



PowerFlex 750-Series Products with TotalFORCE Control Hardware Service Manual - Frames 7...15

Catalog Numbers 20GE, 20JE



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.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc., is prohibited.

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.

These 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).

The following icon may appear in the text of this document.



Identifies information that is useful and can help to make a process easier to do or easier to understand.

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

Before You Begin.....	12
Qualified Personnel.....	12
Personal Safety.....	12
Class 1 LED Product.....	13
Product Safety.....	13
Electrostatic Discharge Icon.....	13
Remove Power from the System for Frame 7.....	14
Remove Power from the System for Frames 8...15.....	16
Renewal Kits for PowerFlex 755T Products with Corrosive Gas Protection (XT).....	19
Dielectric Grease Application (XT).....	22
Inspect and Clean Circuit Board Connectors (XT).....	22
Clean and Apply Dielectric Grease to an Edge Connector (XT).....	23
Dielectric Grease Applicator Kit.....	24
Remove a Protective Cover from a Fiber Transceiver with Dielectric Grease.....	25
Inspect Fiber-optic Transceiver Connections (XT).....	25
Fiber Transceiver with XT Kit.....	26
Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector (XT).....	26
Installation Tools.....	27
Software Tools.....	29
Hardware Installation Diagrams.....	29
Fastener Torque Sequences.....	31
Preventative and Predictive Maintenance.....	32
Recommended Preventative Maintenance.....	32
Recommended Maintenance Schedule Task Descriptions.....	32
Recommended Maintenance Schedule for Operating Conditions Below 40 °C (104 °F).....	33
Recommended Maintenance Schedule for Operating Conditions Above 40 °C (104 °F).....	35
Predictive Maintenance.....	38
Shock Events.....	39
Maintenance of Industrial Control Equipment.....	40
Maintenance of Solid-state Devices.....	42
Component Inspection and Tests.....	43
Inspect Air Filters and Vents for Maintenance.....	43
Inspect Fan Assemblies for Maintenance of Floor-mount Products.....	43
Inspect Circuit Boards, Wire Harnesses, and Fiber-optic Cables for Maintenance.....	43
Perform Forward and Reverse Biased IGBT/Diode Tests for Frame 7.....	44
Perform Forward and Reverse Biased IGBT/Diode Tests for Frames 8...15.....	46

Test AC Input Link Fuses.....	49
Test DC link Fuses.....	49
Test Frame 7 Component Fuses.....	49
Test Frame 8...15 Component Fuses.....	49
Frame 7 Kits.....	51
Remove and Install the IP54 Roof Vent Filters for Frame 7.....	54
Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frame 7.....	55
Remove and Install the IP21, 800/1000 mm Wide Door Vent Filters for Frame 7.....	56
Remove and Install the Control Pod Cover for Frame 7.....	57
Remove and Install the Control Pod HIM Cradle with DPI Connector (XT) for Frame 7.....	58
Remove and Install the Control Pod Printed Circuit Board Fan Assembly for Frame 7.....	60
Remove and Install the Main Control Circuit Board (XT) for Frame 7.....	61
Remove and Install the Backplane Circuit Board (XT) for Frame 7.....	64
Remove and Install the Fiber Transceiver Circuit Board (XT) for Frame 7.....	66
Remove and Install the Control Pod (XT) for Frame 7.....	72
Remove and Install the Main Control Circuit Board (Standard) for Frame 7.....	77
Remove and Install the Control Pod (Standard) for Frame 7.....	80
Remove and Install the LCL Filter/Power Module Heatsink Fan Assembly for Frame 7.....	84
Remove and Install the Protective Guard for Frame 7.....	85
Remove and Install the AC Common Mode Filter Circuit Board for Frame 7.....	86
Remove and Install the 240V Power Distribution Fuse (FH2) for Frame 7.....	88
Remove and Install the AC Precharge Control Circuit Board Fuse (FH3) for Frame 7.....	89
Remove and Install the Control Transformer Fuses (FH4) for Frame 7.....	90
Remove and Install the AC Precharge Fused Disconnect (FD1) Fuses for Frame 7.....	91
Remove and Install the AC Precharge Control Circuit Board for Frame 7.....	92
Open and Close the AC Precharge Components Panel for Frame 7.....	97
Remove and Install the AC Precharge Time Delay Relay for Frame 7.....	100
Remove and Install the AC Precharge TVSS Module for Frame 7.....	101
Remove and Install the DC Link Fuses for Frame 7.....	103
Remove and Install a Power Module for Frame 7.....	105
Remove and Install the Power Layer Interface Circuit Board for Frame 7.....	115
Remove and Install the Power Interface Circuit Board for Frame 7.....	118
Remove and Install the AC Input Link Fuses for Frame 7.....	121
Remove and Install the LCL Filter Module for Frame 7.....	122
Remove and Install the Current Sense Circuit Board for Frame 7.....	128
Frames 8...15 Control Bay and Control Pod Kits.....	134
Remove and Install the IP21/IP54 Roof Vent Filter for Frames 8...15.....	139

Remove and Install the IP21/IP54 Roof Vent Fan for Frames 8...15.....	140
Remove and Install the IP21/IP54 Door Vent Filter for Frames 8...15.....	141
Remove and Install the Control Bay Roof Fan 240V Control Power Fuse (FH1) for Frames 8...15.....	142
Remove and Install the Control Pod Cover for Frames 8...15.....	143
Remove and Install the Control Pod HIM Cradle with DPI Connector (XT) for Frames 8...15.....	144
Remove and Install the Main Control Circuit Board (XT) for Frames 8...15.....	146
Remove and Install the Backplane Circuit Board (XT) for Frames 8...15.....	149
Remove and Install a Fiber Transceiver (XT) for Frames 8...15.....	151
Remove and Install the Fiber Transceiver Circuit Board (XT) for Frames 8...15.....	156
Remove and Install the Fiber-optic Interface Circuit Board for Frames 8...15.....	162
Remove and Install the Control Pod Printed Circuit Board Fan Assembly for Frames 8...15.....	170
Remove and Install the Control Pod (XT) for Frames 8...15.....	171
Remove and Install the Main Control Circuit Board (Standard) for Frames 8...15.....	179
Remove and Install the Control Pod (Standard) for Frames 8...15.....	181
Frames 8...15 Input Bay Kits.....	188
Remove and Install the IP21/IP54 Roof Vent Filter for Frames 8...15.....	195
Remove and Install the IP21/IP54 Roof Vent Fan for Frames 8...15.....	196
Remove and Install the IP54/IP21, 400/600 mm Wide Door Vent Filters for Frames 8...15.....	197
Remove and Install the IP21, 800/1000 mm Wide Door Vent Filters for Frames 8...15.....	198
Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frames 8...15.....	199
Remove and Install the IP54/IP21, 1000 mm Wide Door Vent Fan for Frames 8...15.....	200
Remove and Install the Input Bay Guard for Frames 8...15.....	200
Remove and Install the AC Precharge Control Circuit Board for Frames 8...15.....	202
Remove and Install the AC Precharge Time Delay Relay for Frames 8...15.....	206
Remove and Install the AC Precharge TVSS Module for Frames 8...15.....	207
Remove and Install the AC Precharge Control Circuit Board Fuses (FH1) for Frames 8...15.....	208
Remove and Install the Input Bay 240V Power Distribution Fuse (FH2) for Frames 8...15.....	209
Remove and Install the Input Bay Roof Fan 240V Control Power Fuse (FH3) for Frames 8...15.....	212
Remove and Install the Control Transformer Fuses (FH4...FH7) for Frames 8...15.....	213
Remove and Install the AC Precharge Fused Disconnect (FD1) Fuses for Frames 8...15.....	216
Remove and Install the AC Precharge Circuit Breaker for Frame 8.....	219
Control Transformers.....	224
Frames 8...15 Power Bay Kits.....	225
Remove and Install the IP54 Roof Vent Filters for Frames 8...15.....	236
Remove and Install the IP54 Roof Vent Fan Fuse for Frames 8...15.....	236
Remove and Install the IP54 Roof Vent Fan for Frames 8...15.....	237
Remove and Install the IP54, 400/600 mm Wide Door Vent Filters for Frames 8...15.....	241

Remove and Install the IP21, 400/600 mm Wide Door Vent Filter for Frames 8...15.....	242
Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frames 8...15.....	243
Remove and Install the IP21, 800/1000 mm Wide Door Vent Filters for Frames 8...15.....	244
Remove and Install the DC Precharge Module Disconnect Handle and Shaft for Frames 8...15.....	245
Remove and Install the DC Precharge Module for Frames 8...15.....	246
Remove and Install the DC Precharge Circuit Board for Frames 8...15.....	250
Remove and Install the DC Precharge Module Fuses for Frames 8...15.....	254
Remove and Install the Power Bay Guard for Frames 8...15.....	255
Remove and Install the DC Link Fuses for Frames 8...15.....	256
Remove and Install a Power Module for Frames 8...15.....	257
Remove and Install the Power Module PE-B1 Power Jumper for Frames 8...15.....	264
Remove and Install the Power Module Circuit Board Tray for Frames 8...15.....	265
Remove and Install the Power Layer Interface Circuit Board for Frames 8...15.....	268
Remove and Install the Power Interface Circuit Board for Frames 8...15.....	270
Remove and Install the Power Module Balance Resistors for Frames 8...15.....	273
Remove and Install the Power Module Current Sensors for Frames 8...15.....	275
Remove and Install the Power Module Gate Driver Circuit Board for Frames 8...15.....	276
Remove and Install the Power Module DC Bus Capacitor Assembly for Frames 8...15.....	278
Remove and Install a LCL Filter Module from the Enclosure for Frames 8...15.....	280
Remove and Install the AC Input Link Fuses for Frames 8...15.....	286
Remove and Install the LCL Filter Capacitor Assembly for Frames 8...15.....	290
Remove and Install the LCL Filter Module AC Common Mode Filter Circuit Board for Frames 8...15.....	293
Remove and Install the LCL Filter Module Current Sense Circuit Board for Frames 8...15.....	295
Remove and Install the LCL Filter or Power Module Heatsink Fan Fuse for Frames 8...15.....	299
Remove and Install the LCL Filter or Power Module Heatsink Fan Assembly for Frames 8...15.....	300
Remove and Install the Torque Accuracy Module for Frames 8...15.....	301
Remove and Install the DC Bus Conditioner for Frames 8...15.....	304
Frames 8...15 Wire Entry/Exit Bay Kits.....	307
Remove and Install the IP54/IP21, 400/600 mm Wide Door Vent Filters for Frames 8...15.....	308
Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frames 8...15.....	308
Remove and Install the IP54/IP21, 400/800 mm Wide Door Vent Exhaust Fan and Filter Assembly for Frames 8...15.....	309
Remove and Install the Wire Bay Thermal Switch for Frames 8...15.....	310
Start Up After Repairs.....	313
Before You Apply Power to Frame 7.....	313
Before You Apply Power to Frames 8...15.....	315
Measure No-load DC Bus Voltage and Output Current.....	319
System Schematics.....	320

PowerFlex 755TR LCL Filter Module Schematic Diagrams for Frames 7...15.....321

PowerFlex 755TR Power Module Schematic Diagrams for 7...15..... 323

PowerFlex 755T DC Precharge Module Schematic Diagram..... 325

PowerFlex 755T DC Bus Conditioner Schematic Diagram for Frames 8...15..... 326

PowerFlex 755T AC Precharge Schematic Diagram for Frame 7..... 327

PowerFlex 755T AC Input Bay Schematic Diagrams for Frames 8...12..... 328

PowerFlex 755TL/TR Drives Schematic Diagrams for Frames 7...12..... 333

PowerFlex 755TM Regenerative Bus Supply Schematic Diagrams for Frames 7...12..... 343

PowerFlex 755TM Common Bus Inverters for Frames 8...12..... 350

PowerFlex 755T Entry and Exit Wire Bays for Frames 8...12..... 361

Preface

This manual provides recommended preventative maintenance schedules, major component tests, renewal part replacement procedures, and schematic diagrams for PowerFlex® 750-Series products with TotalFORCE® control.

This manual is intended for qualified service personnel responsible for PowerFlex 750-Series products 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.

For product programming and troubleshooting information that can help you determine if your product requires repairs, see these publications.

For PowerFlex® TotalFORCE® control firmware revision 6.xxx and earlier:

- PowerFlex Drives with TotalFORCE Control Programming Manual, publication [750-PM100](#)
- For drive fault and alarm information, PowerFlex Drives with TotalFORCE Control Conditions Reference Data, publication [750-RD100](#).

For PowerFlex® TotalFORCE® control firmware revision 10.xxx and later:

- PowerFlex Drives with TotalFORCE Control Programming Manual, publication [750-PM101](#).
- For parameter enumerations and descriptions, PowerFlex Drives with TotalFORCE Control Parameters Reference Data, publication [750-RD101](#).
- For drive fault and alarm information, PowerFlex Drives with TotalFORCE Control Conditions Reference Data, publication [750-RD102](#).

Download Firmware, AOP, EDS, and Other Files

You can download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center at rok.auto/pcdc.

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes. Translated versions are not always available for each revision.

Topic	Page
The service information in this publication for PowerFlex® 755TL, 755TR, and TM frame 7...15 drives replaces publication 750-TG100F-EN-P.	Throughout

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
PowerFlex 755T Drive Resources	Find technical content to help you install, configure, use, and maintain your PowerFlex® 755T architecture-class AC drives. Includes downloads of control block diagrams and parameter and drive conditions data.
PowerFlex Drives with TotalFORCE Control Parameters Reference Data, publication 750-RD101	Provides the parameters for PowerFlex® products with TotalFORCE® control.

Resource	Description
PowerFlex Drives with TotalFORCE Control Conditions Reference Data, publication 750-RD102	Provides the fault, alarm, event, and exception codes for PowerFlex® products with TotalFORCE® control.
PowerFlex 755T Products with TotalFORCE Control Input Protection Devices Reference Data, publication 750-RD103	Provides a list of recommended fuses and circuit breakers for PowerFlex® 755TL, 755TR, and 755TM products based product voltage class, current draw, and duty rating.
PowerFlex 750-Series Products with TotalFORCE Control Technical Data, publication 750-TD100	Provides detailed information on: • Drive and bus supply specifications • Option specifications • Fuse and circuit breaker ratings
PowerFlex 755TM IP00 Open Type Kits Technical Data, publication 750-TD101	Provides detailed information on: • Kit selection • Kit ratings and specifications • Option specifications
PowerFlex 755TS Products with TotalFORCE Control Technical Data, publication 750-TD104	Provides detailed information on: • Drive specifications • Option specifications • Fuse and circuit breaker ratings
PowerFlex 750-Series Products with TotalFORCE Control Installation Instructions, publication 750-IN100	Provides the basic steps to install PowerFlex® 755TL low harmonic drives, PowerFlex® 755TR regenerative drives, and PowerFlex® 755TM drive systems.
PowerFlex 755TS Products with TotalFORCE Control Installation Instructions, publication 750-IN119	Provides the basic steps to install PowerFlex® 755TS drives.
PowerFlex 755T Flux Vector Tuning, publication 750-AT006	Provides guidance on how to tune Flux Vector position and velocity loops, filters, and other features to achieve the level of performance that is required for a given application. This publication is intended for novice drives users and users with advanced skills.
PowerFlex 20-HIM-A6 and 20HIM-C6S HIM (Human Interface Module) User Manual, publication 20HIM-UM001	Provides detailed information on HIM components, operation, and features.
PowerFlex 755TM IP00 Open Type Kits Installation Instructions, publication 750-IN101	Provides instructions to install IP00 Open Type kits in user-supplied enclosures.
PowerFlex 755TM AC Precharge Modules Unpacking and Lifting Instructions, publication 750-IN102	These publications provide detailed information on: • Component weights • Precautions and recommendations • Hardware attachment points • Lifting the component out of the packaging
PowerFlex 755TM DC Precharge Modules Unpacking and Lifting Instructions, publication 750-IN103	
PowerFlex 755TM Power and Filter Modules Unpacking and Lifting Instructions, publication 750-IN104	
PowerFlex 750-Series Service Cart and DC Precharge Module Lift Instructions, publication 750-IN105	Provides detailed setup and operating instructions for the module service cart and DC precharge module lift.

Resource	Description
PowerFlex 755TM Power and Filter Module Storage Hardware Instructions, publication 750-IN106	Provides detailed installation and usage instructions for this hardware accessory.
PowerFlex 755T Power Module Service Ramp Instructions, publication 750-IN108	Provides detailed usage instructions for the module service ramp.
Industry Installation Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-AT003	Provides basic information on enclosure systems, considerations to help protect against environmental contaminants, and power and grounding considerations for installing Pulse Width Modulated (PWM) AC drives.
Drives in Common Bus Configurations with PowerFlex 755TM Bus Supplies Application Technique, publication DRIVES-AT005	Provides basic information to properly wire and ground the following products in common bus applications: • PowerFlex® 755TM drive system for common bus solutions • PowerFlex® 750-Series AC and DC input drivexs • Kinetix® 5700 servo drives
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001	Provides basic information to properly wire and ground PWM AC drives.
PowerFlex 750-Series I/O, Feedback, and Power Option Modules Installation, publication 750-IN111	Provides instructions to install and wire PowerFlex® 750-Series option modules.
PowerFlex Drives with TotalFORCE Control Programming Manual (firmware revision 6.xxx and earlier), publication 750-PM100	Provides detailed information on: • I/O, control, and feedback options • Parameters and programming • Faults, alarms, and troubleshooting
PowerFlex 750-Series AC Drives with TotalFORCE Control Quick Start, publication 750-QS100	Provides the basic steps that are required to start up PowerFlex® 750-Series AC Drives with TotalFORCE® Control.
CIP Security with Rockwell Automation Products Application Technique, publication SECURE-AT001	Describes how to plan and implement a Rockwell Automation system that supports the CIP Security protocol.
System Security Design Guidelines Reference Manual, publication SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
PowerFlex 750-Series Products with TotalFORCE Control Reference Manual, publication 750-RM100	Provides detailed setup and programming instructions for common applications.
PowerFlex 750-Series Products with TotalFORCE Control Hardware Service Manual - Frames 5 and 6, publication 750-TG102	Provides detailed information on: • Preventive maintenance • Component testing • Hardware replacement procedures
PowerFlex 750-Series Products with TotalFORCE Control Hardware Service Manual - Frames 6L and 7L, publication 750-TG103	Provides detailed information on: • Preventative maintenance • Component testing • Hardware replacement procedures

Resource	Description
PowerFlex 750-Series Products with TotalFORCE Control Hardware Service Manual - Frames 7...15, publication 750-TG104	Provides detailed information on: • Preventative maintenance • Component testing • Hardware replacement procedures
System Security Design Guidelines Reference Manual, SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
Industrial Automation Wiring and Grounding Guidelines, 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Selection and Configuration tools, rok.auto/systemtools	Helps configure complete, valid catalog numbers and build complete quotes based on detailed product information.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

Before You Begin

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

IMPORTANT: Once the product is connected to a power supply, always verify that system power is not present before performing any work on the product. See safety-related practices that are contained in publication NFPA 70E, Standard for Electrical Safety in the Work Place.

Qualified Personnel



ATTENTION: Risk of injury or equipment damage exists.

Only qualified personnel familiar with PowerFlex drive products and associated machinery should plan or implement the installation, startup, and subsequent maintenance of the system. Failure to comply can result in personal injury and/or equipment damage.

Personal Safety



ATTENTION: Risk of injury or death exists.

To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before servicing.

Frames 5 and 6

Measure the DC bus voltage at the power terminal block by measuring between the +DC and -DC terminals. Also, measure between the +DC terminal and the chassis, and between the -DC terminal and the chassis. The voltage must be zero for all three measurements.

Frame 6L

Measure the DC bus voltage by measuring between the DC+ and DC- testpoint sockets on the bottom of the chassis. Also measure between the DC+ testpoint and PE ground bus bar (GND), and the DC- testpoint and the PE ground bus bar (GND).

Frames 7...15 and 7L

Measure the DC bus voltage by measuring between the +DC and -DC testpoint sockets on the front of the power module. Also measure between the +DC testpoint and chassis GND, and the -DC testpoint and chassis GND.



ATTENTION: Risk of injury or equipment damage exists.

Hazard of personal injury or equipment damage exists when using bipolar input sources. Noise and drift in sensitive input circuits can cause unpredictable changes in motor speed and direction. Use speed command parameters to help reduce input source sensitivity.



ATTENTION: Risk of injury or equipment damage exists.

DPI™ or SCANport™ host products must not be directly connected together via 1202 cables. Unpredictable behavior can result if two or more devices are connected in this manner.



ATTENTION: Risk of injury or death exists.

The drive start/stop/enable control circuitry includes solid state components. If hazards due to accidental contact with moving machinery or unintentional flow of liquid, gas or solids exists, an additional hardwired stop circuit may be required to remove the AC line to the drive. An auxiliary braking method may be required.



ATTENTION: Risk of injury or equipment damage exists.

Unexpected machine operation exists if the drive is configured to automatically issue a Start or Run command. Do not use these functions without considering applicable local, national and international codes, standards, regulations or industry guidelines.



ATTENTION: Risk of injury or death exists.

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 and the oscilloscope chassis is grounded to an earth ground.



ATTENTION: Risk of injury or death exists.

A possible hazard of personal injury due to prolonged exposure to high sound levels. Follow applicable local, national, and international codes, standards, regulations, or industry guidelines for hearing protection when exposed to potentially damaging noise hazards.

Class 1 LED Product



ATTENTION: Risk of injury or death exists.

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.

Product Safety



ATTENTION: Risk of equipment damage exists.

This product contains electrostatic discharge (ESD) sensitive parts and assemblies. Static control precautions are required when you install these assemblies. Component damage can result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference any applicable ESD protection handbook.

Electrostatic Discharge Icon

Electrostatic Discharge (ESD) sensitive parts and assemblies are identified in this manual by this image. Take static control precautions when you install an assembly that is identified as ESD sensitive.



Remove Power from the System for Frame 7

This procedure must be completed before you attempt to service any part of a frame 7 drive or bus supply.



ATTENTION: Risk of injury or equipment damage exists.

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

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

Electric arcs cause excessive wear to contacts on both the module and its receiving connector. Worn contacts can create electrical resistance.

Follow these steps to remove power from a frame 7 drive or bus supply.

1. Turn off and lock out all input power, including any external power sources (such as an Active Front End or other DC power source).



ATTENTION: Risk of injury or death exists.

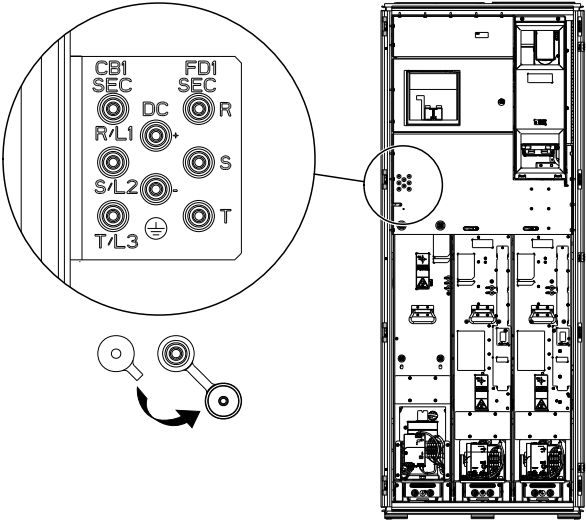
To avoid an electric shock hazard when servicing the product, a means for Lockout/Tagout of the external power supply source, must be provided.

2. If present, turn off and lock out any external, single-phase 120/240V power source.
3. Turn the AC precharge disconnect switch to the "Off" position.
4. Wait 15 minutes.
5. Open the enclosure door.
6. Close and lock the hasp on the circuit breaker.
7. Lock the fused disconnect switch.
8. Verify that there is no voltage at the input-power terminals.

IMPORTANT: Do not use testpoints to verify that incoming power has been removed from the product.

Access testpoints only after incoming power has been removed and the input power system is locked and tagged out.

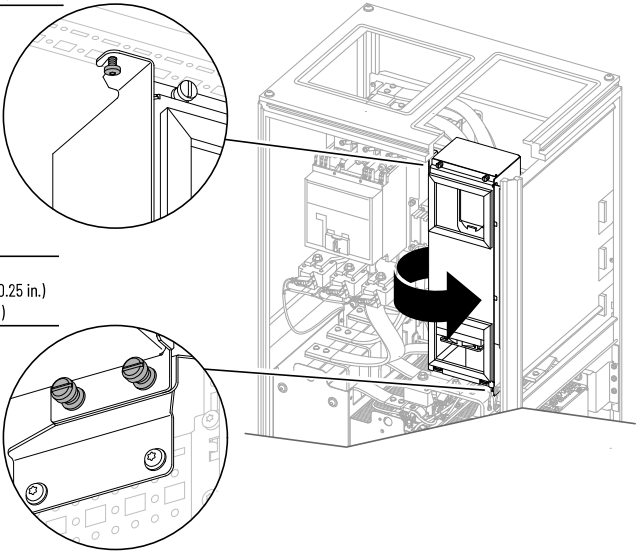
9. Open the protective caps on the testpoints.
10. Measure the AC input and DC bus voltage at the following testpoint sockets in the input bay to verify that there is no voltage present and all components have discharged:
 - Using the circuit breaker output (CB1 SEC) testpoints R/L1, S/L2, and T/L3, measure L to L and L to chassis GND.
 - By using the fused disconnect output (FD1 SEC) testpoints R, S, and T, measure L to L and L to chassis GND.
 - By using the DC bus testpoints +DC and -DC, measure +DC to -DC, +DC to chassis GND, and -DC to chassis GND.



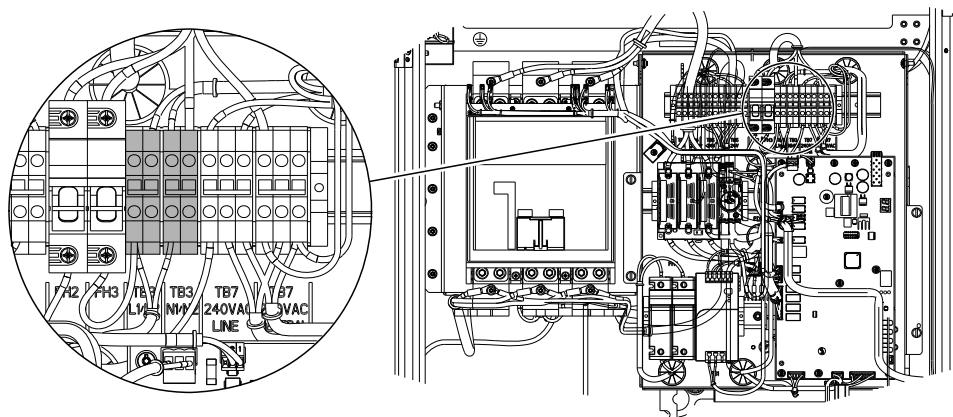
- 11. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
- 12. Close the protective caps on the testpoints.
- 13. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.
- 14. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.

13		M5.5 x 13 mm T25 4.8 N•m (42.0 lb•in)
----	--	---

14		M5 x 0.8 mm P2 or F - 6.4 mm (0.25 in.) 2.8 N•m (25.0 lb•in)
----	---	--



- 15. Measure the 240V AC control voltage at terminals L and N on terminal block TB3.



Control pod not shown for clarity only.

16. Replace all components and the protective guard after service.

Remove Power from the System for Frames 8...15

This procedure must be completed before you attempt to service any part of a frame 8...15 drive, bus supply, or common bus inverter.



ATTENTION: Risk of injury or equipment damage exists.

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

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

Electric arcs cause excessive wear to contacts on both the module and its receiving connector. Worn contacts can create electrical resistance.

Follow these steps to remove power from a frame 8...15 drive, bus supply, or common bus inverter.

1. Turn off and lock out all input power, including any external power sources (such as an Active Front End or other DC power source).



ATTENTION: Risk of injury or death exists.

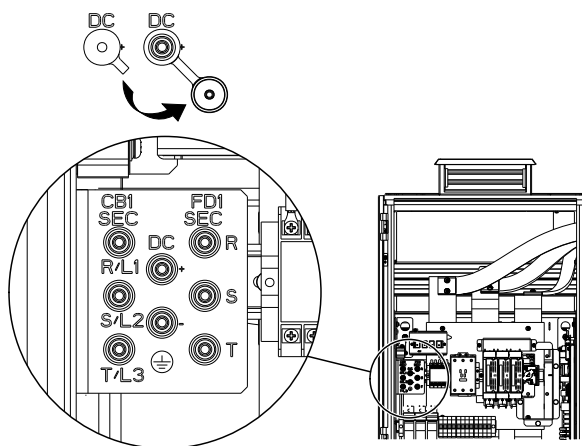
To avoid an electric shock hazard when servicing the product, a means for Lockout/Tagout of the external power supply source, must be provided.

2. If present, turn off and lock out any external, single-phase 120/240V power source.
3. For regenerative drives and bus supplies, complete these steps.
 - a. On the input bay, turn the AC precharge disconnect switch to the "Off" position.
 - b. Wait 15 minutes.
 - c. Open the enclosure door.
 - d. Close and lock the hasp on the circuit breaker.

- e. Lock the fused disconnect switch.
 - f. Verify that there is no voltage at the drive or bus supply input-power terminals.
4. For common bus inverters with DC precharge, complete these steps.
 - a. Complete the tasks in step 3 for the bus supply AC input source.
 - b. Turn the DC precharge disconnect switch to the "Off" position.
 - c. Wait 15 minutes.
 - d. Open the enclosure door.
 - e. Close and lock the hasp on the circuit breaker
 - f. Lock the fused disconnect switch.
 - g. If a control bay is used, turn the selector switch to the "Off" position and lock the switch.

IMPORTANT: Do not use testpoints to verify that incoming power has been removed from the product. Access testpoints only after incoming power has been removed and the input power system is locked and tagged out.

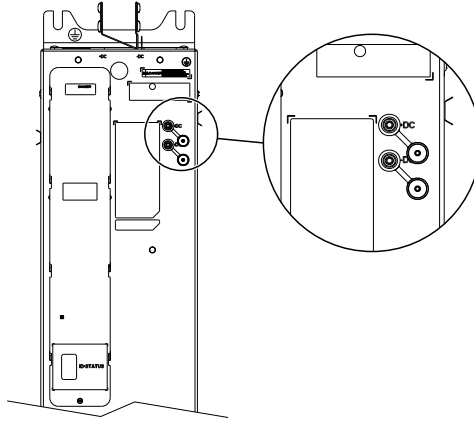
5. For applicable products, open the protective caps on the testpoints.
6. For regenerative drives and bus supplies, measure the AC input and DC bus voltage at the following testpoint sockets in the input bay to verify that there is no voltage present and all components have discharged:
 - Using the circuit breaker output (CB1 SEC) testpoints R/L1, S/L2, and T/L3, measure L to L and L to chassis GND.
 - By using the fused disconnect output (FD1 SEC) testpoints R, S, and T, measure L to L and L to chassis GND.
 - By using the DC bus testpoints +DC and -DC, measure +DC to -DC, +DC to chassis GND, and -DC to chassis GND.





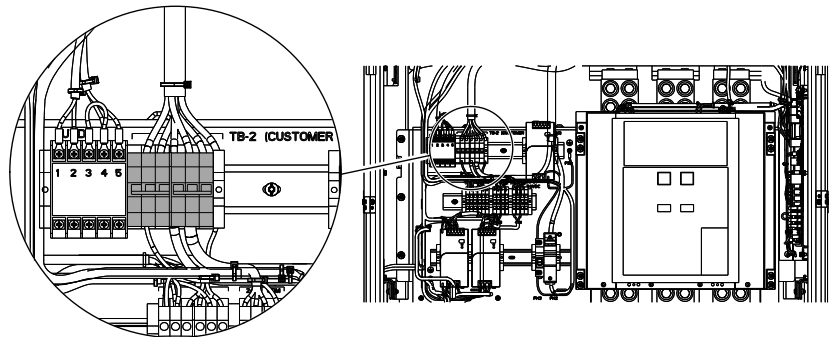
Frame 9 input bay shown.

7. For common bus inverters, by using the DC bus testpoints +DC and -DC on the front of the power modules, measure the DC bus voltage of all power modules and verify that there is no voltage present on the bus capacitors. Measure +DC to -DC, +DC to chassis GND, and -DC to chassis GND.

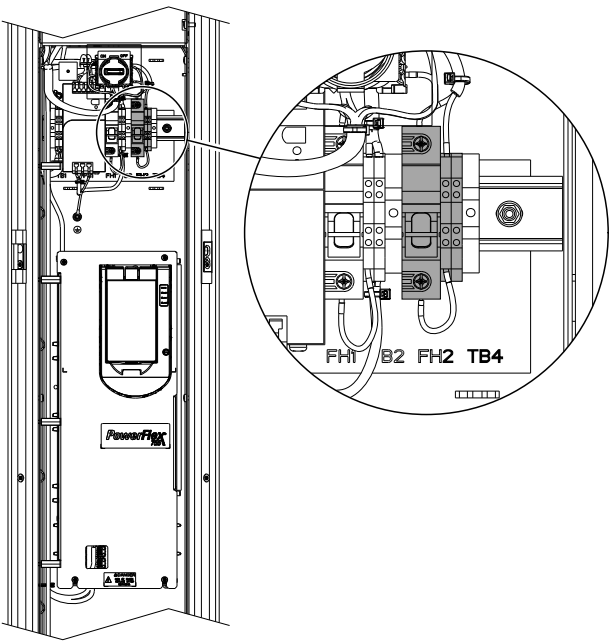


IMPORTANT: When you have completed your measurements, replace the protective caps on the testpoints.

8. Measure the 240V AC control voltage at the appropriate terminals:
 - For drives and bus supplies, in the input bay, measure terminals L and N on terminal block TB2.



- For control bays, measure terminal L at FH2-2 and terminal N at terminal block TB4.



Renewal Kits for PowerFlex 755T Products with Corrosive Gas Protection (XT)

All PowerFlex® 755T product renewal kits with corrosive gas protection (XT) meet the corrosive atmosphere specification as defined by Rockwell Automation. For details on the corrosive atmosphere specification, see the PowerFlex® 750-Series Products with TotalFORCE® Control Technical Data, publication [750-TD100](#).

The PowerFlex® 755T product renewal kits that are listed in this table do not meet the corrosive atmosphere specification. Do not install these renewal kits in a PowerFlex® 755T product with XT (catalog numbers 20GE and 20JE) that is installed in a corrosive environment. The renewal kit catalog number and series are contained on the kit package label and/or nameplate.

Table 1. Renewal Kits without Corrosive Gas Protection

Catalog Number	Module	Series
20-750-MCP001-FnM, 20-750-MCP002-FnM	Control pods	All
SK-RM-MCB1-PF755	Main control board	All
20-750-MI1-xnnnnnnn, 20-750-MI2-xnnnnnnn, 20-750-MI3-xnnnnnnn, 20-750-MI4-xnnnnnnn	Frames 8...15 Power modules	A
20-750-MI5-C650D650 (Corrosive atmosphere rating is Severity Level G3. Consult the factory for more information.)	Frame 7L power module	A
20-750-ML1-xnnnnnnn, 20-750-ML4-xnnnnnnn	LCL filter modules	A

Table 1. Renewal Kits without Corrosive Gas Protection (continued)

Catalog Number	Module	Series
20-750-MACPC1-xx or 20-750-MACPC1-xx-F7M	AC precharge control boards	A
20-750-MFTB1-F8	Fiber transceiver board	A

Protective Packaging for Renewal Kits with XT

Renewal kits with XT are shipped in packaging that is designed to protect products while stored at industrial sites that can be exposed to corrosive gas. Do not remove packaging or protective film from a renewal kit while it is in storage.

Protective Covers on Kits with XT

Some renewal kits with XT use protective covers to seal wire harness connectors, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports. The covers protect against contamination and corrosion in corrosive gas environments. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation. For kits with protective covers:

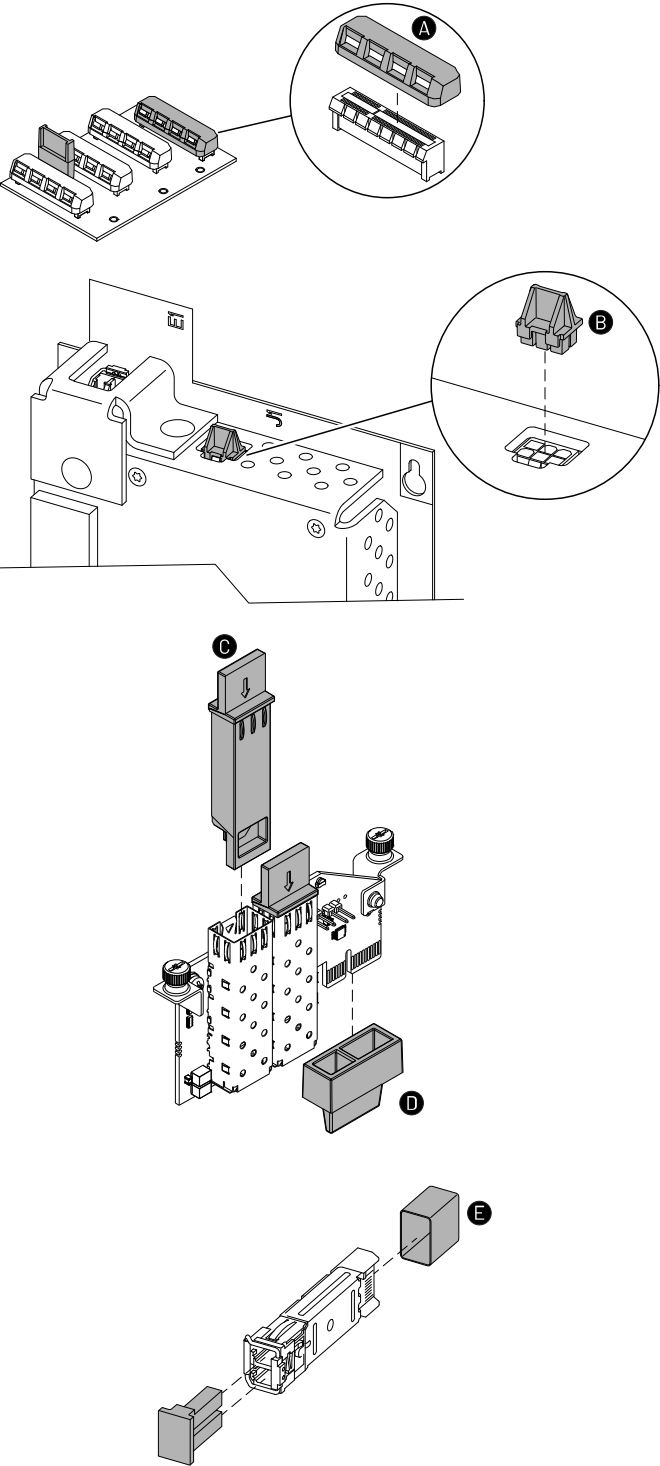
- Do not remove a protective cover from an unused connection or a kit in storage.
- Remove a protective cover when a connection must be made at installation only.

IMPORTANT: Retain protective covers for power and LCL filter modules for reuse. Install protective covers on connectors when a module is removed and stored.

In each applicable chapter of this manual 'XT' appears in the description column of the Renewal Kits tables to identify a kit that contains protective covers.

This figure provides examples of protective covers for components with XT.

Figure 1. Protective Covers for Kits with XT Examples



Item	Description		Item	Description
A	Circuit board connector cover		D	Circuit board edge connector cover
B	Terminal block cover		E	Fiber-optic transceiver covers
C	Fiber-optic port cover		—	—

Dielectric Grease Application (XT)

All printed circuit board renewal kits with XT contain PolySi PST-576 dielectric grease on the edge connectors (where present). All fiber-optic transceivers in renewal kits with XT contain PolySi PST- 576 dielectric grease on the internal edge connector. The dielectric grease provides corrosion resistance for the edge connector and receiving connector.

Where applicable, '(XT)' appears in the description column of the Renewal Kits tables to identify a kit that contains dielectric grease on connectors. Greased connectors are always covered on new kits.

To be sure that edge connectors on circuit boards with XT maintain corrosion resistance, do the following:

- Do not touch or remove the dielectric grease from the circuit-board edge connectors.
- Do not allow the edge connectors to contact surfaces other than the receiving connector.
- If possible, do not pull the circuit board edge connectors out of the receiving connectors after it has been fully inserted and seated.
- Inspect and clean receiving connectors, if necessary, before you install a new or existing circuit board.
- If the grease on a circuit board edge connector becomes contaminated or the edge connector surface becomes exposed, you must clean the edge connector and reapply dielectric grease.

To be sure that edge connectors on fiber-optic transceivers with XT maintain corrosion resistance, do the following:

- Do not touch the dielectric grease on the fiber-optic transceiver edge connector.
- Inspect fiber-optic transceiver connections for contamination.
- If the grease on a fiber-optic transceiver edge connector becomes contaminated or the edge connector surface becomes exposed, you must clean the edge connector and reapply dielectric grease.

To help avoid premature failure of a circuit board or fiber-optic transceiver edge connector that contains dielectric grease, do not allow the grease on the edge connectors to become contaminated with any form of debris or particulate matter.

Inspect and Clean Circuit Board Connectors (XT)

A lint-free alcohol wipe with 90% or higher alcohol content is required to clean a receiving connector.

Before you install a new circuit board or reinstall an existing circuit board with XT, inspect and clean the receiving connector.

Follow these steps to inspect and clean a circuit board connector.

1. By using a bright light, inspect the receiving connector for debris or particulate matter.
2. If there is contamination inside the receiving connector on the circuit board, it is recommended that you replace the circuit board.
3. If the exterior surface of the receiving connector has contamination, to help prevent any debris or particulate matter from entering the connector, use a lint-free alcohol wipe to remove the contamination away from the connector opening.
4. Before you install the new circuit board or reinstall the existing circuit board, allow the receiving connector to dry thoroughly.

Clean and Apply Dielectric Grease to an Edge Connector (XT)

If either of these conditions exist for an edge connector on a circuit board with XT, do not install the circuit board:

- Debris or particulate matter is present on the greased surfaces of a circuit board edge connector.
- Any of the “gold finger” surfaces on the edge connector are not completely coated with a thin layer of grease.

If the dielectric grease on a circuit board edge connector contains debris or the gold finger surfaces are not completely coated with grease, you must thoroughly clean and reapply PolySi PST-576 non-silicone, dielectric grease to the affected connector.

IMPORTANT: Only PolySi PST-576 dielectric grease is approved for use on edge connectors of circuit boards with XT.

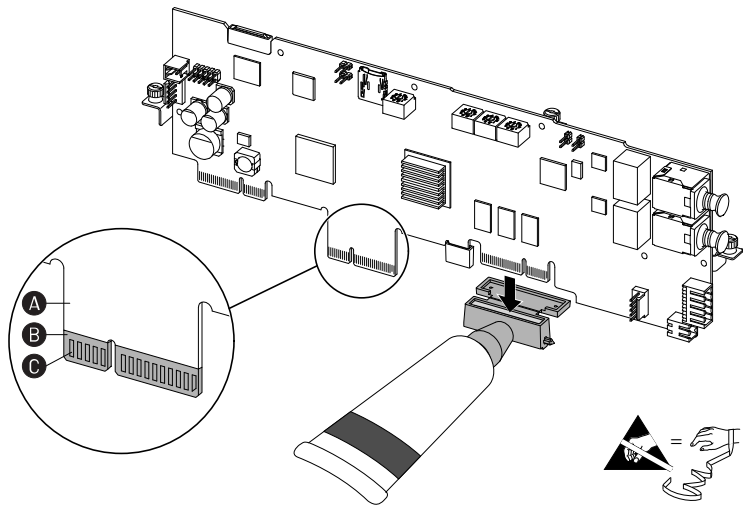
The dielectric grease applicator kit, catalog number SK-RM-GRAPP1, is available to reapply grease to edge connectors on circuit boards and fiber transceivers. See [Dielectric grease applicator kit on page 24](#).



Complete coverage of the edge connector with grease is more important than the thickness of the grease layer. A thicker application of grease does not improve corrosion resistance.

Follow these steps to use the grease applicator kit to apply dielectric grease to an edge connector on a circuit board.

1. By using a lint-free alcohol wipe with 90% or higher alcohol content, remove the contamination and grease from the connector.
2. Before you apply grease, allow the edge connector to dry thoroughly.
3. Open the grease tube and by using the pin on the side of the large applicator, puncture the seal on the end of the tube.
4. Install the large grease applicator on the threaded tip of the tube.
5. Close the applicator cover.
6. Press the tube until the applicator-tip chamber is completely filled with grease. The chamber is full when grease escapes through the small holes on the applicator cover.
7. Open the applicator cover and verify that the chamber is full of grease.
8. If the chamber is not full of grease, repeat steps 5...7.
9. To apply dielectric grease to both sides, insert the edge connector (A) into the center of the applicator tip. Be sure that the grease (B) is applied beyond the edge of the gold finger surfaces (C) on the edge connector (ideally in contact with the conformal coating on the board).



- 10. Repeat steps 5...9 for each affected edge connector.
- 11. After use, remove the grease applicator from the grease tube.
- 12. Replace the cap on the grease tube.
- 13. By using a clean cloth, wipe the remaining grease out of the applicator tip and close the cover.

Dielectric Grease Applicator Kit

The dielectric grease applicator kit, catalog number SK-RM-GRAPP1, is available to reapply grease to edge connectors on circuit boards and fiber transceivers. The grease applicator kit contains these components.

Figure 2. Dielectric Grease Applicator Kit Contents

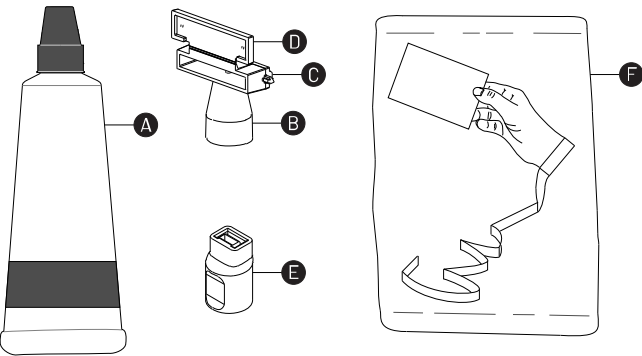


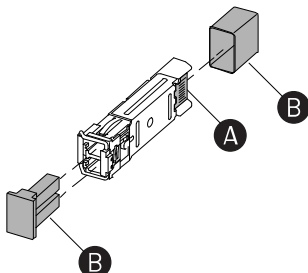
Table 2. Grease Kit Contents Description

Item	Description		Item	Description
A	PolySi PST-576 dielectric grease tube		D	Applicator cover (hinged)
B	Large grease applicator (for circuit board edge connectors)		E	Small grease applicator (for fiber transceiver edge connector)
C	Pin (to pierce grease tube)		F	Electrostatic discharge (ESD) strap

Remove a Protective Cover from a Fiber Transceiver with Dielectric Grease

Do not touch or allow the transceiver edge connector (A) to contact surfaces other than the receiving connector.

1. Hold the middle of the fiber-optic transceiver.
2. Remove the covers (B) from the ends of the transceiver.



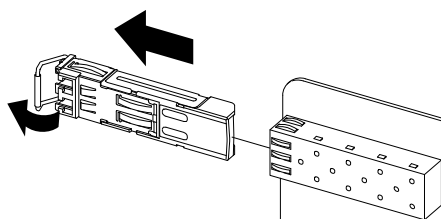
Inspect Fiber-optic Transceiver Connections (XT)

Follow these steps to inspect the fiber-optic transceiver (XT) connections for contamination, corrosion, or displaced grease.

1. By using a lint-free alcohol wipe with 90% or higher alcohol content, remove any debris from the outside of the transceiver cage.

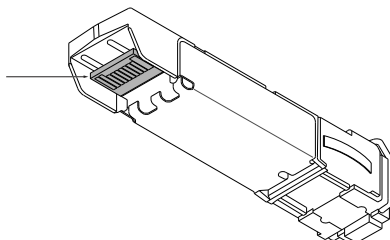
IMPORTANT: Take care when cleaning the surface of a transceiver cage to help prevent any debris or particulate matter from entering the cage.

2. By lifting the latch, remove the existing transceiver from the transceiver cage.



If the latch is obstructed and you cannot use your fingers to open it, use a small screwdriver, or other long, narrow tool to open the latch.

3. By using a bright light, inspect the edge connector inside of the transceiver cage for contamination. If the edge connector inside of the transceiver cage contains debris or corrosion, replace the printed circuit board and transceiver.
4. By using a bright light, inspect the transceiver edge connector for missing grease or contamination or corrosion.



If the transceiver edge connector is corroded, replace the fiber-optic transceiver (XT). Or, if grease is missing or contaminated, clean and apply grease to the existing transceiver edge connector.

Fiber Transceiver with XT Kit

Use the fiber transceiver with XT kit, catalog number SK-RM-FTR1-F8-XT, to replace a contaminated or corroded transceiver. The transceiver with XT contains dielectric grease on the edge connector. Do not remove the protective covers before installation.

Figure 3. Fiber Transceiver with XT Kit Contents

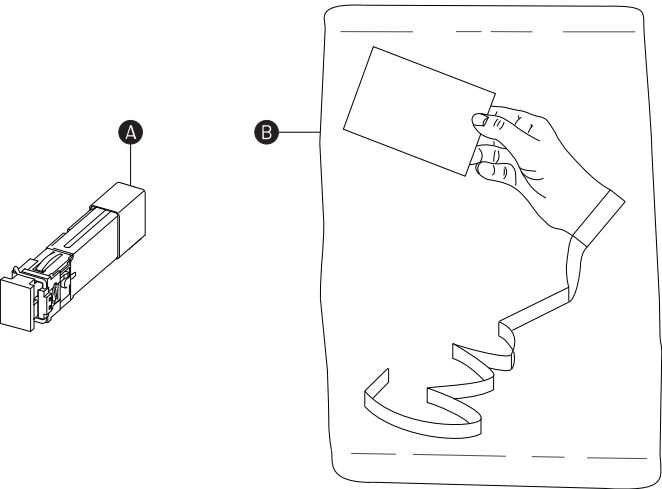


Table 3. Transceiver with XT Kit Contents Description

Item	Description
A	Fiber transceiver with XT
B	Electrostatic discharge (ESD) strap

Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector (XT)

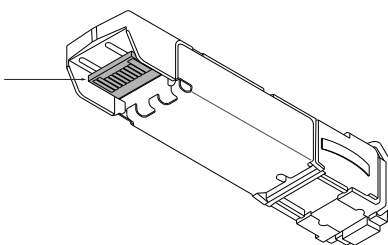
If the dielectric grease on a transceiver edge connector contains debris or is removed to expose the edge connector before installation, you must thoroughly clean and reapply PolySi PST-576 nonsilicone, dielectric grease to the affected connector.

IMPORTANT: Only PolySi PST-576 dielectric grease is approved for use on edge connectors of circuit boards with XT.

The grease applicator kit, catalog number SK-RM-GRAPP1, is available to reapply grease to edge connectors on fiber transceivers. See [Dielectric Grease Applicator Kit on page 24](#).

Follow these steps to use the grease applicator kit to apply dielectric grease to a transceiver edge connector on a fiber transceiver.

1. By using a lint-free alcohol wipe with 90% or higher alcohol content, remove any debris away from the transceiver edge connector.

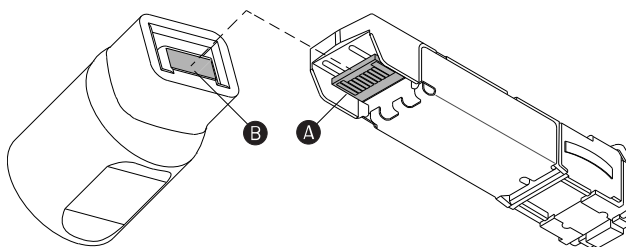


2. Before you apply grease, allow the edge connector to dry thoroughly.
3. Open the grease tube and, if necessary, by using the pin on the side of the large applicator, puncture the seal on the end of the tube.
4. Install the small grease applicator on the threaded tip of the tube.
5. Press the tube until the small cavity of the applicator tip is filled completely with grease.



The tip is full when grease reaches the end of the small cavity on the tip of the applicator. Do not over-fill the small cavity with grease.

6. To apply dielectric grease, insert the edge-connector (A) end of the transceiver into the applicator tip (B).



The transceiver edge connector fits into the small, inner cavity with the grease, and the outer transceiver case fits into the outer cavity of the applicator.

7. Remove the transceiver from the applicator.

IMPORTANT: Take care not to touch the edge connector before insertion into the fiber-optic port.

8. After use, remove the small grease applicator from the grease tube.
9. Replace the cap on the grease tube.
10. By using a clean cloth, wipe the remaining grease out of the applicator tip.

Installation Tools

This list includes the tools that are needed for installation and test measurements.

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.

Table 4. Installation Tools

Tool Description	Details
Allen socket wrench	3 mm, 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, 15 mm, 17 mm, 19 mm, 22 mm
Crimp tools	For cable terminals 1.5...240
Current clamp	1000 A (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 / Task light	For inspections
Flat-nose screwdriver	3 mm (0.12 in.), 5 mm (0.19 in.), 6.4 mm (0.25 in.)
Fuse puller	—
Hexagonal socket wrench	2.5 mm, 7 mm, 8 mm, 10 mm, 12 mm, 13 mm, 17 mm, 18 mm
Insulation tester	1000V DC
Level	—
Lift strap	5/16 in. J-hook style, 24 in. long, 1000 lb min.
Module service cart	The optional module service cart (20-750-MCART1) is recommended to handle and transport power modules. Important: The service cart is required to handle and transport LCL filter modules.
DCPC module lift	Used together with the module service cart to remove DC precharge modules.
Module storage hardware	Module storage hardware (20-750-MINV-ATIP) helps to stabilize power and filter modules during temporary storage after removal.
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	—
Open end wrenches	Two 1-1/2 in. open end wrenches to tighten coolant hose connections.
Oscilloscope	Portable, digitizing, dual channel scope, with isolation
Phillips screwdriver/bit	#1, #2
Ratcheting wrench	1...12 N•m (8.8...106 lb•in)

Table 4. Installation Tools (continued)

Tool Description	Details
Torque wrench	1...12 N•m (8.8...106 lb•in)
Torque wrench	6...50 N•m (53...443 lb•in)
Torx, star, or hexalobular screw driver/bit	#15, #20, #25, #30, #40, #45
Wire cutter	—

Software Tools

PowerFlex® 750-Series products with TotalFORCE® Control can be configured by using the following software products:

- Studio 5000 Logix Designer® software is an intuitive programming environment that allows you to work collaboratively to design and maintain their automation systems.
- Connected Components Workbench™ software provides controller programming and simulation, device configuration, and visualization with Human Machine Interface (HMI) editor.

For PowerFlex® 750-Series products and software compatibility, see the Product Compatibility and Download Center at rok.auto/pcdc.

Hardware Installation Diagrams

The assembly illustrations throughout this manual contain diagrams (as shown here) that identify the following: sequence number (if necessary), type of fastener, fastener size, tool type and size, and final assembly torque.

Figure 4. Fastener Diagram

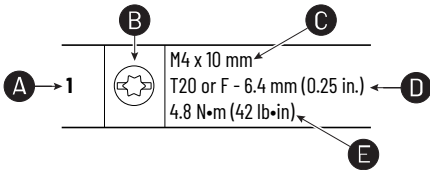


Table 5. Fastener Diagram Elements

Item	Name	Description
A	Sequence number	When used, the sequence number corresponds with a step in a procedure.
B	Fastener type	A graphic representation of the fastener drive type.
C	Fastener size	Specifies diameter x thread pitch x length as necessary.

Table 5. Fastener Diagram Elements (continued)

Item	Name	Description
D	Tool type and size	The recommended tool for the specified fastener drive type.
E	Torque	Specifies the final assembly torque for the fastener.

Table 6. Fastener Drive Types

Graphic	Description
	Flat-head screw
	Hexagonal bolt
	Hexagonal nut or standoff
	Hexagonal screw
	Torx screw
	Phillips screw
	Pozidriv screw
	Slotted torx screw
	Slotted Phillips

Table 7. Tool Types

F	Flat-nose screwdriver
Px	Phillips screwdriver/bit and size
PZx	Pozidriv screwdriver/bit and size
Txx	Torx screwdriver/bit and size
xx mm	Hexagonal socket wrench

Fastener Torque Sequences



ATTENTION: Risk of equipment damage exists.
Components can be damaged if the tightening procedure is not performed to specification.

These figures illustrate the initial and final torque sequences for components that are fastened to a heatsink by using two, four, and six screws. The initial torque is 1/3 (33%) of the final torque, except six-point mountings, which require a 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 5. Two-point Mounting

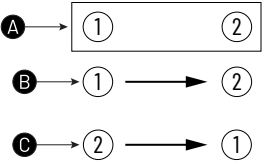


Figure 6. Four-point Mounting

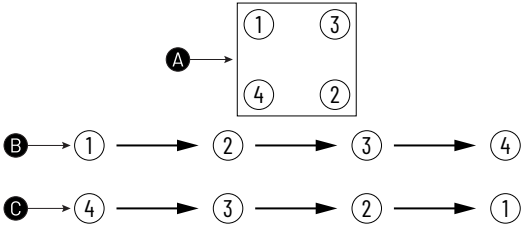


Figure 7. Six-point Mounting

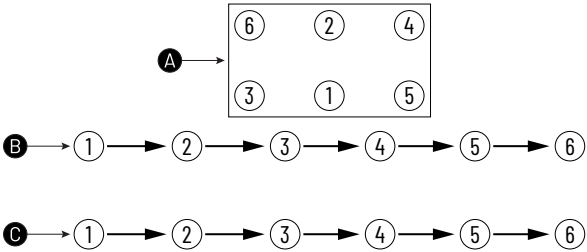


Table 8. Torque Sequences

Item	Description
A	Fastener pattern
B	Initial torque sequence
C	Final torque sequence

Preventative and Predictive Maintenance

For applications that demand the highest levels of machine availability, Rockwell Automation recommends regularly scheduled preventative maintenance for PowerFlex® product components. There are two methods for planning preventative maintenance for your product:

- Follow a recommended preventative maintenance schedule for the operating environment applicable to your drive, bus supply, or common bus inverter.
- The predicted remaining life of components appears on the Predictive Maintenance page in the Connected Components Workbench™ and Studio 5000 Logix Designer® software applications.

Recommended Preventative Maintenance

To help achieve the highest level of uptime, Rockwell Automation recommends that you follow the maintenance schedule that is provided for your operating environment. For environments with a corrosive atmosphere, use PowerFlex® 755T products with enhanced (XT) protection only.

A recommended maintenance schedule is provided for these environments:

- Operating conditions below 40 °C (104 °F)
- Operating conditions above 40 °C (104 °F)

IMPORTANT: Duty cycle and load profile can greatly affect the reliability of PowerFlex® 750-Series Products with TotalFORCE® Control.

An annual preventative maintenance program includes the following primary tasks:

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

IMPORTANT: For products that have been in storage for multiple years, see instructions on how to reform the bus capacitors, visit rok.auto/support and search on Capacitor Reforming Guidelines.

Recommended Maintenance Schedule Task Descriptions

Table 9. Maintenance Task Descriptions

Task	Description
Inspect	Inspect the component for signs of excessive accumulation of dust, dirt, or external damage. For example, inspect the filters/fan inlet screens for debris that can block the airflow path.
Clean	Clean the components that can be reused, specifically the door-mounted air filters and fan inlet screens.
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.

Table 9. Maintenance Task Descriptions (continued)

Task	Description
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. Use the predictive maintenance parameters to determine a replacement schedule for components in shaded table rows.
Review	Self-review or a discussion with Rockwell Automation personnel is recommended to help determine whether any of the enhancements/changes made to the drive firmware or hardware could benefit the application.

Recommended Maintenance Schedule for Operating Conditions Below 40 °C (104 °F)

This table provides a recommended schedule of maintenance tasks for the components or activities that are associated with products that are operated in conditions below 40 °C (104 °F). The table also identifies the components that have parameters (firmware revisions 6.xxx and earlier only) or objects available to monitor the remaining life in software applications.

Table 10. Recommended Maintenance Schedule for Operating Conditions Below 40 °C (104 °F)

Components and Activities	Kit Cat. No. or Requirements	Monitor Predictive Maintenance Parameters or Objects	Inspect/Clean	Maintain	Review	Replace
Frames 8...15 Power Module Balance Resistors	SK-RM-INVBRn-F8M	—	—	—	—	Every 9 years
Frames 7...15 Power Module Insulated Gate BiPolar Transistors (IGBTs)	Requires power module replacement cat. no. 20-750-MI1-CnnnDnnn, 20-750-MI1-EnnnFnnn, 20-750-MI2-CnnnDnnn, 20-750-MI2-EnnnFnnn, 20-750-MI3-CnnnDnnn, 20-750-MI3-EnnnFnnn, 20-750-MI4-CnnnDnnn, or 20-750-MI4-EnnnFnnn.	Parameters: Port 12 /14: 140, 240, 340, 440, 540, 640, 740, 840, 940, 1040 Object: 0x414	—	—	—	—
Frames 7...15 Power Module DC Bus Capacitors	Frames 8...15: SK-RM-ICP1-xnnnxnnn	Parameters: Port 12 /14: 143, 243, 343, 443, 543, 643, 743, 843, 943, 1043 Object: 0x414	—	—	—	—
Frames 7...15 Power Module Power Layer Interface Circuit Board	SK-RM-PLI1-F8	—	—	—	—	Every 12 years
Frames 7...15 Power Module Power Interface Circuit Board	SK-RM-PIBn-xnnnxnnn, SK-RM-PIB4-xnnnxnnn	—	—	—	—	Every 12 years

Table 10. Recommended Maintenance Schedule for Operating Conditions Below 40 °C (104 °F) (continued)

Components and Activities	Kit Cat. No. or Requirements	Monitor Predictive Maintenance Parameters or Objects	Inspect/Clean	Maintain	Review	Replace
Frames 7...15 Power Module Heatsink Fan	SK-RM-INVFAN1-F8, SK-RM-MFAN-F7	Parameters: Port 12 /14: 136, 236, 336, 436, 536, 636, 736, 836, 936, 1036 Object: 0x414	Every year	—	—	—
Frames 7...15 LCL Filter Module Capacitors	SK-RM-LCLCPn-F8M	Parameters: Port 14: 1250, 1450, 1550, 1650, 1750, 1850, 1950, 2150, Object: 0x414	—	—	—	—
Frames 7...15 Current Sense Circuit Board	SK-RM-CSB1-nnn, SK-RM-CSB-F7	—	—	—	—	Every 12 years
Frames 8...15 AC Common Mode Filter Board	SK-RM-EMCFB1	—	—	—	—	Every 12 years
Frames 7...15 LCL Filter Module Heatsink Fan	SK-RM-INVFAN1-F8, SK-RM-MFAN-F7	Parameters: Port 14: 1246, 1346, 1546, 1646, 1746, 1846, 1946, 2146 Object: 0x414	Every year	—	—	—
Frames 7...15 AC Precharge Time Delay Relay	20-750-MACPC-TDR	—	—	—	—	Every 10 years
Frames 7...15 AC Precharge Circuit Board	20-750-MACPC1-xx, 20-750-MACPC1-xx-F7M	—	—	—	—	Every 12 years
Frames 8...15 DC Precharge Circuit Board	SK-RM-DCPC1-xx	—	—	—	—	Every 12 years
Frames 7...15 Door-mounted Ventilation Air Filters	Multiple catalog numbers - review the kits list for your frame size.	—	Every year	—	—	Every year
Frames 7...15 Roof-mounted Ventilation Assembly Air Filters	Multiple catalog numbers - review the kits list for your frame size.	—	Every year	—	—	Every year
Frames 8...15 Input Bay Fans	SK-RM-IBFAN1-F8	Parameter: Port 0: 523 Object: 0x414	Every year	—	—	—
Frames 8...15 Power Bay IP54 Roof Fan	SK-RM-PBFAN1-F8	Parameter: Port 0: 533 Object: 0x414	Every year	—	—	—
Frames 8...15 Wiring Bay Fan	SK-RM-WBDR-FANFLRn	Parameter: Port 0: 543 Object 0x414	Every year	—	—	—

Table 10. Recommended Maintenance Schedule for Operating Conditions Below 40 °C (104 °F) (continued)

Components and Activities	Kit Cat. No. or Requirements	Monitor Predictive Maintenance Parameters or Objects	Inspect/Clean	Maintain	Review	Replace
Frames 8...15 Control Bay Roof Fan	SK-RM-IBFAN1-F8	Parameter: Port 0: 553 Object 0x414	Every year	—	—	—
Frames 7...15 Control Pod Printed Circuit Board Fan	SK-RM-PODFAN1-F8, SK-RM-PODFAN-F7	Parameter: Port 0: 513 Object 0x414	Every year	—	—	—
Control Pod Main Control Circuit Board	SK-RM-MCB2- PF755	—	—	—	—	Every 12 years
Frames 7...15 Control Pod Dual Transceiver Circuit Board	20-750-MFTB1-F8	—	—	—	—	Every 12 years
Frames 7...15 Control Pod Fiber Interface Circuit Board	SK-RM-FIBn-F8	—	—	—	—	Every 12 years
Control Pod Backplane Circuit Board	SK-RM-PODBP1	—	—	—	—	Every 12 years
Frames 7...15 Control Pod Fiber-optic Cables	20-750-MFOC-nxn	—	Every year	—	—	Every 5 years
Cables and Connectors	—	—	Every year	Every year	—	—
Electrical Connections	—	—	Every year	—	—	—
PE Ground Connections	—	—	Every year	—	—	—
Firmware Enhancements	—	—	—	—	Every 3 years	—
Hardware Enhancements	—	—	—	—	Every 3 years	—
Parameters	—	—	—	—	Every 3 years	—
Operational Variables	—	—	—	—	Every 3 years	—
Application Concerns	—	—	—	—	Every 3 years	—
Spare Part Inventory	—	—	—	—	Every year	—

Recommended Maintenance Schedule for Operating Conditions Above 40 °C (104 °F)

This table provides a recommended schedule of maintenance tasks for the components or activities that are associated with products that are operated in conditions above 40 °C (104 °F). The table also identifies the components that have parameters (firmware revisions 6.xxx and earlier only) or objects available to monitor the remaining life in software applications.

Table 11. Recommended Maintenance Schedule for Operating Conditions Above 40°C (104 °F)

Components and Activities	Kit Cat. No. or Requirements	Monitor Predictive Maintenance Parameters or Objects	Inspect/Clean	Maintain	Review	Replace
Frames 8...15 Power Module Balance Resistors	SK-RM-INVBRn-F8M	—	—	—	—	Every 6 years
Frames 7...15 Power Module Insulated Gate BiPolar Transistors (IGBTs)	Requires power module replacement cat. no. 20-750-MI1-CnnnDnnn, 20-750-MI1-EnnnFnnn, 20-750-MI2-CnnnDnnn, 20-750-MI2-EnnnFnnn, 20-750-MI3-CnnnDnnn, 20-750-MI3-EnnnFnnn, 20-750-MI4-CnnnDnnn, or 20-750-MI4-EnnnFnnn.	Parameters: Port 12 /14: 140, 240, 340, 440, 540, 640, 740, 840, 940, 1040 Object: 0x414	—	—	—	—
Frames 7...15 Power Module DC Bus Capacitors	Frame 8...15: SK-RM-ICP1-xnnnxnnn	Parameters: Port 12 /14: 143, 243, 343, 443, 543, 643, 743, 843, 943, 1043 Object: 0x414	—	—	—	—
Frames 7...15 Power Module Power Layer Interface Circuit Board	SK-RM-PLI1-F8	—	—	—	—	Every 8 years
Frames 7...15 Power Module Power Interface Circuit Board	SK-RM-PIBn-xnnnxnnn, SK-RM-PIB4-xnnnxnnn	—	—	—	—	Every 8 years
Frames 7...15 Power Module Heatsink Fan	SK-RM-INVFAN1-F8, SK-RM-MFAN-F7	Parameters: Port 12 /14: 136, 236, 336, 436, 536, 636, 736, 836, 936, 1036 Object: 0x414	Every year	—	—	—
Frames 7...15 LCL Filter Module Capacitors	SK-RM-LCLCPn-F8M	Parameters: Port 14: 1250, 1450, 1550, 1650, 1750, 1850, 1950, 2150 Object: 0x414	—	—	—	—
Frames 7...15 Current Sense Circuit Board	SK-RM-CSB1-nnn, SK-RM-CSB-F7	—	—	—	—	Every 8 years
Frames 8...15 AC Common Mode Filter Board	SK-RM-EMCFB1	—	—	—	—	Every 8 years
Frames 7...15 LCL Filter Module Heatsink Fan	SK-RM-INVFAN1-F8, SK-RM-MFAN-F7	Parameters: Port 14: 1246, 1346, 1546, 1646, 1746, 1846, 1946, 2146 Object: 0x414	Every year	—	—	—

Table 11. Recommended Maintenance Schedule for Operating Conditions Above 40°C (104 °F) (continued)

Components and Activities	Kit Cat. No. or Requirements	Monitor Predictive Maintenance Parameters or Objects	Inspect/Clean	Maintain	Review	Replace
Frames 7...15 AC Precharge Time Delay Relay	20-750-MACPC-TDR	—	—	—	—	Every 8 years
Frames 7...15 AC Precharge Circuit Board	20-750-MACPC1-xx, 20-750-MACPC1-xx-F7M	—	—	—	—	Every 8 years
Frames 8...15 DC Precharge Circuit Board	SK-RM-DCPC1-xx	—	—	—	—	Every 8 years
Frames 7...15 Door-mounted Ventilation Air Filters	Multiple catalog numbers - review the kits list for your frame size.	—	Every year	—	—	Every year
Frames 7...15 Roof-mounted Ventilation Assembly Air Filters	Multiple catalog numbers - review the kits list for your frame size.	—	Every year	—	—	Every year
Frames 8...15 Input Bay Fans	SK-RM-IBFAN1-F8	Parameter: Port 0: 523 Object: 0x414	Every year	—	—	—
Frames 8...15 Power Bay IP54 Roof Fan	SK-RM-PBFAN1-F8	Parameter: Port 0: 533 Object: 0x414	Every year	—	—	—
Frames 8...15 Wiring Bay Fan	SK-RM-WBDR-FANFLRn	Parameter: Port 0: 543 Object 0x414	Every year	—	—	—
Frames 8...15 Control Bay Roof Fan	SK-RM-IBFAN1-F8	Parameter: Port 0: 553 Object 0x414	Every year	—	—	—
Frames 7...15 Control Pod Printed Circuit Board Fan	SK-RM-PODFAN1-F8, SK-RM-PODFAN-F7	Parameter: Port 0: 513 Object 0x414	Every year	—	—	—
Control Pod Main Control Circuit Board	SK-RM-MCB2-PF755	—	—	—	—	Every 8 years
Frames 7...15 Control Pod Dual Transceiver Circuit Board	20-750-MFTB1-F8	—	—	—	—	Every 8 years
Frames 7...15 Control Pod Fiber Interface Circuit Board	SK-RM-FIBn-F8	—	—	—	—	Every 8 years
Control Pod Backplane Circuit Board	SK-RM-PODBP1	—	—	—	—	Every 8 years
Frames 7...15 Control Pod Fiber-optic Cables	20-750-MFOC-nxn	—	Every year	—	—	Every 4 years

Table 11. Recommended Maintenance Schedule for Operating Conditions Above 40°C (104 °F) (continued)

Components and Activities	Kit Cat. No. or Requirements	Monitor Predictive Maintenance Parameters or Objects	Inspect/Clean	Maintain	Review	Replace
Cables and Connectors	—	—	Every year	Every year	—	—
Electrical Connections	—	—	Every year	—	—	—
PE Ground Connections	—	—	Every year	—	—	—
Firmware Enhancements	—	—	—	—	Every 3 years	—
Hardware Enhancements	—	—	—	—	Every 3 years	—
Parameters	—	—	—	—	Every 3 years	—
Operational Variables	—	—	—	—	Every 3 years	—
Application Concerns	—	—	—	—	Every 3 years	—
Spare Part Inventory	—	—	—	—	Every year	—

Predictive Maintenance

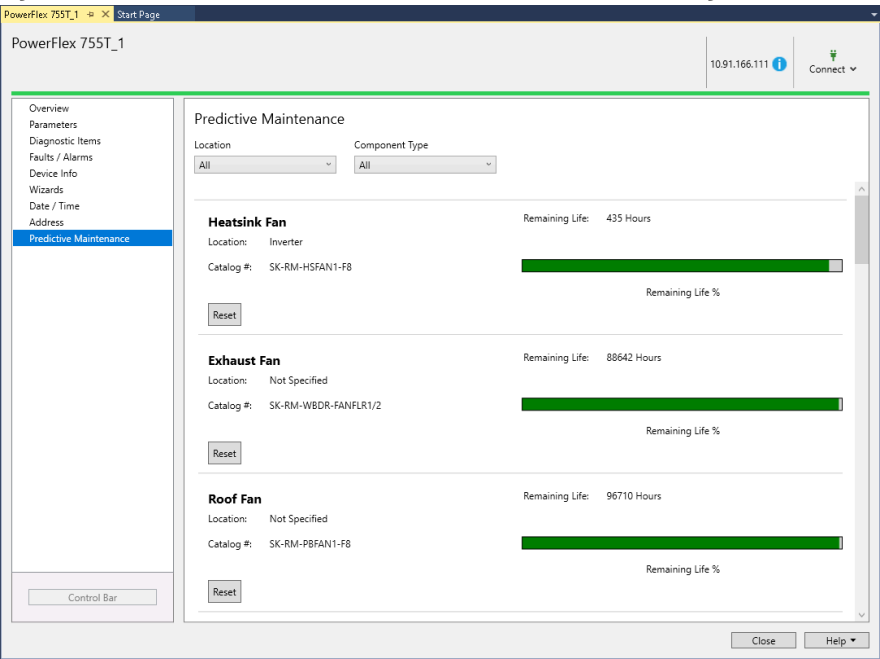
PowerFlex® 750-Series Products with TotalFORCE® Control contain algorithms for predictive maintenance that are used to improve the uptime of machines, processes, and facilities. These algorithms monitor the lifespan of certain components and display the percentage of remaining life and the number of hours or counts of remaining life in specific parameters or a software interface. These algorithms can be used to alert personnel when the components are nearing the end of their lifespan so the components can be replaced before they fail. For an overview of predictive maintenance, see the Predictive Maintenance section in the PowerFlex 750-Series Products with TotalFORCE Control Reference Manual, publication [750-RM100](#).

IMPORTANT: Failure to address predictive maintenance alarms can cause unexpected downtime or premature product failure.

For firmware revisions 6.005 and earlier, the remaining life of components with predictive maintenance appear in parameters. For firmware revisions 10.001 and later, the remaining life of components with predictive maintenance appear on the Predictive Maintenance page in the Device Details window in Connected Components Workbench™ software and the Drive Details window in Studio 5000 Logix Designer® application (as shown in this Predictive Maintenance page example).

NOTE: Firmware revisions 6.xxx and earlier cannot be used in frame 6L and 7L liquid cooled drives.

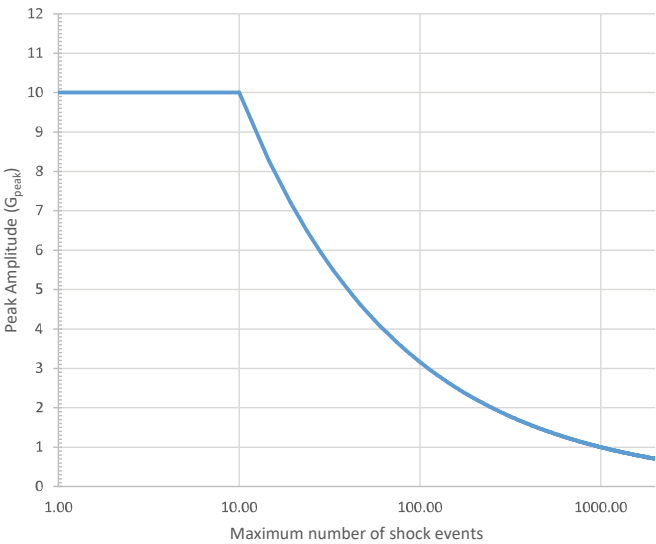
Figure 8. Connected Components Workbench - Predictive Maintenance Page



Shock Events

PowerFlex® 755T products can withstand a finite number of shock events. The maximum allowable number of shock events increases as the peak amplitude decreases. Below 0.7 g peak, the maximum total shock events should not exceed 2000 cycles.

Figure 9. Shock Events Graph



Maintenance of Industrial Control Equipment



ATTENTION: Risk of injury or death exists.

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. NFPA 70E, 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 required training where it is not feasible to de-energize and lock out or tag out 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 removed. 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 the Industry Installation Guidelines for Pulse Width Modulated (PWM) AC Drives, publication [DRIVES-AT003](#), for guidance on environmental considerations. See NEMA Standard No. 250, Enclosures for Electrical Equipment, or UL 50E Electrical Equipment Enclosures, 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. Compressed air is not recommended for cleaning because it can displace dirt, dust, or debris into other parts or equipment, or damage delicate parts.

PowerFlex® 755T products with XT use dielectric grease to protect critical connections from the effects of corrosive gases. When you disconnect or reconnect a greased connection, always inspect for dust, dirt, conductive debris, or other contaminants. If contamination is found, thoroughly clean receiving surfaces and reapply dielectric grease as described in the dielectric grease section.

Blowers and Fans

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 the unit does not operate, check and replace wiring, fuse, or blower or fan motor as appropriate. Clean or change air filters as recommended in the product manual. Also, clean the 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 worn parts or assemblies according to individual product renewal-parts lists. Check

for and retighten 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 (mated 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 Rockwell Automation sales office for information.

Contacts

Check contacts for excessive wear and dirt accumulation. 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 residue 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 the hazards of electrical shock and contribute to electromagnetic interference (EMI). Check the tightness of all terminals and bus bar connections and torque any loose connections properly. Infrared technology can be used to check for hot (high resistance/loose) connections during periodic maintenance. 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 clean any residues of melted coil insulation from other parts of the device or replace such parts.

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 detergents on the lenses or reflectors. Replace any damaged lenses and reflectors

Maintenance of Solid-state Devices



ATTENTION: Risk of equipment damage exists.

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. 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 circuit 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 temperature control provisions must be maintained. 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 locking and interlocking 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 power is restored, 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 maintaining 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 to avoid a control malfunction hazard. For additional information, see NEMA ICS 1.3, PREVENTIVE MAINTENANCE OF INDUSTRIAL CONTROL AND SYSTEMS EQUIPMENT, published by the National Electrical Manufacturers Association, and NFPA 70B, ELECTRICAL EQUIPMENT MAINTENANCE, published by the National Fire Protection Association.

Component Inspection and Tests

Preventative maintenance includes inspections and tests of the major components in the drive and includes recommendations for repairs. For information on conditions that can cause a fault or alarm and how to troubleshoot these conditions, review the Troubleshooting section in one of these manuals:

- PowerFlex Drives with TotalFORCE Control programming manual, publication [750-PM100](#) (firmware revisions 6.xxx and earlier)
- PowerFlex Drives with TotalFORCE Control programming manual, publication [750-PM101](#) (firmware revision 10.xxx and later)

Inspect Air Filters and Vents for Maintenance

Visually inspect the door and roof exhaust vents and air filters for dirt and damage. Dirt build-up on vents and air filters can lead to component damage or failure. Follow these inspection and maintenance instructions along with the Recommended Preventative Maintenance information.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. If present, remove the filters from the enclosure door vents and inspect the vents and filters for dirt buildup or blockage.
4. Clean the door vents as necessary.
5. Clean or replace all filters as necessary.
6. If applicable, remove the filters from the IP54 exhaust vent assemblies and inspect the vents and filters for dirt buildup or blockage.
7. Clean the exhaust vents as necessary.
8. Clean or replace all filters as necessary.

Inspect Fan Assemblies for Maintenance of Floor-mount Products

Inspect the fan assemblies for dirt and damage. Dirt build-up or blockage on fans can lead to component damage or failure. Follow these inspection and maintenance instructions along with the Recommended Preventative Maintenance information.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Inspect the enclosure door and roof vent fan assemblies for blockage and verify free rotation.
4. Clean or replace all enclosure fan assemblies as necessary.
5. Inspect all LCL filter and power module fan assemblies for blockage and verify free rotation.
6. If applicable, clean or replace the LCL filter or power module fan assembly as necessary.
7. Inspect the control pod fan assembly for blockage and verify free rotation.
8. Clean or replace the control pod fan assembly as necessary.

Inspect Circuit Boards, Wire Harnesses, and Fiber-optic Cables for Maintenance

Visually inspect the primary circuit boards, wire harnesses and connectors, and fiber-optic cables for burn marks, breakage, foil delamination, dirt, or damage. Dirt build-up and other

visible damage on some components can lead to component failure. Follow these inspection and maintenance instructions along with the Recommended Preventative Maintenance information.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Read the Protective Covers on Kits with XT topic.

IMPORTANT: Do not remove protective covers from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers (if present) and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

4. Remove the cover from the control pod and inspect all major visible components, including: circuit boards, wire harnesses, fiber-optic cables (if present), and connectors.
5. If any control pod components show evidence of burn marks or breakage, replace the damaged components without further testing.
6. For frames 5 and 6L, inspect the power feedback circuit board.
7. If any power feedback board components, particularly the resistors, show evidence of burn marks or breakage, replace the circuit board without further testing.
8. If an AC precharge module or system is installed, inspect all major visible components.
9. If any AC precharge components show evidence of burn marks or breakage, replace the damaged components without further testing.
10. If a DC precharge module is installed, inspect all major visible components.
11. If any DC precharge components show evidence of burn marks or breakage, replace the damaged components without further testing.
12. Visibly inspect all visible circuit boards, wire harnesses and connectors, and fiber-optic cables (if present) throughout the system.
13. Replace any of these circuit boards, wire harnesses and connectors, or fiber-optic cables without further testing if they show evidence of burn marks, breakage, or foil delamination.

Perform Forward and Reverse Biased IGBT/Diode Tests for Frame 7

Follow these steps to perform forward and reverse biased IGBT/diode tests on the frame 7 power module.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Remove the power module from the enclosure.

IMPORTANT: The actual voltage readings can vary depending upon your equipment. If your readings are not near the values that are indicated in these tables, verify that the actual voltage that is measured is consistent for each phase of the power module.

IMPORTANT: Residual voltage on the DC bus capacitors can affect a ".OL" (open circuit) reading. If the capacitors are 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 ".OL". The voltage increase and eventual display of ".OL" can take several minutes to occur.

4. On the digital multi-meter, select the "Diode Test" mode and complete the forward-biased diode tests on the power module by using the test points in this table.

Table 12. Forward-biased Diode Test Points and Meter Readings

+ Meter Lead to Test Point	- Meter Lead to Test Point	Nominal Meter Reading
-DC	U/T1	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
-DC	V/T2	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
-DC	W/T3	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
U/T1	+DC	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
V/T2	+DC	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
W/T3	+DC	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.

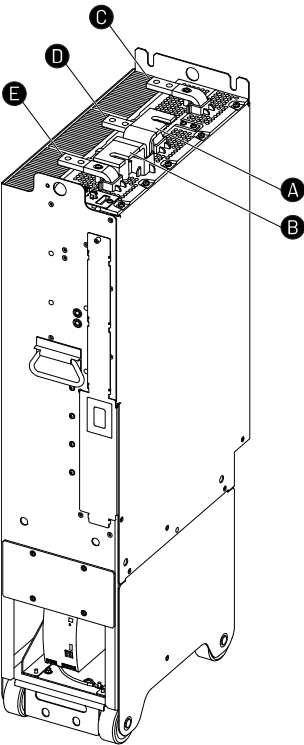
5. On the digital multi-meter, select the "Diode Test" mode and complete the reverse-biased diode tests on the power module by using the test points in this table.

Table 13. Reverse-biased Diode Test Points and Meter Readings

+ Meter Lead to Test Point	- Meter Lead to Test Point	Nominal Meter Reading
U/T1	-DC	".OL" (open circuit)
V/T2	-DC	".OL" (open circuit)
W/T3	-DC	".OL" (open circuit)
+DC	U/T1	".OL" (open circuit)
+DC	V/T2	".OL" (open circuit)

+ Meter Lead to Test Point	- Meter Lead to Test Point	Nominal Meter Reading
+DC	W/T2	".0L" (open circuit)

Figure 10. Frame 7 Power Module Power Terminal Locations



Item	Name	Item	Name
A	+DC	D	S/L2, V/T2
B	-DC	E	T/L3, W/T3
C	R/L1, U/T1	—	—

- 6. If the product fails the meter readings, replace the power module.
- 7. Before you place the drive or bus supply back into service, complete the Start Up After Repairs procedure.

Perform Forward and Reverse Biased IGBT/Diode Tests for Frames 8...15

Follow these steps to perform forward and reverse biased IGBT/diode tests on the frames 8...15 power modules.

- 1. Review the product advisories in [Before You Begin on page 12](#).
- 2. Remove power from the system.
- 3. Remove the power module from the enclosure.

IMPORTANT: The actual voltage readings can vary depending upon your equipment. If your readings are not near the values that are indicated in these tables, verify that the actual voltage that is measured is consistent for each phase of the power module.

IMPORTANT: Residual voltage on the DC bus capacitors can affect a ".OL" (open circuit) reading. If the capacitors are 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 ".OL". The voltage increase and eventual display of ".OL" can take several minutes to occur.

4. On the digital multi-meter, select the "Diode Test" mode and complete the forward-biased diode tests on the power module by using the test points in this table.

Table 14. Forward-biased Diode Test Points and Meter Readings

+ Meter Lead to Test Point	- Meter Lead to Test Point	Nominal Meter Reading
-DC	U/T1	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
-DC	V/T2	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
-DC	W/T3	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
U/T1	+DC	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
V/T2	+DC	The value should gradually rise to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.
W/T3	+DC	The value typically rises to between 0.20V and 0.75V. If the value is outside this range, contact Technical Support.

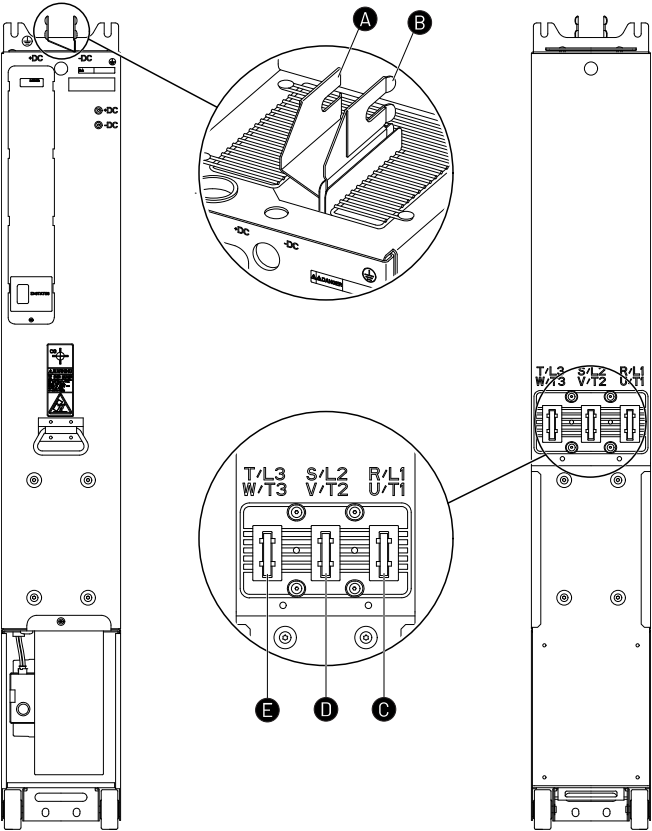
5. On the digital multi-meter, select the "Diode Test" mode and complete the reverse-biased diode tests on the power module by using the test points in this table.

Table 15. Reverse-biased Diode Test Points and Meter Readings

+ Meter Lead to Test Point	- Meter Lead to Test Point	Nominal Meter Reading
U/T1	-DC	".OL" (open circuit)
V/T2	-DC	".OL" (open circuit)

+ Meter Lead to Test Point	- Meter Lead to Test Point	Nominal Meter Reading
W/T3	-DC	".OL" (open circuit)
+DC	U/T1	".OL" (open circuit)
+DC	V/T2	".OL" (open circuit)
+DC	W/T2	".OL" (open circuit)

Figure 11. Frames 8...15 Power Module Power Terminal Locations



Item	Name	Item	Name
A	+DC	D	S/L2, V/T2
B	-DC	E	T/L3, W/T3
C	R/L1, U/T1	—	—

- 6. If the product fails the meter readings, replace the power module.
- 7. Before you place the drive or bus supply back into service, complete the Start Up After Repairs procedure.

Test AC Input Link Fuses

The AC input link fuses contain fuse indicator switches that signal an open fuse that will fault the drive system. Follow these steps to perform an AC input link fuse test.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the power bay enclosure door.
4. Continuity test the AC line fuses in the circuit.
Each LCL filter module is connected to three AC line fuses.
5. Replace all fuses as necessary.

Test DC link Fuses

The DC link fuses contain fuse indicator switches that signal an open fuse that will fault the drive system. Follow these steps to perform a DC link fuse test.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the power bay enclosure door.
4. Continuity test the DC link fuses in the circuit.
Each DC link contains two fuses.
5. Replace all fuses as necessary.

Test Frame 7 Component Fuses

Follow these steps to perform a continuity test on frame 7 component fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Continuity test these fuses:
 - 240V power distribution fuse (FH2)
 - AC precharge control board fuse (FH3)
 - Control transformer fuses (FH4)
 - AC precharge fused disconnect fuses (FD1)
5. Replace all fuses as necessary.

Test Frame 8...15 Component Fuses

Follow these steps to perform a continuity test on frames 8...15 component fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Continuity test these fuses:
 - AC precharge control board fuses (FH1)
 - 240V power distribution fuse (FH2)
 - Input bay 240V control power fuse (FH3)
 - Control transformer fuses (FH4...FH7)
 - AC precharge fused disconnect fuses (FD1)

- IP54 exhaust fan fuse
 - LCL filter and power module heatsink fan fuse (F1)
5. Replace all fuses as necessary.

Frame 7 Kits

This table lists the renewal kits available for PowerFlex® 755T frame 7 products. (XT) appears in the table title to help identify a kit that contains protective covers and/or dielectric grease on connectors.

Table 16. Frame 7 Ventilation Renewal Kits

Cat. No.	Description	Notes
SK-RM-PBFAN-54FLTR1	IP54 Exhaust Vent Filters	Each kit contains two filters. Frame 7 enclosures require two kits (four filters).
SK-RM-PB8DR-54FLTR1	IP54, 800 mm wide Door Vent Filters	—
SK-RM-PB8DR-21FLTR1	IP21, 800 mm wide Door Vent Filters	—

Table 17. Frame 7 Control Pod (XT) Renewal Kits

Cat. No.	Description	Notes
SK-RM-CR1	Control Pod HIM Cradle with DPI™ Connector	—
SK-RM-PODFAN-F7	Control Pod Printed Circuit Board Fan Assembly	—
SK-RM-MCB2-PF755	Main Control Circuit Board	This catalog number supports PowerFlex® 755T firmware revisions 10.001 and later only. Use this renewal kit with PowerFlex® 755T products with an “E” in catalog number position 4.
SK-RM-PODBP1	Control Pod Backplane Circuit Board	—
20-750-MFTB1-F8	Fiber Transceiver Circuit Board	—
20-750-MCPOD3-F7M	Control Pod Assembly, Regenerative Drive and Bus Supply	This catalog number supports PowerFlex® 755T firmware revisions 10.001 and later only. Use this renewal kit with PowerFlex® 755T products with an “E” in catalog number position 4.
20-750-MCPOD4-F7M	Control Pod Assembly, Low Harmonic Drive	This catalog number supports PowerFlex® 755T firmware revisions 10.001 and later only. Use this renewal kit with PowerFlex® 755T products with an “E” in catalog number position 4.

Table 18. Frame 7 Control Pod (Standard) Renewal Kits

Cat. No.	Description	Notes
SK-RM-MCB1-PF755	Main Control Circuit Board	This kit catalog number supports PowerFlex® 755T firmware revisions 6.xxx and earlier only. Use this renewal kit with PowerFlex® 755T products with a "T" in catalog number position 4.
20-750-MCPOD1-F7M	Control Pod Assembly, Regenerative Drive and Bus Supply	This kit catalog number supports PowerFlex® 755T firmware revisions 6.xxx and earlier only. Use this renewal kit with PowerFlex® 755T products with a "T" in catalog number position 4.
20-750-MCPOD2-F7M	Control Pod Assembly, Low Harmonic Drive	This kit catalog number supports PowerFlex® 755T firmware revisions 6.xxx and earlier only. Use this renewal kit with PowerFlex® 755T products with a "T" in catalog number position 4.

Table 19. Frame 7 Cooling Fan Renewal Kit

Cat. No.	Description	Notes
SK-RM-MFAN-F7	LCL Filter and Power Module Heatsink Fan Assembly	—

Table 20. Frame 7 Control Power Renewal Kits

Cat. No.	Description	Notes
SK-RM-IBFH2-FUSE2A-F8	400V/480V/600V, 240V Power Distribution Fuse (FH2)	15 A Fuse Rating
SK-RM-IBFH2-FUSE2B-F8	690V, 240V Power Distribution Fuse (FH2)	16 A Fuse Rating

Table 21. Frame 7 AC Precharge Renewal Kits

Cat. No.	Description	Notes
SK-RM-EMCFB1	AC Common Mode Filter Circuit Board	—
20-750-MACPC1-CD-F7M	400V/480V, AC Precharge Control Circuit Board (XT)	—

Table 21. Frame 7 AC Precharge Renewal Kits (continued)

Cat. No.	Description	Notes
20-750-MACPC1-EF-F7M	600V/690V, AC Precharge Control Circuit Board (XT)	—
SK-RM-IBFH2-FUSE2A-F8	400V/480V/600V Control Transformer Fuses (FH4)	One 15 A Fuse
SK-RM-IBFH4-FUSE5A-F7	400V/480V/600V Control Transformer Fuses (FH4)	Two 17.5 A Fuses
SK-RM-IBFH2-FUSE2B-F8	690V, Control Transformer Fuses (FH4)	One 16 A Fuse
SK-RM-IBFH4-FUSE5B-F7	690V, Control Transformer Fuses (FH4)	Two 10 A Fuses
SK-RM-IBFH3-FUSE3B-F8	400V/480V/600V, AC Precharge Control Circuit Board Fuse (FH3)	2 A Fuse Rating
SK-RM-IBFH3-FUSE3A-F8	690V, AC Precharge Control Circuit Board Fuse (FH3)	2 A Fuse Rating
SK-RM-IBD-FUSEA-F8	400V/480V/600V, AC Precharge Fused Disconnect (FD1) Fuses	30 A Fuse Rating
SK-RM-IBD-FUSEB-F8	690V, AC Precharge Fused Disconnect (FD1) Fuses	32 A Fuse Rating
20-750-MACPC-TDR	AC Precharge Time Delay Relay	—
20-750-MACP-CD-TVSS	AC Precharge TVSS Module, 400V/480V	—
20-750-MACP-EF-TVSS	AC Precharge TVSS Module, 600V/690V	—

Table 22. Frame 7 Power Module Renewal Kits

Cat. No.	Description	Notes
20-750-MI4-CnnnDnnn, 20-750-MI4-EnnnFnnn	Frame 7 Power Module (XT)	"nnn" in "CnnnDnnn" and "EnnnFnnn" identifies the normal duty (ND) continuous amp rating of the power module. To identify your catalog number, see the data nameplate on the front of the power module.
SK-RM-DCFUSE1-F8	400V/480V Power Module DC Link Fuses	—

Table 22. Frame 7 Power Module Renewal Kits (continued)

Cat. No.	Description	Notes
SK-RM-DCFUSE2-F8	600V/690V Power Module DC Link Fuses	—
SK-RM-PLI1-F8	Power Module Power Layer Interface Circuit Board (XT)	—
SK-RM-PIB4-CnnnDnnn, SK-RM-PIB4-EnnnFnnn	Power Module Power Interface Circuit Board	“C” and “D” in “CnnnDnnn” identifies a circuit board compatible with a power module that is rated for 400/480V, respectively. “E” and “F” in “EnnnFnnn” identifies a circuit board compatible with a power module that is rated for 600/690V, respectively. “nnn” in “CnnnDnnn” and “EnnnFnnn” identifies the normal duty (ND) continuous amp rating the power module that the circuit board is compatible with.

Table 23. Frame 7 LCL Filter Module Renewal Kits

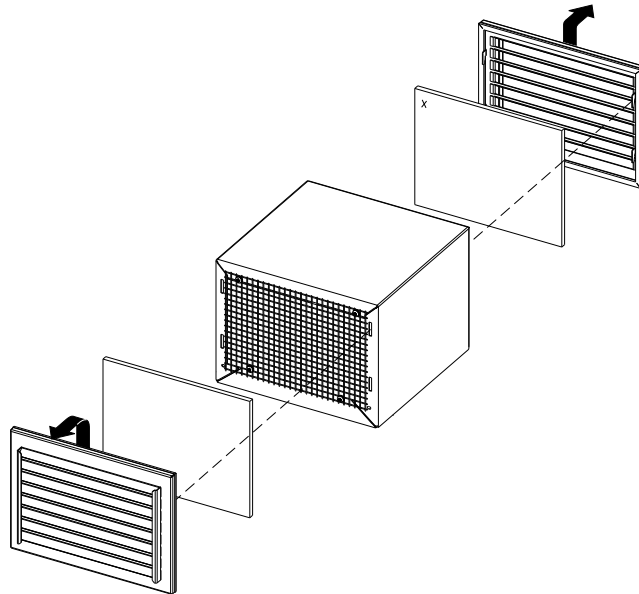
Cat. No.	Description	Notes
20-750-ML4-CnnnDnnn, 20-750-ML4-EnnnFnnn	LCL Filter Module (XT)	“nnn” in “CnnnDnnn” and “EnnnFnnn” identifies the normal duty (ND) continuous amp rating of the LCL filter module. To identify your catalog number, see the data nameplate on the front of the LCL filter module.
SK-RM-ACFUSE1-F8	400V/480V LCL Filter Module AC Input Fuses	—
SK-RM-ACFUSE5-F8	600V/690V LCL Filter Module AC Input Fuses	—
SK-RM-CSB-F7	LCL Filter Module Current Sense Circuit Board (XT)	—

Remove and Install the IP54 Roof Vent Filters for Frame 7

Replace the IP54 roof vent filters on a power bay with kit catalog number SK-RM-PBFAN-54FLTR1. Follow these steps to remove and install the IP54 exhaust vent filters on a power bay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.

3. Slide the vent up to release the tabs from the slots in the vent assembly and remove the vent.
4. Remove the filter from the vent cover.



IMPORTANT: Verify that the airflow direction arrow and "X" on the fiber filter media points inward, toward the interior of the enclosure.

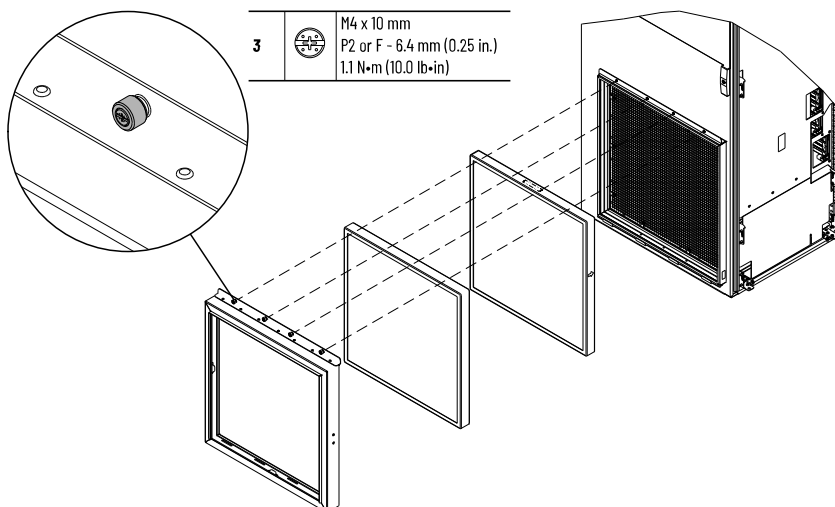
5. Install the IP54 exhaust vent filters on a power bay in the reverse order of removal.

Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frame 7

Replace the IP54 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-54FLTR1. Follow these steps to remove and install the IP54, 800/1000 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door.
4. Remove the metal mesh filter from the cover.

5. Pull the top edge of the fiber filter out and lift it off the cassette on the door.



IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

6. Insert the new metal mesh filter into the filter cassette cover.
7. Place the slots on the cassette cover on the tabs on the door vent chassis.

IMPORTANT: Verify that the airflow direction arrow on the fiber filter media points inward, toward the interior of the enclosure.

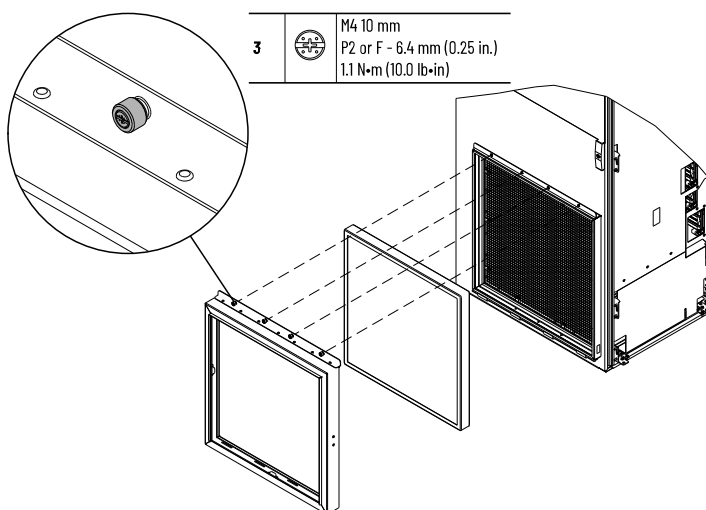
8. Insert the fiber filter in the cassette chassis on the door and close and secure the cassette cover with metal mesh filter to the door.

Remove and Install the IP21, 800/1000 mm Wide Door Vent Filters for Frame 7

Replace the IP21 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-21FLTR1. Follow these steps to remove and install the IP21, 800/1000 mm wide door vent filter.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.

3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door and remove the cover and metal mesh filter.



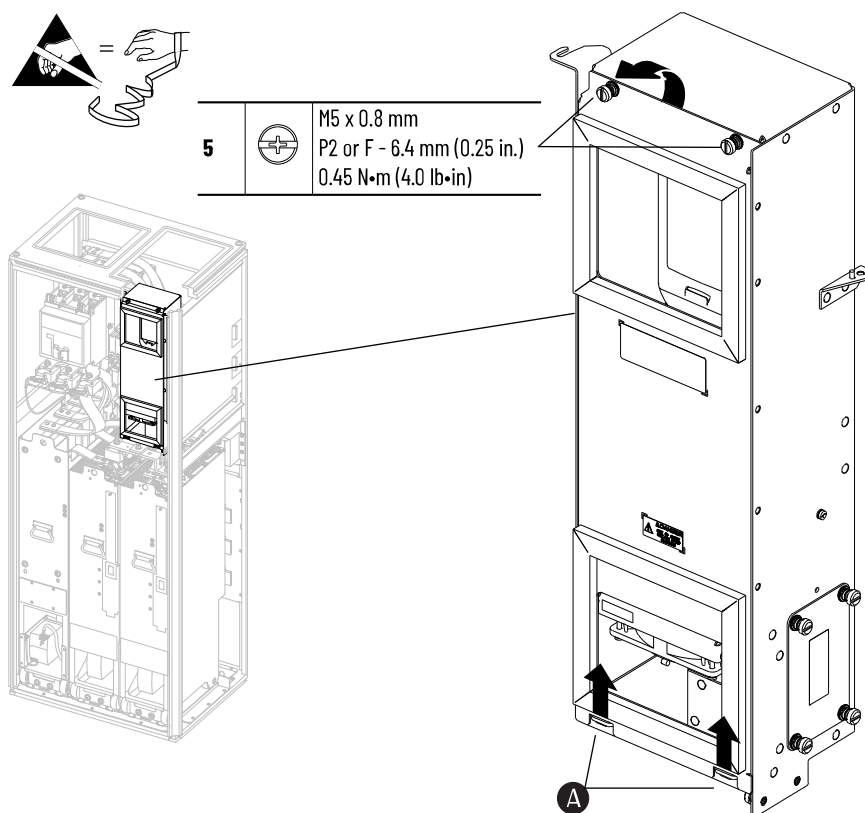
IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

4. Place the slots on the cassette cover on the tabs on the door vent chassis.
5. Insert the filter in the cassette chassis on the door and close and secure the cassette cover to the door.

Remove and Install the Control Pod Cover for Frame 7

You must remove the control pod cover to access other components inside the pod. Follow these steps to remove and install the control pod cover.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Loosen the two captive screws at the top of the control pod and pull the cover out from the chassis.
5. Lift the bottom of the cover off the tabs (A) and remove the cover.



The control pod is shown separated from the power bay to clarify the instructions only.

6. Install the control pod cover in the reverse order of removal.

Remove and Install the Control Pod HIM Cradle with DPI Connector (XT) for Frame 7

Replace the control pod HIM cradle with DPI™ connector with kit catalog number SK-RM-CR1. Follow these steps to remove and install the control pod HIM cradle with DPI™ connector.

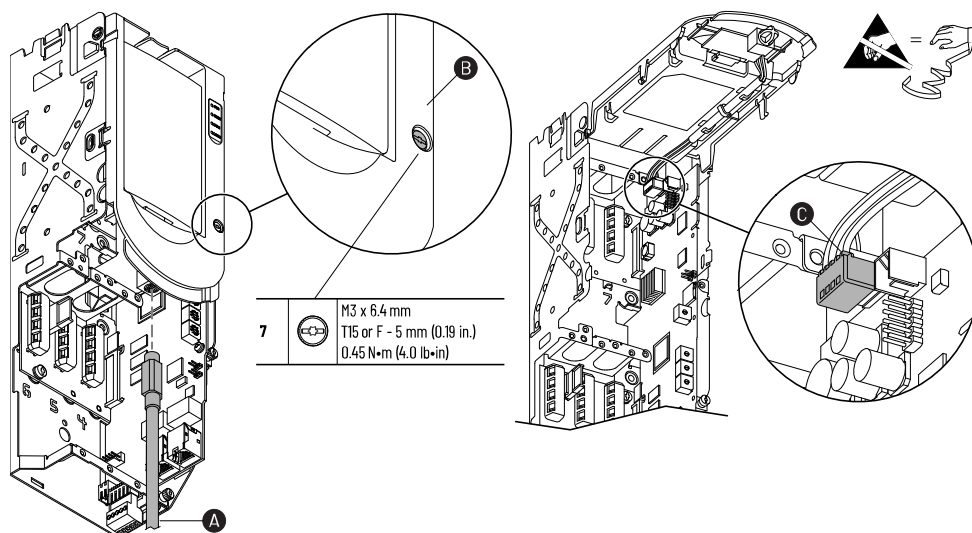
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 57](#).
5. If a HIM is installed in the cradle, remove the HIM.
6. If used, disconnect the DPI™ cable (A) from the connector on the bottom of the HIM cradle.



