

Installation Instructions



⚠ DANGER

Hazardous voltage. Will cause death or serious injury.

Turn off and lock out all power supplying this device before removing cover or device and while cover is removed.

Replace the cover before power supplying this device is turned on.



SAFETY INSTRUCTIONS

Accessory installation should be completed **before** the breaker is mounted and connected. If breaker is installed, **be sure to turn off power supplying breaker** before installing accessory. Disconnect and remove the breaker from the panel or enclosure to install the accessories.

NOTE: This instruction outlines the recommended installation procedure. Accessory units can be mounted in either left or right poles of circuit breaker.

Circuit Breaker Preparation

1. Depress trip button (See Fig. 1) to trip circuit breaker prior to removing cover. Before installing accessory unit, breaker **must** be in tripped position.
2. Remove five load end cover screws (A, Fig. 1) and, if breaker is mounted, also remove two mounting screws (B, Fig. 1). Remove load end cover only, and remove handle and handle barrier.
3. Ref. Fig. 2: Locate the 5/16 x 5/32 channel for the accessory wire leads. On models with a molded in knock out, remove one half of the knock out for two wire accessories such as single auxiliary switches and the entire knockout for four wire accessories such as double auxiliary switches, shunt trip, alarm, undervoltage trip and low voltage switch. Remove channel knockouts only from the side in which the accessory is to be installed.
4. On models with access holes plugs, remove the access hole plug (T) from the 5/16 X 5/32 accessory lead access hole (C) by pushing the plug into the interior of the circuit breaker. (NOTE: The moveable contacts must be pushed downward slightly for removal of the plug from the circuit breaker.) Remove the plug only from the side in which the accessory is to be installed.

Accessory Mounting Instructions

NOTE: Shunt trip and Undervoltage trip may require special installation procedure. See Item 5.

