

PowerFlex® 700 Drive Power Interface Board and Switch Mode Power Supply Board Replacement - Frames 7, 8, 9, 10



Installation Instructions



Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls ([publication SGI-1.1](#) available from your local Rockwell Automation sales office or online at <http://literature.rockwellautomation.com>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





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.

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

WARNING 	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
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.
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.

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Introduction

This publication provides guidelines for replacing/installing Power Interface Boards and Switch Mode Power Supply Boards in the PowerFlex 700 drive for Frames 7, 8, 9, and 10. All kits include the board, wrist strap and hardware (if required).

Description	Kit Catalog No.	Notes	Frame			
			7	8	9	10
Power Interface Board	SK-G9-GDB1-D292	292A Drives	X			
	SK-G9-GDB1-D325	325A Drives	X			
	SK-G9-GDB1-D365	365A Drives		X		
	SK-G9-GDB1-D415	415A Drives		X		
	SK-G9-GDB1-D481	481A Drives		X		
	SK-G9-GDB1-D535	535A Drives		X		
	SK-G9-GDB1-D600	600A Drives		X		
	SK-G9-GDB1-D700	730A Drives			X	
	SK-G9-GDB1-D875	875A Drives				X
Switch Mode Power Supply Board	SK-G9-PWRS1-D0		X	X	X	X

The precautions and general installation requirements provided in the PowerFlex 700 Frame 7-10 Installation Instructions (publication 20B-IN014) and the PowerFlex 700 User Manual (publication 20B-UM002) must be followed in addition to those included here.

Recommended Tools

The following list of tools is provided for your reference to disassemble and assemble the drive and components. This list may not be all-encompassing for your situation. Not all tools are needed for some components. Refer to pertinent sections for details.

- Screwdrivers (standard, Phillips, star – various sizes)
- Socket set, metric
- Cylindrical pick-up magnet
- Pliers, needle-nose
- Nylon tie wraps

Safety Precautions

The precautions and general installation requirements provided in the PowerFlex 700 Frame 7-10 Installation Instructions (publication 20B-IN014) and the PowerFlex 700 User Manual (publication 20B-UM002) must be followed in addition to those included here.

ATTENTION



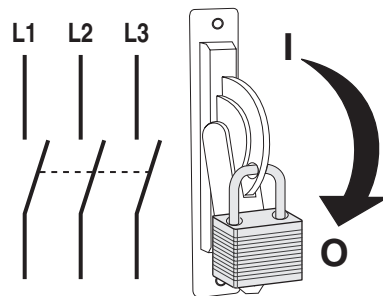
To avoid an electric shock hazard, ensure that all power has been removed before proceeding. In addition, before servicing, verify that the voltage on the bus capacitors has discharged. Check the DC bus voltage at the Power Terminal Block by measuring between the +DC and -DC terminals, between the +DC terminal and the chassis, and between the -DC terminal and the chassis. The voltage must be zero for all three measurements.

Remove power before making or breaking cable connections. When you remove or insert a cable connector with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices, causing unintended machine motion.
- causing an explosion in a hazardous environment.

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

1. Turn off and lock out input power. Wait five minutes.
2. Verify that there is no voltage at the drive's input power terminals.
3. Check the DC bus voltage at the Power Terminal Block by measuring between the +DC and -DC terminals, between the +DC terminal and the chassis, and between the -DC terminal and the chassis. The voltage must be zero for all three measurements.



ATTENTION

This assembly contains parts and sub-assemblies that are sensitive to electrostatic discharge. Static control precautions are required when servicing this assembly. Component damage may result if you ignore electrostatic discharge control procedures. If you are not familiar with static control procedures, reference Allen-Bradley Publication 8000-4.5.2 Guarding Against Electrostatic Damage, or any other applicable ESD protection handbook.

ATTENTION

The information in this publication is merely a guide for proper installation. Rockwell Automation, Inc. cannot assume responsibility for the compliance or the noncompliance to any code (national, local, or otherwise) for the proper installation of this drive or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored.

ATTENTION

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

ATTENTION

HOT surfaces can cause severe burns. **Do not** touch the heatsink surface during operation of the drive. After disconnecting power, allow time for cooling.

ATTENTION

Replace all protective shields before applying power to the drive. Failure to replace protective shields may result in death or serious injury.

