

Instructions for Installing Auxiliary Switches in Type SPB, Systems Pow-R Breakers



I.L. 15159-A
File 29-800

UL LISTED DEVICE

Auxiliary Switches are listed by Underwriters Laboratories, Inc. as a circuit breaker accessory, under File E64983. Field installation of an auxiliary switch in a Systems Pow-R Breaker does not void the breaker UL listing.

GENERAL DESCRIPTION/PURPOSE

Auxiliary switches are used in remote control circuits for interlocks, indicating lights, and signal contacts to indicate the open or closed position of the breaker main contacts. The position of the main contacts is indicated by closed or open switches as follows:

“a” Contacts – Open when breaker is open and closed when breaker is closed.

“b” Contacts – Closed when breaker is open and open when breaker is closed.

Auxiliary switch assemblies are supplied in kit form for field installation as illustrated in Fig. 1. Kits are available as indicated in Table 1, for fixed or standard drawout, or for cassette type drawout mounting. Also, switches are available for standard circuits or for Low Level Electronic Circuits see Table 1 for proper catalog numbers. Kits are supplied complete with a pre-assembled wiring harness, mounting hardware, and wire ties. All assemblies are for mounting internally in the right pole of the breaker, as described in this leaflet.

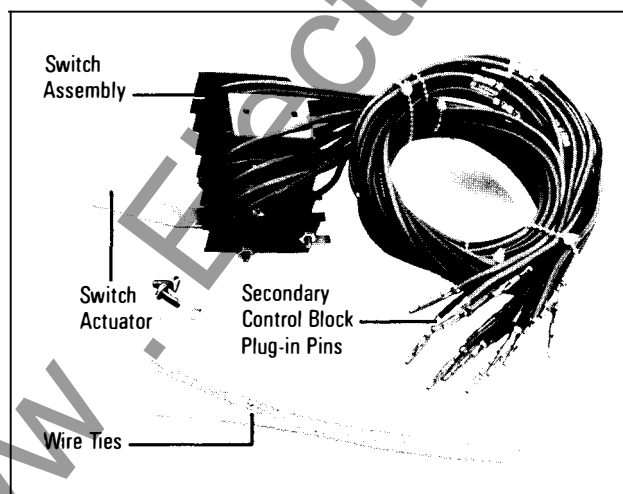


Fig. 1 Typical Auxiliary Switch Kit (6(a/b) shown as reference only)

Table 1
Auxiliary Switch Kit
Catalog Numbers ①

Breaker Frame Rating Amperes	Frame Height Inches	No. of a/b (SPDT) Switches	Auxiliary Switch Kit Cat. No. ②	
250	12	4	SPB AUX 164	
400		4	SPB E AUX 164	
800		4	SPB AUX C 164	
1200		4	SPB E AUX C 164	
1600		16	4	
2000C	4			
2000	22		4	SPB AUX 304
2500			4	SPB E AUX 304
3000			4	SPB AUX C 304
		4	SPB E AUX C 304	
4000	26	4	SPB AUX 404	
5000		4	SPB E AUX 404	
		4	SPB AUX C 404	
		4	SPB E AUX C 404	

- ① Proper Catalog Reference must be selected on the basis of frame rating, height, and mounting to insure the proper harness length.
- ② Catalog designations are as follows: SPB E AUX – low level electronic circuit use. SPB AUX C – cassette drawout mounting. SPB E AUX C – low level electronic circuit use in cassette mounted SPB.

ELECTRICAL RATING

Standard Switch

120-600 Volts, 50/60 Hz., 6.0 Amps
24-125 Volts, dc, 0.5 Amps

Low Level Electronic Circuit Switch

120 Volt, 50/60 Hz., 1.0 Amps
30 Volt, dc, 1.0 Amps

CAUTION: Before attempting to install any circuit breaker accessory, the circuit breaker must be opened and the stored energy in the mechanism springs discharged. If drawout, the breaker should be removed from the cell and taken to a suitable work bench where the installation can be properly made and tested before being placed in service. General instructions for operating System Pow-R Breakers are provided in I.B. 15082.

