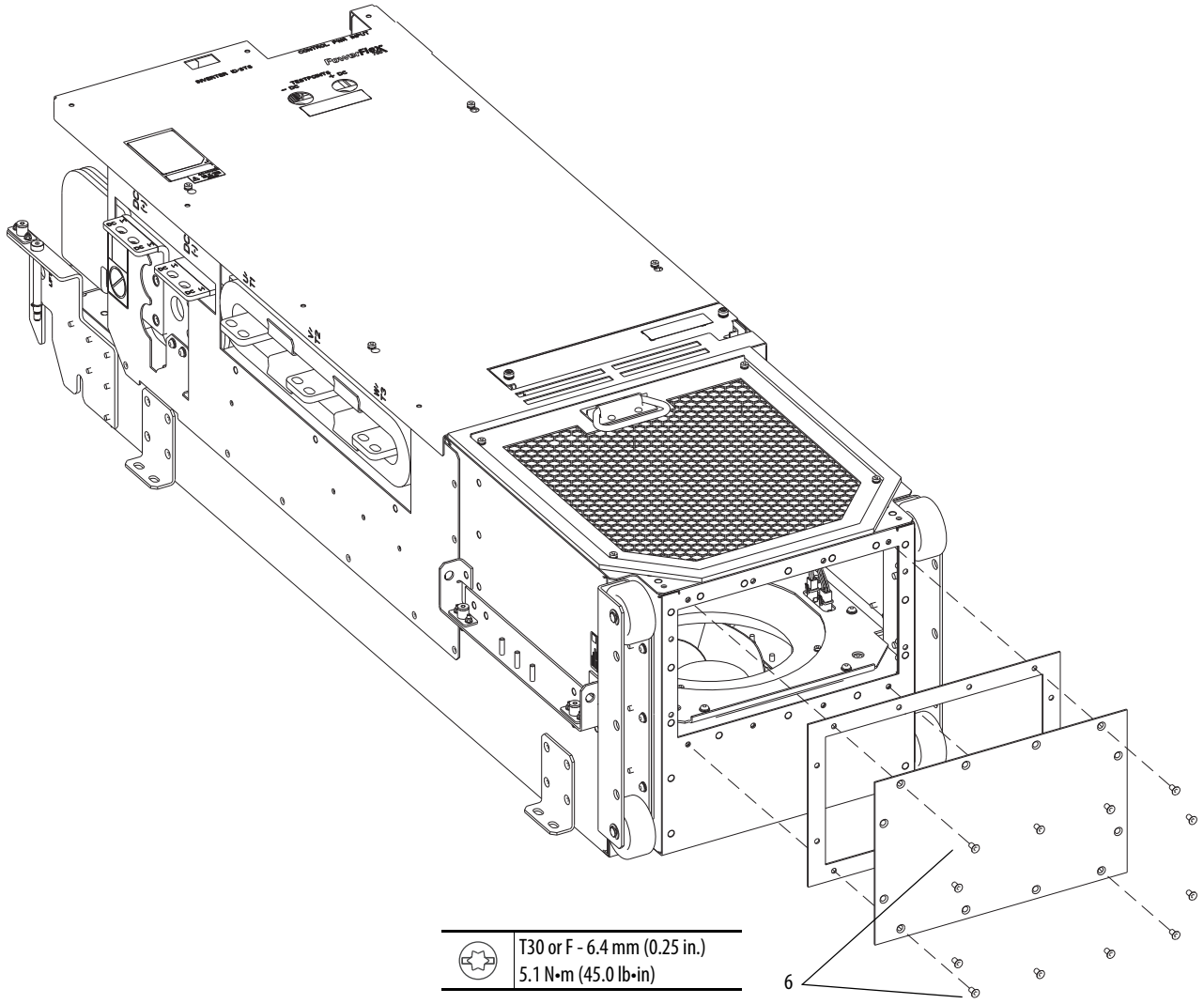
Install the Discharge Resistor Assembly

Install the discharge resistor assembly in the reverse order of removal. See Remove the Discharge Resistor Assembly on page 287.

Inverter Heatsink Fan Inlet Bottom Cover Removal/ Installation

Remove the Inverter Heatsink Fan Inlet Bottom Cover

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Lay the inverter on the back panel. See the Lifting instructions contained in the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001.
6. Remove the 12 M6 x 12-mm screws that secure the bottom cover and gasket to the inverter frame and remove the cover and gasket.



Install the Inverter Heatsink Fan Inlet Bottom Cover

1. Inspect the inlet bottom cover gasket for damage and replace it if necessary. See Inlet Bottom Cover Gasket Replacement on page 295.
2. Install the inverter heatsink fan-inlet bottom cover in the reverse order of removal. See Remove the Inverter Heatsink Fan Inlet Bottom Cover on page 294.

Inlet Bottom Cover Gasket Replacement

Remove the Inlet Bottom Cover Gasket

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the drive enclosure door.
4. Remove the inverter heatsink fan-inlet bottom cover. See Remove the Inverter Heatsink Fan Inlet Bottom Cover on page 294.
5. Carefully remove the gasket and any gasket material that may be stuck to the sealing surface.
6. Clean the chassis surface on which the gasket is installed with a 50% isopropyl alcohol / 50% water mixture.

Install the Inlet Bottom Cover Gasket

Note: One side of the duct gasket is coated with an adhesive. Take care to align the gasket properly before fully removing the paper liner and exposing the adhesive.

1. Begin removing the paper liner as you align the replacement gasket with the cover edges and press the gasket into place on the duct.
2. Install the inverter heatsink fan-inlet bottom cover. See Install the Inverter Heatsink Fan Inlet Bottom Cover on page 295.

Notes:

AC Input Drive Enclosure Component Replacement Procedures

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Input Common-mode Core Removal/Installation (Frame 9 and Larger, Common DC Input Drives Only)	318
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This chapter provides detailed procedures for how to remove and replace AC input drive and common drive enclosure components.

Note: For detailed removal and installation instructions for the IP54, NEMA/UL Type 12 cabinet blower assembly, see the PowerFlex® 755 AC Drives Cabinet Blower Assembly Kit - Frames 8...10 Installation Instructions, publication 750-IN026.

AC Input Drive Enclosure Components Identification

This table contains the components that comprise the AC input drive and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit

A complete list of spare parts for PowerFlex 755 Frame 8...10 drives is available on the Allen-Bradley web site at:
http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

IMPORTANT Use only Rockwell Automation provided filters, gaskets, and components. Use of third-party components is not supported.

Table 13 - AC Input Drive Enclosure Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No.	Qty.
IP20, NEMA/UL Type 1 Door Filter	20-750-FLTR1-F8	1
IP54, NEMA/UL Type 12 Cabinet Blower Exhaust Filter, Fiber (Single Pair)	SK-R1-FLTR2-F8	2
IP54, NEMA/UL Type 12 Cabinet Blower Exhaust Filter, Fiber (12 Pairs)	SK-R1-FLTR2M-F8	24
IP54, NEMA/UL Type 12 Cabinet Door Filter Cassette	SK-R1-FLTRFRM-F8	1
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Pleated (Single Piece)	SK-R1-FLTR3-F8	1
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Pleated (12 Pieces)	SK-R1-FLTR3M-F8	12
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Metal Mesh	SK-R1-FLTR4-F8	1
IP54, NEMA/UL Type 12 Cabinet Door Gasket	SK-R1-G2-F8	1
IP20, NEMA/UL Type 1 Debris Screen	SK-R1-GRILL1-F8	1
(1)Exhaust Hood	20-750-HOOD1-F8	1
Top Conduit Plate 600 mm	SK-R1-CPLT1-F8	1
Top Conduit Plate 800 mm	SK-R1-CPLT2-F8	1
IP20, NEMA/UL Type 1 Door Fan with Finger Guard	20-750-FAN3-F8	1
IP20, NEMA/UL Type 1 Door Fan Harness	SK-R1-FANH1-F8	1
IP54, NEMA/UL Type 12 Cabinet Blower Assembly	SK-R1-FAN4-F8	1
IP54, NEMA/UL Type 12 Cabinet Blower Harness	SK-R1-FANH4-F8	1
DC Bus Fuse, 1400A	SK-R1-FUSE3-F9	1
DC Bus Fuse Wire Harness	SK-R1-DCBUSH1-F9	1
Cabinet L Bus Bar	20-750-LBRKT1	1
Cabinet Door Shield Kit (Frame 10)	20-750-EMCDK1-F10	15

(1) Included with IP54 enclosure, optional for IP20 enclosure.

TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

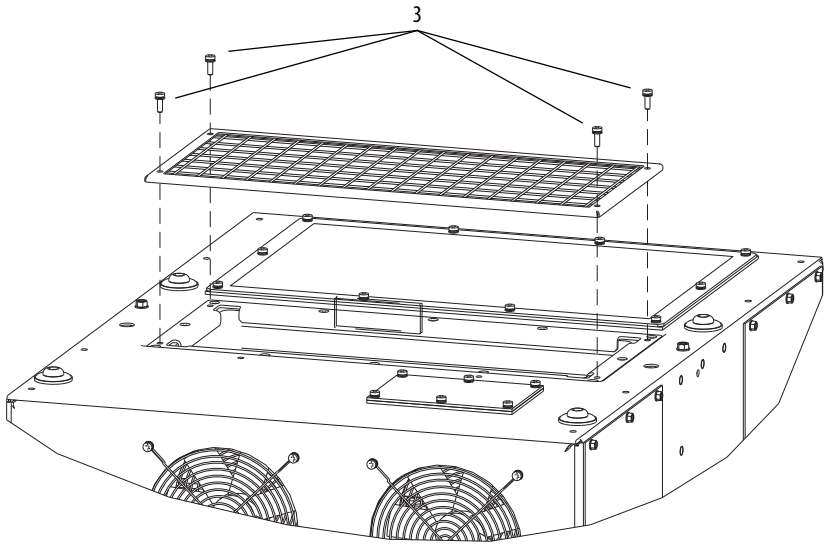
IP20, NEMA/UL Type 1 Debris Screen Removal/Installation

Remove the Debris Screen

Note: This procedure applies to both AC input and Common DC input drive enclosures.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the four M5 x 16 screws that secure the debris screen to the top of the enclosure and remove the screen.

	T25 4.0 N•m (35 lb•in)



Install the Debris Screen

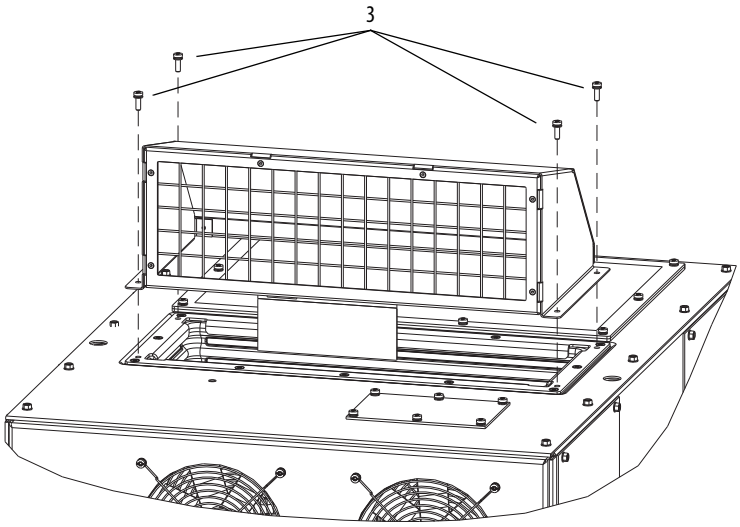
Install the debris screen in the reverse order of removal. See Remove the Debris Screen.

Exhaust Hood Removal/ Installation

Remove the Exhaust Hood

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the four M5 x 16 screws that secure the exhaust hood to the top of the enclosure and remove the hood.

	T25 4.0 N•m (35 lb•in)



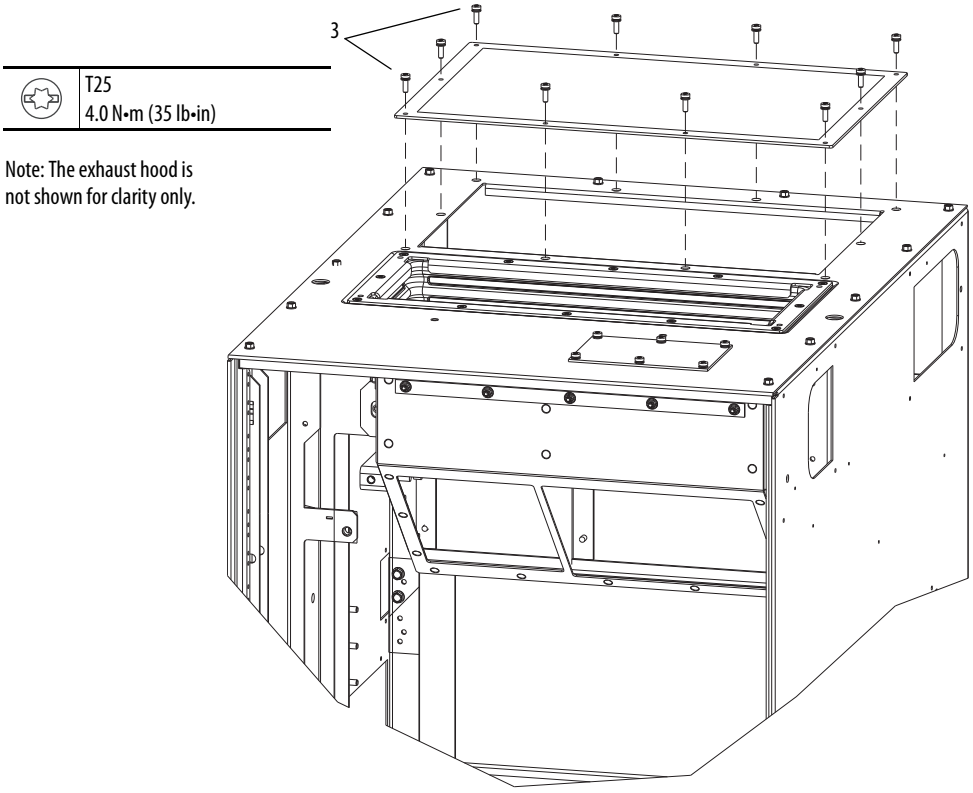
Install the Exhaust Hood

Install the exhaust hood in the reverse order of removal. See Remove the Exhaust Hood.

Top Conduit Plate Removal/ Installation

Remove the Top Conduit Plate

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the eight (for 600-mm deep enclosures) or ten (for 800-mm deep enclosures) M5 x 16 screws that secure the conduit plate to the top of the enclosure and remove the plate.



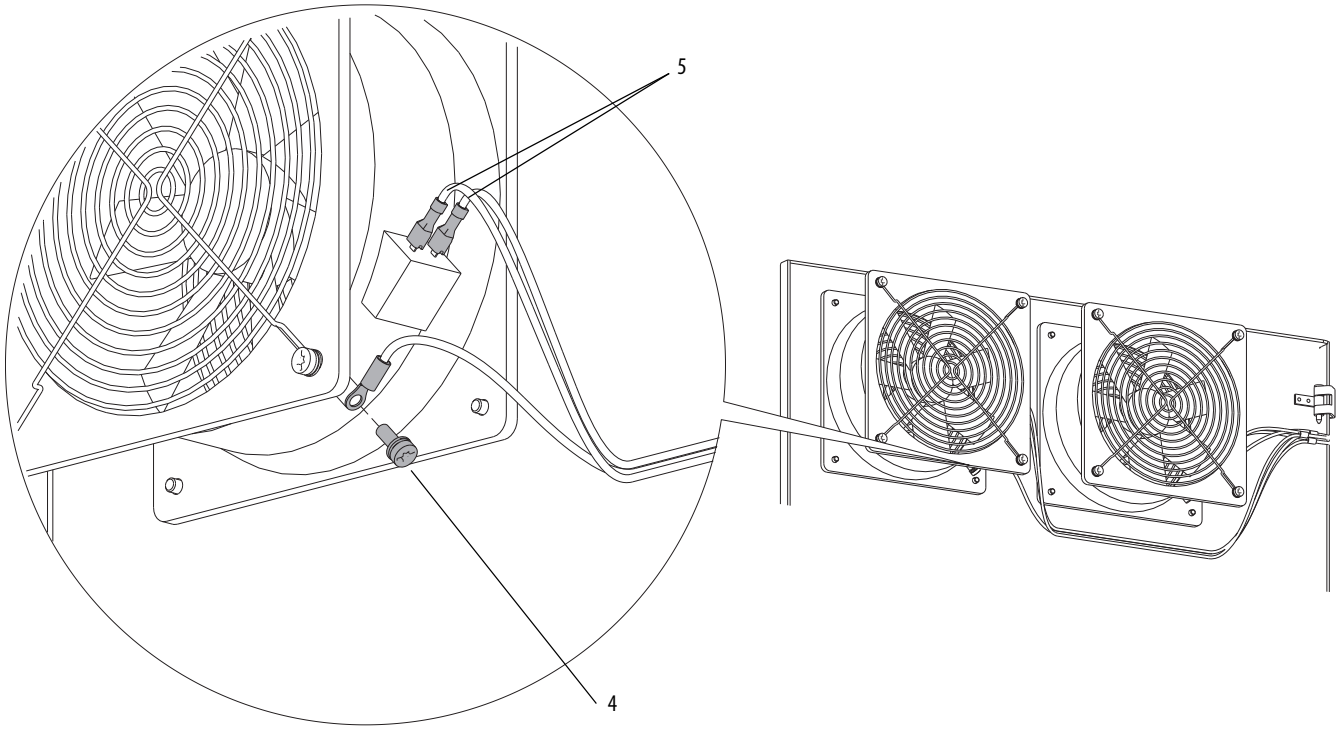
Install the Top Conduit Plate

Install the top conduit plate in the reverse order of removal. See Remove the Top Conduit Plate.

IP20, NEMA/UL Type 1 Enclosure Door Fan Removal/ Installation

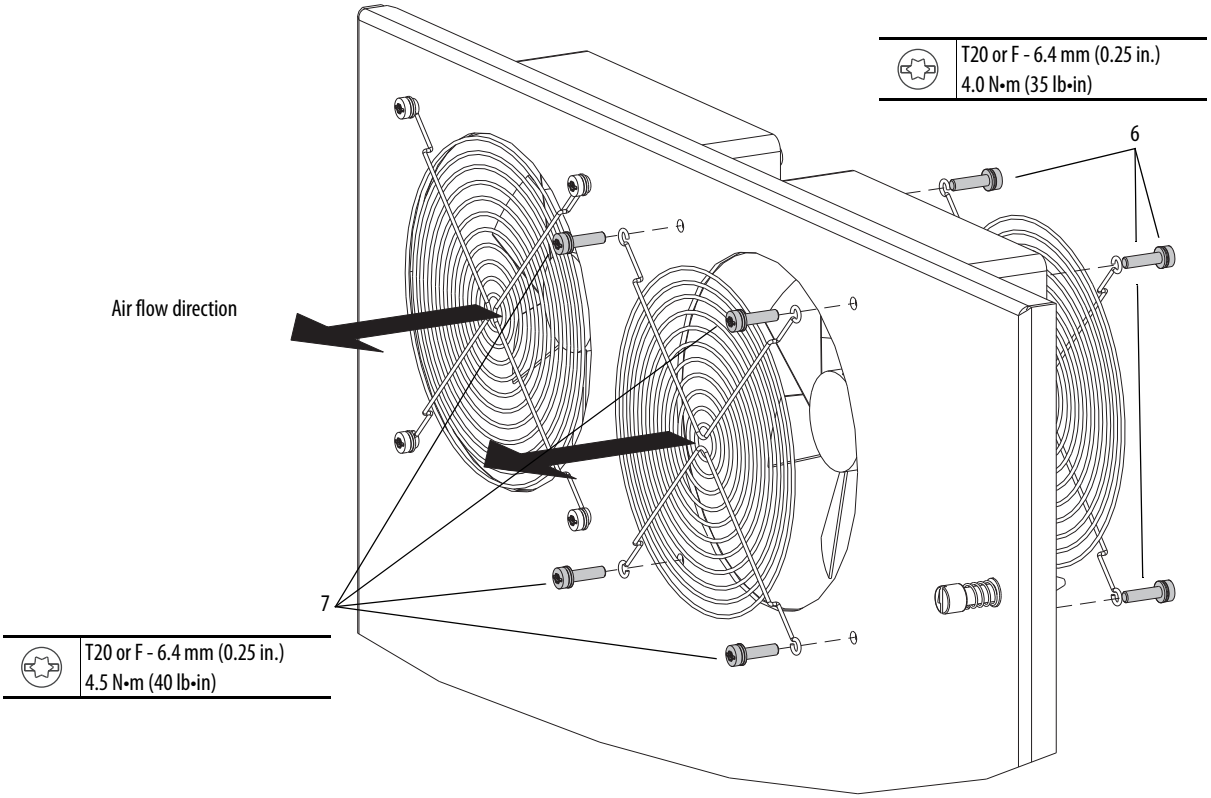
Remove the Enclosure Door Fan

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the M5 x 8-mm screw that secures the fan-power harness ground wire to the fan and remove the ground wire. Retain the screw for reuse.
5. Disconnect the Fan (+) and Fan (-) power wires from the fan terminals.



	T25 or F - 6.4 mm (0.25 in.) 2.8 N•m (25 lb•in)

6. Remove the four M5 x 20 screws that secure the inner guard to the fan housing and remove the guard.
7. Remove the four M5 x 20 screws that secure the outer fan guard and fan to the enclosure door and remove the outer fan guard and fan.



Install the Enclosure Door Fan

Install the enclosure door fan in the reverse order of removal. See Remove the Enclosure Door Fan on page 302.

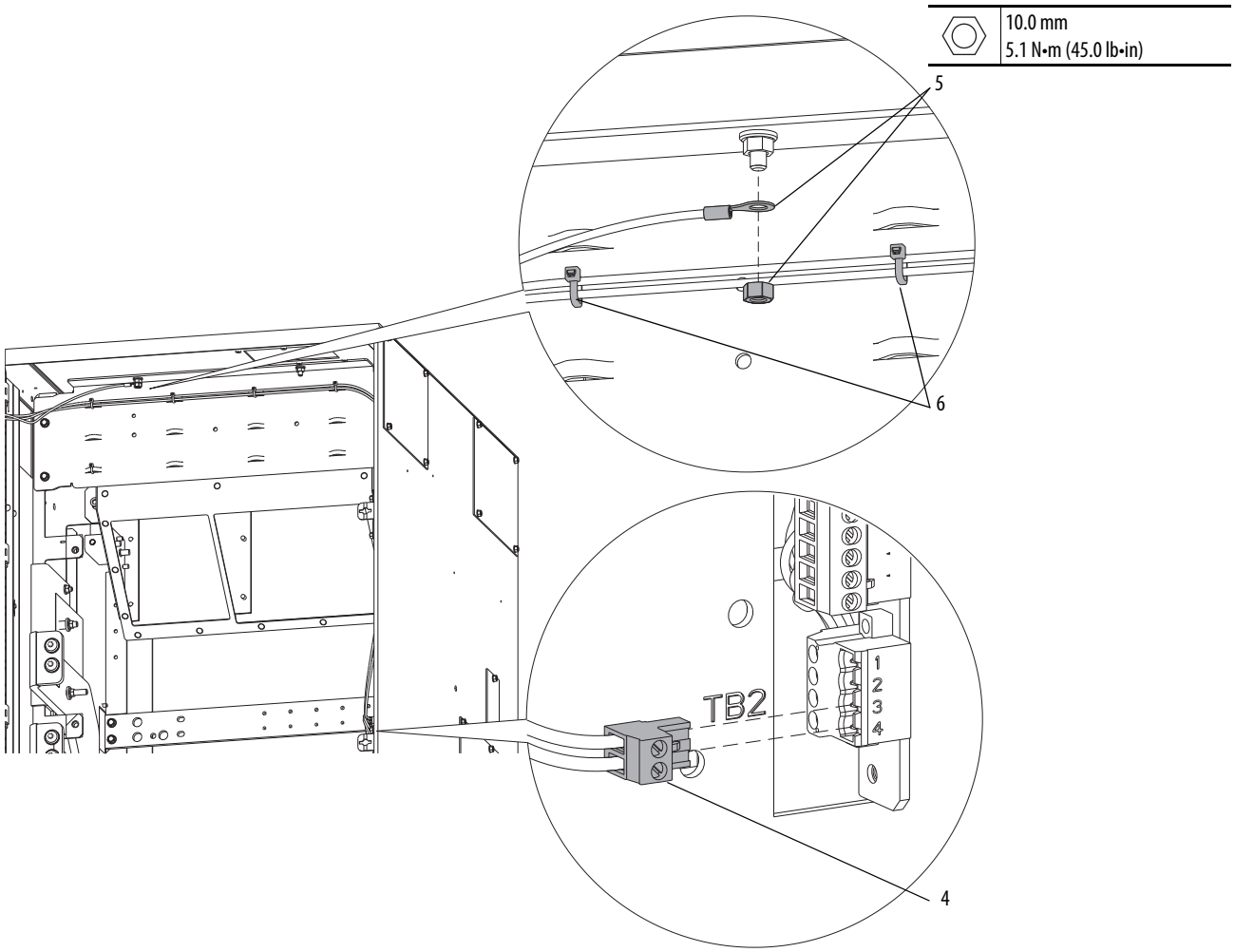
IMPORTANT When installing a new fan, verify that the air flow direction arrow on the fan points toward the exterior of the drive enclosure.

IP20, NEMA/UL Type 1 Enclosure Door Fan Harness Removal/Installation

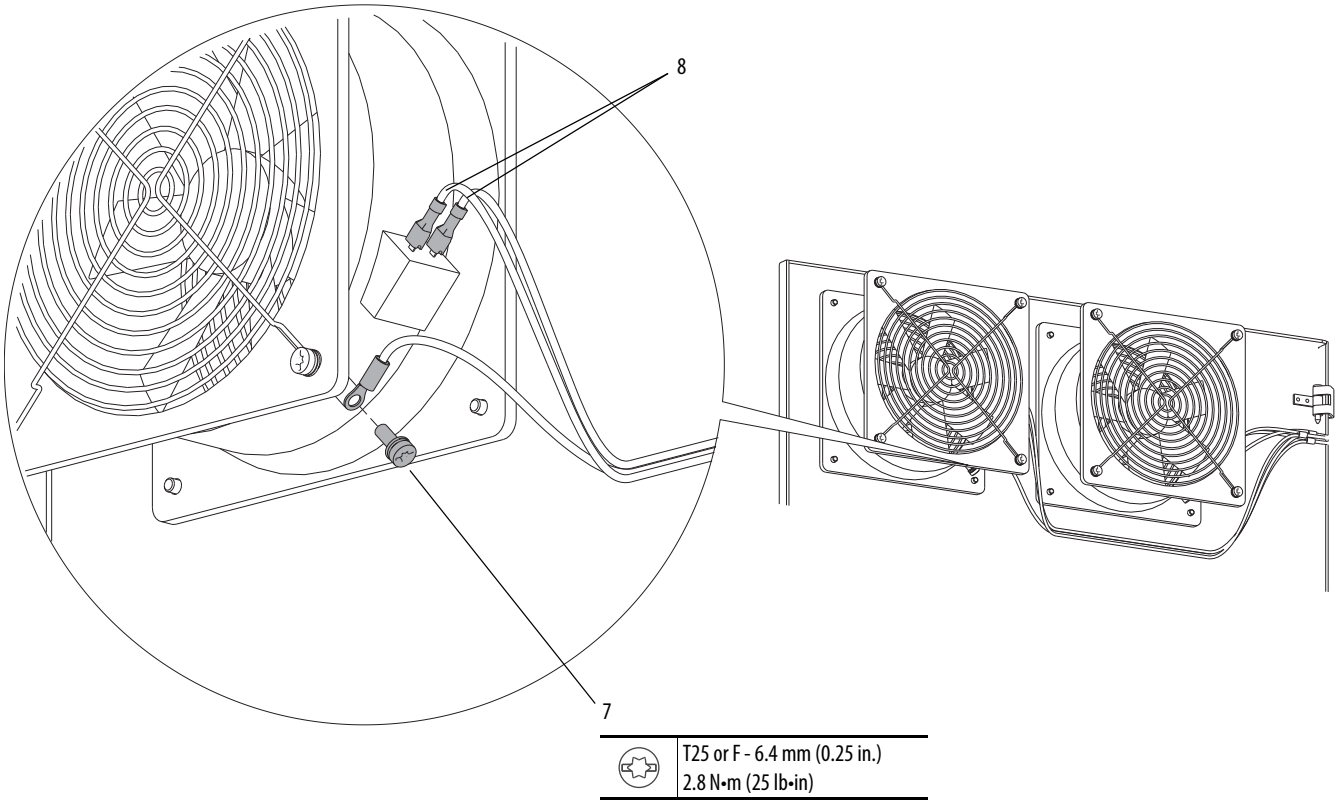
Remove the Enclosure Door Fan Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. Disconnect the two-position, fan power connector from terminal TB2-3 and TB2-4 on the outside, right wall of the drive control panel.
5. Remove the M6 grounding nut from the enclosure wire way ceiling.
6. Cut the cable ties on the enclosure wire way.



7. Remove the M5 x 8-mm screw that secures the fan-power harness ground wires to each of the fans and remove the ground wires.
8. Disconnect the Fan (+) and Fan (-) power wires from the terminals on both fans and remove the fan harness.



Install the Enclosure Door Fan Wire Harness

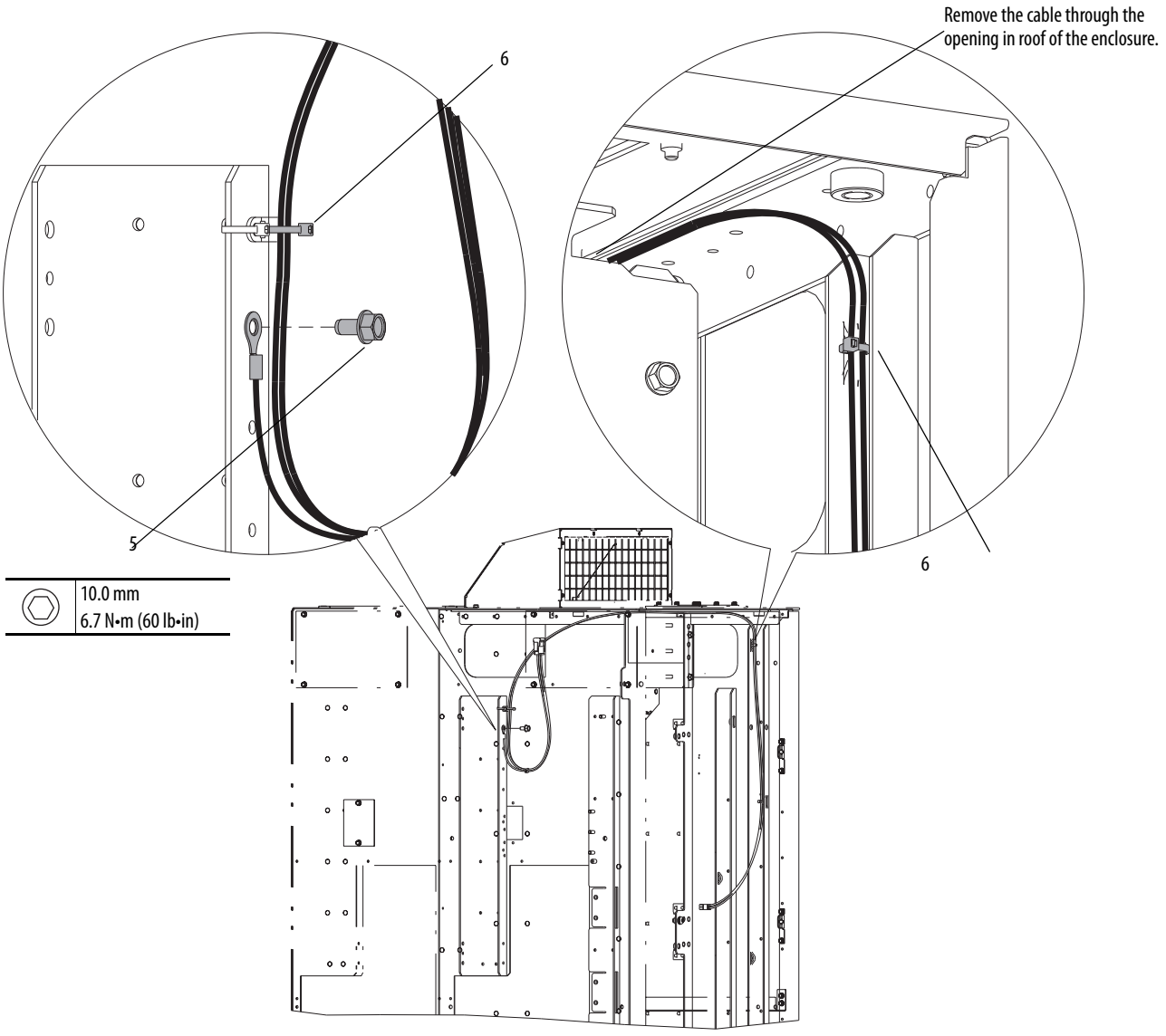
Install the enclosure door fan harness in the reverse order of removal. See Remove the Enclosure Door Fan Wire Harness on page 303.

IP54, NEMA/UL Type 12 Cabinet Blower Wire Harness Removal/Installation

Remove the Cabinet Blower Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.

4. Remove the blower assembly from the drive. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Remove the M6 x 12-mm screw that secures the wire harness ground wire to the cabinet.
6. Cut all cable ties that secure the blower wire harness to the cabinet and remove the wire harness.



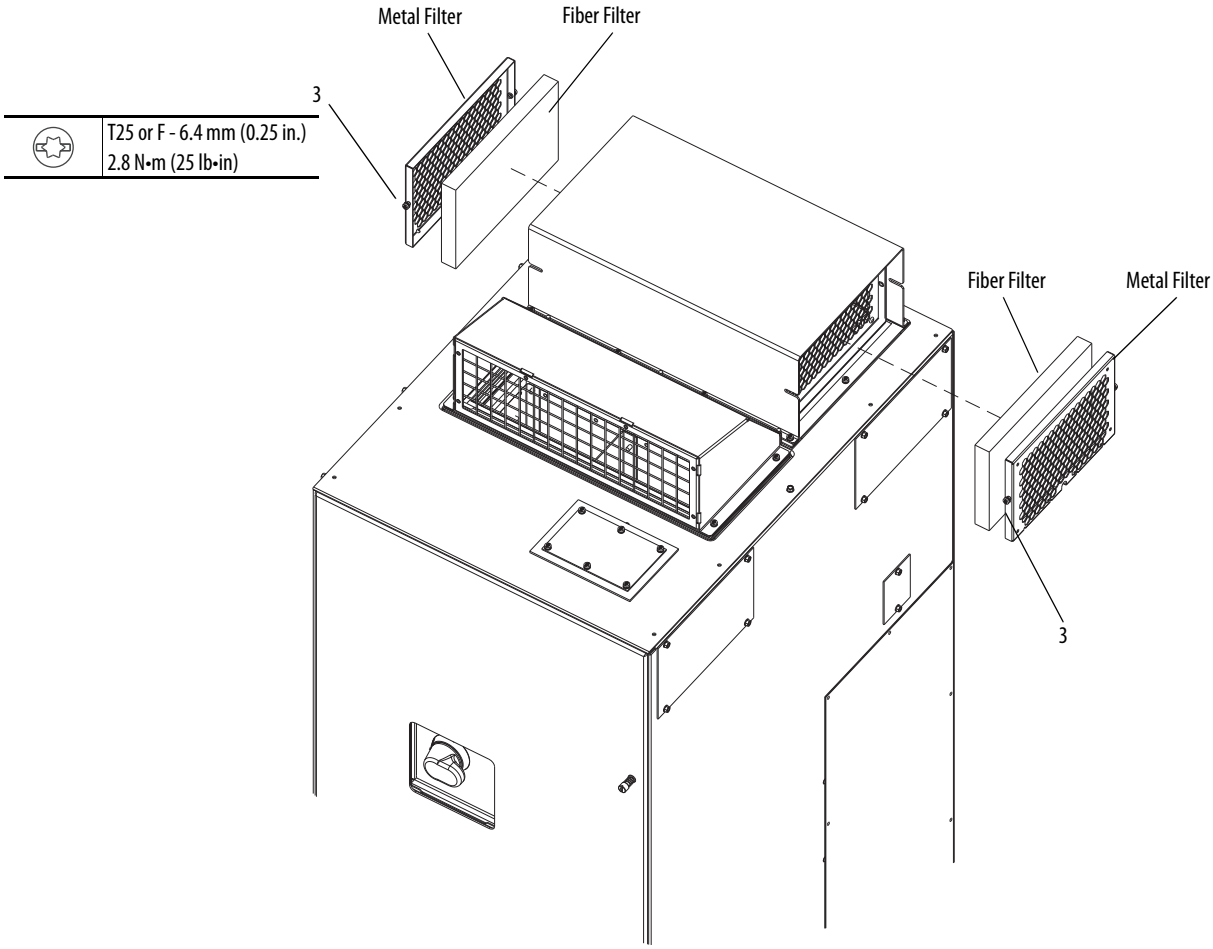
Install the Cabinet Blower Wire Harness

Install the cabinet blower wire harness in the reverse order of removal. See Remove the Cabinet Blower Wire Harness on page 305.

IP54, NEMA/UL Type 12 Cabinet Blower Exhaust Filters Removal/Installation

Remove the Cabinet Blower Exhaust Filters

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Loosen the two hexalobular screws that secure each of the outer metal mesh filters to the blower assembly and remove the outer metal and inner fiber filters from the blower.



Install the Cabinet Blower Exhaust Filters

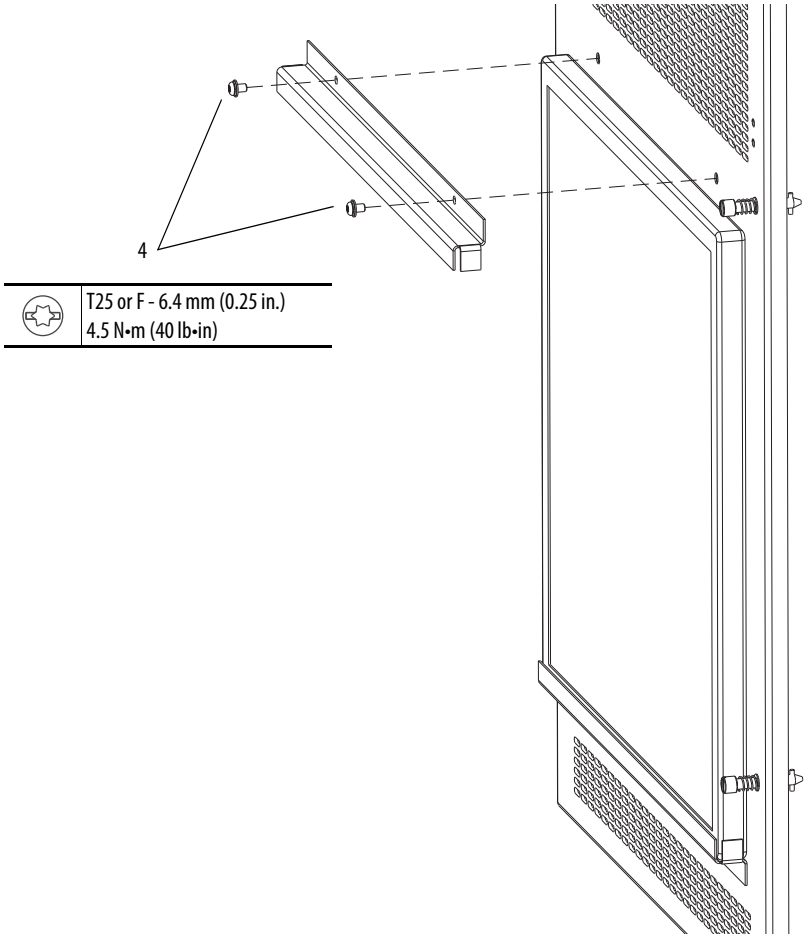
Install the cabinet blower exhaust filters in the reverse order of removal. See Remove the Cabinet Blower Exhaust Filters on page 307.

IP20, NEMA/UL Type 1 Door Filter Removal/Installation

Remove the IP20 Door Filter

Note: This procedure applies to both AC input and Common DC input drive enclosures.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the two M6 x 16-mm screws that secure the filter bracket to the enclosure door and remove the bracket.
4. Remove the filter from the holder.



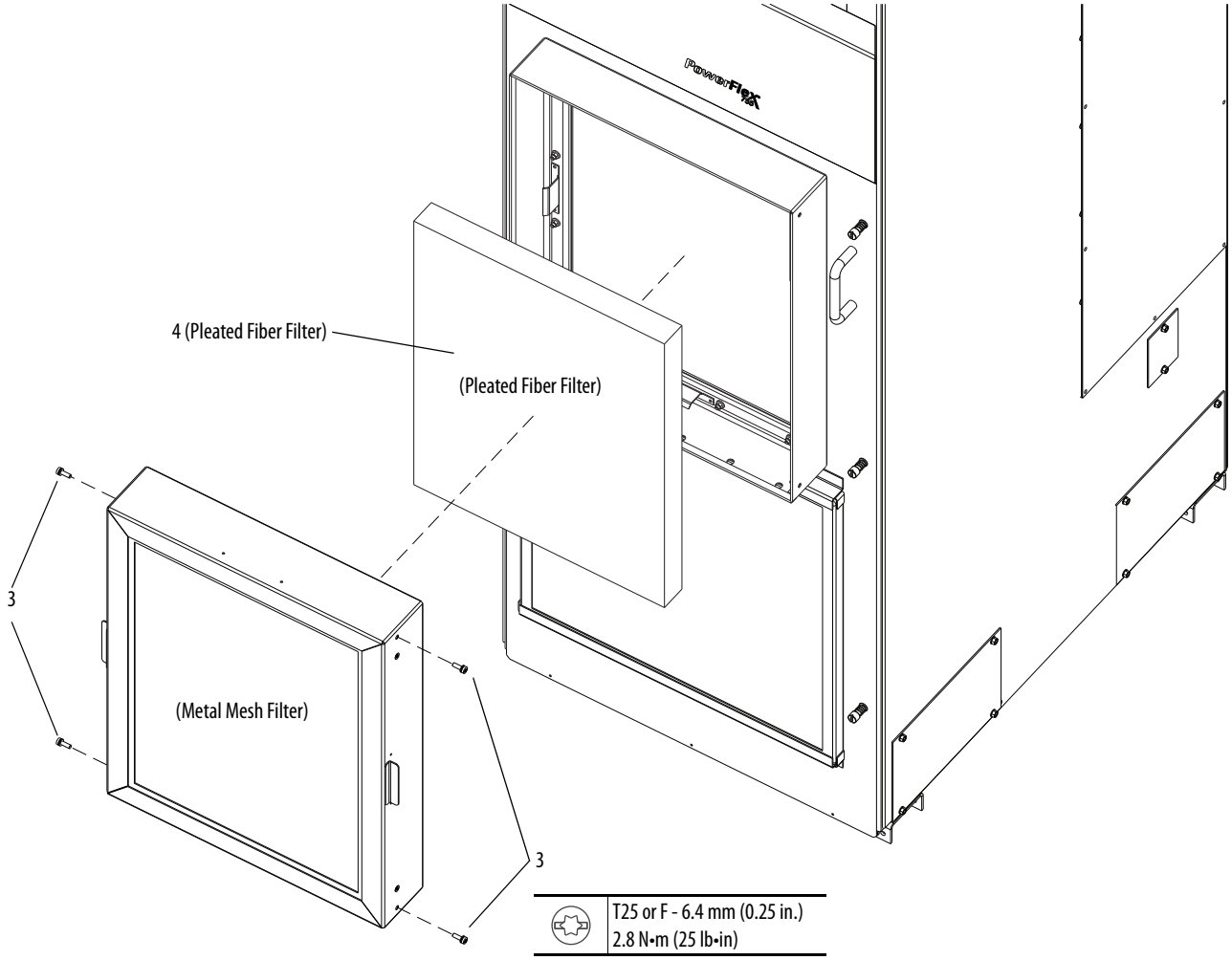
Install the Door Filter

Install the door filter in the reverse order of removal. See Remove the IP20 Door Filter.

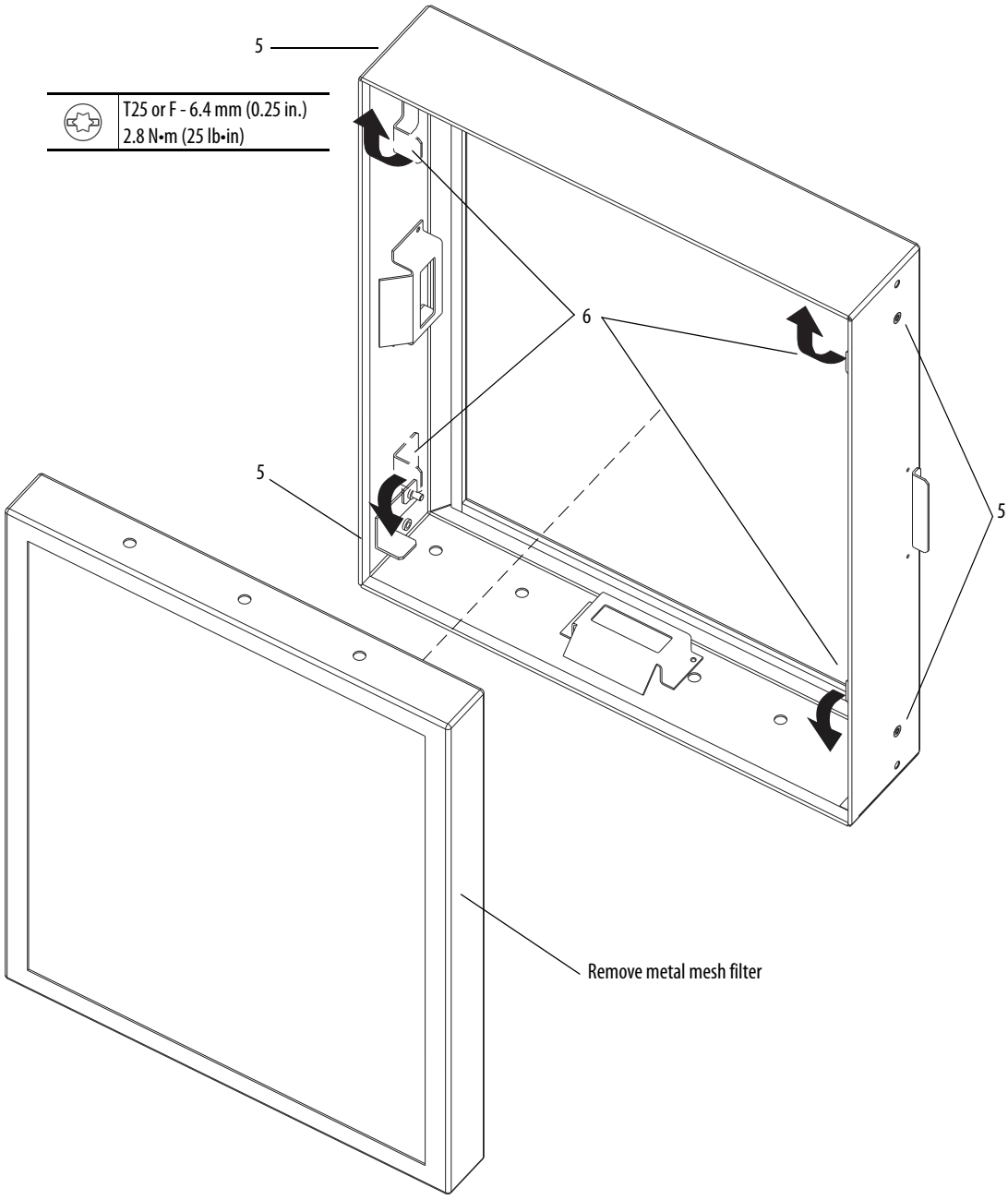
IP54, NEMA/UL Type 12 Cabinet Door Filters Removal/Installation

Remove the Cabinet Door Filters

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the four hexalobular screws that secure the filter cassette cover and metal mesh filter to the filter cassette chassis and remove the cover.
4. Remove the pleated fiber filter from the cassette on the cabinet door.



5. Loosen the four hexalobular screws on the outside walls of the cassette chassis that secure the metal mesh filter to the chassis.
6. Rotate the four metal latches on the inside wall of the cassette chassis and remove the filter.



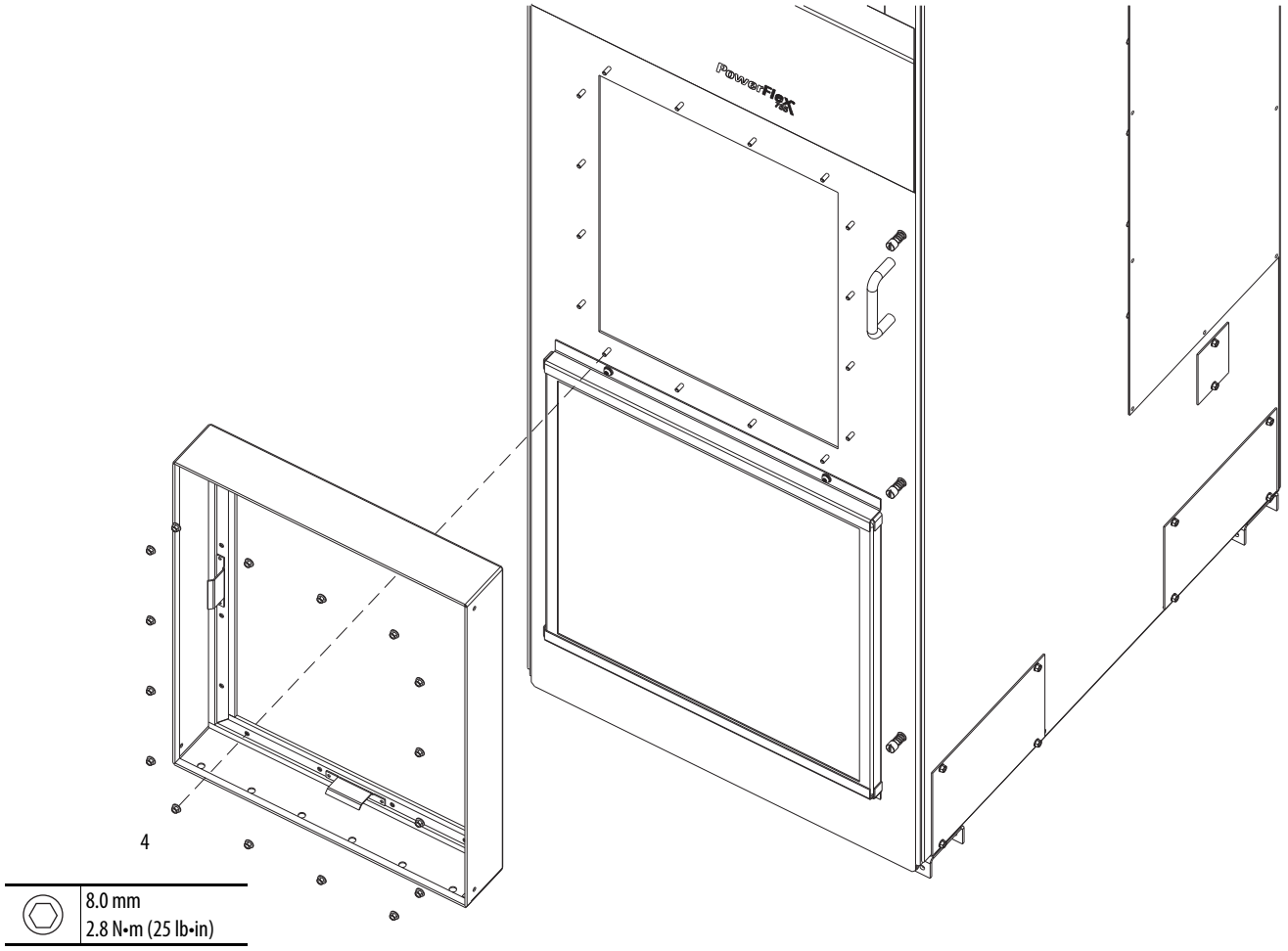
Install the Cabinet Door Filters

Install the cabinet door filters in the reverse order of removal. See Remove the Cabinet Door Filter Cassette on page 311.

IP54, NEMA/UL Type 12 Cabinet-door Filter Cassette Removal/Installation

Remove the Cabinet Door Filter Cassette

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the cabinet door filters. See IP54, NEMA/UL Type 12 Cabinet Door Filters Removal/Installation on page 309.
4. Remove the 16-hex nuts that secure the filter cassette chassis to the cabinet door and remove the chassis.



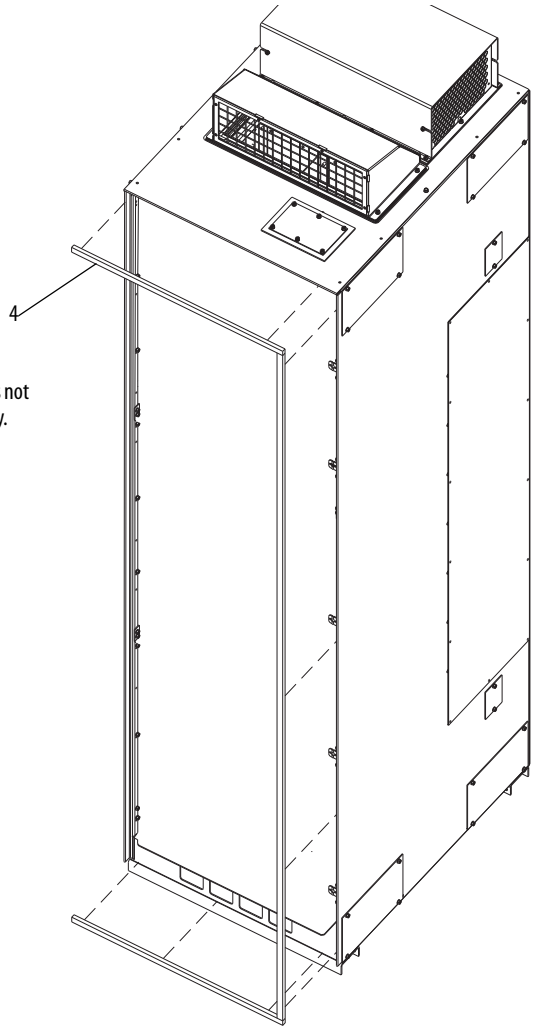
Install the Cabinet Door Filter Cassette

Install the cabinet door filter cassette in the reverse order of removal. See Remove the Cabinet Door Filter Cassette on page 311.

IP54, NEMA/UL Type 12 Cabinet Door Gasket Removal/Installation

Remove the Cabinet Door Gasket

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Carefully remove the gasket and any gasket material that may be stuck to the sealing surface.
5. Clean the surface on which the gasket is installed with a 50% isopropyl alcohol / 50% water mixture.



Note: The cabinet door is not shown for clarity only.

Install the Cabinet Door Gasket

Note: One side of the door gasket is coated with an adhesive. Take care to align the gasket properly before fully removing the paper liner and exposing the adhesive.

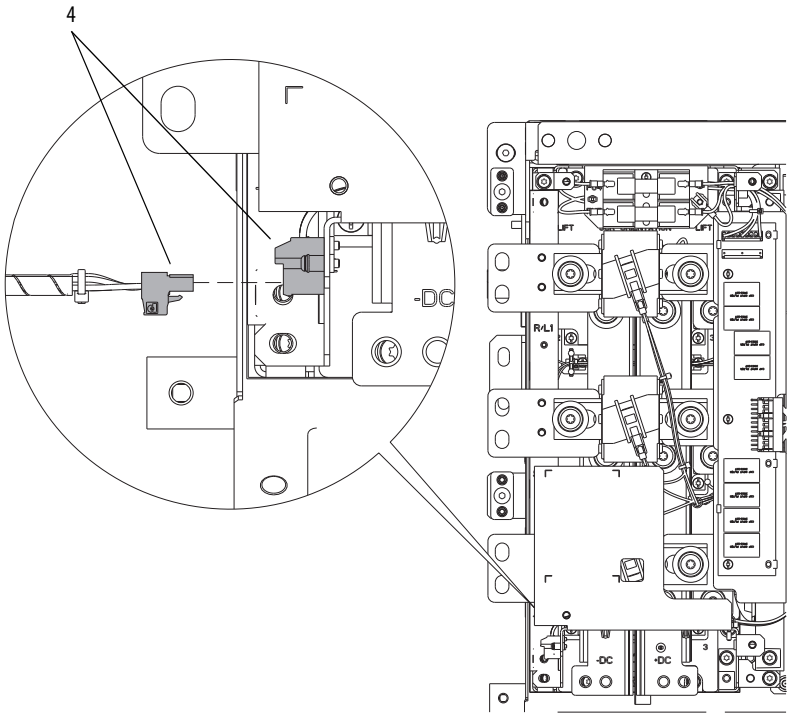
- Begin removing the paper liner as you align the replacement gasket with the cabinet edges and press the gasket into place.

DC Bus Fuse Wire Harness Removal/Installation (Frame 9 and Larger Drives Only)

Remove the DC Bus Fuse Wire Harness

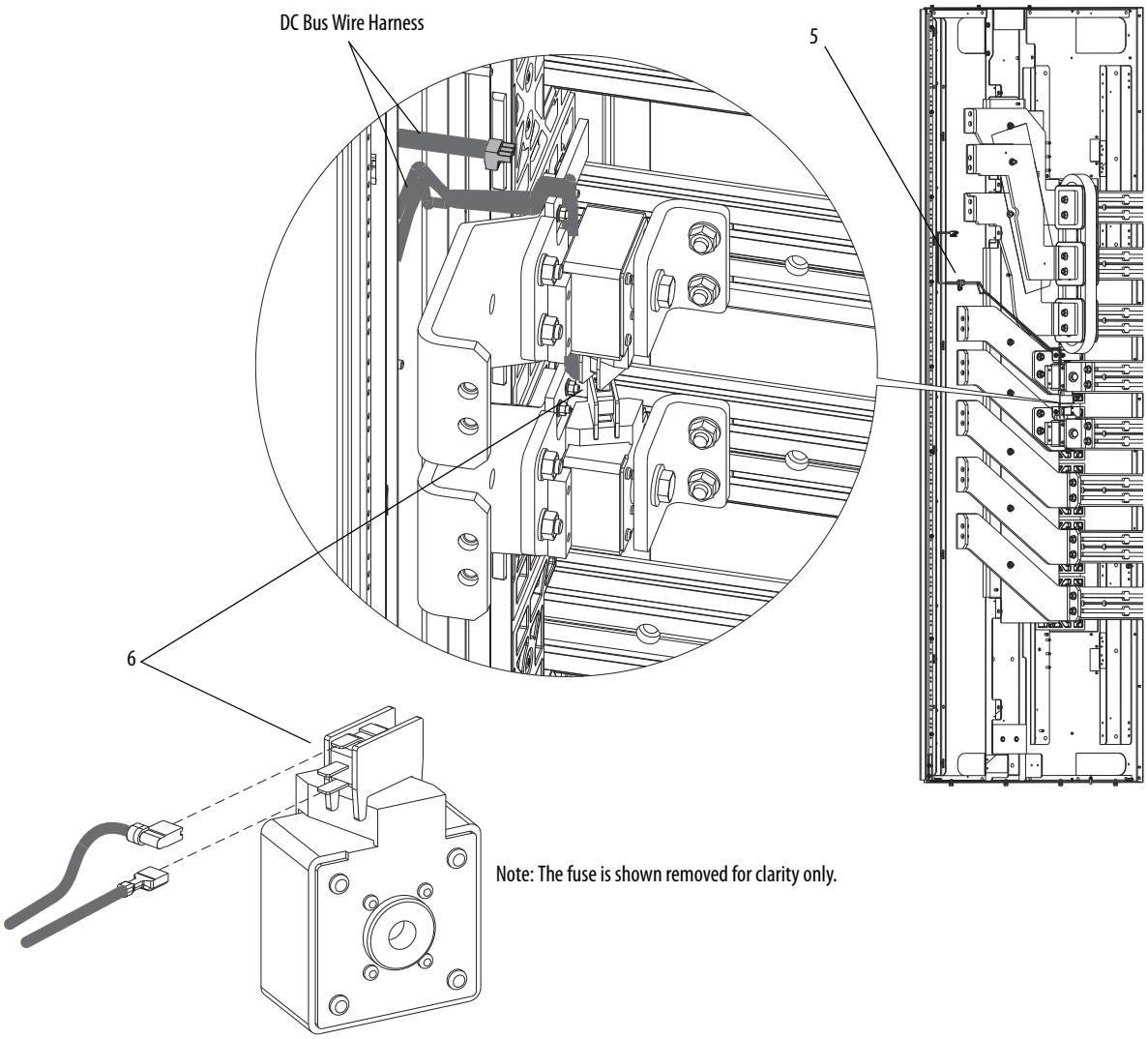
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. The DC bus fuses and fuse indicators, to which the wire harness is connected, are at the back of the drive enclosure. Therefore, the drive assemblies must be removed from the enclosure. Remove the drive assemblies from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.