Important Initial Steps

Read and follow these statements before performing any service on the drive.

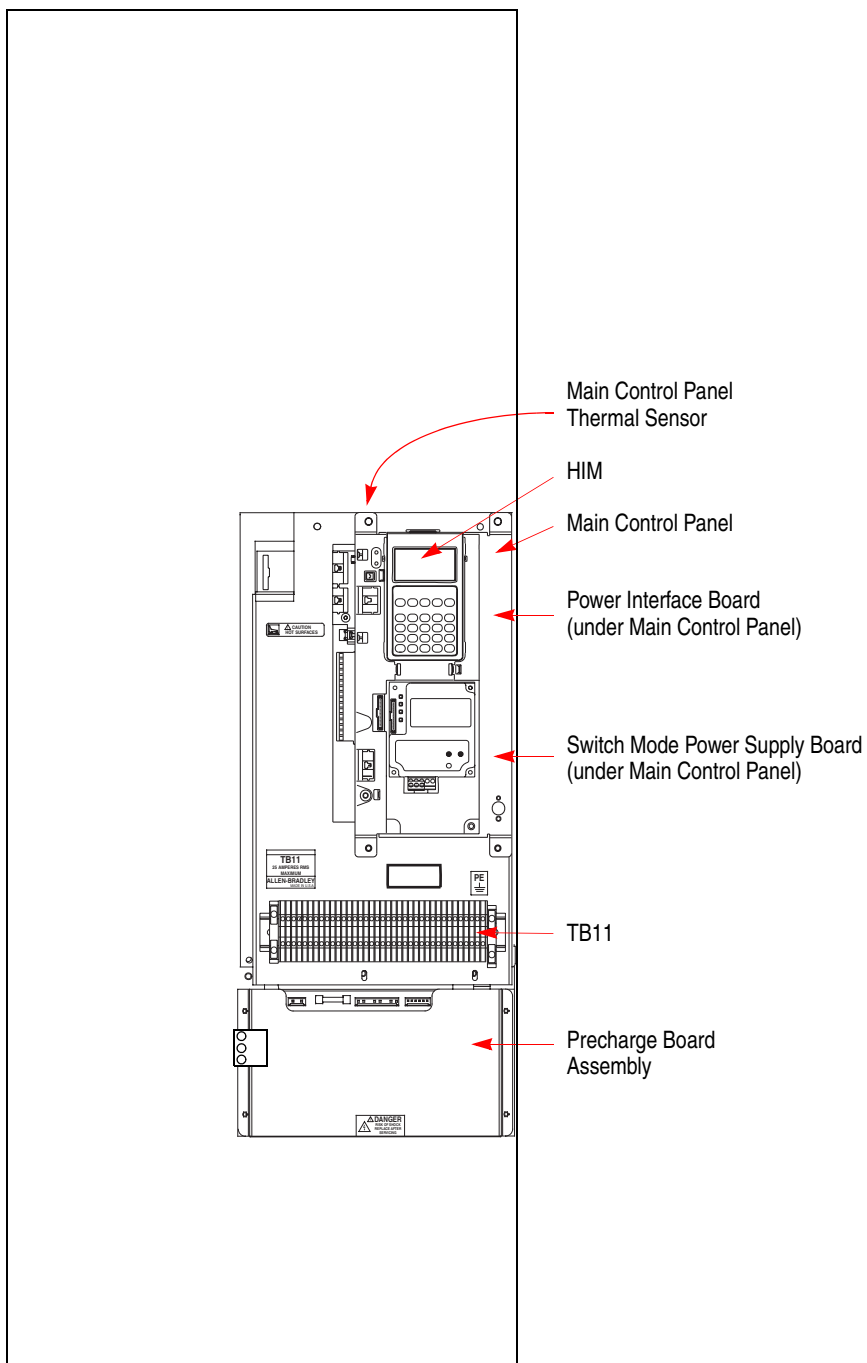
- Read and follow the precautions in [Safety Precautions on page 6](#).
- Identify components to be replaced using the figures in [Component Diagrams on page 9](#).
- Remove protective shields only as necessary.
- Before disconnecting any wire or cable, verify that it is labeled. Also, when removing components, note hardware type and location.
- When torquing any fasteners, use a colored marker or torque seal to mark each fastener after torquing so you know when all are done and to indicate signs of any subsequent tampering.
- Refer to the product installation documentation for startup and other instructions after servicing.