If a cable is not connected to the DPI™ port on the human interface module (HIM) cradle, be sure to leave the protective cover installed.

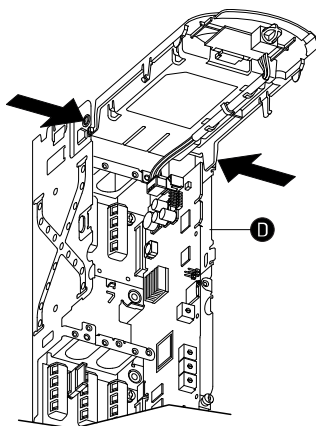
7. Loosen the screw that secures the HIM cradle (B) to the pod chassis, and rotate the cradle up to a 90° horizontal position.

8. Disconnect the terminal block (C) for the HIM wire harness from the connector on the main control board.



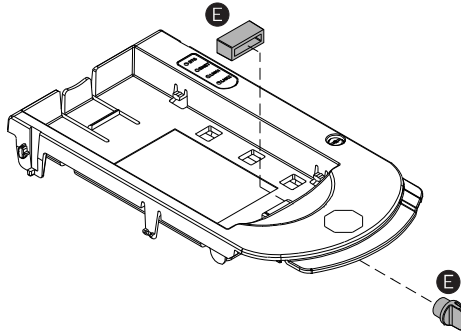
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

9. Press in on the tabs at the top of the HIM cradle where it connects to the control pod chassis (D) to release the cradle from the chassis.



IMPORTANT: Do not remove protective covers (E) from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

10. Install the control pod HIM cradle with DPI™ connector in the reverse order of removal.

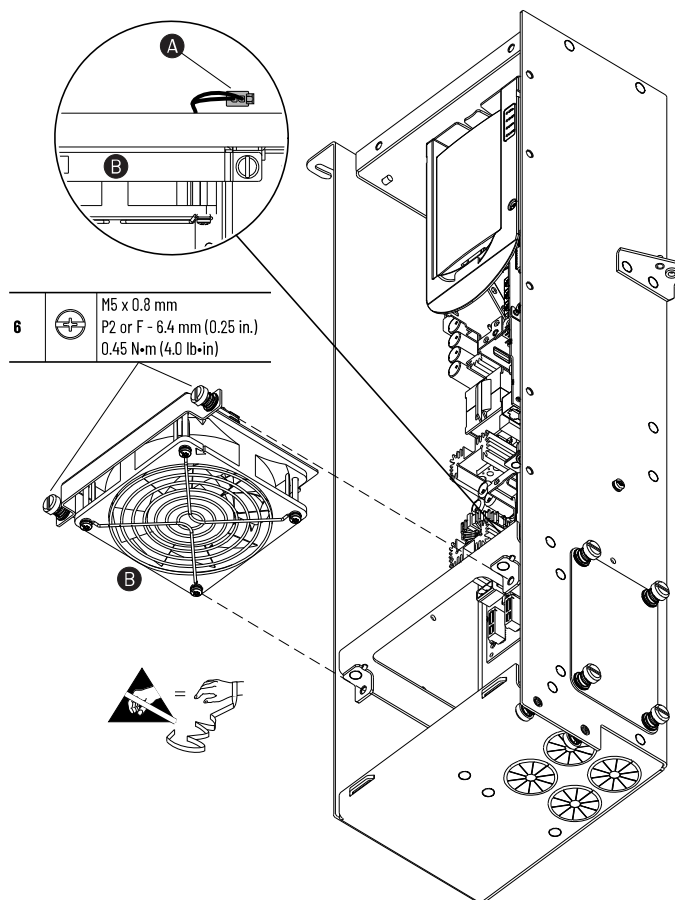


Remove and Install the Control Pod Printed Circuit Board Fan Assembly for Frame 7

Replace the control pod printed circuit board fan assembly with kit catalog number SK-RM-PODFAN-F7. Follow these steps to remove and install the control pod printed circuit board fan assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 57](#).
5. Disconnect the fan power wire harness connector J1 (A) from connector P1 in the control pod.

6. Loosen the two captive screws that secure the fan assembly (B) to the pod chassis and remove the fan assembly.



The control pod is shown separated from the power bay to clarify the instructions only.

7. Install the control pod printed circuit board fan assembly in the reverse order of removal.

Remove and Install the Main Control Circuit Board (XT) for Frame 7

Replace a main control circuit board with kit catalog number SK-RM-MCB2-PF755. Follow these steps to remove and install the main control circuit board with XT.

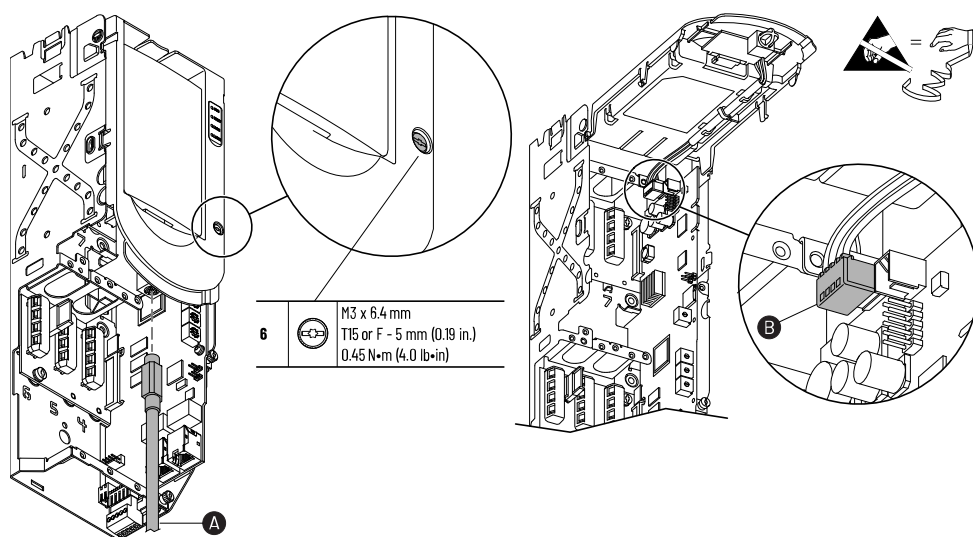
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover. See [Remove and Install the Control Pod Cover for Frame 7 on page 57](#).
5. If used, disconnect the DPI™ cable (A) from the connector (Port 2) on the bottom of the human interface module (HIM) cradle.



If a cable is not connected to the DPI™ port on the HIM cradle, be sure to leave the protective cover installed.

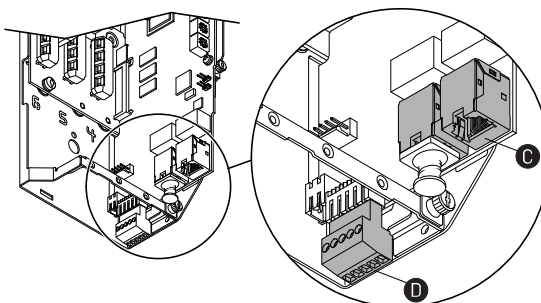
6. Loosen the screw that secures the HIM cradle to the pod chassis, and rotate the cradle up to a 90° horizontal position.

7. If necessary, disconnect and remove any option modules, to provide access to the main control circuit board. Reinstallation of option modules is the same as the main control circuit board.
8. Disconnect the terminal block (B) for the HIM wire harness from the connector on the main control board.



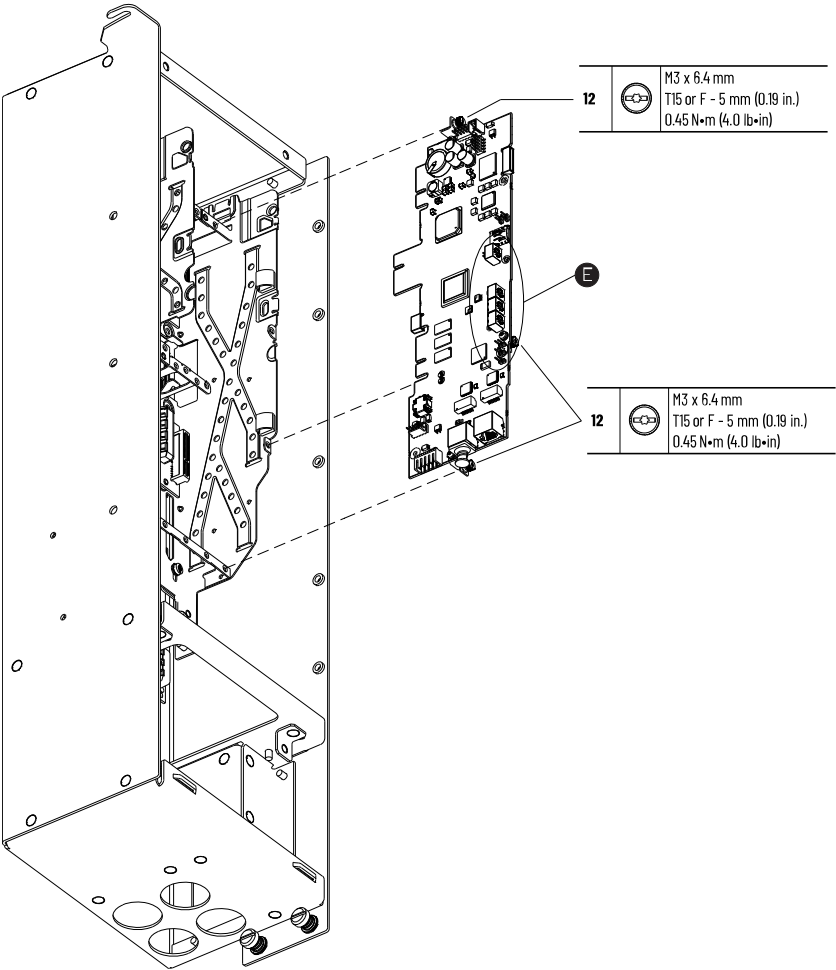
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

9. Disconnect any Ethernet cables from the Ethernet ports (C) on the bottom of the main control board.
10. Disconnect the plug-in terminal block (D) from the TB1 connector on the bottom of the main control board.



11. Record any settings that are made on these main control board selectors or jumpers (E):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper

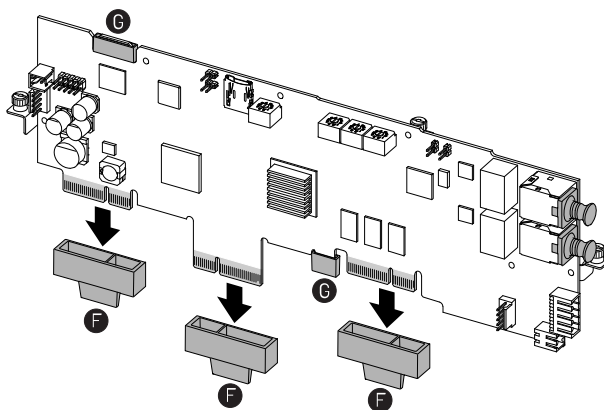
12. Loosen the three captive thumbscrews that secure the main control board to the pod chassis and remove the board.



The HIM cradle is not shown for clarity only.

IMPORTANT: Circuit boards that are contained in renewal kits with XT contain dielectric grease on the edge connectors, where present. Do not touch or remove the grease from circuit board edge connectors. A non-greased connector can lead to corrosion. If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\) on page 26](#).

13. On the new main control circuit board, for each protective cover, hold the tab (F) on the cover and carefully remove the cover from the edge connector on the circuit board. Do not touch the edge connector.



IMPORTANT: Do not remove these protective covers (G); for factory use only.

14. Install the main control circuit board in the reverse order of removal.
15. Make any necessary changes to the settings on these main control board selectors or jumpers:
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
16. Install any option modules in the reverse order of removal.

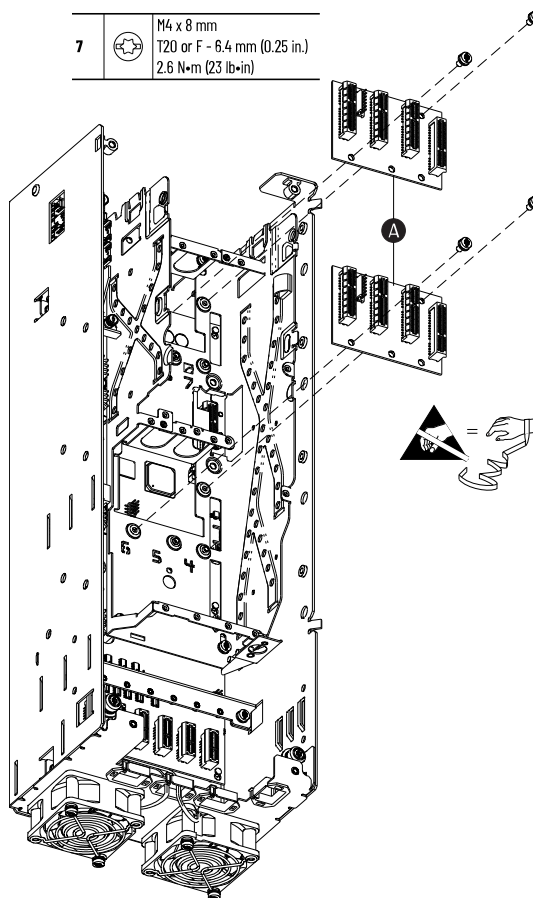
Remove and Install the Backplane Circuit Board (XT) for Frame 7

Replace a control pod backplane circuit board with kit catalog number SK-RM-P0DBP1. Follow these steps to remove and install the backplane circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover.
5. Remove the main control circuit board.

IMPORTANT: The main control circuit board and option module circuit board edge connectors contain dielectric grease. Do not touch the edge connectors on the board.

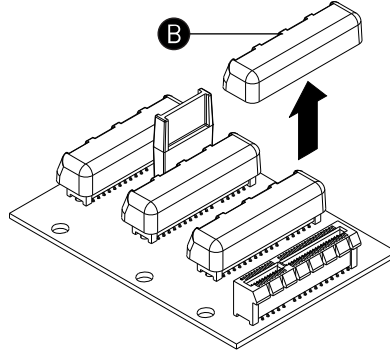
6. Disconnect and remove any option modules from the backplane circuit boards.
7. Remove the two M4 x 8 mm Torx screws that secure the backplane circuit board (A) to the pod chassis and remove the board.



This frame 8...15 control pod is shown separated from the enclosure to clarify the instructions only.

IMPORTANT: Do not remove protective covers (B) from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

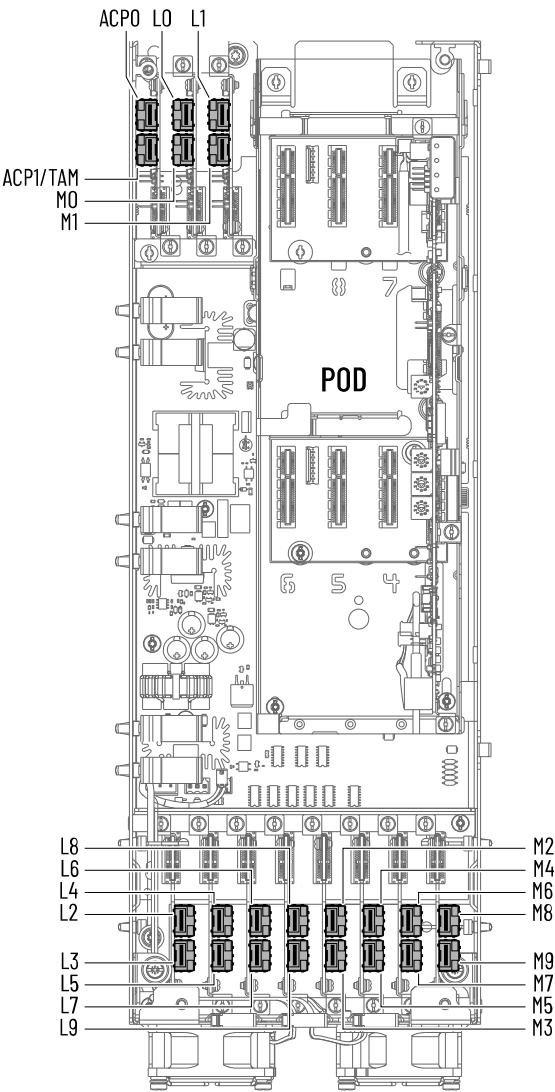
8. Install the backplane circuit board in the reverse order of removal.



Remove and Install the Fiber Transceiver Circuit Board (XT) for Frame 7

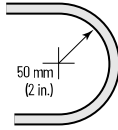
Replace a fiber transceiver circuit board with kit catalog number 20-750-MFTB1-F8. Follow these steps to remove and install the fiber transceiver circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover.



Port Name	Description
ACPO	Fiber transceiver port for the fiber-optic connection from ACP on the AC precharge control board.
ACPI / TAM	Fiber transceiver port for the fiber-optic connection from ACP on the second AC precharge control board (frames 13...15 only) or the fiber-optic connection from TAM on the torque accuracy module. Frame 13...15 PowerFlex® 755TR drives and 755TM bus supplies cannot use a torque accuracy module (TAM).
LO...L9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as line side converters.
M0...M9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as motor side inverters.

IMPORTANT: The 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 as inside bend radius is decreased.



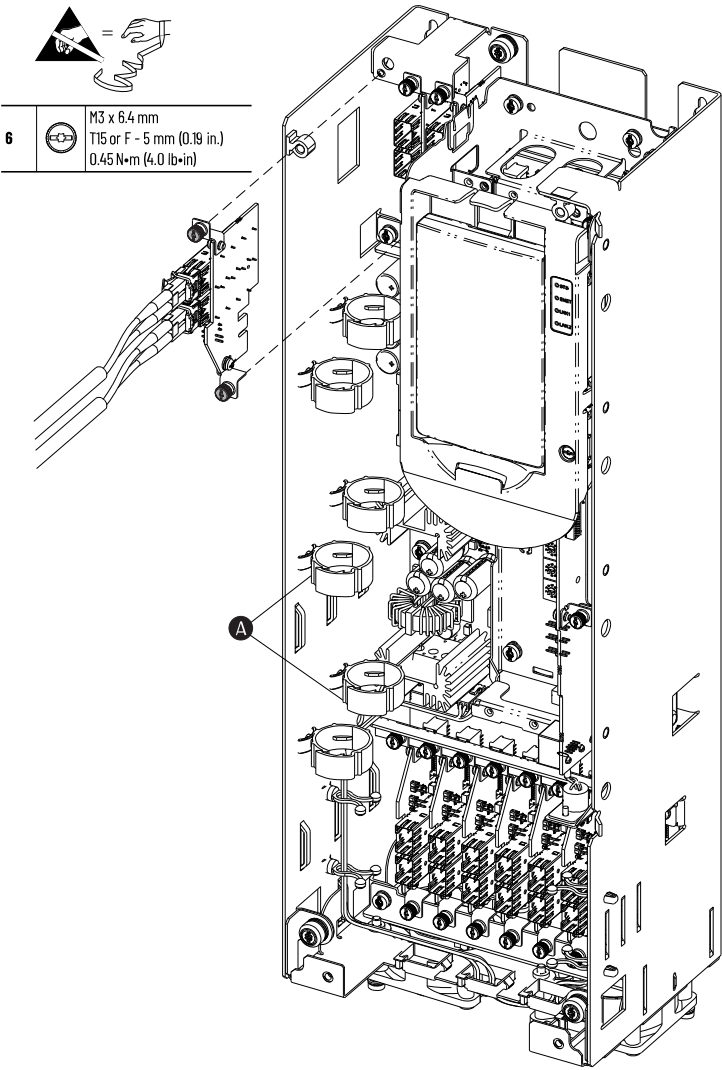
-
5. Remove the fiber-optic cables for the corresponding fiber transceiver circuit board from the cable management devices (A in the illustration) in the control pod.
-



When all or many of the fiber-optic ports are used, it is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

IMPORTANT: The edge connectors on a fiber transceiver circuit board with XT contain dielectric grease. If you do not intend to replace a fiber transceiver circuit board, do not touch the edge connectors on the board.

6. Loosen the two captive thumbscrews that secure the board and fiber-optic cables to the chassis and remove the board and cables.

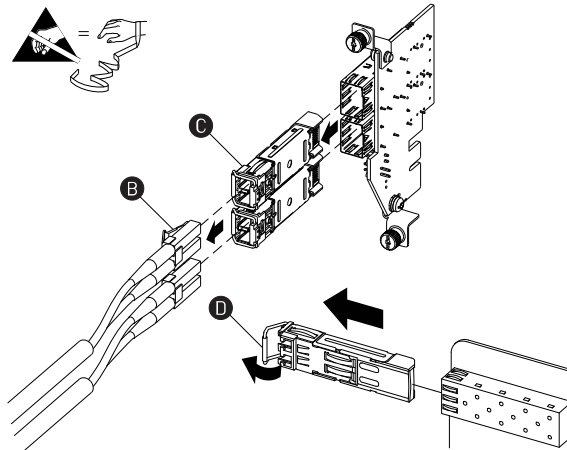


The control pod is shown separated from the enclosure to clarify the instructions only.

7. For each fiber-optic cable, remove the cable (B) from the transceiver (C).

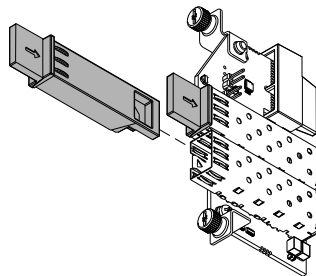
IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

8. For each fiber transceiver board, open the transceiver latch (D) and pull the transceiver out of the port connector on the board. Retain the transceiver for reuse.



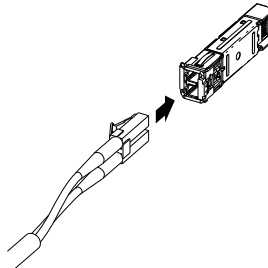
If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

9. If used, remove the protective cover from the fiber-optic port on the fiber transceiver board.



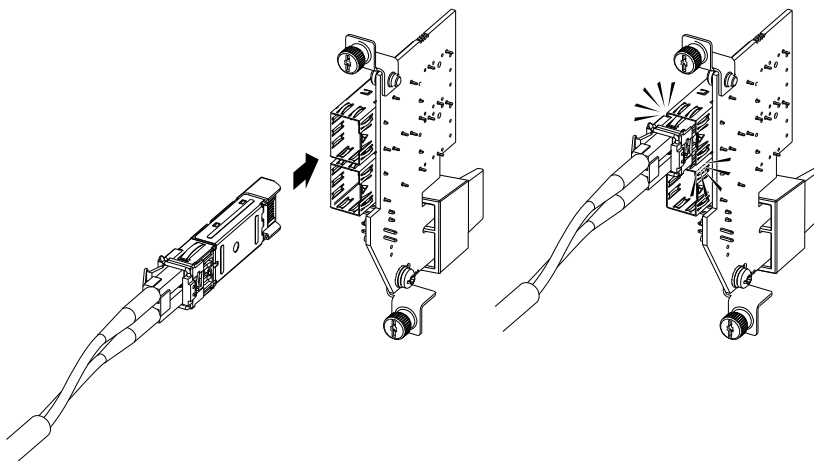
IMPORTANT: Circuit boards that are contained in renewal kits with XT contain dielectric grease on the edge connectors, where present. Do not touch or remove the grease from circuit board edge connectors. A non-greased connector can lead to corrosion.

10. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.

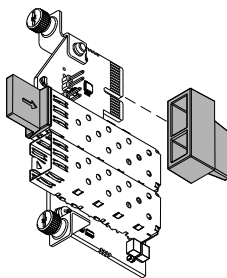


IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\)](#) on page 26.

11. Insert the transceiver with fiber-optic cable into the port on the board, until you hear an audible 'click.'



12. Hold the tab on the protective cover and carefully remove the cover from the edge connector on the circuit board. Do not touch the edge connector.



IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\)](#) on page 26.

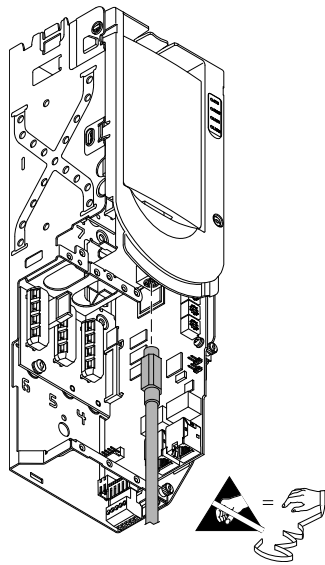
IMPORTANT: Do not remove protective covers from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

13. Install the fiber transceiver circuit board with fiber-optic cables in the reverse order of removal.

Remove and Install the Control Pod (XT) for Frame 7

Replace a control pod assembly with kit catalog number 20-750-MCP0D3-F7M (regenerative drive or bus supply) or 20-750-MCP0D4-F7M (low harmonic drive). Follow these steps to remove and install the control pod assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard.
5. Remove the control pod cover.
6. If a human interface module (HIM) is installed in the HIM cradle, remove the HIM.
7. If used, disconnect the DPI™ cable from the connector on the bottom of the HIM cradle.

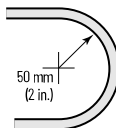


The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.



If a cable is not connected to the DPI™ port on the HIM cradle, be sure to leave the protective cover installed.

IMPORTANT: The 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 as inside bend radius is decreased.



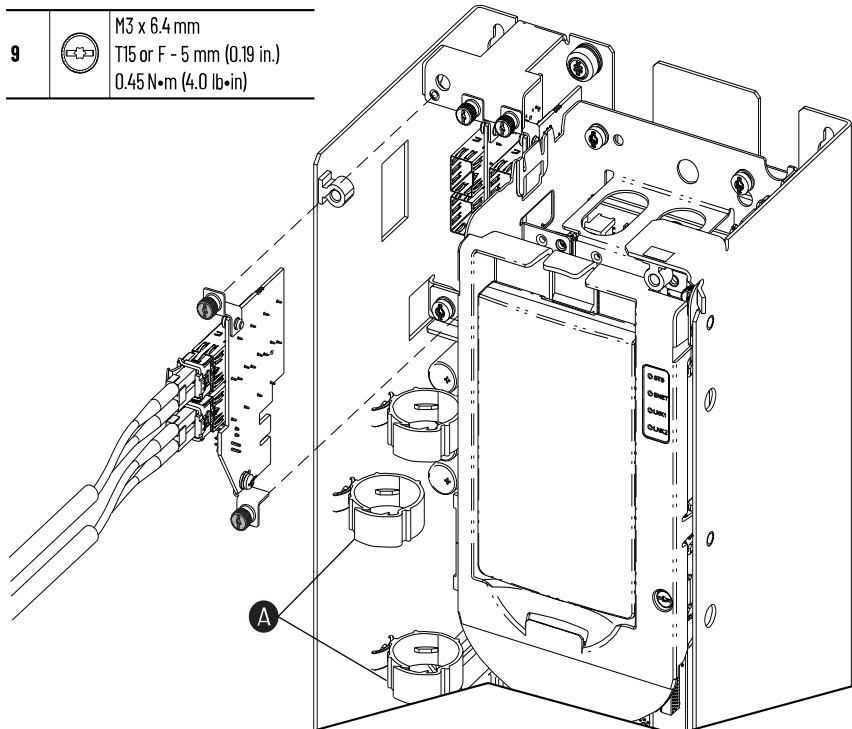
8. If used, remove the fiber-optic cables from the cable management devices (A in illustration) in the control pod.



It is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

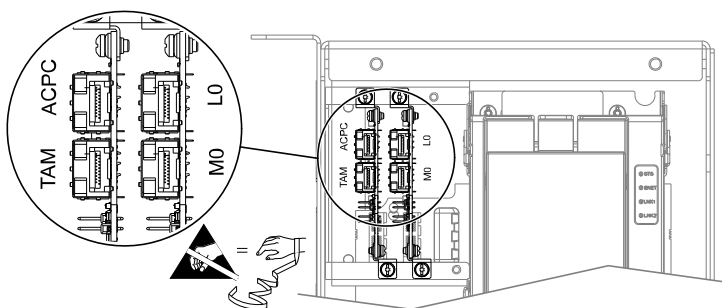
IMPORTANT: The edge connectors on a fiber transceiver circuit board with enhanced protection contain dielectric grease. If you do not intend to replace a fiber transceiver circuit board, do not touch the edge connectors on the board.

9. Loosen the two captive thumbscrews that secure each of the fiber transceiver circuit boards to the chassis and remove the boards with cables. Retain the fiber transceiver boards for reuse.

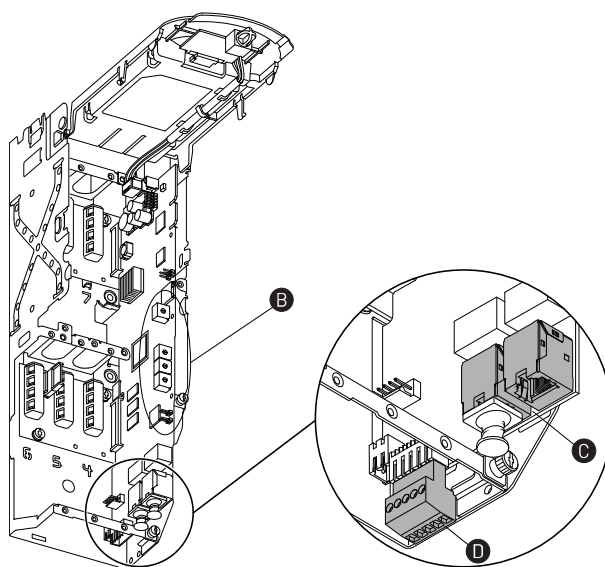


The control pod is shown separated from the enclosure to clarify the instructions only.

10. Remove the fiber-optic cables from the applicable ports on the fiber transceiver boards.
 - AC precharge circuit board fiber-optic cable from the ACPC port.
 - If present, torque accuracy module fiber-optic cable from the TAM port.
 - Line side converter power module fiber-optic cables from the LO port.
 - Motor side inverter power module fiber-optic cable from the MO port.

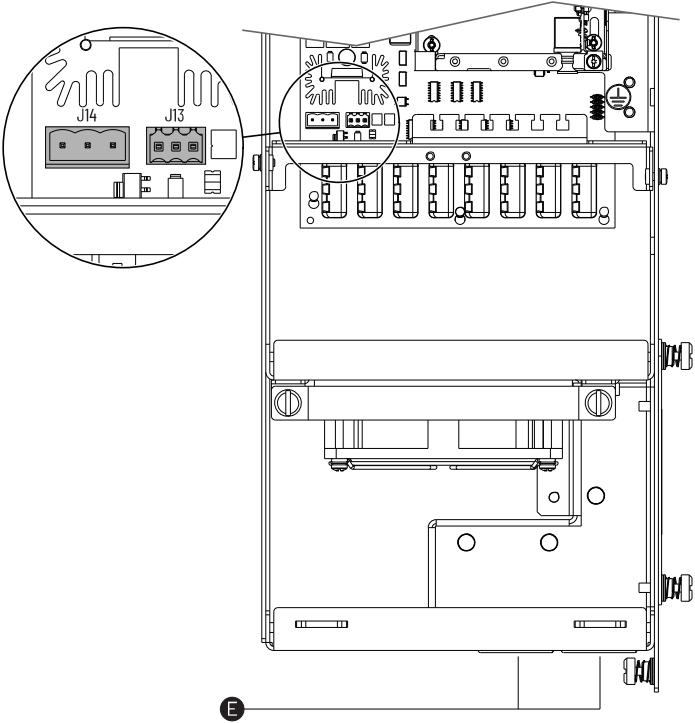


11. Route the fiber optic cables through the grommets in the bottom of the control pod carefully, and coil the fiber-optic cable and secure in a protected location. Follow the minimum bend radius requirement.
12. If an option module is installed, complete these steps:
 - a. Disconnect the plug-in terminal blocks.
 - b. Loosen the two captive thumb screws that secure the option module to the control pod chassis and remove the option module. Final torque for re-assembly is 0.45 N•m (4 lb•in).
13. Record any settings made on these main control board selectors or jumpers (B in the illustration):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
14. Disconnect any Ethernet cables from the Ethernet ports (C) on the bottom of the main control board.
15. Disconnect the plug-in terminal block (TB1 - D) on the bottom of the main control board.



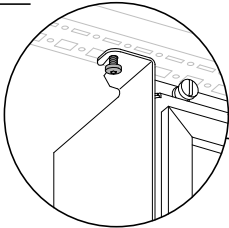
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

16. Disconnect connector P14 from connector J14 on the fiber-optic interface board.
17. If installed, disconnect the customer supplied 24V supply power wire connector P13 from connector J13 on the fiber-optic interface board.
18. Route all control cables through the grommets (E) in the bottom of the control pod.

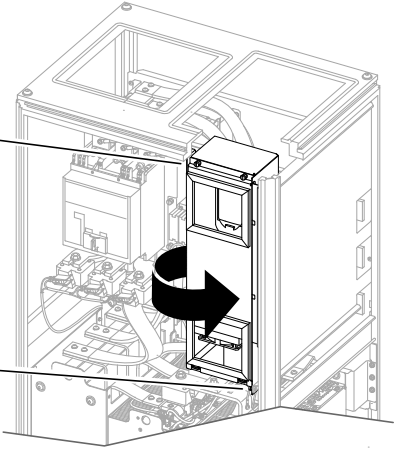
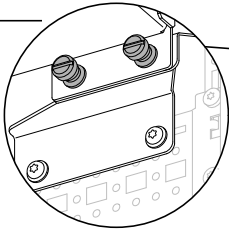


- 19. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.
- 20. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.

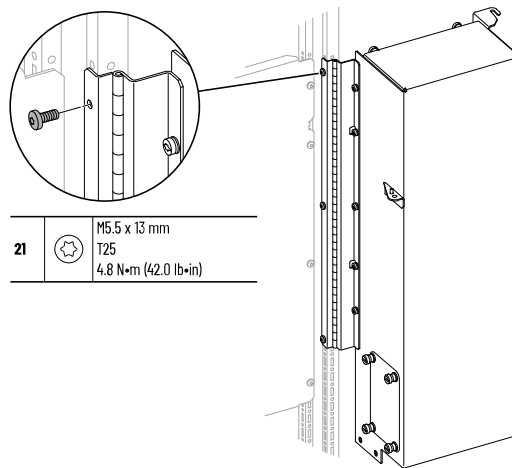
19		M5.5 x 13 mm T25 4.8 N•m (42.0 lb•in)
----	---	---



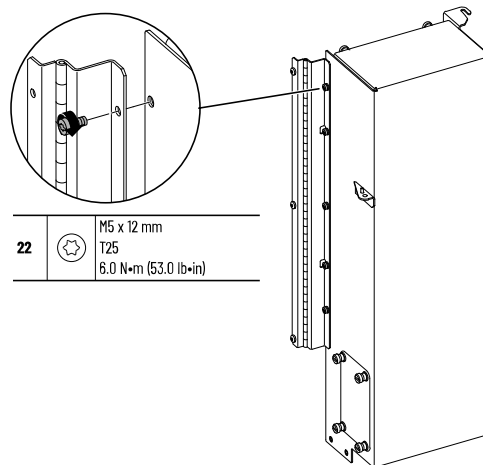
20		M5 x 0.8 mm P2 or F - 6.4 mm (0.25 in.) 2.8 N•m (25.0 lb•in)
----	---	--



- 21. While supporting the control pod assembly, remove the three M5.5 x 13 mm Torx screws that secure the hinged mounting bracket to the inside edge of the enclosure and remove the control pod assembly.



22. Install the hinged mounting bracket on the new control pod assembly by using the five M5 x 12 mm Torx screws provided with the kit.

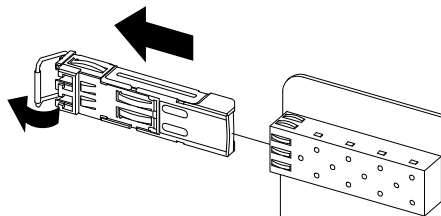


23. Install the control pod in the reverse order of removal.

IMPORTANT: Do not remove protective covers from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

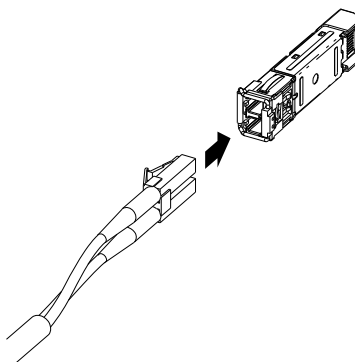
24. Make any necessary changes to the settings on these main control board selectors or jumpers:
- Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper

25. For each fiber transceiver board, open the transceiver latch and pull the transceiver out of the connector on the board.



If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

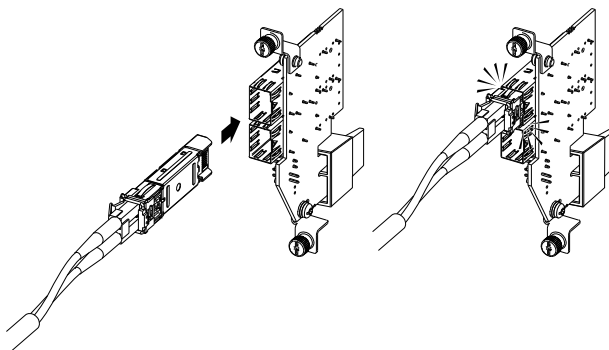
26. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\) on page 26](#).

27. Insert the transceiver and fiber-optic cable into the connector on the board, until you hear an audible 'click.'



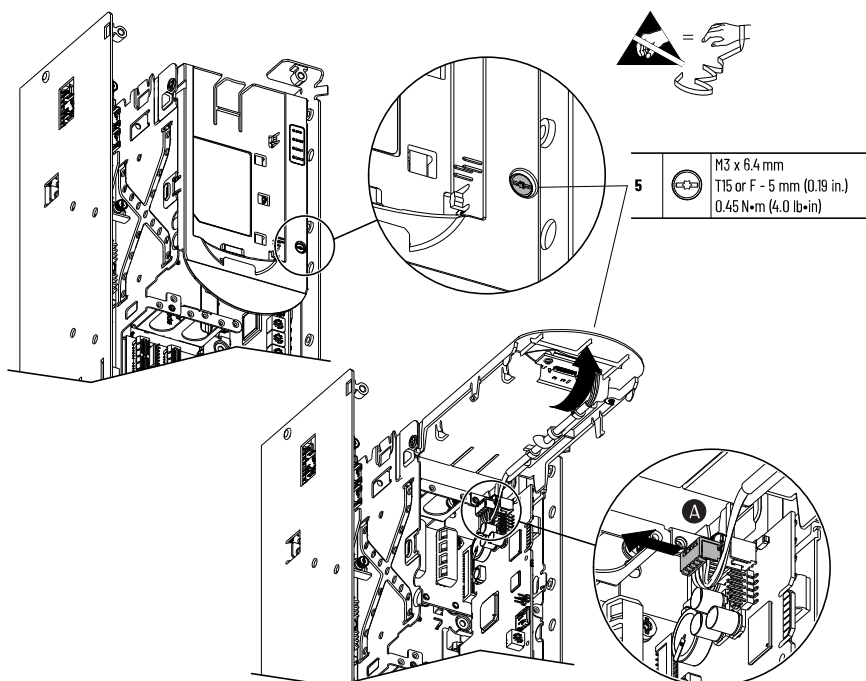
Remove and Install the Main Control Circuit Board (Standard) for Frame 7

Replace a standard main control circuit board with kit catalog number SK-RM-MCB1-PF755.

NOTE: This kit has been discontinued and is no longer available for sale.

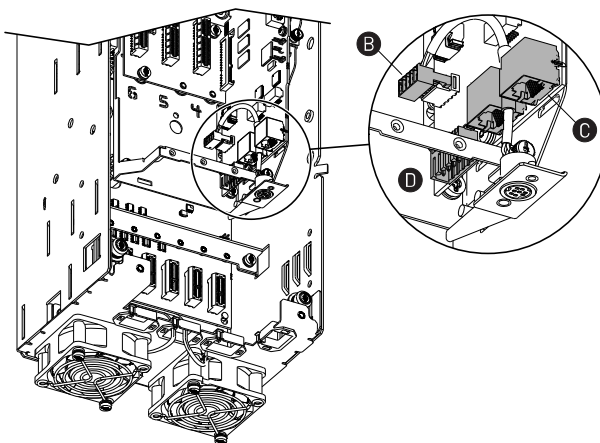
Follow these steps to remove and install the standard main control circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover. See [Remove and Install the Control Pod Cover for Frame 7 on page 57](#).
5. Loosen the screw that secures the human interface module (HIM) cradle to the pod chassis, and rotate the cradle up to a 90° horizontal position.
6. Disconnect the terminal block (A) for the HIM wire harness from the connector on the main control board.

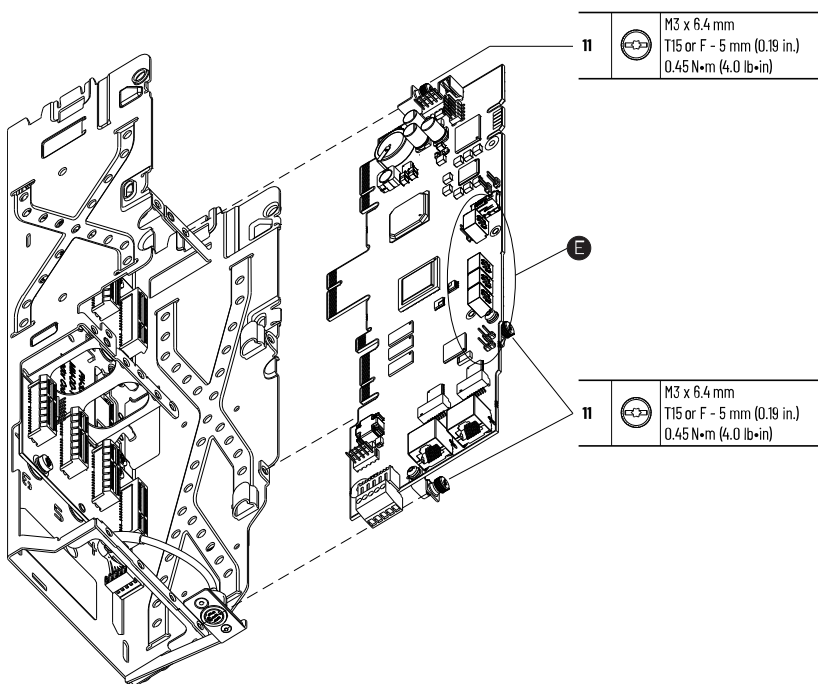


The control pod chassis is shown removed from the enclosure for clarity only.

7. Disconnect the HIM plug-in terminal block (B) for the mini-DIN connector on the control board.
8. Disconnect any Ethernet cables from the Ethernet ports (C) on the bottom of the main control board.
9. Disconnect the plug-in terminal block TB1 (D) on the bottom of the main control board.



10. Record any settings that are made on these main control board selectors or jumpers (E):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
11. Loosen the three captive thumbscrews that secure the main control board to the pod chassis and remove the board.



The control pod HIM cradle is not shown for clarity only.

12. Install the main control circuit board in the reverse order of removal.
13. Make any necessary changes to the settings on these main control board selectors or jumpers:
 - Control selector
 - Embedded EtherNet/IP™ address selectors

- Safety enable jumper
- Hardware enable jumper

Remove and Install the Control Pod (Standard) for Frame 7

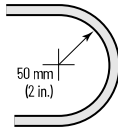
Replace a standard control pod assembly with kit catalog number 20-750-MCPOD1-F7M (regenerative drive or bus supply) or 20-750-MCPOD2-F7M (low harmonic drive).

NOTE: These kits have been discontinued and are no longer available for sale.

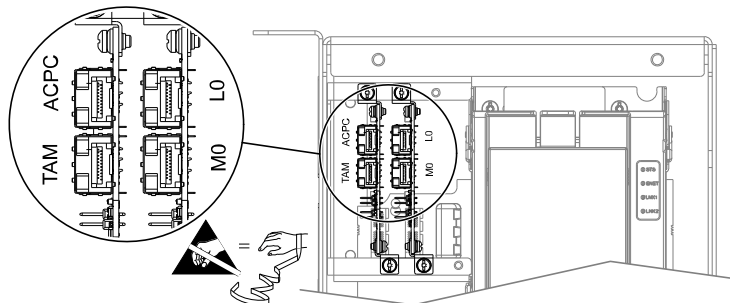
Follow these steps to remove and install the standard control pod assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Remove the control pod cover. See [Remove and Install the Control Pod Cover for Frame 7 on page 57](#).
6. If a human interface module (HIM) is installed in the HIM cradle, remove the HIM.

IMPORTANT: The 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 as inside bend radius is decreased.

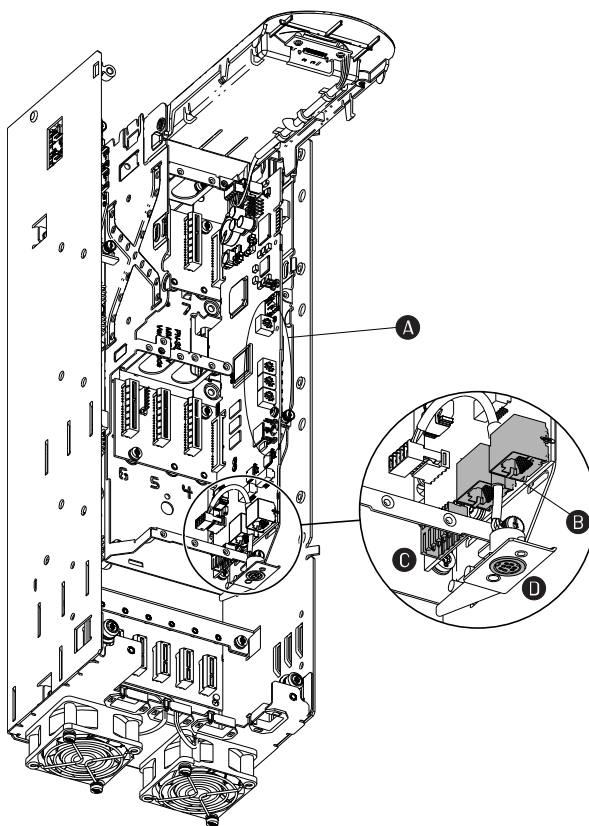


7. Remove the fiber-optic cables from the applicable ports on the fiber transceiver boards.
 - AC precharge circuit board fiber-optic cable from the ACPC port.
 - If present, torque accuracy module fiber-optic cable from the TAM port.
 - Line side converter power module fiber-optic cables from the LO port.
 - Motor side inverter power module fiber-optic cable from the MO port.

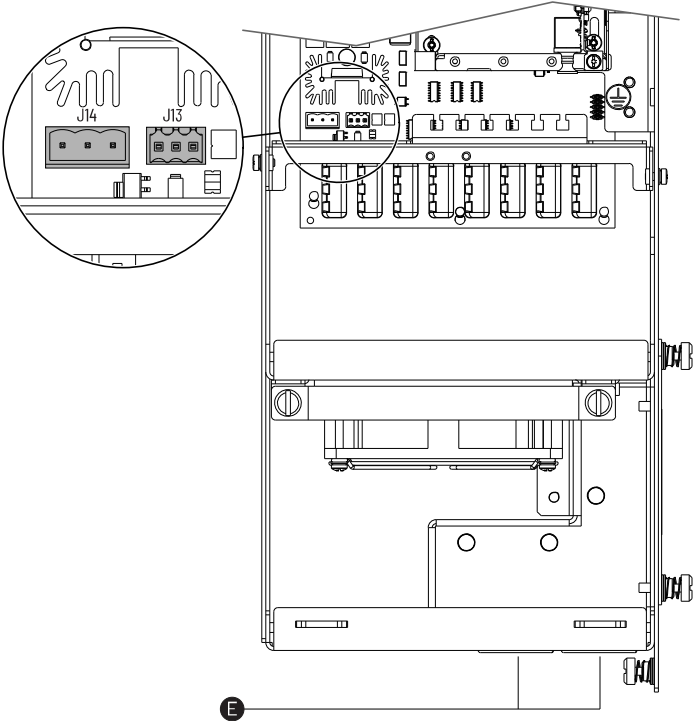


8. Route the fiber-optic cables through the grommets in the bottom of the control pod carefully, and coil the fiber-optic cable and secure in a protected location. Follow the minimum bend radius requirement.

9. If an option module is installed, complete these steps:
 - a. Disconnect the plug-in terminal blocks.
 - b. Loosen the two captive thumbscrews that secure the option module to the control pod chassis and remove the option module. Final torque for reassembly is 0.45 N•m (4.0 lb•in).
10. Record any settings that are made on these main control board selectors or jumpers (A in the illustration):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
11. Disconnect any Ethernet cables from the Ethernet ports (B) on the bottom of the main control board.
12. Disconnect the plug-in terminal block TB1 (C) on the bottom of the main control board.
13. If present, disconnect the DPI™ cable from the mini-DIN Port 2 connector (D) on the control pod chassis.

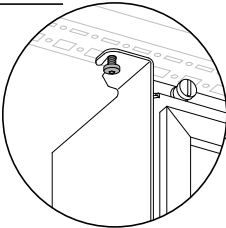


14. Disconnect connector P14 from connector J14 on the fiber-optic interface board.
15. If installed, disconnect the customer supplied 24V supply power wire connector P13 from connector J13 on the fiber-optic interface board.
16. Route all cables through the grommets (E) in the bottom of the control pod.

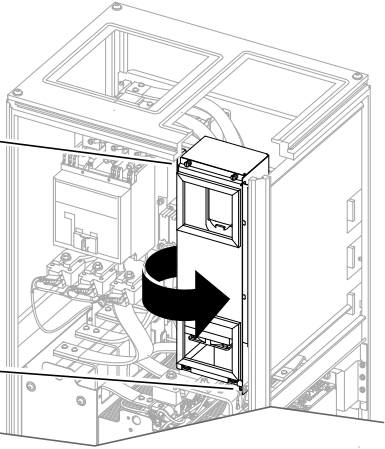
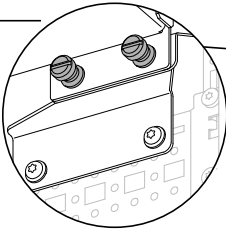


- 17. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.
- 18. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.

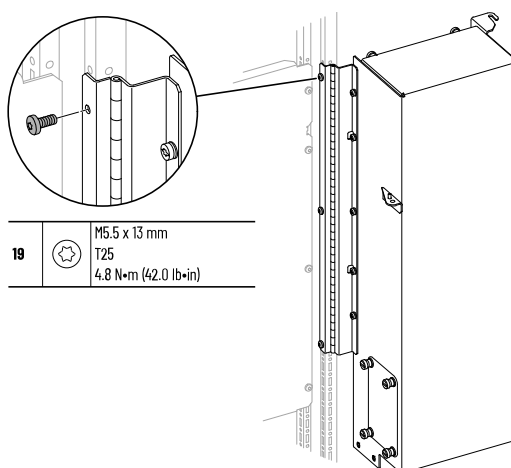
17		M5.5 x 13 mm T25 4.8 N•m (42.0 lb•in)
----	---	---



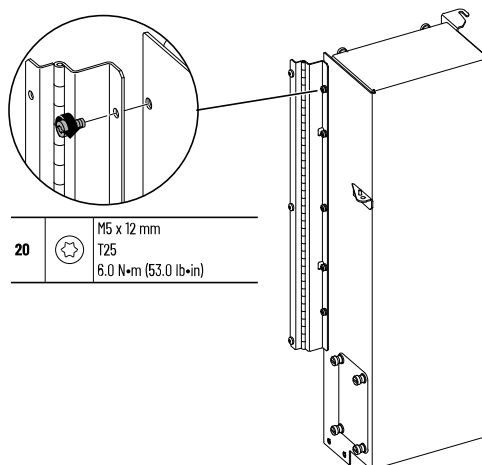
18		M5 x 0.8 mm P2 or F - 6.4 mm (0.25 in.) 2.8 N•m (25.0 lb•in)
----	---	--



- 19. While supporting the control pod assembly, remove the three M5.5 x 13 mm Torx screws that secure the hinged mounting bracket to the inside edge of the enclosure and remove the control pod assembly.



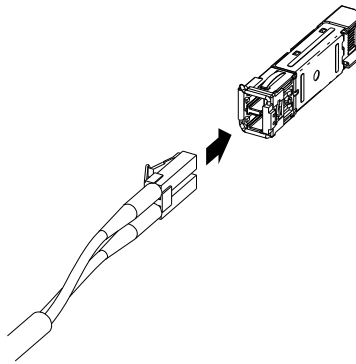
20. Install the hinged mounting bracket on the control pod assembly by using the five M5 x 12 mm Torx screws provided with the kit.



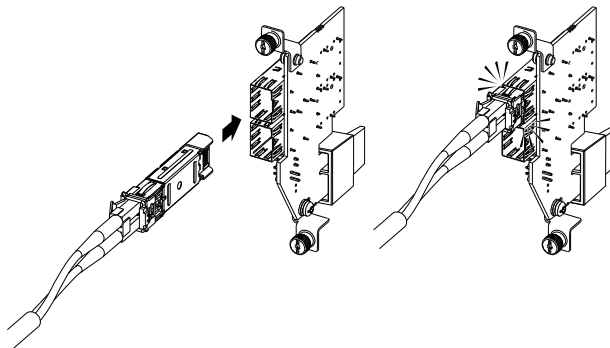
21. Install the control pod in the reverse order of removal.

IMPORTANT: Do not remove protective covers from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

22. Make any necessary changes to the settings on these main control board selectors or jumpers:
- Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
23. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



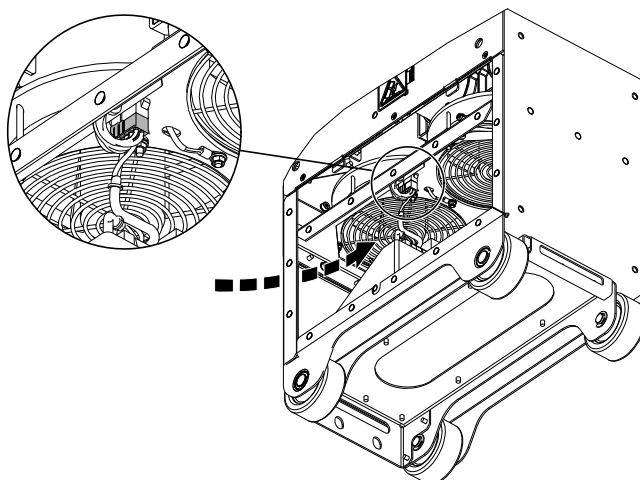
24. Insert the transceiver and fiber-optic cable into the connector on the board, until you hear an audible 'click.'



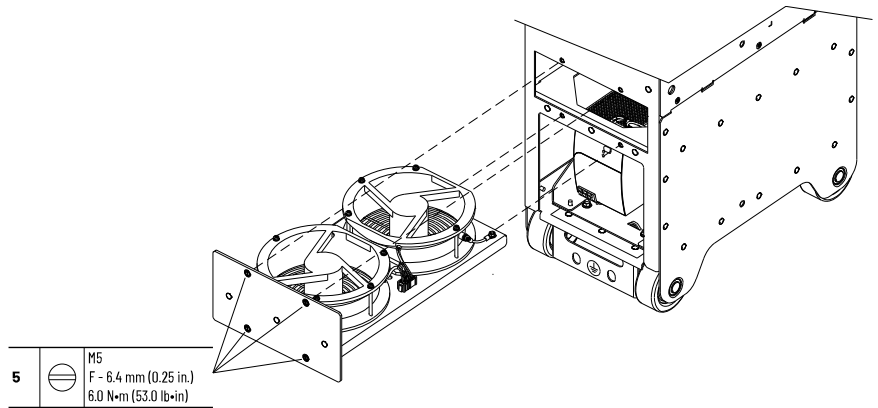
Remove and Install the LCL Filter/Power Module Heatsink Fan Assembly for Frame 7

Replace an LCL filter/power module heatsink fan assembly with kit catalog number SK-RM-MFAN-F7. Follow these steps to remove and install the LCL filter/power module heatsink fan assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Below the fan assembly, reach through the opening in the front of the power or LCL filter module chassis, and disconnect the fan power supply connector P4 from J4 on the fan assembly.



5. Loosen the four captive M5 screws on the front of the fan assembly and slide the assembly out of the chassis.



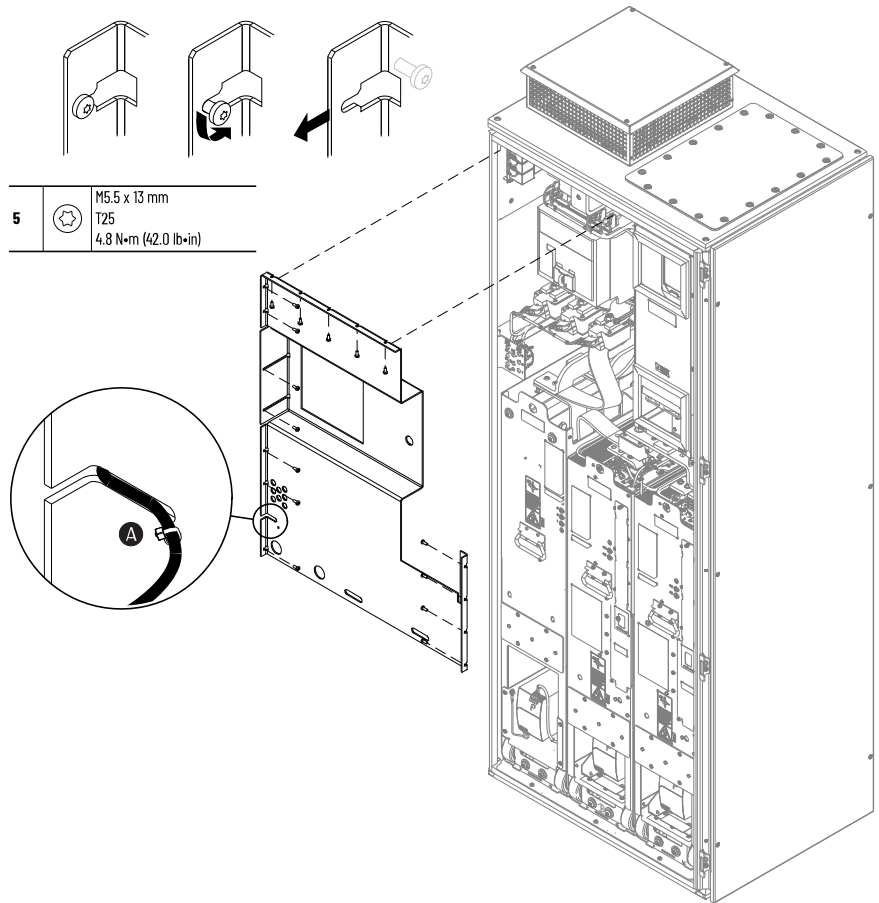
6. Install the LCL filter/power module heatsink fan assembly in the reverse order of removal.

Remove and Install the Protective Guard for Frame 7

You must remove the protective guard to access certain components in the enclosure. Follow these steps to remove and install the protective guard.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. If a door-mounted HIM is installed, cut the cable tie (A) that secures the HIM communication cable to the guard.

5. Loosen the 16 M5.5 x 13 mm Torx screws that secure the guard to the enclosure and remove the guard. It is not necessary to remove the screws.



IMPORTANT: Be sure to secure the HIM cable to the guard with a new cable tie.

6. Install the protective guard in the reverse order of removal.

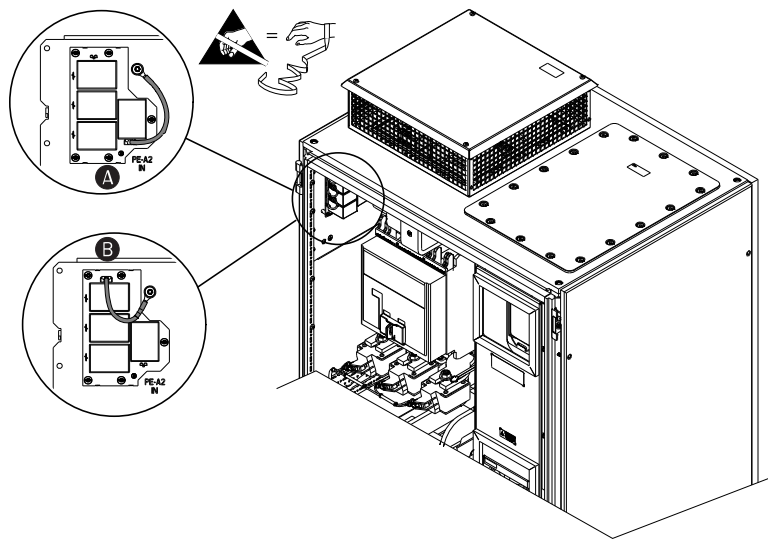
Remove and Install the AC Common Mode Filter Circuit Board for Frame 7

Replace the AC common mode filter circuit board with kit catalog number SK-RM-EMCFB1. Follow these steps to remove and install the AC common mode filter circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).

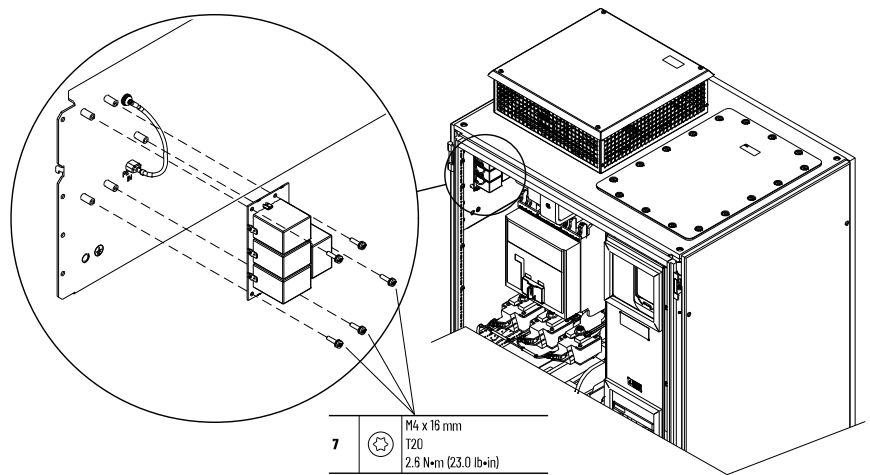
IMPORTANT: The PE-A2 jumper on the new AC common mode filter circuit board must be installed in the same position as the old board.

5. Record the position of the PE-A2 jumper on the circuit board.



Item	Description
A	PE-A2 jumper in the "IN" position
B	PE-A2 jumper in the "OUT" position

6. Disconnect the PE-A2 jumper wire from the wire stake on the board.
7. Remove the five, M4 x 16 mm slotted-Torx screws that secure the circuit board to the sheet metal panel and remove the board.



8. Repeat steps 5...7 for each AC common mode filter board.
9. Install the AC common mode filter circuit board in the reverse order of removal.
10. Verify that the PE-A2 jumper is installed in the same position on the new board as it was on the old board.

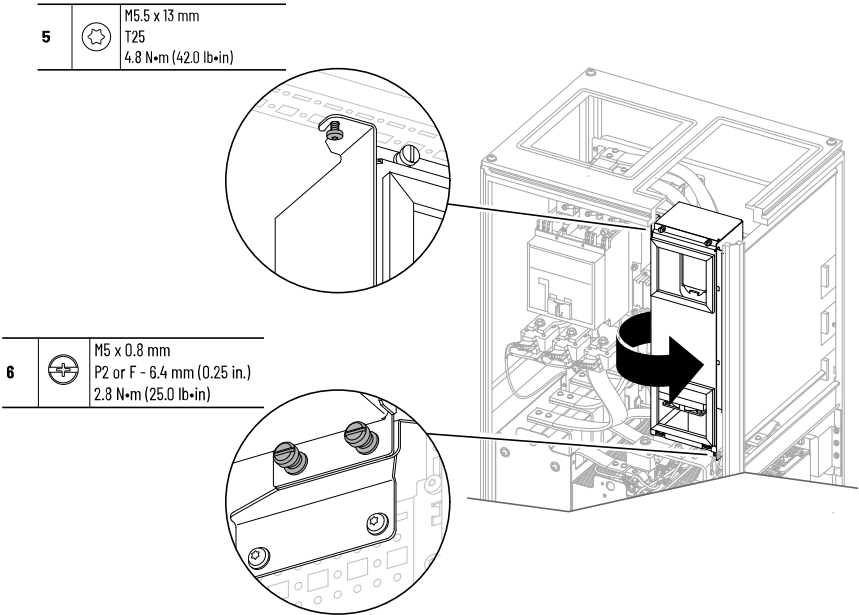
Remove and Install the 240V Power Distribution Fuse (FH2) for Frame 7

Replace the 240V power distribution fuse (Labeled FH2) with the appropriate kit catalog number that is identified in this table:

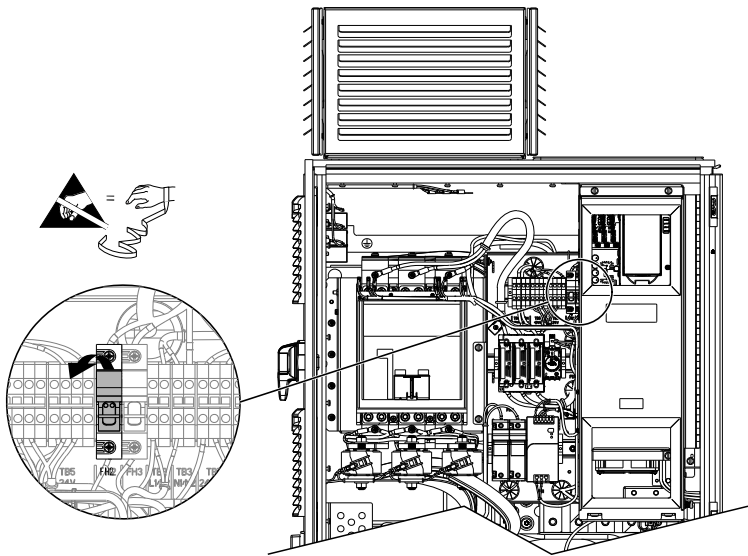
Cat. No.	Voltage Class	IP Rating	Fuse Amp Rating
SK-RM-IBFH2-FUSE2A-F8	400V/480V/600V	IP21/IP54	15
SK-RM-IBFH2-FUSE2B-F8	690V	IP21/IP54	16

Fuse holder (labeled FH2) is on the AC precharge control panel. Follow these steps to remove and install the 240V power distribution fuse.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard.
5. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.
6. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.



7. Pull out on the tab on the fuse holder that is labeled FH2 and remove the fuse.



8. Install the 240V power distribution fuse in the reverse order of removal.

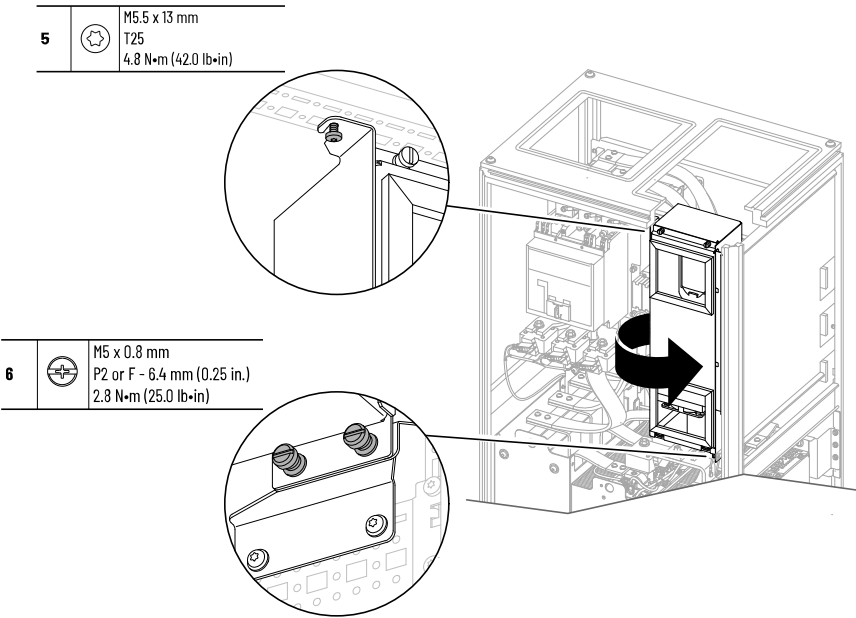
Remove and Install the AC Precharge Control Circuit Board Fuse (FH3) for Frame 7

Replace the AC precharge control circuit board fuse (labeled FH3) with the appropriate kit catalog number that is identified in this table:

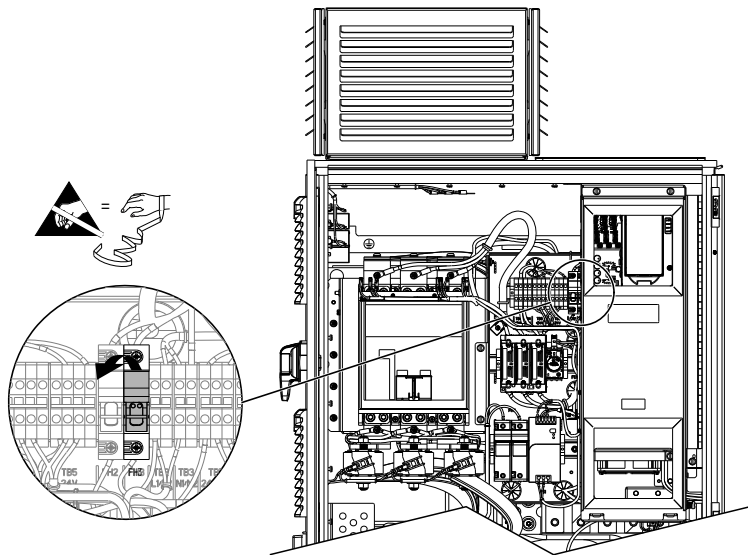
Cat. No.	Voltage Class	IP Rating	Fuse Amp Rating
SK-RM-IBFH3-FUSE3B-F8	400V/480V/600V	IP21/IP54	2
SK-RM-IBFH3-FUSE3A-F8	690V	P21/IP54	2

Fuse holder (labeled FH3) is on the AC precharge control panel. Follow these steps to remove and install the AC precharge control circuit board fuse.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard.
5. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.
6. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.



7. Pull out on the tab on the fuse holder that is labeled FH3 and remove the fuse.



8. Install the AC precharge control circuit board fuse in the reverse order of removal.

Remove and Install the Control Transformer Fuses (FH4) for Frame 7

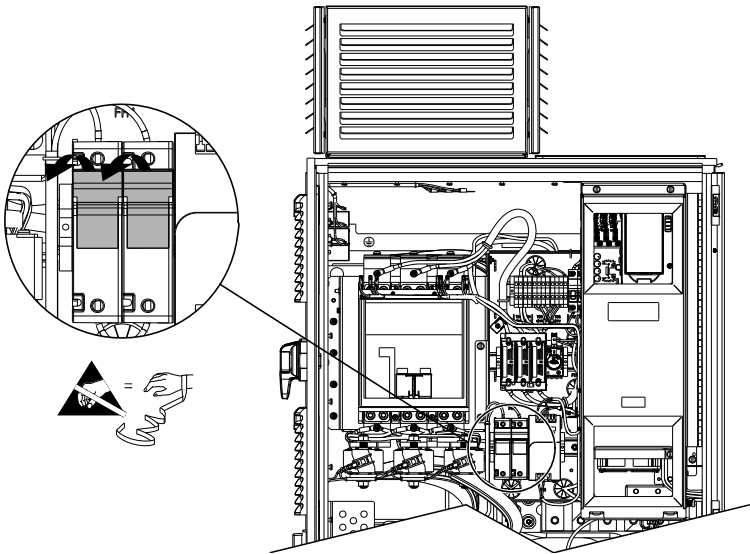
Replace control transformer fuses (labeled FH4) with the appropriate kit catalog number that is identified in this table:

Cat. No.	Voltage Class	Fuse Amp Rating
SK-RM-IBFH2-FUSE2A-F8	400V/480V/600V	15
SK-RM-IBFH4-FUSE5A-F7	400V/480V/600V	17.5
SK-RM-IBFH2-FUSE2B-F8	690V	16

Cat. No.	Voltage Class	Fuse Amp Rating
SK-RM-IBFH4-FUSE5B-F7	690V	10

The fuse holders (labeled FH4) are on the AC precharge control panel. Follow these steps to remove the control transformer fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Pull out on the tabs at the top of the fuse holder that is labeled FH4 and remove the fuses.



6. Install the control transformer fuses in the reverse order of removal.

Remove and Install the AC Precharge Fused Disconnect (FD1) Fuses for Frame 7

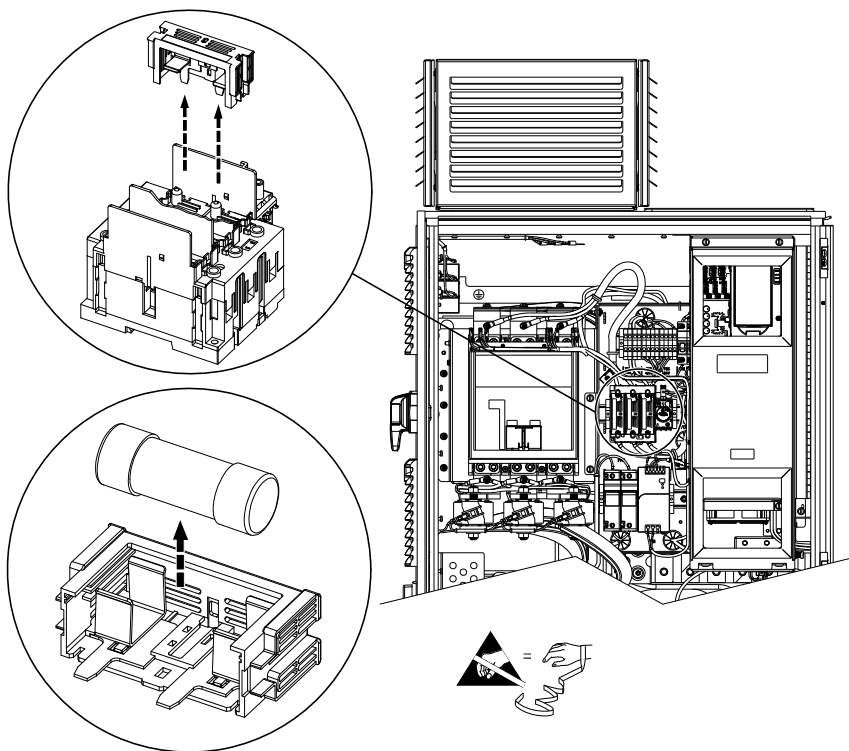
Replace the AC precharge fused disconnect (FD1) fuses with the appropriate kit catalog number that is identified in this table:

Cat. No.	Voltage Class	Fuse Amp Rating	Quantity
SK-RM-IBD-FUSEA-F8	400V/480V/600V	30	3
SK-RM-IBD-FUSEB-F8	690V	32	3

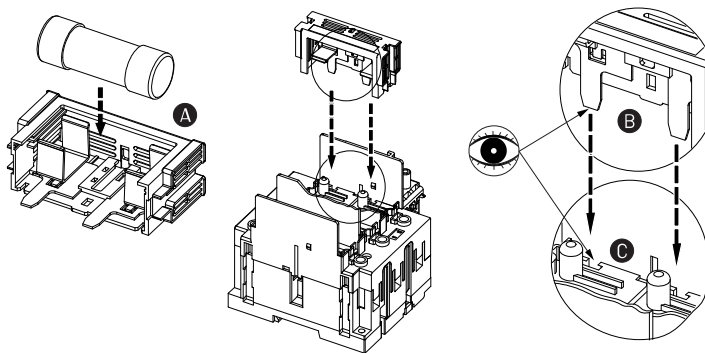
The fuse holder (labeled FD1) is on the AC precharge control panel. Follow these steps to remove the AC precharge fused disconnect fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.

4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. By gripping the top and bottom of the fuse holder on the fused disconnect (labeled FD1), pull out.
6. Remove the fuse from the fuse holder.



7. Repeat steps 5 and 6 for each fuse.
8. Insert the fuse into the fuse holder (A).
9. Align the tabs (B) on the fuse holder with the slots (C) in the fused disconnect and insert the fuse holder.



Remove and Install the AC Precharge Control Circuit Board for Frame 7

Replace the AC precharge control circuit board with kit catalog numbers 20-750-MACPC1-CD-F7M and 20-750-MACPC1-EF-F7M. Kit catalog number 20-750-MACPC1-EF-F7M is not used with frame

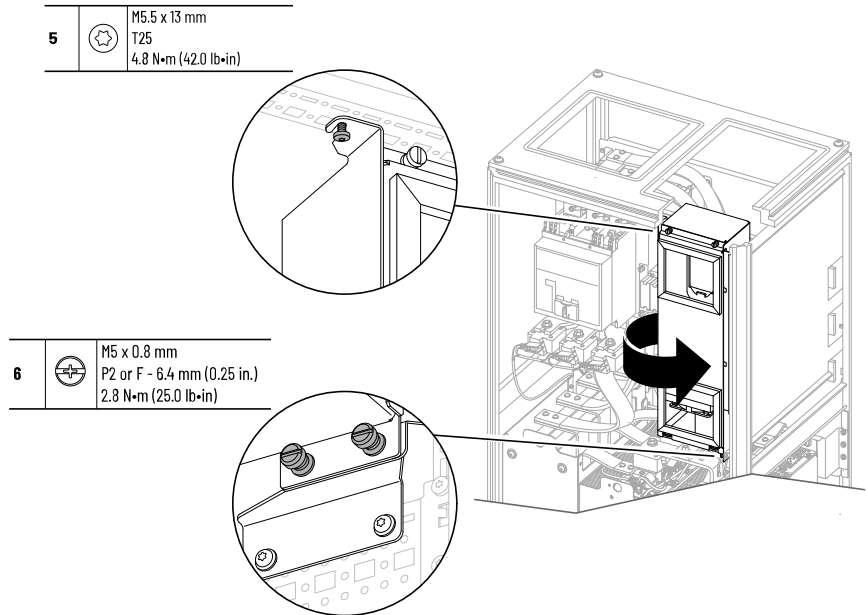
7L liquid cooled drives. Follow these steps to remove and replace the AC precharge control circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).

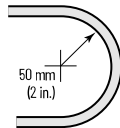


The AC precharge control circuit board is located behind the control pod.

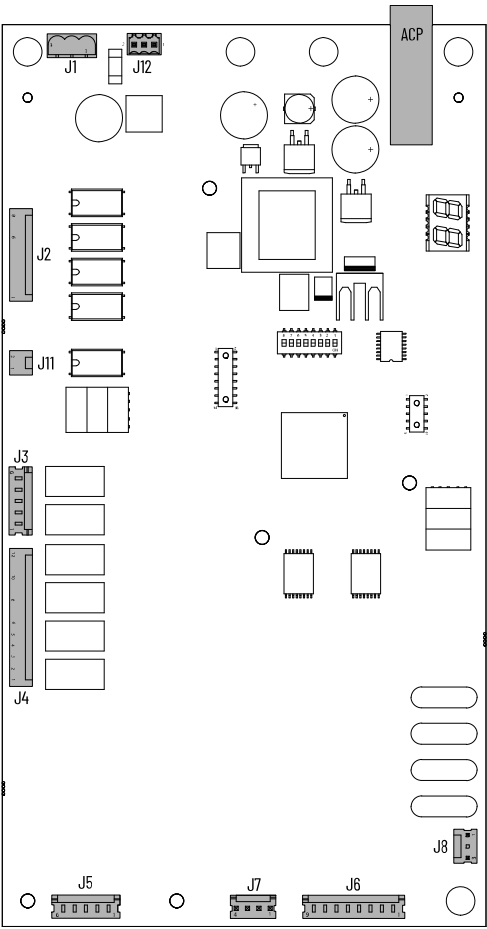
5. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.
6. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.



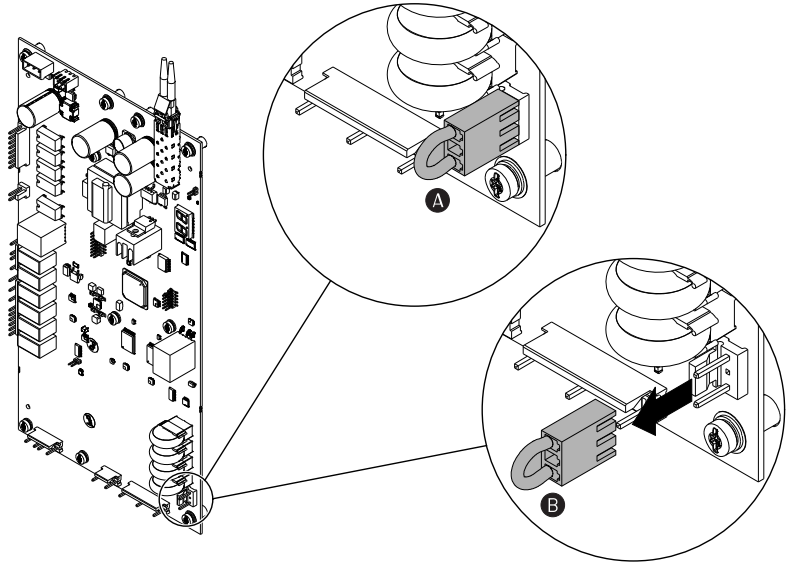
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



7. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the ACP port on the AC precharge control circuit board.
8. Remove the transceiver from the ACP port and discard the transceiver.
9. Disconnect these wire harness connectors from the connectors on the AC precharge circuit board:
 - P1 from J1
 - P2 from J2
 - P3 from J3
 - P4 from J4
 - P5 from J5
 - P6 from J6
 - P7 from J7
 - P11 from J11
 - P12 from J12, if present

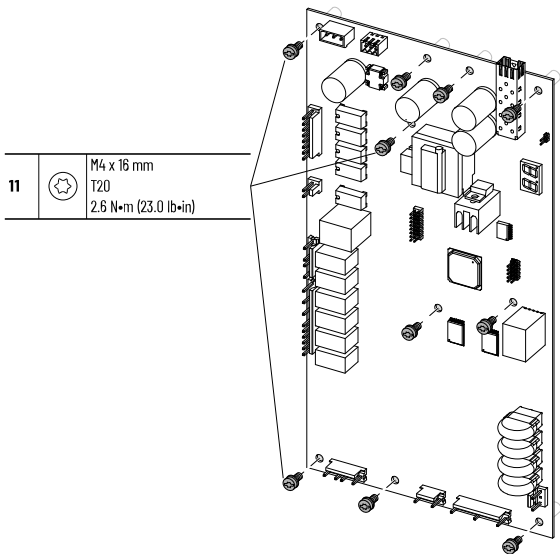


10. Record the position of the PE-A jumper on the circuit board. The PE-A jumper on the new AC precharge control circuit board must be installed in the same position.

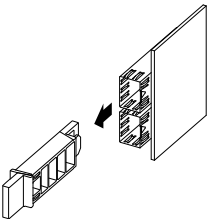


Item	Description
A	PE-A jumper in the "IN" position
B	PE-A jumper in the "OUT" position

11. Remove the 10, M4 x 16 mm slotted-Torx screws that secure the circuit board to the standoffs on the sheet metal panel, and remove the board.

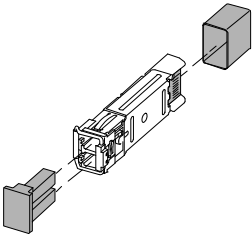


12. Install the AC precharge control circuit board in the reverse order of removal.
13. Remove the protective cover from the ACP port on the new AC precharge circuit board.



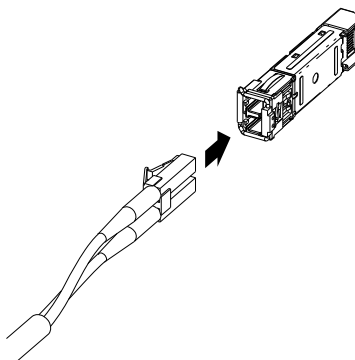
This illustration represents a fiber-optic transceiver port on an example circuit board only.

14. Remove the new transceiver supplied with the kit from the packing materials.
15. Remove the protective covers from the transceiver.

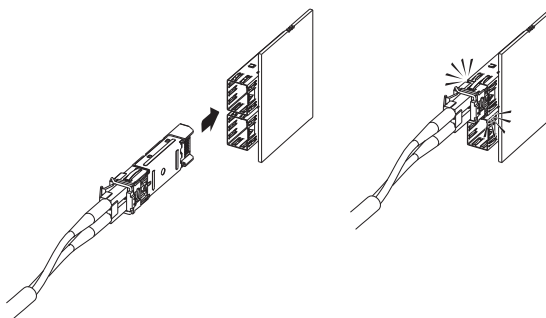


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

16. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



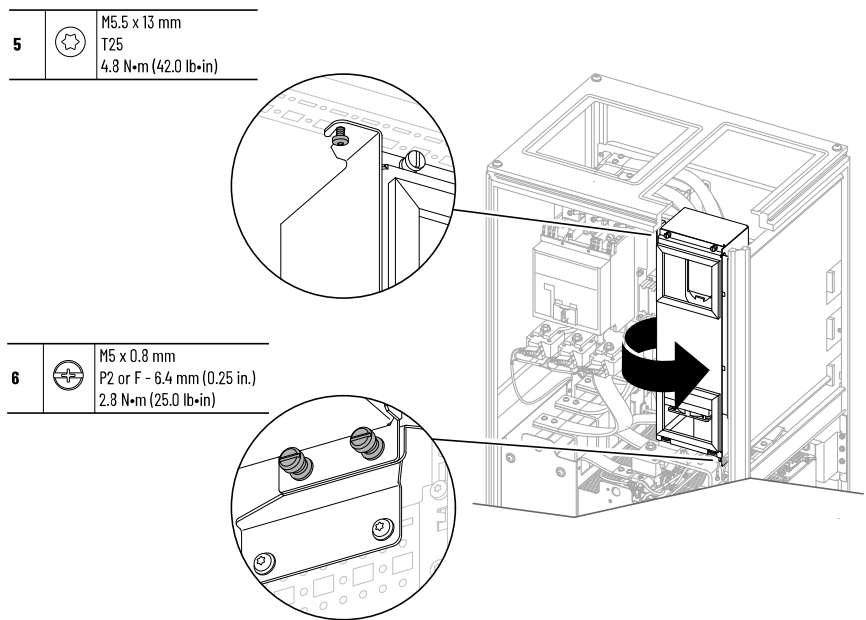
17. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



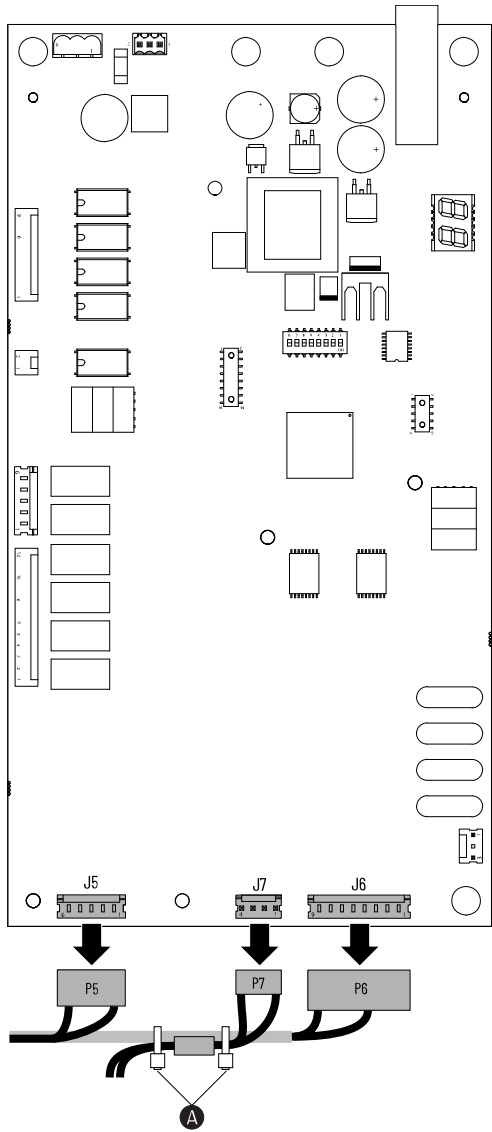
Open and Close the AC Precharge Components Panel for Frame 7

Open the AC precharge components panel to access components on the back of or behind the panel. Follow these steps to open and close the AC precharge components panel.

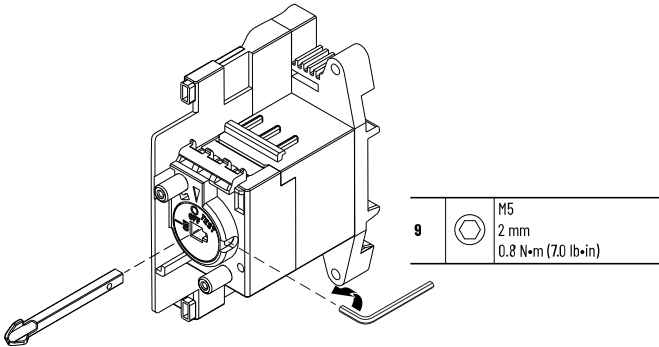
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the enclosure frame.
6. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.



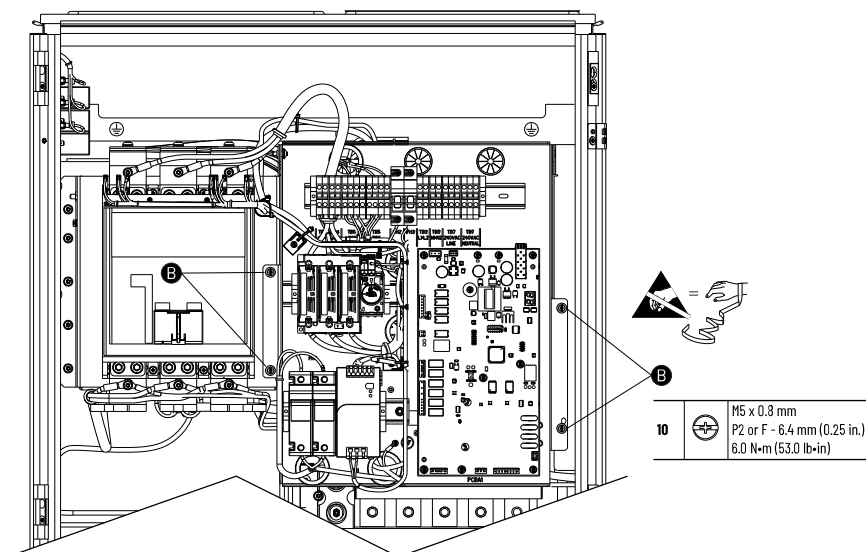
7. Disconnect these wire harness connectors from the connectors on the AC precharge control circuit board:
 - P5 from J5
 - P6 from J6
 - P7 from J7
8. Cut the cable ties (A) that secure the P6 and P7 wire harnesses together.



9. Loosen the hex screw that secures the handle to the fused disconnect switch and remove the handle.

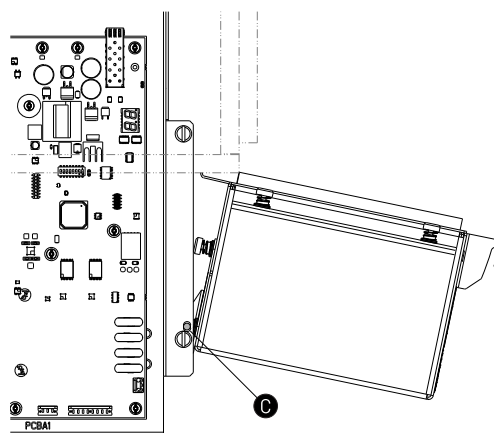


10. Loosen the four captive screws (B) that secure the AC precharge components panel to the chassis.



The control pod is not shown for clarity only.

11. Rotate the AC precharge components panel upward and secure the panel by placing the hole (C) on the side of the panel onto the pin on the control pod assembly.



This illustration shows a top view of the rotated control pod assembly with a partial view of the AC precharge components panel rotated upwards at 90°.

12. Close the AC precharge components panel in the reverse order.

Remove and Install the AC Precharge Time Delay Relay for Frame 7

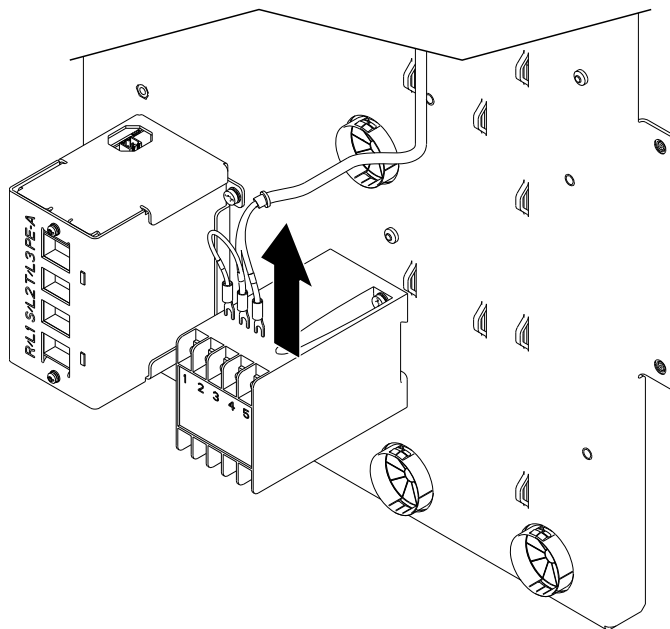
Replace the AC precharge time delay relay with kit catalog number 20-750-MACPC-TDR. Follow these steps to remove and install the AC precharge time delay relay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard.

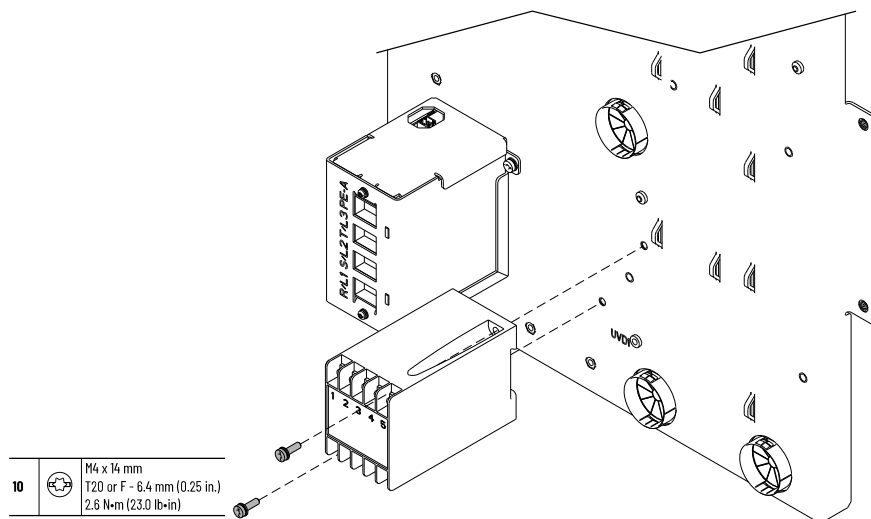


The AC precharge time delay relay is located behind the control pod and on the back of the AC precharge components panel.

5. Open the AC precharge components panel. See [Open and Close the AC Precharge Components Panel for Frame 7 on page 97](#).
6. Disconnect the wires from the terminals on the time delay relay.



7. Remove the two M4 x 14 mm slotted-Torx screws that secure the time delay relay to the panel and remove the relay.



8. Install the AC precharge time delay relay in the reverse order of removal.

Remove and Install the AC Precharge TVSS Module for Frame 7

Replace the AC precharge TVSS module with kit catalog number 20-750-MACP-CD-TVSS (400V/480V) or 20-750-MACP-EF-TVSS (600V/690V). Kit catalog number 20-750-MACP-EF-TVSS

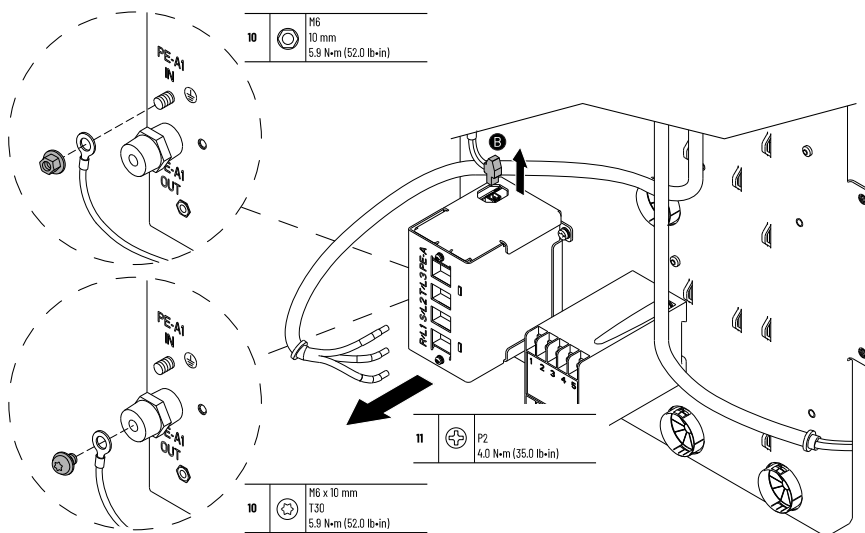
(600V/690V) is not used with frame 7L liquid cooled drives. Follow these steps to remove and install the AC precharge TVSS module relay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).

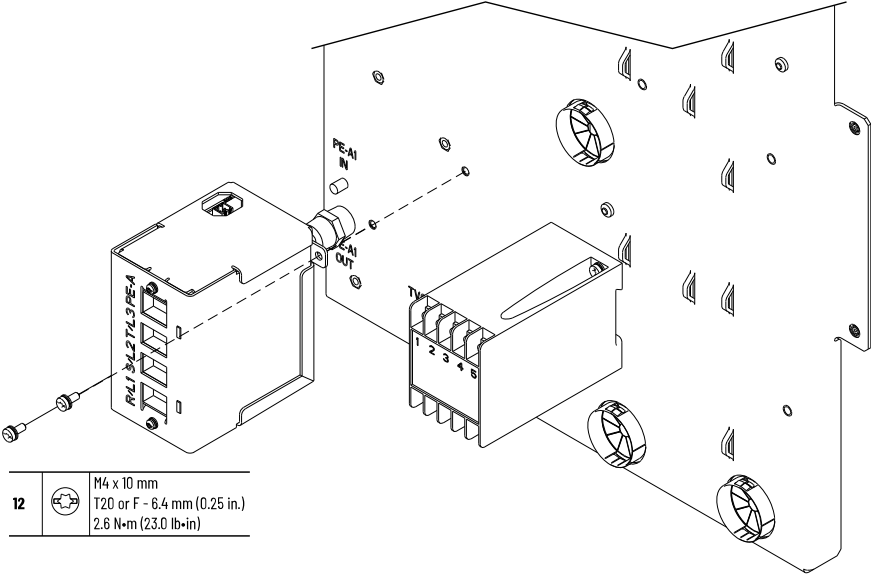


The AC precharge TVSS module is located behind the control pod and on the back of the AC precharge components panel.

5. Open the AC precharge components panel. See [Open and Close the AC Precharge Components Panel for Frame 7 on page 97](#).
6. Disconnect connector P15 (B) from the module.
7. Remove either the M6 hex nut or M6 x 10 mm Torx screw that secures the ground wire to the appropriate PE-A1 terminal.
8. Loosen the terminal block screws that secure the wires to terminals R/L1, S/L2, and T/L3 and remove the wires.



9. Remove the two M4 x 10 mm slotted-Torx screws that secure the TVSS module to the panel and remove the module.



10. Install the AC precharge TVSS module in the reverse order of removal.

Remove and Install the DC Link Fuses for Frame 7

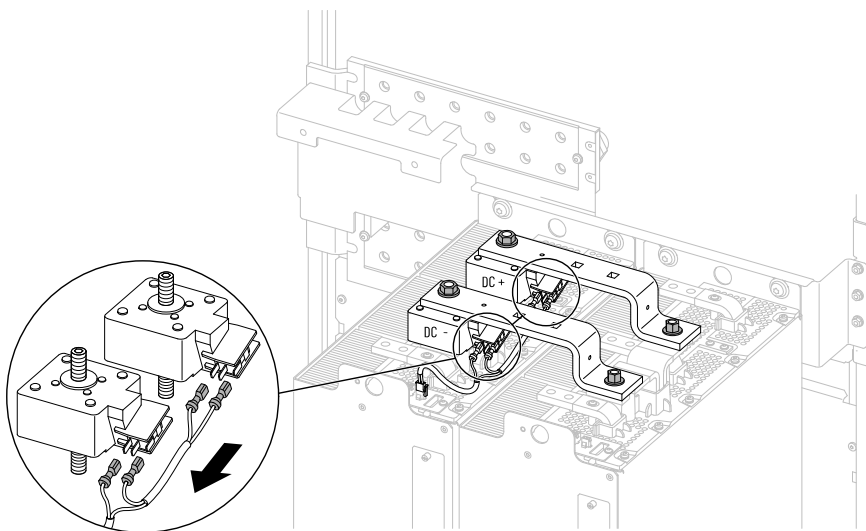
Replace the DC link fuses with the appropriate kit catalog number that is identified in this table:

Cat. No.	Power Module Voltage Class	Fuses per Kit	Fuse Amps /Leg (1 Leg)	Bussman Fuse Number
SK-RM-DCFUSE1-F8	400V/480V AC	2	1400	170M6467
SK-RM-DCFUSE2-F8	600V/690V AC	2	1100	170M6499

Follow these steps to remove and install the DC link fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).

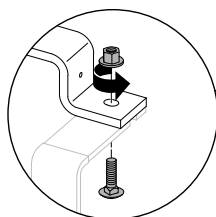
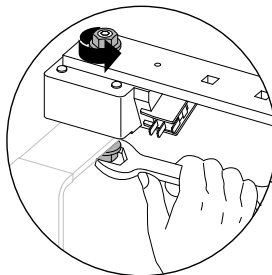
5. Disconnect the fuse wire harness connectors from the fuse indicator switches and retain the wire harness for reuse.



Some components are not shown for clarity only.

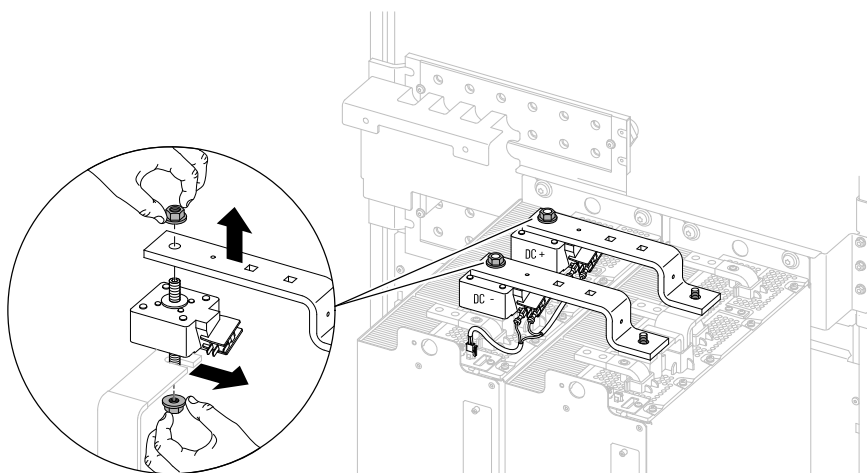
6. Complete the appropriate task for your product:
 - For a bus supply, remove the two M12 hexagonal nuts that secure each of the fuses to the connection DC bus bars and DC terminals on the power module and remove the fuses.
 - For a drive, loosen but do not remove the two M12 hexagonal nuts that secure each of the fuses to the connection DC bus bars and DC terminals on the power module.
7. For drives only, remove the M10 hexagonal nut and bolt that secure each of the connection DC bus bars to the DC terminals on the power module.

6		M12 19 mm 45.0 N•m (398.0 lb•in)
---	--	--

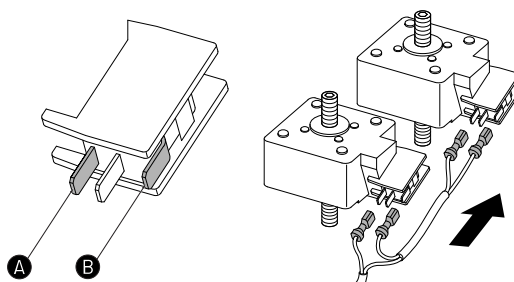


7		M10 17 mm 38.0 N•m (336.0 lb•in)
---	--	--

8. For drives only, remove the two M12 hexagonal nuts that secure each of the fuses to the connection DC bus bars and DC terminals on the power module and remove the DC bus bars and fuses.



9. Install the DC link fuses in the reverse order of removal.



10. Verify that the fuse wire harness connectors are installed on the outer two terminals (A and B) of the fuse indicator switches.

Remove and Install a Power Module for Frame 7



ATTENTION: Risk of injury, death, or equipment damage exists.

IGBT power and LCL filter modules have a high center of gravity and may pose a tip-over hazard. To guard against death, serious personal injury, or equipment damage, do not subject the module to high rates of acceleration or deceleration while transporting. Do not push or pull above the points that are indicated on the module.

Equipment is available that is designed to help you safely handle the power modules. The following equipment is recommended:

- PowerFlex® 750-Series module service cart, catalog number 20-750-MCART1. See the PowerFlex 750-Series Service Cart and DC Precharge Module Life Instructions, publication [750-IN105](#).
- PowerFlex® 750TM power and LCL filter module storage hardware, catalog number 20-750-MINV-ATIP. See the PowerFlex 755TM Power and Filter Module Storage Hardware Installation Instructions, publication [750-IN106](#).
- PowerFlex® 755T power module service ramp, catalog number 20-750-MRAMP1. See the PowerFlex 755T Power Module Service Ramp Instructions, publication [750-IN108](#).

