NF/NFOM Panelboards
Information Manual
Class 1670

Instruction Bulletin

80043-741-01

Retain in the directory card pocket for future use.

SQUARE D

by Schneider Electric

HAZARD CATEGORIES AND SPECIAL SYMBOLS

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

CAUTION

CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, can result in property damage.

Provides additional information to clarify or simplify a procedure.

PLEASE NOTE Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

ENGLISH

TABLE OF CONTENTS

Introduction 7
Safety Precautions. 7
Installation 8
Interior Mounting for Square D Brand Enclosures 8
Surface Mounting (Enclosure Mounted on Wall) 9
Flush Mounting (Enclosure Recessed in Wall) 9
Neutral Bonding Strap Installation 11
125 A or 250 A Maximum NF Panelboards 12
400 A or 600 A Maximum NF Panelboards 13
800 A Maximum NF Panelboards 14
ECB, EDB, EGB, and EJB Circuit Breaker Installation and Removal 15
ECB, EDB, EGB, and EJB Circuit Breaker Installation 15
ECB, EDB, EGB, and EJB Circuit Breaker Removal 16
Circuit Breaker Reset Instructions 17
Interior Trim Preparation 18
Appendix 1: Specifications 19
Typical Wiring 19
Integral Main or Sub-Feed
(FI, KI, H, J, LA, LC, LH, EDB, EGB, EJB) 19
Panelboard Ratings 24
Short Circuit Current Rating for Main Lug Interiors with
Sub-Feed or Feed-Through Lugs 25
CE Marking 25
Appendix 2: Accessory Kits 26
Equipment Ground Bar Kits 27
Sub-Feed Lug Kits 125–400 A Panelboards 27
Main Lug Kits 28

© 2008 Schneider Electric All Rights Reserved

ENGLISH

© 2008 Schneider Electric All Rights Reserved

ENGLISH

LIST OF FIGURES

Figure 1: Interior Mounting of Square D Brand Enclosures 10
Figure 2: Bonding Strap Installation — 125 A or 250 A Maximum NF Panelboards 12
Figure 3: Bonding Strap Installation — 400 A or 600 A Maximum NF Panelboards 13
Figure 4: Bonding Strap Installation — 800 A Maximum NF Panelboards 14
Figure 5: ECB, EDB, EGB, and EJB Circuit Breaker Installation and Removal . . 16
Figure 6: Circuit Breaker Handle Positions 17
Figure 7: Interior Trim Diagram 18
Figure 8: NF/NFOM 125–250 A Main Lugs or Main Breaker Diagram 20
Figure 9: NF 400–800 A Main Lugs or Main Circuit Breaker with or without Feed-Through Lugs Diagram 21
Figure 10: NF 400–800 A Main Circuit Breaker with Feed-Through Lugs or Sub-Feed Circuit Breakers Diagram 22
Figure 11: Typical NF Panelboard with Split Bus Diagram 23

© 2008 Schneider Electric All Rights Reserved

ENGLISH

LIST OF TABLES

Table 1: Panelboard Typical Wiring 19
Table 2: Series Connected Breaker Ratings (RMS Symmetrical) 24
Table 3: Equipment Ground Bar Kits Specifications 27
Table 4: Sub-Feed Lugs kits for 125–400 A Panelboard Applications 27
Table 5: Mechanical Lug Kits — Aluminum 28
Table 6: Mechanical Lug Kits — Copper 28
Table 7: Versa-Crimp® Compression Lug Kits — Aluminum 29
Table 8: Versa-Crimp® Compression Lug Kits — Copper 29

© 2008 Schneider Electric All Rights Reserved

ENGLISH

Introduction

This bulletin contains instructions for installing Square D® brand NF and NFOM circuit breaker panelboards. These panelboards are Underwriters Laboratories (cULus) listed and accept ECB, EDB, EGB, and EJB branch circuit breakers.

For technical support on the installation of this panelboard, contact the Square D/Schneider Electric Customer Information Center at 1-888-SquareD (1-888-778-2733).

See the labels on the equipment for rating and safety information. Additional equipment labels are provided with this document.

Safety Precautions

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Read and understand this entire instruction bulletin and the included NEMA PB 1.1 standards publication before installing, operating, or maintaining this equipment.
- Local codes vary, but are adopted and enforced to promote safe electrical installations. A permit may be needed to do electrical work, and some codes may require an inspection of the electrical work.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly-rated voltage sensing device to confirm all power is off.
- Replace all devices, doors and covers before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

© 2008 Schneider Electric All Rights Reserved

ENGLISH

Installation

This section provides instructions for the following NF/NFOM panelboard procedures:

- "Interior Mounting for Square D Brand Enclosures" on page 8
- "Neutral Bonding Strap Installation" on page 11
- "ECB, EDB, EGB, and EJB Circuit Breaker Installation and Removal" on page 15
- "Circuit Breaker Reset Instructions" on page 17
- "Interior Trim Preparation" on page 18

Interior Mounting for Square D Brand Enclosures

A separate standards publication, titled "General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less" (NEMA PB1.1), has been provided with this equipment. Familiarize yourself with the content of this document before proceeding with any of the following procedures.

If you did not receive a copy of this document, or if you have any questions regarding this equipment, contact your local distributor or Schneider Electric representative.

CAUTION

HAZARD OF EQUIPMENT DAMAGE

- Ensure all connections are properly tightened.
- Refer to the torque information label provided on the panelboard before tightening the connections.

Failure to follow these instructions can result in equipment damage.