IMPORTANT You must first remove the wiring as detailed in the PowerFlex 750-Series AC Drive Installation Instructions. Then, you must disconnect the three-position, DC bus fuse wire harness connector from terminal block TB6 on the lower left side of the converter (as shown here).



Note: The converter si shown removed from the drive enclosure for clarity only.

5. Unlock the cable support on the left wall of the drive enclosure and release the DC bus wire harness from the support.
6. Remove the DC bus wire harness leads from the fuse indicators and remove the wire harness.



Install the DC Bus Fuse Wire Harness

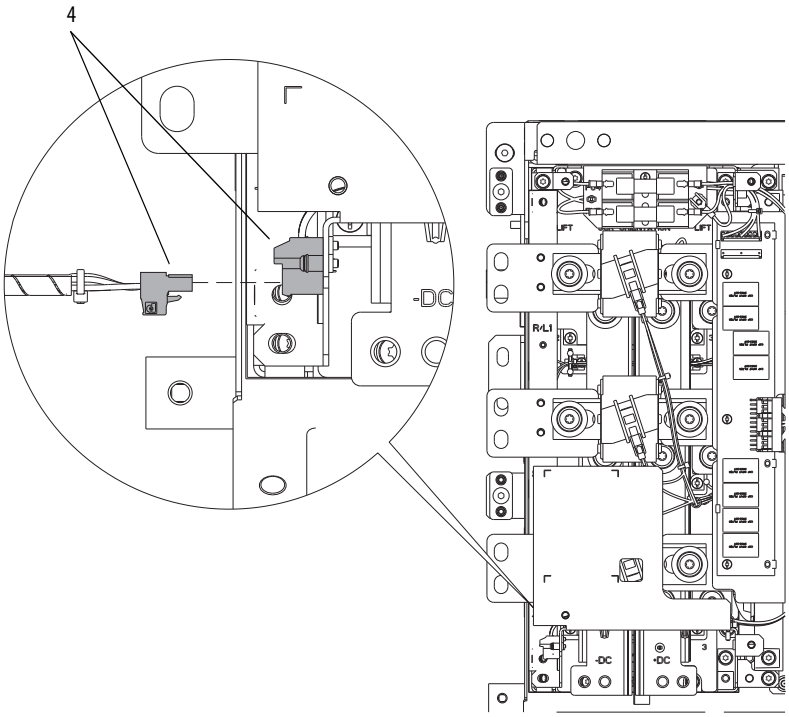
Install the DC Bus Fuse Wire Harness in the reverse order of removal. See Remove the DC Bus Fuse Wire Harness on page 313.

DC Bus Fuses and Fuse Indicators Removal/ Installation (Frame 9 and Larger Drives Only)

Remove the DC Bus Fuses and Fuse Indicators

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. The DC bus fuses and fuse indicators are at the back of the drive enclosure. Therefore, the drive assemblies must be removed from the enclosure. Remove the drive assemblies from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.

IMPORTANT You must first remove the wiring as detailed in the PowerFlex 750-Series AC Drive Installation Instructions. Then, you must disconnect the three-position, DC bus fuse wire harness connector from terminal block TB6 on the lower left side of the converter (as shown here).

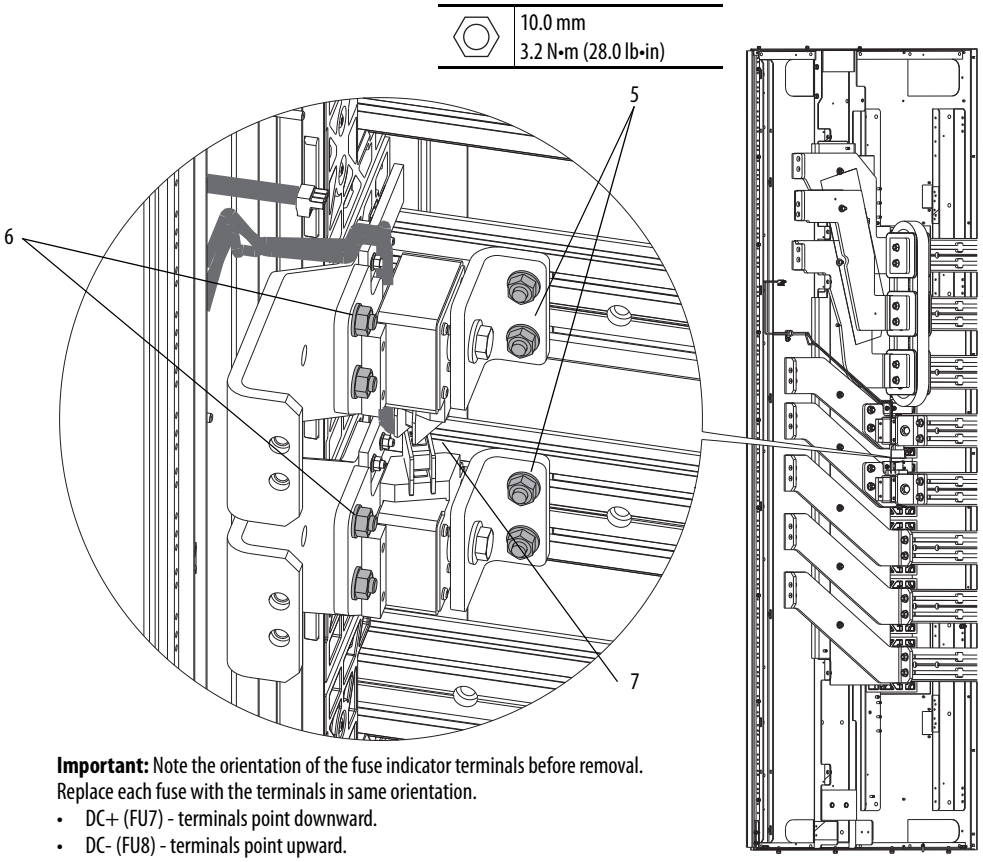


Note: The converter is shown removed from the drive enclosure for clarity only.

5. Remove the two M10 hex nuts that secure each of the L-brackets to the drive backplane DC bus (extruded bars) at the back of the drive enclosure.
6. Remove the two M10 hex nuts that secure each of the brackets to the DC+ and DC- forward bus bar terminals.

IMPORTANT	Note the orientation of the fuse indicator terminals before removal. Replace each fuse with the terminals in same orientation.

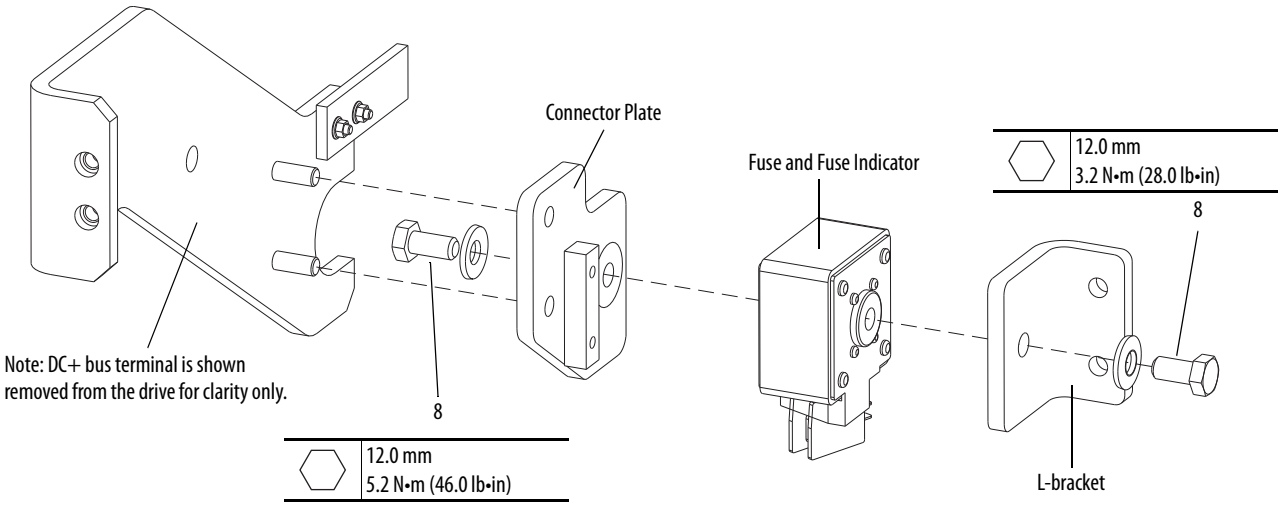
7. Remove the DC bus wire harness leads from the fuse indicators and slide the fuse assemblies off the bolts.



Important: Note the orientation of the fuse indicator terminals before removal. Replace each fuse with the terminals in same orientation.

- DC+ (FU7) - terminals point downward.
- DC- (FU8) - terminals point upward.

8. Remove the two M12 x 18-mm hex bolts and washers that secure the L-bracket and connector plate to the fuse and remove the fuse.



Install the DC Bus Fuses and Fuse Indicators

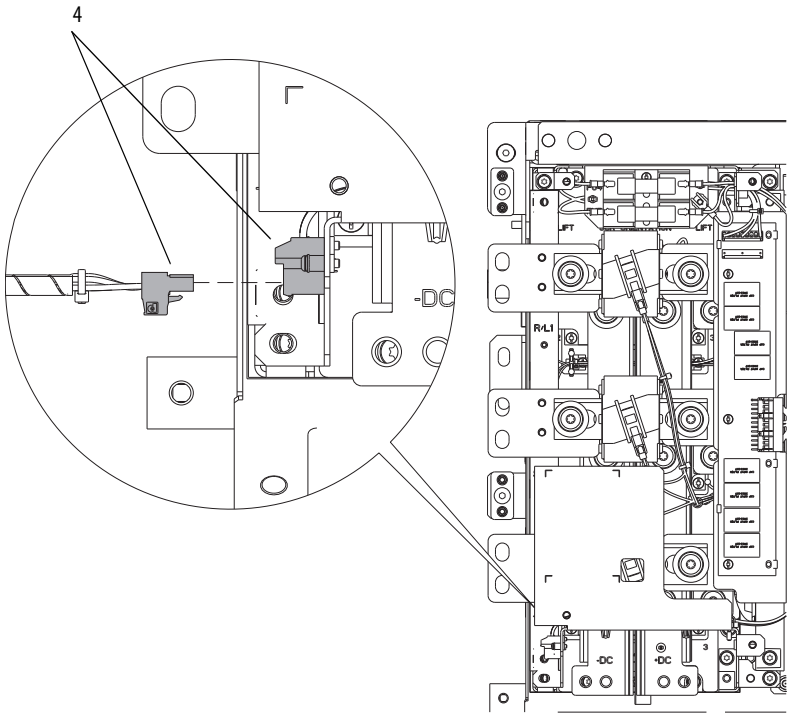
Install the DC bus fuses and fuse indicators in the reverse order of removal. See Remove the DC Bus Fuses and Fuse Indicators on page 315.

Input Common-mode Core Removal/Installation (Frame 9 and Larger, Common DC Input Drives Only)

Remove the Input Common Mode Core

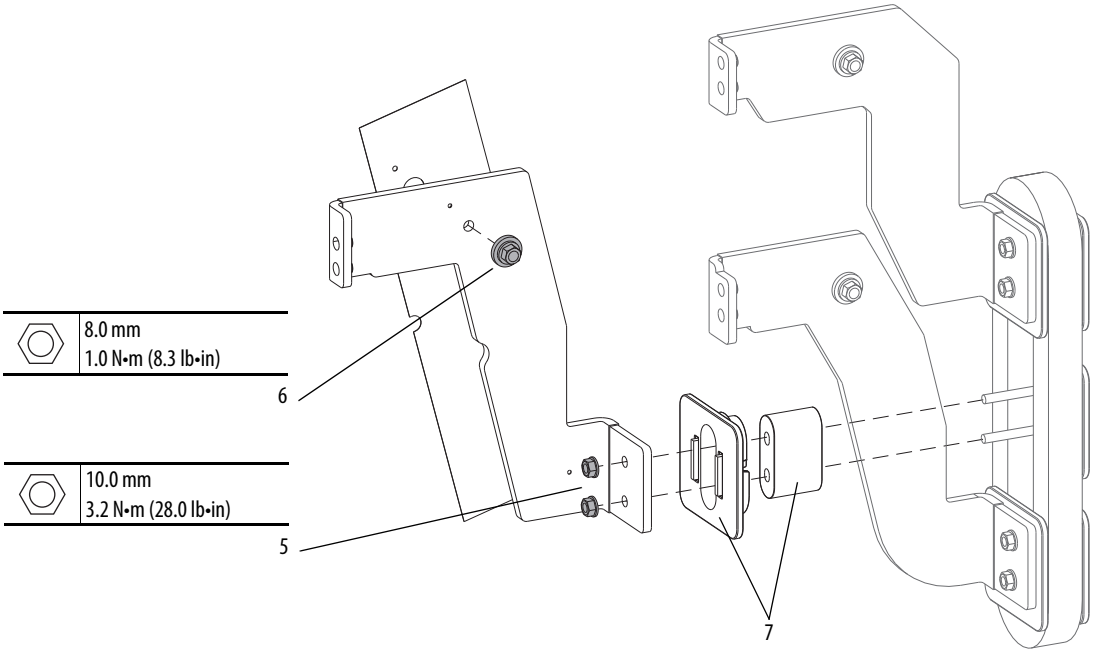
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. The input common mode core is at the back of the drive enclosure. Therefore, the drive assemblies must be removed from the enclosure. Remove the drive assemblies from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.

IMPORTANT You must first remove the wiring as detailed in the PowerFlex 750-Series AC Drive Installation Instructions. Then, you must disconnect the three-position, DC bus fuse wire harness connector from terminal block TB6 on the lower left side of the converter (as shown here).

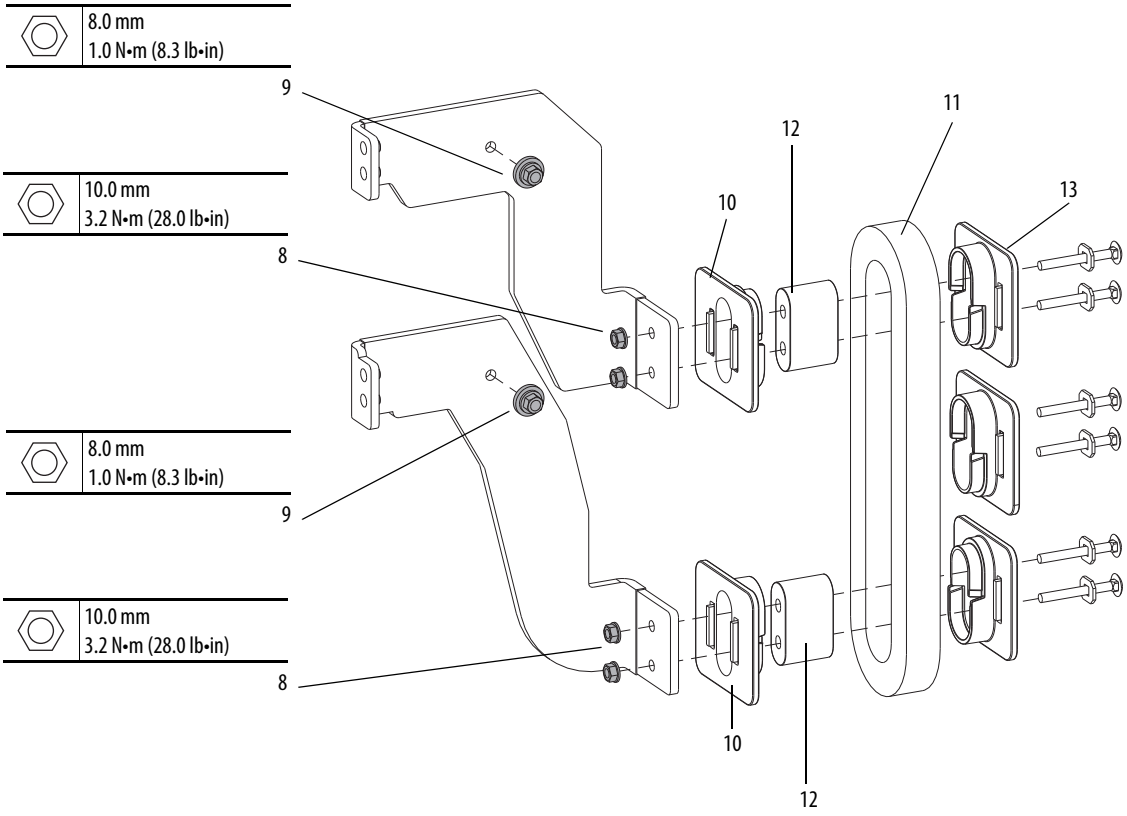


Note: The converter is shown removed from the drive enclosure for clarity only.

5. Remove the two M10 nuts that secure the center (S/L2) AC input terminal to the input common-mode core assembly.
6. Remove the M8 nut and washer that secures the center (S/L2) AC input terminal and isolation sheet to the insulator material on the side of the drive enclosure. Remove the terminal and isolation sheet.
7. Remove front plate and aluminum core for the center terminal from the bolts.



8. Remove the four M10 nuts that secure the remaining (R/L1, T/L3) AC input terminals to the input common-mode core assembly.
9. Remove the two M8 nuts that secure each of the remaining (R/L1, T/L3) AC input terminals to the insulator material on the side of the drive enclosure. Remove the terminals.
10. While supporting the input common mode core, remove the two front plates from the bolts connected to the drive backplane DC bus (extruded bars) at the back of the enclosure.
11. Remove the input common mode core.
12. Remove the two aluminum cores from the bolts.
13. Remove the three back plates from the bolts.



Install the Input Common Mode Core

Install the input common-mode core assembly in the reverse order of removal. See Remove the Input Common Mode Core on page 318.

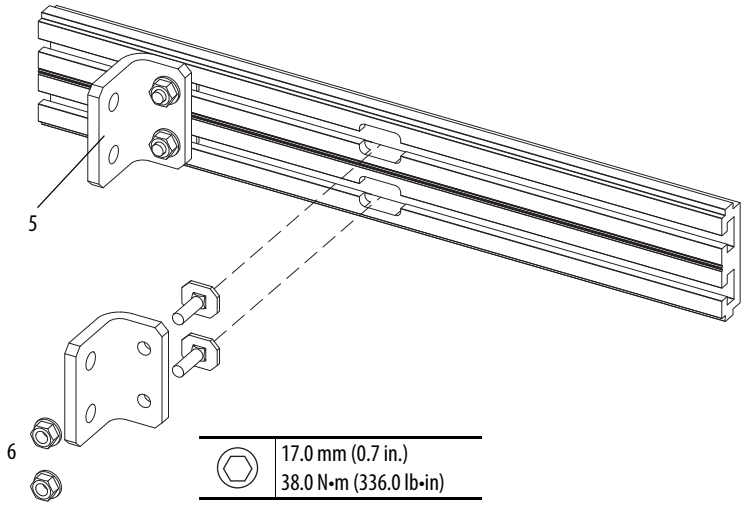
IMPORTANT The isolation sheet that separates the S/L2 terminal from the other two terminals must be installed in the same location as it was before removal.

Cabinet L Bus Bars Removal/ Installation

Remove the Cabinet L Bus Bars

Note: The cabinet L bus bars are used on both AC input and common DC input frame 10 drives.

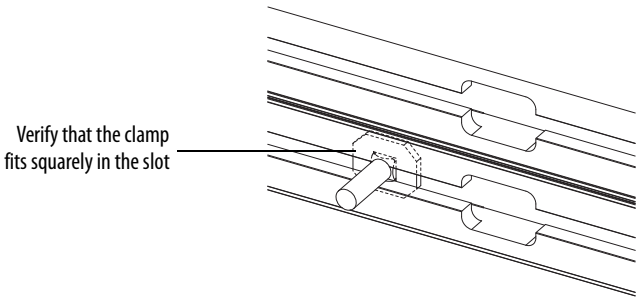
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. The cabinet L bus bar is at the back of the drive enclosure. Therefore, the drive assemblies must be removed from the enclosure. Remove the drive assemblies from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
5. Disconnect the AC line input power, output to motor, or DC power cables from the L bus bars.
6. Loosen the two M10 x 1.5 nuts that secure each L bus bar to the extruded bus bar at the back of the cabinet, slide the L bus bars and hardware to the notch in the extruded bus bar and pull the bus bar, clamp, and bolt off the bus bar.



Install the Cabinet L Bus Bars

Install the cabinet L bus bars in the reverse order of removal. See Remove the Cabinet L Bus Bars on page 321.

IMPORTANT Verify that the clamp fits squarely in the extruded bus bar slot.



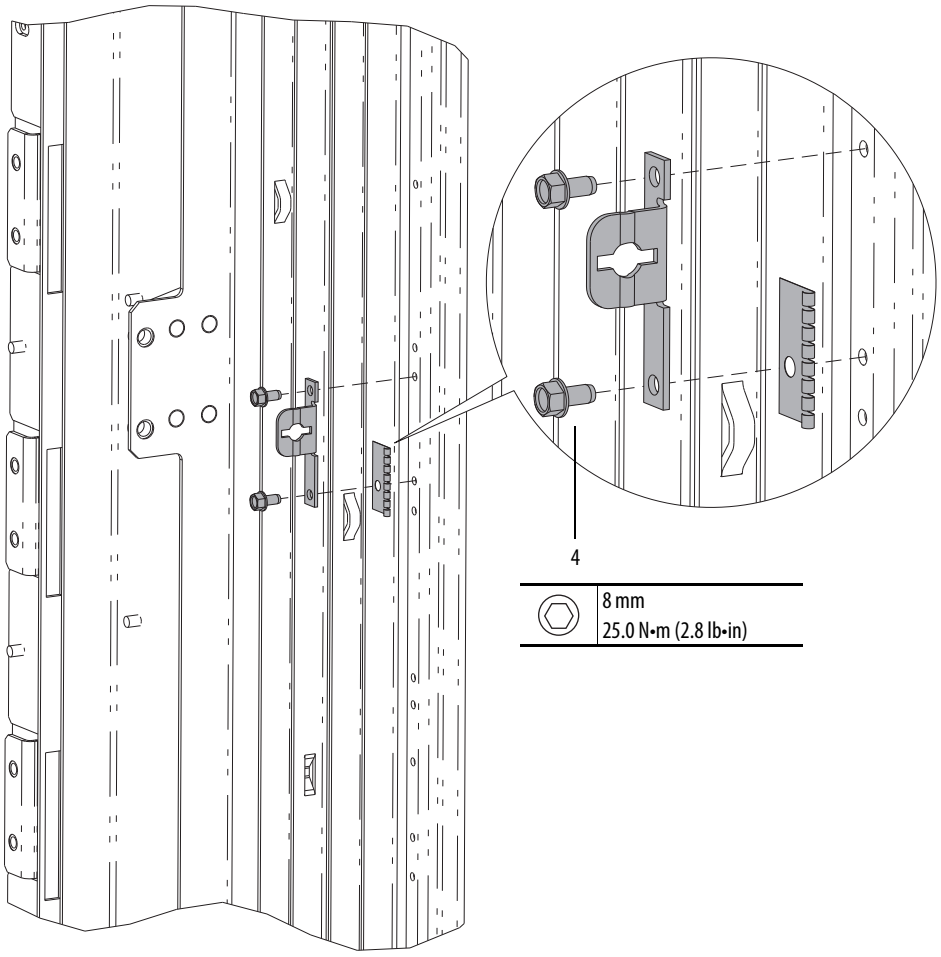
Cabinet Door EMC Shield Removal/Installation (Frame 10 Drives Only)

Remove the Cabinet Door EMC Shield

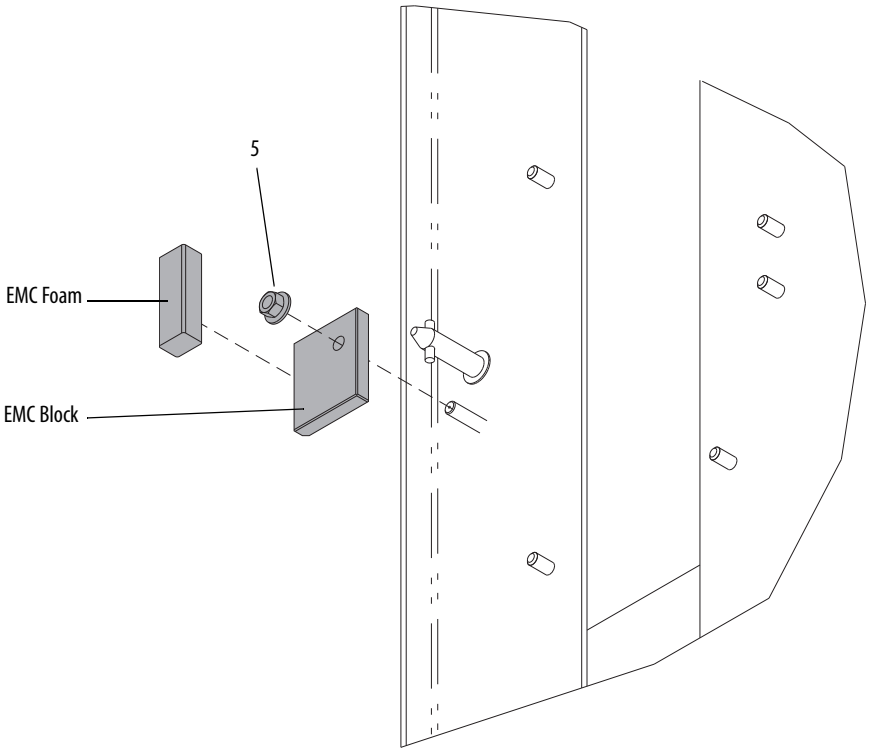
Note: The cabinet door EMC shield assembly is used on both AC input and common DC input frame 10 drives.

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. Remove the two hex-head screws that secure the EMC assembly (five per cabinet) to the cabinet frame and remove the assembly.

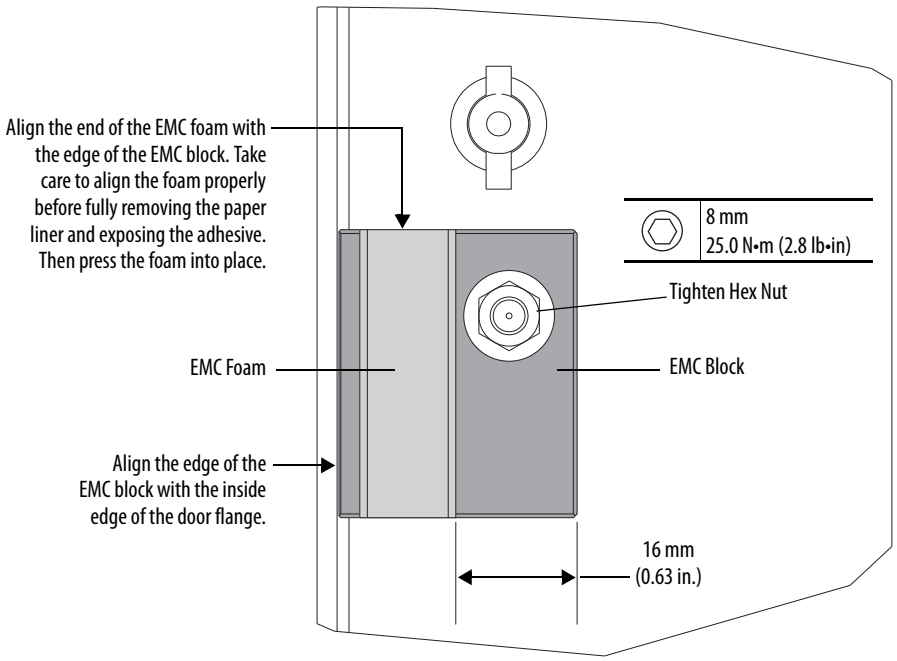


5. Remove the M5 hex nut that secures the EMC assembly (five per door) to the cabinet door and remove the assembly.



Install the Cabinet Door EMC Shield

Install the cabinet door shield in the reverse order of removal. Verify that the new EMC shield kit is installed as described in the illustration shown here. Also, see Remove the Cabinet Door EMC Shield on page 322.



Common DC Input Drive Enclosure Component Replacement Procedures

Topic	Page
Common DC Input Drive Enclosure Components Identification	326
Enclosure Door Fan Removal/Installation	327
Enclosure Door Fan Wire Harness Removal/Installation	328
DC Back Bus Guards Removal/Installation	330
120/240V Control Power Input Wire Harness Removal/Installation	332
120/240V Control Power Output Wire Harness Removal/Installation	333
120/240V Circuit Breaker Removal/Installation	334
120V UPS Power Input Wire Harness Removal/Installation	336
Input Common-mode Core Removal/Installation (Common DC Input Drives)	337

This chapter provides detailed procedures for how to remove and replace common DC input drive enclosure components.

Common DC Input Drive Enclosure Components Identification

This table contains the components that comprise the common DC input drive enclosure and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit

A complete list of spare parts for PowerFlex® 755 Frame 8...10 drives is available on the Allen-Bradley web site at:
http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

Table 14 - Common DC Input Drive Enclosure Replacement Kits/Parts

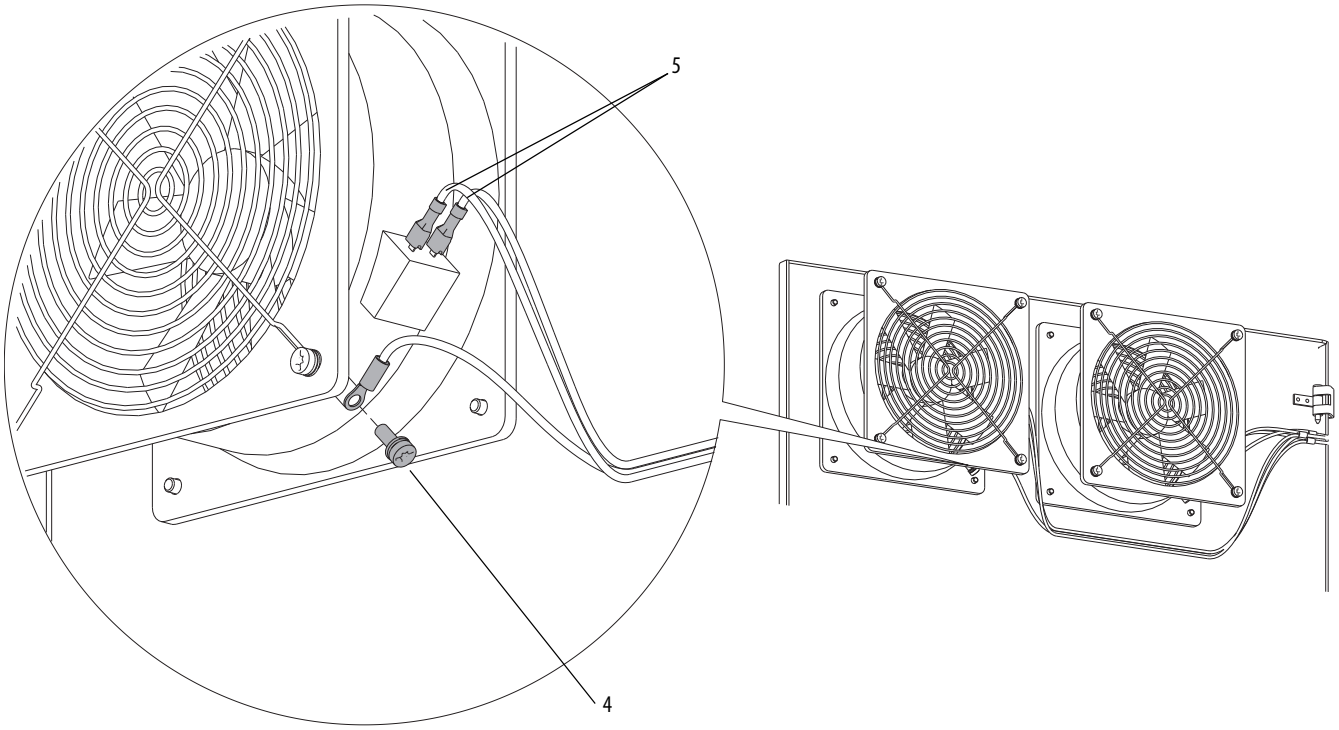
Component Description	Replacement Kit Cat. No. or Part No.	Qty.
IP20, NEMA/UL Type 1 Door Filter	20-750-FLTR1-F8	1
DC Input Cabinet Wire Harness Kit	SK-R1-CBPBRKH1-F8	–
Wire Harness, 120/240V Control Power		1
Wire Harness, Transformer Primary		1
Wire Harness, 120V UPS Input		1
DC Input Cabinet Back Bus Guard Kit	SK-R1-CBPGRD1-F8	–
Guard, Control Rail		2
Guard, DC Bus		1
Door Fan with Finger Guard	20-750-FAN3-F8	1
Door Fan Harness	SK-R1-FANH1-F8	1
Input Common Mode Core	20-750-CBPEMCCM1-F8	1
Cabinet L Bus Bar (see Cabinet L Bus Bars Removal/ Installation on page 321 for instructions)	20-750-LBRKT1	1
Circuit Breaker, 2-Pole, 13A	1489-A2D130A	1
Lockout Attachment	1489-AALOA	1
Cabinet Door Shield Kit (Frame 10) (see Cabinet Door EMC Shield Removal/Installation (Frame 10 Drives Only) on page 322 for instructions)	20-750-EMCDK1-F10	1

TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

Enclosure Door Fan Removal/ Installation

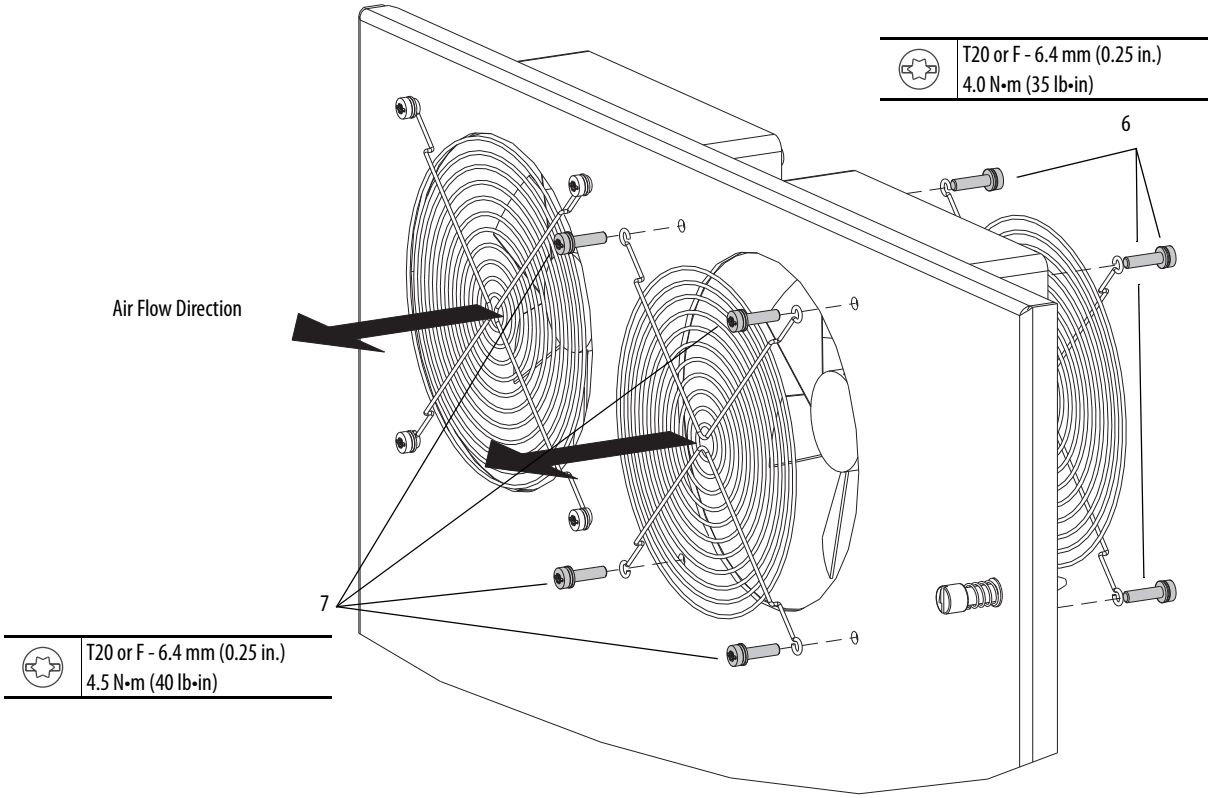
Remove the Enclosure Door Fan

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the M5 x 8-mm screw that secures the fan power-harness ground wire to the fan and remove the ground wire. Retain the screw for reuse.
5. Disconnect the Fan (+) and Fan (-) power wires from the fan terminals.



	T25 or F - 6.4 mm (0.25 in.) 2.8 N•m (25 lb•in)

6. Remove the four M5 x 20 screws that secure the inner guard to the fan housing and remove the guard.
7. Remove the four M5 x 20 screws that secure the outer fan guard and fan to the enclosure door and remove the outer fan guard and fan.



Install the Enclosure Door Fan

Install the enclosure door fan in the reverse order of removal. See Remove the Enclosure Door Fan on page 327.

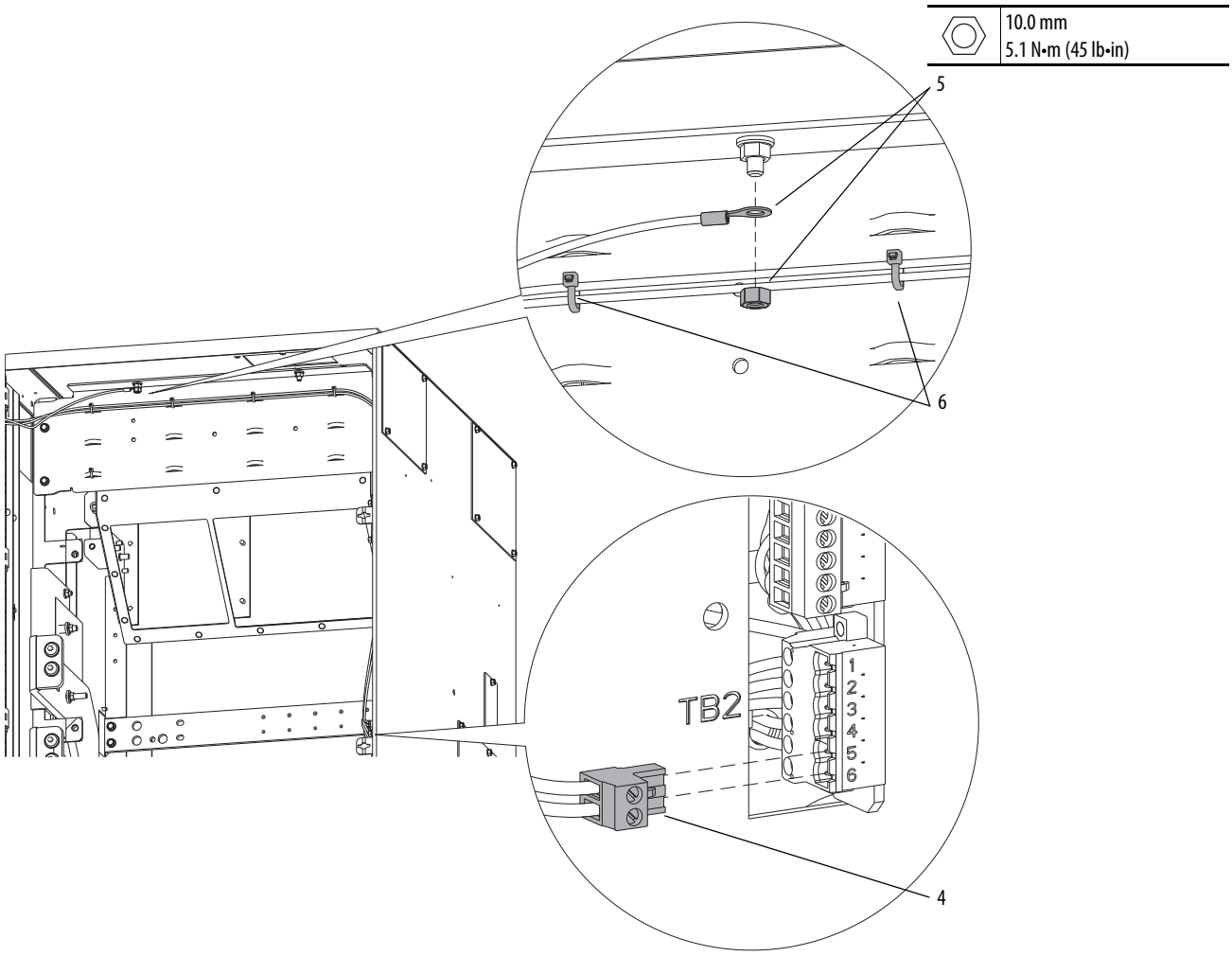
IMPORTANT	When installing a new fan, verify that the air flow direction arrow on the fan points toward the exterior of the drive enclosure.

Enclosure Door Fan Wire Harness Removal/ Installation

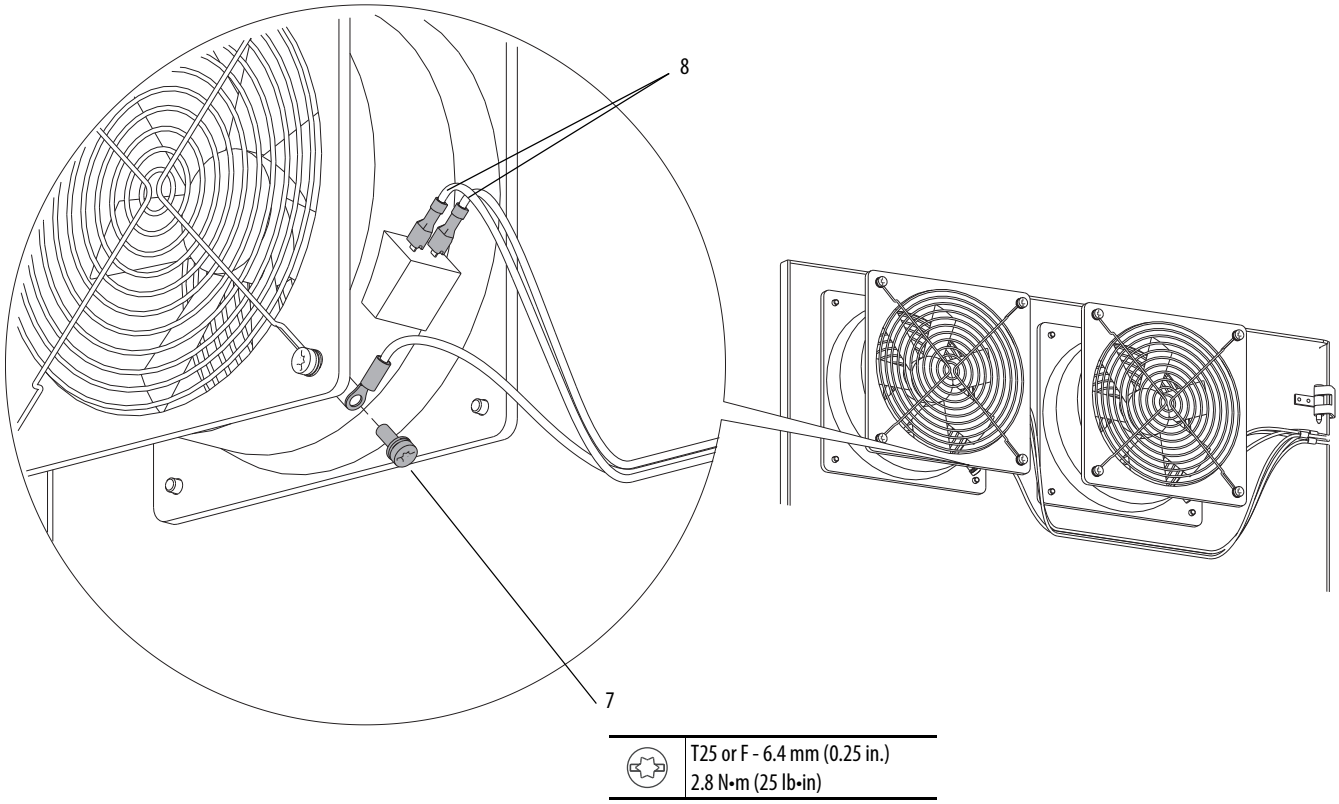
Remove the Enclosure Door Fan Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. Disconnect the two-position, fan power connector from terminal TB2-5 and TB2-6 on the outside, right wall of the drive control panel.
5. Remove the M6 grounding nut from the enclosure wire way ceiling.
6. Cut the cable ties that secure the wire harness to the enclosure wire way.



7. Remove the M5 x 8-mm screw that secures the fan power-harness ground wires to each of the fans and remove the ground wires.
8. Disconnect the Fan (+) and Fan (-) power wires from the terminals on both fans and remove the fan harness.



Install the Enclosure Door Fan Wire Harness

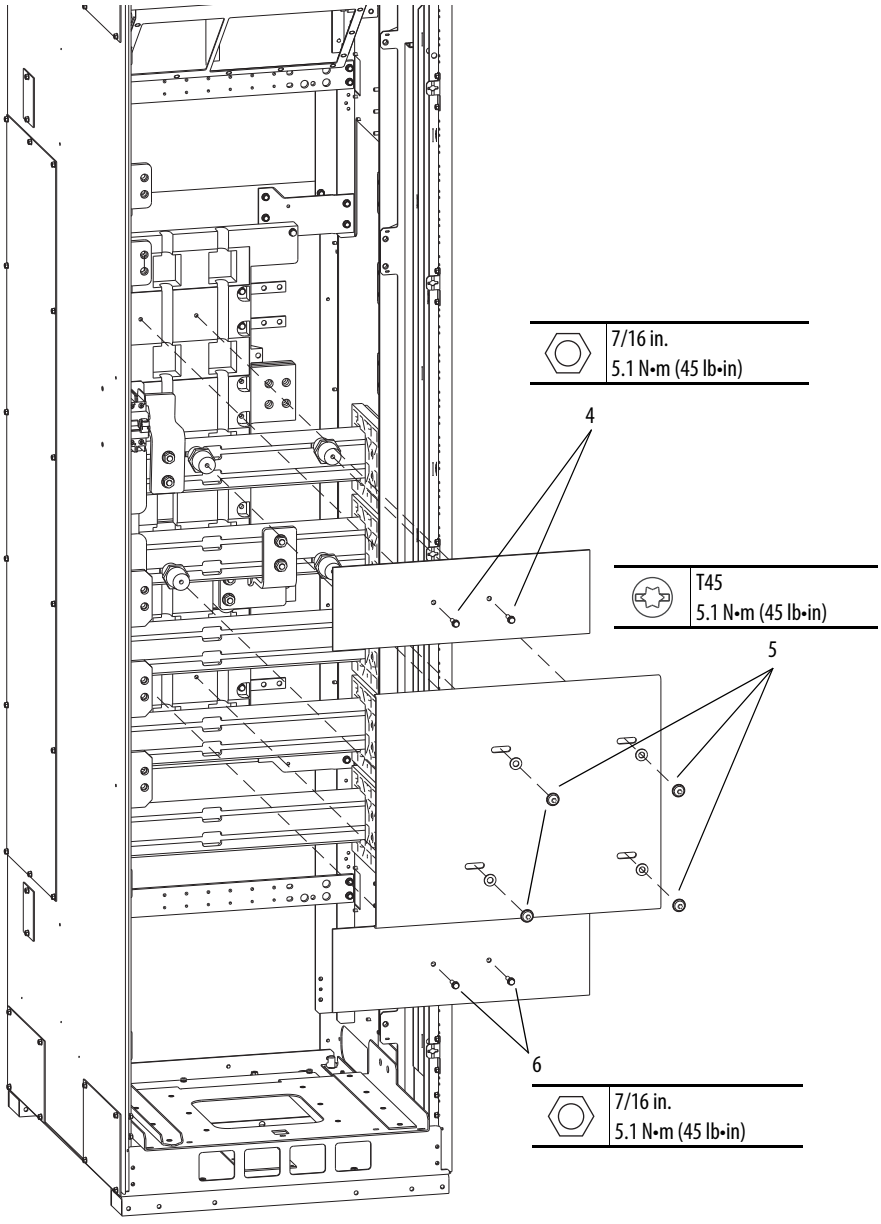
Install the enclosure door fan harness in the reverse order of removal. See Remove the Enclosure Door Fan Wire Harness on page 328.

DC Back Bus Guards Removal/ Installation

Remove the DC Back Bus Guards

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.

4. Remove the two ¼-20 x 1-in. hex head screws that secure the top guard (that covers the 120-V control bus) to the enclosure and remove the guard.
5. Remove the four M10 x 16-mm screws that secure the middle guard (that covers the +DC and -DC bus) to the enclosure and remove the guard.
6. Remove the two ¼-20 x 1-in. hex head screws that secure the bottom guard (that covers the 120-V UPS bus) to the enclosure and remove the guard.



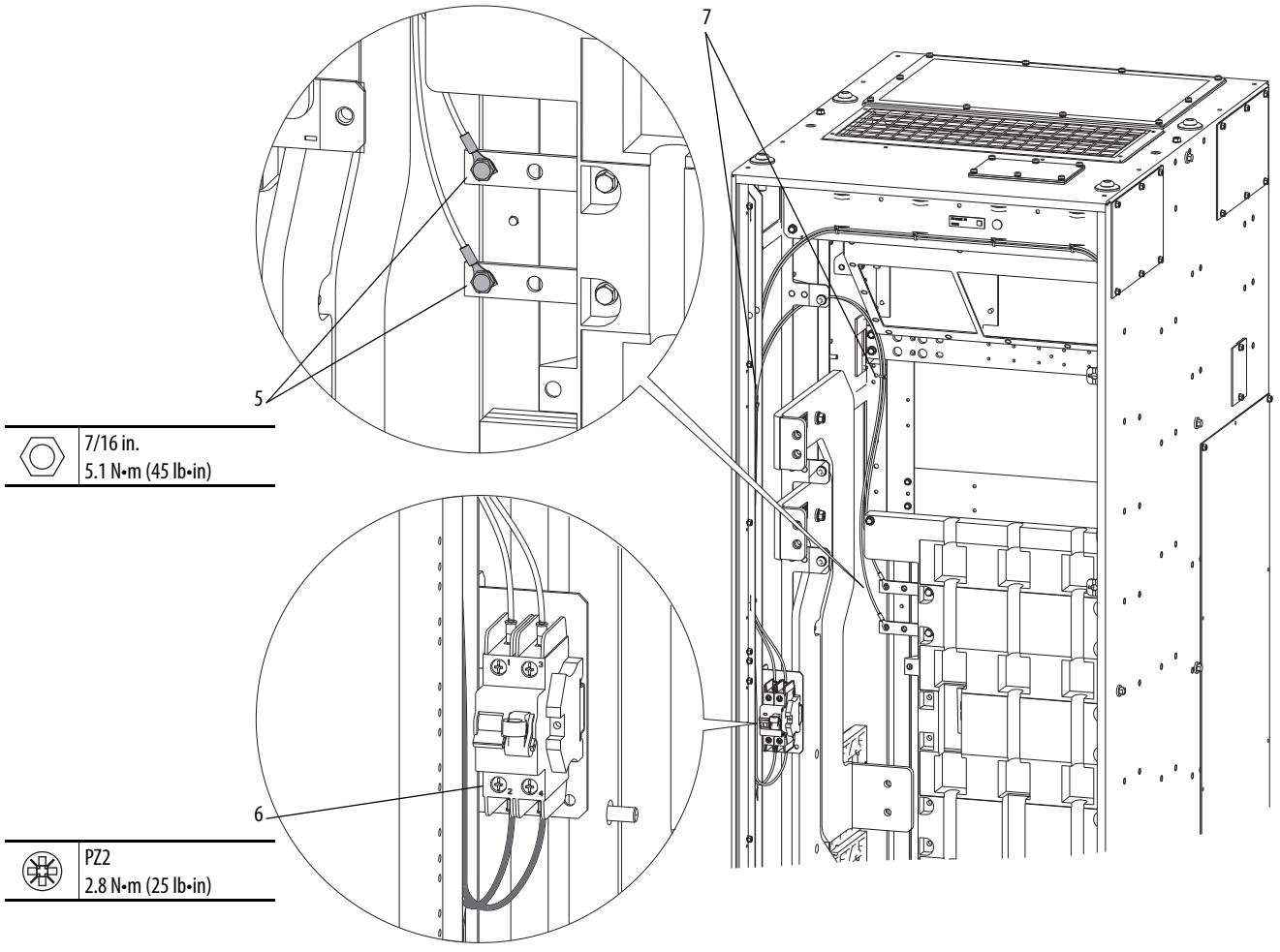
Install the DC Back Bus Guards

Install the DC back bus guards in the reverse order of removal. Guards must be replaced before returning the drive to service. See Remove the DC Back Bus Guards on page 330.

120/240V Control Power Input Wire Harness Removal/ Installation

Remove the 120/240V Control Power Input Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
4. Remove the top DC bus back guard to access the 120-V control bus. See Remove the DC Back Bus Guards on page 330.
5. Loosen the two ¼-20 x ½ in. hex head screws that secure the harness to the 120-V control bus and remove the wires.
6. Loosen the screws that secure the input wires to terminals SW5-2 and SW5-4 on the bottom of the circuit breaker and remove the wires.
7. Cut the cable ties that secure the wire harness to the enclosure wire ways and remove the harness.



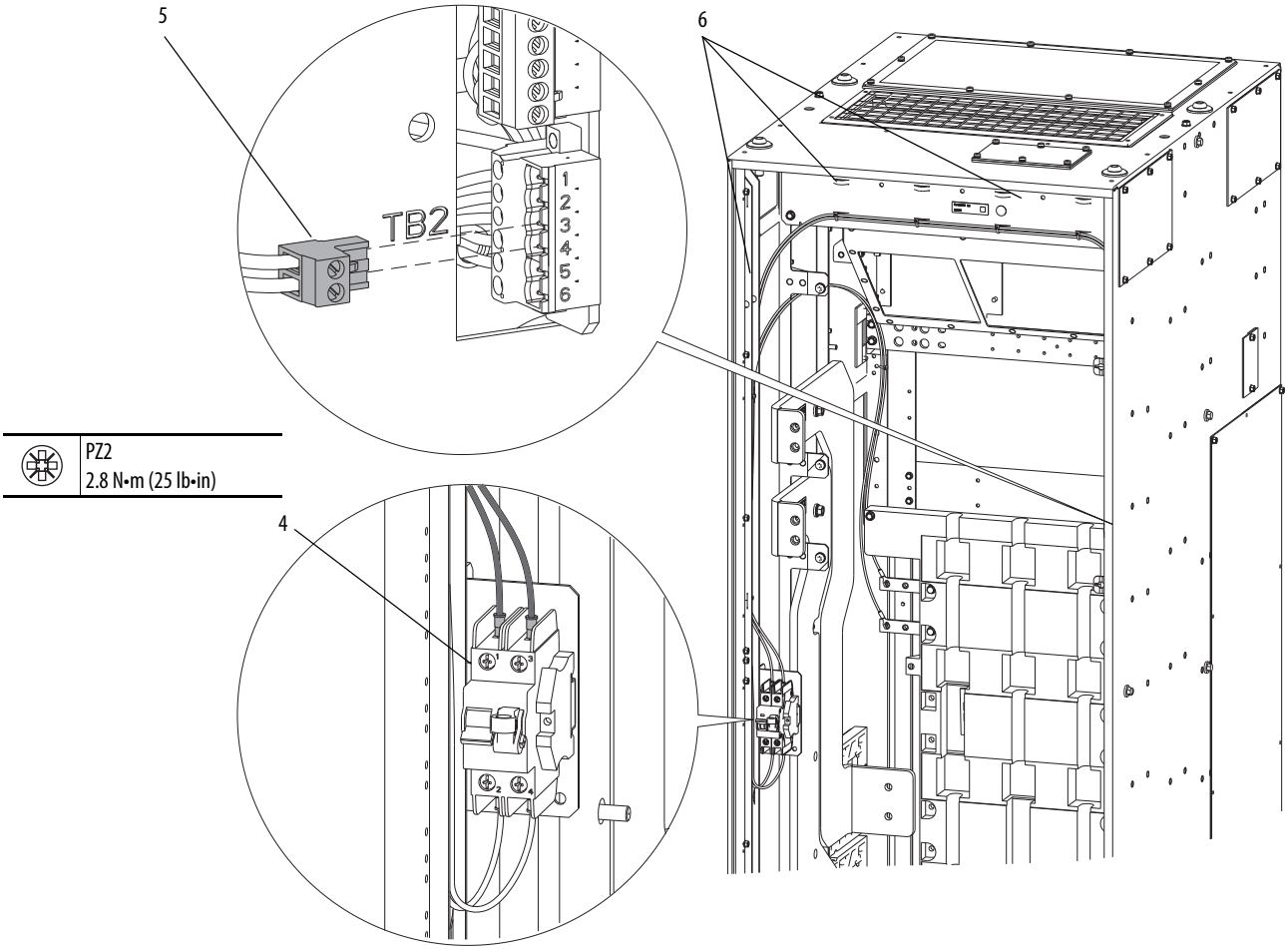
Install the 120/240V Control Power Input Wire Harness

Install the 120/240V control power-input wire harness in the reverse order of removal. See Remove the 120/240V Control Power Input Wire Harness on page 332.

120/240V Control Power Output Wire Harness Removal/Installation

Remove the 120/240V Control Power Output Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Loosen the screws that secure the output wires from terminals SW5-1 and SW5-3 on the top of the circuit breaker and remove the wires.
5. Disconnect the two-position connector from terminal block TB2-3 and TB2-4 on the outside right wall of the drive control panel.
6. Cut the cable ties from enclosure wire ways and remove the harness.



