



SHUNT TRIP OPERATING CURRENTS

Rated Voltage	Tripping Voltage Range	Nominal Operating Currents (Amperes) For Shunt Trip Features Used With Breaker Type(s)					
		EQ®-P, EQ-B	QJ	E, EH, EF, HE	CE	FJ	JJ, JL, HJ, CJ, KM, HM, CM, MP, KP, HP, CP, HR, CR
AC (60 HZ)							
115	86–125	0.45	0.34	0.13	0.28	0.71	2.0
230	173–250	0.9	0.17	0.059	0.17	0.059	1.1
460	345–500	—	—	0.03	0.34	0.03	2.1
600	450–625	—	—	0.039	0.44	0.039	2.7
DC*							
24	18–25	—	0.86	1.3	0.09	1.3	—
48	36–50	—	0.41	0.056	0.88	0.33	4.5
125	94–130	—	0.19	0.018	0.33	0.15	0.61
250	188–260	—	—	0.035	0.21	0.035	0.51

*Control from exciter circuits Not Recommended.

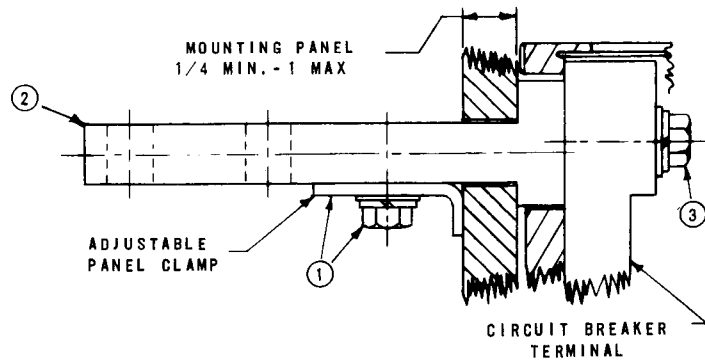
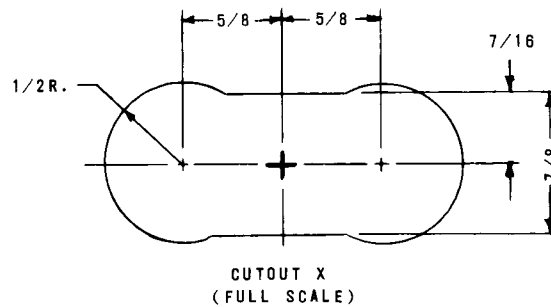
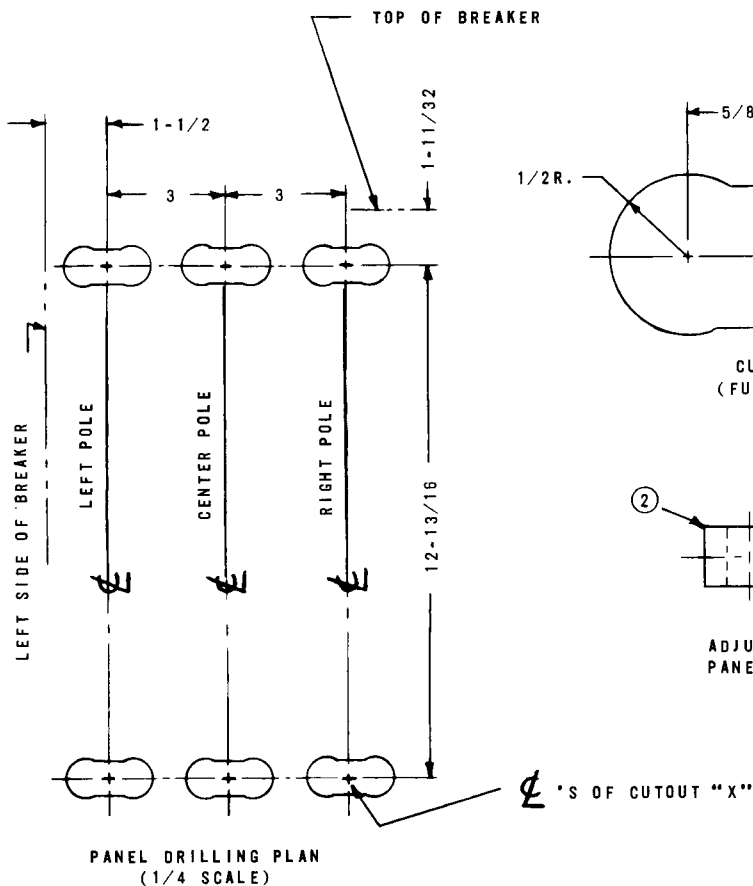
UNDERVOLTAGE TRIP OPERATING CURRENTS

Rated Voltage	Tripping Voltage Range	Nominal Operating Currents (Amperes For Undervoltage Trip Features Used With Breaker Type(s)			
		E, EH, EF, HE	CE	FJ	JJ, JL, HJ, CJ, KM, HM, CM, MP, KP, HP, CP, HR, CR
AC (60 HZ)					
115	40–80	0.018	0.025	0.018	0.055
230	80–161	0.011	0.014	0.011	0.037
460	161–320	0.009	—	0.009	0.014
600	210–420	0.013	—	0.013	0.011
DC					
24	8.4–16.8	0.084	—	0.084	—
46	16.8–33.6	—	—	0.624	—
125	43.8–88	—	0.030	—	0.031
250	88–175	0.013	—	0.013	0.026



