DEH41502 Instructions

Power Break® Stationary Conversion Kit

PBI - PBII Stationary Conversion Kit

Overview

The Power Break Stationary Conversion Kit provides all the necessary parts and information to assist in the replacement of a Power Break I stationary circuit breaker with an equivalently rated Power Break II stationary circuit breaker (refer to Table 1). This instruction manual describes the modifications that need to be performed on the equipment and breaker for installation For complete Power Break II installation and operation instructions, refer to the GEH6279 instruction manual.

Frame Rating	Operation Type	Conversion Kit	Page
800A	Manual Electrical	SSF08TPCCR	1
1600A	Manual Electrical	SSF16TPCCR	1-2
2000A	Manual Electrical	SSF20TPCCR	1-2
2500A Front Connect	Manual Electrical	SSF40TPCCMR SSF40TPCCER	3
2500A Back Connect	Manual Electrical	SSF40TPCCMR SSF40TPCCER	3
3000A Back Connect	Manual Electrical	SSF40TPCCMR SSF40TPCCER	3
3000A Front Connect	Manual Electrical	SSF40TPCCMR SSF40TPCCER	3
4000A	Manual Electrical	SSF40TPCCMR SSF40TPCCER	3

Table 1: List of various breaker frame sizes with their respective conversion kits.

800A Stationary Breaker

The 800A Power Break II design is similar in dimension to the 800A Power Break I breaker. The only modification required is the panel cutout. Begin process by removing existing breaker from equipment.

Panel Cutout

A 14” x 10” cutout is required for the Power Break II breaker to fit. Figure 1 shows the new front panel cutout using the existing cutout as reference (dashed line in Figure 1). Once cutout is complete, mount the standard trim plate using #8-32 screws and torque to 5 in-lbs.

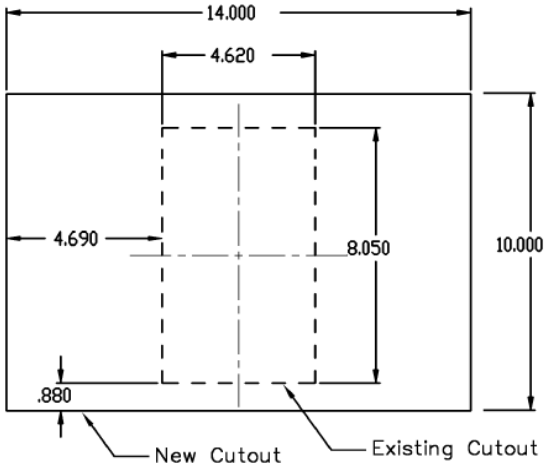

Figure 1: 800A Panel Cutout

Breaker Installation

Ensure that all accessory connections are secure. Line up mounting holes with enclosure. Place the bolts and tighten to 300 in-lbs.

1600–2000A Stationary Breaker

In order to make the conversion to a 1600A or 2000A Power Break II breaker four modifications are required Begin process by removing existing breaker from equipment

Panel Cutout

Figure 2 shows the 14”x10” cutout required using the existing cutout as reference (dashed). Once cutout is complete, mount the standard trim plate using #8-32 screws and torque to 5 in-lbs.

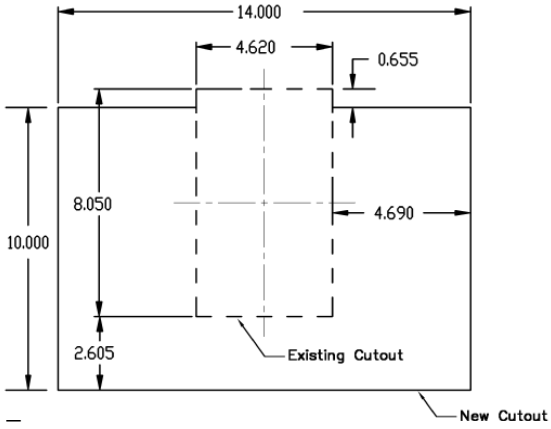

Figure 2: 1600 - 2000A Panel Cutout

Mounting Hole Relocation

Since the mounting holes for the Power Break II breaker do not align with the holes in panel, new mounting holes need to be drilled on the panel breaker mounting space. Figure 3 shows the new locations for the 1600A-2000A breakers. A 1:1 scale template is provided with the kit to guide in the drilling of the holes, which should be made for a ¼-20 tap. **It is important to note that new non magnetic mounting boards or channels may need to be installed in the existing housing to accommodate for the relocation of the mounting holes.**

