

Inrush Card Kit for D1h-D8h Drives

Trane TR-200 230 V

1 Overview

1.1 Description

The inrush card kit includes all parts required to replace the inrush card in Trane® TR-200 series D1h–D8h drives.

1.2 Kit Numbers

Use these instructions with the following kits.

Table 1: Inrush Card Kit Numbers

Number	Kit description
176F4063	TR-200 Inrush card 55-160 kW 200–240 V
176F4064	TR-200 Inrush card 110-315 kW 380-500 V
176F4065	TR-200 Inrush card 75-400 kW 525–690 V
176F4066	TR-200 Inrush card rugged 110-315 kW 400V
176F4067	TR-200 Inrush card rugged 75-400 kW 690V

1.3 Items Supplied

The following items are included with the inrush card kits for D1h–D8h drives.

Table 2: Items Supplied with Inrush Card Kits for D1h–D8h Drives

Item	Quantity
Inrush card	1
Standoff (for D1h/D3h/D5h/D6h drives only)	3

1.4 Safety Information

N O T I C E

QUALIFIED PERSONNEL

Only qualified, Trane-authorized personnel are allowed to install the parts described in these installation instructions.

- Disassembly and reassembly of the drive must be done in accordance with the corresponding service guide.

⚠ W A R N I N G ⚠

ELECTRICAL SHOCK HAZARD

Trane® TR-200 series drives contain dangerous voltages when connected to mains voltage. Improper installation, and installing or servicing with power connected, can cause death, serious injury, or equipment failure.

- Only use qualified electricians for the installation.
- Disconnect the drive from all power sources before installation or service.
- Treat the drive as live whenever the mains voltage is connected.
- Follow the guidelines in these instructions and local electrical safety codes.

⚠ W A R N I N G ⚠**DISCHARGE TIME (20 MINUTES)**

The drive contains DC-link capacitors, which can remain charged even when the drive is not powered. High voltage can be present even when the warning LED indicator lights are off. Failure to wait the specified time after power has been removed before performing service or repair work can result in death or serious injury.

- Stop the motor.
- Disconnect AC mains and remote DC-link power supplies, including battery back-ups, UPS, and DC-link connections to other drives.
- Disconnect or lock PM motor.
- Wait for the capacitors to discharge fully. The minimum waiting time is 20 minutes.
- Before performing any service or repair work, use an appropriate voltage measuring device to make sure that the capacitors are fully discharged.

N O T I C E**ELECTROSTATIC DISCHARGE**

To prevent damage to sensitive components, follow proper ESD precautions.

2 Installation in D1h/D3h/D5h/D6h

2.1 Accessing the Inrush Card in D1h/D3h/D5h/D6h Drives

To access the inrush card, use the following steps to remove the listed components from the drive. Refer to [Illustration 1](#). See the service guide for detailed instructions for each component.