Component Diagrams

Drive Components

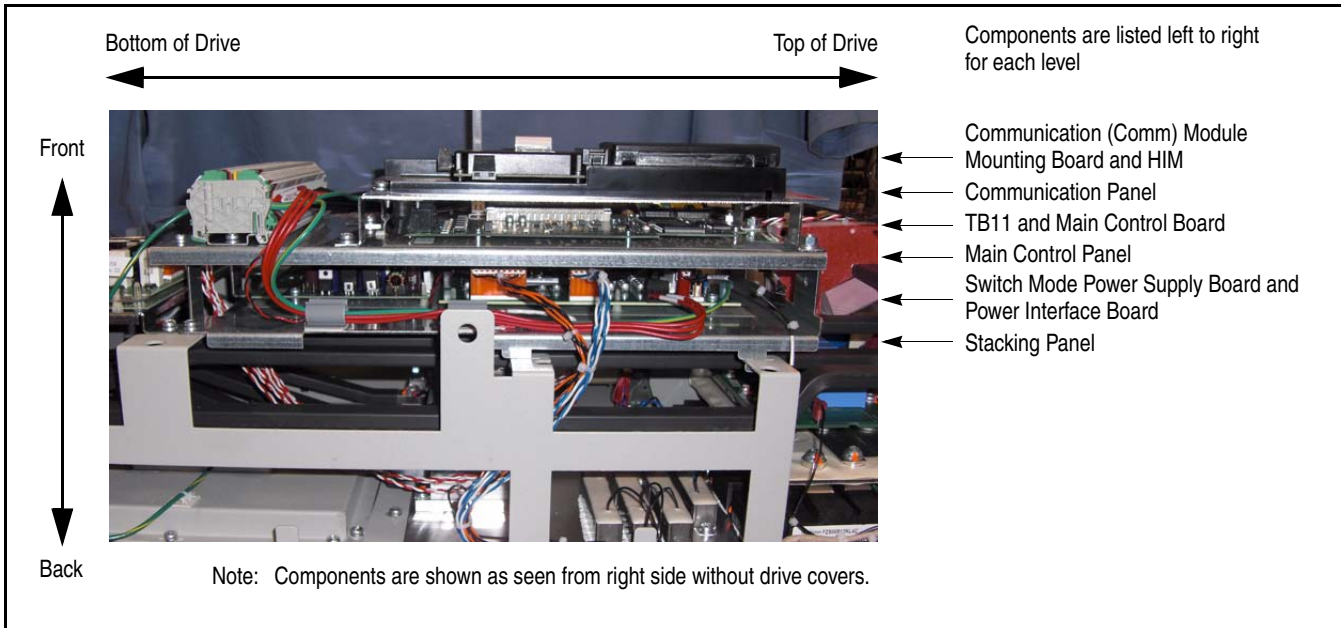
Figure 1 Main Control Panel Assembly - Relative Location

Frame 7 shown



Main Control Panel Assembly

Figure 2 Main Control Panel Assembly (Frame 7 AC input drive shown)



Circuit Boards

Figure 3 Circuit Boards - Frame 7 (AC input drive shown)