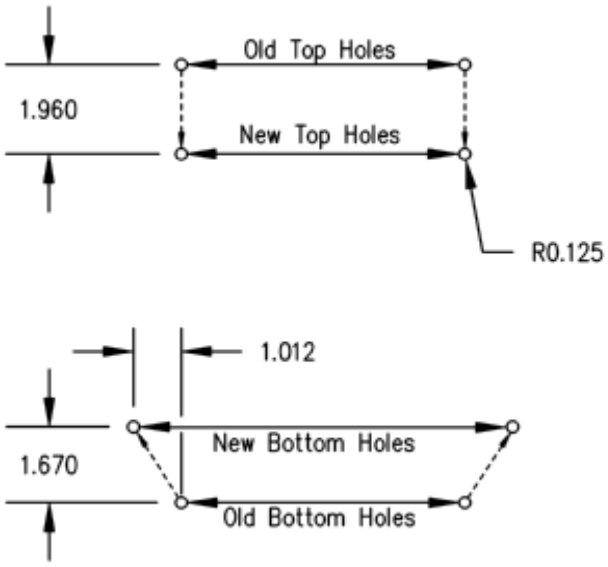

Figure 3. 1600-2000A Mounting Hole Relocation

Line /Load Strap Extensions

The Power Break I 1600A and 2000A breakers are longer than their Power Break II counterparts. To compensate for the difference in length, 6 line strap extensions are provided with the conversion kit. Please note that the length for the straps is different, 1600A is 4" long and 2000A is 5.25". Bolt the extensions using 1/2" screws to the line and load straps to a torque of 300 in-lbs. The extensions should be bolted as shown on Figure 4.

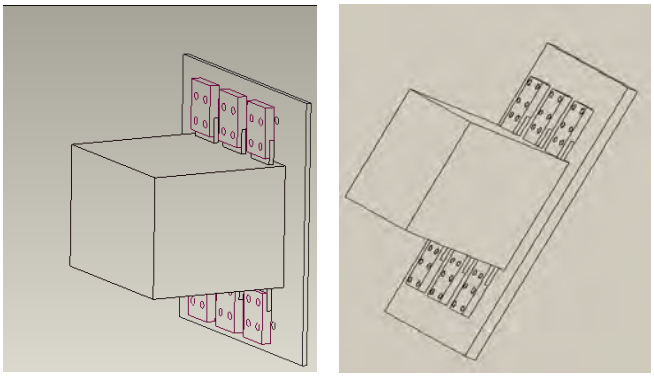

Figure 4: Installed 1600A (left) and 2000A (right) Strap Extenders

Line Shield

Due to the addition of the strap extensions, a shield is required in the line side of the breaker. To install, place line shield so that the top of mounting bracket aligns with where breaker base and mid cover meet. Mark the area to drill using a drill or white pencil (Figure 5).

Figure 5: Mark the Area for Drilling Holes

After marking the area, drill the holes to a depth of approximately 0.75" using a 0.156" bit. Finally install the line shield using #10-16 thread cutting screws provided (Figure 6).

Figure 6: Line Shield Installation

Breaker Installation

Ensure that all accessory connections are secure. Line up mounting holes with enclosure. Place the bolts and tighten to 300 in-lbs.

Neutral Sensor

For Power Break I connected in a three-phase four-wire system please note the following regarding neutral sensor:

- If the Power Break I has an Enhanced MVT Plus/PM trip unit, the neutral sensor can be reused.
- If the Power Break I has an Original MVT, RMS-9, or EPIC trip unit, the neutral sensor can be reused. However, a 1:1 isolation CT might be required to properly isolate from multiple grounds.
- For Power Break I with any other trip unit, the neutral sensor must be replaced. See Page 31, GET8052C for Neutral Sensor Options.

2500-4000A Stationary Breaker

Breakers with a frame size from 2500A to 4000A are considered large frame. They include the 2500A front connected (FC), 2500A back connected (BC), 3000A FC, 3000A BC, and 4000A FC. As in the case of the 800A breakers, the Power Break II designs are similar in dimensions to the Power Break I breakers. Only the panel cutout needs to be modified to be ready for breaker installation. Begin process by removing existing breaker from equipment.

Panel Cutout

The 2500A FC, 2500A BC, 3000A FC, and 3000A BC reqire a 14" x 16.07" cutout for the Power Break II breaker to fit. Figure 8 shows the new front panel cut out using the existing cutout as reference (red line in Figure 7).

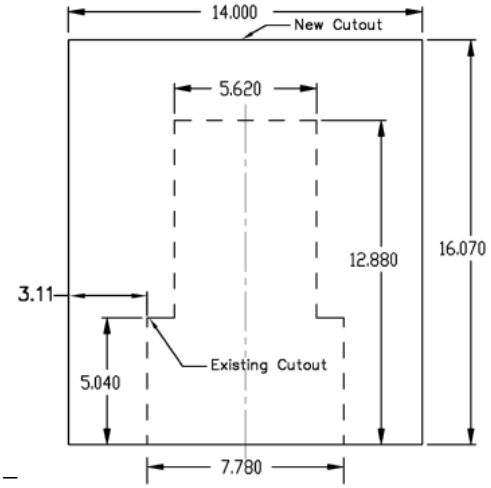

Figure 7: 2500A FC, BC, 3000A FC, and BC Panel Cutout

The cutout for the 4000A breaker should be 14" by 13.54" and it is shown in Figure 8.