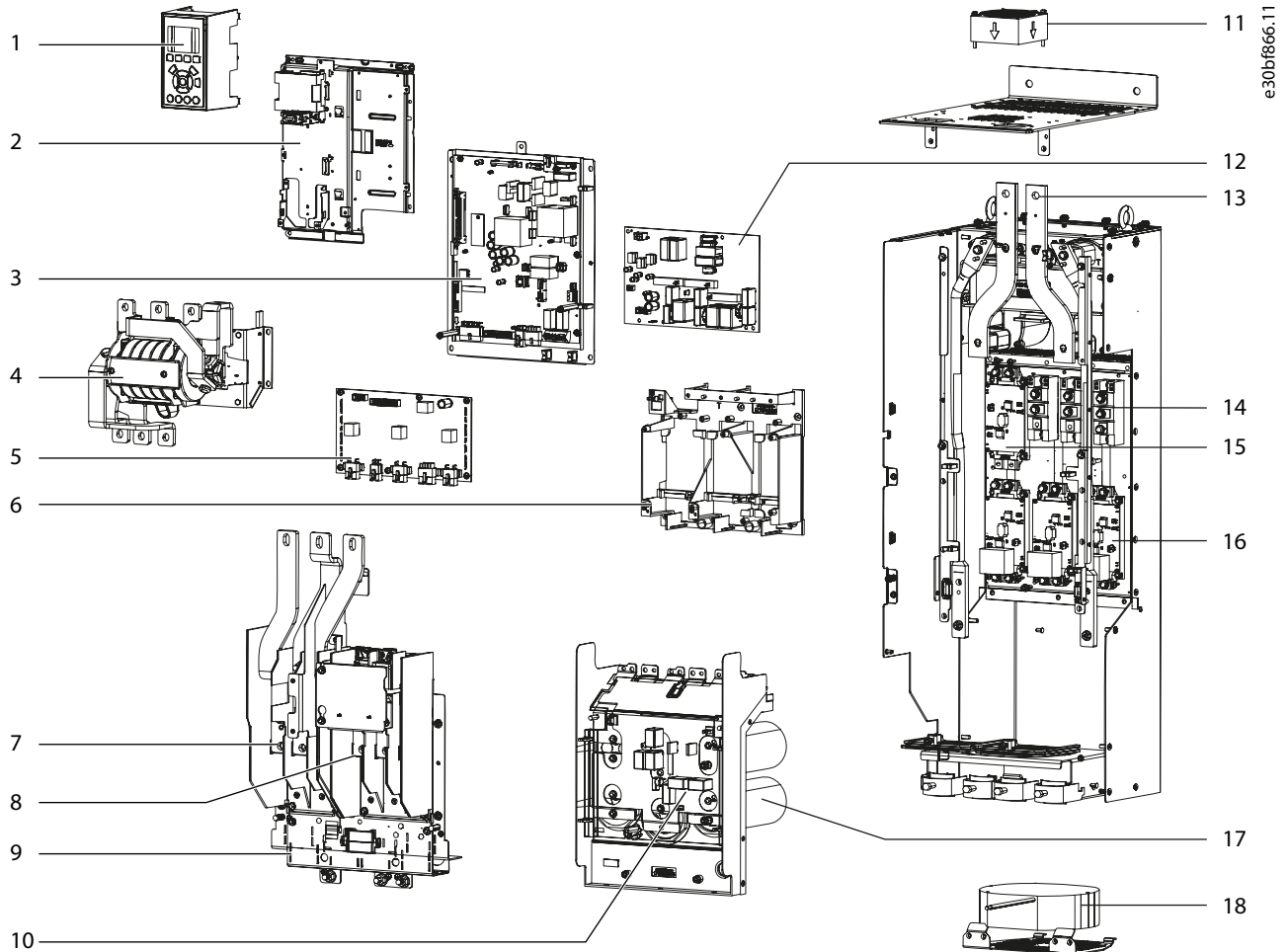


Illustration 1: Exploded View of D3h Drive (D1h/D5h/D6h are similar)

1	Local control panel (LCP) and LCP cradle	10	Balance/high frequency card
2	Control card mounting plate	11	Top fan (IP 20 only)
3	Power card mounting plate	12	Inrush card
4	Gatedrive card	13	DC inductor
5	RF1 filter (optional)	14	SCR/diode modules
6	Gatedrive card support bracket	15	Brake IGBT module (optional)
7	Mains input terminal block	16	IGBT modules
8	Motor terminal block	17	Capacitor bank
9	Power terminal mounting plate	18	Heat sink fan

Procedure

1. Remove the control card mounting plate.
2. Remove the power card mounting plate.

3. Remove the AC input busbars and any input options present, such as RFI filter or mains fuses.
4. Remove the mains input terminal block and EMC shield.
5. Remove the brake terminals, if present.
6. Remove the motor terminal block.
7. Remove the power terminal mounting plate.
8. Remove the DC bus rails.

2.2 Removing the Inrush Card in D1h/D3h/D5h/D6h Drives

To remove the inrush card, use the following steps. Refer to [Illustration 2](#).

Procedure

1. Unplug the cables from the following connectors on the inrush card:
 - a. MK1800
 - b. MK1802
2. Remove 5 screws (T20) from the inrush card.
3. Remove the inrush card and discard it.