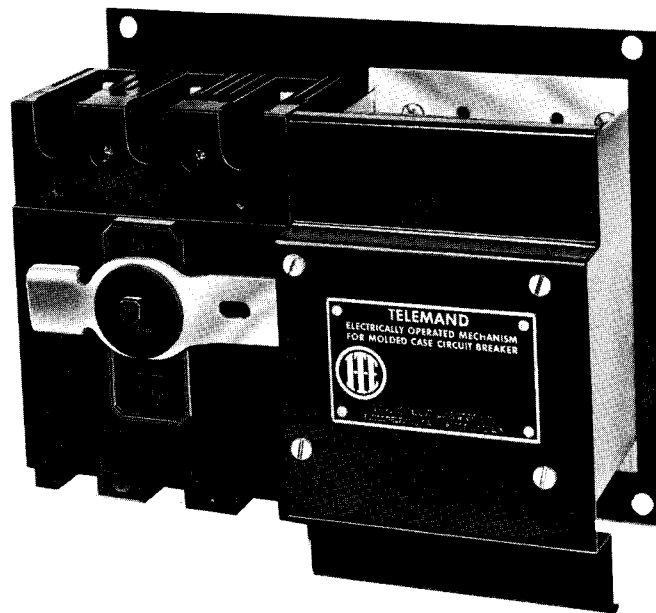
SWITCHBOARD CONNECTING STRAP MOUNTING INSTRUCTIONS FOR KP FRAME

- Drill mounting panel as shown in drilling plan below.
- Remove panel clamp, hex head bolt, lockwasher and flatwasher (1) and insert connecting strap (2) through holes drilled in mounting panel.
- Mount connecting strap (2) to mounting panel with panel clamp, hex head bolt, lockwasher and flatwasher (1) as shown below.
- Remove two hex head bolts, lockwashers and flatwashers (3) from end of connecting straps.
- Mount circuit breaker to connecting straps with two hex head bolts, lockwashers and flatwashers (3) through two mounting holes in each circuit breaker terminal. Tighten all screws securely.





TELEMAND® MOTOR OPERATOR MOUNTING INSTRUCTIONS FOR E, EH, EF AND HE FRAME



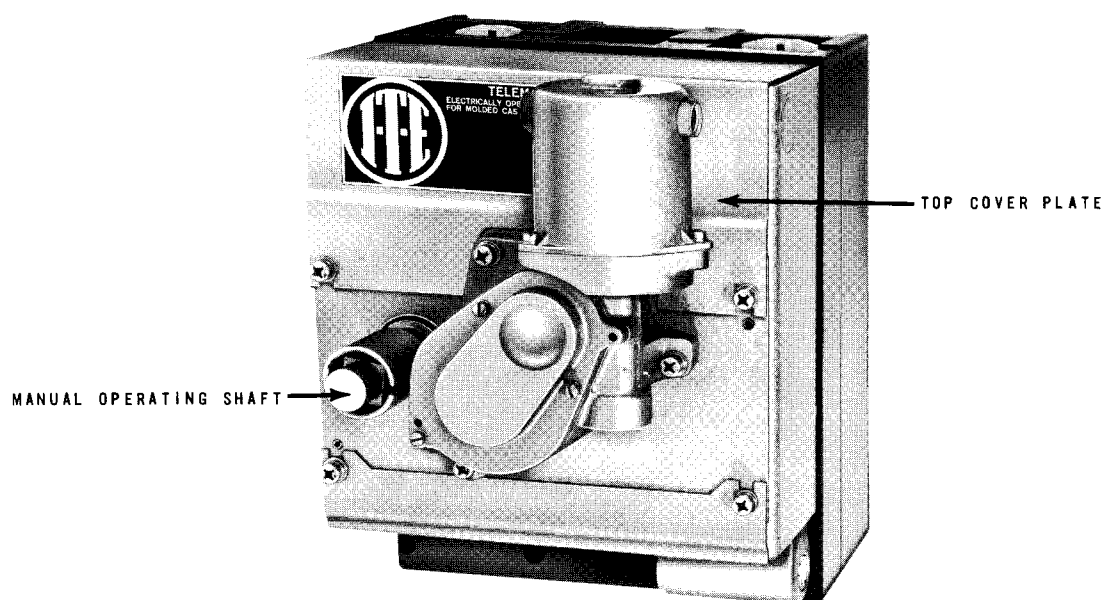
1. Remove the four screws on top of the Telemand Motor Operator and remove the cover.
2. Remove halfway the two screws on the sides of the housing which have slotted holes.
3. Pivot the motor mechanism up in the housing to permit sliding the breaker underneath the operating arm.
4. The "Off" side of the breaker must be facing the same direction as the terminal block.
5. Screw the breaker into place.
6. Pivot the operating assembly back into position with the breaker handle projecting through the rubber grommet.
7. Tighten all screws.

Circuit Breaker Is Now Ready For Telemand Operation.

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TELEMAND® MOTOR OPERATOR MOUNTING INSTRUCTIONS FOR JD, JJ, JL, HJ AND CJ FRAME



G-42714A

BREAKER PREPARATIONS

1. Remove —
 - a. the breaker cover from all ET breakers except the JD, JJ and HJ frames.
 - b. the Amp-trapt housing and breaker cover from all CORDON® breakers.

