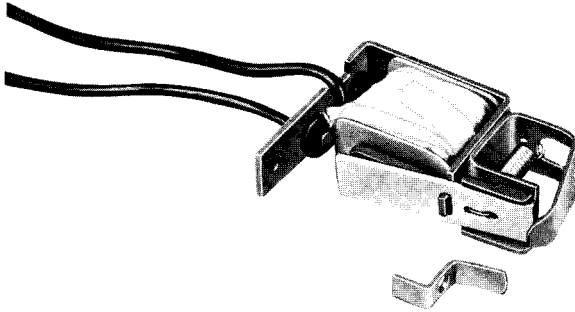


**Molded Case Circuit Breakers
EQ® QJ Frame - 225 Amperes
Internal Accessories/Features**

INSTRUCTIONS

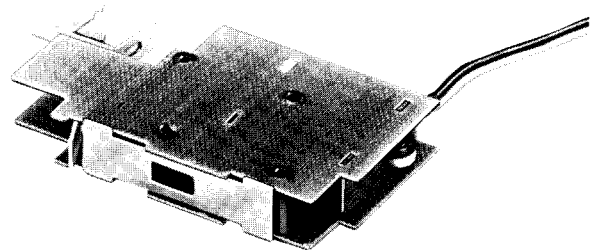


SHUNT TRIP



One or all critical breakers may be tripped at the push of a button from a distant control point by use of a shunt trip device. This device operates through an auxiliary switch contact, so that when the breaker opens, current cannot be maintained on the shunt trip coil. The shunt trip is available in all three-pole QJ frame circuit breakers in coils rated 120 and 240 volts ac.

AUXILIARY SWITCH



For applications requiring remote "On" or "Off" indication or electrical interlocking, single-pole, double-throw auxiliary switches are available in all three-pole QJ frame circuit breakers. Each switch comprises an "A" (normally open when breaker is open) and a "B" (normally closed when breaker is open) contact, with a common connection. The auxiliary switch assembly provides one or two auxiliary switches for the use of the customer.

INSTALLATION OF FEATURES

CAUTION: Never attempt to install internal accessories while electricity is applied to circuit breakers. Always remove the power source.

Shunt trip and/or auxiliary switch devices for QJ frame circuit breakers are mounted in the cavity molded into the breaker base between the center and right poles of the breaker.

The auxiliary switch assembly is designed to provide one or two auxiliary switches for the customer's use. When installing a shunt trip device, an auxiliary switch must be used in conjunction with the shunt trip coil and wired in series with it. A single auxiliary switch is included in the shunt trip kit for this purpose.

If an auxiliary switch is required for an external accessory circuit in addition to the shunt trip, a separate two-switch assembly, Cat. No. A02QJ0R3, must be substituted for the single auxiliary switch assembly supplied with the shunt trip. One of the switches is wired in series with the shunt trip, leaving one switch for the external accessory circuit.

For this joint installation of shunt trip and additional auxiliary switch, the lead wire marked "B" (red wire) must be removed from one of the switches by cutting it off as close as possible to the point where it leaves the breaker housing. The remaining stub should then be tape-sealed.