Example

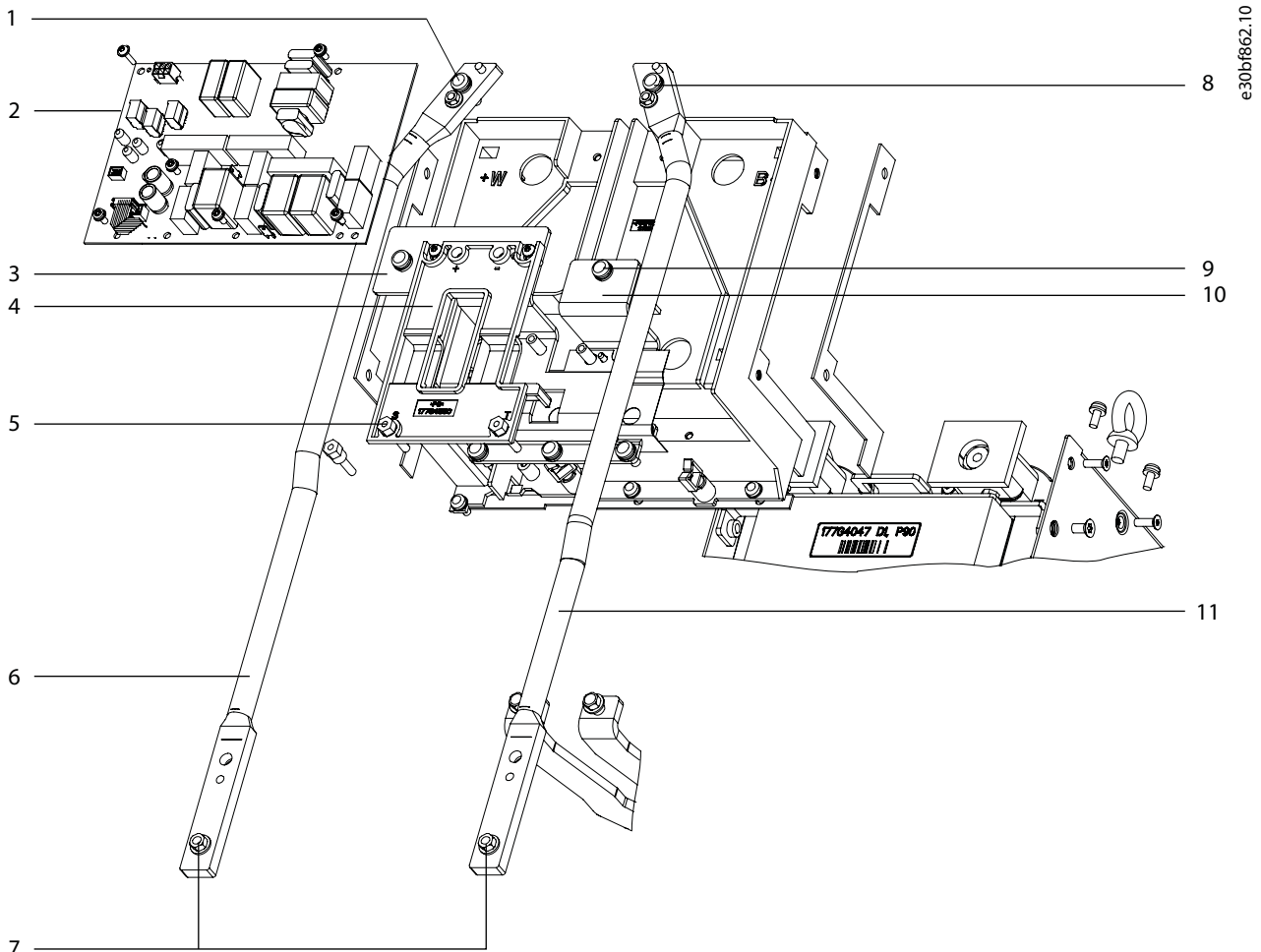


Illustration 2: Inrush Card and DC Bus Rails

1	Screw (T30)	7	Nut (10 mm)
2	Inrush card	8	Screw (T30)
3	DC(+) busbar	9	Screw (T30)
4	Inrush support bracket	10	DC(+)
5	Standoff (11 mm)	11	DC(-) busbar DC coil to capacitor bank
6	DC coil to capacitor bank DC(-) busbar	-	-

2.3 Replacing the Standoffs in D1h/D3h/D5h/D6h Drives

NOTICE

STANDOFF REPLACEMENT

Only D1h/D3h/D5h/D6h drives require replacement of the standoffs. For all other drives, use the installed standoffs.