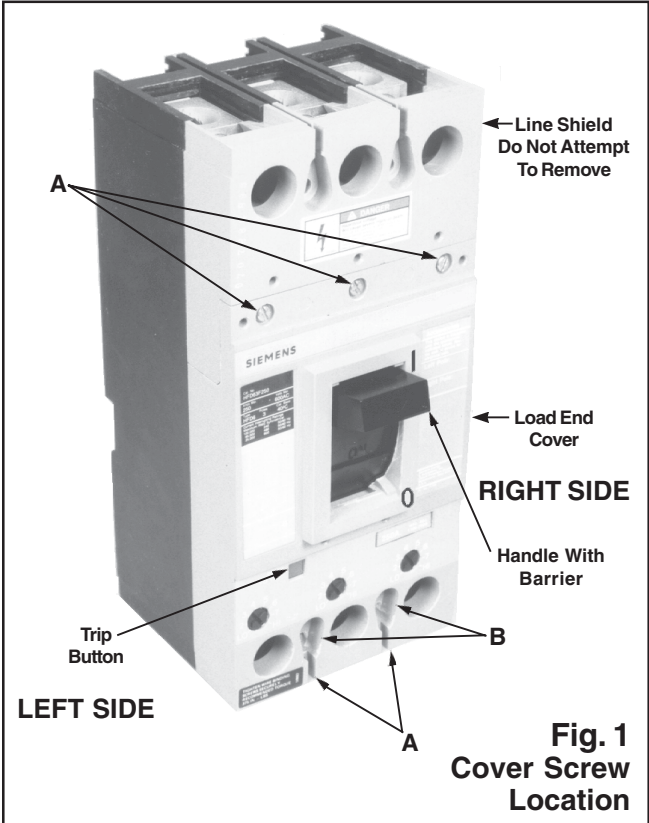


Fig. 1
Cover Screw Location

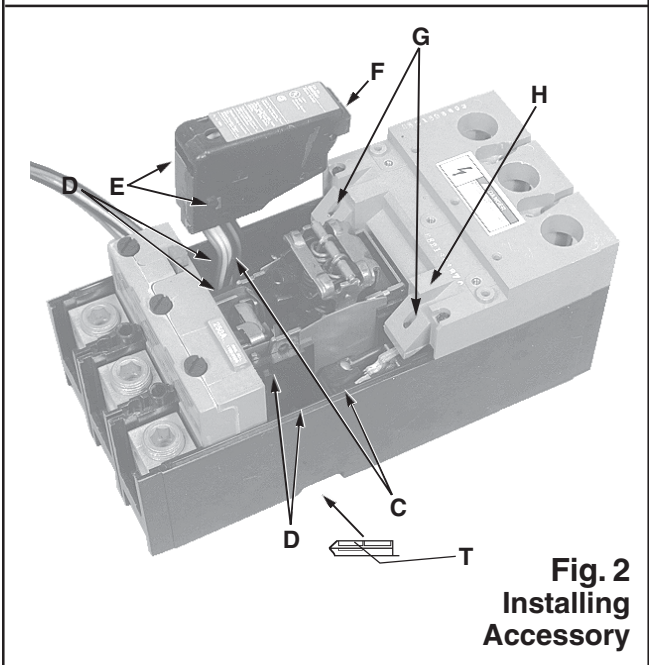
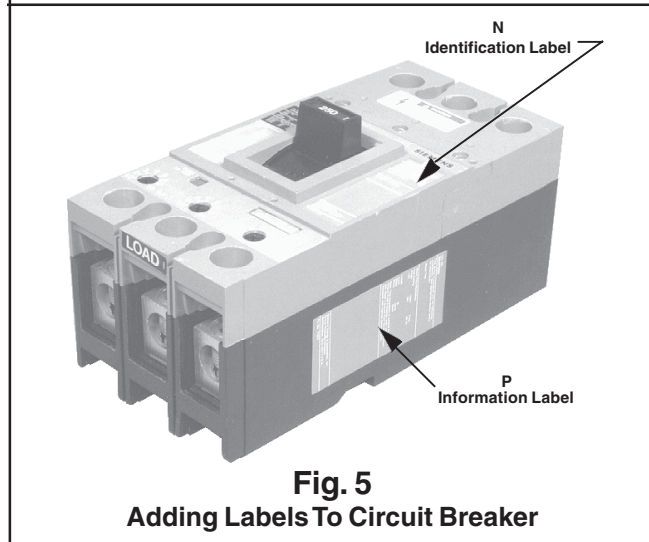
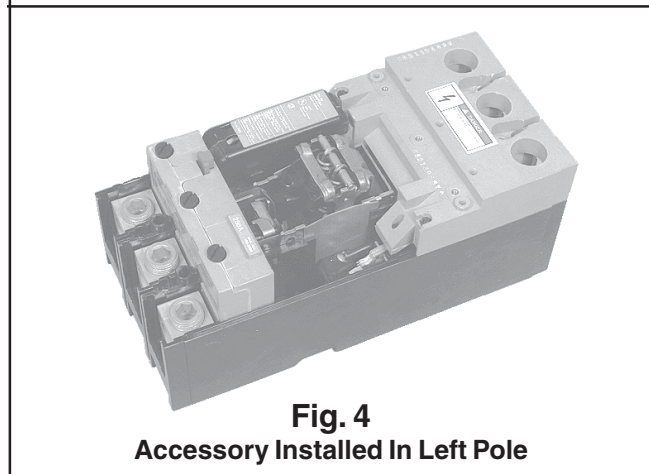
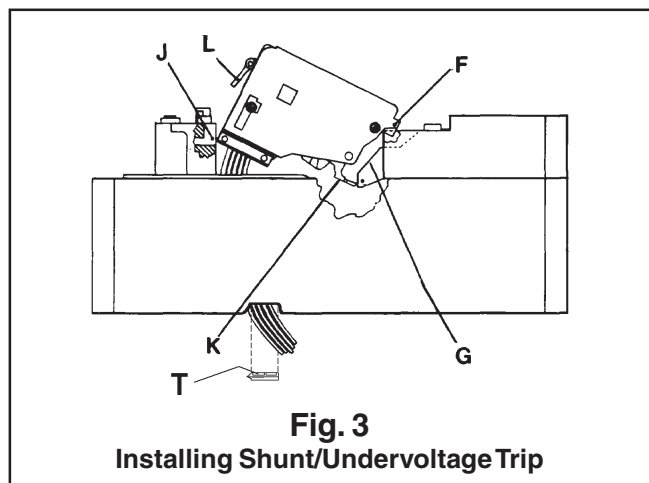