IMPORTANT: The service ramp is used only with power module when the cabinet is mounted directly to the floor. Do not use the ramp to remove LCL filter modules from the cabinet. Review service ramp instructions before using.

Replace the power module with the appropriate catalog number: 20-750-MI4-CnnnDnnn or 20-750-MI4-EnnnFnn. The power module catalog number is included on the nameplate that is on the front of the module as shown in this illustration.

Figure 12. Frame 7 Power Module Nameplate Location



UL LISTED
ND.CONT.
5Q.E99272

UKCA



MSIP-REM-AAA-750-M



Cat No: 20-750-MI4-C30D2302

UL Open Type / IP00 CM Cap Jumper Insulated

CONVERTER RATINGS:

XT

Series: B

	400V Class	480V Class
Power LD/ND/HD	200/160/132 kW	300/250/200 kW
Input:	3 Phase, 50Hz	3 Phase, 60Hz
AC Voltage	400	480
Amps LD/ND/HD	343/282/243	323/271/222
Output:	DC	DC
DC Voltage	580	696
Base Freq. (default)	DC	DC
Cont. Amps LD/ND/HD	394/324/279	371/311/255
60S OL Amps LD/ND/HD	343/356/419	408/342/383
3S OL Amps LD/ND/HD	NA/466/502	NA/467/459
INVERTER RATINGS:		
	540V Class	650V Class
Power LD/ND/HD	200/160/132 kW	300/250/200 HP
Input:	DC	DC
DC Voltage	540	650
Amps LD/ND/HD	423/348/300	399/333/274
Output:	3 Phase, 0-400Hz	3 Phase, 0-400Hz
AC Voltage	0-400	0-460
Base Freq. (default)	50Hz	60Hz
Cont. Amps LD/ND/HD	367/302/260	361/302/248
60S OL Amps LD/ND/HD	404/332/390	397/332/372
3S OL Amps LD/ND/HD	NA/453/468	NA/453/446

240V Supply (Amp): 2.84

24 VDC Supply (Amp): 1.5

Surrounding Air Temp.(°C): 50



PN-S81015

9999 2023/11/29

Original Firmware:



Serial Number: 2110904296

See product literature for additional information

Rockwell Automation

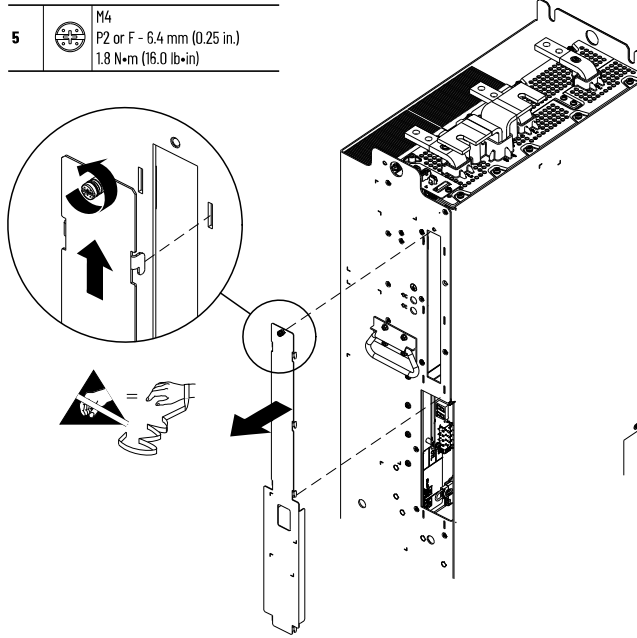
1201 S 2nd St, Milwaukee, WI 53204, USA



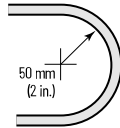
Follow these steps to remove a power module from the enclosure.

1. Review the product advisories in [Before You Begin on page 12.](#)
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85.](#)
5. Loosen the thumbscrew that secures the connection cover to the front of the power module.

6. Use the screw to lift the connections cover up and off the power module chassis.



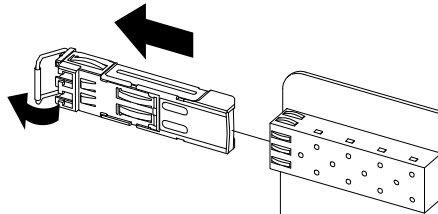
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



7. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cables from the transceiver in the CTL and PDI (if used) ports on the power interface circuit board.

IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

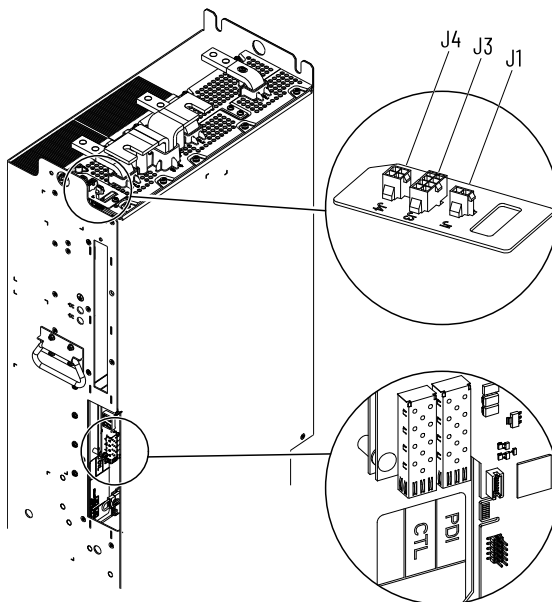
8. Carefully remove the cable from the power module chassis and, observing the minimum bend radius, secure the fiber-optic cable in a protected location.
9. For the CTL and PDI (if used) fiber-optic ports on the power layer interface board, open the transceiver latch and pull the transceiver out of the connector on the board.



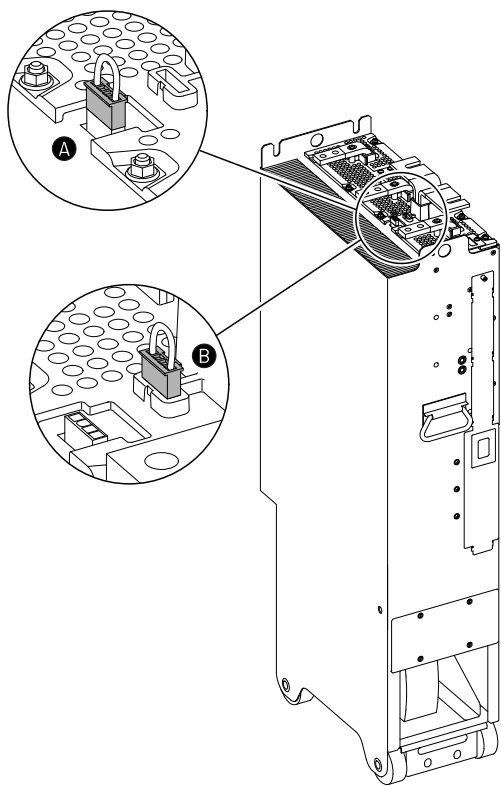
If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver, or other long, narrow tool to open the latch.

IMPORTANT: For line side converter power module replacement, retain the PDI fiber-optic transceiver for reuse. When the power module is removed to replace the power layer interface circuit board only, retain the CTL and PDI (if used) fiber-optic transceivers for reuse. If present, do not remove the protective cover from the PDI fiber-optic port.

10. For line side converter power modules, disconnect the DC fuse wire harness connector P1 from connector J1 on the I/O panel on the power module.
11. For line side converter power modules, disconnect the 24V DC signal wire harness connector P3 from J3 on the I/O panel on the power module.
12. Disconnect the 240V AC and optional 24V DC power supply wire harness connector P4 from J4 on the I/O panel on the power module.



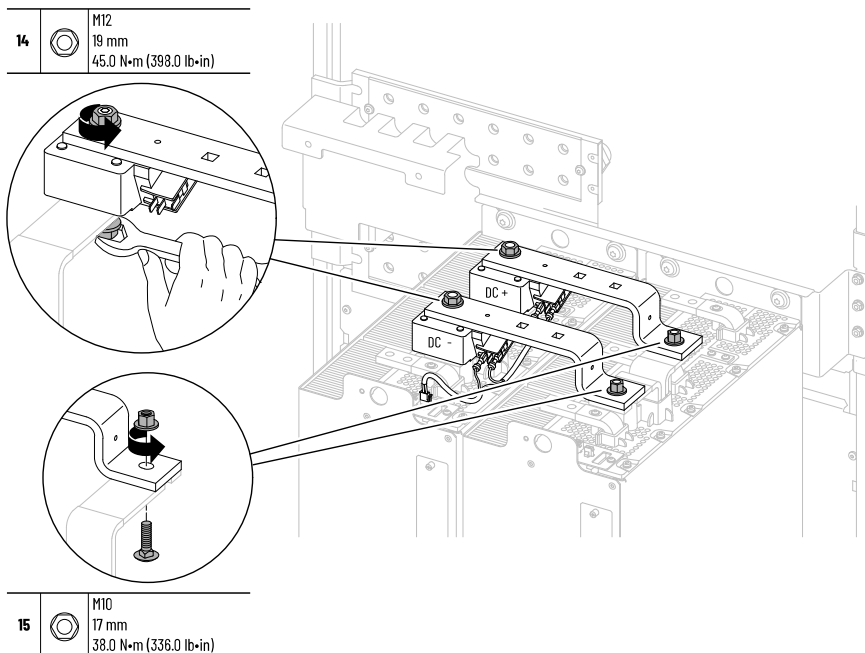
13. Record the position of the DR jumper on the top of the power module. The DR jumper on the new power module must be installed in the same position.



Item	Description
A	DR jumper in the "IN" position
B	DR jumper in the "OUT" position

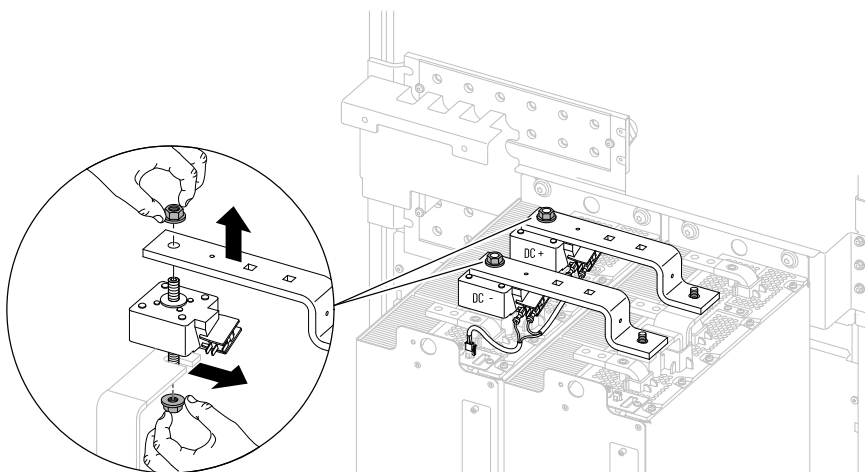
14. Complete the appropriate task for your product:
- For a bus supply, remove the two M12 hexagonal nuts that secure each of the fuses to the connection DC bus bars and DC terminals on the power module and remove the fuses.
 - For a drive, loosen but do not remove the two M12 hexagonal nuts that secure each of the fuses to the connection DC bus bars and DC terminals on the power module.

15. For drives only, remove the M10 hexagonal nut and bolt that secure each of the connection DC bus bars to the DC terminals on the power module.

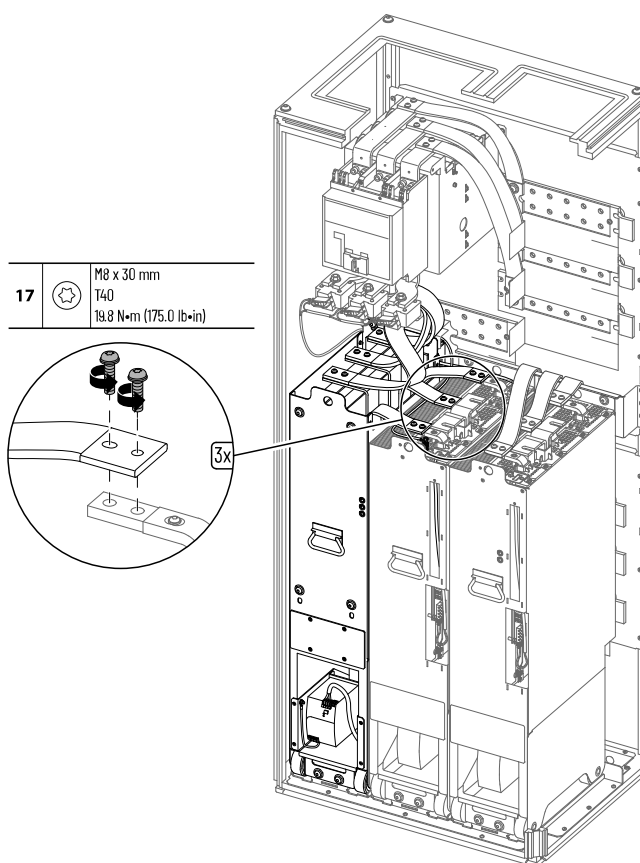


Frame 7 drive shown.

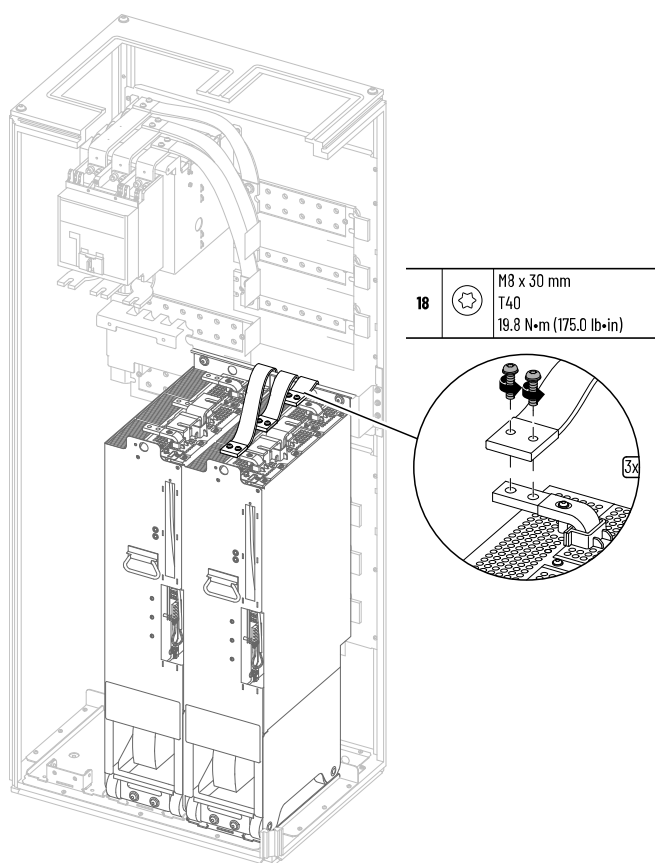
16. For drives only, remove the two M12 hexagonal nuts that secure each of the fuses to the connection DC bus bars and DC terminals on the power module and remove the DC bus bars and fuses.



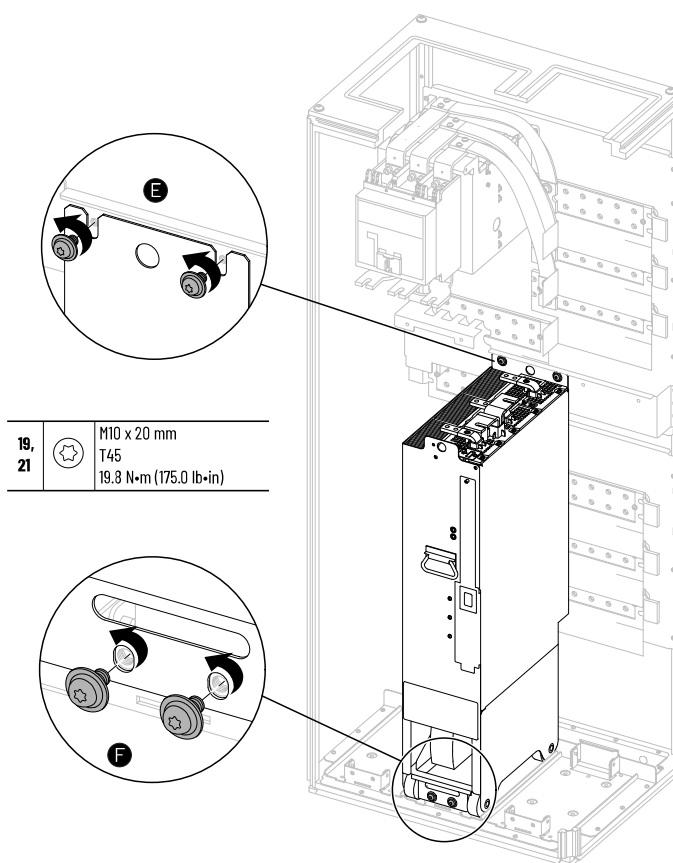
17. For the line side converter power module, remove the six M8 x 30 mm Torx screws that secure the AC input flexible bus bars to the AC input terminals on the power module, and remove the flexible bus bars.



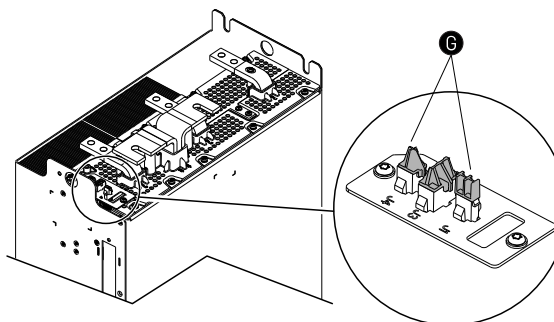
18. For the motor side inverter module, remove the six M8 x 30 mm Torx screws that secure the AC output flexible bus bars to the AC output terminals on the power module, and remove the flexible bus bars.



19. Remove the two M10 x 20 mm Torx screws (E) that secure the upper power module chassis to the module support bracket.
20. While you prepare and secure the PowerFlex® 750-Series service cart or service ramp to the enclosure, leave the two M10 x 20 mm screws that secure the power module chassis to the floor mounting bracket.
21. To release the power module, remove the two remaining M10 screws (F).

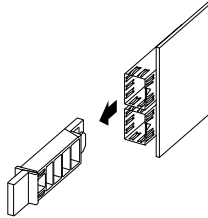


22. On the new power module, verify that the jumper DR is installed in the same position as the old power module.
23. Install the power module into the enclosure in the reverse order of removal.



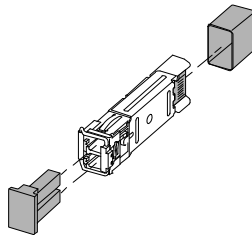
IMPORTANT: For motor side inverter power modules, do not remove the protective covers (G) from connector J3 on the I/O panel and the fiber-optic port PDI on the power layer interface circuit board. Retain protective covers for power and LCL filter modules for reuse. Install protective covers on connectors when a module is removed and stored.

24. Remove the protective covers from the CTL and PDI (if used) fiber-optic ports on the power layer interface circuit board.

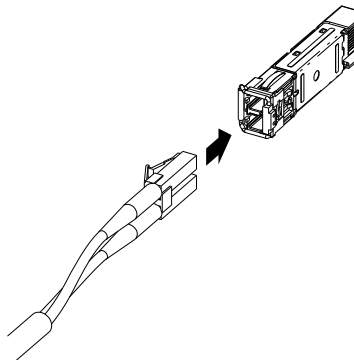


This illustration represents a fiber-optic transceiver port on an example circuit board only.

25. Remove the new transceiver supplied with the kit from the packing materials.
26. Remove the protective covers from the transceiver.

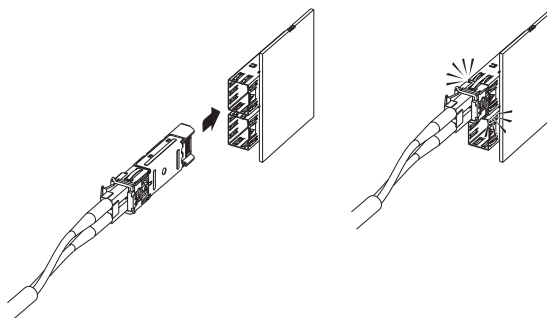


27. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

28. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



Remove and Install the Power Layer Interface Circuit Board for Frame 7

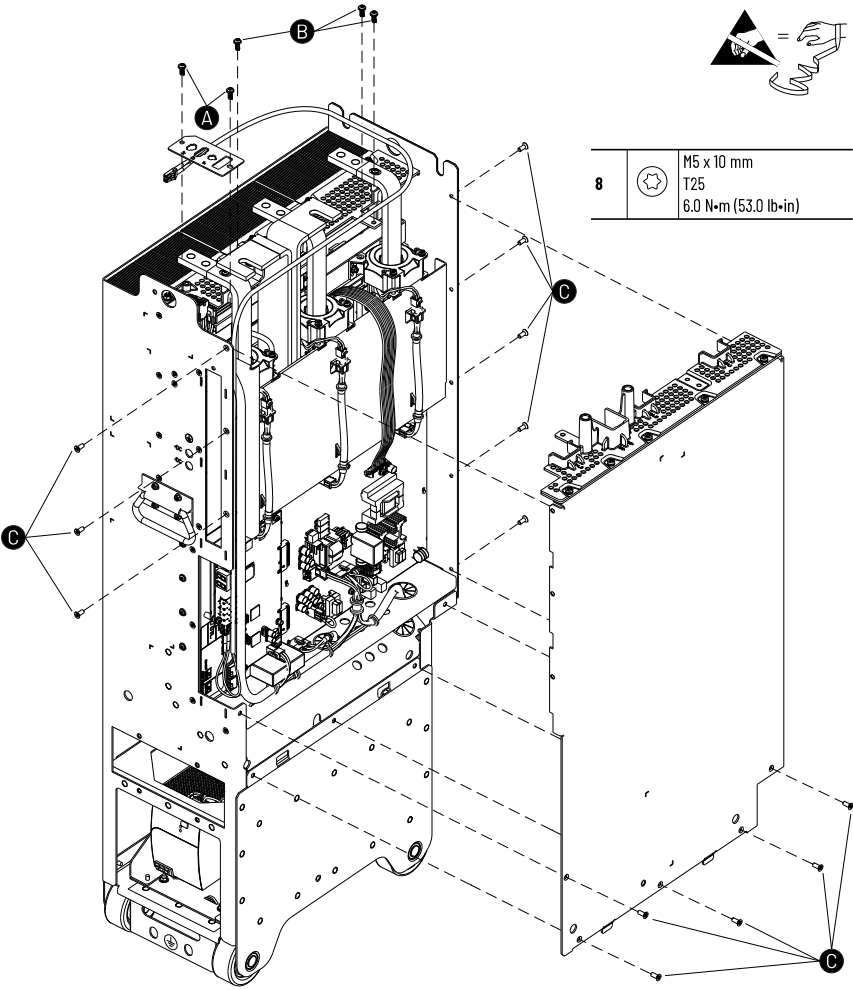
Replace a power layer interface circuit board with kit catalog number SK-RM-PLI1-F8. Follow these steps to remove and install the power layer interface circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Remove the power module from the enclosure. See [Remove and Install a Power Module for Frame 7 on page 105](#).
6. Remove the two M5 x 12 mm Torx screws (A) that secure the I/O connections plate to the top of the power module chassis and remove the panel.
7. Remove the three M5 x 12 mm Torx screws (B) that secure the bus bar support to the right, top side of the power module chassis.
8. Remove the 13 M5 x 10 mm Torx screws (C) that secure the right side cover to the power module and remove the cover.

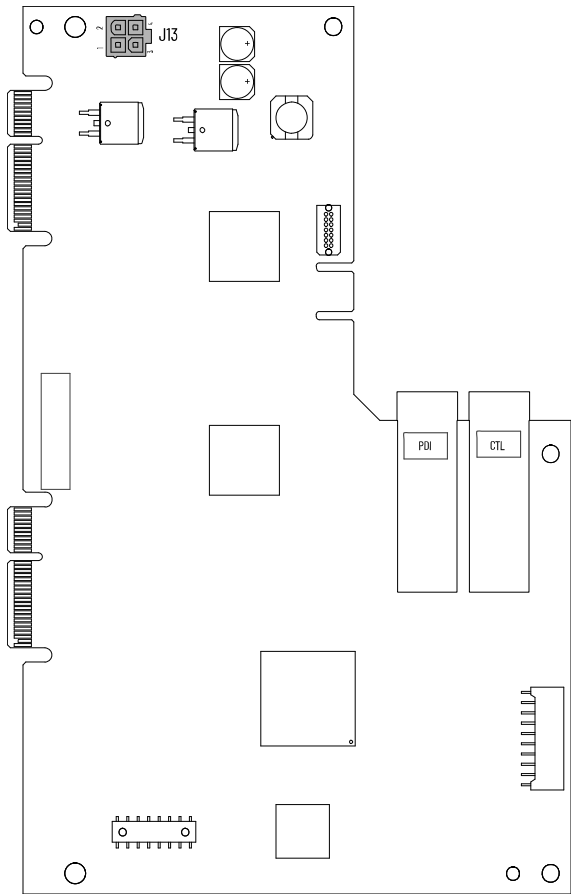
6, 7		M5 x 12 mm
		T25
		2.6 N•m (23.0 lb•in)



8		M5 x 10 mm
		T25
		6.0 N•m (53.0 lb•in)

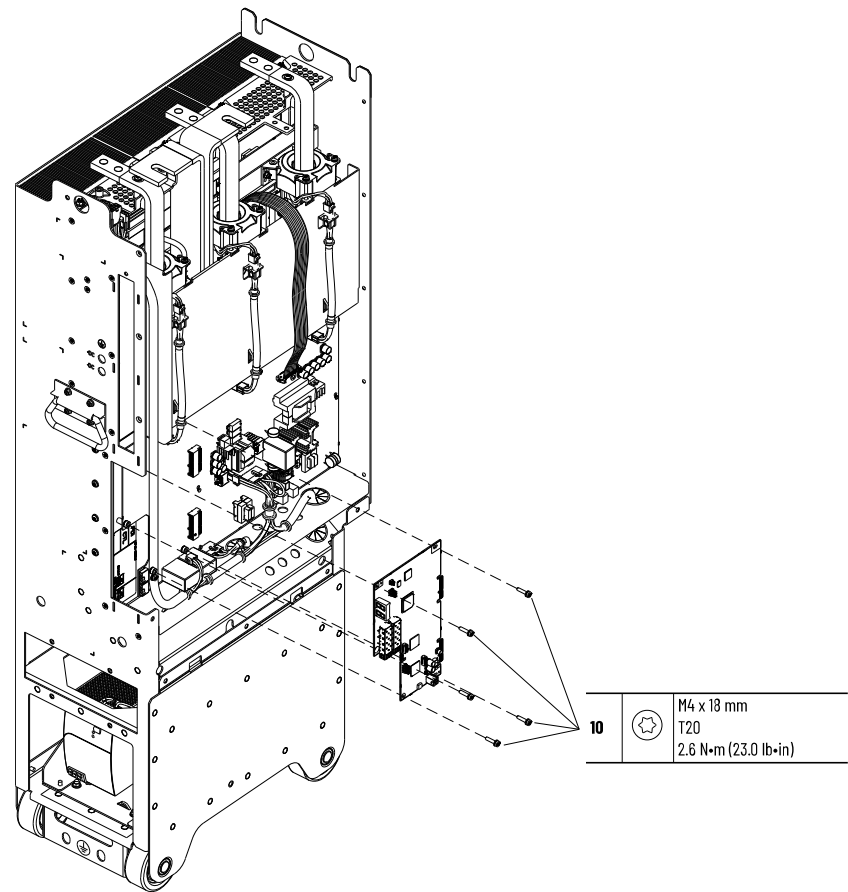


9. Disconnect the cable connector P13 from connector J13 on the power layer interface circuit board.



IMPORTANT: Retain the fiber-optic transceivers installed on the power layer interface circuit board for reuse.

10. Remove the five M4 x 18 mm Torx screws that secure the power layer interface circuit board to the power interface circuit board and remove the board.



11. Install the power layer interface board in the reverse order of removal.

IMPORTANT: If present, do not remove the protective cover from the PDI fiber-optic port on the power layer interface circuit board unless used at the time of installation.

12. Remove the protective cover from connector J13 on the new power layer interface circuit board.
13. Connect the wire harness connector P13 to connector J13 on the power layer interface circuit board.

Remove and Install the Power Interface Circuit Board for Frame 7

Replace the power interface circuit board with the kit catalog number for your power module rating that is identified in this table:

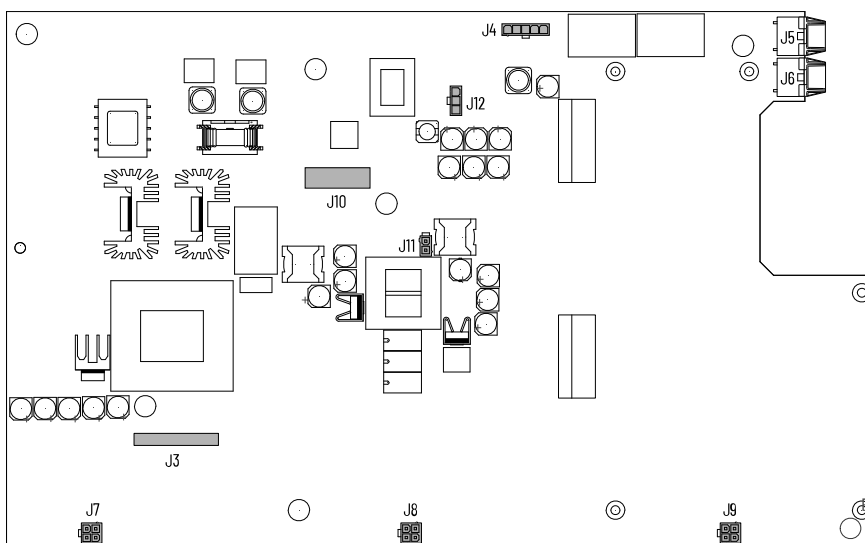
Cat. No.	Power Module Normal Duty Rating
SK-RM-PIB4-C302D302	400V 302 A, 480V 302 A
SK-RM-PIB4-C367D361	400V 367 A, 480V 361 A

Cat. No.	Power Module Normal Duty Rating
SK-RM-PIB4-C460D430	400V 460 A, 480V 430 A
SK-RM-PIB4-C540D505	400V 540 A, 480V 505 A
SK-RM-PIB4-C585D617	400V 585 A, 480V 540 A
SK-RM-PIB4-E192F171	600V 192 A, 690V 171 A
SK-RM-PIB4-E242F215	600V 242 A, 690V 215 A
SK-RM-PIB4-E295F265	600V 295 A, 690V 265 A
SK-RM-PIB4-E355F330	600V 355 A, 690V 330 A
SK-RM-PIB4-E395F370	600V 395 A, 690V 370 A

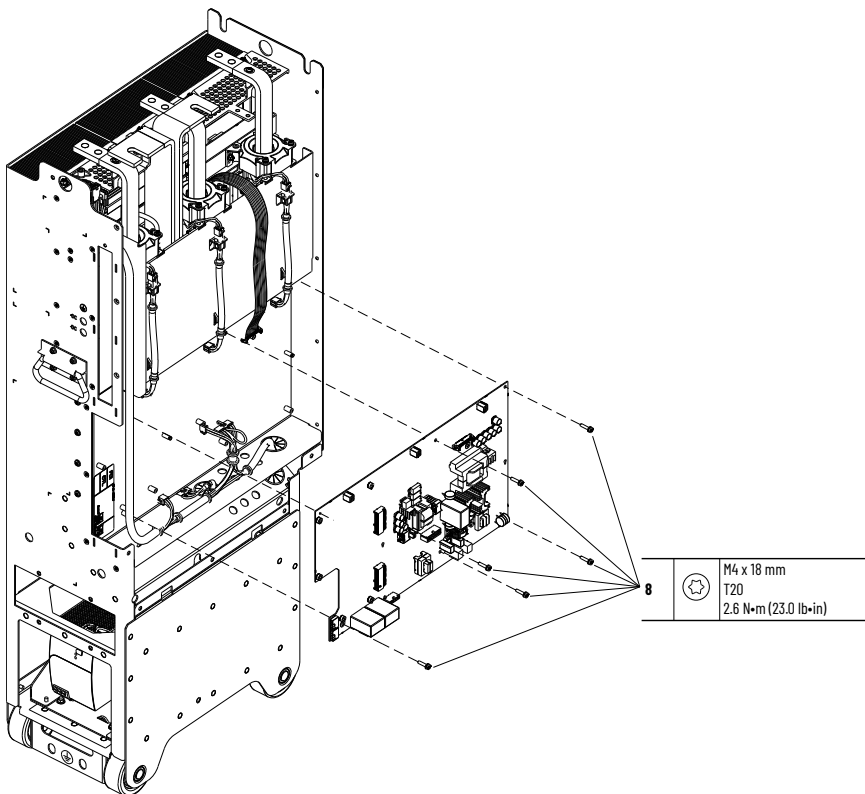
IMPORTANT: The power interface circuit board contains data regarding the power modules predictive maintenance runtime history. Replacing the power interface circuit board erases this data and is not recommended if predictive maintenance data is required for your application.

Follow these steps to remove and install the power interface circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Remove the power module from the enclosure. See [Remove and Install a Power Module for Frame 7 on page 105](#).
6. Remove the power layer interface circuit board from the power module. See [Remove and Install the Power Interface Circuit Board for Frame 7 on page 118](#).
7. Disconnect these cable connectors from the power interface circuit board:
 - P3 from J3
 - P4 from J4
 - P7 from J7
 - P8 from J8
 - P9 from J9
 - P10 from J10
 - P11 from J11



8. Remove the seven M4 x 18 mm Torx screws that secure the power interface circuit board to the EMI shield and remove the board.



9. Install the power interface circuit board in the reverse order of removal.

IMPORTANT: Do not remove the protective covers from connectors J5 and J6 on the power interface circuit board.

Remove and Install the AC Input Link Fuses for Frame 7

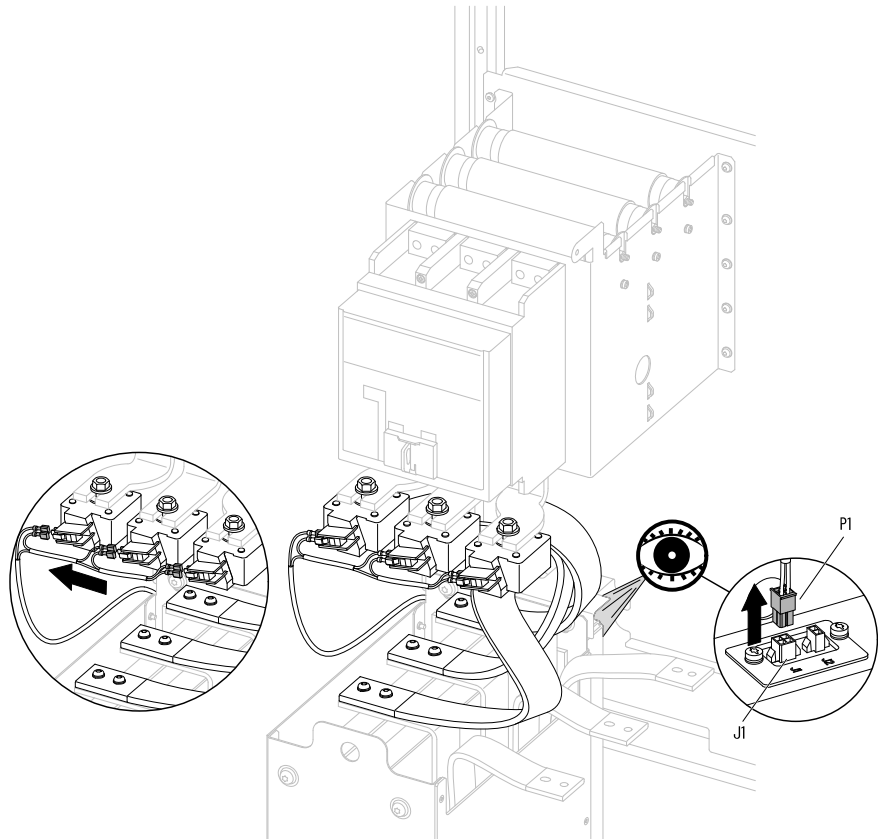
Replace the AC input link fuses with the appropriate kit catalog number based on the LCL filter module that is identified in table:

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuses per Kit	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE1-F8	20-750-ML4-C585D 617	400V/480V	3	690/700V (IEC/U.L.), 900 A	170M6463
SK-RM-ACFUSE5-F8	20-750-ML4-E395F 370	600V/690V	3	690/700V (IEC/U.L.), 700 A	170M6461

All fuses are Bussman Square Body - Flush End Contact -BKN/- Type K Indicator.

Follow these steps to remove and install the AC input link fuses.

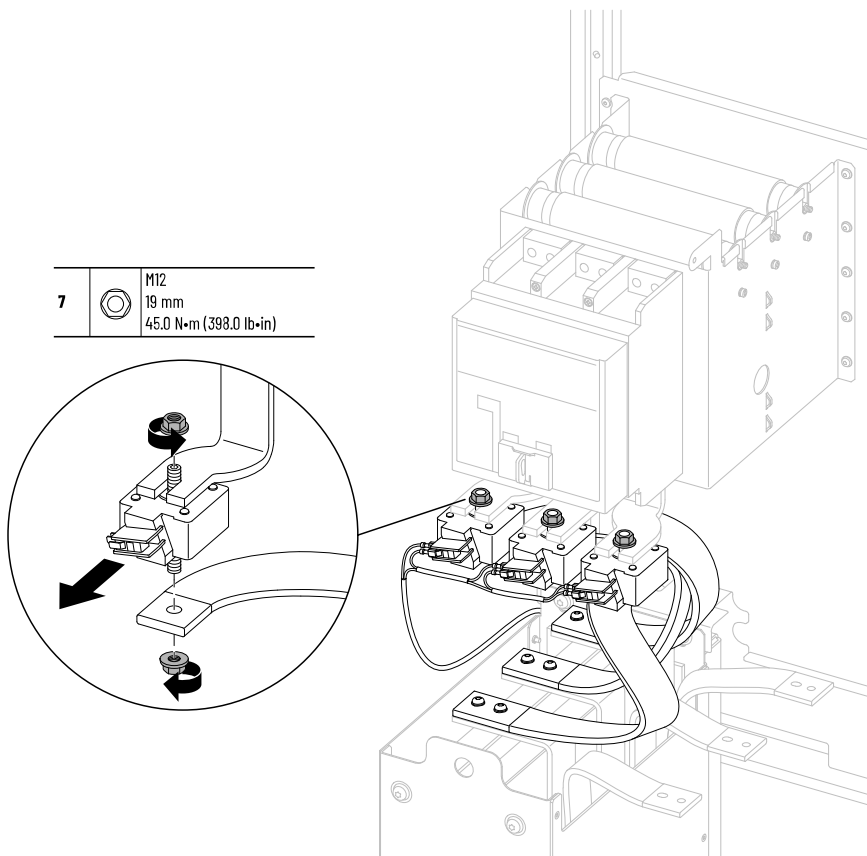
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Disconnect the fuse wire harness connector P1 from J1 on the I/O panel at the back of the LCL filter module.
6. Disconnect the fuse wire harness connectors from the fuse indicator switches and discard the wire harness.



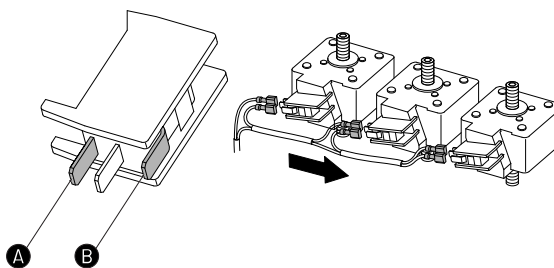


Some components are not shown for clarity only.

7. Remove the two M12 hexagonal screws that secure each fuse terminal to the AC input and output bus bars and remove the fuse.



8. Install the AC input link fuses in the reverse order of removal. Verify that the new fuse wire harness connectors are installed on the outer two terminals (A and B) of the fuse indicator switches.



Remove and Install the LCL Filter Module for Frame 7



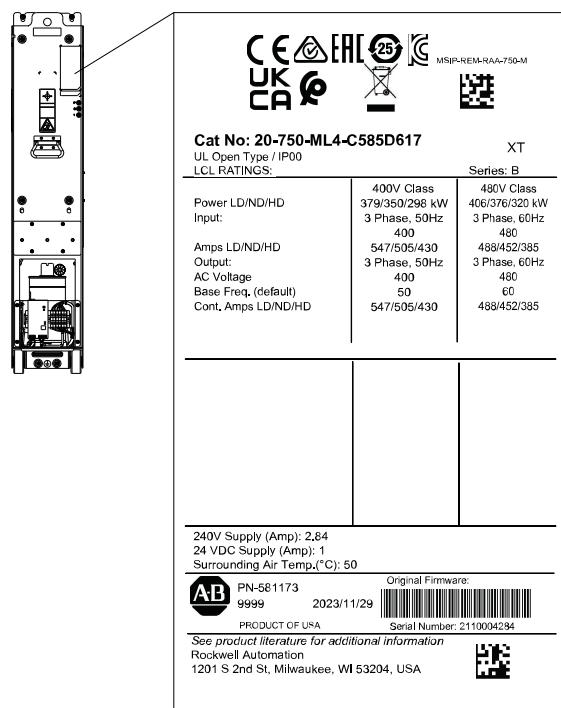
ATTENTION: IGBT power and LCL filter modules have a high center of gravity and a tip-over hazard exists. To guard against death, serious personal injury, or equipment damage, do not subject the module to high rates of acceleration or deceleration while transporting. Do not push or pull above the points that are indicated on the module.

Equipment is available that is designed to help you safely handle the LCL filter modules. The following equipment is recommended:

- PowerFlex® 750-Series module service cart, catalog number 20-750-MCART1. See the PowerFlex 750-Series Service Cart and DC Precharge Module Life Instructions, publication [750-IN105](#).
- PowerFlex® 750TM power and LCL filter module storage hardware, catalog number 20-750-MINV-ATIP. See the PowerFlex 755TM Power and Filter Module Storage Hardware Installation Instructions, publication [750-IN106](#).

Replace the LCL filter module with the appropriate catalog number: 20-750-ML4-CnnnDnnn or 20-750-ML4-EnnnFnnn. The LCL filter module catalog number is included on the nameplate that is on the front of the module as shown in this illustration.

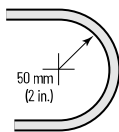
Figure 13. Frame 7 and 7L LCL Filter Module Nameplate Location



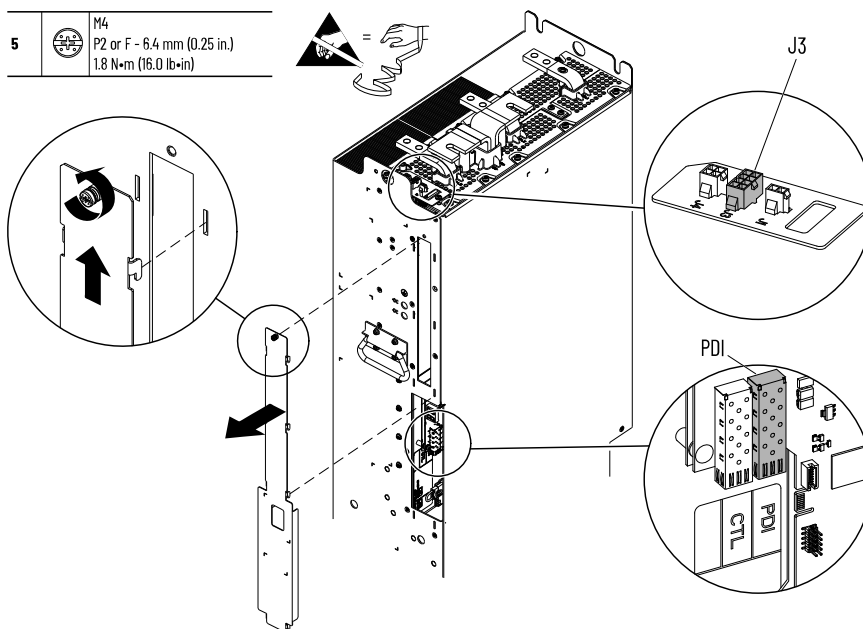
Follow these steps to remove the LCL filter module from the enclosure.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Protective Guard for Frame 7 on page 85](#).
5. Loosen the thumbscrew that secures the connection cover to the front of the line side converter power module.
6. Use the screw to lift the connections cover up and off the power module chassis.

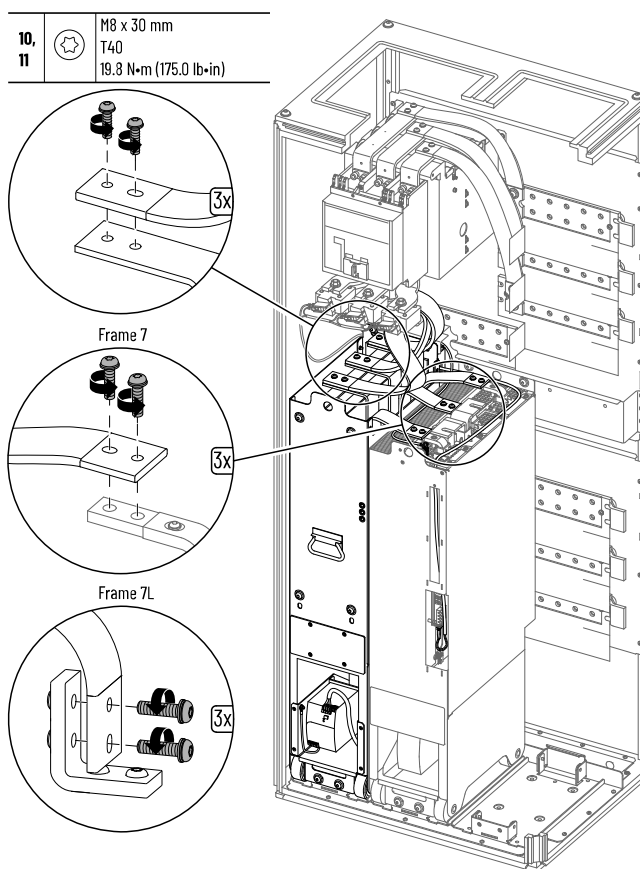
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



7. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the PDI port of the power interface circuit board in the adjoining power module.
8. Carefully remove the cable from the power module chassis and secure the fiber-optic cable in a protected location.
9. Disconnect the 24V DC signal wire harness connector P3 from J3 on the I/O panel in the adjoining power module.



10. Remove the two M8 x 30 mm Torx screws that secure the circuit breaker AC output flexible bus bars to the AC input terminals on the LCL filter and remove the bus bars.
11. Remove the two M8 x 30 mm Torx screws that secure each of the LCL filter AC output flexible bus bars to the AC input terminals on the line side converter power module and remove the bus bars.

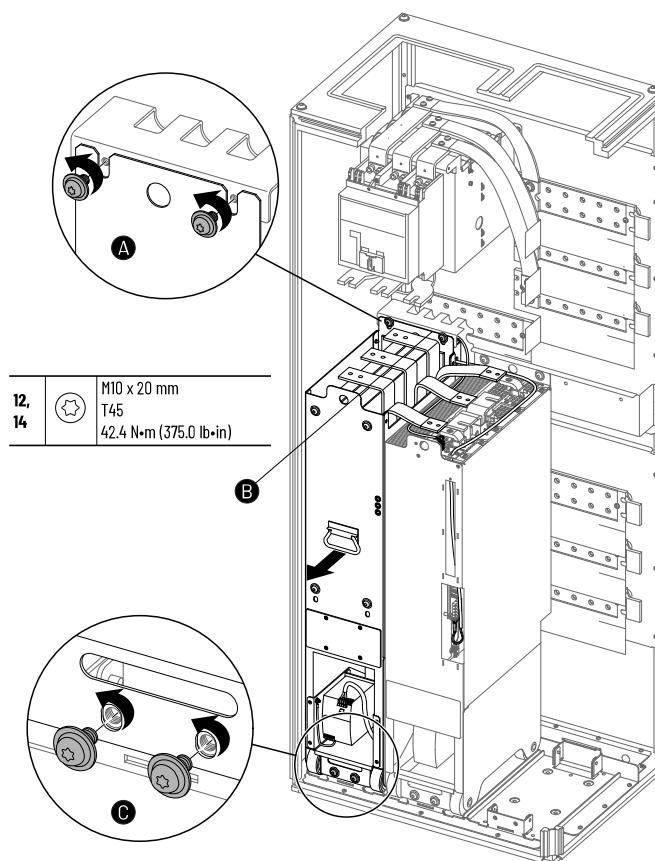


Frame 7 shown.

12. Remove the two M10 x 20 mm Torx screws (A) that secure the upper LCL filter module chassis to the module support bracket.
13. While you prepare and secure the PowerFlex® 750-Series service cart to the enclosure, leave the two M10 x 20 mm screws that secure the LCL filter module chassis to the floor mounting bracket.

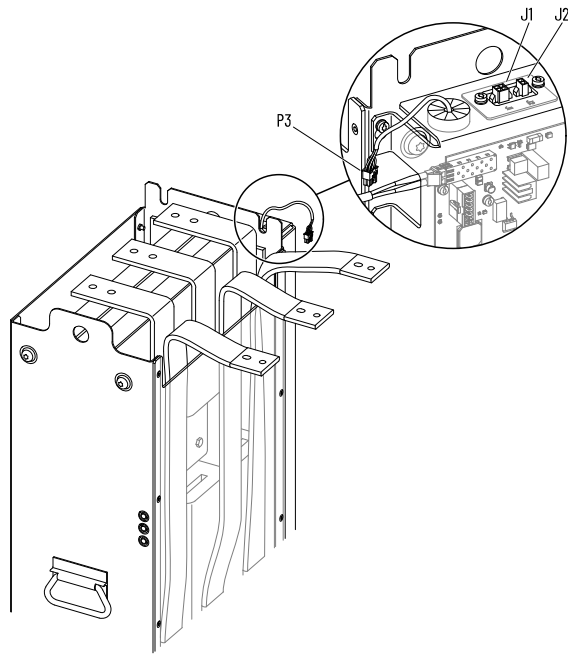
IMPORTANT: The AC fuse wire harness and 240V AC power wire harness connections are on the back of the LCL filter module (B). These connectors must be removed before you can release the module fully from the enclosure.

14. To release the LCL filter module, remove the two remaining M10 screws (C) at the bottom of the module, and pull the module out only as far as necessary to expose the connections at the back of the module.



Frame 7 shown.

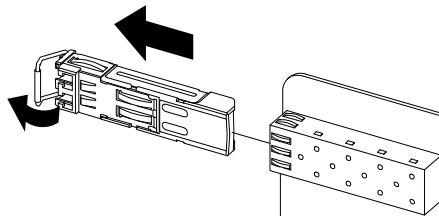
15. Disconnect the AC fuse wire harness connector P1 from connector J1 on the LCL filter I/O panel.
16. Disconnect the 240V AC power wire harness connector P2 from J2 on the LCL filter module I/O panel.



17. Remove the LCL filter module from the enclosure.
18. Install the LCL filter module in the reverse order of removal.
19. Remove the protective cover from wire harness connector P3 when the connection to J3 is made on the line side power module.

IMPORTANT: Retain protective covers for power and LCL filter modules for reuse. Install protective covers on connectors when a module is removed and stored.

20. In the adjoining power module, open the transceiver latch and pull the transceiver out of the PDI fiber-optic port on the power layer interface board.

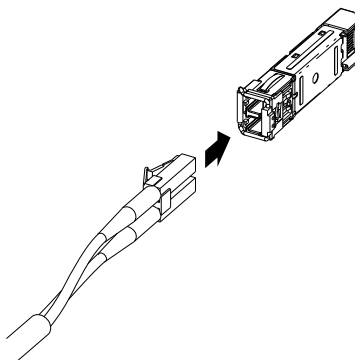


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.



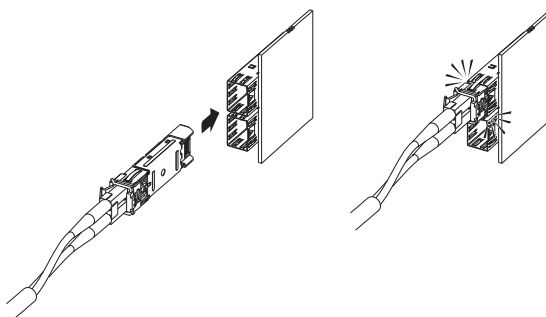
If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver, or other long, narrow tool to open the latch.

21. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



This illustration represents a fiber-optic transceiver port on an example circuit board only.

22. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'

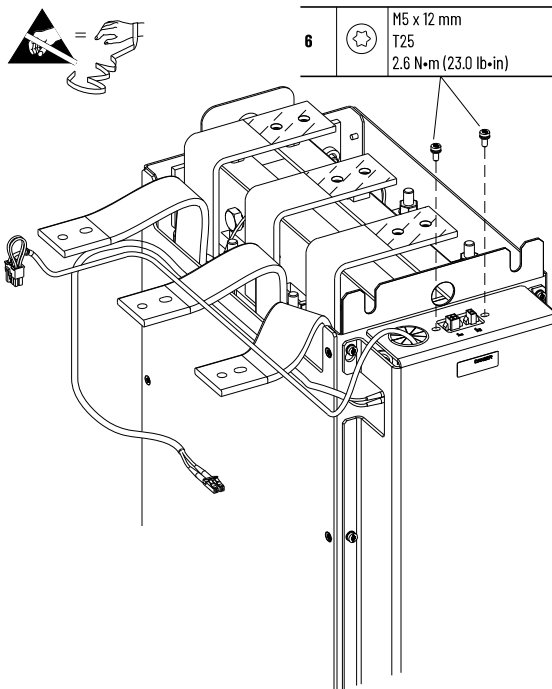


Remove and Install the Current Sense Circuit Board for Frame 7

Replace a current sense circuit board with kit catalog number SK-RM-CSB-F7. Follow these steps to remove and install the current sense circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard.
5. Remove the LCL filter module from the enclosure.

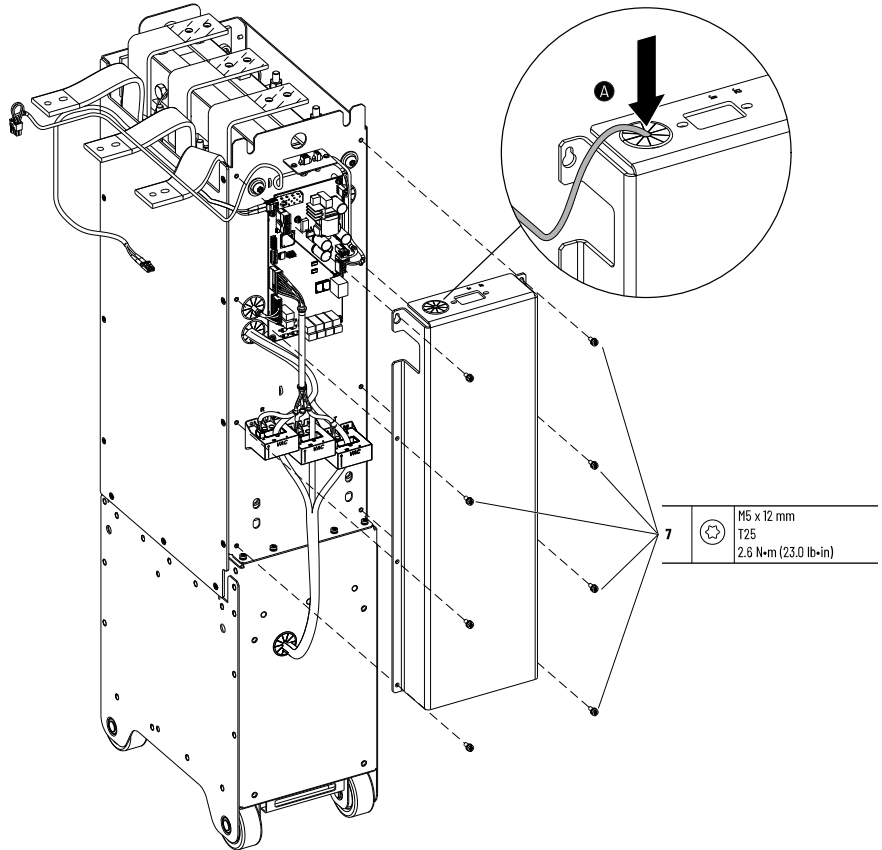
6. Remove the two M5 x 12 mm Torx screws that secure the J1 and J2 connector mounting plate to the protective cover on the back of the LCL filter module.



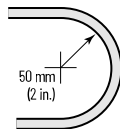


The 24V DC control power wire harness is routed through a grommet in the protective cover. You cannot remove the cover until the wire harness is pulled through the back side of the grommet.

7. Remove the eight M5 x 12 mm Torx screws that secure the protective cover to the LCL filter module chassis and remove the cover partially from the module.
8. To release the protective cover from the module fully, route the 24V DC control power supply wire harness (A) and connector P3 through the grommet on the cover.

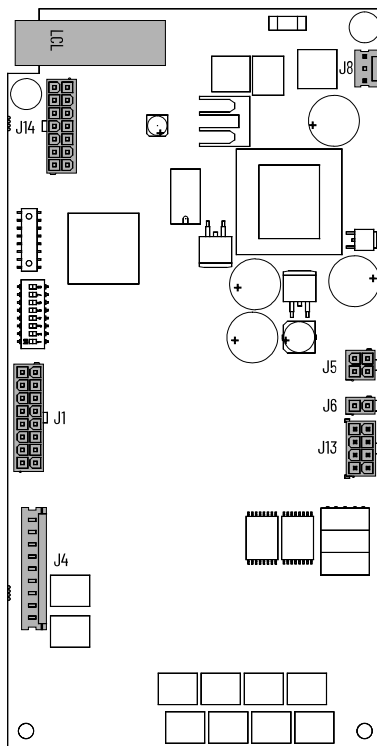


IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.

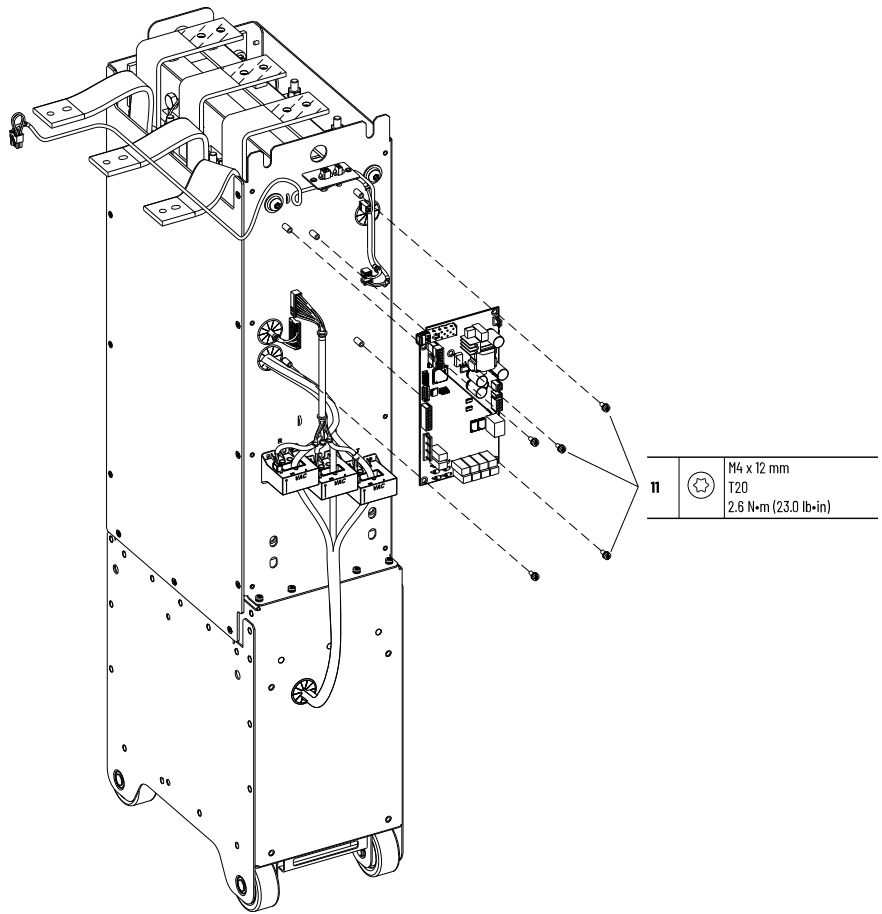


9. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the LCL port on the current sense circuit board.
10. Disconnect these connectors from the current sense circuit board:
 - P1 from J1
 - P4 from J4
 - P5 from J5
 - P6 from J6
 - P8 from J8

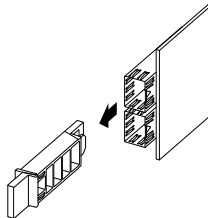
- P13 from J13
- P14 from J14 (this connector must be reused to maintain the rating of the LCL filter module)



11. Remove the five M4 x 12 mm Torx screws that secure the current sense circuit board to the chassis and remove the board.

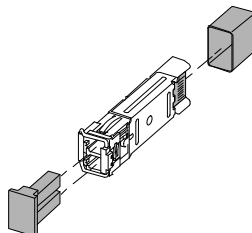


12. Install the current sense circuit board in the reverse order of removal.
13. Remove the protective cover from the LCL port on the new current sense circuit board. This illustration represents a fiber-optic transceiver port on an example circuit board only.



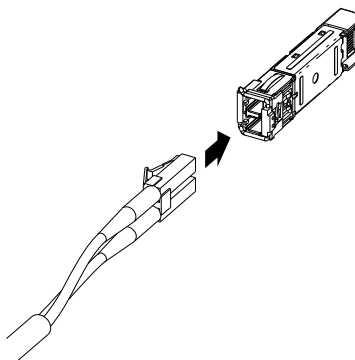
This illustration represents a fiber-optic transceiver port on an example circuit board only.

14. Remove the new transceiver supplied with the kit from the packing materials.
15. Remove the protective covers from the transceiver.

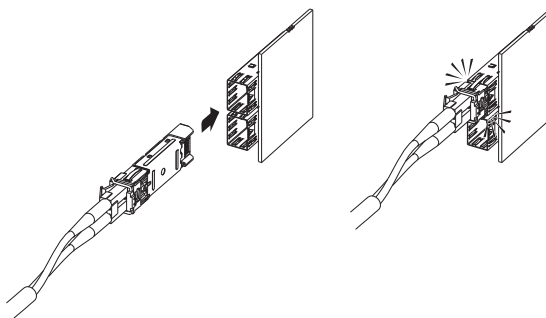


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

16. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



17. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



Frames 8...15 Control Bay and Control Pod Kits

This table lists the renewal kits available for the control bay and control pod for frames 8...15. (XT) appears in the description column in the table to identify a kit that contains protective covers and/or dielectric grease on connectors. (Standard) appears in the table title to identify a kit that does not contain protective covers or dielectric grease on connectors.

Table 24. Control Bay Ventilation Renewal Kits

Cat. No.	Description	Notes	Item in Figure
SK-RM-IBFAN-54FLTR1	IP21/IP54 Roof Vent Filter	—	A
SK-RM-IBFAN1-F8	IP21/IP54 Roof Vent Fan	—	B
SK-RM-CB3DR-FLTR1	IP21/IP54, 300 mm Wide Door Vent Filter	—	C

Figure 14. Control Bay Ventilation Kits Identification

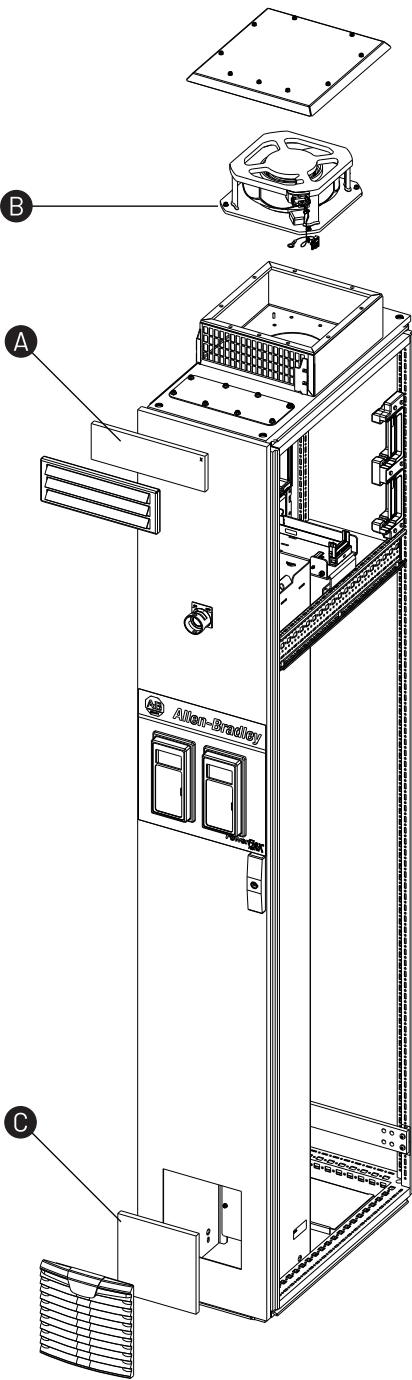


Table 25. Control Pod (XT) Renewal Kits

Cat. No.	Description	Notes	Item in Figure
SK-RM-CR1	Control Pod HIM Cradle with DPI™ Connector	—	D
SK-RM-MCB2-PF755	Main Control Circuit Board, Regenerative/Low Harmonic/Inverter	This catalog number supports PowerFlex® 755T firmware revisions 10.001 and later only. Use this renewal kit with	E

Table 25. Control Pod (XT) Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
		PowerFlex® 755T products with an "E" in catalog number position 4.	
SK-RM-PODBP1	Control Pod Backplane Circuit Board	—	F
SK-RM-FTR1-F8-XT	Fiber optic transceiver	—	—
20-750-MFTB1-F8	Fiber Transceiver Circuit Board	—	G
SK-RM-FIB1-F8	Fiber-optic Interface Circuit Board, Regenerative, and Low Harmonic	—	H
SK-RM-FIB2-F8	Fiber-optic Interface Circuit Board, Low Harmonic	—	H
SK-RM-PODFAN1-F8	Printed Circuit Board Fan Assembly	—	I
20-750-MCP0D3-F8M	Control Pod Assembly, Regenerative, and Low Harmonic	This catalog number supports PowerFlex® 755T firmware revisions 10.001 and later only. Use this renewal kit with PowerFlex® 755T products with an "E" in catalog number position 4.	—
20-750-MCP0D4-F8M	Control Pod Assembly, Low Harmonic	—	—

Table 26. Control Pod (Standard) Renewal Kits

Cat. No.	Description	Notes	Item in Figure
SK-RM-MCB1-PF755	Main Control Circuit Board, Regenerative/Low Harmonic/Inverter	This kit catalog number supports PowerFlex® 755T firmware revisions 6.005 and earlier only. Use this renewal kit with PowerFlex® 755T products with a "T" in catalog number position 4.	E
20-750-MCP0D1-F8M	Control Pod Assembly, Regenerative, and Low Harmonic	This kit catalog number supports PowerFlex® 755T firmware revisions 6.005 and earlier only. Use this renewal kit with PowerFlex® 755T	—

Table 26. Control Pod (Standard) Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
		products with a "T" in catalog number position 4.	
20-750-MCP0D2-F8M	Control Pod Assembly, Low Harmonic	This kit catalog number supports PowerFlex® 755T firmware revisions 6.005 and earlier only. Use this renewal kit with PowerFlex® 755T products with a "T" in catalog number position 4.	—

Figure 15. Control Pod Assembly Kits Identification (XT Shown)

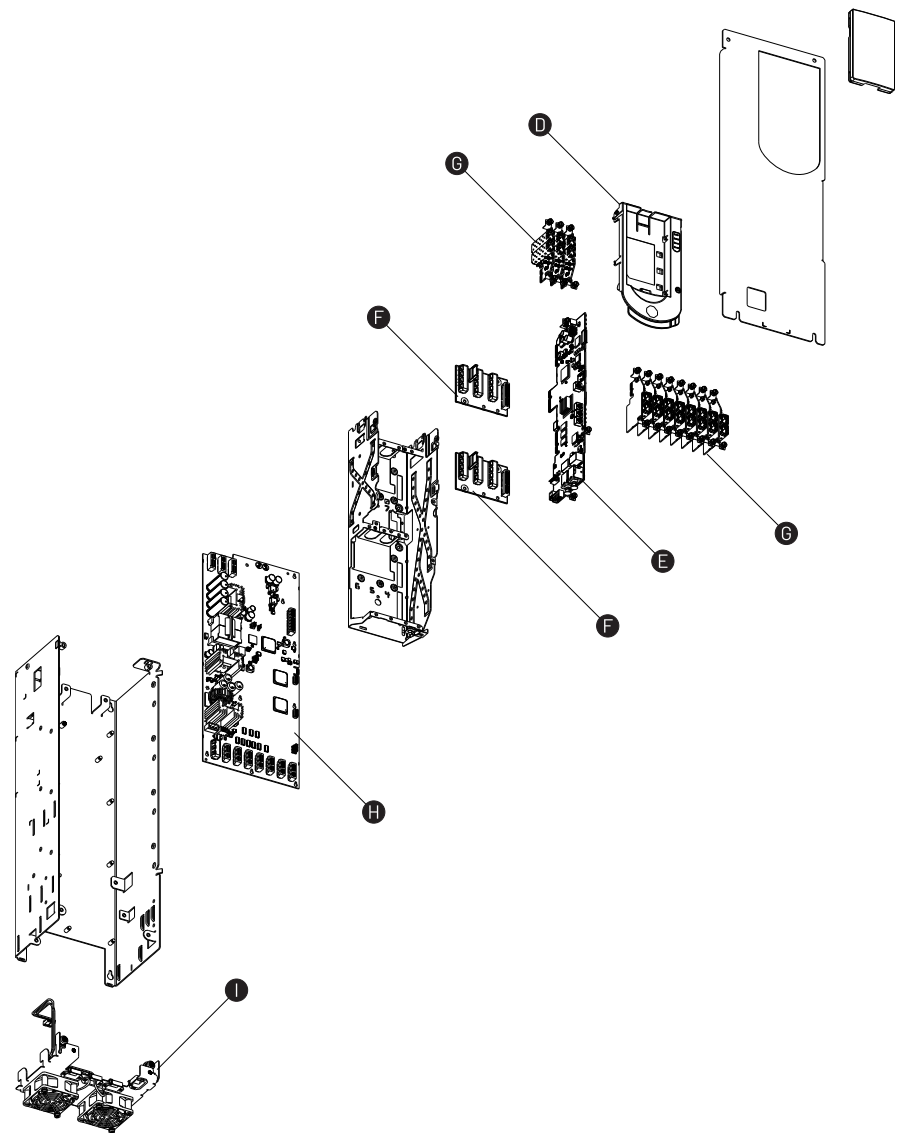
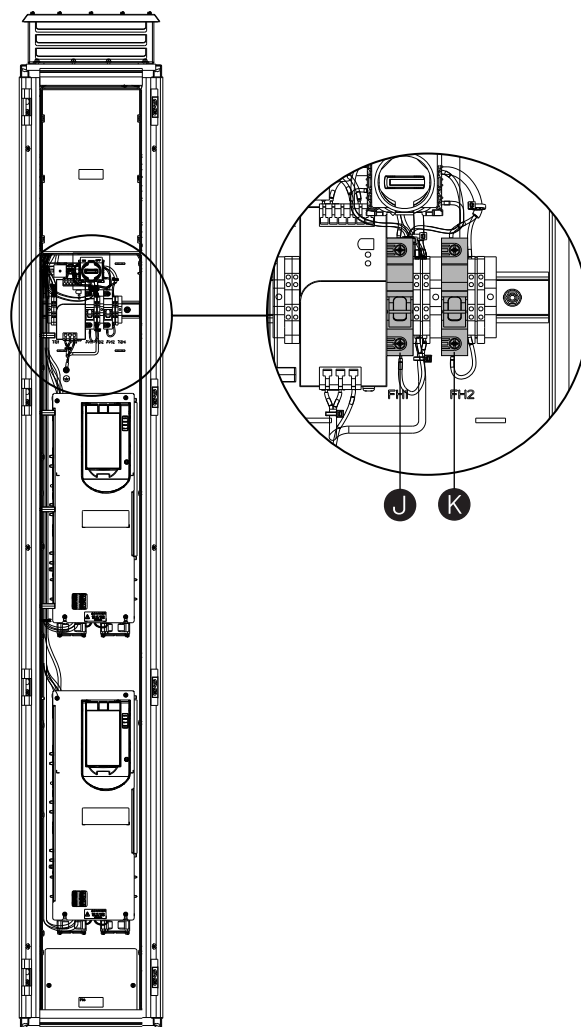


Table 27. Control Power Renewal Kits

Cat. No.	Description	Notes	Item in Figure
SK-RM-IBFH3-FUSE3x-Fn	Roof Fan 240V Control Power Fuse (FH1)	This kit contains one fuse. Kit catalog numbers vary based on the product frame size and voltage class. See the control bay roof fan 240V control power fuse replacement procedure for product frame size, voltage class, and kit compatibility.	J
SK-RM-IBFH2-FUSE2x-Fn	240V Power Distribution Fuse (FH2)	This kit contains one fuse. Kit catalog numbers vary based on the product frame size, voltage class, and IP rating. See the control bay 240V power distribution fuse replacement procedure for product frame size, voltage class, IP rating, and kit compatibility.	K

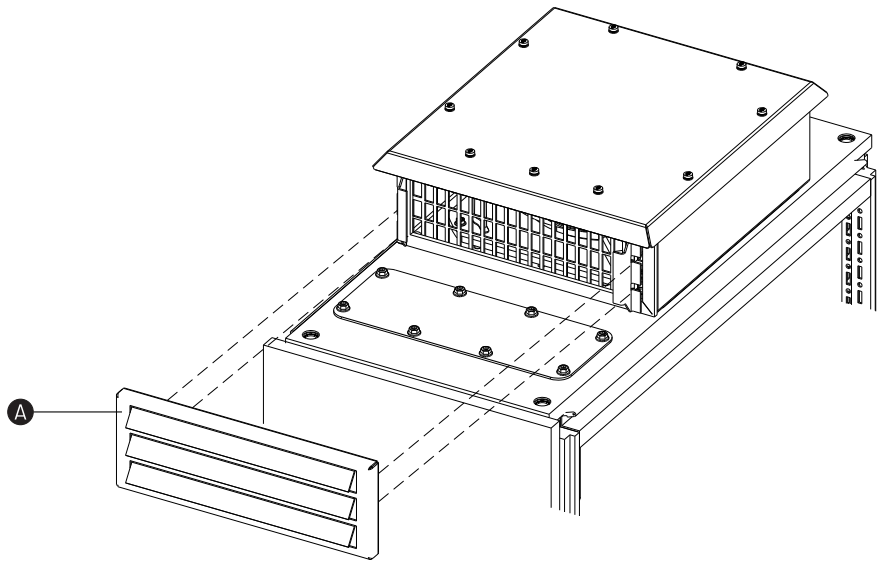
Figure 16. Control Bay Fuse Kits Identification



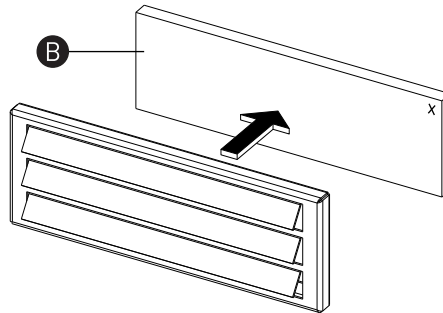
Remove and Install the IP21/IP54 Roof Vent Filter for Frames 8...15

Replace an IP21/IP54 roof vent filter on a control or input bay with kit catalog number SK-RM-IBFAN-54FLTR1. Follow these steps to remove and install the IP21/IP54 roof vent filter.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Slide the vent cover (A) up to release the tabs from the slots in the vent assembly and remove the vent.



4. Remove the filter (B) from the vent cover.



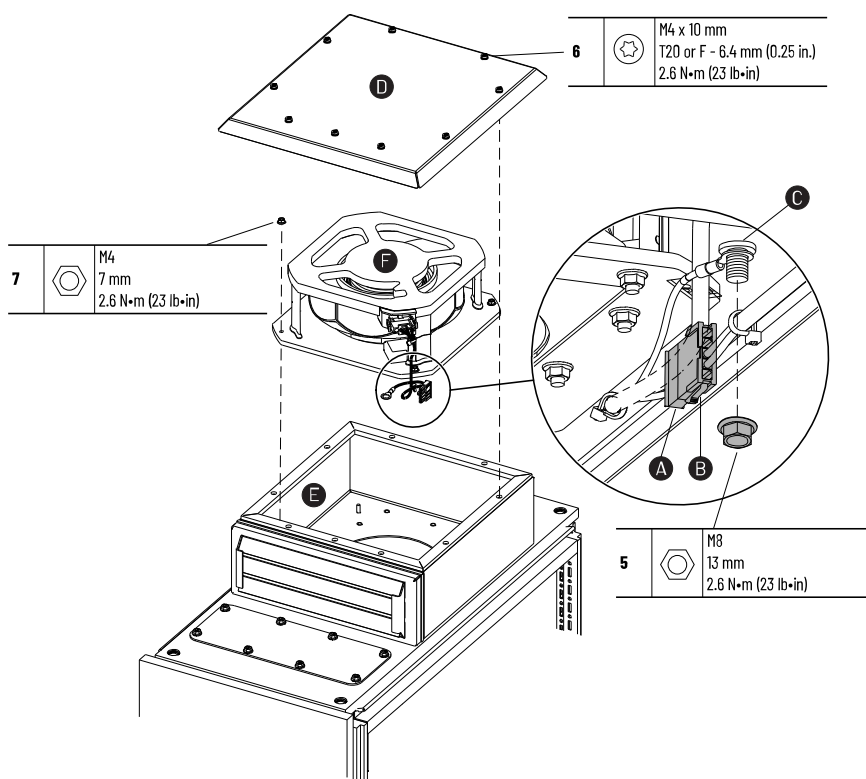
IMPORTANT: For installation of the new filter, verify that the 'X' on the filter media is on the side that faces toward the roof vent (A).

5. Install the IP21/IP54 roof vent filter in the reverse order of removal.

Remove and Install the IP21/IP54 Roof Vent Fan for Frames 8...15

Replace an IP21/IP54 roof vent fan on a control or input bay with kit catalog number SK-RM-IBFAN1-F8. Follow these steps to remove and install the IP21/IP54 roof vent fan.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the control bay or input bay enclosure door.
4. Disconnect the fan P2 connector (A) from connector P12 (B) on the inside of the enclosure.
5. Remove the M8 hex nut and washer that secure the ground wire (C) to the inside of the enclosure roof and remove the wire.
6. Remove the nine M4 x 10 mm slotted-Torx screws that secure the vent cover (D) to the top of the vent assembly and remove the cover.
7. Remove the four M4 hex nuts that secure the fan assembly to the vent (E).
8. Lift the side of the fan (F) opposite from the connector and, while holding the fan at an angle to the housing, remove the fan.

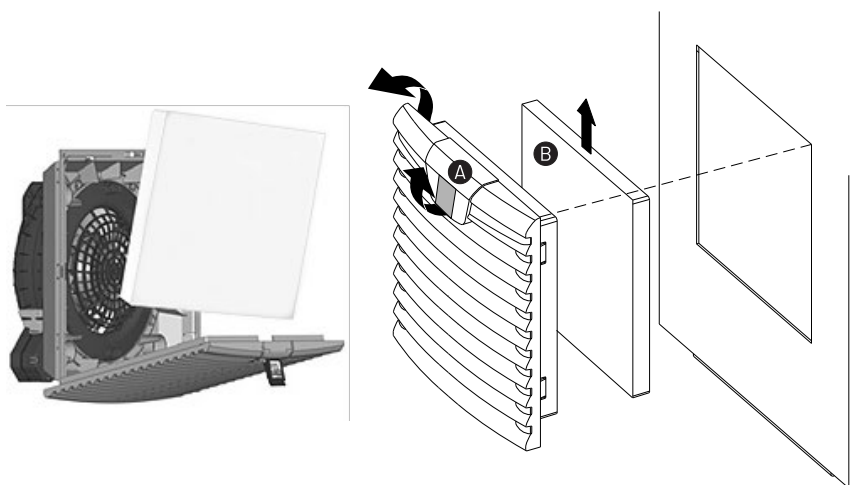


9. Install the IP21/IP54 roof vent fan in the reverse order of removal.

Remove and Install the IP21/IP54 Door Vent Filter for Frames 8...15

Replace an IP21/IP54 door vent filter with kit catalog number SK-RM-CB3DR-FLTR1. Follow these steps to remove and install the IP21/IP54 door vent filter.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the control bay enclosure door.
4. Lift the tab (A) on the top center of the vent cover and lower the cover.
5. Remove the filter media (B) from the vent.



IMPORTANT: For installation of the new filter, verify that the Rittal logo on the fiber filter media points inward, toward the interior of the enclosure.

6. Install the IP21/IP54 door vent filter in the reverse order of removal.

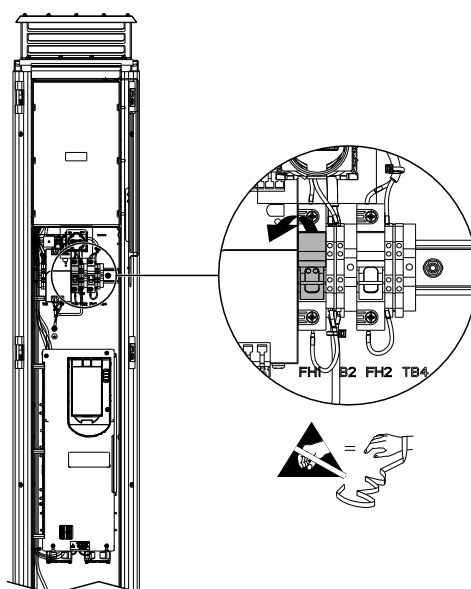
Remove and Install the Control Bay Roof Fan 240V Control Power Fuse (FH1) for Frames 8...15

Replace the control bay roof fan 240V control power fuse (labeled FH1) with the appropriate kit catalog number that is identified in this table (each kit contains one fuse):

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Frame Size	Required Fuse Quantity
SK-RM-IBFH3-FUSE3B-F8	400V/480V/600V	2	IP21/IP54	8 and 9	1
SK-RM-IBFH3-FUSE3A-F8	690V	2	IP21/IP54	8 and 9	1
SK-RM-IBFH3-FUSE3D-F10	400V/480V/600V	4	IP21/IP54	10...12	4
SK-RM-IBFH3-FUSE3D-F10	400V/480V/600V	4	IP21/IP54	13...15	4
SK-RM-IBFH3-FUSE3C-F10	690V	4	IP21/IP54	10...12	4
SK-RM-IBFH3-FUSE3C-F10	690V	4	IP21/IP54	13...15	4

The roof fan 240V control power fuse holder (labeled FH1) is on the control panel in the control bay. Follow these steps to remove and replace the roof fan 240V control power fuse.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Pull out on the tab at the top of the fuse holder and remove the fuse.



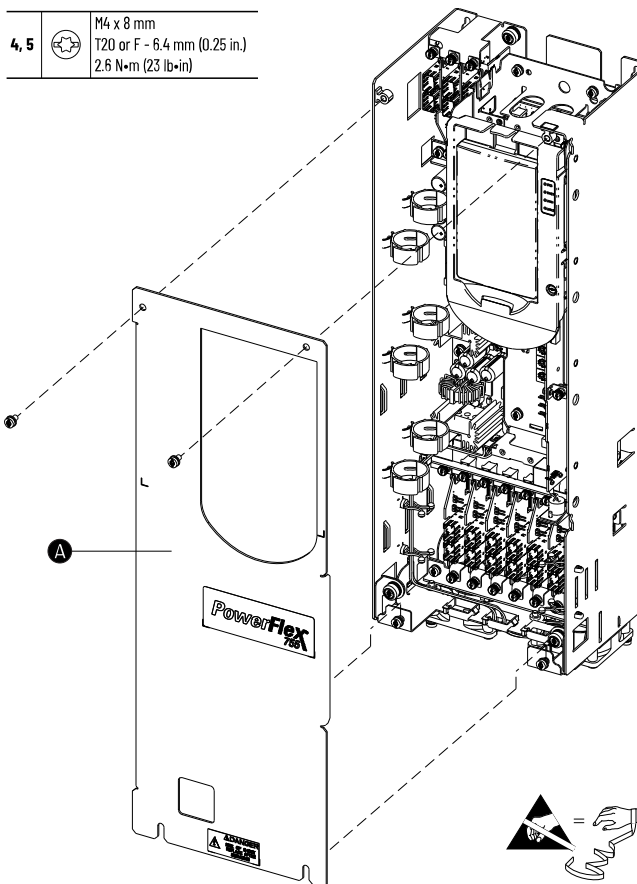
5. Install the roof fan 240V control power fuse in the reverse order of removal.

Remove and Install the Control Pod Cover for Frames 8...15

You must remove the control pod cover to access other components inside the pod. Follow these steps to remove and install the control pod cover.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Loosen, but do not remove, the bottom two M4 x 8 mm slotted-Torx screws that secure the cover (A) to the assembly.

5. Remove the top two M4 x 8 mm slotted-Torx screws that secure the cover to the assembly and remove the cover.



The control pod is shown separated from the enclosure to clarify the instructions only.

6. Install the control pod cover in the reverse order of removal.

Remove and Install the Control Pod HIM Cradle with DPI Connector (XT) for Frames 8...15

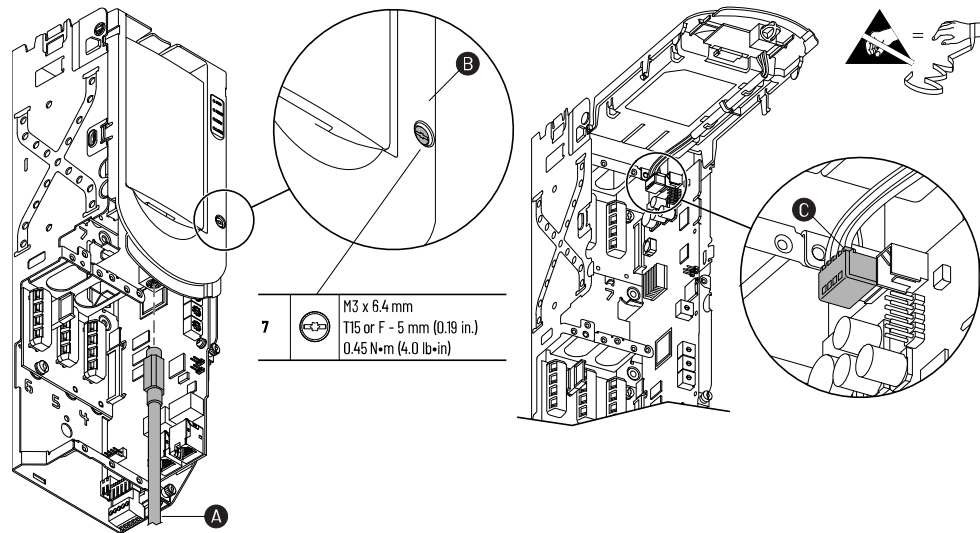
Replace the control pod HIM cradle with DPI™ connector with kit catalog number SK-RM-CR1. Follow these steps to remove and install the control pod HIM cradle with DPI™ connector.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 143](#).
5. If a HIM is installed in the HIM cradle, remove the HIM.
6. If used, disconnect the DPI™ cable (A) from the connector (Port 2) on the bottom of the HIM cradle.



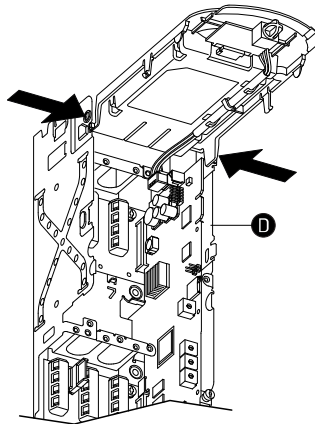
If a cable is not connected to the DPI™ port on the human interface module (HIM) cradle, be sure to leave the protective cover installed.

7. Loosen the screw that secures the HIM cradle (B) to the pod chassis and rotate the cradle up to a 90° horizontal position.
8. Disconnect the terminal block (C) for the HIM wire harness from the connector on the main control board.



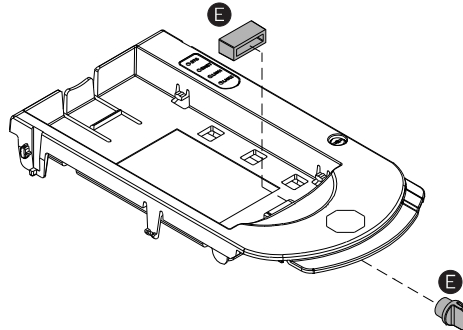
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

9. Press in on the tabs at the top of the HIM cradle where it connects to the control pod chassis (D) to release the cradle from the chassis.



IMPORTANT: Do not remove protective covers (E) from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

10. Install the control pod HIM cradle with DPI™ connector in the reverse order of removal.



Remove and Install the Main Control Circuit Board (XT) for Frames 8...15

Replace a main control circuit board with kit catalog number SK-RM-MCB2-PF755. Follow these steps to remove and install the main control circuit board with XT.

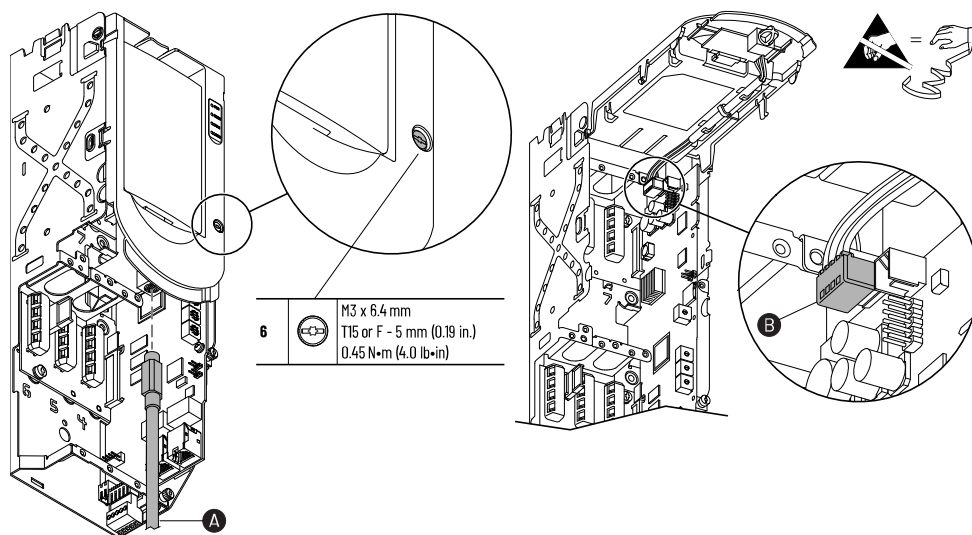
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 143](#).
5. If used, disconnect the DPI™ cable (A) from the connector (Port 2) on the bottom of the human interface module (HIM) cradle.



If a cable is not connected to the DPI™ port on the HIM cradle, be sure to leave the protective cover installed.

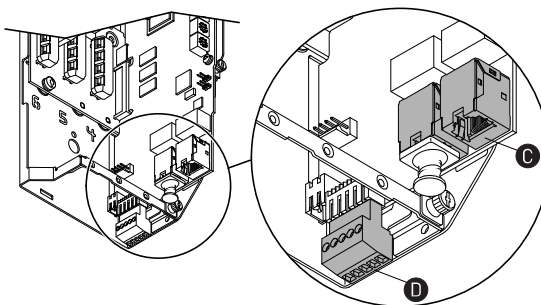
6. Loosen the screw that secures the HIM cradle to the pod chassis, and rotate the cradle up to a 90° horizontal position.
7. If necessary, disconnect and remove any option modules, to provide access to the main control circuit board. Reinstallation of option modules is the same as the main control circuit board.

8. Disconnect the terminal block (B) for the HIM wire harness from the connector on the main control board.



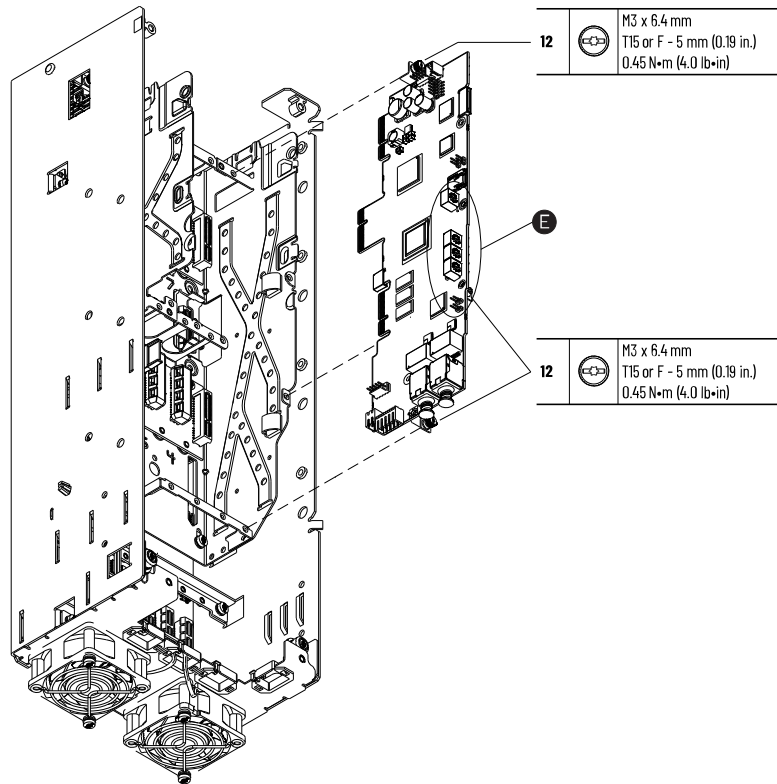
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

9. Disconnect any Ethernet cables from the Ethernet ports (C) on the bottom of the main control board.
10. Disconnect the plug-in terminal block (D) from the TB1 connector on the bottom of the main control board.



11. Record any settings that are made on these main control board selectors or jumpers (E):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper

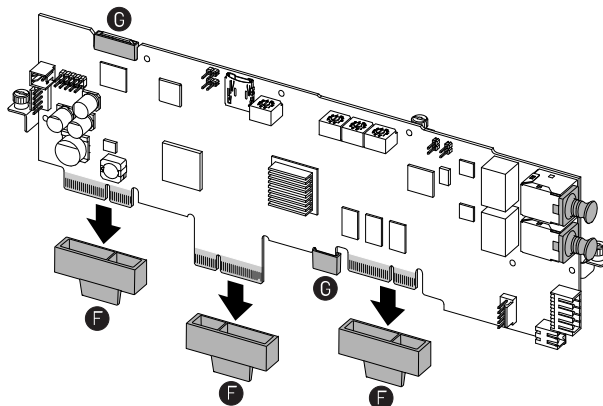
12. Loosen the three captive thumbscrews that secure the main control board to the pod chassis and remove the board.



The HIM cradle is not shown for clarity only.

IMPORTANT: Circuit boards that are contained in renewal kits with XT contain dielectric grease on the edge connectors, where present. Do not touch or remove the grease from circuit board edge connectors. A non-greased connector can lead to corrosion. If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\) on page 26](#).

13. On the new main control circuit board, for each protective cover, hold the tab (F) on the cover and carefully remove the cover from the edge connector on the circuit board. Do not touch the edge connector.



IMPORTANT: Do not remove these protective covers (G); for factory use only.

14. Install the main control circuit board in the reverse order of removal.
15. Make any necessary changes to the settings on these main control board selectors or jumpers:
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
16. Install any option modules in the reverse order of removal.

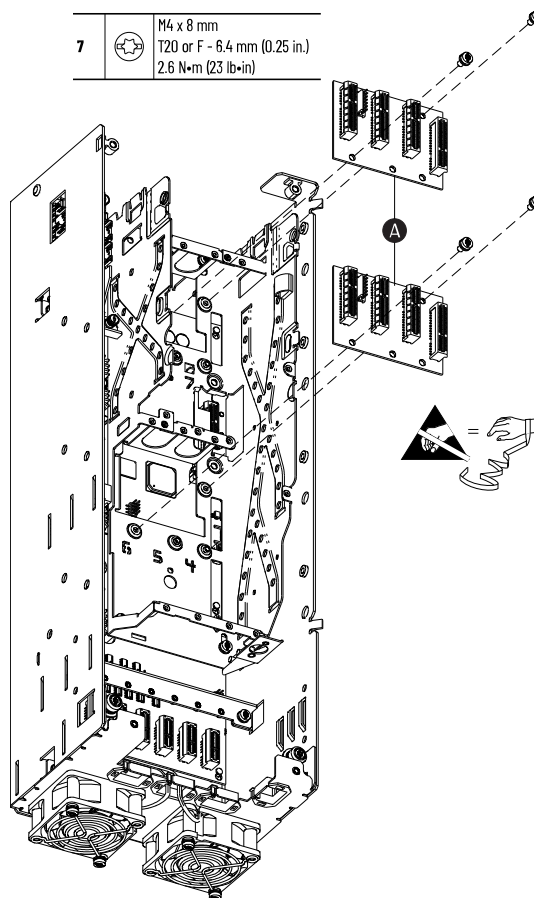
Remove and Install the Backplane Circuit Board (XT) for Frames 8...15

Replace a control pod backplane circuit board with kit catalog number SK-RM-PODBP1. Follow these steps to remove and install the backplane circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover.
5. Remove the main control circuit board.

IMPORTANT: The main control circuit board and option module circuit board edge connectors contain dielectric grease. Do not touch the edge connectors on the board.

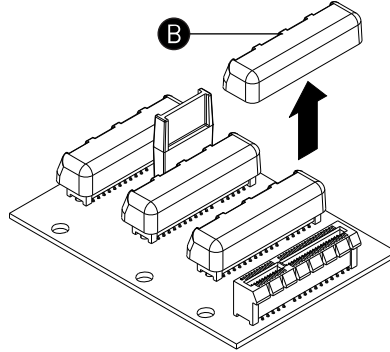
6. Disconnect and remove any option modules from the backplane circuit boards.
7. Remove the two M4 x 8 mm Torx screws that secure the backplane circuit board (A) to the pod chassis and remove the board.



This frame 8...15 control pod is shown separated from the enclosure to clarify the instructions only.

IMPORTANT: Do not remove protective covers (B) from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

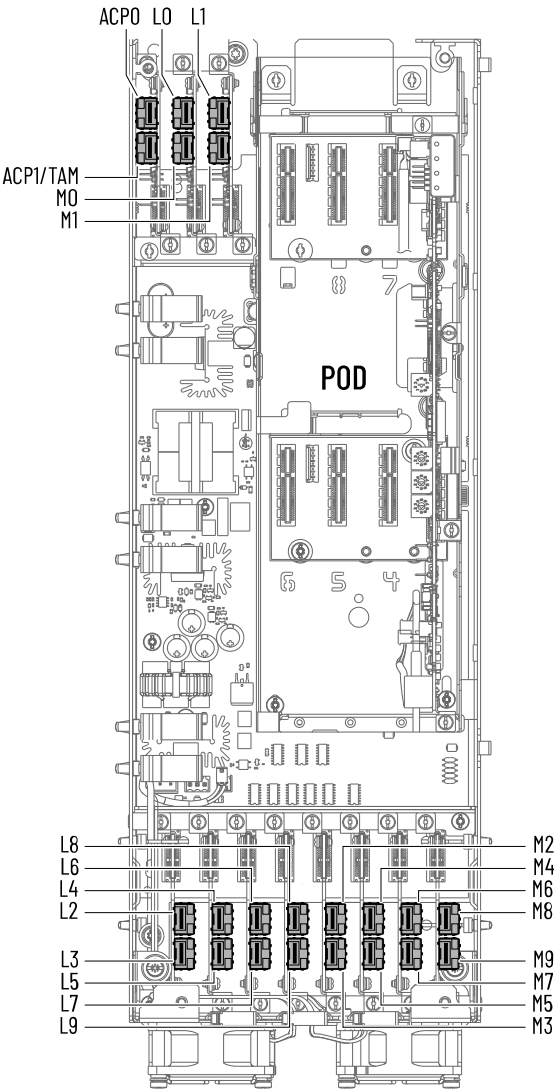
8. Install the backplane circuit board in the reverse order of removal.



Remove and Install a Fiber Transceiver (XT) for Frames 8...15

Replace a fiber transceiver (XT) with kit catalog number SK-RM-FTR1-F8-XT. Follow these steps to remove and install the fiber transceiver (XT).

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover. See [Remove and Install the Control Pod Cover for Frames 8...15 on page 143](#).

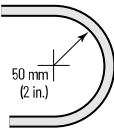


Port Name	Description
ACP0	Fiber transceiver port for the fiber-optic connection from ACP on the AC precharge control board.
ACP1 / TAM	Fiber transceiver port for the fiber-optic connection from ACP on the second AC precharge control board (frames 13...15 only) or the fiber-optic connection from TAM on the torque accuracy module. Frame 13...15 PowerFlex® 755TR drives and 755TM bus supplies cannot use a torque accuracy module (TAM).
L0...L9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as line side converters.

Port Name	Description
M0...M9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as motor side inverters.

5. Remove the fiber-optic cables for the corresponding fiber transceiver circuit board from the cable management devices (A in the illustration) in the control pod.

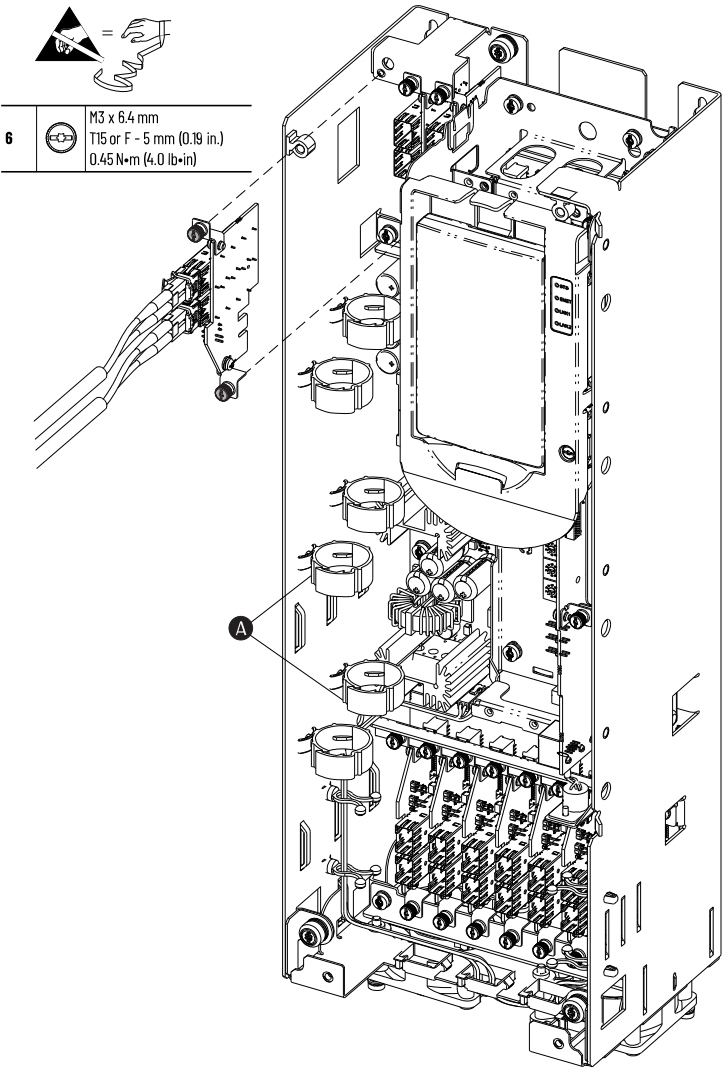
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



When all or many of the fiber-optic ports are used, it is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

IMPORTANT: The edge connectors on a fiber transceiver circuit board with XT contain dielectric grease. If you do not intend to replace a fiber transceiver circuit board, do not touch the edge connectors on the board.

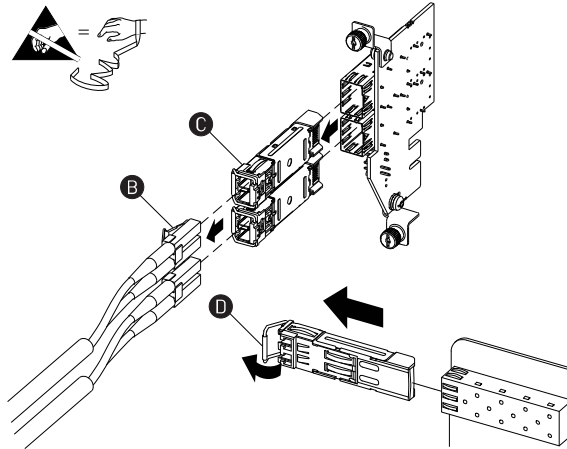
6. Loosen the two captive thumbscrews that secure the board and fiber-optic cables to the chassis and remove the board and cables.





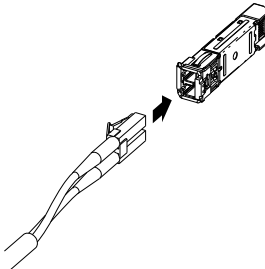
The control pod is shown separated from the enclosure to clarify the instructions only.

7. For each fiber-optic cable, remove the cable (B) from the transceiver (C).
8. For each fiber transceiver board, open the transceiver latch (D) and pull the transceiver out of the port connector on the board.