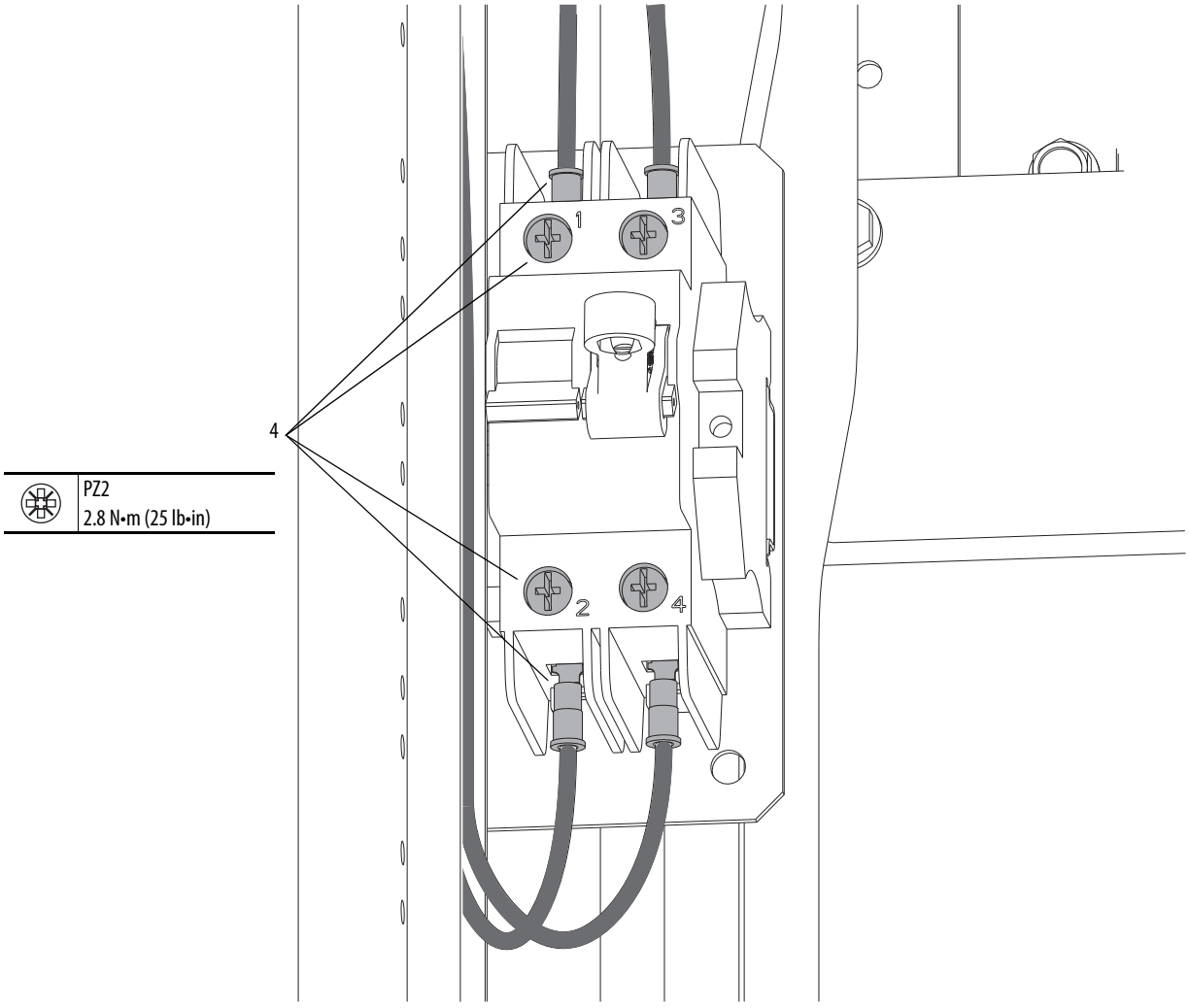
Install the 120/240V Control Power Output Wire Harness

Install the 120/240V control-power output wire harness in the reverse order of removal. See 120/240V Control Power Output Wire Harness Removal/ Installation on page 333.

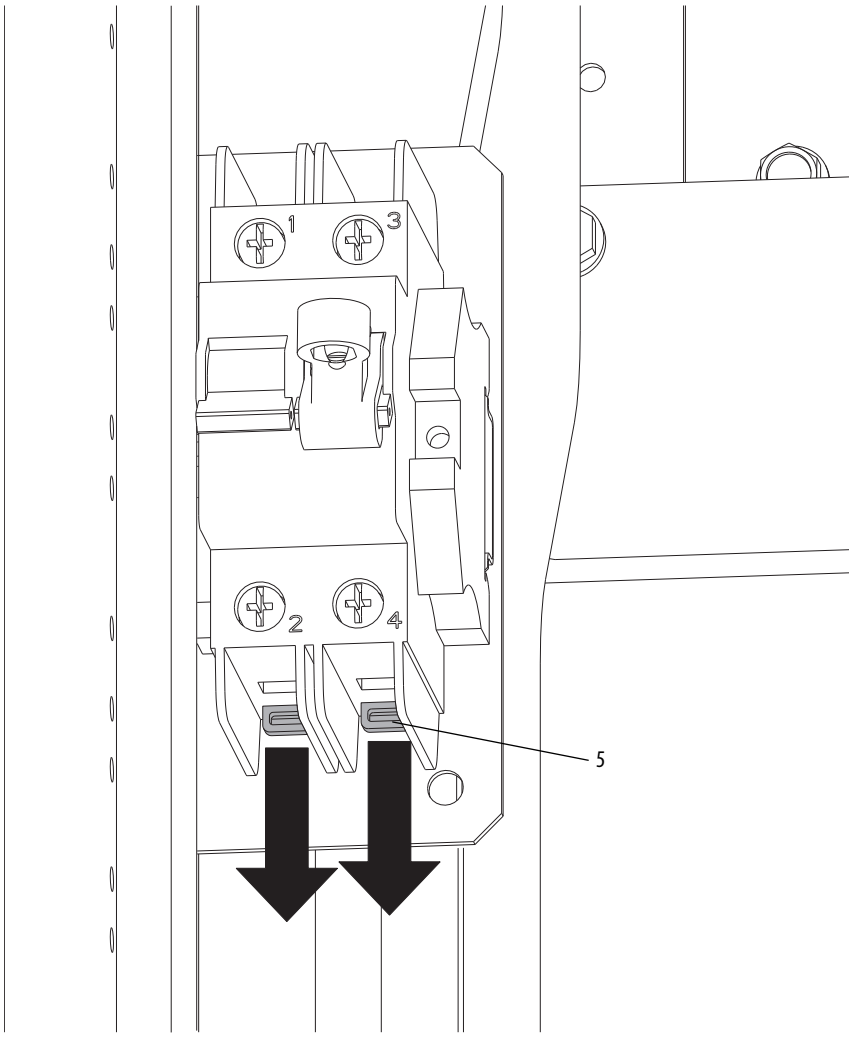
120/240V Circuit Breaker Removal/Installation

Remove the 120/240V Circuit Breaker

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Loosen the screws that secure the output wires to terminals SW5-1 and SW5-3 on the top of the circuit breaker and the input wires to terminals SW5-2 and SW5-4 on the bottom of the circuit breaker. Remove the wires.



5. Release the spring-loaded latches at the bottom of the circuit breaker and lift the circuit breaker off the DIN rail.



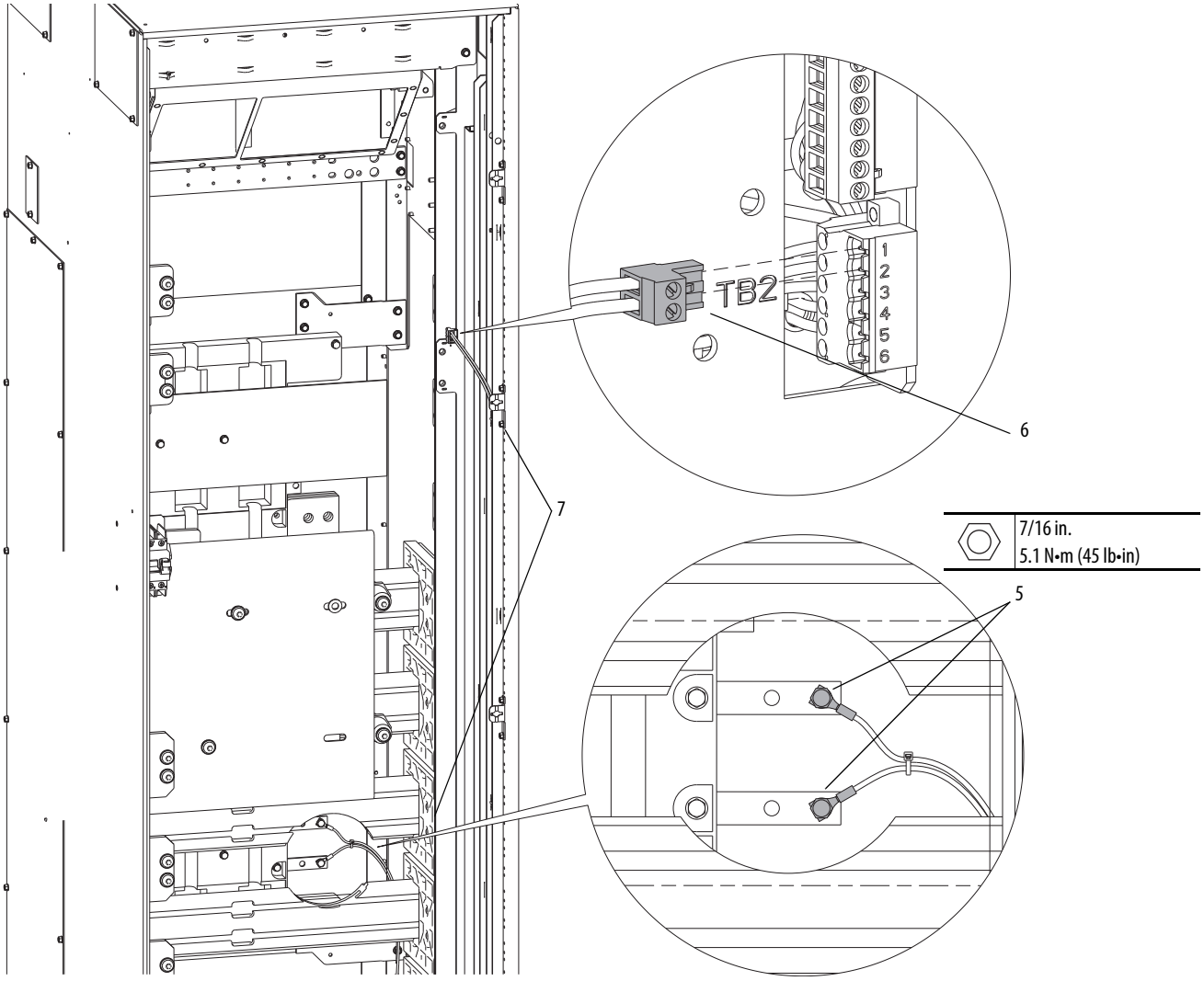
Install the 120/240V Circuit Breaker

Install the 120/240V circuit breaker in the reverse order of removal. See Remove the 120/240V Circuit Breaker on page 334.

120V UPS Power Input Wire Harness Removal/ Installation

Remove the 120V UPS Power Input Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.
4. Remove the bottom DC bus back guard to access the 120-V UPS bus. See Remove the DC Back Bus Guards on page 330.
5. Loosen the two ¼-20 x ½ in. hex head screws that secure the harness to the 120-V UPS bus and remove the wires.
6. Disconnect the two-position connector from terminal block TB2-1 and TB2-2 on the outside, right wall of the drive control panel.
7. Cut the cable ties that secure the wire harness to the enclosure wire ways and remove the harness.



Install the 120V UPS Power Input Wire Harness

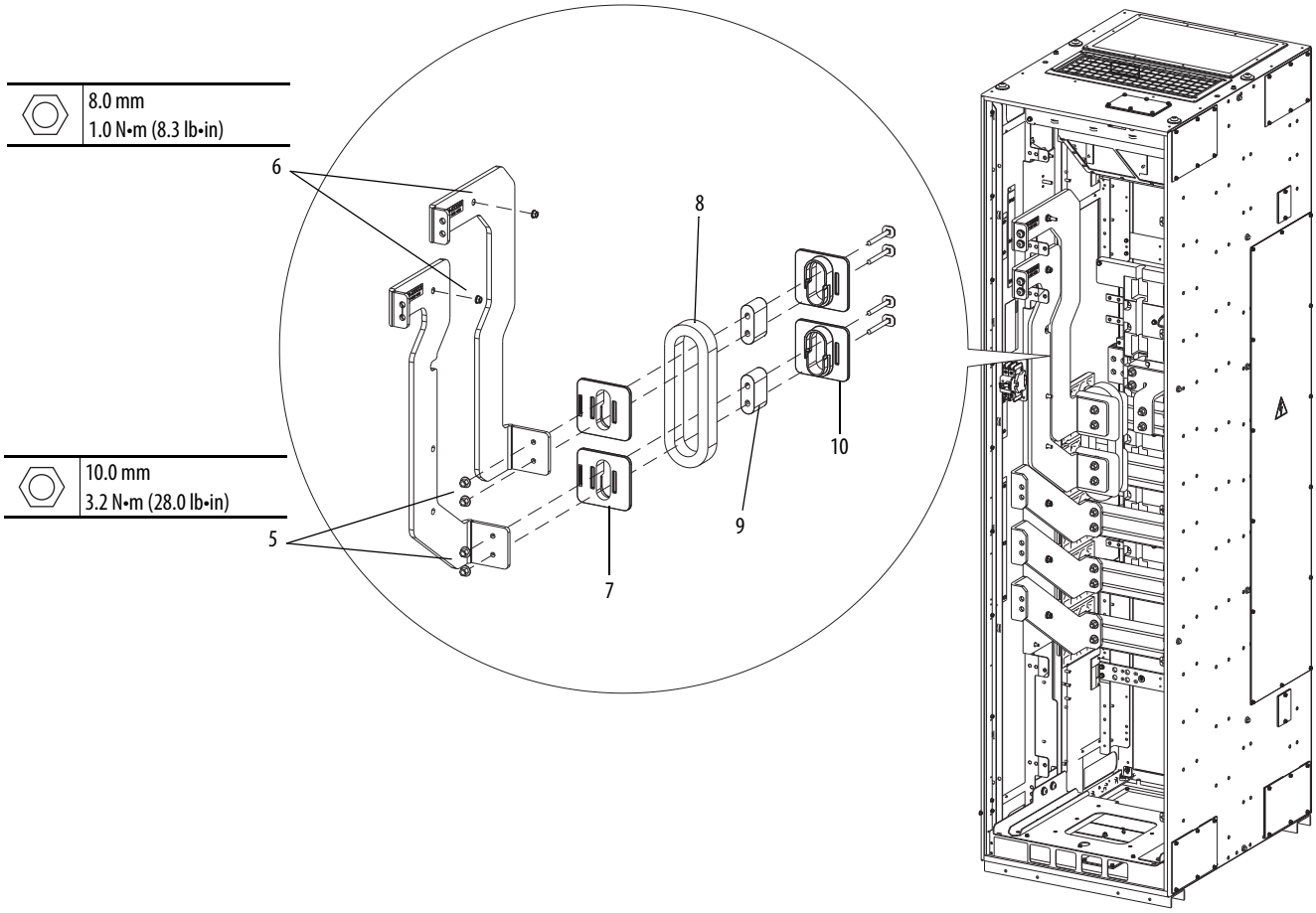
Install the 120-V UPS power input wire harness in the reverse order of removal. See Remove the 120V UPS Power Input Wire Harness on page 336.

Input Common-mode Core Removal/Installation (Common DC Input Drives)

Remove the Input Common Mode Core

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. The input common-mode core is at the back of the drive enclosure. Therefore, the drive assembly must be removed from the enclosure. Remove the drive assembly from the enclosure. See the PowerFlex 750-Series AC Drive Installation Instructions, publication number 750-IN001, for details.

5. Remove the two M10 nuts and washers that secure each of the DC+ and DC- input terminals to the input common-mode core assembly.
6. Remove the M8 nut and washer that secures each of the DC+ and DC- input terminals to the insulator material on the side of the drive enclosure. Remove the terminals.
7. While supporting the input common-mode core, remove the two front plates from the bolts connected to the drive backplane DC bus (extruded bars) at the back of the enclosure.
8. Remove the input common-mode core from the back plates.
9. Remove the two aluminum cores from the bolts.
10. Remove the two back plates from the bolts.



Install the Input Common Mode Core

Install the input common-mode core assembly in the reverse order of removal. See Remove the Input Common Mode Core on page 337.

Option-bay Enclosure Component Replacement Procedures

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This chapter provides detailed procedures for how to remove and replace option bay enclosure components.

Option-bay Enclosure Components Identification

Table 15 and Table 16 (on page 341) contain the components that comprise the frame 8 and 9 option bay enclosures and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit

A complete list of spare parts for PowerFlex® 755 Frame 8...10 drives is available on the Allen-Bradley web site at:
http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

Table 15 - Frame 8 Option Bay Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No. (Series A & B)	Replacement Kit Cat. No. or Part No. (Series C)
Circuit Breaker Disconnect Handle Panel	SK-R1-0DISCP1-F8	SK-R1-0DISCP1-F8C
Circuit Breaker Disconnect Handle (includes handle, cable, operating, and bail mechanism)		
Operating Mechanism for 600 A, L-Frame Circuit Breaker	1494V-M72	–
Operating Mechanism for 800 A, M-Frame Circuit Breaker	1494V-M72	–
Operating Mechanism for 1200 A, N-Frame Circuit Breaker	1494V-M72	–
Disconnect Switch Handle	–	1494F-M2
IP20, NEMA/UL Type 1 Door Fan with Finger Guard	20-750-FAN3-F8	
IP20, NEMA/UL Type 1 Door Fan Harness	SK-R1-0FANH1-F8	
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Assembly	SK-R1-0FAN12-F8	
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Harness	SK-R1-0FAN12H1-F8	
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter, Fiber (Single)	SK-R1-FLTR2-F8	
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter, Fiber (Multi)	SK-R1-FLTR2M-F8	
Thermostat	SK-R1-0TH1-F8	
Thermostat Wire Harness	SK-R1-0THH1-F8	
Control Transformer	SK-R1-0FANXFMR	
Control Transformer Fuses (includes both 400V and 600V class)	SK-R1-0XFMRFUSES	
IP20, NEMA/UL Type 1 Control Transformer Panel Harness	SK-R1-0XFMRH1-F8	SK-R1-0XFMRH1-F8C
IP54, NEMA/UL Type 12 Control Transformer Panel Harness	SK-R1-0XFMRH2-F8	SK-R1-0XFMRH2-F8C
Contactor Wire Harnesses	SK-R1-0CONTH1-F8	SK-R1-0CONTH1-F8C
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Pleated (Single Piece)	SK-R1-FLTR3-F8	
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Pleated (12 Pieces)	SK-R1-FLTR3M-F8	
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Metal Mesh	SK-R1-FLTR4-F8	

Table 15 - Frame 8 Option Bay Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No. (Series A & B)	Replacement Kit Cat. No. or Part No. (Series C)
IP54, NEMA/UL Type 12 Cabinet Door Filter Cassette	SK-R1-FLTRFRM-F8	
IP54, MENEMA/UL Type 12 Cabinet Door Gasket	SK-R1-G2-F8	
Upper and Lower Conduit Plates (600-mm deep cabinet)	SK-R1-OCPLT1-F8	
Upper and Lower Conduit Plates (800-mm deep cabinet)	SK-R1-OCPLT2-F8	

Table 16 - Frame 9 Option Bay Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No. (Series B)	Replacement Kit Cat. No. or Part No. (Series C)
Option Bay Guards	SK-R1-OGRD2-F9	SK-R1-OGRD2-F9C
Door Interlock with Wire Harness	–	SK-R1-ODRL1-F9C
Circuit Breaker Disconnect Handle Panel	SK-R1-ODISCP1-F9	–
Circuit Breaker Disconnect Handle (includes handle, cable, operating, and bail mechanism)		
Flex-Cable Operating Mechanism for 1200 A, N-Frame Circuit Breaker	140U-N-FCX04	–
Flex-Cable Operating Mechanism for 2500 A, R-Frame Circuit Breaker	140U-R-FCX04	–
IP54 Circuit Breaker Access Door	–	SK-R1-OAD1-F9C
Circuit Breaker Bezel	–	SK-R1-OBZ1-F9C
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Assembly	SK-R1-OFAN12-F8	
IP20, NEMA/UL Type 1 Cabinet Exhaust Blower Assembly	SK-R1-OFAN12-F9	
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter, Fiber (Single)	SK-R1-FLTR2-F8	
IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter, Fiber (Multi)	SK-R1-FLTR2M-F8	
Option-bay Wire Harness Kit	SK-R1-OBAYH1-F9	
600V and below Control-transformer Panel Wire Harness		
690V Control Transformer Panel Wire Harness		
Output Reactor Wire Harness		
With Input/Output Reactor Jumper Wire		
No Reactor Jumper Wire		
Reactor Fan Tray Wire Harness		
Exhaust Blower Wire Harness		
Exhaust Blower Jumper Wire		
24V Supply Wire Harness		
3-position Control Power Terminal Block	SK-R1-LNGCONN	
Thermostat	SK-R1-OTH1-F8	

Table 16 - Frame 9 Option Bay Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No. (Series B)	Replacement Kit Cat. No. or Part No. (Series C)
Thermostat Wire Harness	SK-R1-OTHH1-F8	
Control Transformer	SK-R1-OFANXFMR	
Control Transformer Fuses (includes both 400V and 600V class)	SK-R1-OXFMRFUSES	
Reactor Fan Tray	SK-R1-OCARTFAN-F9	
Reactor Fan Relay	700-HLT12U2X	
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Pleated (Single Piece)	SK-R1-FLTR3-F8	
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Pleated (12 Pieces)	SK-R1-FLTR3M-F8	
IP54, NEMA/UL Type 12 Cabinet Door Inlet Filter, Metal Mesh	SK-R1-FLTR4-F8	
IP54, NEMA/UL Type 12 Cabinet Door Filter Cassette	SK-R1-FLTRFRM-F8	
IP54, MENEMA/UL Type 12 Cabinet Door Gasket	SK-R1-G2-F8	
Upper and Lower Conduit Plates (600-mm deep cabinet)	SK-R1-OCPLT1-F8	
Upper and Lower Conduit Plates (800-mm deep cabinet)	SK-R1-OCPLT2-F8	

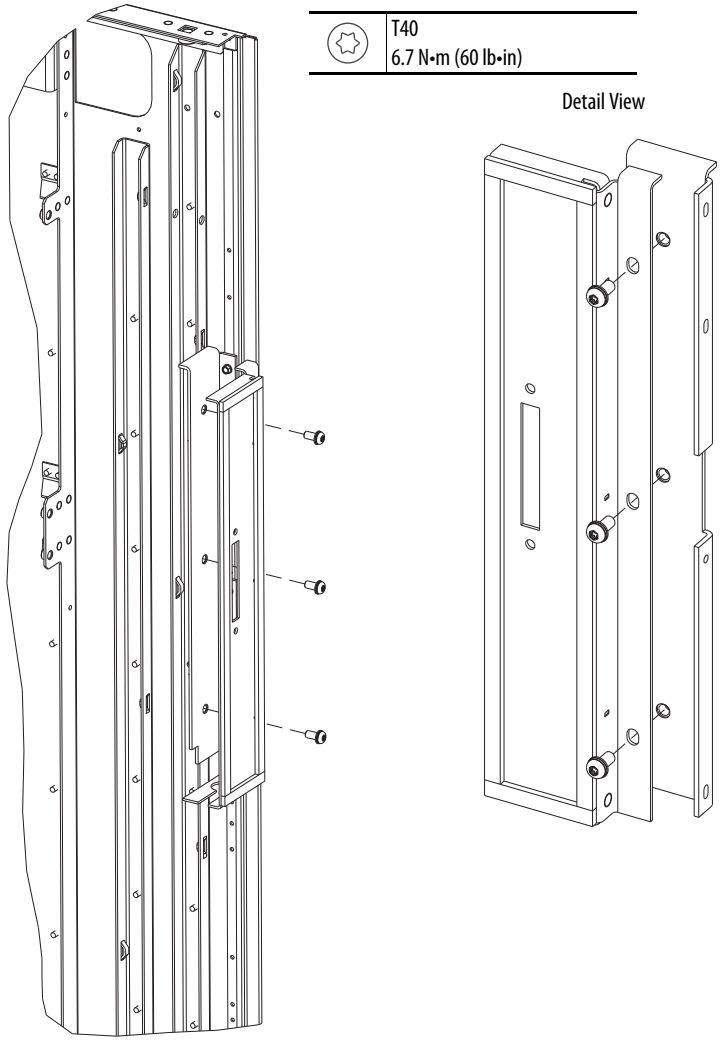
TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

Frame 8 Circuit Breaker Disconnect Handle Panel Removal/Installation

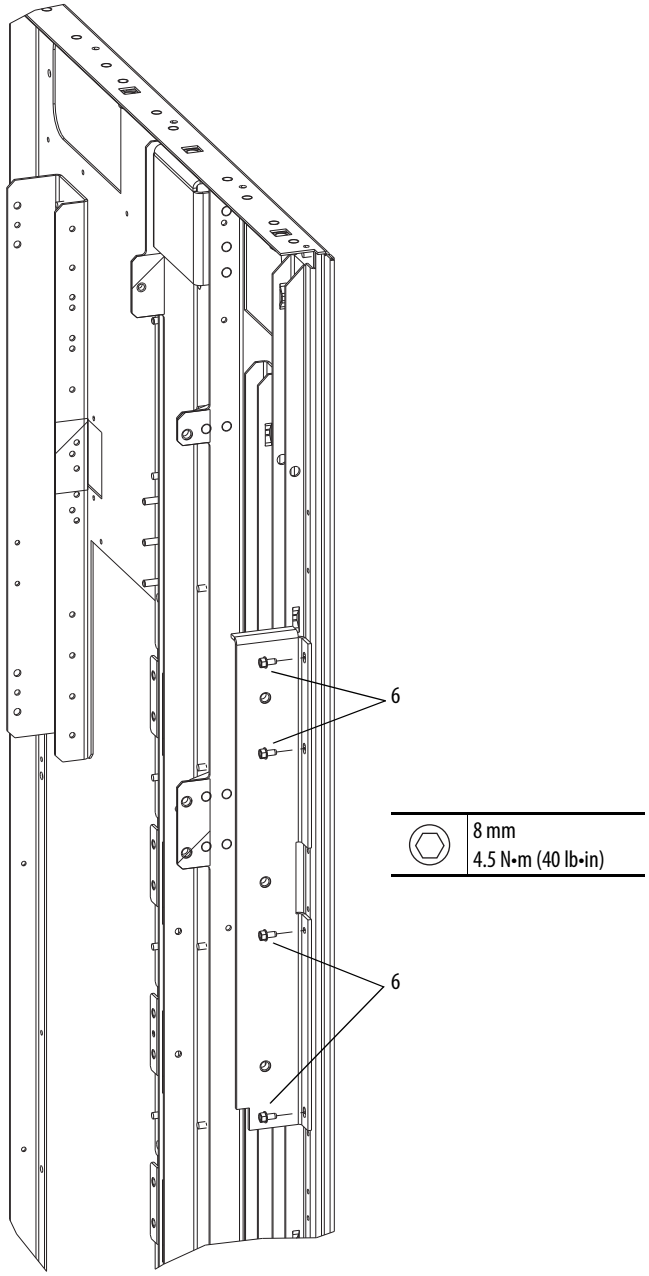
Remove the Frame 8 Circuit Breaker Disconnect Handle Panel

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the circuit breaker disconnect handle per the manufacturer's instructions.

5. Remove the three M8 x 20-mm hexalobular screws that secure the disconnect handle panel to the support bracket and remove the handle panel.



6. Remove the four M5 x 12-mm hex head screws that secure the disconnect support bracket to the enclosure frame and remove the support bracket.



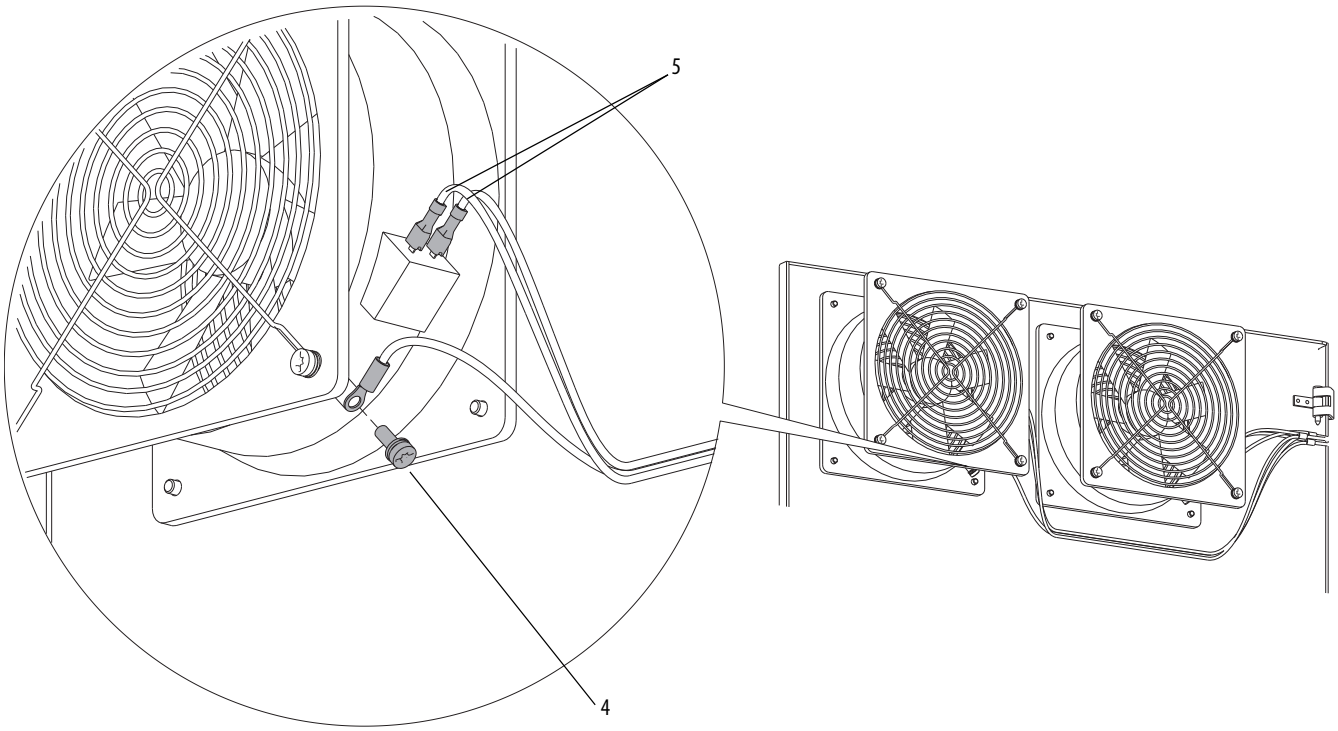
Install the Frame 8 Circuit Breaker Disconnect Handle Panel

Install the disconnect support bracket and handle panel in the reverse order of removal. See Remove the Frame 8 Circuit Breaker Disconnect Handle Panel on page 342.

IP20, NEMA/UL Type 1 Door Fan Removal/Installation (Frame 8 Only)

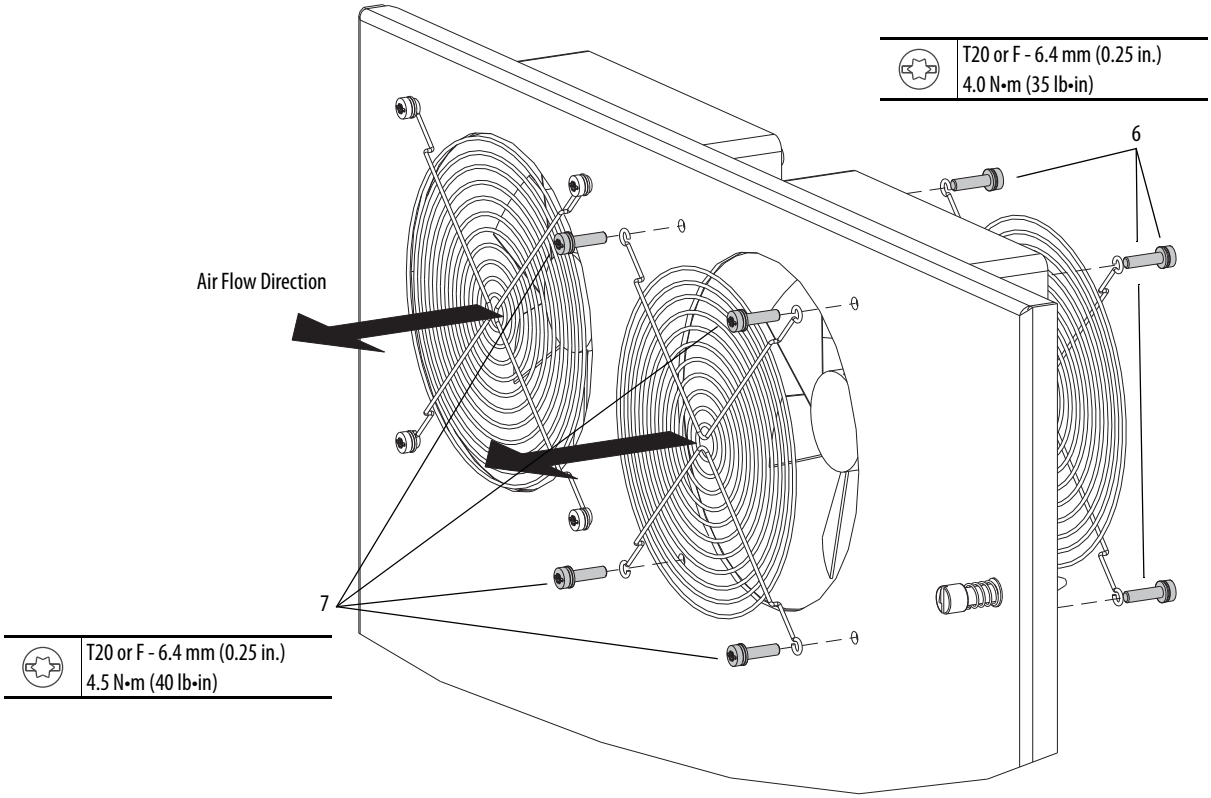
Remove the IP20, NEMA/UL Type 1 Door Fan (Frame 8 Only)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the M5 x 8-mm screw that secures the fan-power harness ground wire to the fan and remove the ground wire. Retain the screw for reuse.
5. Disconnect the Fan (+) and Fan (-) power wires from the fan terminals.



	T25 or F - 6.4 mm (0.25 in.) 2.8 N•m (25 lb•in)

6. Remove the four M5 x 20-mm screws that secure the inner guard to the fan housing and remove the guard.
7. Remove the four M5 x 20-mm screws that secure the outer fan guard and fan to the enclosure door and remove the outer fan guard and fan.



Install the IP20, NEMA/UL Type 1 Door Fan (Frame 8 Only)

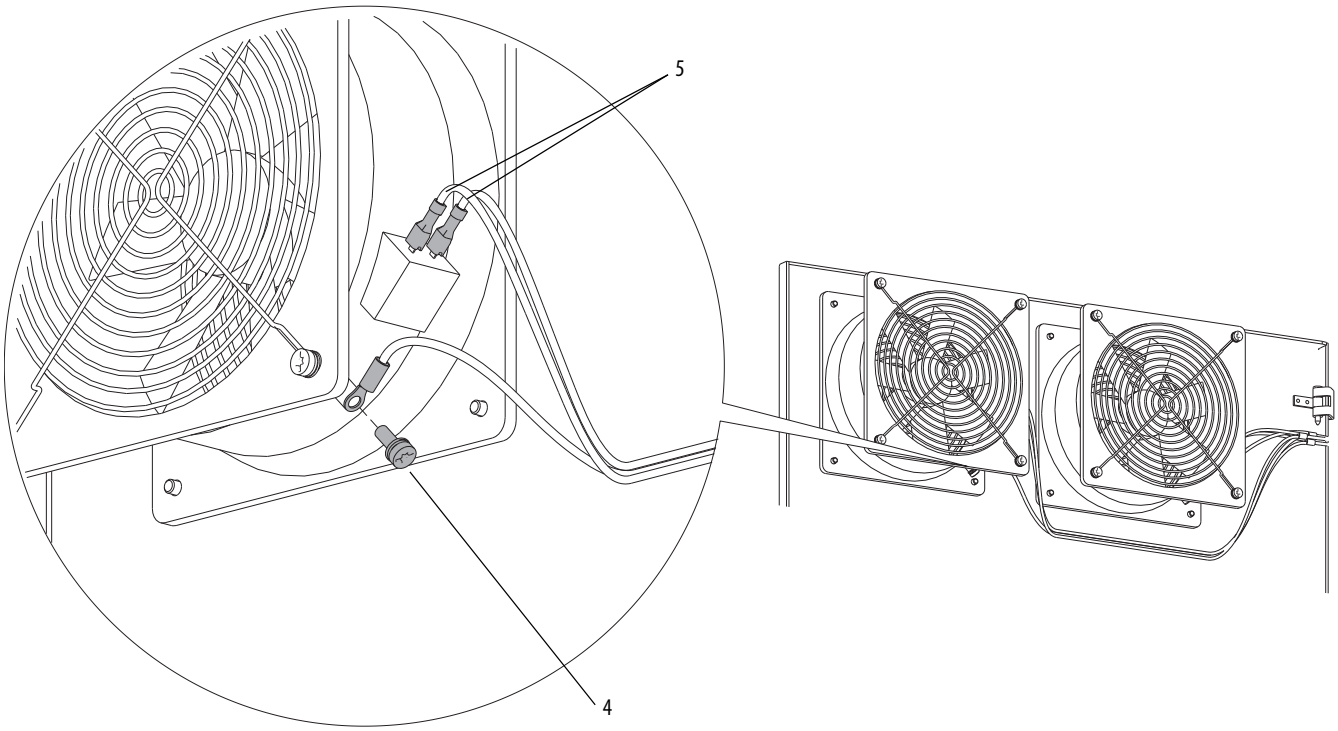
Install the door fan in the reverse order of removal. See Remove the IP20, NEMA/UL Type 1 Door Fan (Frame 8 Only) on page 345.

IMPORTANT	When installing a new fan, verify that the air flow direction arrow on the fan points to the exterior of the drive enclosure.

IP20, NEMA/UL Type 1 Door Fan Harness Removal/ Installation (Frame 8 Only)

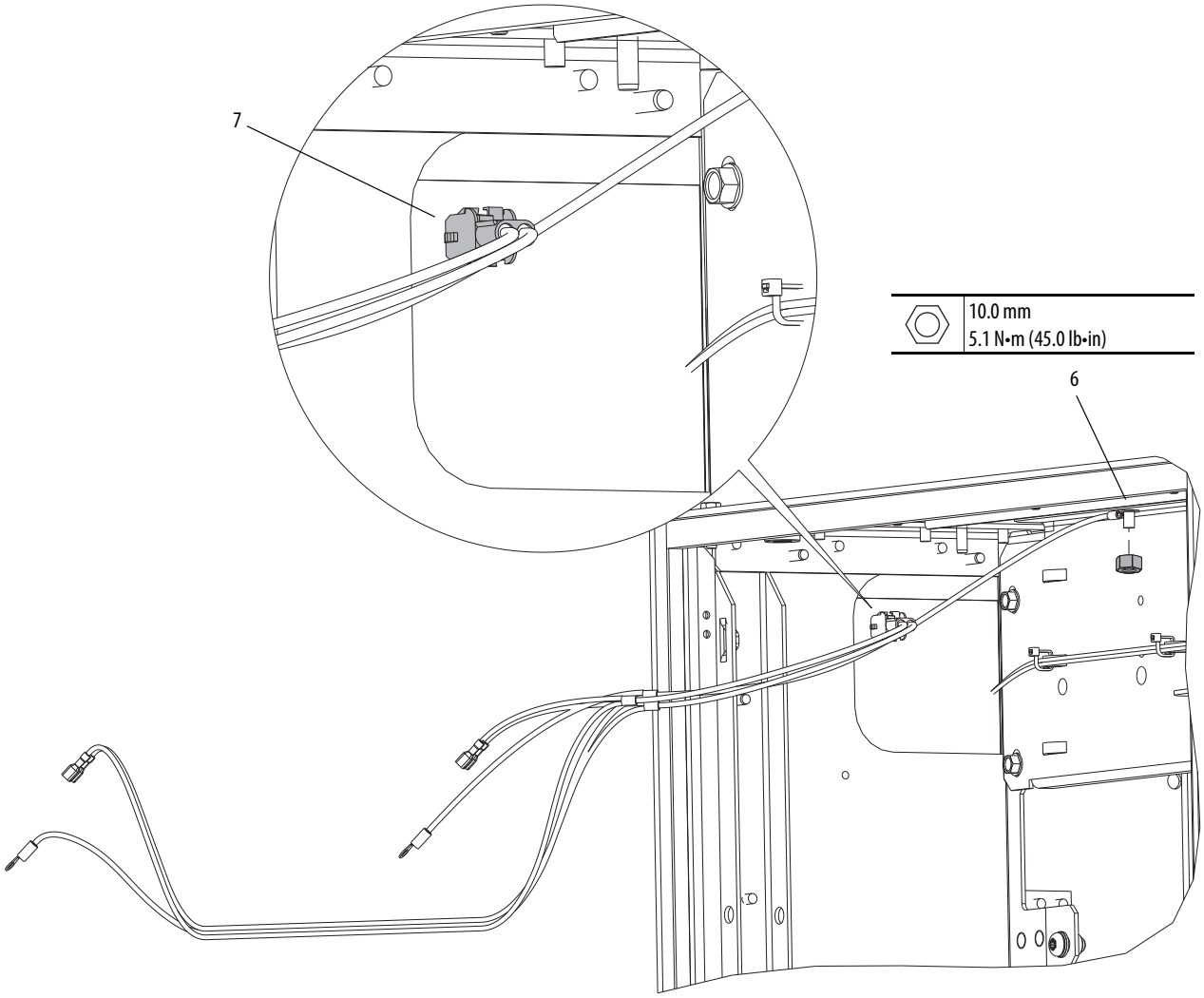
Remove the IP20, NEMA/UL Type 1 Door Fan Harness (Frame 8)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the M5 screw that secures the fan-power harness ground wire to the fan and remove the ground wire. Retain the screw for reuse.
5. Disconnect the Fan (+) and Fan (-) power wires from the fan terminals.



	T25 or F - 6.4 mm (0.25 in.) 2.8 N•m (25 lb•in)

6. Remove the M6 grounding nut from the cabinet ceiling.
7. Disconnect the fan harness from the connector in the upper left corner of the cabinet, and remove the fan harness.



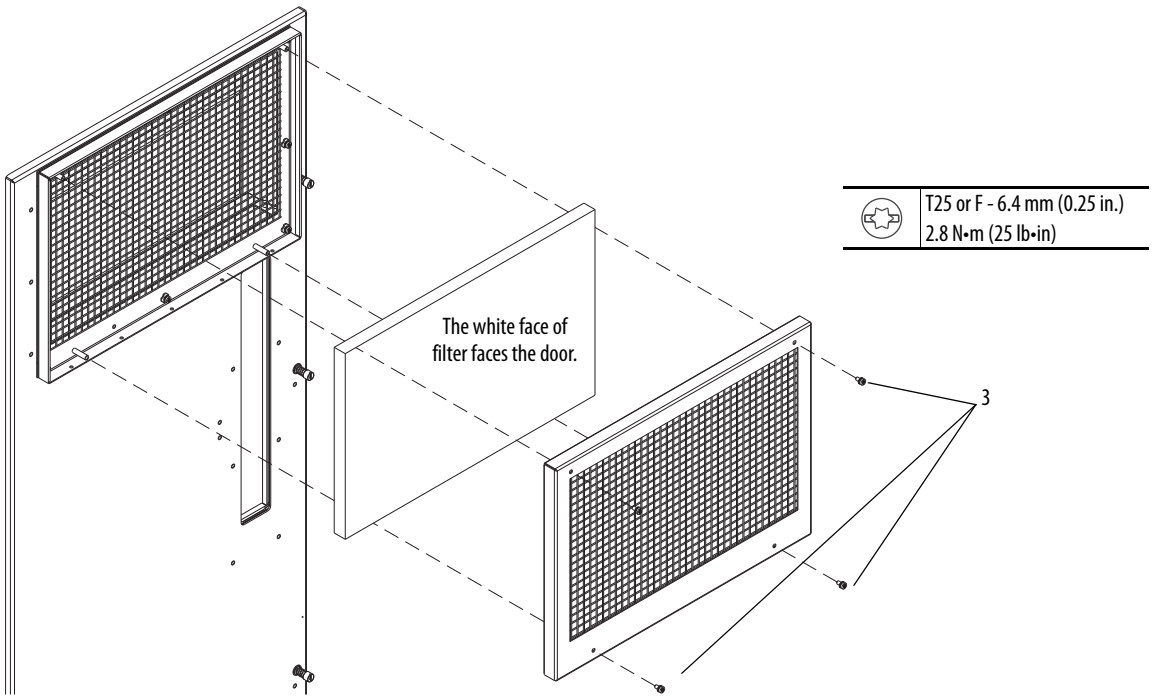
Install the IP20, NEMA/UL Type 1 Door Fan Harness (Frame 8 Only)

Install the door fan harness in the reverse order of removal. See Remove the IP20, NEMA/UL Type 1 Door Fan Harness (Frame 8) on page 347.

IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter Removal/Installation

Remove the IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the four hexalobular screws that secure the filter cover to the door and remove the filter and cover from the drive.



Install the IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter

Install the IP54, NEMA/UL Type 12 cabinet exhaust blower in the reverse order of removal. See Remove the IP54, NEMA/UL Type 12 Cabinet Exhaust Blower Filter.

IP54, NEMA/UL Type 12 Cabinet Door-inlet Filters Removal/Installation

The steps to remove and install the IP54, NEMA/UL Type 12 cabinet door inlet filters is the same as the IP54, NEMA/UL Type 12 Cabinet Door Filters Removal/Installation procedures on page 309.

IP54, NEMA/UL Type 12 Cabinet Door-inlet Filter Cassette Removal/ Installation

The steps to remove and install the IP54, NEMA/UL Type 12 cabinet door-inlet filter cassette is the same as the IP54, NEMA/UL Type 12 Cabinet-door Filter Cassette Removal/Installation procedures on page 311.

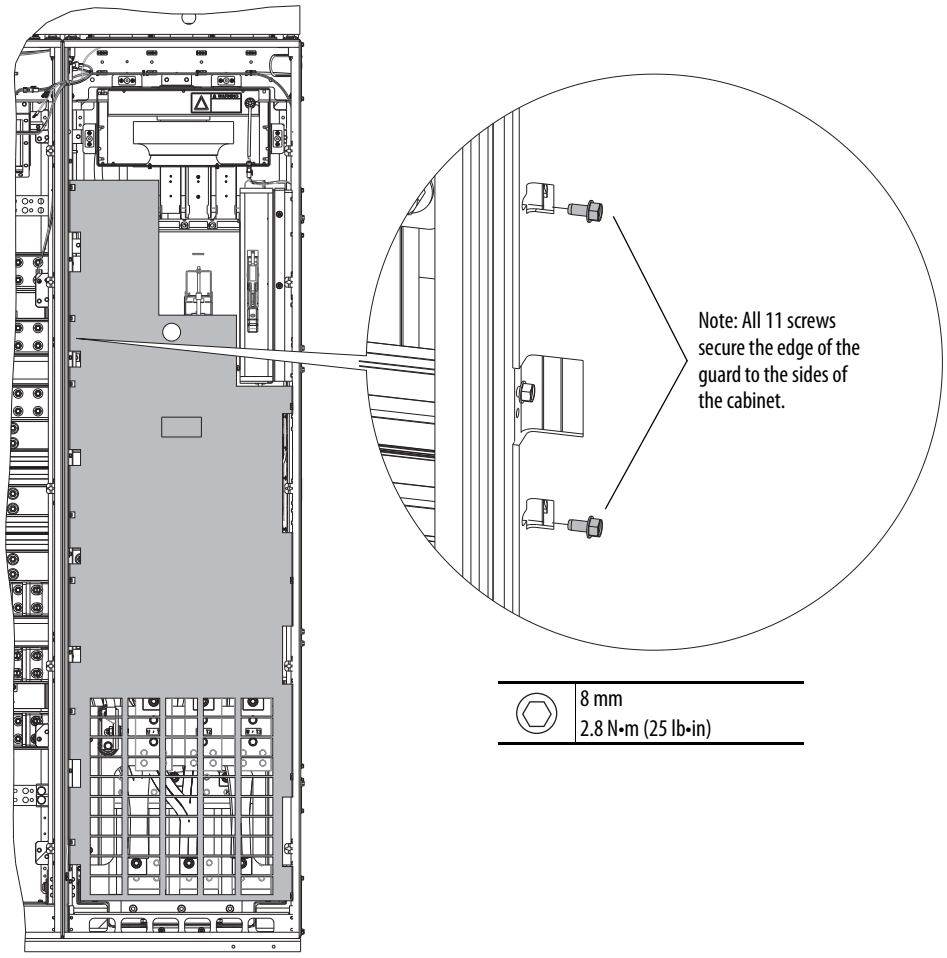
IP54, NEMA/UL Type 12 Cabinet Door Gasket Removal/Installation

The steps to remove and install the IP54, NEMA/UL Type 12 cabinet door gasket is the same as the IP54, NEMA/UL Type 12 Cabinet Door Gasket Removal/Installation procedures on page 312.

Frame 8 Option Bay Guard Removal/Installation

Remove the Frame 8 Option Bay Guard

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Loosen, but do not remove, the 11, M5 x 12-mm hex head screws that secure the guard to the cabinet frame and remove the guard.



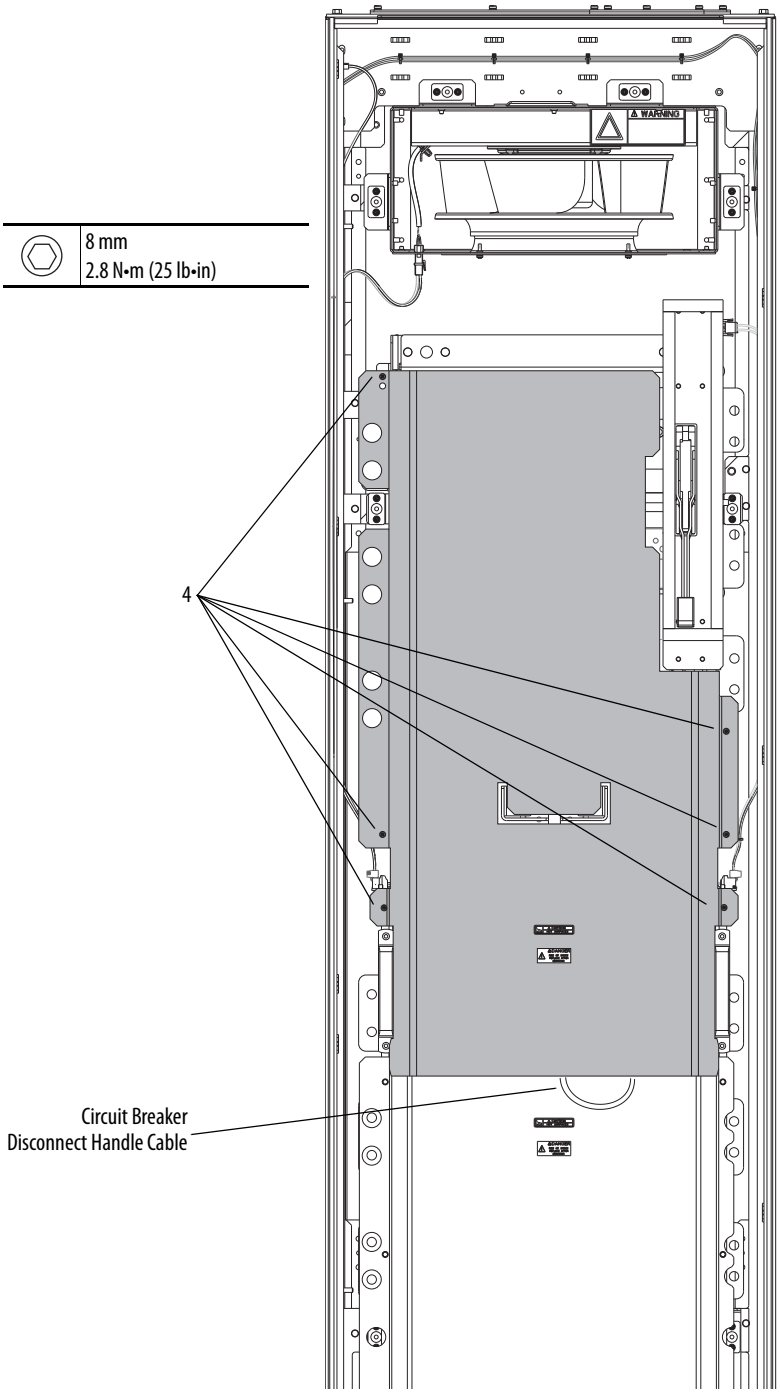
Install the Frame 8 Option Bay Guard

Install the frame 8 option bay guard in the reverse order of removal. See Remove the Frame 8 Option Bay Guard on page 350.

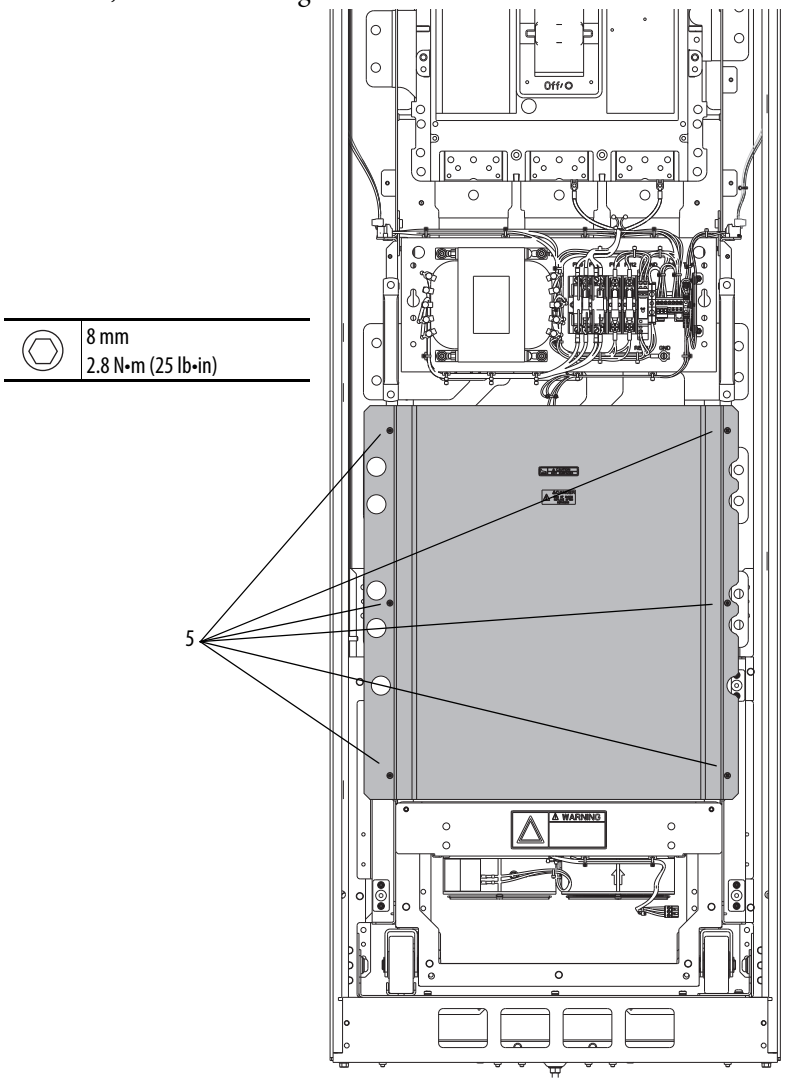
Frame 9 Series B Option Bay Guards Removal/Installation

Remove the Frame 9 Series B Option Bay Guards

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the six nylon M5 hex nuts that secure the upper guard to the chassis, and remove the guard.



5. Remove the six nylon M5 hex nuts that secure the lower guard to the chassis, and remove the guard.



Install the Frame 9 Series B Option Bay Guards

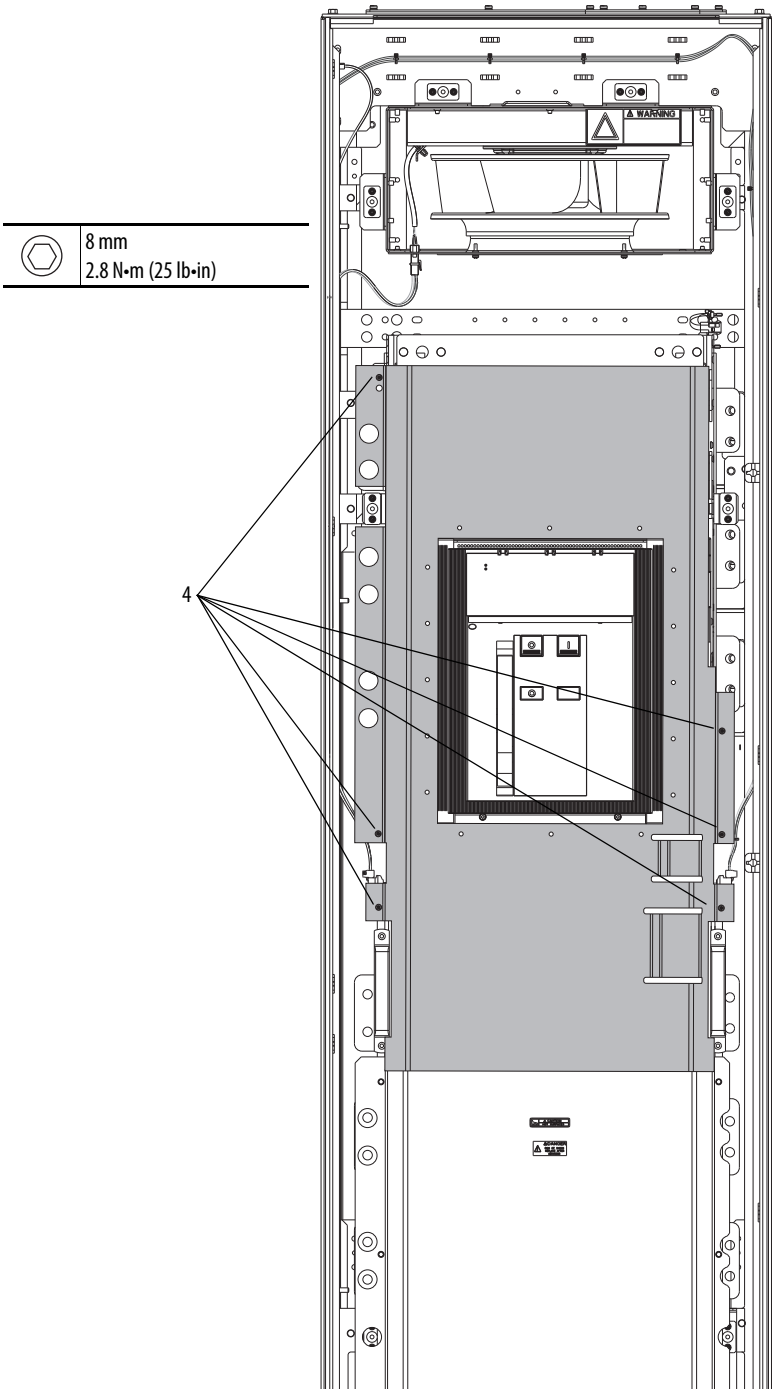
Install the frame 9 series B option bay guards in the reverse order of removal. See Remove the Frame 9 Series B Option Bay Guards on page 351.

IMPORTANT The circuit breaker disconnect handle cable must be positioned in front of the lower guard and behind the upper guard.