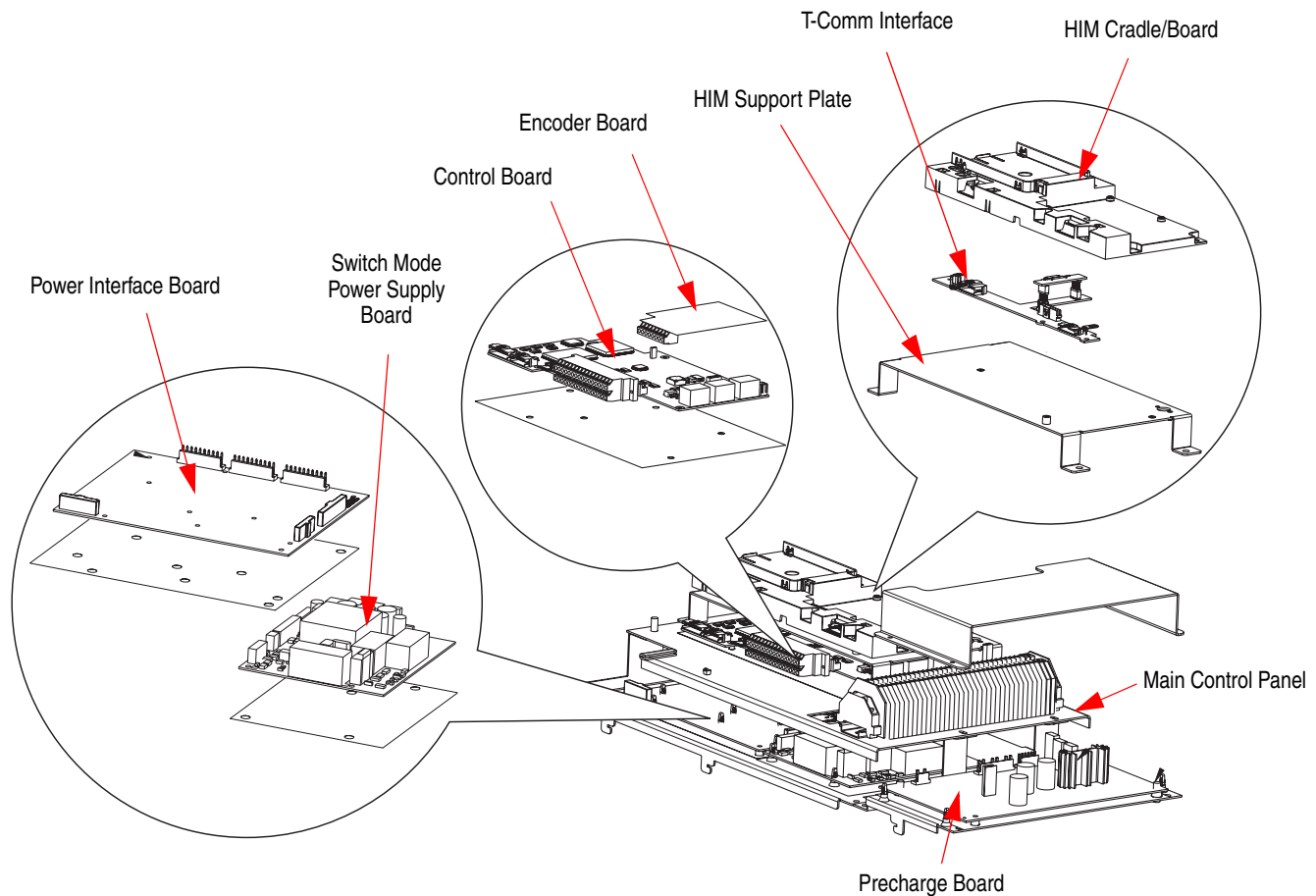


Figure 4 Circuit Boards - Frames 8...10

This diagram indicates the location of all boards on Frames 8...10 except for the Precharge Board on Frame 10.