2. Mount circuit breakers and/or base assemblies in position. Tighten special line side mounting studs furnished with the Telemand units, using wrench on stud flats. Stud end of special line side mounting studs with captive washer and lockwasher should enter counterbore in circuit breaker. These studs secure the circuit breaker to the mounting surface, and the motor mechanism to the circuit breaker. Tighten load side mounting screws securely.

3. Make terminal connections and replace circuit breaker cover where necessary. Replace Amp-trap housing on CORDON circuit breakers.

4. Circuit breaker handle should be moved to the "OFF" position to permit mounting of the Telemand unit.

TELEMAND ADDITION

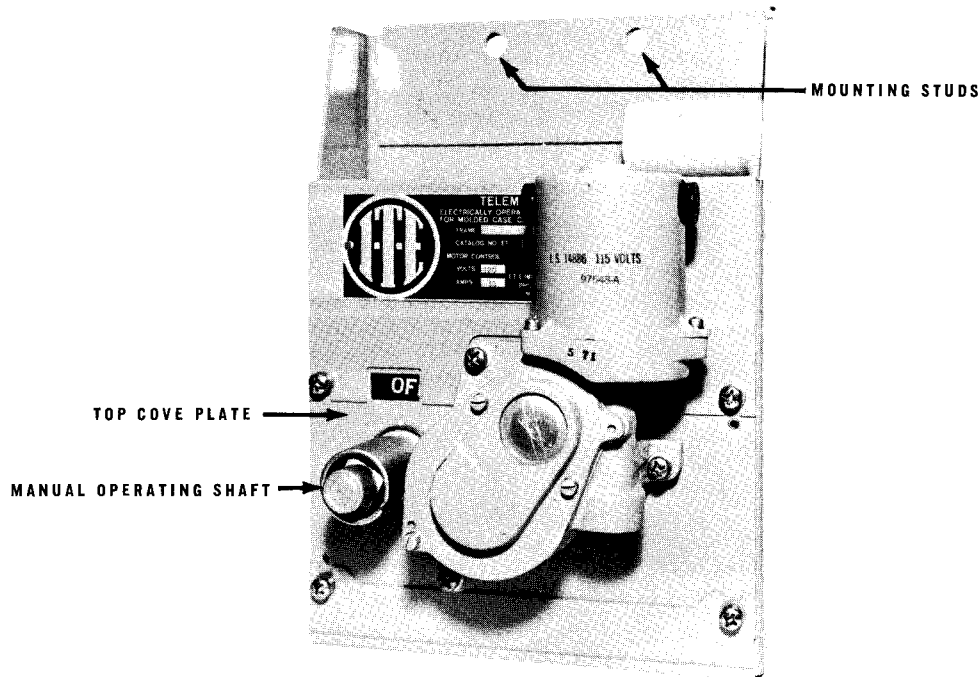
1. Place the Telemand operating handle over manual operating shaft. Depress to engage handle and turn clockwise until it stops.
2. Remove top cover plate of motor mechanism. Place Telemand over circuit breaker operating handle and mounting studs.
3. Add large flat washer, lockwasher and nut (furnished) to each stud and tighten securely.
4. Wire Telemand in accordance with diagram located on under side of top cover plate.
5. Replace top cover plate.

Circuit Breaker Is Now Ready For Telemand Operation

WARNING: Do Not Work On Circuit Breaker "Live" Without Taking Proper Safety Precautions



TELEMAND® MOTOR OPERATOR MOUNTING INSTRUCTIONS FOR KM, HM AND CM FRAME



BREAKER PREPARATIONS

1. Remove —
 - A. the breaker cover from all ET breakers.
 - b. the Amp-trap† housing and breaker cover from all CORDON® breakers.
2. Mount circuit breakers and/or base assemblies in position. Tighten special line side mounting studs furnished with the Telemand units, using wrench on stud flats. Stud end of special line side mounting studs with captive washer and lockwasher should enter counterbore in circuit breaker. These studs secure the circuit breaker mounting surface, and the motor mechanism to the circuit breaker. Tighten load side mounting screws securely.
3. Make terminal connections and replace circuit breaker cover where necessary. Replace Amp-trap housing on CORDON circuit breakers.
4. Circuit breaker handle should be moved to the "OFF" position to permit mounting of the Telemand unit.

TELEMAND ADDITION

1. Place the Telemand operating handle over manual operating shaft. Depress to engage handle and turn clockwise until it stops.
2. Add metal bushing (furnished) to mounting studs (except the KM frame) and position against circuit breaker cover.
3. Place Telemand over circuit breaker operating handle and mounting studs.
4. Add large flat washer, lockwasher and nut (furnished) to each stud and tighten securely.
5. Remove top cover plate of motor mechanism and wire Telemand in accordance with diagram located on underside of top cover plate.
6. Replace top cover plate.

Circuit Breaker Is Now Ready For Telemand Operation

WARNING: Do Not Work On Circuit Breaker "Live" Without Taking Proper Safety Precautions

† Registered Trademark — Chase-Shawmut Company.