To properly mount and install the NF/NFOM panelboard interior, please refer to the NEMA PB 1.1 standards publication, and follow the instructions below for either "Surface Mounting (Enclosure Mounted on Wall)" or "Flush Mounting (Enclosure Recessed in Wall)."

© 2008 Schneider Electric All Rights Reserved

Surface Mounting (Enclosure Mounted on Wall)

1. Mount the enclosure as instructed in the NEMA PB 1.1 standards publication.
2. Remove the interior trim from the trim brackets.
3. Install the interior as described below:
   a. Thread the provided elevating nuts on the enclosure studs.
   b. Set the interior on the enclosure studs. (See Figure 1 on page 10).
   c. Tighten the flange nuts against the interior side rails until the rails are against the back of the enclosure.
   d. Remount the interior trim after wiring.
4. If used as service entrance equipment, neutral bonding is required. See the “Neutral Bonding Strap Installation” instructions on page 11.
5. Apply equipment labels (located in the bag assembly) as directed by the instructions on the back of the equipment label sheet.

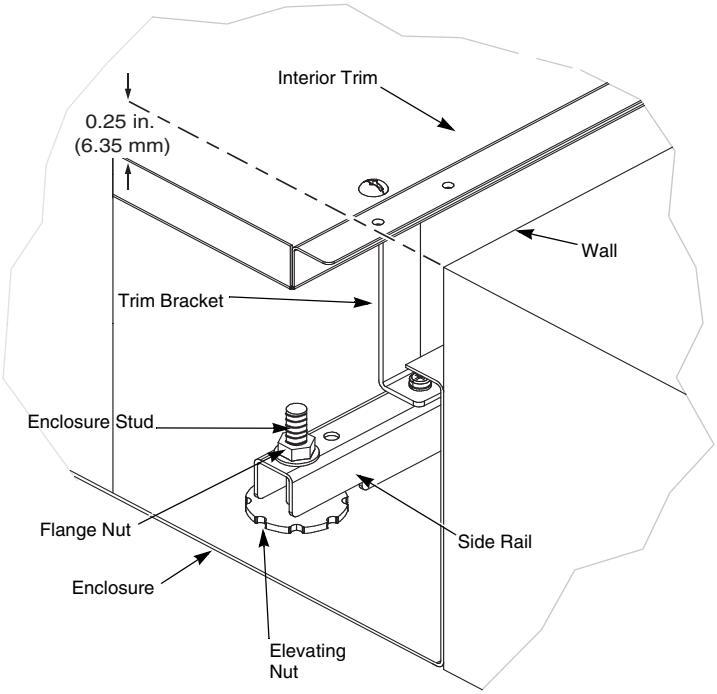
Flush Mounting (Enclosure Recessed in Wall)

1. Mount the enclosure as instructed in the NEMA PB 1.1 standards publication.
2. Remove the interior trim from the trim brackets.
3. Install the interior as described below:
   a. Thread the provided elevating nuts on the enclosure studs.
   b. Set the interior on the enclosure studs (see Figure 1 on page 10). Place the flange nuts onto the enclosure studs, but do not tighten.
   c. Adjust the elevating nuts so that the lip of the interior trim is approximately 0.25 inches (6.35 mm) from wall line.
   d. Tighten the flange nuts against the side rails.
   e. Remount the interior trim after wiring.
4. If used as service entrance equipment, neutral bonding is required. See the “Neutral Bonding Strap Installation” instructions on page 11.
5. Apply equipment labels (located in the bag assembly) as directed by the instructions on the back of the equipment label sheet.

© 2008 Schneider Electric All Rights Reserved

ENGLISH

Figure 1: Interior Mounting of Square D Brand Enclosures



© 2008 Schneider Electric All Rights Reserved

Neutral Bonding Strap Installation

The neutral bonding strap should be used only when the panelboard is **installed** as service equipment.

To properly bond the neutral to the panelboard, follow the instructions for either “125 A or 250 A Maximum NF Panelboards”, “400 A or 600 A Maximum NF Panelboards”, or “800 A Maximum NF Panelboards” below, and on pages 12–14.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Turn off all power supplying this equipment before working on or inside the equipment.
- The main bonding strap should be used only when the panelboard is installed as service equipment.
- Do not mix the mounting screws with the interior trim screws.

Failure to follow these instructions will result in death or serious injury.

NOTE: The bonding strap parts are found in the bag assembly provided with the interior.

© 2008 Schneider Electric All Rights Reserved

ENGLISH

125 A or 250 A Maximum NF Panelboards

To install a neutral bonding strap on a 125 A or 250 A maximum NF panelboard, refer to Figure 2 and follow the instructions below.

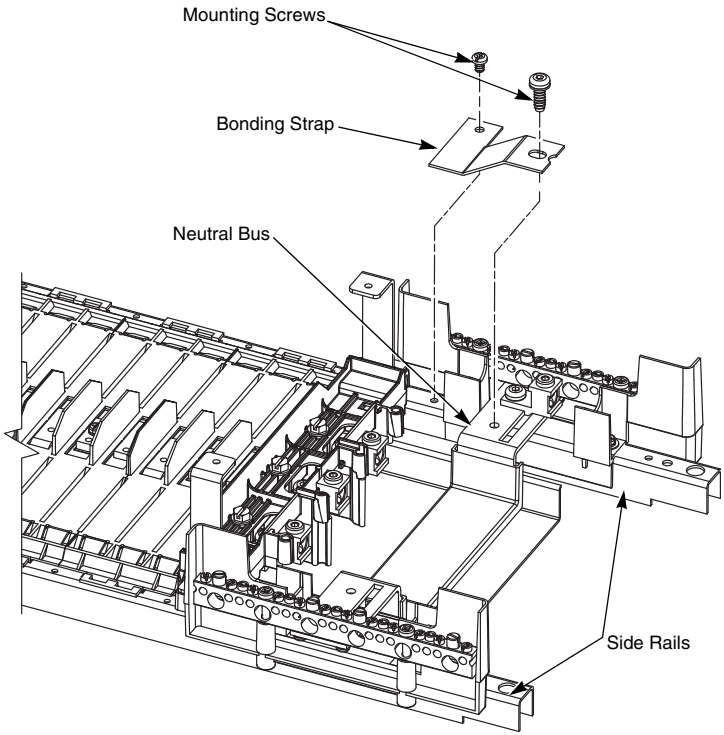
1. Align the bonding strap on the side rail, as pictured.