After removing the inrush card, compare the standoffs installed in the drive to the standoffs in [Illustration 3](#). If the drive contains old standoffs, replace them with the new standoffs included in the kit. To replace the standoffs, use the following steps.

Procedure

1. Remove 3 standoffs (11 mm), 1 from each SCR input busbar.
2. Fasten 3 new standoffs (11 mm), 1 in each SCR busbar. Torque to 2.3 Nm (20 in-lb).

Example

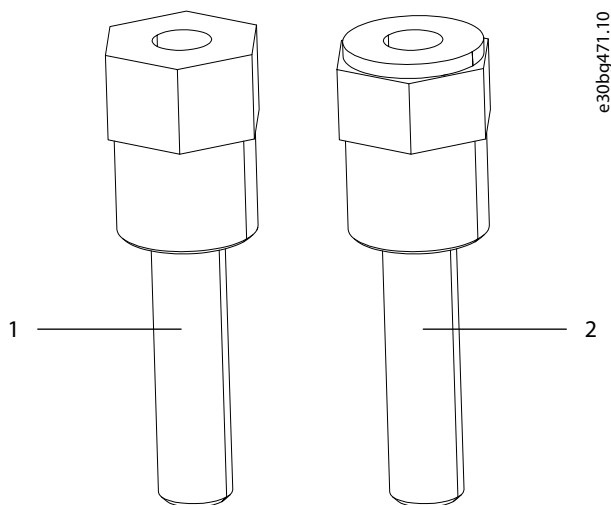


Illustration 3: Standoff Replacement

1	Old standoff
2	New standoff (included in kit)

2.4 Installing the Inrush Card in D1h/D3h/D5h/D6h Drives

To install the new inrush card, use the following steps. Refer to [Illustration 2](#).

Procedure

1. Place the new inrush card in the drive.
2. Fasten 5 screws (T20) in the inrush card.
3. Plug the cables to the following connectors on the inrush card:
 - a. MK1800
 - b. MK1802

2.5 Reassembling the D1h/D3h/D5h/D6h Drive

After installing the new inrush card and standoffs, replace the following components in the drive. Refer to [Illustration 1](#). See the service guide for detailed instructions for each step.

Procedure

1. Replace the DC bus rails.
2. Replace the power terminal mounting plate.
3. Replace the motor terminal block.
4. Replace the optional brake terminals, if present.
5. Replace the mains input terminal block and EMC shield.
6. Replace the AC input busbars and any power options, such as RFI filter or mains fuses.
7. Replace the power card mounting plate.
8. Replace the control card mounting plate.

3 Installation in D2h/D4h/D7h/D8h

3.1 Accessing the Inrush Card in D2h/D4h/D7h/D8h Drives

To access the inrush card, use the following steps to remove components from the drive. Refer to [Illustration 4](#). See the service guide for detailed instructions for each component.