TELEMAND® MOTOR OPERATOR MOUNTING INSTRUCTIONS FOR KP, HP, HR, CP AND CR FRAME

To Mount Telemand Onto the Enclosure Door, Refer to Section I, to Mount Telemand Onto the HP or KP Breaker, Refer to Section II and to Mount Telemand Onto the CP Breaker, Refer to Section III.

SECTION I — MOUNTING OF TELEMAND ON THE ENCLOSURE DOOR

1. Mount mounting block assembly and circuit breaker as per instructions furnished with mounting block assembly. NOTE: Enclosure door must be positioned at level marked "front sheet" on instruction sheet furnished with mounting block assembly.
2. Move circuit breaker handle to "OFF" position
3. On HP or KP breakers, remove both end covers. On CP breaker, remove end cover on line end only.
4. Replace line end cover with special slotted end cover furnished with Telemand. Do not replace load end cover on HP or KP breakers. Close enclosure door.
5. Place the telemand operating handle over manual operating shaft, depress to engage handle and turn clockwise until it stops. Remove the handle.
6. Place the Telemand over circuit breaker operating handle protruding through enclosure door. Drill the enclosure door, using the four (4) 11/32 Dia. holes in Telemand housing as a template. Holes in door to be 11/32 Dia.
7. Push hex head bolts (furnished) through drilled holes from the interior of the enclosure and add spacers (furnished) to bolts on outside. (See sketch Fig. 1, next page.) Place Telemand over the protruding bolts, add flatwasher, lockwasher and special nut (furnished) to each bolt and tighten securely.
8. Remove top cover plate of motor mechanism and wire Telemand in accordance with diagram located on underside of top cover plate. Remove top cover plate.
3. Remove end covers. Mount the breaker on line end with two (2) special mounting stud assemblies furnished with the Telemand. Tighten mounting studs securely, using wrench on stud flats.
4. Mount the breaker load end with two (2) breaker mounting screws, flatwashers and lockwashers furnished with the mounting block assembly. Tighten screws securely.
5. Make terminal connections and replace breaker end cover on line end with special slotted end cover, furnished with the Telemand.
6. Place the Telemand operating handle over manual operating shaft. Depress to engage handle and turn clockwise until it stops. Remove the handle.
7. Place Telemand over circuit breaker operating handle and line end special mounting studs. Add flatwashers, lockwashers and special nuts (furnished) to each stud and tighten securely.
8. Replace load end cover and mount it with two (2) special mounting screw assemblies (furnished) through the Telemand housing. (See sketch Fig. 2.)
9. Remove top cover plate of motor mechanism and wire Telemand in accordance with diagram located on underside of top cover plate. Replace top cover plate.

Circuit Breaker Is Now Ready For Telemand Operation

SECTION II — MOUNTING OF TELEMAND ONTO HP OR KP CIRCUIT BREAKER

1. For HP breaker mounting, mount the mounting block assembly per instructions furnished with that assembly. For KP breaker mounting, provide four (4) 3/8-16 tapped holes, properly located to suit breaker mounting screws.
2. Move circuit breaker handle to "OFF" position.

Circuit Breaker Is Now Ready For Telemand Operation

SECTION III — MOUNTING OF TELEMAND ON CP CIRCUIT BREAKER

1. For CP breaker mounting, mount the mounting block assembly per instructions furnished with that assembly.
2. Remove end cover and Amp-trap† cover. Mount the breaker on line end with two (2) special mounting stud assemblies furnished with Telemand. Tighten mounting stud securely, using wrench on stud flats.
3. Make line end terminal connections and replace breaker end cover on line end with slotted end cover furnished with the Telemand.
4. Mount Amp-traps to breaker and mounting block connector straps with mounting hardware (furnished with the Amp-trap unit). Tighten securely.

(Continued)

† Registered Trademark, The Chase-Shawmut Company.



TELEMAND® MOTOR OPERATOR MOUNTING INSTRUCTIONS FOR KP, HP, HR, CP AND CR FRAME (Continued)

SECTION III – (Continued)

5. Replace Amp-trap† cover. Fasten Amp-trap cover to studs on mounting block with screws captivated in Amp-trap cover. Do not fasten Amp-trap cover to breaker.
6. Place Telemand operating handle over manual operating shaft. Depress to engage handle and turn clockwise until handle is centered between "ON" and "OFF" position. Remove handle.
7. Place Telemand over circuit breaker operating handle (breaker is in "TRIPPED" position) and line end mounting studs. Add flatwashers, lockwashers, and special nuts (furnished) to each stud and tighten securely.
8. Mount the Telemand to load end of breaker with two (2) special mounting screw assemblies furnished with the Telemand. (See sketch Fig. 2, below.)
9. Remove top cover plate of motor mechanism and wire Telemand in accordance with diagram located on underside or top cover plate. Replace top cover plate.