   NOTE: For some applications, it may be necessary to remove the lug (not pictured) before installing the bonding strap.

2. Insert the two mounting screws, as pictured. Tighten the 10-32 screw to 10–12 lb-in (1.1–1.4 N•m) and the 1/4-20 screw to 25–30 lb-in (2.8–3.4 N•m).

   NOTE: If the lug was removed in Step 1, reinstall it on top of the bonding strap. Use the 1/4-20 x 3/4 in. mounting screw. Lug mounting screws are provided in the bonding strap bag assembly.

Figure 2: Bonding Strap Installation — 125 A or 250 A Maximum NF Panelboards



© 2008 Schneider Electric All Rights Reserved

ENGLISH

400 A or 600 A Maximum NF Panelboards

To install a neutral bonding strap on a 400 A or 600 A maximum NF panelboard, refer to Figure 3 and follow the instructions below.

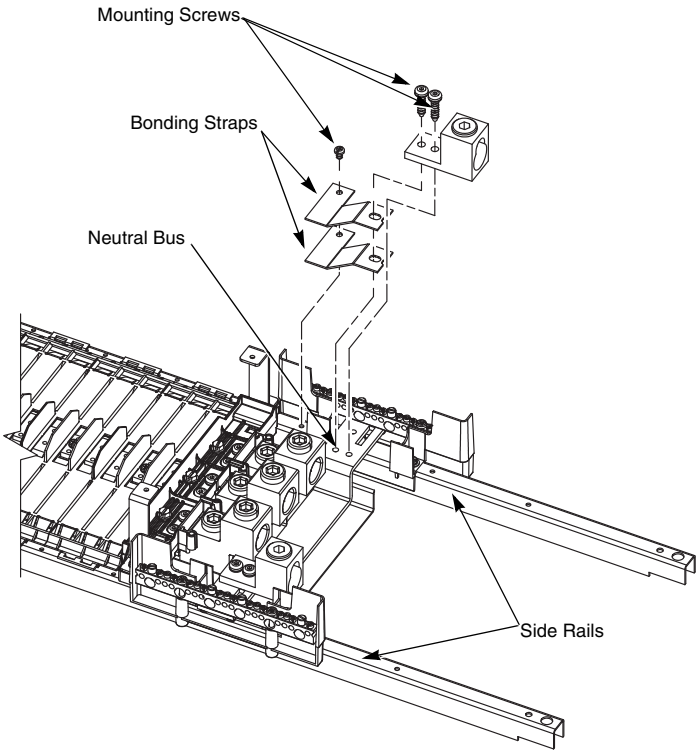
1. Align the two bonding straps on the side rail, as pictured.

   NOTE: For some applications, it may be necessary to remove the lug before installing the bonding strap.

2. Insert the three mounting screws, as pictured. Tighten the 10-32 screw to 10–12 lb-in (1.1–1.4 N•m) and the two 1/4-20 screws to 60–65 lb-in (6.8–7.3 N•m).

   NOTE: If the lug was removed in Step 1 above, reinstall it on top of the bonding strap. Use the 1/4-20 x 1 1/8 in. mounting screws. Lug mounting screws are provided in the bonding strap bag assembly.

Figure 3: Bonding Strap Installation — 400 A or 600 A Maximum NF Panelboards



© 2008 Schneider Electric All Rights Reserved

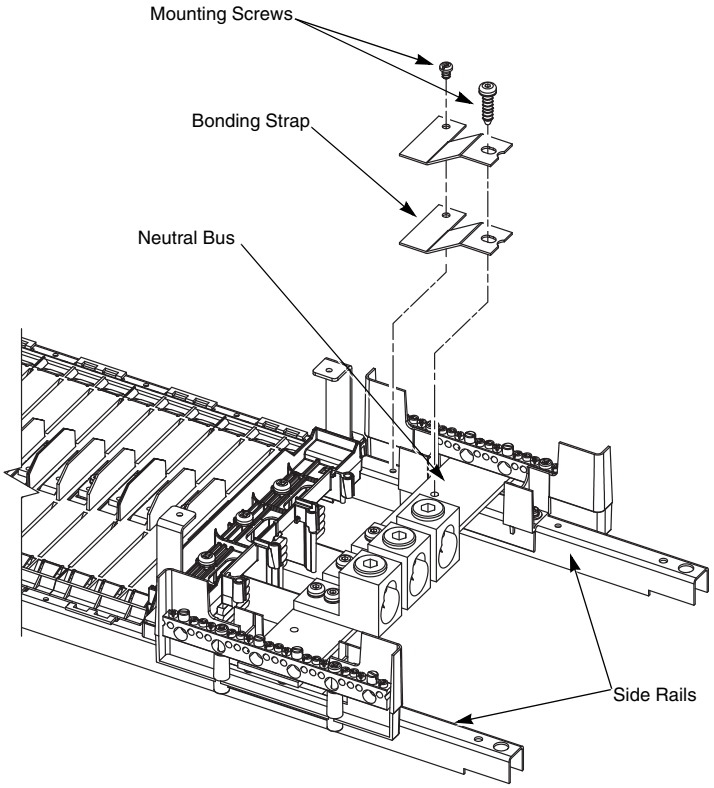
ENGLISH

800 A Maximum NF Panelboards

To install a neutral bonding strap on an 800 A maximum NF panelboard, refer to Figure 4 and follow the instructions below.

