

# Instructions for Drawout Cassettes, Shutters and Cable Interlocks for Through the Door Westinghouse Type SPB Systems Pow-R-Breakers and Series C, Types RD and RDC, Molded Case Breakers



I.L. 32-697 A

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**DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. DEATH OR SEVERE PERSONAL INJURY CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING WITH THE TASK AND ALWAYS FOLLOW GENERALLY ACCEPTED SAFETY PROCEDURES.**

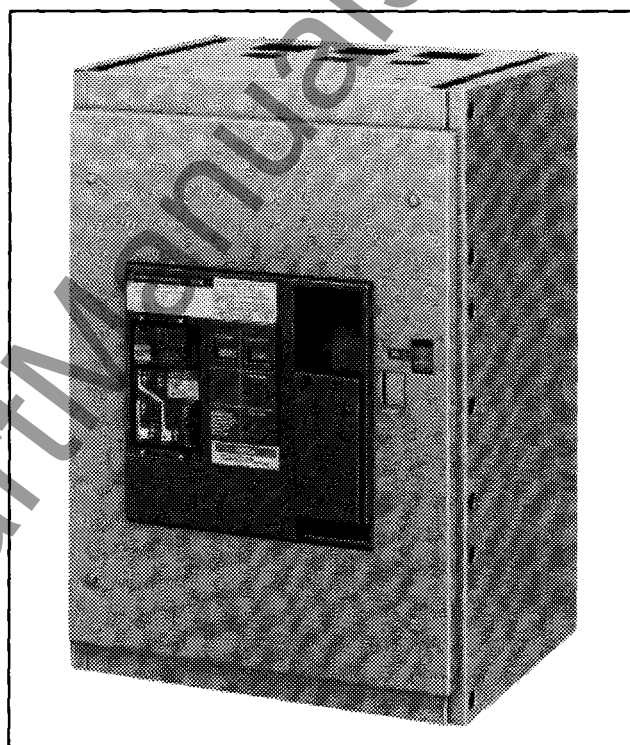
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The user is cautioned to observe all recommendations, warnings and cautions relating to the safety of personnel and equipment, as well as all general and local health and safety laws, codes and procedures.

The recommendations and information contained herein are based on Cutler-Hammer experience and judgement, but should not be considered to be all inclusive or covering every application or circumstance which may arise. If any questions arise, contact Cutler-Hammer for further information or instructions.

## 1.0 Supplementary Information

The instructions contained in this book supplement the instructions for type SPB Systems Pow-R Breakers covered in I.L. 29-801 (I.B. 15082) and the instructions for Series C, types RD and RDC molded case breakers covered in I.L. 29-106.



**Fig. 1. View of 3000A SPB Circuit Breaker (Shown with Digitrip RMS Trip Unit Installed) Mounted in the Cassette Drawout**

## 2.0 Drawout Mounting

Drawout assemblies consist of a stationary frame and a moving carriage with four positions: Connected, Test, Disconnected and Fully Withdrawn. Extension rails and racking mechanism are part of the drawout assembly and are self-contained. The operating handle is a standard commercially available socket wrench with a ratchet. The drawout mechanism is mechanically interlocked with the breaker drawout element so that the breaker cannot be racked in or out of the connected position with its main contacts closed. Drawout breakers have two designs: Behind the door design and through the door design.

## 3.0 Removal of Breaker From Box

Each Through the Door Drawout Circuit Breaker is supplied with shipping straps to prevent damage in shipment. These straps are to be removed and replaced with a cassette cover (see Section 12.0) that meets applicable standards.

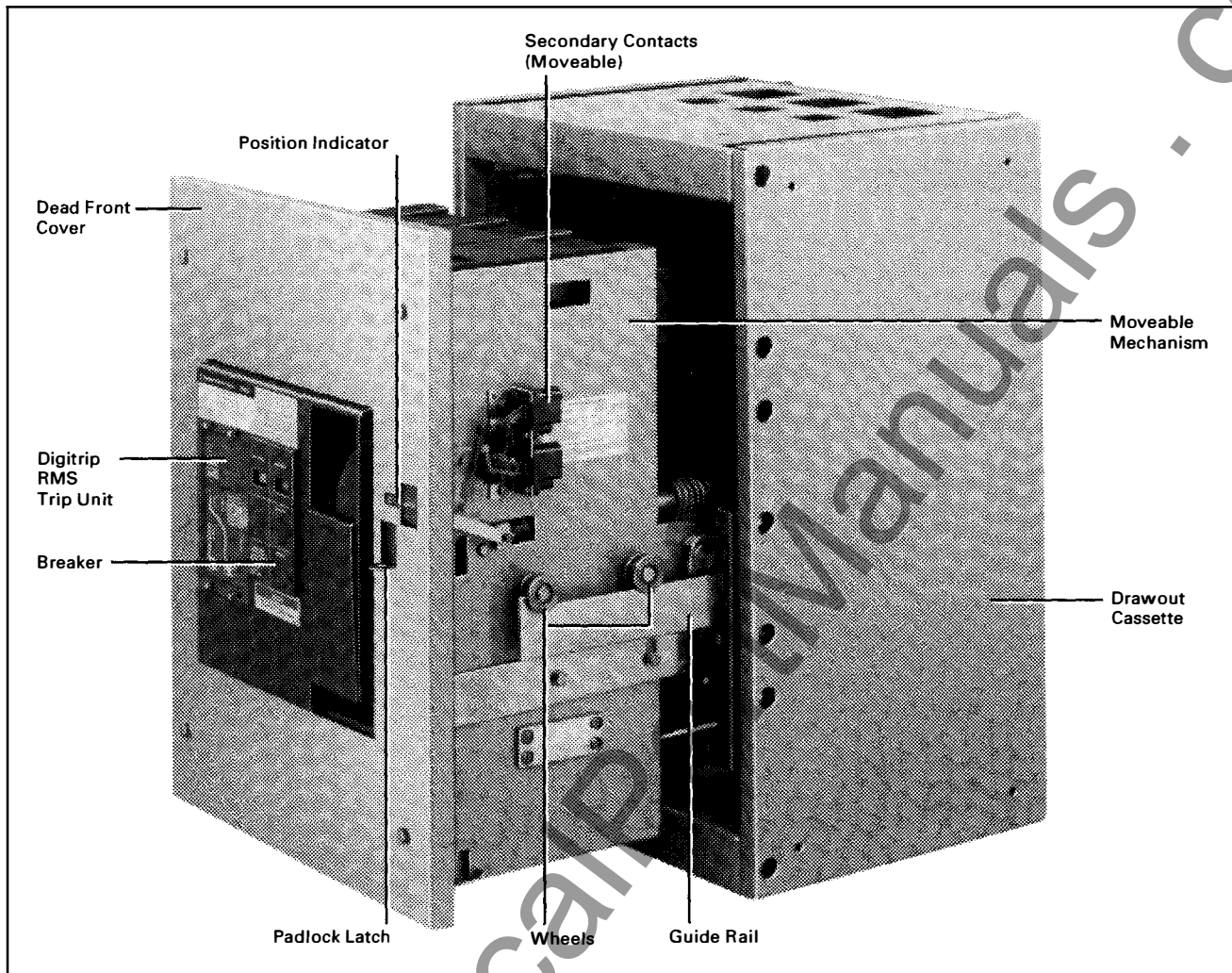


Fig. 2. View of Drawout SPB Breaker on Cassette Extension Rails

#### 4.0 Insertion of Breaker

##### **CAUTION**

**DRAWOUT CASSETTE MUST BE SECURELY ANCHORED PRIOR TO INSERTION OF BREAKER.**

- ENSURE POSITION INDICATOR ON MOVABLE MECHANISM IS IN "WITHDRAW" POSITION.
- EXTEND GUIDE TRACK RAILS OF CASSETTE.
- RAISE BREAKER TO HEIGHT JUST ABOVE THE GUIDE TRACK RAILS.
- LOWER BREAKER SO THAT THE WHEELS OF THE MOVABLE MECHANISM SIT ON THE RAILS ON BOTH SIDES.
- PUSH BREAKER INTO CASSETTE. BREAKER IS NOW IN THE WITHDRAWN POSITION. TO OPERATE THE BREAKER, THE BREAKER MUST BE RACKED INTO THE CASSETTE WITH THE WRENCH.

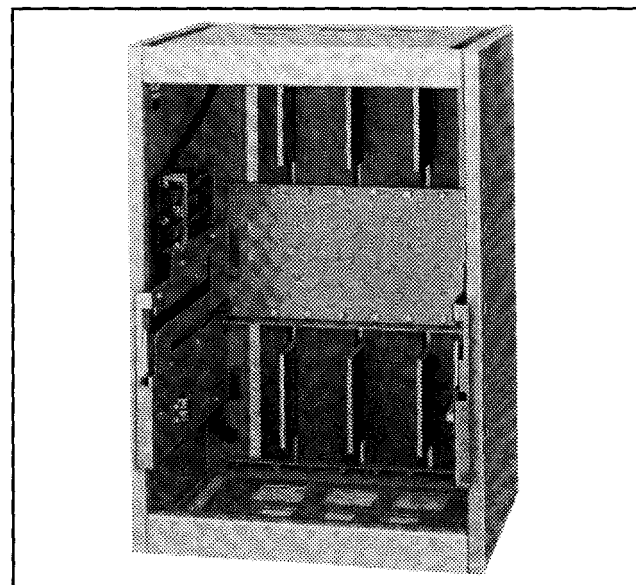
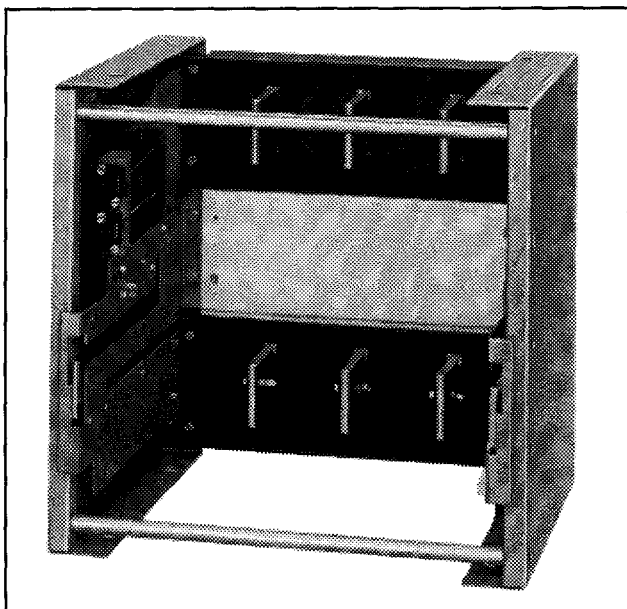
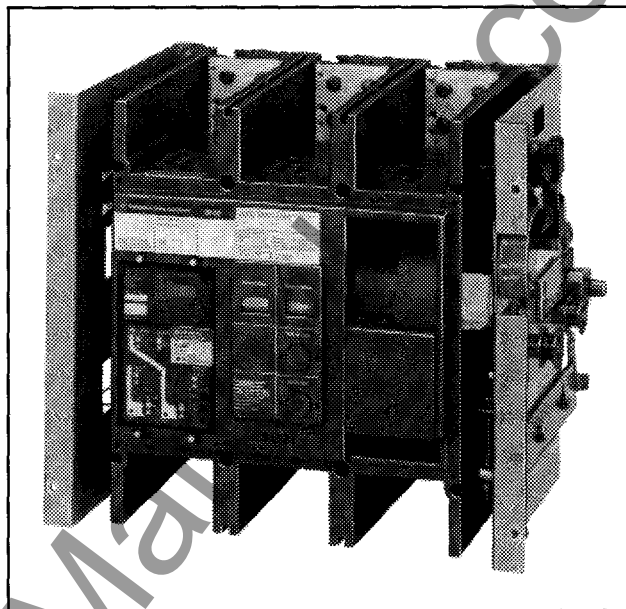