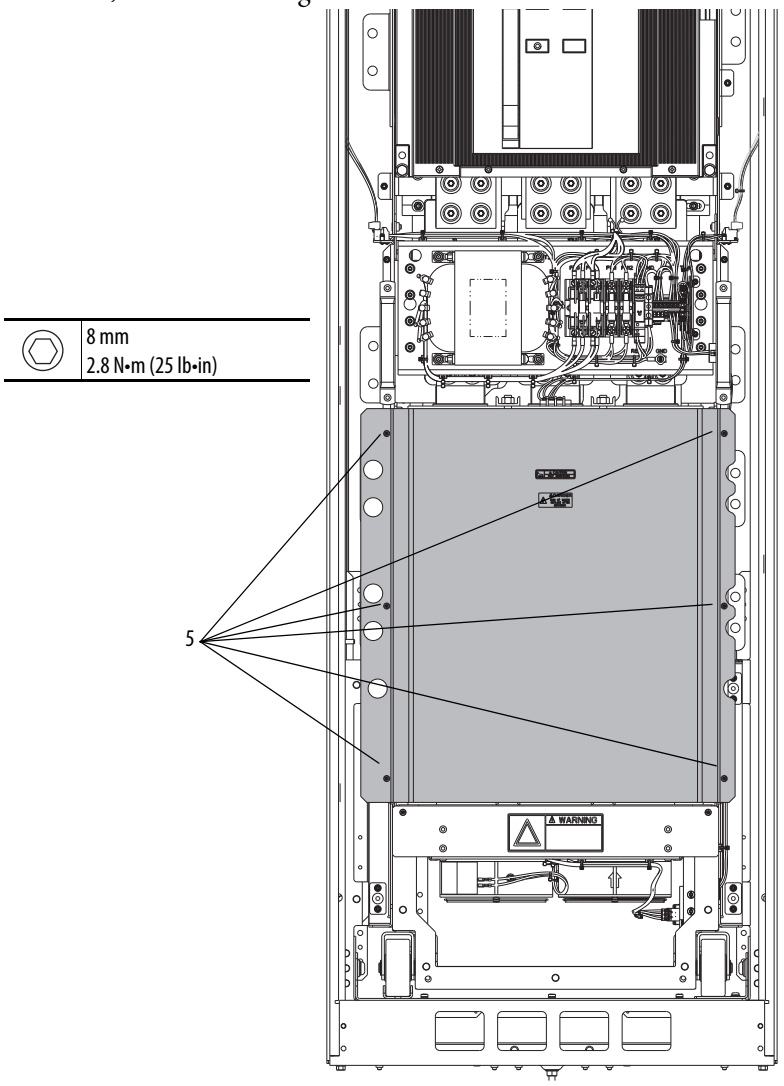
Frame 9 Series C Option Bay Guards Removal/Installation

Remove the Frame 9 Series C Option Bay Guards

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the six nylon M5 hex nuts that secure the upper guard to the chassis, and remove the guard.



5. Remove the six nylon M5 hex nuts that secure the lower guard to the chassis, and remove the guard.



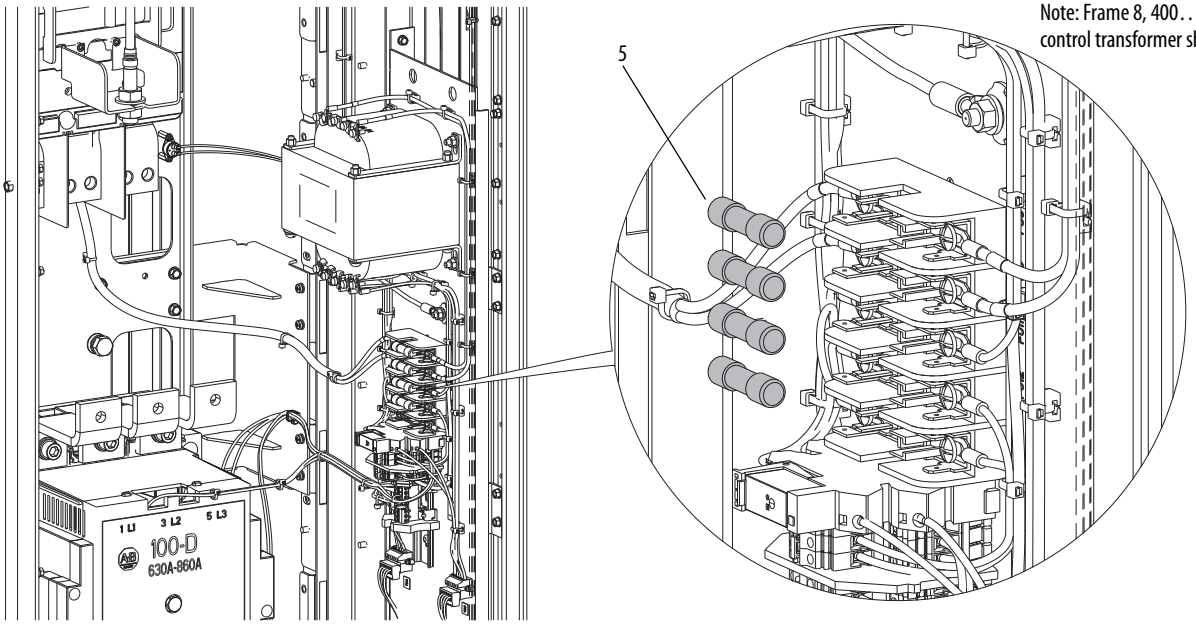
Install the Frame 9 Series C Option Bay Guards

Install the frame 9 series C option bay guards in the reverse order of removal. See Remove the Frame 9 Series C Option Bay Guards on page 353.

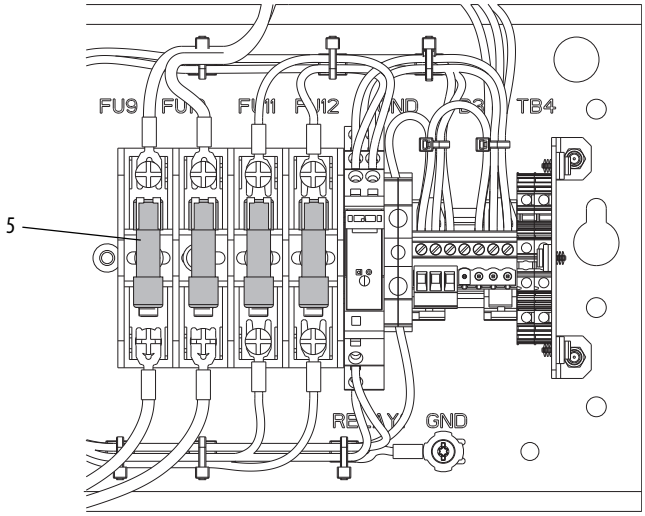
Control Transformer Fuses Removal/Installation

Remove the Control Transformer Fuses

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guards. See Remove the Frame 8 Option Bay Guard on page 350, or Remove the Frame 9 Series B Option Bay Guards on page 351.
5. To remove the fuses from the two-position fuse holders, use a fuse puller.



Note: Frame 8, 400…600V control transformer shown.



Note: Frame 9, 600V and below control transformer shown.

Install the Control Transformer Fuses

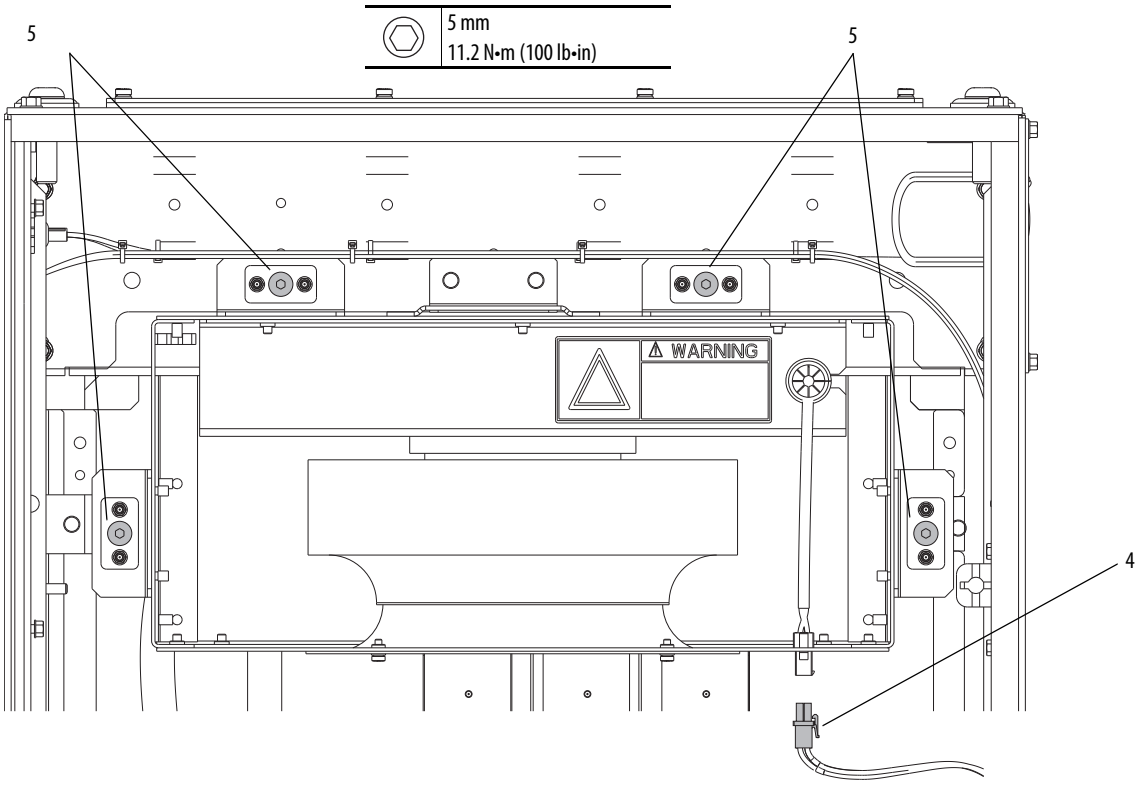
Install the control transformer fuses in the reverse order of removal. See Remove the Control Transformer Fuses on page 355. Also, see the frame 8 and frame 9 option bay schematics in Appendix A on page 417 for fuse designations.

Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Assembly Removal/Installation

Remove the Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Assembly

Note: The blower assembly weights approximately 12.4 kg (27.3 lb).

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Disconnect the four-position blower power harness connector from the connector on the bottom of the blower assembly.
5. Loosen the four captive 5-mm hex screws that secure the blower assembly to the cabinet frame and remove the assembly from the drive.



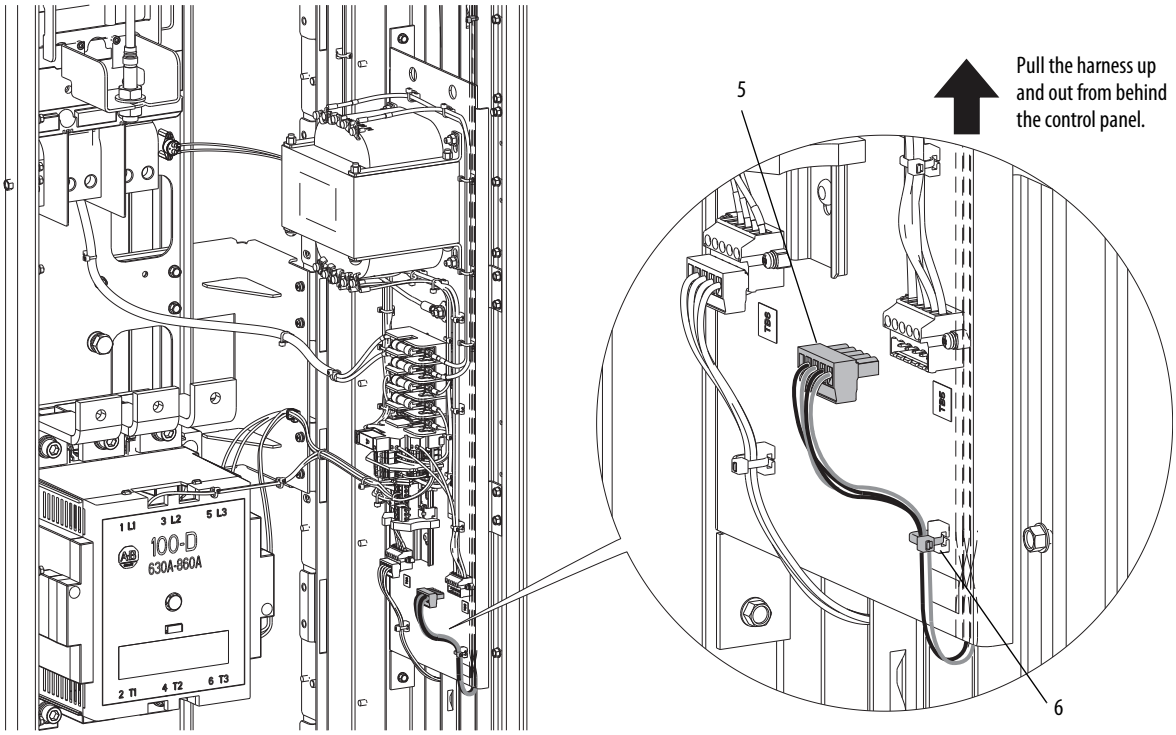
Install the Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Assembly

Install the frame 8 IP54, NEMA/UL Type 12 cabinet blower assembly in the reverse order of removal. See Remove the Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Assembly on page 356.

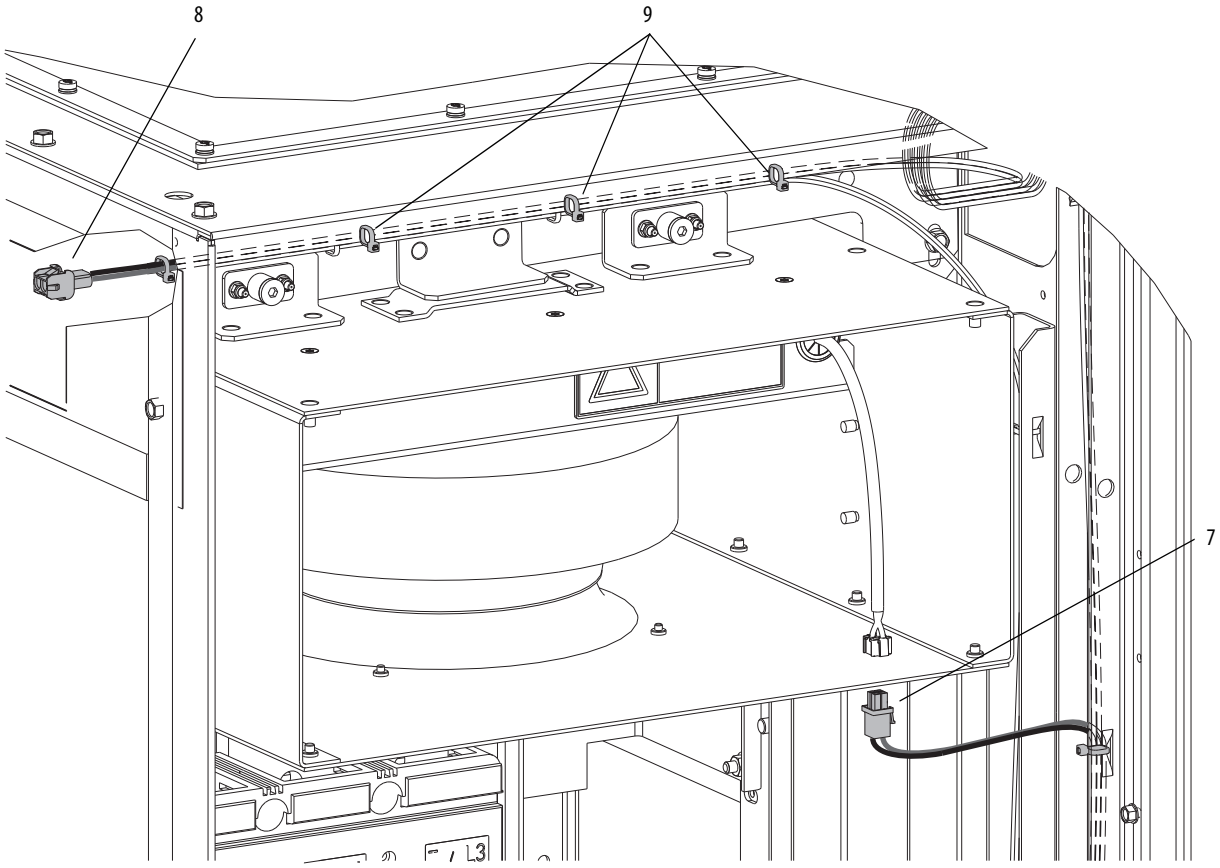
Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Wire Harness Removal/ Installation

Remove the Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guard. See Remove the Frame 8 Option Bay Guard on page 350.
5. Disconnect the power connector from terminal block TB5 on the control transformer panel on the right side of the cabinet.
6. Open the releasable cable tie that secures the harness to the control transformer panel and pull the harness up from behind the panel.



7. Disconnect the cable connector from the blower assembly.
8. Disconnect the two-position blower harness connector from the drive bay connector.
9. Open the releasable cable ties that secure the blower harness to the enclosure wire way and remove the harness.



Install the Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Wire Harness

Install the IP54, NEMA/UL Type 12 cabinet blower wire harness in the reverse order of removal. See Remove the Frame 8 IP54, NEMA/UL Type 12 Cabinet Blower Wire Harness on page 357.

Frame 8 Control Transformer Removal/Installation

Remove the Frame 8 Control Transformer

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.

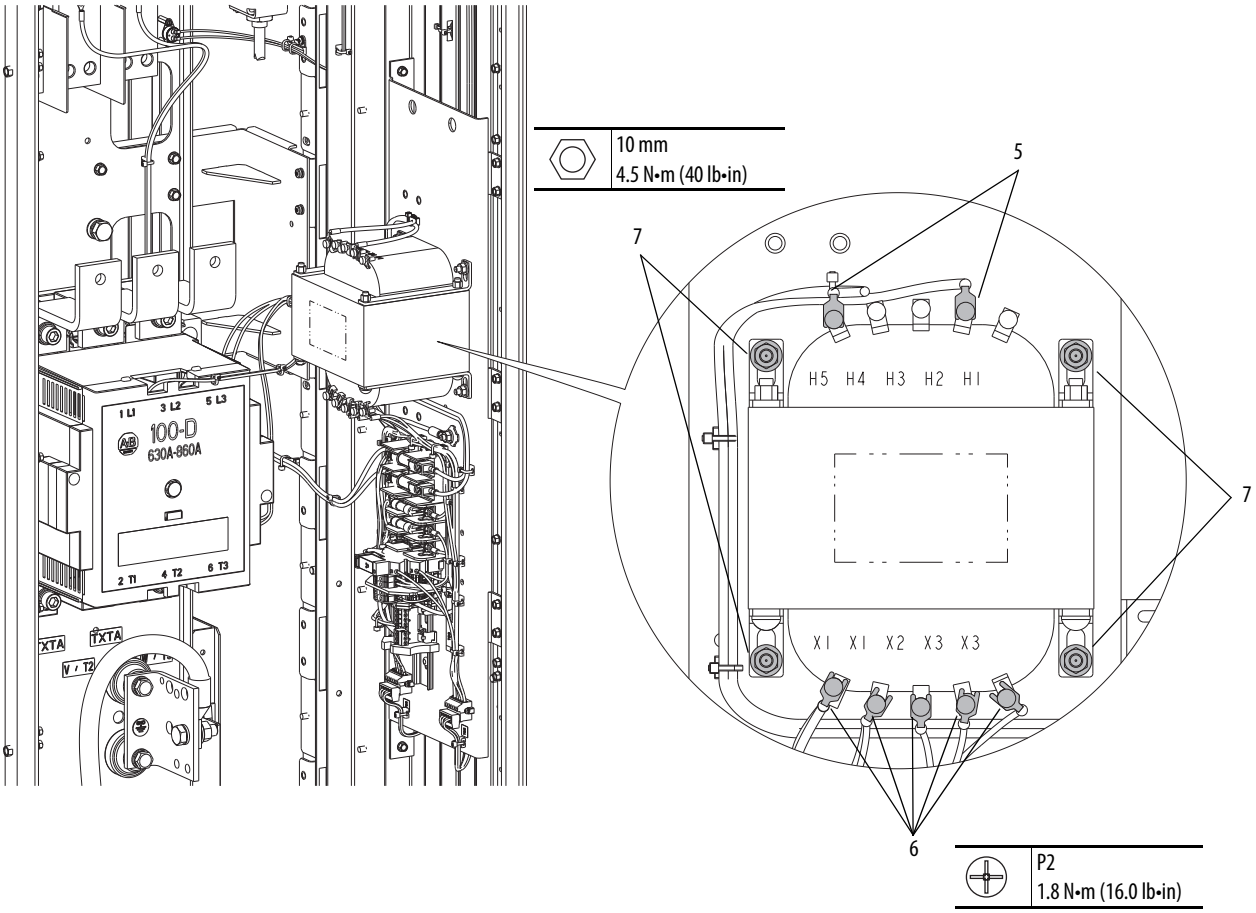
4. Remove the guard. See Remove the Frame 8 Option Bay Guard on page 350.

IMPORTANT Before you disconnect the control-transformer primary wires leads, note the terminal connections. The control transformer has multiple input phase terminals. See Frame 8 AC Input IP20 Option Bay With a Control Transformer Schematic Diagram on page 425 or Frame 8 AC Input IP54 Option Bay Schematic Diagram on page 426 for more information.

5. Loosen the M4 screws that secure the primary wire leads to the Hx terminals at the top of the transformer and remove the wires.
6. Loosen the M4 screws that secure the secondary wire leads to the X1...X3 terminals at the bottom of the transformer and remove the wires.

IMPORTANT The control transformer is heavy. Be sure to support it as you remove the screws, so it does not fall and damage other components.

7. Remove the four M6 nuts and washers that secure the transformer to the control panel and remove the control transformer.



Install the Frame 8 Control Transformer

Install the frame 8 control transformer in the reverse order of removal. See Remove the Frame 8 Control Transformer on page 358.

IMPORTANT The control transformer has multiple input phase terminals. See Frame 8 AC Input IP20 Option Bay With a Control Transformer Schematic Diagram on page 425 or Frame 8 AC Input IP54 Option Bay Schematic Diagram on page 426 for more information.

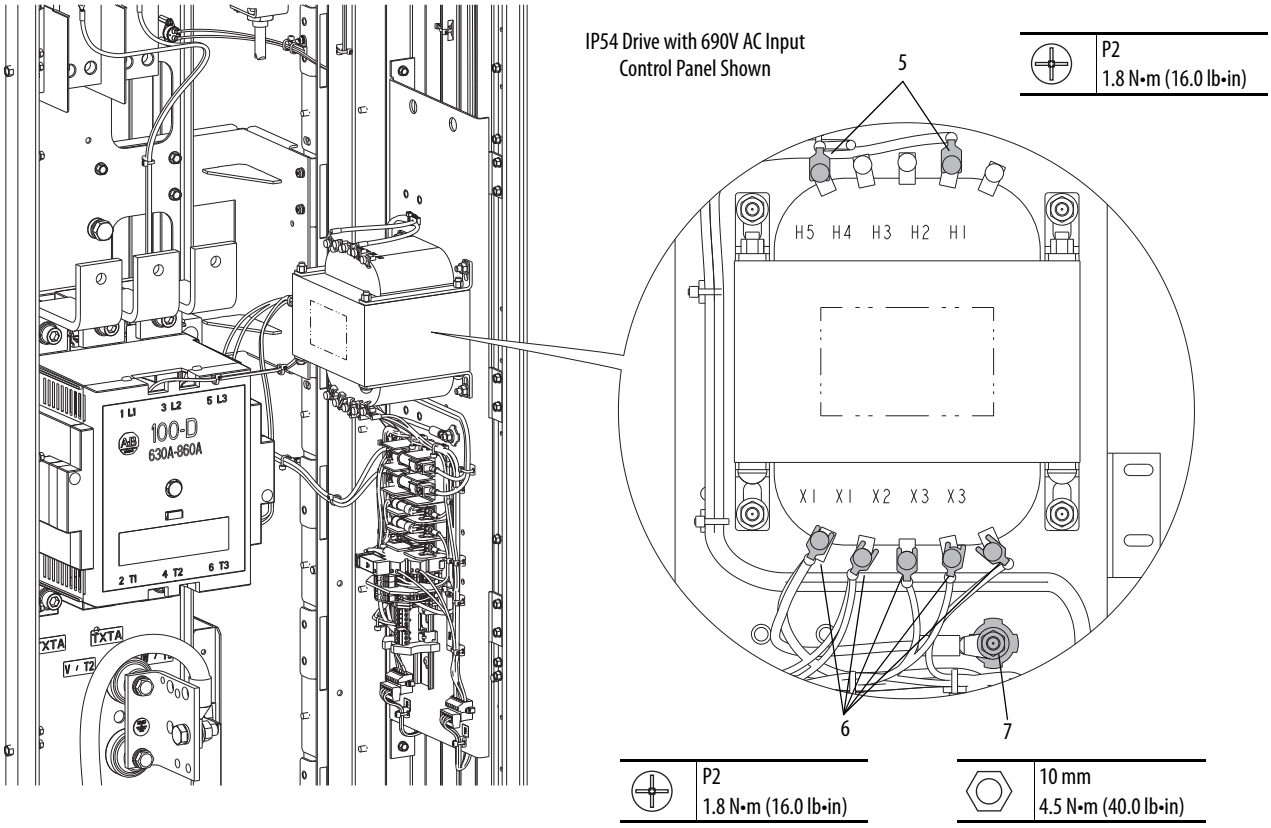
Frame 8 Control Transformer Wire Harness Removal/ Installation

Remove the Frame 8 Control Transformer Wire Harness

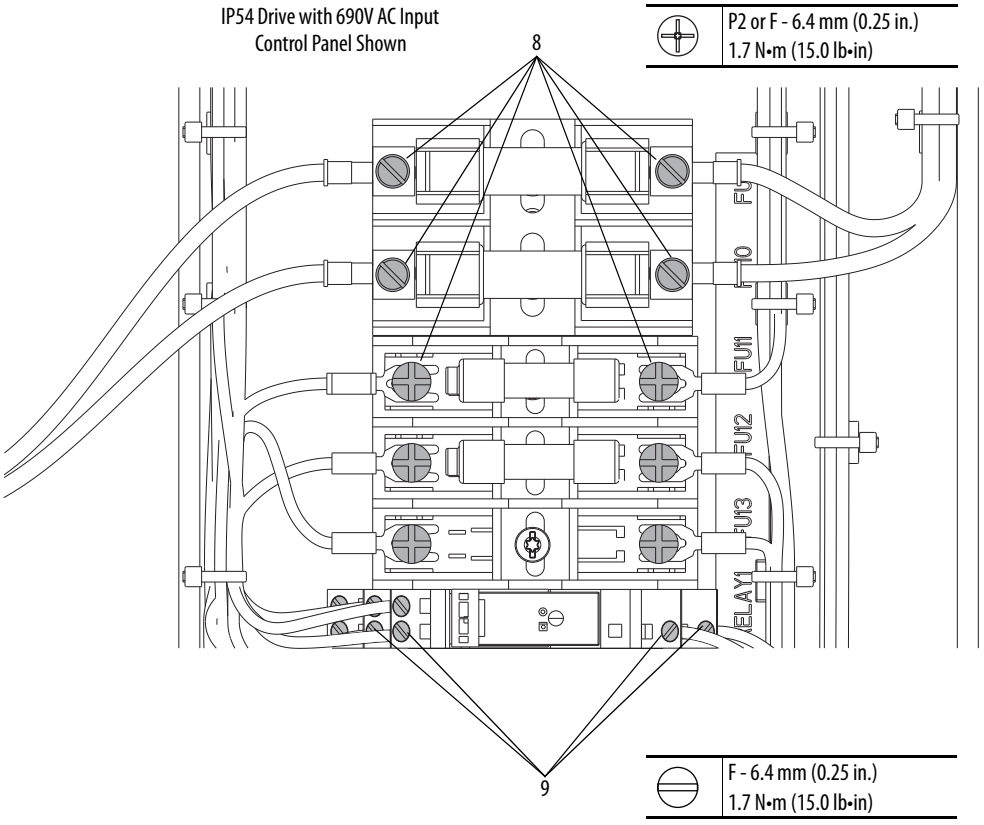
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guard. See Remove the Frame 8 Option Bay Guard on page 350.

IMPORTANT Before you disconnect the control-transformer primary wires leads, note the terminal connections. The control transformer has multiple input phase terminals. See Frame 8 AC Input IP20 Option Bay With a Control Transformer Schematic Diagram on page 425 or Frame 8 AC Input IP54 Option Bay Schematic Diagram on page 426 for more information.

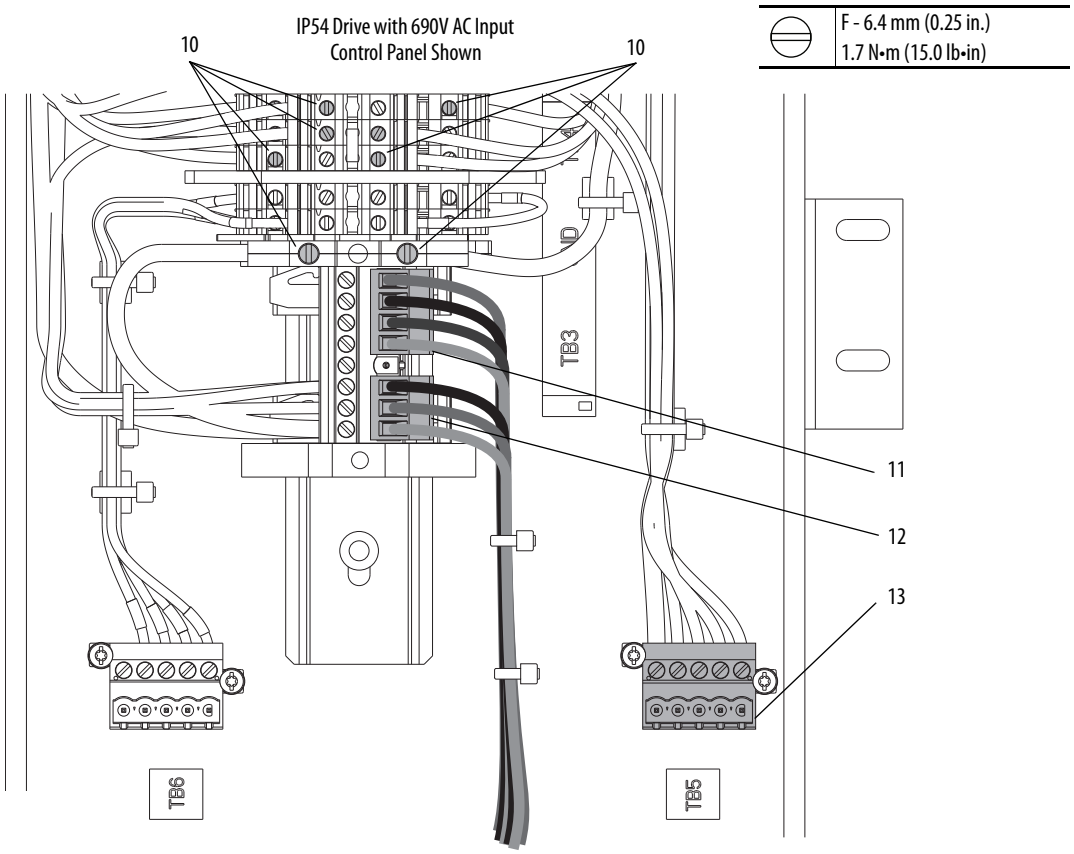
5. Loosen the M4 screws that secure the primary wire leads to the Hx terminals at the top of the transformer and remove the wires.
6. Loosen the M4 screws that secure the secondary wire leads to the X1...X3 terminals at the bottom of the transformer and remove the wires.
7. Remove the M6 nut and washer that secures the ground wire (GND) to the control panel. Retain the screw and washer for reuse.



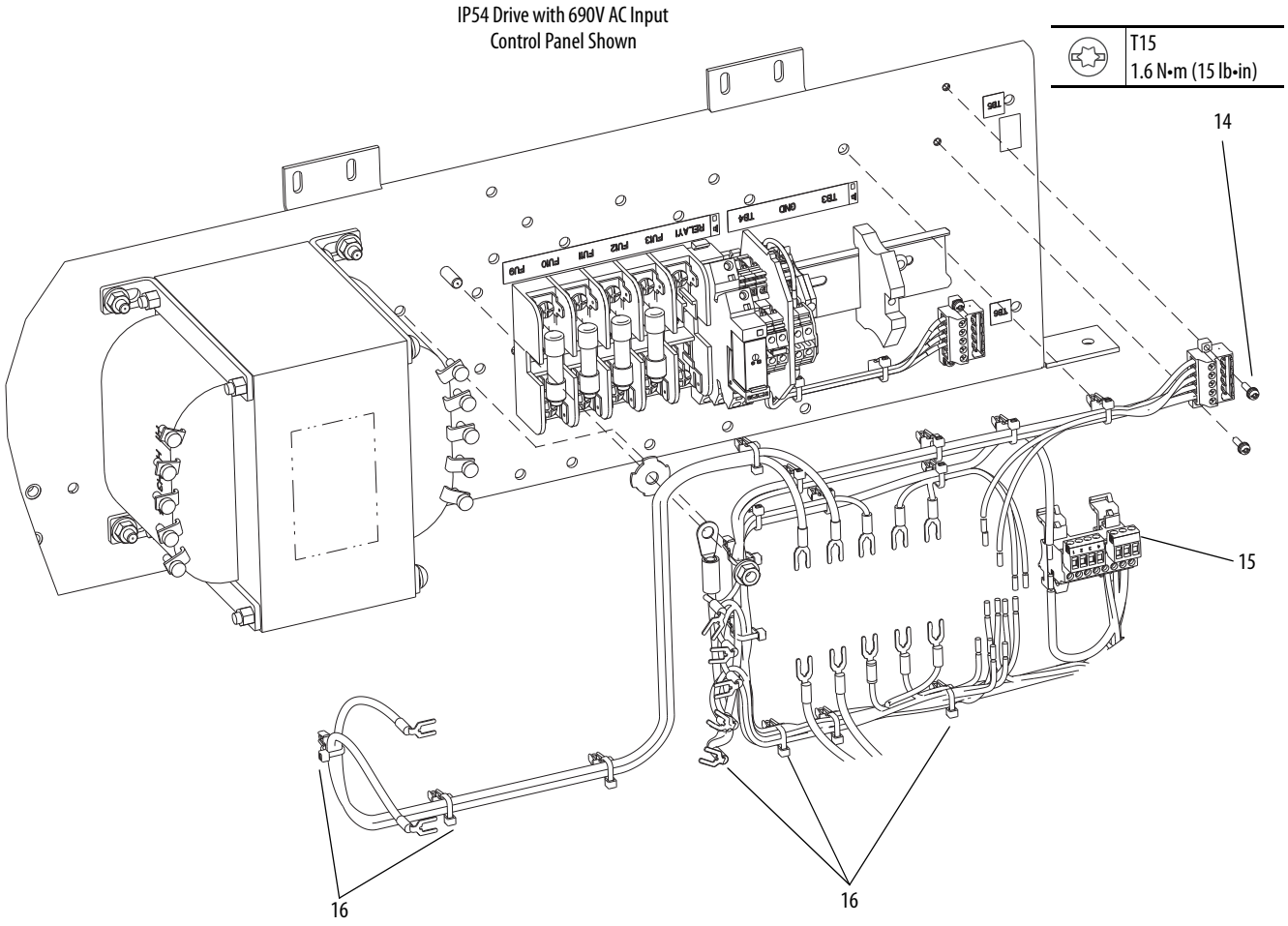
8. Loosen the screws that secure each of the wire leads to the fuse holders (FU9, FU10, FU11, FU12, FU13) and remove the wires.
9. For IP54 drives only, loosen the screws that secure the wires to the relay terminal block (RELAY1) and remove the wires.



10. Loosen the screws that secure the wires to terminal blocks TB4 and GND.
11. If present, disconnect the four-position contactor status connector from terminal block TB3.
12. If present, disconnect the three-position control power connector from terminal block TB3.
13. For IP54 drives, disconnect the five-position blower power connector from terminal blocks TB5.



14. For IP54 drives, remove the two screws that secure terminal block TB5 to the control panel and remove the terminal block. Retain the screws for reuse. Tightening torque for reassembly is 1.6 N•m (15 lb•in).
15. Use a flat nose screw driver to remove the push-mount terminal block TB3 from the DIN rail.
16. Remove the removable cable tie mounts that secure the wire harness to the control panel and remove the wire harness.



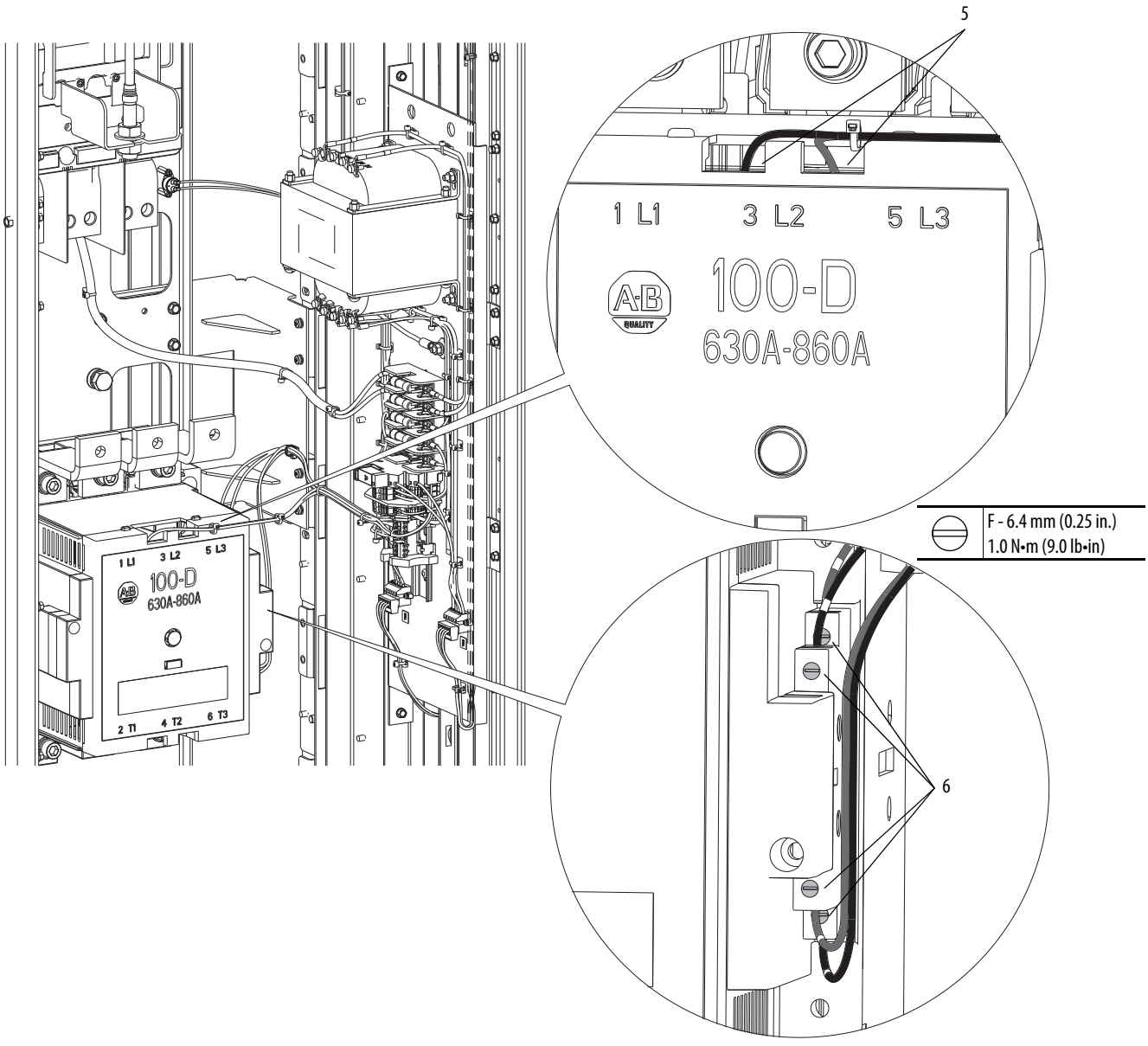
Install the Frame 8 Control Transformer Wire Harness

Install the frame 8 control transformer wire harness in the reverse order of removal. See Remove the Frame 8 Control Transformer Wire Harness on page 360.

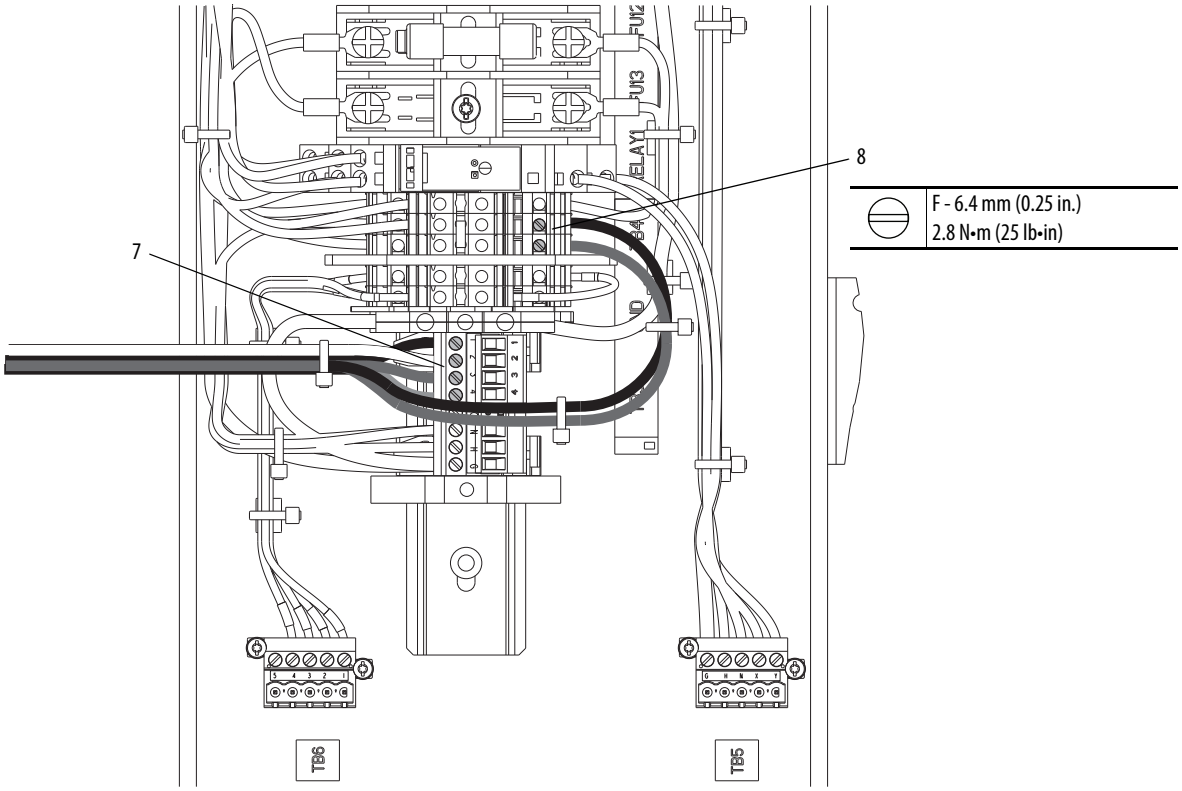
Frame 8 Contactor Wire Harness Removal/ Installation

Remove the Frame 8 Contactor Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guard. See Remove the Frame 8 Option Bay Guard on page 350.
5. Loosen the screws that secure the wire leads to terminals A1 and A2 on the top of the contactor and remove the wires.
6. Loosen the screws that secure the wire leads to terminals 13, 14, 21, and 22 on the side of the contactor and remove the wires.



7. Loosen the screws that secure the four wires to the top of terminal block TB3 on the control panel and remove the wires.
8. Loosen the screws that secure the two wires to the bottom of terminal block TB4 on the control panel and remove the wire harness.



Install the Frame 8 Contactor Wire Harness

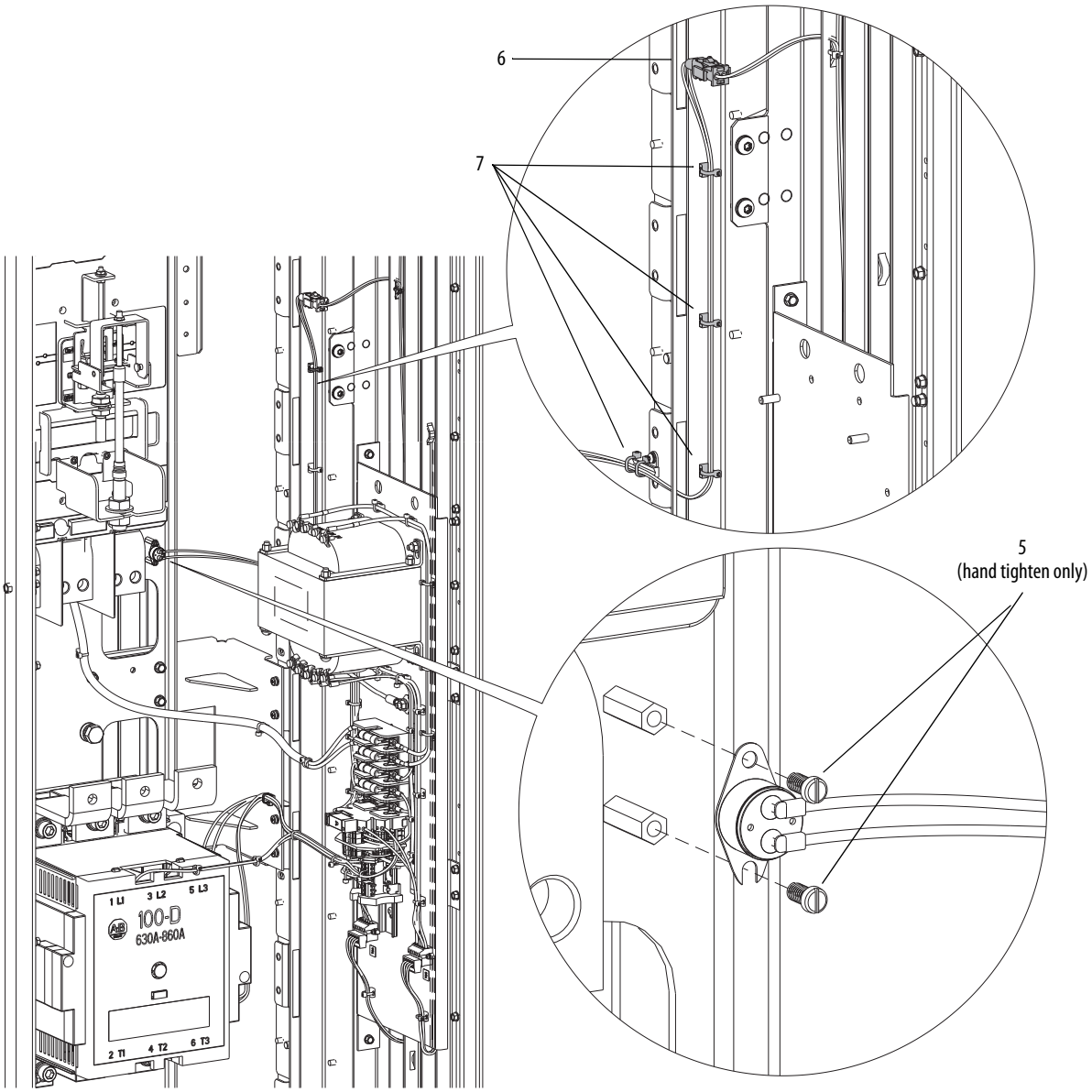
Install the frame 8 contactor wire harness in the reverse order of removal. SeeRemove the Frame 8 Contactor Wire Harness on page 365.

Frame 8 Thermostat and Wire Harness Removal/ Installation

Remove the Frame 8 Thermostat and Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay enclosure door.
4. Remove the guard. See Remove the Frame 8 Option Bay Guard on page 350.

5. Remove the two nylon screws that secure the thermostat to the mounting standoffs and remove the thermostat and wire harness.
6. Disconnect the thermostat wire harness from the connector on the side of the cabinet frame.
7. Remove the cable tie mounts from the cabinet frame and remove the wire harness.



Install the Frame 8 Thermostat and Wire Harness

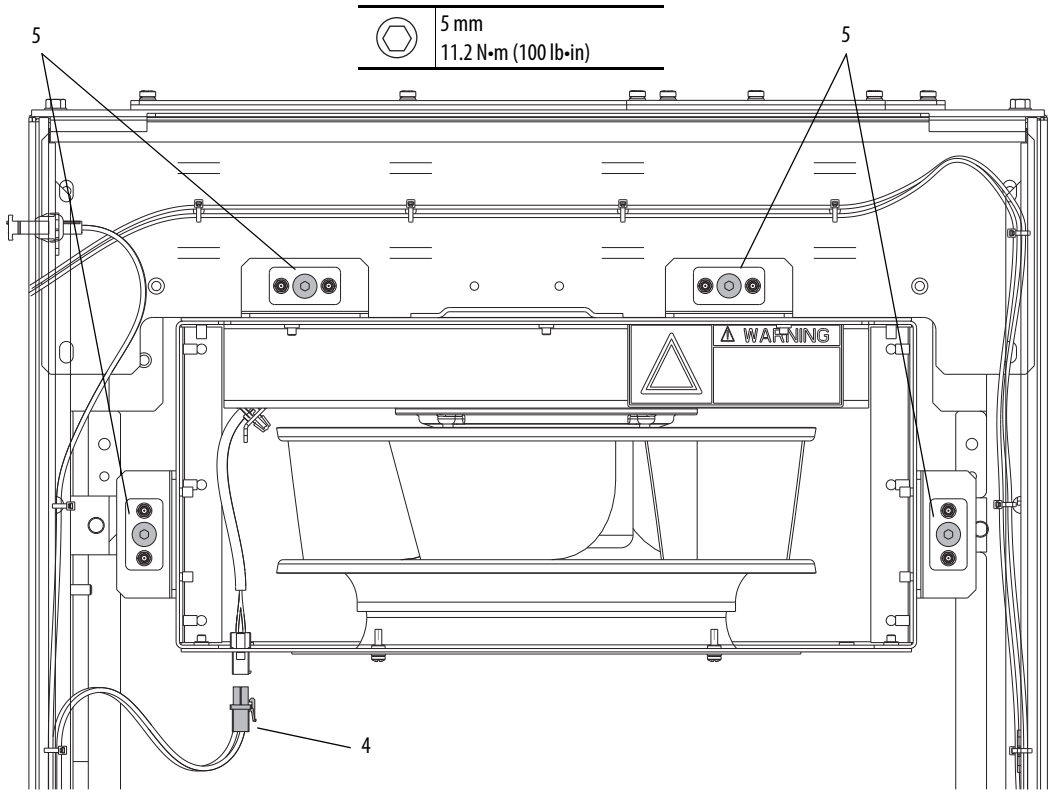
Install the thermostat and wire harness in the reverse order of removal. See Remove the Frame 8 Thermostat and Wire Harness on page 366.

Frame 9 Cabinet Blower Assembly Removal/ Installation

Remove the Frame 9 Cabinet Blower Assembly

Note: The blower assembly weights approximately 12.4 kg (27.3 lb).

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Disconnect the blower power connector from the connector on the bottom of the blower assembly.
5. Loosen the four captive 5-mm hex screws that secure the blower assembly to the cabinet frame and remove the assembly from the drive.



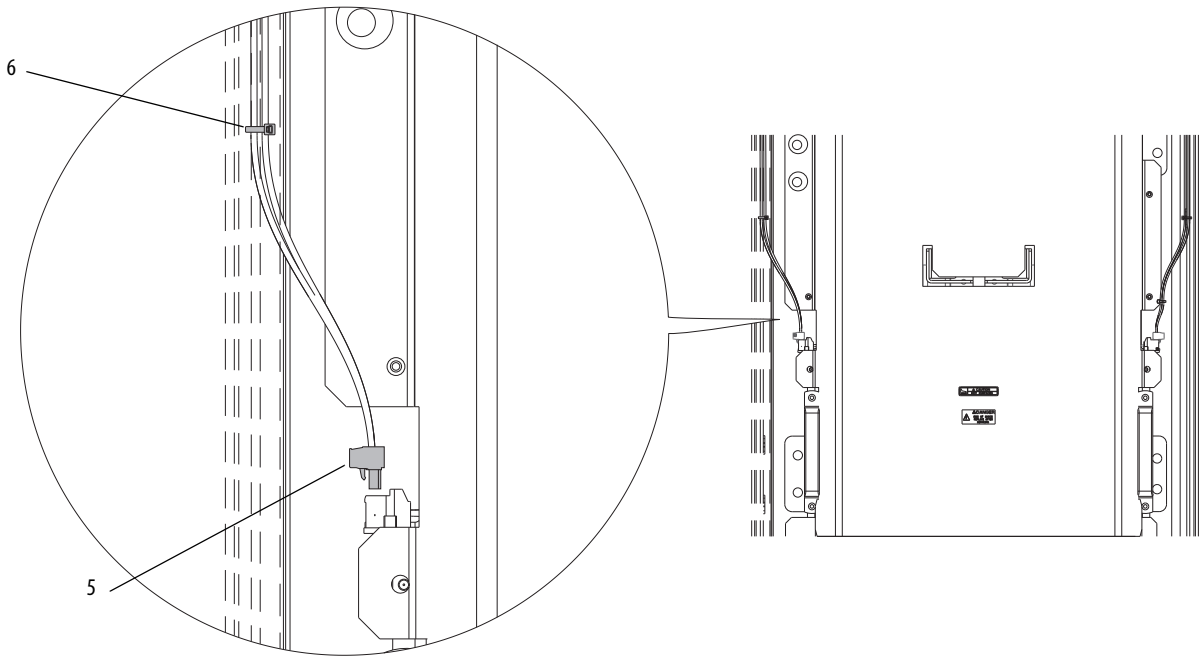
Install the Frame 9 Cabinet Blower Assembly

Install the frame 9 cabinet blower assembly in the reverse order of removal. See Remove the Frame 9 Cabinet Blower Assembly on page 368.

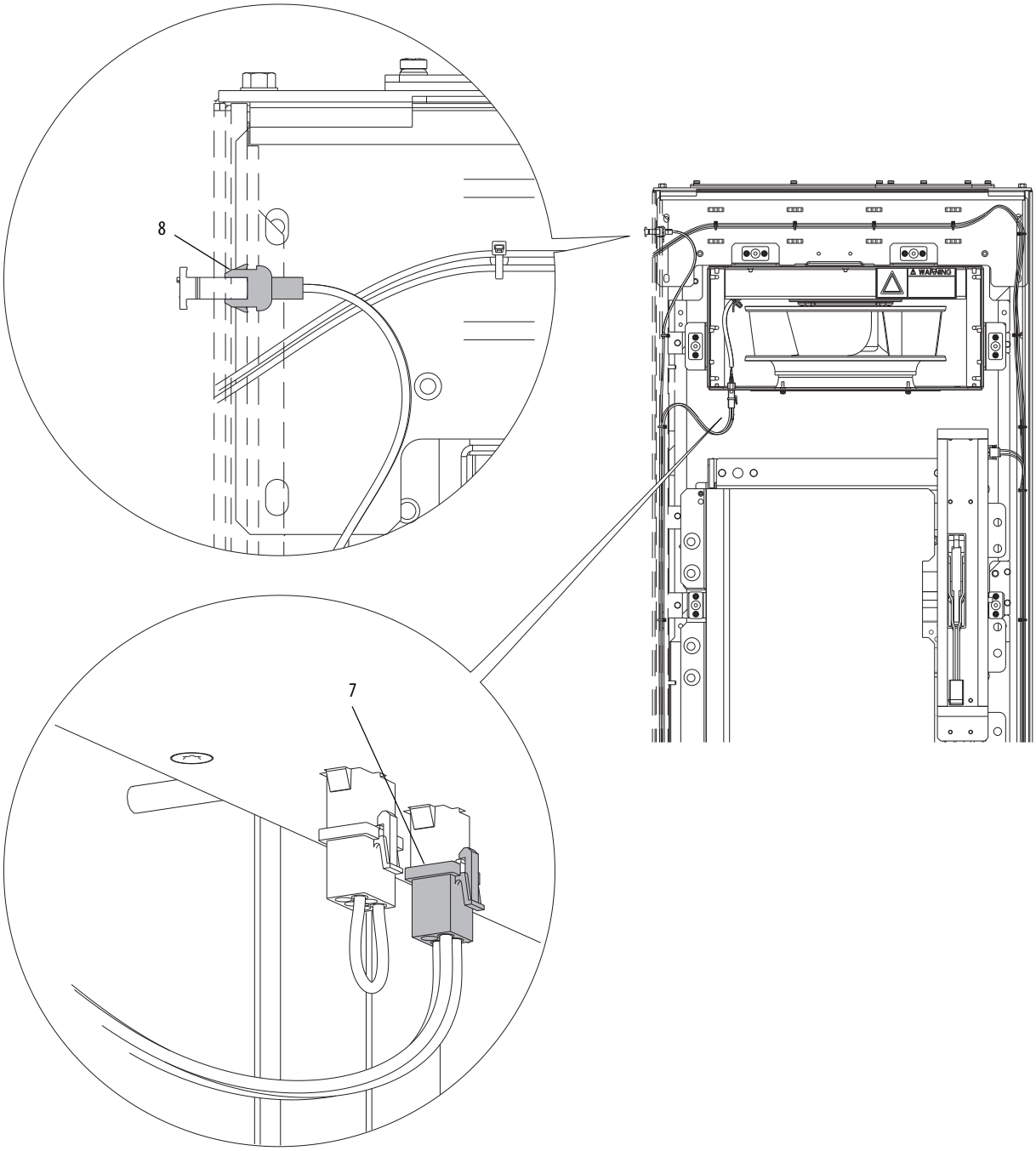
Frame 9 Cabinet Blower Wire Harness Removal/ Installation

Remove the Frame 9 Cabinet Blower Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the upper guard. See Remove the Frame 9 Series B Option Bay Guards on page 351.
5. Disconnect the blower wire harness from the terminal block on the left side of the control panel.
6. Open the releasable cable ties that secure the harness to the side of the cabinet.



7. Disconnect the blower power connector from the connector on the bottom of the blower assembly.
8. Disconnect the connector from the drive bay connector and remove the harness



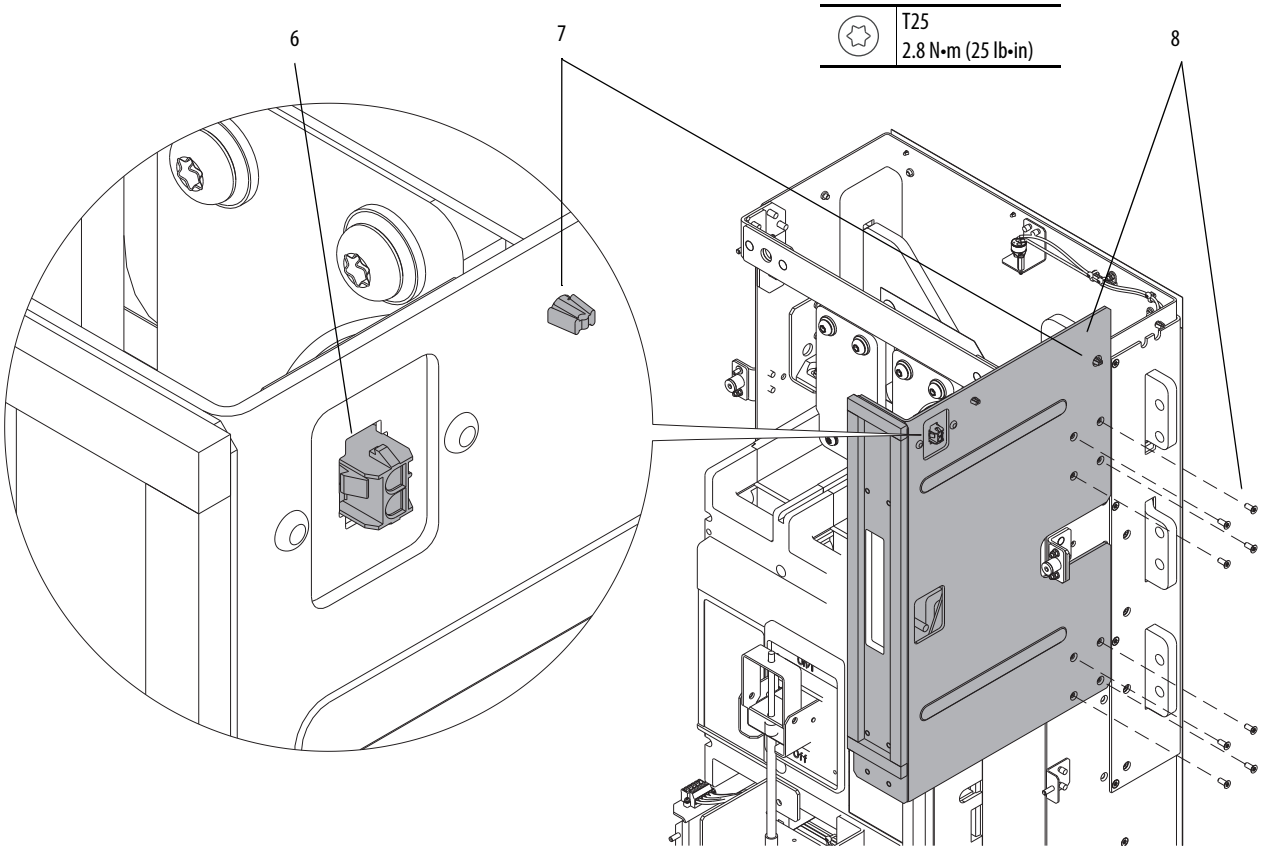
Install the Frame 9 Cabinet Blower Wire Harness

Install the frame 9 cabinet blower wire harness in the reverse order of removal. See Remove the Frame 9 Cabinet Blower Wire Harness on page 369.