1. Align the two bonding straps on the side rail, as pictured.
2. Insert the two mounting screws, as pictured. Tighten the 10-32 screw to 10–12 lb-in (1.1–1.4 N•m) and the 1/4-20 screw to 60–65 lb-in (6.8–7.3 N•m).

Figure 4: Bonding Strap Installation — 800 A Maximum NF Panelboards



© 2008 Schneider Electric All Rights Reserved

ECB, EDB, EGB, and EJB Circuit Breaker Installation and Removal

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly-rated voltage sensing device to confirm that all power is off.
- All unused spaces must be filled with blank fillers.
- Replace all devices, doors and covers before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

ECB, EDB, EGB, and EJB Circuit Breaker Installation

Refer to Figure 5 on page 16 for the following instructions:

1. Turn off all power to the panelboard.
2. Turn the breaker off.
3. Remove the interior trim.
4. With the bolt-on connector end of the circuit breaker slightly elevated, insert the mounting foot into the slot in the phase cover.
5. Rotate the breaker down and back until the captive screw(s) align with the tapped holes in the breaker connectors.
6. Engage the screws into the branch connector hole and tighten it to 20–30 lb-in (2.3–3.4 N•m).
7. Install the load wire.
8. Reinstall the interior trim.

© 2008 Schneider Electric All Rights Reserved

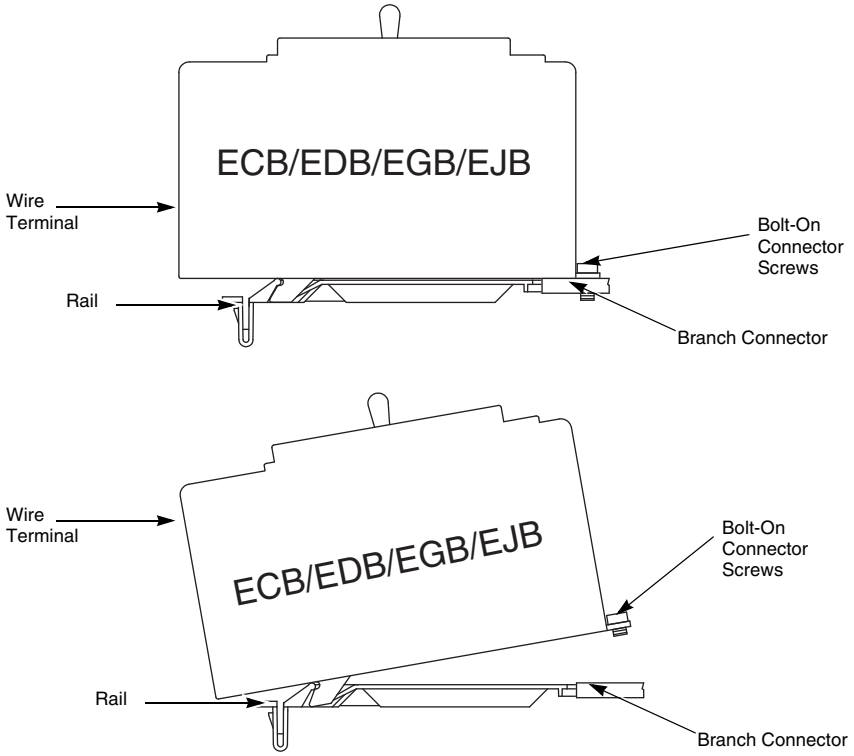
ENGLISH

ECB, EDB, EGB, and EJB Circuit Breaker Removal

Refer to Figure 5 on page 16 for the following instructions:

1. Turn off all power to the panelboard.
2. Remove the interior trim.
3. Turn the breaker off.
4. Remove the load wire.
5. Loosen the screw(s) in the breaker connector and lift the breaker off of the panelboard.
6. Reinstall the interior trim.

Figure 5: ECB, EDB, EGB, and EJB Circuit Breaker Installation and Removal



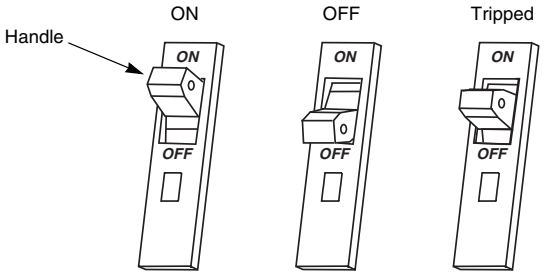
© 2008 Schneider Electric All Rights Reserved

ENGLISH

Circuit Breaker Reset Instructions

If the circuit breaker is tripped, the handle will be at the mid-position between ON and OFF. To reset the circuit breaker, push the handle to the OFF position, then to the ON position.