Circuit Breaker Is Now Ready For Telemand Operation

WARNING: Do Not Work On Circuit Breaker "Live" Without Taking Proper Safety Precautions

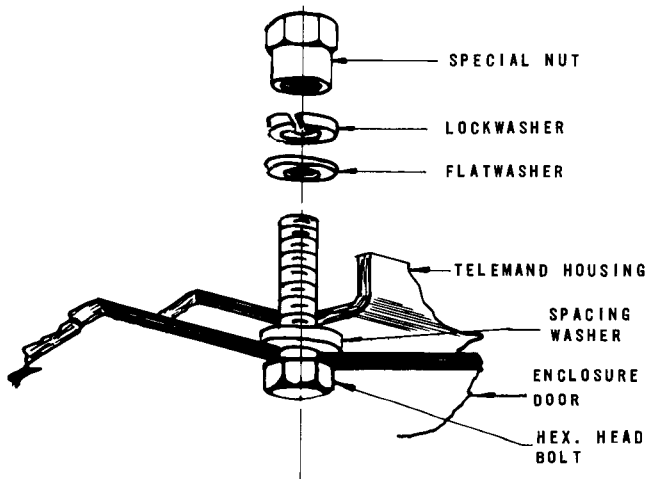


Figure 1

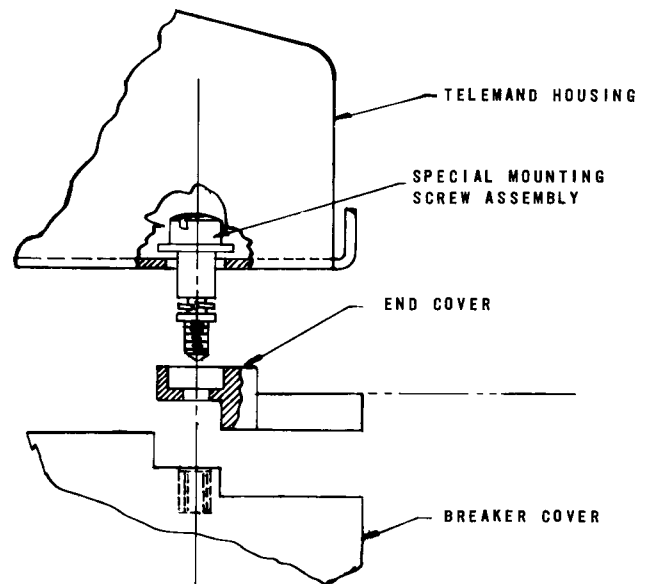


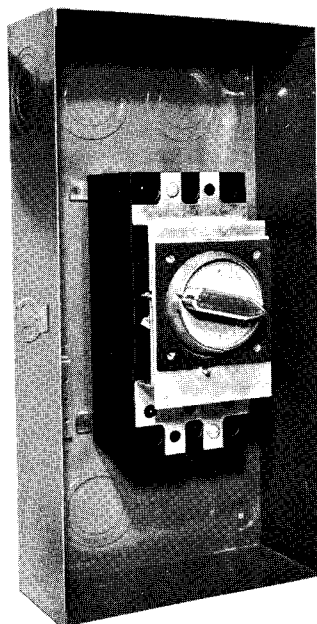
Figure 2

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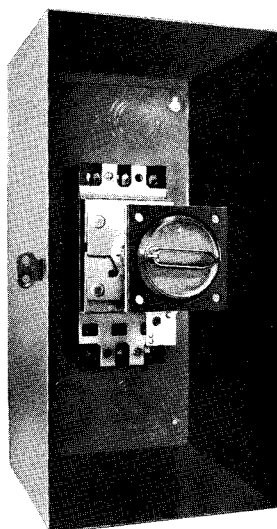
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INSTALLATION PROCEDURES
STANDARD — AND VARIABLE-DEPTH ROTARY-HANDLE ENCLOSURE MECHANISMS
FOR QJ, E, EH, EF, HE AND FJ FRAME