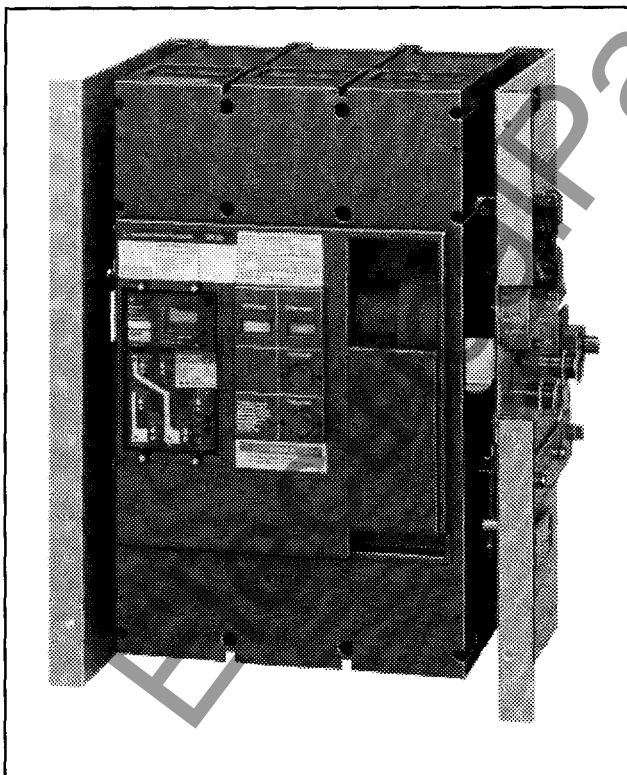
Fig. 3. Front View of 3000-Amp Cassette



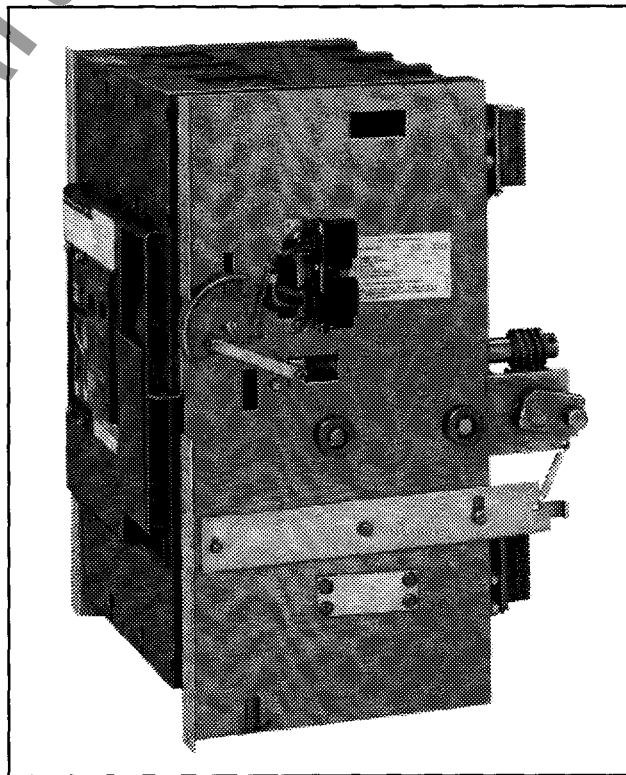
**Fig. 4.** Front View of 2000-Amp Cassette



**Fig. 5.** View of 1600-Amp SPB Breaker with Dead Front Cover Removed



**Fig. 6.** View of 3000-Amp SPB Breaker with Dead Front Cover Removed



**Fig. 7.** Side View of 3000-Amp SPB Breaker

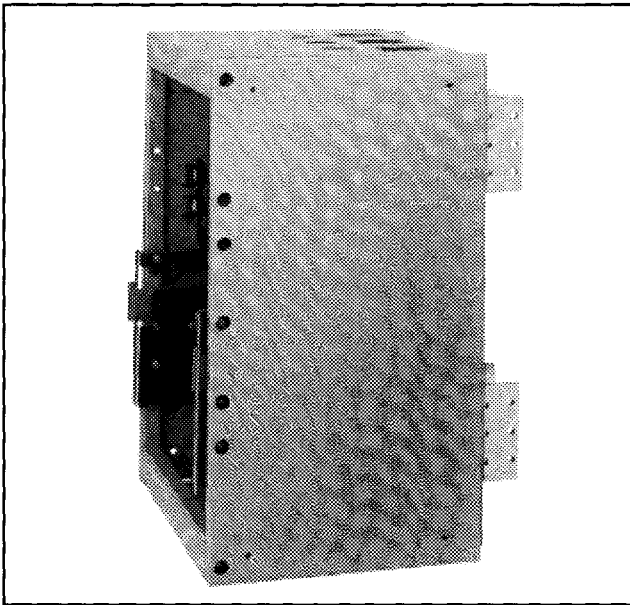


Fig. 8. Side View of 3000-Amp Cassette

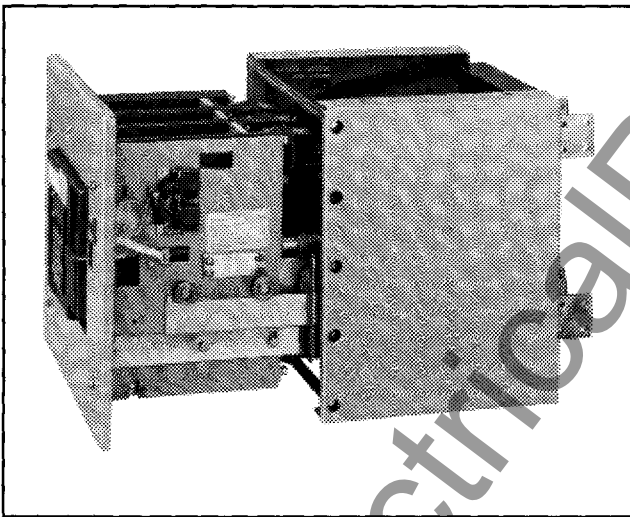


Fig. 9. Side View of Drawout SPB Breaker on Cassette Extension Rails

### 5.0 Drawout Interlocks

The breaker is mechanically interlocked to the drawout mechanism to ensure that the breaker is always open when connecting or disconnecting it from the line and load stabs.

#### NOTICE

**LIFTING THE PADLOCK LATCH IN AN ATTEMPT TO RACK THE BREAKER IN OR OUT WHILE THE BREAKER CONTACTS ARE CLOSED WILL RESULT IN THE BREAKER TRIPPING TO THE OPEN POSITION.**

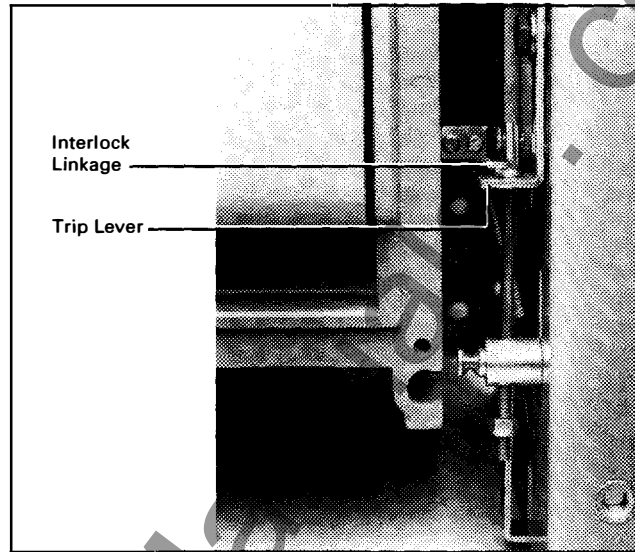


Fig. 10. Proper Placement - Interlock Linkage Above Trip Lever (Front View with Dead Front Cover Removed)

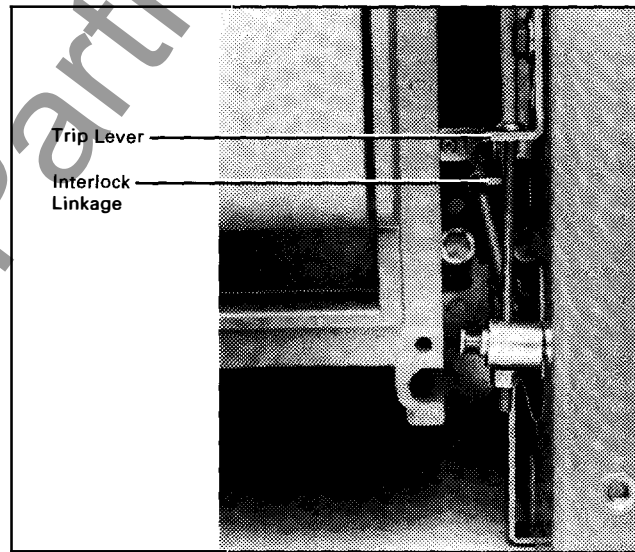


Fig. 11. Improper Placement - Interlock Linkage Below Trip Lever (Front View with Dead Front Cover Removed)

**Note:** In order for the interlock mechanism to operate properly, it is critical to ensure that the interlock linkage rests above the trip lever on the drawout carriage. See Fig. 10. Fig. 11 shows the interlock linkage positioned improperly. Always check the position of this lever before placing the breaker in service.