Figure 6: Circuit Breaker Handle Positions



© 2008 Schneider Electric All Rights Reserved

ENGLISH

Interior Trim Preparation

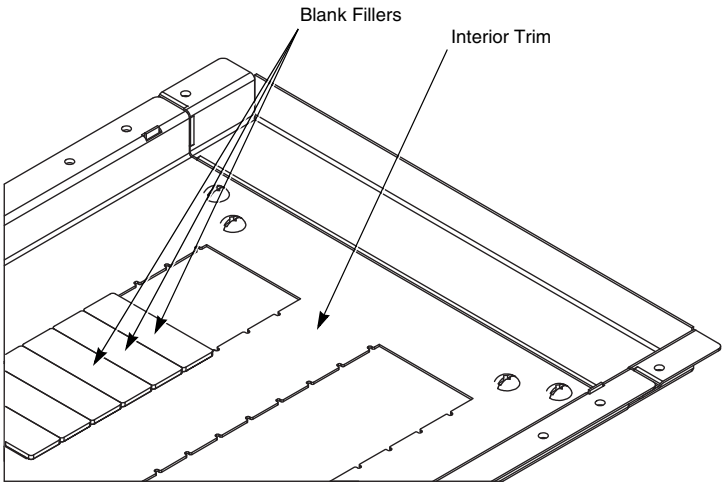
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Before energizing the panelboard, all unused spaces must be filled with blank fillers.
- Replace all devices, doors, and covers before energizing this equipment.

Failure to follow this instruction will result in death or serious injury.

Figure 7: Interior Trim Diagram



NOTE: The back of the interior trim lists the catalog number for its corresponding compatible blank fillers.

© 2008 Schneider Electric All Rights Reserved

ENGLISH

Appendix 1: Specifications

Typical Wiring

NOTE: Do not use on 600 V or 480 V, 3-phase 3-wire delta systems.

Table 1: Panelboard Typical Wiring[1]

	1-Phase Panelboards		3-Phase Panelboards	
Voltage AC	**Phase**	**Wires**	**Phase**	**Wires**
600Y/347	1	3	3	4
480Y/277	1	3	3	4
208Y/120	1	3	3	4
120/240	1	3	—	—
240[2]	1	2	3	3
240	3	3	—	—
240/120[3]	—	—	3	4 Delta

1 Additional information is provided on the panelboard. See the main circuit breaker rating, if used.

2 For this system, the neutral is not used.

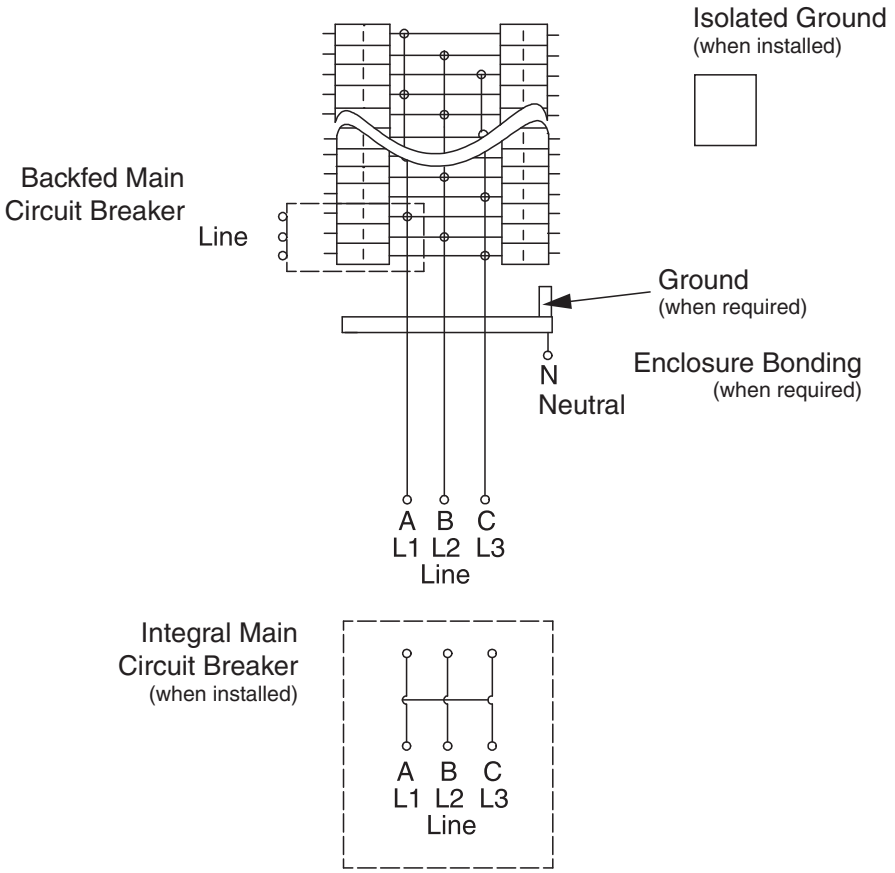
3 When wiring for a delta system, phases “A” and “C” must be 120 V to neutral, phase “B” 208 V to neutral.