Standard-Depth Rotary Handle Mechanism Mounted
on FJ-Frame Breaker

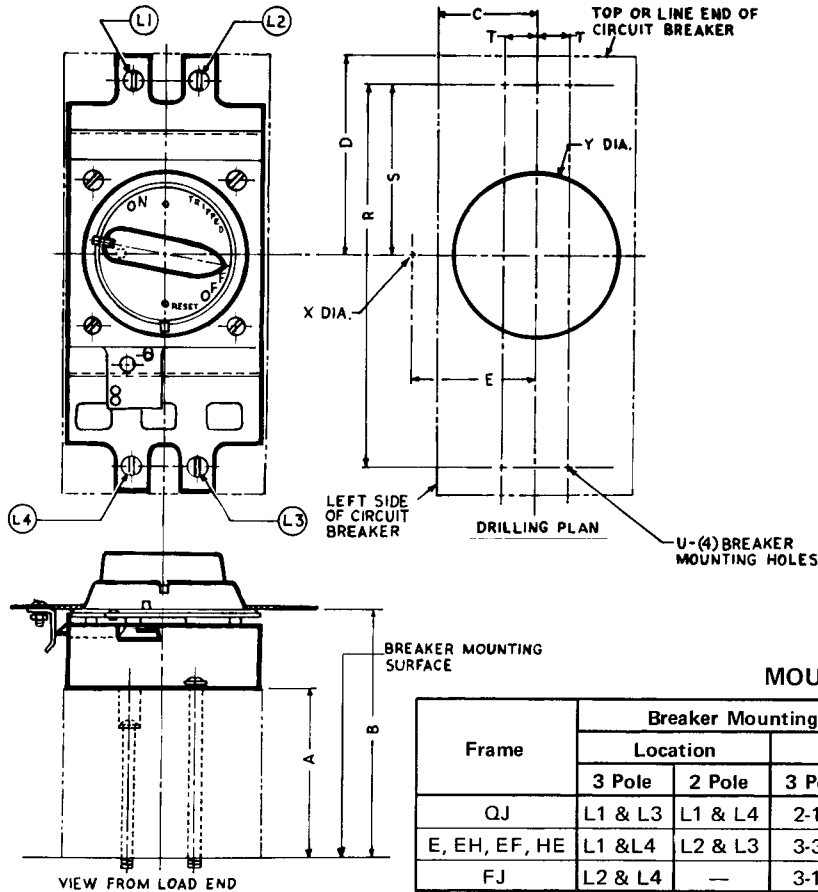


Variable-Depth Rotary Handle Mechanism Mounted
on FJ-Frame Breaker



ROTARY-HANDLE STANDARD-DEPTH MECHANISM

MOUNTING AND DRILLING PLAN



DIMENSIONAL CHART

Frame	QJ-225	E, EH, EF, HE	FJ
A	2-17/32	3-19/32	3-7/8
B	4-5/32	4-31/32	5-11/16
C	2-1/4	2-1/4	2-1/4
D	2-13/16	2-25/32	4-17/32
E	2-27/32	2-27/32	2-27/32
R	5-3/4	4-19/32	8-3/4
S	2-3/16	2-1/16	3-29/32
T	3/4	3/4	3/4
U	1/4-20	8-32	1/4-20
X	.177	.177	.177
Y	4	4	4

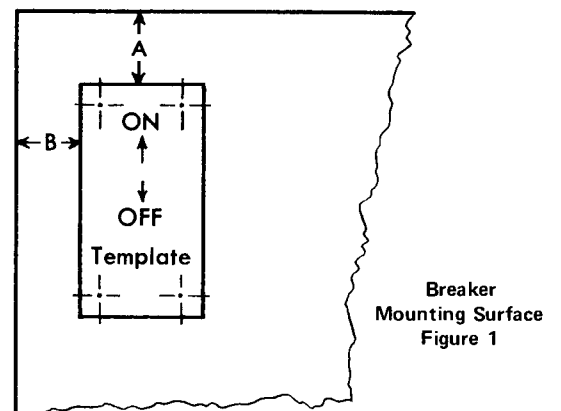
MOUNTING CHART

Frame	Breaker Mounting Screw*				Mechanism Mounting Screw*			
	Location		Length		Location		Length	
	3 Pole	2 Pole	3 Pole	2 Pole	3 Pole	2 Pole	3 Pole	2 Pole
QJ	L1 & L3	L1 & L4	2-1/2	3	L1 & L4	L1 & L4	3	3
E, EH, EF, HE	L1 & L4	L2 & L3	3-3/8	3-7/8	L2 & L3	L2 & L3	3-7/8	3-7/8
FJ	L2 & L4	—	3-1/2	—	L1 & L3	—	4-1/4	—

* All mounting screws furnished with lockwashers and flatwashers.

DRILLING OF ENCLOSURE AND COVER

1. Drill four breaker mounting holes (U) per drilling plan on outline drawing
2. Place template on breaker mounting surface so that the four centers in the template line up with the breaker mounting holes. Make sure "ON"-"OFF" indications on breaker. Use 2 breaker mounting screws to hold template in place.
3. Measure distances "A" and "B" from walls of enclosure. See Fig. 1.



Breaker Mounting Surface Figure 1

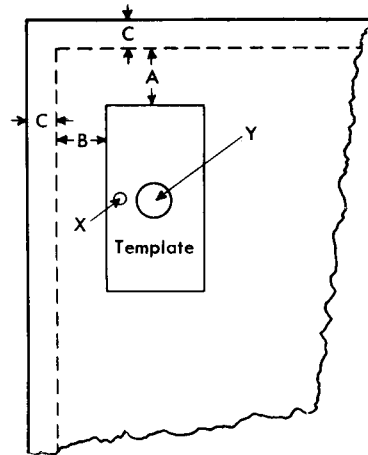
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ROTARY-HANDLE STANDARD-DEPTH MECHANISM

MOUNTING AND DRILLING PLAN (Continued)

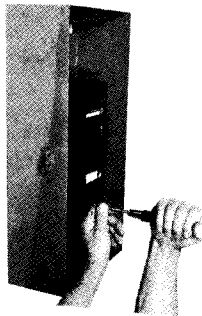
4. Relocate template on enclosure cover by adding enclosure thickness and cover overhang (C) to dimensions "A" and "B". See Fig. 2.
5. Remove backing from template and secure template on door.
6. Drill holes "X" (.177" diam.) and "Y" (4" diam.) on template.



Enclosure Cover
Figure 2

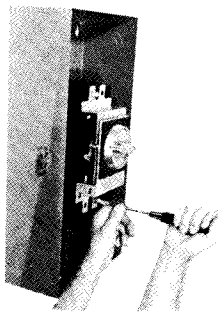
MOUNTING OF BREAKER AND MECHANISM

1. Mount breaker, with "ON" up, with two mounting screws per breaker mounting screw chart on outline drawing. Note: two pole QJ and E, EH and EF Frame breakers and mechanisms mount with same two screws.