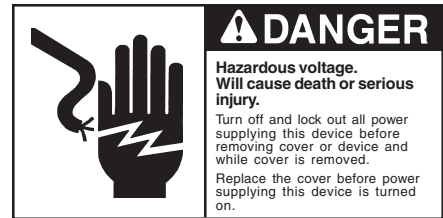
Fig. 2
Installing Accessory



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5. **Ref. Fig. 2:** Feed accessory leads through the opened channel for accessory wire leads to bring the leads out bottom of circuit breaker. (NOTE: Leads must be routed in the same order as they exit wire retainer of the accessory case.) Pull gently and evenly on accessory wire leads (2 to 6 wires) while lowering the accessory into the base. Accessory is located in circuit breaker by two ribs, (E), one on each side of the accessory. Slide accessory down into two slots (D) in base. Make sure all slack is removed from leads inside the breaker. When accessory is correctly installed, tops of ribs on side of accessory will be at same level as top outside edge of the breaker base, and front of accessory case (F) will rest on sloped surface (G) of line shield.
6. **Shunt and Undervoltage Trip Installation:** Shunt Trip and Undervoltage Trip units must be delatched to install. When the device is delatched, there will be approximately 5/16 inch gap between the latch lever foot (K, Fig. 3) and the accessory case. (To delatch Shunt Trip, push on the center of label on top of accessory until device delatches.)
 Optional: If labels are found on trip unit, remove the small label covering the opening in the trip unit (J, Fig. 3), in the pole in which the accessory is to be mounted.
 Start the accessory into the breaker by tilting the line end of the accessory (F, Fig. 3) down at approximately 30° and lower the accessory into the breaker, guiding the latch lever foot (K, Fig. 3) under the edge of the line cover (G, Fig. 3), and the tab on the accessory case (F, Fig. 3), into the slot on top of the line cover near (G, Fig.3). As the lever foot clears the line cover, rotate the accessory parallel with the breaker and lower into position while guiding the transfer link (L, Fig. 3) into the opening (J, Fig. 3) at the top of the trip unit. Be sure to remove all slack from the wire leads inside the breaker.
7. Replace handle and handle barrier (orient tabs and handle "ON" marking nearest trip unit), load end cover and cover screws (quantity 5), and two mounting screws if removed (See A & B, Fig. 1).
8. Add two labels provided to circuit breaker. Attach accessory identification label (N, Fig. 5) to appropriate space in label on top of right side of circuit breaker cover. Attach accessory information label (P, Fig. 5) on side of circuit breaker as shown.
9. NOTE: 250 VDC & 600 VAC undervoltage trip devices require the use of an external voltage dropping resistor (supplied) in series with the supply circuit.





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Auxiliary Switch Information

All switches have three leads which are identified as follows:

Wire Markings	Wire Color	Switch Terminals or Contacts
C1 or C2	White	C - Common Terminal
A1 or A2	Black	open when breaker is open, closed when breaker is closed.
B1 or B2	Red	closed when breaker is open, open when breaker is closed.

Auxiliary Switch Mechanical / Electrical Check

1. Use a buzzer or light indicator attached to switch leads A1 and C1. With breaker in "ON" position, indicator light or buzzer should operate.
2. Turn breaker to "OFF" position, indicator light or buzzer should turn off.
3. With leads B1 and C1 attached to indicator, it should operate with breaker in the "OFF" position and not operate with breaker "ON".
4. Repeat steps 1 - 3 using leads A2, B2 and C2.

Should the indicator not function properly during check procedure, check for incorrect installation or wiring.

Auxiliary Switch Kits

Cat. No.	Number Of Switches	Ampere Rating Of Switch					
		A.C. Voltage			D.C. Voltage		
		120V	240V	480V	24V	125V	250V
A01FD62	1	7.2	7.2		.5	.25	
A02FD62	2	7.2	7.2		.5	.25	
A01FD64	1	7.2	7.2	7.2	.5	.25	
A02FD64	2	7.2	7.2	7.2	.5	.25	
A01FDLV	1	1			.1		

Maximum Accessory Combinations Which Can Be Installed			
Shunt Trip*	Undervoltage Trip	Auxiliary Switch(s)	Alarm Switch
1	1	1	—
1	—	2	—
1	—	1	1
—	1	3	—
—	1	2	1
—	—	3	1
—	—	4	—

*Shunt trip units include coil clearing switch.

Electrical Check:

Shunt Trip Accessory

1. Reset and turn circuit breaker ON.
2. Attach test circuit to accessory leads. When the test voltage reaches a minimum of 55 percent of the rated coil voltage, the circuit breaker must trip.
3. With breaker TRIPPED or OFF, check to make sure coil circuit has opened.