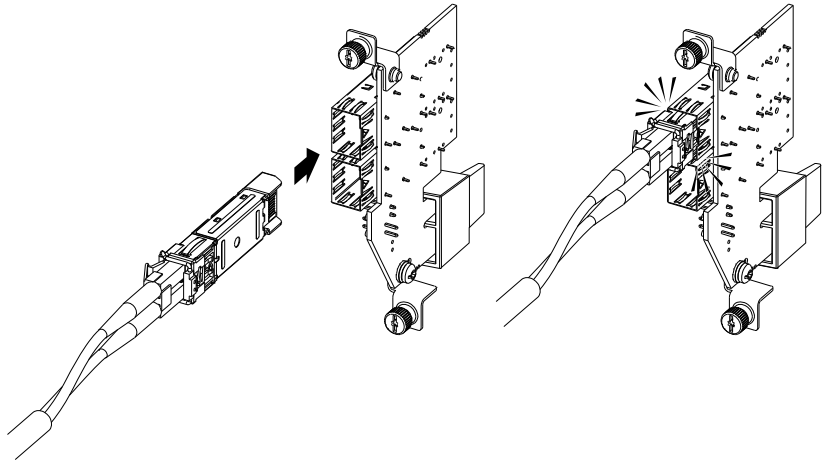
If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

9. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the new transceiver.



IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\)](#) on page 26.

10. Insert the transceiver with fiber-optic cable into the port on the board, until you hear an audible 'click.'

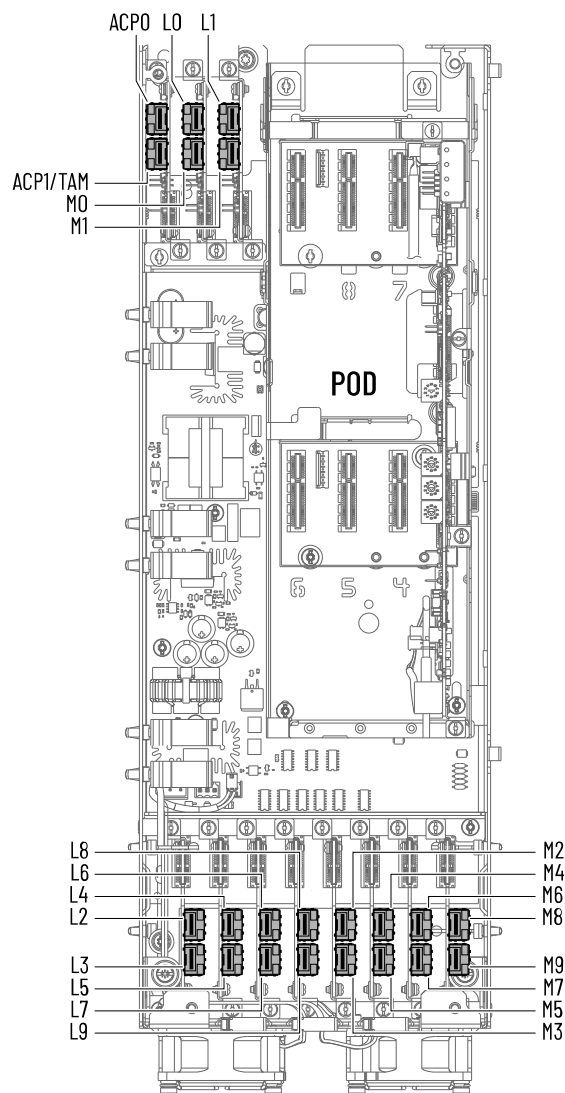


11. If necessary, install the fiber transceiver circuit board with fiber-optic cables in the reverse order of removal.

Remove and Install the Fiber Transceiver Circuit Board (XT) for Frames 8...15

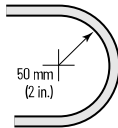
Replace a fiber transceiver circuit board with kit catalog number 20-750-MFTB1-F8. Follow these steps to remove and install the fiber transceiver circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the control pod cover.



Port Name	Description
ACPO	Fiber transceiver port for the fiber-optic connection from ACP on the AC precharge control board.
ACP1 / TAM	Fiber transceiver port for the fiber-optic connection from ACP on the second AC precharge control board (frames 13...15 only) or the fiber-optic connection from TAM on the torque accuracy module. Frame 13...15 PowerFlex® 755TR drives and 755TM bus supplies cannot use a torque accuracy module (TAM).
LO...L9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as line side converters.
M0...M9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as motor side inverters.

IMPORTANT: The 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 as inside bend radius is decreased.



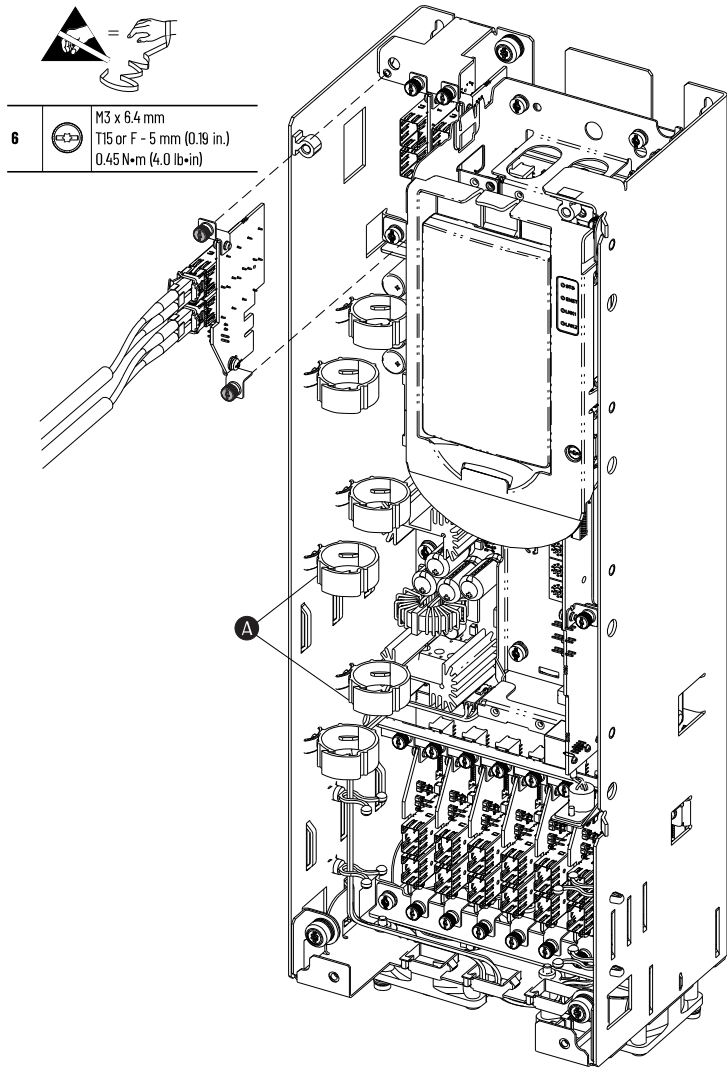
-
5. Remove the fiber-optic cables for the corresponding fiber transceiver circuit board from the cable management devices (A in the illustration) in the control pod.
-



When all or many of the fiber-optic ports are used, it is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

IMPORTANT: The edge connectors on a fiber transceiver circuit board with XT contain dielectric grease. If you do not intend to replace a fiber transceiver circuit board, do not touch the edge connectors on the board.

6. Loosen the two captive thumbscrews that secure the board and fiber-optic cables to the chassis and remove the board and cables.

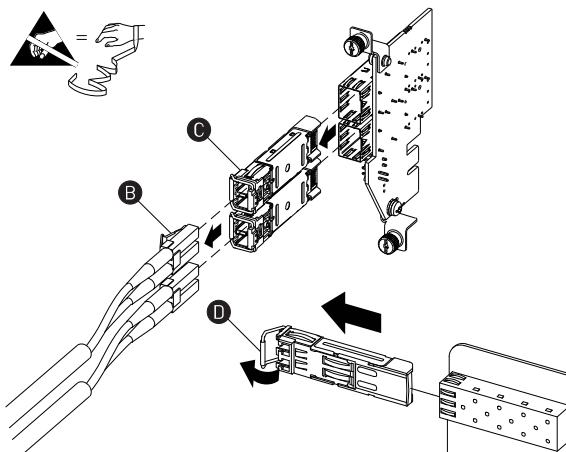


The control pod is shown separated from the enclosure to clarify the instructions only.

7. For each fiber-optic cable, remove the cable (B) from the transceiver (C).

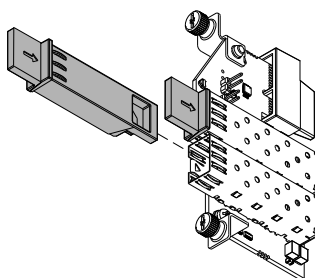
IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

8. For each fiber transceiver board, open the transceiver latch (D) and pull the transceiver out of the port connector on the board. Retain the transceiver for reuse.



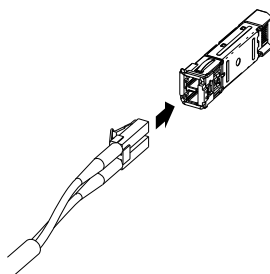
If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

9. If used, remove the protective cover from the fiber-optic port on the fiber transceiver board.



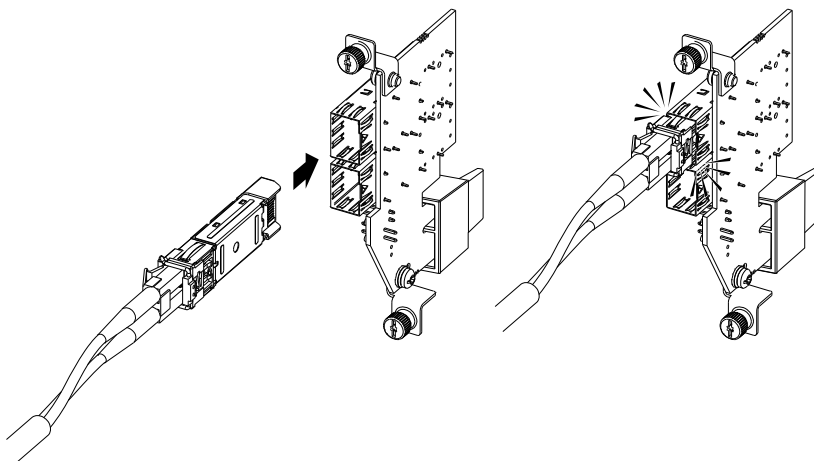
IMPORTANT: Circuit boards that are contained in renewal kits with XT contain dielectric grease on the edge connectors, where present. Do not touch or remove the grease from circuit board edge connectors. A non-greased connector can lead to corrosion.

10. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.

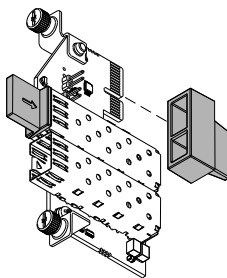


IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\)](#) on page 26.

11. Insert the transceiver with fiber-optic cable into the port on the board, until you hear an audible 'click.'



12. Hold the tab on the protective cover and carefully remove the cover from the edge connector on the circuit board. Do not touch the edge connector.



IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\)](#) on page 26.

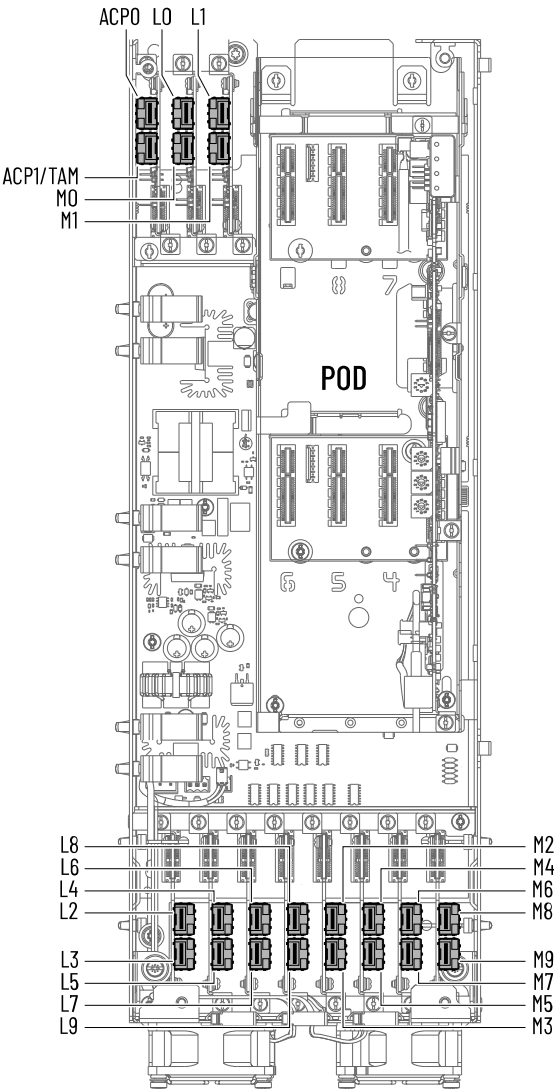
IMPORTANT: Do not remove protective covers from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

13. Install the fiber transceiver circuit board with fiber-optic cables in the reverse order of removal.

Remove and Install the Fiber-optic Interface Circuit Board for Frames 8...15

Replace a fiber-optic interface board with kit catalog number SK-RM-FIB1-F8 or SK-RM-FIB2-F8. Follow these steps to remove and install the fiber-optic interface circuit board.

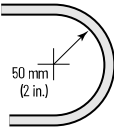
- 1. Review the product advisories in the [Before You Begin on page 12](#) section.
- 2. Remove power from the system.
- 3. Open the enclosure door.
- 4. Remove the control pod cover.



Port Name	Description
ACPO	Fiber transceiver port for the fiber-optic connection from ACP on the first AC precharge control board.
ACPI / TAM	Fiber transceiver port for the fiber-optic connection from ACP on the second AC precharge control board (frames 13...15 only) or the fiber-optic connection from

Port Name	Description
	TAM on the torque accuracy module. Frame 13...15 PowerFlex® 755TR drives and 755TM bus supplies cannot use a torque accuracy module (TAM).
L0...L9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as line side converters.
M0...M9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as motor side inverters.

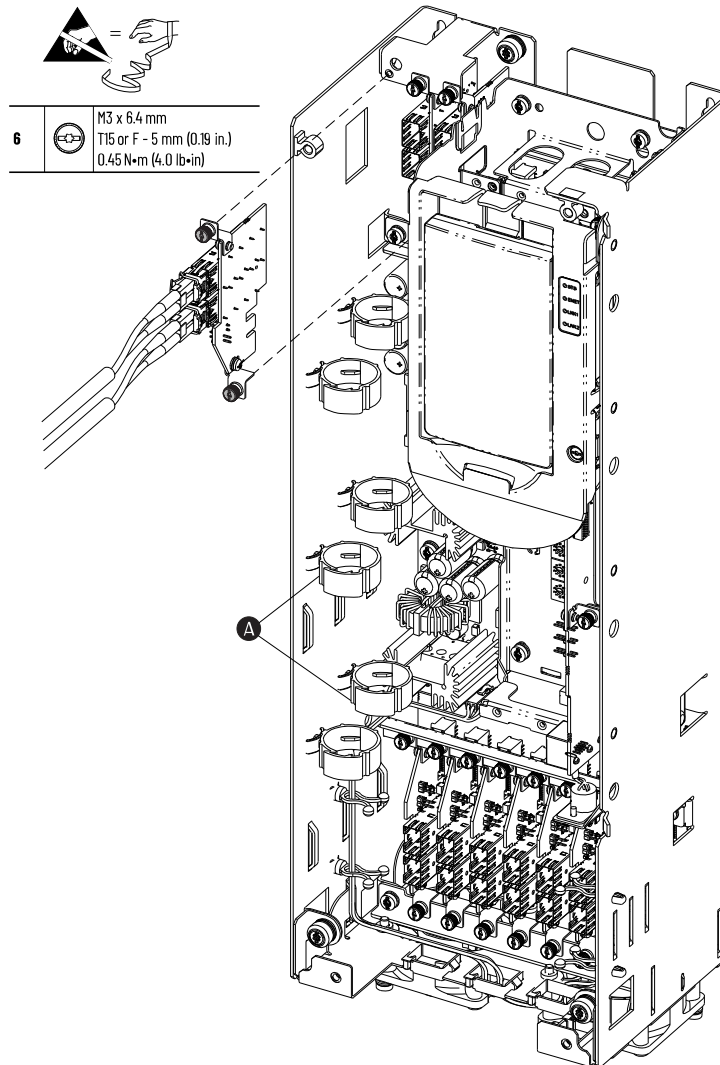
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



5. Remove the fiber-optic cables from the cable management devices (A in illustration) in the control pod.
-  It is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

IMPORTANT: The edge connectors on a fiber transceiver circuit board with XT contain dielectric grease. If you do not intend to replace a fiber transceiver circuit board, do not touch the edge connectors on the board.

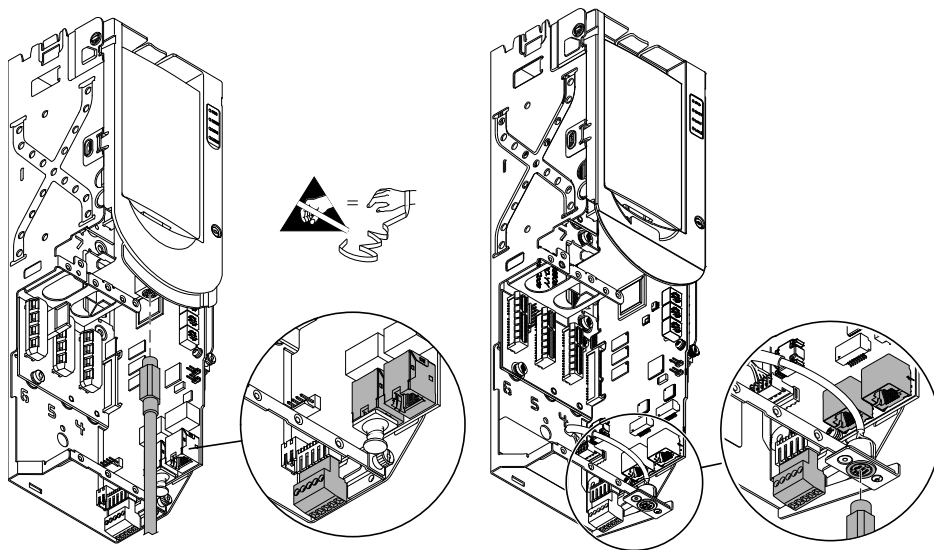
6. Loosen the two captive thumbscrews that secure each of the fiber transceiver circuit boards to the chassis and remove the boards with cables. Retain the fiber transceiver boards for reuse.



The control pod is shown separated from the enclosure to clarify the instructions only.

7. Remove the fiber-optic cables from the applicable ports on the fiber transceiver boards.
 - AC precharge circuit board and torque accuracy module (if present) fiber-optic cables from the ACP0 and ACP1 / TAM port, respectively.
 - Each line side inverter fiber-optic cable from the Ln port.
 - Each motor side converter fiber-optic cable from the Mn port.
8. Follow the minimum bend radius requirement and carefully coil the fiber-optic cable and secure in a protected location.

9. To prepare the control pod for removal, complete these steps:
 - a. Disconnect any Ethernet cables from the Ethernet ports on the bottom of the main control board.
 - b. If used, disconnect the drive peripheral interface (DPI™) cable from the connector (port 2) on the human interface module (HIM) cradle (XT) or the mini-DIN connector (port 2) on the control pod (standard).
 - c. If used, disconnect the plug-in terminal block TB1 on the bottom of the main control board.
 - d. If used, disconnect any I/O wiring terminal blocks from an installed option module.



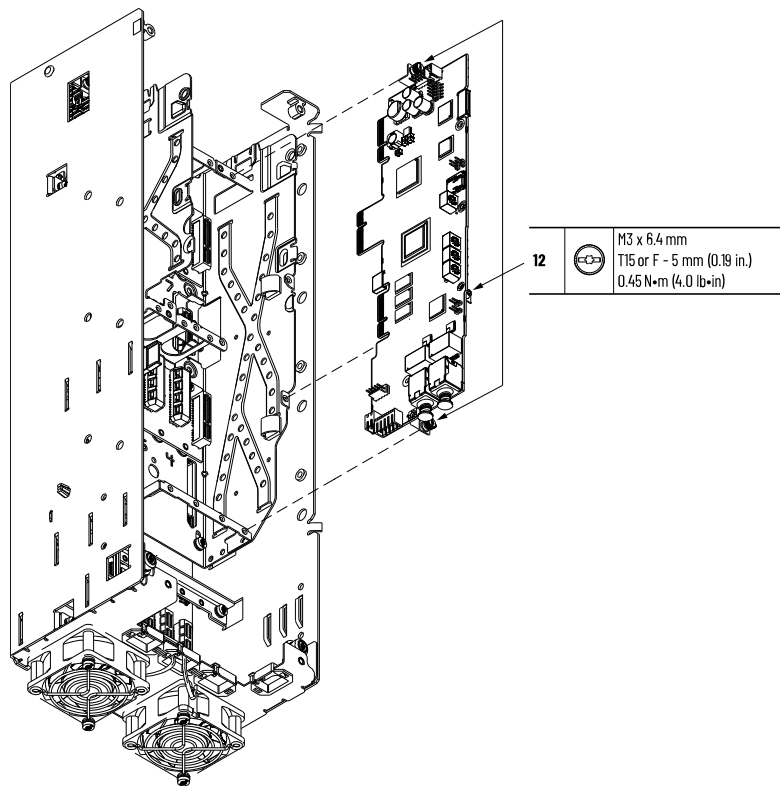
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

10. If installed, disconnect all option module plug-in terminal blocks.

IMPORTANT: The option module (XT) and main control circuit board (XT) edge connectors contain dielectric grease. Do not touch the edge connectors on the board.

11. If installed, remove the option module in slot 7 by loosening the two captive thumbscrews on the module and by pulling the module out of the control pod. The tightening torque for reinstallation of the option module is the same as for the main control board.

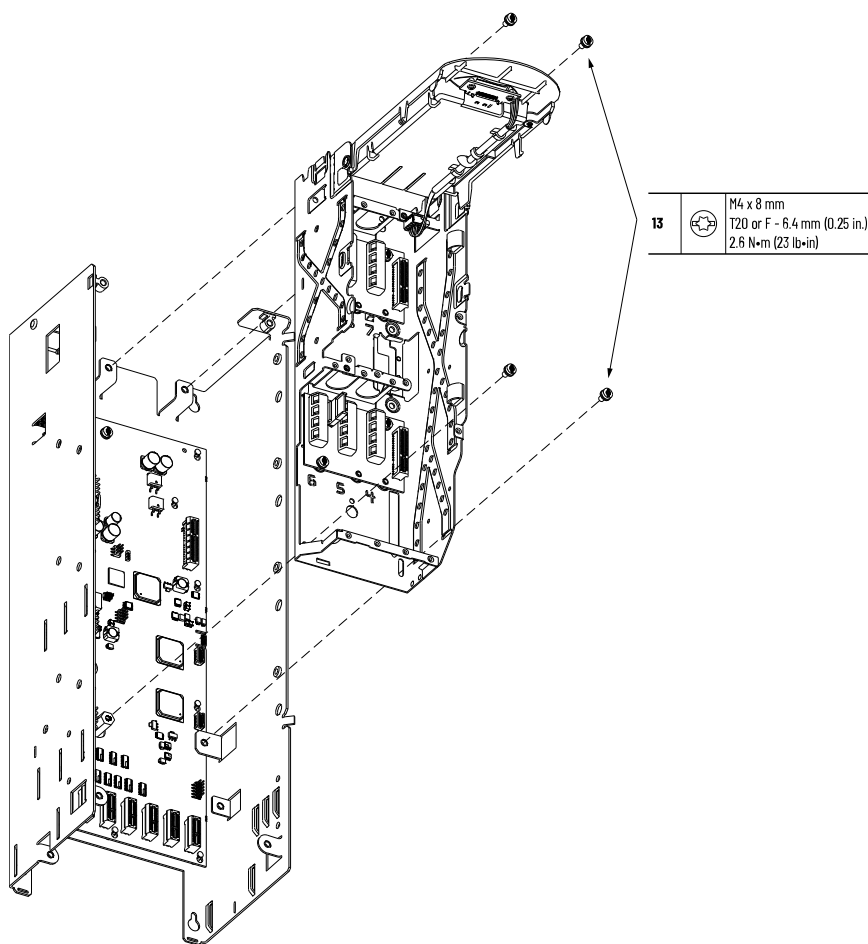
12. Loosen the three captive thumbscrews that secure the main control board to the pod chassis and remove the board.



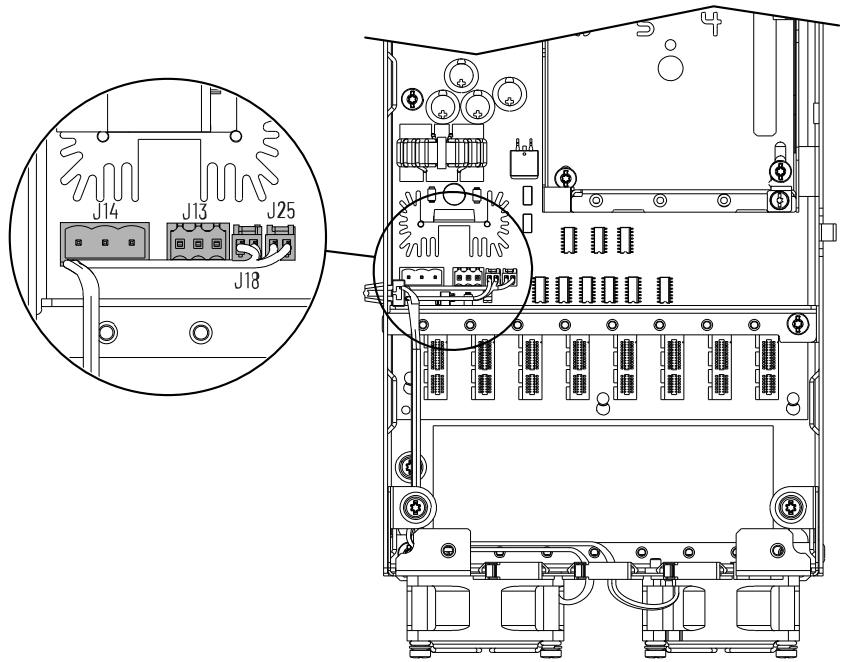
 The HIM cradle is not shown for clarity only.

IMPORTANT: The four M4 x 8 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.

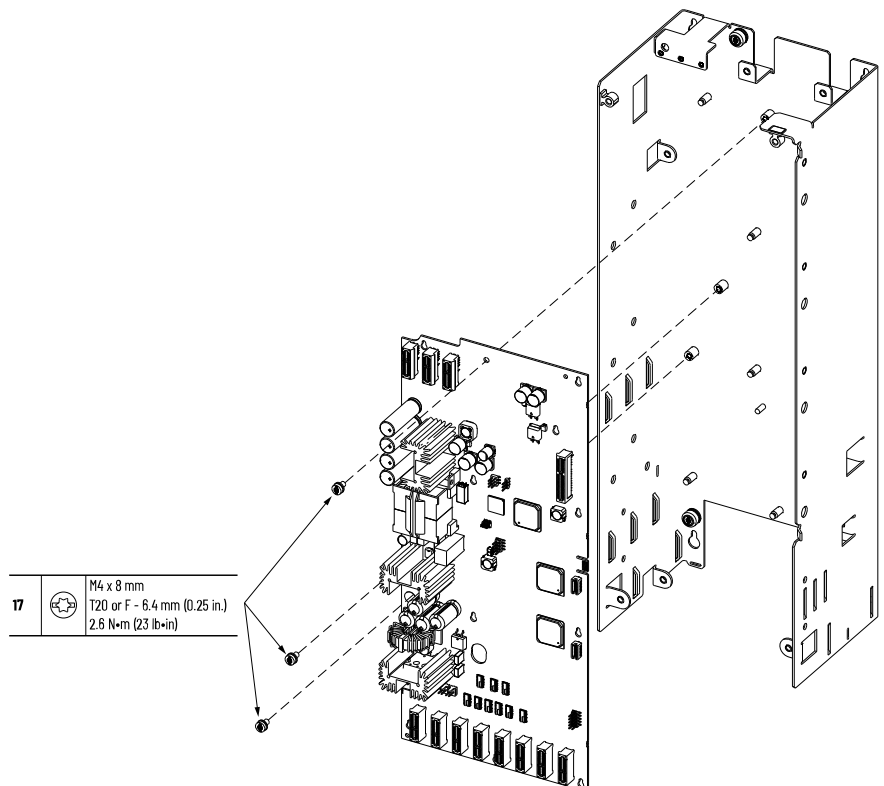
13. Remove the four M4 x 8 mm screws that secure the control pod chassis to the standoffs on the control panel, then remove the control pod chassis.



14. Disconnect the internal 24V DC power wire harness connector P14 from connector J14 on the fiber-optic interface board.
15. If installed, disconnect the customer-supplied 24V DC power wire harness connector P13 from connector J13 on the fiber-optic interface board.
16. Disconnect the two fan power supply wire harness connectors from connectors J18 and J25 on the fiber-optic interface board.

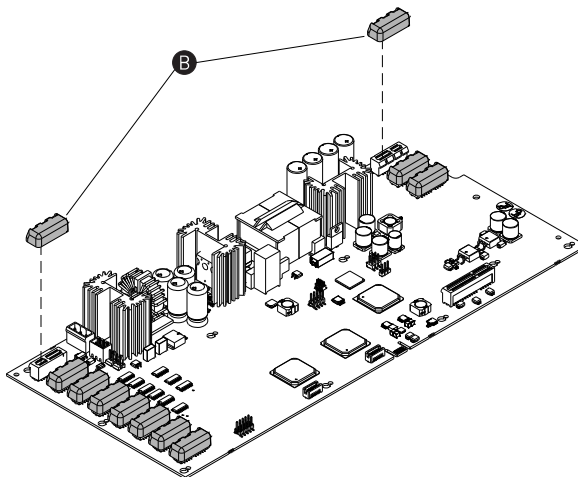


17. Remove the three M4 x 8 mm long screws that secure the fiber-optic interface board to the control pod.
18. Move the fiber-optic interface board upward slightly so that the keyholes on board clear the mounting posts and remove the board.
19. Rotate the left side of the fiber-optic interface board away from the control pod chassis so that the board clears the mounting tab on the right sidewall of the control pod and remove the board.

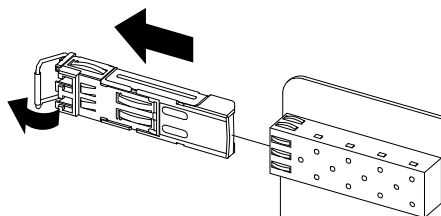


IMPORTANT: Do not remove protective covers (B) from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

20. Install the fiber-optic interface circuit board in the reverse order of removal.

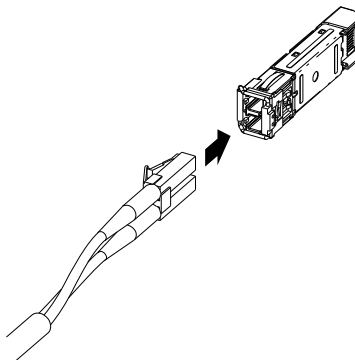


21. For each fiber transceiver board, open the transceiver latch and pull the transceiver out of the connector on the board.



If the latch is obstructed and you cannot use your fingers to open it, use a small, flat-blade screwdriver or other long, narrow tool to open the latch.

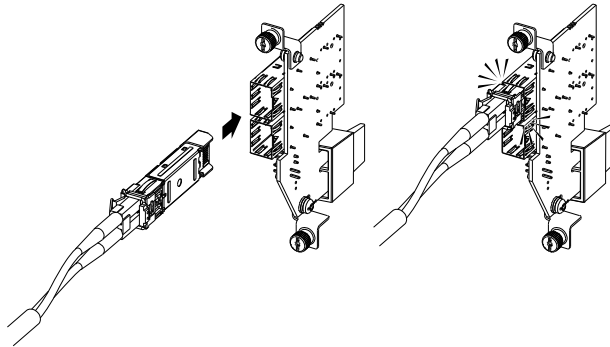
22. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\)](#) on page 26.

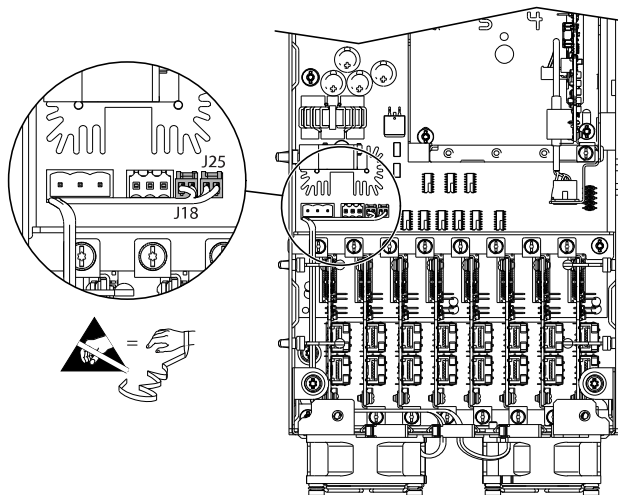
23. Insert the transceiver and fiber-optic cable into the connector on the board, until you hear an audible 'click.'



Remove and Install the Control Pod Printed Circuit Board Fan Assembly for Frames 8...15

Replace the control pod printed circuit board fan assembly with kit catalog number SK-RMPODFAN1-F8. Follow these steps to remove and install the control-pod printed circuit board fan assembly.

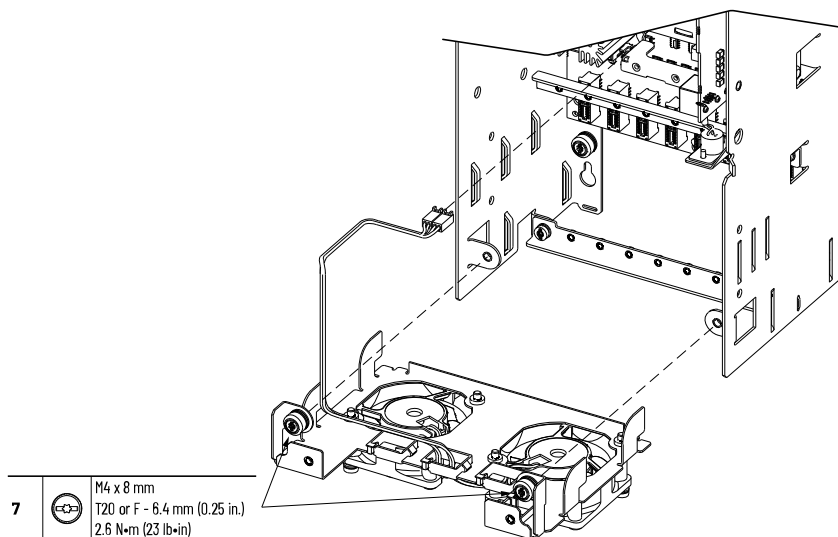
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 143](#).
5. Disconnect the two fan power supply connectors from connectors J18 and J25 on the fiber-optic interface board.
6. Remove the wire harness from the cable supports on the side of the pod chassis.





The control pod is shown separated from the enclosure to clarify the instructions only.

7. Loosen the two captive thumbscrews on the fan assembly and pull the assembly out and off the pod chassis.



8. Install the control pod printed circuit board fan assembly in the reverse order of removal.

Remove and Install the Control Pod (XT) for Frames 8...15

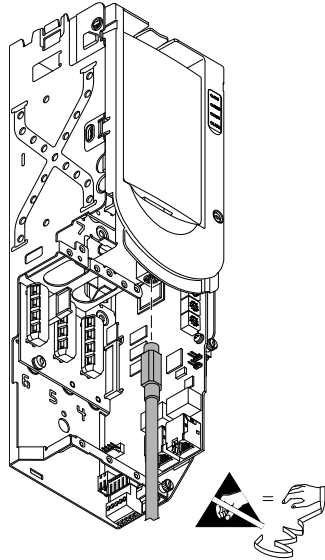
Replace the control pod (XT) assembly with kit catalog number 20-750-MCP0D3-F8M or 20-750-MCP0D4-F8M. Follow these steps to remove and install the control pod.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 143](#).
5. If a human interface module (HIM) is installed in the HIM cradle, remove the HIM.



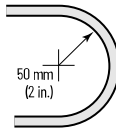
If a cable is not connected to the DPI™ port on the HIM cradle, be sure to leave the protective cover installed.

6. If used, disconnect the DPI™ cable from the connector on the bottom of the HIM cradle.



The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

IMPORTANT: The 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 as inside bend radius is decreased.



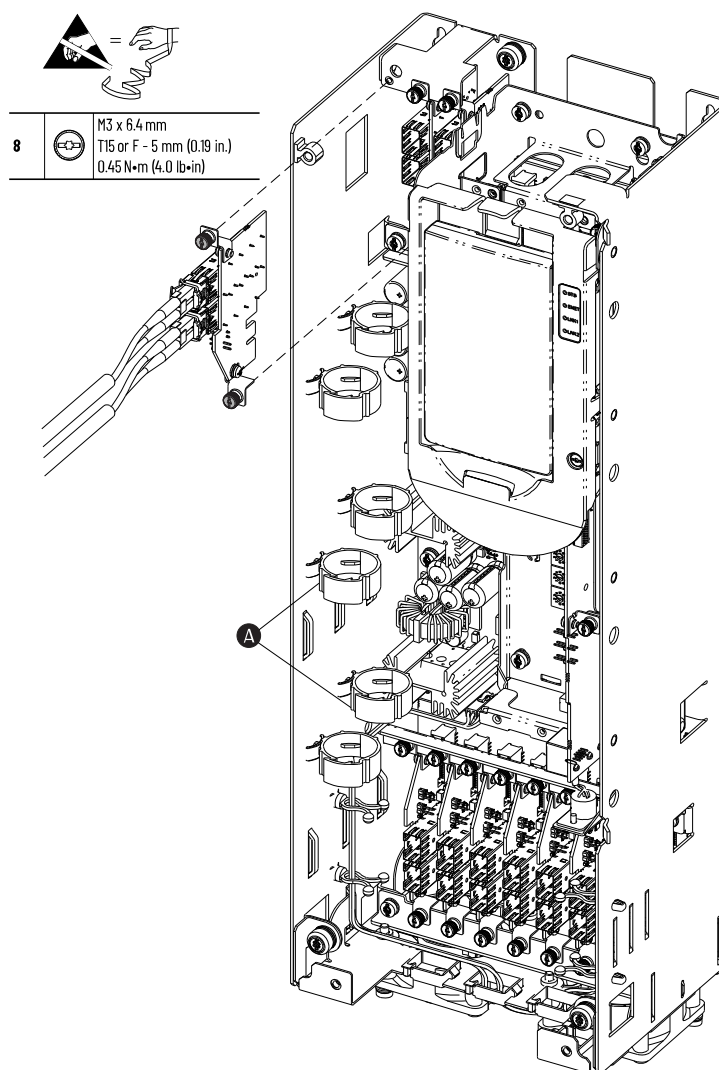
7. Remove the fiber-optic cables from the cable management devices (A in illustration) in the control pod.



It is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

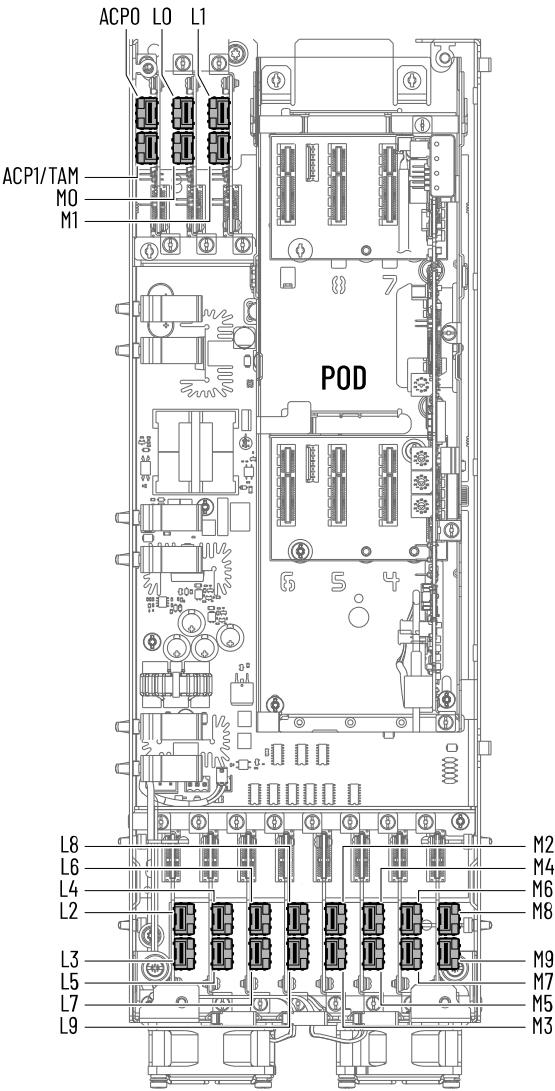
IMPORTANT: The edge connectors on a fiber transceiver circuit board with enhanced protection contain dielectric grease. If you do not intend to replace a fiber transceiver circuit board, do not touch the edge connectors on the board.

8. Loosen the two captive thumbscrews that secure each of the fiber transceiver circuit boards to the chassis and remove the boards with cables. Retain the fiber transceiver boards for reuse.



The control pod is shown separated from the enclosure to clarify the instructions only.

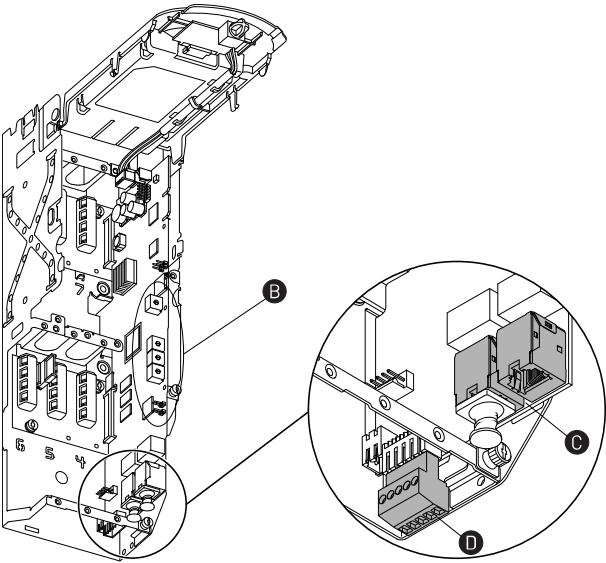
9. Remove the fiber-optic cables from the applicable ports on the fiber transceiver boards.
 - AC precharge circuit board and torque accuracy module (if present) fiber-optic cables from the ACP0 and ACP1 / TAM port, respectively.
 - Each line side inverter fiber-optic cable from the Ln port.
 - Each motor side converter fiber-optic cable from the Mn port.



Port Name	Description
ACP0	Fiber transceiver port for the fiber-optic connection from ACP on the first AC precharge control board.
ACP1 / TAM	Fiber transceiver port for the fiber-optic connection from ACP on the second AC precharge control board (frames 13...15 only) or the fiber-optic connection from TAM on the torque accuracy module. Frame 13...15 PowerFlex® 755TR drives and 755TM bus supplies cannot use a torque accuracy module (TAM).
L0...L9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as line side converters.

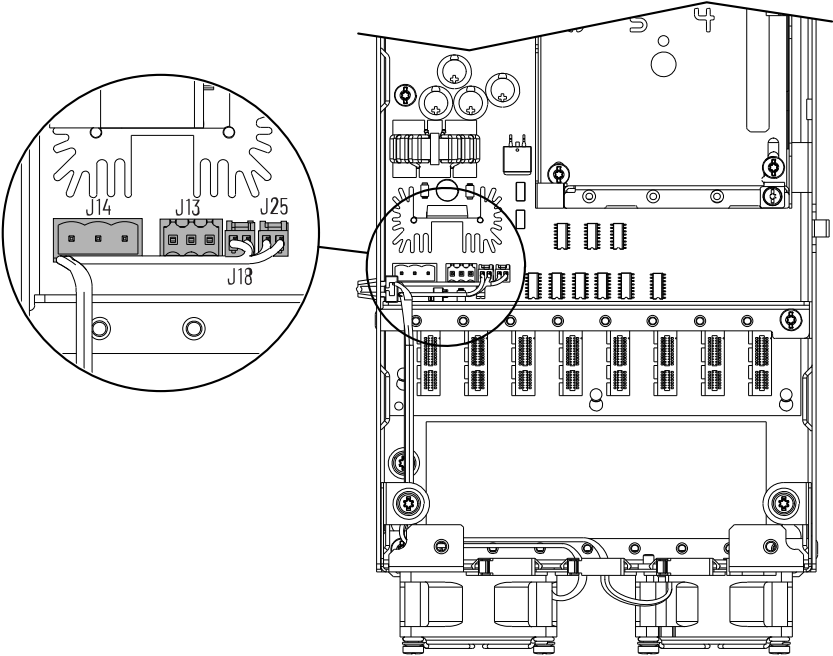
Port Name	Description
M0...M9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as motor side inverters.

- 10. Follow the minimum bend radius requirement and carefully coil the fiber-optic cable and secure in a protected location.
- 11. If an option module is installed, complete these steps:
 - a. Disconnect the plug-in terminal blocks.
 - b. Loosen the two captive thumbscrews that secure the option module to the control pod chassis and remove the option module. Final torque for reassembly is 0.45 N•m (4.0 lb•in).
- 12. Record any settings that are made on these main control board selectors or jumpers (B):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
- 13. Disconnect any Ethernet cables from the Ethernet ports on the bottom of the main control board.
- 14. Disconnect the plug-in terminal block (TB1) on the bottom of the main control board.



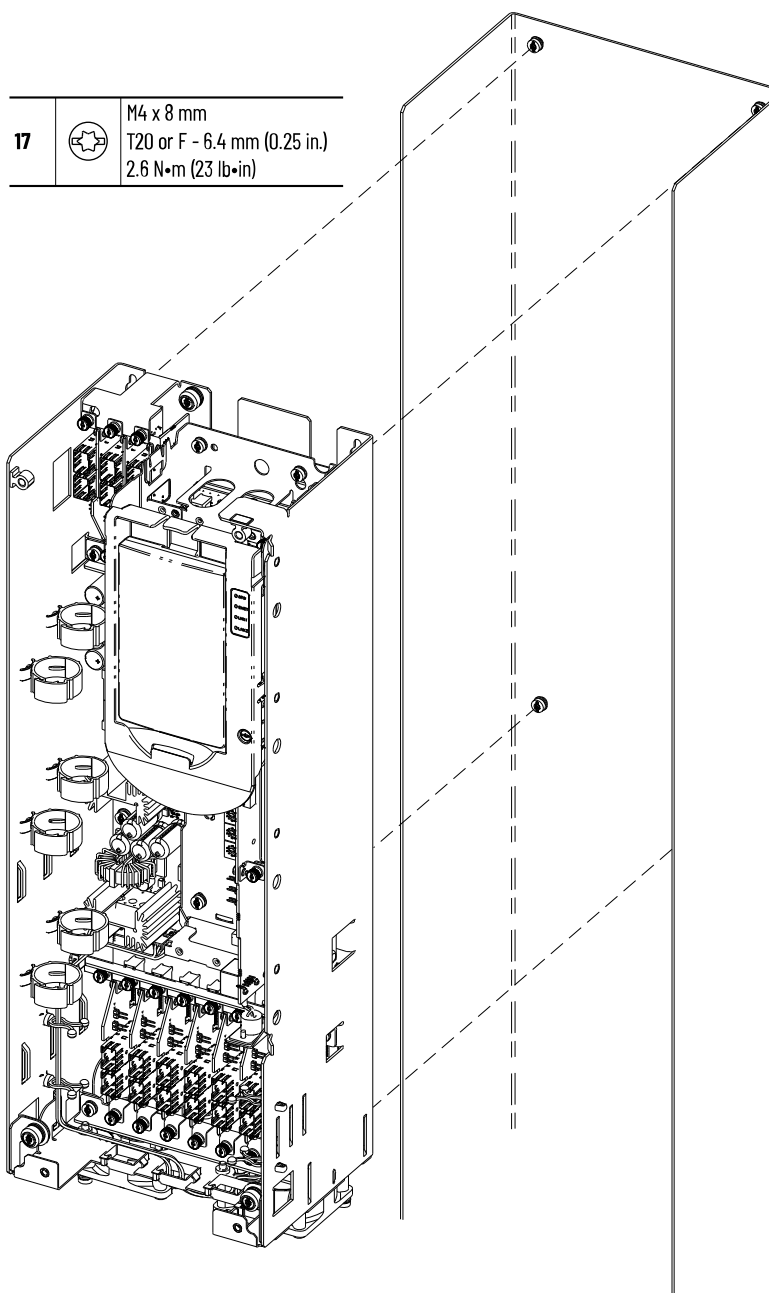
The inner control pod chassis is shown removed from the outer control pod chassis for clarity only.

- 15. Disconnect connector P14 from connector J14 on the fiber-optic interface board.
- 16. If installed, disconnect the customer supplied 24V supply power wire connector P13 from connector J13 on the fiber-optic interface board.



- 17. Loosen the four M4 x 8 mm Torx screws that secure the pod chassis to the back panel.

18. Slide the pod up, so that the keyholes on the pod clear the mounting screws, and remove the control pod.

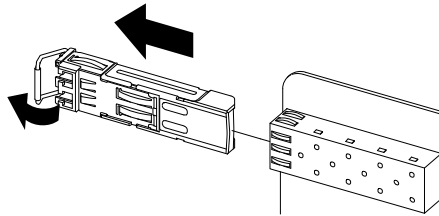


The control pod panel is shown in this example.

19. Install the control pod in the reverse order of removal.

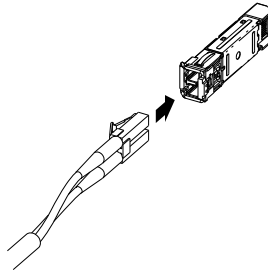
IMPORTANT: Do not remove protective covers from wire harnesses, circuit board connectors, terminal blocks, and fiber-optic transceivers and ports unless used at the time of installation. For the product to meet the corrosive atmosphere rating, protective covers must remain installed in unused connectors during storage and operation.

20. Make any necessary changes to the settings on these main control board selectors or jumpers:
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
21. For each fiber transceiver board, open the transceiver latch and pull the transceiver out of the connector on the board.



If the latch is obstructed and you cannot use your fingers to open it, use a small, flat-blade screwdriver or other long, narrow tool to open the latch.

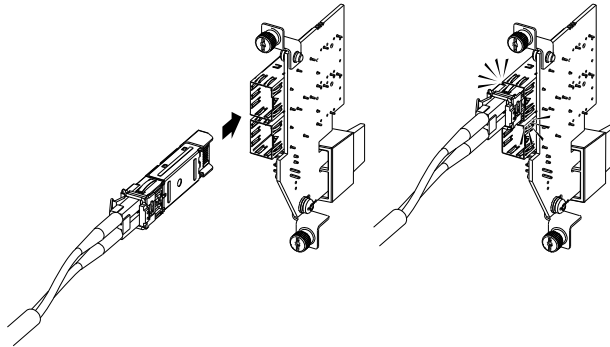
22. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

IMPORTANT: If before you install the new board, grease is removed from an edge connector or is contaminated, do not install the circuit board. You must clean and reapply grease to the affected edge connector or connectors. See [Clean and Apply Dielectric Grease to a Fiber Transceiver Edge Connector \(XT\) on page 26](#).

23. Insert the transceiver and fiber-optic cable into the connector on the board, until you hear an audible 'click.'



Remove and Install the Main Control Circuit Board (Standard) for Frames 8...15

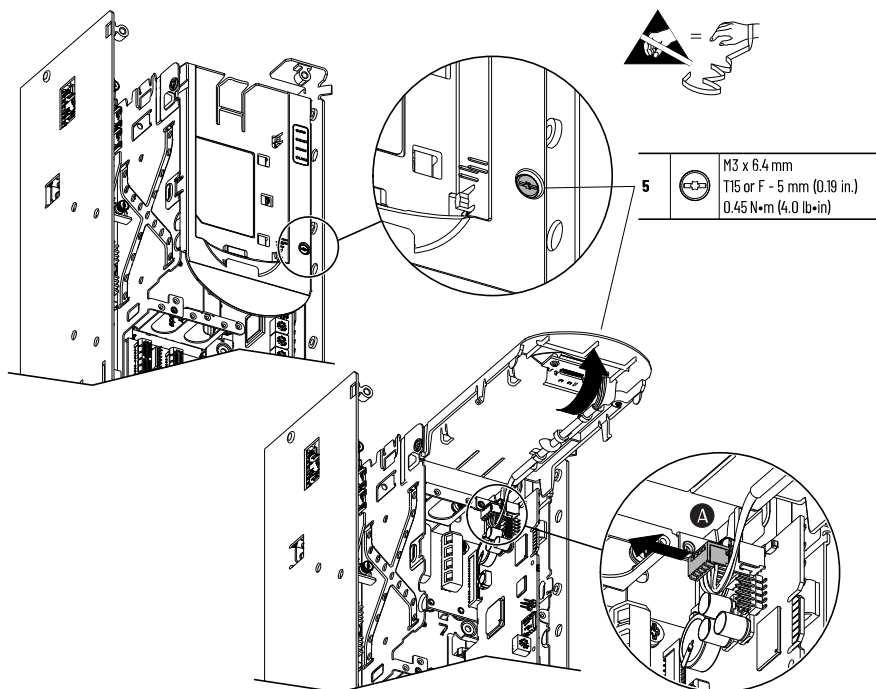
Replace a standard main control circuit board with kit catalog number SK-RM-MCB1-PF755.

NOTE: This kit is discontinued and is no longer available for sale.

Follow these steps to remove and install the standard main control circuit board.

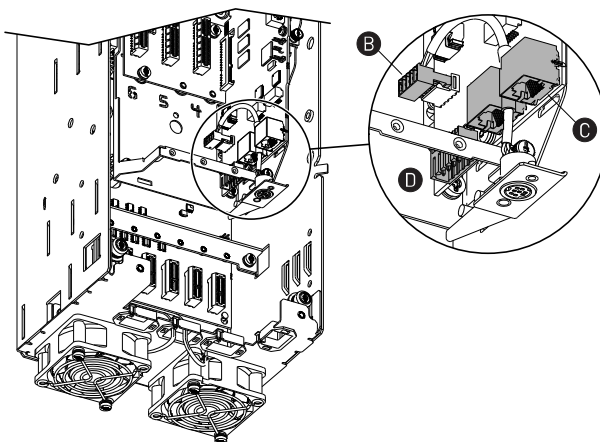
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 143](#).
5. Loosen the screw that secures the human interface module (HIM) cradle to the pod chassis, and rotate the cradle up to a 90° horizontal position.

6. Disconnect the terminal block (A) for the HIM wire harness from the connector on the main control board.



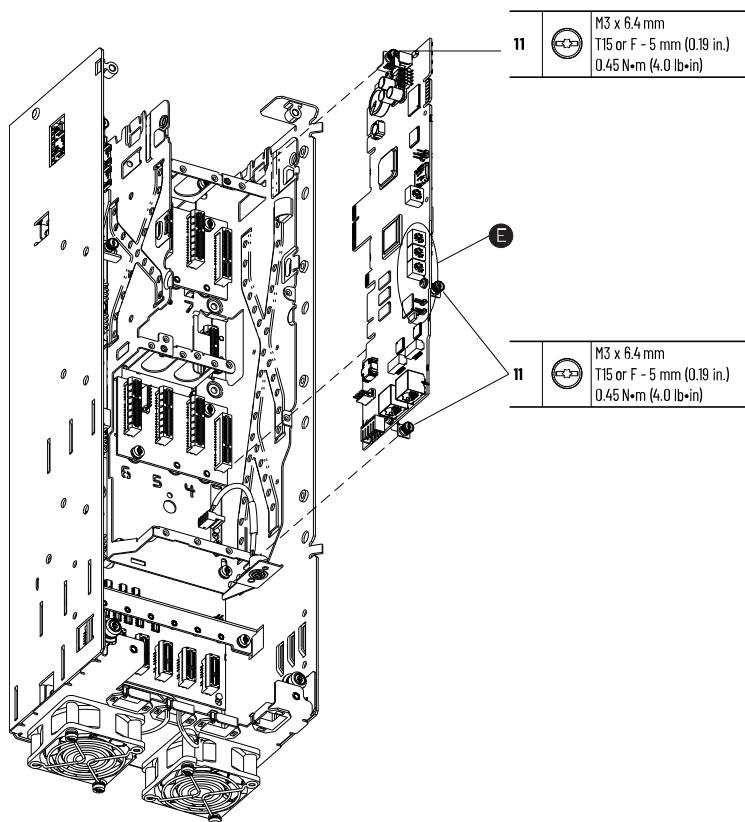
The control pod chassis is shown removed from the enclosure for clarity only.

7. Disconnect the HIM plug-in terminal block (B) for the mini-DIN connector on the control board.
8. Disconnect any Ethernet cables from the Ethernet ports (C) on the bottom of the main control board.
9. Disconnect the plug-in terminal block TB1 (D) on the bottom of the main control board.



10. Record any settings made on these main control board selectors or jumpers (E):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper

11. Loosen the three captive thumb screws that secure the main control board to the pod chassis and remove the board.



The HIM cradle is not shown for clarity only.

12. Install the main control circuit board in the reverse order of removal.
13. Make any necessary changes to the settings on these main control board selectors or jumpers:
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper

Remove and Install the Control Pod (Standard) for Frames 8...15

Replace the standard control pod assembly with kit catalog number 20-750-MCPOD1-F8M or 20-750-MCPOD2-F8M.

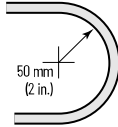
NOTE: These kits have been discontinued and are no longer available for sale.

Follow these steps to remove and install the standard control pod.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. [Remove the control pod cover on page 143](#).

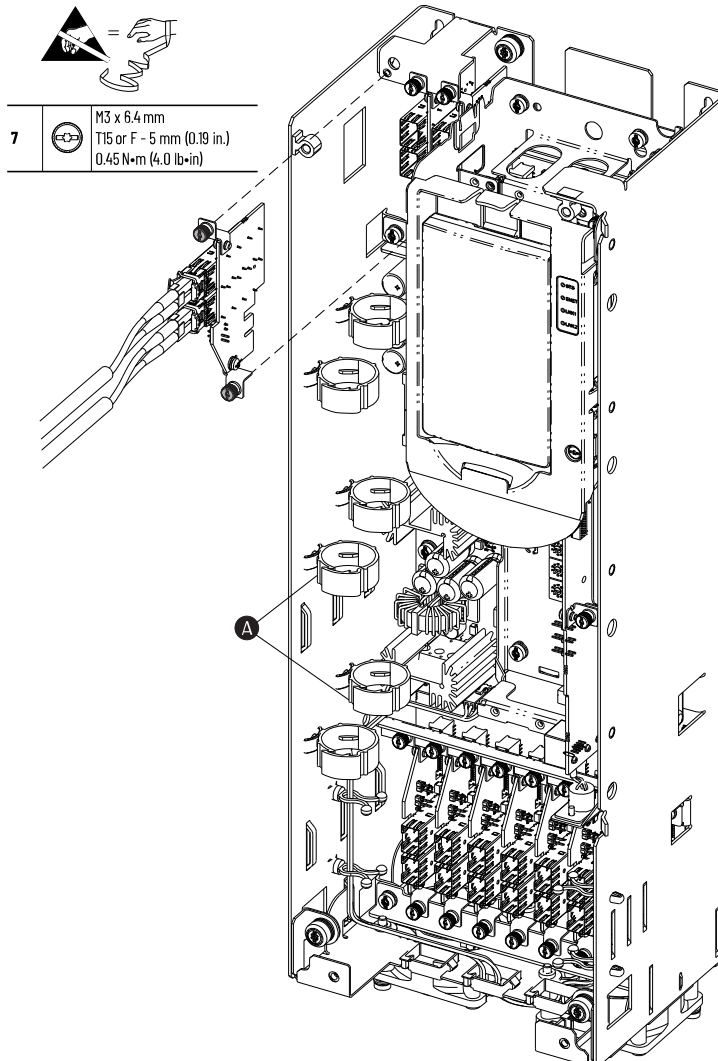
5. If a human interface module (HIM) is installed in the HIM cradle, remove the HIM.
6. Remove the fiber-optic cables from the cable management devices (A in illustration) in the control pod.

IMPORTANT: The 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 as inside bend radius is decreased.



It is easier to remove the fiber transceiver circuit board from the pod before removing the fiber-optic cables. However, it is possible to remove the fiber-optic cables without removing the boards.

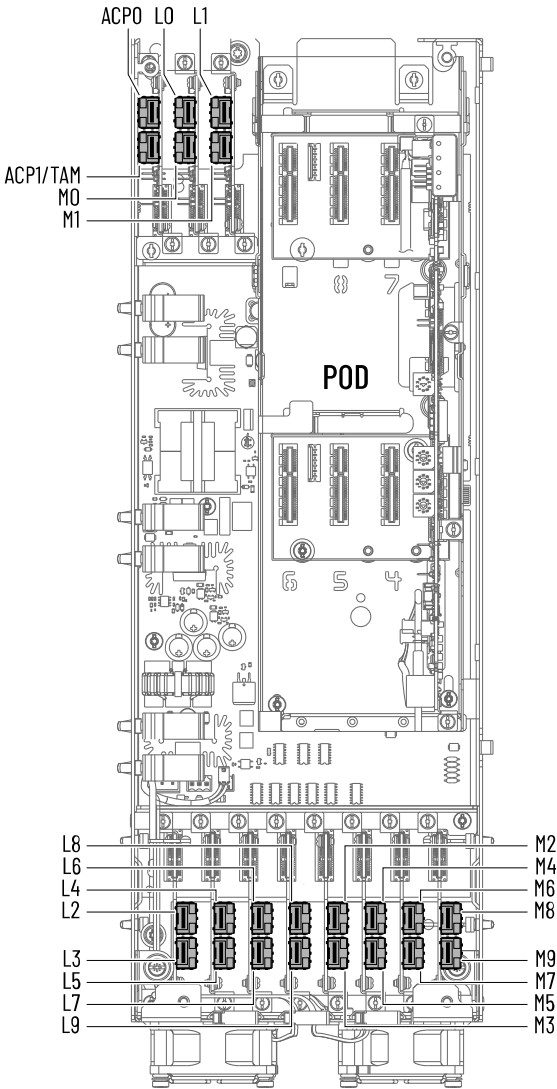
7. Loosen the two captive thumbscrews that secure each of the fiber transceiver circuit boards to the chassis and remove the boards with cables. Retain the fiber transceiver boards for reuse.





The control pod is shown separated from the enclosure to clarify the instructions only.

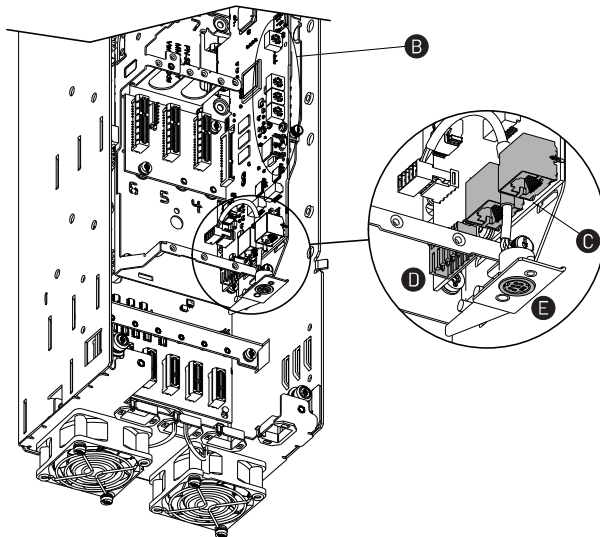
8. Remove the fiber-optic cables from the applicable ports on the fiber transceiver boards.
- AC precharge circuit board and torque accuracy module (if present) fiber-optic cables from the ACP0 and ACP1 / TAM port, respectively.
 - Each line side inverter fiber-optic cable from the *L_n* port.
 - Each motor side converter fiber-optic cable from the *M_n* port.



Port Name	Description
ACP0	Fiber transceiver port for the fiber-optic connection from ACP on the first AC precharge control board.
ACP1 / TAM	Fiber transceiver port for the fiber-optic connection from ACP on the second AC precharge control board (frames 13...15 only) or the fiber-optic connection from

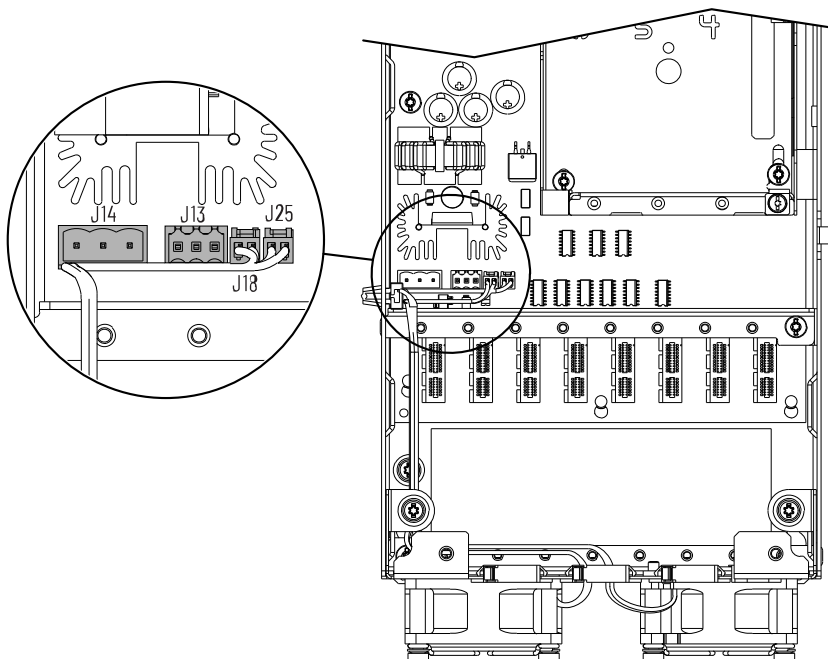
Port Name	Description
	TAM on the torque accuracy module. Frame 13...15 PowerFlex® 755TR drives and 755TM bus supplies cannot use a torque accuracy module (TAM).
L0...L9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as line side converters.
M0...M9	Fiber transceiver ports for the fiber-optic connections from CNTL on the power layer interface board in power modules that are used as motor side inverters.

9. Follow the minimum bend radius requirement and carefully coil the fiber-optic cable and secure in a protected location.
10. If an option module is installed, complete these steps:
 - a. Disconnect the plug-in terminal blocks.
 - b. Loosen the two captive thumbscrews that secure the option module to the control pod chassis and remove the option module. Final torque for reassembly is 0.45 N•m (4.0 lb•in).
11. Record any settings that are made on these main control board selectors or jumpers (B):
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
12. Disconnect any Ethernet cables from the Ethernet ports (C) on the bottom of the main control board.
13. Disconnect the plug-in terminal block TB1 (D) on the bottom of the main control board.
14. If present, disconnect the DPI™ cable from the mini-DIN Port 2 connector (E) on the control pod chassis.



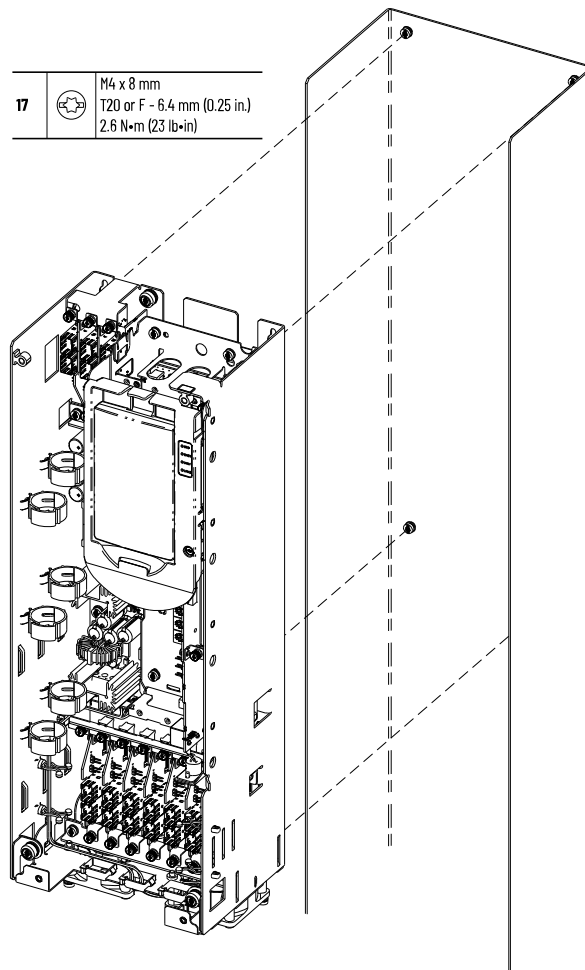
15. Disconnect connector P14 from connector J14 on the fiber-optic interface board.

16. If installed, disconnect the customer supplied 24V supply power wire connector P13 from connector J13 on the fiber-optic interface board.



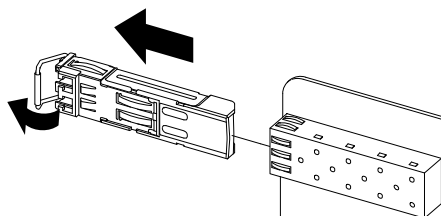
17. Loosen the four M4 x 8 mm Torx screws that secure the pod chassis to the back panel.

18. Slide the pod up, so that the keyholes on the pod clear the mounting screws, and remove the control pod.



Control pod mounting panel shown in example.

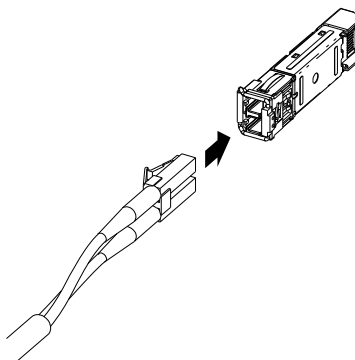
19. Install the control pod in the reverse order of removal.
20. Make any necessary changes to the settings on these main control board selectors or jumpers:
 - Control selector
 - Embedded EtherNet/IP™ address selectors
 - Safety enable jumper
 - Hardware enable jumper
21. For each fiber transceiver board, open the transceiver latch and pull the transceiver out of the connector on the board.



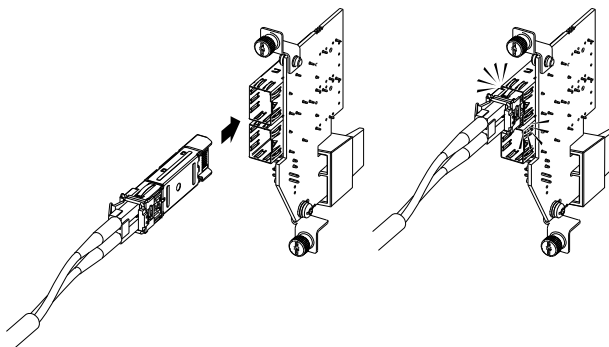


If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

22. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



23. Insert the transceiver and fiber-optic cable into the connector on the board, until you hear an audible 'click.'



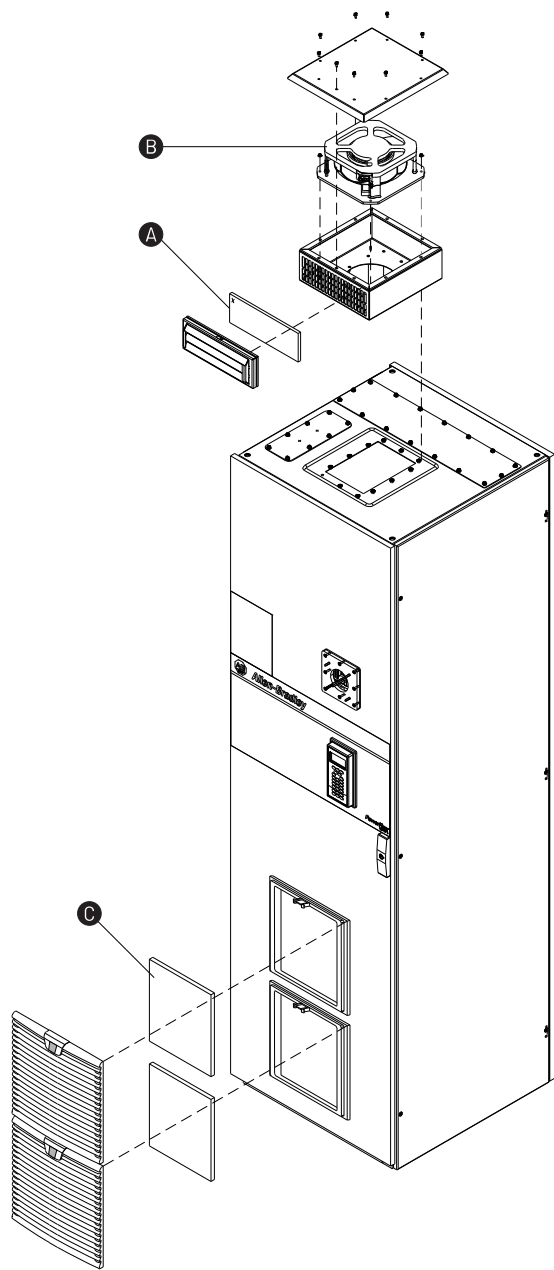
Frames 8...15 Input Bay Kits

This table lists the renewal kits available for input bay for frames 8...15. (XT) appears in the description column in the table to help identify a kit that contains protective covers and/or dielectric grease on connectors.

Table 28. Input Bay Ventilation Renewal Kits

Cat. No.	Description	Notes	Item in Figure
SK-RM-IBFAN-54FLTR1	IP21/IP54 Roof Vent Filter	—	A
SK-RM-IBFAN1-F8	IP54/IP21 Roof Vent Fan	—	B
SK-RM-IB4DR-FLTR1	IP54/IP21 400 mm Wide Door Vent Filter	—	C
SK-RM-IB6DR-FLTR1	IP54/IP21 600 mm Wide Door Vent Filter	—	C
SK-RM-PB8DR-54FLTR1	IP54 1000 mm Wide Door Vent Filters	—	D
SK-RM-PB8DR-21FLTR1	IP21 1000 mm Wide Door Vent Filter	—	E
SK-RM-IBDR-FAN1	IP54/IP21 1000 mm Wide Door Vent Fan	This kit contains one fan with wire harness.	F

Figure 17. Frame 8 and 9 Input Bay Ventilation Kits Identification



 Door vent cover shown removed for clarity only. Door vent covers remain attached to the vent back panel when open.

Figure 18. Frames 10...12 Input Bay Ventilation Kits Identification

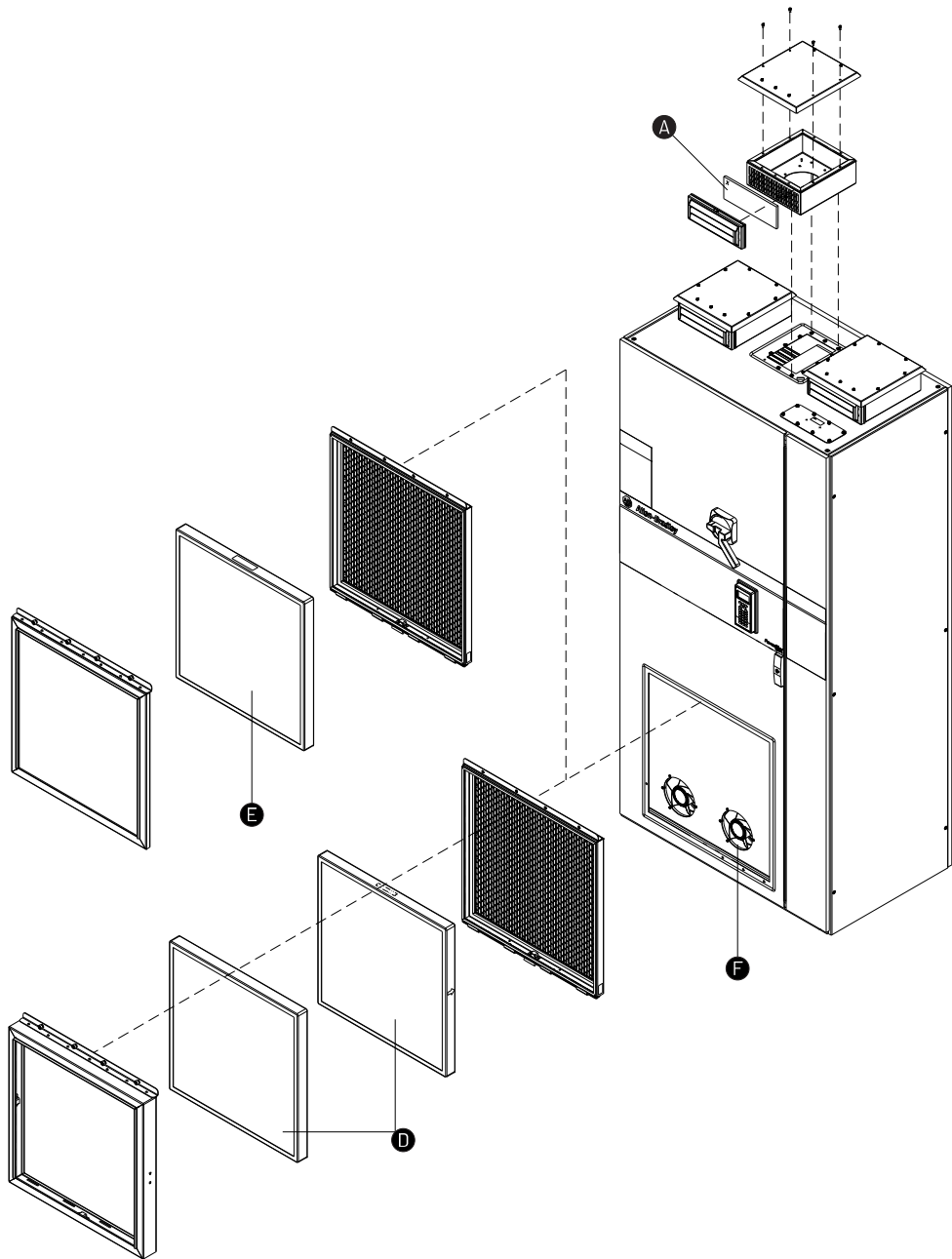


Table 29. Input Bay AC Precharge Renewal Kits

Cat. No.	Description	Notes	Item in Figure
20-750-MACPC1-CD	400V/480V, AC Precharge Control Circuit Board (XT)	—	G
20-750-MACPC1-EF	600V/690V, AC Precharge Control Circuit Board (XT)	—	G
SK-RM-IBCB-FUSE1A-F8	400V/480V/600V, AC Precharge Control Circuit Board Fuse (FH1)	This kit contains three fuses.	H

Table 29. Input Bay AC Precharge Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
SK-RM-IBCB-FUSE1B-F9	690V, AC Precharge Control Circuit Board Fuse (FH1)	This kit contains three fuses.	H
20-750-MACPC-TDR	AC Precharge Time Delay Relay	—	I
20-750-MACP-CD-TVSS	400V/480V, AC Precharge TVSS Module	—	J
20-750-MACP-EF-TVSS	600V/690V, AC Precharge TVSS Module	—	J
SK-RM-IBFH4-FUSE4x-Fn	Control Transformer Fuses (FH4...FH7)	These kits contain two fuses. Kit catalog numbers vary based on the product frame size, voltage class, and IP rating. See the control transformer fuse replacement procedure for product frame size, voltage class, IP rating, and kit compatibility.	K
SK-RM-IBD-FUSEx-Fn	AC Precharge Fused Disconnect (FD1) Fuses	This kit contains three fuses. Kit catalog numbers vary based on the product frame size and voltage class. See the AC precharge fused disconnect fuse replacement procedure for product frame size, voltage class, and kit compatibility.	L
20-750-MACPCCB-1K0-F8M	AC Precharge Circuit Breaker (Frame 8)	—	M
—	AC Precharge Control Transformers	AC precharge control transformers are not available as a Rockwell Automation replacement kit. See the PowerFlex® 755TM IP00 Open Type Kits, Technical Data, publication 750-TD101, for a complete list of Rockwell Automation recommended control transformer vendor catalog numbers.	P

Figure 19. Frame 8 and 9 AC Precharge Module Kits Identification

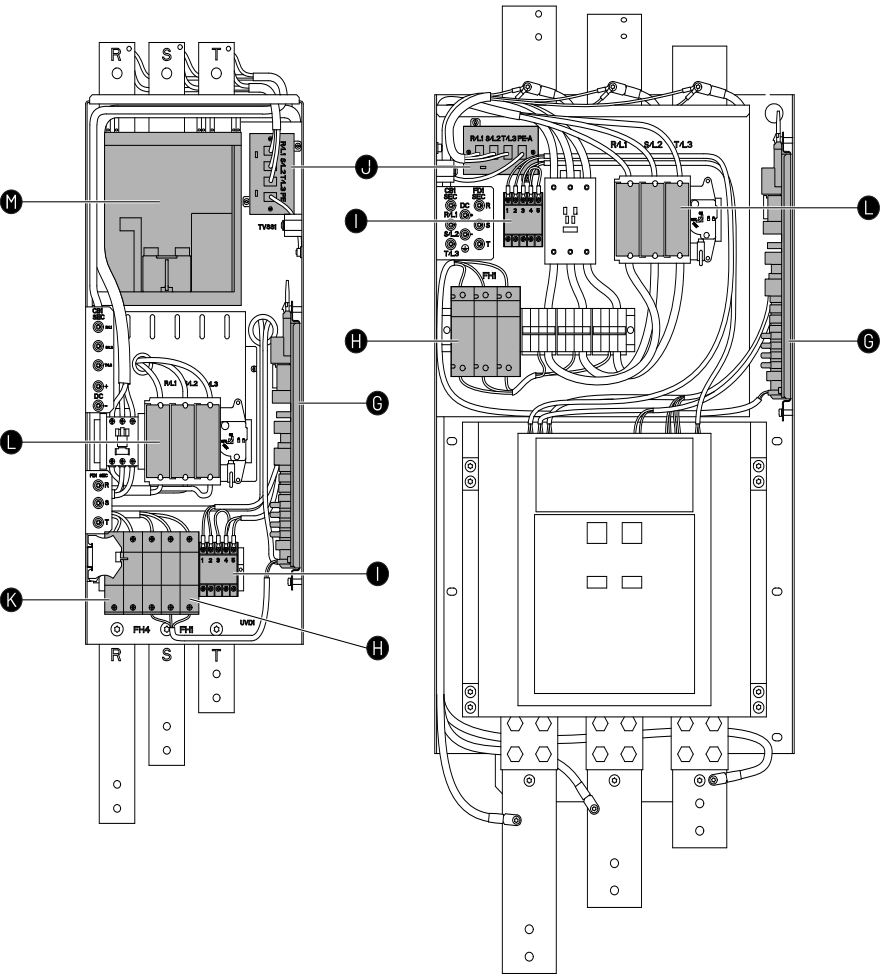


Figure 20. Frames 10...15 AC Precharge Module and Control Components Kits Identification

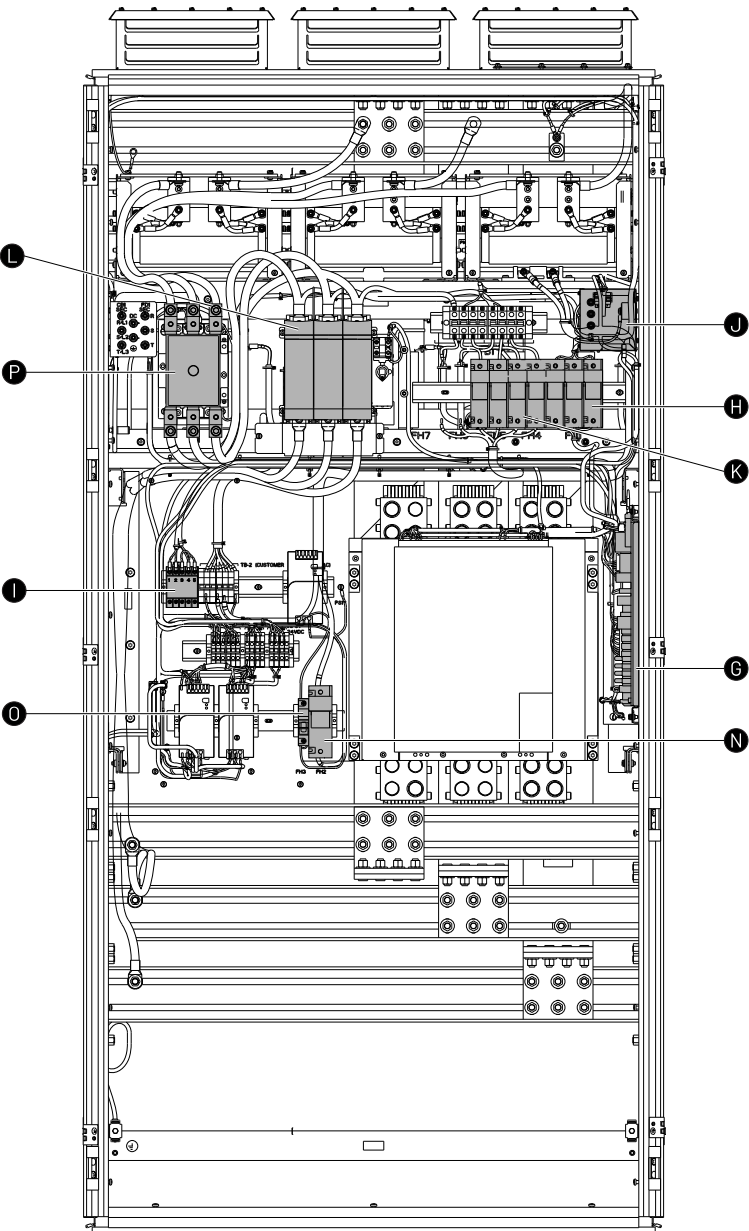


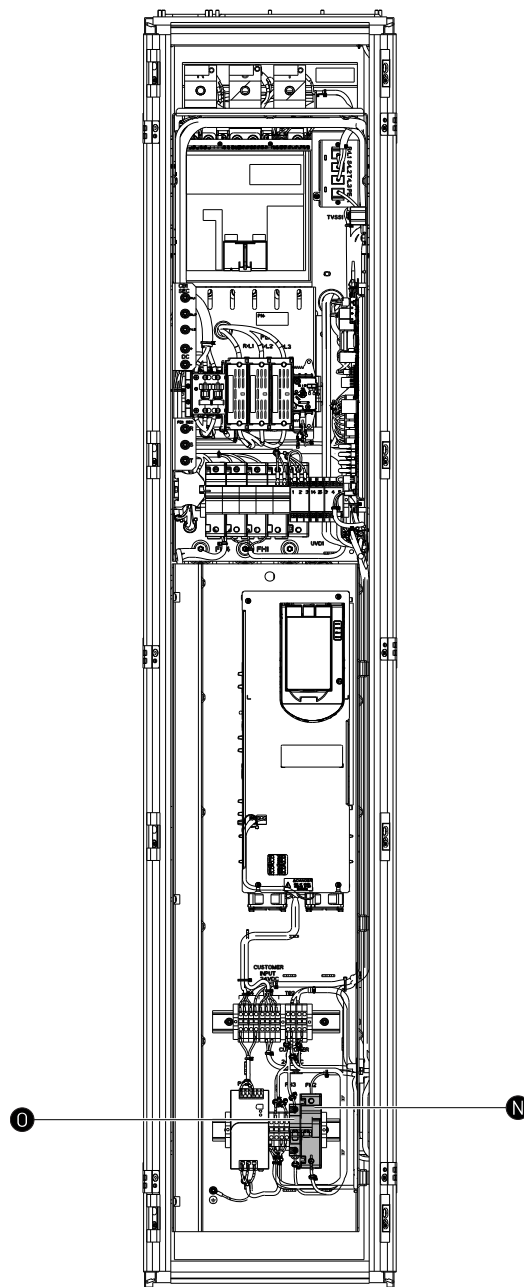
Table 30. Input Bay Control Power Renewal Kits

Cat. No.	Description	Notes	Item in Figure
SK-RM-IBFH2-FUSE2x-Fn	240V Power Distribution Fuse (FH2)	This kit contains one fuse. Kit catalog numbers vary based on the product frame size and IP rating. See the power distribution fuse replacement procedure for product frame size, voltage class, IP rating, and kit compatibility.	N

Table 30. Input Bay Control Power Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
SK-RM-IBFH3-FUSE3x-Fn	Roof Fan 240V Control Power Fuse (FH3)	This kit contains one fuse. Kit catalog numbers vary based on the product frame size and IP rating. See the roof fan 240V control power fuse replacement procedure for product frame size, voltage class, IP rating, and kit compatibility.	0

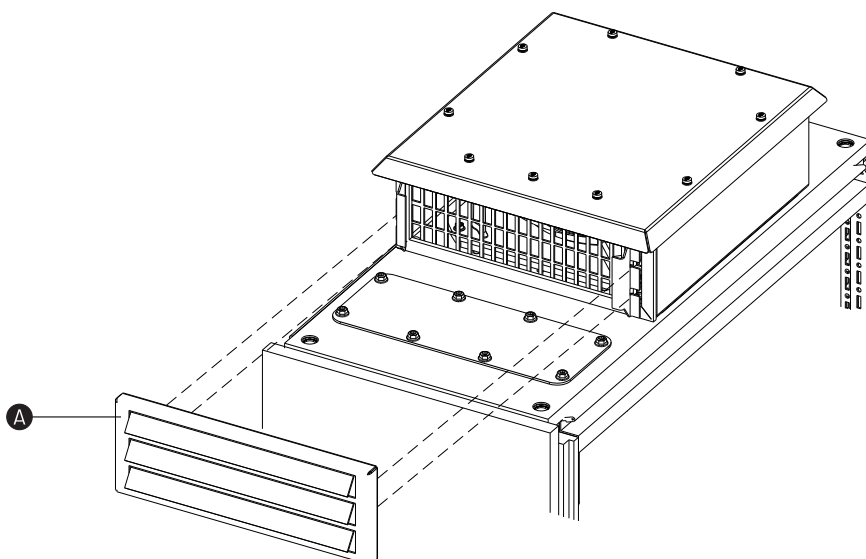
Figure 21. Frame 8 and 9 Input Bay Control Power Kits Identification



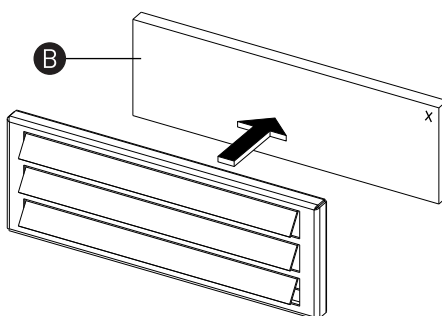
Remove and Install the IP21/IP54 Roof Vent Filter for Frames 8...15

Replace an IP21/IP54 roof vent filter on a control or input bay with kit catalog number SK-RM-IBFAN-54FLTR1. Follow these steps to remove and install the IP21/IP54 roof vent filter.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Slide the vent cover (A) up to release the tabs from the slots in the vent assembly and remove the vent.



4. Remove the filter (B) from the vent cover.



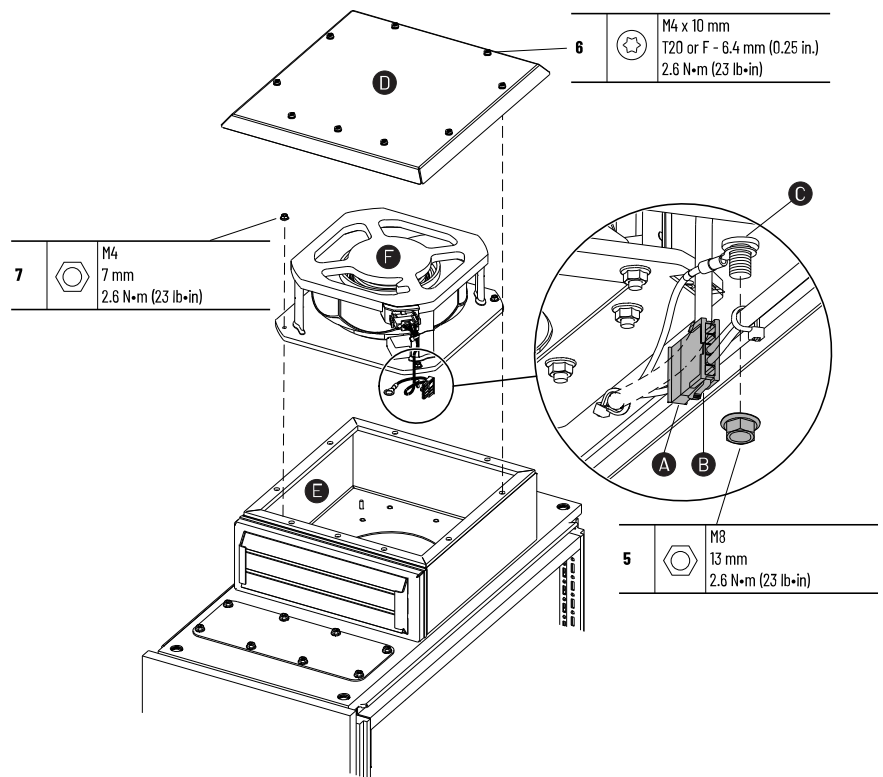
IMPORTANT: For installation of the new filter, verify that the 'X' on the filter media is on the side that faces toward the roof vent (A).

5. Install the IP21/IP54 roof vent filter in the reverse order of removal.

Remove and Install the IP21/IP54 Roof Vent Fan for Frames 8...15

Replace an IP21/IP54 roof vent fan on a control or input bay with kit catalog number SK-RM-IBFAN1-F8. Follow these steps to remove and install the IP21/IP54 roof vent fan.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the control bay or input bay enclosure door.
4. Disconnect the fan P2 connector (A) from connector P12 (B) on the inside of the enclosure.
5. Remove the M8 hex nut and washer that secure the ground wire (C) to the inside of the enclosure roof and remove the wire.
6. Remove the nine M4 x 10 mm slotted-Torx screws that secure the vent cover (D) to the top of the vent assembly and remove the cover.
7. Remove the four M4 hex nuts that secure the fan assembly to the vent (E).
8. Lift the side of the fan (F) opposite from the connector and, while holding the fan at an angle to the housing, remove the fan.



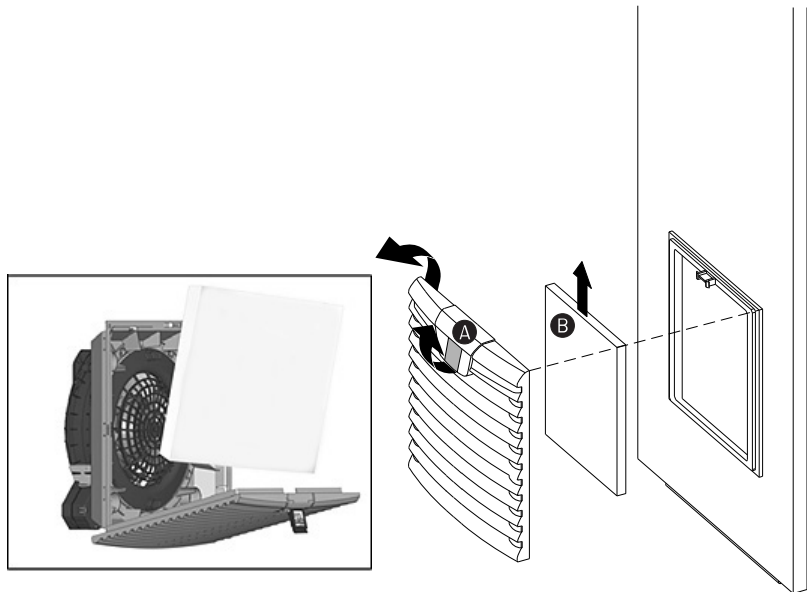
9. Install the IP21/IP54 roof vent fan in the reverse order of removal.

Remove and Install the IP54/IP21, 400/600 mm Wide Door Vent Filters for Frames 8...15

Replace the IP54/IP21, 400/600 mm wide door vent filter with it catalog number SK-RM-IB4DR-FLTR1 (400 mm wide door) or SK-RM-IB6DR-FLTR1 (600 mm wide door). Follow these steps to remove and install the IP54/IP21, 400/600 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Lift the tab (A) on the top center of the vent cover and lower the cover.

4. Remove the filter media (B) from the vent.



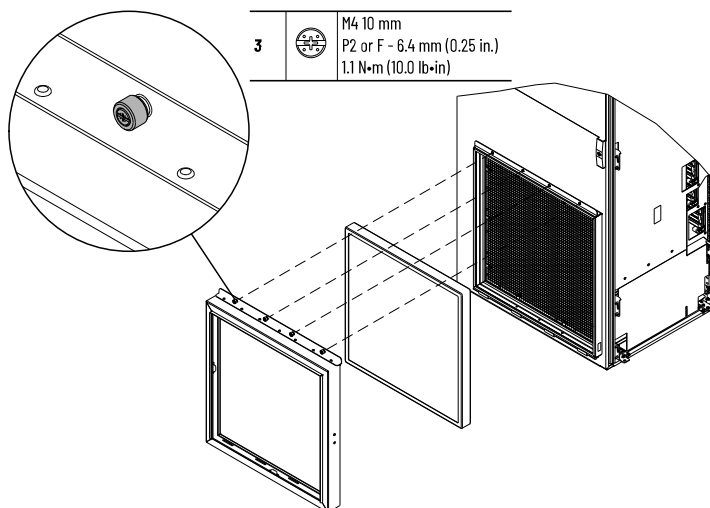
IMPORTANT: Verify that the Rittal logo on the fiber filter media points inward, toward the interior of the enclosure.

5. Install the IP54/IP21, 400/600 mm wide door vent filters in the reverse order of removal.

Remove and Install the IP21, 800/1000 mm Wide Door Vent Filters for Frames 8...15

Replace the IP21 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-21FLTR1. Follow these steps to remove and install the IP21, 800/1000 mm wide door vent filter.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door and remove the cover and metal mesh filter.



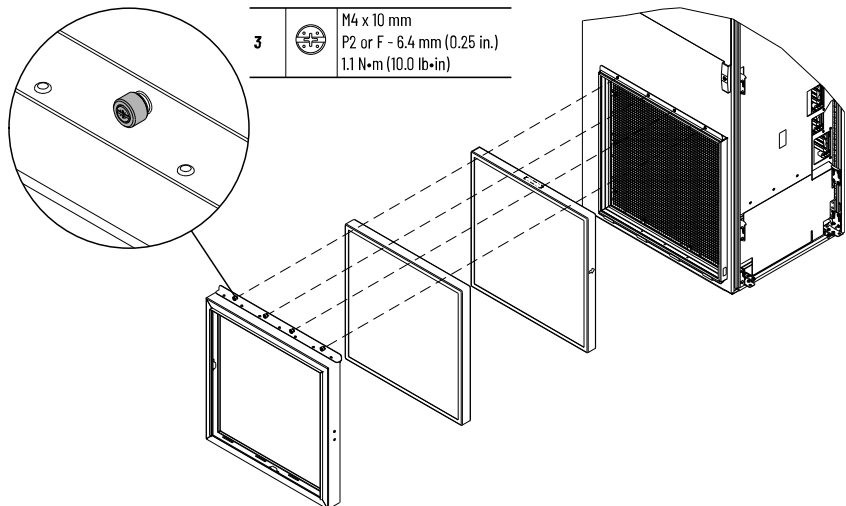
IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

4. Place the slots on the cassette cover on the tabs on the door vent chassis.
5. Insert the filter in the cassette chassis on the door and close and secure the cassette cover to the door.

Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frames 8...15

Replace the IP54 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-54FLTR1. Follow these steps to remove and install the IP54, 800/1000 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door.
4. Remove the metal mesh filter from the cover.
5. Pull the top edge of the fiber filter out and lift it off the cassette on the door.



IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

6. Insert the new metal mesh filter into the filter cassette cover.
7. Place the slots on the cassette cover on the tabs on the door vent chassis.

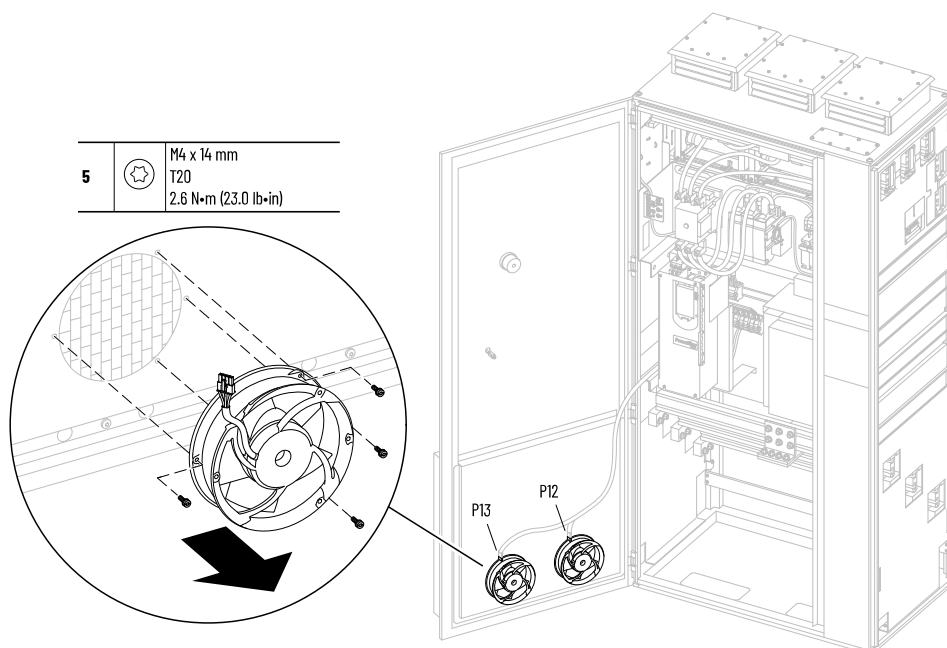
IMPORTANT: Verify that the airflow direction arrow on the fiber filter media points inward, toward the interior of the enclosure.

8. Insert the fiber filter in the cassette chassis on the door and close and secure the cassette cover with metal mesh filter to the door.

Remove and Install the IP54/IP21, 1000 mm Wide Door Vent Fan for Frames 8...15

Replace the IP54/IP21, 1000 mm wide door vent fan for an input bay with kit catalog number SK-RM-IBDR-FAN1. Follow these steps to remove and install the IP54/IP21, 1000 mm wide door vent fan.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the input bay enclosure door.
4. Disconnect the connectors P12 or P13 from the fans on the door.
5. Remove the four M4 x 14 mm Torx screws that secure the fan to the door and remove the fan.



IMPORTANT: Verify that the airflow direction arrow on the fan points inward, toward the interior of the enclosure.

6. Install the door vent fans in the reverse order of removal.

Remove and Install the Input Bay Guard for Frames 8...15

You must remove the guards to access other components inside the input bay. Follow these steps to remove and install the guards.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the input bay enclosure door.
4. Loosen the M5.5 x 13 mm Torx screws that secure the guard to the enclosure and remove the appropriate guard.
 - Frame 8, 400 mm wide input bay guards require removal of six screws.
 - Frame 9, 600 mm wide input bay guards require removal of six screws.
 - Frames 10...15, 1000 mm wide input bay guards require removal of 28 screws.

Figure 22. Frame 8, 400 mm Wide Input Bay

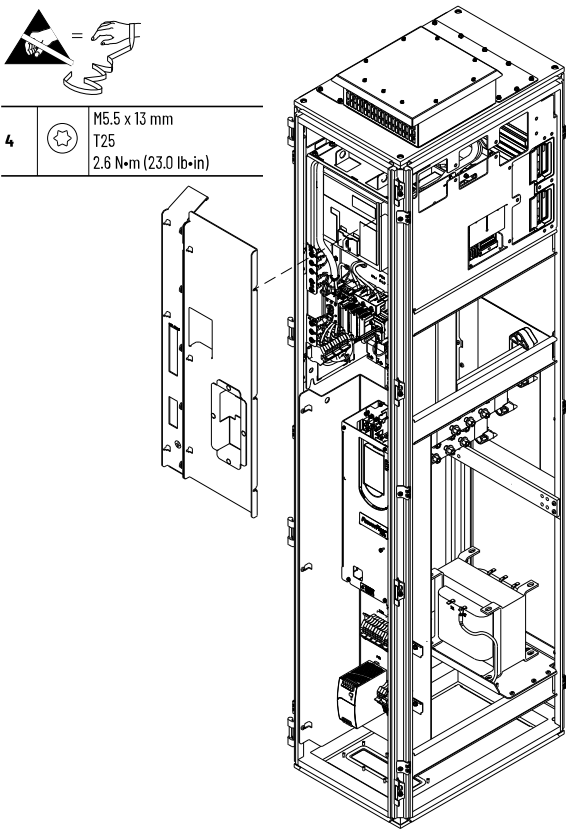


Figure 23. Frame 9, 600 mm Wide Input Bay

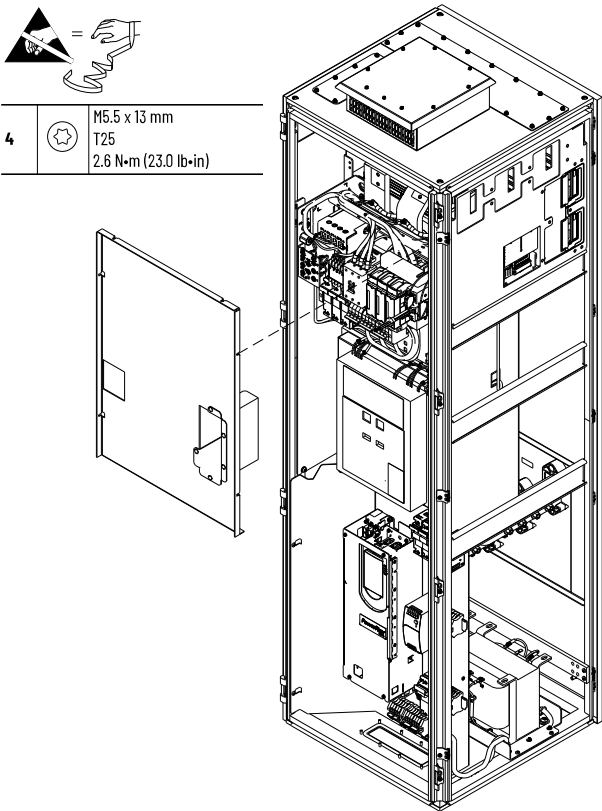
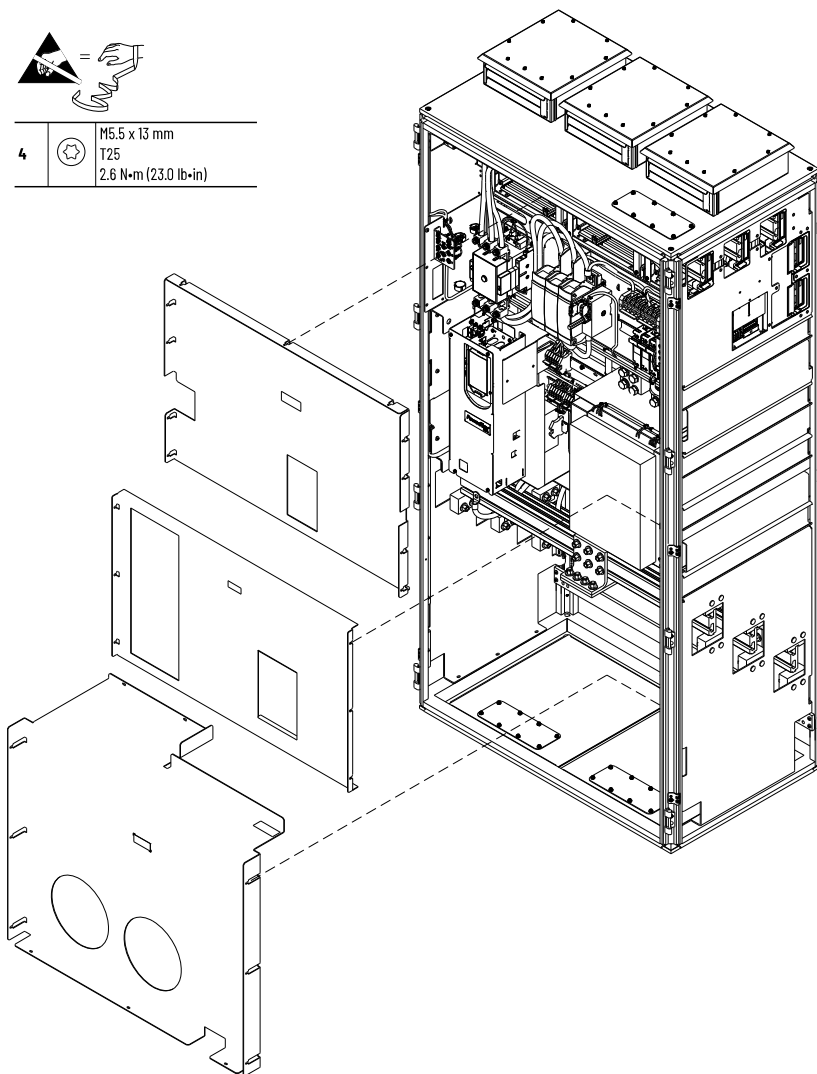


Figure 24. Frames 10...15, 1000 mm Wide Input Bay



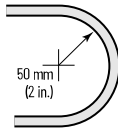
5. Install the guards in the reverse order of removal.