The breaker will only close in the "DISCONNECTED", "TEST" and "CONNECTED" position. The breaker will not close in the "WITHDRAW" position.

The breaker must be completely pushed into the cassette before racking the breaker into the connected position. To protect the worm gear of the movable mechanism, there is an interlock bar on the right-hand side of the cassette that prevents racking of the breaker unless the breaker is fully inserted into the cell.

See I.L. 6647C21H02 "Key Interlock Kit Installation Instructions for Though the Door Drawout Systems Pow-R-Breakers" for information and instructions on the key interlock.

## 6.0 Breaker Position

The drawout mechanism has four positions. They are achieved by lifting the padlock latch and inserting a  $\frac{3}{4}$ -inch socket wrench. Clockwise motion moves the breaker towards the "CONNECTED" position. Counterclockwise motion moves the breaker towards the "WITHDRAW" position. See Fig. 12.

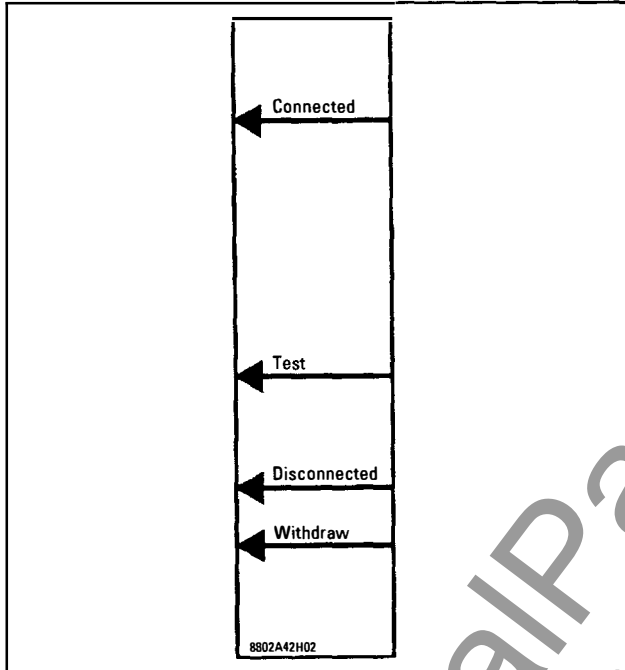


Fig. 12. Breaker Position Nameplate

### CONNECTED

In this position the breaker is fully connected to the primary stabs and secondary contacts.

### TEST

In this position the breaker is not connected to the primary stabs, but is connected to the secondary contacts.

### DISCONNECTED

In this position both the primary stabs and the secondary contacts are disconnected.

### WITHDRAW

In this position the breaker can be removed from the cassette.

## 7.0 Secondary Contacts

Secondary contacts may be mounted on the left or right hand side of the breaker to a maximum of 48 contact points. There are four terminal blocks of twelve contacts each: "A", "B", "C" and "D". See Fig. 13.

These secondary contacts consist of a moving assembly mounted on to the guide track of the cassette and a fixed assembly mounted onto the movable mechanism of the breaker. The fixed and moving secondary contacts are self-aligning.

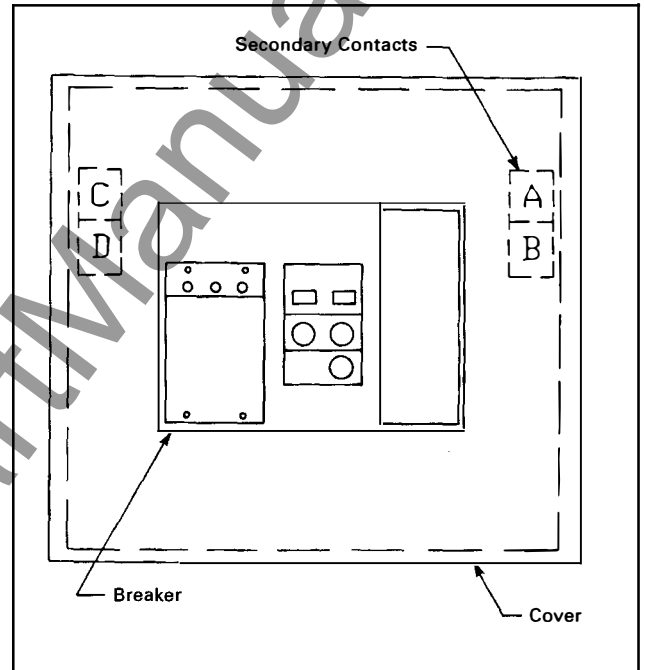


Fig. 13. Front View of Cassette Cover

Every cassette comes standard with "C" and "D" secondary blocks providing 24 contact points. Additional kits providing up to 24 additional contact points are available through the optional "A" and "B" secondary blocks. See Table 1.

Table 1. Optional Secondary Contacts<sup>①</sup>

Description <sup>②</sup>	Lead Length (Ft.)	Style Number
12 point <sup>③</sup>	6	6396C85G07
24 point	6	6396C85G08
12 point <sup>③</sup>	14	6396C85G10
24 point	14	6396C85G11

① Right hand mounted.

② Supplied with mounting bracket.

③ Can be configured for "A" or "B".

Each wiring harness comes standard with 6 foot leads. Optional 14 foot leads are also available.

## 8.0 Optional Cassette Shutter Assembly

The cassette shutter assembly is a mechanical device providing protection from contact with live bus work when the breaker is removed from the cassette. Glass polyester shutter panels cover the main contact stabs at the rear of the cassette when the breaker is removed. The shutters open when the breaker is inserted into the cassette and the breaker contact fingers can engage the fixed stabs. The shutters are interlocked to prevent accidental exposure to the fixed stabs during maintenance. See Fig. 15.

This shutter design is compatible with 3- or 4-pole SPB Systems Pow-Rbreakers and RD/RDC molded casebreakers which are used in a through the door drawout configuration. A cassette can be supplied with or without the shutters already mounted. See Table 2.

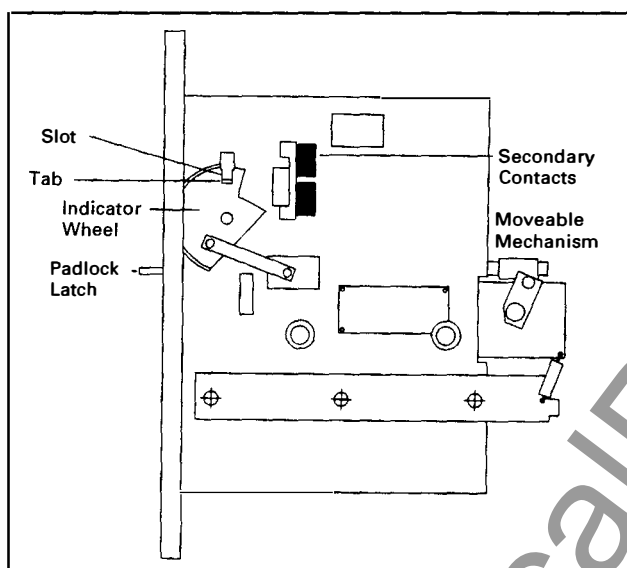


Fig. 14. Operation Check

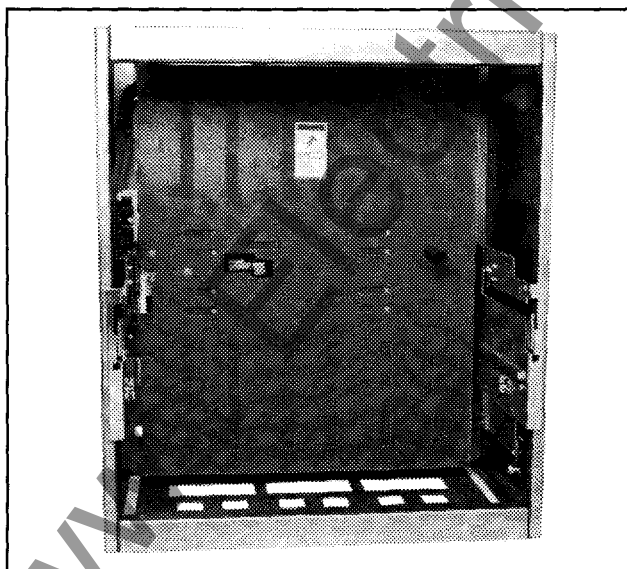


Fig. 15. 4000-Amp SPB Cassette with Shutter Installed

Shutters can also be added in the field at a later date to the appropriate cassette shown in Table 2. Shutters installed in the field are supplied in kit form and UL listed as a field mountable device. The shutter kit consists of glass polyester panels mounted to a channel and bracket assembly. See Table 3.