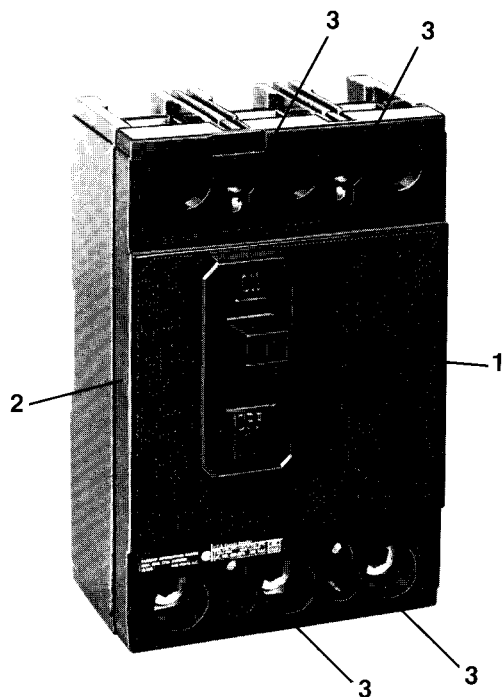


Fig. 1

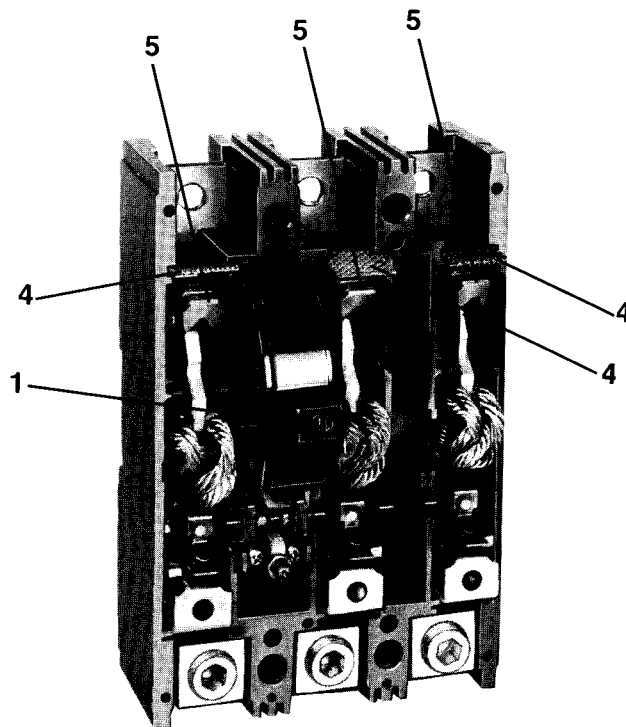


Fig. 2

GENERAL INSTALLATION PROCEDURES

CAUTION: Remove circuit breaker from electrical system.

1. Always exercise circuit breaker handle (1) by turning ON-OFF several times to assure initial functioning of breaker mechanism.
 2. Place handle in OFF position.
 3. Place circuit breaker face down on a prepared surface. Be sure to protect handle from damage.
 4. Using drill guide on page 8, drill and deburr the holes required for specific features. Exercise extreme care so that drill bit just breaks through molding material on the inside of the breaker.
 5. Remove the circuit breaker cover (2) after removing the four cover rivets (3) that secure it using a steel drift pin or similar device.
 6. Remove the operating handle (1) and all end shields (4) and arc chute assemblies (5), carefully noting location of each part to facilitate re-installing.
 7. Remove debris caused by drilling from the interior of the circuit breaker housing.
- CAUTION:** Use only DRY AIR or vacuum equipment.
8. Install accessories, following specific instructions for each device as shown on the following pages.
 9. In reverse order, replace all parts and reassemble breaker.

INSTALLATION OF AUXILIARY SWITCH ASSEMBLY

NOTE: Auxiliary switch assemblies for QJ frame circuit breakers are mounted in the cavity molded into the base between the center and right poles of the breaker.

The auxiliary switch assembly is designed to provide one or two auxiliary switches for the customer's use. If it is used in conjunction with a shunt trip device, one of the switches must be wired in series with the shunt trip, leaving only one switch for customer use. If an auxiliary switch is required for an external accessory circuit in addition to the shunt trip, a separate two-switch assembly, Cat. No. A02QJ0R3, must be substituted for the single auxiliary switch assembly supplied with the shunt trip. One of the switches is wired in series with the shunt trip, leaving one switch for the external accessory circuit.

For this joint installation of shunt trip and additional auxiliary switch, the lead wire marked "B" (red wire) must be removed from one of the switches by cutting it off as close as possible to the point where it leaves the breaker housing. The remaining stub should then be tape-sealed.

CAUTION: Remove circuit breaker from electrical system.

1. Follow General Installation Procedures outlined for features on page 3.
2. Slip auxiliary switch actuator lever (6) over the connector bar (7) and snap into position as shown in Fig. 3.