Remove and Install the AC Precharge Control Circuit Board for Frames 8...15

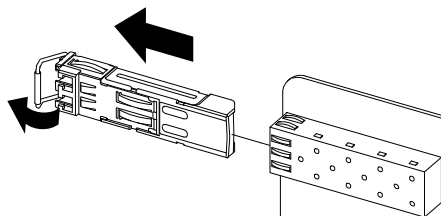
Replace the AC precharge control circuit board with kit catalog numbers 20-750-MACPC1-CD and 20-750-MACPC1-EF. Follow these steps to remove and install the AC precharge control circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard. See [Remove and Install the Input Bay Guard for Frames 8...15 on page 200](#).

IMPORTANT: The 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 as inside bend radius is decreased.

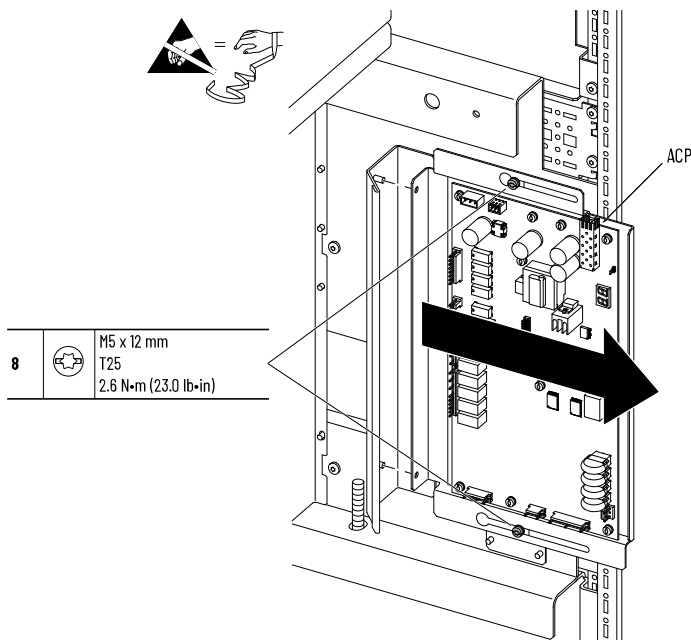


5. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the ACP port on the AC precharge control circuit board.
6. Open the transceiver latch and pull the transceiver out of the connector on the board. You can retain the transceiver as a spare part.

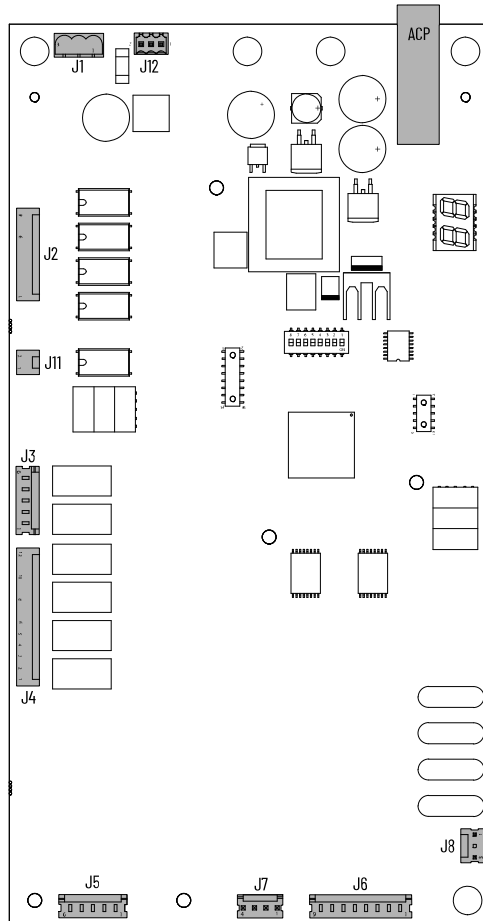


If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

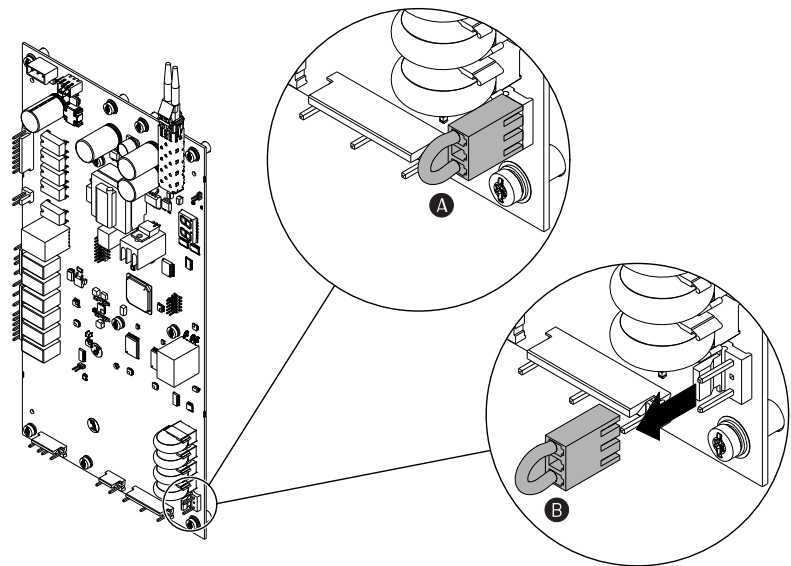
7. Cut and remove the tie wraps that secure the wire harnesses that is connected to the AC precharge control circuit board.
8. Loosen the two 5 x 12 mm slotted-Torx screws that secure the circuit board panel to the AC precharge module chassis or enclosure side sheet and slide the panel out of the chassis as far as possible.



9. Disconnect these wire harness connectors from the connectors on the AC precharge circuit board:
 - P1 from J1
 - P2 from J2
 - P3 from J3
 - P4 from J4
 - P5 from J5
 - P6 from J6
 - P7 from J7
 - P11 from J11
 - P12 from J12, if present



10. Record the position of the PE-A jumper on the circuit board. The PE-A jumper on the new AC precharge control circuit board must be installed in the same position.



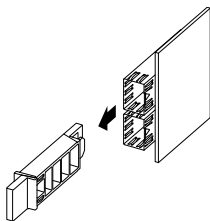
Item	Description
A	PE-A jumper in the "IN" position
B	PE-A jumper in the "OUT" position

- Remove the bracket and board by sliding the bracket out of the drive.
- Install the AC precharge control circuit board in the reverse order of removal.



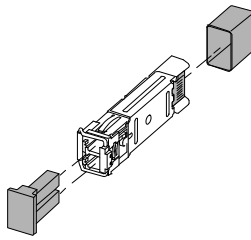
This illustration represents a fiber-optic transceiver port on an example circuit board only.

- Remove the protective cover from the ACP port on the new AC precharge circuit board.

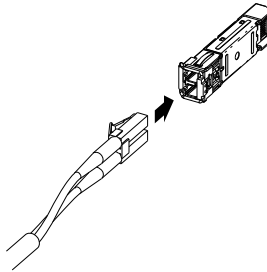


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

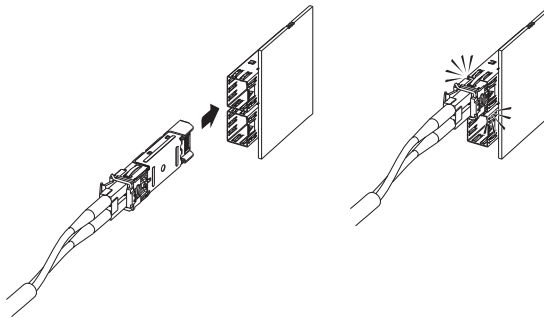
- Remove the new transceiver supplied with the kit from the packing materials.
- Remove the protective covers from the transceiver.



16. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



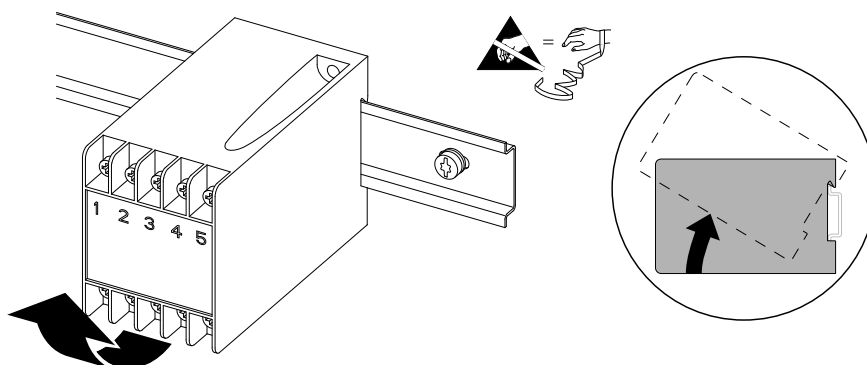
17. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



Remove and Install the AC Precharge Time Delay Relay for Frames 8...15

Replace the AC precharge time delay relay with kit catalog number 20-750-MACPC-TDR. Follow these steps to remove and install the AC precharge time delay relay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the input bay enclosure door.
4. Remove the guard from the enclosure.
5. Disconnect the wires from the top terminals on the time delay relay.
6. Pull up on the bottom of the relay chassis and lift it up and off the DIN rail.

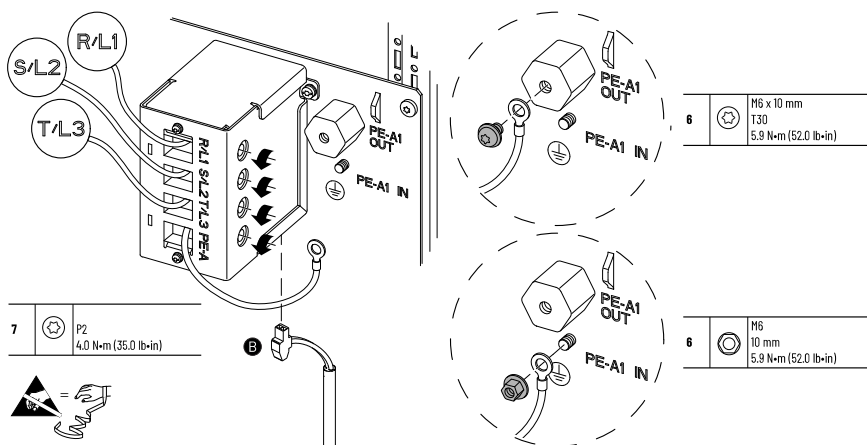


7. Install the AC precharge time delay relay in the reverse order of removal.

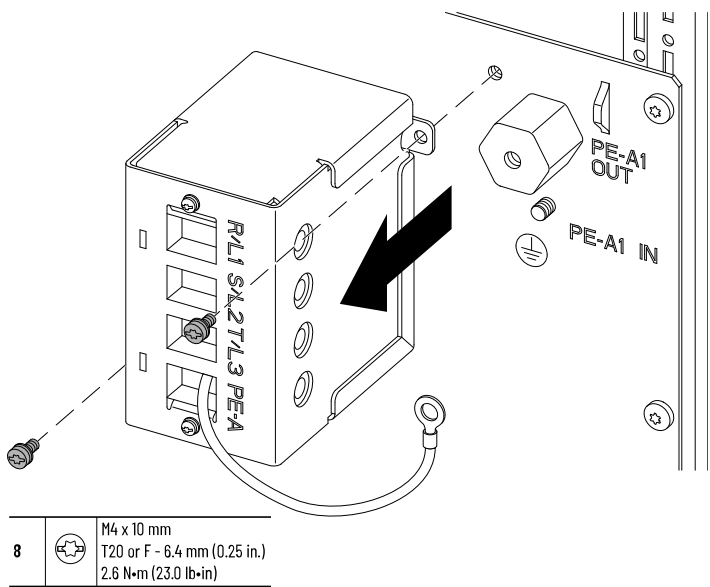
Remove and Install the AC Precharge TVSS Module for Frames 8...15

Replace the AC precharge TVSS module with kit catalog number 20-750-MACP-CD-TVSS (400V/480V) or 20-750-MACP-EF-TVSS (600V/690V). Follow these steps to remove and install the AC precharge TVSS module relay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the input bay enclosure door.
4. Remove the guard from the enclosure.
5. Disconnect connector P15 (B) from the module.
6. Remove either the M6 hex nut or M6 x 10 mm Torx screw that secures the ground wire to the appropriate PE-A1 terminal.
7. Loosen the terminal block screws that secure the wires to terminals R/L1, S/L2, and T/L3 and remove the wires.



8. Remove the two M4 x 10 mm slotted-Torx screws that secure the TVSS module to the panel and remove the module.



9. Install the AC precharge TVSS module in the reverse order of removal.

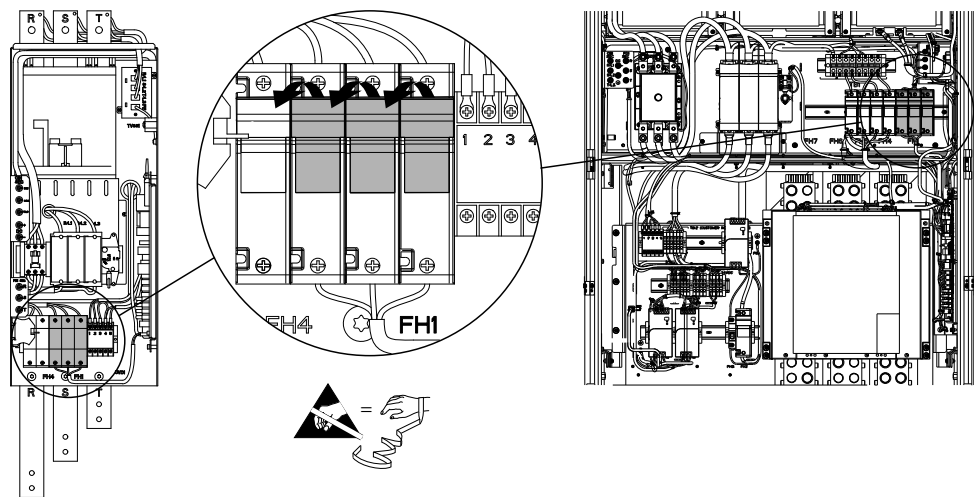
Remove and Install the AC Precharge Control Circuit Board Fuses (FH1) for Frames 8...15

Replace the AC precharge control circuit board fuses (labeled FH1) with the appropriate kit catalog number that is identified in this table. Each kit contains three fuses.

Cat. No.	Voltage Class	Fuse Amp Rating	Frame Size	Required Fuse Quantity
SK-RM-IBCB-FUSE1A-F8	400V/480V/600V	1	8...12	3
SK-RM-IBCB-FUSE1A-F8	400V/480V/600V	1	13...15	6
SK-RM-IBCB-FUSE1B-F9	690V	1	8...12	3
SK-RM-IBCB-FUSE1B-F9	690V	1	13...15	6

For frames 8 and 9, the fuse holders labeled FH1 are located in the AC precharge module in the input bay. For frames 10...15, the fuse holders labeled FH1 are on the control panel in the input bay. Follow these steps to remove and install the AC precharge control circuit board fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the guard from the enclosure.
5. Pull out the tabs at the top of the fuse holders and remove the fuses.



6. Install the AC precharge control circuit board fuses in the reverse order of removal.

Remove and Install the Input Bay 240V Power Distribution Fuse (FH2) for Frames 8...15

Replace the 240V power distribution fuse (labeled FH2) with the appropriate kit catalog number that is identified in these tables. Each kit contains one fuse.

Table 31. Frame 8 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2A-F8	400V/480V/600V	15	IP21	1
SK-RM-IBFH2-FUSE2B-F8	690V	16	IP21	1
SK-RM-IBFH2-FUSE2C-F8	400V/480V/600V	20	IP54	1
SK-RM-IBFH2-FUSE2D-F8	690V	20	IP54	1

Table 32. Frame 9 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2E-F9	400V/480V/600V	25	IP21	1
SK-RM-IBFH2-FUSE2F-F9	690V	25	IP21	1
SK-RM-IBFH2-FUSE2G-F9	400V/480V/600V	35	IP54	1
SK-RM-IBFH2-FUSE2H-F9	690V	40	IP54	1

Table 33. Frame 10 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2G-F9	400V/480V/600V	35	IP21	1
SK-RM-IBFH2-FUSE2H-F9	690V	40	IP21	1
SK-RM-IBFH2-FUSE2I-F10	400V/480V/600V	60	IP54	1
SK-RM-IBFH2-FUSE2J-F10	690V	63	IP54	1

Table 34. Frame 11 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2K-F11	400V/480V/600V	45	IP21	1
SK-RM-IBFH2-FUSE2L-F11	690V	50	IP21	1
SK-RM-IBFH2-FUSE2M-F11	400V/480V/600V	70	IP54	1
SK-RM-IBFH2-FUSE2N-F11	690V	80	IP54	1

Table 35. Frame 12 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2I-F10	400V/480V/600V	60	IP21	1
SK-RM-IBFH2-FUSE2J-F10	690V	63	IP21	1
SK-RM-IBFH2-FUSE2O-F12	400V/480V/600V	70	IP54	1
SK-RM-IBFH2-FUSE2P-F12	690V	80	IP54	1

Table 36. Frame 13 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2G-F9	400V/480V/600V	35	IP21	2
SK-RM-IBFH2-FUSE2H-F9	690V	40	IP21	2
SK-RM-IBFH2-FUSE2I-F10	400V/480V/600V	60	IP54	2
SK-RM-IBFH2-FUSE2J-F10	690V	63	IP54	2

Table 37. Frame 14 Fuses

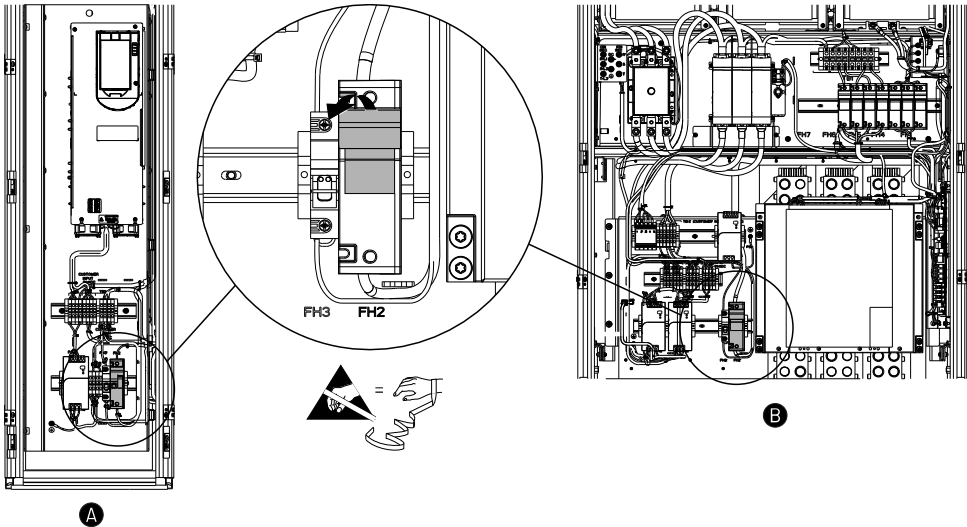
Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2K-F11	400V/480V/600V	45	IP21	2
SK-RM-IBFH2-FUSE2L-F11	690V	50	IP21	2
SK-RM-IBFH2-FUSE2M-F11	400V/480V/600V	70	IP54	2
SK-RM-IBFH2-FUSE2N-F11	690V	80	IP54	2

Table 38. Frame 15 Fuses

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Required Fuse Quantity
SK-RM-IBFH2-FUSE2I-F10	400V/480V/600V	60	IP21	2
SK-RM-IBFH2-FUSE2J-F10	690V	63	IP21	2
SK-RM-IBFH2-FUSE2O-F12	400V/480V/600V	70	IP54	2
SK-RM-IBFH2-FUSE2P-F12	690V	80	IP54	2

The 240V power distribution fuse holder (labeled FH2) is on the control panel in the input bay. Follow these steps to remove and install the 240V power distribution fuse.

- 1. Review the product advisories in [Before You Begin on page 12](#).
- 2. Remove power from the system.
- 3. Open the enclosure door.
- 4. Remove the guard from the enclosure.
- 5. Pull out on the tab at the top of the fuse holder and remove the fuse.



Item	Description		Item	Description
A	Frames 8 and 9 Input Bay		B	Frames 8...15 Input Bay (Frame 10 Shown)

6. Install the 240V power distribution fuse in the reverse order of removal.

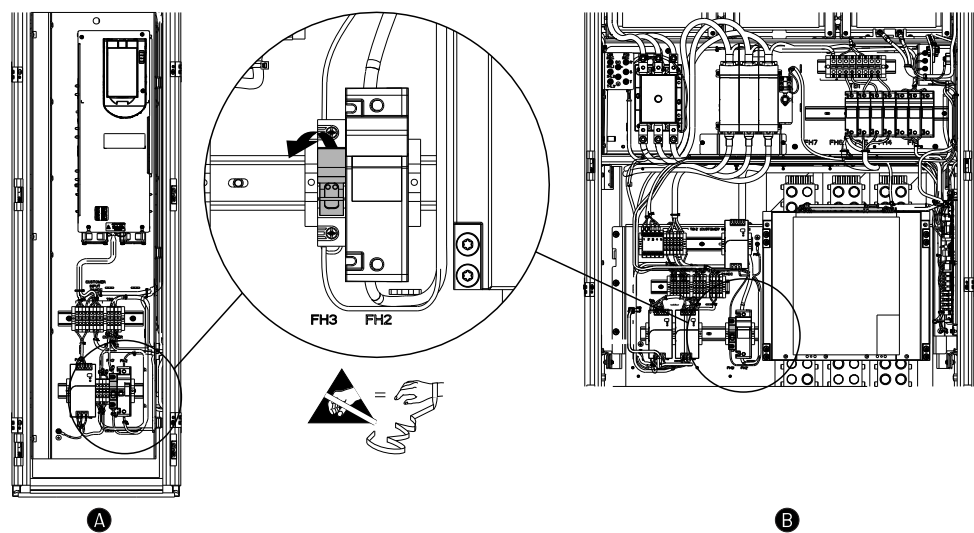
Remove and Install the Input Bay Roof Fan 240V Control Power Fuse (FH3) for Frames 8...15

Replace the input bay roof fan 240V control power fuse (labeled FH3) with the appropriate kit catalog number that is identified in this table. Each kit contains one fuse.

Cat. No.	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Frame Size	Required Fuse Quantity
SK-RM-IBFH3-FUSE3B-F8	400V/480V/600V	2	IP21/IP54	8 and 9	1
SK-RM-IBFH3-FUSE3A-F8	690V	2	IP21/IP54	8 and 9	1
SK-RM-IBFH3-FUSE3D-F10	400V/480V/600V	4	IP21/IP54	10...12	4
SK-RM-IBFH3-FUSE3D-F10	400V/480V/600V	4	IP21/IP54	13...15	4
SK-RM-IBFH3-FUSE3C-F10	690V	4	IP21/IP54	10...12	4
SK-RM-IBFH3-FUSE3C-F10	690V	4	IP21/IP54	13...15	4

The roof fan 240V control power fuse holder (labeled FH3) is on the control panel in the input bay. Follow these steps to remove and replace the roof fan 240V control power fuse.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the guard from the enclosure.
5. Pull out on the tab at the top of the fuse holder and remove the fuse.



Item	Description	Item	Description
A	Frames 8 and 9 Input Bay	B	Frames 8...15 Input Bay (Frame 10 Shown)

6. Install the roof fan 240V control power fuse in the reverse order of removal.

Remove and Install the Control Transformer Fuses (FH4...FH7) for Frames 8...15

Replace the control transformer fuses (labeled FH4...FH7) with the appropriate kit catalog number that is identified in these tables.

IMPORTANT: Control transformer fuse quantities vary based on the product voltage class and IP rating. It is recommended that you replace all control transformer fuses.

Table 39. Frame 8 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4A-F8	2	400V/480V/600V	20	IP21	2
SK-RM-IBFH4-FUSE4B-F8	2	690V	16	IP21	2
SK-RM-IBFH4-FUSE4C-F8	2	400V/480V/600V	30	IP54	2
SK-RM-IBFH4-FUSE4D-F8	2	690V	20	IP54	2

Table 40. Frame 9 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4C-F8	2	400V/480V/600V	30	IP21	2
SK-RM-IBFH4-FUSE4D-F8	2	690V	20	IP21	2
SK-RM-IBFH4-FUSE4F-F9	4	400V/480V/600V	30	IP54	4
SK-RM-IBFH4-FUSE4H-F9	4	690V	20	IP54	4

Table 41. Frame 10 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4F-F9	4	400V/480V/600V	30	IP21	4
SK-RM-IBFH4-FUSE4H-F9	4	690V	20	IP21	4
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V/600V	30	IP54	6
SK-RM-IBFH4-FUSE4K-F11	6	690V	20	IP54	6

Table 42. Frame 11 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4F-F9	4	400V/480V/600V	30	IP21	4
SK-RM-IBFH4-FUSE4H-F9	4	690V	20	IP21	4
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V	30	IP54	6
SK-RM-IBFH4-FUSE4A-F8	6	600V	20	IP54	6
SK-RM-IBFH4-FUSE4K-F11	6	690V	20	IP54	6

Table 43. Frame 12 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V	30	IP21	6

Table 43. Frame 12 Fuses (continued)

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4A-F8	2	600V	20	IP21	6
SK-RM-IBFH4-FUSE4K-F11	6	690V	20	IP21	6
SK-RM-IBFH4-FUSE4F-F9	2	400V/480V	30	IP54	8
SK-RM-IBFH4-FUSE4A-F8	2	600V	20	IP54	8
SK-RM-IBFH4-FUSE4M-F12	8	690V	20	IP54	8

Table 44. Frame 13 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4F-F9	4	400V/480V/600V	30	IP21	8
SK-RM-IBFH4-FUSE4H-F9	4	690V	20	IP21	8
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V	30	IP54	12
SK-RM-IBFH4-FUSE4A-F8	2	600V	20	IP54	12
SK-RM-IBFH4-FUSE4K-F11	6	690V	20	IP54	12

Table 45. Frame 14 Fuses

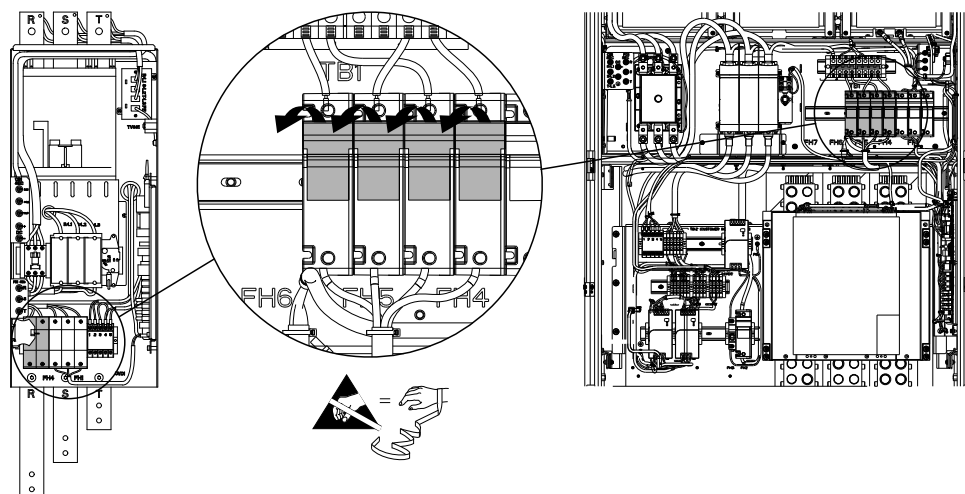
Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4F-F9	4	400V/480V/600V	30	IP21	8
SK-RM-IBFH4-FUSE4H-F9	4	690V	20	IP21	8
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V	30	IP54	12
SK-RM-IBFH4-FUSE4A-F8	2	600V	20	IP54	12
SK-RM-IBFH4-FUSE4K-F11	6	690V	20	IP54	12

Table 46. Frame 15 Fuses

Kit Cat. No.	Fuse Quantity in Kit	Voltage Class	Fuse Amp Rating	Enclosure IP Rating	Fuse Quantity Required
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V	30	IP21	12
SK-RM-IBFH4-FUSE4A-F8	2	600V	20	IP21	12
SK-RM-IBFH4-FUSE4K-F11	6	690V	20	IP21	12
SK-RM-IBFH4-FUSE4J-F11	6	400V/480V	30	IP54	16
SK-RM-IBFH4-FUSE4A-F8	2	600V	20	IP54	16
SK-RM-IBFH4-FUSE4M-F12	8	690V	20	IP54	16

For frame 8, the control transformer fuse holders (labeled FH4) are located in the AC precharge module in the input bay. For frames 9...15, the fuse holders (labeled FH4...FH7) are on the control panel in the input bay. Follow these steps to remove and replace the control transformer fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the guard from the enclosure.
5. Pull out on the tabs at the top of the fuse holder and remove the fuse.



6. Install the control transformer fuses in the reverse order of removal.

Remove and Install the AC Precharge Fused Disconnect (FD1) Fuses for Frames 8...15

Replace the AC precharge fused disconnect (labeled FD1) fuses with the appropriate kit catalog number that is identified in these tables. Each kit contains three fuses.

Table 47. Frame 8 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEA-F8	400V/480V/600V	30	3
SK-RM-IBD-FUSEB-F8	690V	32	3

Table 48. Frame 9 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEC-F9	400V/480V	70	3
SK-RM-IBD-FUSED-F9	600V	60	3
SK-RM-IBD-FUSEE-F9	690V	63	3

Table 49. Frame 10 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEF-F10	400V/480V	110	3
SK-RM-IBD-FUSEG-F10	600V	80	3
SK-RM-IBD-FUSEH-F10	690V	80	3

Table 50. Frame 11 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEI-F11	400V/480V	150	3
SK-RM-IBD-FUSEF-F10	600V	110	3
SK-RM-IBD-FUSEJ-F12	690V	125	3

Table 51. Frame 12 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEK-F12	400V/480V	200	3
SK-RM-IBD-FUSEI-F11	600V	150	3
SK-RM-IBD-FUSEL-F12	690V	160	3

Table 52. Frame 13 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEF-F10	400V/480V	110	6
SK-RM-IBD-FUSEG-F10	600V	80	6
SK-RM-IBD-FUSEH-F10	690V	80	6

Table 53. Frame 14 Fuses

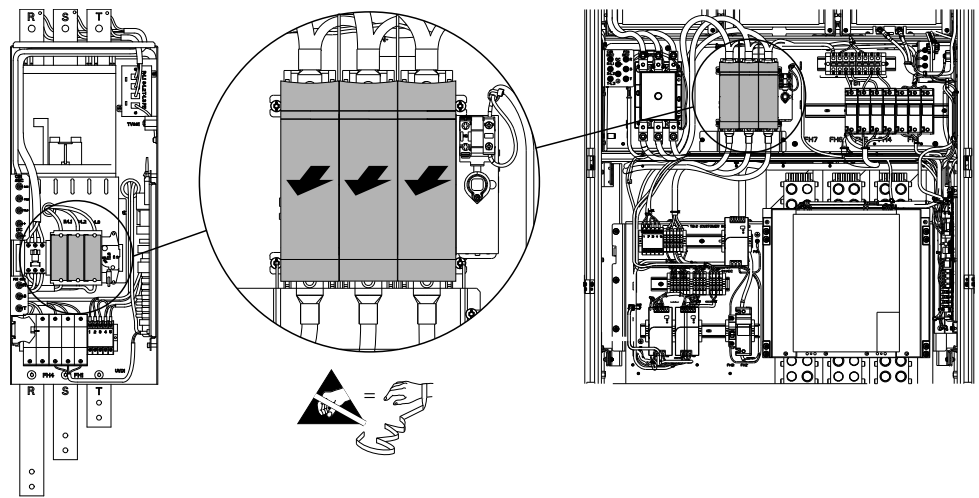
Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEI-F11	400V/480V	150	6
SK-RM-IBD-FUSEF-F10	600V	110	6
SK-RM-IBD-FUSEJ-F12	690V	125	6

Table 54. Frame 15 Fuses

Kit Cat. No.	Voltage Class	Fuse Amp Rating	Fuse Quantity Required
SK-RM-IBD-FUSEK-F12	400V/480V	200	6
SK-RM-IBD-FUSEI-F11	600V	150	6
SK-RM-IBD-FUSEL-F12	690V	160	6

For frames 8 and 9, the fused disconnect fuse holders (FD1) are located in the AC precharge module in the input bay. For frames 10...12, the fused disconnect fuse holders (FD1) are on the control panel in the input bay. Follow these steps to remove and install the AC precharge fused disconnect fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the guard from the enclosure.
5. Pull the front of the fuse assembly out and remove the fuses.



6. Install the AC precharge fused disconnect fuses in the reverse order of removal.

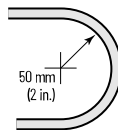
Remove and Install the AC Precharge Circuit Breaker for Frame 8

Replace the frame 8 AC precharge circuit breaker with kit catalog number 20-750-MACPCCB-1K0-F8M. Follow these steps to remove and install the AC precharge circuit breaker.

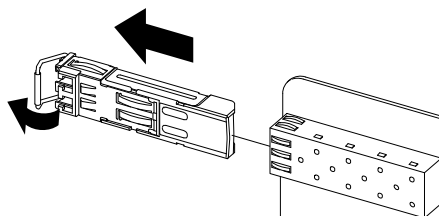
IMPORTANT: The circuit breaker weighs 11.0 kg (24.25 lb). It is recommended that two people complete these steps to remove the circuit breaker from the module.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the enclosure door.
4. Remove the protective guard.

IMPORTANT: The 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 as inside bend radius is decreased.



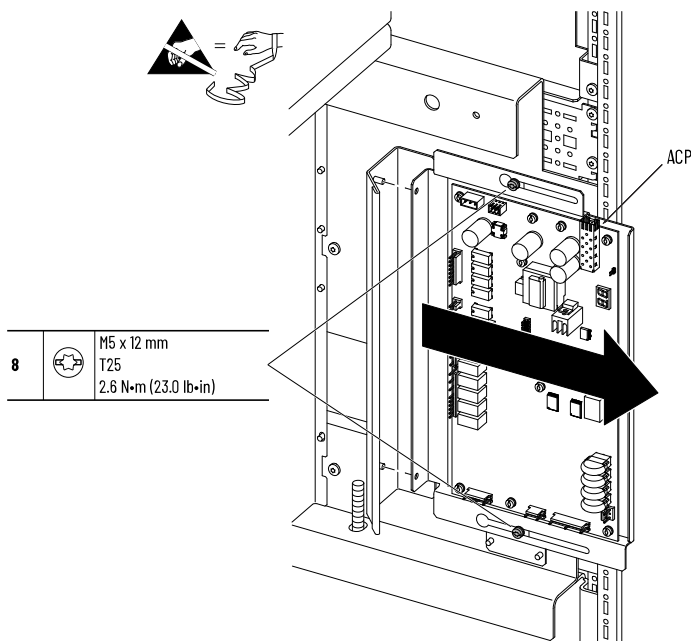
5. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the ACP port on the AC precharge control circuit board.
6. Open the transceiver latch and pull the transceiver out of the connector on the board. Retain the transceiver as a spare part.



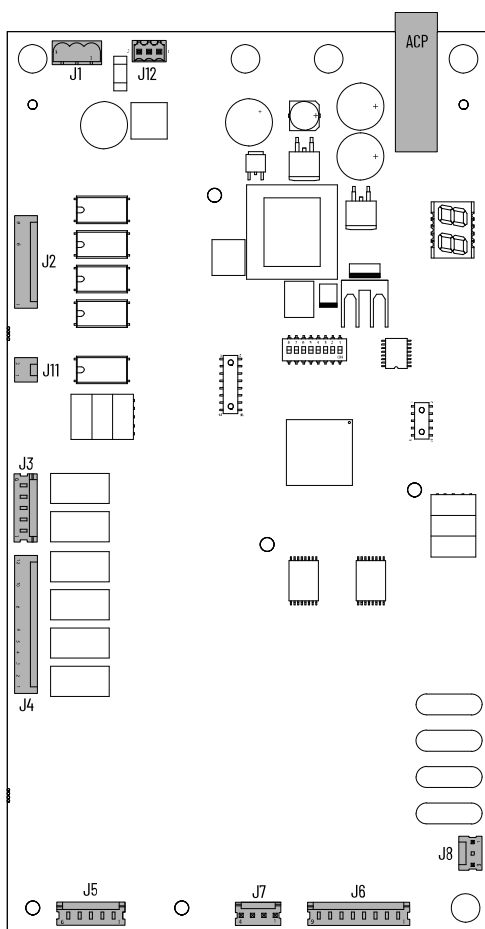


If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

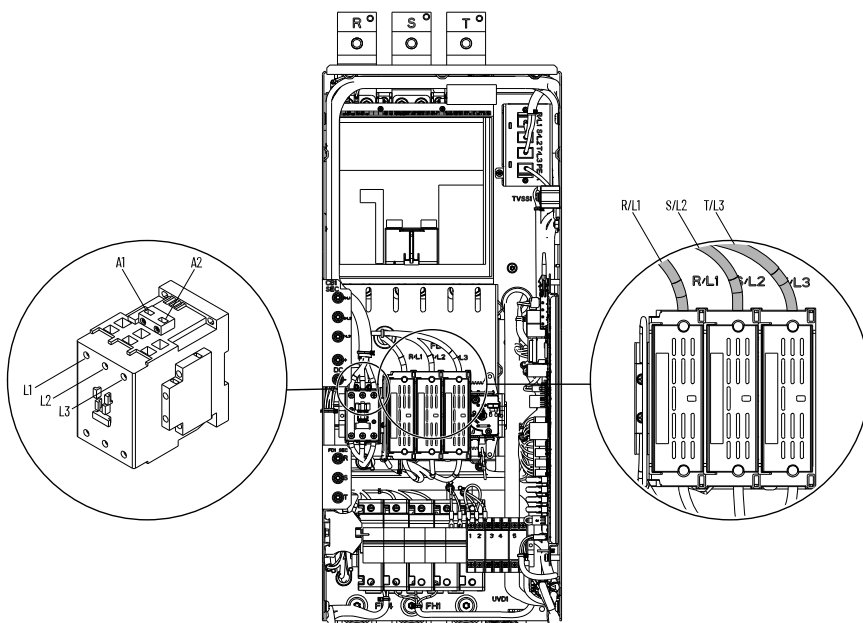
7. Cut and remove the tie wraps that secure the wire harnesses that is connected to the AC precharge control circuit board.
8. Loosen the two 5 x 12 mm slotted-Torx screws that secure the circuit board panel to the AC precharge module chassis or enclosure side sheet and slide the panel out of the chassis as far as possible.



9. Disconnect these wire harness connectors from the connectors on the AC precharge circuit board:
 - P1 from J1
 - P2 from J2
 - P3 from J3
 - P4 from J4
 - P5 from J5
 - P6 from J6
 - P7 from J7
 - P11 from J11
 - P12 from J12, if present

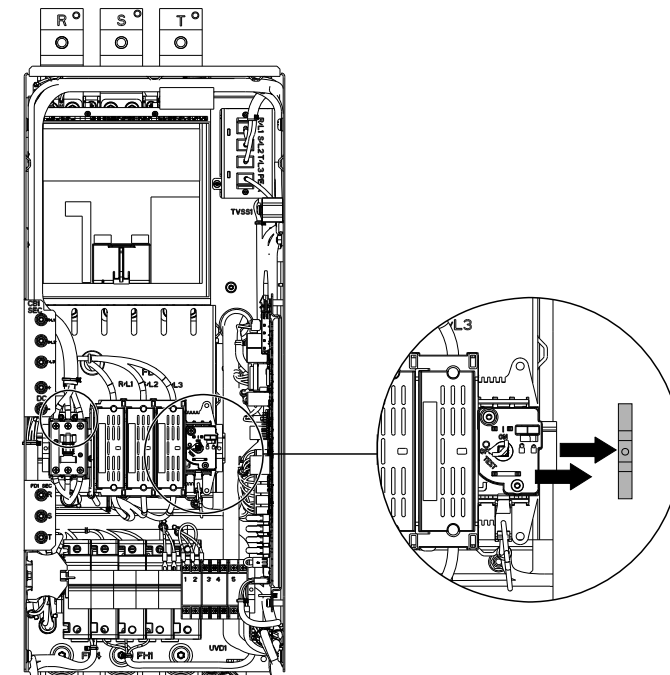


10. Disconnect the wires from the AC precharge contactor terminals L1, L2, and L3 (top).
11. Disconnect the wires from the AC precharge contactor terminals A1 and A2 (top).
12. Disconnect the wires from the fused disconnect switch terminals R/L1, S/L2 and T/L3.



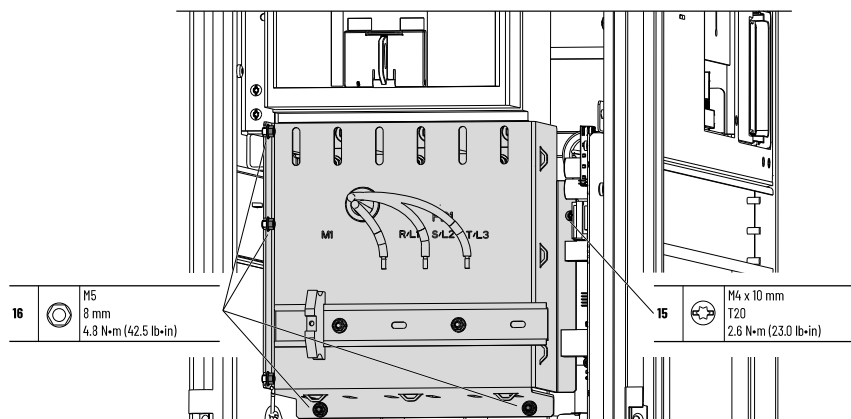
13. Loosen the set screw on the right-most DIN rail cap and remove the cap.

14. Remove the fused disconnect, terminal block, and AC precharge contactor from the DIN rail.

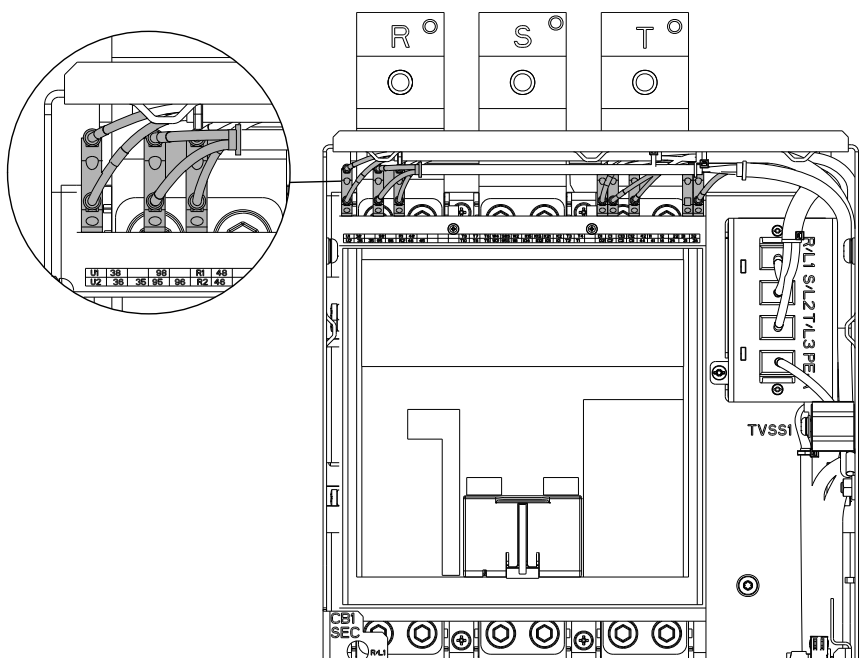


As you remove the bracket, push the three fused disconnect wires through the grommet in the bracket.

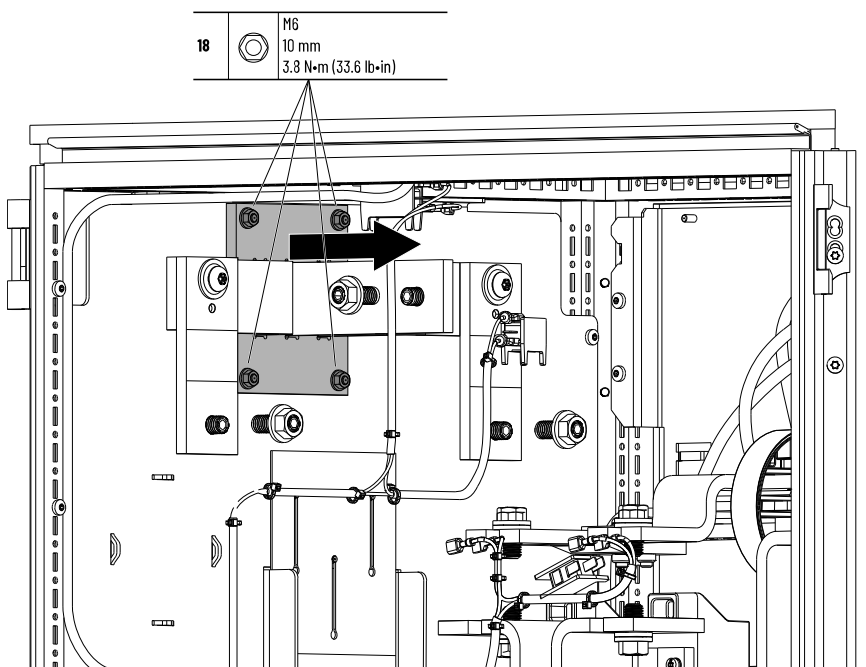
15. Remove the M4 x 10 mm slotted-Torx screw from the mounting bracket.
16. Remove the five M5 nuts that secure the mounting bracket to the AC precharge module chassis and remove the bracket.



17. Disconnect the wires from the terminal blocks on the top of the circuit breaker; U1, U2, 95, 98, R2, R1, C1, C2, C11, C12, D1, D2, 31, and 34.



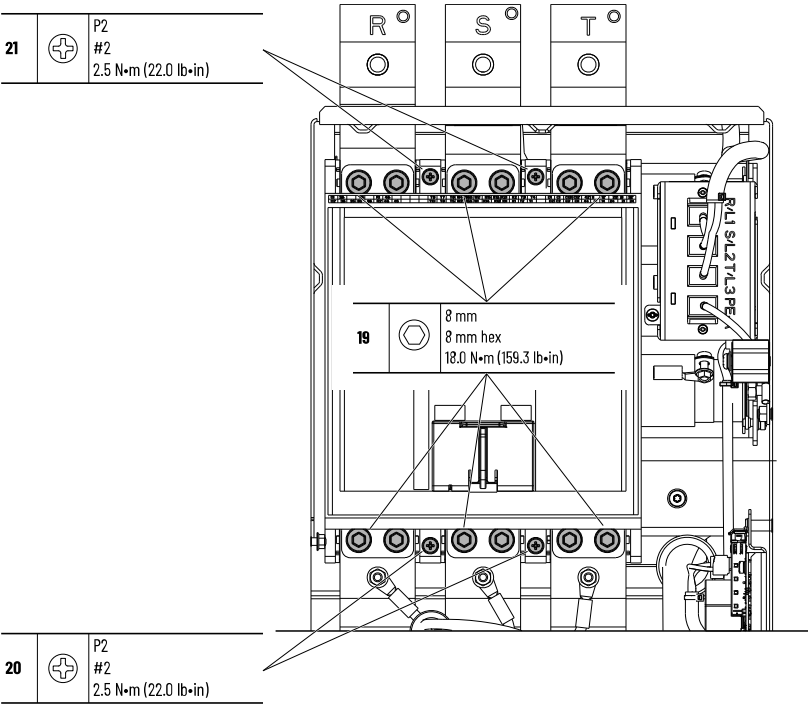
18. Remove the four M6 nuts that secure the insulator to the upper bus support panel in the adjacent power bay and move the insulator off of the panel studs so it is loose on the bus bars.



IMPORTANT: The circuit breaker weighs 11.0 kg (24.25 lb). It is recommended that two people complete these steps to remove the circuit breaker from the module. Brace the circuit breaker while the mounting screws are removed.

19. Remove the 12 - 8 mm hex socket screws, washers, and bus bar plates that secure the circuit breaker bus bars to the bus bar extensions.
20. Remove the bottom two Phillips head screws that secure the circuit breaker to the chassis.

21. Remove the top two Phillips head screws that secure the circuit breaker to the chassis and remove the circuit breaker from the chassis.



22. Install the AC precharge circuit breaker in the reverse order of removal.

Control Transformers

Control transformers are not available as a replacement kit. See the PowerFlex 755TM IP00 Open Type Kits, Technical Data, publication [750-TD101](#), for a complete list of Rockwell Automation recommended control transformer vendor catalog numbers.

Frames 8...15 Power Bay Kits

This table lists the renewal kits available for power bays for frames 8...15. (XT) appears in the description column in the table to help identify a kit that contains protective covers and/or dielectric grease on connectors.

Table 55. Power Bay Ventilation Renewal Kits

Cat. No.	Description	Item in Figure
SK-RM-PBFAN-54FLTR1	IP54 Roof Vent Filter	A
SK-RM-INVFAN1-FUSE	IP54 Roof Vent Fan Fuse	B
SK-RM-PBFAN1-F8	IP54 Roof Vent Fan	C
SK-RM-PB4DR-54FLTR1	IP54 400 mm Wide Door Filter	D
SK-RM-PB4DR-21FLTR1	400 mm Wide IP21 Door Filter	E
SK-RM-PB6DR-54FLTR1	600 mm Wide IP54 Door Filter	D
SK-RM-PB6DR-21FLTR1	600 mm Wide IP21 Door Filter	E
SK-RM-PB8DR-54FLTR1	800 mm Wide IP54 Door Filter	D
SK-RM-PB8DR-21FLTR1	800 mm Wide IP21 Door Filter	E

Figure 25. Power Bay Roof Ventilation Kits Identification

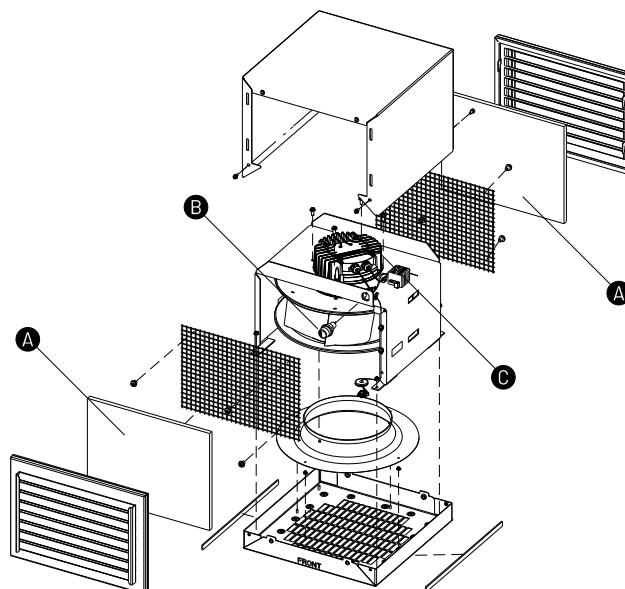


Figure 26. Power Bay Door Ventilation Kits Identification

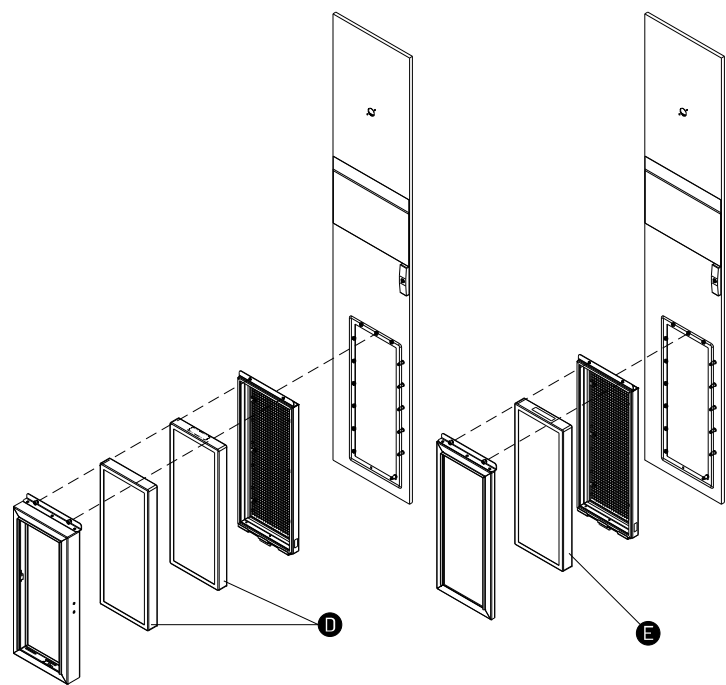


Table 56. DC Precharge Module and DC Link/Fuse Renewal Kits

Cat. No.	Description	Item in Figure
SK-RM-DCPC-HNDL	DC Precharge Module Disconnect Handle and Shaft	F
SK-RM-DCPC1-CD	400V/480V DC Precharge Circuit Board (XT)	G
SK-RM-DCPC1-EF	600V/690V DC Precharge Circuit Board (XT)	G
SK-RM-DCFUSE1-F8	400V/480V DC Precharge Fuses	H
SK-RM-DCFUSE2-F8	600V/690V DC Precharge Fuses	H
SK-RM-DCFUSE1-F8	400V/480V DC Link Fuses	I
SK-RM-DCFUSE2-F8	600V/690V DC Link Fuses	I

Figure 27. DC Precharge Module Kits Identification

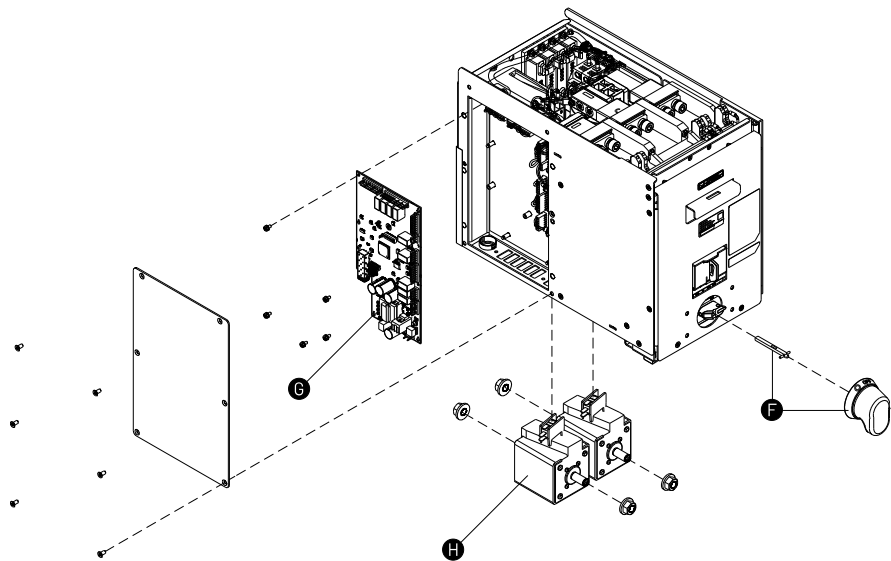


Figure 28. DC Link Fuse Kits Identification

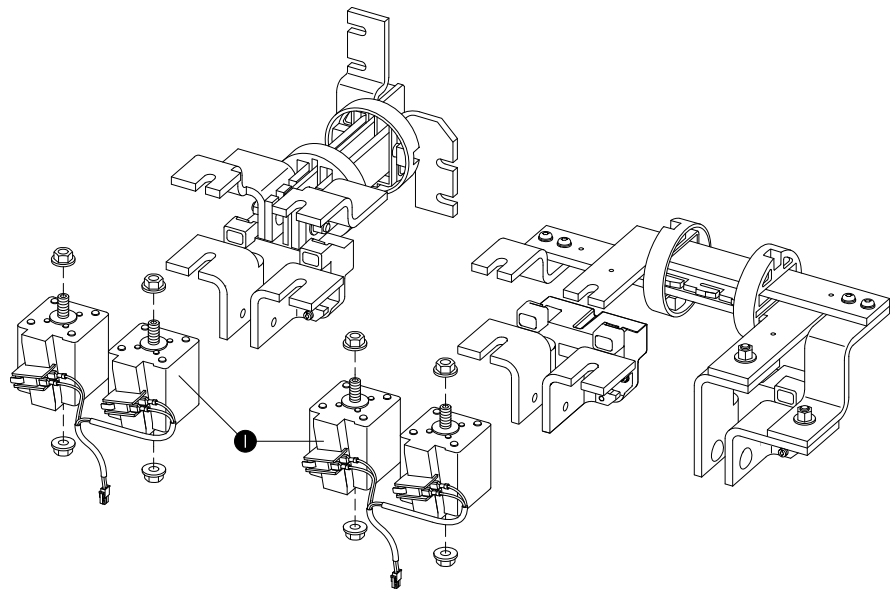


Table 57. Power Module Renewal Kits

Cat. No.	Description	Notes	Item in Figure
20-750-MI1-CnnnDnnn 20-750-MI1-EnnnFnnn 20-750-MI2-CnnnDnnn 20-750-MI2-EnnnFnnn 20-750-MI3-CnnnDnnn 20-750-MI3-EnnnFnnn	Power Module (XT)	"MI1" identifies a power module with no paralleling inductor and no reflected wave filter. "MI2" identifies a power module with a paralleling inductor only. "MI3" identifies a power module with a reflected wave filter only. "C" and "D" in "CnnnDnnn" identifies a power module that is rated for 400/480V, respectively. "E" and "F" in "EnnnFnnn" identifies a	—

Table 57. Power Module Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
		power module that is rated for 600/ 690V, respectively. "nnn" in "CnnnDnnn" and "EnnnFnnn" identifies the power module amp rating. To identify your power module catalog number, see the nameplate on the front of the module.	
SK-RM-INV-JMPR-F8	Power Module Power Jumper (P5/P6)	—	J
SK-RM-PLI1-F8	Power Layer Interface Circuit Board (XT)	—	K
SK-RM-PIB1-CnnnDnnn SK-RM-PIB1-EnnnFnnn SK-RM-PIB2-CnnnDnnn SK-RM-PIB2-EnnnFnnn SK-RM-PIB3-CnnnDnnn SK-RM-PIB3-EnnnFnnn	Power Interface Circuit Board (XT)	"PIB1" identifies a circuit board compatible with a power module with no paralleling inductor and no reflected wave filter. "PIB2" identifies a circuit board compatible with a power module with a paralleling inductor only. "PIB3" identifies a circuit board compatible with a power module with a reflected wave filter only. "C" and "D" in "CnnnDnnn" identifies a circuit board compatible with a power module that is rated for 400/480V, respectively. "E" and "F" in "EnnnFnnn" identifies a circuit board compatible with a power module that is rated for 600/690V, respectively. "nnn" in "CnnnDnnn" and "EnnnFnnn" identifies the amp rating the power module that the circuit board is compatible with. For kit to power module compatibility, see the power interface circuit board replacement procedure.	L
SK-RM-INVBR1-F8M	400/480V Balance Resistors	This kit contains two balance resistors.	M
SK-RM-INVBR2-F8M	600/690V Balance Resistors	This kit contains two balance resistors.	M
SK-RM-INVCS1-F8M	622 A Current Sensor	Compatible with power modules 20-750-MIn-C302D302, 20-750-MIn-C367D361, 20-750-MIn-C460D430, 20-750-MIn-C540D505, and all 20-750-MIn-EnnnFnnn.	N

Table 57. Power Module Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
SK-RM-INVCS2-F8	1000 A Current Sensor	Compatible with power modules 20-750-MIn-C585D545, 20-750-MIn-C650D617, 20-750-MIn-C750D710, and 20-750-MIn-C770D740.	N
SK-RM-GDB-C540D505 SK-RM-GDB-C770D740 SK-RM-GDB-E395F370 SK-RM-GDB-E545F505	Gate Driver Circuit Board	—	0
SK-RM-ICP1-C540D505	400/480V DC Bus Capacitor Assembly	Compatible with power modules 20-750-MIn-C302D302, 20-750-MIn-C367D361, 20-750-MIn-C460D430, and 20-750-MIn-C540D505	X
SK-RM-ICP1-C770D740	400/480V DC Bus Capacitor Assembly	Compatible with power modules 20-750-MIn-C585D545, 20-750-MIn-C650D617, 20-750-MIn-C750D710, and 20-750-MIn-C770D740	X
SK-RM-ICP1-E395F370	600/690V DC Bus Capacitor Assembly	Compatible with power modules 20-750-MIn-E242F215, 20-750-MIn-E295F265, 20-750-MIn-E355F330, and 20-750-MIn-E395F370	X
SK-RM-ICP1-E545F505	600/690V DC Bus Capacitor Assembly	Compatible with power modules 20-750-MIn-E395F370, 20-750-MIn-E435F415, and 20-750-MIn-E545F505	X

Figure 29. Power Module Circuit Boards and Jumper Identification

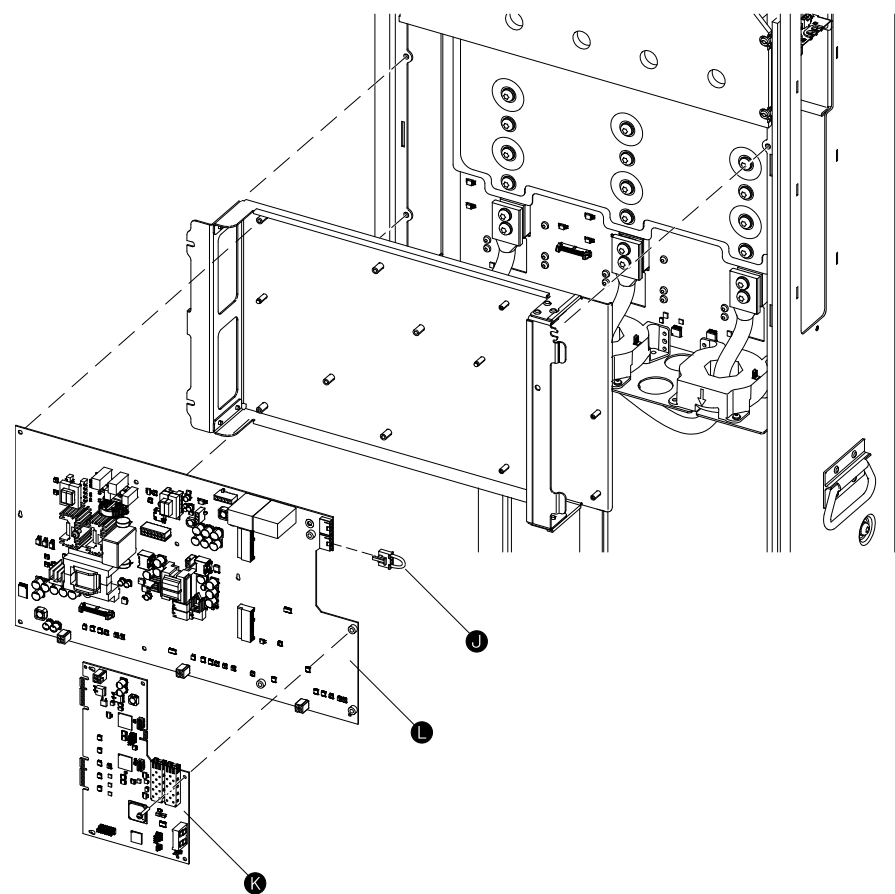


Figure 30. Power Module Power Kits Identification

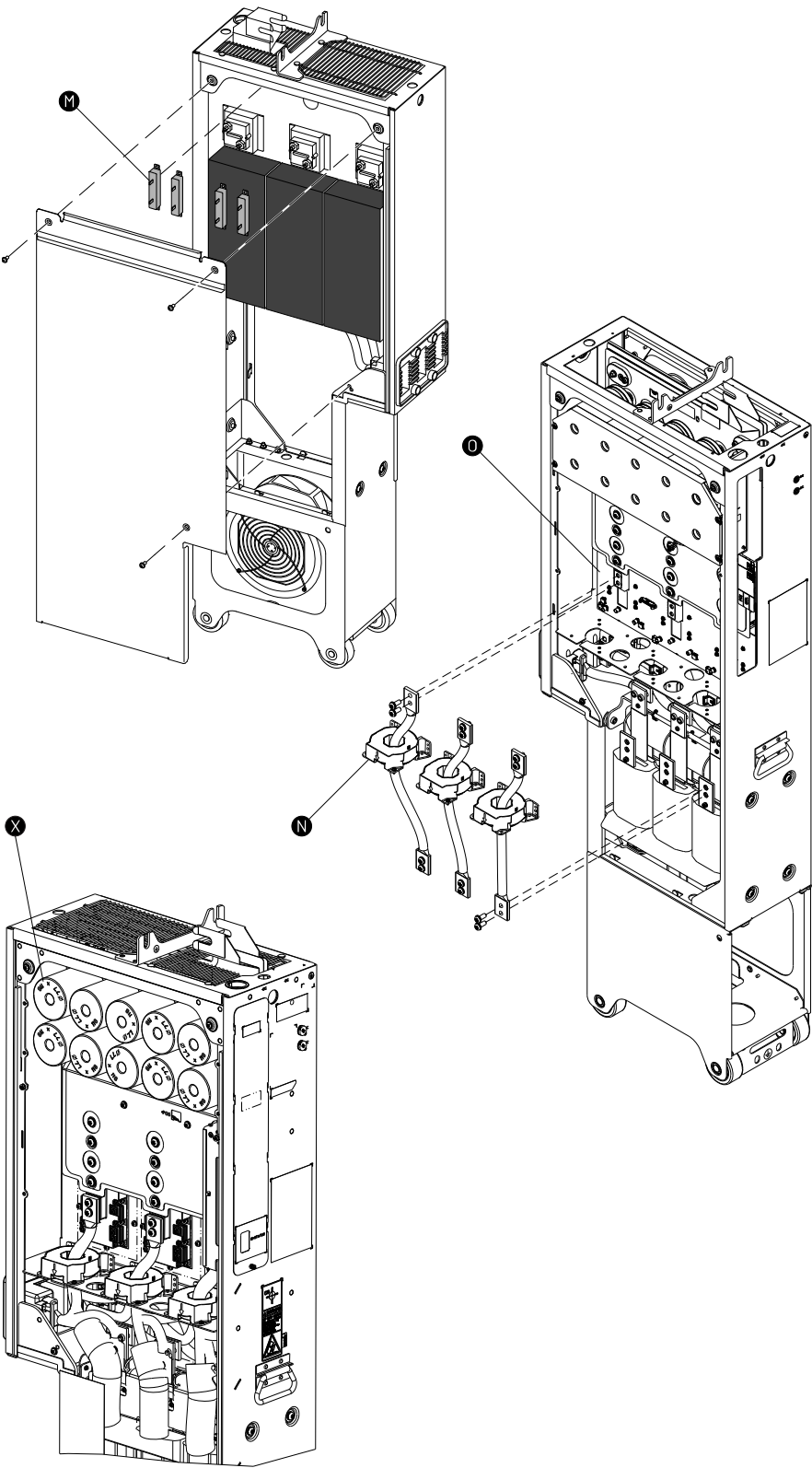


Table 58. LCL Filter Module Renewal Kits

Cat. No.	Description	Notes	Item in Figure
20-750-ML1-CnnnDnnn 20-750-ML1-EnnnFnnn	LCL Filter Module (XT)	"C" and "D" in "CnnnDnnn" identifies an LCL filter module that is rated for 400/480V, respectively. "E" and "F" in "EnnnFnnn" identifies an LCL filter module that is rated for 600/690V, respectively. "nnn" in "CnnnDnnn" and "EnnnFnnn" identifies the LCL filter module amp rating. To identify your LCL filter module catalog number, see the nameplate on the front of the module.	—
SK-RM-ACFUSE1-F8	400/480V, 600V/690V AC Input Link Fuses	This kit contains three fuses. See the AC input link fuses replacement procedure for LCL filter module and AC input link fuse kit compatibility.	P
SK-RM-ACFUSE2-F8	400/480V, 600V/690V AC Input Link Fuses	This kit contains three fuses. See the AC input link fuses replacement procedure for LCL filter module and AC input link fuse kit compatibility.	P
SK-RM-ACFUSE3-F9	400/480V AC Input Link Fuses	This kit contains three fuses. See the AC input link fuses replacement procedure for LCL filter module and AC input link fuse kit compatibility.	P
SK-RM-ACFUSE4-F9	400/480V AC Input Link Fuses	This kit contains three fuses. See the AC input link fuses replacement procedure for LCL filter module and AC input link fuse kit compatibility.	P
SK-RM-ACFUSE5-F8	600V/690V AC Input Link Fuses	This kit contains three fuses. See the AC input link fuses replacement procedure for LCL filter module and AC input link fuse kit compatibility.	P
SK-RM-ACFUSE6-F9	600V/690V AC Input Link Fuses	This kit contains three fuses. See the AC input link fuses replacement procedure for LCL filter module and AC input link fuse kit compatibility.	P
SK-RM-LCLCP1-F8M	30 μ F Capacitor Canister	This kit contains one capacitor. See the LCL filter capacitor assembly replacement procedure for LCL filter module and capacitor kit compatibility.	Q
SK-RM-LCLCP2-F8M	41 μ F Capacitor Canister	This kit contains one capacitor. See the LCL filter capacitor assembly	Q

Table 58. LCL Filter Module Renewal Kits (continued)

Cat. No.	Description	Notes	Item in Figure
		replacement procedure for LCL filter module and capacitor kit compatibility.	
SK-RM-LCLCP3-F8M	62 μ F Capacitor Canister	This kit contains one capacitor. See the LCL filter capacitor assembly replacement procedure for LCL filter module and capacitor kit compatibility.	Q
SK-RM-LCLCP4-F8M	80 μ F Capacitor Canister	This kit contains one capacitor. See the LCL filter capacitor assembly replacement procedure for LCL filter module and capacitor kit compatibility.	Q
SK-RM-EMCFB1	AC Common Mode Filter Board	—	R
SK-RM-CSB1-263	263 A Current Sense Board (XT)	—	S
SK-RM-CSB1-350	350 A Current Sense Board (XT)	—	S
SK-RM-CSB1-525	525 A Current Sense Board (XT)	—	S
SK-RM-CSB1-700	700 A Current Sense Board (XT)	—	S

Figure 31. LCL Filter Module Kits Identification

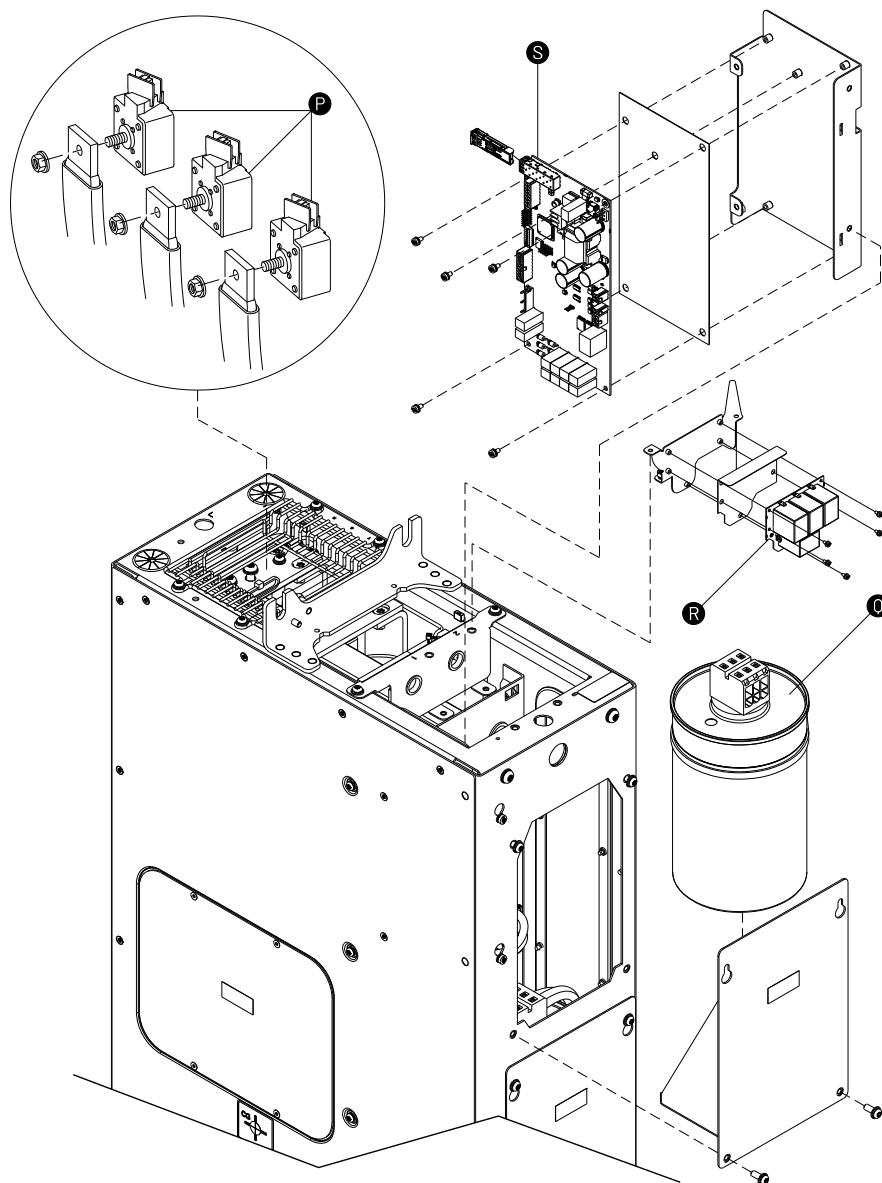


Table 59. Power and LCL Filter Module Kits

Cat. No.	Description	Item in Figure
SK-RM-INVFAN1-FUSE	Heatsink Fan Fuse	T
SK-RM-INVFAN1-F8	Heatsink Fan Assembly	U

Figure 32. LCL Filter and Power Mod Fan Kits Identification

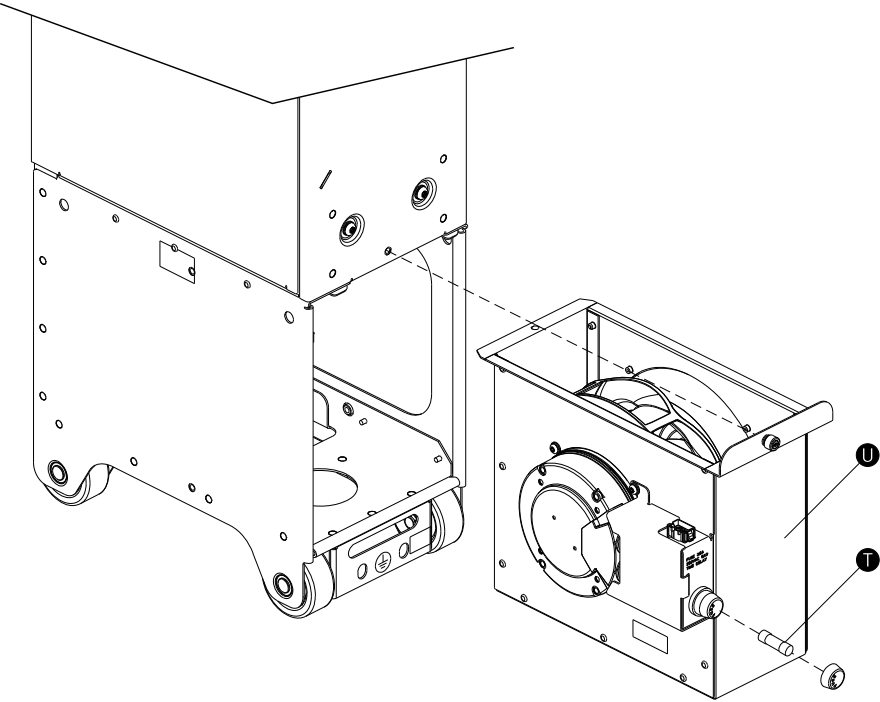
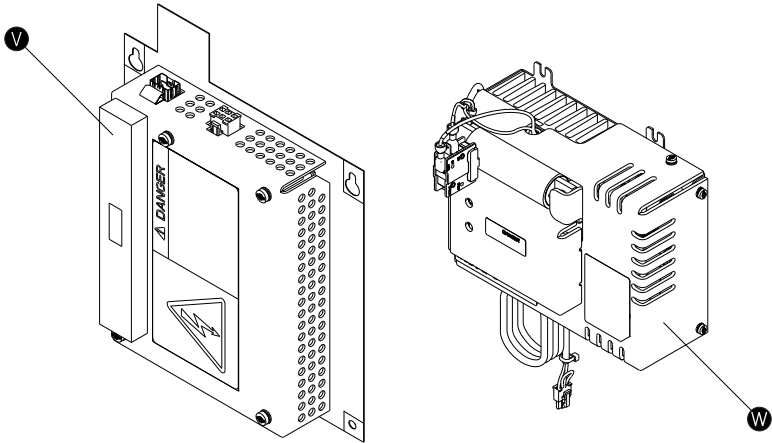


Table 60. Power Bay Accessories Kits

Cat. No.	Description	Item in Figure
20-750-MTAM1-CD	400/480V Torque Accuracy Module (XT)	V
20-750-MTAM1-EF	600/690V Torque Accuracy Module (XT)	V
20-750-MDCBUS-COND	DC Bus Conditioner	W

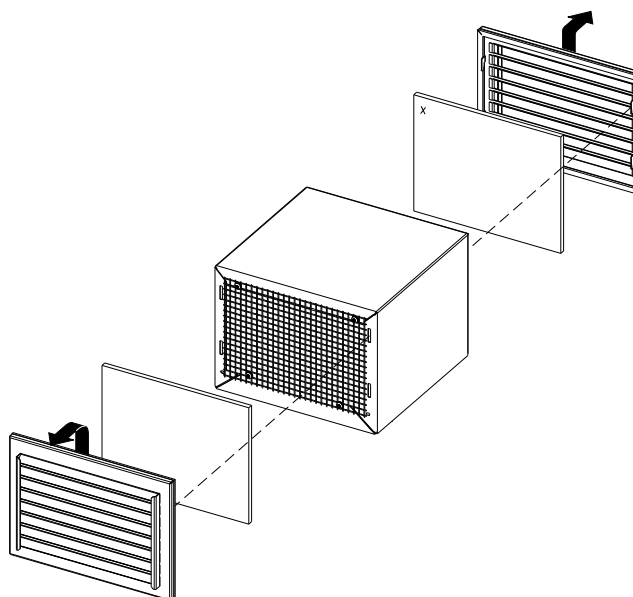
Figure 33. Power Bay Accessory Kits Identification



Remove and Install the IP54 Roof Vent Filters for Frames 8...15

Replace the IP54 roof vent filters on a power bay with kit catalog number SK-RM-PBFAN-54FLTR1. Follow these steps to remove and install the IP54 exhaust vent filters on a power bay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Slide the vent up to release the tabs from the slots in the vent assembly and remove the vent.
4. Remove the filter from the vent cover.



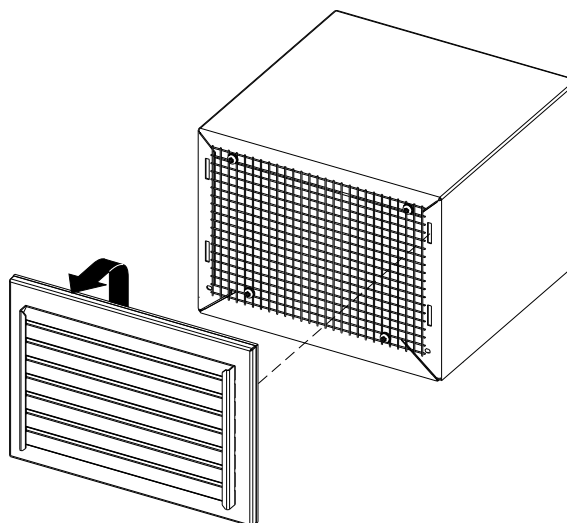
IMPORTANT: Verify that the airflow direction arrow and "X" on the fiber filter media points inward, toward the interior of the enclosure.

5. Install the IP54 exhaust vent filters on a power bay in the reverse order of removal.

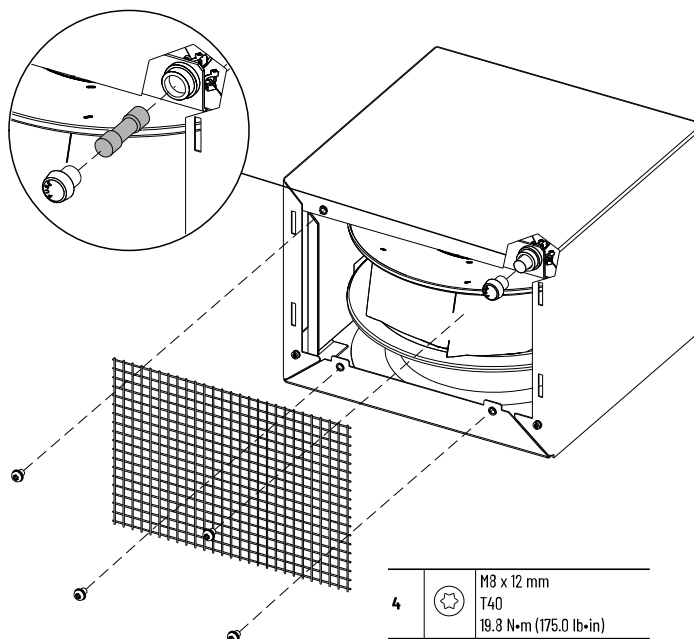
Remove and Install the IP54 Roof Vent Fan Fuse for Frames 8...15

Replace the roof vent fan fuse on a power bay with kit catalog number SK-RM-INVFAN1-FUSE (Time Delay, 250V, 3.5 A, Cartridge). Follow these steps to remove and install the IP54 roof vent fan fuse on a power bay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Slide the front vent up to release the tabs from the slots in the vent hood and remove the vent.



4. Remove the four M8 x 12 mm Torx screws that secure the screen to the front of the fan housing and remove the screen.
5. Unscrew the fuse holder and fuse and remove the fuse.



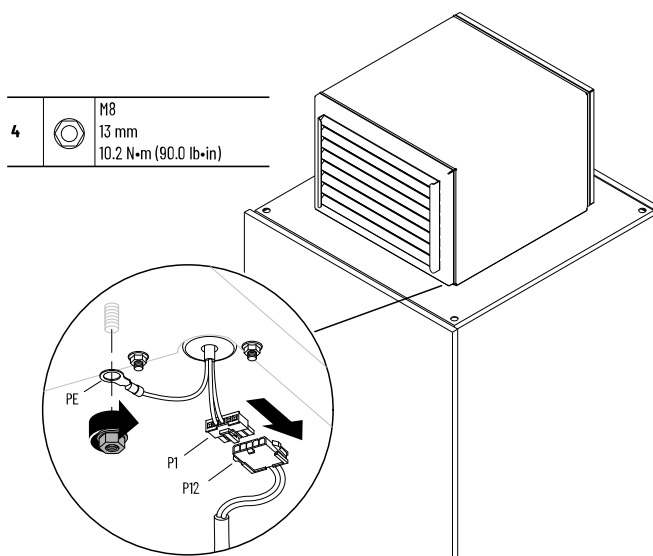
6. Install the IP54 roof vent fan fuse in the reverse order of removal. Tightening torque for the fuse holder is 3.4 N•m (30 lb•in).

Remove and Install the IP54 Roof Vent Fan for Frames 8...15

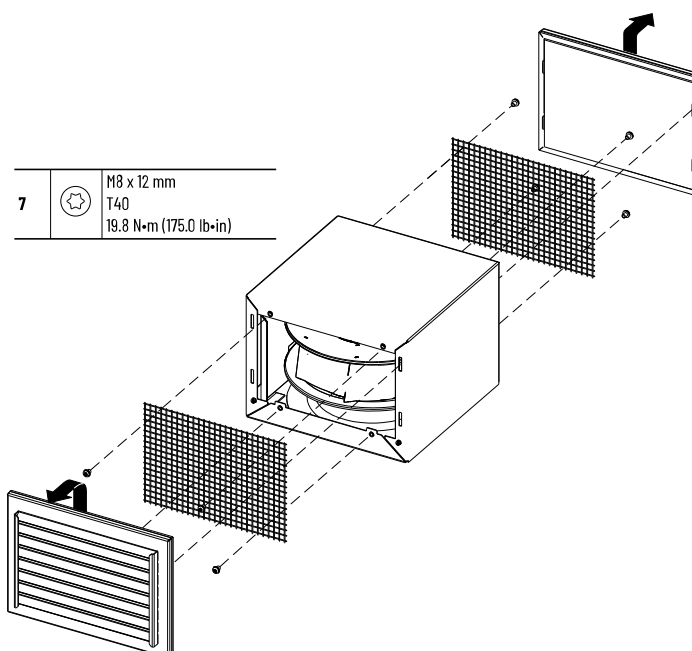
Replace the IP54 roof vent fan on a power bay with kit catalog number SK-RM-PBFAN1-F8. Follow these steps to remove and install the IP54 roof vent fan on a power bay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the power bay enclosure door.

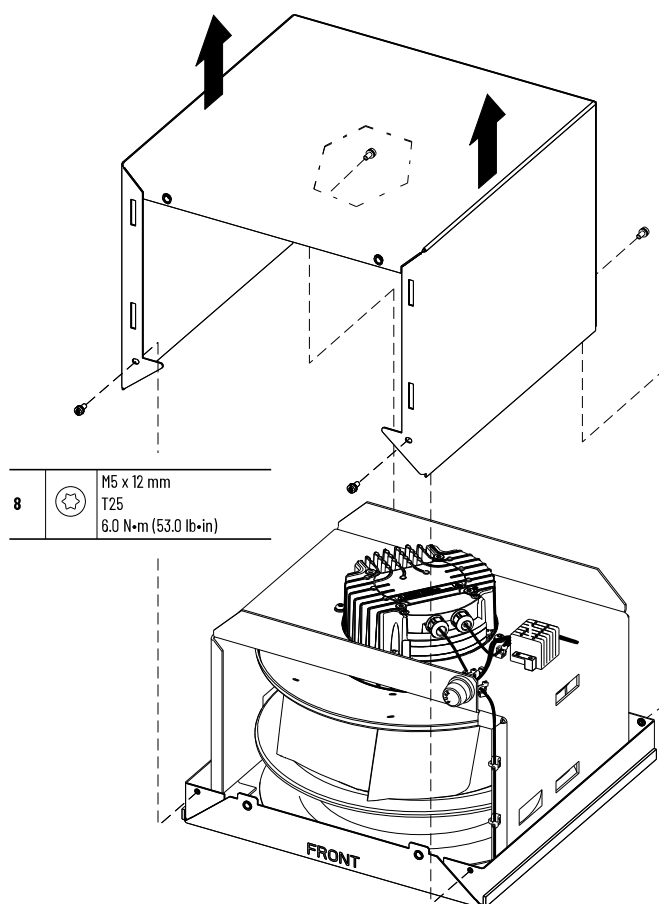
4. Remove the M8 hex nut that secures the ground wire terminal to the grounding stud on the inside of the enclosure and remove the wire.
5. Disconnect connector P1 from connector P12 on the inside of the enclosure.



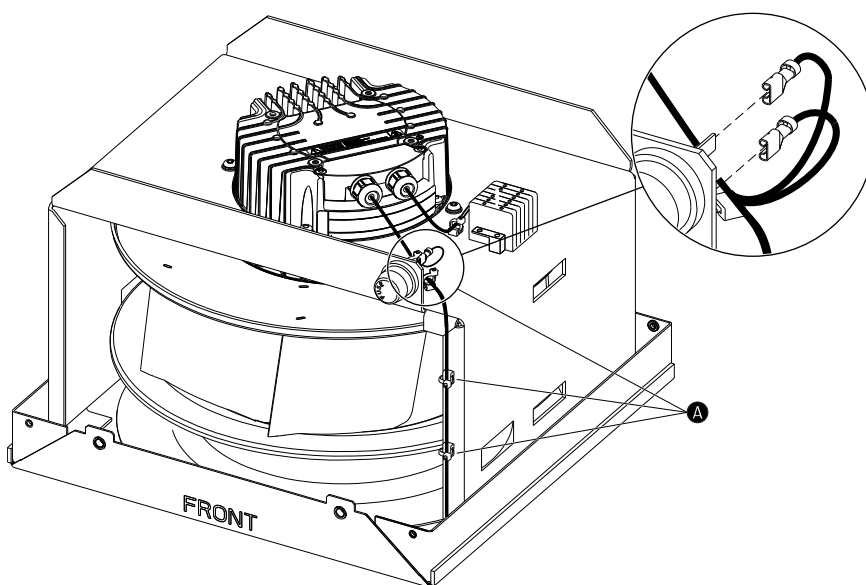
6. Slide the front and rear vent covers up until the tabs on the vent cover clear the slots on the vent housing, and remove the vent covers.
7. Remove the eight M8 x 12 mm Torx screws that secure the metal screens to the front and rear of the vent housing and remove the screens.



8. Remove the four M5 x 12 mm Torx screws that secure the vent assembly cover to the fan assembly base and remove the cover.

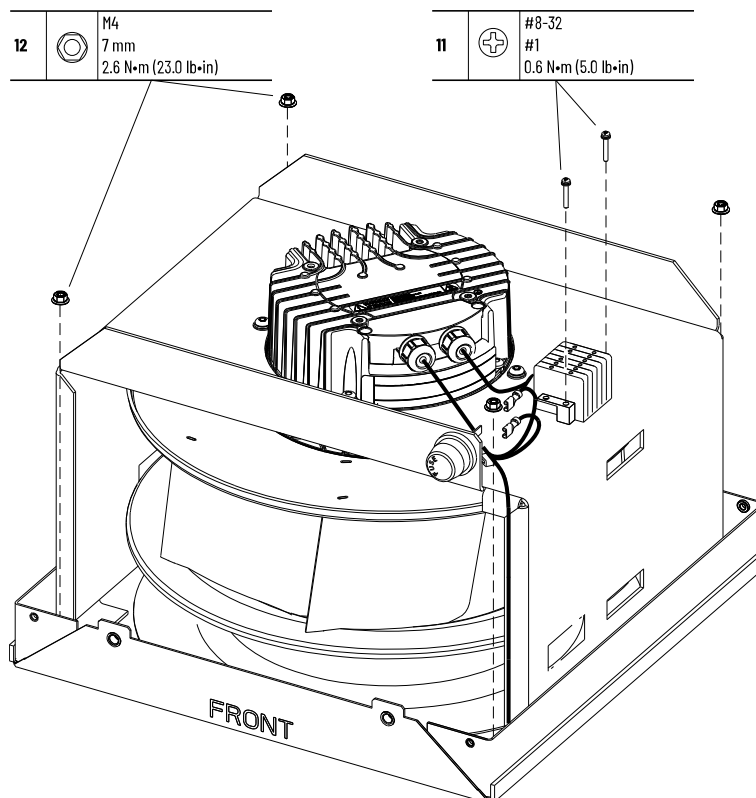


9. Cut the cable ties (A) that secure the wire harness to the fan housing.
10. Disconnect the two wires from the fuse holder on the front of the vent housing.

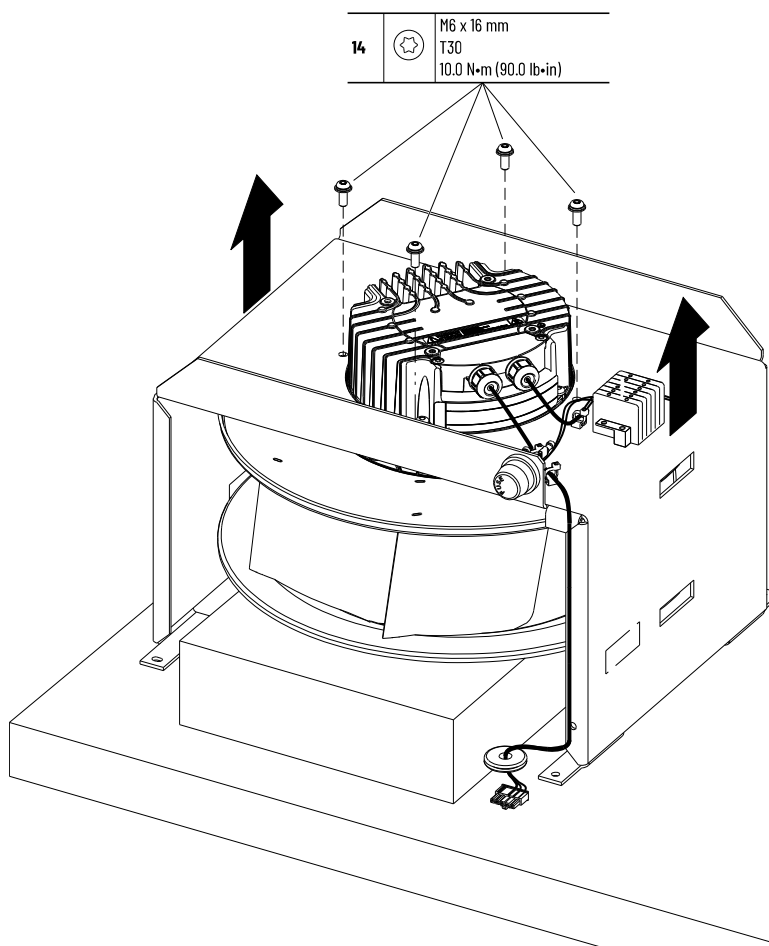


11. Remove the two #8-32 mm Phillips head screws (white) that secure the interconnection terminal block to the fan housing and remove the terminal block.

12. Remove the four M4 nuts that secure the fan assembly and housing to fan base and carefully lift the fan assembly and housing off the base. As you lift the fan assembly and housing, pull the wire harness carefully through the opening in the enclosure roof.



13. Place the fan assembly on a support block that is on a solid work surface, with only the fan in contact with a support block. The support under the fan allows you to lift the metal fan support off the fan unit after the screws have been removed.
14. Remove the four M6 x 16 mm Torx screws that secure the fan to the metal fan support and lift the support off the fan.



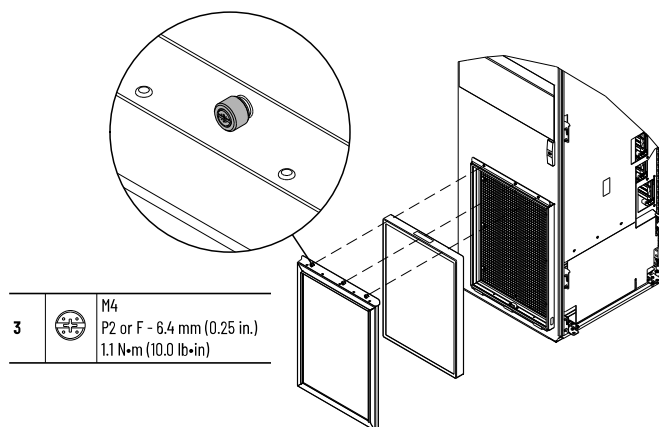
15. Install the IP54 roof vent fan on a power bay in the reverse order of removal.

Remove and Install the IP54, 400/600 mm Wide Door Vent Filters for Frames 8...15

Replace the IP54, 400/600 mm wide door vent filters with the kit catalog number SK-RM-PB4DR-54FLTR1 (400 mm wide enclosure) or SK-RM-PB6DR-54FLTR1 (600 mm wide enclosure). Follow these steps to remove and install the IP54, 400/600 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the two or three slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door and remove the cover and metal mesh filter.
4. Remove the metal mesh filter from the cover.

- Pull the top edge of the fiber filter out and lift it off the cassette.



IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

- Insert the metal mesh filter into the filter cassette cover.
- Place the slots on the cassette cover on the tabs on the door vent chassis.

IMPORTANT: Verify that the airflow direction arrow on the fiber filter media points inward, toward the interior of the enclosure.

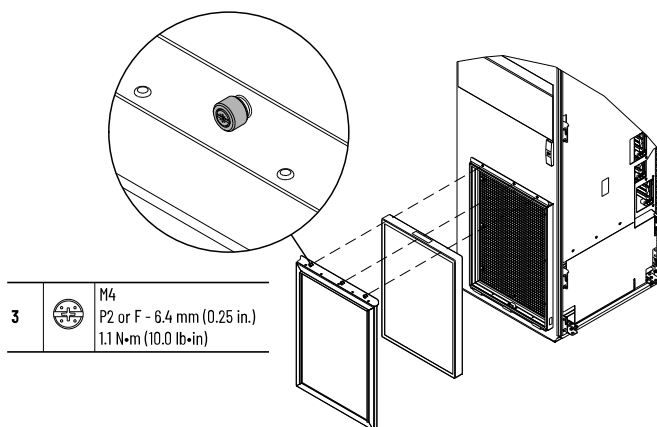
- Insert the fiber filter in the cassette chassis on the door and close and secure the cassette cover to the door.

Remove and Install the IP21, 400/600 mm Wide Door Vent Filter for Frames 8...15

Replace the IP21, 400/600 mm wide door vent filter with kit catalog number SK-RM-PB4DR-21FLTR1 (400 mm wide enclosure) or SK-RM-PB6DR-21FLTR1 (600 mm wide enclosure). Follow these steps to remove and install the IP21, 400/600 mm wide door vent filter.

- Review the product advisories in [Before You Begin on page 12](#).
- Remove power from the system.
- Loosen the two or three slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh screen to the cassette chassis on the door and remove the cover and metal mesh filter.

4. Remove the metal mesh filter from the cover.



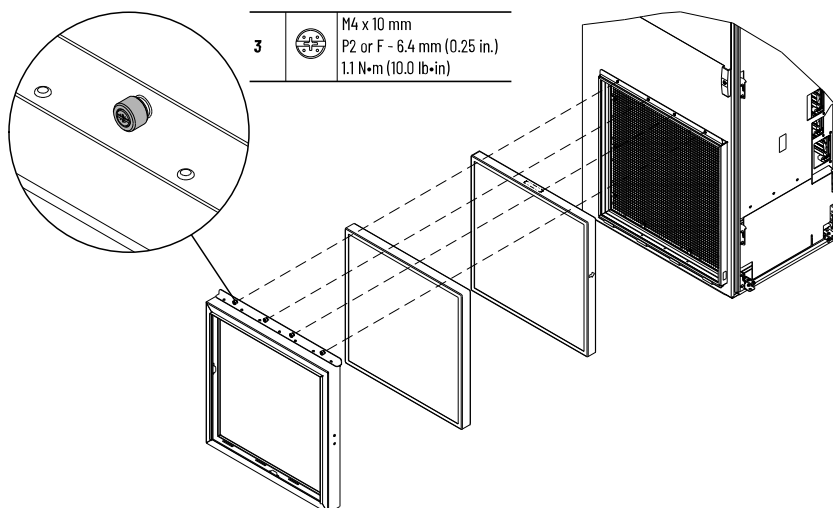
IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

5. Place the slots on the cassette cover on the tabs on the door vent chassis.
6. Insert the filter in the cassette chassis on the door and close and secure the cassette cover to the door.

Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frames 8...15

Replace the IP54 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-54FLTR1. Follow these steps to remove and install the IP54, 800/1000 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door.
4. Remove the metal mesh filter from the cover.
5. Pull the top edge of the fiber filter out and lift it off the cassette on the door.



IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

6. Insert the new metal mesh filter into the filter cassette cover.
 7. Place the slots on the cassette cover on the tabs on the door vent chassis.
-

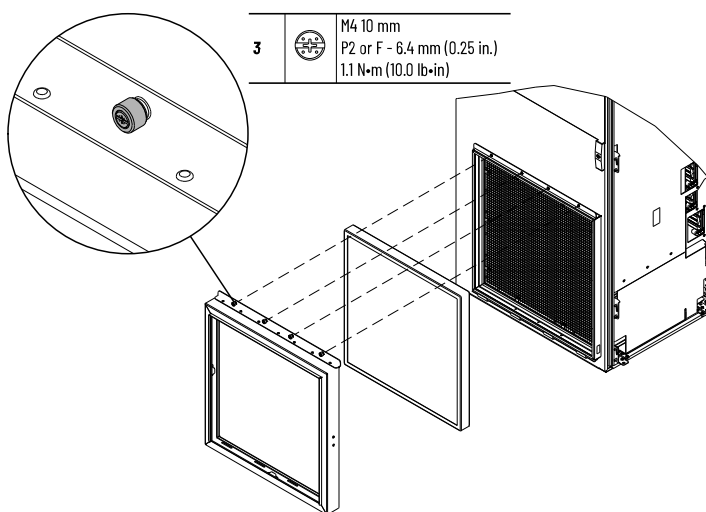
IMPORTANT: Verify that the airflow direction arrow on the fiber filter media points inward, toward the interior of the enclosure.

8. Insert the fiber filter in the cassette chassis on the door and close and secure the cassette cover with metal mesh filter to the door.

Remove and Install the IP21, 800/1000 mm Wide Door Vent Filters for Frames 8...15

Replace the IP21 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-21FLTR1. Follow these steps to remove and install the IP21, 800/1000 mm wide door vent filter.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door and remove the cover and metal mesh filter.



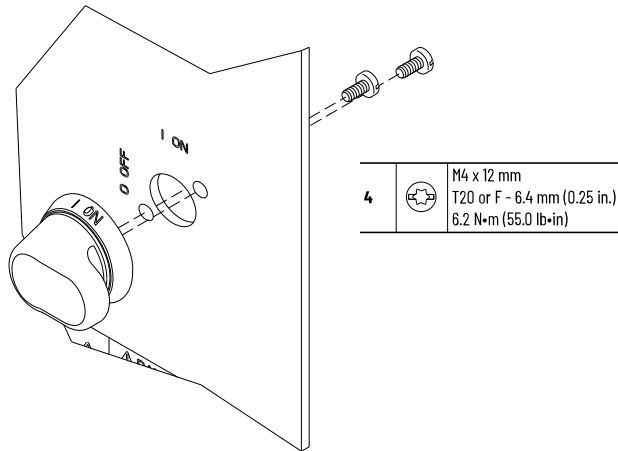
IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

4. Place the slots on the cassette cover on the tabs on the door vent chassis.
5. Insert the filter in the cassette chassis on the door and close and secure the cassette cover to the door.

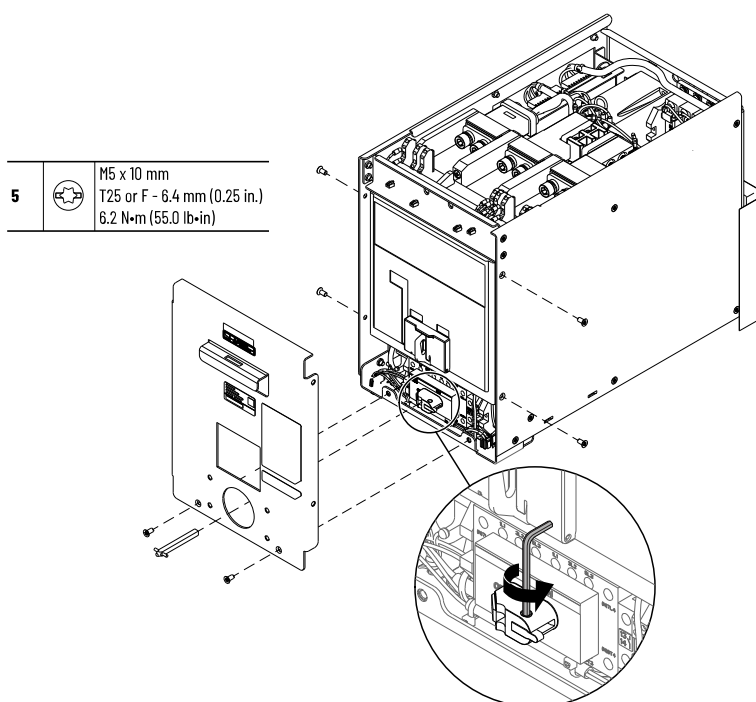
Remove and Install the DC Precharge Module Disconnect Handle and Shaft for Frames 8...15

Replace the DC precharge module disconnect handle and shaft with kit catalog number SK-RMDCPC-HNDL. Follow these steps to remove and install the DC precharge module disconnect handle and shaft.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the power bay door.
4. Remove the two M4 x 12 mm screws that secure the disconnect handle to the door and remove the handle.