The shutters outlined in Table 3 are not directly compatible with older cassette designs, such as Catalog Numbers 21SPBCOS, 30SPBCOS, 40SPBCOS, RD20DOS, RD20DOSS, RCD20DOS and RCD20DOSS. Shutter kits from Table 3 can, however, be added to the older 3000-ampere and below cassette design, if the existing cassette is first altered to accept the shutters. The aluminum plate between the line and load stabs of the older existing cassette must first be replaced with new replacement aluminum plates. The replacement aluminum plates for use with existing cassettes are as follows:

- Style 8644C48H02 (2000 ampere and below)
- Style 8644C24H04 (3000 ampere only)
- Not Applicable (4000 ampere)

Table 2. Cassette Types

Breaker Type	Frame Size (Amperes)	Shutters Installed	Secondary Lead Length (Ft.)	Catalog <sup>①</sup> Number (3-pole)
SPB	800	no	6	CSPB803W
SPB	800	no	14	CSPB803W4
SPB	800	yes	6	CSPB803S
SPB	800	yes	14	CSPB803S4
SPB	2000	no	6	CSPB203W
SPB	2000	no	14	CSPB203W4
SPB	2000	yes	6	CSPB203S
SPB	2000	yes	14	CSPB203S4
SPB	3000	no	6	CSPB303W
SPB	3000	no	14	CSPB303W4
SPB	3000	yes	6	CSPB303S
SPB	3000	yes	14	CSPB303S4
SPB	4000	no	6	CSPB403W
SPB	4000	no	14	CSPB403W4
SPB	4000	yes	6	CSPB403S
SPB	4000	yes	14	CSPB403S4
RD	2000	no	6	CRD203W
RD	2000	no	14	CRD203W4
RD	2000	yes	6	CRD203S
RD	2000	yes	14	CRD203S4
RDC	2000	no	6	CRDC203W
RDC	2000	no	14	CRDC203W4
RDC	2000	yes	6	CRDC203S
RDC	2000	yes	14	CRDC203S4

① For 4-pole catalog numbers, the seventh digit becomes a 4 in lieu of 3, otherwise the rest of the number is the same.

Table 3. Shutter Kits

Breaker Type	Frame Size (Amperes)	Poles	Catalog Number
SPB, RD or RDC	2000	3	SCSPB203
SPB, RD or RDC	2000	4	SCSPB204
SPB	3000	3	SCSPB303
SPB	3000	4	SCSPB304
SPB	4000	3	SCSPB403



**⚠ DANGER**

NO ATTEMPT SHOULD BE MADE TO INSTALL THESE DEVICES ON ENERGIZED EQUIPMENT. SEVERE PERSONAL INJURY OR DEATH, AS WELL AS SUBSTANTIAL PROPERTY DAMAGE, CAN RESULT FROM WORKING WITH ENERGIZED EQUIPMENT. TURN OFF ALL POWER SUPPLYING THIS EQUIPMENT AND TEST FOR VOLTAGE BEFORE ATTEMPTING TO INSTALL THESE ACCESSORIES.

### 8.1 Installing Shutters Without Cable Interlock

Before beginning the installation, read through Sections 8.1, 8.2 and 9.5 completely.

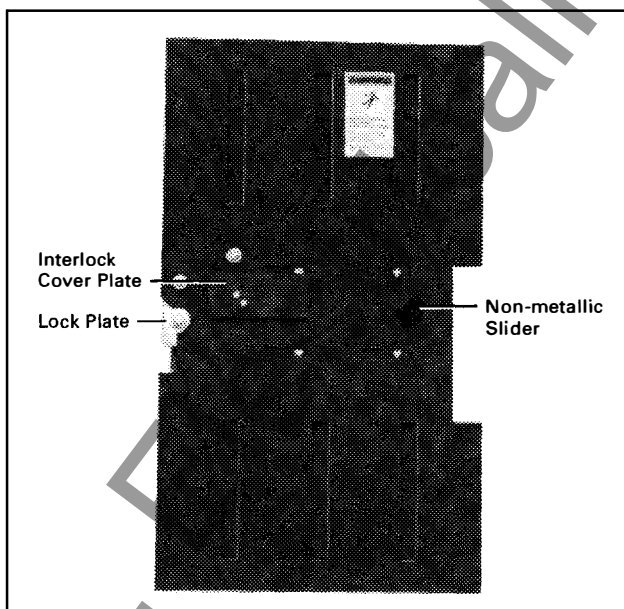
8.1.1 Turn off all power to buswork. Using a 3/4 in. socket, turn the draw-out mechanism on the right side of the breaker to the WITHDRAWN position and remove the breaker from the cassette.

8.1.2 Test for voltage at the buswork before proceeding to ensure that no voltage is present.

8.1.3 Remove the interlock cover plate (shown in Fig. 16) from the shutter assembly by removing two (2) .190-32X.375 screws and washers. Set the plate and hardware aside for step 8.1.8.

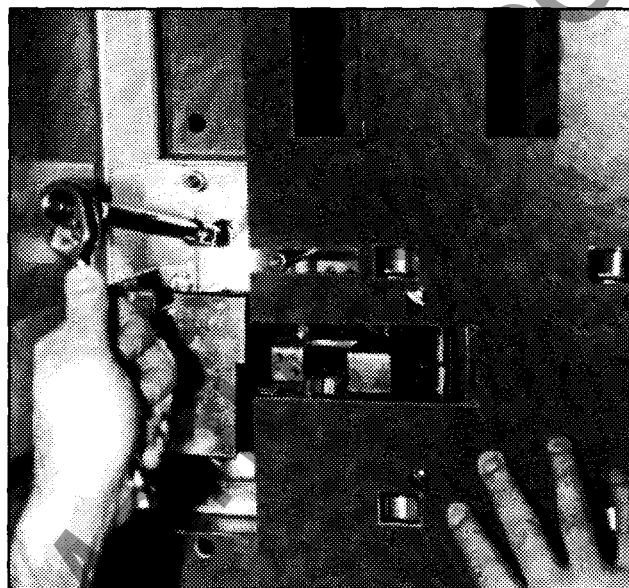
8.1.4 Remove the three (3) .250-20X.62 bolts and washers securing the front shutter panel. Remove front shutter panel and set aside.

**Note:** For 3000A-5000A breakers, there will be two (2) .250-20X.62 bolts and one (1) .25-20X.87 pan head screw. The screw secures a black non-metallic slider which also must be removed. See Fig. 16.



**Fig. 16.** Typical Shutter Accessory Kit Through the Door Drawout Systems Pow-R-Breakers

8.1.5 Attach the channel and bracket assembly with the remaining shutter panel to the rear channel of the cassette using four (4) .312-18X.75 bolts and lock washers inserted through the .344 in. diameter holes in the shutter channel (see Fig. 17).



**Fig. 17.** Mounting Channel and Bracket Assembly with Rear Shutter Panel in Cassette (3000A Three-Pole Model Shown)

8.1.6 With the left hand, push in on the shutter lock plate and hold. Use the right hand to push the shutter panel toward the rear of the cassette. The panel should pivot to the left and clear the contact stabs.

8.1.7 Re-attach the front shutter panel using the hardware removed in step 8.1.4.

**⚠ CAUTION**

**FOR 3000A-5000A BREAKERS, ENSURE THAT THE NON-METALLIC SLIDER IS REINSTALLED ON THE RIGHT SIDE STANDOFF ROD. DAMAGE TO EQUIPMENT WILL RESULT IF SLIDER IS NOT PROPERLY INSTALLED.**

8.1.8 Re-attach the interlock cover plate removed in step 8.1.3.

### 8.2 Testing Shutters Without Cable Interlock

8.2.1 With left hand, push in on the shutter lock plate and hold. With right hand, push sharply in the center of the shutter panel. The rear shutter panel should slide to the left as the front panel slides back, exposing the stabs.

Confirm that both panels clear all of the stabs. The non-metallic shutter shaft slider on 3000A-5000A cassettes should slide freely. When the lock plate and shutter panels are released they should return to their original positions, concealing the stabs.

8.2.2 After proper operation of the shutters is confirmed, place the breaker in the cassette and remove the four bolts that secure the dead front shield. Set dead front and bolts aside for Section 9.3. Turn the lever-in mechanism while watching the shutters. As the breaker moves back in the cassette the shutters should open allowing the contact fingers to engage the stabs in the CONNECTED position.

8.2.3 Return breaker to the WITHDRAWN position and confirm that the shutters close.

8.2.4 Skip to Section 9.4.

### 8.3 Installing Shutters With Cable Interlock

The installation of shutters with cable interlock can be divided into three parts. The first part is the transfer of the interlock brackets and cables to the shutter channel. The second part is the installation of the shutter channel and bracket assembly to the rear of the cassette. (This will be designated cassette A in the instructions that follow.) This is followed by the installation of the side bracket and interlock latch onto the right rail assembly of another cassette. (This will be designated cassette B.)

Before beginning the installation, read through Sections 8.3 and 9.2-9.4 completely.

**8.3.1** Turn off all power to buswork. Using a 3/4 in. socket, turn the drawout mechanism on the right side of both breakers to the WITHDRAW position and remove the breakers from the cassettes.

**8.3.2** Test for voltage at the buswork before proceeding to ensure that no voltage is present in either cell.

#### Transfer of Cable Interlock Parts to Shutter Channel

**8.3.3** Remove all hardware and rubber seals from the free end of one cable. The rubber seals and .190-32 nut will not be reused and can be discarded. Set the .438-20 nuts and star washers aside for step 8.3.11

**8.3.4** Remove the six (6) .190-32 screws and lock washers securing the two interlock brackets to the channel and remove the brackets with the cable.

**8.3.5** To mount the interlock brackets on the shutter channel, slide the free end of the cable between the channel and pivot pins from the left and mount the brackets to the shutter channel using the .190-32 screws and lock washers removed in step 8.3.4. The shutter channel is identical to the interlock channel from which the brackets were removed and the brackets must be attached using the same holes.

**Note:** The brackets mount on either side of the center pivot pin on 4000A and 5000A styles so the cable should not pass behind the left pivot pin.

**8.3.6** Repeat steps 8.3.3 through 8.3.5 for the other cable assembly.

#### Installation of Rear Bracket Assembly

**8.3.7** Remove the three (3) .250-20X.62 bolts and washers, securing the front shutter panel to the channel and bracket assembly.

**Note:** For 3000A-5000A breakers where there will be two (2) .250-20X.62 hex bolts and one (1) .250-20X.87 pan head screw. The screw secures a black non-metallic slider which also must be removed. See Fig. 16.

**8.3.8** Insert the free end of the cable through the 1.0 X 1.5 in. round end slot in the rear channel of cassette A from the front of the cell.