Frame 9 Circuit Breaker Disconnect Handle Panel (Series A) Removal/ Installation

Remove the Frame 9 Circuit Breaker Disconnect Handle Panel (Series A)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the power option assembly from the cabinet. See the PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001 for details.
5. Remove the circuit breaker disconnect handle per the manufacturer's instructions.
6. Push the thermostat harness connector through the cutout in the top of the panel.
7. Remove the two cable tie mounts from the panel and remove the thermostat wire harness.
8. Remove the eight M5 x 12-mm hexalobular screws that secure the disconnect handle panel to the power option assembly and remove the panel.



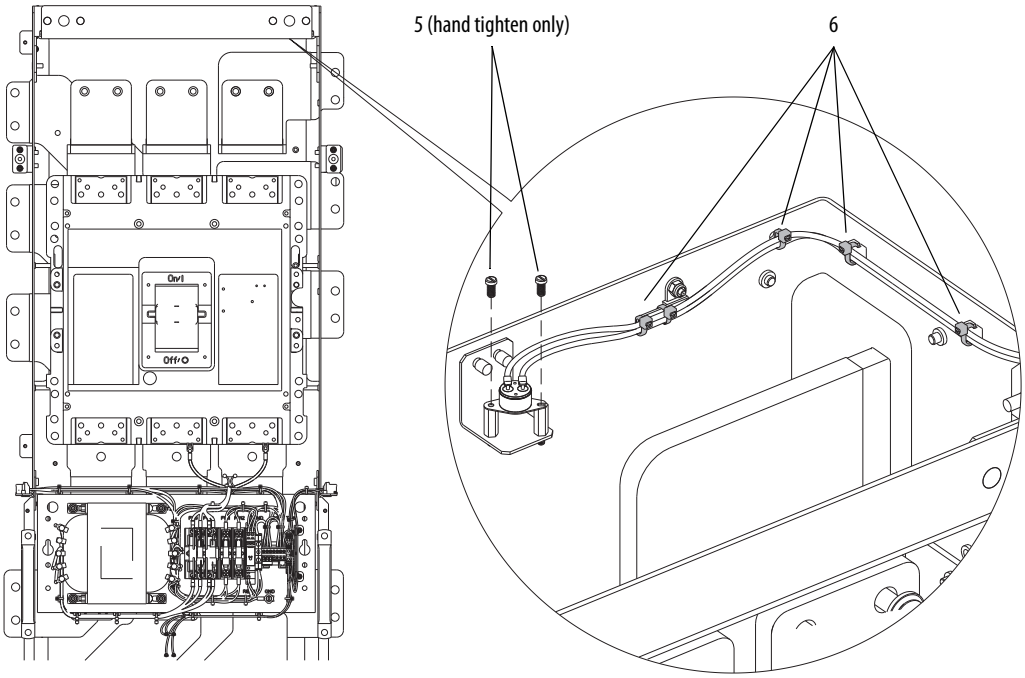
Install the Frame 9 Circuit Breaker Disconnect Handle Panel (Series A)

Install the frame 9 circuit breaker disconnect handle panel (series A) in the reverse order of removal. See Remove the Frame 9 Circuit Breaker Disconnect Handle Panel (Series A) on page 371.

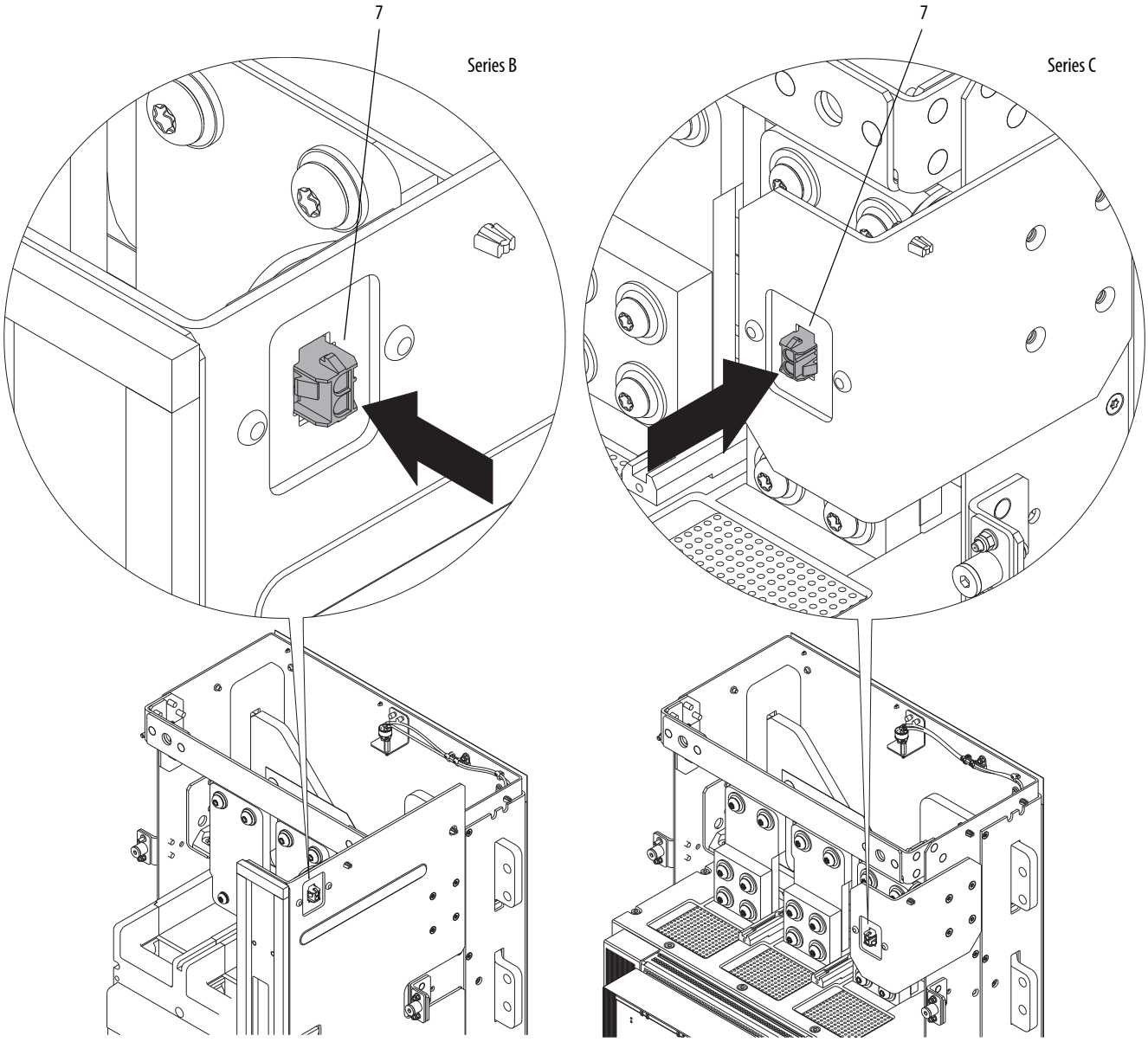
Frame 9 Thermostat and Wire Harness Removal/ Installation

Remove the Frame 9 Thermostat and Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the power option assembly from the cabinet. See the PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001 for details.
5. Remove the two nylon screws that secure the thermostat to the mounting standoffs and remove the thermostat.
6. Open the releasable cable ties that secure the harness to the chassis.



7. Push the thermostat harness connector through the cutout in the top of the panel and remove the thermostat and wire harness.



Install the Frame 9 Thermostat and Wire Harness

Install the frame 9 thermostat and wire harness in the reverse order of removal. See Remove the Frame 9 Thermostat and Wire Harness on page 372.

Frame 9 Control Transformer Removal/Installation

Remove the Frame 9 Control Transformer

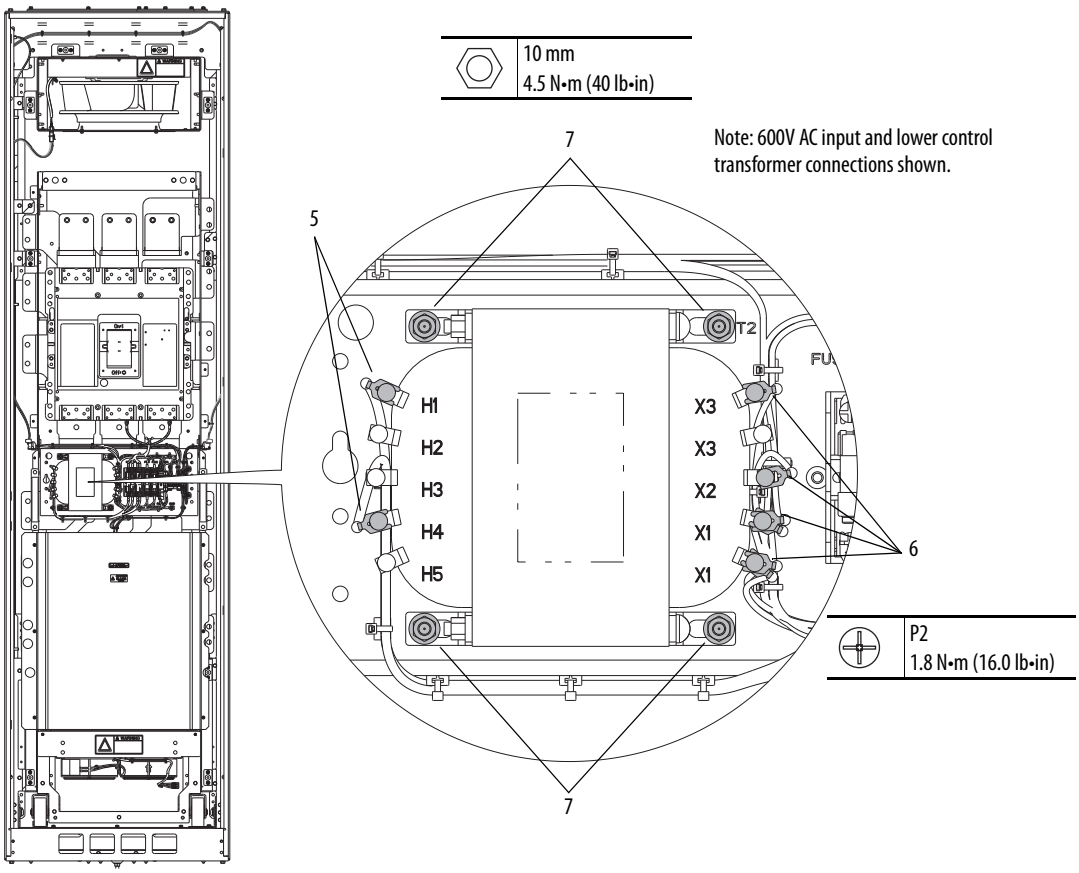
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the upper guard. See Remove the Frame 9 Series B Option Bay Guards on page 351.

IMPORTANT Before you disconnect the control-transformer primary wires leads, note the terminal connections. The control transformer has multiple input phase terminals. See Frame 9 AC Input Option Bay Schematic Diagram on page 427 for more information.

5. Loosen the M4 screws that secure the primary wire leads to the Hx terminals on the left side of the transformer and remove the wires.
6. Loosen the M4 screws that secure the secondary wire leads to the X1...X3 terminals on the right side of the transformer and remove the wires.

IMPORTANT The control transformer is heavy. Be sure to support it as you remove the screws, so it does not fall and damage other components.

7. Remove the four M6 nuts and washers that secure the transformer to the control panel and remove the control transformer.



Install the Frame 9 Control Transformer

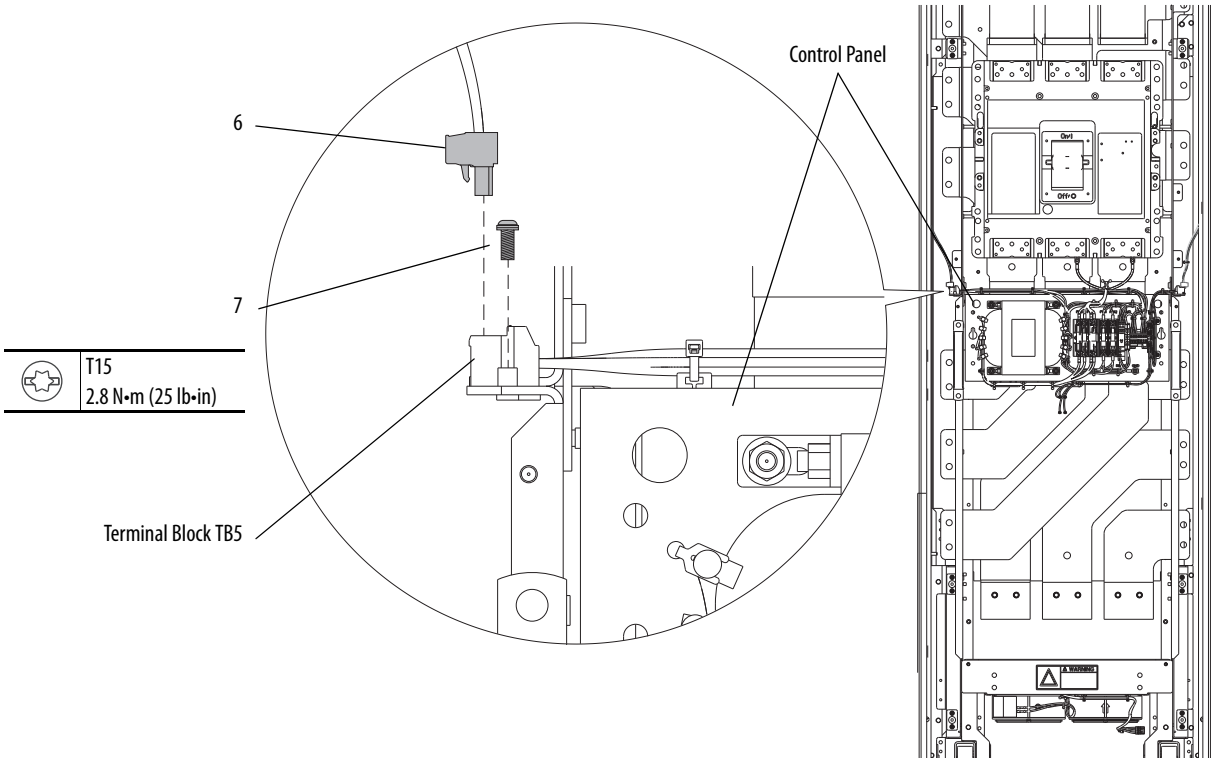
Install the frame 9 control transformer in the reverse order of removal. See Remove the Frame 9 Control Transformer on page 374.

IMPORTANT The control transformer has multiple input phase terminals. See Frame 9 AC Input Option Bay Schematic Diagram on page 427 for more information.

Frame 9 Main Control-panel Wire Harness Removal/ Installation

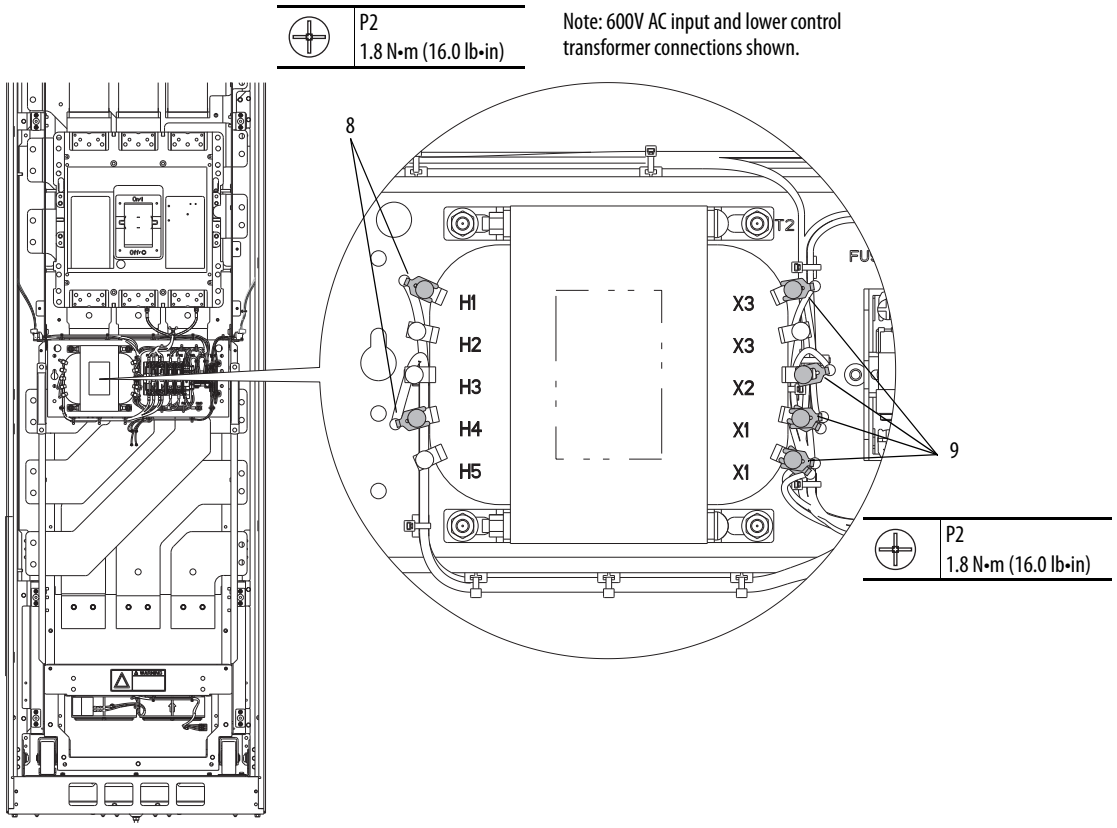
Remove the Frame 9 Main Control-panel Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guards. See Remove the Frame 9 Series B Option Bay Guards on page 351.
5. Loosen the two screws that secure the wires from the control panel to the door interlock and remove the wires.
6. Disconnect the blower wire harness from terminal block TB5 on the left side of the control panel.
7. Remove the two M3 x 12-mm hexalobular screws and washers that secure the terminal block to the left side of the control panel. Retain the screws and washers for reuse.

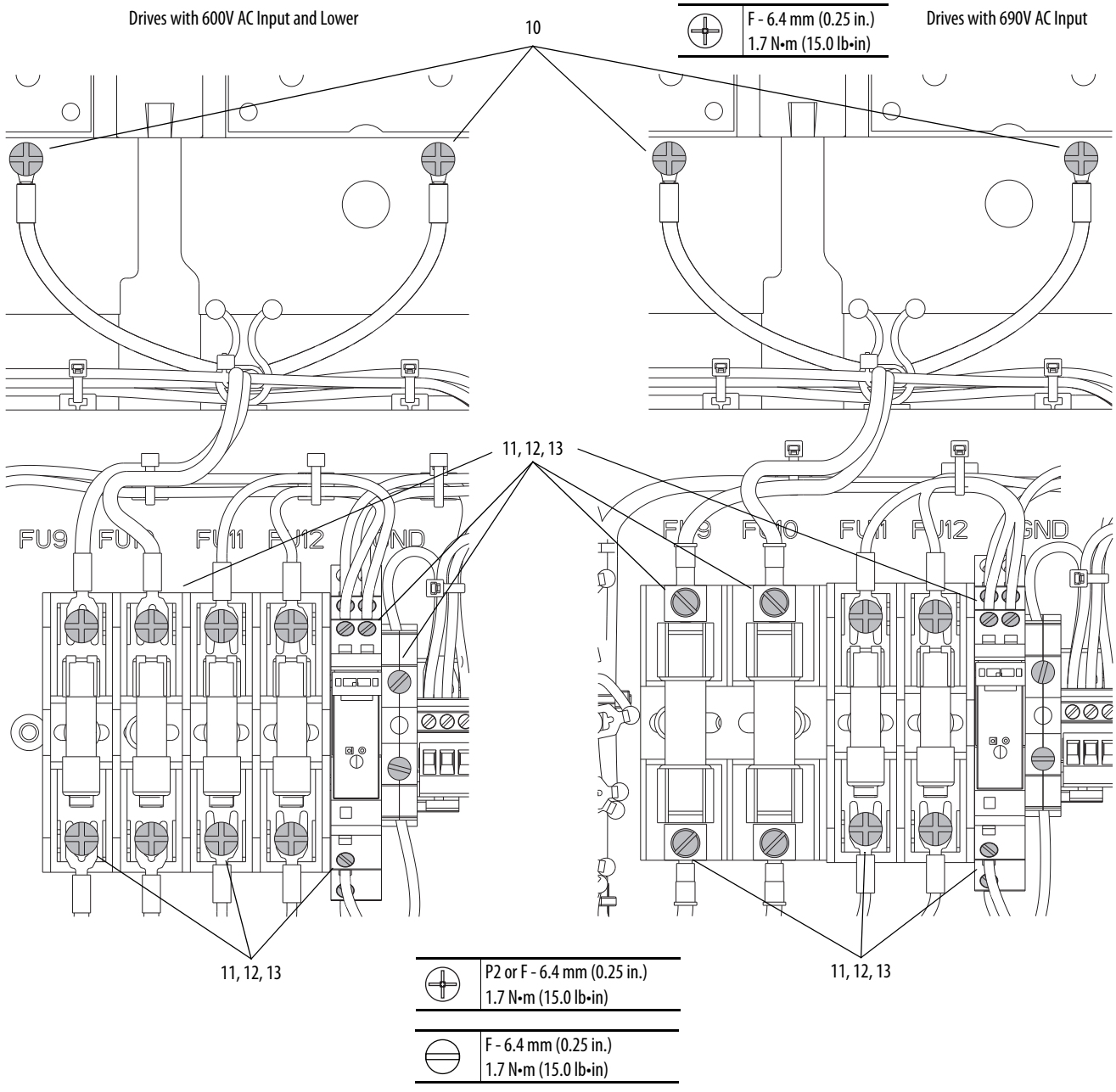


IMPORTANT Before you disconnect the control-transformer primary wires leads, note the terminal connections. The control transformer has multiple input phase terminals. See Frame 9 AC Input Option Bay Schematic Diagram on page 427 for more information.

8. Loosen the M4 screws that secure the primary wire leads to the Hx terminals on the left side of the transformer and remove the wires.
9. Loosen the M4 screws that secure the secondary wire leads to the X1...X3 terminals on the right side of the transformer and remove the wires.



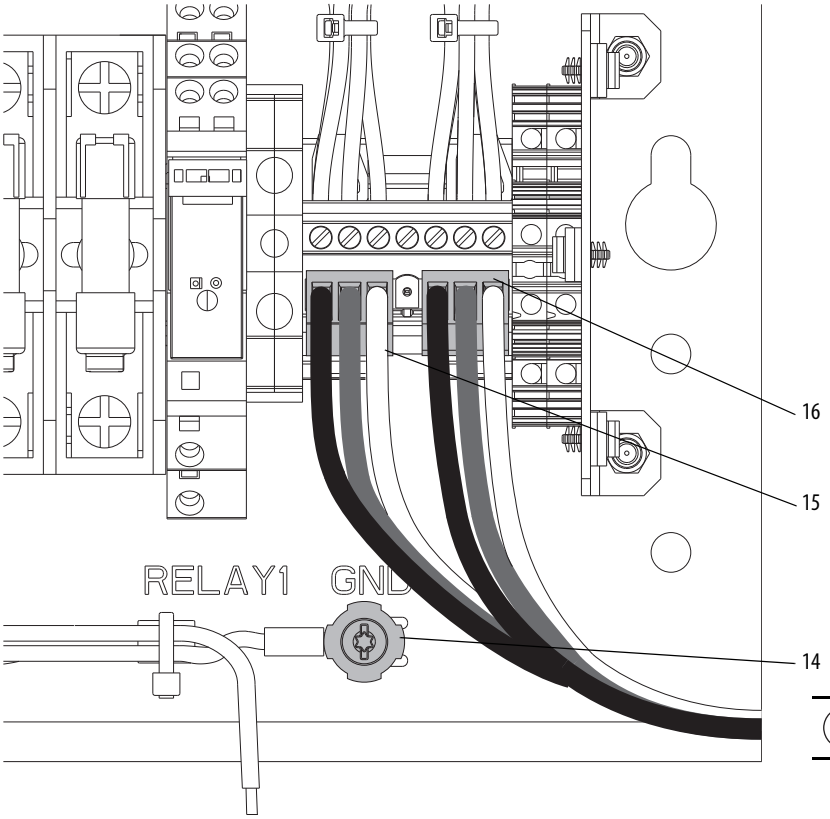
10. Remove the two screws and washers that secure the fuse wire leads to the AC input bus bars and remove the wires. Retain the screws and washers for reuse.
11. Loosen the screws that secure each of the eight wire leads to the fuse holders (FU9, FU10, FU11, FU12) and remove the wires.
12. Loosen the screws that secure the wires to the relay terminal block (RELAY1) and remove the wires.
13. Loosen the screws that secure the wires to the top and bottom of the grounding terminal block (GND) and remove the wires.



14. Remove the screw and washer that secures the ground wire to the control panel (GND) and remove the ground wire. Retain the screw and washer for reuse.

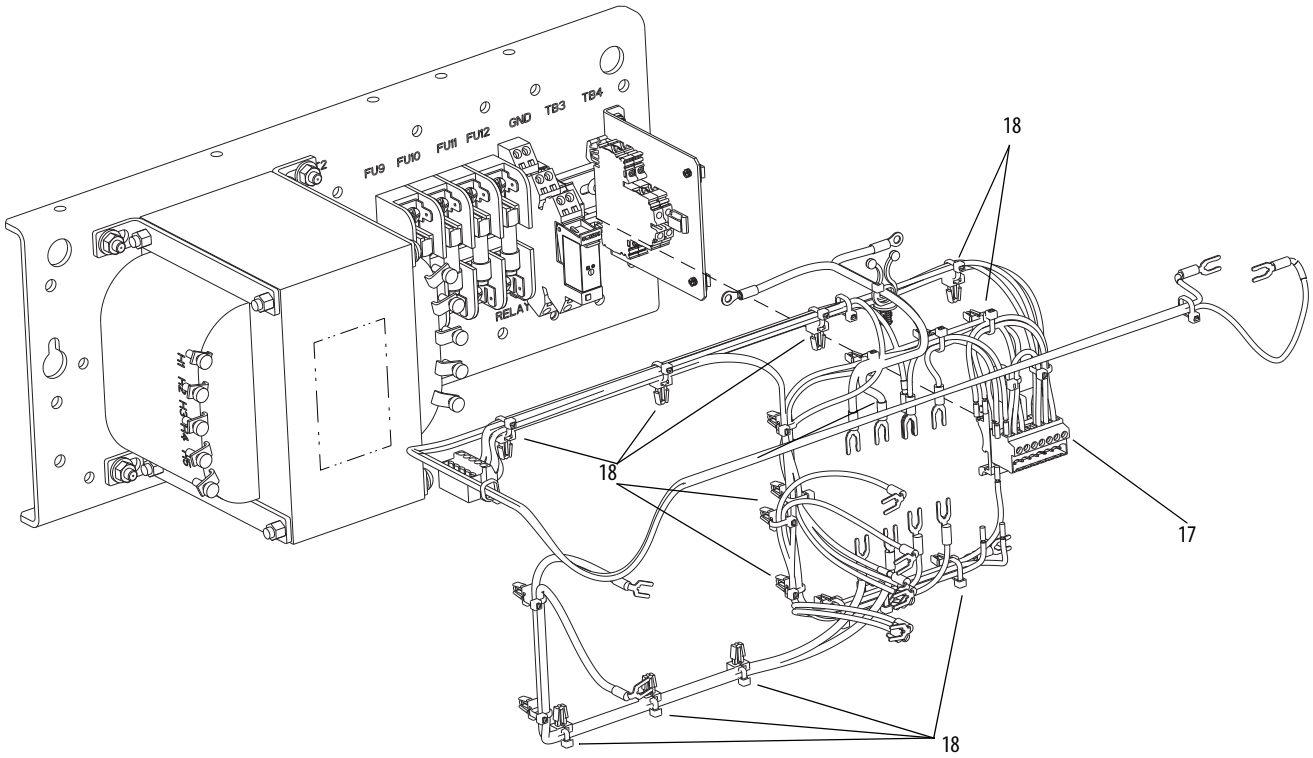
15. If present, disconnect the three-position control output power connector from terminal block TB3.

16. If present, disconnect the three-position reactor fans power connector from terminal block TB3.



	F - 6.4 mm (0.25 in.) 1.7 N•m (15.0 lb•in)

17. To remove the push-mount terminal block TB3 from the DIN rail, use a flat nose screw driver.
18. Remove the removable cable tie mounts that secure the wire harness to the control panel and remove the wire harness.



Install the Frame 9 Main Control-panel Wire Harness

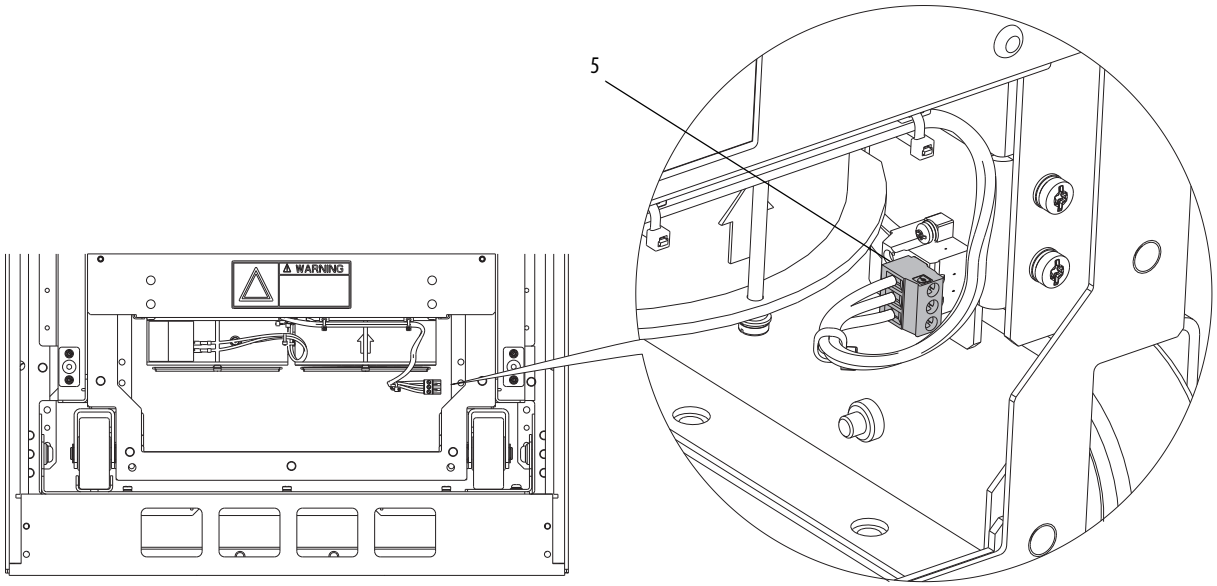
Install the frame 9 main control-panel wire harness in the reverse order of removal. See Remove the Frame 9 Main Control-panel Wire Harness on page 375.

IMPORTANT The control transformer has multiple input phase terminals. See Frame 9 AC Input Option Bay Schematic Diagram on page 427 for more information.

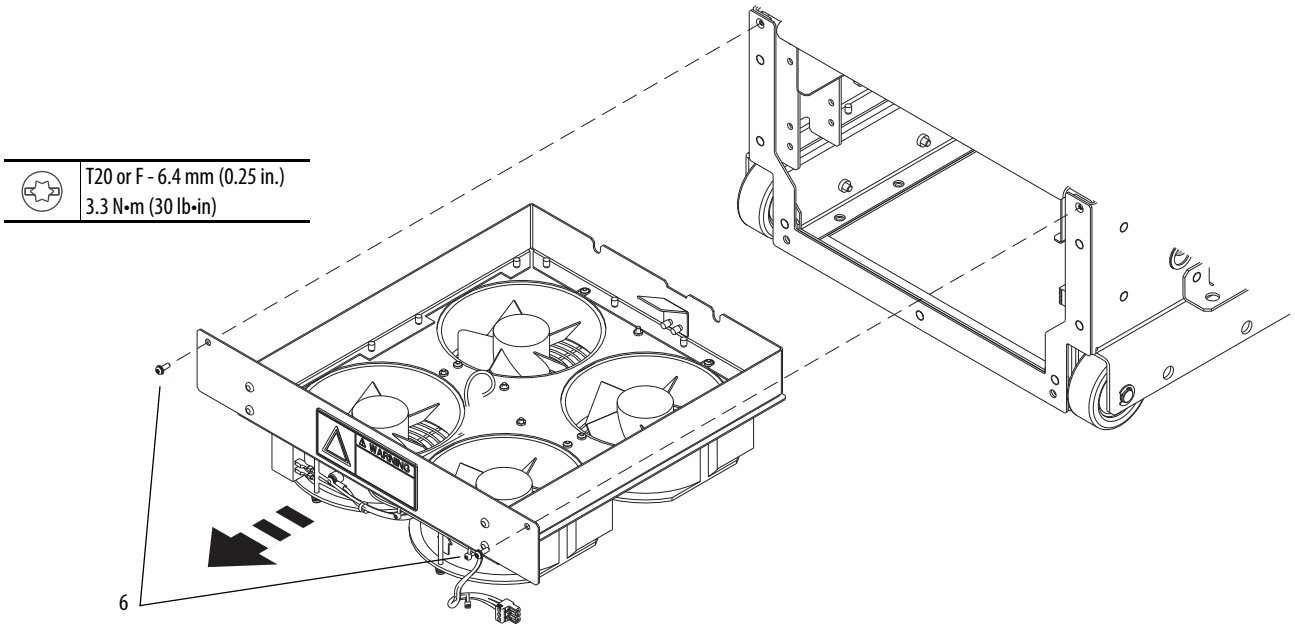
Frame 9 Reactor Fan Tray Removal/Installation

Remove the Frame 9 Reactor Fan Tray

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guards. See Remove the Frame 9 Series B Option Bay Guards on page 351.
5. Disconnect the three-position fan power connector from the terminal block at the bottom, right side of the option bay chassis.



6. Remove the two M4 x 12-mm hexalobular screws that secure the fan tray to the chassis and slide the fan tray out of the chassis.



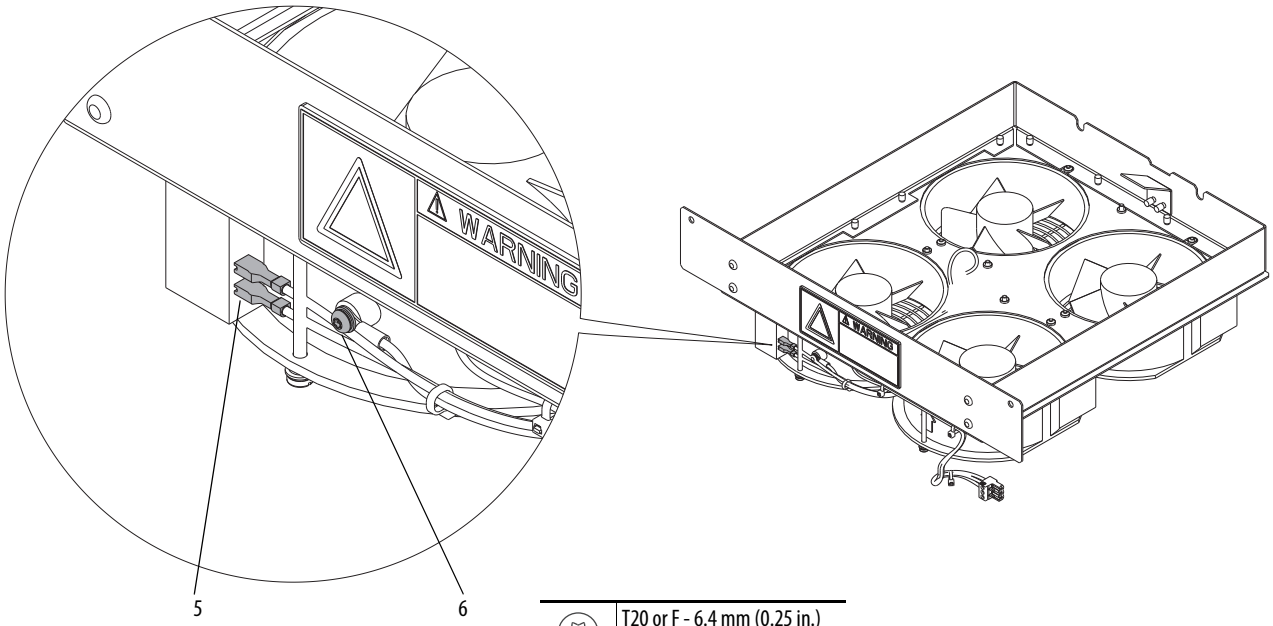
Install the Frame 9 Reactor Fan Tray

Install the frame 9 reactor fan tray in the reverse order of removal. See Remove the Frame 9 Reactor Fan Tray on page 380.

Frame 9 Reactor Fan Tray Wire Harness Removal/ Installation

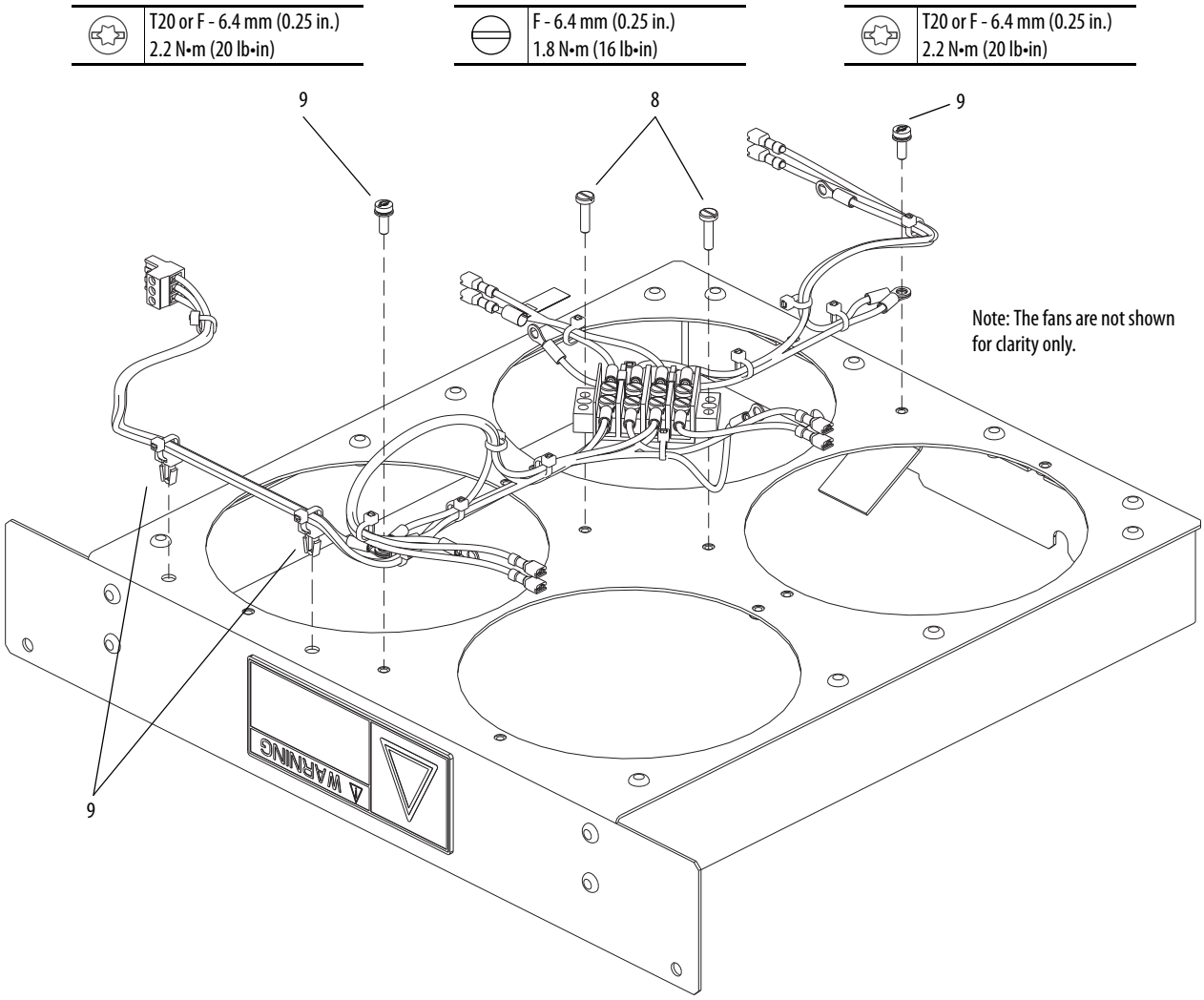
Remove the Frame 9 Reactor Fan Tray Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the Reactor Fan Tray from the drive. See Remove the Frame 9 Reactor Fan Tray on page 380.
5. Disconnect the Fan (+) and Fan (-) power wires from the fan terminals.
6. Remove the M4 x 8-mm hexalobular screw that secures the ground wire to the side of the fan and remove the ground wire.



	T20 or F - 6.4 mm (0.25 in.) 2.2 N•m (20 lb•in)

7. On the underside of the tray, remove the two M4 x 12-mm hexalobular screws that secure the fan harness ground wires to the fan tray.
8. On the underside of the tray, remove the two M4 x 16-mm hexalobular screws that secure the fan harness terminal block to the fan tray.
9. On the underside of the tray, disengage the two cable tie push mounts that secure the fan harness to the fan tray and remove the harness.



Install the Frame 9 Reactor Fan Tray Wire Harness

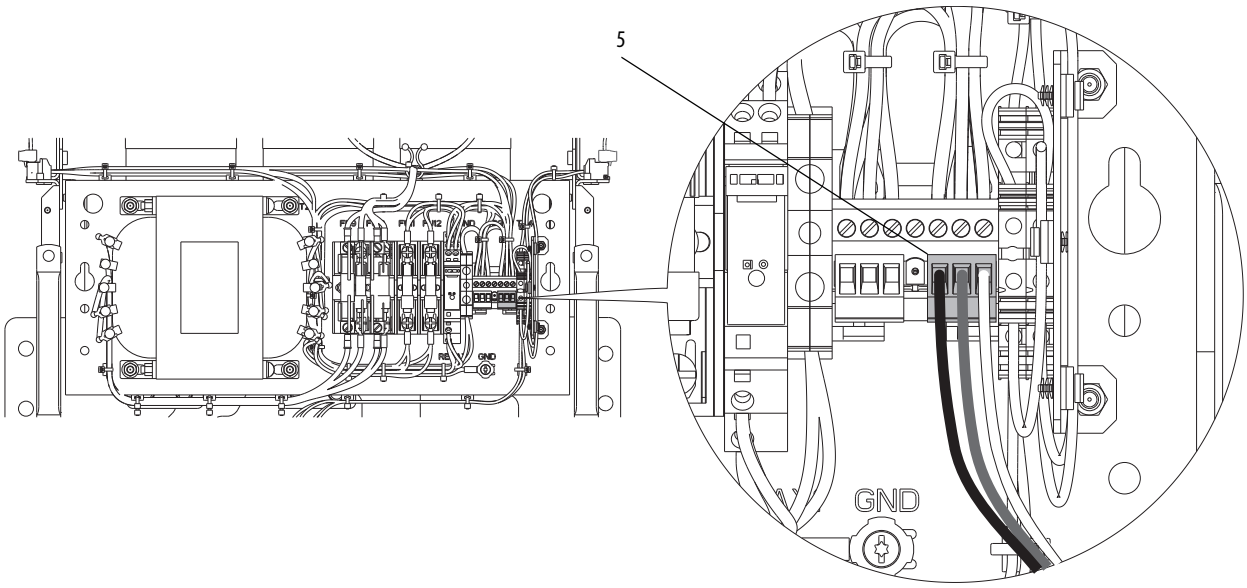
Install the frame 9 reactor fan tray harness in the reverse order of removal. See Remove the Frame 9 Reactor Fan Tray Wire Harness on page 381.

TIP The position of the cable tie push mounts and ground wire connection points determine the proper orientation of the wire harness.

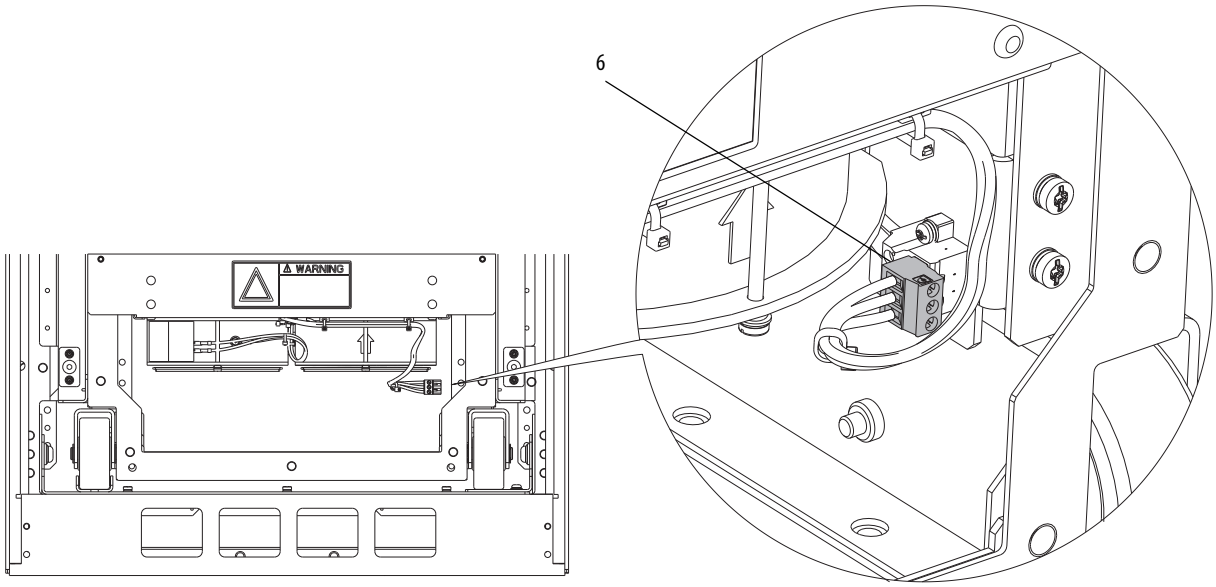
Frame 9 Reactor Fans Wire Harness Removal/ Installation

Remove the Frame 9 Reactor Fans Wire Harness

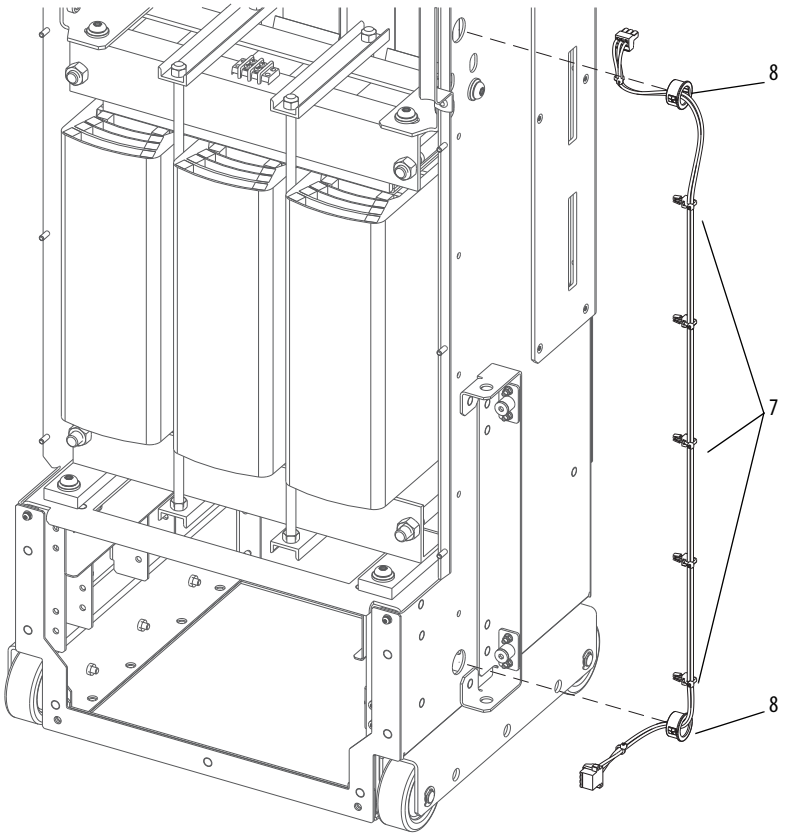
1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the power option assembly from the cabinet. See the PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001 for details.
5. Disconnect the three-position fan power connector from terminal block TB3 on the control panel.



6. Disconnect the three-position fan power connector from the terminal block at the bottom, right side of the option bay chassis.



7. Remove the cable tie mounts from the side of the power option assembly.
8. Remove the grommets from the holes in the power option assembly and remove the wire harness.



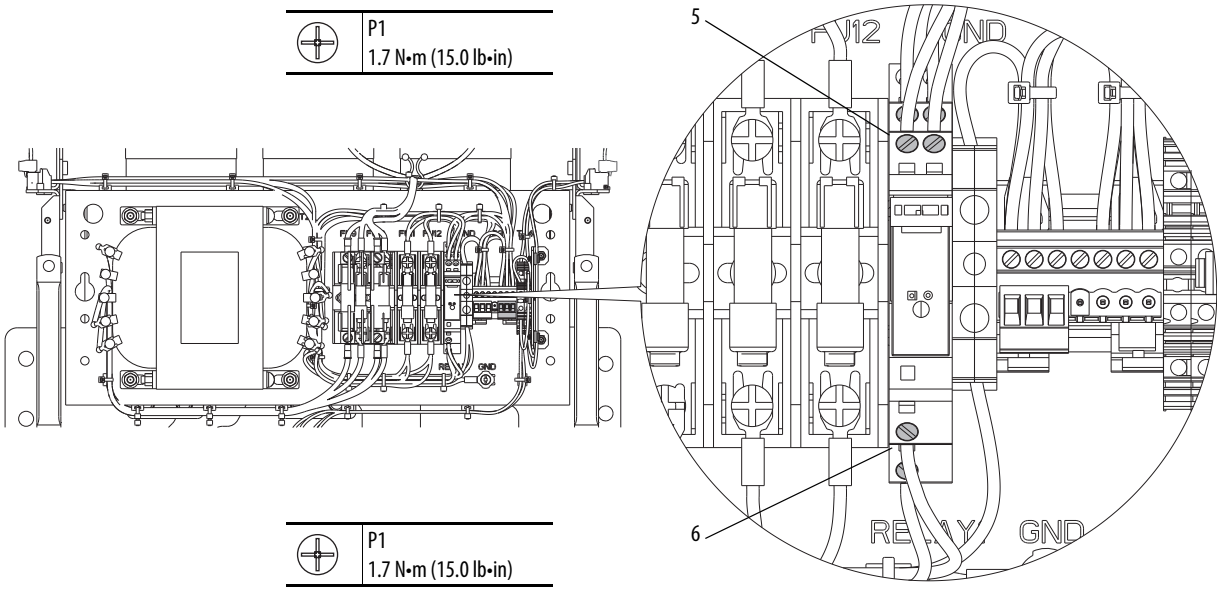
Install the Frame 9 Reactor Fans Wire Harness

Install the frame 9 reactor fans wire harness in the reverse order of removal. See Remove the Frame 9 Reactor Fans Wire Harness on page 383.

Frame 9 Cabinet Blower Relay Removal/Installation

Remove the Frame 9 Cabinet Blower Relay

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guards. See Remove the Frame 9 Series B Option Bay Guards on page 351.
5. Loosen the four screws that secure the wire leads to the top of the fan relay terminal block (RELAY1) and remove the wires.
6. Loosen the two screws that secure the wire leads to the bottom of the fan relay and remove the wires.
7. To remove the relay from the DIN rail, use a flat nose screw driver.



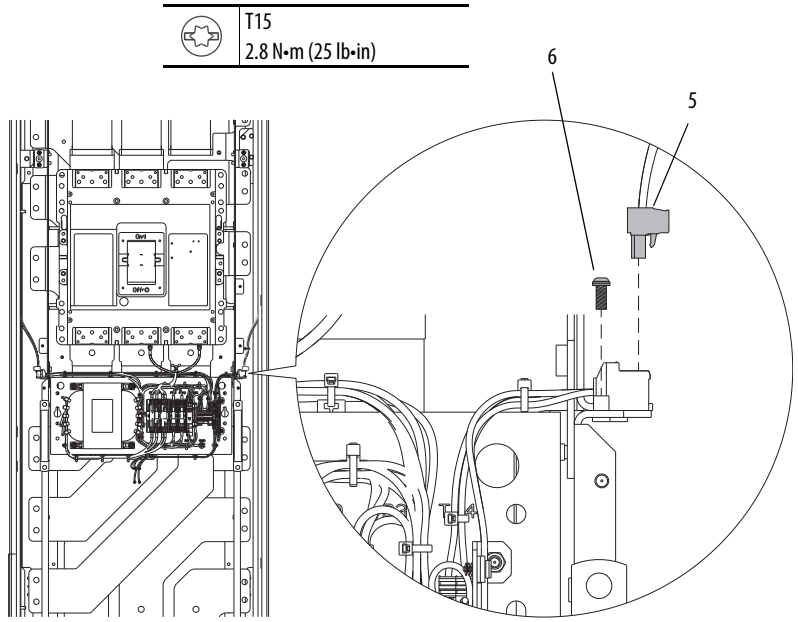
Install the Frame 9 Cabinet Blower Relay

Install the frame 9 cabinet blower relay in the reverse order of removal. See Remove the Frame 9 Cabinet Blower Relay.

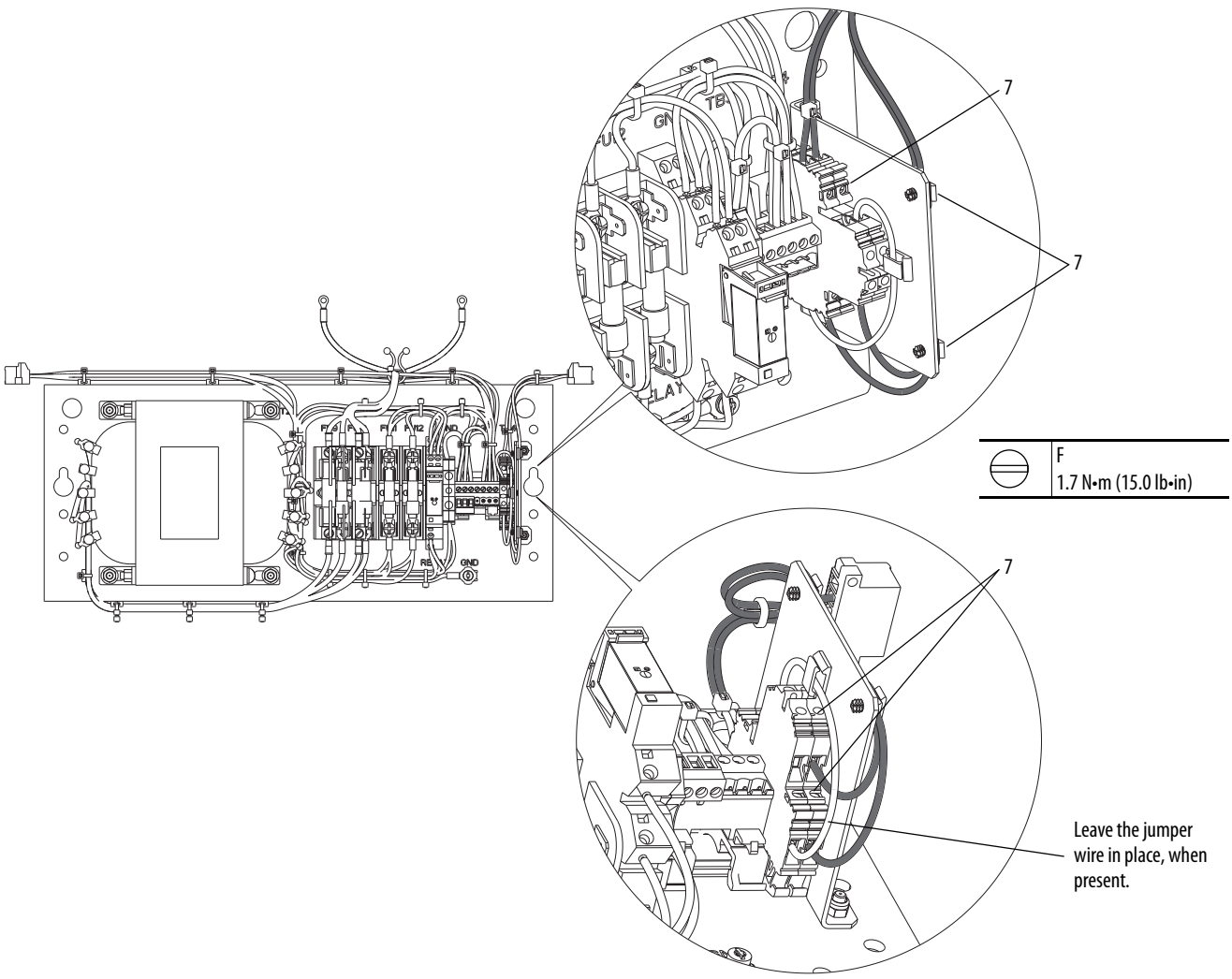
Frame 9 Control Panel Thermostat Harness Removal/Installation

Remove the Frame 9 Control-panel Thermostat Wire Harness

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the option bay door.
4. Remove the guards. See Remove the Frame 9 Series B Option Bay Guards on page 351.
5. Disconnect the thermostat connector from terminal block TB6 on the right side of the control panel.
6. Remove the two M3 x 12-mm hexalobular screws that secure the terminal block to the support bracket.



7. Loosen the screws that secure the wire leads to the top and bottom of terminal block TB4, remove the wire harness from the supports, and remove the wire harness.



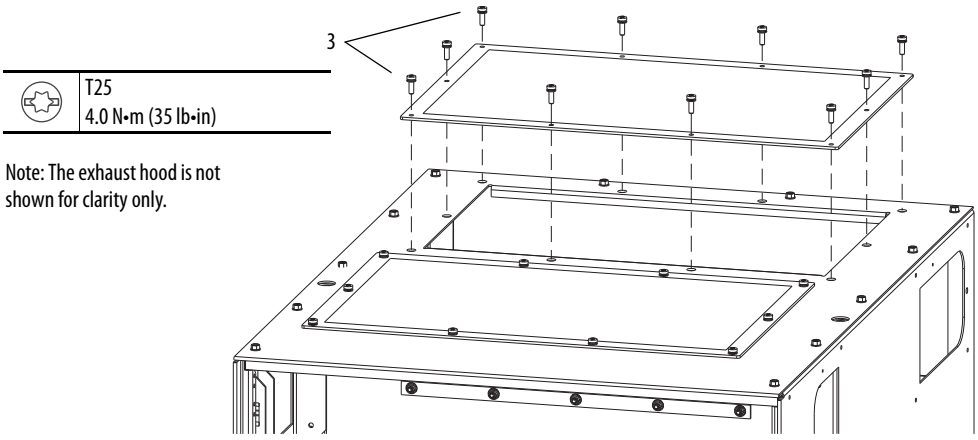
Install the Frame 9 Control-panel Thermostat Wire Harness

Install the frame 9 control-panel thermostat wire harness in the reverse order of removal. See Remove the Frame 9 Control-panel Thermostat Wire Harness on page 386.