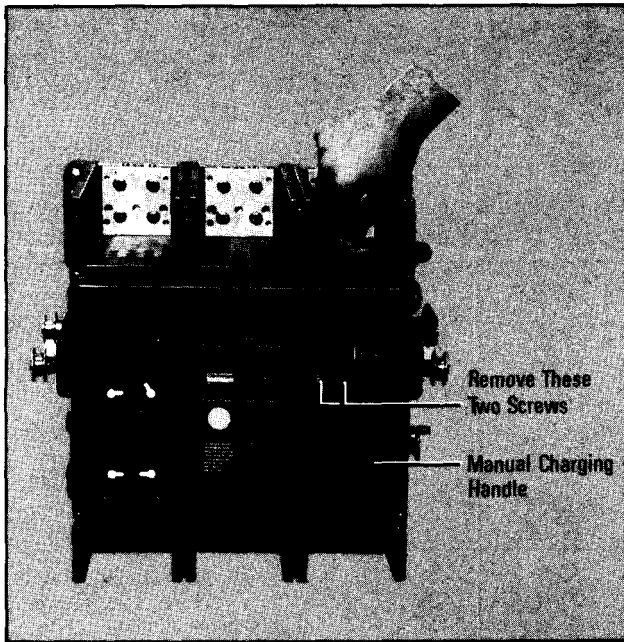


Fig. 2 Removing Charging Handle Screws from an SPB Breaker

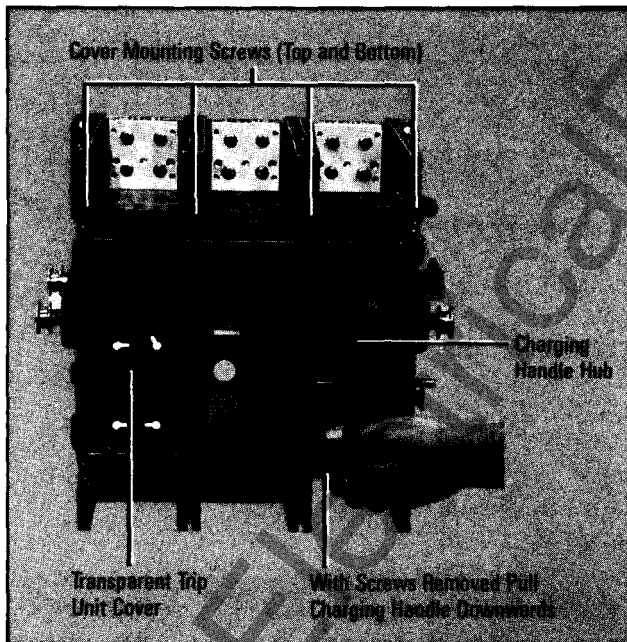


Fig. 3 Removing Charging Handle

WARNING: THERE IS A HAZARD OF ELECTRICAL SHOCK OR BURN WHENEVER WORKING IN OR AROUND ELECTRICAL EQUIPMENT. ALWAYS TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE SWITCHBOARDS.

FRONT COVER REMOVAL

To install an auxiliary switch, the manual charging handle and front cover must first be removed. To remove the manual charging handle, remove the two screws as shown in Fig. 2 and pull the handle downwards as shown in Fig. 3. Next, remove the cover mounting screws illustrated in Fig. 3. The transparent cover over the trip unit need not be removed separately, since it will be removed intact with the front cover.

CAUTION: ON BREAKERS BUILT BEFORE 1982, THERE IS A SMALL PROJECTION ON THE CHARGING MECHANISM HUB THAT SERVES AS A POSITIONING GUIDE FOR INSTALLING THE FRONT COVER. IF THE MECHANISM IS MANUALLY CHARGED WITH THE FRONT COVER REMOVED, CARE SHOULD BE EXERCISED TO AVOID OVER EXTENDING THE CHARGING LEVER EITHER UPWARDS OR DOWNWARDS, WHICH COULD BREAK-OFF THE PROJECTION. WITH THE FRONT COVER IN PLACE, THE HUB STOPS AGAINST THE COVER AND THIS CONDITION WILL NOT OCCUR.