**8.3.9** Attach the channel and bracket assembly with the remaining shutter panel to the rear channel of the cassette using four (4) .312-18X.62 bolts and lock washers, inserted through the .344 in. diameter holes in the shutter channel (see Fig. 17).

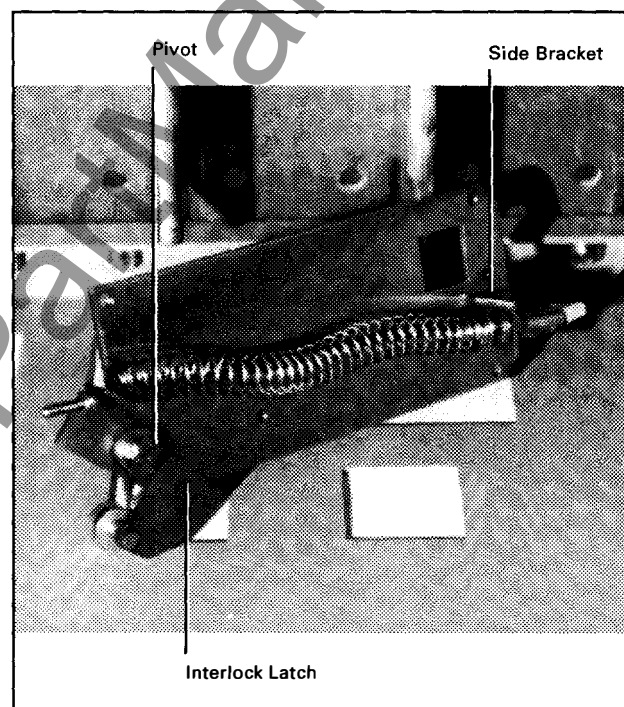
#### CAUTION

**DO NOT OPERATE SHUTTER UNTIL STEPS 8.3.10 THROUGH 8.3.16 ARE COMPLETE. DAMAGE TO SHUTTER BRACKETS MAY RESULT IF SHUTTER IS OPERATED PRIOR TO INSTALLATION OF THE SPRING ON THE FREE END OF THE CABLE.**

#### Installation of Interlock Latch Assembly

**8.3.10** Loosen the rubber grommet from the bottom hole on the back of the right side sheet of cassette B. Slide the grommet forward on the wires. Insert the cable through the hole and grommet, then slide the grommet back into place.

**8.3.11** Thread a .438-20 nut on the cable, running it just over half way down. Slide a .438 washer against the nut and place the side bracket on the cable with the threaded holes in the bracket facing left and back (see Fig. 18). Follow with another .438 washer and nut and tighten finger tight.



**Fig. 18. Side Bracket and Latch Mounted on Extension Plate**

**8.3.12** Slide one of the provided springs onto the cable and compress it enough to grip the cable behind the threads with locking pliers.

**Note:** Be careful to grip the cable, not the sleeve, with the locking pliers.

**8.3.13** Slide the latch assembly onto the cable with the roller down and to the left (see Fig. 18). Secure with a .190-32 nylon stop nut running the nut, all the way down the threads.

**8.3.14 400A-2000A styles:** Orient the extension plate so that the notch on the long side is at the top and toward the rear of the cassette. Position the cable with side bracket and interlock latch assembly against the right side of the extension plate as shown in Fig. 18.



Align the top hole of the side mounting bracket with the top .210 in. diameter hole in the extension plate (Fig. 21, hole B). Attach with a .190-32X.50 screw and lock washer inserted from the left, but do not tighten.

**2500-5000A styles:** Orient the extension plate so that the corner with three .210 diameter holes is at the bottom and towards the rear of the cassette as shown in Fig. 18. Position the cable with side bracket and interlock latch assembly against the right side of the extension plate. For 2500A-3150A styles align the top mounting hole of the side bracket with the top .210 in. diameter hole (Fig. 22, hole B). For 4000A and 5000A styles use the center .210 in. diameter hole (Fig. 22, hole C). Attach with a .190-32X.50 screw and lock washer inserted from the left, but do not tighten.

8.3.15 Align the bottom hole of the side mounting bracket and attach with another .190-32X.50 screw and lock washer. Tighten the bottom screw first and then the top.

8.3.16 Place the pivot in the latch with the larger diameter on the right side. Align the pivot hole with the appropriate mounting hole in the extension plate (see Fig. 18 and Fig. 21 or 22) and insert a .25-20X.75 hex bolt from the left. Secure with a .25-20 nylon stop nut.

8.3.17 Mount the extension plate to the side rail assembly of the cassette with two .25-20X.75 hex bolts and lock washers. The extension plate mounts between the side rail assembly and the side sheet of the cassette as shown in Fig. 19.

8.3.18 With the left hand, push in on the shutter lock plate (see Fig. 17) in cassette A and hold. Use the other hand to push the shutter panel toward the rear of the cassette. The panel should pivot to the left and clear the main contact stabs.

8.3.19 Re-attach the front shutter panel using the hardware removed in step 8.3.7.

**Note:** For 3000A-5000A breakers, ensure that the non-metallic slider is re-installed on the right side standoff rod.

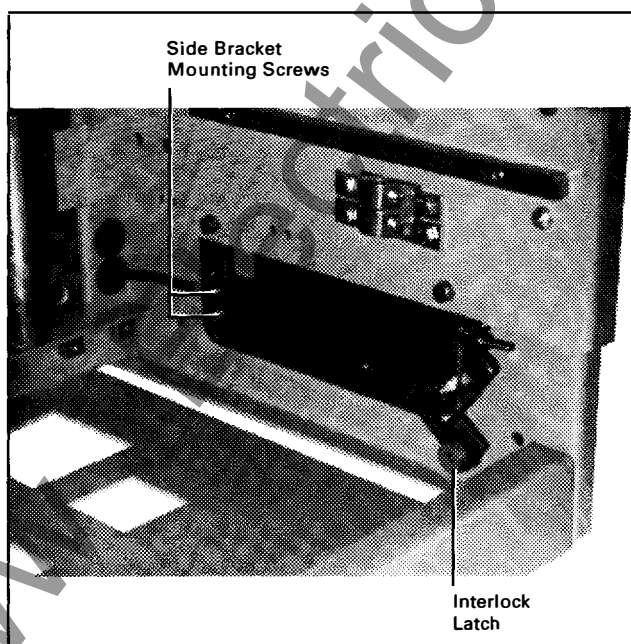


Fig. 19. Extension plate mounted in a 3000A cassette

8.3.20 With left hand, push in on the shutter lock plate and hold. With right hand, push sharply in the center of the shutter panel. The rear shutter panel should slide to the left as the front panel slides back, exposing the stabs. The black non-metallic shutter shaft slider (if equipped) should slide freely. When the lock plate and shutter panels are released they should return to their original positions, concealing the stabs.

8.3.21 Place breaker A in the cassette and remove the four bolts that secure the dead front shield. Set the dead front and bolts aside for Section 9.4. Turn the lever-in mechanism while watching the shutters. As the breaker moves back in the cassette the shutters should open allowing the contact fingers to engage the stabs in the CONNECTED position.

8.3.22 Return breaker to the WITHDRAW position and confirm that the shutters close.

8.3.23 Repeat steps 8.3.7 through 8.3.22 with the other shutter and cable assembly, substituting B for A in steps 8.3.8, 8.3.18 and 8.3.20. Substitute A for B in step 8.3.10.

8.3.24 Go to Section 9.2.

## 9.0 Optional Cable Interlocks

The cable interlock, for use with vertically mounted breakers in a through the door drawout configuration only, is a mechanical, cable operated device which mutually interlocks a pair of breakers. One breaker is held in a trip-free condition while the other breaker is closed. The use of cables permits greater flexibility in the design and layout of the switchgear.

Compatible with the shutters described in Section 8, the cable interlock device is supplied in kit form and UL listed as a field mountable accessory. See Table 4. The kit consists of two cable assemblies, mounting brackets and hardware for installation in the drawout cassettes outlined in Table 2.

Table 4. Cable Interlocking Kits<sup>①</sup>

Frame Size (Amperes)	Poles	Breaker's Center-to-Center Spacing Range (Inches)	Style Number
400-2000	3	21-32	6647C66G01
400-2000	3	33-45	6647C66G02
2500-3000	3	30-36	6647C66G03
2500-3000	3	37-42	6647C66G04
400-2000	4	21-28	6647C66G05
400-2000	4	29-41	6647C66G06
2500-3000	4	32-38	6647C66G07
4000	3	36-41	6647C66G08
4000	3	42-55	6647C66G09

<sup>①</sup> Vertically mounted breakers only.

## 9.1 Installation of Cable Interlock Without Shutters

The installation of the cable interlock can be divided into two parts. The first part is the installation of the interlock channel and bracket assembly to the rear of the cassette. (This will be designated cassette A in the instructions that follow.) This is followed by the installation of the side bracket and interlock latch onto the right rail assembly of another cassette. (This will be designated cassette B.)

Before beginning the installation, read through Sections 9.1 through 9.4 completely.

9.1.1 Turn off all power to buswork. Using a 3/4 in. socket, turn the drawout mechanism of the right side of both breakers to the WITHDRAW position and remove the breaker from the cassettes.

9.1.2 Test for voltage at the buswork before proceeding to ensure that no voltage is present.

#### Installation of Rear Channel and Bracket Assembly

9.1.3 Remove all hardware and rubber seals from the free end of one cable. The rubber seals and .190-32 nut will not be used and can be discarded. Set the .438-20 nuts and star washers aside for step 9.1.7.

9.1.4 Insert the free end of the cable through the 1.0 X 1.5 in. round end slot in the rear channel of cassette A from the front of the cell.

9.1.5 Attach the channel and bracket assembly to the rear channel of the cassette using four (4) .312-18X.75 bolts and lock washers, inserted through the .344 in. diameter holes in the interlock channel (see Fig. 17).

#### Installation of Interlock Latch Assembly

9.1.6 Loosen the rubber grommet from the bottom hole on the back of the right side sheet of cassette B and slide the grommet forward on the wires. Insert the cable through the hole and grommet and slide the grommet back into place.