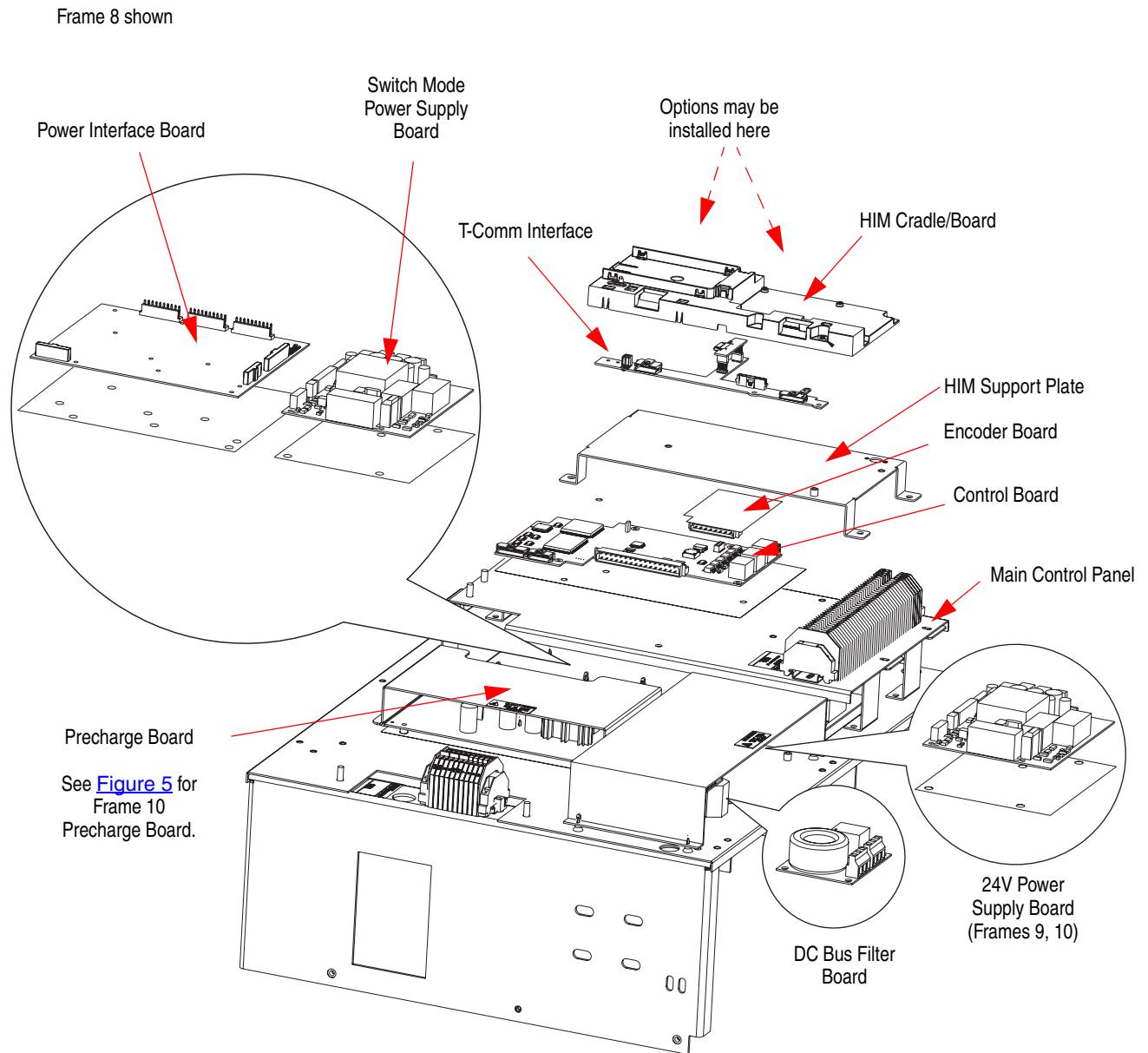
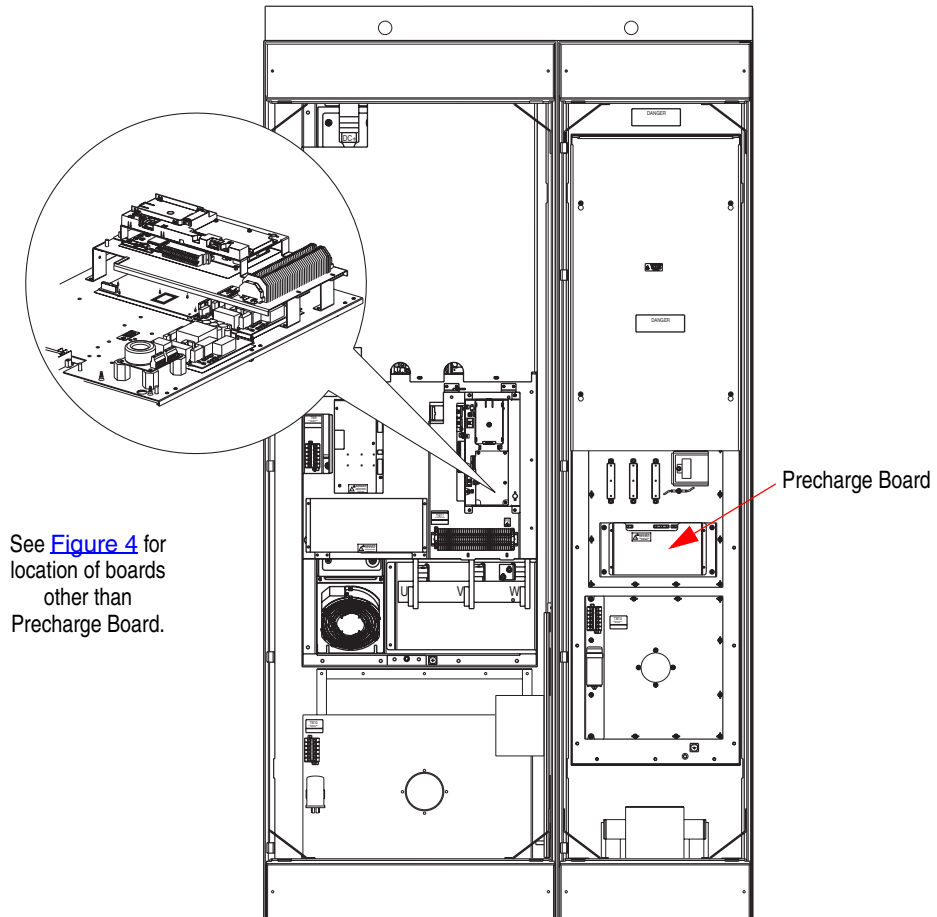