Integral Main or Sub-Feed
(FI, KI, H, J, LA, LC, LH, EDB, EGB, EJB)

© 2008 Schneider Electric All Rights Reserved

ENGLISH

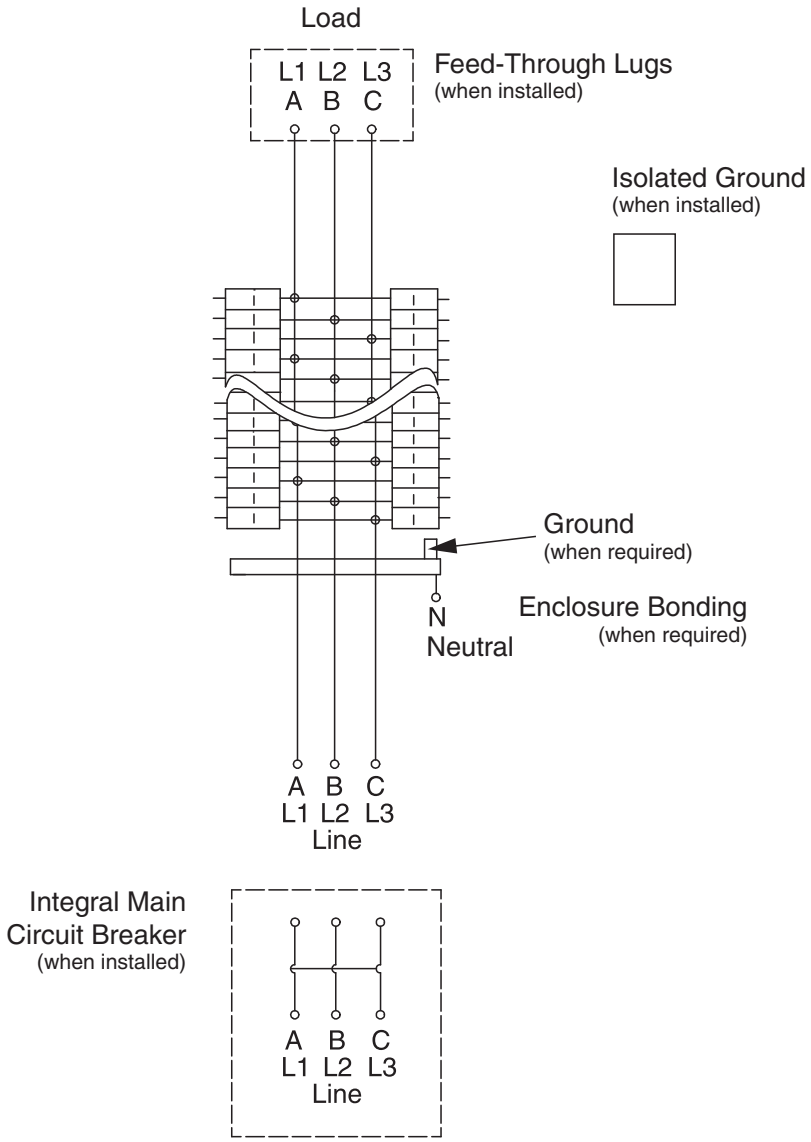
Figure 8: NF/NFOM 125–250 A Main Lugs or Main Breaker Diagram



© 2008 Schneider Electric All Rights Reserved

ENGLISH

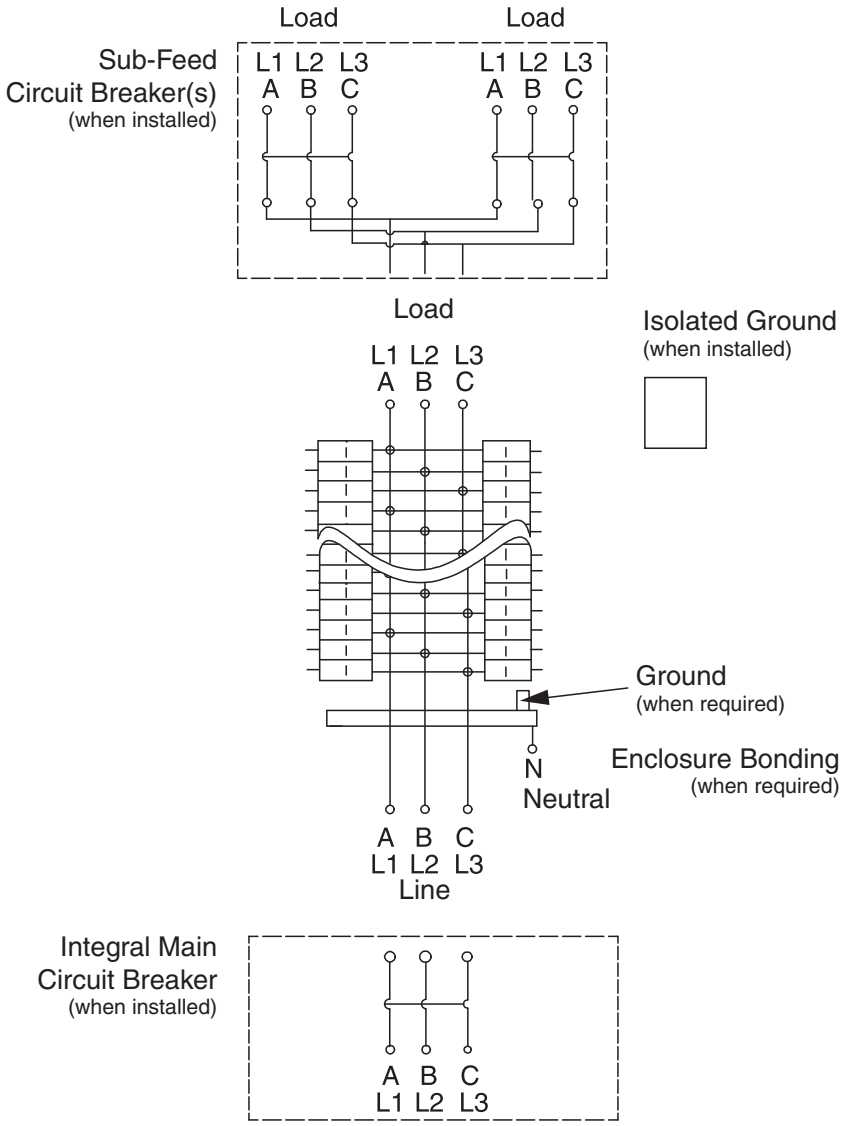
Figure 9: NF 400–800 A Main Lugs or Main Circuit Breaker with or without Feed-Through Lugs Diagram