AUXILIARY SWITCH INSTALLATION

1. The switch assembly may be installed with the breaker in either the vertical or horizontal position. If the horizontal position is selected with a drawout breaker, a simple frame should be used to support the breaker and prevent possible damage to the secondary disconnect blocks.
2. Temporarily remove the bottom right pole vertical barrier to properly position the switch assembly. Re-install the barrier after the switch assembly is installed.
3. Mount the switch assembly to the center mounting barrier as shown in Fig. 4, using two panhead screws (0.138-32 x 0.375) and lockwashers. A completed assembly is shown in Fig. 5.
4. On drawout breakers, route the control wires to the appropriate secondary control disconnect block. A typical installation is illustrated in Fig. 6. Color coded wires with marked terminal designations and plug-in pins are provided.

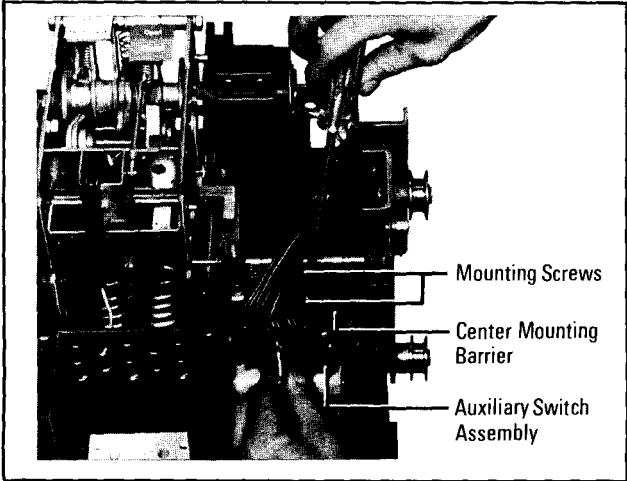


Fig. 4 Installation of Auxiliary Switch Assembly

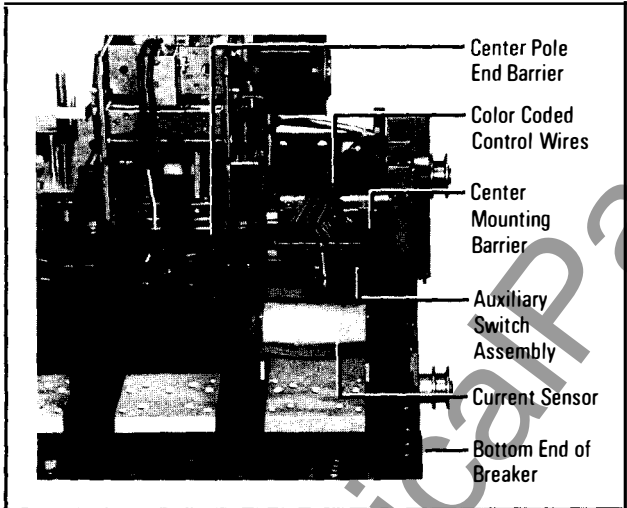


Fig. 5 View of Auxiliary Switch Assembly Installed with Front Cover and End Barrier Removed

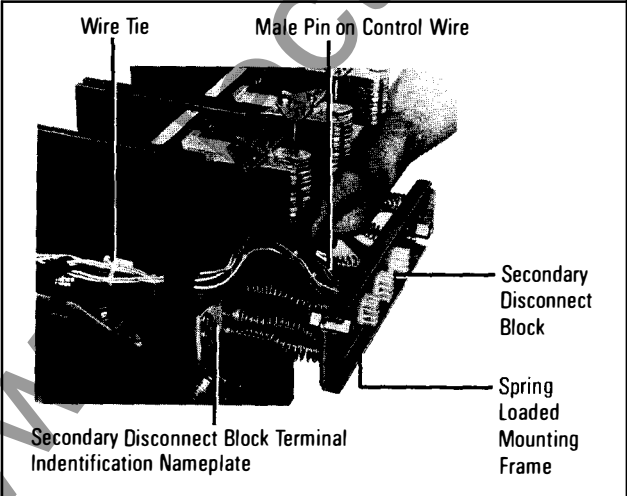


Fig. 6 Typical Control Wire Connections to Secondary Disconnect Block on Drawout Breaker

5. On fixed mounted breakers with side mounted terminal blocks – when provided – route the control wires to the appropriate terminal block or to alternate terminal blocks in the switchboard when the breaker is reinstalled.