9.1.7 Thread a .438-20 nut on the cable, running it just over half way down. Slide a .438 washer against the nut and place the side bracket on the cable with the threaded holes in the bracket facing left and back (see Fig. 18). Follow with another .438 washer and nut and tighten finger tight.

9.1.8 Slide one of the provided springs onto the cable and compress it enough to grip the cable behind the threads with locking pliers.

**Note:** Be careful to grip the cable, not the sleeve, with the locking pliers.

9.1.9 Slide the latch assembly onto the cable with the roller down and to the left (see Fig. 18). Secure with a .190-32 nylon stop nut running the nut, all the way down the threads.

9.1.10 **400A-2000A styles:** Orient the extension plate so that the notch on the long side is at the top and toward the rear of the cassette. Position the cable with side bracket and interlock latch assembly against the right side of the extension plate as shown in Fig. 18.

Align the top hole of the side mounting bracket with the top .210 in. diameter hole in the extension plate (Fig. 21, hole B). Attach with a .190-32X.50 screw and lock washer inserted from the left, but do not tighten.

**2500-5000A styles:** Orient the extension plate so that the corner with three .210 diameter holes is at the bottom and towards the rear of the cassette as shown in Fig. 18. Position the cable with side bracket and interlock latch assembly against the right side of the extension plate. For 2500A-3150A styles align the top mounting hole of the side bracket with the top .210 in. diameter hole (Fig. 22, hole B). For 4000A and 5000A styles use the center .210 in. diameter hole (Fig. 22, hole C). Attach with a .190-32X.50 screw and lock washer inserted from the left, but do not tighten.

9.1.11 Align the bottom hole of the side mounting bracket and attach with another .190-32X.50 screw and lock washer. Tighten the bottom screw first and then the top.

9.1.12 Place the pivot in the latch with the larger diameter on the right side. Align the pivot hole with the appropriate mounting hole in the extension plate (see Fig. 18 and Fig. 21 or 22) and insert a .25-20X.75 hex bolt from the left. Secure with a .25-20 nylon stop nut.

9.1.13 Mount the extension plate to the side rail assembly of the cassette with two .25-20X.75 hex bolts and lock washers. The extension plate mounts between the side rail assembly and the side sheet of the cassette as shown in Fig. 19.

9.1.14 Repeat steps 9.1.3 through 9.1.13 with the other interlock and cable assembly, substituting B for A in step 9.1.4. Substitute A for B in step 9.1.6.

#### 9.2 Adjusting the Cable Interlock

9.2.1 With breaker A removed from the cell, turn the lever-in mechanism until the indicator shows either TEST or CONNECTED. Remove the socket and mark the right side sheet of the breaker carriage where the trip arm extends through the side sheet. Measure up .5 in. (1.25 cm) from this resting position and place another mark (see Fig. 20). This marks the .5 in. (1.25 cm) of travel needed to ensure the lockout of this breaker. Turn the lever-in mechanism back to the WITHDRAW position.

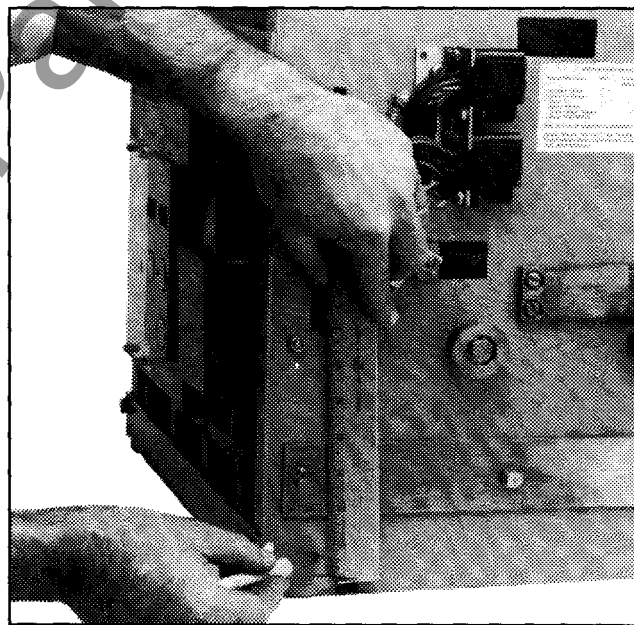


Fig. 20. Marking the Trip Arm Travel

9.2.2 Repeat step 9.2.1 with breaker B.

9.2.3 Insert both breakers into the cassettes and ratchet both in to the CONNECTED position.

9.2.4 Check to see if the roller of breaker A is in the correct position. It should just touch the bottom of the trip arm.

9.2.5 If the roller is too low, remove the breaker from cassette A and adjust the cable by moving it forward in the mounting bracket. If the roller is pushing up on the trip arm, the cable must be moved back. It may be necessary to remove the extension plate from the side rail assembly to perform the adjustment.

9.2.6 Re-insert breaker A in the cassette and check roller position again. Repeat steps 9.2.4 and 9.2.5 until the roller is properly positioned.

9.2.7 When the roller appears to be in the correct position, check the travel by charging and closing breaker B. Verify that the trip arm on breaker A has moved up .5 in. (1.25 cm).

9.2.8 When adjustment in cassette A is complete remove breaker A from the cassette and tighten the adjusting nuts on the cable.

9.2.9 Put breaker A back in the cassette and ratchet it in to the CONNECTED position and repeat steps 9.2.3 through 9.2.8 for the other cable switching the A and B designations as in Section 8.3 or 9.1.

### 9.3 Testing Cable Interlock

9.3.1 When the adjustment for both cables is complete, test the cable interlock by charging both breakers. Close breaker A and push the CLOSE button on breaker B. Breaker B should make no attempt to close. Next, open breaker A and recharge it. Then close breaker B and push the CLOSE button on breaker A. It should make no attempt to close.

If both breakers can be in the closed position at the same time, repeat steps 9.2.3 through 9.2.9.

### 9.4 Return to Service

After proper operation is confirmed, replace the dead fronts and return the breakers to service as required.

**Note:** Cutler-Hammer Inc. assumes no responsibility for damage done to circuit breakers or other equipment during field mounting of any accessories.

### 10.0 Instructions for Installation of Breaker Position Nameplate

A breaker position nameplate is supplied with each through the door drawout circuit breaker. To install this nameplate lift the padlock latch and insert a 3/4-inch socket wrench. Rotate wrench clockwise until the indicator label is in the "TEST" position. Remove the wrench and verify that the padlock latch drops and that the tab on the right sheet falls into the test position slot on the indicator wheel.

Place the breaker position nameplate to the left of the indicator window so that the arrows line up.

Reinsert the wrench and rotate counterclockwise until the indicator label lines to the "WITHDRAWN" position prior to insertion into the stationary portion of the cassette.

### 11.0 Operation Check

- Ensure wiring is clear of all obstructions.
- Rack breaker to "DISCONNECTED" position; visually verify that secondary contacts are apart. Manually charge and close breaker.
- Rack breaker to "TEST" position; ensure tab falls into slot of indicator wheel on right hand side of movable mechanism. Verify that breaker trips when padlock latch is raised. See Fig. 14.
- Visually verify that the secondary contacts are connected; check electrical continuity by energizing the control circuit and operating the breaker.
- Rack breaker to "CONNECTED" position; visually verify that secondary contacts remain connected.
- Rack breaker to "DISCONNECTED" position; visually verify that secondary contacts are apart.

### 12.0 Instructions for Manufacturing the Cassette Cover

Cassette covers (see Fig. 24, 25 and 26) should be manufactured using the following drawings:

400-2000C - Use Drawing 6649C84  
2500-3000 - Use Drawing 6649C85  
4000 - Use Drawing 6649C85

**Note:** If a flanged cover is to be used, the flange length from the inside of the cover to the edge of the flange should be no greater than .88 inches. Longer dimensions may hold the breaker from being racked in to the "CONNECTED" position completely.

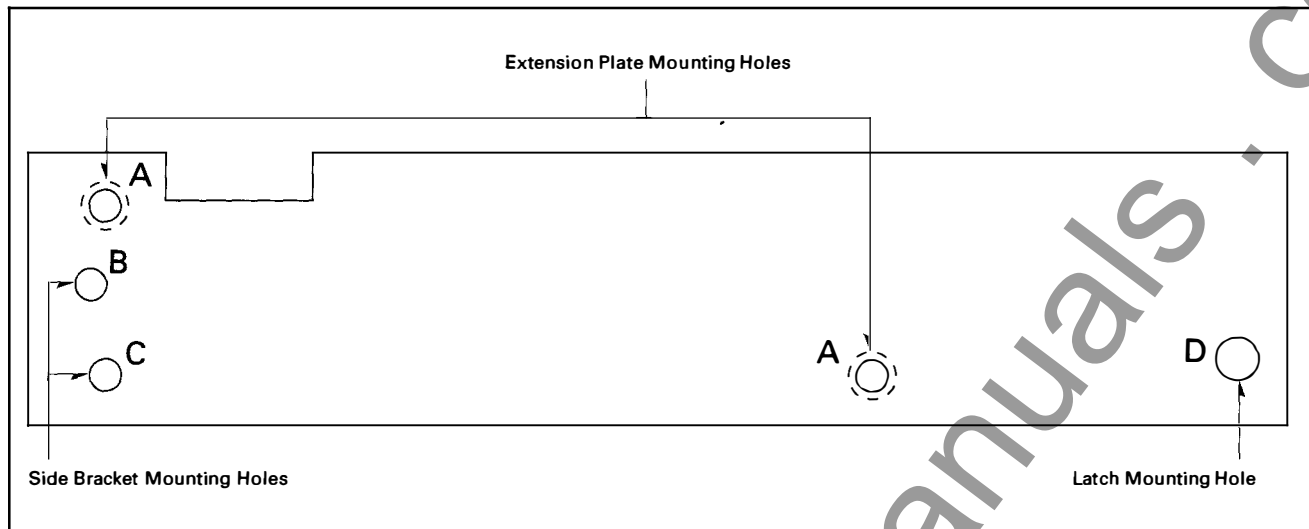
#### NOTICE

**CIRCUIT BREAKER SHOULD NOT BE PLACED IN SERVICE WITH SHIPPING STRAPS INSTALLED. REPLACE WITH SUITABLE CASSETTE COVER.**