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2. With breaker in "OFF" position and mechanism in "OFF" position, mount mechanism on breaker using other two mounting screws per mechanism mounting screw chart on outline drawing. Make sure opening in mechanism lever engages breaker operating handle. Do not tighten screws.



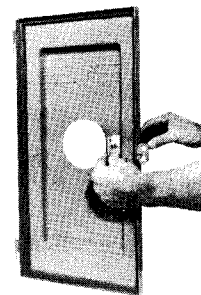
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3. Close enclosure door and center mechanism in large hole. When centered, tighten mechanism mounting screws securely.



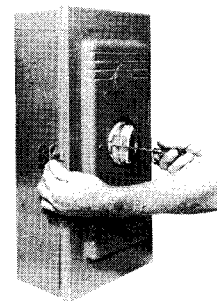
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4. Mount latch bracket to enclosure door.



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5. Close enclosure door. Latch on mechanism should engage latch bracket when breaker is "ON" and disengage latch bracket when breaker is "OFF".
6. Enclosure door may be opened when breaker is "ON" by turning defeater screw clockwise.

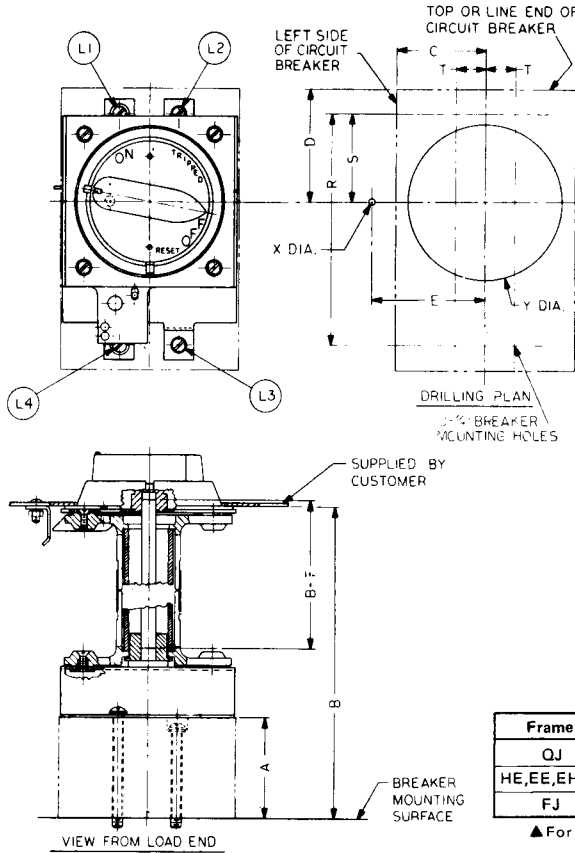


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ROTARY-HANDLE VARIABLE-DEPTH MECHANISM

MOUNTING AND DRILLING PLAN



MOUNTING CHART

Frame	Breaker Mounting Screw*				Mechanism Mounting Screw*			
	Location		Length		Location		Length	
QJ	L2 & L3	L1 & L4	2-1/2	3	L1 & L4	L1 & L4	3	3
HE,EE,EH,EF	L1 & L4	L2 & L3	3-3/8	3-7/8	L2 & L3	L2 & L3	3-7/8	3-7/8
FJ	L2 & L4	—	3-1/2	—	L1 & L3	—	4-1/4	—

* All mounting screws furnished with lockwashers and flatwashers.

ENCLOSURE DEPTH DIMENSIONS (Maximum and Minimum)

Frame	3 Inch Pipe		5 Inch Pipe		7 Inch Pipe		9 Inch Pipe	
	B Max.	B Min.	B Max.	B Min.	B Max.	B Min.	B Max.	B Min.
QJ	9-3/4	7-3/4	11-3/4	9-3/4	13-3/4	11-3/4	15-3/4	13-3/4
HE,EE,EH,EF	10-1/2	8-1/2	12-1/2	10-1/2	14-1/2	12-1/2	16-1/2	14-1/2
FJ	11-1/4	9-1/4	13-1/4	11-1/4	15-1/4	13-1/4	17-1/4	15-1/4

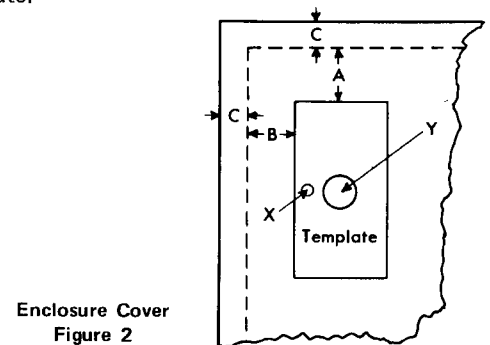
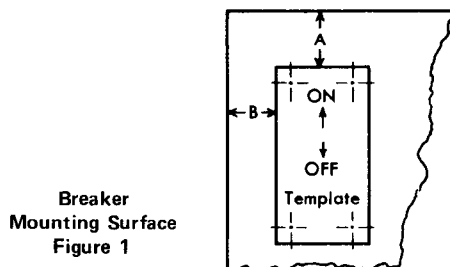
DIMENSIONAL CHART

Frame	A	C	D	E	F▲	R	S	T	U	X	Y
QJ	2-17/32	2-1/4	2-13/16	2-27/32	4-1/8	5-3/4	2-3/16	3/4	1/4-20	.177	4
HE,EE,EH,EF	3-19/32	2-1/4	2-25/32	2-27/32	4-15/16	4-19/32	2-1/16	3/4	8-32	.177	4
FJ	3-7/8	2-1/4	4-17/32	2-27/32	5-21/32	8-3/4	3-29/32	3/4	1/4-20	.177	4

▲ For reference purposes used to determine cut off.