© 2008 Schneider Electric All Rights Reserved

ENGLISH

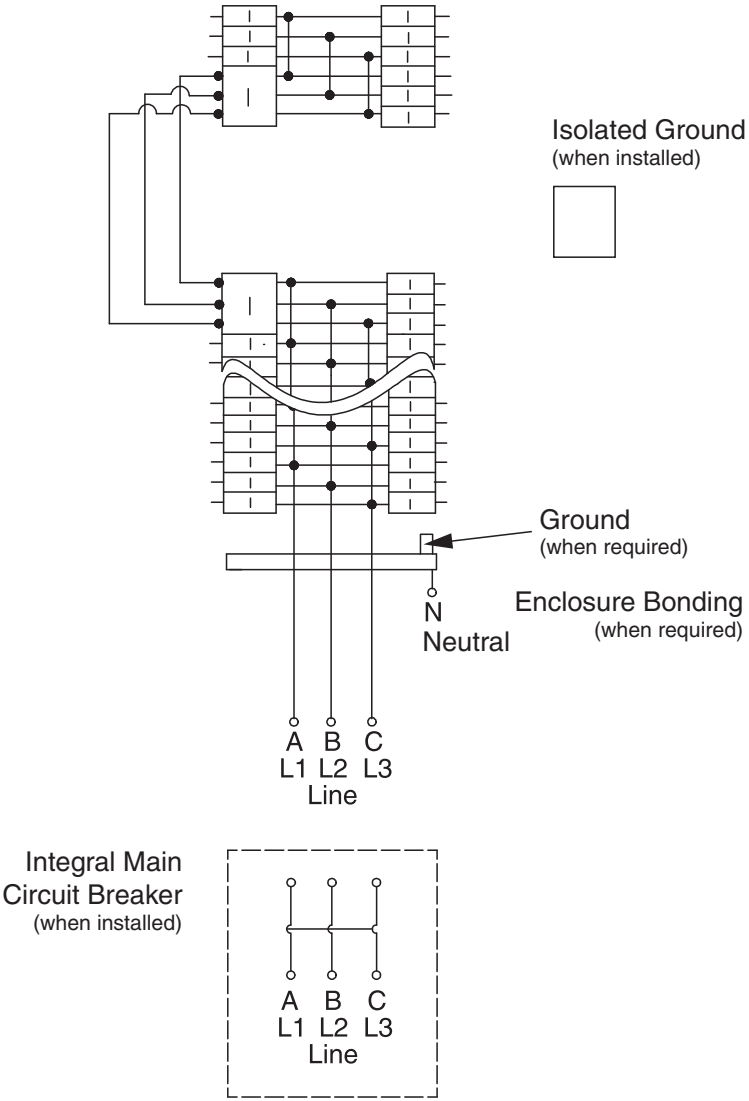
Figure 10: NF 400–800 A Main Circuit Breaker with Feed-Through Lugs or Sub-Feed Circuit Breakers Diagram



© 2008 Schneider Electric All Rights Reserved

ENGLISH

Figure 11: Typical NF Panelboard with Split Bus Diagram



© 2008 Schneider Electric All Rights Reserved

ENGLISH

Panelboard Ratings

Refer to NEC section 110-22 and CEC rule 14-014 for more information. The series rated system label is located in the bag assembly.

NOTE: 125 A ED/EG/EJ breakers are 480Y/277 Vac maximum only.

Table 2: Series Connected Breaker Ratings (RMS Symmetrical)

Max. System Voltage AC[1]	Max. Short Circuit Current Rating	Square D Brand Integral or Remote Main Circuit Breakers and Remote Main Fuses	Square D Brand Branch Circuit Breaker Catalog Designation and Allowable Ampere Ranges
120 120/240 240	65,000	EG, FH, FG, KH, LH, MH, MX, HG, JG	EDB, EDB–EPD
		EG	ECB–G3
	100,000	EJ, FC, FJ, KC, LC, LX, HJ, JJ	EDB, EDB–EPD, EGB
		EJ, FC, KC, HJ, JJ	ECB–G3
	125,000	HL, JL	EDB, EDB–EPD, EGB, ECB–G3
	200,000	FI, KI, LI, LXI	EDB, EDB–EPD, EGB, EJB
		FI, KI	ECB–G3
		Class J or T (600 V) 200 A Max Fuses	ECB–G3
277 480Y/277	35,000	EG. FG, KH, LH, HG, JG	EDB, EDB–EPD
		EG, HG, JG	ECB–G3
	65,000	EJ, FC, FJ, KC, LC, LX, HJ, JJ	EDB, EDB–EPD, EGB
		EJ, FC, KC, HJ, JJ	ECB–G3
	100,000	HL, JL	EDB, EDB–EPD, EGB, EJB
		400 A Max Fuses	EDB, EDB–EPD, EGB, EJB
	200,000	FI, KI, LI, LXI	EDB, EDB–EPD, EGB, EJB
		FI, KI	ECB–G3
		200 A Max Fuses	EDB, EDB–EPD, EGB, EJB, ECB–G3
600Y/347	18,000	HG, JG, MG	EDB
	25,000	EJ, FI, KH, KI, LC, LE, LX, LI, LXI, HJ, JJ	EDB, EGB
		LH	(15–70 A) EDB, EGB
	35,000	LC, LE, LX	EDB, EGB, EJB
	50,000	HL, JL	EDB, EGB, EJB
	65,000	FI, KI	EDB, EGB, EJB
		LI, LXI	EJB
	200,000	Class J or T (600 V) 200 A Max Fuses	EDB, EGB, EJB

[1] Short circuit tests are conducted at 100–105% of the maximum rated voltage of the panelboard.