6. Connect all control wires as indicated by the connection diagrams in either Figs. 8 or 11. Exact terminal locations for both types of drawouts and fixed mounted breakers are shown.

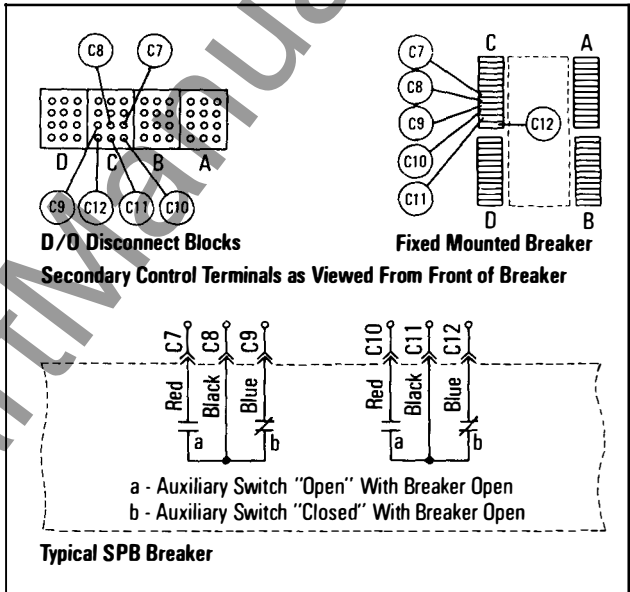


Fig. 7 Connection Diagram shown for 2(a/b) Spare Auxiliary Switches (shown for reference only)

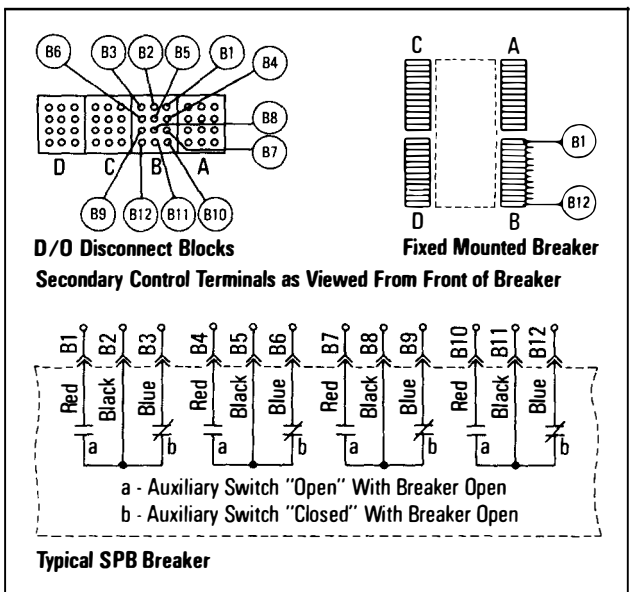


Fig. 8 Connection Diagram shown for 4(a/b) Spare Auxiliary Switches for Standard Drawout and Fixed Mounted Breakers