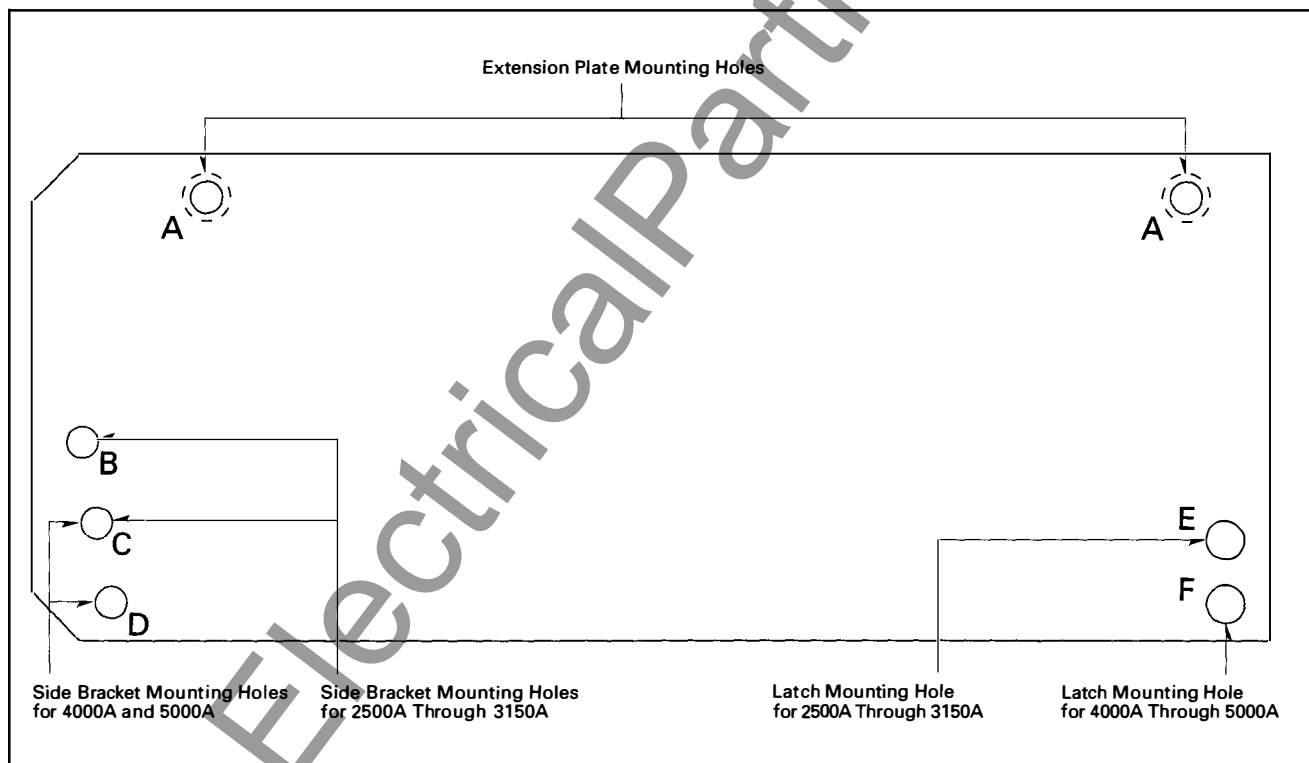
### 13.0 Instructions for Caution Label

The purpose of this label is to prevent, in this cassette, the use of a circuit breaker with a continuous current rating higher than that of the branch bus connecting it to the main bus. It also is to prevent the use of a circuit breaker with an interrupting current rating less than the maximum available short circuit capacity of the system.

Write in the branch bus continuous current rating and the maximum available short circuit capacity of the system in the indicated spaces. Place label on the left guide track. See Fig. 23.