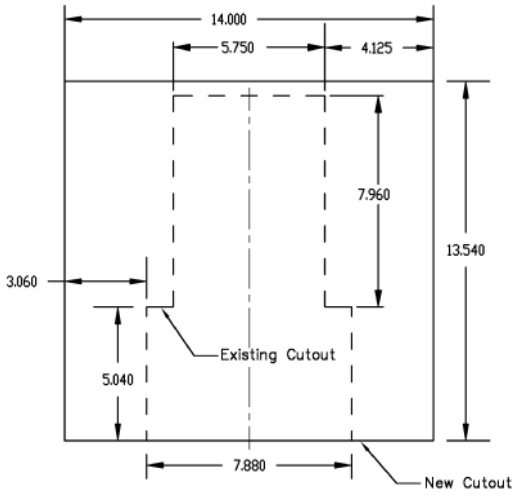

Figure 8: 4000A Panel Cutout

Trim Plate

Once cutout is complete, mount the provided trim plate using #8-32 screws and torque to 5 in-lbs. Please note the trim plate is determined by the Power Break I that is to be replaced. Figure 9 shows the 2 types of trim plates used in large frame breakers. If the equipment had an electrically operated Power Break I, SSF40TPCCE kit should be used (left). If the breaker was Manually operated, use SSF40TPCCM kit (right).

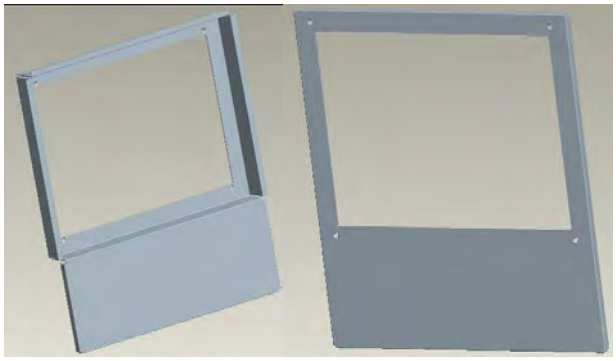

Figure 9: Trim Plates: Electrical (left), Manual (right)

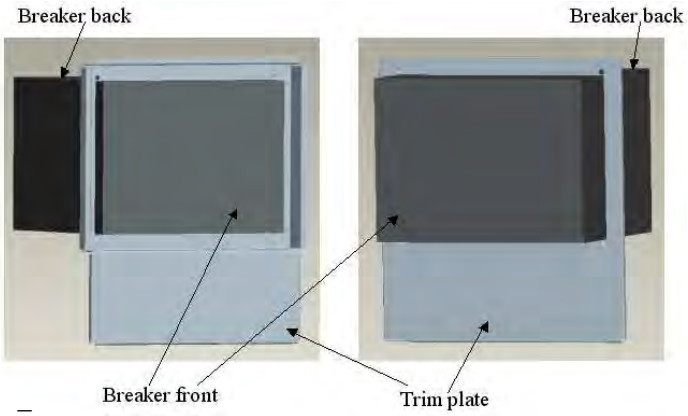

Figure 10: Trim Plates: Electrical (left), Manual (right)

Breaker Installation

Ensure that all accessory connections are secure. Line up mounting holes with enclosure. Place the bolts and tighten to 225 in-lbs for 2500-3000A breaker, or 300 in-lbs for a 4000A.

Neutral Sensor

For Power Break I connected in a three-phase four-wire system please note the following regarding neutral sensor:

- If the Power Break I has an Enhanced MVT Plus/PM trip unit, the neutral sensor can be reused
- If the Power Break I has an Original MVT, RMS-9, or EPIC trip unit, the neutral sensor can be reused. However, a 1:1 isolation CT might be required to properly isolate from multiple grounds.
- For Power Break I with any other trip unit, the neutral sensor must be replaced. See Page 31, GET8052 for Neutral Sensor Options.

Appendix: Additional Information

Frame Rating	Operation Type	Weight (lbs)
800A	Manual Electrical	71 80
1600A 2000A	Manual Electrical	79 88
2500A Front Connect	Manual Electrical	178 187
2500A Back Connect	Manual Electrical	167 176
3000A Back Connect	Manual Electrical	179 188
3000A Front Connect	Manual Electrical	216 225
4000A	Manual Electrical	320 329

Table 1: Weights of Various PBII Breaker Frame Sizes

Frame Rating	Bolt	Torque (in-lbs)
800A	(1) ½ in	300
1600A-2000A	(2) ½ in	300
2500A	(4) 3/8 in	225
3000A	(4) 3/8 in	225
4000A	(6) ½ in	300

Table 2: Bolt Sizes and Recommended Mounting Torques for Bus Connections.

	PBI			PBII		
Stationary	Total	Top	Bottom	Total	Top	Bottom
800A	N/A	N/A	N/A	N/A	N/A	N/A
1600A	60	30	30	60	30	30
2000A	160	80	80	86.4	43.2	43.2
2500A	160	80	80	160	80	80
3000A	270	135	135	270	135	135
4000A	280	140	140	270	135	135

Table 3: Minimum Ventilation Cutout Areas

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the ABB Inc.

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