5. Remove the six M5 x 10 mm screws that secure the front cover to the DC precharge unit and remove the cover.
6. Loosen the hexagonal screw that secures the disconnect handle shaft to the disconnect switch and remove the handle.



7. Install the DC precharge module disconnect handle and shaft in the reverse order of removal.

Remove and Install the DC Precharge Module for Frames 8...15

Replace the DC precharge module with kit catalog number 20-750-MDCP1-CD-F8M (400/480V), 20-750-MDCP2-CD-F8M (400/480V with common mode core), 20-750-MDCP1-EF-F8M (600/690V), or 20-750-MDCP2-EF-F8M (600/690V with common mode core).

Before you can remove the DC precharge module from the enclosure, you must first remove the connected power module. Do not remove the power module until you are instructed to do so in this procedure.

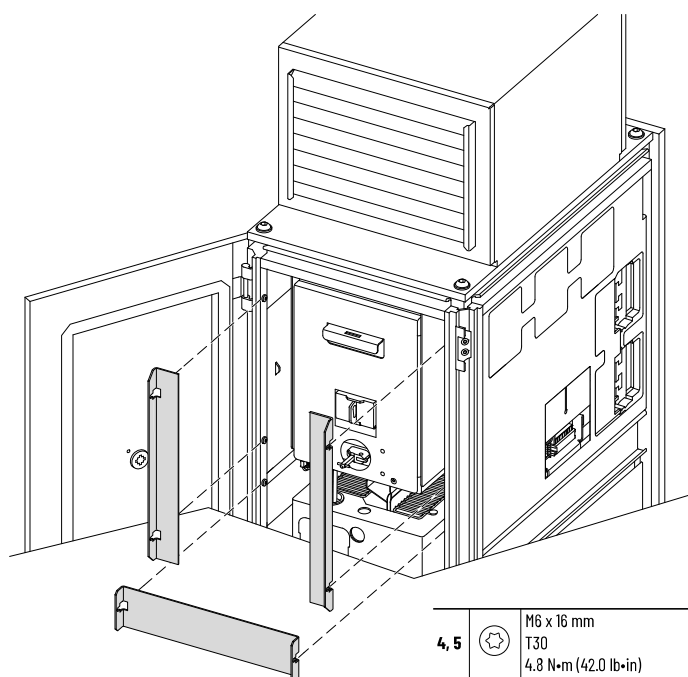
The DC precharge module weighs 41 kg (90 lb). Equipment is available that is designed to help you safely remove and handle the DC precharge module. The following equipment is recommended:

- PowerFlex 750-Series module service cart, catalog number 20-750-MCART1
- PowerFlex 755T DC precharge module lift, catalog number 20-750-MCART2 (must be used with the module service cart 20-750-MCART1)

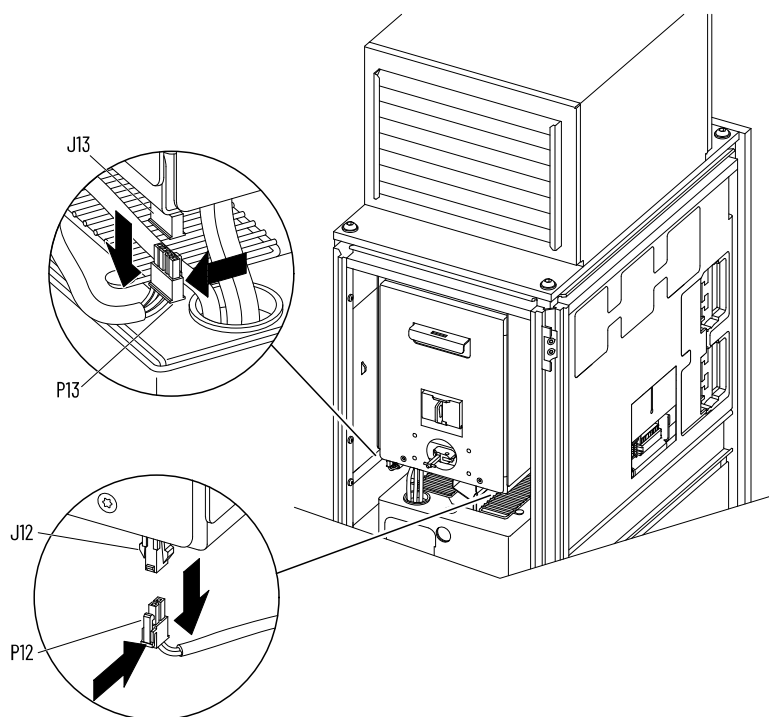
For instructions on how to setup and use this equipment, see the PowerFlex 750-Series Service Cart and DC Precharge Module Lift Installation Instructions, publication [750-IN105](#).

Follow these steps to remove and install the DC precharge module from the enclosure.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay door.
4. Loosen the two M6 x 16 mm Torx screws that secure the side guards to the enclosure.
5. Loosen the two M6 x 16 mm Torx screws that secure the bottom guard to the enclosure.



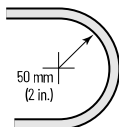
6. If present, by pressing the release tab on the connector, disconnect connector P12 from J12 on the DC precharge module.
7. By pressing the release tab on the connector, disconnect connector P13 from J13 on the DC precharge module.



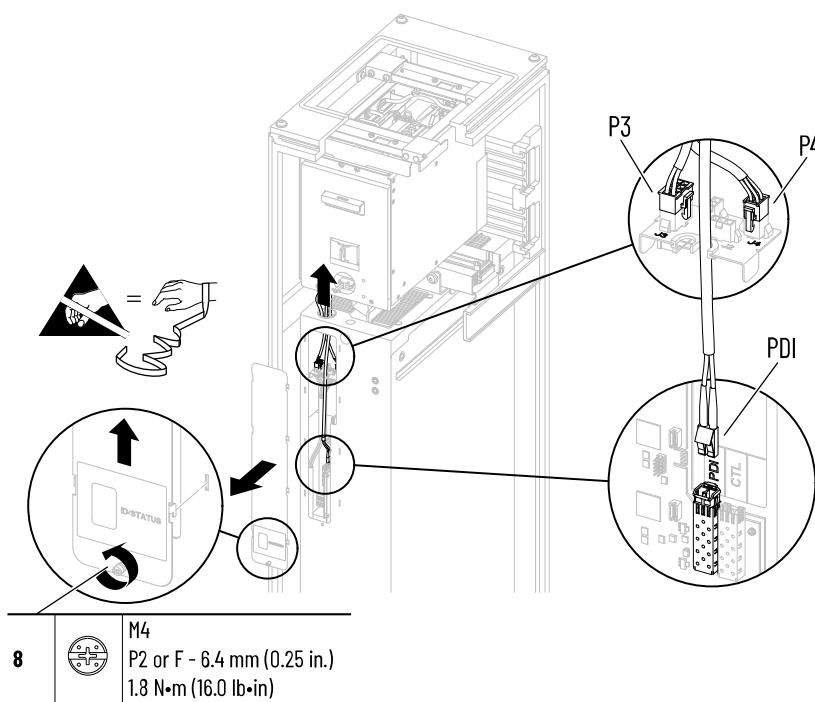
IMPORTANT: Be sure to protect the loose wire harnesses from damage during DC precharge module removal. If possible, secure the loose harnesses to the side panels inside the enclosure.

8. Loosen the thumb screw that secures the connections cover to the front of the power module.
9. Use the screw to lift the connections cover up and off the power module chassis.
10. Disconnect connector P3 from J3 on the power module I/O control panel.
11. Disconnect connector P4 from J4 on the power module I/O control panel.

IMPORTANT: The 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 as inside bend radius is decreased.



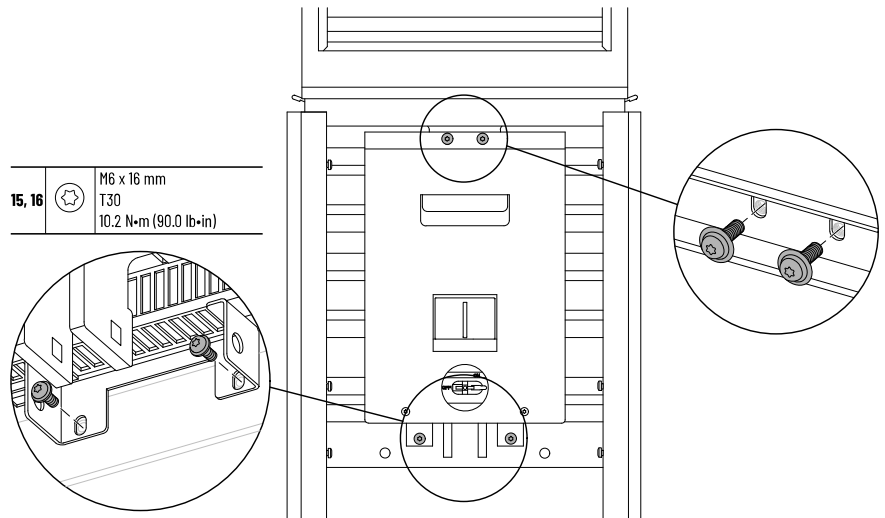
12. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the PDI port on the power layer interface circuit board.



13. Remove the fiber-optic cable from the power module chassis.

IMPORTANT: Be sure to protect the loose wire harnesses and fiber-optic cable from damage during power module removal. If possible, secure the loose harnesses to the side panels inside the enclosure.

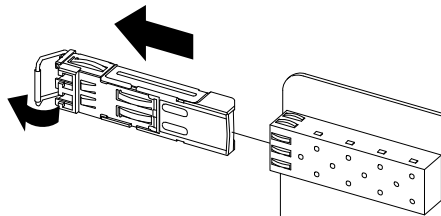
14. Complete the removal of the power module from the enclosure.
15. Remove the two M6 x 16 mm hex screws that secure the bottom of the DC precharge module to the control bus support.
16. Remove the two M6 x 16 mm hex screws that secure the top of the DC precharge module to the enclosure roof support bracket.



17. To remove the module by using the service cart and DC precharge module lift, follow the detailed instructions in the PowerFlex 750-Series Service Cart and DCPC Module Lift Installation Instructions, publication [750-IN105](#).

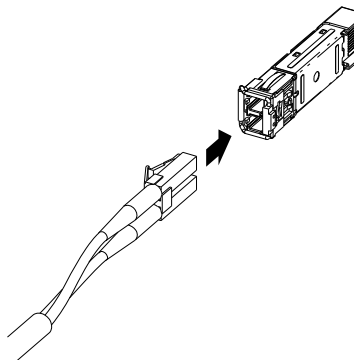
IMPORTANT: During module removal from the enclosure, be sure to protect the loose wire harnesses and fiber-optic cable from damage.

18. Install the DC precharge module into the enclosure in the reverse order of removal.
19. Remove the transceiver from the fiber-optic port on the power layer interface circuit board.

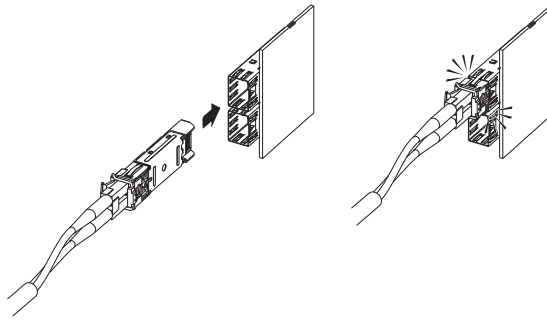


If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

20. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



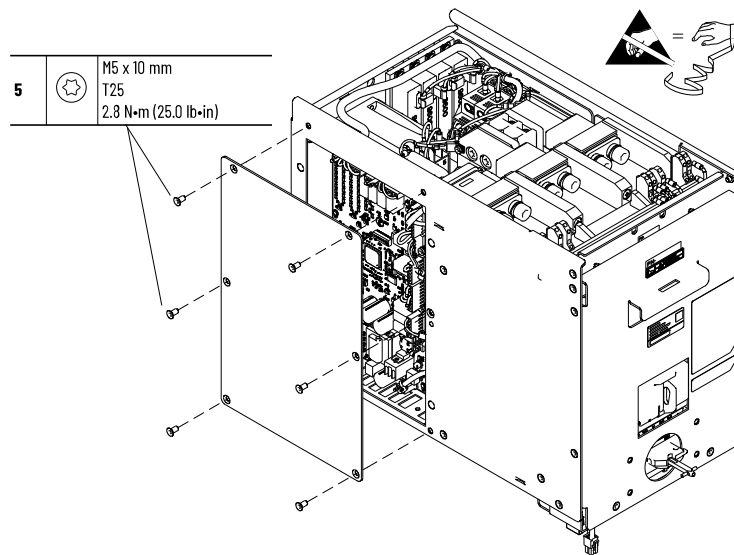
21. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



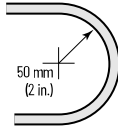
Remove and Install the DC Precharge Circuit Board for Frames 8...15

Replace the DC precharge module circuit board with the appropriate kit catalog number SK-RM-DCPC1-CD (400V/480V) or SK-RM-DCPC1-EF (600V/690V). Follow these steps to remove and install the DC precharge circuit board.

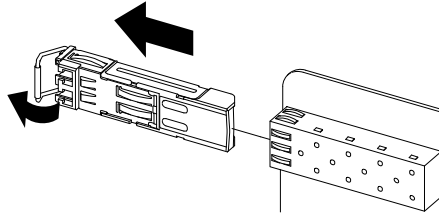
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay door.
4. Remove the DC precharge module from the enclosure.
5. Remove the six M5 x 10 mm Torx screws that secure the circuit board cover to the DC precharge chassis and remove the cover.



IMPORTANT: The 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 as inside bend radius is decreased.



6. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the DCP port on the DC precharge circuit board.



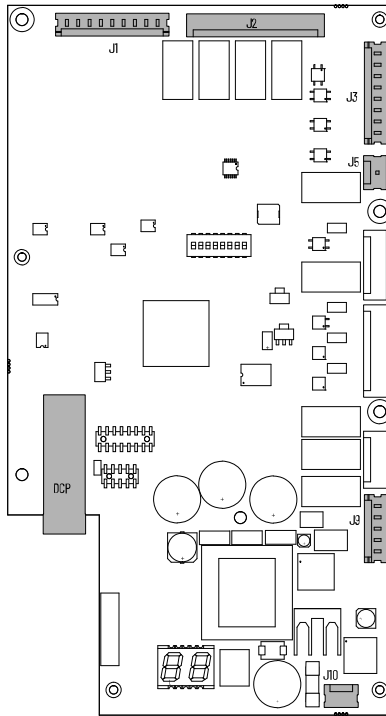
IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

7. Open the transceiver latch and pull the transceiver out of the connector on the board. Retain the transceiver as a spare part.

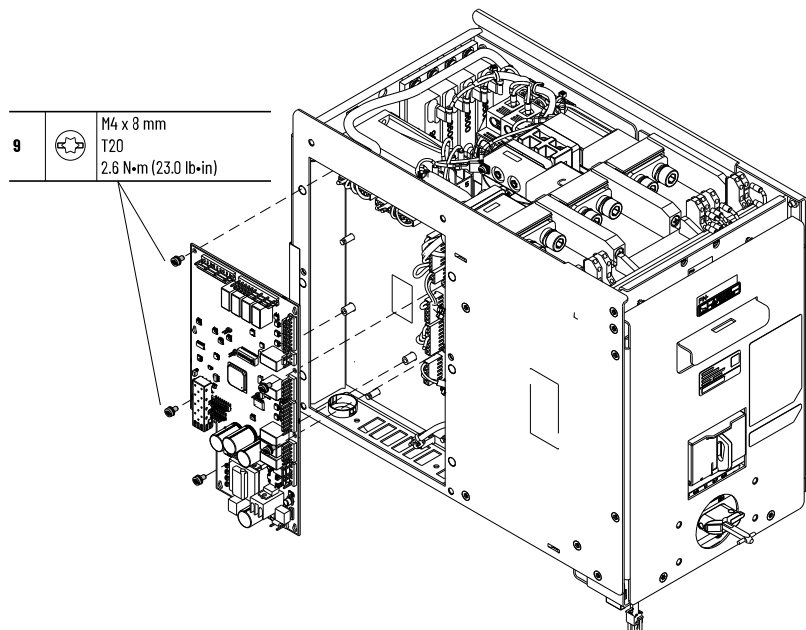


If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

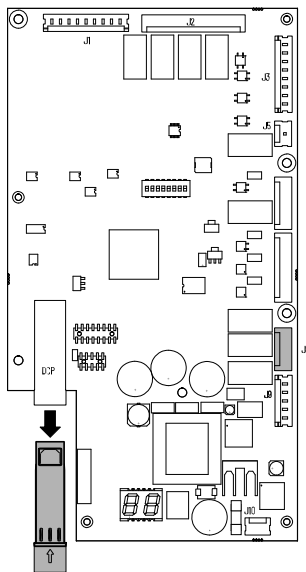
8. Disconnect these cable connectors from the DC precharge circuit board:
 - P1 from J1
 - P2 from J2
 - P3 from J3
 - P5 from J5
 - P9 from J9
 - P10 from J10



9. Remove the five M4 x 8 mm slotted-Torx screws that secure the DC precharge circuit board to the standoffs on the chassis. Lift the board up so that the keyholes on the board clear the mounting posts and remove the board.



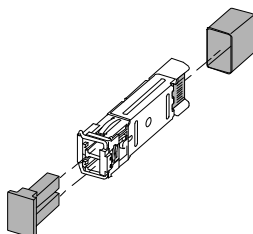
10. With the exception of the protective cover on connector J8, remove the protective covers from the connectors on the DC precharge control circuit board.
11. Install the DC precharge circuit board in the reverse order of removal.
12. Remove the protective cover from the DCP port on the board.



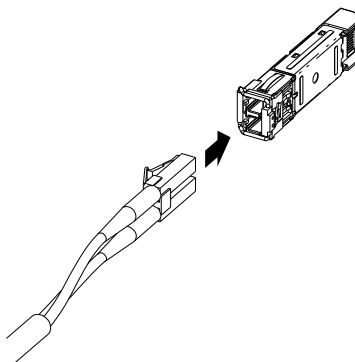
13. Remove the new transceiver supplied with the kit from the packing materials.

IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

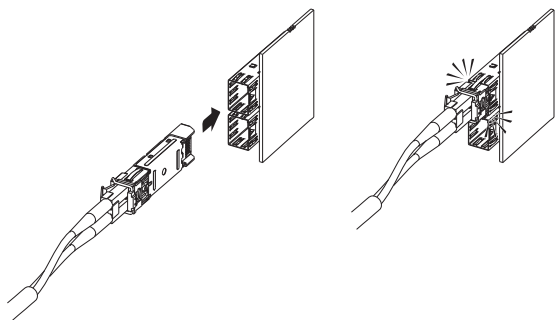
14. Remove the protective covers from the transceiver.



15. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



16. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



Remove and Install the DC Precharge Module Fuses for Frames 8...15

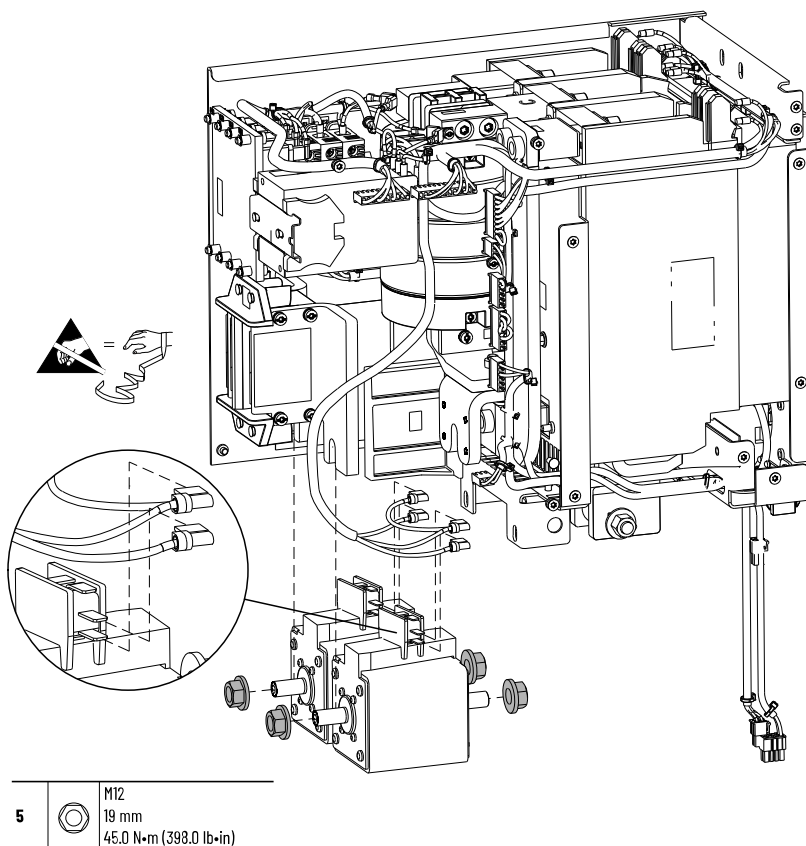
Replace the DC precharge fuses with the appropriate kit catalog number that is identified in this table:

Fuse Kit Cat. No.	DC Precharge Module Cat. No. (No Filtering)	DC Precharge Module Cat. No. (w/DC Common Mode Cores)	Fuses Per Kit	Fuse Amps/Leg	1 Bussman Fuse/Leg
SK-RM-DCFUSE1-F8	20-750-MDCP1-CD-F8M	20-750-MDCP2-CD-F8M	2	1400	170M6467
SK-RM-DCFUSE2-F8	20-750-MDCP1-EF-F8M	20-750-MDCP2-EF-F8M	2	1100	170M6467

Follow these steps to remove and install the DC precharge module fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay door.
4. Remove the DC precharge module from the enclosure.
5. Remove the four M12 hex nuts that secure the fuses to the bus bars.

6. Pull the fuses out of the chassis and disconnect the signal cables from the indicator switches.



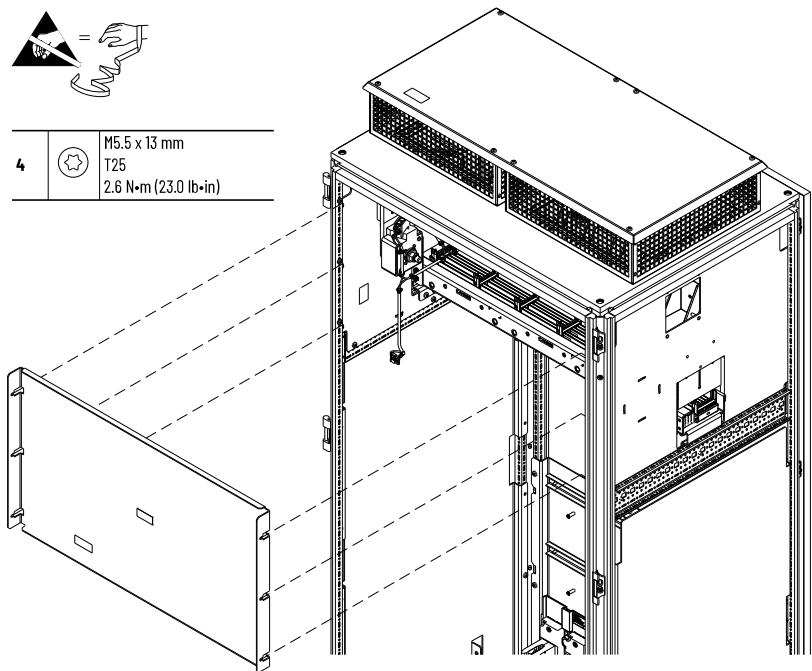
The side and back panels are not shown for clarity only.

7. Install the DC precharge fuses in the reverse order of removal.

Remove and Install the Power Bay Guard for Frames 8...15

To access components in a power bay, you must remove the upper guard. Follow these steps to remove and install the upper guard in a power bay.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay door.
4. Loosen the six M5.5 x 13 mm Torx screws that secure the guard from the enclosure.



5. Install the guard in the reverse order of removal.

Remove and Install the DC Link Fuses for Frames 8...15

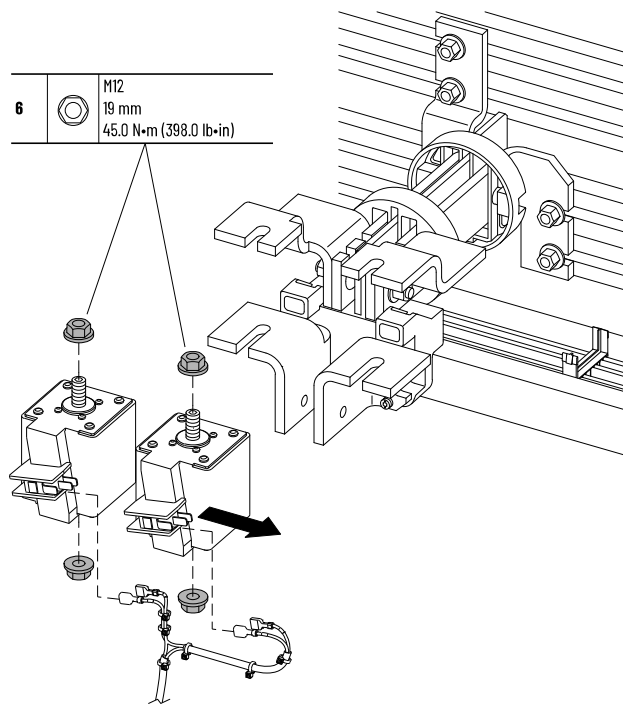
Replace the DC link fuses with the appropriate kit catalog number that is identified in this table:

Fuse Kit Cat. No.	DC Link/Fuse Assembly Kit Cat. No.	Voltage Class	Fuses Per Kit	Fuse Amps/Leg	1 Bussmann Fuse/Leg
SK-RM-DCFUSE1-F8	20-750-MDCL1-CD-F8M	400V/480V AC	2	1400	170M6467
SK-RM-DCFUSE1-F8	20-750-MDCL2-CD-F8M	400V/480V AC	2	1400	170M6467
SK-RM-DCFUSE2-F8	20-750-MDCL1-EF-F8M	600V/690V AC	2	1100	170M6499
SK-RM-DCFUSE2-F8	20-750-MDCL2-EF-F8M	600V/690V AC	2	1100	170M6499

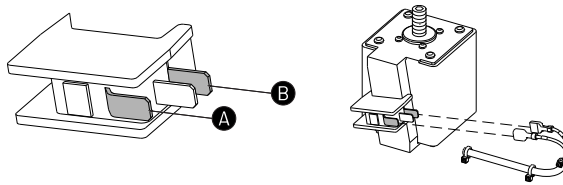
IMPORTANT: It is recommended that you replace both DC link fuses for each power module installed.

Follow these steps to remove and install the DC link fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay door.
4. Remove the upper guard from the enclosure.
5. Remove the wire harness connectors from the stab connectors on the fuse indicator switches and retain the wire harness for reuse.
6. Remove the four M12 x 13 mm hex nuts that secure the fuses to the DC link bus bars and remove the fuses.



7. Install the DC link fuses in the reverse order of removal. Verify that the DC fuse wire harness connectors are installed on the outer two terminals (A and B) of the fuse indicator switches.



Remove and Install a Power Module for Frames 8...15



ATTENTION: Risk of injury, death, or equipment damage exists.

IGBT power and LCL filter modules have a high center of gravity and may pose a tip-over hazard. To guard against death, serious personal injury, or equipment damage, do not subject the module to high rates of acceleration or deceleration while transporting. Do not push or pull above the points that are indicated on the module.

Equipment is available that is designed to help you safely handle the power modules. The following equipment is recommended:

- PowerFlex® 750-Series module service cart, catalog number 20-750-MCART1. See the PowerFlex 750-Series Service Cart and DC Precharge Module Life Instructions, publication [750-IN105](#).
- PowerFlex® 750TM power and LCL filter module storage hardware, catalog number 20-750-MINV-ATIP. See the PowerFlex 755TM Power and Filter Module Storage Hardware Installation Instructions, publication [750-IN106](#).
- PowerFlex® 755T power module service ramp, catalog number 20-750-MRAMP1. See the PowerFlex 755T Power Module Service Ramp Instructions, publication [750-IN108](#).

IMPORTANT: The service ramp is used only with power module when the cabinet is mounted directly to the floor. Do not use the ramp to remove LCL filter modules from the cabinet. Review service ramp instructions before using.

Replace the power module with the appropriate catalog number: 20-750-M11-CnnnDnnn, 20-750-M11-EnnnFnnn, 20-750-M12-CnnnDnnn, 20-750-M12-EnnnFnnn, 20-750-M13-CnnnDnnn, or 20-750-M13-EnnnFnnn. The power module catalog number is included on the nameplate that is on the front of the module as shown in this illustration.

Figure 34. Frame 8...15 Power Module Nameplate Location

Cal No: 20-750-M1-C302D302

UL Open Type / IP00 CM Cap Jumper Insulated

CONVERTER RATINGS:

		Series: B
Power LD/ND/HD	400V Class	480V Class
Input:	228/188/162 kW	258/216/177 kW
AC Voltage	3 Phase, 50Hz	3 Phase, 60Hz
Cont. Amps LD/ND/HD	400	480
Output:	343/282/243	323/271/222
DC Voltage	DC	DC
Base Freq. (default)	580	696
Cont. Amps LD/ND/HD	DC	DC
60S OL Amps LD/ND/HD	394/324/279	371/311/255
3S OL Amps LD/ND/HD	433/356/419	408/342/383
INVERTER RATINGS:	NA/486/502	NA/467/459
Power LD/ND/HD	540V Class	650V Class
Input:	200/160/132 kW	300/250/200 HP
DC Voltage	DC	DC
Amps LD/ND/HD	540	650
Output:	423/348/300	399/333/274
AC Voltage	3 Phase, 0-400Hz	3 Phase, 0-400Hz
Base Freq. (default)	0-400	0-460
Cont. Amps LD/ND/HD	50Hz	60Hz
60S OL Amps LD/ND/HD	367/302/260	361/302/248
3S OL Amps LD/ND/HD	404/332/390	397/332/372
	NA/453/468	NA/453/446

240V Supply (Amp): 2.84
 24 VDC Supply (Amp): 1.5
 Surrounding Air Temp.(°C): 50

PN-581015

9999

2023/11/29

PRODUCT OF USA

Original Firmware:

Serial Number: 2110094295

See product literature for additional information

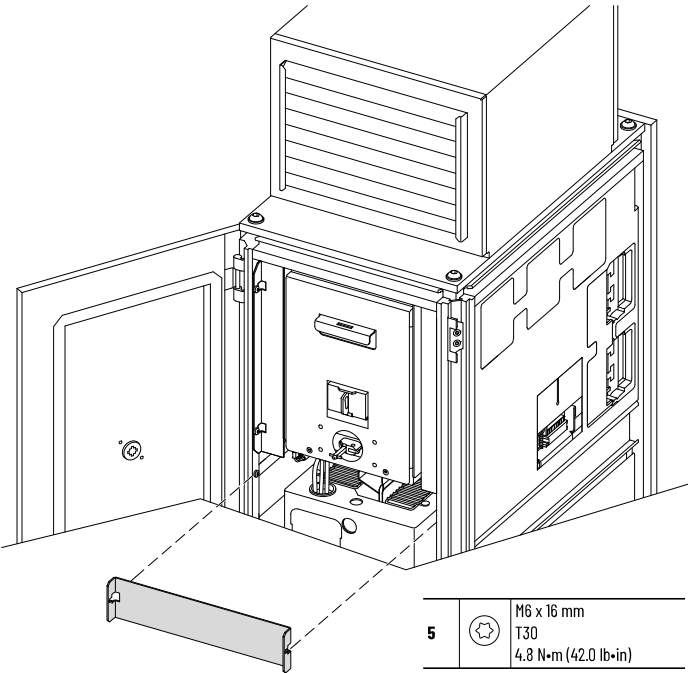
Rockwell Automation

1201 S 2nd St, Milwaukee, WI 53204, USA

Follow these steps to remove and install a power module from the enclosure.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. If a DC link fuse assembly is installed, remove the upper guard from the enclosure.

5. If a DC precharge module is installed, loosen the two M6 x 16 mm Torx screws that secure the bottom guard to the enclosure, and remove the bottom guard.

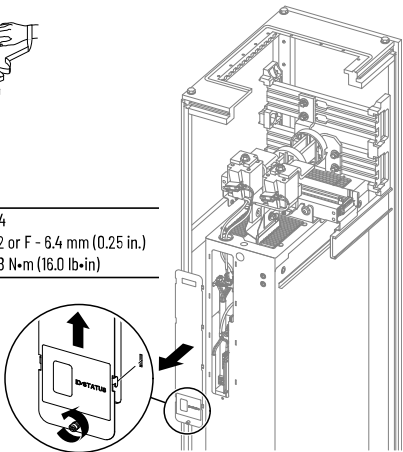


A power module with DC link fuse assembly is shown throughout this procedure. The remaining steps are the same when a DC precharge module is installed.

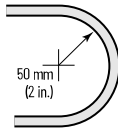
6. Loosen the thumb screw that secures the connections cover to the front of the power module.
7. Use the screw to lift the connections cover up and off the power module chassis.



6		M4 P2 or F - 6.4 mm (0.25 in.) 1.8 N•m (16.0 lb•in)
---	--	---



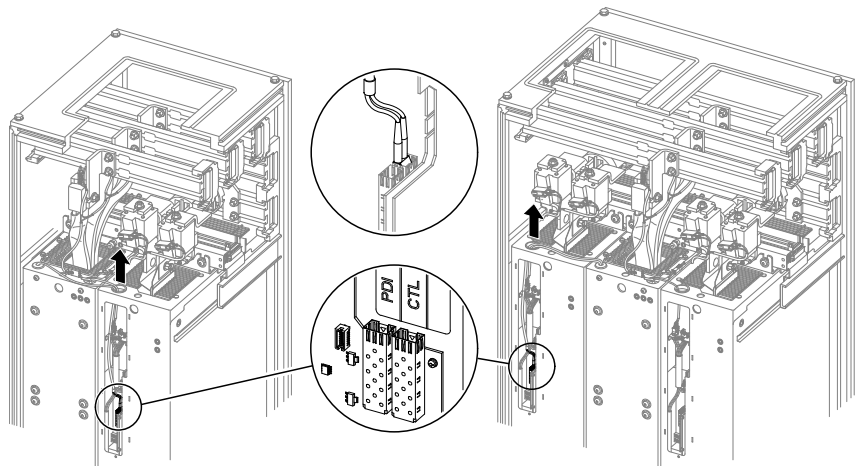
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



8. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cables from the transceiver in the CTL and PDI (if used) ports on the power layer interface circuit board.

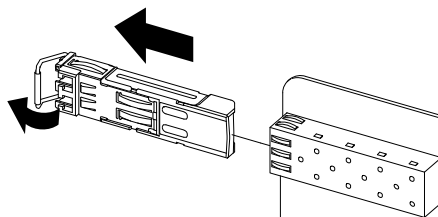
IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

9. Carefully remove the cable from the power module chassis and, observing the minimum bend radius, secure the fiber-optic cables in a protected location.



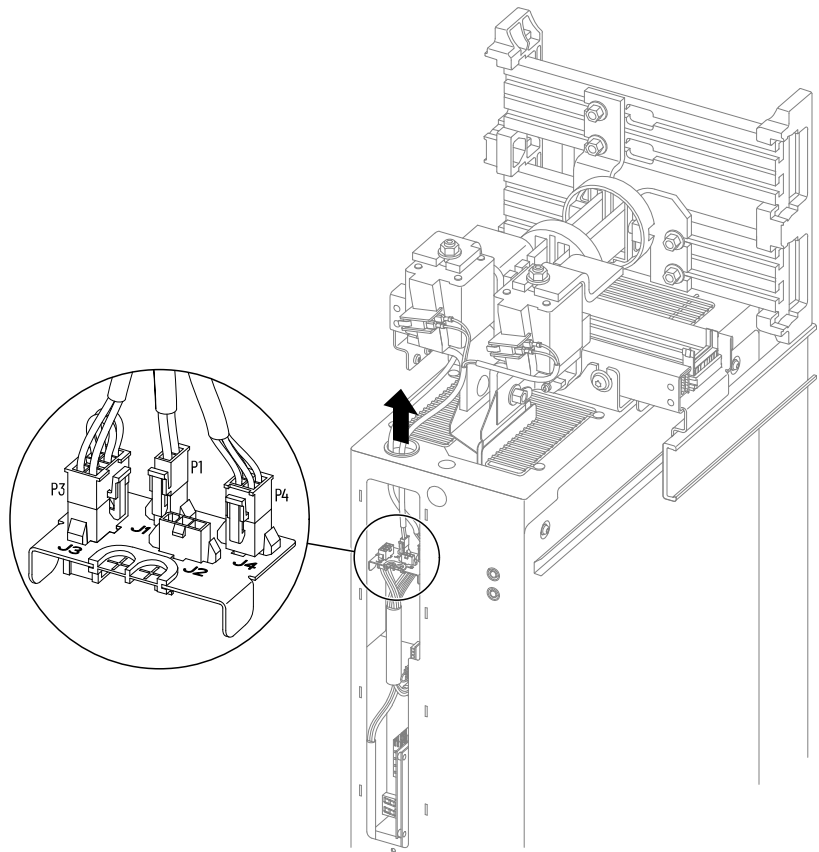
If the latch is obstructed and you cannot use your fingers to open it, use a small, flat-blade screwdriver or other long, narrow tool to open the latch.

10. For the CTL and PDI (if used) fiber optic ports on the power layer interface board, open the transceiver latch and pull the transceiver out of the connector on the board.



IMPORTANT: Retain the CTL and PDI (if used) fiber optic transceivers for reuse. If present, do not remove the protective cover from the PDI fiber optic port. See Protective Covers on Kits with XT on page 27 for details on protective covers.

11. If present, disconnect the cable connector P1 from connector J1 on the I/O panel in the power module remove the cable from the power module chassis.
12. If present, disconnect the cable connector P2 from connector J2 on the I/O panel in the power module remove the cable from the power module chassis.
13. Disconnect the cable connector P3 from connector J3 on the I/O panel in the power module remove the cable from the power module chassis.
14. Disconnect the cable connector P4 from connector J4 on the I/O panel in the power module remove the cable from the power module chassis.



The power module and assemblies are shown removed from the enclosure for clarity only.



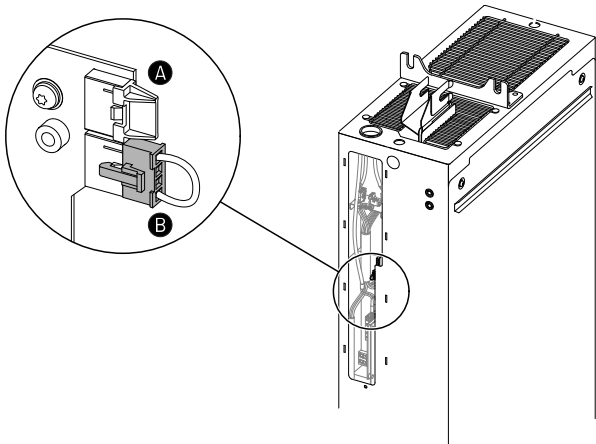
ATTENTION: Risk of equipment damage exists.

Equipment damage can occur if the PE-B1 jumper is installed in the connected (IN) position for these applications:

- The power module is used as a regenerative front-end converter. Do not install the PE-B1 jumper in the connected (IN) position for this application.
- The power module is used as a common bus inverter with a regenerative front-end converter. Do not install the PE-B1 jumper in the connected (IN) position for this application.

The PE-B1 jumper can be installed in the connected (IN) position when the power module is used as a common bus inverter with a non-regenerative front-end converter.

15. Record the position of the PE-B1 jumper on the power interface circuit board in the power module. The PE-B1 jumper on the new power module must be installed in the same position.

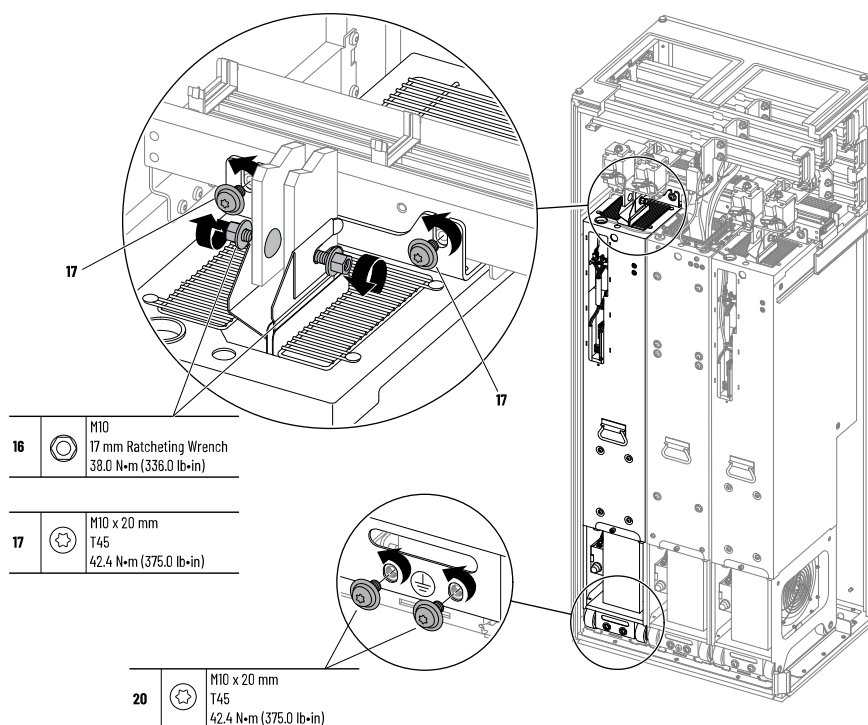


Item	Description
A	PE-B1 jumper in the "IN" position
B	PE-B1 jumper in the "OUT" position (default)



The protective cover (at A) shown in the illustration is not present on all existing power modules. If present, the protective cover must remain installed in the unused jumper connector J5 or J6. See Protective Covers on Kits with XT on page 27 for details on protective covers.

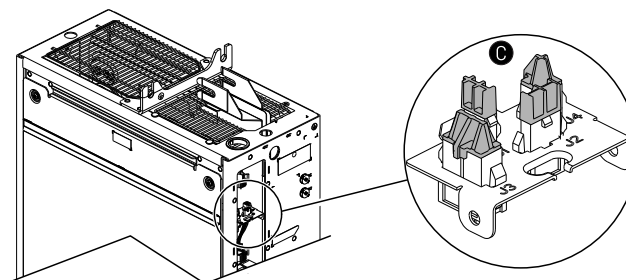
16. Loosen the two M10 x 10 mm hex nuts and bolts that secure the power module DC input terminals to the DC precharge module or DC link fuse terminals.
17. Remove the two M10 x 20 mm Torx screws that secure the power module chassis to the control bus frame.
18. Leave the two M10 x 20 mm screws that secure the power module chassis to the floor mounting bracket while preparing the PowerFlex® 750-Series service cart or service ramp.



19. To remove the module by using the service cart, follow the detailed instructions in the PowerFlex® 750-Series Service Cart and DCPC Module Lift Installation Instructions, publication [750-IN105](#). To remove the module using PowerFlex 755TM service ramp, follow the procedures that are detailed in the PowerFlex® 755T Module Service Ramp Instructions, publication [750-IN108](#).
20. To release the power module from the enclosure, remove the two remaining M10 x 20 mm screws.
21. Remove the power module from the enclosure.
22. Verify that the jumper PE-B1 is installed in the correct position on the new power module.

IMPORTANT: The protective cover provided in connector J5 on the power interface circuit board in the new power module must be installed in the unused PE-B1 jumper connector, position J5 or J6.

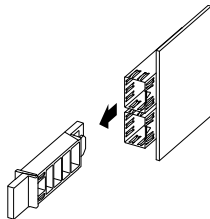
23. Install the power module into the enclosure in the reverse order of removal.
24. Connect the existing wire harnesses to the I/O penal on the power module.



IMPORTANT: Do not remove the protective covers (C) from connectors J2 and J3 on the power module I/O panel unless used at the time of installation. Do not remove the protective cover from the fiber-optic port PDI on the power layer interface circuit board unless used at the time of installation.

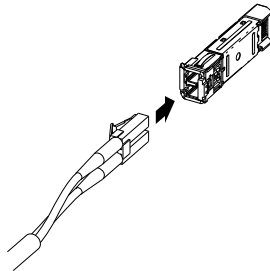
IMPORTANT: Retain protective covers for power and LCL filter modules for reuse. Install protective covers on connectors when a module is removed and stored.

25. If used, remove the protective cover from the PDI fiber optic port on the power layer interface circuit board.

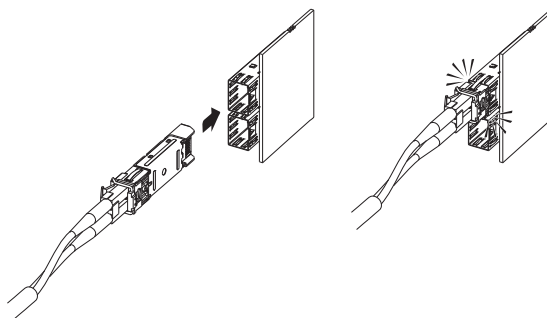


This illustration represents a fiber-optic transceiver port on an example circuit board only.

26. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



27. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'

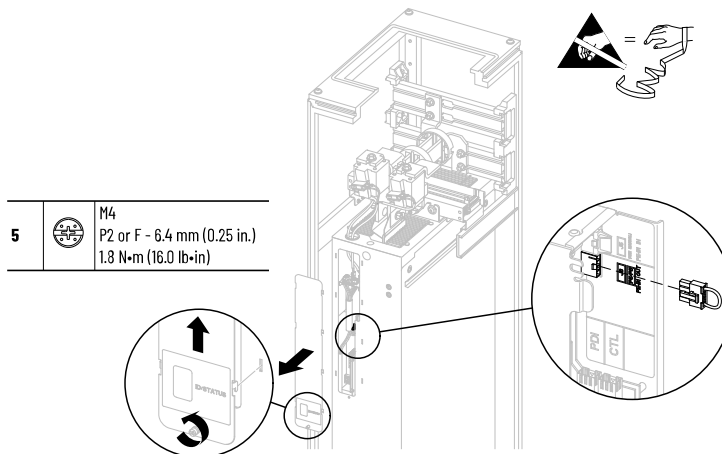


Remove and Install the Power Module PE-B1 Power Jumper for Frames 8...15

Replace the power module PE-B1 power jumper with kit catalog number SK-RM-INV-JMPR-F8. Follow these steps to remove and install the power module PE-B1 power jumper.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.

3. Open the corresponding enclosure door.
4. If present, remove the guards from the enclosure.
5. Loosen the thumb screw that secures the connections cover to the front of the power module.
6. Use the screw to lift the connections cover up and off the power module chassis.
7. Remove the jumper from connector P5 or P6 on the power layer interface circuit board.



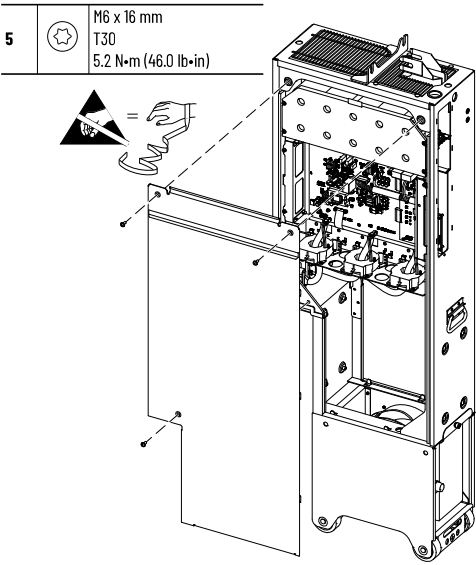
IMPORTANT: If present, do not remove the protective cover from the unused jumper socket (J5 or J6) on the power interface circuit board.

8. Install the power module PE-B1 power jumper in the reverse order of removal. Verify that the jumper PE-B1 is installed in the same position on the new power module as it was on the old power module.

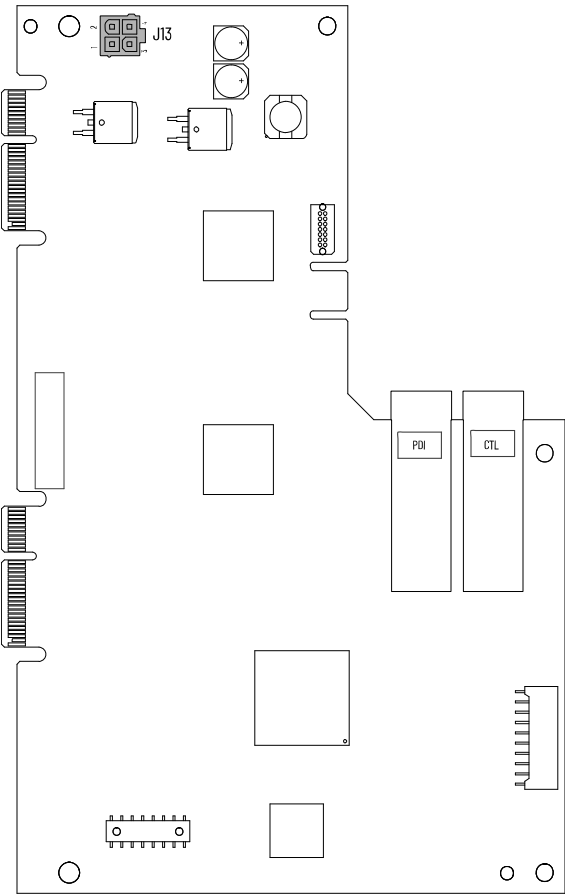
Remove and Install the Power Module Circuit Board Tray for Frames 8...15

You must remove the circuit board tray from the power module to access the power layer interface and power interface circuit boards. Two versions of the circuit board tray are released. Follow these steps to remove and install the circuit board tray.

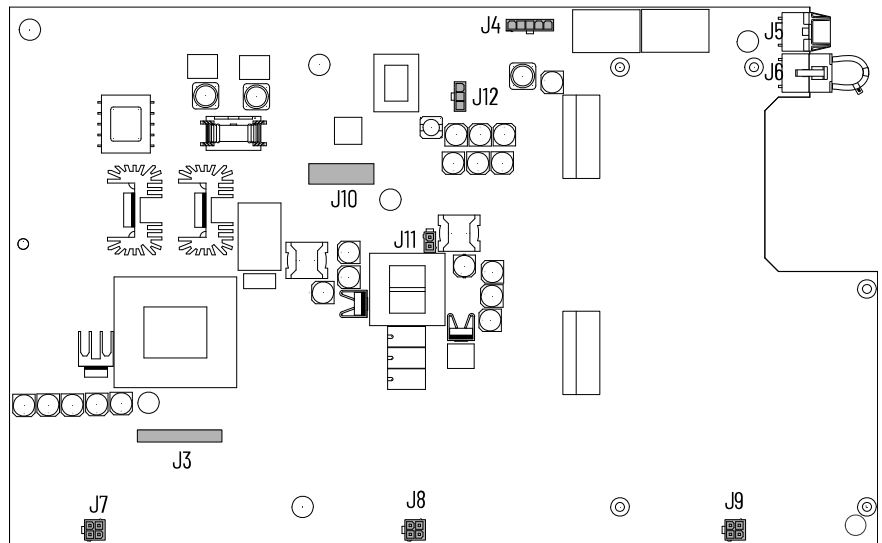
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. Remove the power module from the enclosure.
5. Remove the three M6 x 16 mm Torx screws that secure the left-side cover to the power module chassis and remove the cover.



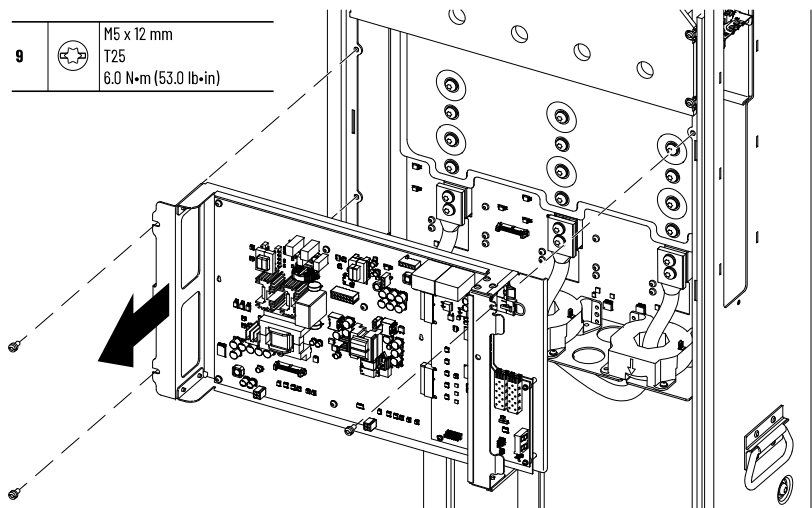
6. isconnect the wire harness connector P13 from connector J13 on the power layer interface circuit board.



7. Disconnect these wire harness connectors from the power interface circuit board:
 - P3 from J3
 - P4 from J4
 - P7 from J7
 - P8 from J8
 - P9 from J9
 - P10 from J10
 - P11 from J11
 - If a thermal switch is used, P12 from J12



8. Remove all cables ties from the cable mounts on the front of the circuit board tray.
9. Remove the three M5 x 12 mm slotted-Torx screws that secure the circuit board tray to the power module chassis and, remove the tray by rotating the left side away from the chassis and by sliding the tabs on the right side of the tray out of the mounting slots.



10. Install the circuit board tray in the reverse order of removal.

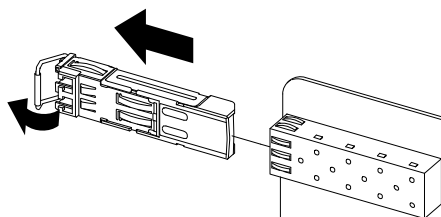
Remove and Install the Power Layer Interface Circuit Board for Frames 8...15

Replace the power module power layer interface circuit board with kit catalog number SK-RM-PLI1- F8. Two versions of the circuit board tray are released. Each version of the tray uses different screw sizes to secure the power layer interface circuit board to the tray. Circuit board trays and screw combinations for the power layer interface board include:

- Part number PN-371633 contains five M3 x 20 mm slotted-Torx screws
- Part number PN-417691 contains five M4 x 18 mm slotted-Torx screws

Follow these steps to remove and install the power layer interface circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. Remove the power module from the enclosure.
5. Remove the circuit board tray from the power module.
6. For the CTL and PDI (if used) fiber optic ports on the power layer interface board, open the transceiver latch and pull the transceiver out of the connector on the board. Retain the fiber optic transceivers for reuse.



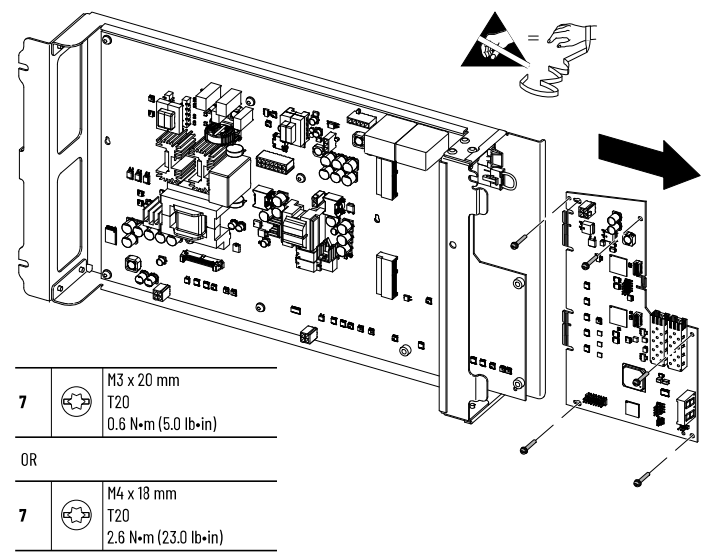
If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

7. Remove the five M3 x 20 mm or M4 x 18 mm slotted-Torx screws that secure the power layer interface circuit board to the standoffs on the circuit board tray and remove the circuit board. Retain the screws for reuse.

IMPORTANT: The power layer interface circuit board replacement kit excludes screws. Therefore, all existing screws for this board must be reused. Verify the screw size that is supplied with your circuit board tray and apply the recommended torque during reinstallation.

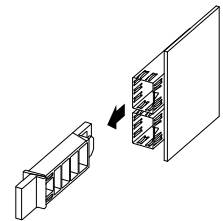
8. Slide the board to the right to disconnect the two 64-pin edge connectors and remove the circuit board.



9. Remove the protective cover from connector J13 on the new power layer interface circuit board.

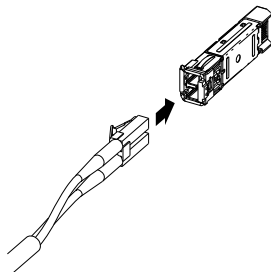
IMPORTANT: If present, do not remove the protective cover from the fiber-optic port PDI on the power layer interface circuit board unless used at the time of installation.

10. Install the power layer interface circuit board in the reverse order of removal.
11. Connect the wire harness connector P13 to connector J13 on the power layer interface circuit board.
12. If used, remove the protective cover from the PDI fiber optic port on the power layer interface circuit board.

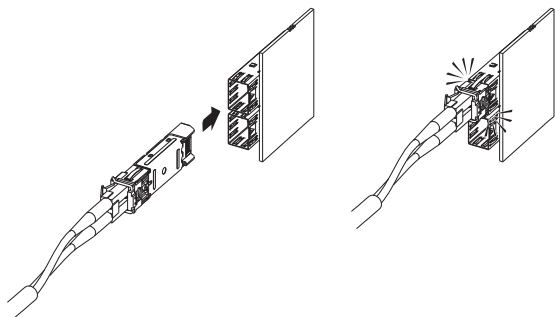


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

13. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



14. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



Remove and Install the Power Interface Circuit Board for Frames 8...15

IMPORTANT: The power interface circuit board contains data regarding the power modules predictive maintenance runtime history. Replacing the power interface circuit board will erase this data and is not recommended if predictive maintenance data is required for your application.

Replace the power module power interface circuit board with the kit catalog number for your power module rating that is identified in this table:

Power Module Normal Duty Rating	Cat. No. (for Power Modules with No Filtering)	Cat. No. (for Power Modules with Paralleling Inductor)	Cat. No. (for Power Modules with Reflected Wave Filter)
400V 302A, 480V 302A	SK-RM-PIB1-C302D302	—	SK-RM-PIB3-C302D302
400V 367A, 480V 361A	SK-RM-PIB1-C367D361	—	SK-RM-PIB3-C367D361
400V 460A, 480V 430A	SK-RM-PIB1-C460D430	SK-RM-PIB2-C460D430	SK-RM-PIB3-C460D430
400V 540A, 480V 505A	SK-RM-PIB1-C540D505	SK-RM-PIB2-C540D505	SK-RM-PIB3-C540D505
400V 585A, 480V 540A	SK-RM-PIB1-C585D545	SK-RM-PIB2-C585D545	SK-RM-PIB3-C585D545
400V 650A, 480V 617A	SK-RM-PIB1-C650D617	SK-RM-PIB2-C650D617	SK-RM-PIB3-C650D617

Power Module Normal Duty Rating	Cat. No. (for Power Modules with No Filtering)	Cat. No. (for Power Modules with Paralleling Inductor)	Cat. No. (for Power Modules with Reflected Wave Filter)
400V 750A, 480V 710A	SK-RM-PIB1-C750D710	SK-RM-PIB2-C750D710	SK-RM-PIB3-C750D710
400V 770A, 480V 740A	SK-RM-PIB1-C770D740	SK-RM-PIB2-C770D740	SK-RM-PIB3-C770D740
600V 242A, 690V 215A	SK-RM-PIB1-E242F215	—	SK-RM-PIB3-E242F215
600V 295A, 690V 265A	SK-RM-PIB1-E295F265	SK-RM-PIB2-E295F265	SK-RM-PIB3-E295F265
600V 355A, 690V 330A	SK-RM-PIB1-E355F330	SK-RM-PIB2-E355F330	SK-RM-PIB3-E355F330
600V 395A, 690V 370A	SK-RM-PIB1-E395F370	SK-RM-PIB2-E395F370	SK-RM-PIB3-E395F370
600V 409A, 690V 390A	—	SK-RM-PIB2-E409F390	SK-RM-PIB3-E409F390
600V 435A, 690V 415A	SK-RM-PIB1-E435F415	SK-RM-PIB2-E435F415	SK-RM-PIB3-E435F415
600V 545A, 690V 505A	SK-RM-PIB1-E545F505	SK-RM-PIB2-E545F505	SK-RM-PIB3-E545F505

Two versions of the circuit board tray are released. Each version of the tray uses different screw sizes to secure the power interface circuit board to the tray. Circuit board trays and screw combinations for the power interface board include:

- Part number PN-371633 contains five M4 x 10 mm slotted-Torx screws
- Part number PN-417691 contains five M4 x 18 mm slotted-Torx screws

Follow these steps to remove and install the power interface circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. Remove the power module from the enclosure.
5. Remove the circuit board tray from the power module.
6. Remove the power layer interface circuit board.



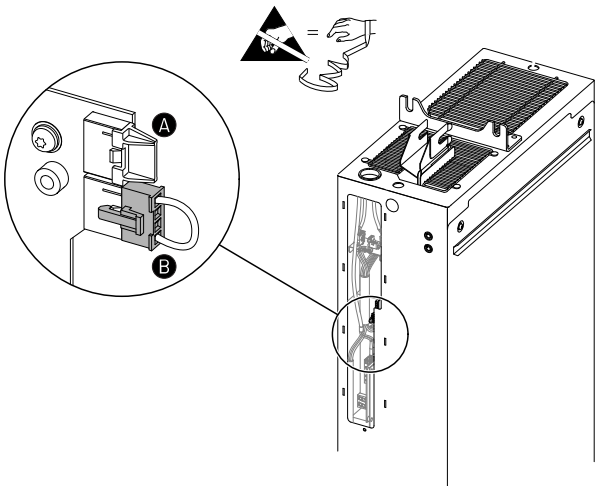
ATTENTION: Risk of equipment damage exists.

Equipment damage can occur if the PE-B1 jumper is installed in the connected (IN) position for these applications:

- The power module is used as a regenerative front-end converter. Do not install the PE-B1 jumper in the connected (IN) position for this application.
- The power module is used as a common bus inverter with a regenerative front-end converter. Do not install the PE-B1 jumper in the connected (IN) position for this application.

The PE-B1 jumper can be installed in the connected (IN) position when the power module is used as a common bus inverter with a non-regenerative front-end converter.

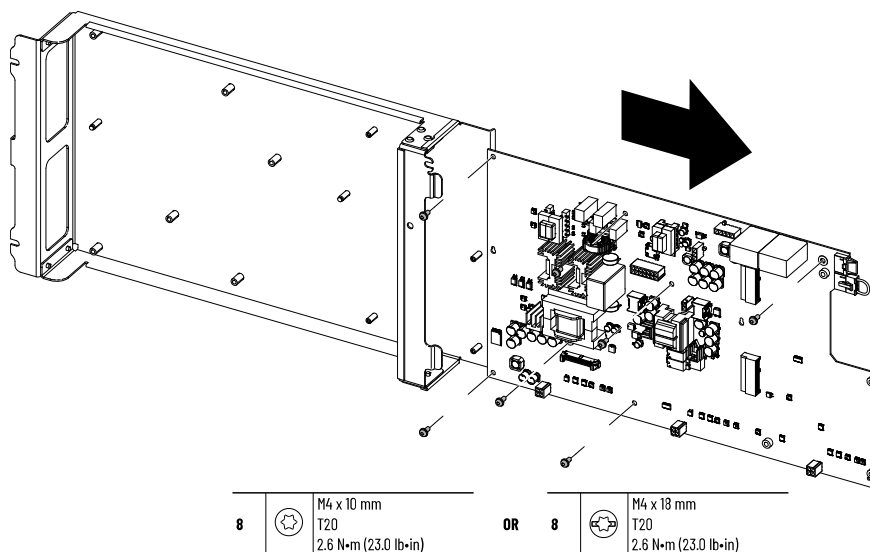
7. Record the position of the PE-B1 jumper on the power interface circuit board in the power module. The PE-B1 jumper on the new power module must be installed in the same position.



Item	Description
A	J5 - PE-B1 jumper in the "IN" position
B	J6 - PE-B1 jumper in the "OUT" position

IMPORTANT: The protective cover shown in the illustration is not present on all existing power modules. If present, the protective cover must remain installed in the unused jumper connector J5 or J6.

8. Remove the seven M4 x 10 mm or M4 x 18 mm Torx screws that secure the power interface circuit board to the circuit board tray and remove the circuit board by lifting the board up and off the supports on the tray. Retain the screws for reuse.



IMPORTANT: The power interface circuit board replacement kit excludes screws. Therefore, all existing screws for this board must be reused. Verify the screw size that is supplied with your circuit board tray and apply the recommended torque during reinstallation.

IMPORTANT: Do not remove the protective cover from the unused jumper connector J5 or J6 on the power interface circuit board.

9. Install the power interface circuit board in the reverse order of removal.

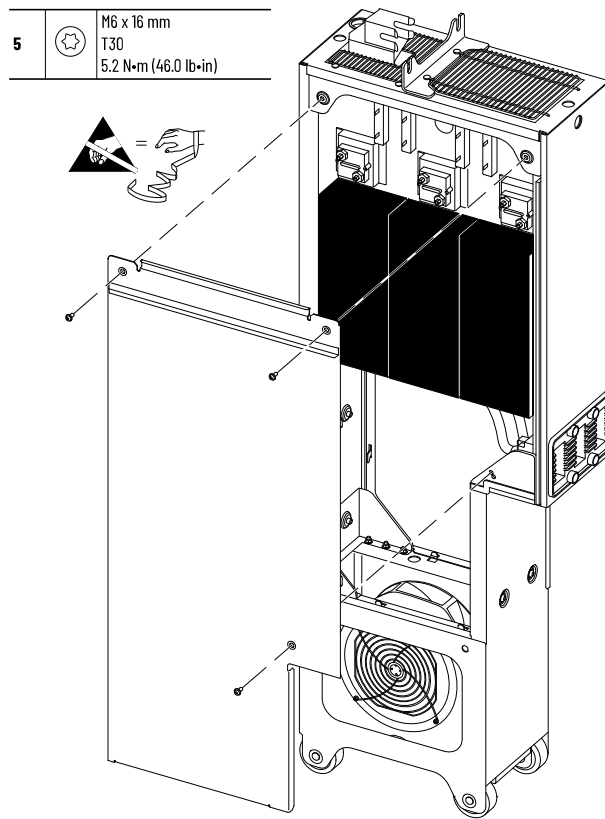
Remove and Install the Power Module Balance Resistors for Frames 8...15

Replace the power module balance resistors with the appropriate kit catalog number:

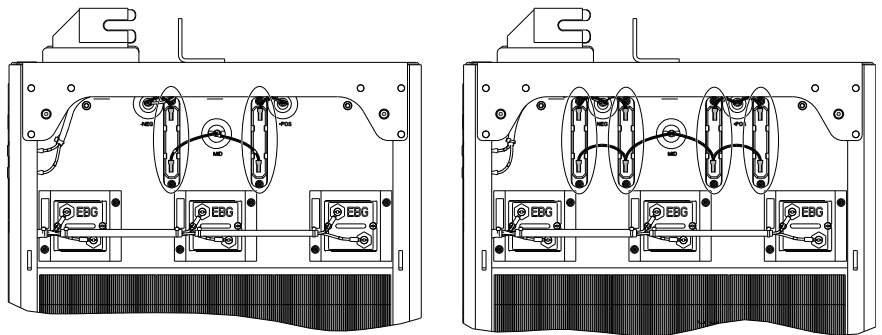
- SK-RM-INVBR1-F8M (400/480V) - For power module catalog numbers 20-750-MIn-CnnnDnnn
- SK-RM-INVBR2-F8M (600/690V) - For power module catalog numbers 20-750-MIn-EnnnFnnn

Follow these steps to remove and install the balance resistors.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. Remove the power module from the enclosure.
5. Remove the three M6 x 16 mm Torx screws that secure the right-side cover to the power module chassis and remove the cover.

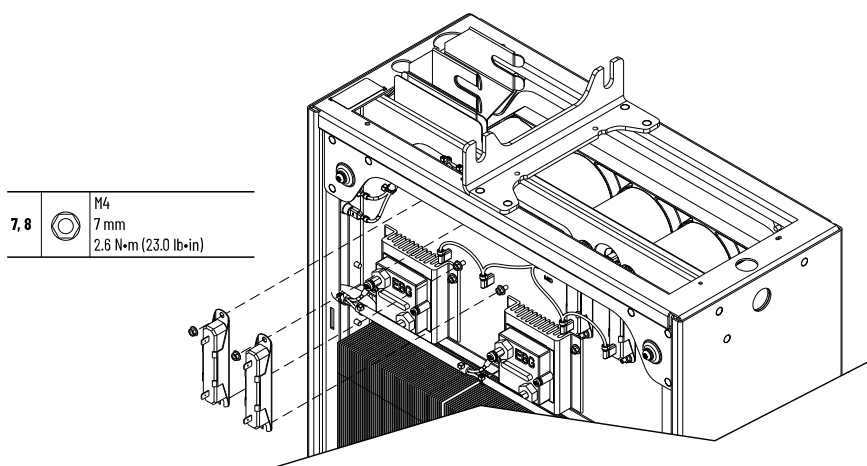


6. Disconnect the stab connectors from the terminals on the balance resistors.



Frame 8...15 power modules contain either two or four balance resistors.

7. Loosen the lower M4 nut that secures the balance resistor to the power module chassis.
8. Remove the upper M4 nut that secures the balance resistor to the power module chassis and remove the resistors.



9. Install the balance resistors in the reverse order of removal.

Remove and Install the Power Module Current Sensors for Frames 8...15

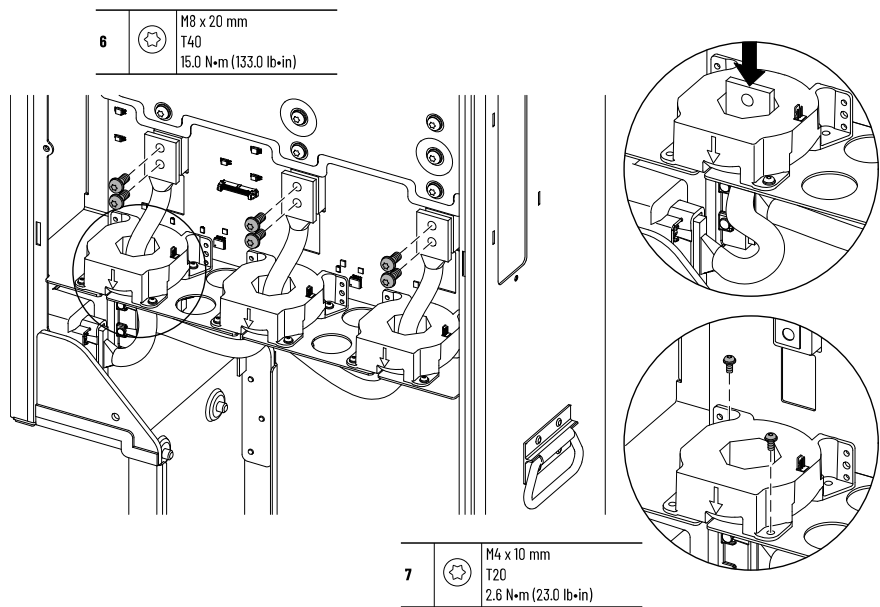
Replace the power module current sensors with the appropriate kit catalog number:

- SK-RM-INVCS1-F8M, 622 A (compatible with power module catalog numbers 20-750-MIn-C302D302, 20-750-MIn-C367D361, 20-750-MIn-C460D430, 20-750-MIn-C540D505, and all 20-750-MIn-EnnnFnnn)
- SK-RM-INVCS2-F8M, 1000 A (compatible with power module catalog numbers 20-750-MIn-C585D545, 20-750-MIn-C650D617, 20-750-MIn-C750D710, and 20-750-MIn-C770D740)

Follow these steps to remove and install the current sensors.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. Remove the power module from the enclosure.
5. Remove the circuit board tray from the power module.
6. Remove the six M8 x 20 mm Torx screws that secure the three flexible bus cables to the IGBT power terminals and pull the flexible bus cables through the opening in the current sensors.

7. Remove the six M4 x 10 mm Torx screws that secure the three current sensors to the power module chassis and remove the current sensors.



Power module without an inductor shown.

8. Install the current sensors in the reverse order of removal.

Remove and Install the Power Module Gate Driver Circuit Board for Frames 8...15

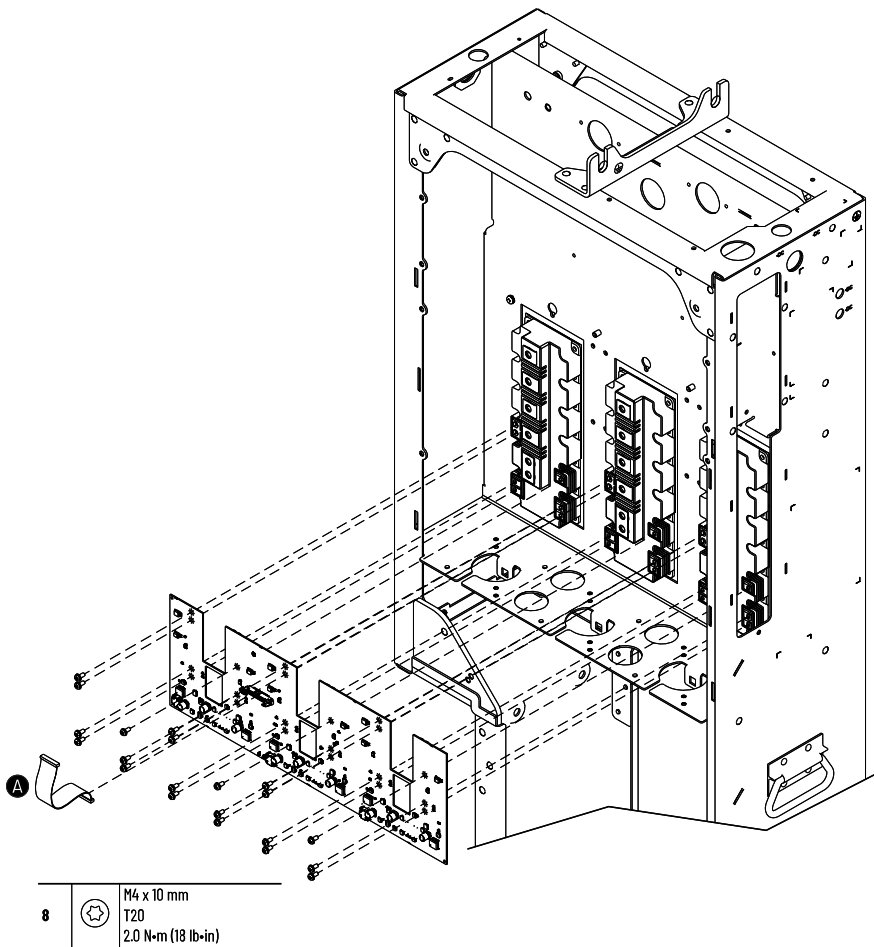
Replace the gate driver circuit board with the appropriate kit catalog number based on the installed power module that is identified in this table:

Power Module Rating	Gate Driver Circuit Board Cat. No.
400V 302A, 480V 302A	SK-RM-GDB-C540D505
400V 367A, 480V 361A	SK-RM-GDB-C540D505
400V 460A, 480V 430A	SK-RM-GDB-C540D505
400V 540A, 480V 505A	SK-RM-GDB-C540D505
400V 585A, 480V 545A	SK-RM-GDB-C770D740
400V 650A, 480V 617A	SK-RM-GDB-C770D740
400V 750A, 480V 710A	SK-RM-GDB-C770D740
400V 770A, 480V 740A	SK-RM-GDB-C770D740
600V 242A, 690V 215A	SK-RM-GDB-E395F370
600V 295A, 690V 265A	SK-RM-GDB-E395F370

Power Module Rating	Gate Driver Circuit Board Cat. No.
600V 355A, 690V 330A	SK-RM-GDB-E395F370
600V 395A, 690V 370A	SK-RM-GDB-E395F370
600V 435A, 690V 415A	SK-RM-GDB-E545F505
600V 545A, 690V 505A	SK-RM-GDB-E545F505

Follow these steps to remove and install the gate driver circuit board from a power module.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. Remove the power module from the enclosure.
5. Remove the circuit board tray from the power module.
6. Remove the current sensors from the power module.
7. Disconnect the ribbon cable (A) connector P1 from J1 on the gate driver circuit board. Retain the ribbon cable for reuse.
8. Remove the 21 M4 x 10 mm Torx screws that secure the gate driver circuit board to the IGBT and remove board. Retain the screws for reuse.





Some power module components are not shown for clarity only.

9. Install the gate driver circuit board in the reverse order of removal.

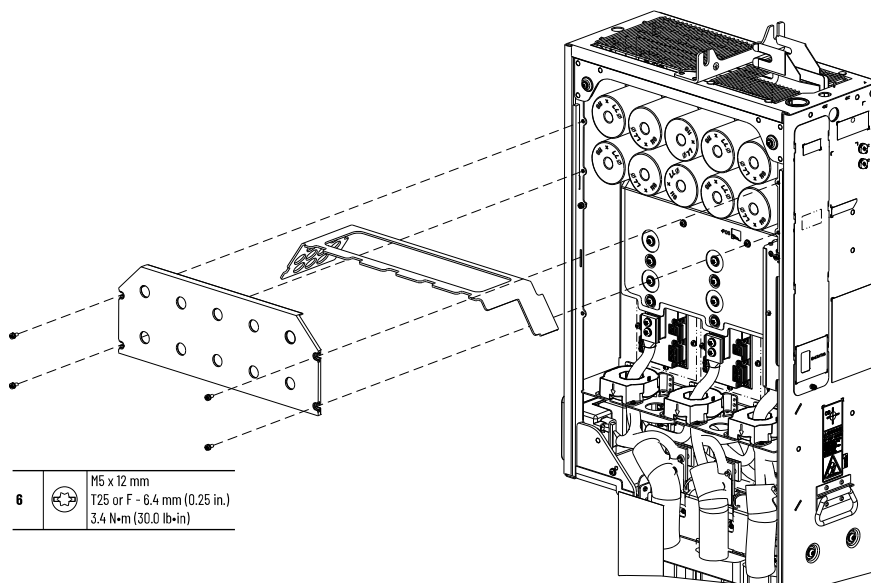
Remove and Install the Power Module DC Bus Capacitor Assembly for Frames 8...15

Replace the frame 8...15 power module DC bus capacitor assembly with the appropriate kit catalog number:

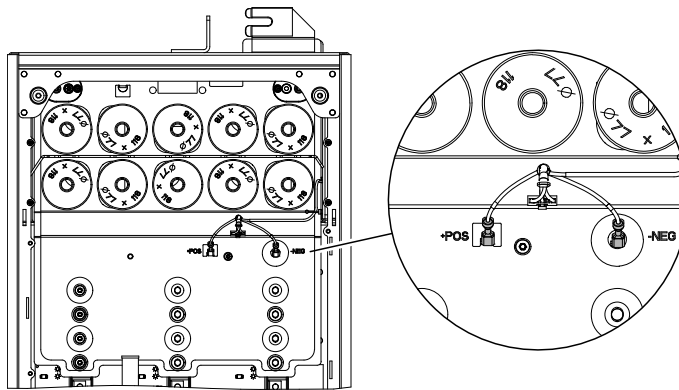
- SK-RM-ICP1-C540D505 (400/480V) - For power module catalog numbers 20-750-MIn-C302D302, 20-750-MIn-C367D361, 20-750-MIn-C460D430, and 20-750-MIn-C540D505
- SK-RM-ICP1-C770D740 (400/480V) - For power module catalog numbers 20-750-MIn-C585D545, 20-750-MIn-C650D617, 20-750-MIn-C750D710, and 20-750-MIn-C770D740
- SK-RM-ICP1-E395F370 (600/690V) - For power module catalog numbers 20-750-MIn-E242F215, 20-750-MIn-E295F265, 20-750-MIn-E355F330, and 20-750-MIn-E395F370
- SK-RM-ICP1-E545F505 (600/690V) - For power module catalog numbers 20-750-MIn-E395F370, 20-750-MIn-E435F415, and 20-750-MIn-E545F505

Follow these steps to remove and install the frame 8...15 power module DC bus capacitor assembly.

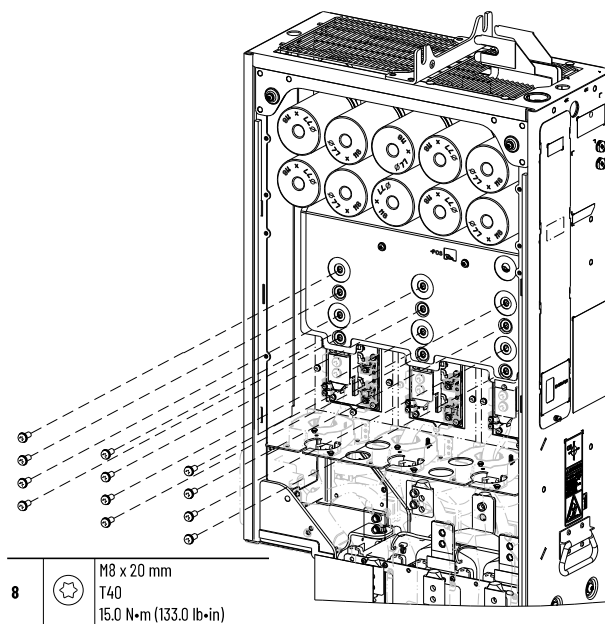
1. Review the product advisories in [Before You Begin on page 12](#). See [Remove and Install the Power Module Circuit Board Tray for Frames 8...15 on page 265](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. Remove the power module from the enclosure.
5. Remove the circuit board tray from the power module.
6. Remove the four M5 x 12 mm slotted-Torx screws that secure the protective plastic cover and bracket the to the power module chassis and remove the cover and bracket from the drive.



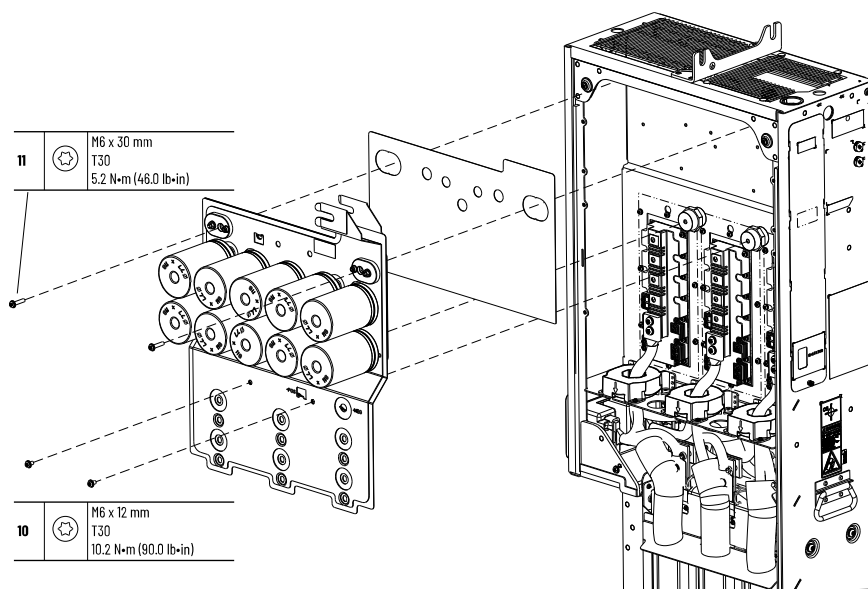
7. Disconnect the +POS and -NEG wire stab connectors from the stakes on the DC bus bars.



8. Remove the 12, M8 x 20 mm Torx screws that secure the flat bus bars to the IGBT modules.



9. One person must support the DC bus capacitor assembly during the remainder of the removal steps.
10. Remove the two M6 x 12 mm Torx screws that secure the DC bus capacitor assembly to the two stand-offs on the power module chassis.
11. Remove the two M6 x 30 mm Torx screws that secure the top of the DC bus capacitor assembly to the power module chassis and remove the assembly and plastic insulator sheet.



12. Install the plastic insulator sheet on the back of the DC bus capacitor assembly.
13. Install the DC bus capacitor assembly with plastic insulator sheet in the reverse order of removal.

Remove and Install a LCL Filter Module from the Enclosure for Frames 8...15



ATTENTION: Risk of injury, death, or equipment damage exists.

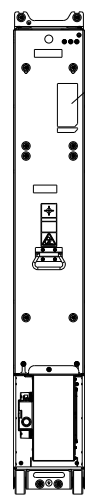
IGBT power and LCL filter modules have a high center of gravity and may pose a tip-over hazard. To guard against death, serious personal injury, or equipment damage, do not subject the module to high rates of acceleration or deceleration while transporting. Do not push or pull above the points that are indicated on the module.

Equipment is available that is designed to help you safely handle the power modules. The following equipment is recommended:

- PowerFlex® 750-Series module service cart, catalog number 20-750-MCART1. See the PowerFlex 750-Series Service Cart and DC Precharge Module Life Instructions, publication [750-IN105](#).
- PowerFlex® 750TM power and LCL filter module storage hardware, catalog number 20-750-MINV-ATIP. See the PowerFlex 755TM Power and Filter Module Storage Hardware Installation Instructions, publication [750-IN106](#).

Replace the LCL filter module with the appropriate catalog number: 20-750-ML1-CnnnDnnn or 20-750-ML1-EnnnFnnn. The LCL filter module catalog number is included on the nameplate located on the front of the module as shown in this illustration.

Figure 35. Frame 8...15 LCL Filter Module Nameplate Location





Cat No: 20-750-ML1-C585D617
UL Open Type / IP00
LCL RATINGS:

Power LD/ND/HD
Input:

400V Class
379/350/298 kW
3 Phase, 50Hz
400

480V Class
406/376/320 kW
3 Phase, 60Hz
480

Amps LD/ND/HD
Output:

547/505/430
3 Phase, 50Hz
400

488/452/385
3 Phase, 60Hz
480

AC Voltage
Base Freq. (default)

50

60

Cont. Amps LD/ND/HD

547/505/430

488/452/385

240V Supply (Amp): 2.84
24 VDC Supply (Amp): 1
Surrounding Air Temp.(°C): 50

 PN-581173
9999

2023/11/29

Original Firmware:


Serial Number: 211004284

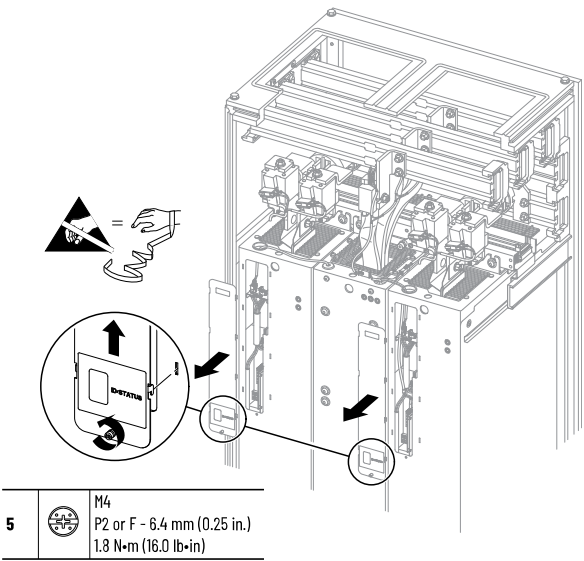
PRODUCT OF USA

See product literature for additional information
Rockwell Automation
1201 S 2nd St, Milwaukee, WI 53204, USA

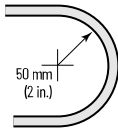


Follow these steps to remove and install the LCL filter module from the enclosure.

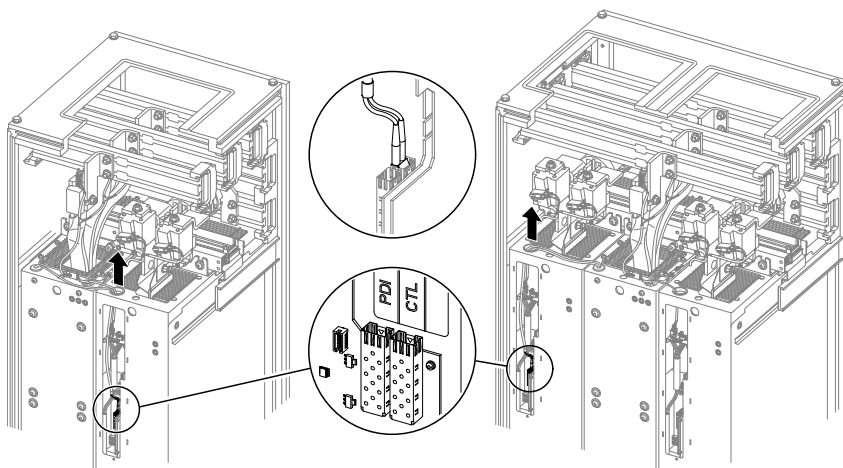
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding enclosure door.
4. If present, remove the guards from the enclosure.
5. Loosen the screw that secures the connections cover to the front of the adjoining one or more power modules.
6. Use the screw to lift the connections cover up and off the power module chassis.



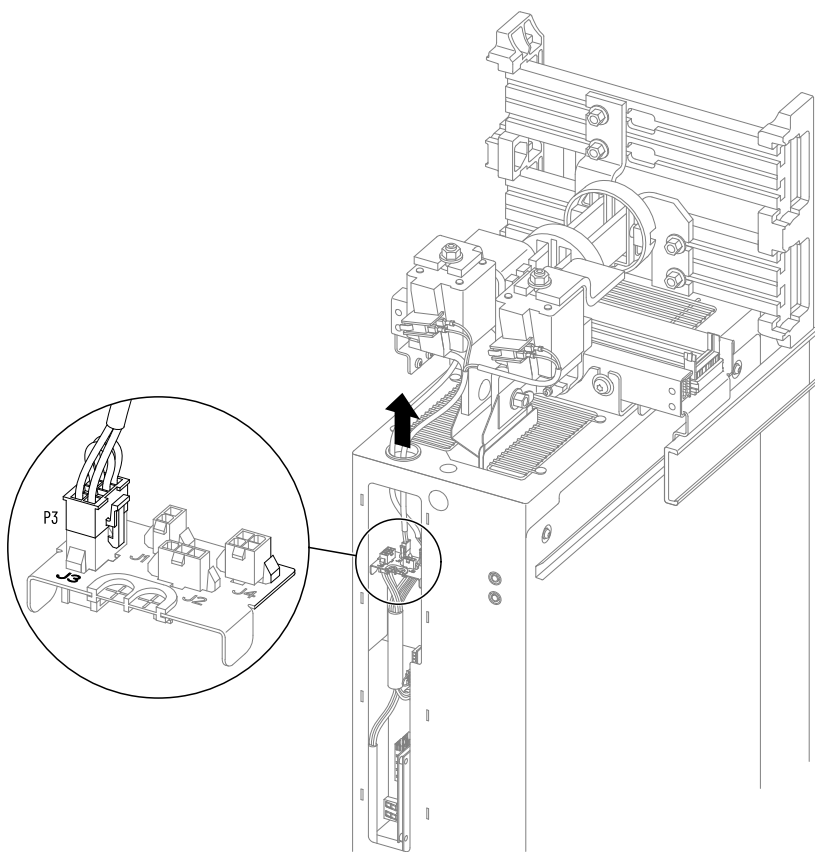
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



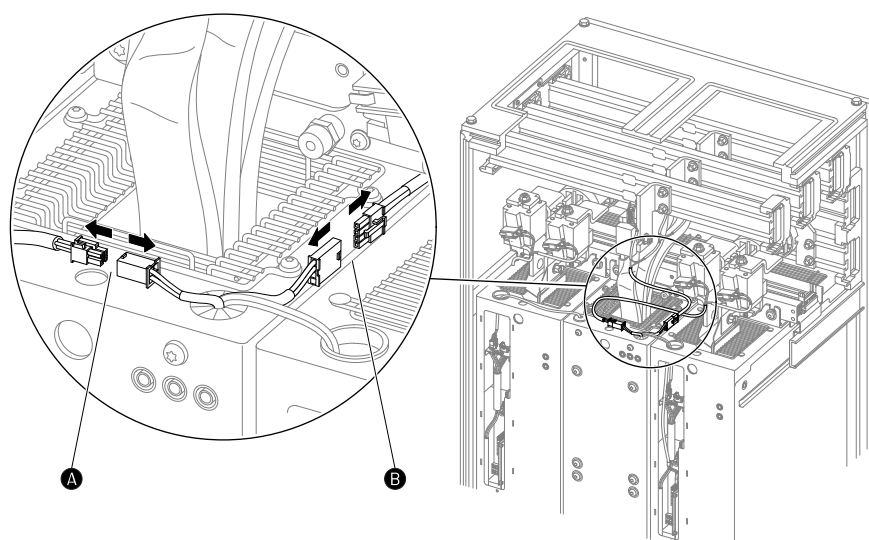
7. Without bending the cable to a radius less than 50 mm (2 in.), disconnect the fiber-optic cable from the transceiver in the PDI port on the power layer interface circuit board in the power module.
8. Carefully remove the cable from the power module chassis and, observing the minimum bend radius, secure the fiber-optic cable in a protected location.



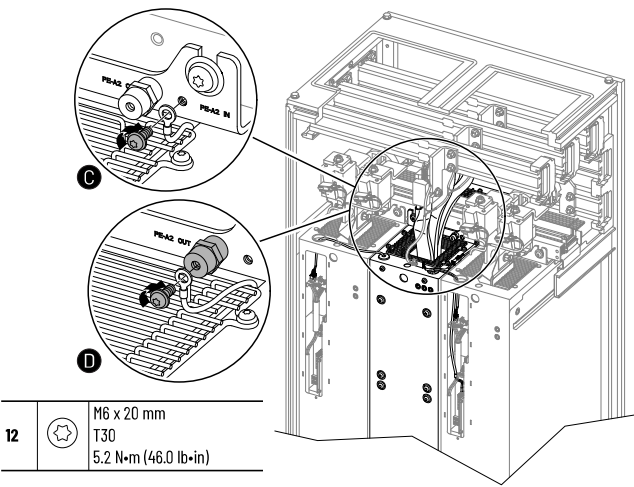
9. Disconnect the 24V cable connector P3 from connector J3 on the I/O panel in one or more power modules and remove the cable from the chassis.



10. Disconnect the 240V AC control power wire harness connector P4 from P2 (A) on the LCL filter module.
11. Disconnect the AC input fuse wire harness connector P5 from P1 (B) on the LCL filter module.

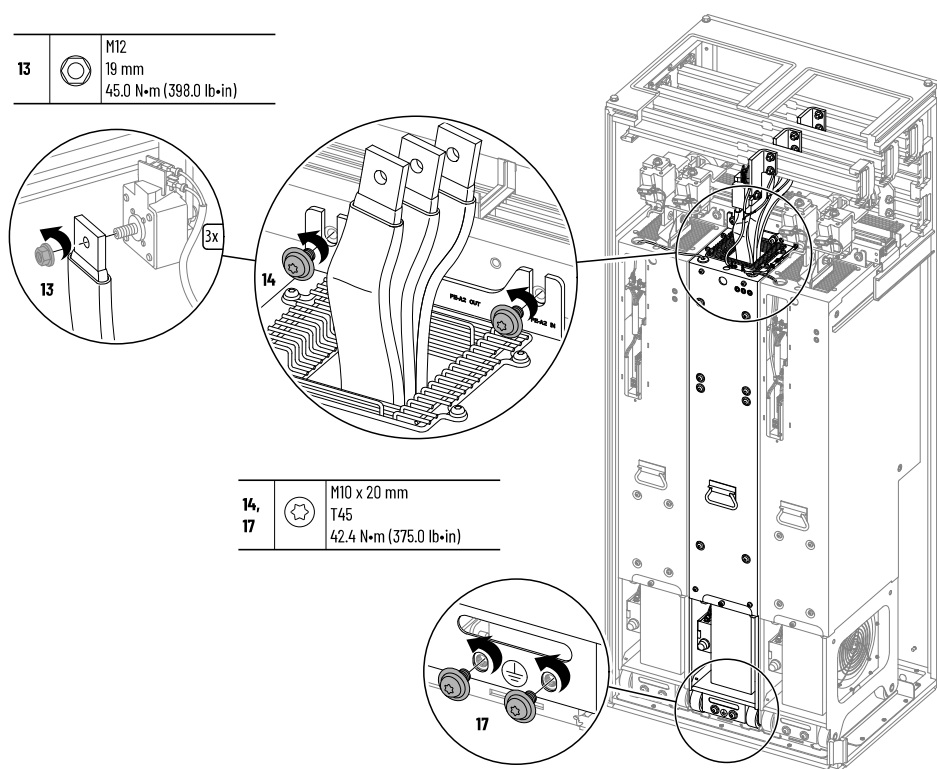


12. Record the position of the PE-A2 jumper on the LCL filter module. The PE-A2 jumper on the new LCL filter module must be installed in the same position.



Item	Description
C	PE-A2 Jumper IN
D	PE-A2 Jumper OUT

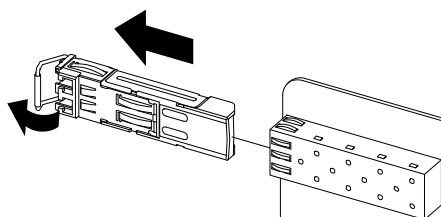
13. Remove the three M12 x 13 mm hex nuts that secure the flexible bus cables to the AC input fuse terminals and remove the flexible bus cables.
14. Remove the two M10 x 20 mm Torx screws that secure the LCL filter module chassis to the control bus frame.
15. Leave the two M10 x 20 mm screws that secure the LCL filter module chassis to the floor mounting bracket while preparing the PowerFlex® 750-Series service cart.
16. Secure the service cart to the floor mounting bracket in the enclosure. See the PowerFlex 750-Series Service Cart and DCPC Module Lift Installation Instructions, publication [750-IN105](#), for information on by using the service cart.
17. To release the LCL filter module, remove the two remaining M10 screws.



18. Remove the LCL filter module from the enclosure.
19. Verify that the jumper PE-A2 is installed in the correct position on the new LCL filter module.
20. Install the LCL filter module into the enclosure in the reverse order of removal.
21. Remove the protective covers from wire harness connectors P1, P2, and P3 when the applicable connections are made on the adjoining power module.

IMPORTANT: Retain protective covers for power and LCL filter modules for reuse. Install protective covers on connectors when a module is removed and stored.

22. In the adjoining power module, open the transceiver latch and pull the transceiver out of the PDI fiber optic port on the power layer interface board.

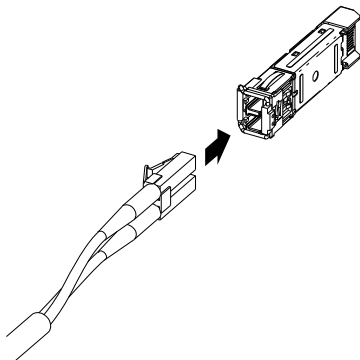


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

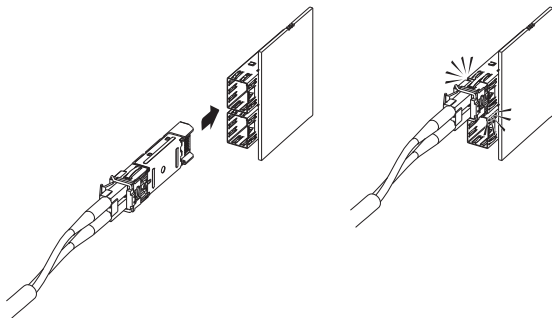


If the latch is obstructed and you cannot use your fingers to open it, use a small, flat-blade screwdriver or other long, narrow tool to open the latch.

23. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



24. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



Remove and Install the AC Input Link Fuses for Frames 8...15

IMPORTANT: It is recommended that you replace all three AC input link fuses.

Replace the AC input link fuses with the appropriate kit catalog number for the LCL filter module that is identified in these tables. Each LCL filter module requires three AC input fuses. Each AC input fuse kit contains three fuses. All fuses are Bussman Square Body - Flush End Contact -BKN/- Type K Indicator.

Table 61. Frame 8 Fuses

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE1-F8	One 20-750-ML1-C540D 505	400V/480V	690/700V (IEC/U.L.), 900 A	170M6463
SK-RM-ACFUSE2-F8	One 20-750-ML1-C770D 740	400V/480V	690/700V (IEC/U.L.), 1250 A	170M6466

Table 61. Frame 8 Fuses (continued)

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE5-F8	One 20-750-ML1-E395F 370	600V/690V	690/700V (IEC/U.L.), 700 A	170M6461
SK-RM-ACFUSE1-F8	One 20-750-ML1-E545F 505	600V/690V	690/700V (IEC/U.L.), 900 A	170M6463

Table 62. Frame 9 Fuses

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE3-F9	One 20-750-ML1-C1K1D1K0	400V/480V	600/500V (IEC/U.L.), 1800 A	170M6470
SK-RM-ACFUSE4-F9	One 20-750-ML1-C1K4D 1K3	400V/480V	550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE2-F8	One 20-750-ML1-E760F 735	600V/690V	690/700V (IEC/U.L.), 1250 A	170M6466
SK-RM-ACFUSE6-F9	One 20-750-ML1-E980F 920	600V/690V	690/700V (IEC/U.L.), 1600 A	170M6469

Table 63. Frame 10 Fuses

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE2-F8	One 20-750-ML1-C770D 740 and	400V/480V	690/700V (IEC/U.L.), 1250 A	170M6466
SK-RM-ACFUSE4-F9	One 20-750-ML1-C1K4D 1K3		550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE1-F8	One 20-750-ML1-E545F 505 and	600V/690V	690/700V (IEC/U.L.), 900 A	170M6463

Table 63. Frame 10 Fuses (continued)

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE6-F9	One 20-750-ML1-E980F 920		690/700V (IEC/U.L.), 1600 A	170M6469

Table 64. Frame 11 Fuses

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE4-F9	Two 20-750-ML1-C1K4D 1K3	400V/480V	550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE6-F9	Two 20-750-ML1-E980F 920	600V/690V	690/700V (IEC/U.L.), 1600 A	170M6469

Table 65. Frame 12 Fuses

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE2-F8	One 20-750-ML1-C770D 740 and	400V/480V	690/700V (IEC/U.L.), 1250 A	170M6466
SK-RM-ACFUSE4-F9	Two 20-750-ML1-C1K4D 1K3		550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE1-F8	One 20-750-ML1-E545F 505 and	600V/690V	690/700V (IEC/U.L.), 900 A	170M6463
SK-RM-ACFUSE6-F9	Two 20-750-ML1-E980F 920		690/700V (IEC/U.L.), 1600 A	170M646

Table 66. Frame 13 Fuses

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE2-F8	Two 20-750-ML1-C770D 740 and	400V/480V	690/700V (IEC/U.L.), 1250 A	170M6466

Table 66. Frame 13 Fuses (continued)

Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE4-F9	Two 20-750-ML1-C1K4D 1K3		550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE1-F8	Two 20-750-ML1-E545F 505 and	600V/690V	690/700V (IEC/U.L.), 900 A	170M6463
SK-RM-ACFUSE6-F9	Two 20-750-ML1-E980F 920		690/700V (IEC/U.L.), 1600 A	170M6469

Table 67. Frame 14 Fuses

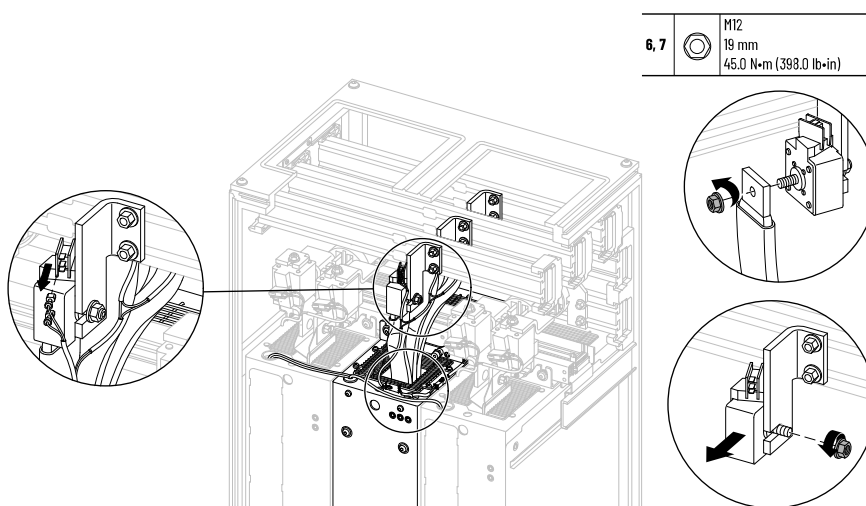
Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE4-F9	Four 20-750-ML1-C1K4D 1K3	400V/480V	550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE6-F9	Four 20-750-ML1-C1K4D 1K3	600V/690V	690/700V (IEC/U.L.), 1600 A	170M6469

Table 68. Frame 15 Fuses

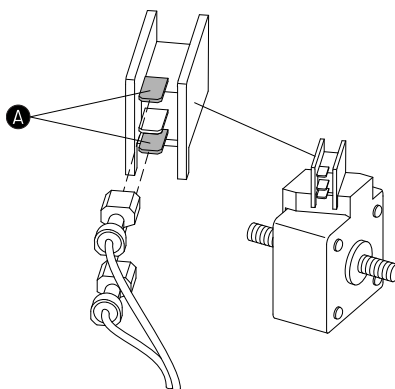
Fuse Kit Cat. No.	LCL Filter Module Cat. No.	Voltage Rating	Fuse Rating	Bussman Fuse Number
SK-RM-ACFUSE2-F8	Two 20-750-ML1-C770D 740 and	400V/480V	690/700V (IEC/U.L.), 1250 A	170M6466
SK-RM-ACFUSE4-F9	Four 20-750-ML1-C1K4D 1K3		550/500V (IEC/U.L.), 2000 A	170M6471
SK-RM-ACFUSE1-F8	Two 20-750-ML1-E545F 505 and	600V/690V	690/700V (IEC/U.L.), 900 A	170M6463
SK-RM-ACFUSE6-F9	Four 20-750-ML1-E980F 920		690/700V (IEC/U.L.), 1600 A	170M6469

Follow these steps to remove and install the AC input link fuses.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. If present, remove the guards from the enclosure.
5. Disconnect the AC input fuse wire harness connector from fuse indicator switches on the fuses.
6. Remove the three M12 x 13 mm hex nuts that secure the flexible bus cables to the AC input fuse terminals and remove the flexible bus cables.
7. Remove the three M12 x 13 mm hex nuts that secure the fuse to the AC input bus bars and remove the fuses.