**Fig. 21.** Side Bracket and Latch Mounting Locations on Extension Plate for 400A-2000A Breakers



**Fig. 22.** Side Bracket and Latch Mounting Locations on Extension Plate for 2500A-5000A Breakers

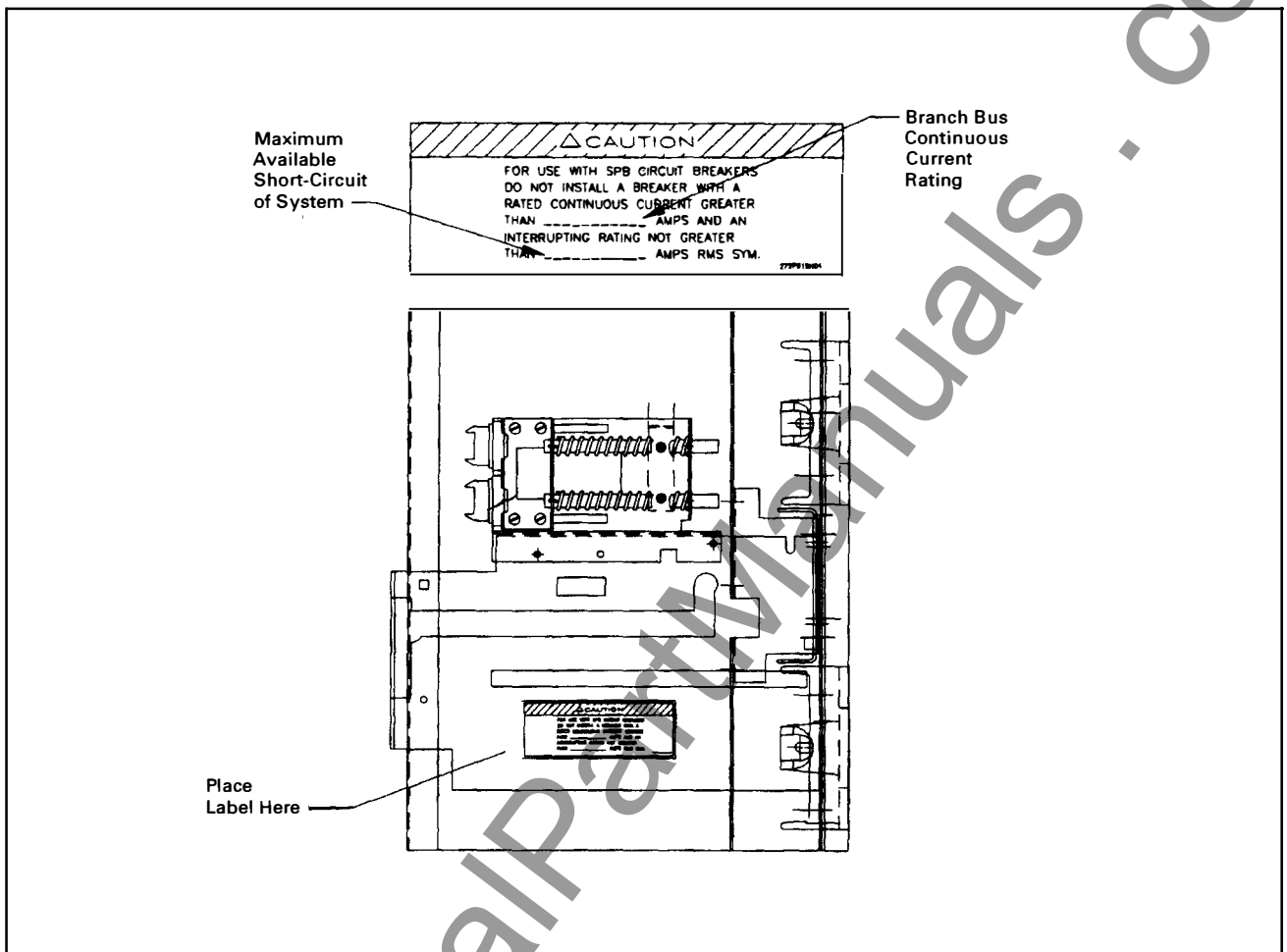


Fig. 23. Caution Label Instructions

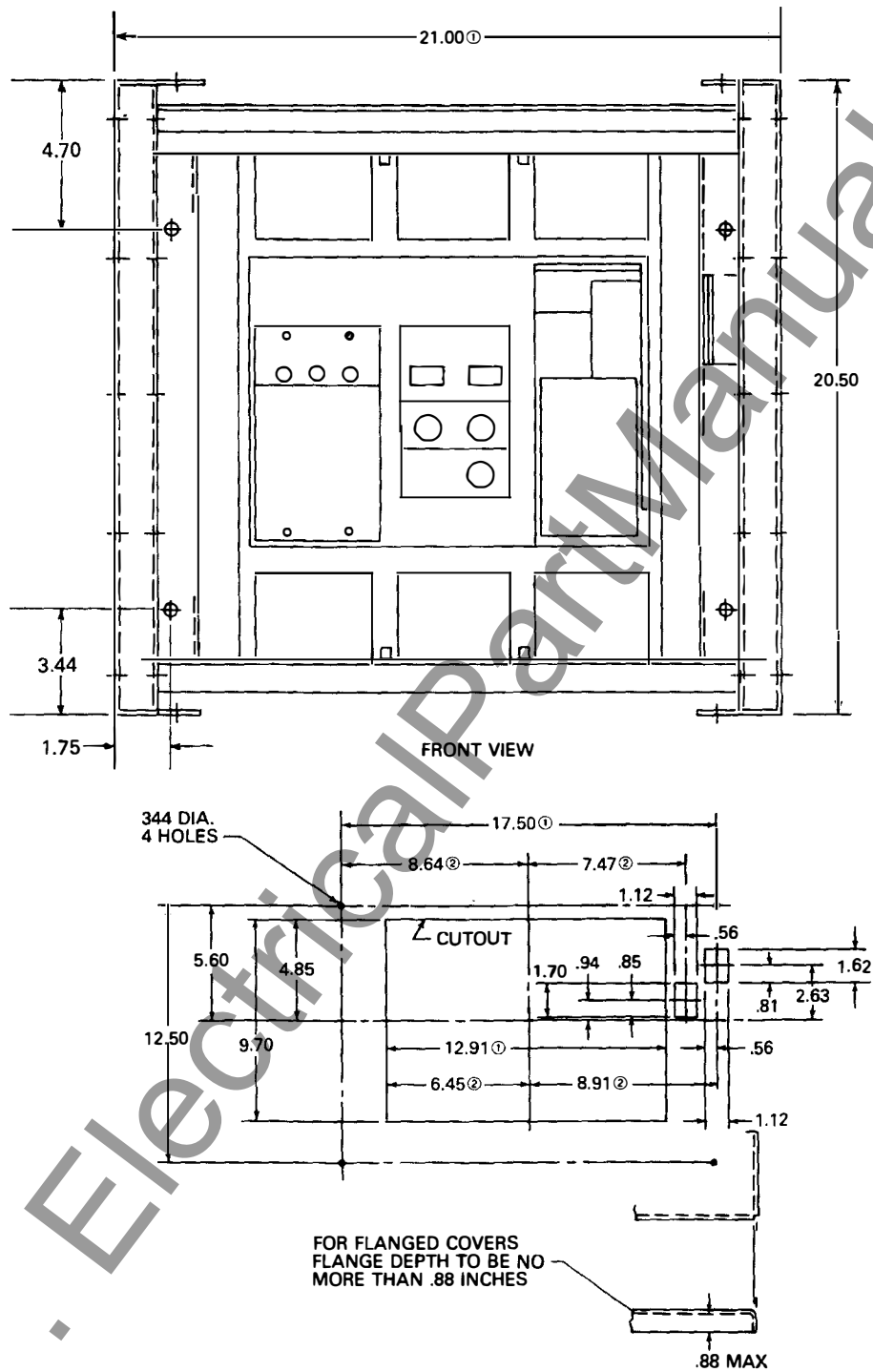


Fig. 24. Front Cover Cutout Detail for all SPB, RD and RDC Cassettes Through 2000A



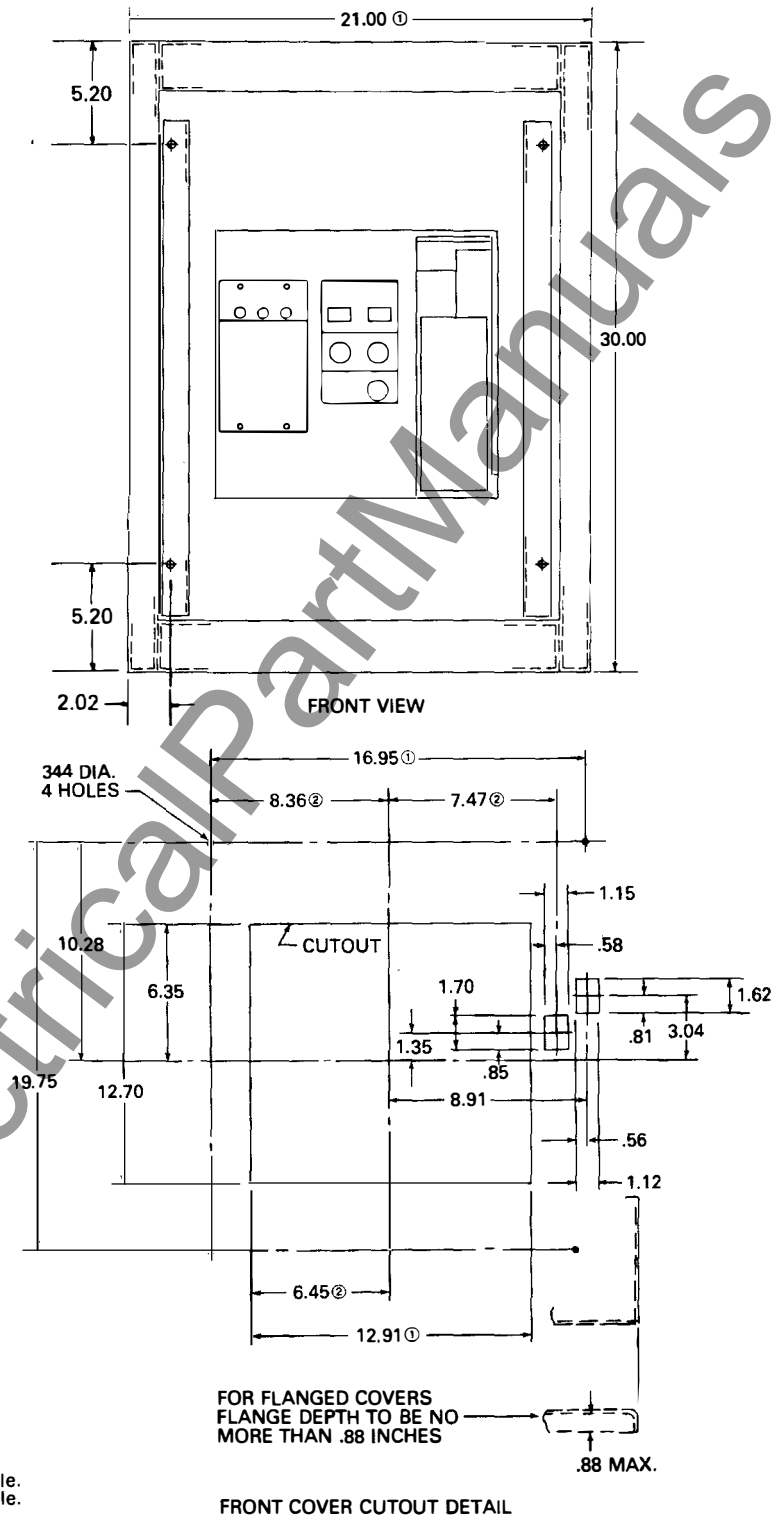


Fig. 25. Front Cover Cutout Detail for 3000A SPB Cassettes

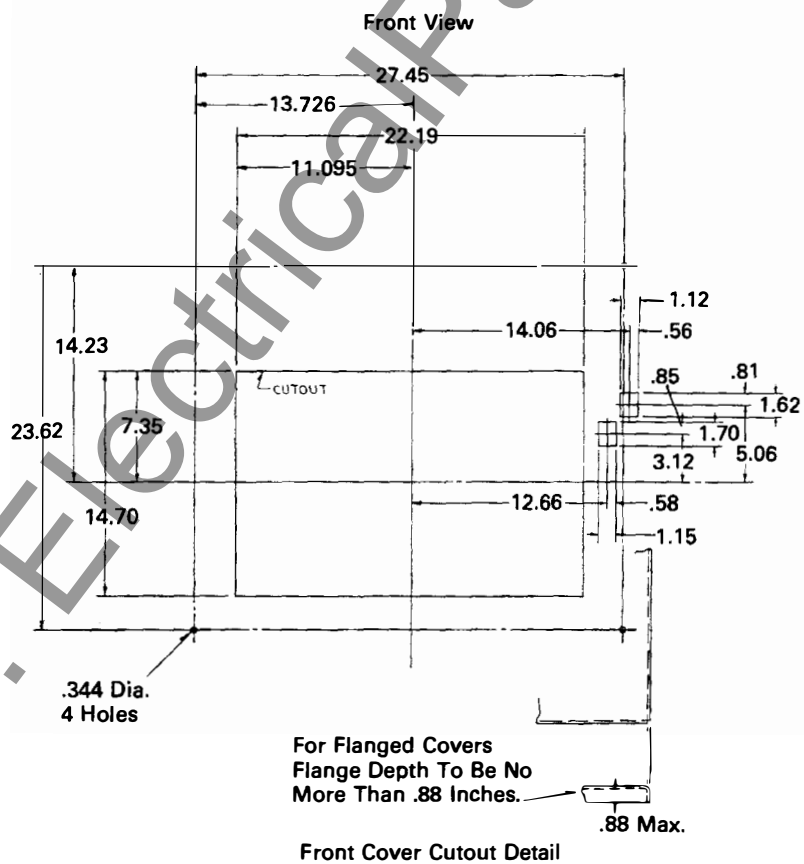
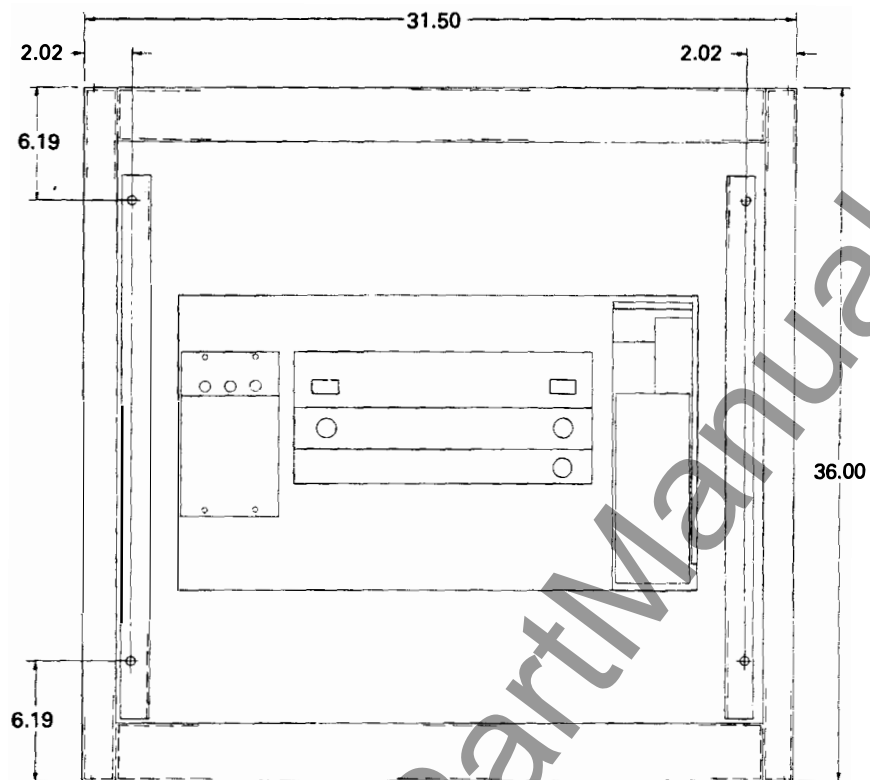


Fig. 26. Front Cover Cutout Detail for 4000A SPB Cassettes

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