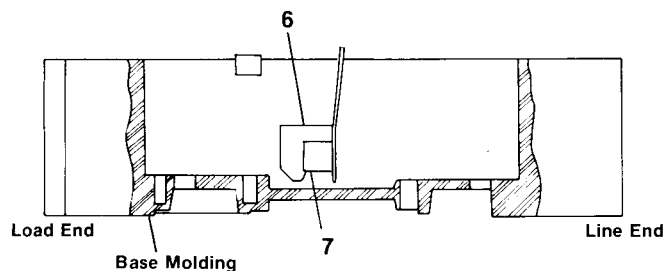
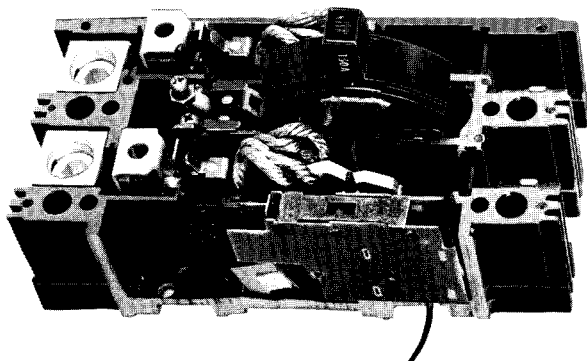


Fig. 3

AUXILIARY SWITCH INSTALLED IN BREAKER



3. Following Fig. 4, thread auxiliary switch wire leads through proper hole(s) that have been previously drilled at the line end. For one auxiliary switch, use the hole closest to the line end connectors. For two switches, use both holes drilled as indicated in the drill guide on page 8.

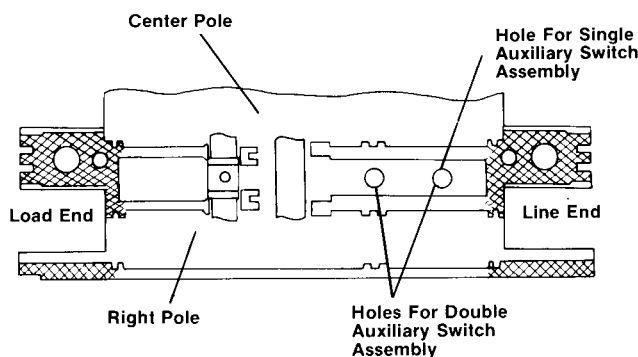


Fig. 4

4. Place auxiliary switch assembly in the molding cavity as illustrated in Fig. 5, fitting over the actuator lever (6). Side plates (8) must be positioned in the molding slots (9) near the tripper bar (10).

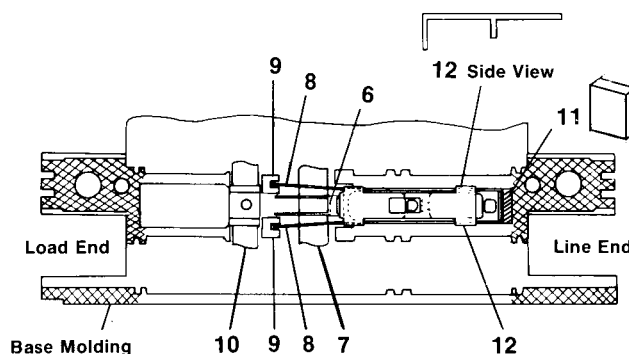


Fig. 5

5. Position black fiber spacer shield (11) at top of switch assembly near line end of breaker.
6. Place auxiliary switch actuator (12) on top of the switch assembly with its formed leg toward the actuator lever (6) in position on the connector bar (7). See Fig. 5.

7. Be sure wire leads (13) are pulled tight from the interior and maintain position by placing Ty-Wrap(s) (14) as close as possible to outside rear of base molding. See Fig. 6.

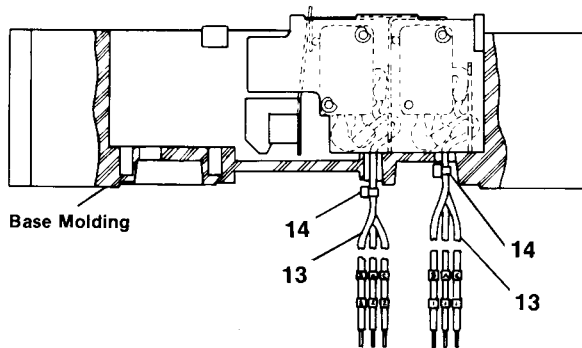


Fig. 6

8. Check function of auxiliary switch(es) by placing a continuity tester or equivalent device across switch contact leads. See Fig. 7.