8. Install the AC input link fuses in the reverse order of removal and verify that the fuse wire harness connectors are installed on the outer two terminals (A) of the fuse indicator switches.



Remove and Install the LCL Filter Capacitor Assembly for Frames 8...15

Replace the LCL filter module capacitor assembly with the appropriate kit catalog number based on the installed LCL filter that is identified in this table. Each LCL filter module capacitor

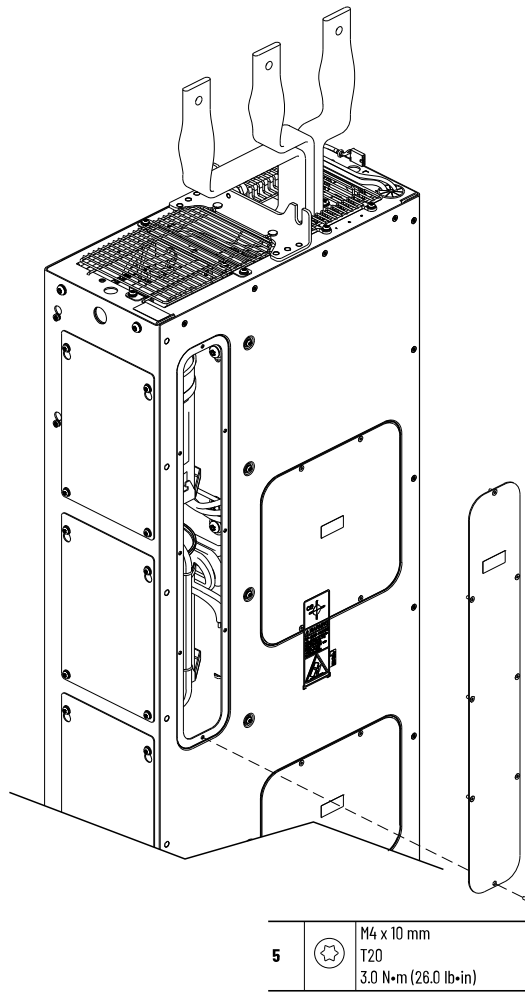
assembly kit contains one capacitor. It is recommended that you replace all capacitors in the module.

LCL Filter Module Cat. No.	LCL Filter Module Capacitor Quantity Required	Capacitor Kit Cat. No.
20-750-ML1-E545F505	2	SK-RM-LCLCP1-F8M, 30 μ F
20-750-ML1-E760F735	2	SK-RM-LCLCP2-F8M, 41 μ F
20-750-ML1-E395F370	1	SK-RM-LCLCP2-F8M, 41 μ F
20-750-ML1-E980F920	3	SK-RM-LCLCP2-F8M, 41 μ F
20-750-ML1-C770D740	2	SK-RM-LCLCP3-F8M, 62 μ F
20-750-ML1-C540D505	1	SK-RM-LCLCP4-F8M, 80 μ F
20-750-ML1-C1K1D1K0	2	SK-RM-LCLCP4-F8M, 80 μ F
20-750-ML1-C1K4D1K3	3	SK-RM-LCLCP4-F8M, 80 μ F

Follow these steps to remove and install the LCL filter capacitor assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. Remove the LCL filter module from the enclosure.
5. Remove the wire access cover to more easily feed the wiring through the back of the chassis when a capacitor assembly is removed. Remove the eight M4 x 10 mm Torx

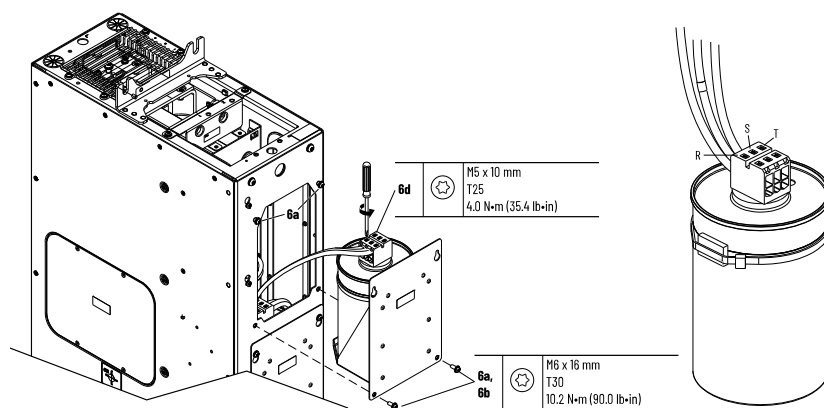
screws that secure the capacitor wire access cover to the chassis and remove the cover.



IMPORTANT: The interconnection wires cannot be removed from the terminal block on the top of the capacitor until the capacitor assembly has been removed from the chassis.

6. For each capacitor in the LCL filter module, complete these steps:
 - a. Loosen, but do not remove, the upper two M6 x 16 mm Torx screws that secure the capacitor assembly to the chassis.
 - b. Remove the lower two M6 x 16 mm Torx screws that secure the capacitor assembly to the chassis.
 - c. Lift the capacitor assembly up and off the top screws and slide the assembly out of the chassis.

- d. Disconnect the wires from terminals at the top of the capacitor and remove the capacitor assembly.



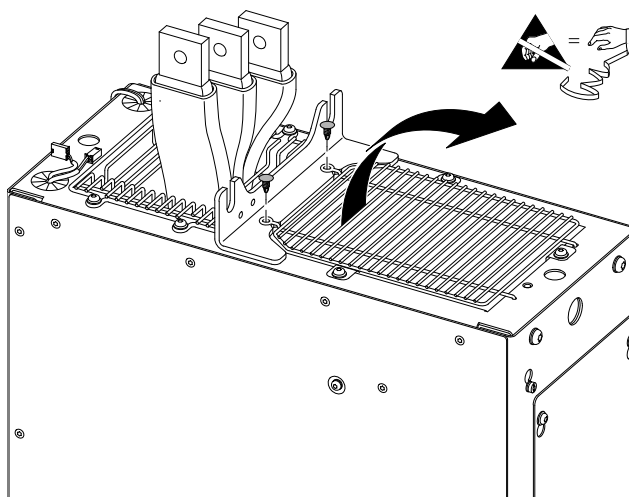
The contents of the capacitor canisters is classified as not hazardous according to regulation (EC) 1272/2008 [CLP] and classified as not dangerous according to 76/548/ EEC / 1999/24/EEC.

7. Install the LCL filter capacitor assembly in the reverse order of removal. Verify that the wire harness connections that route through the R, S and T current sensors connect to the correct terminal on the capacitor R, S and T.

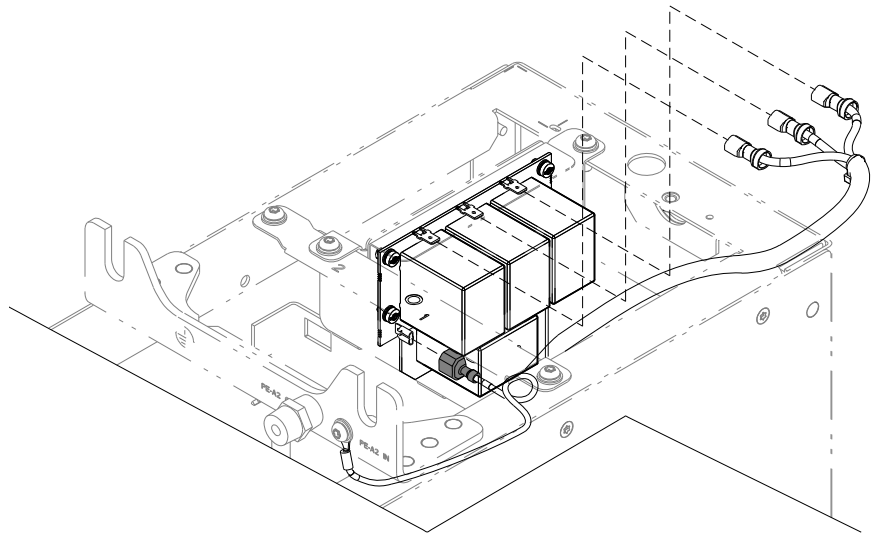
Remove and Install the LCL Filter Module AC Common Mode Filter Circuit Board for Frames 8...15

Replace the LCL filter module AC common mode filter circuit board with kit catalog number SK-RMEMCFB1. Follow these steps to remove and install the AC common mode filter circuit board.

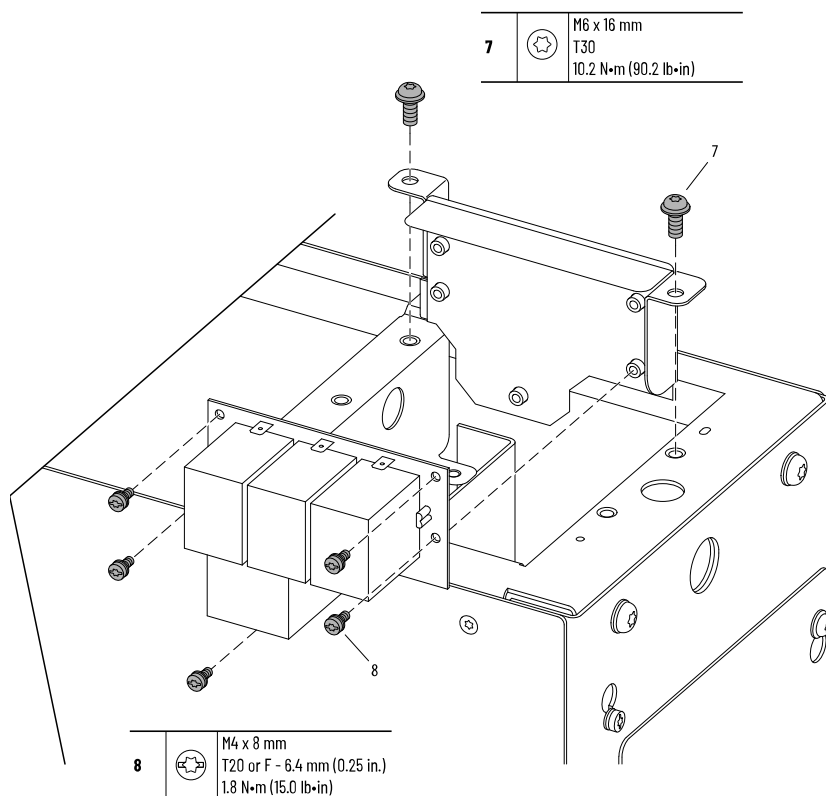
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. Remove the LCL filter module from the enclosure.
5. Remove the two barb fasteners that secure the screen to the chassis and remove the screen. The barb fasteners are not reusable.



6. Remove the four cables from the connectors at the top and side of the EMC filter circuit board. Retain the cables for reuse.



7. Remove the two M6 x 16 mm screws that secure the EMC filter circuit board panel to the support bracket and remove the panel.
8. Remove the five M4 x 8 mm screws that secure the EMC filter circuit board to the panel and remove the circuit board.



9. Install the AC common mode filter circuit board in the reverse order of removal.

Remove and Install the LCL Filter Module Current Sense Circuit Board for Frames 8...15

Replace the LCL filter module current sense circuit board with the appropriate kit catalog number:

- SK-RM-CSB1-263, 263 A (compatible with LCL filter module catalog numbers 20-750-ML1-C540D505, 20-750-ML1-E395F370, and 20-750-ML1-E545F505)
- SK-RM-CSB1-350, 350 A (compatible with LCL filter module catalog numbers 20-750-ML1-C770D740, and 20-750-ML1-E760F735)
- SK-RM-CSB1-525, 525 A (compatible with LCL filter module catalog numbers 20-750-ML1-C1K1D1K0 and 20-750-ML1-E980F920)
- SK-RM-CSB1-700, 700 A (compatible with LCL filter module catalog number 20-750-ML1-C1K4D1K3)

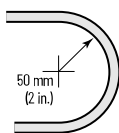


The LCL filter module catalog number is located on the data nameplate on the front of the module.

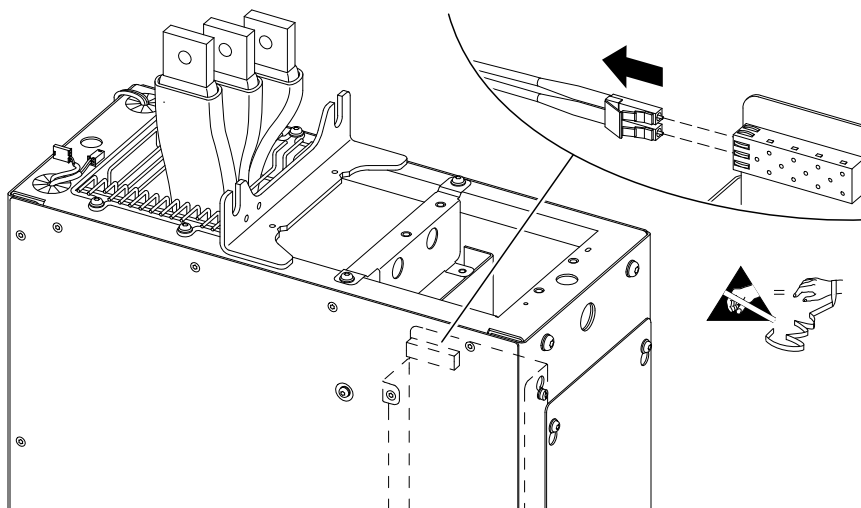
Follow these steps to remove and install the current sense circuit board.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. Remove the LCL filter module from the enclosure.
5. If installed, remove the EMC filter circuit board from the LCL filter module.

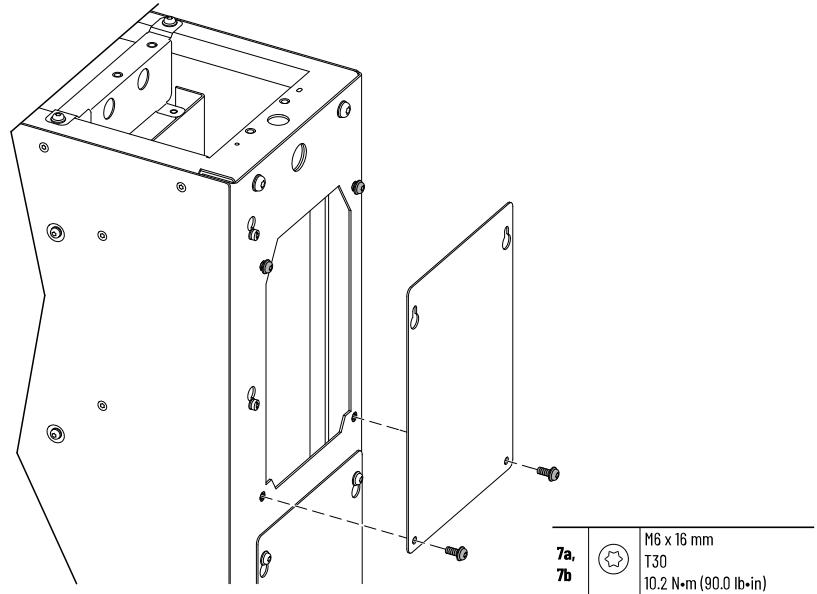
IMPORTANT: The minimum inside bend radius for fiber-optic cable is 50 mm (2 in.). Any bends with a shorter inside radius can permanently damage the fiber-optic cable. Signal attenuation increases as inside bend radius is decreased.



6. Without bending the cable to a radius less than 50 mm (2 in.), disconnect the fiber-optic cable from the transceiver in the LCL port on the current sense circuit board.

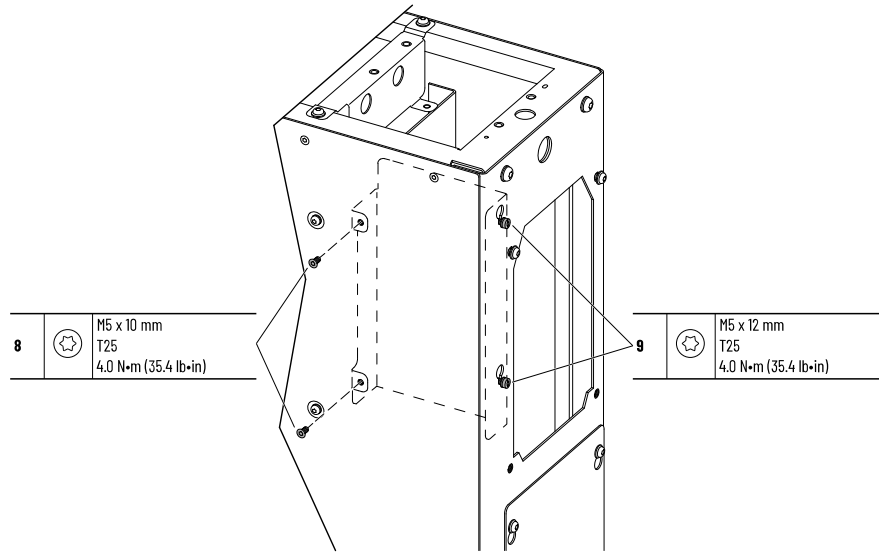


7. If the top-most receptacle on the back of the LCL filter module contains a filter capacitor, remove the capacitor. If the top-most receptacle on the back of the LCL filter module does not contain a filter capacitor, complete steps a and b.
 - a. Remove the lower two M6 x 16 mm Torx screws that secure the cover to the chassis.
 - b. Loosen the upper two M6 x 16 mm Torx screws that secure the cover to the chassis and remove the cover.

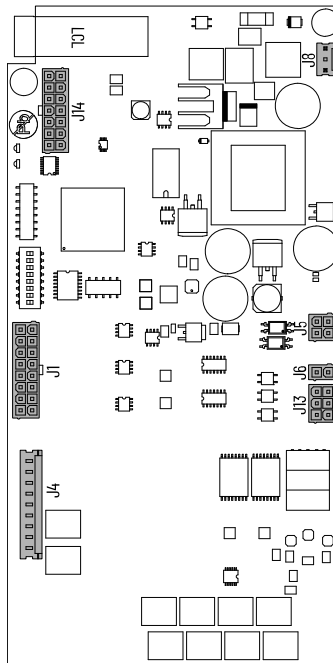


IMPORTANT: The current sense circuit board and tray cannot be removed from the LCL filter chassis fully, until the cable ties are cut and the wire harness connections to the board are

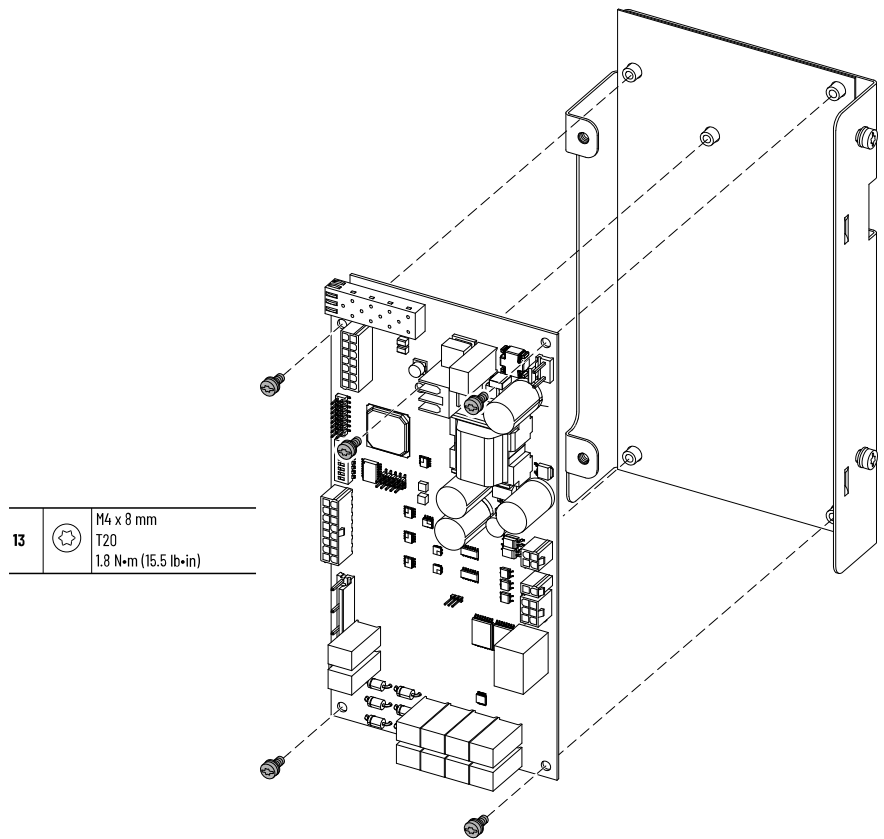
8. Remove the two M5 x 10 mm Torx screws that secure the current sense circuit board tray to the side of the chassis.
9. While supporting the circuit board tray, loosen, but do not remove, the two M5 x 12 mm Torx screws that secure the current sense circuit board tray to the back of the chassis and lift the tray off the screws.



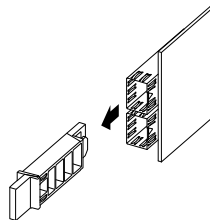
10. Cut the cable ties that secure the wires to the circuit board tray.
11. Disconnect these connectors from the current sense circuit board:
 - P8 from J8
 - P5 from J5
 - P6 from J6
 - P12 from J13
 - P4 from J4
 - P1 from J1
 - P14 from J14 (must be reused to maintain the rating of the module)



12. Remove the circuit board tray from the module chassis.
13. Remove the five M4 x 8 mm Torx screws that secure the current sense circuit board to the circuit board tray and remove the circuit board.



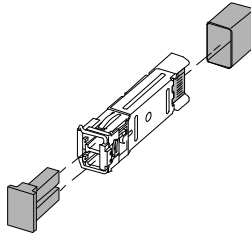
14. Install the current sense circuit board in the reverse order of removal.
15. After the wire harness connectors have been reconnected to the circuit board, secure the harness wires to the circuit board tray by using cable ties in the same locations as previously secured.
16. Remove the protective cover from the LCL port on the new AC precharge circuit board.



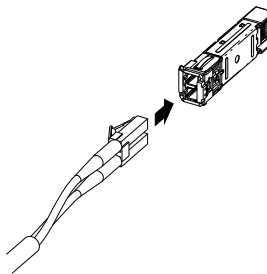
17. Remove the new transceiver supplied with the kit from the packing materials.

IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

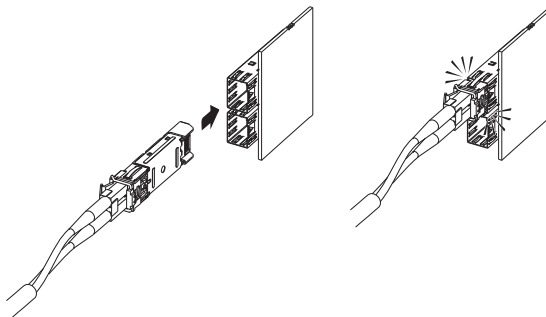
18. Remove the protective covers from the transceiver.



19. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



20. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'

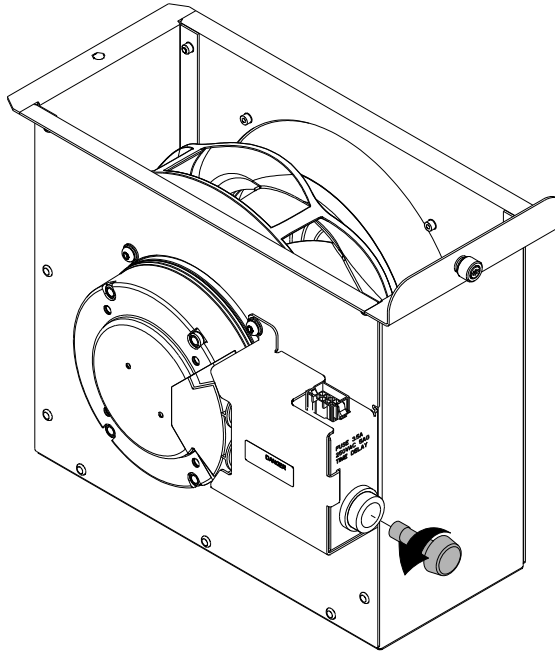


Remove and Install the LCL Filter or Power Module Heatsink Fan Fuse for Frames 8...15

Replace the LCL filter or power module heatsink fan fuse with kit catalog number SK-RM-INVFN1- FUSE (Time Delay, 250V, 3.5 A, Cartridge). Follow these steps to remove and install the LCL filter or power module heatsink fan fuse.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. On the appropriate LCL filter or power module heatsink fan, unscrew the fuse holder cover with the fuse.

5. Remove the fuse from the fuse holder.



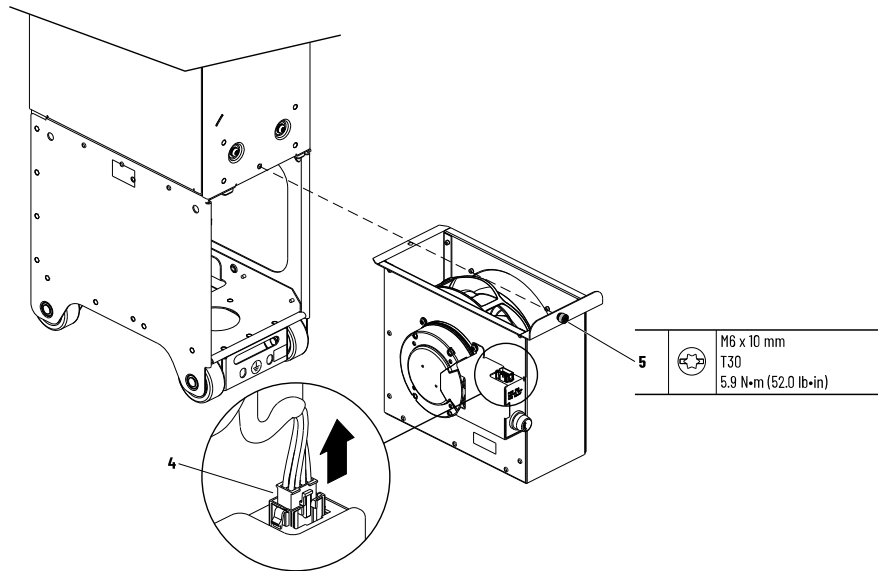
The heatsink fan is shown removed from the module for clarity only

6. Install the LCL filter or power module heatsink fan fuse in the reverse order of removal.

Remove and Install the LCL Filter or Power Module Heatsink Fan Assembly for Frames 8...15

Replace the LCL filter or power module heatsink fan assembly with kit catalog number SK-RMINVFAN1- F8. Follow these steps to remove and install the LCL filter or power module heatsink fan assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. Disconnect connector P13 from connector J13 on the fan assembly housing.
5. Loosen the M6 slotted-Torx screw that secures the fan housing to the module chassis and slide the fan assembly out of the chassis.



6. Install the power or LCL filter module heatsink fan assembly in the reverse order of removal.

Remove and Install the Torque Accuracy Module for Frames 8...15

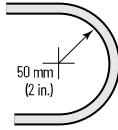
Replace the torque accuracy module with the appropriate kit catalog number:

- 20-750-MTAM1-CD (400/480V)
- 20-750-MTAM1-EF (600/690V)

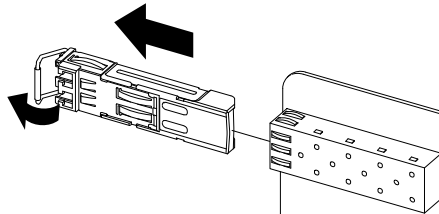
Follow these steps to remove and install the torque accuracy module.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. Remove the right-most power module from the enclosure.

IMPORTANT: The 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 as inside bend radius is decreased.

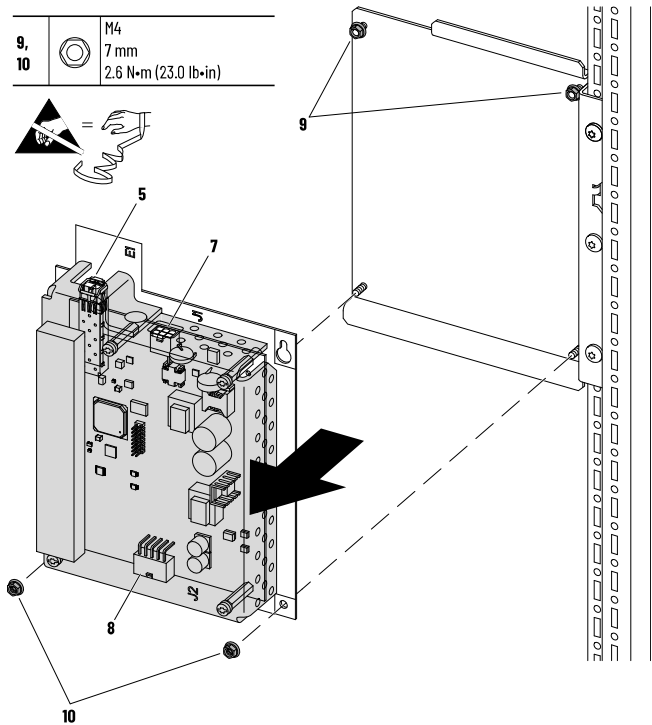


5. Without bending the cable to a radius less than 50 mm (2 in.), remove the fiber-optic cable from the transceiver in the TAM port on the torque accuracy module.
6. Open the transceiver latch and pull the transceiver out of the connector on the board. You can retain the transceiver as a spare part.

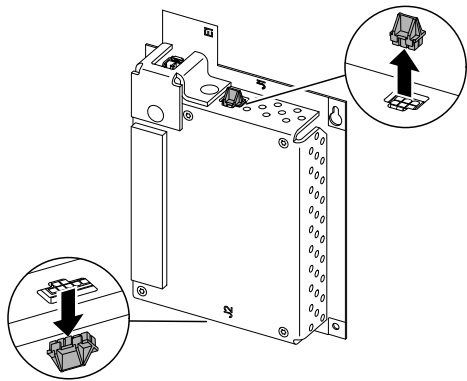


If the latch is obstructed and you cannot use your fingers to open it, use a small, screwdriver or other long, narrow tool to open the latch.

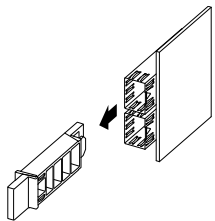
7. Disconnect connector P1 from J1 on the torque accuracy module.
8. Disconnect connector P2 from J2 on the torque accuracy module.
9. Loosen the two upper M4 hex nuts and washers that secure the torque accuracy module panel to the mounting bracket.
10. Remove the lower two M4 hex nuts and washers that secure the torque accuracy module panel to the mounting bracket and remove the module and panel.



11. Remove the protective covers from connectors J1 and J2 on the new torque accuracy module.

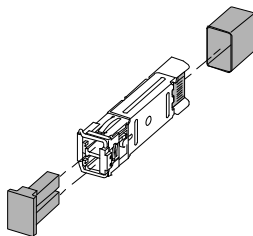


12. Install the torque accuracy module in the reverse order of removal.
13. Remove the protective cover from the TAM port on the new torque accuracy module.

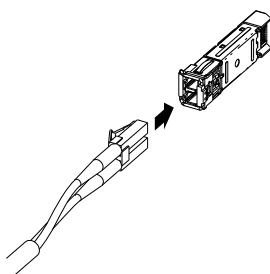


IMPORTANT: The end of the transceiver that connects to the inside of the fiber port contains dielectric grease. Do not touch the end of the transceiver.

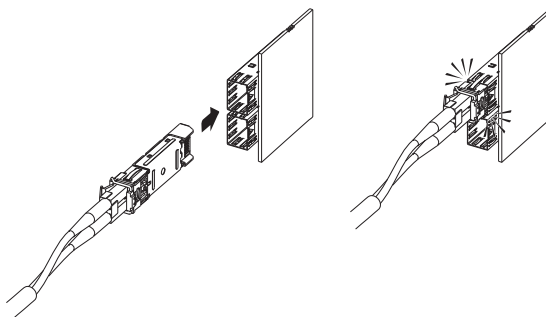
14. Remove the protective covers from the transceiver.



15. Without bending the cable to a radius less than 50 mm (2 in.), fully insert the fiber-optic cable into the transceiver.



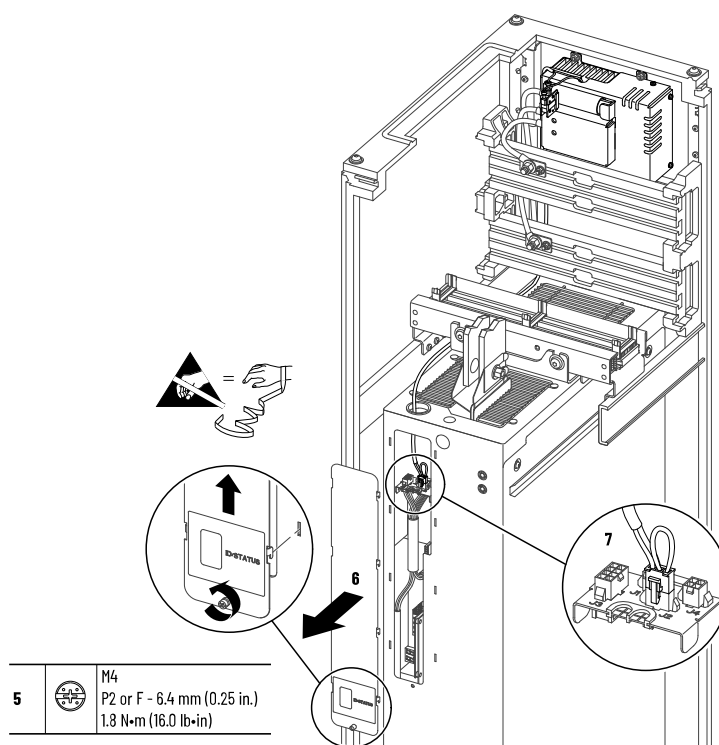
16. Insert the transceiver and fiber-optic cable into the port on the board, until you hear an audible 'click.'



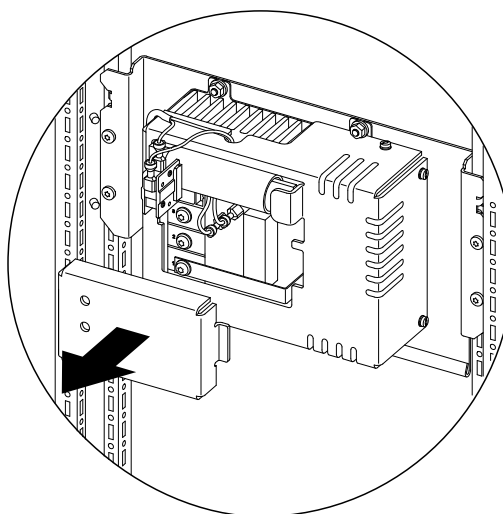
Remove and Install the DC Bus Conditioner for Frames 8...15

Replace the DC bus conditioner with kit catalog number 20-750-MDCBUS-COND. Follow these steps to remove and install the DC bus conditioner.

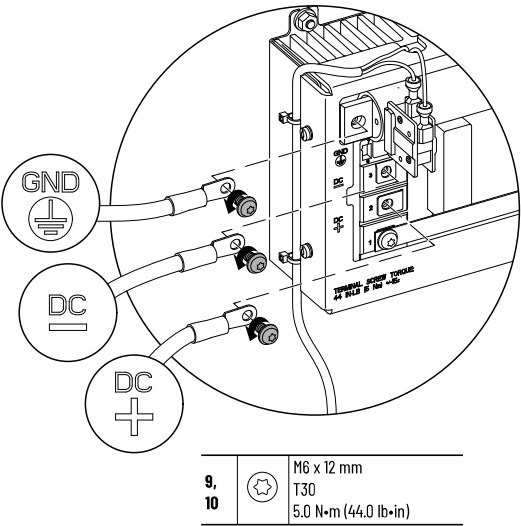
1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the corresponding power bay enclosure door.
4. If present, remove the guards from the enclosure.
5. Loosen the thumb screw that secures the connections cover to the front of the power module.
6. By using the screw, lift the connections cover up and off the power module chassis.
7. Disconnect the DC bus conditioner cable connector P2 from J2 on the I/O panel in the power module.



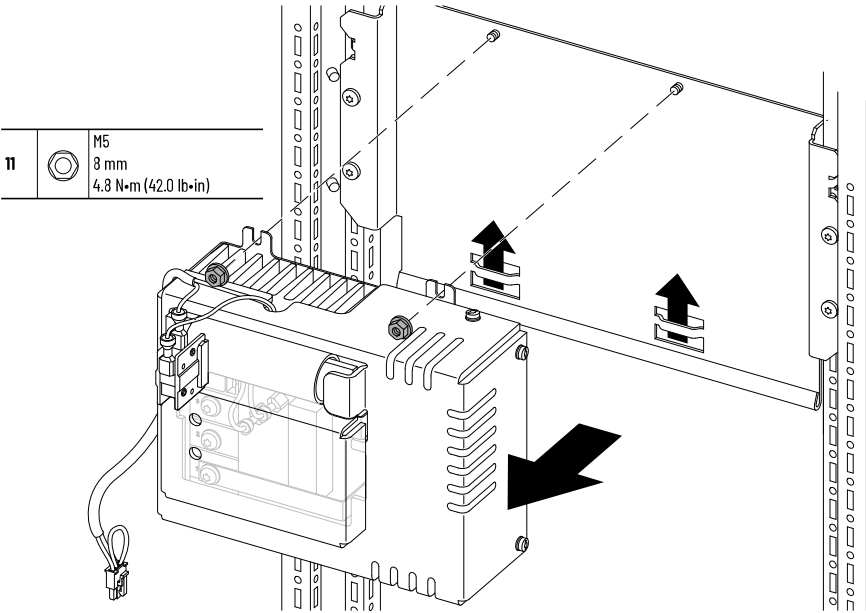
8. Remove the clear-plastic connections cover from the front of the DC bus conditioner.



9. Remove the two M6 x 12 mm Torx screws that secure the +DC and -DC cables to the +DC and -DC terminals on the DC bus conditioner, respectively, and remove the cables.
10. Remove the M6 x 12 mm Torx screw that secures the ground cable to the GND (PE) terminal on the DC bus conditioner and remove the cable.



11. Remove the two M5 hexagonal nuts and washers that secure the DC bus conditioner to the sheet metal mounting panel and remove the DC bus conditioner.



12. Install the DC bus conditioner in the reverse order of removal.

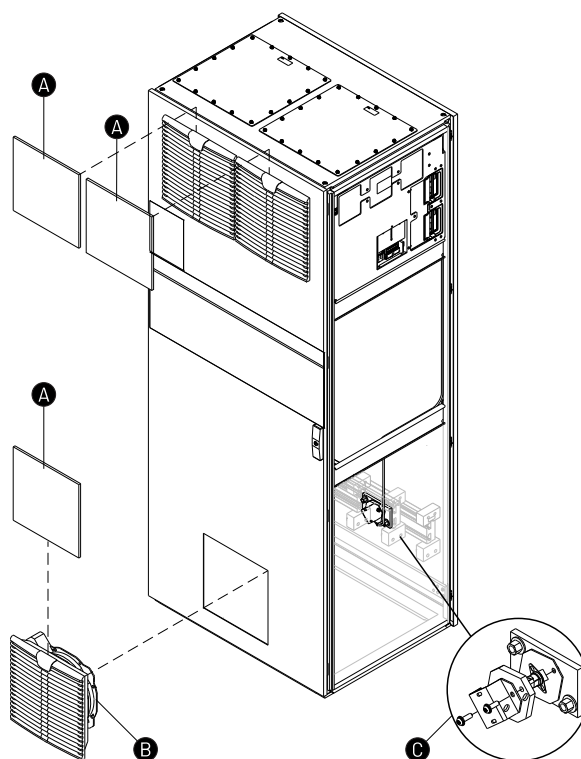
Frames 8...15 Wire Entry/Exit Bay Kits

This table lists the renewal kits available for wire entry/exit bay for frames 8...15.

Table 69. Wire Entry/Exit Bay Renewal Kits

Cat. No.	Description	Item in Figure
SK-RM-WBDR-FLTR1	IP21/IP54 400 mm Wide Door Vent Filter	A
SK-RM-WBDR-FLTR1	IP21/IP54 800 mm Wide Door Vent Filter	A
SK-RM-WBDR-FANFLR1	IP21/IP54 400 mm Wide Door Vent Exhaust Fan and Filter	B
SK-RM-WBDR-FANFLR2	IP21/IP54 800 mm Wide Door Vent Exhaust Fan and Filter	B
SK-RM-THRMSW-WB	Thermal Switch	C

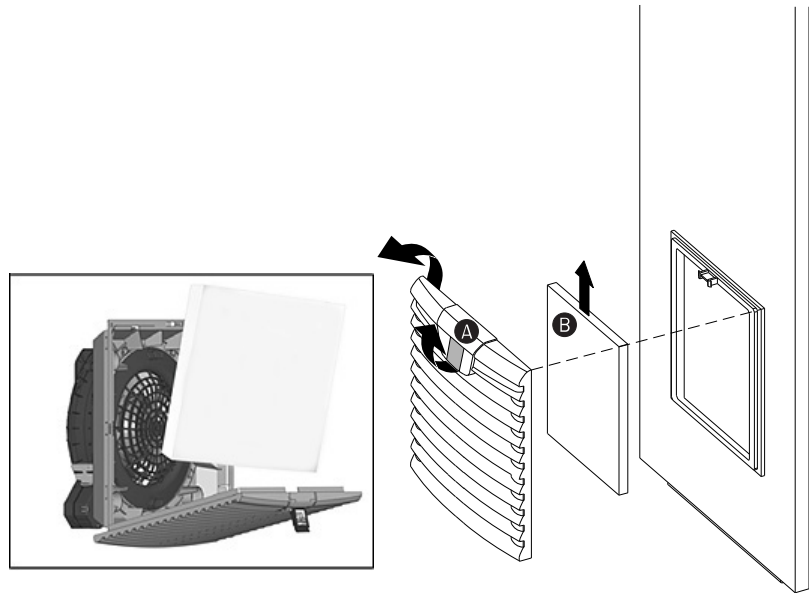
Figure 36. Wire Entry/Exit Bay Kits Identification



Remove and Install the IP54/IP21, 400/600 mm Wide Door Vent Filters for Frames 8...15

Replace the IP54/IP21, 400/600 mm wide door vent filter with it catalog number SK-RM-IB4DR-FLTR1 (400 mm wide door) or SK-RM-IB6DR-FLTR1 (600 mm wide door). Follow these steps to remove and install the IP54/IP21, 400/600 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Lift the tab (A) on the top center of the vent cover and lower the cover.
4. Remove the filter media (B) from the vent.



IMPORTANT: Verify that the Rittal logo on the fiber filter media points inward, toward the interior of the enclosure.

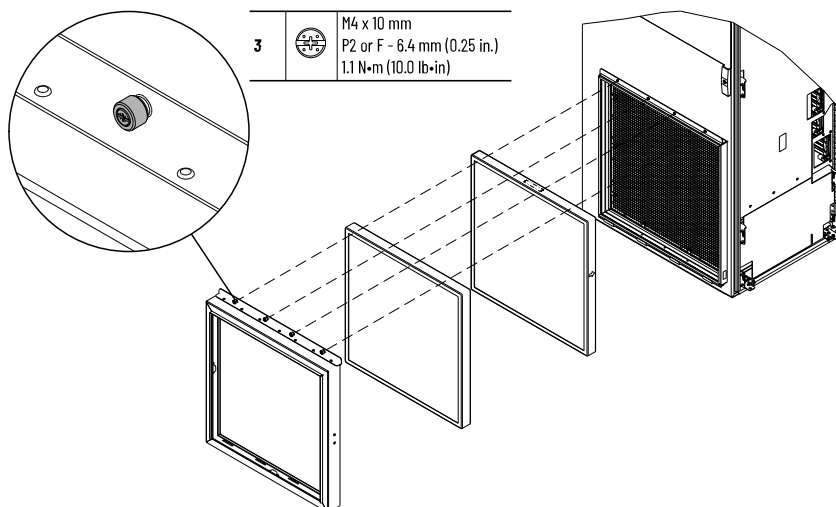
5. Install the IP54/IP21, 400/600 mm wide door vent filters in the reverse order of removal.

Remove and Install the IP54, 800/1000 mm Wide Door Vent Filters for Frames 8...15

Replace the IP54 door vent filters for an 800 mm wide power bay or 1000 mm wide input bay with kit catalog number SK-RM-PB8DR-54FLTR1. Follow these steps to remove and install the IP54, 800/1000 mm wide door vent filters.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Loosen the four slotted-Phillips head, captive screws that secure the filter cassette cover and metal mesh filter to the cassette chassis on the door.
4. Remove the metal mesh filter from the cover.

5. Pull the top edge of the fiber filter out and lift it off the cassette on the door.



IMPORTANT: Verify that the weep holes on the metal mesh filter are at the bottom of the filter when installed.

6. Insert the new metal mesh filter into the filter cassette cover.
7. Place the slots on the cassette cover on the tabs on the door vent chassis.

IMPORTANT: Verify that the airflow direction arrow on the fiber filter media points inward, toward the interior of the enclosure.

8. Insert the fiber filter in the cassette chassis on the door and close and secure the cassette cover with metal mesh filter to the door.

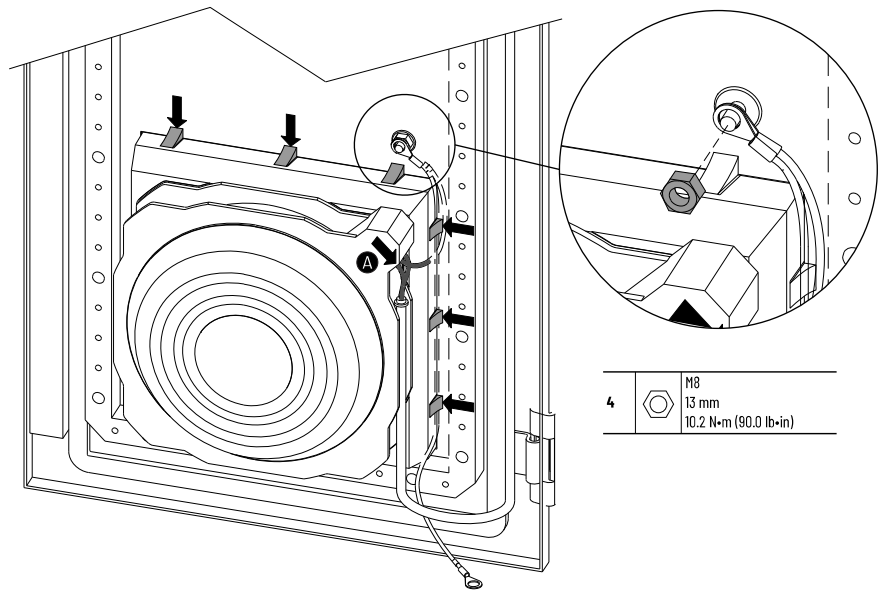
Remove and Install the IP54/IP21, 400/800 mm Wide Door Vent Exhaust Fan and Filter Assembly for Frames 8...15

Replace the IP54/IP21, 400 mm or 800 mm wide door vent exhaust fan and filter assembly with the appropriate kit catalog number:

- 400 mm wide entry/exit bay SK-RM-WBDR-FANFLR1
- 800 mm wide entry/exit bay SK-RM-WBDR-FANFLR2

Follow these steps to remove and install the IP54/IP21, 400 mm or 800 mm wide door vent exhaust fan and filter assembly.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the wire bay enclosure door.
4. On the inside of the enclosure door, remove the M8 hex nut and washer that secures the two ground wire lugs to the door, and remove the wires.
5. Disconnect the fan power wires from connector P1 (A) on the fan assembly.
6. Press the tabs on the vent cover inward and pull the vent off the front of the enclosure door.

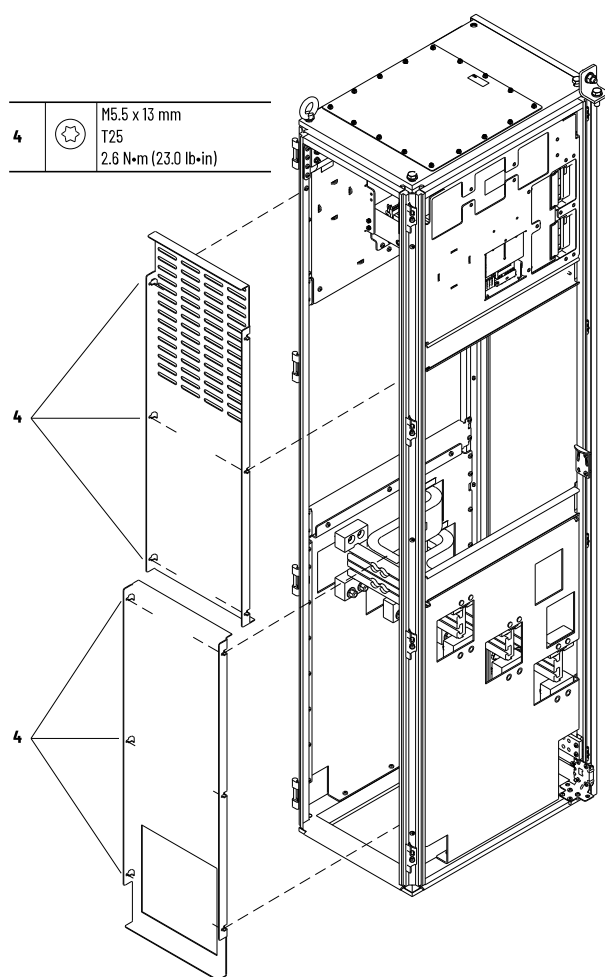


7. Install the IP54/IP21, 400/800 mm wide door vent exhaust fan, and filter assembly in the reverse order of removal.

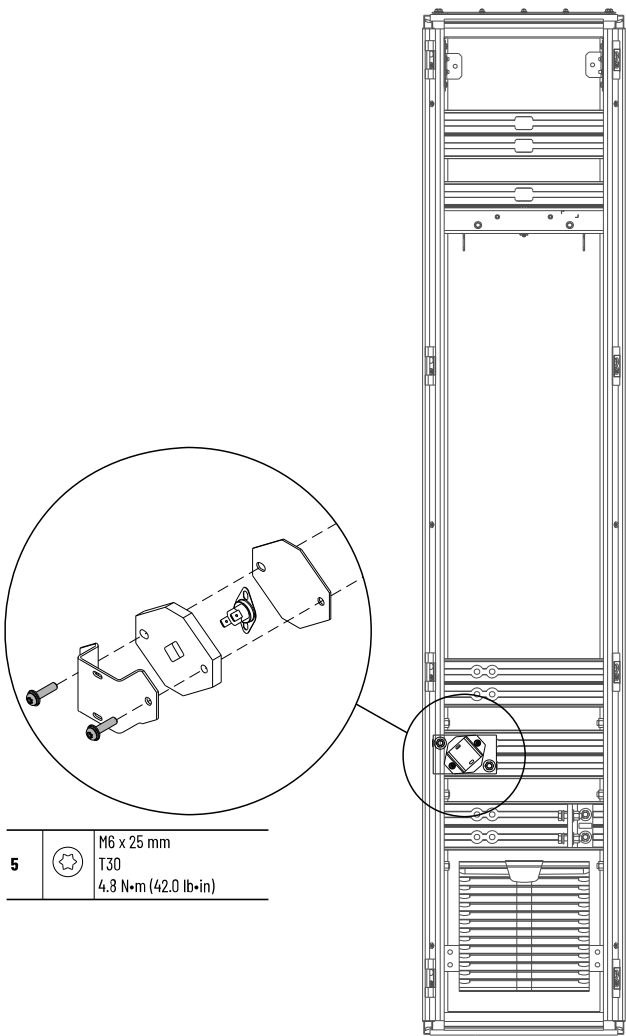
Remove and Install the Wire Bay Thermal Switch for Frames 8...15

Replace the thermal switch with kit catalog number SK-RM-THRMSW-WB. Follow these steps to remove and install the thermal switch.

1. Review the product advisories in [Before You Begin on page 12](#).
2. Remove power from the system.
3. Open the wire bay enclosure door.
4. Loosen the 12 screws that secure the guards to the enclosure and remove the guards.



5. Remove the two M6 x 25 mm Torx screws that secure the thermal switch assembly to the mounting bracket on the bus bar and remove the assembly. Retain the screws, guard, and clamp for reuse.
6. Disconnect the wires from the two terminals on the thermal switch.



5		M6 x 25 mm T30 4.8 N•m (42.0 lb•in)
---	---	---

7. Install the thermal switch in the reverse order of removal.

Start Up After Repairs

After you have completed repairs and before power has been applied, complete the detailed instructions for starting up a regenerative drive, regenerative bus supply, and common bus inverter.

Before You Apply Power to Frame 7

Before you place a frame 7 drive or bus supply into operation after a repair, follow these steps.

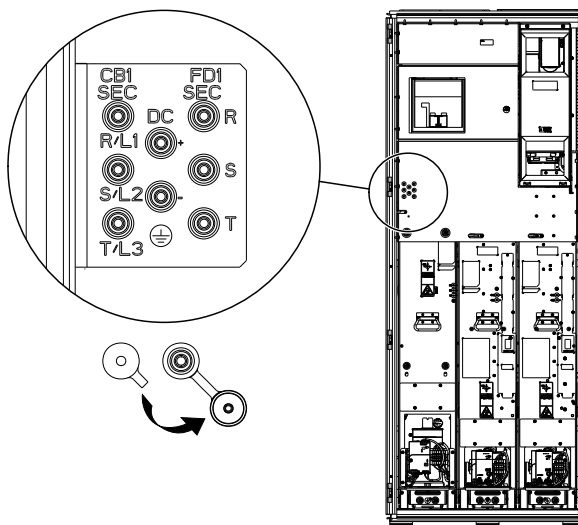


ATTENTION: Risk of injury or death exists.

To avoid an electric shock hazard, verify that there is no AC input and DC bus voltage before servicing. Remove power and wait five minutes before you open the cabinet door. Use the testpoints provided to take these measurements:

- Verify that there is no AC input voltage present using the R/L1, S/L2, and T/L3 testpoint sockets in the input bay by measuring L to L and L to GND.
- Verify that there is no AC input voltage present using the R, S, and T testpoint sockets in the input bay by measuring L to L and L to GND.
- Verify that there is no DC bus voltage present using the +DC to -DC testpoints in the input bay by measuring +DC to -DC, +DC to GND, and -DC to GND.

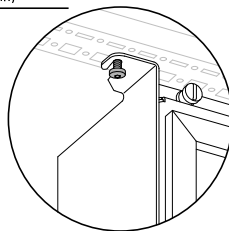
1. Open the protective caps on the testpoints.
2. Measure the AC input and DC bus voltage at the following testpoint sockets to verify that there is no voltage present:
 - Using the circuit breaker output (CB1 SEC) testpoints R/L1, S/L2, and T/L3, measure L to L and L to chassis GND.
 - By using the fused disconnect output (FD1 SEC) testpoints R, S, and T, measure L to L and L to chassis GND.
 - By using the DC bus testpoints +DC and -DC, measure +DC to -DC, +DC to chassis GND, and -DC to chassis GND.



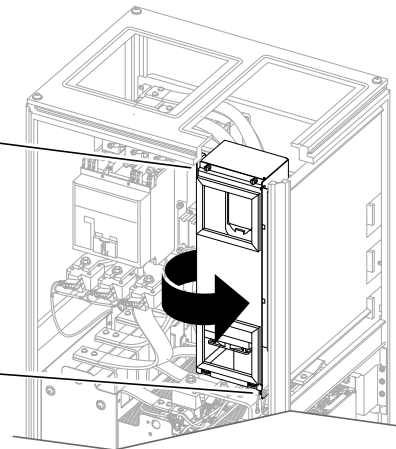
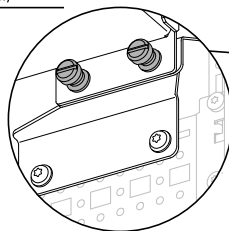
3. Loosen the M5.5 x 13 mm Torx screw that secures the control pod assembly to the chassis.

4. Loosen the two M5 captive screws that secure the bottom of the control pod assembly to the side panel and rotate the control pod assembly out from the enclosure.

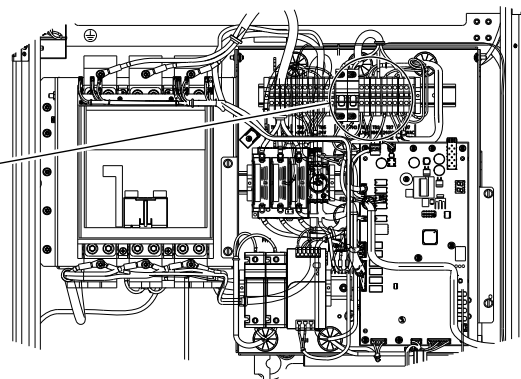
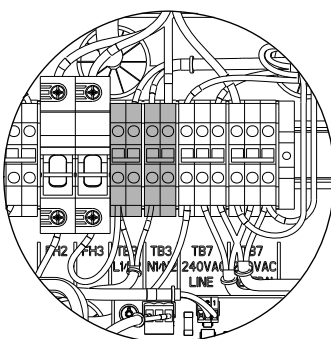
3		M5.5 x 13 mm T25 4.8 N•m (42.0 lb•in)
---	---	---



4		M5.5 P2 or F - 6.4 mm (0.25 in.) 2.8 N•m (25.0 lb•in)
---	---	---



5. Measure the 240V AC control voltage at terminals L and N on terminal block TB3.

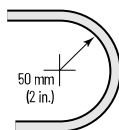


Control pod not shown for clarity only.

6. Perform phase to ground resistance tests to verify that there are no shorts on the following locations:
 - Use the circuit breaker output (CB1 SEC) testpoints R/L1, S/L2, and T/L3 to measure L to chassis GND.
 - Use the fused disconnect output (FD1 SEC) testpoints R, S, and T to measure L to chassis GND.
 - Use the DC bus testpoints +DC and -DC to measure +DC to chassis GND, and -DC to chassis GND.
7. If the measured value of any resistance test is less than 1 kΩ, troubleshoot to find the short, correct the problem, and repeat step 6.

8. Perform phase to ground resistance tests to verify that there are no shorts on the following locations:
 - Use the DC bus testpoints +DC and -DC on the front of the power modules to measure +DC to chassis GND, and -DC to chassis GND.
9. If the measured value of any resistance test is less than 1 k Ω , troubleshoot to find the short, correct the problem, and repeat step 8.
10. Close the protective caps on the testpoints.

IMPORTANT: The 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 as inside bend radius is decreased.



-
11. For any module or component that has been removed and reinstalled, complete the following:
 - Verify that all hardware connections have been replaced and are properly torqued.
 - If applicable, verify that all fiber-optic cables are connected at both ends and properly secured and supported by cable ties along their entire length.
 - Verify that all interconnection wire harnesses are connected at both ends and properly supported by cable ties along their entire length.
 12. When service has been completed on the control pod, verify that all fiber-optic, and control power and I/O wires are connected and properly secured and supported by cable ties along their entire length.
 13. Continue with [Measure No-load DC Bus Voltage and Output Current on page 319](#).

Before You Apply Power to Frames 8...15

Before you place a frame 8...15 drive, bus supply, or common bus inverter into operation after a repair, follow these steps.

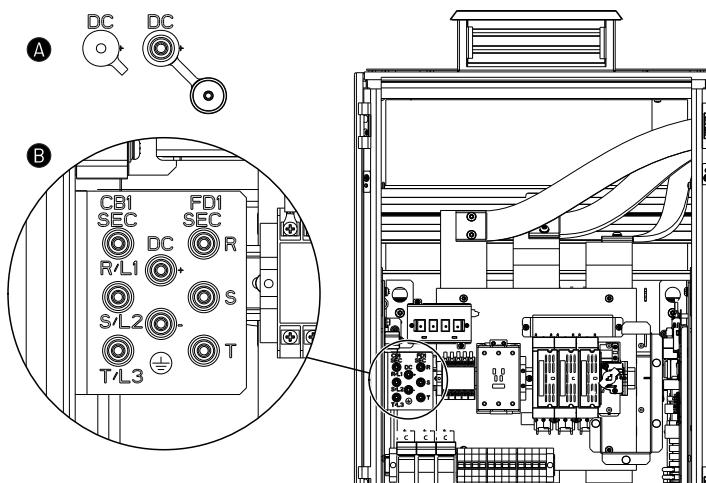


ATTENTION: Risk of injury or death exists.

To avoid an electric shock hazard, verify that there is no AC input and DC bus voltage before servicing. Remove power and wait five minutes before you open the cabinet door. Use the testpoints provided to take these measurements:

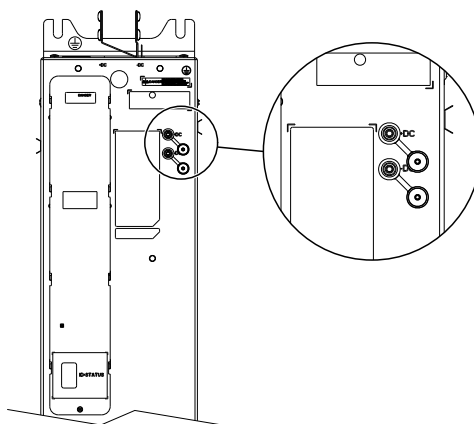
- Verify that there is no AC input voltage present using the R/L1, S/L2, and T/L3 testpoint sockets in the input bay by measuring L to L and L to GND.
- Verify that there is no AC input voltage present using the R, S, and T testpoint sockets in the input bay by measuring L to L and L to GND.
- Verify that there is no DC bus voltage present using the +DC to -DC testpoints in the input bay by measuring +DC to -DC, +DC to GND, and -DC to GND.

1. For applicable products, open the protective caps (A) on the testpoints.
2. For regenerative drives and bus supplies, measure the AC input and DC bus voltage at the following testpoint sockets (B) in the input bay to verify that there is no voltage present:
 - Use the circuit breaker output (CB1 SEC) testpoints R/L1, S/L2, and T/L3 to measure L to L and L to chassis GND.
 - Use the fused disconnect output (FD1 SEC) testpoints R, S, and T to measure L to L and L to chassis GND.
 - Use the DC bus testpoints +DC and -DC to measure +DC to -DC, +DC to chassis GND, and -DC to chassis GND.

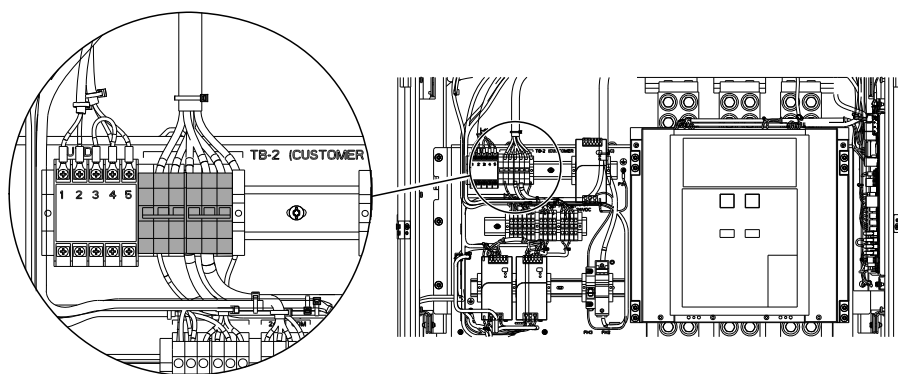


Frame 9 input bay shown.

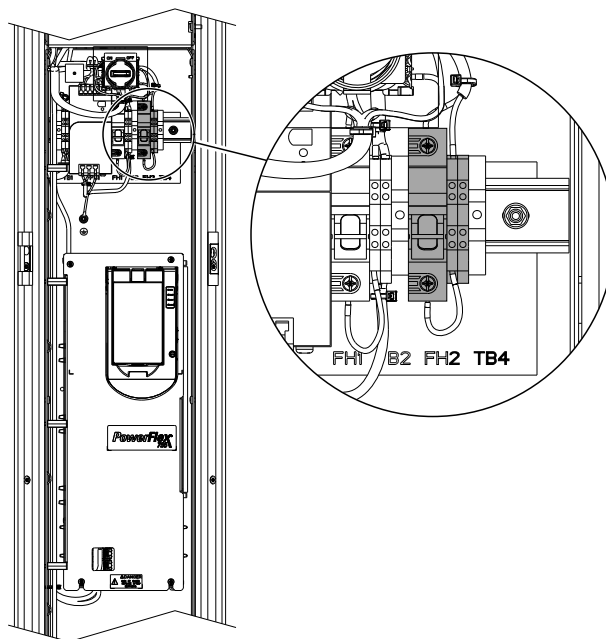
3. For common bus inverters, use the DC bus testpoints +DC and -DC on the front of the power modules to measure the DC bus voltage of all power modules and verify that there is no voltage present on the bus capacitors. Measure +DC to -DC, +DC to chassis GND, and -DC to chassis GND.



4. For drives and bus supplies, measure the 240V AC control voltage at the appropriate terminals:
 - For drives and bus supplies, in the input bay, measure terminals L and N on terminal block TB2.

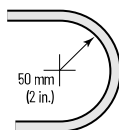


- For control bays, measure terminal L on FH2-2 and terminal N on terminal block TB4.



- For all products, in the input bay perform phase to ground resistance tests to verify that there are no shorts on the following locations:
 - Use the circuit breaker output (CB1 SEC) testpoints R/L1, S/L2, and T/L3 to measure L to chassis GND.
 - Use the fused disconnect output (FD1 SEC) testpoints R, S, and T to measure L to chassis GND.
 - Use the DC bus testpoints +DC and -DC to measure +DC to chassis GND, and -DC to chassis GND.
- If the measured value of any resistance test is less than 1 k Ω , troubleshoot to find the short, correct the problem, and repeat step 5.
- For all products, in the power bay perform phase to ground resistance tests to verify that there are no shorts on the following locations:
 - Use the DC bus testpoints +DC and -DC on the front of the power modules to measure +DC to chassis GND, and -DC to chassis GND.
- If the measured value of any resistance test is less than 1 k Ω , troubleshoot to find the short, correct the problem, and repeat step 7.
- When you have completed your measurements, replace the protective caps on the testpoints.

IMPORTANT: The 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 as inside bend radius is decreased.



10. For any module or component that has been removed and reinstalled, complete the following:
 - Verify that all hardware connections have been replaced and are properly torqued.
 - If applicable, verify that all fiber-optic cables are connected at both ends and properly secured and supported by cable ties along their entire length when routed between enclosures.
 - Verify that all interconnection wire harnesses are connected at both ends and properly supported by cable ties along their entire length when routed between enclosures.
11. When service has been completed on the control pod, verify that all fiber-optic, and control power and I/O wires are connected and properly secured and supported by cable ties along their entire length when routed between enclosures.
12. Continue with [Measure No-load DC Bus Voltage and Output Current on page 319](#).

Measure No-load DC Bus Voltage and Output Current

Follow these steps to measure the DC bus voltage and output current and diagnose problems without connecting the motor to its mechanical load.

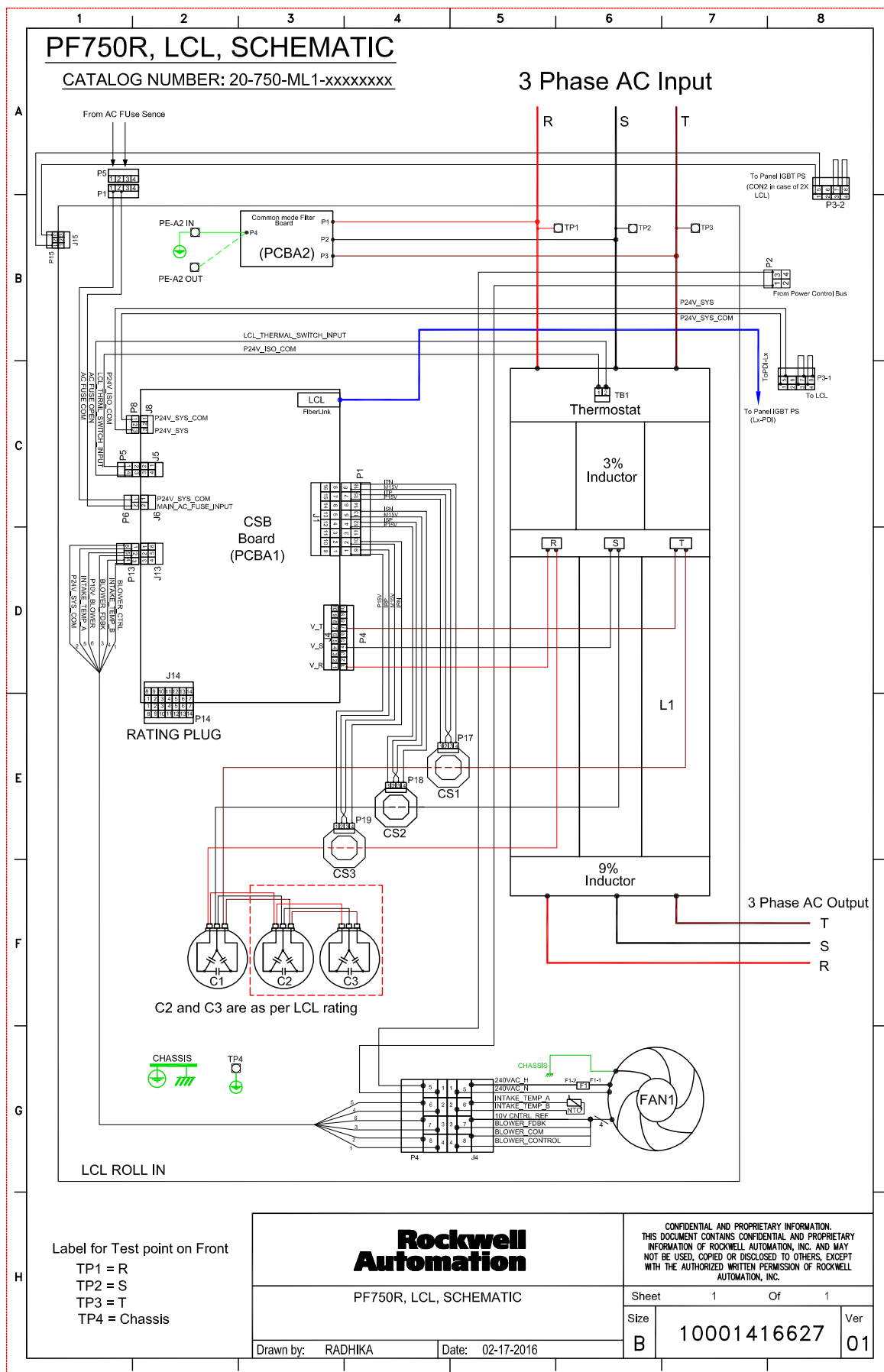
1. Verify that the input power and ground wires are connected.
2. Verify that the AC line power at the disconnect device is within the rated value for the drive or bus supply.
3. Verify that the control power voltage is correct.
4. Verify that the motor cables are connected.
5. Verify that the motor load is disconnected.
6. Energize the system.
7. Measure the DC bus voltage and verify that the measured value is displayed in port 0, parameter 3 [DC Bus Volts].
8. Start the system and increase the speed from zero to base speed.
9. Measure the system output current and verify that the measured value is displayed in port 10, parameter 3 [Output Current].
10. Stop the system.
11. Reconnect the load to the motor before proceeding with drive startup.

For startup information see the PowerFlex® Drives with TotalFORCE® Control Programming Manual, publication [750-PM100](#) (firmware revision 6.001 and earlier), or [750-PM101](#) (firmware revision 10.001 and later).

System Schematics

This chapter provides schematics for PowerFlex® 755T modules and products.

Figure 38. PowerFlex® 755TR Frame 8...15 LCL Filter Module



PowerFlex 755TR Power Module Schematic Diagrams for 7...15

Figure 39. PowerFlex® 755T Frame 7 Power Module

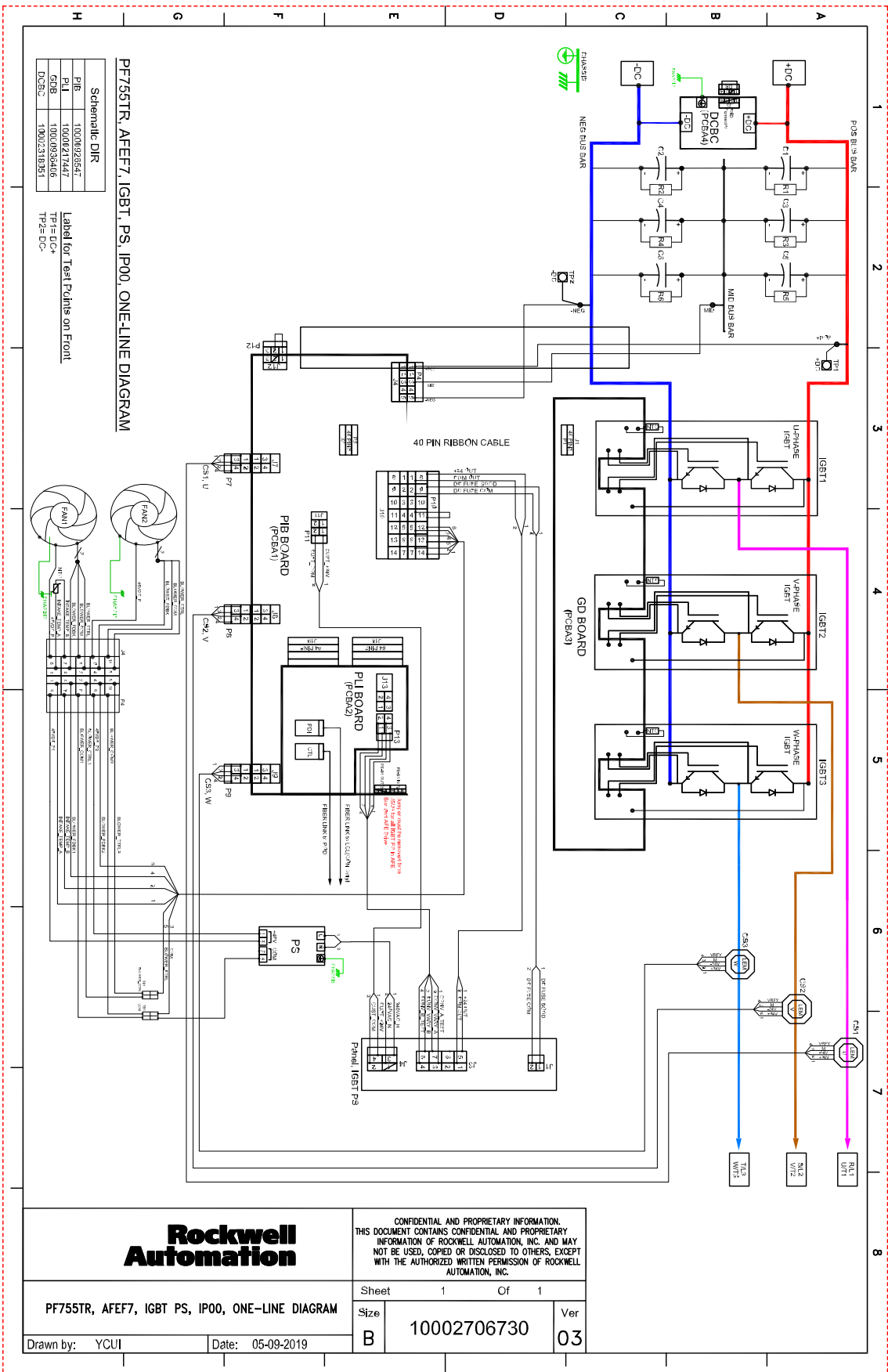
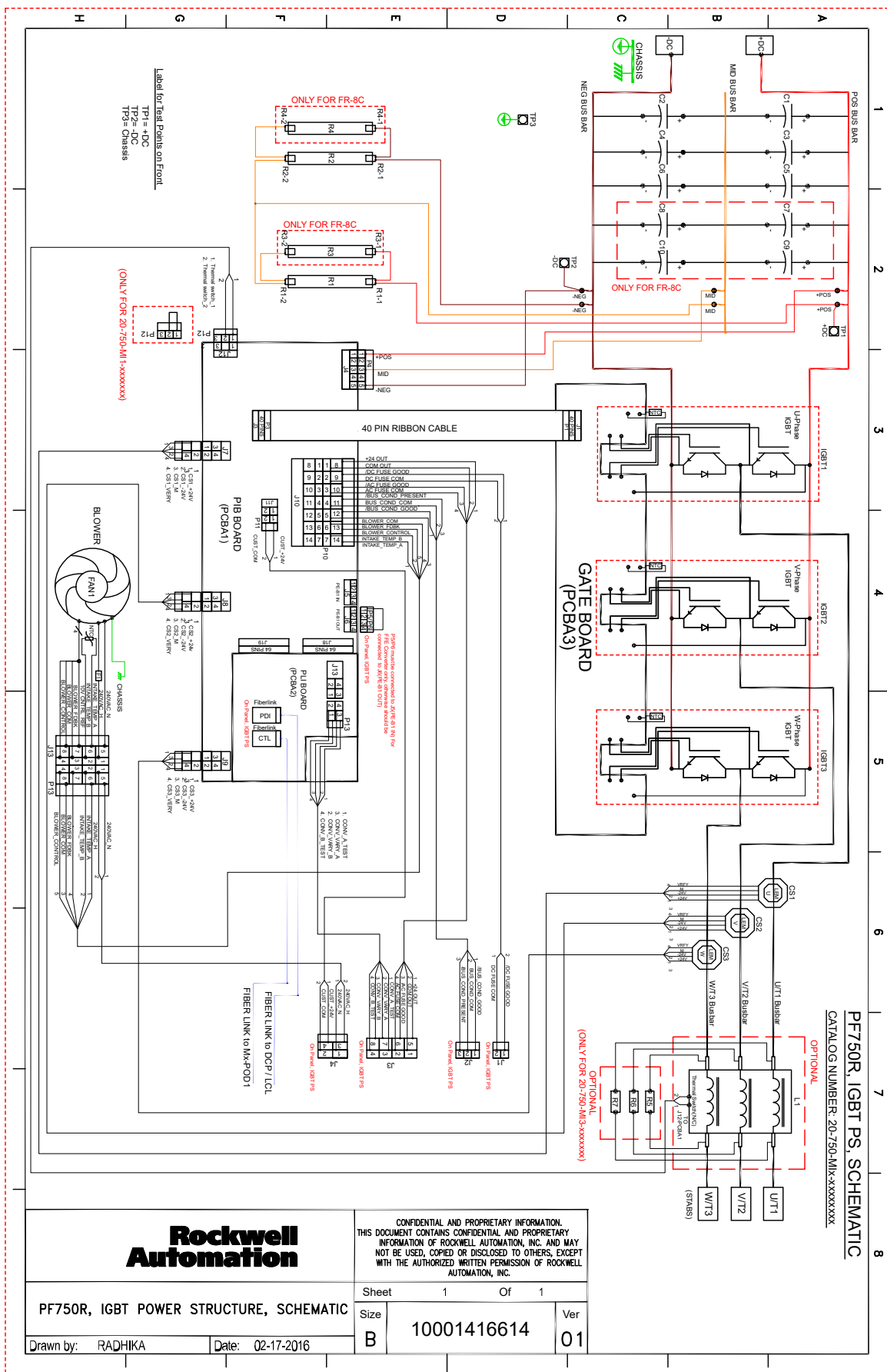


Figure 40. PowerFlex®755T Frames 8...15 Power Module



Rockwell Automation

PF750R, DCPC, SCHEMATIC

CATALOG NUMBER: 20-750-MDCPC-x-xx-xxx

CONFIDENTIAL AND PROPRIETARY INFORMATION. THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF ROCKWELL AUTOMATION, INC. AND MAY NOT BE USED, COPIED OR DISCLOSED TO OTHERS, EXCEPT WITH THE AUTHORIZED WRITTEN PERMISSION OF ROCKWELL AUTOMATION, INC.

Sheet 1 Of 1

Size B

Ver 02

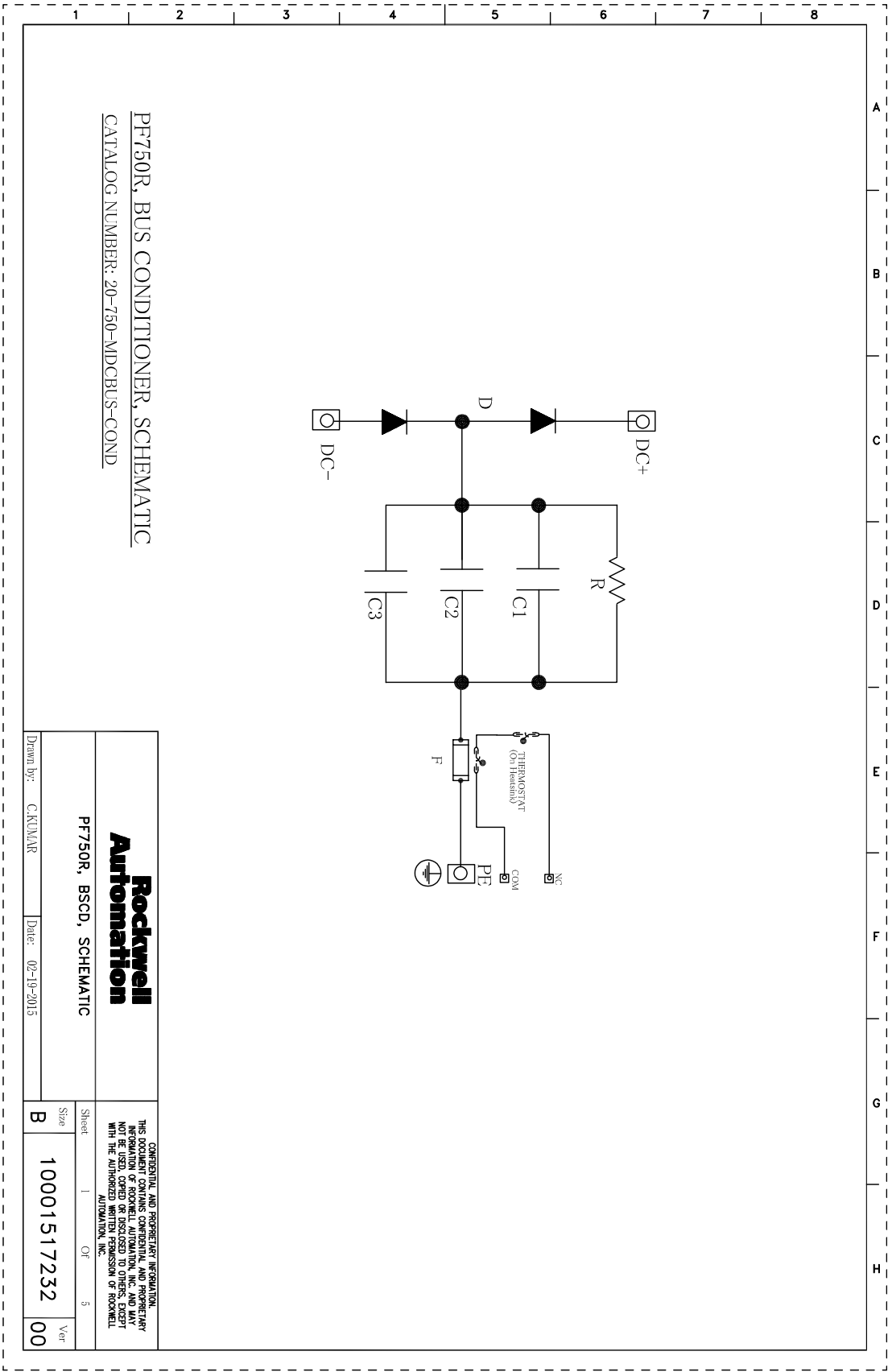
10001416647

Drawn by: AGAJJAR Date: 01-10-2017

PF750R, DCPC, SCHEMATIC

PowerFlex 755T DC Bus Conditioner Schematic Diagram for Frames 8...15

Figure 42. PowerFlex® 755T Frames 8...15 DC Bus Conditioner



Schematic DIR

Component	Location
ACPC	100U1261666
SFB	100U1301226
CMF	100U2236693
TVS5	100U45414
TVS5	100U4541253

Labels for Test Points

Test Point	Terminal Block
TP1	CMF
TP2	CMF
TP3	CMF
TP4	CMF
TP5	CMF
TP6	CMF
TP7	CMF
TP8	CMF
TP9	CMF
TP10	CMF
TP11	CMF
TP12	CMF
TP13	CMF
TP14	CMF
TP15	CMF
TP16	CMF
TP17	CMF
TP18	CMF
TP19	CMF
TP20	CMF
TP21	CMF
TP22	CMF
TP23	CMF
TP24	CMF
TP25	CMF
TP26	CMF
TP27	CMF
TP28	CMF
TP29	CMF
TP30	CMF
TP31	CMF
TP32	CMF
TP33	CMF
TP34	CMF
TP35	CMF
TP36	CMF
TP37	CMF
TP38	CMF
TP39	CMF
TP40	CMF
TP41	CMF
TP42	CMF
TP43	CMF
TP44	CMF
TP45	CMF
TP46	CMF
TP47	CMF
TP48	CMF
TP49	CMF
TP50	CMF
TP51	CMF
TP52	CMF
TP53	CMF
TP54	CMF
TP55	CMF
TP56	CMF
TP57	CMF
TP58	CMF
TP59	CMF
TP60	CMF
TP61	CMF
TP62	CMF
TP63	CMF
TP64	CMF
TP65	CMF
TP66	CMF
TP67	CMF
TP68	CMF
TP69	CMF
TP70	CMF
TP71	CMF
TP72	CMF
TP73	CMF
TP74	CMF
TP75	CMF
TP76	CMF
TP77	CMF
TP78	CMF
TP79	CMF
TP80	CMF
TP81	CMF
TP82	CMF
TP83	CMF
TP84	CMF
TP85	CMF
TP86	CMF
TP87	CMF
TP88	CMF
TP89	CMF
TP90	CMF
TP91	CMF
TP92	CMF
TP93	CMF
TP94	CMF
TP95	CMF
TP96	CMF
TP97	CMF
TP98	CMF
TP99	CMF
TP100	CMF

Labels for Terminal Blocks

Terminal Block	Terminal Number
CMF	1-100
CMF	101-200
CMF	201-300
CMF	301-400
CMF	401-500
CMF	501-600
CMF	601-700
CMF	701-800
CMF	801-900
CMF	901-1000

PowerFlex 755T AC Input Bay Schematic Diagrams for Frames 8...12

Figure 44. PowerFlex® 755T Frame 8 AC Input Bay

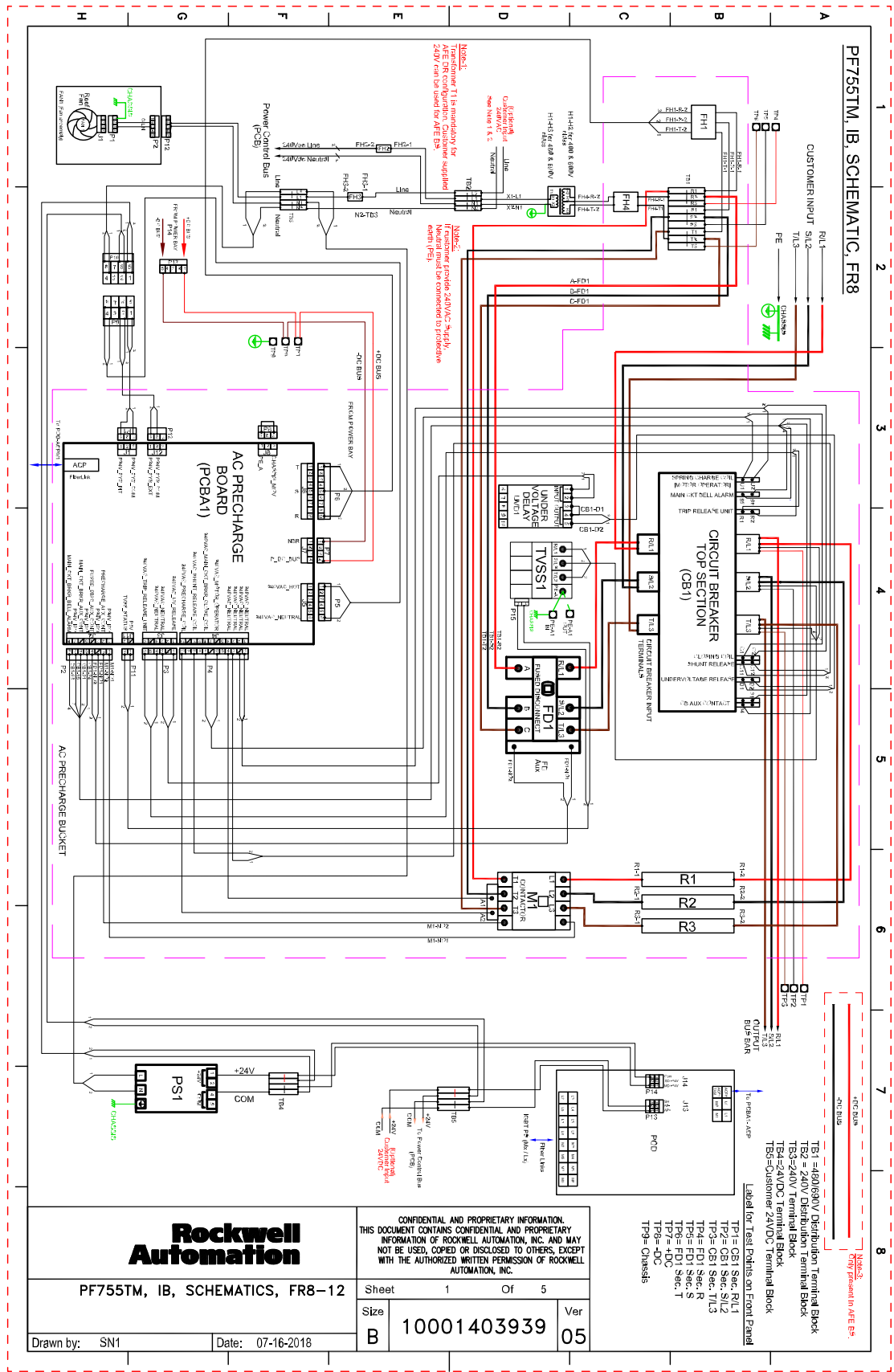


Figure 45. PowerFlex® 755T Frame 9 AC Input Bay

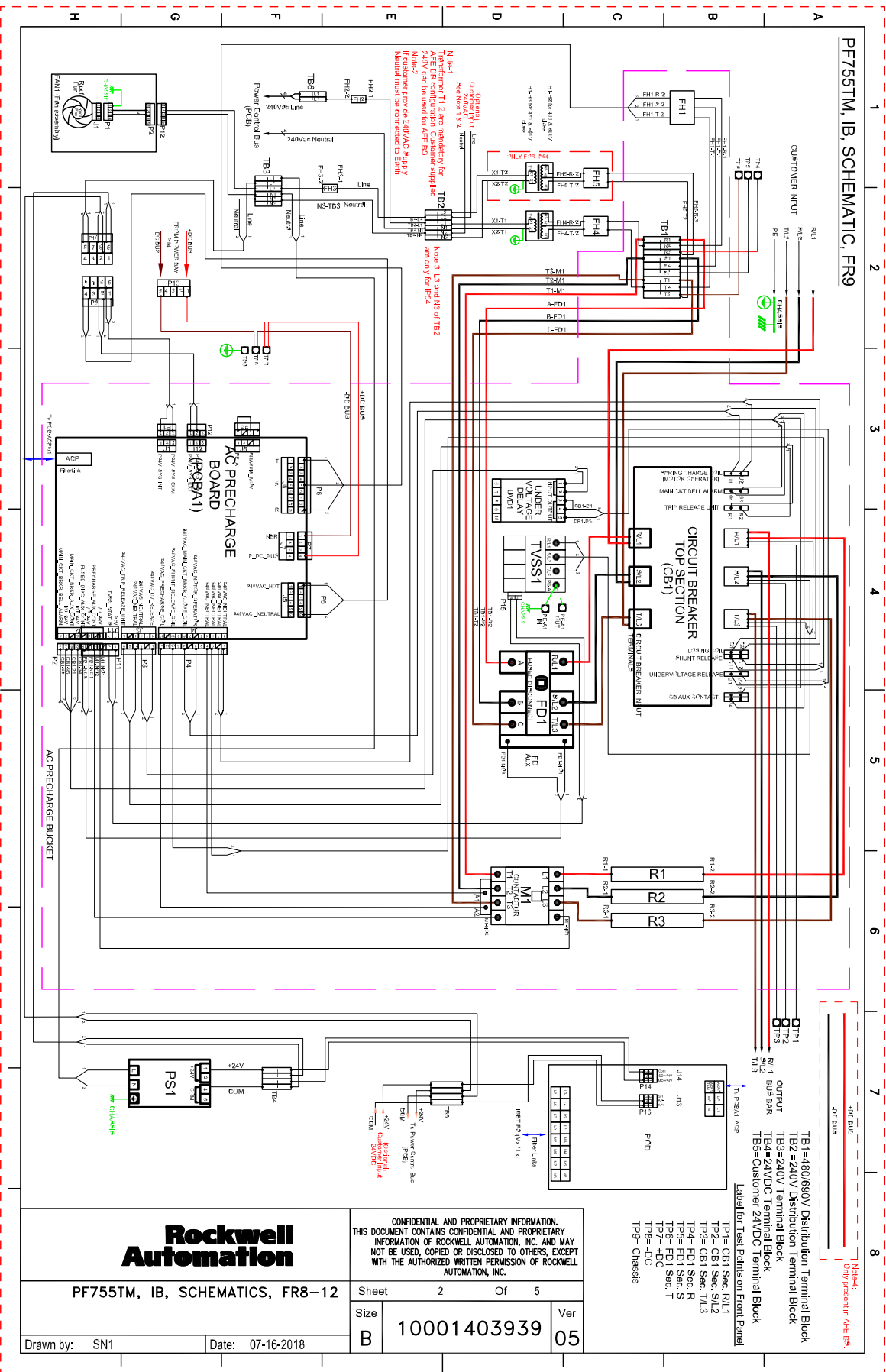


Figure 46. PowerFlex® 755T Frame 10 AC Input Bay

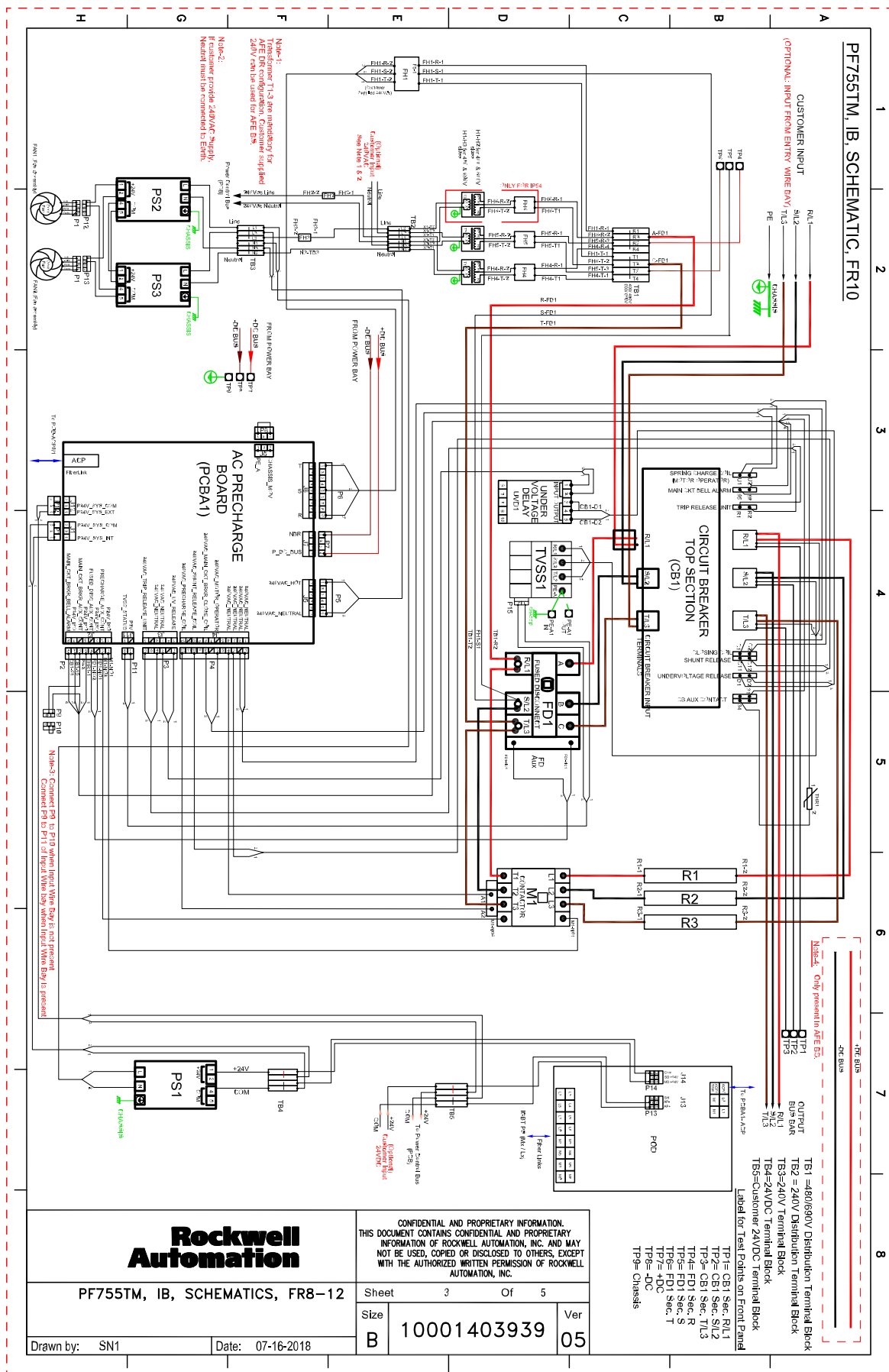


Figure 47. PowerFlex® 755T Frame 11 AC Input Bay

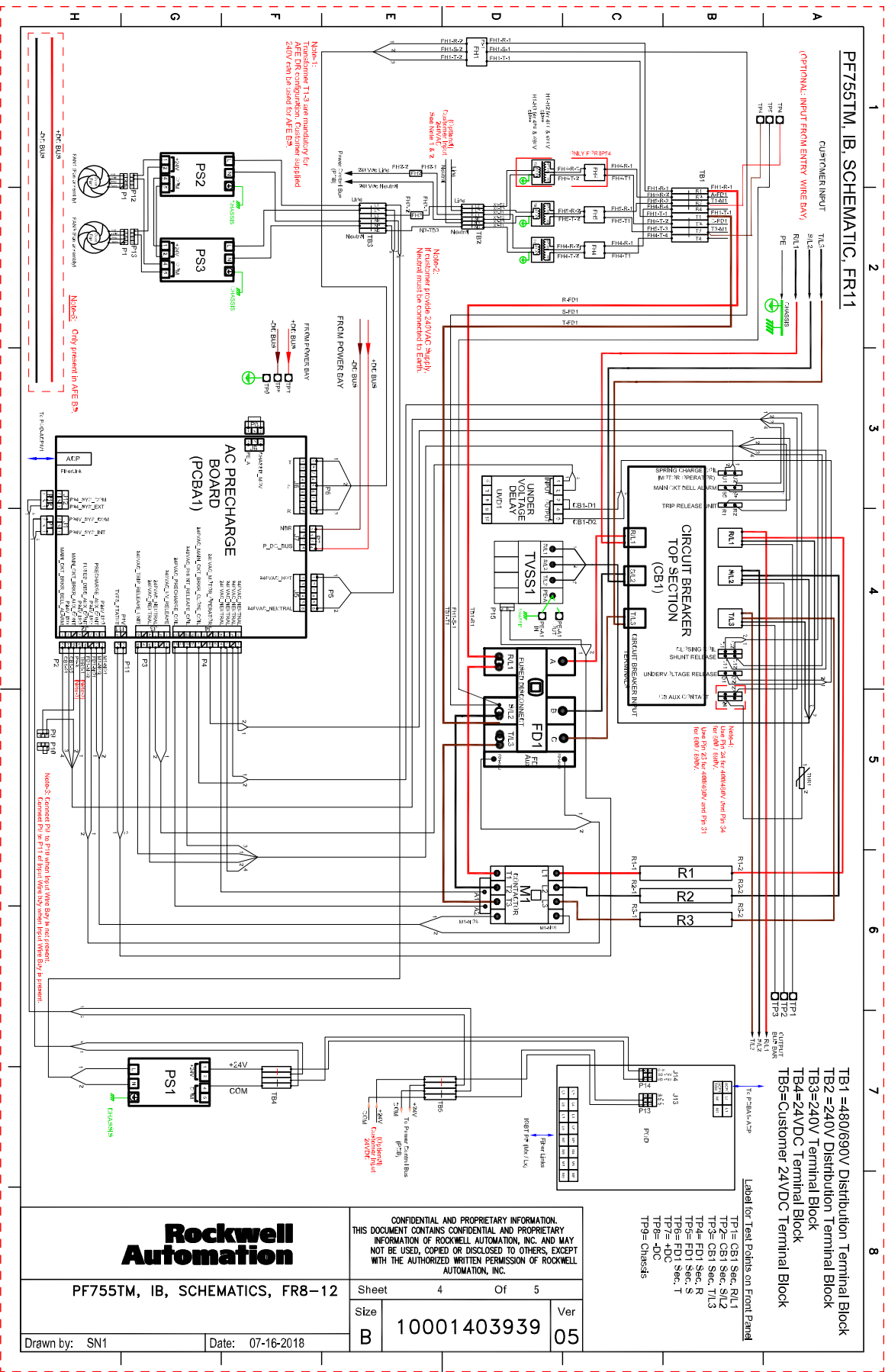
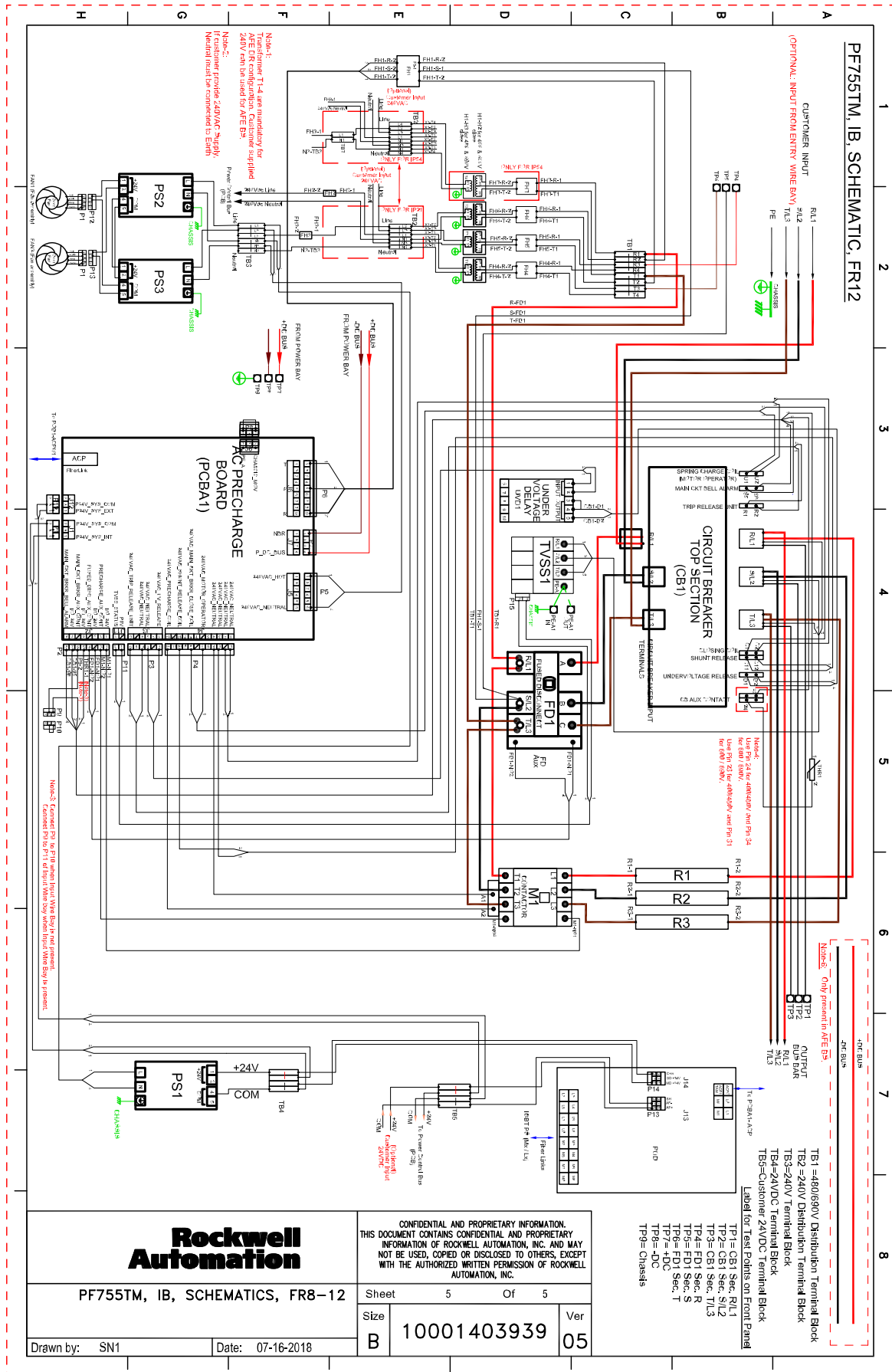