Top Conduit Plate Removal/ Installation

Remove the Top Conduit Plate

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the ten M5 x 16-mm screws that secure the conduit plate to the top of the enclosure and remove the plate.



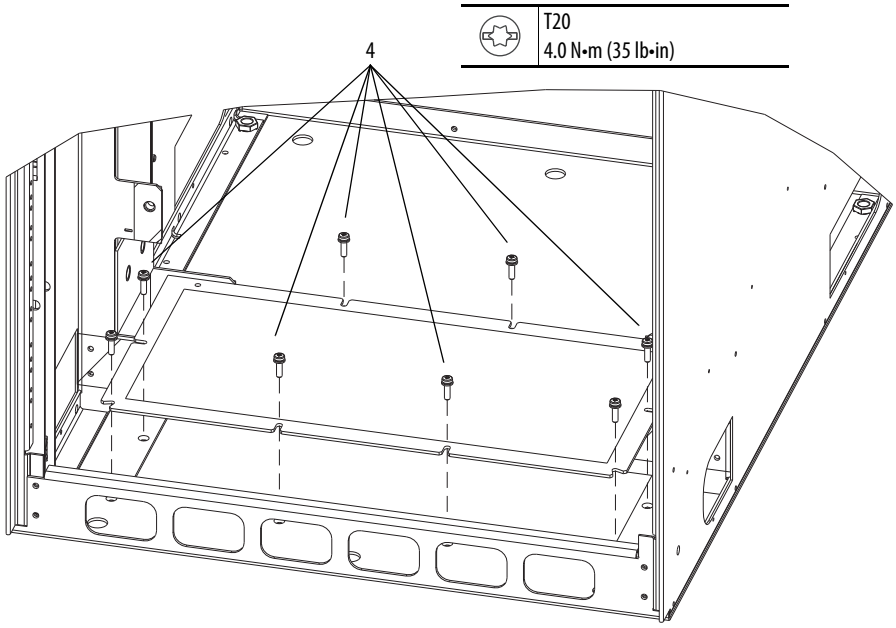
Install the Top Conduit Plate

Install the top conduit plate in the reverse order of removal. See Remove the Top Conduit Plate.

Bottom Conduit Plate Removal/Installation

Remove the Bottom Conduit Plate

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Remove the chassis from the option bay.
4. Remove the eight M5 x 16 screws that secure the plate to the bottom of the enclosure and remove the plate.



Install the Bottom Conduit Plate

Install the bottom conduit plate in the reverse order of removal. See Remove the Bottom Conduit Plate.

Enclosure Cable Components Replacement Procedures (Frame 9 and Larger Drives)

Topic	Page
Enclosure Cable Components and Part Numbers	391
24V Wire Harness Removal/Installation (Frame 9 and Larger Drives)	392
First Inverter (INV1) Fiber-optic Cable Removal/Installation	397
Second Inverter (INV2) Fiber-optic Cable Removal/Installation	401
Third Inverter (INV3) Fiber-optic Cable Removal/Installation	406
Fiber-optic Spool Removal/Installation	410

This chapter provides detailed procedures for how to remove and replace enclosure cable components that are used on frame 9 and larger drives.

Enclosure Cable Components and Part Numbers

This table contains the components that comprise the frame 9 and larger drive enclosure cables and provides the following information for each component, if applicable:

- Kit catalog number or part number
- Quantity that is contained in the kit

A complete list of spare parts for PowerFlex® 755 Frame 8...10 drives is available on the Allen-Bradley web site at:
http://www.ab.com/support/abdrives/powerflex70/PF7ReleasedParts.pdf

IMPORTANT Use only Rockwell Automation provided fiber-optic cables and transceivers. Use of third-party components is not supported.

Table 17 - Enclosure Cable Replacement Kits/Parts

Component Description	Replacement Kit Cat. No. or Part No.	Qty.
2-Bay 24V Wire Harness Kit	20-750-PH2-F9	1
3-Bay 24V Wire Harness Kit	20-750-PH3-F10	1
Fiber-optic Cable, 560 mm (22 in.) Long, Kit	20-750-FCBL1-F8	–
Fiber-optic Cable, 560 mm (22 in.) Long		2
Cable Labels (CONV and INV)		2

Table 17 - Enclosure Cable Replacement Kits/Parts (Continued)

Component Description	Replacement Kit Cat. No. or Part No.	Qty.
Fiber-optic Cable, 2.8 m (110 in.) Long, Kit	20-750-FCBL1-F10	–
Fiber-optic Cable, 2.8 m (110 in.) Long		1
Cable Labels (INV1, INV2, and INV3)		3
Fiber-optic Cable Spool Kit	20-750-SPL1-F10	1
Fiber-optic Transceiver	SK-R1-FTR1-F8	1

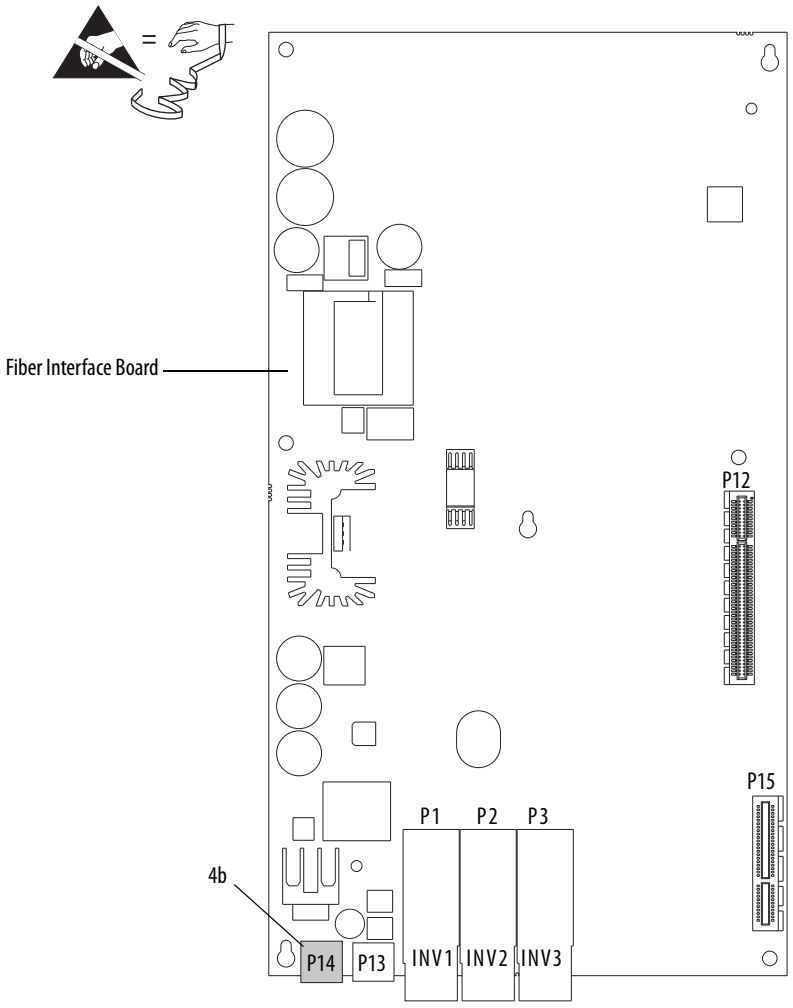
TIP See Fastener/Tool/Torque Information on page 31 for descriptions of the fasteners, tools, and torque figures that are used in the disassembly/assembly procedures in this chapter.

24V Wire Harness Removal/ Installation (Frame 9 and Larger Drives)

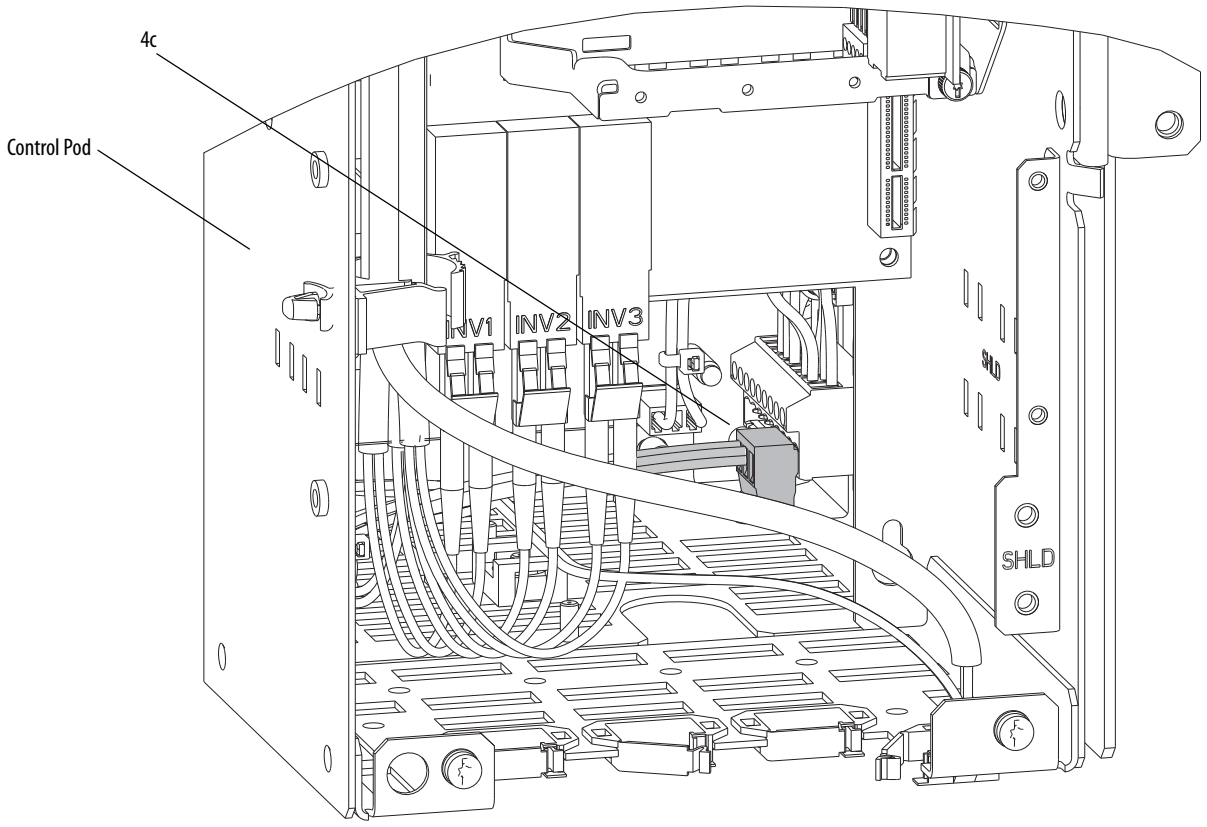
Removing the 24V Wire Harness (Frame 9 and Larger Drives)

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure doors.
4. Complete the following steps in the drive bay that holds the control pod.
   a. Remove the control pod cover. See Remove the Control Pod Cover on page 55.

b. Disconnect the J14 connector from P14 on the fiber interface board in the control pod.

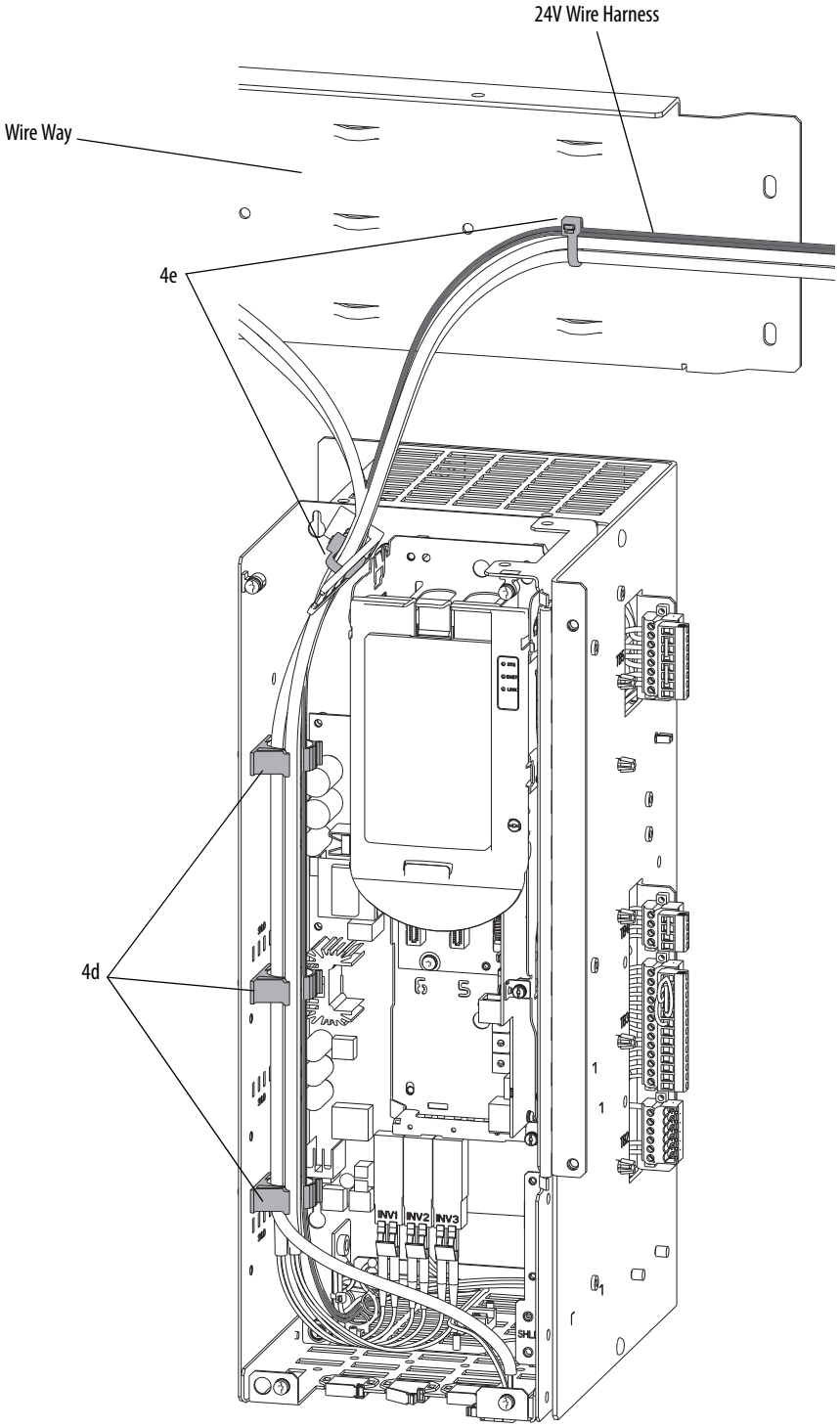


c. Disconnect the three-position 24-V wire harness connector from terminal block TB1 on the control panel (behind the control pod). Remove the cable from the cable support on the bottom of the control panel.

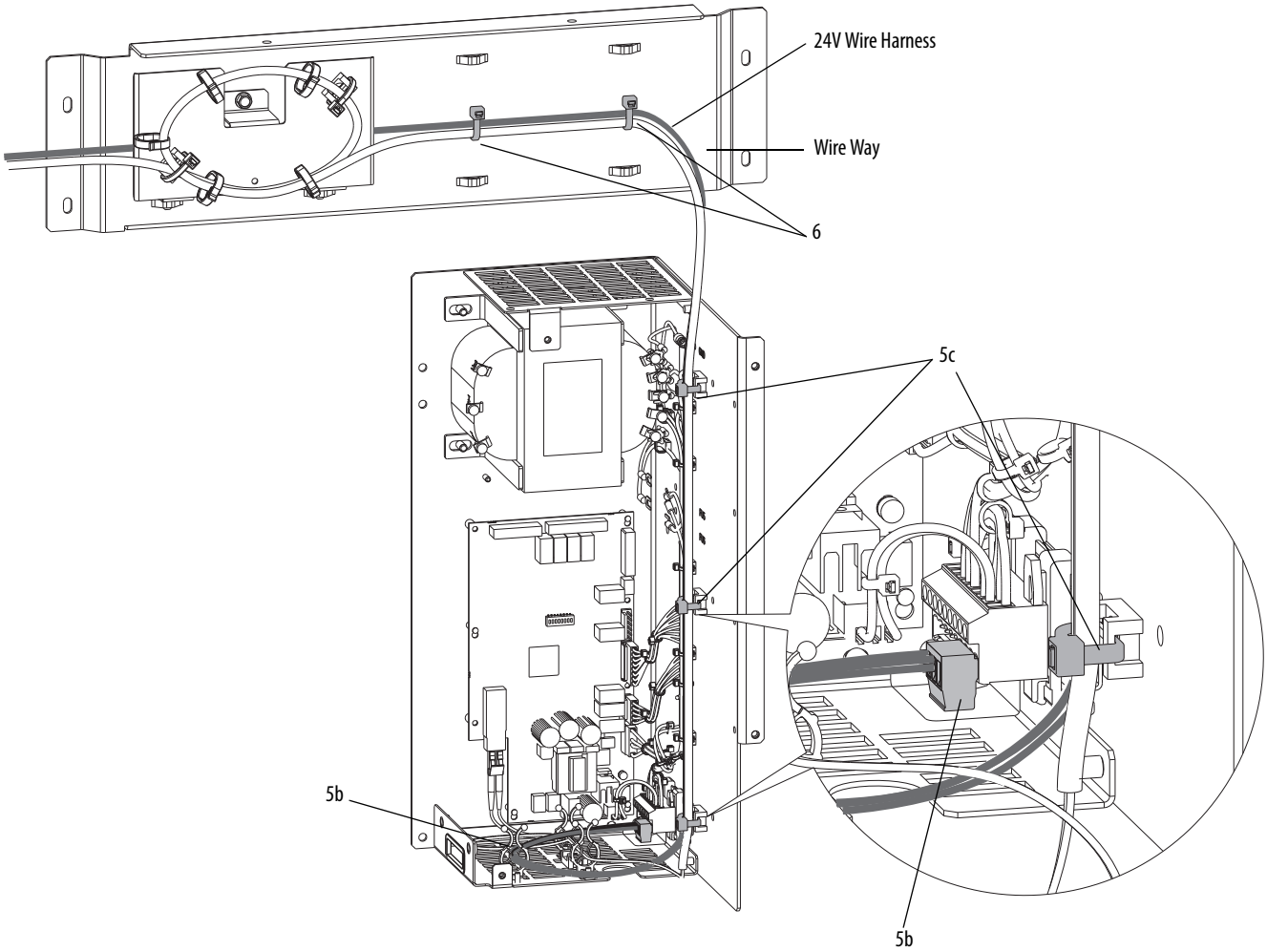


d. Unlock the three cable supports along the inside left wall of the control pod.

e. Open the two releaseable cable ties; one at the top left of the control pod, and one on the horizontal wire way at the top of the enclosure.



5. Complete the following steps in each additional enclosure.
   a. Remove the converter or common-bus precharge right cover. See Remove the Converter Right Cover (No Control Pod) on page 84 or Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
   b. Disconnect the three-position 24V wire harness connector from terminal block TB1 on the control panel and remove the cable from the cable support on the bottom of the control panel.
   c. Open the three releaseable cable ties along the inside right wall of the control panel.
6. On the horizontal wire way, open all releaseable cable ties.
7. Remove the 24-V wire harness from the enclosures.



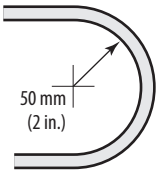
Installing the 24V Wire Harness (Frame 9 and Larger Drives)

Install the 24-V wire harness in the reverse order of removal. See Removing the 24V Wire Harness (Frame 9 and Larger Drives) on page 392.

First Inverter (INV1) Fiber-optic Cable Removal/ Installation

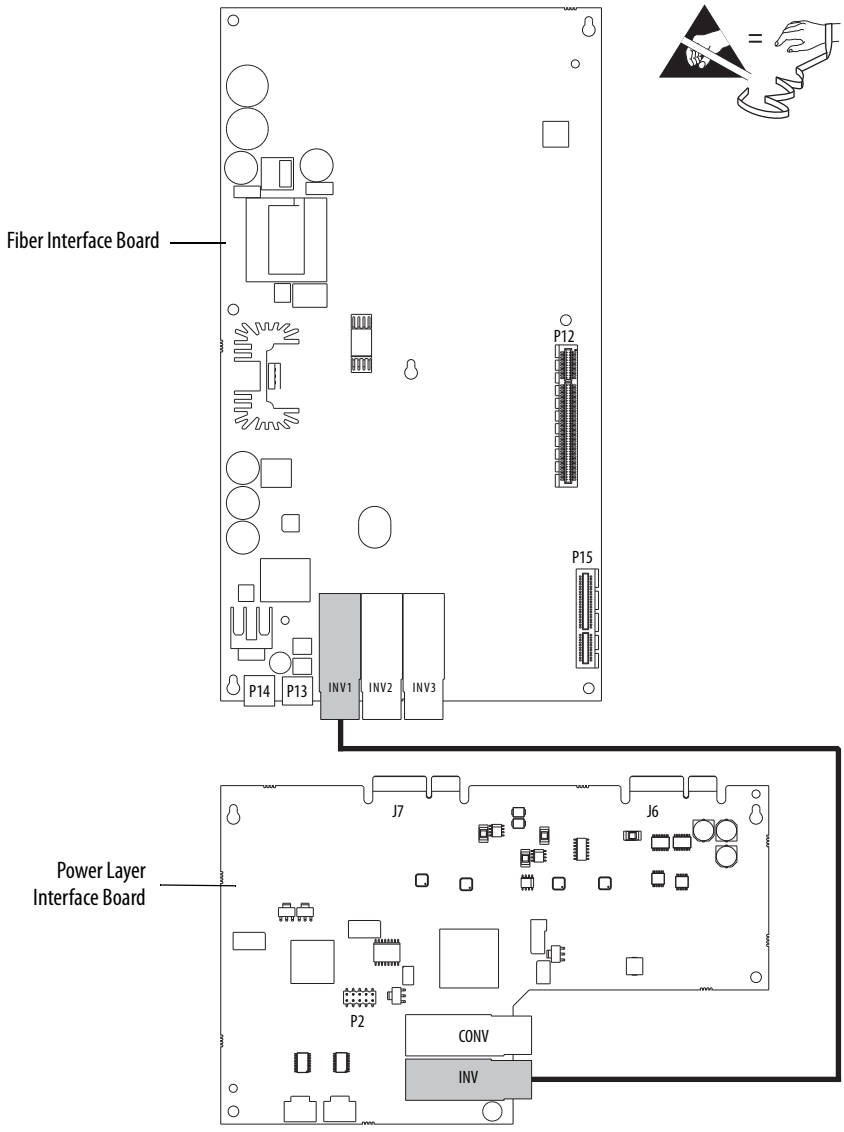
Removing the First Inverter (INV1) Fiber-optic Cable

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.

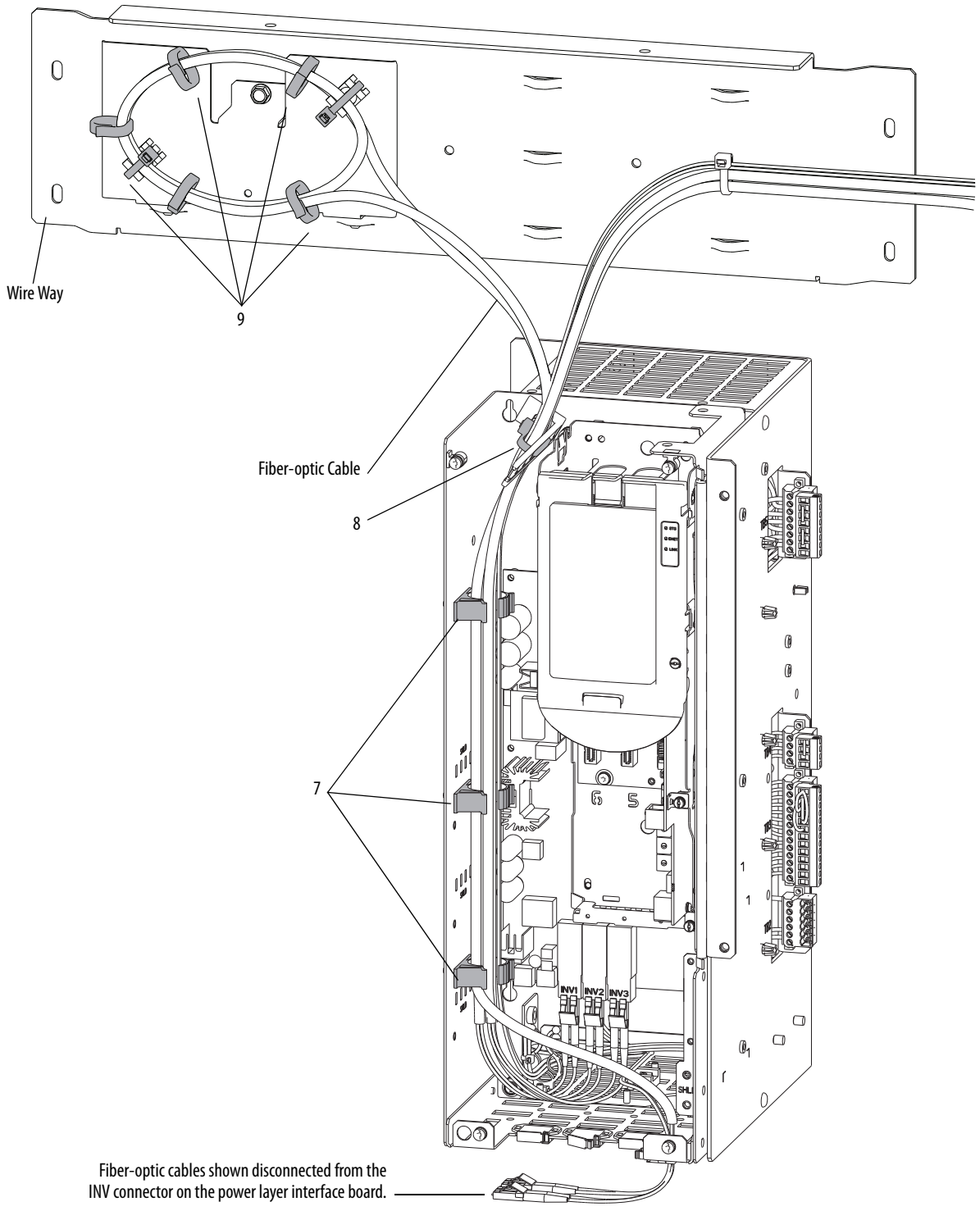


1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Remove the control pod cover. See Remove the Control Pod Cover on page 55.

5. Disconnect the fiber-optic cable from INV1 on the fiber interface board in the control pod.
6. Disconnect the fiber-optic cable from INV on the power layer interface board in the inverter card cage (below the control pod).



7. Unlock the three cable supports along the inside left wall of the control pod.
8. Open the releaseable cable tie at the top left of the control pod.
9. On the cable spool at the top of the horizontal enclosure wire way, open the two releaseable cable ties and unspool the fiber-optic cable from the cable supports and remove the fiber-optic cable.



Installing the First Inverter (INV1) Fiber-optic Cable

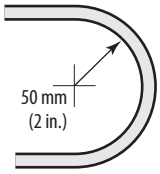
IMPORTANT Frame 9 and larger drives fiber-optic cables that are connected between the fiber interface circuit board and the power-layer interface circuit board on each inverter must be the same length. Cables kits are provided with a length of 2.8 m (110 in.) to meet this requirement.

IMPORTANT Follow these guidelines when installing the new fiber-optic cable on the inverters for frame 9 and 10 drives:

- The cable must be looped through the cable supports on the fiber-optic cable spool as directed in the following table.
- The cable must be routed through all existing cable ties as previously installed.

Drive Enclosure	Number of Fiber-optic Cable Loops on Spool
First Inverter	2
Second Inverter	1
Third Inverter	0

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.

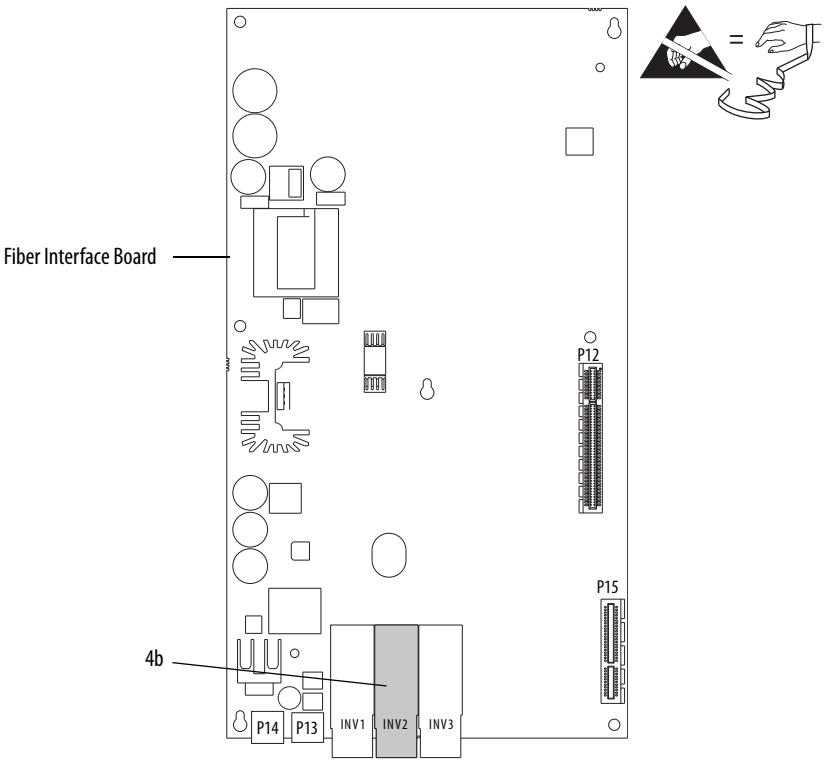


Install the first inverter (INV1) fiber-optic cable in the reverse order of removal. See Removing the First Inverter (INV1) Fiber-optic Cable on page 397.

Second Inverter (INV2) Fiber-optic Cable Removal/ Installation

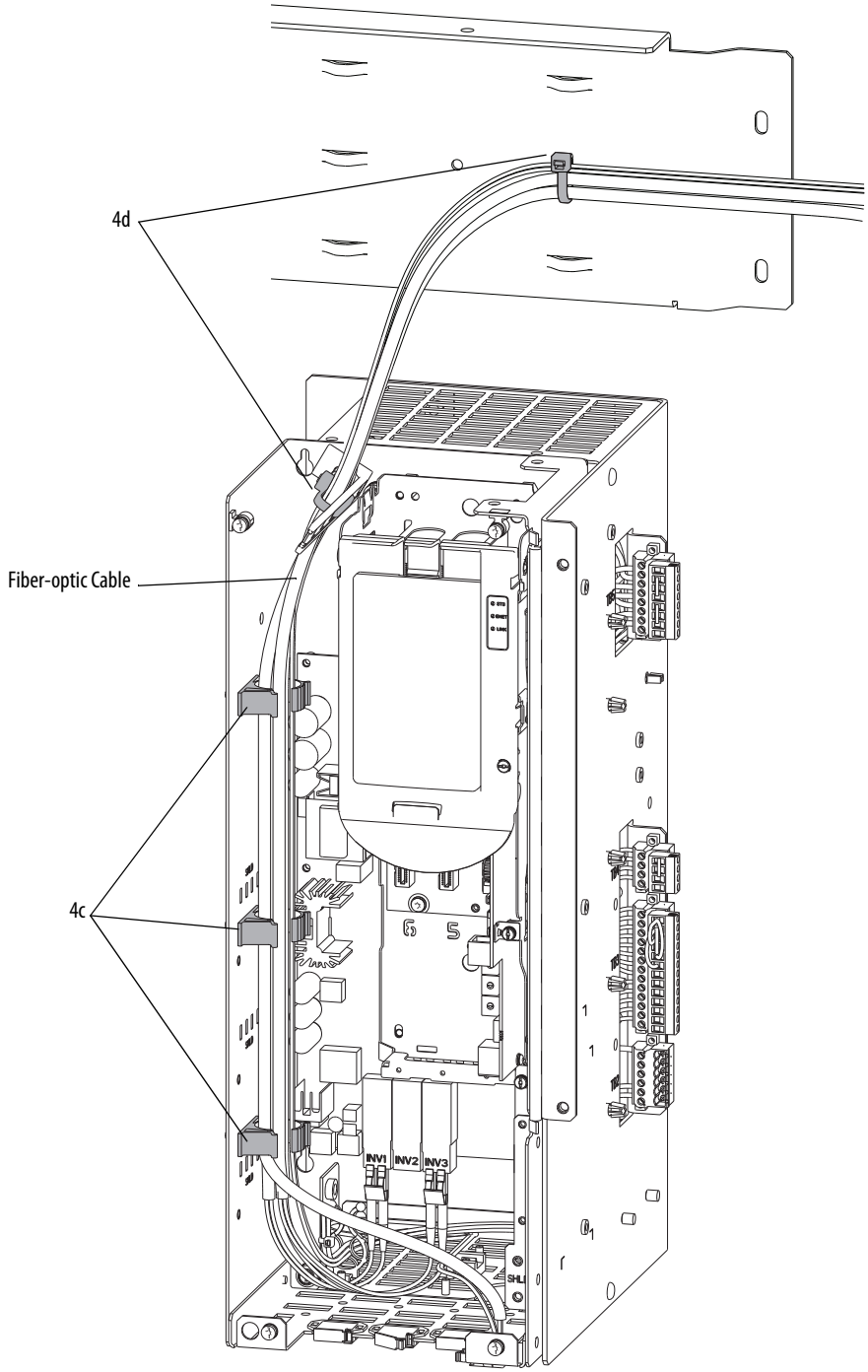
Removing the Second Inverter (INV2) Fiber-optic Cable

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Complete the following steps in the drive bay that holds the control pod.
   a. Remove the control pod cover. See Remove the Control Pod Cover on page 55.
   b. Disconnect the fiber-optic cable from INV2 on the fiber interface board in the control pod.

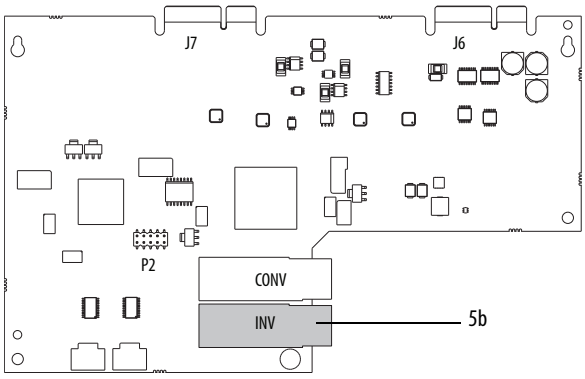


c. Unlock three cable supports along the inside left wall of the control pod.

d. Open the two releaseable cable ties; one at the top left of the control pod, and one on the horizontal wire way at the top of the enclosure.



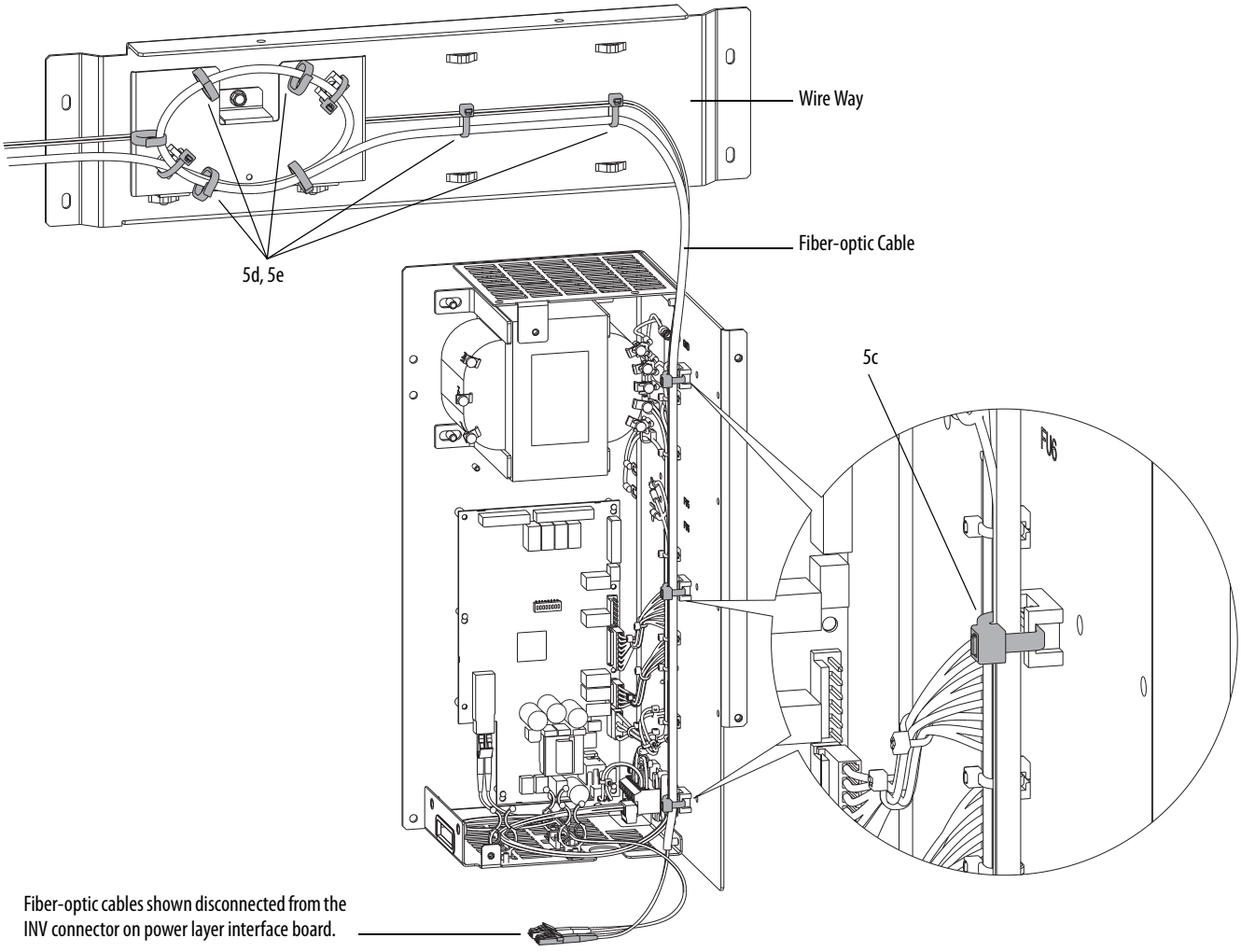
5. Complete the following steps in the second bay.
   a. Remove the converter or common-bus precharge right cover. See Remove the Converter Right Cover (No Control Pod) on page 84 or Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
   b. Disconnect the fiber-optic cable from INV on the power layer interface board in the inverter card cage (below the control panel).



c. Open the three releaseable cable ties along the inside right wall of the control panel.

d. Open the two releaseable cable ties on the horizontal enclosure wire way.

e. On the cable spool at the top of the horizontal enclosure wire way, open the two releaseable cable ties and unspool the fiber-optic cable from the cable supports and remove the fiber-optic cable.



Installing the Second Inverter (INV2) Fiber-optic Cable

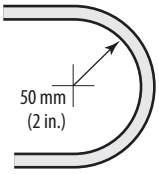
IMPORTANT Frame 9 and larger drives fiber-optic cables that are connected between the fiber interface circuit board and the power-layer interface circuit board on each inverter must be the same length. Cables kits are provided with a length of 2.8 m (110 in.) to meet this requirement.

IMPORTANT Follow these guidelines when installing the new fiber-optic cable on the inverters for frame 9 and 10 drives:

- The cable must be looped through the cable supports on the fiber-optic cable spool as directed in the following table.
- The cable must be routed through all existing cable ties as previously installed.

Drive Enclosure	Number of Fiber-optic Cable Loops on Spool
First Inverter	2
Second Inverter	1
Third Inverter	0

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.

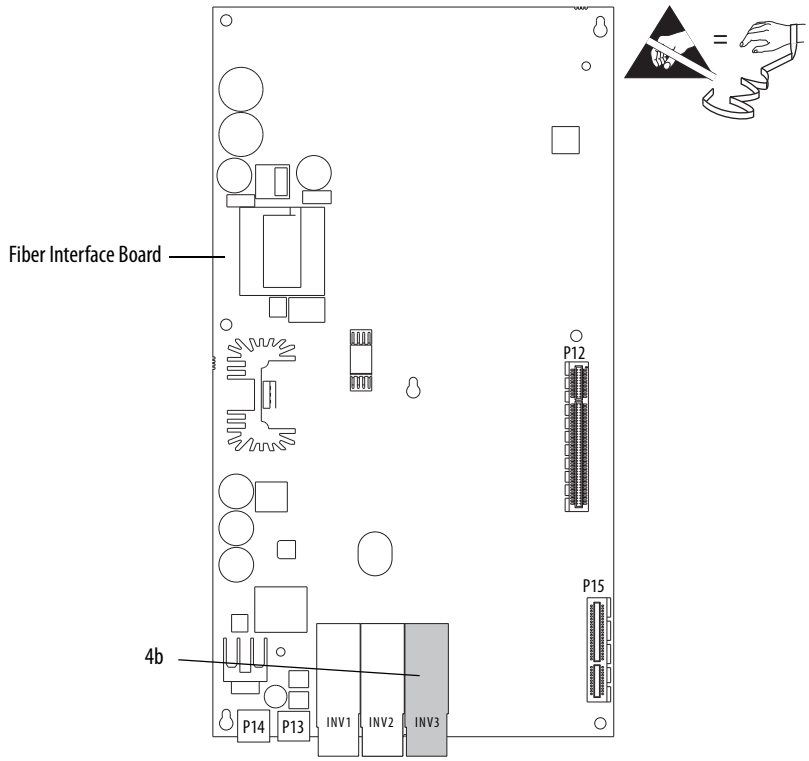


Install the second inverter (INV2) fiber-optic cable in the reverse order of removal. See Removing the Second Inverter (INV2) Fiber-optic Cable on page 401.

Third Inverter (INV3) Fiber-optic Cable Removal/ Installation

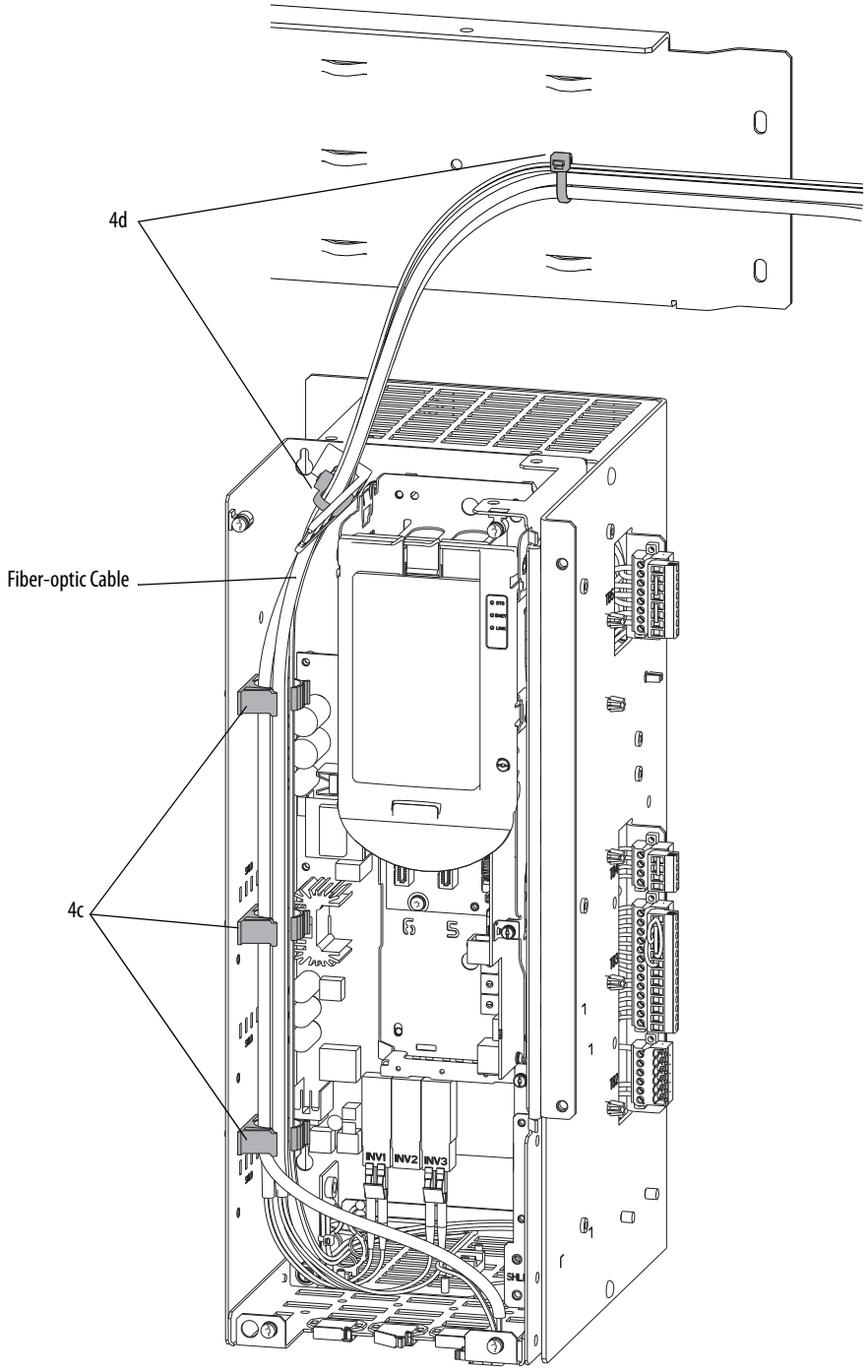
Removing the Third Inverter (INV3) Fiber-optic Cable

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.
4. Complete the following steps in the drive bay that holds the control pod.
   a. Remove the control pod cover. See Remove the Control Pod Cover on page 55.
   b. Disconnect the fiber-optic cable from INV3 on the fiber interface board in the control pod.

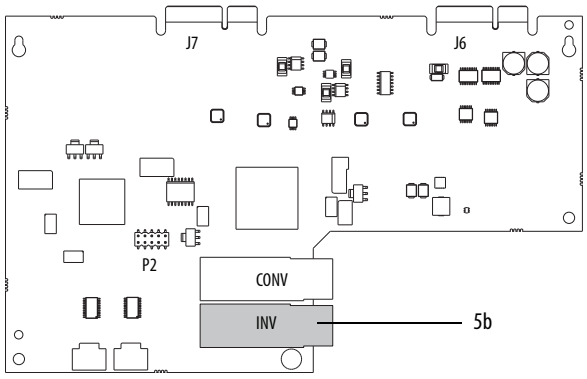


c. Unlock three cable supports along the inside left wall of the control pod.

d. Open the two releaseable cable ties; one at the top left of the control pod, and one on the horizontal wire way at the top of the enclosure.

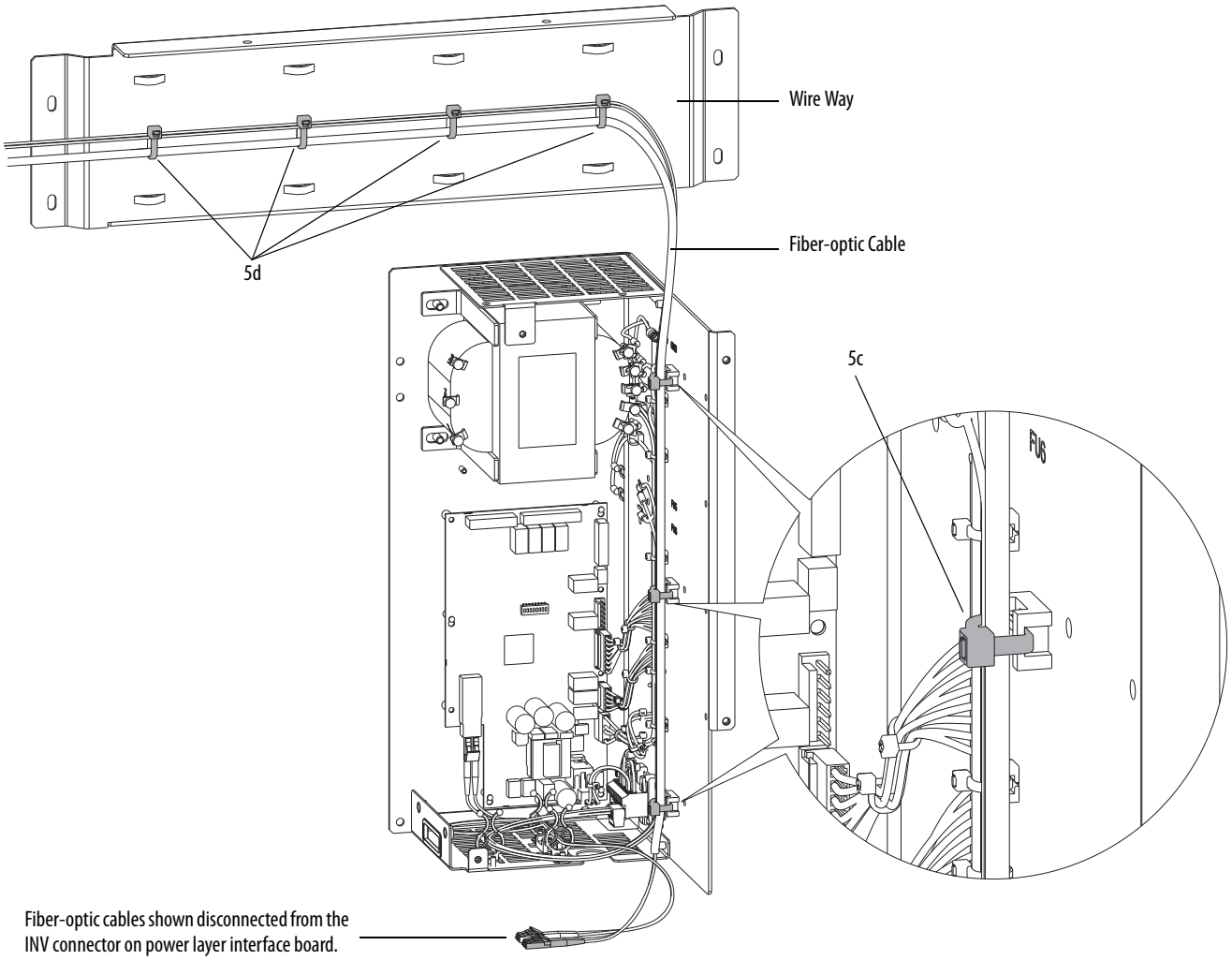


5. Complete the following steps in the third bay.
   a. Remove the converter or common-bus precharge right cover. See Remove the Converter Right Cover (No Control Pod) on page 84 or Remove the DC Input with Precharge Assembly Right Cover (No Control Pod) on page 168.
   b. Disconnect the fiber-optic cable from INV on the power layer interface board in the inverter card cage (below the control panel).



c. Open the three releaseable cable ties along the inside right wall of the control panel.

d. Open the four releaseable cable ties on the horizontal enclosure wire way and remove the fiber-optic cable.



Installing the Third Inverter (INV3) Fiber-optic Cable

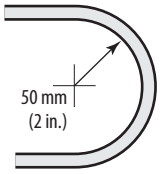
IMPORTANT Frame 9 and larger drives fiber-optic cables that are connected between the fiber interface circuit board and the power-layer interface circuit board on each inverter must be the same length. Cables kits are provided with a length of 2.8 m (110 in.) to meet this requirement.

IMPORTANT Follow these guidelines when installing the new fiber-optic cable on the inverters for frame 9 and 10 drives:

- The cable must be looped through the cable supports on the fiber-optic cable spool as directed in the following table.
- The cable must be routed through all existing cable ties as previously installed.

Drive Enclosure	Number of Fiber-optic Cable Loops on Spool
First Inverter	2
Second Inverter	1
Third Inverter	0

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



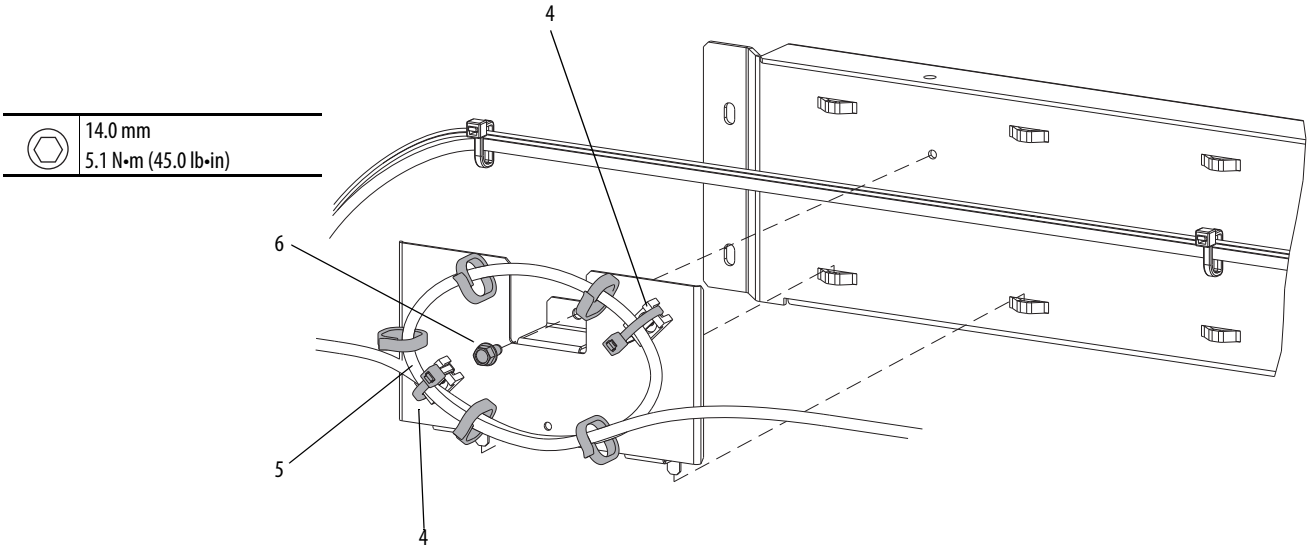
Install the third inverter (INV3) fiber-optic cable in the reverse order of removal. See Removing the Third Inverter (INV3) Fiber-optic Cable on page 406.

Fiber-optic Spool Removal/ Installation

Removing the Fiber-optic Spool

1. Review the General Precautions on page 22.
2. Remove power from the drive. See Remove Power from the Drive on page 23.
3. Open the enclosure door.

4. Open the releaseable cable ties on the fiber-optic spool.
5. Carefully unspool the fiber-optic cable from the cable supports on the spool.
6. Remove the M6 x 14-mm hex screw that secures the spool to the enclosure wire way.
7. To remove the spool, lift it off the tabs on the wire way.



Installing the Fiber-optic Spool

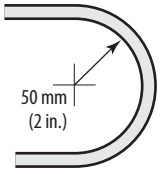
Install the fiber-optic spool in the reverse order of removal. See Removing the Fiber-optic Spool on page 410.

IMPORTANT Follow these guidelines when installing the new fiber-optic cable on the inverters for frame 9 and 10 drives:

- The cable must be looped through the cable supports on the fiber-optic cable spool as directed in the following table.
- The cable must be routed through all existing cable ties as previously installed.

Drive Enclosure	Number of Fiber-optic Cable Loops on Spool
First Inverter	2
Second Inverter	1
Third Inverter	0

IMPORTANT Minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases with decreased inside bend radii.



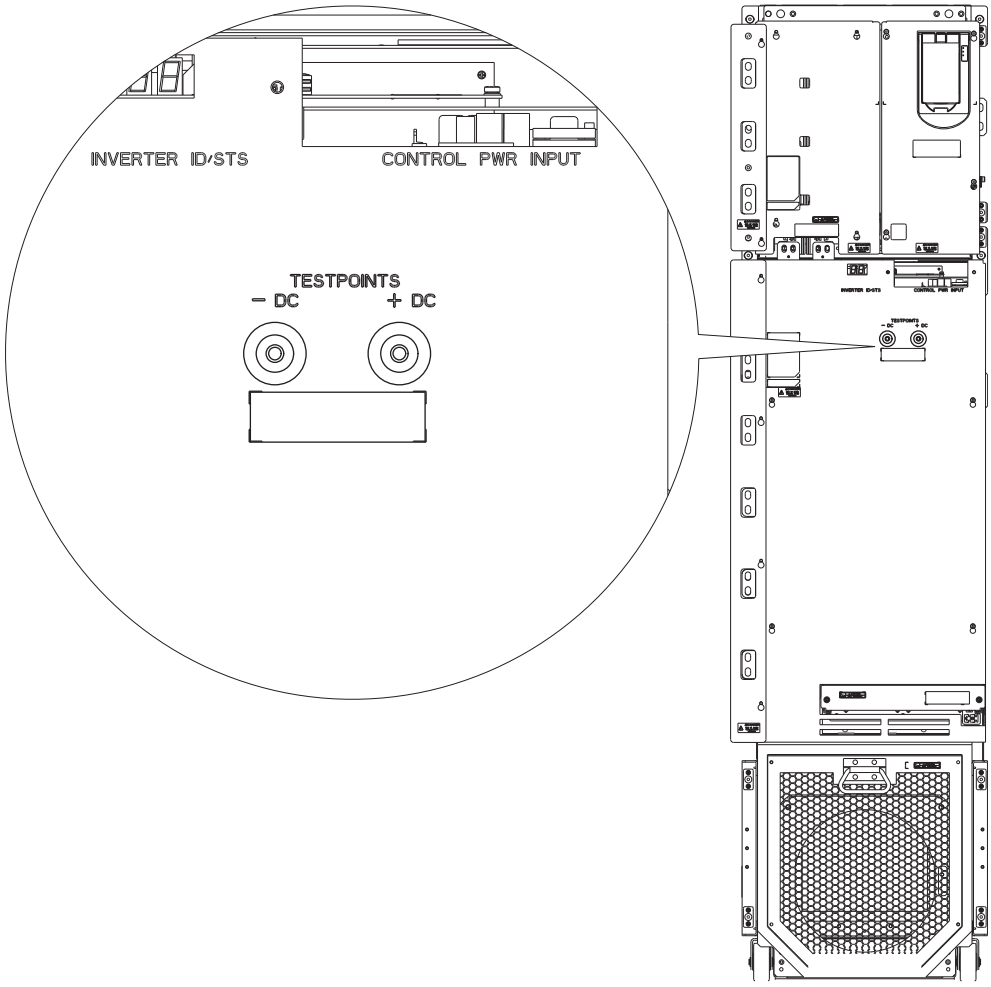
Drive Start Up After Repairs

Topic	Page
Before You Apply Power to the Drive	413
Testing With the Motor Without a Mechanical Load	415

This chapter provides detailed instructions for starting up a drive after you have completed repairs.