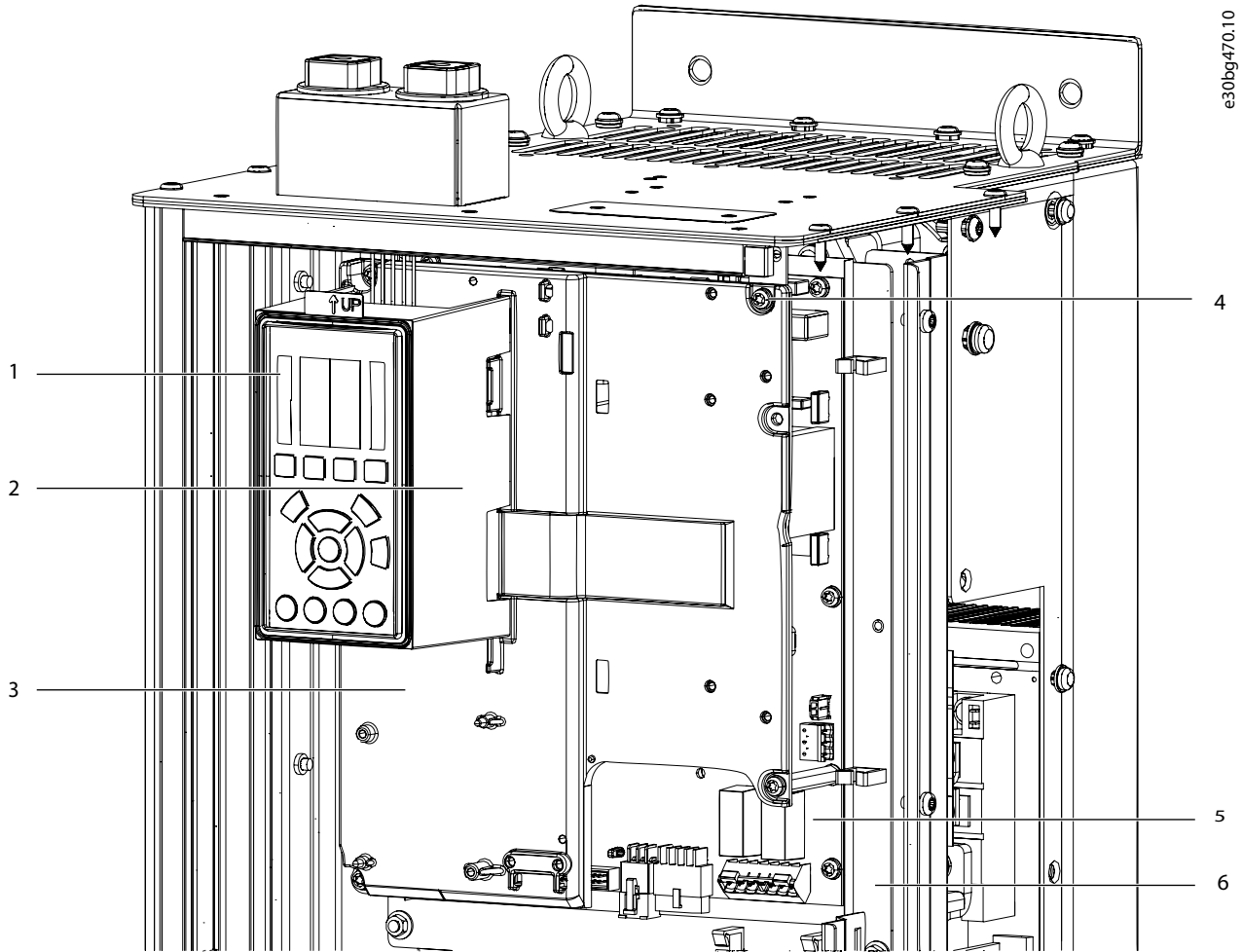


Illustration 4: Control Card Mounting Plate and Power Card Mounting Plate

1	Local control panel (LCP)	4	Screw (T20)
2	LCP cradle	5	Power card
3	Control card mounting plate	6	Power card mounting plate