Figure 48. PowerFlex® 755T Frame 12 AC Input Bay



PowerFlex 755TL/TR Drives Schematic Diagrams for Frames 7...12

Figure 49. PowerFlex® 755TL/TR Frame 7 Drive

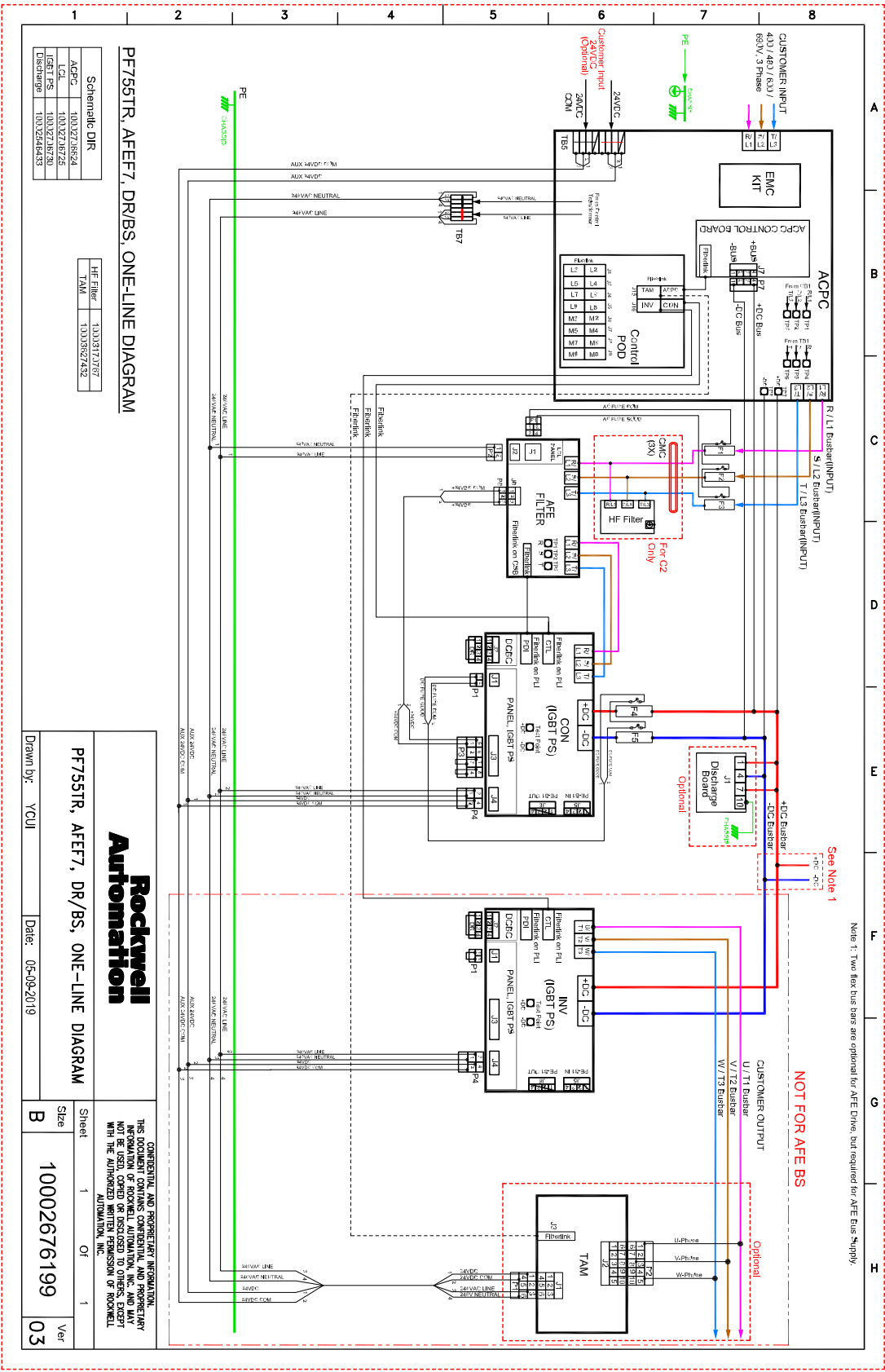


Figure 50. PowerFlex® 755TL/TR Frame 8 Drive, Solid Ground

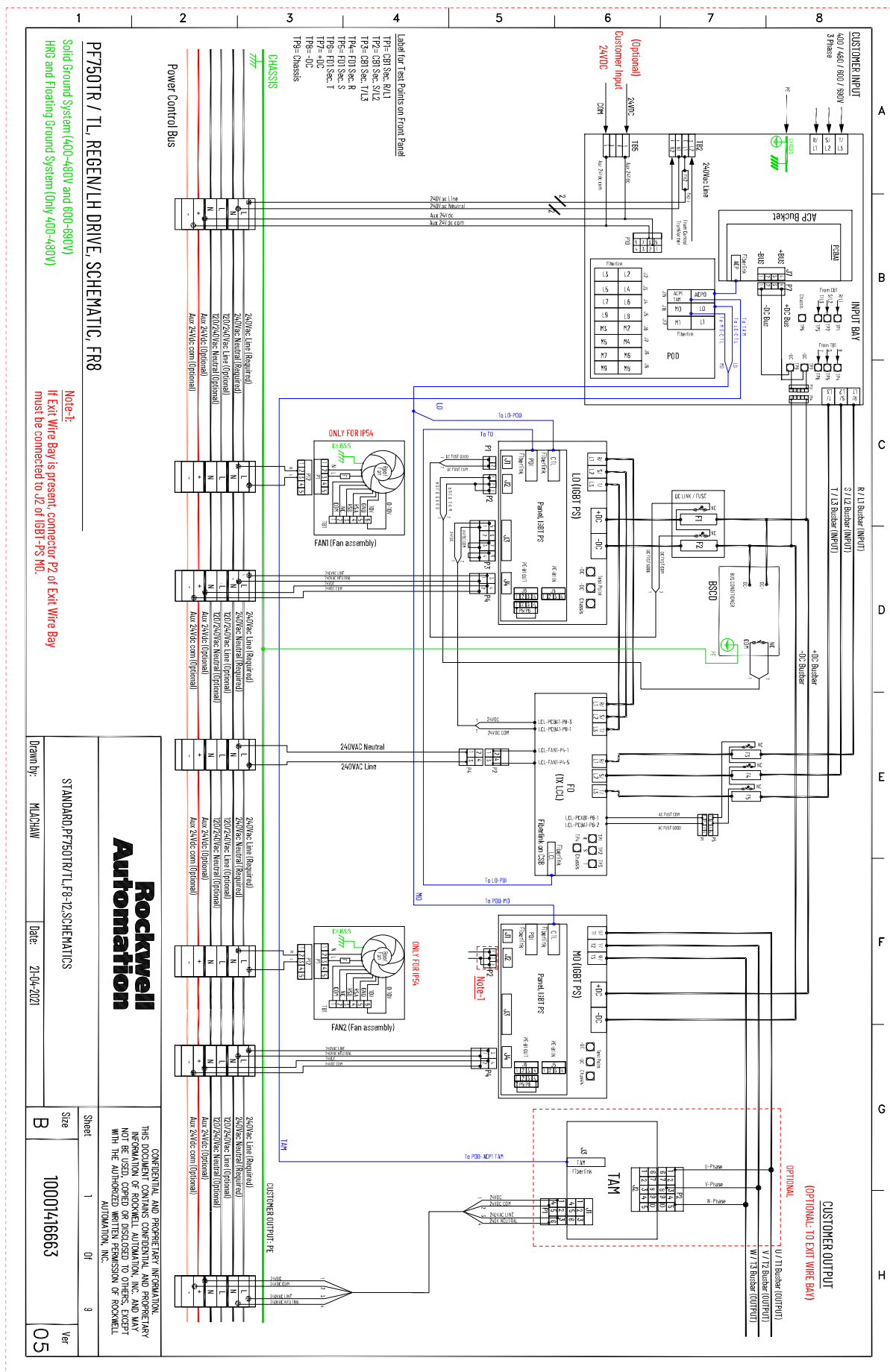


Figure 51. PowerFlex® 755TL/TR Frame 8 Drive, High Resistance and Ungrounded

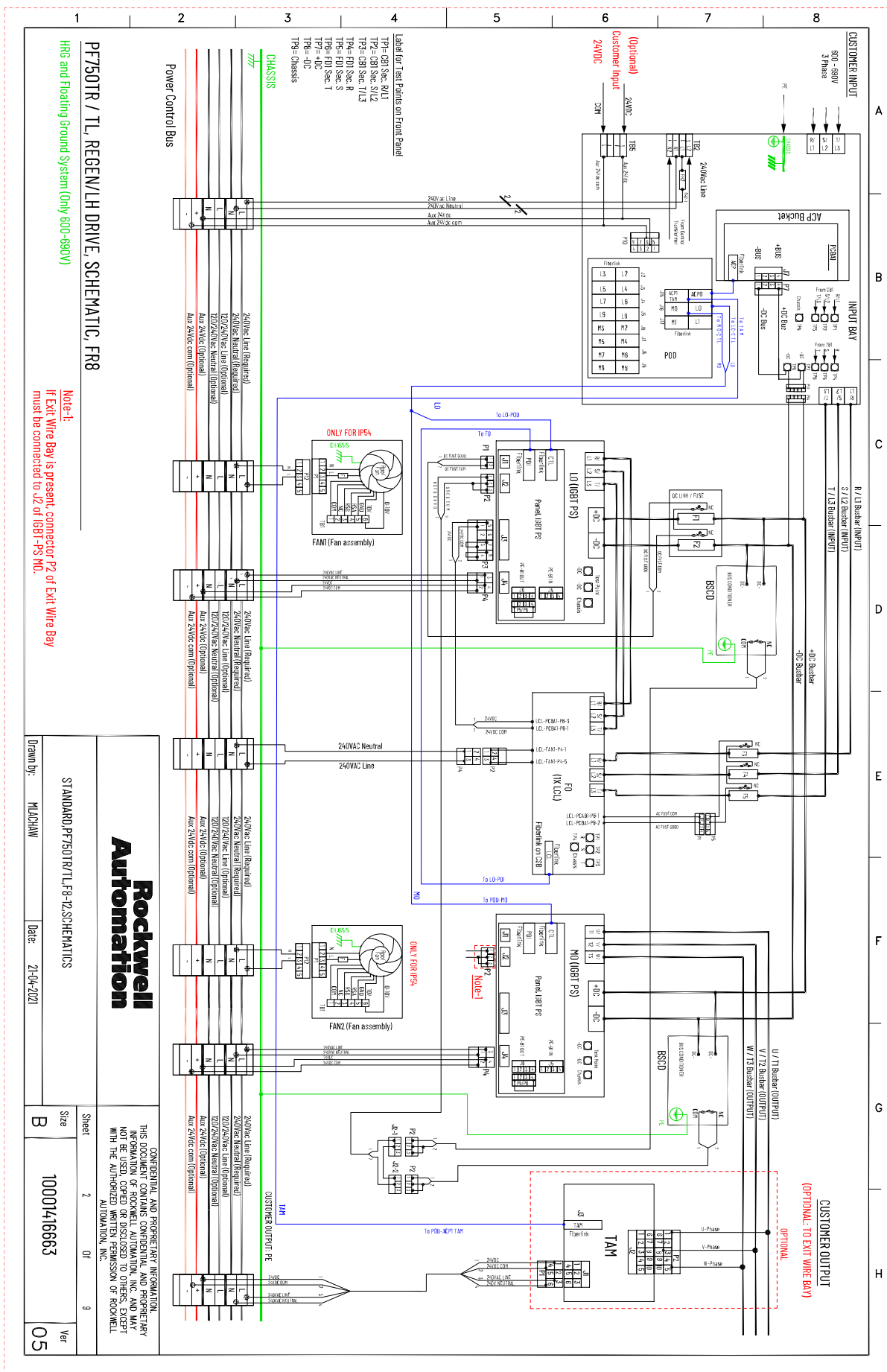


Figure 52. PowerFlex® 755TL/TR Frame 9 Drive

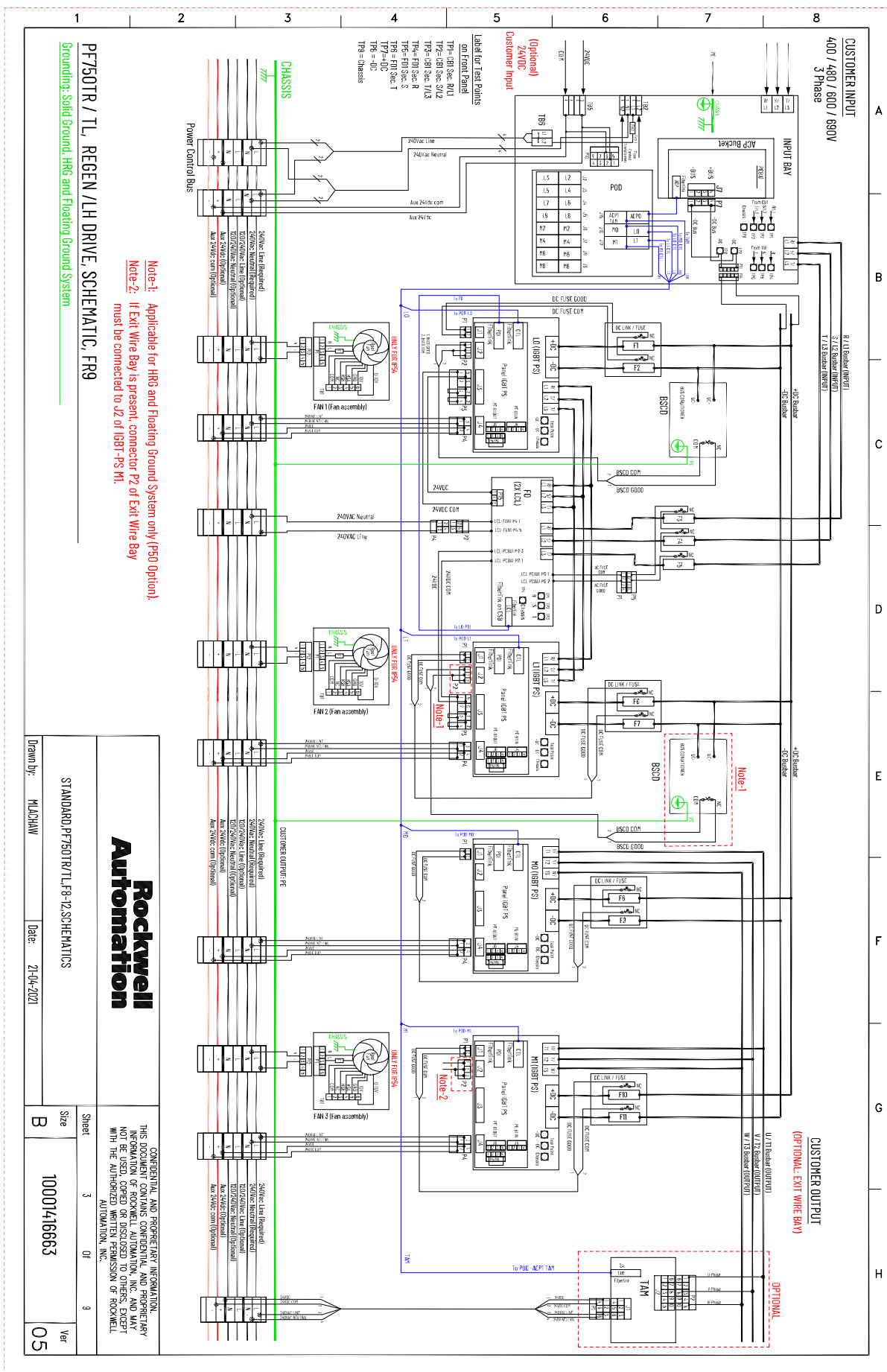


Figure 53. PowerFlex® 755TL/TR Frame 10 Drive (Sheet 1 of 2)

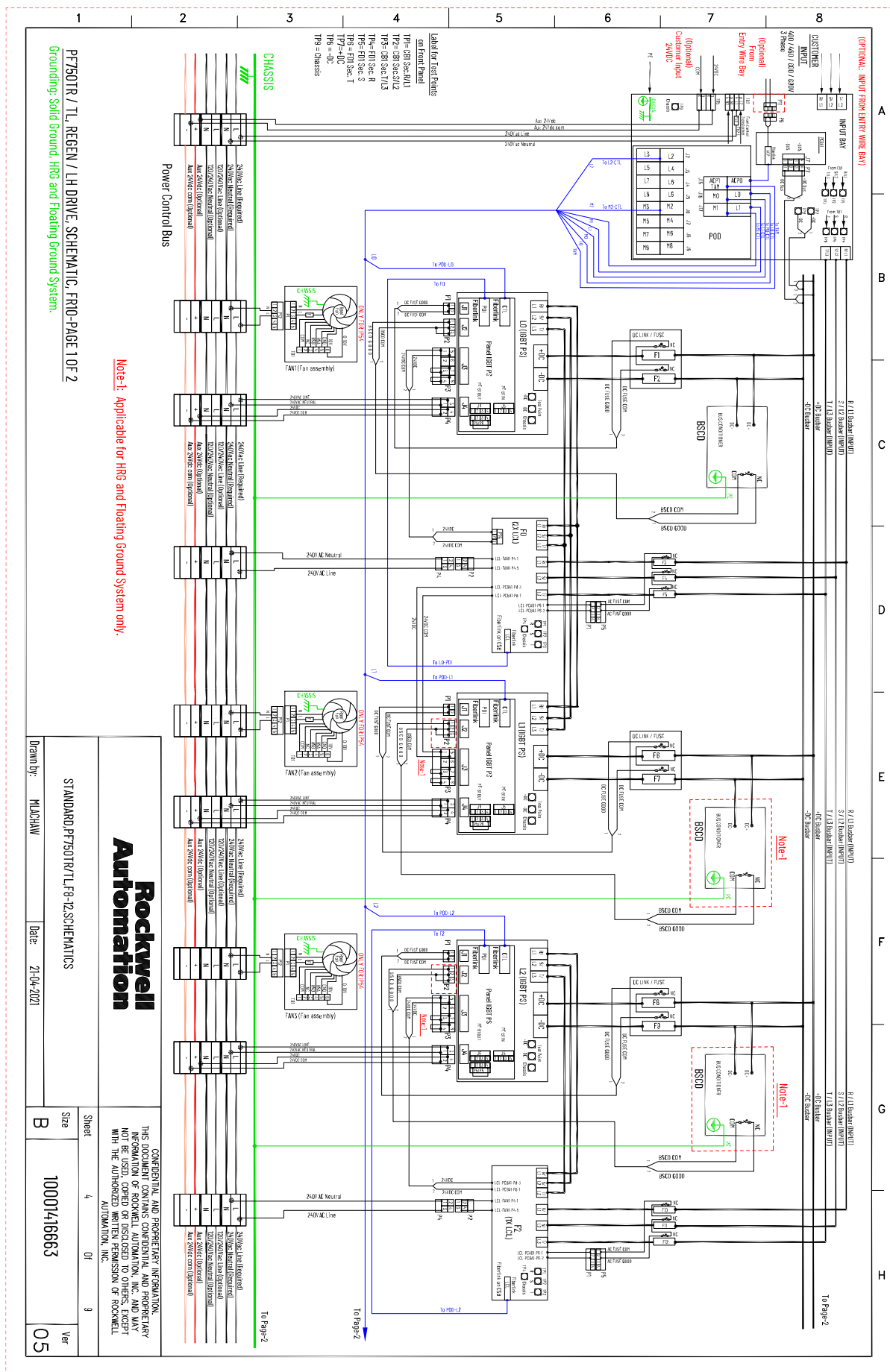


Figure 54. PowerFlex® 755TL/TR Frame 10 Drive (Sheet 2 of 2)

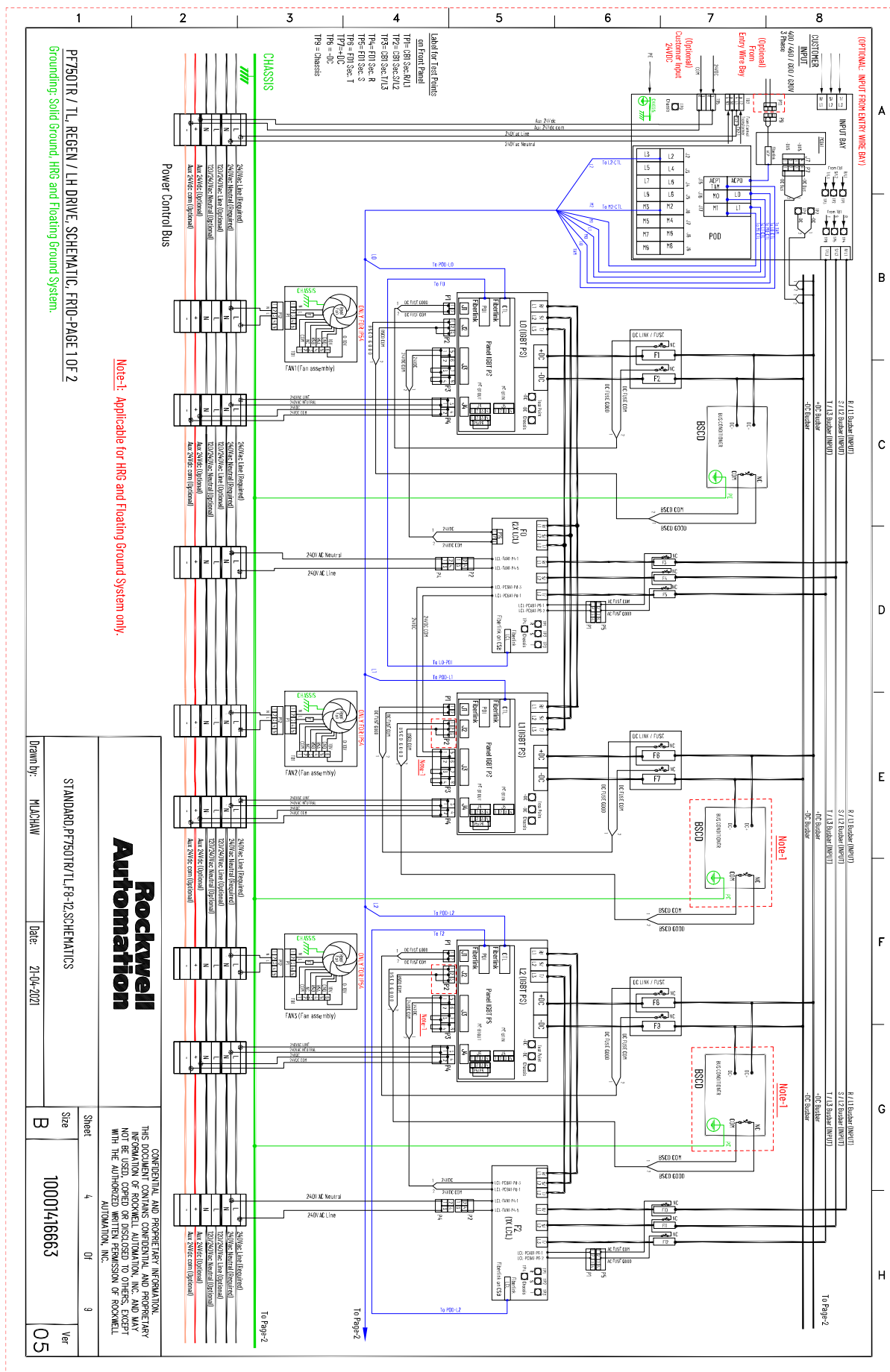


Figure 55. PowerFlex® 755TL/TR Frame 11 Drive (Sheet 1 of 2)

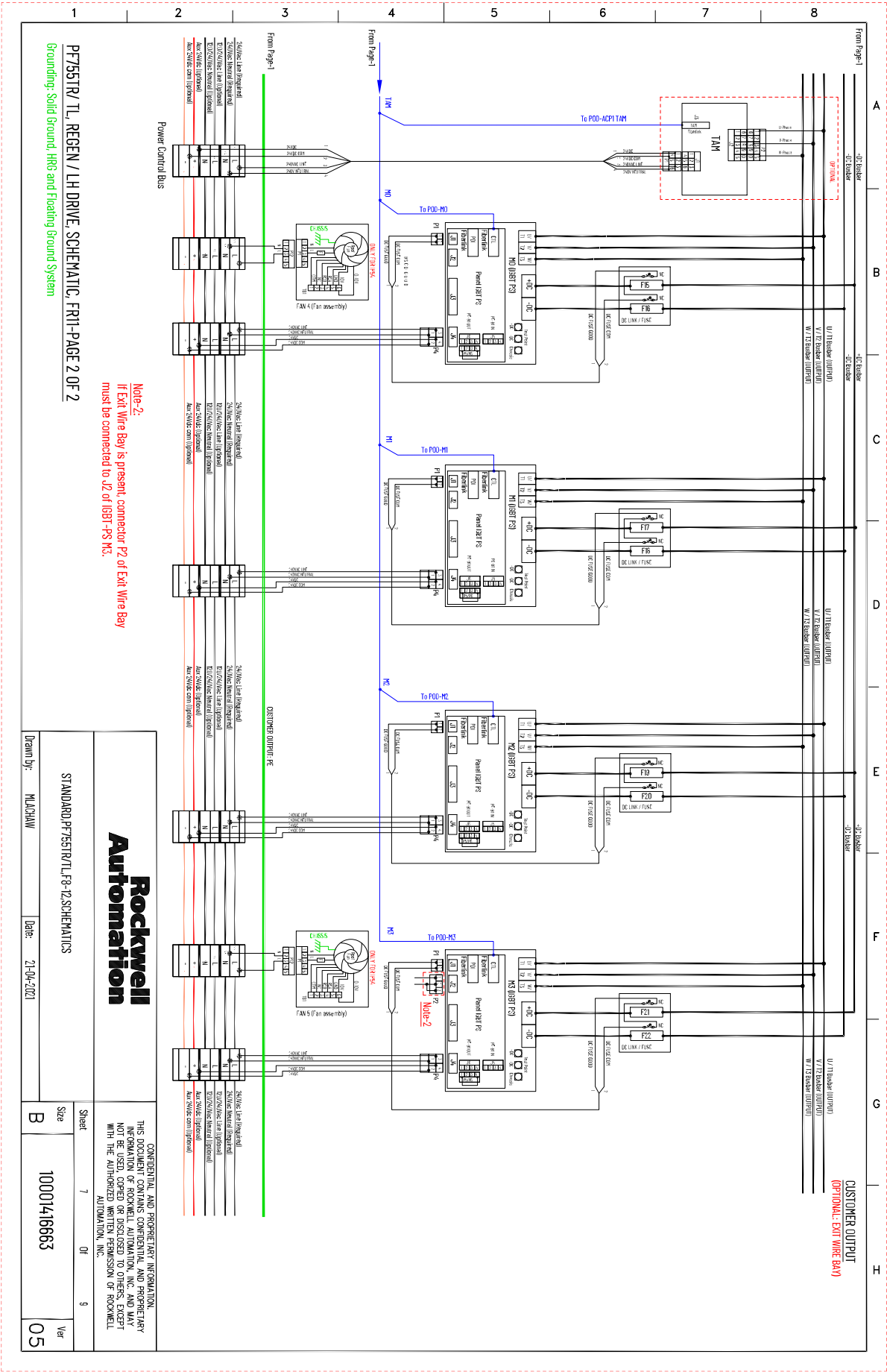


Figure 56. PowerFlex® 755TL/TR Frame 11 Drive (Sheet 2 of 2)

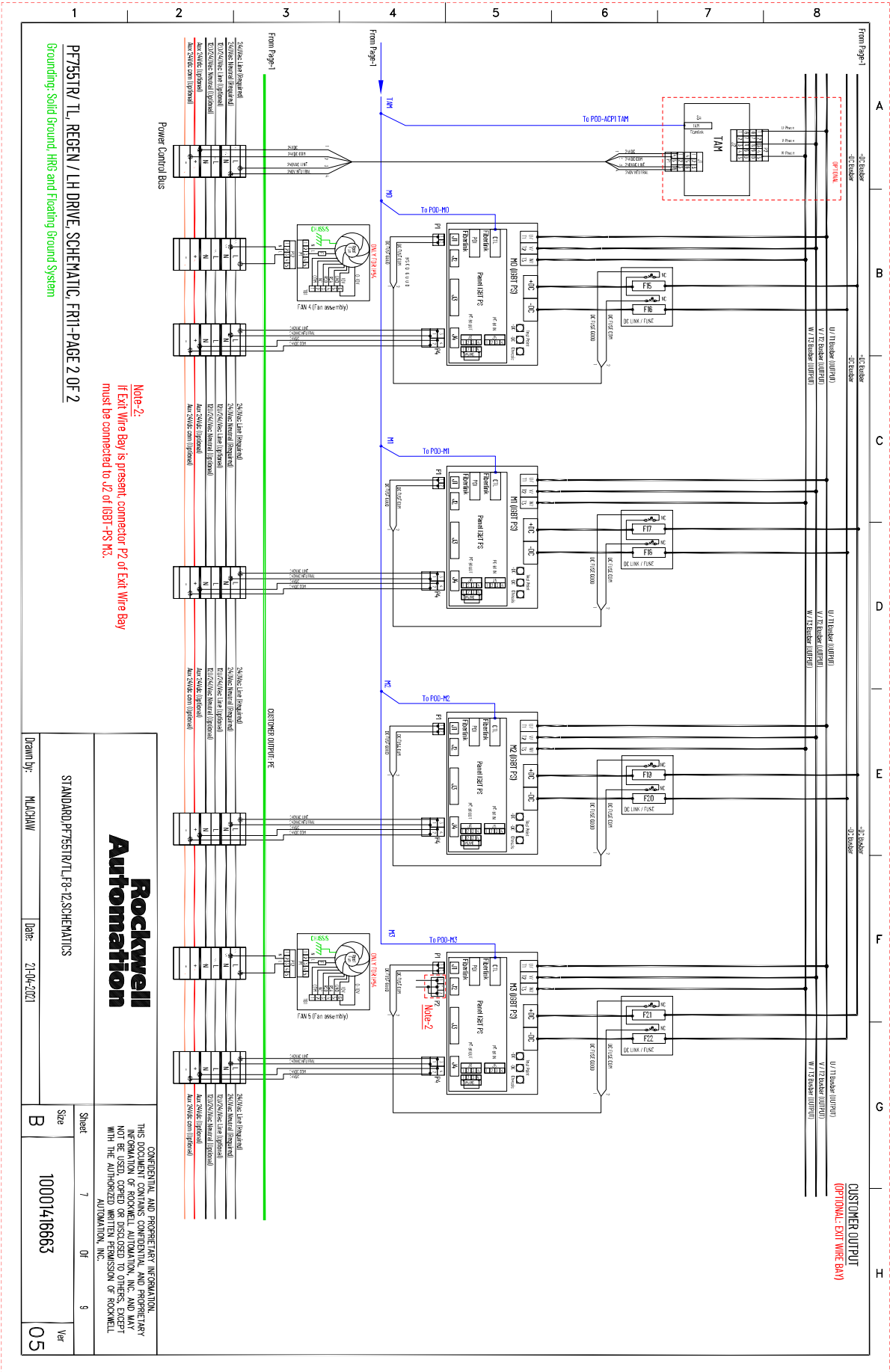


Figure 57. PowerFlex® 755TL/TR Frame 12 Drive (Sheet 1 of 2)

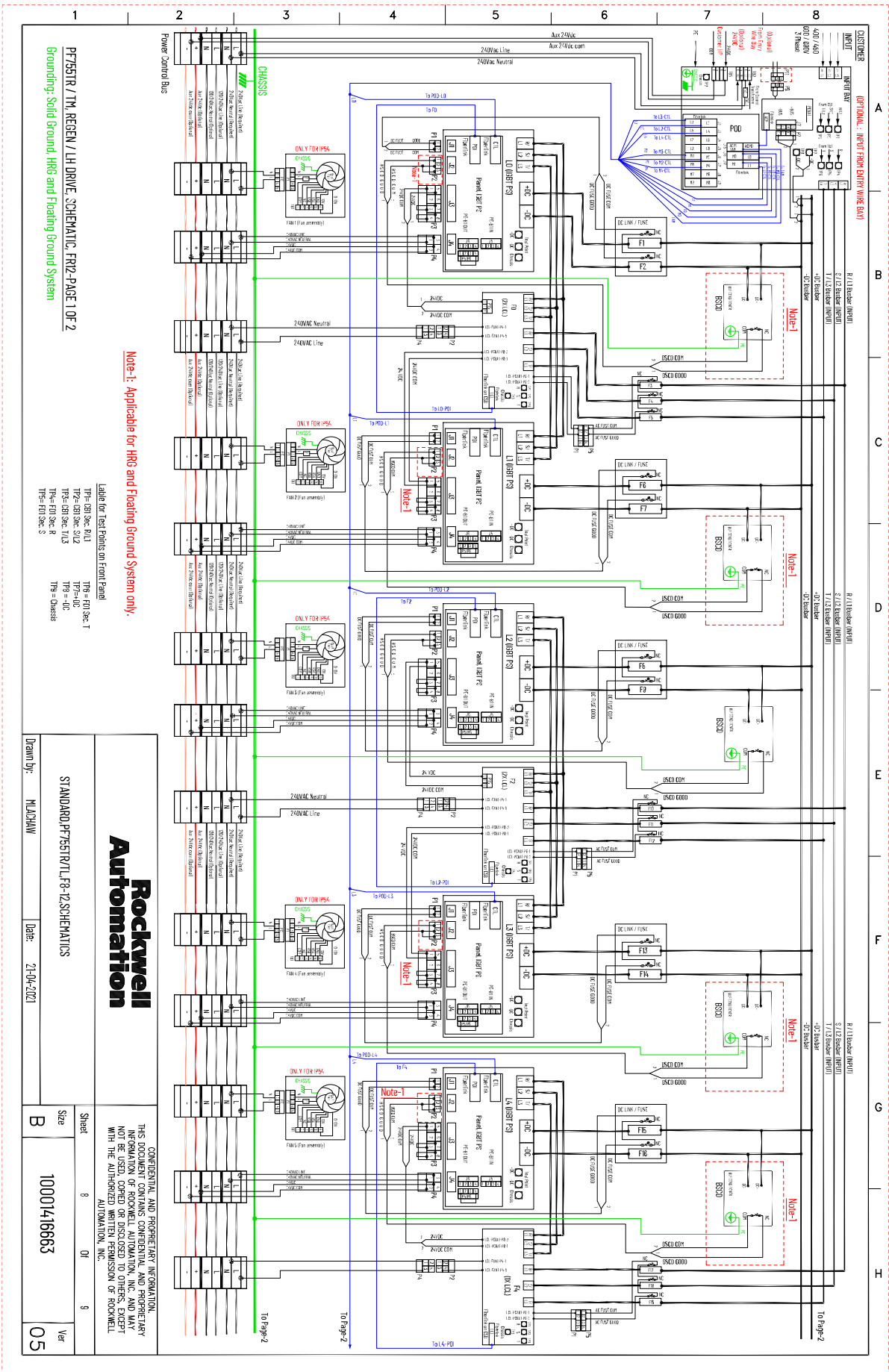
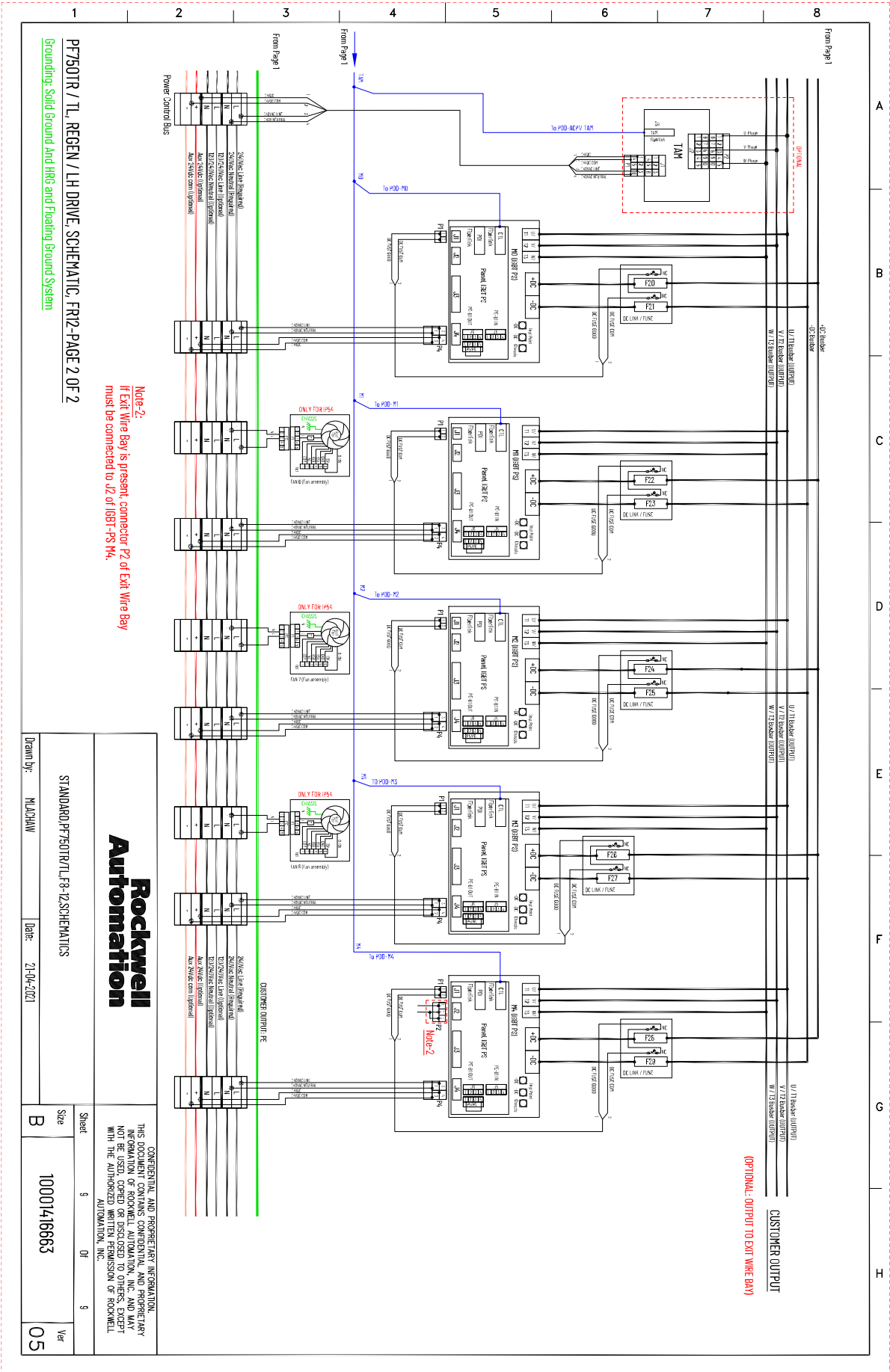


Figure 58. PowerFlex® 755TL/TR Frame 12 Drive (Sheet 2 of 2)



NOT FOR AFE BS

See Note 1

Customer Input
400 / 480 / 600 V
60 Hz / 3 Phase

ACPC
ACPC CONTROL BOARD

EMC KIT

Control POD

AFE FILTER

CON (IGBT PS)
PANEL (IGBT PS)

INV (IGBT PS)
PANEL (IGBT PS)

Customer Output
U / T1 Busbar
V / T2 Busbar
W / T3 Busbar

Optional
Discharge Board

TAM

Legend
ACPC: 1002278524
T1: 1002278725
T2: 1002278725
T3: 1002278725
Discharge: 1002546433

Legend
HF Filter: 1002372707
TAM: 1002582432

Legend
PF755TR, AFE7, DR/BS, ONE-LINE DIAGRAM

Legend
Drawn by: YCUI
Date: 05-08-2019

Legend
Sheet 1 of 1
Size 10002676199
Ver 03

Legend
THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF ROCKWELL AUTOMATION, INC. AND MAY NOT BE USED, COPIED OR DISCLOSED TO OTHERS, EXCEPT WITH THE AUTHORIZED WRITTEN PERMISSION OF ROCKWELL AUTOMATION, INC.

Figure 60. PowerFlex® 755TM Frame 8 Bus Supply, Solid Ground

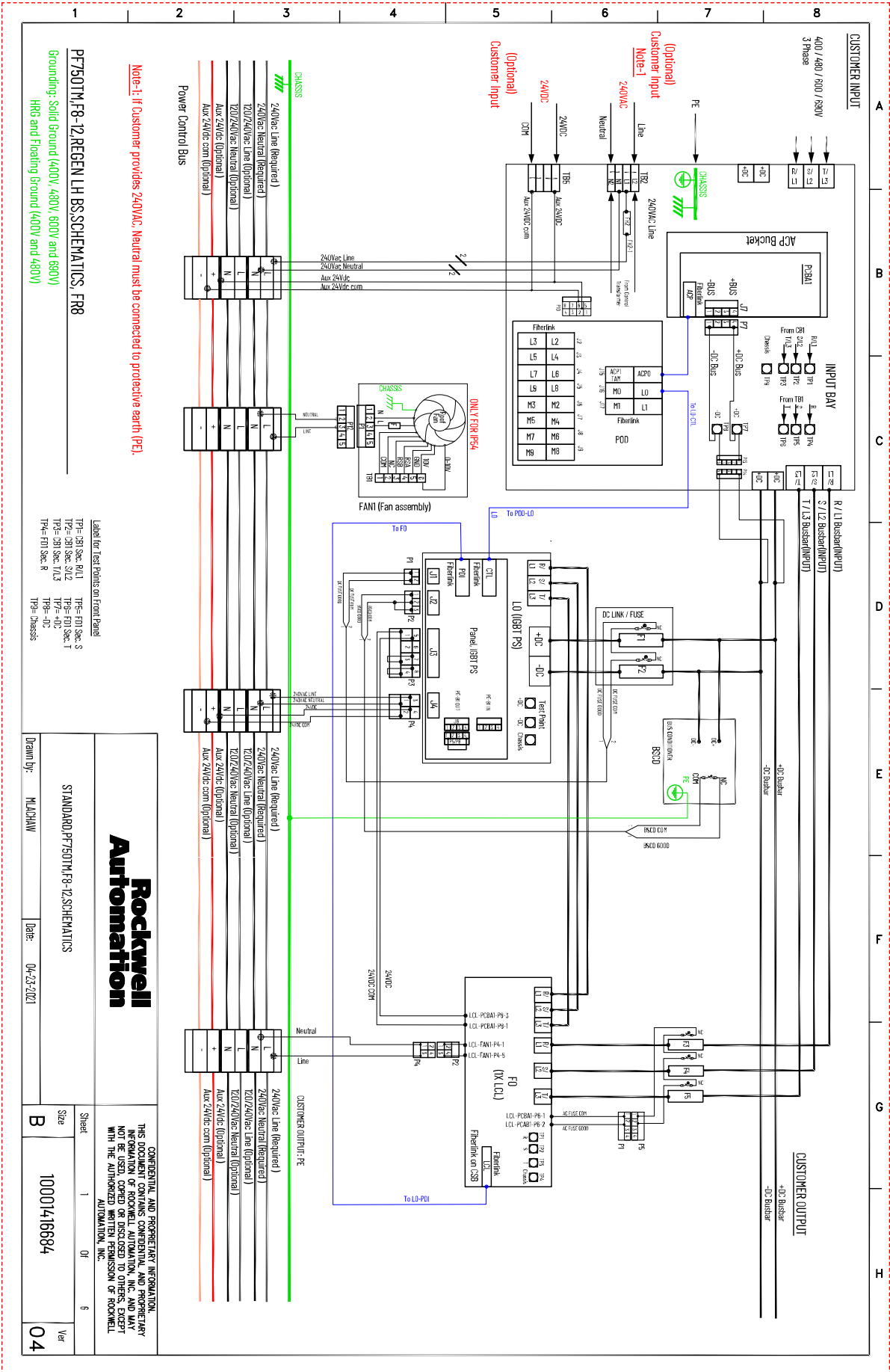


Figure 61. PowerFlex® 755TM Frame 8 Bus Supply, High-resistance Ground and Ungrounded

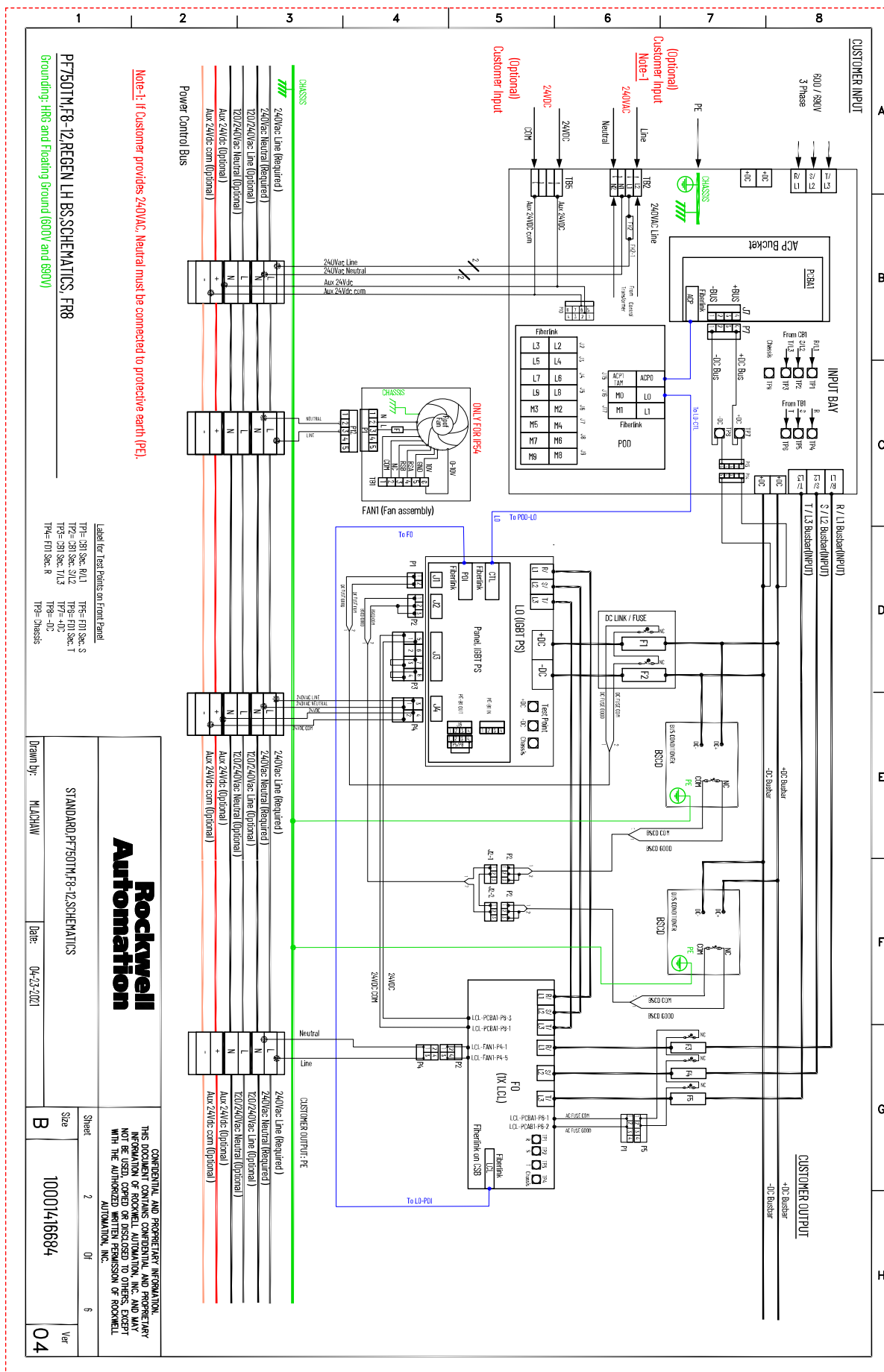


Figure 62. PowerFlex® 755TM Frame 9 Bus Supply

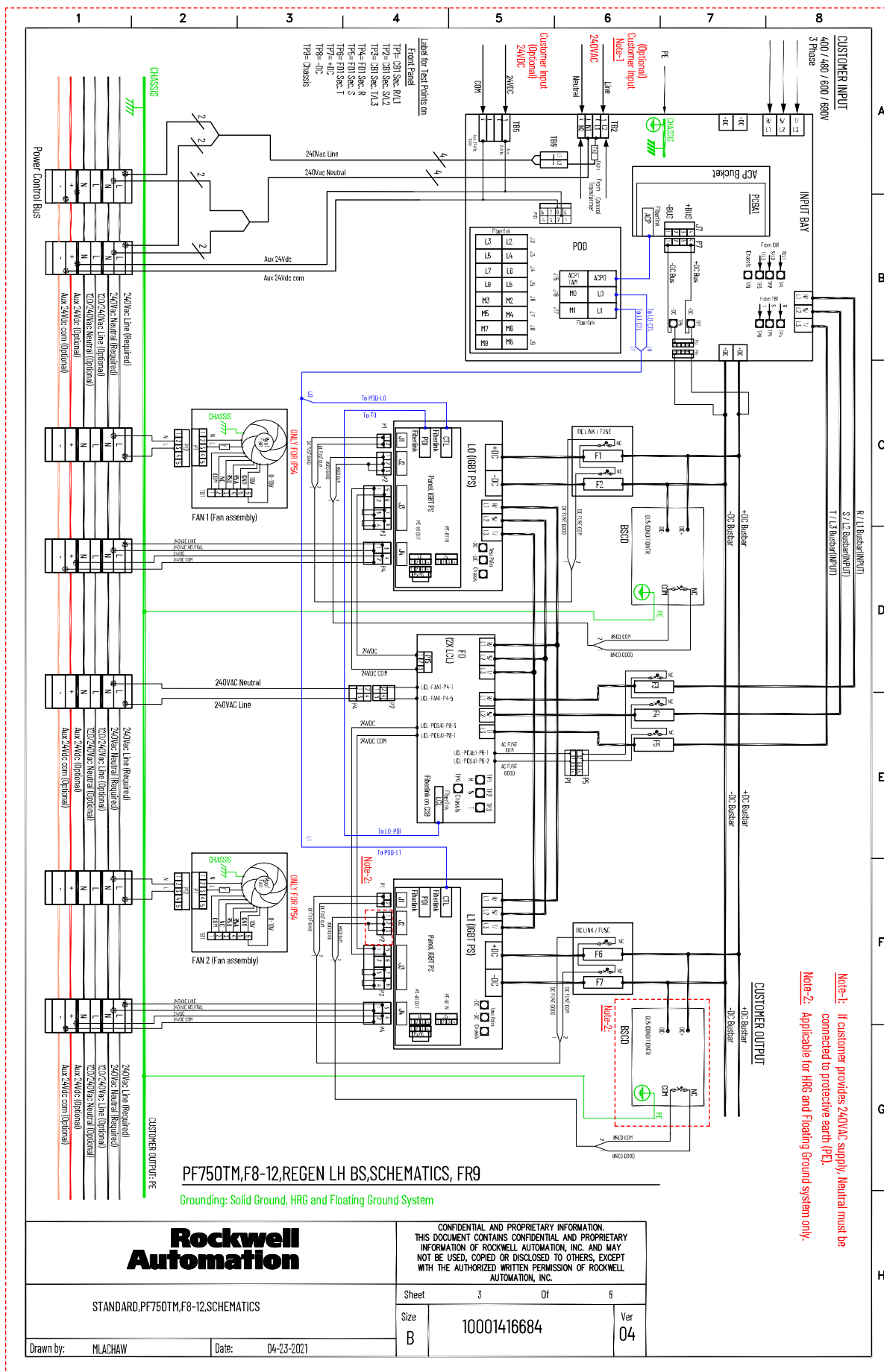


Figure 63. PowerFlex® 755TM Frame 10 Bus Supply

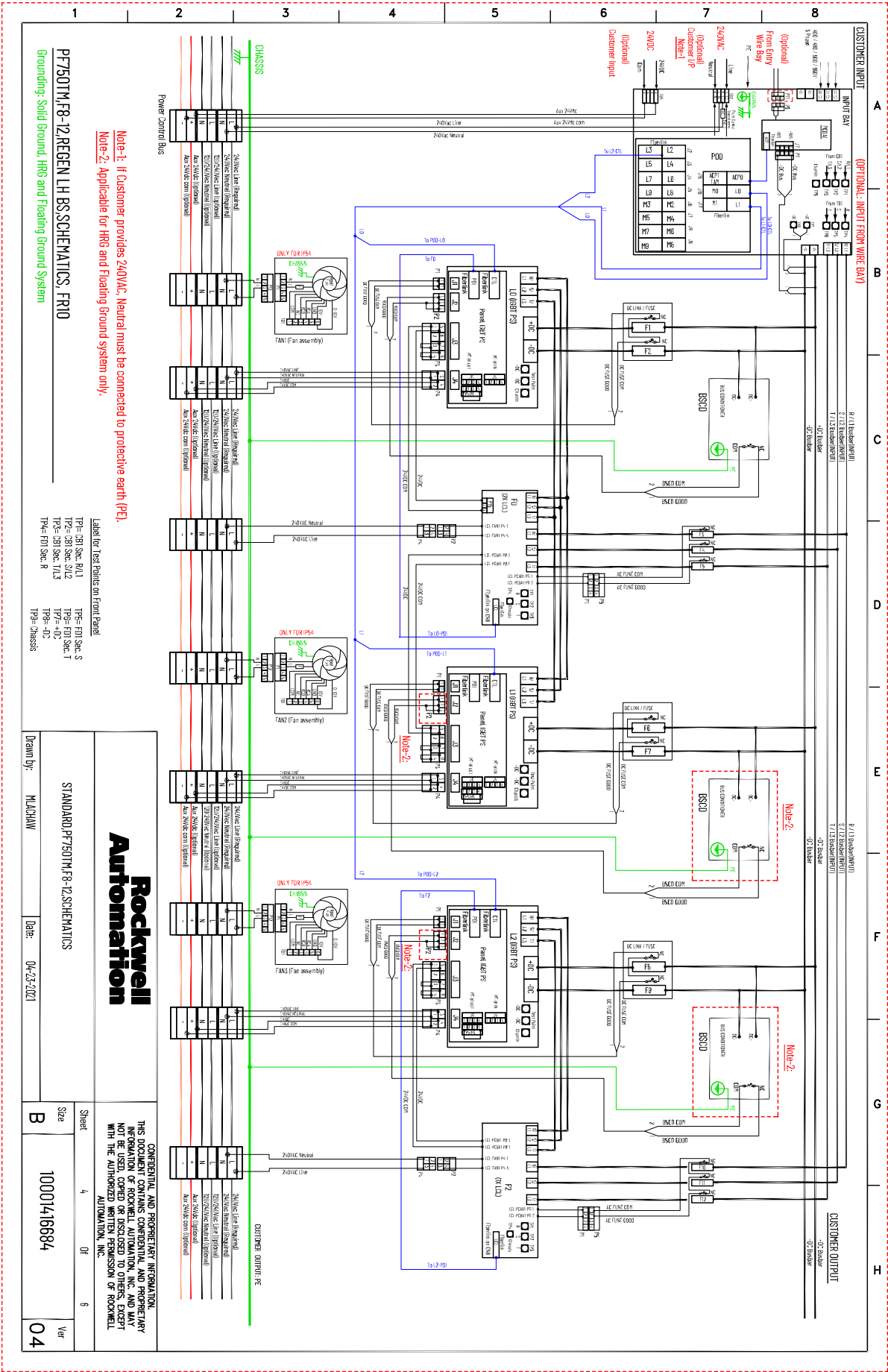


Figure 64. PowerFlex® 755TM Frame 11 Bus Supply

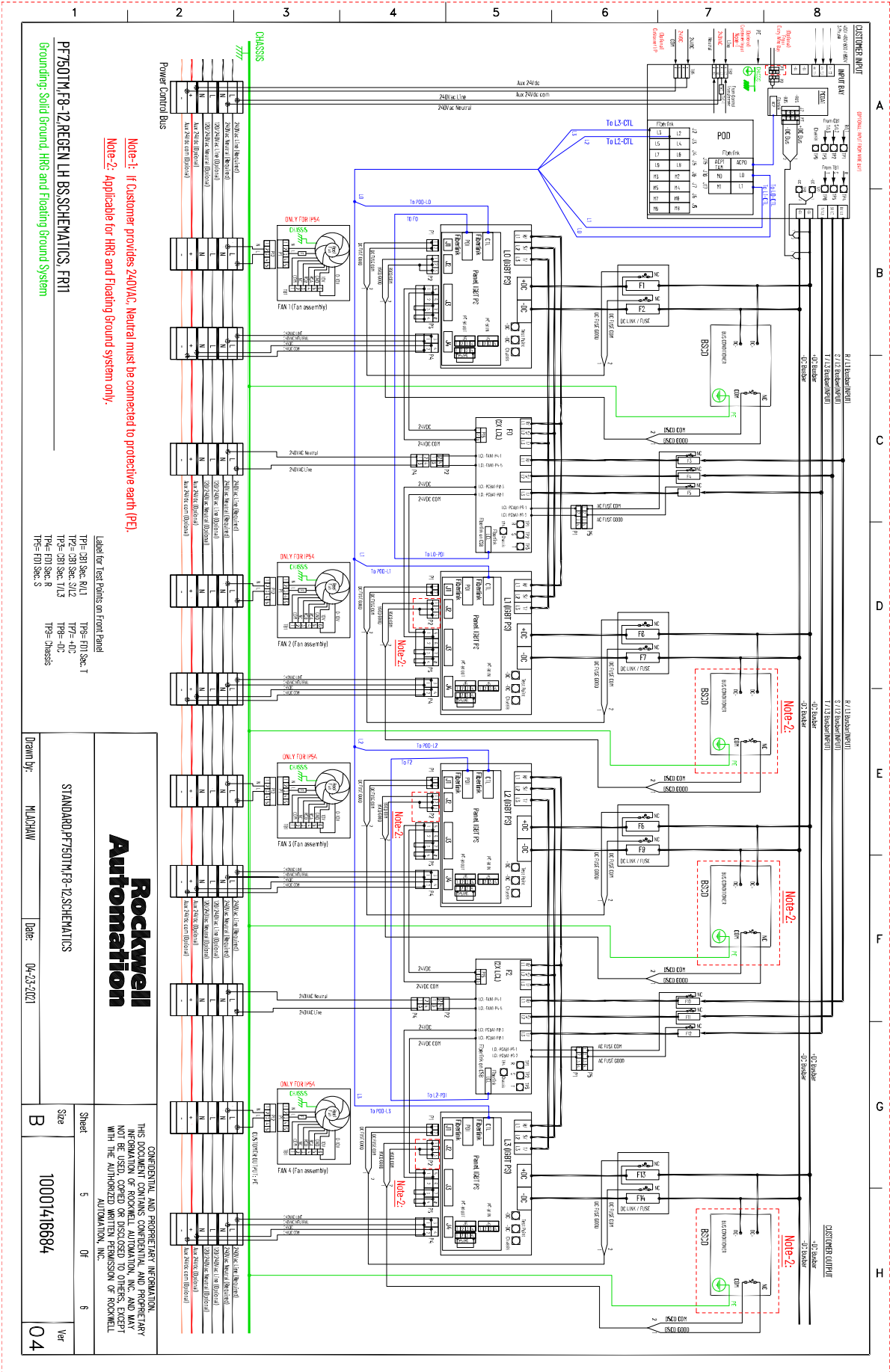
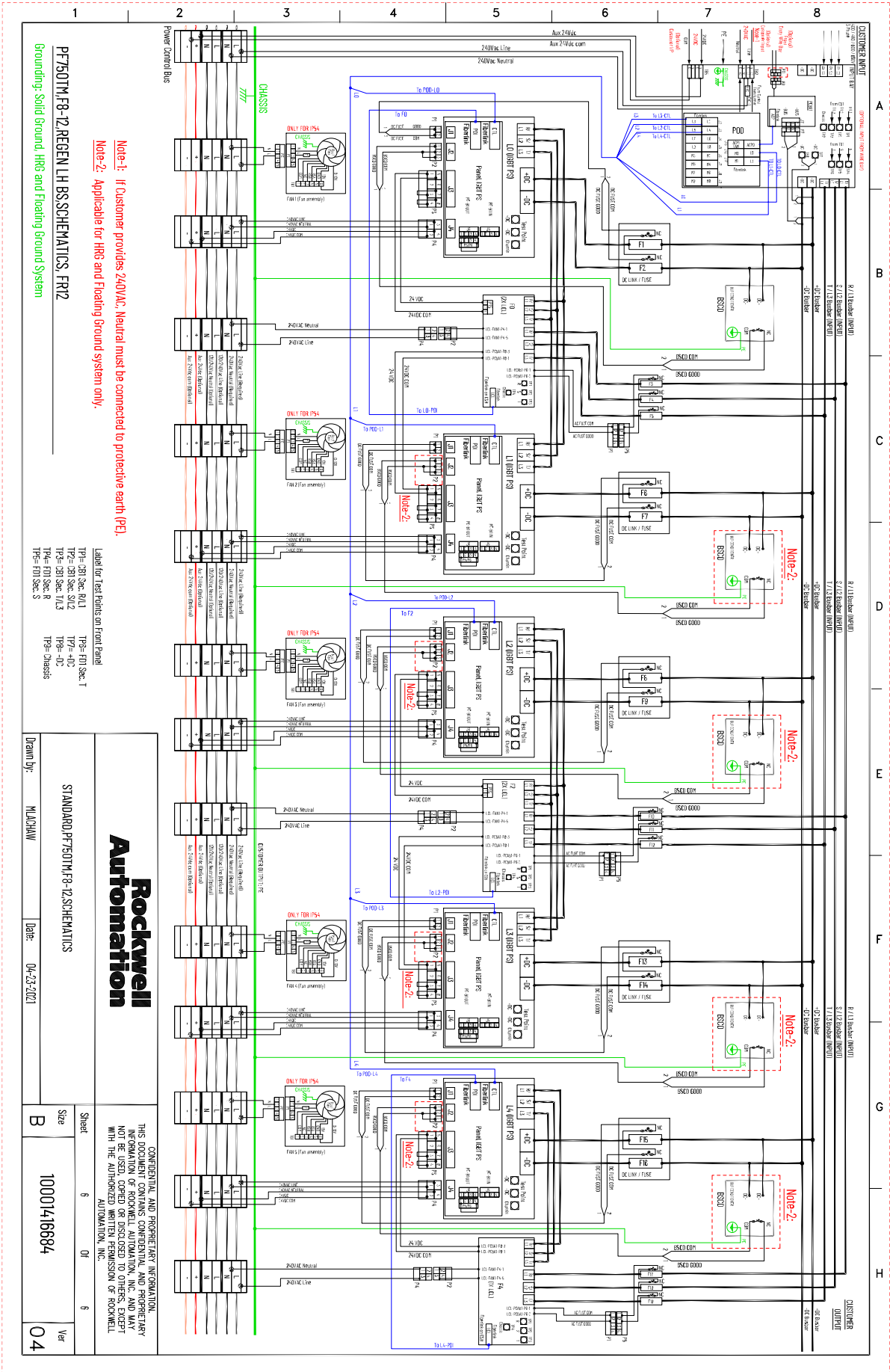
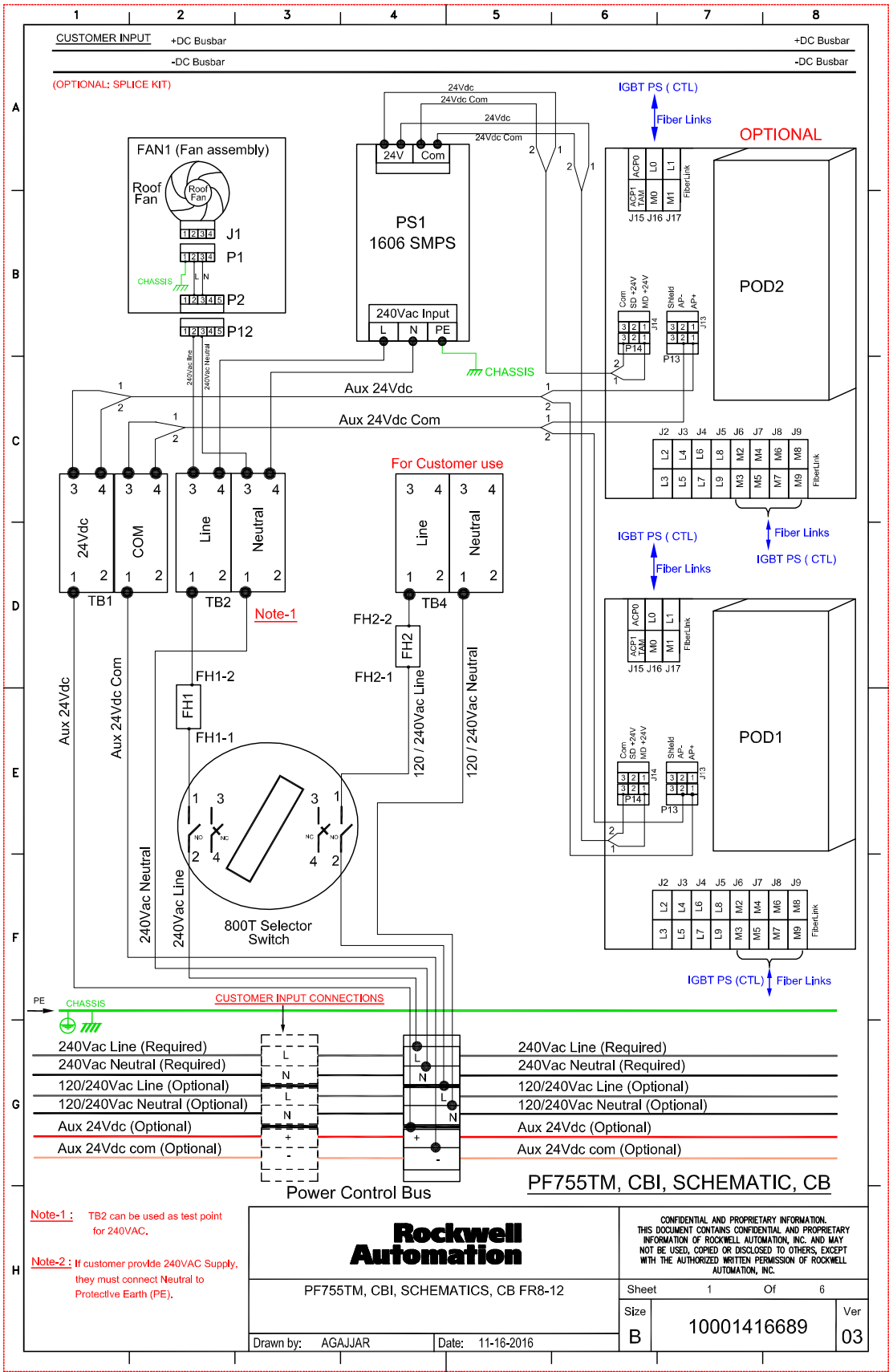


Figure 65. PowerFlex® 755TM Frame 12 Bus Supply



PowerFlex 755TM Common Bus Inverters for Frames 8...12

Figure 66. PowerFlex® 755TM Common Bus Inverter Control Bay



750-TG104A-EN-P - March 2026



Figure 68. PowerFlex® 755TM Frame 8 Common Bus Inverter with DC Precharge Module

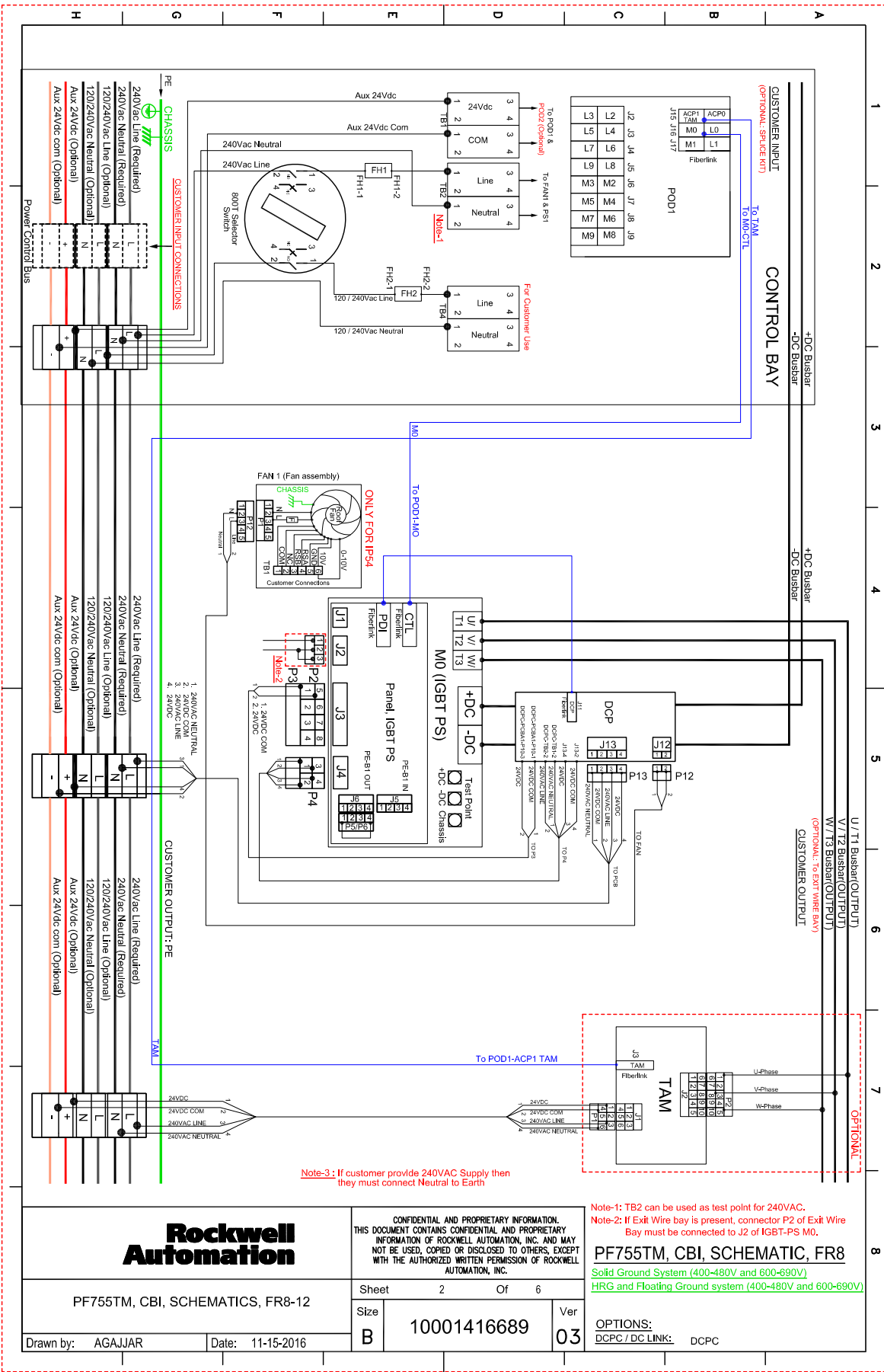


Figure 69. PowerFlex® 755TM Frame 9 Common Bus Inverter with DC Link Fuses

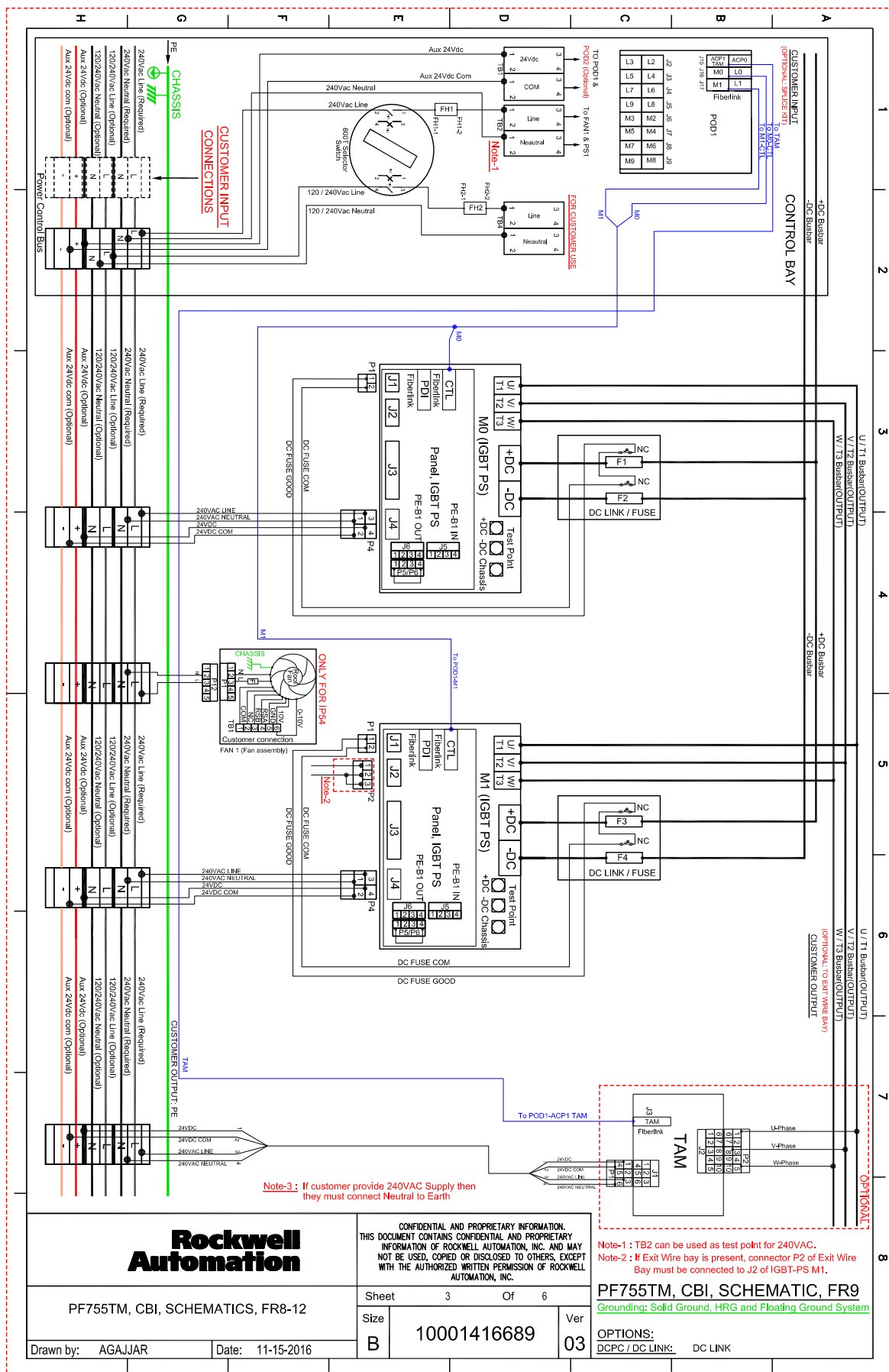


Figure 70. PowerFlex® 755TM Frame 9 Common Bus Inverter with DC Precharge Module

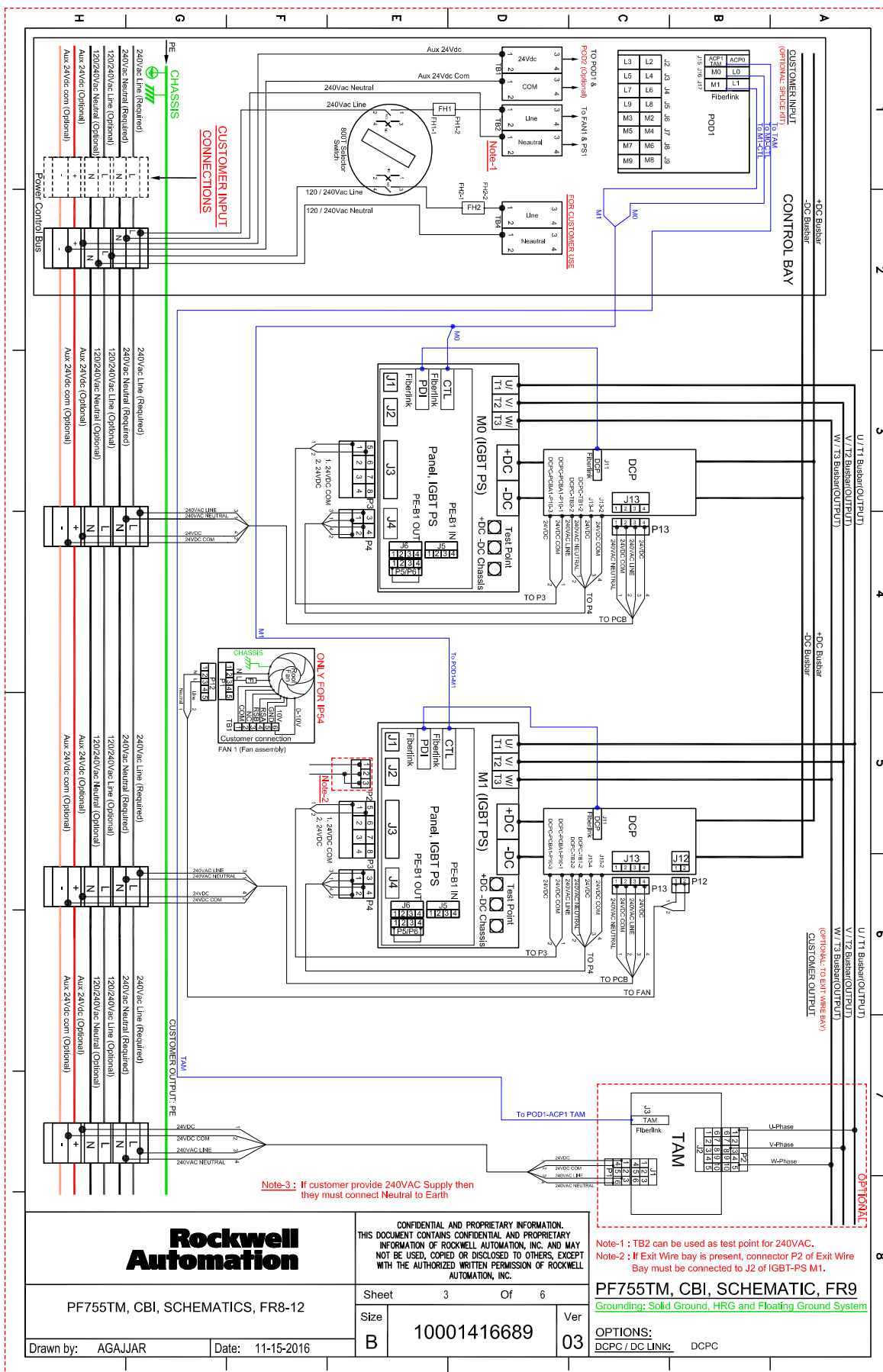


Figure 71. PowerFlex® 755TM Frame 10 Common Bus Inverter with DC Link Fuses

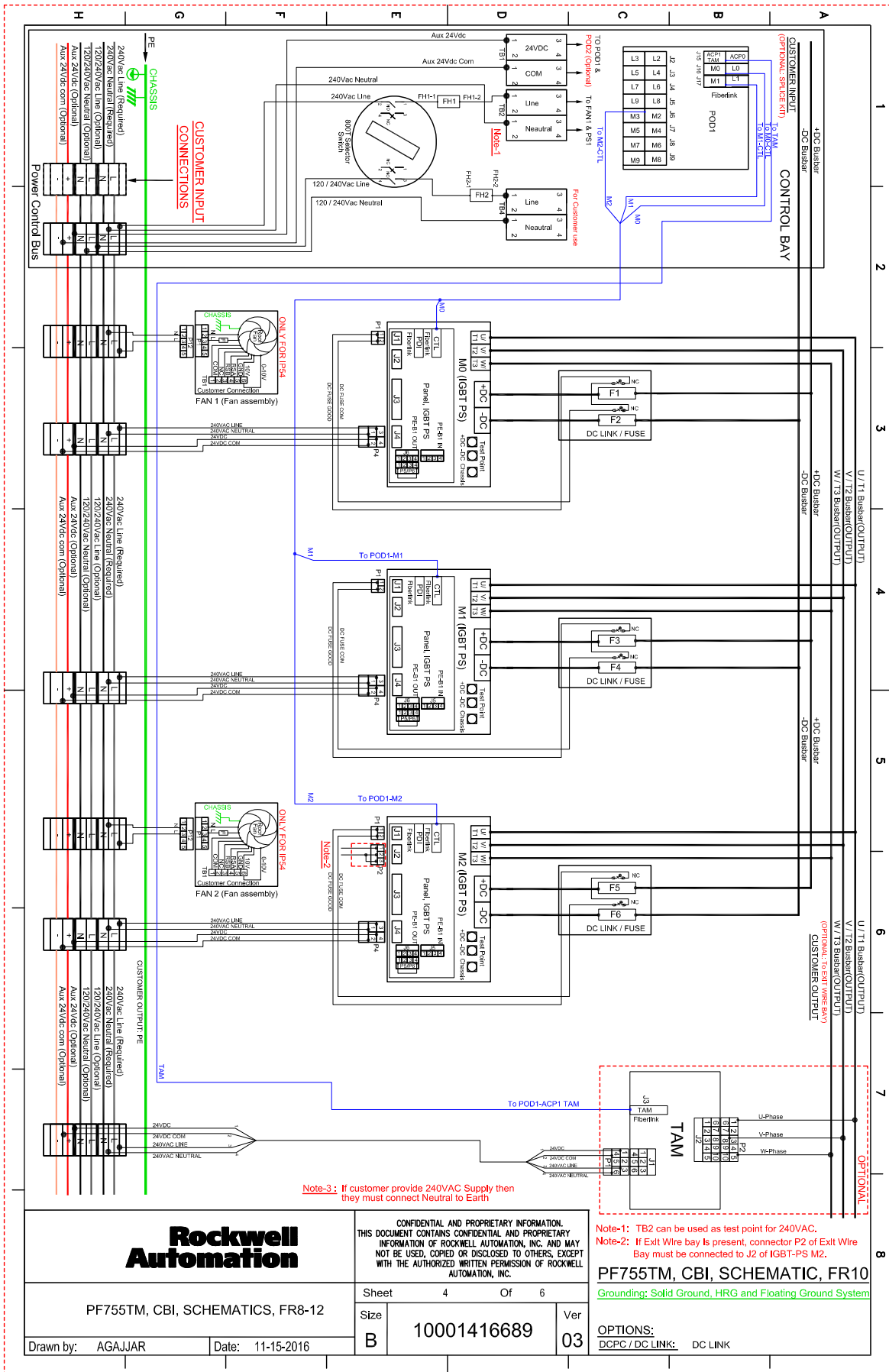


Figure 72. PowerFlex® 755TM Frame 10 Common Bus Inverter with DC Precharge Module

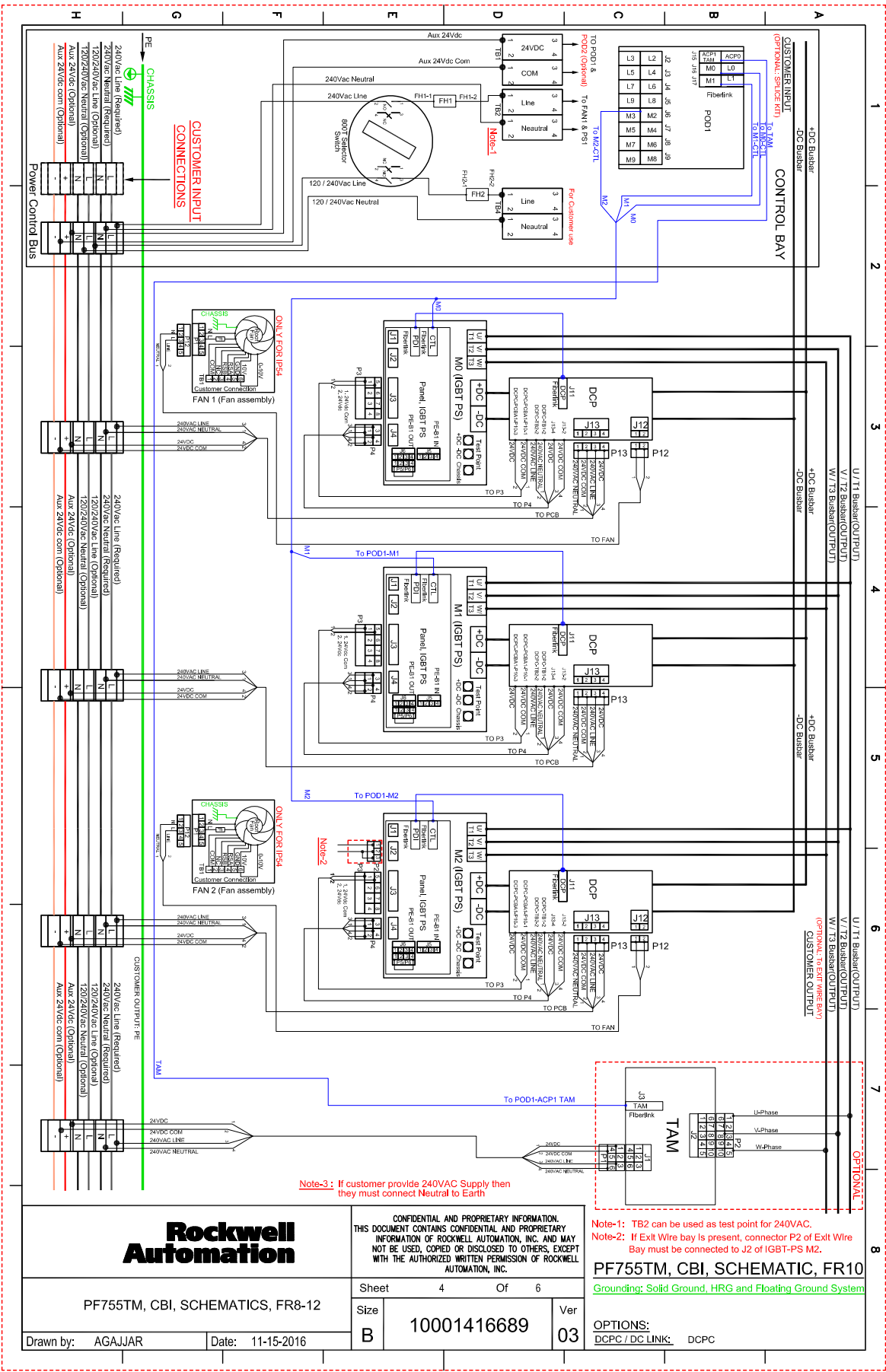


Figure 73. PowerFlex® 755TM Frame 11 Common Bus Inverter with DC Link Fuses

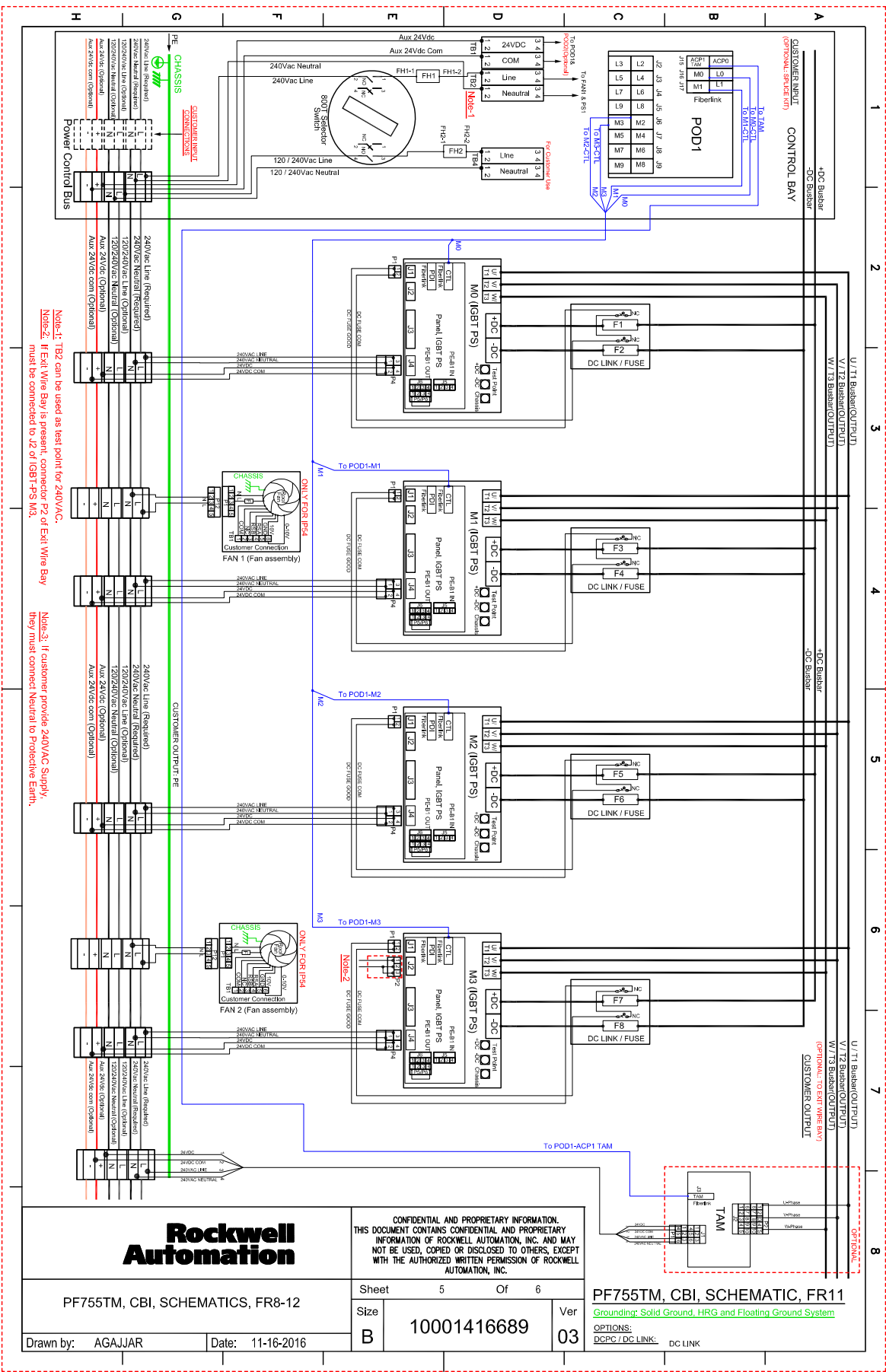


Figure 74. PowerFlex® 755TM Frame 11 Common Bus Inverter with DC Precharge Module

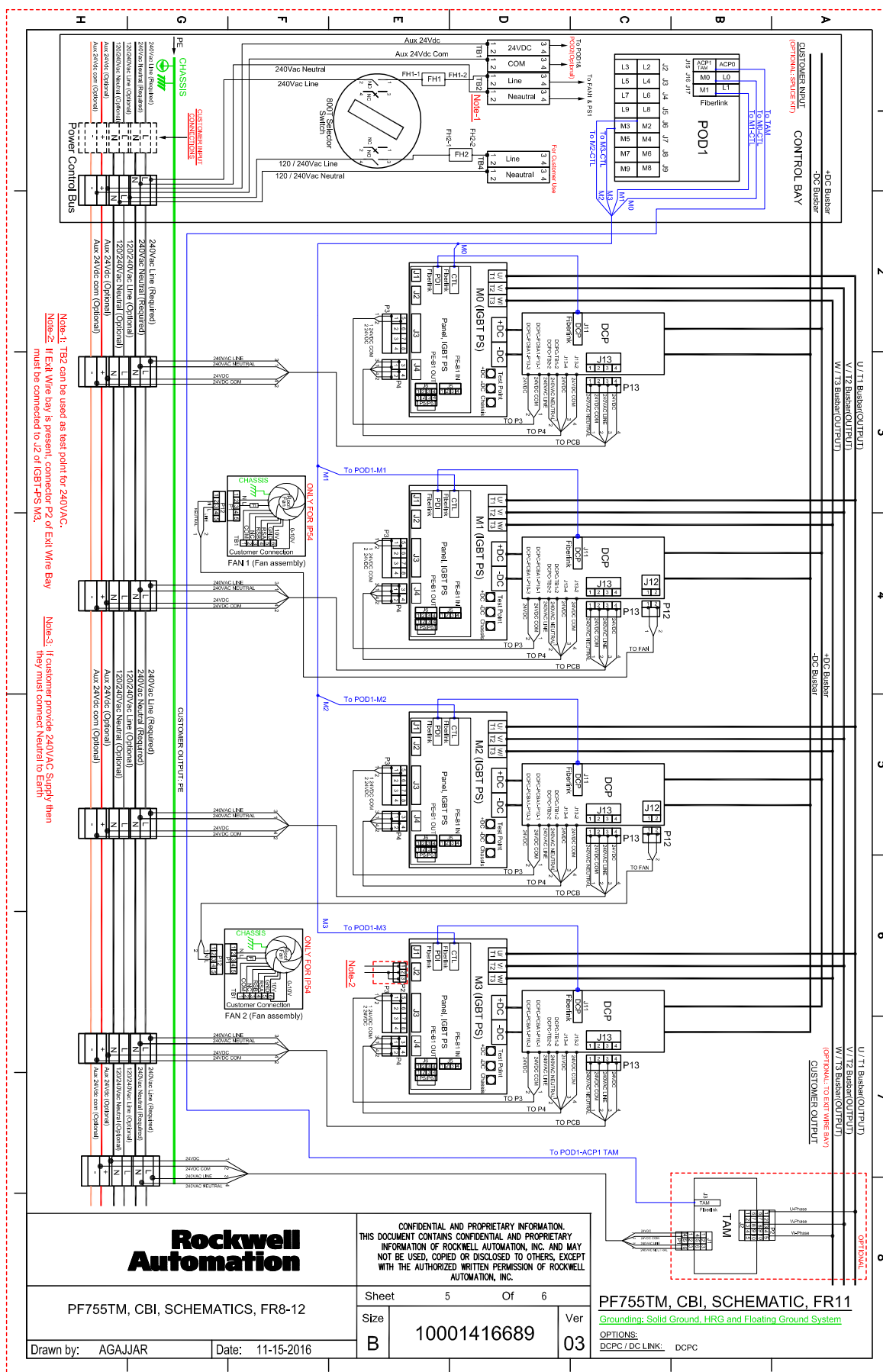


Figure 75. PowerFlex® 755TM Frame 12 Common Bus Inverter with DC Link Fuses

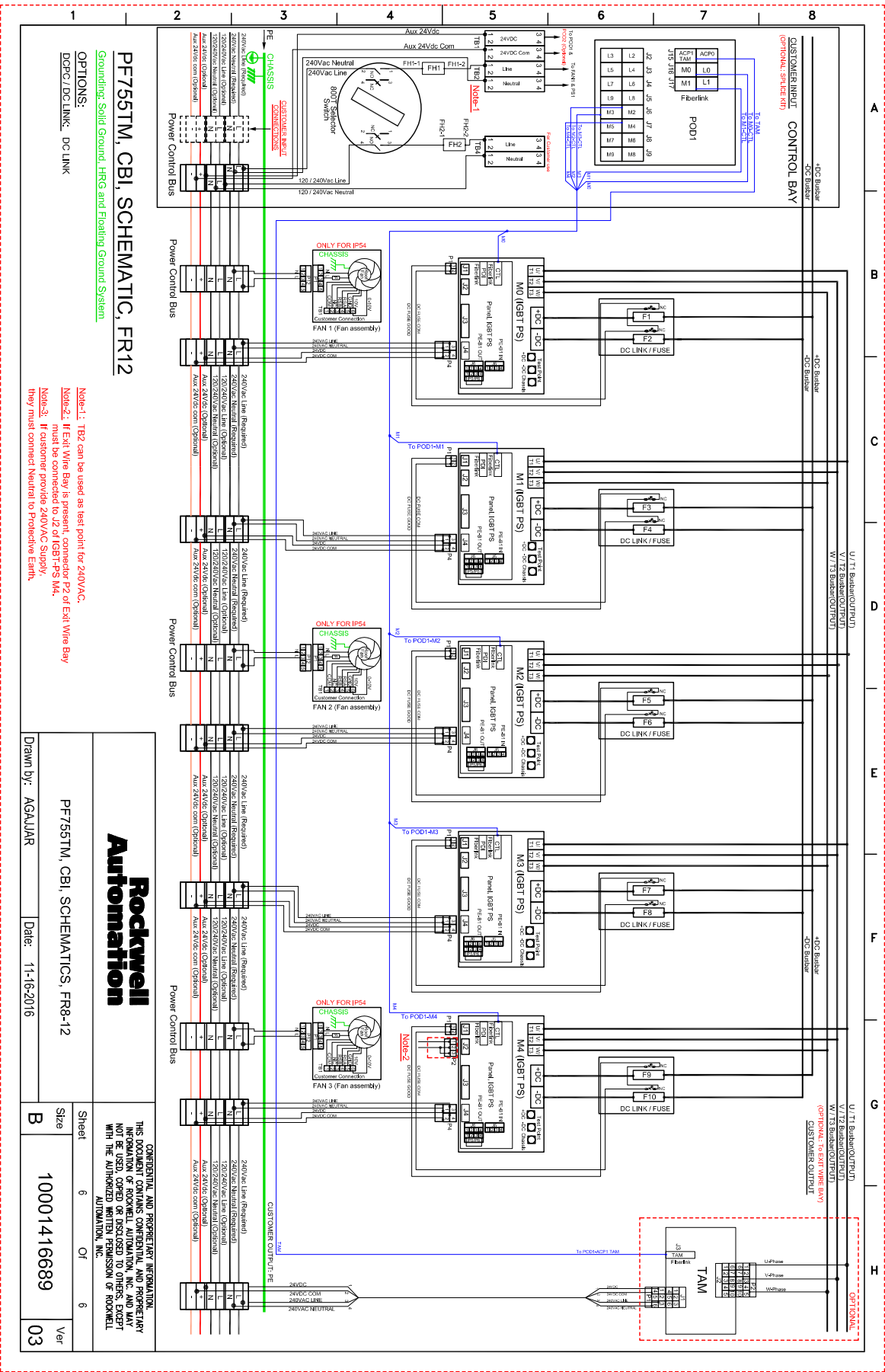
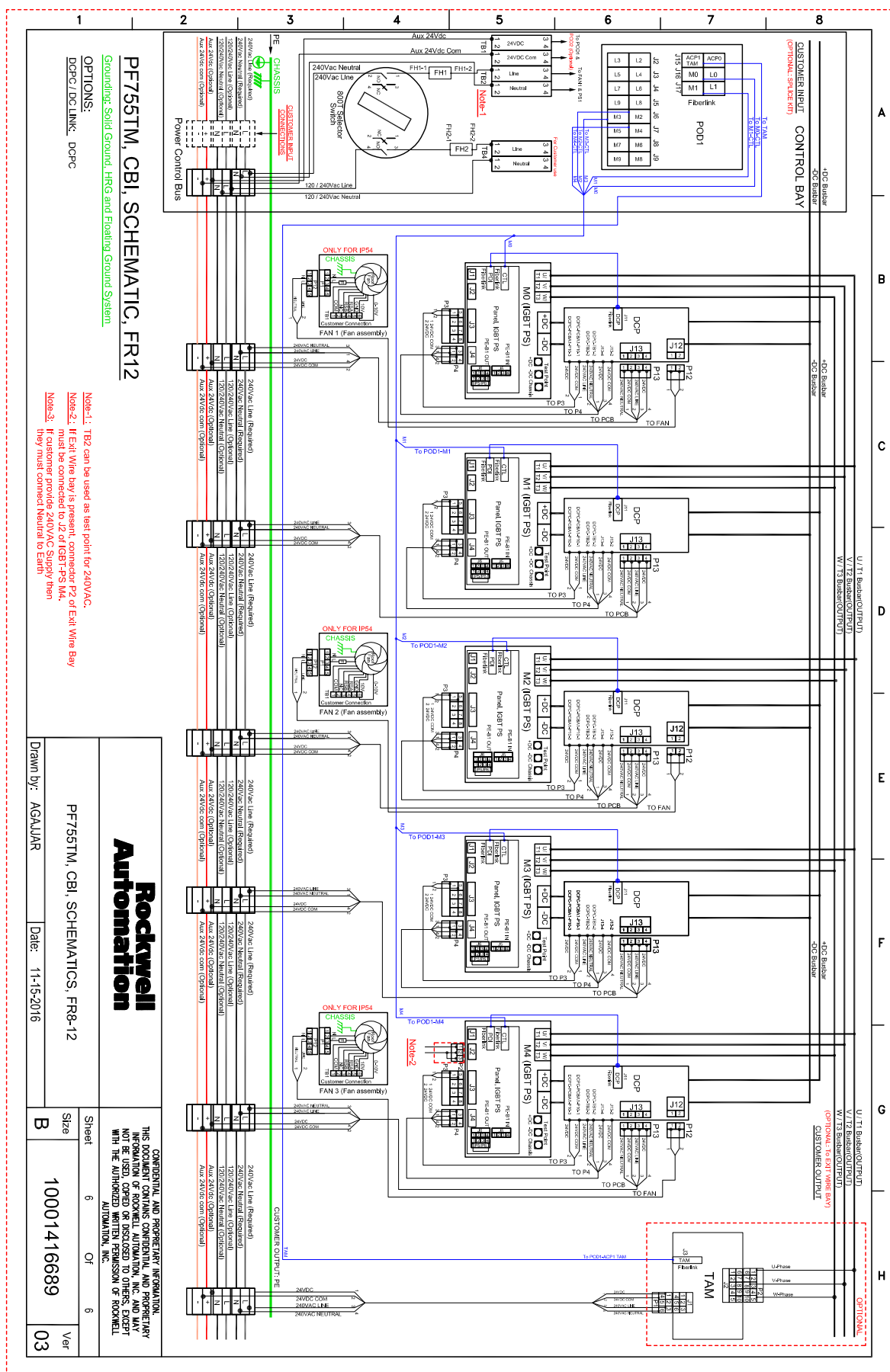
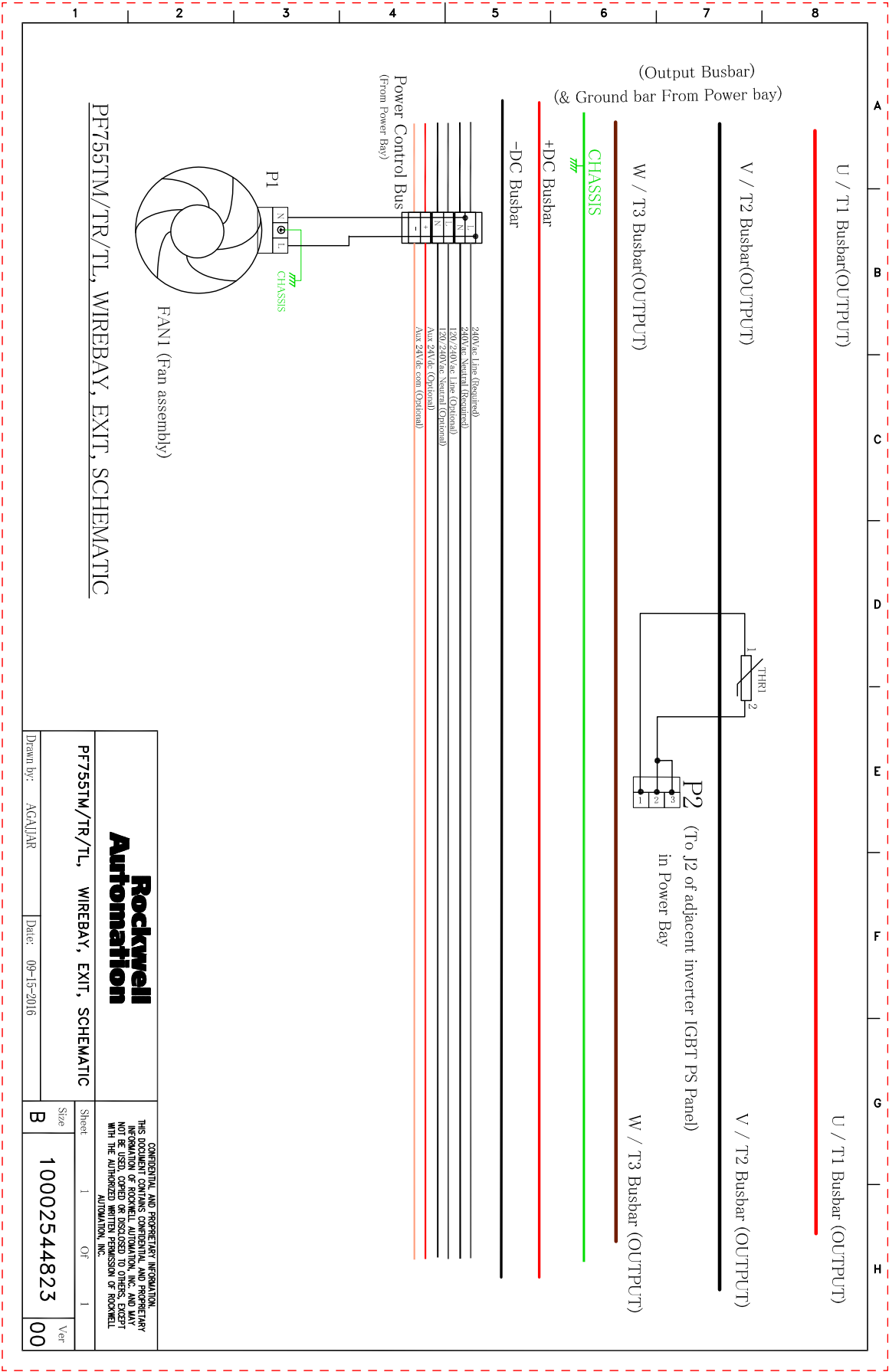


Figure 76. PowerFlex® 755TM Frame 12 Common Bus Inverter with DC Precharge Module



[illegible]

Figure 78. PowerFlex® 755T Exit Wire Bay



Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	rok.auto/pcdc

Documentation Feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental information on its website at rok.auto/pec.

Allen-Bradley, Connected Components Workbench, expanding human possibility, Kinetix, PowerFlex, Rockwell Automation, Studio 5000 Logix Designer, and TotalFORCE are trademarks of Rockwell Automation, Inc.

Trademarks not belonging to Rockwell Automation are property of their respective companies.

Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.    

rockwellautomation.com — expanding **human possibility**®

AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000

EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2663 0600

ASIA PACIFIC: Rockwell Automation SEA Pte Ltd, 2 Corporation Road, #04-05, Main Lobby, Corporation Place, Singapore 618494, Tel: (65) 6510 6608

UNITED KINGDOM: Rockwell Automation Ltd., Pitfield, Kiln Farm, Milton Keynes, MK11 3DR, United Kingdom, Tel: (44)(1908) 838-800