Before You Apply Power to the Drive

1. Check the DC bus voltage at the -DC and +DC testpoints sockets on the front of the power module.



2. Perform forward and reverse biased diode tests, by using a digital multimeter. See Forward and Reverse Biased SCR/Diode Tests on page 45.
3. Inspect the drive for loose bolts, disconnected cables, and so forth.
4. Verify the following connections.
   - All fiber-optic cables are connected at both ends and properly supported by cable ties along their entire length when connected between enclosures.
   - If any work was performed on the converter, inspect all converter wire harnesses to be sure that they are all connected at both ends.
   - If any work was performed on the converter, inspect the control transformer primary connections to verify that the taps are appropriate for the applied voltage:

Primary Terminal Connections	Input Voltage
H1 & H2	380/415
H1 & H3	440/480
H1 & H4	575/600
H1 & H5	690

   - If any work was performed on the DC input with precharge assembly, inspect all DC input wire harnesses to be sure that they are all connected at both ends.
   - If any work was performed on the DC input with precharge assembly, inspect the control transformer primary connections to verify that the taps are appropriate for the applied voltage:

Primary Terminal Connections	Input Voltage
H1 & H2	120
H1 & H3	240

   - If any work was performed on a frame 9 or larger drive, inspect the 24-V wire harnesses to be sure that they are properly connected at the ends and properly supported by cables ties along their entire length.
   - If any work was performed to or around the inverter card cage, verify that the current feedback cable is connected to the inverter power board, and to all three current sensors. Also verify that the P6 cable is connected to the inverter power board, and that the J1 cable is connected to the main power supply board.
   - The two heatsink fan cables are connected to the fan terminal block.

Testing With the Motor Without a Mechanical Load

This test lets you measure the DC bus voltage and output current and diagnose problems without connecting the motor to its mechanical load.

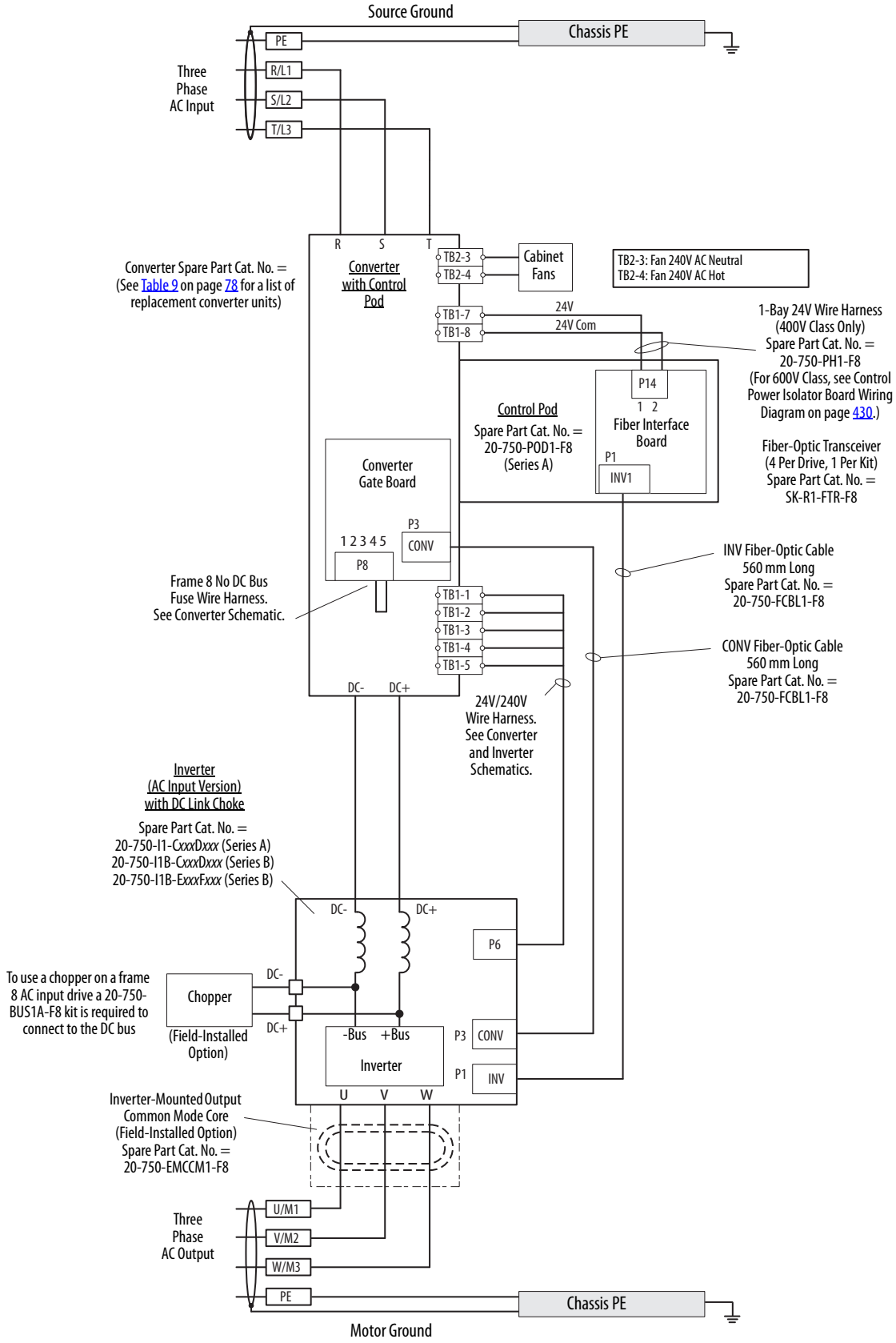
1. Verify that the input power and ground wires are connected.
2. Verify that the motor cables are connected.
3. Verify that the motor load is disconnected.
4. Energize the drive.
5. Measure the DC bus voltage and verify that the value is reflected in parameter 11 [DC Bus Volts].
6. Start the drive and increase the speed from zero to base speed.
7. Measure drive output current and verify that the value is reflected in the parameter 7 [Output Current].
8. Stop the drive.

Notes:

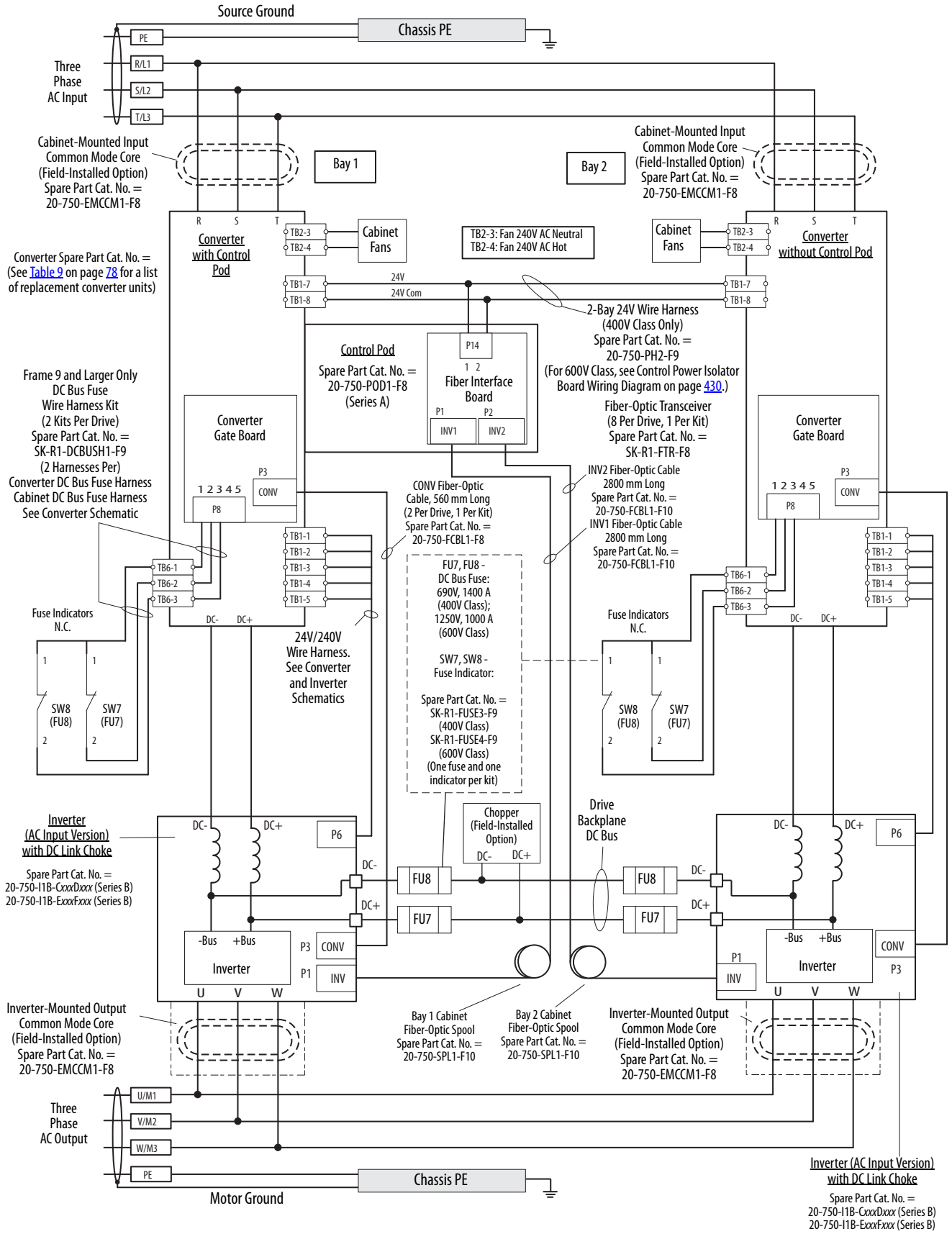
Schematics

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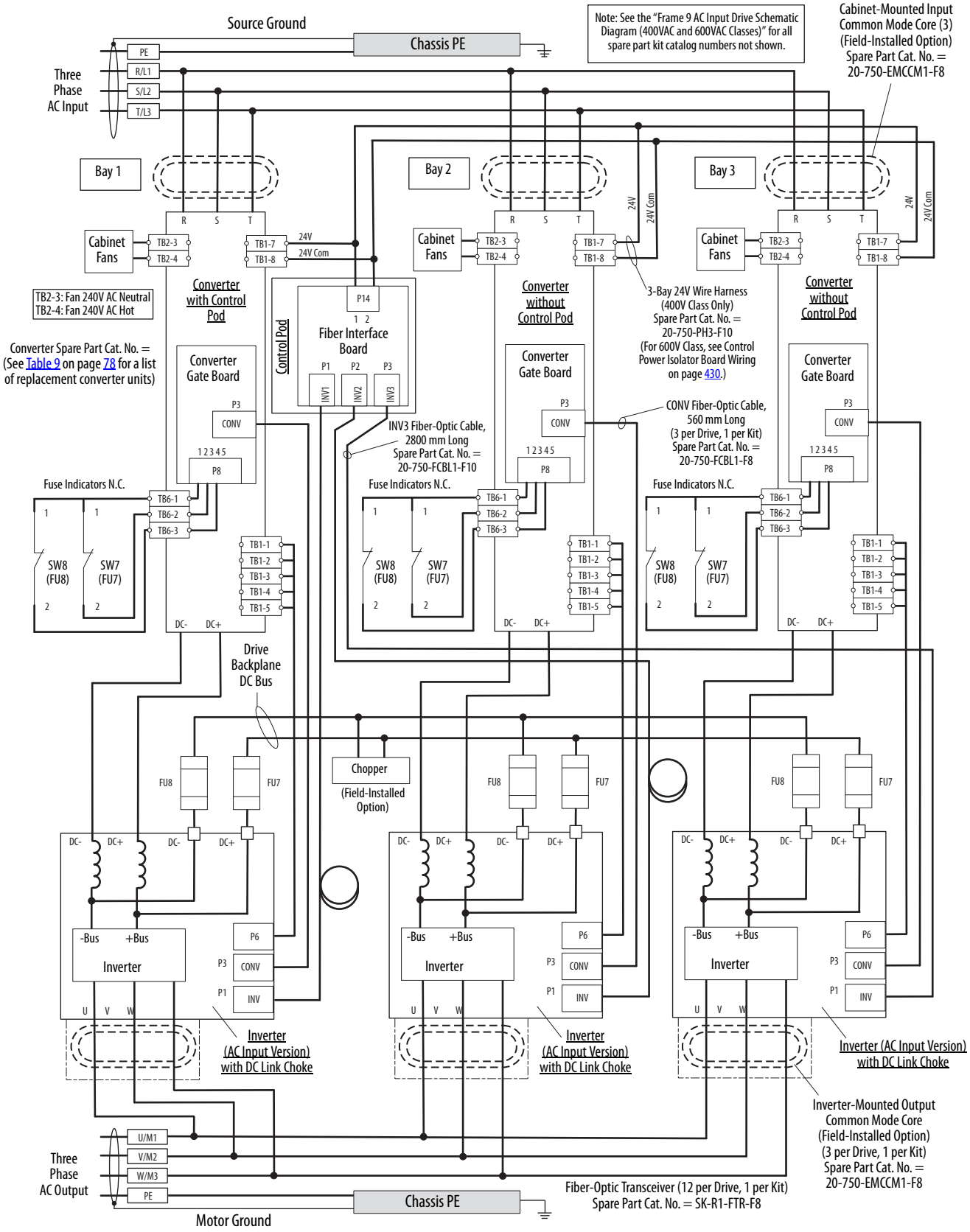
Frame 8 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes)



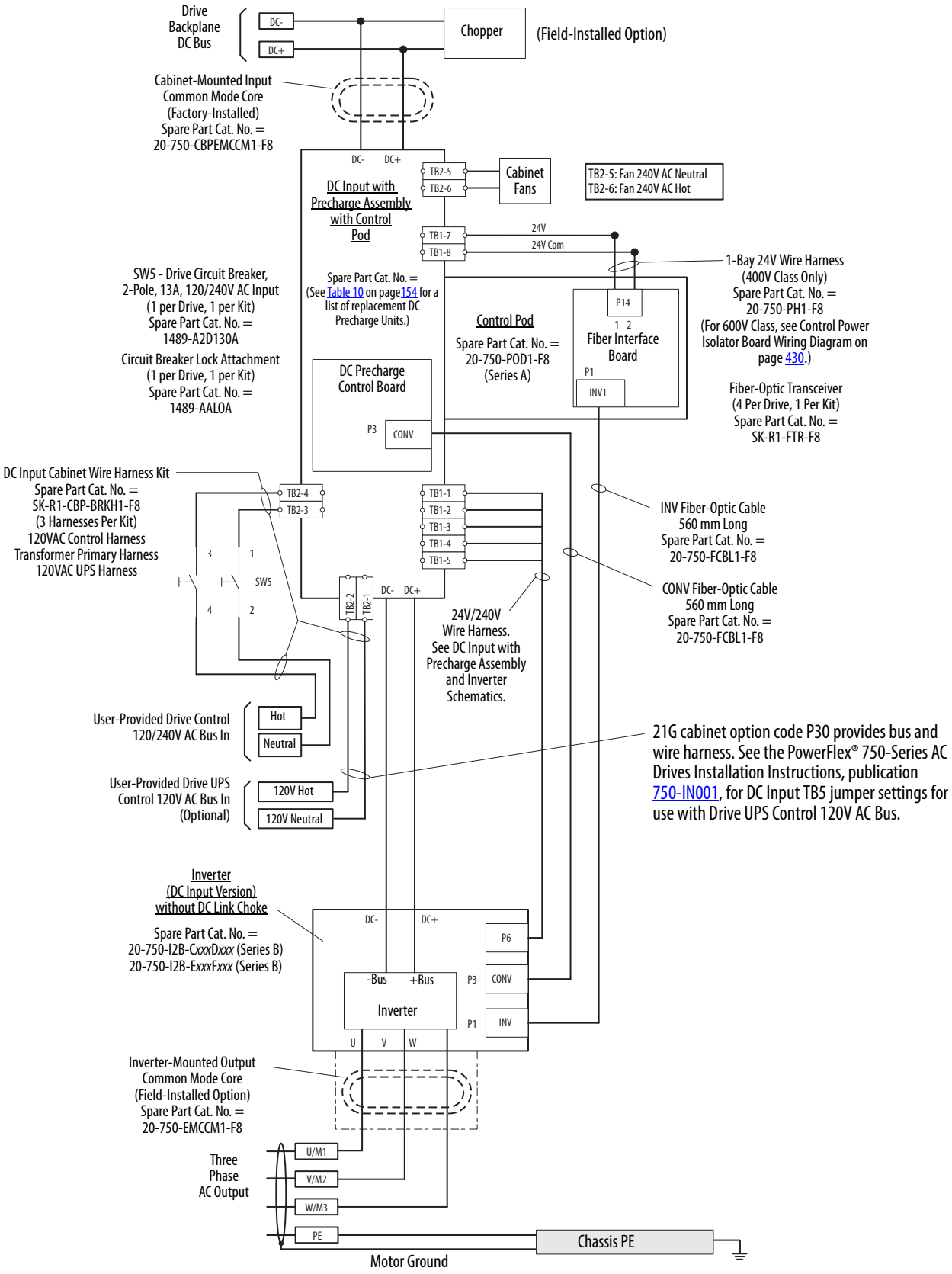
Frame 9 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes)



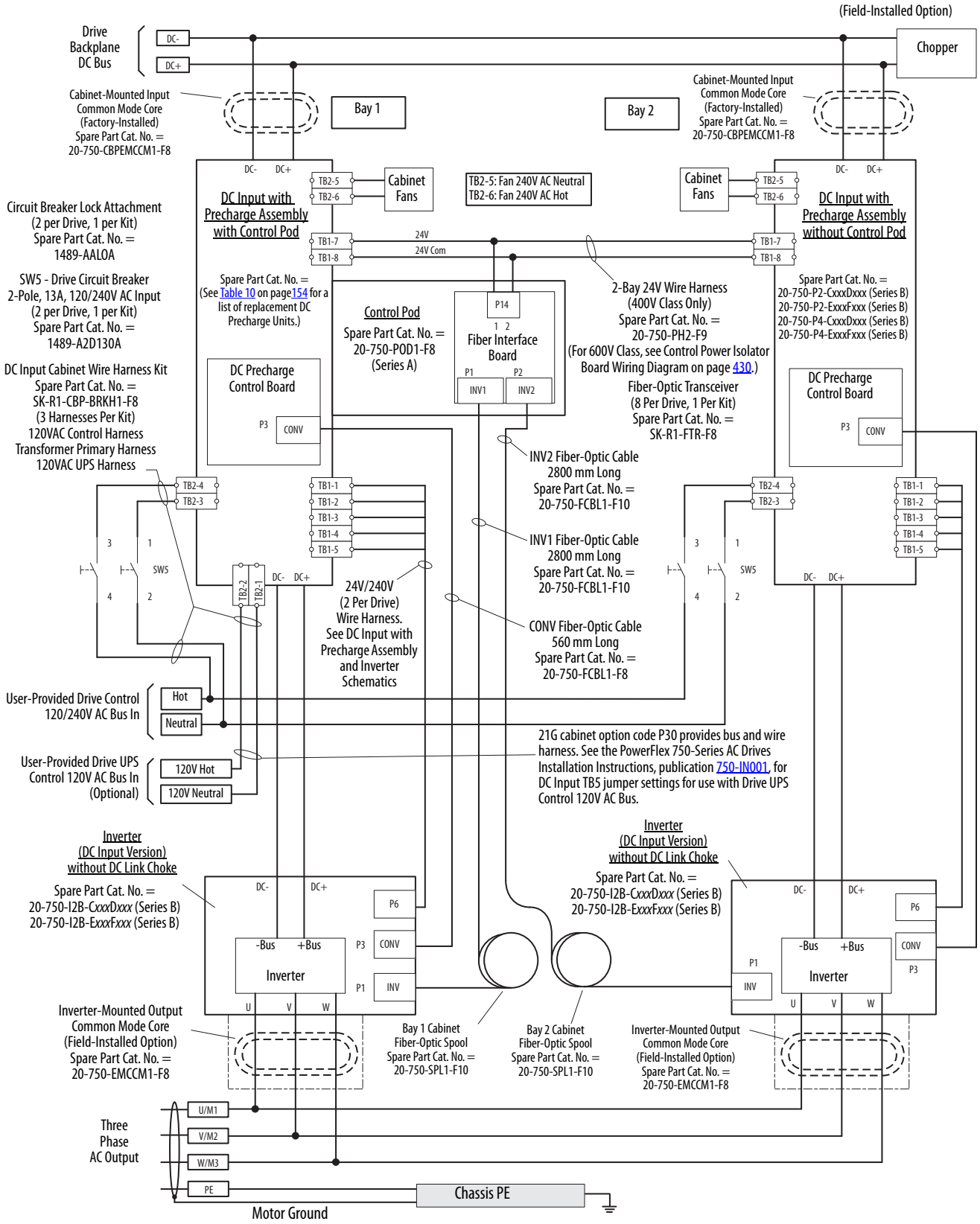
Frame 10 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes)



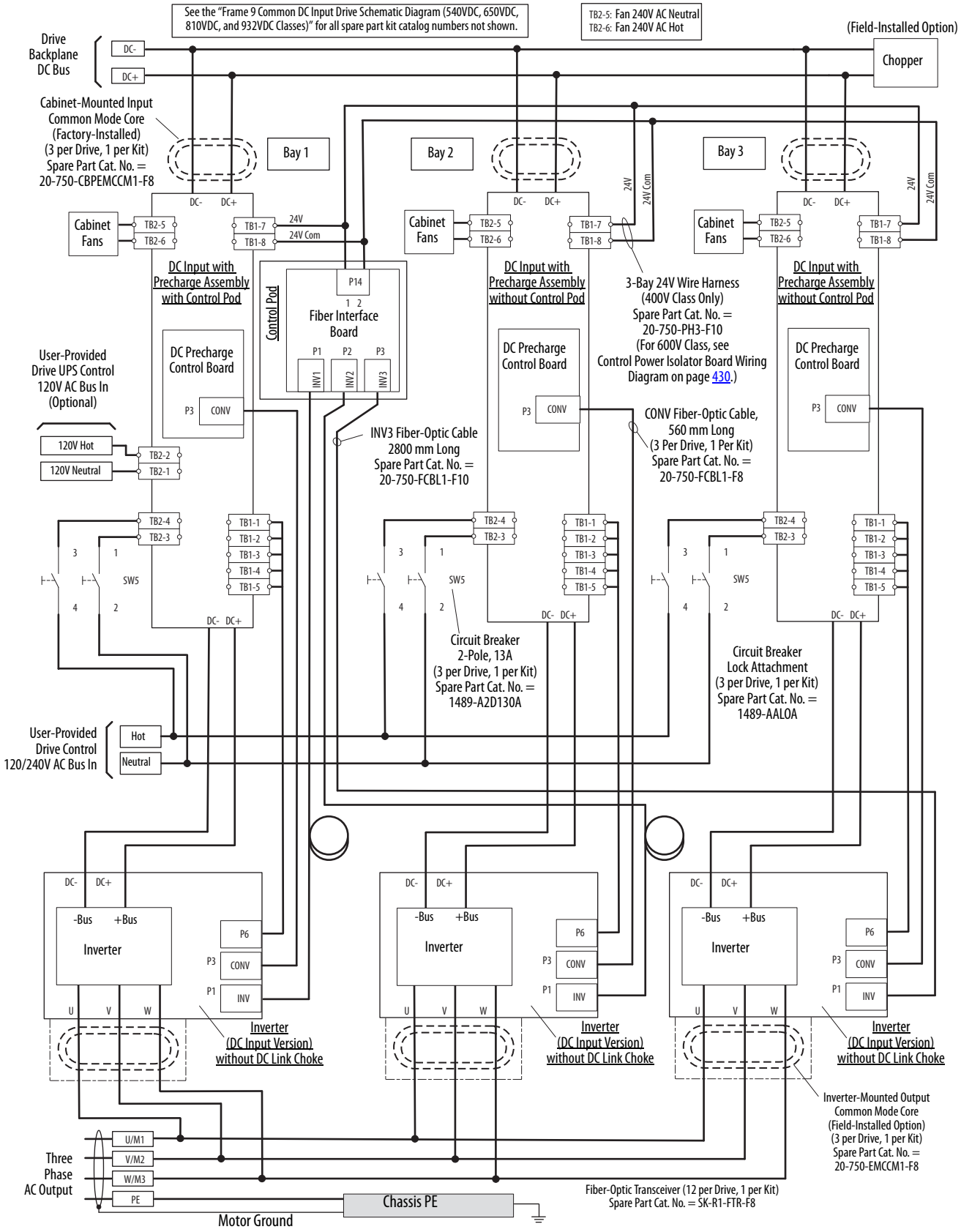
Frame 8 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes)



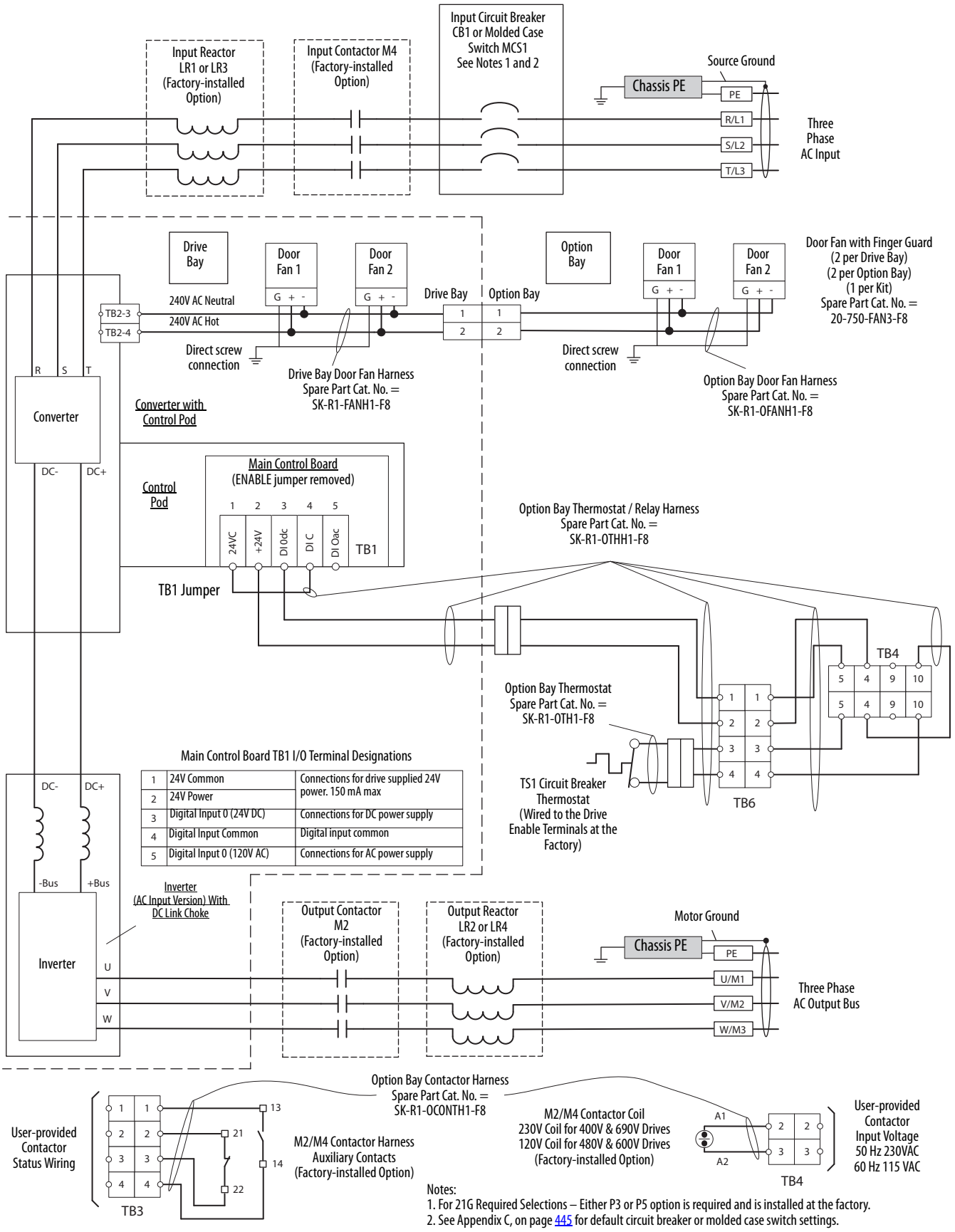
Frame 9 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes)



Frame 10 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes)

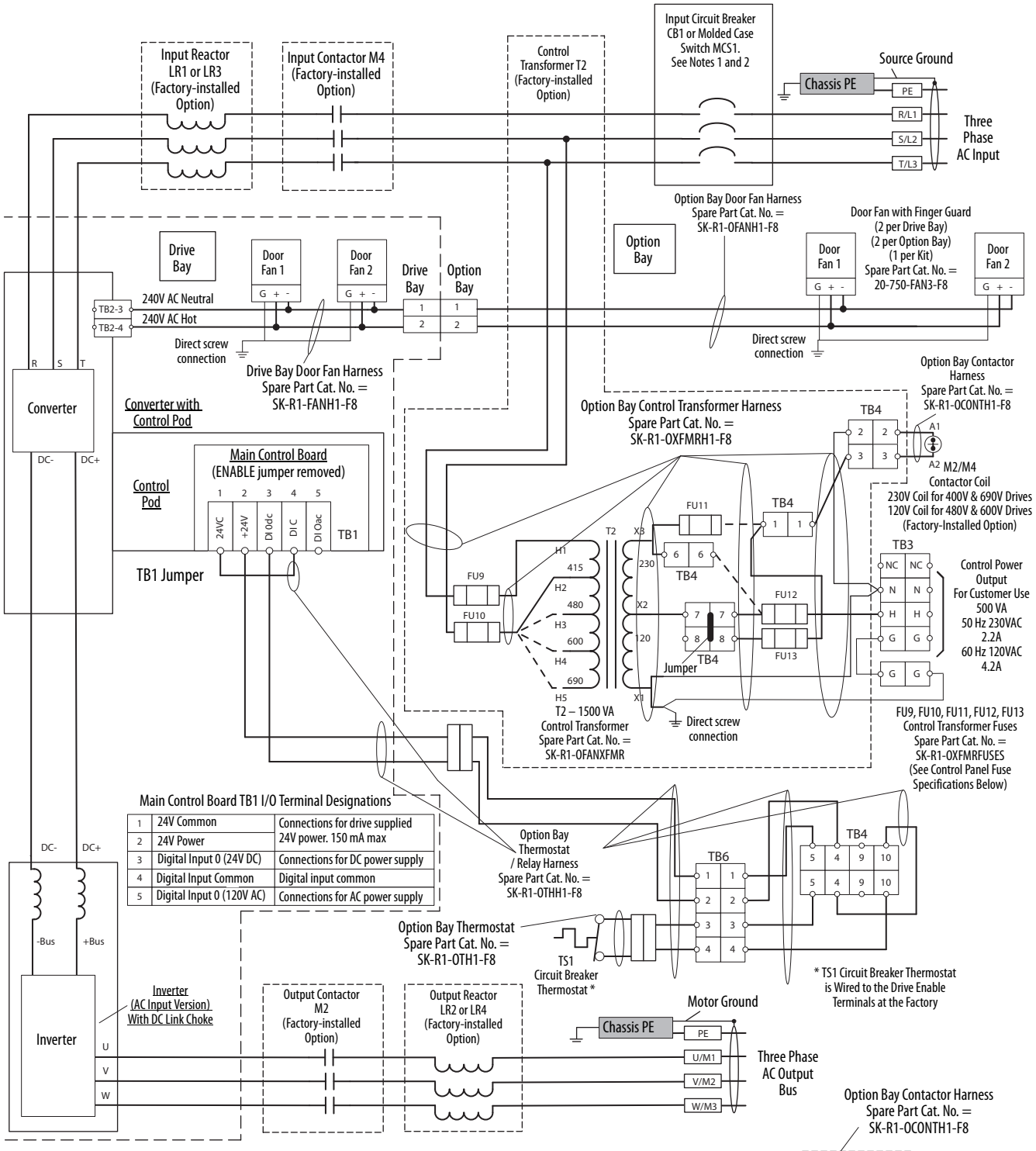


Frame 8 AC Input IP20 Option Bay Without a Control Transformer Schematic Diagram



Notes:
1. For 21G Required Selections – Either P3 or P5 option is required and is installed at the factory.
2. See Appendix C, on page 445 for default circuit breaker or molded case switch settings.

Frame 8 AC Input IP20 Option Bay With a Control Transformer Schematic Diagram

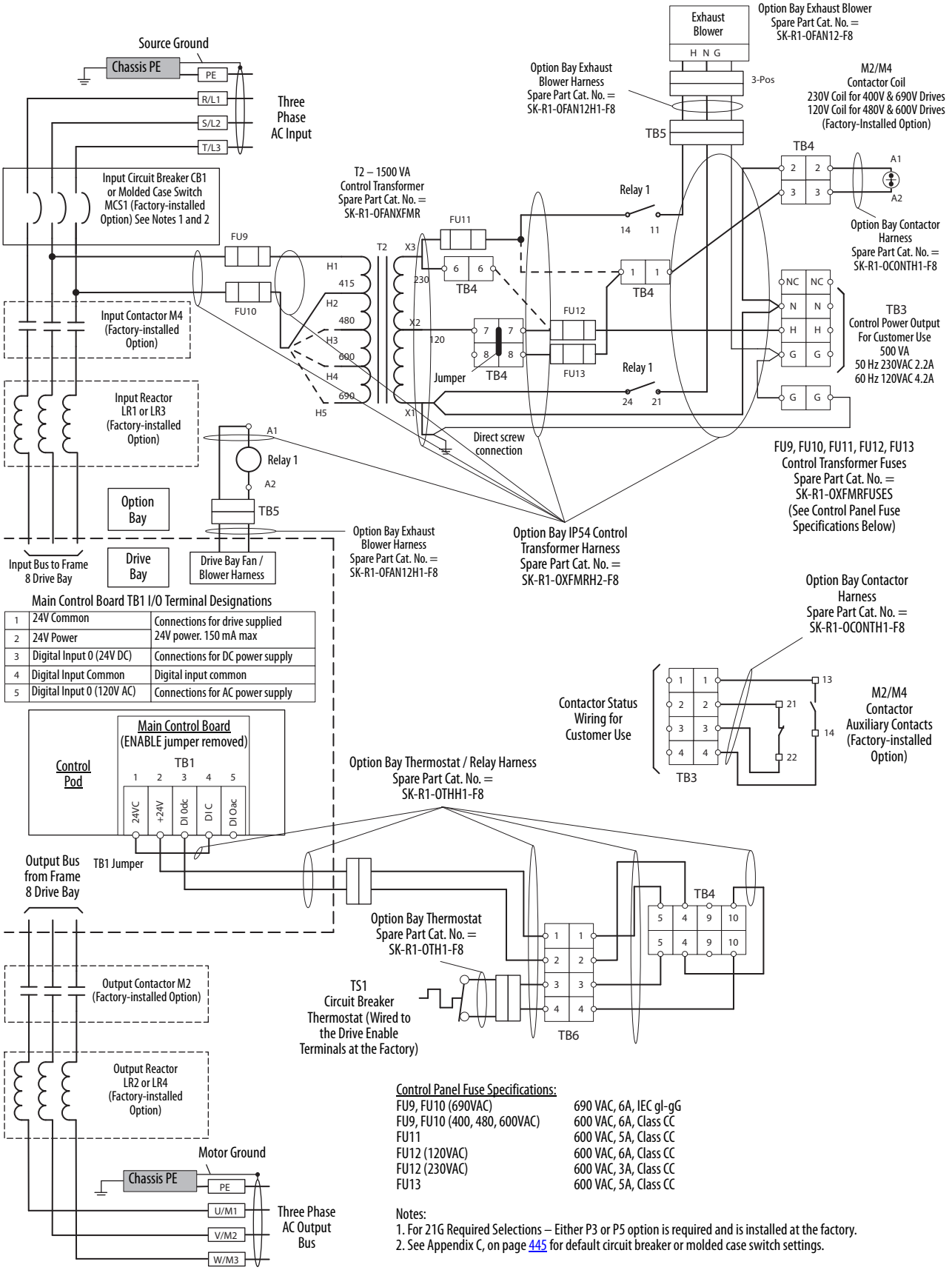


Control Panel Fuse Specifications:

FU9, FU10 (690VAC)	690 VAC, 6A, IEC gI-gG
FU9, FU10 (400, 480, 600VAC)	600 VAC, 6A, Class CC
FU11	600 VAC, 5A, Class CC
FU12 (120VAC)	600 VAC, 6A, Class CC
FU12 (230VAC)	600 VAC, 3A, Class CC
FU13	600 VAC, 5A, Class CC

Notes:
1. For 21G Required Selections – Either P3 or P5 option is required and is installed at the factory.
2. See Appendix C, on page 445 for default circuit breaker or molded case switch settings.

Frame 8 AC Input IP54 Option Bay Schematic Diagram

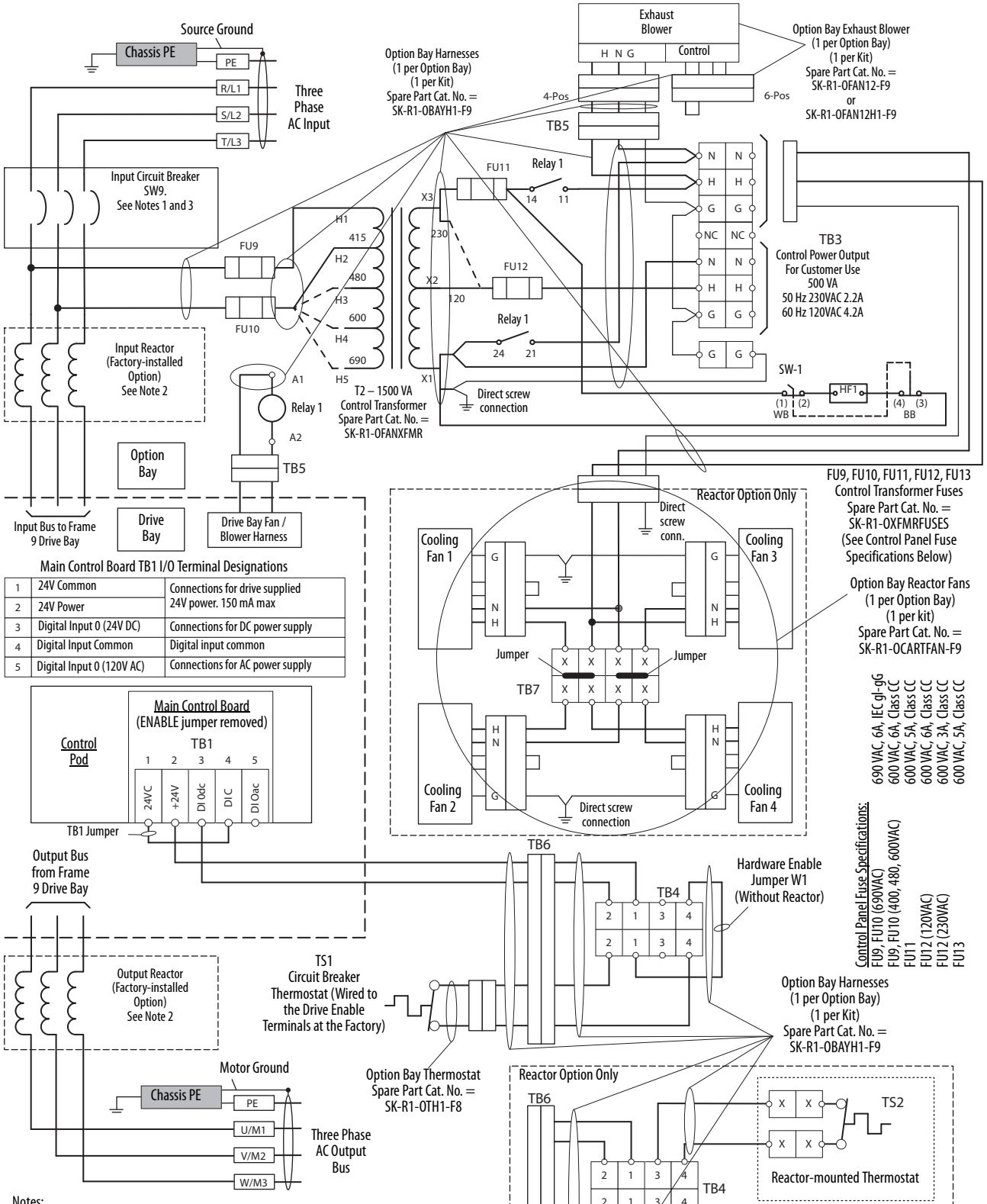


Control Panel Fuse Specifications:

FU9, FU10 (690VAC)	690 VAC, 6A, IEC gI-gG
FU9, FU10 (400, 480, 600VAC)	600 VAC, 6A, Class CC
FU11	600 VAC, 5A, Class CC
FU12 (120VAC)	600 VAC, 6A, Class CC
FU12 (230VAC)	600 VAC, 3A, Class CC
FU13	600 VAC, 5A, Class CC

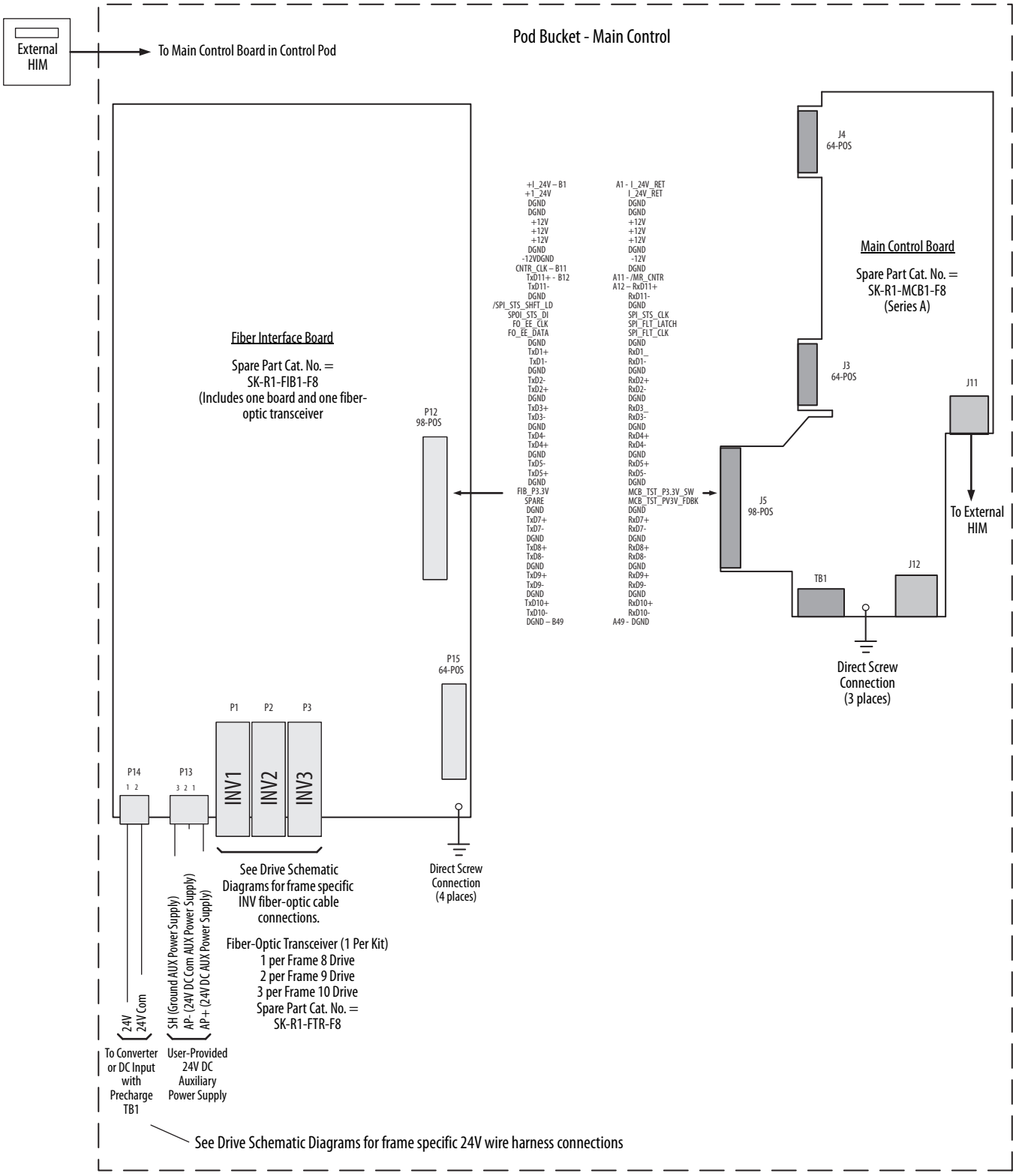
Notes:
1. For 21G Required Selections – Either P3 or P5 option is required and is installed at the factory.
2. See Appendix C, on page 445 for default circuit breaker or molded case switch settings.

Frame 9 AC Input Option Bay Schematic Diagram

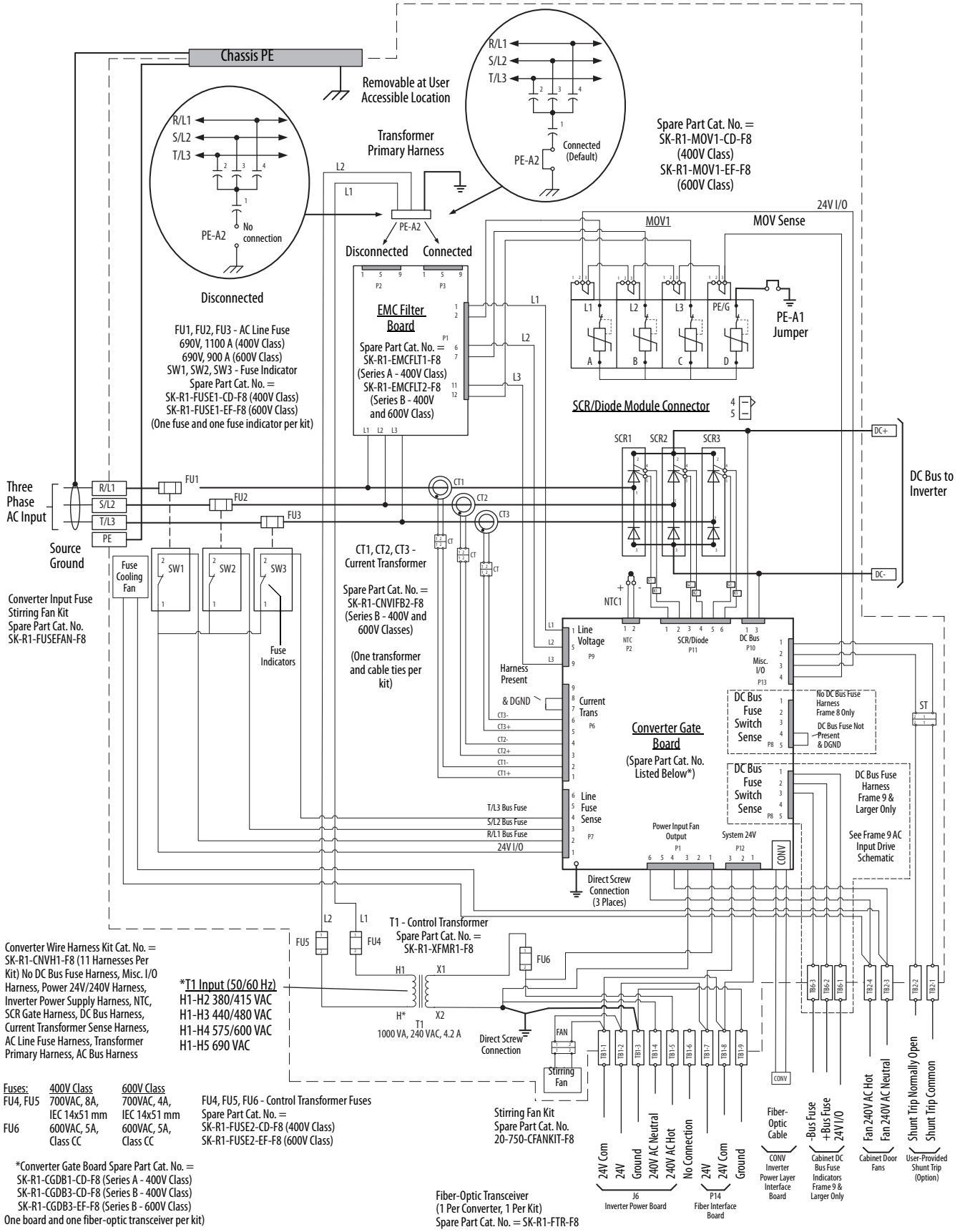


Notes:
1. For 21G Required Selections – P5 Input Non-Fused Molded Case Disconnect Switch is not offered.
2. For 21G Additional Selections – P11& P12 contactors are not offered; and L3 & L4 5% reactors are not offered.
3. See Appendix C, on page 445 for default circuit breaker settings.

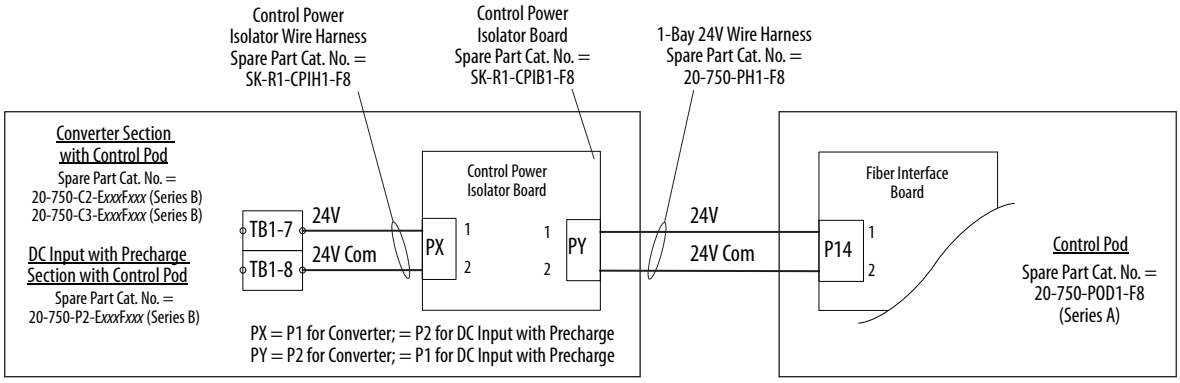
Control Pod Schematic Diagram



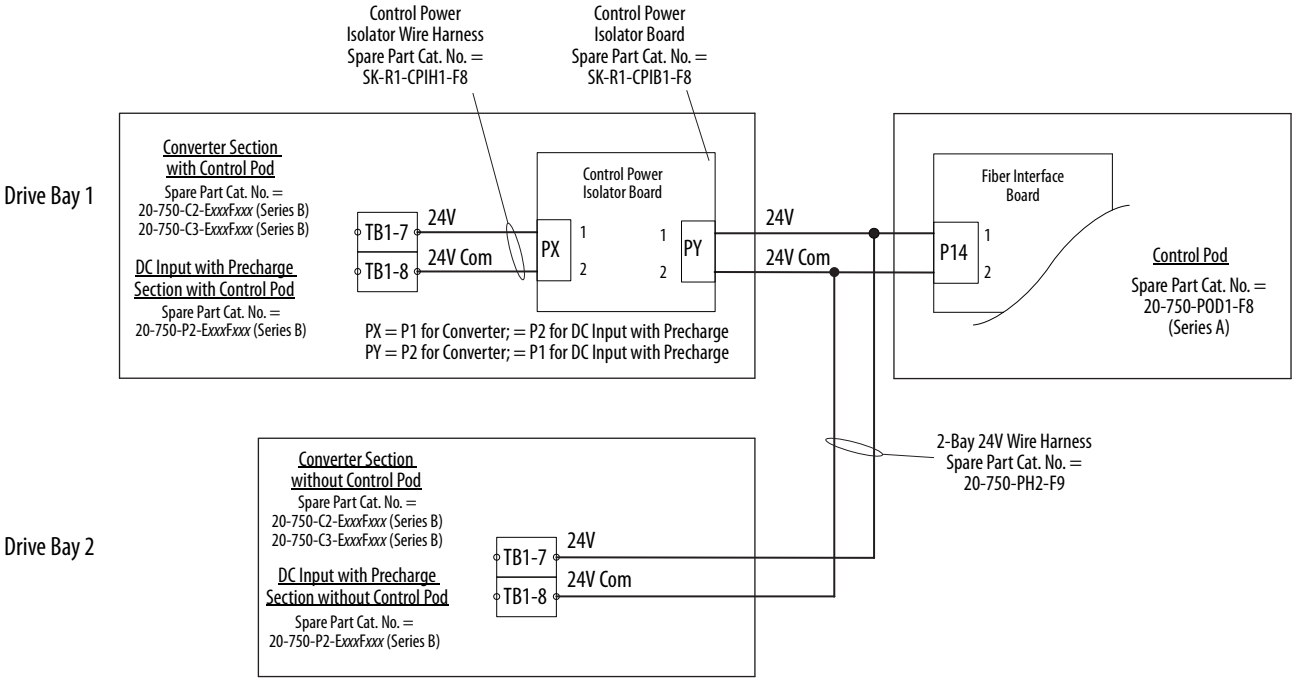
Converter Schematic Diagram (400VAC and 600VAC Classes AC Input Drive)



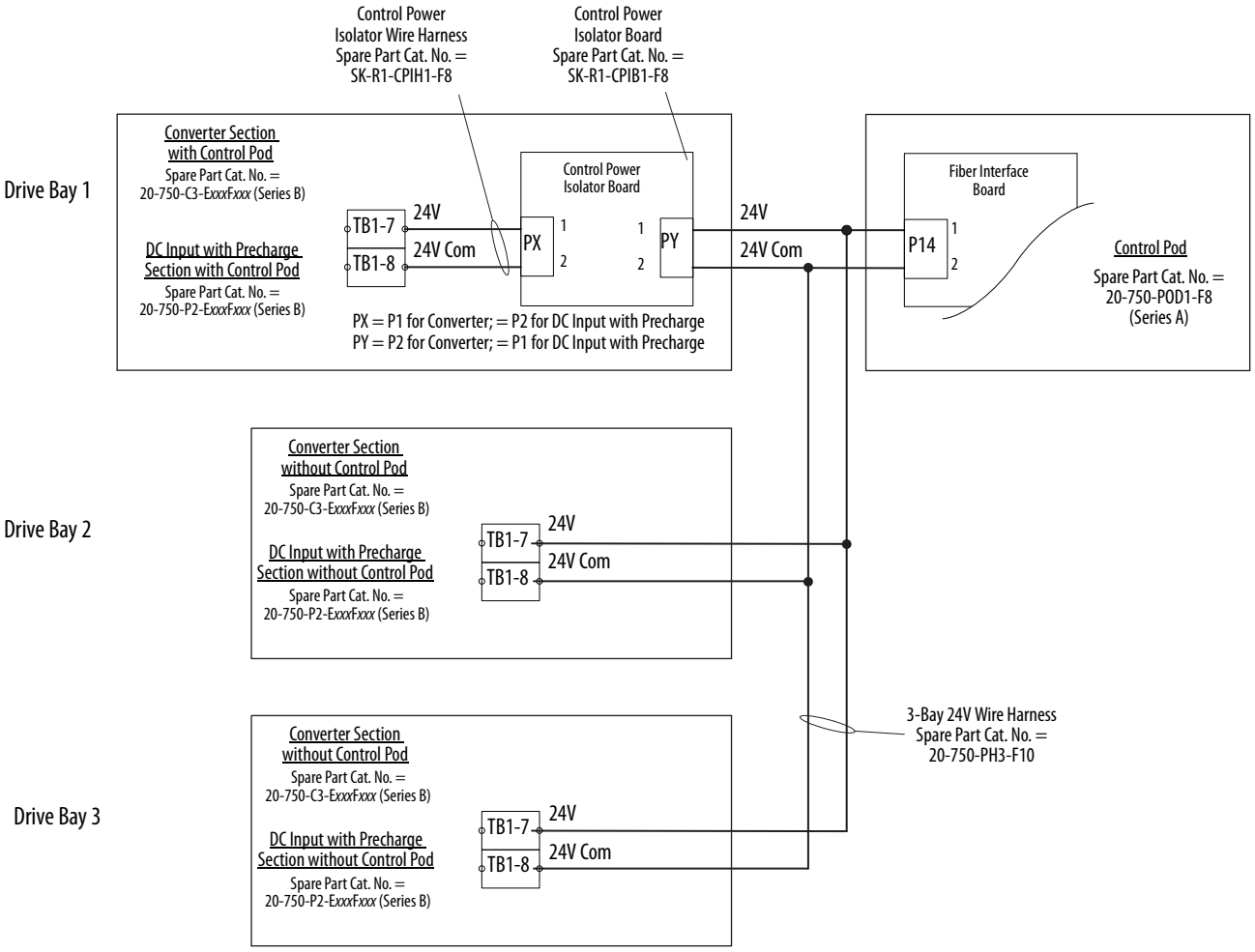
Frame 8 Control Power Isolator Board Wiring Diagrams (600VAC Class AC Input Drive, and 810VDC and 932VDC Classes Common DC Input Drive)



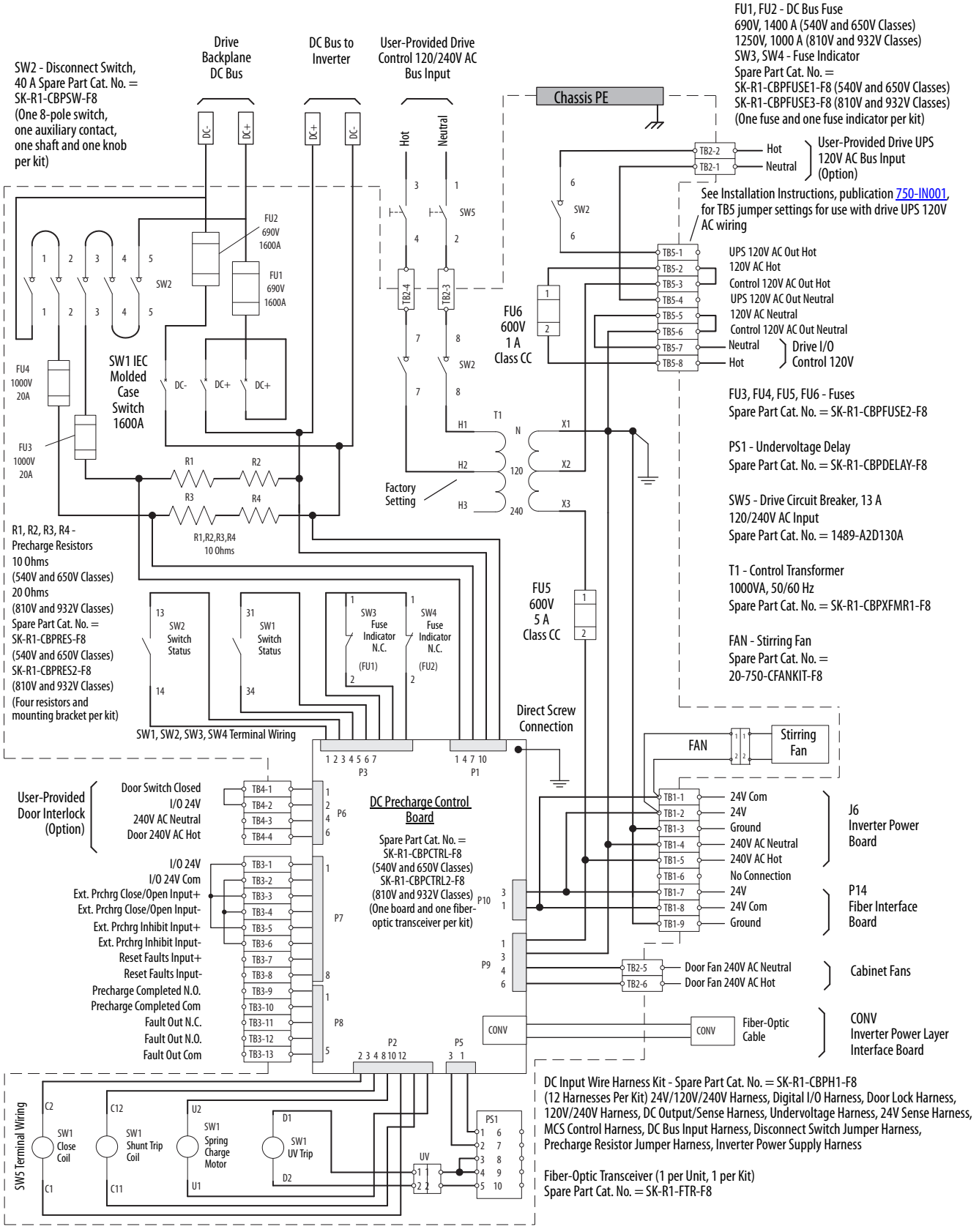
Frame 9 Control Power Isolator Board Wiring Diagrams (600VAC Class AC Input Drive, and 810VDC and 932VDC Classes Common DC Input Drive)