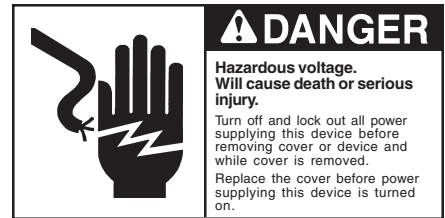
Electrical Data For Shunt Trip

Coil Voltage	Inrush Current At Rated Voltage (Amperes)	Cat. No.
60 Cycles AC		
12	3.9	S19FD60
24	1.2	S17FD60
48	.8	S18FD60
120	.395	S01FD60
208	.265	S02FD60
240	.165	S03FD60
277	.190	S15FD60
480	.145	S04FD60
600	.080	S06FD60
D.C.		
12	4.3	S16FD60
24	2.2	S07FD60
48	1.2	S09FD60
125	.5	S11FD60
250	.35	S13FD60

Electrical Check:

Undervoltage Trip Accessory

1. With breaker in TRIPPED position, connect test circuit to accessory leads. Energize undervoltage trip device at 85 percent of the marked rated voltage of the coil. Reset and turn breaker handle ON. Breaker must reset and turn on.
2. Reduce voltage to 35 percent of rated coil voltage. Circuit breaker must trip between 70 and 35 percent of rated voltage.



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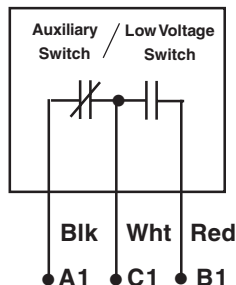
Electrical Data For Undervoltage Trip

Coil Voltage	Sealed Current At Rated Voltage (Amperes)	Cat. No.	
60 Cycles AC			
120	.03	W01FD64	U01FD60
208	.018	W02FD64	U02FD60
240	.016	W03FD64	U03FD60
277	.013	W16FD64	U16FD60
480	.008	W06FD64	U06FD60
*600	.008	W08FD64	U08FD60
D.C.			
24	.11	W13FD64	U13FD60
48	.06	W14FD64	U14FD60
125	.027	W10FD64	U10FD60
**250	.02	W12FD64*	U12FD60

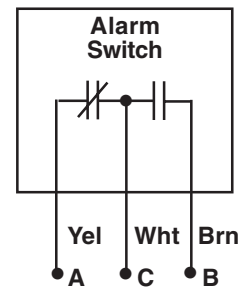
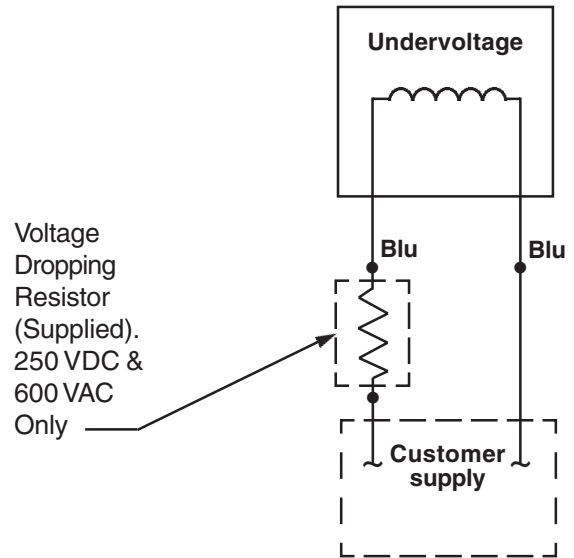
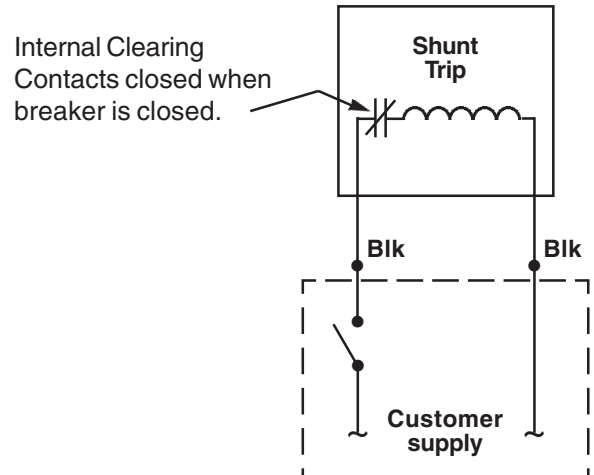
- * Kit includes a 30k ohm, 25 watt resistor.
- ** Kit includes a 2.5k ohm, 25 watt resistor.
- *** **Note:** Resistor to be mounted externally and connected by installer in series with undervoltage supply circuit.

Accessory Units

Accessory units employing an auxiliary switch in combination with a shunt trip, an undervoltage trip, an alarm switch, or a second auxiliary switch will utilize the wire colors and designations for each device as shown below. A double auxiliary switch combination will use wiring marking A2, B2, and C2 for the second switch.



- A1-C1 Closed when circuit breaker is closed.
- B1-C1 Open when circuit breaker is closed.



- A-C Closed when circuit breaker is in tripped position.
- B-C Open when circuit breaker is in tripped position.