© 2008 Schneider Electric All Rights Reserved

Short Circuit Current Rating for Main Lug Interiors with Sub-Feed or Feed-Through Lugs

Main lug interiors equipped with sub-feed or feed-through lugs, where the device feeding the interior is unknown or not a Square D device, are rated to 25,000 RMS symmetrical amperes at 600Y/347 Vac maximum for three cycles. Use of one of the Square D circuit breakers of the correct ampere rating, listed as main circuit breakers on page 19, ahead of these lugs will result in a rating equal to that of the circuit breaker.

CAUTION

HAZARD OF EQUIPMENT DAMAGE

Use only one wire per phase for incoming circuit breaker connections when the integral LH main circuit breaker is upstream of the feed-through lugs.

Failure to follow these instructions can result in equipment damage.

CE Marking

Interiors with the “CE” mark meet the IEC 60439-1 standard.

© 2008 Schneider Electric All Rights Reserved

ENGLISH

Appendix 2: Accessory Kits

An assortment of field-installable accessory kits are available for NF panelboards:

- Equipment Ground Bar Kits, on page 27
- Sub-Feed Lug Kits 125–400 A Panelboards, on page 27
- Main Lug Kits
  - — Mechanical Lug Kits — Aluminum, on page 28
  - — Mechanical Lug Kits — Copper, on page 28
  - — Versa-Crimp® Compression Lug Kits — Aluminum, on page 29
  - — Versa-Crimp® Compression Lug Kits — Copper, on page 29

© 2008 Schneider Electric All Rights Reserved

Equipment Ground Bar Kits

Equipment ground bar kits, suitable for copper or aluminum wire, meet the grounding needs of NF panelboards.

Table 3: Equipment Ground Bar Kits Specifications

Panelboard		Use Ground Bar Kit Catalog Number	
Branch Circuit	**Mains Rating**	**Aluminum[1]**	**Copper[2]**
1–42	800 A Maximum	(1) PK27GTA	(1) PK27GTACU
54–84		(2) PK27GTA	(2) PK27GTACU

[1] Aluminum bars suitable for 60° C or 75° C Copper or Aluminum conductors.

[2] Copper bars suitable for 60° C or 75° C Copper conductors.

Ground bar mounting locations are identified by the ground symbol ⏚ stamped into the backwall of the enclosure.

Sub-Feed Lug Kits 125–400 A Panelboards

Sub-Feed main lugs are available for 125, 250, or 400 A applications.

Table 4: Sub-Feed Lugs kits for 125–400 A Panelboard Applications

Main Amps	Kit Catalog Number	Maximum Circuits
125	NF125SFL	18, 30
250	NF250SFL	30, 42, 54, 66, 84
400	NF400SFL	30, 42, 54, 66, 84

© 2008 Schneider Electric All Rights Reserved

ENGLISH

Main Lug Kits

Table 5: Mechanical Lug Kits — Aluminum

Panelboard Amps	Kit Catalog Number	Wire Range
125	Standard	#6–350 kcmil 13.3–177.3 mm^2
250	Standard	
400	Standard	(1) 1/0–750 kcmil (2) 1/0–350 kcmil (1) 53.48–380 mm^2 (2) 53.48–177.3 mm^2
600	Standard	(2) 1/0–750 kcmil (2) 53.48–380 mm^2
800	Standard	(3) 1/0–750 kcmil (3) 53.48–380 mm^2

Table 6: Mechanical Lug Kits — Copper

Panelboard Amps	Kit Catalog Number	Wire Range
125	NFCUM1	#6–350 kcmil 13.3–177.3 mm^2
250	NFCUM2	
400	NFCUM4	(1) 1/0–750 kcmil (2) 1/0–350 kcmil (1) 53.48–380 mm^2 (2) 53.48–177.3 mm^2
600	NFCUM6	(2) 1/0–750 kcmil (2) 53.48–380 mm^2

© 2008 Schneider Electric All Rights Reserved

Table 7: Versa-Crimp® Compression Lug Kits — Aluminum

Panelboard Amps	Kit Catalog Number	Wire Range	Crimp Tool
125	NFALV1	#4–300 kcmil 21.15–152 mm^2	VC6
250	NFALV2	250–350 kcmil 126.7–177.3 mm^2	
400	NFALV4	(2) 2/0–500 kcmil (2) 67.43–253.4 mm^2	
600	NFALV6		

Table 8: Versa-Crimp® Compression Lug Kits — Copper

Panelboard Amps	Kit Catalog Number	Wire Range	Crimp Tool
125	NFCUV1	#6–1/0 kcmil 13.30–53.48 mm^2	VC6-3
250	NFCUV2	(1) 2/0–300 kcmil (1) 67.43–152 mm^2	VC6-FT, VC7, VC7-FT, VC8
400	NFCUV4	(1) 400–750 kcmil (1) 202.7–380 mm^2	
600	NFCUV6	(2) 250–500 kcmil (2) 126.7–253.4 mm^2	VC6 Series

© 2008 Schneider Electric All Rights Reserved

Schneider Electric USA
252 North Tippecanoe
Peru, IN 46970 USA
1-888-SquareD (1-888-778-2733)
www.us.SquareD.com

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

80043-741-01
© 2008 Schneider Electric All Rights Reserved

03/2008