Frame 10 Control Power Isolator Board Wiring Diagrams (600VAC Class AC Input Drive, and 810VDC and 932VDC Classes Common DC Input Drive)

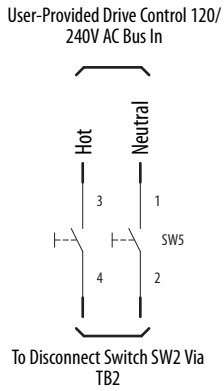


DC Input with Precharge Assembly Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes Common DC Input Drives)

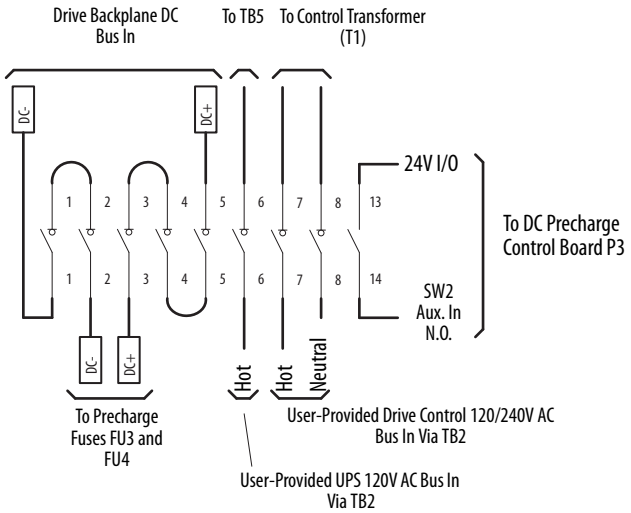


DC Input with Precharge Devices Schematic Diagrams

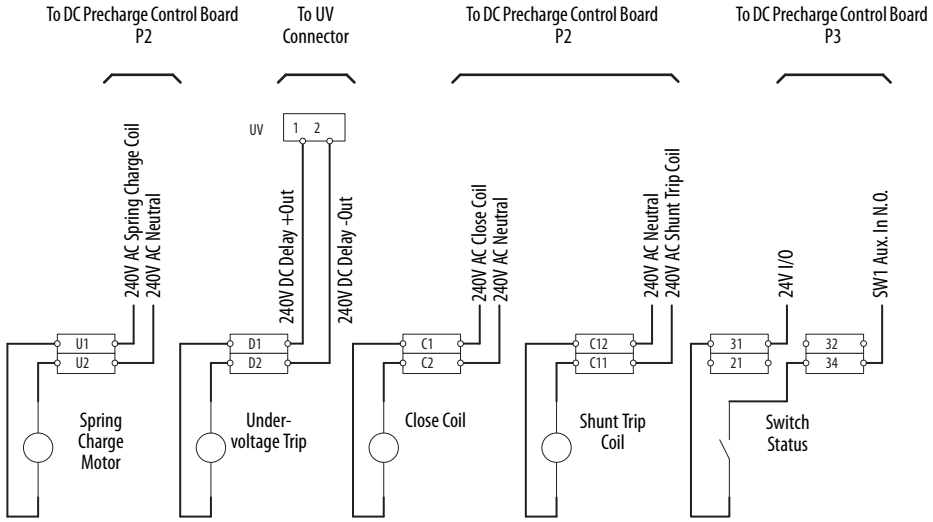
DC Input Circuit Breaker (SW5)



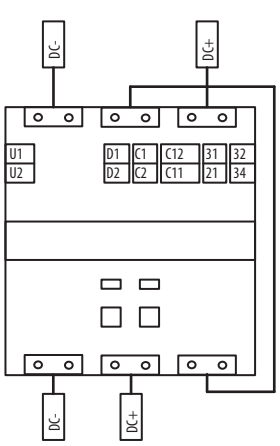
DC Input Disconnect Switch (SW2)

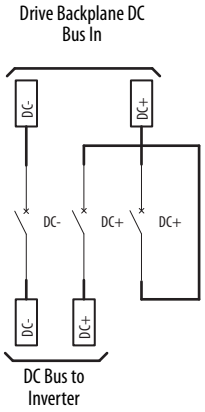


DC Input Molded Case Switch (SW1) Control

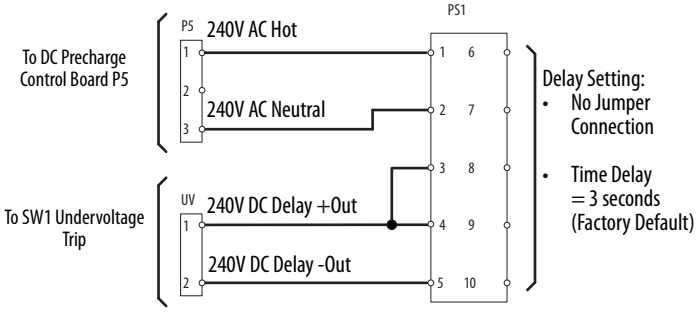


DC Input Molded Case Switch (SW1) Power

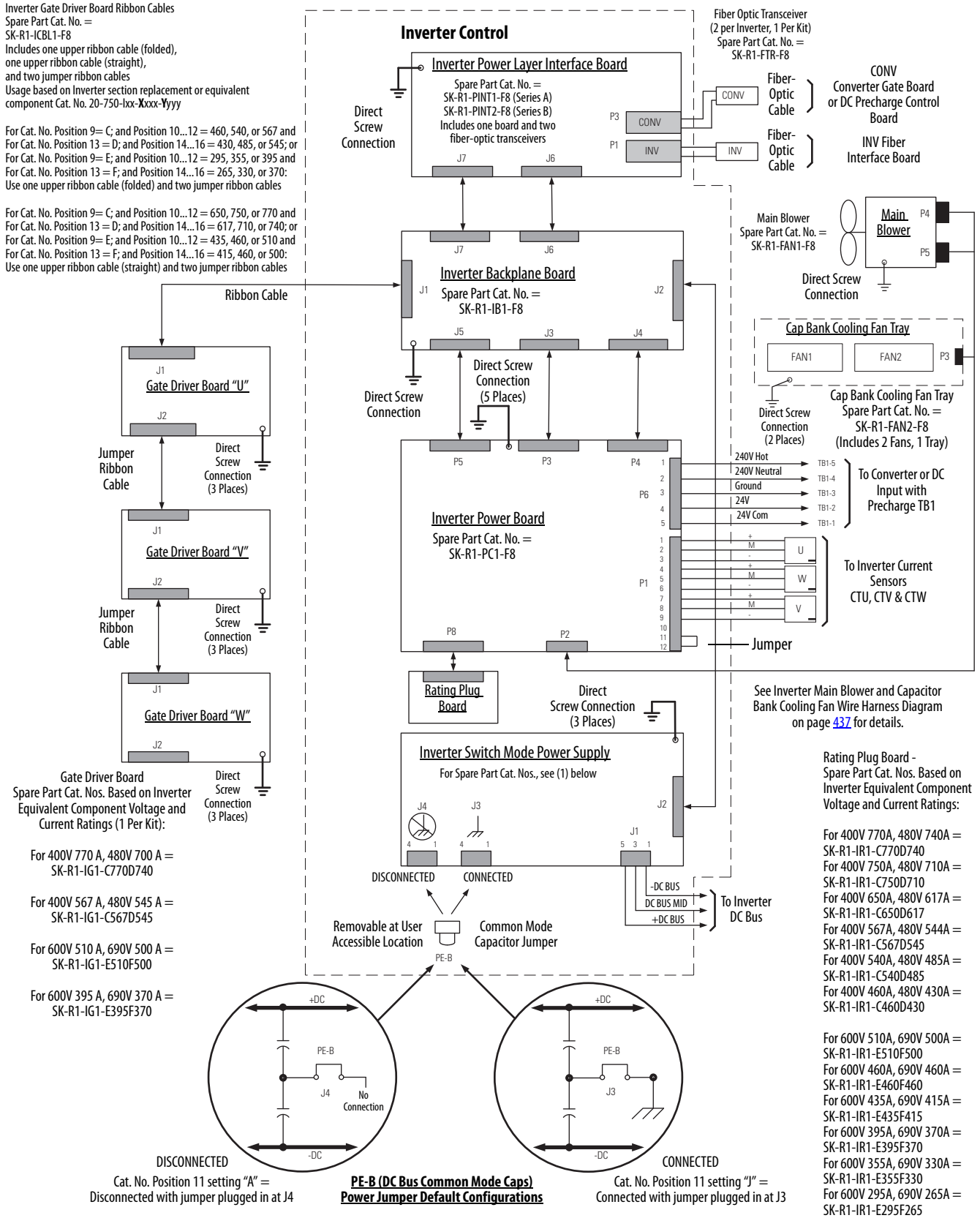




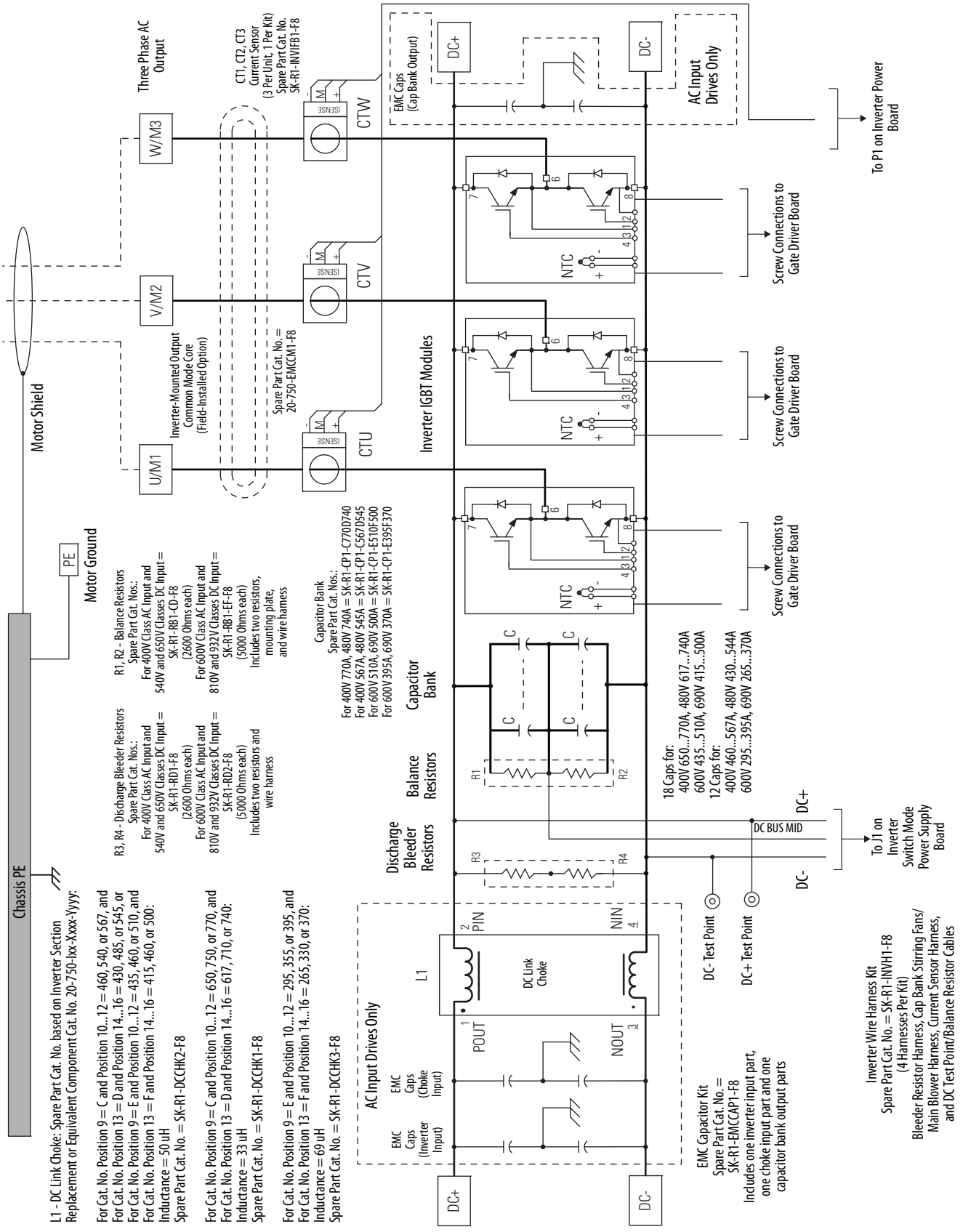
DC Input Undervoltage Delay Module (PS1)



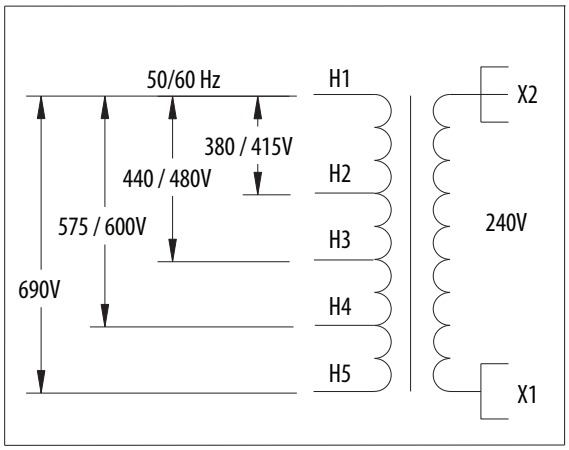
Inverter Circuit Board Schematic Diagram (All Drive Configurations)



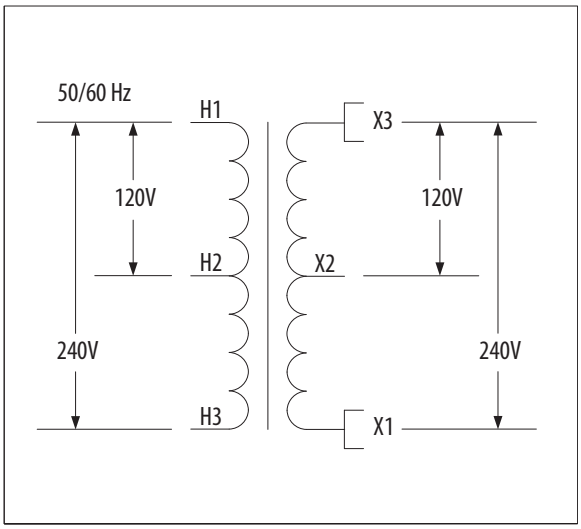
Inverter Power Layer Schematic Diagram (All Drive Configurations)



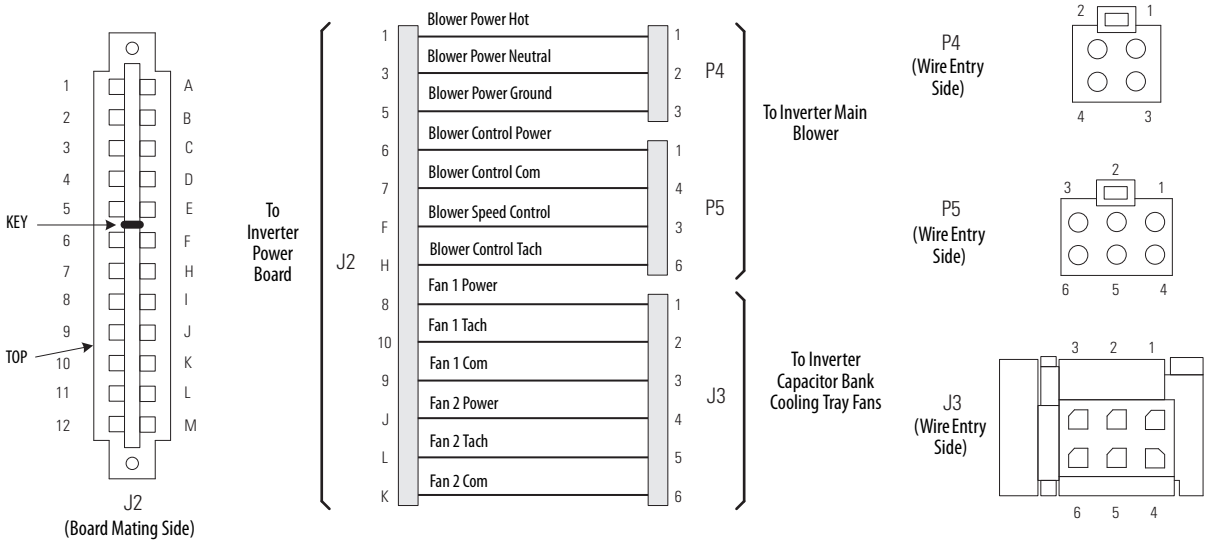
AC Input Drive Control Transformer Schematic Diagram



DC Input with Precharge Assembly Control Transformer Schematic Diagram

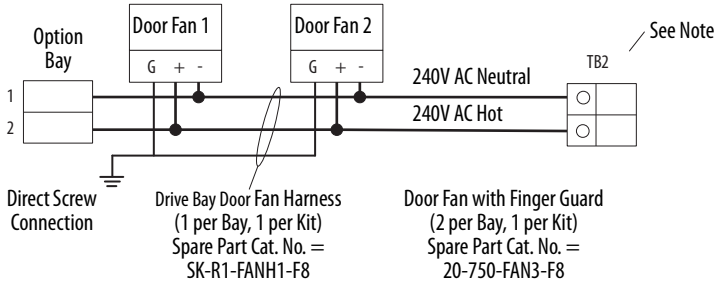


Inverter Main Blower and Capacitor Bank Cooling Fan Wire Harness Diagram

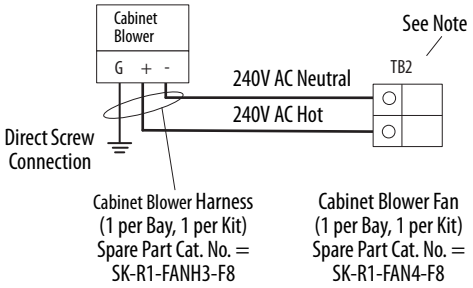


Cabinet Cooling Wiring Diagrams

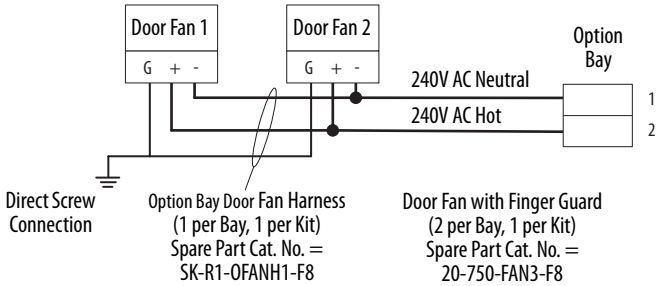
IP20, NEMA/UL Type 1 Drive Bay



IP54, NEMA/UL Type 12 Drive Bay



IP20, NEMA/UL Type 1 Option Bay (Frame 8)



Note: For TB2 terminal numbers for AC Input and Common DC Input drives, see Drive Schematic Diagrams on previous pages.

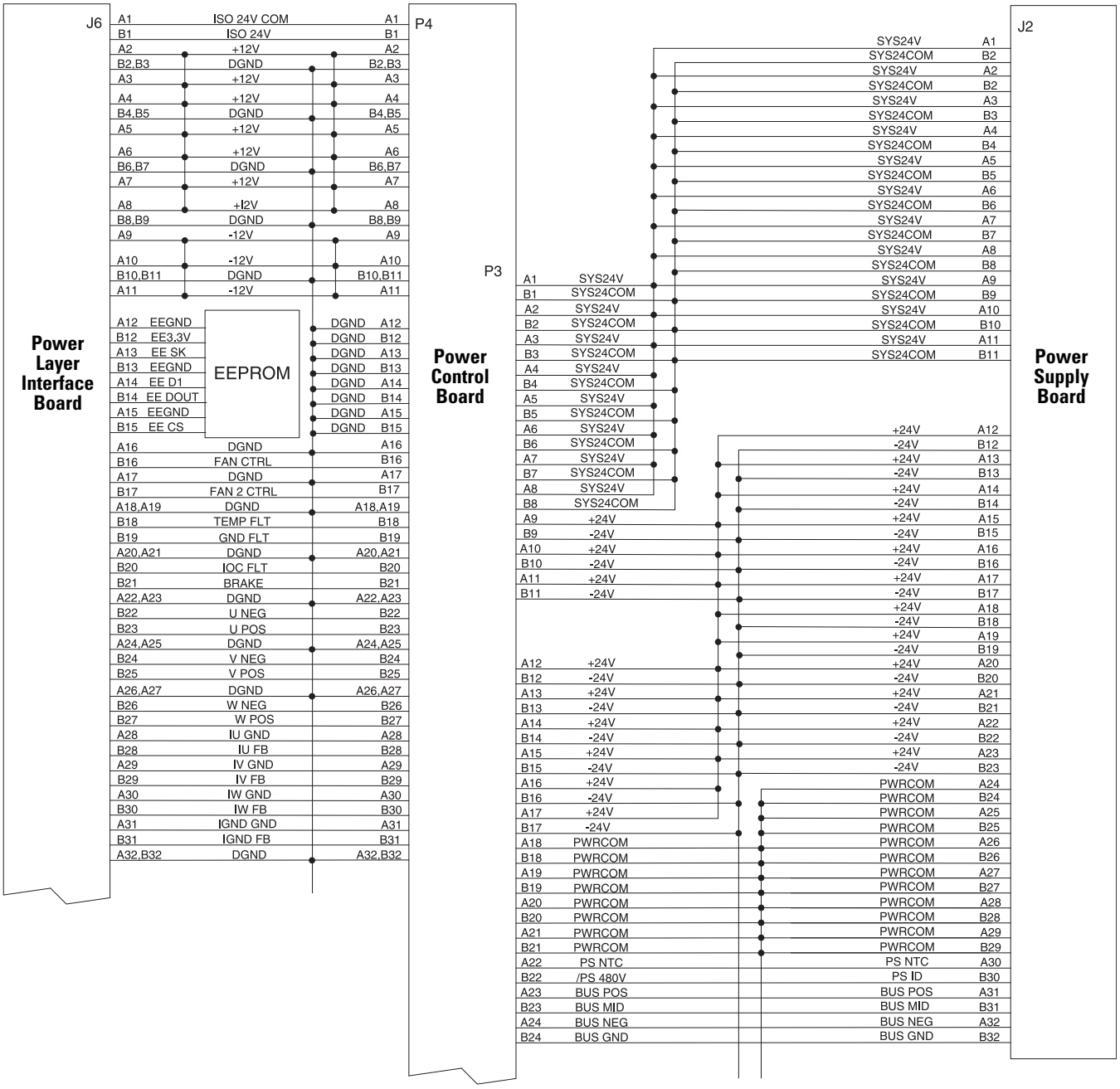
Notes:

Circuit Board Interconnections

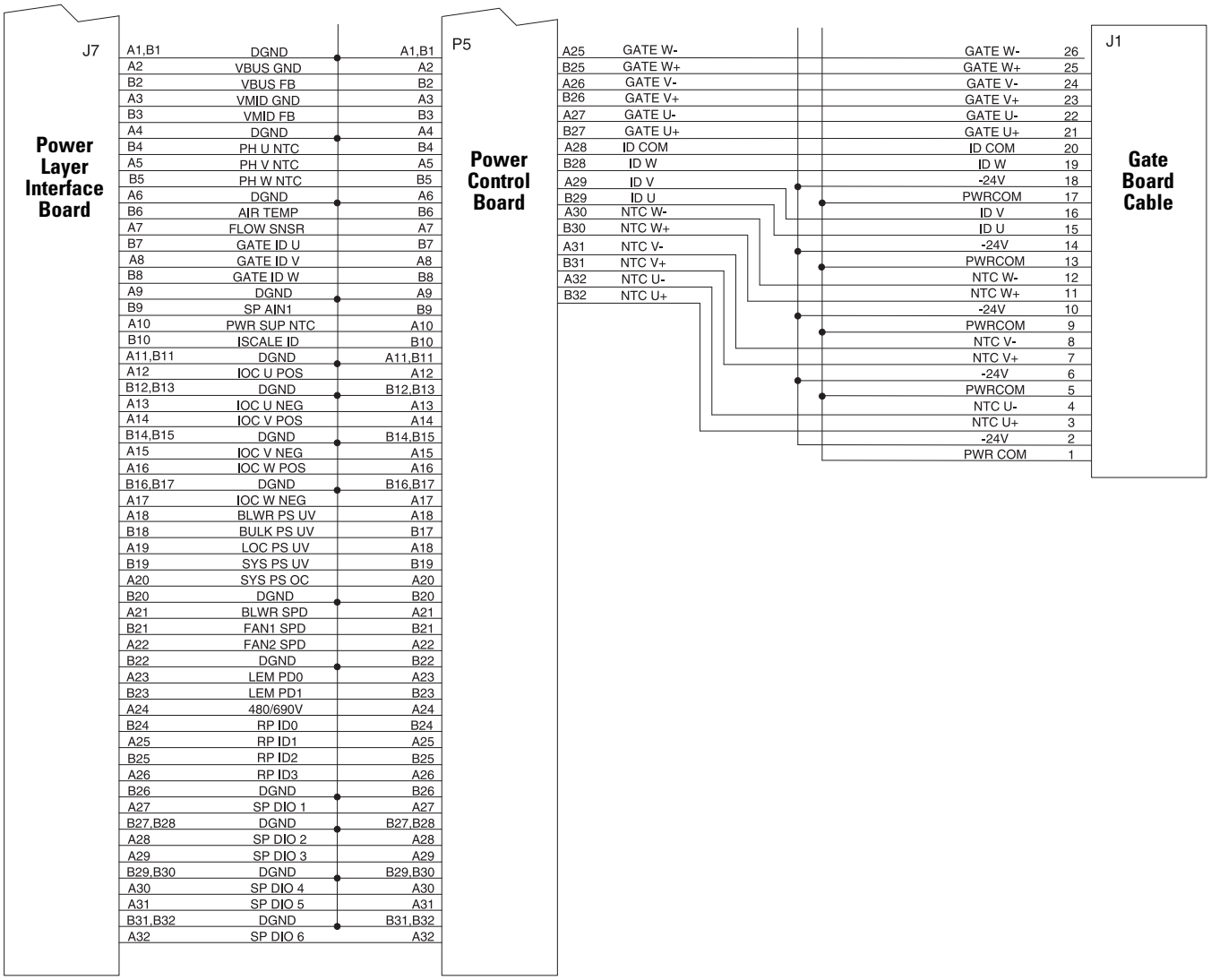
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Inverter Board Interconnections Diagram 1	440
Inverter Board Interconnections Diagram 2	441
Control Board Interconnections Diagram 1	442
Control Board Interconnections Diagram 2	443

This chapter provides the interconnection signals between drive circuit boards.

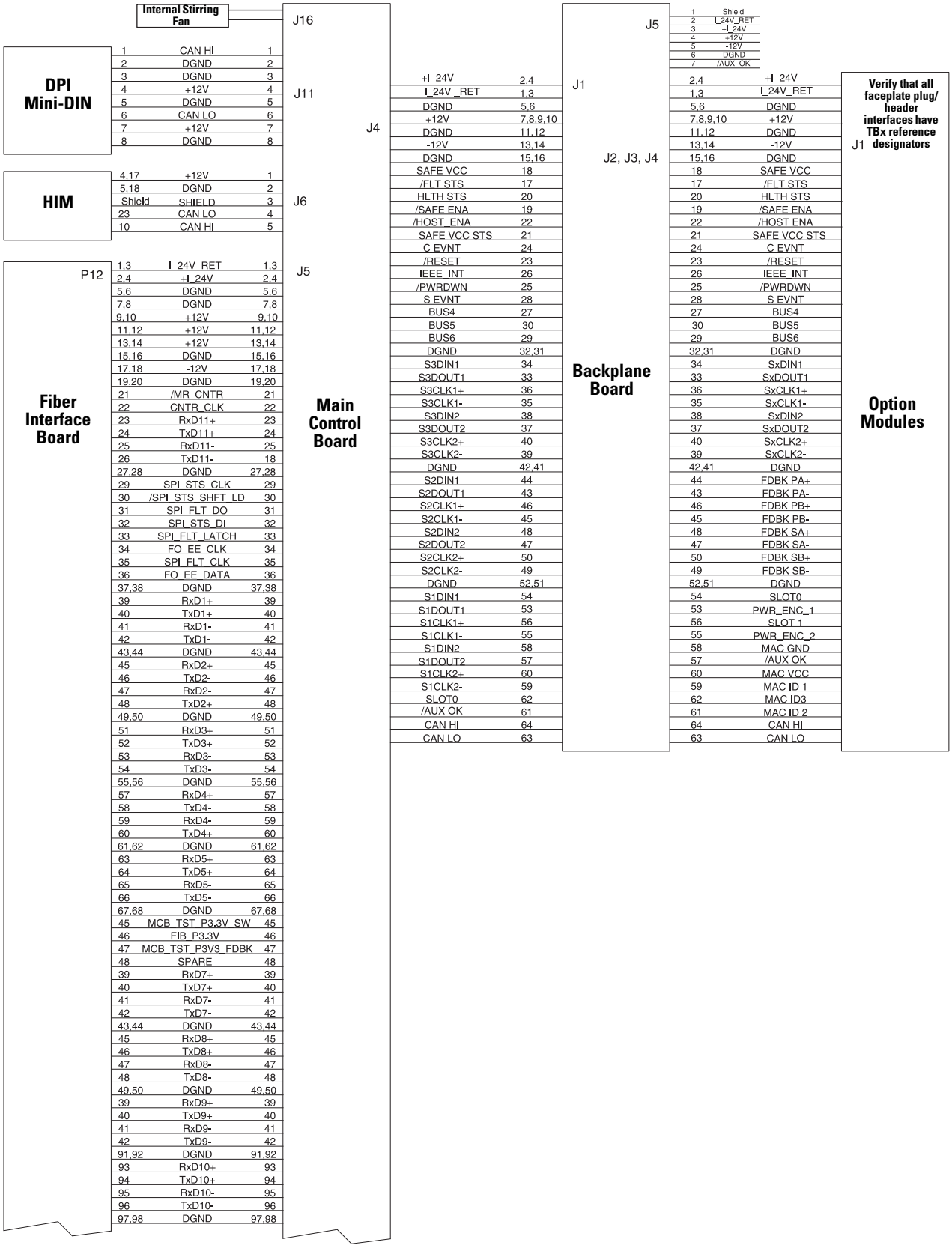
Inverter Board Interconnections Diagram 1



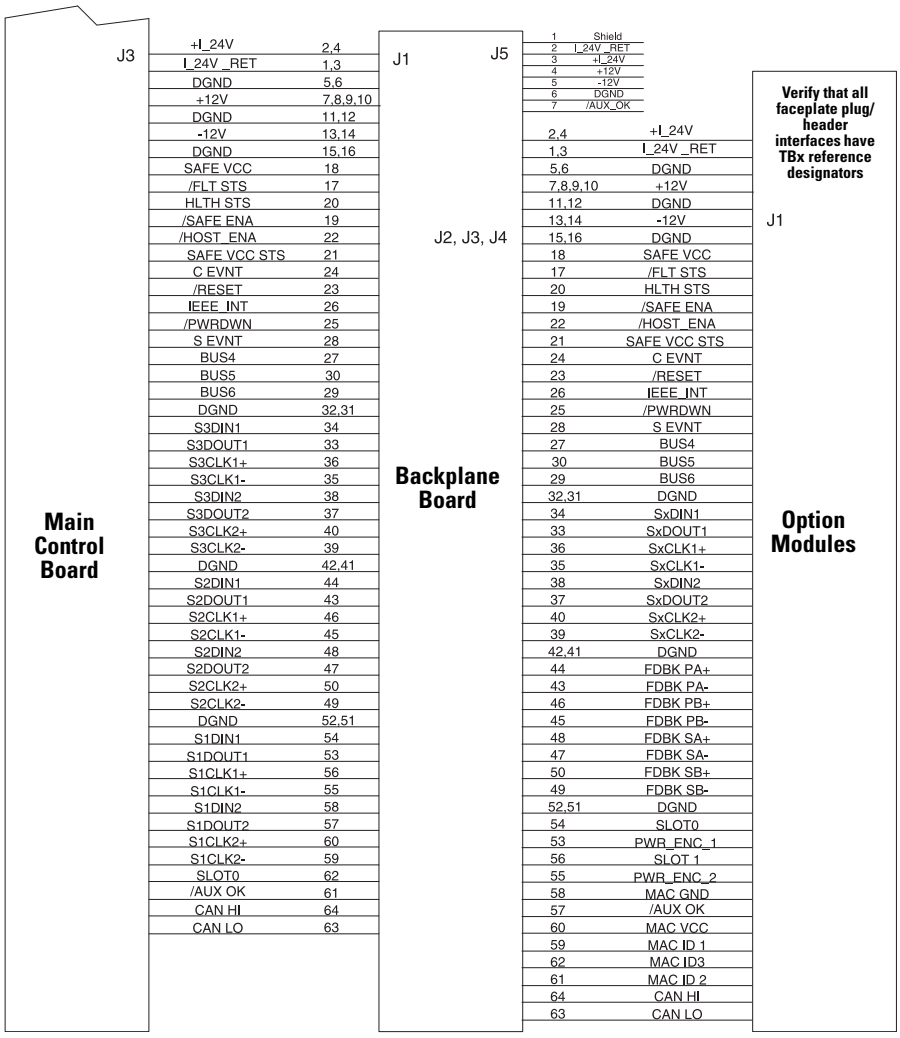
Inverter Board Interconnections Diagram 2



Control Board Interconnections Diagram 1



Control Board Interconnections Diagram 2



Notes:

Drive-compatible Circuit Breakers, Molded Case Switches, Contactors, and Line Reactors

Replacement Part Catalog Numbers, Ratings, and Settings

This appendix contains catalog numbers, ratings, and corresponding settings for the following:

- Drive-compatible circuit breakers
- Molded case switches
- Contactors
- 3% and 5% line reactors

Table 18 - 400V AC Input Drive, Light Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (kW)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
C460	8	540	315	140G-N0H3-E12	1200	690	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-B	1321-3R600-C
C540	8	585	315	140G-N0H3-E12	1200	720	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-B	1321-3R600-C
C567	8	612	355	140G-N0H3-E12	1200	750	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R750-B	1321-3R750-C
C650	8	750	400	140G-N0H3-E12	1200	930	6000	10800	–	140G-N6S3-E12	1200	100-D860EA11	1321-3R750-B	1321-3R750-C
C750	8	796	450	140G-N0H3-E12	1200	990	6000	10800	–	140G-N6S3-E12	1200	100-D860EA11	1321-3R850-B	1321-3R850-C
C770	8	832	450	140G-N0H3-E12	1200	1020	6000	10800	–	140G-N6S3-E12	1200	100-D860EA11	1321-3R850-B	1321-3R850-C
C910	9	1040	560	140G-R12I3-E20	2000	1300	10000	18000	1200	–	–	–	–	–
C1K0	9	1090	630	140G-R12I3-E20	2000	1350	10000	18000	1200	–	–	–	–	–
C1K1	9	1175	710	140G-R12I3-E20	2000	1450	10000	18000	1200	–	–	–	–	–
C1K2	9	1465	800	140G-R12I3-E20	2000	1800	10000	18000	1200	–	–	–	–	–
C1K4	9	1480	850	140G-R12I3-E20	2000	1850	10000	18000	1200	–	–	–	–	–
C1K5	9	1600	900	140G-R12I3-E20	2000	2000	10000	18000	1200	–	–	–	–	–
C1K6(1)	10	1715	1000	–	–	–	–	–	–	–	–	–	–	–
C2K1 (1)	10	2330	1400	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 19 - 480V AC Input Drive, Light Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (Hp)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
D430	8	485	400	140G-N0H3-E12	1200	570	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	1321-3R500-C
D485	8	545	450	140G-N0H3-E12	1200	660	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-B	1321-3R600-C
D545	8	590	500	140G-N0H3-E12	1200	720	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-B	1321-3R600-C
D617	8	710	600	140G-N0H3-E12	1200	840	6000	10800	–	140G-N6S3-E12	1200	100-D860ED11	1321-3R750-B	1321-3R750-C
D710	8	765	650	140G-N0H3-E12	1200	900	6000	10800	–	140G-N6S3-E12	1200	100-G1200KD12	1321-3R850-B	1321-3R850-C
D740	8	800	700	140G-N0H3-E12	1200	960	6000	10800	–	140G-N6S3-E12	1200	100-G1200KD12	1321-3R850-B	1321-3R850-C
D800	9	960	800	140G-N0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
D960	9	1045	900	140G-R12I3-E20	2000	1250	10000	18000	1200	–	–	–	–	–
D1K0	9	1135	1000	140G-R12I3-E20	2000	1350	10000	18000	1200	–	–	–	–	–
D1K2	9	1365	1100	140G-R12I3-E20	2000	1650	10000	18000	1200	–	–	–	–	–
D1K3	9	1420	1250	140G-R12I3-E20	2000	1700	10000	18000	1200	–	–	–	–	–
D1K4	9	1540	1350	140G-R12I3-E20	2000	1850	10000	18000	1200	–	–	–	–	–
D1K5(1)	10	1655	1500	–	–	–	–	–	–	–	–	–	–	–
D2K0(1)	10	2240	2000	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 20 - 600V AC Input Drive, Light Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (Hp)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
E295	8	355	350	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-54004
E355	8	395	400	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3R600-C	RL-4003B14
E395	8	435	450	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-C	RL-54503
E435	8	460	500	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	RL-54503
E460	8	510	500	140G-M6F3-D80	800	680	6000	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	RL-54004
E510	8	545	550	140G-M6F3-D80	800	680	6000	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-C	RL-54503
E595	9	595	700	140G-NS0H3-E12	1200	810	6000	10800	–	–	–	–	–	–
E630	9	760	800	140G-NS0H3-E12	1200	900	6000	10800	–	–	–	–	–	–
E760	9	835	900	140G-NS0H3-E12	1200	990	6000	10800	–	–	–	–	–	–
E825	9	900	950	140G-NS0H3-E12	1200	1080	6000	10800	–	–	–	–	–	–
E900	9	980	1000	140G-R12I3-E20	2000	1150	10000	18000	1200	–	–	–	–	–
E980	9	1045	1100	140G-R12I3-E20	2000	1250	10000	18000	1200	–	–	–	–	–
E1K1(1)	10	1220	1200	–	–	–	–	–	–	–	–	–	–	–
E1K4(1)	10	1530	1500	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 21 - 690V AC Input Drive, Light Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (kW)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
F265	8	330	315	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F330	8	370	355	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F370	8	410	400	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F415	8	460	450	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630EA11	1321-3R500-C	RL-54004
F460	8	500	500	140G-M6F3-D80	800	680	6000	–	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-C	RL-54004
F500	8	530	530	140G-M6F3-D80	800	680	6000	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3R600-C	RL-54004
F590	9	650	630	140G-NS0H3-E12	1200	780	6000	10800	–	–	–	–	–	–
F650	9	710	710	140G-NS0H3-E12	1200	840	6000	10800	–	–	–	–	–	–
F710	9	790	800	140G-NS0H3-E12	1200	930	6000	10800	–	–	–	–	–	–
F765	9	860	850	140G-NS0H3-E12	1200	1020	6000	10800	–	–	–	–	–	–
F795	9	960	900	140G-NS0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
F960	9	1020	1000	140G-R12I3-E20	2000	1300	10000	18000	1200	–	–	–	–	–
F1K0(1)	10	1150	1100	–	–	–	–	–	–	–	–	–	–	–
F1K4(1)	10	1485	1500	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 22 - 400V AC Input Drive, Normal Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (kW)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
C460	8	460	250	140G-M0F3-D60	600	600	4500	-	–	140G-M6S3-D80	800	100-D630EA11	1321-3R500-B	1321-3R500-C
C540	8	540	315	140G-N0H3-E12	1200	660	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-B	1321-3R600-C
C567	8	567	315	140G-N0H3-E12	1200	720	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-B	1321-3R600-C
C650	8	650	355	140G-N0H3-E12	1200	810	6000	10800	–	140G-N6S3-E12	1200	100-D860EA11	1321-3R750-B	1321-3R750-C
C750	8	750	400	140G-N0H3-E12	1200	930	6000	10800	–	140G-N6S3-E12	1200	100-D860EA11	1321-3R750-B	1321-3R750-C
C770	8	770	400	140G-N0H3-E12	1200	960	6000	10800	–	140G-N6S3-E12	1200	100-D860EA11	1321-3R850-B	1321-3R850-C
C910	9	910	500	140G-NS0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
C1K0	9	1040	560	140G-R12I3-E20	2000	1300	10000	18000	1200	–	–	–	–	–
C1K1	9	1090	630	140G-R12I3-E20	2000	1350	10000	18000	1200	–	–	–	–	–
C1K2	9	1175	710	140G-R12I3-E20	2000	1450	10000	18000	1200	–	–	–	–	–
C1K4	9	1465	800	140G-R12I3-E20	2000	1800	10000	18000	1200	–	–	–	–	–
C1K5	9	1480	850	140G-R12I3-E20	2000	1850	10000	18000	1200	–	–	–	–	–
C1K6(1)	10	1590	900	–	–	–	–	–	–	–	–	–	–	–
C2K1(1)	10	2150	1250	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 23 - 480V AC Input Drive, Normal Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (Hp)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
D430	8	430	350	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	1321-3R500-C
D485	8	485	400	140G-N0H3-E12	1200	570	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	1321-3R500-C
D545	8	545	450	140G-N0H3-E12	1200	660	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-B	1321-3R600-C
D617	8	617	500	140G-N0H3-E12	1200	750	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R750-B	1321-3R750-C
D710	8	710	600	140G-N0H3-E12	1200	840	6000	10800	–	140G-N6S3-E12	1200	100-D860ED11	1321-3R750-B	1321-3R750-C
D740	8	740	650	140G-N0H3-E12	1200	870	6000	10800	–	140G-N6S3-E12	1200	100-G1200KD12	1321-3R750-B	1321-3R750-C
D800	9	800	700	140G-NS0H3-E12	1200	960	6000	10800	–	–	–	–	–	–
D960	9	960	800	140G-NS0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
D1K0	9	1045	900	140G-R12I3-E20	2000	1250	10000	18000	1200	–	–	–	–	–
D1K2	9	1135	1000	140G-R12I3-E20	2000	1350	10000	18000	1200	–	–	–	–	–
D1K3	9	1365	1100	140G-R12I3-E20	2000	1650	10000	18000	1200	–	–	–	–	–
D1K4	9	1420	1250	140G-R12I3-E20	2000	1700	10000	18000	1200	–	–	–	–	–
D1K5(1)	10	1525	1350	–	–	–	–	–	–	–	–	–	–	–
D2K0(1)	10	2070	1750	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 24 - 600V AC Input Drive, Normal Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (Hp)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
E295	8	295	300	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-41508
E355	8	355	350	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-54004
E395	8	395	400	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3R600-C	RL-4003B14
E435	8	435	450	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-C	RL-54503
E460	8	460	500	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	RL-54503
E510	8	510	500	140G-M6F3-D80	800	680	6000	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	RL-54503
E595	9	595	600	140G-NS0H3-E12	1200	720	6000	10800	–	–	–	–	–	–
E630	9	630	700	140G-NS0H3-E12	1200	750	6000	10800	–	–	–	–	–	–
E760	9	760	800	140G-NS0H3-E12	1200	900	6000	10800	–	–	–	–	–	–
E825	9	825	900	140G-NS0H3-E12	1200	990	6000	10800	–	–	–	–	–	–
E900	9	900	950	140G-NS0H3-E12	1200	1080	6000	10800	–	–	–	–	–	–
E980	9	980	1000	140G-R12I3-E20	2000	1150	10000	18000	1200	–	–	–	–	–
E1K1(1)	10	1110	1100	–	–	–	–	–	–	–	–	–	–	–
E1K4(1)	10	1430	1400	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 25 - 690V AC Input Drive, Normal Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (kW)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
F265	8	265	250	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420EA11	RL-41508	RL-26503
F330	8	330	315	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F370	8	370	355	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F415	8	415	400	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F460	8	460	450	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630EA11	1321-3R500-C	RL-54004
F500	8	500	500	140G-M6F3-D80	800	680	6000	–	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-C	RL-54004
F590	9	590	560	140G-NS0H3-E12	1200	690	6000	10800	–	–	–	–	–	–
F650	9	650	630	140G-NS0H3-E12	1200	780	6000	10800	–	–	–	–	–	–
F710	9	710	710	140G-NS0H3-E12	1200	840	6000	10800	–	–	–	–	–	–
F765	9	765	750	140G-NS0H3-E12	1200	900	6000	10800	–	–	–	–	–	–
F795	9	795	800	140G-NS0H3-E12	1200	930	6000	10800	–	–	–	–	–	–
F960	9	960	900	140G-NS0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
F1K0(1)	10	1040	1000	–	–	–	–	–	–	–	–	–	–	–
F1K4(1)	10	1400	1400	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 26 - 400V AC Input Drive, Heavy Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (kW)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
C460	8	385	200	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RB400-B	1321-3RC400-C
C540	8	456	250	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630EA11	1321-3R500-B	1321-3R500-C
C567	8	472	250	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630EA11	1321-3R500-B	1321-3R500-C
C650	8	540	315	140G-N0H3-E12	1200	660	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-B	1321-3R600-C
C750	8	585	315	140G-N0H3-E12	1200	720	6000	10800	–	140G-M6S3-D80	800	100-D630EA11	1321-3R600-B	1321-3R600-C
C770	8	642	355	140G-N0H3-E12	1200	810	6000	10800	–	140G-M6S3-D80	800	100-D860EA11	1321-3R750-B	1321-3R750-C
C910	9	750	400	140G-NS0H3-E12	1200	930	6000	10800	–	–	–	–	–	–
C1K0	9	880	500	140G-NS0H3-E12	1200	1080	6000	10800	–	–	–	–	–	–
C1K1	9	910	500	140G-NS0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
C1K2	9	1040	560	140G-R12I3-E20	2000	1300	10000	18000	1200	–	–	–	–	–
C1K4	9	1090	630	140G-R12I3-E20	2000	1350	10000	18000	1200	–	–	–	–	–
C1K5	9	1175	710	140G-R12I3-E20	2000	1450	10000	18000	1200	–	–	–	–	–
C1K6(1)	10	1325	710	–	–	–	–	–	–	–	–	–	–	–
C2K1(1)	10	1800	1000	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 27 - 480V AC Input Drive, Heavy Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (Hp)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
D430	8	370	300	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RB400-B	1321-3RC400-C
D485	8	414	350	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3R500-B	1321-3R500-C
D545	8	454	350	140G-M0F3-D60	600	600	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	1321-3R500-C
D617	8	485	400	140G-N0H3-E12	1200	570	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R500-B	1321-3R500-C
D710	8	545	450	140G-N0H3-E12	1200	660	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-B	1321-3R600-C
D740	8	617	500	140G-N0H3-E12	1200	750	6000	10800	–	140G-M6S3-D80	800	100-D630ED11	1321-3R750-B	1321-3R750-C
D800	9	710	600	140G-NS0H3-E12	1200	840	6000	10800	–	–	–	–	–	–
D960	9	795	700	140G-NS0H3-E12	1200	960	6000	10800	–	–	–	–	–	–
D1K0	9	800	750	140G-NS0H3-E12	1200	960	6000	10800	–	–	–	–	–	–
D1K2	9	960	800	140G-NS0H3-E12	1200	1140	6000	10800	–	–	–	–	–	–
D1K3	9	1045	900	140G-R12I3-E20	2000	1250	10000	18000	1200	–	–	–	–	–
D1K4	9	1135	1000	140G-R12I3-E20	2000	1350	10000	18000	1200	–	–	–	–	–
D1K5(1)	10	1270	1100	–	–	–	–	–	–	–	–	–	–	–
D2K0(1)	10	1730	1650	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 28 - 600V AC Input Drive, Heavy Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (Hp)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
E295	8	272	250	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-41508
E355	8	295	300	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-41508
E395	8	329	350	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-54004
E435	8	355	350	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3RC400-C	RL-54004
E460	8	395	400	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420ED11	1321-3R600-C	RL-4003B14
E510	8	425	450	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D630ED11	1321-3R600-C	RL-54503
E595	9	510	500	140G-NS0H3-E12	1200	600	6000	10800	–	–	–	–	–	–
E630	9	595	600	140G-NS0H3-E12	1200	720	6000	10800	–	–	–	–	–	–
E760	9	630	700	140G-NS0H3-E12	1200	750	6000	10800	–	–	–	–	–	–
E825	9	700	750	140G-NS0H3-E12	1200	840	6000	10800	–	–	–	–	–	–
E900	9	760	800	140G-NS0H3-E12	1200	900	6000	10800	–	–	–	–	–	–
E980	9	815	900	140G-NS0H3-E12	1200	960	6000	10800	–	–	–	–	–	–
E1K1(1)	10	920	1000	–	–	–	–	–	–	–	–	–	–	–
E1K4(1)	10	1190	1250	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Table 29 - 690V AC Input Drive, Heavy Duty Ratings

Drive Cat. No.	Fame Size	Drive Rating (Amps)	Drive Power Rating (kW)	Circuit Breaker Cat. No.	Circuit Breaker Rating (Amps)	Circuit Breaker TM / ET Actual Current Setting (Amps) L	Circuit Breaker TM / ET Actual Current Setting (Amps) S	Circuit Breaker TM / ET Actual Current Setting (Amps) I	Circuit Breaker TM / ET Actual Current Setting (Amps) G	Molded Case Switch Cat. No.	Molded Case Switch Setting (Amps)	Contactor Cat. No.	3% Line Reactor Cat. No.	5% Line Reactor Cat. No.
F265	8	215	200	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420EA11	RL-41508	RL-26503
F330	8	265	250	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420EA11	RL-41508	RL-26503
F370	8	308	300	140G-M0F3-D60	600	420	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F415	8	370	355	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F460	8	375	375	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F500	8	413	400	140G-M0F3-D60	600	510	4500	–	–	140G-M6S3-D80	800	100-D420EA11	1321-3RC400-C	RL-41508
F590	9	460	450	140G-NS0H3-E12	1200	540	6000	10800	–	–	–	–	–	–
F650	9	500	500	140G-NS0H3-E12	1200	600	6000	10800	–	–	–	–	–	–
F710	9	590	560	140G-NS0H3-E12	1200	690	6000	10800	–	–	–	–	–	–
F765	9	650	630	140G-NS0H3-E12	1200	780	6000	10800	–	–	–	–	–	–
F795	9	750	710	140G-NS0H3-E12	1200	900	6000	10800	–	–	–	–	–	–
F960	9	795	800	140G-NS0H3-E12	1200	930	6000	10800	–	–	–	–	–	–
F1K0(1)	10	865	900	–	–	–	–	–	–	–	–	–	–	–
F1K4(1)	10	1160	1120	–	–	–	–	–	–	–	–	–	–	–

(1) Contact the factory.

Notes:

History of Changes

This appendix summarizes the revisions to this manual. Reference this appendix if you need information to determine what changes have been made across multiple revisions. This may be especially useful if you are deciding to upgrade your hardware based on information added with previous revisions of this manual.

750-TG001E-EN-P, July 2012

Table 30 - 750-TG001E-EN-P, July 2012

Topic
Updated the Spare Part Compatibility with Series A and Series B Drives table to include a new Series B Converter Unit part number.
Updated the Converter Components Identification table to reflect the addition of the stirring fan kit.
Updated the Converter Assembly Components Diagram 2 to reflect the addition of the stirring fan kit.
Added the new Converter Gate Board Stirring Fan Removal/Installation procedure.
Updated the 24V/240V Power Wire Harness Removal/Installation procedure to include disconnecting the stirring fan.
Updated the DC Input with Precharge Assembly Components Identification table to reflect the addition of the stirring fan kit.
Updated the DC Input with Precharge Assembly Components Diagram 2 to reflect the addition of the stirring fan kit.
Updated the 24V/120V/240V Wire Harness Removal/Installation procedure to include disconnecting the stirring fan.
Added the new DC Precharge Control Board Stirring Fan Removal/Installation procedure.
Updated the Converter Schematic Diagram (400VAC and 600VAC Classes AC Input Drive) to reflect the addition of the stirring fan.
Updated the DC Input with Precharge Assembly Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes Common DC Input Drives) to reflect the addition of the stirring fan.

750-TG001D-EN-P, April 2012

Table 31 - 750-TG001D-EN-P, April 2012

Topic
Added illustrations of Frame 10 drives to the “Drive Input Power Configurations” section.
Updated the “Drive Series Components Compatibility” section to include frame 10 drives.
Updated the “Recommended Drives Maintenance Tasks and Schedule ”table to include filters for the IP54 cabinet blower assembly.
Removed the Series A Converter EMC Filter Board from the “Converter Components Identification” table.
Removed the Series A Converter Current Sensor kit from the “Converter Components Identification” table.
Added the Three Bay 24V Wire Harness kit for frame 10 drives to the “Converter Components Identification” table.
Updated the “Control Power Isolator Board Removal/Installation (600/690V AC Input Drives Only)” procedures to include steps for frame 10 drives.

Table 31 - 750-TG001D-EN-P, April 2012 (Continued)

Topic
Added the Three Bay 24V Wire Harness kit for frame 10 drives to the "DC Input with Precharge Assembly Components Identification" table.
Updated the "Control Power Isolator Board Removal/Installation (810/932V DC Input Drives Only)" procedures to include steps for frame 10 drives.
Added the Cabinet L Bus Bar kit to the "AC Input Drive Enclosure Components Identification" table.
Added the Cabinet Door Shield Kit (Frame 10) kit to the "AC Input Drive Enclosure Components Identification" table.
Added the "Cabinet L Bus Bars Removal/Installation" AC input enclosure procedures.
Added the "Cabinet Door EMC Shield Removal/Installation (Frame 10 Drives Only)" AC input enclosure procedures.
Added the Circuit Breaker kit to the "Common DC Input Drive Enclosure Components Identification" table.
Added the lockout Attachment kit to the "Common DC Input Drive Enclosure Components Identification" table.
Updated the "Enclosure Cable Components and Part Numbers" table to include the 3-Bay 24V Wire Harness Kit.
Added the new Third Inverter (INV3) Fiber-optic Cable Removal/Installation procedure.
Added the "Frame 10 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes)".
Added the "Frame 10 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes)".
Updated the "Frame 8 Control Power Isolator Board Wiring Diagrams (600VAC Class AC Input Drive, and 810VDC and 932VDC Classes Common DC Input Drive)" for frame 10 drives.
Corrected the terminal labels on "Inverter Main Blower and Capacitor Bank Cooling Fan Wire Harness Diagram".
Added the "Cabinet Cooling Wiring Diagrams".

750-TG001C-EN-P, January 2012

Table 32 - 750-TG001C-EN-P, January 2012

Topic
Updated the Converter Components Identification table to include the new kits for 600/690V AC input drives.
Updated the Converter Assembly Components Diagram 2 to include the new Control Power Isolation board.
Updated the Surge-suppressor Sense Wire Harness Removal/Installation procedure to reflect the addition of the new Control Power Isolation board and 24V wire harness for 600/690V AC input drives.
Updated the Surge Suppressor Removal/Installation procedure to reflect the addition of the new Control Power Isolation board and 24V wire harness for 600/690V AC input drives.
Updated the Surge Suppressor Assembly Removal/Installation procedure to reflect the addition of the new Control Power Isolation board and 24V wire harness for 600/690V AC input drives.
Added the new Control Power Isolator Board 24V Wire Harness Removal/Installation (600/690V AC Input Drives Only) procedure.
Added the new Control Power Isolator Board Removal/Installation (600/690V AC Input Drives Only) procedure.
Updated the DC Input with Precharge Assembly Components Identification table to include the new kits for 810/932V DC input drives.
Updated the DC Input with Precharge Assembly Components Diagram 2 to include the new Control Power Isolation board and 24V wire harness.
Added the new Control Power Isolator Board 24V Wire Harness Removal/Installation (810/932V DC Input Drives Only) procedure.
Added the new Control Power Isolator Board Removal/Installation (810/932V DC Input Drives Only) procedure.
Updated the Undervoltage Delay Bracket Removal/Installation procedure to reflect the addition of the new Control Power Isolation board.
Updated the Inverter Components Identification table to include the new kits for 600/690V AC input drives.

Table 32 - 750-TG001C-EN-P, January 2012 (Continued)

Topic
Updated the following schematic diagrams in Appendix A Schematics to reflect the addition of 600/690V AC input and 810/932V DC input drives: • Frame 8 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes) • Frame 9 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes) • Frame 8 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes) • Frame 9 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes) • Converter Schematic Diagram (400VAC and 600VAC Classes AC Input Drive) • DC Input with Precharge Assembly Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes Common DC Input Drives) • Inverter Circuit Board Schematic Diagram (All Drive Configurations) • Inverter Power Layer Schematic Diagram (All Drive Configurations)
Added the following new schematic diagram to Appendix A Schematics: • Frame 8 Control Power Isolator Board Wiring Diagrams (600VAC Class AC Input Drive, and 810VDC and 932VDC Classes Common DC Input Drive)
Added the new History of Changes appendix.

750-TG001B-EN-P, October 2011

Table 33 - 750-TG001B-EN-P, October 2011

Change
Updated the Lockout/Tagout procedure to include steps for common DC input drives.
Added the new “Drive Input Power Configurations” section to provide general information on identifying the main drive components for each available configuration.
Added the new “Drive Series Components Compatibility” section to provide important information about drive component compatibility based on the drive series designator.
Updated the list of “Commonly Used Tools” to include additional required tool sizes.
Updated the “Fastener/Tool/Torque Information” table to include the POZIDRIV fastener and tool types.
Updated the “Component Inspection and Maintenance” procedure to include common DC input drives.
Added the “DC Precharge Assembly Fuse Tests” procedure.
Added the “Fiber-Optic Cable Removal/Installation (Frame 8)” procedures to Chapter 4.
Added the new “DC Input with Precharge Assembly Component Replacement Procedures” chapter.
Updated the “Inverter Gate Board Connection Ribbon Cables Removal/Installation” procedure to reflect new ribbon cable variation.
Added the new “Inverter Top DC Bus Bar Removal/Installation (Common DC Input Drive Only)” to Chapter 7.
Updated the “IP20, NEMA/UL Type 1 Enclosure Door Fan Removal/Installation” procedure to include an additional required step.
Added the “DC Bus Fuse Wire Harness Removal/Installation (Frame 9 and Larger Drives Only)” procedure.
Added the “DC Bus Fuses and Fuse Indicators Removal/Installation (Frame 9 and Larger Drives Only)” procedure.
Added the “Input Common-mode Core Removal/Installation (Frame 9 and Larger, Common DC Input Drives Only)” procedure.
Added the new “Common DC Input Drive Enclosure Component Replacement Procedures” chapter.

Table 33 - 750-TG001B-EN-P, October 2011 (Continued)

Change
Added the new "Enclosure Cable Components Replacement Procedures (Frame 9 and Larger Drives)" chapter.
Updated the "Before Applying Power to the Drive" procedure to include steps for common DC input drives.
Added the following new schematic diagrams to Appendix A Schematics: • Frame 8 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes) • Frame 9 AC Input Drive Schematic Diagram (400VAC and 600VAC Classes) • Frame 8 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes) • Frame 9 Common DC Input Drive Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes) • DC Input with Precharge Assembly Schematic Diagram (540VDC, 650VDC, 810VDC, and 932VDC Classes Common DC Input Drives) • DC Input with Precharge Devices Schematic Diagrams • DC Input with Precharge Assembly Control Transformer Schematic Diagram • Updated the following schematic diagrams in Appendix A Schematics: • Control Pod Schematic Diagram • Converter Schematic Diagram (400VAC and 600VAC Classes AC Input Drive) • Inverter Circuit Board Schematic Diagram (All Drive Configurations) • Inverter Power Layer Schematic Diagram (All Drive Configurations)

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