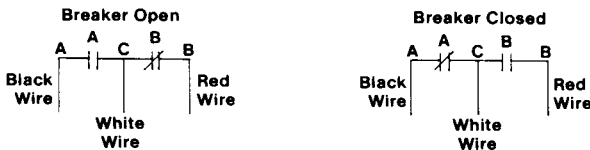


Fig. 7

With breaker open, circuit will be through white (C) and red (B) leads of each switch.

With breaker closed, circuit will be through white (C) and black (A) leads of each switch.

9. Latch circuit breaker mechanism. Depress moving contact arm (15) slowly toward a closed position. Continuity tester or a click should indicate that switch has functioned when moving contact arm

Special Note: Be sure to attach both parts of two-part label enclosed with Accessory Kit as shown in diagrams on page 8.

has been depressed approximately 3/16". If switch fails to function at this point, then correct by bending auxiliary switch actuator lever (6) slightly. See Fig. 8.

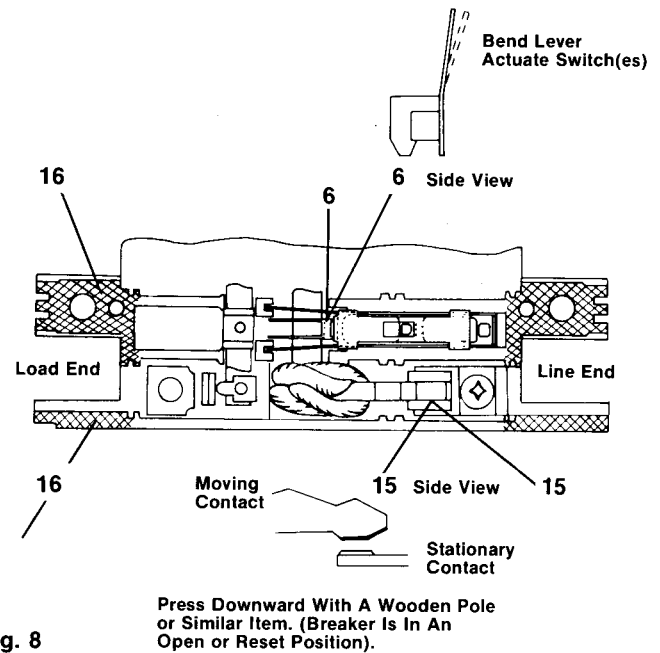


Fig. 8

10. Place a small amount of high-temperature, solid lubricant on the actuator lever where it touches the switch actuator.
11. If auxiliary switch assembly is the only device required, proceed to step 12 below and follow to end of instructions. If shunt trip is to be installed, follow instructions on page 6.
12. Replace all arc chute assemblies, end shields and handle in reverse order of removal.
13. Enlarge four cover rivet holes, using No. 22 (.157" dia.) drill.
14. a. Replace cover and secure with self-tapping screws provided.
b. Test operating function of auxiliary switch(es).
15. Reopen cover and apply silicone adhesive/sealant supplied with kit to breaker base molding on cross-hatched areas only at line and load ends (16). See Fig. 8.
16. a. Replace cover and secure with self-tapping screws provided.
b. Retest for operation of switch(es).
17. Seal cover screws with RTV uncured silicone rubber compound.

INSTALLATION OF SHUNT TRIP

NOTE: Shunt trips for QJ frame circuit breakers are mounted in the cavity molded into the base between center and right poles.

When installing a shunt trip device, an auxiliary switch must be used in conjunction with the shunt trip coil and wired in series with it. A single auxiliary switch is included in the shunt trip kit for this purpose.

If an auxiliary switch is required for an external accessory circuit in addition to the shunt trip, a separate two-switch assembly, Cat. No. A02QJ0R3, must be substituted for the single auxiliary switch assembly supplied with the shunt trip. One of the switches is wired in series with the shunt trip, leaving one switch for the external accessory circuit.