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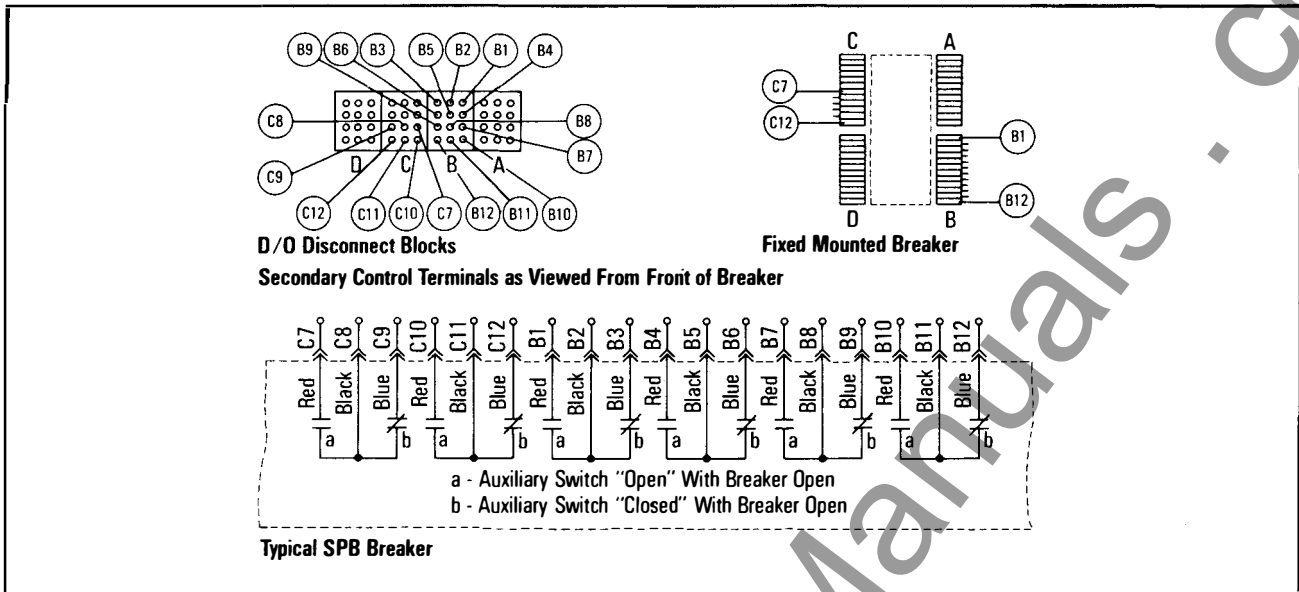


Fig. 9 Connection Diagram shown for 6(a/b) Spare Auxiliary Switches (shown for reference only)

AMP type male pin terminations are provided for insertion into the drawout disconnect blocks. To properly insert a male pin, push it in until it snaps in position. Test by pulling - it should not be removable. For fixed mounted breakers with side mounted terminal blocks, the male pins should be removed and the lengths of wires modified as required. A special extraction tool is required to remove the terminations from the drawout disconnect blocks. Details on this, plus other termination details are given in Figs. 10 and 12.

Make sure that control wires do not interfere with moving parts or the front cover when it is replaced.

TEST OPERATION – ADJUSTMENTS

CAUTION: OBSERVE NORMAL SAFETY PRECAUTIONS TO AVOID CONTACT WITH MOVING PARTS IN THE MECHANISM AS WELL AS ENERGIZED TERMINATIONS IN THE CONTROL CIRCUIT.

Temporarily, reinstall the manual charging handle so that the proper operation of the auxiliary switches can be confirmed. The auxiliary switch must operate when the breaker is opened and closed. The auxiliary switch assembly has been pre-adjusted at the factory and further field adjustments should not be required.

RETURN TO SERVICE

After proper mechanical operation is confirmed, replace the vertical end barrier, the front cover and manual charging handle. Attach the nameplate supplied with the acces-

sory kit on the side of the breaker adjacent to the control leads. Return to service as required.

NOTE: WESTINGHOUSE ASSUMES NO RESPONSIBILITY FOR DAMAGE DONE TO CIRCUIT BREAKERS DURING FIELD MOUNTING OF ANY ACCESSORY.