DRILLING OF ENCLOSURE AND ENCLOSURE COVER

1. Drill four breaker mounting holes (U) per drilling plan on outline drawing.
2. Place template on breaker mounting surface so that the four centers in the template line up with the breaker mounting holes. Make sure "ON"- "OFF" indications on template are in same direction as "ON"- "OFF" indications on breaker. Use two breaker mounting screws to hold template in place.
3. Measure distances "A" and "B" from walls of enclosure. See Fig. 1.
4. Relocate template on enclosure cover by adding enclosure thickness and cover overhang (C) to dimensions "A" and "B". See Fig. 2.
5. Remove backing from template and secure template on door.
6. Drill holes "X" (.177" diam.) and "Y" (4" diam.) on template.



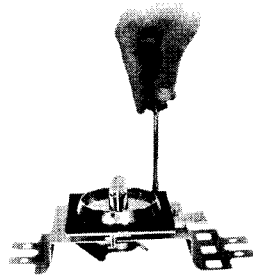
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ROTARY-HANDLE VARIABLE-DEPTH MECHANISM

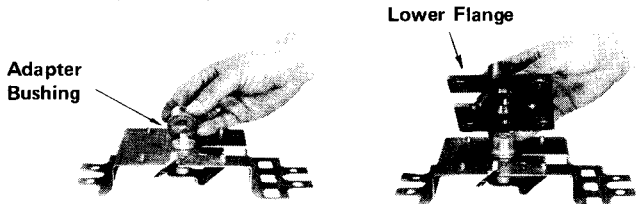
ASSEMBLY OF MECHANISM

1. Disassemble upper mechanism from lower mechanism by removing the four screws.

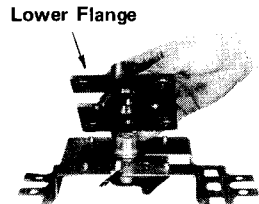


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2. With adapter bushing in place on bearing of lower mechanism, place lower flange (flange with the 4 clearance holes) on to the lower mechanism. Secure with four flat head screws.

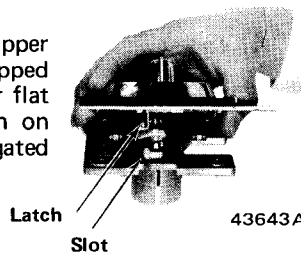


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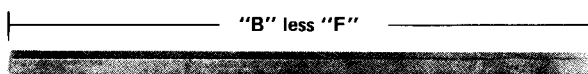
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3. Place upper mechanism on upper flange (flange with 4 tapped holes) and secure with four flat head screws. Be sure latch on mechanism fits into elongated slot in flange.



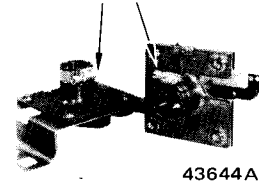
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4. Cut square shaft to desired dimension. To do this subtract dimension "F" (see dimension chart, preceding page) from "B" dimension which is the distance from the back of the breaker to inside of enclosure door.



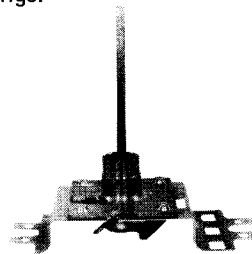
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5. Place pipe clamp on the collar of each flange. Do not tighten.

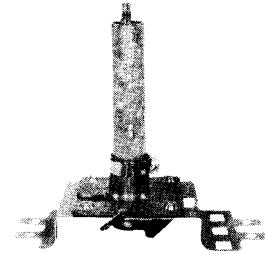


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6. Place square shaft into bushing on lower mechanism and then place support pipe over this shaft and into collar of flange.

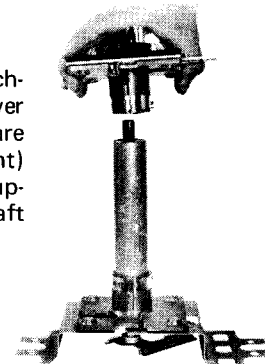


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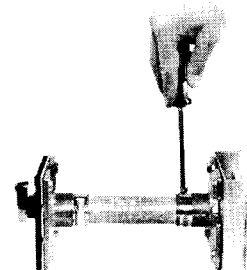
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7. With both lower and upper mechanisms in "OFF" position (lower mechanism is "OFF" when square shaft is turned fully to the right) place upper mechanism on to support pipe. Make sure square shaft engages upper mechanism.



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8. Lay assembly on flat surface (this will square assembly). If "B" dimension is the minimum, as shown on dimensional chart, tighten pipe clamps with support pipe seated fully into both flange collars. If "B" dimension is other than minimum, adjust support pipe so that approximately same amount of pipe is in each of the upper and lower flange collars. (A minimum of 1/2 inch of pipe must be in each flange collar). Tighten pipe clamps.



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(Continued)