For this joint installation of shunt trip and additional auxiliary switch, the lead wire marked "B" (red wire) must be removed from one of the switches by cutting it off as close as possible to the point where it leaves the breaker housing. The remaining stub should then be tape-sealed.

CAUTION: Remove circuit breaker from electrical system.

1. Follow General Installation Procedures outlined for features on page 3.
2. Following Fig. 9, thread shunt trip wire leads through proper holes that have been previously drilled at the load end as indicated in the drill guide on page 8.

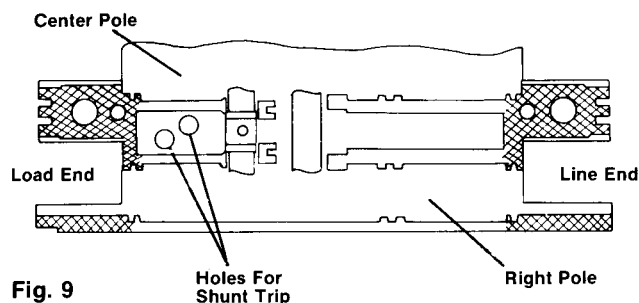
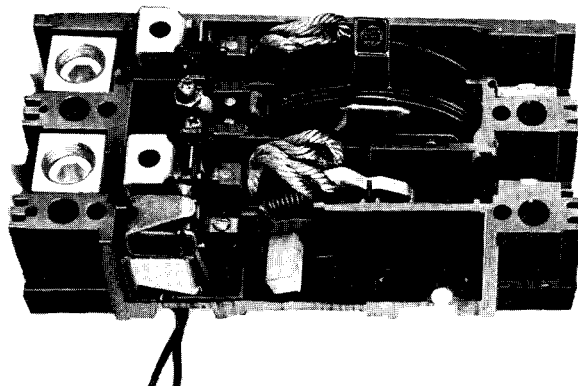


Fig. 9



SHUNT TRIP INSTALLED IN BREAKER

3. Place shunt trip in the molding cavity as illustrated in Fig. 10.

Be sure to

- a. Feed **one** wire through each hole.
- b. Fit extrusion on bottom of shunt trip magnet yoke assembly (17) into hole in base (18).
- c. Position black fiber spacer shield (19) between magnet yoke assembly and base molding.

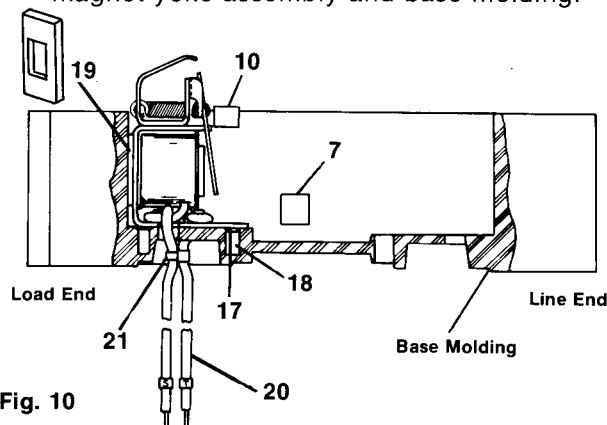


Fig. 10

4. Be sure wire leads (20) are pulled tight from the interior and maintain position by placing Ty-Wrap (21) as close as possible to outside rear of base molding. This will assure that the shunt trip assembly, when installed, will remain flat against bottom of breaker base molding.
5. Place trip lever (22) on top of tripper bar (10) with long, angled leg facing shunt trip as illustrated in Fig. 11. Fasten in position with self-tapping screw (23) provided.
6. Refer to pages 4-5 for the installation procedure for the auxiliary switch assembly.
7. Properly installed features will be positioned as indicated in Fig. 11.