Procedure

1. Remove the control card mounting plate.
2. Remove the power card mounting plate.

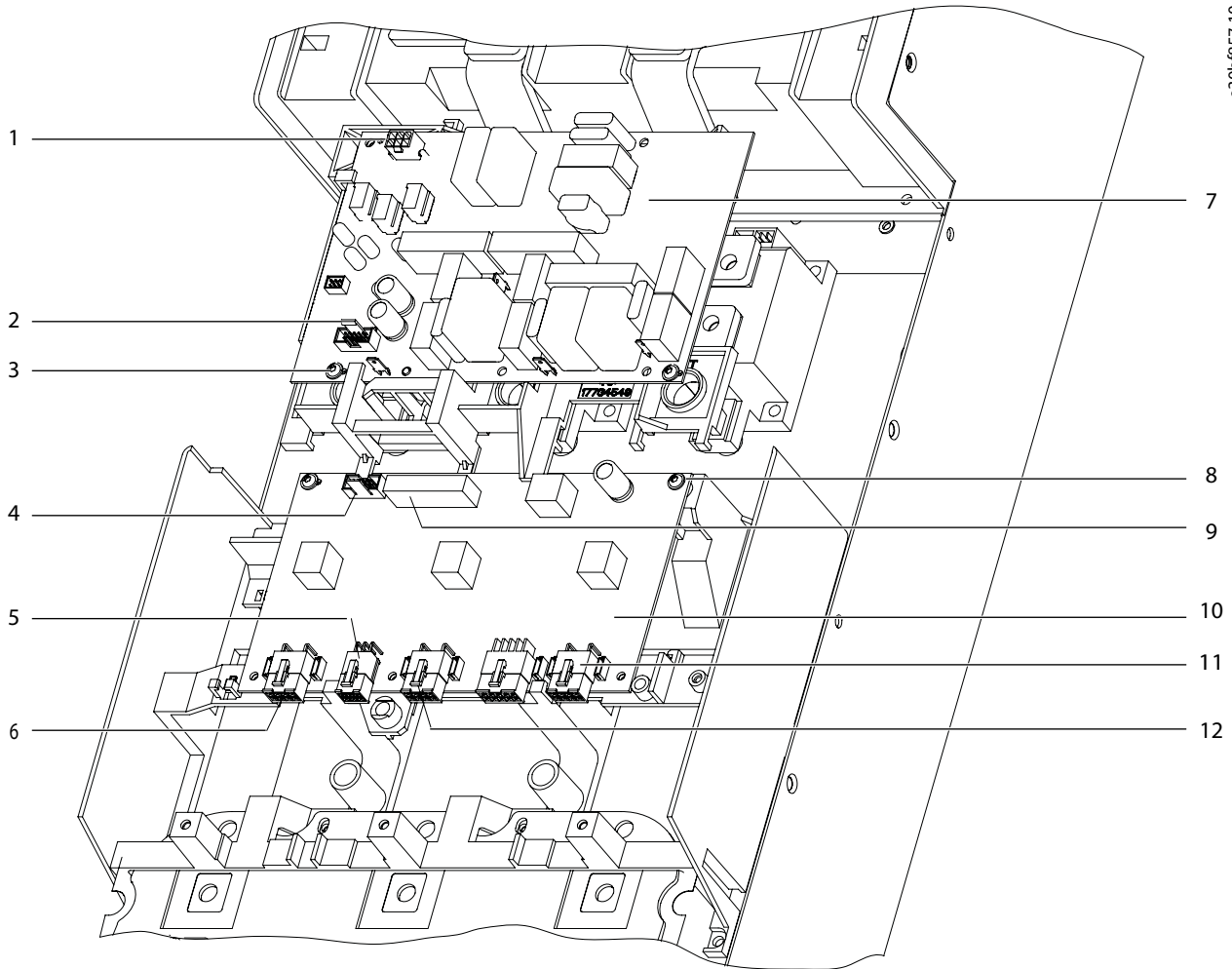
3.2 Removing the Inrush Card from D2h/D4h/D7h/D8h Drives

To remove the inrush card, use the following steps. Refer to [Illustration 5](#).

Procedure

1. Unplug the cable from the inrush card connector MK1802.
2. Remove 2 thread-forming screws (T20).
3. Remove 5 screws (T20) from the inrush card.
4. Remove the inrush card and discard it.

Example



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Illustration 5: Inrush Card and Gatedrive Card

1	MK1802	7	Inrush card
2	MK1800	8	Screw (T20)
3	Screw (T20)	9	MK101
4	MK102	10	Gatedrive card
5	MK100	11	MK201
6	MK501	12	MK601

3.3 Installing the Inrush Card in D2h/D4h/D7h/D8h Drives

To install the inrush card, use the following steps. Refer to [Illustration 5](#).

Procedure

1. Position the inrush card in the drive.
2. Secure 5 screws (T20) in the inrush card.
3. Secure 2 thread-forming screws (T20).
4. Connect the cable to the inrush card connector MK1802.

3.4 Reassembling the D2h/D4h/D7h/D8h Drive

After installing the new inrush card, replace the following components in the drive. Refer to [Illustration 4](#). See the service guide for detailed instructions for each component.

Procedure

1. Replace the power card mounting plate.
2. Replace the control card mounting plate.

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