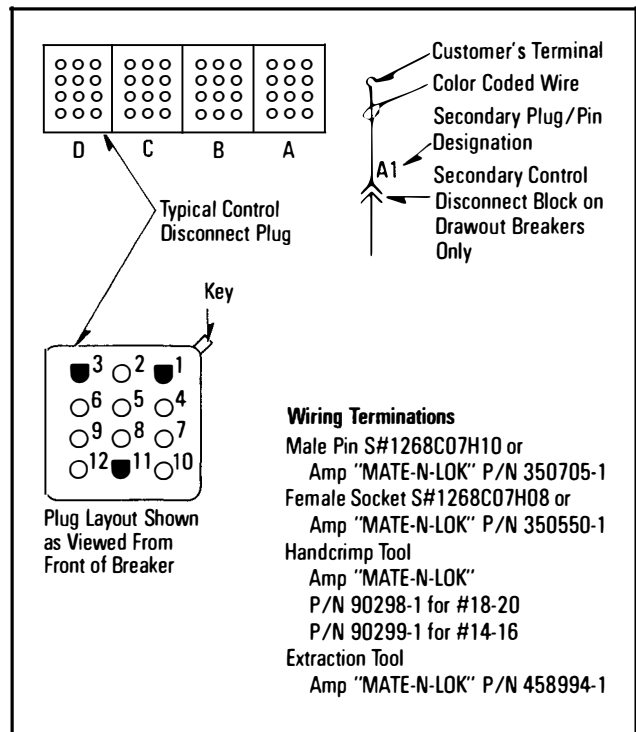


Fig. 10 SPB Control Wire Location and Termination Details for Standard Drawout

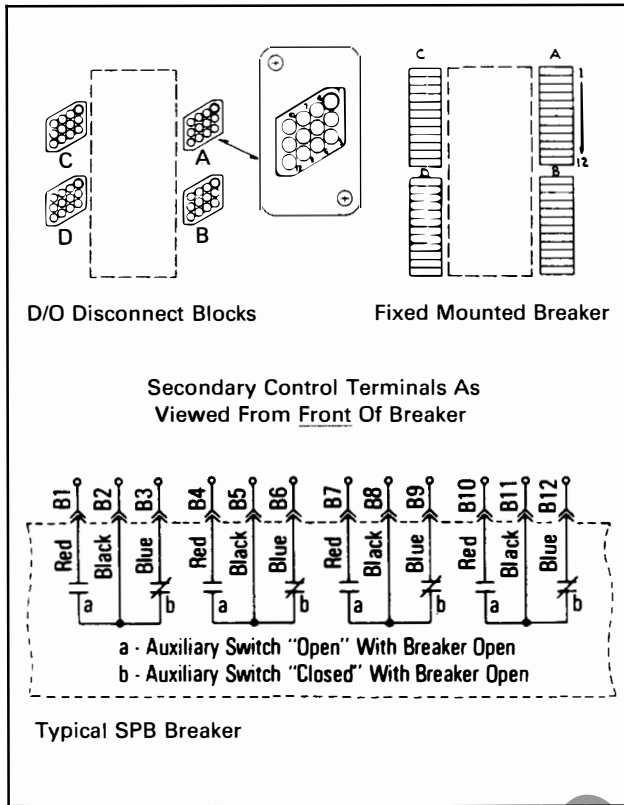


Fig. 11 Connection Diagram shown for 4(a/b) Spare Auxiliary Switches for Cassette Drawout and Fixed Mounted Breakers

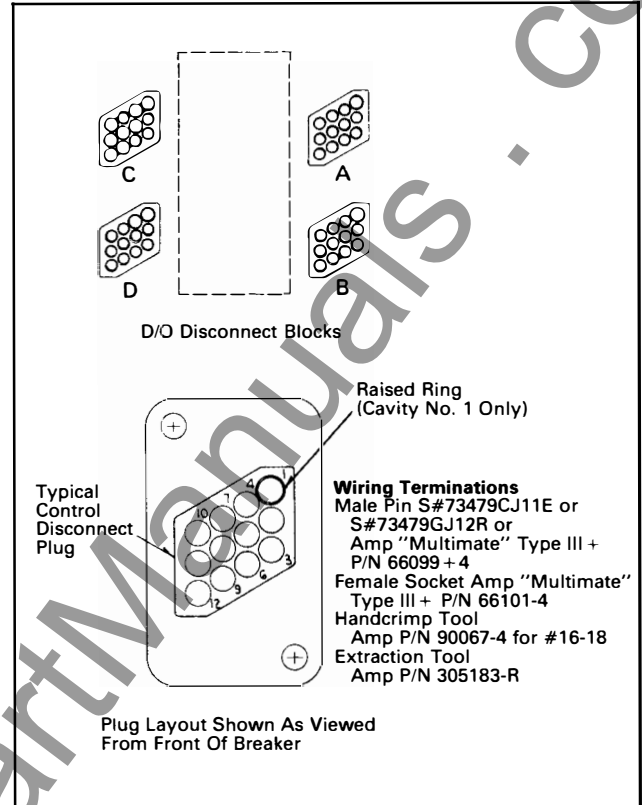


Fig. 12 SPB Control Wire Location and Termination Details for Cassette Drawout

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