Figure 5 Frame 10 AC Input Circuit Boards

This diagram indicates the location of the Precharge Board on Frame 10 as different from that on Frames 7...9.



Component Replacement Procedures

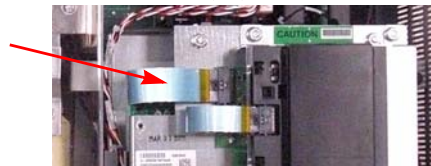
Read and follow the [Safety Precautions on page 6](#) and [Important Initial Steps on page 8](#) for all these instructions.

Refer to the figures in [Component Diagrams on page 9](#) as needed for these instructions.

Remove Main Control Panel Assembly

Perform this procedure **only** when instructed for the component you are replacing.

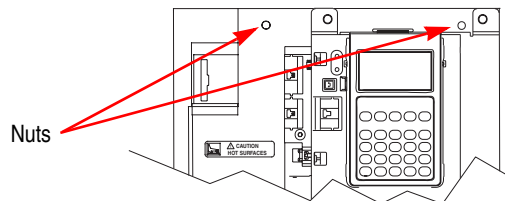
1. Remove safety shields as needed.
2. Remove the ribbon cable going from the Main Control Board (J2) to the Power Interface Board (J1).



3. Remove the two screws and washers on the Main Control Panel below TB11.
4. For Frames 9 and 10: Remove the two screws on the left side of the Main Control Panel assembly.

These screws are larger than those below TB11. Do not mix the two sets.

5. For Frame 7 only: Verify that all wiring to lower side of TB11 is properly labeled and then disconnect wiring from TB11.
6. Remove the two nuts at the top of the Main Control Panel.



7. Remove Main Control Panel; support.
8. Disconnect wire harnesses from TB11 to the Switch Mode Power Supply Board (J4 connector) and at TB1 and TB2 on the Power Interface Board.
9. Label and disconnect all customer wiring from TB11.
10. Carefully set the Main Control Panel aside.