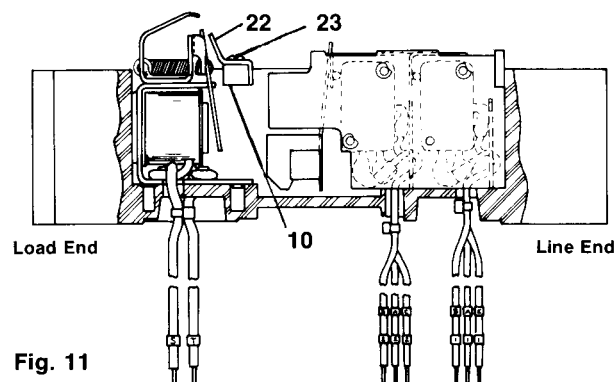


Fig. 11

8. Refer to Page 7 for instructions covering adjustments and test procedures necessary to assure that shunt trip functions properly.

Special Note: Be sure to attach both parts of two-part label enclosed with Accessory Kit as shown in diagrams on page 8.

ATTACHMENTS, TEST PROCEDURES

SHUNT TRIP

1. Latch circuit breaker mechanism and move operating handle to close contacts.
2. If breaker cannot be latched, check trip lever (22) and be sure it is not interfering with the armature and rotating the tripper bar (10). Bend the trip lever away from the armature if required, then repeat step 1. Refer to Fig. 12.
3. With breaker contacts closed, position a small screwdriver (24) under the tripper bar (10) and depress armature (25) of the shunt trip device. Breaker should trip when armature is depressed.
4. If breaker does not trip, check for proper installation of shunt trip device or any binding parts. Correct if required.
5. With shunt trip functioning properly mechanically, perform electrical test as follows:
 - a. Connect shunt trip and auxiliary trip as shown on wiring label and in Fig. 13. Switch circuit is in series with shunt trip.
 - b. Latch and close circuit breaker.
 - c. Apply the normal voltage indicated by the Catalog Number. Shunt trip must trip breaker at 55% or less of the full coil voltage for both a-c and d-c operation. Auxiliary switch circuit wired in series with shunt trip must be closed when breaker is tripped.
6. Replace all arc chute assemblies, end shields and handle in reverse order of removal.
7. Enlarge four cover rivet holes using No. 22 (.157" dia.) drill.
8. Apply silicone adhesive/sealant supplied with kit to breaker base molding on cross-hatched areas only at line and load ends (16). See Fig. 9.
9. Replace cover and secure with self-tapping screws provided.
10. Seal cover screws with RTV uncured silicone rubber compound.

CAUTION: Exercise extreme care when working with voltage supply.