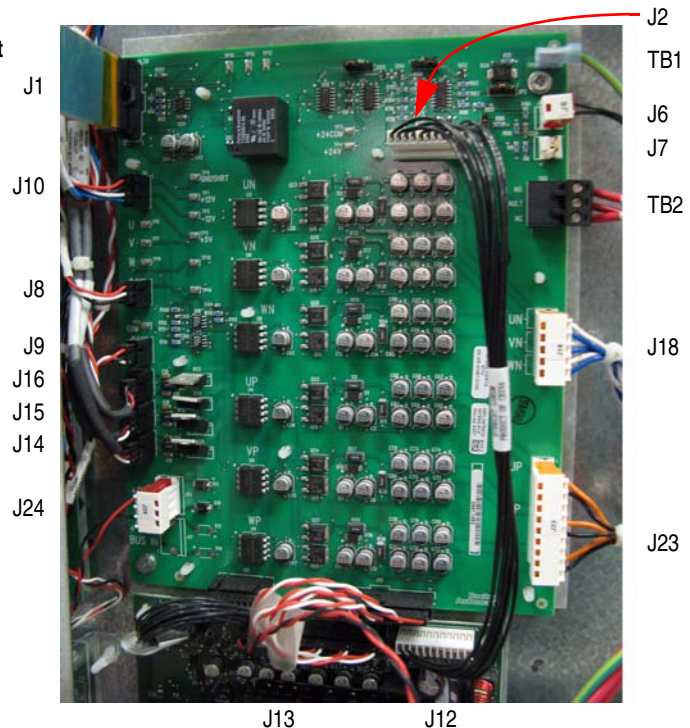
Power Interface Board

Remove Components

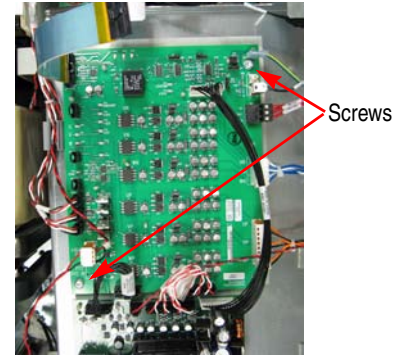
1. Perform [Remove Main Control Panel Assembly on page 13](#).
2. Remove all remaining wiring and cabling from the Power Interface Board as indicated in the table below.

Connector	Frame				Connected Components
	7	8	9	10	
J1	X	X	X	X	Main Control Board
J10	X	X	X		Precharge Board (only on DC input systems)
J8		X	X	X	U Phase Gate Interface Board
J9			X	X	24V Power Supply Board
J16	X	X	X	X	W Phase CT
J15	X	X	X	X	V Phase CT
J14	X	X	X	X	U Phase CT
J24	X	X	X	X	+Bus IN of Power Interface Board to J1 of Precharge Board
J13	X	X	X	X	Switch Mode Power Supply Board
J12	X	X	X	X	Switch Mode Power Supply Board
J23	X	X	X	X	U, V, W positive gates (upper phase)
J18	X	X	X	X	U, V, W negative gates (lower phase)
TB2	X	X	X	X	TB11
J7	X				Monitor Wire to thermal sensors
J6		X	X	X	Monitor Wire to thermal sensors
TB1	X	X	X	X	TB11
J2		X	X	X	Switch Mode Power Supply Board

Frame 9
DC input
shown



3. Remove the two Power Interface Board mounting star screws located at the upper right and lower left corners of the board.
4. Using your fingers or needle-nose pliers, squeeze the wings of each of the nine (9) spacers and separate the Power Interface Board from the mounting plate.
5. Remove the Power Interface Board.



Frame 7 shown

Install Components

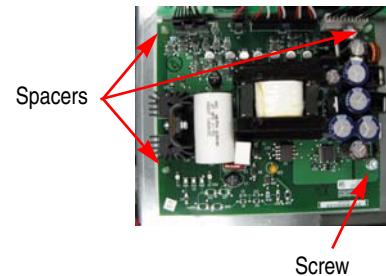
1. Install the new Power Interface Board.
Tighten board screws to 1.7 N-m (15 lb.-in.)
2. Reconnect all wiring except the ribbon cable going from the Power Interface Board (J1) to the Main Control Board (J2).
3. Reinstall the Main Control Panel Assembly.
Tighten sheet metal screws to 3.2 N-m (28 lb.-in.)
4. Reconnect the ribbon cable going from the Power Interface Board (J1) to the Main Control Board (J2).
5. Replace all safety shields and enclosure covers before applying power to the drive.

Switch Mode Power Supply Board

Refer to the figures in [Component Diagrams on page 9](#) for these instructions.

Remove Components

1. Perform [Remove Main Control Panel Assembly on page 13](#).
2. Disconnect all cables (J2, J4, J3, J1) from the Switch Mode Power Supply Board.
3. Remove the Switch Mode Power Supply Board mounting star screw located at the lower right corner of the board.
4. Using your fingers or needle-nose pliers, squeeze the wings of each of the three spacers and separate the Switch Mode Power Supply Board from the mounting plate.
5. Remove the Switch Mode Power Supply Board.



Install Components

1. Install the new Switch Mode Power Supply Board.
Tighten board screws to 1.7 N-m (15 lb.-in.)
2. Reconnect all cables.
3. Reassemble all components in the reverse order of removal.
Tighten sheet metal screws to 3.2 N-m (28 lb.-in.)
4. Reconnect the ribbon cable going from the Power Interface Board (J1) to the Main Control Board (J2).
5. Replace all safety shields and enclosure covers before applying power to the drive.

Notes:

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Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3434 Monday – Friday, 8 a.m. - 5 p.m. EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need to be returned.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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