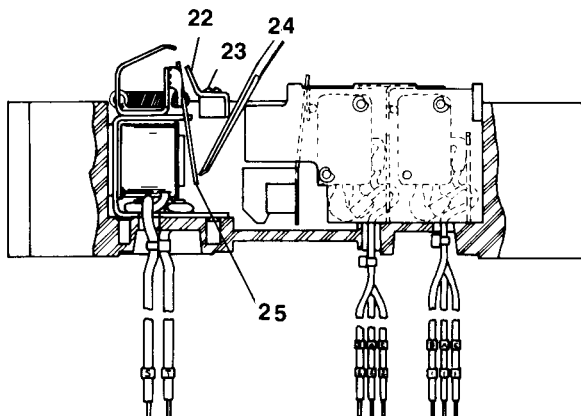


Fig. 12

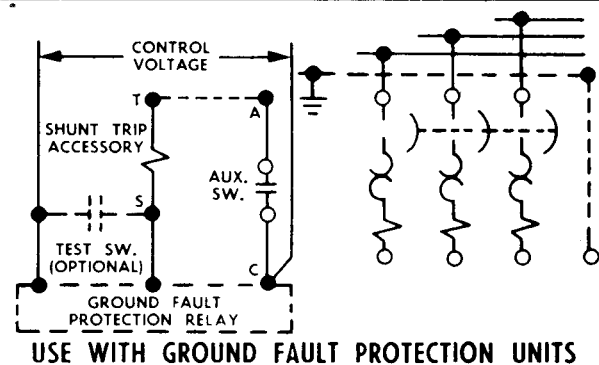
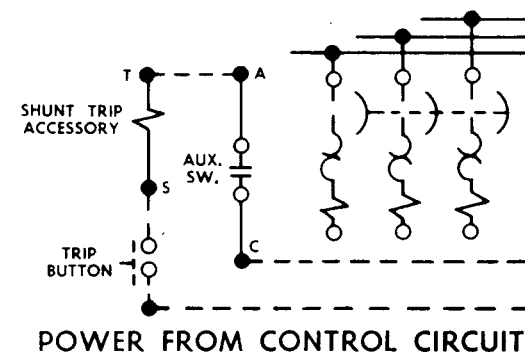
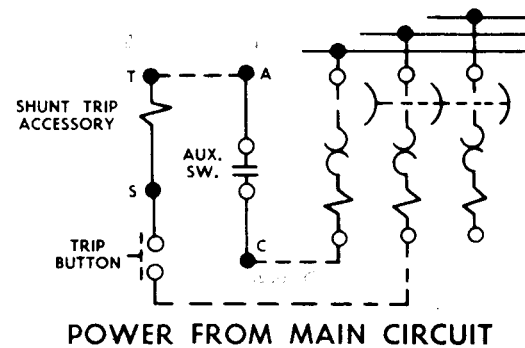
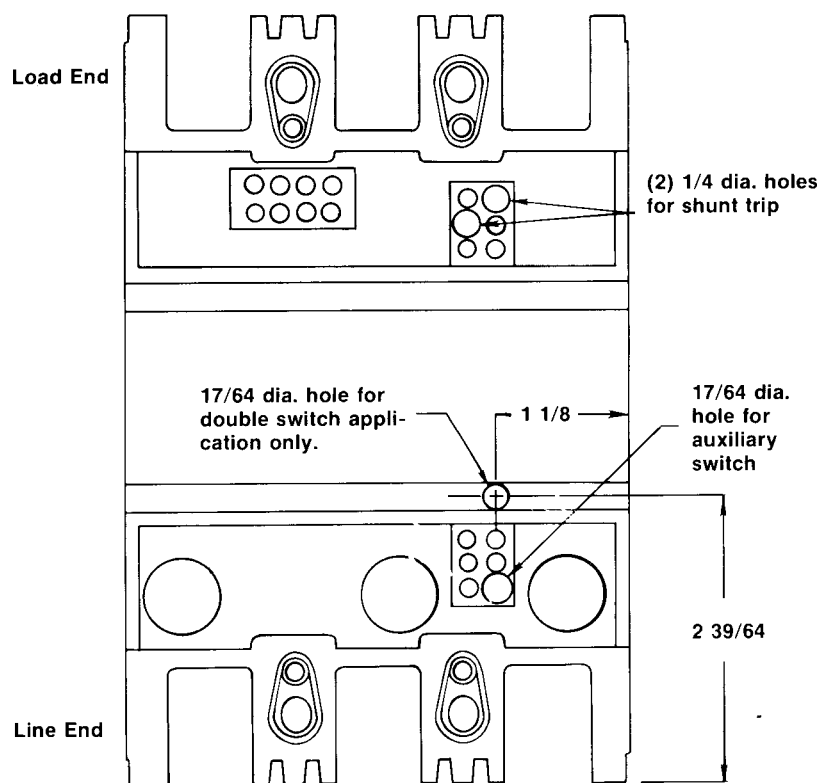


Fig. 13

INTERNAL ACCESSORIES FOR QJ FRAME BREAKERS

			Accessories U/L Listed When Installed By Factory Or Qualified Feature Installer						
			Shunt Trip Meets U/L Requirements For Operation At 55% Of Rated Nominal Voltage (1)		Auxiliary Switches Next To Last Letter Indicates Pole Installation — (R) Right Pole (L) Left Pole				
Circuit Breaker Type	Nominal Operating Voltage		Catalog Number	Inrush Current	No. Of SPDT Switches	Catalog Number	Application Limits		
	AC	DC					Per Amps	Switch Volts	
QJ	120		S01QJ0R3	.310	1	A0KPJ0R3 A02QJ0R3	.5	125V DC	
	240		S01QJ0R3	.620			.25	250V DC	
		24	S07QJ0R3	5.600	2		.5	125V AC	
		48	S09QJ0R3	.910			15	250V AC	
		120	S10QJ0R3	.180					

DRILL GUIDE FOR INSTALLING FEATURES



POSITIONING OF LABEL

