

SIEMENS

Molded Case Circuit Breakers

PD & RD Frame
Information and
Instruction Guide





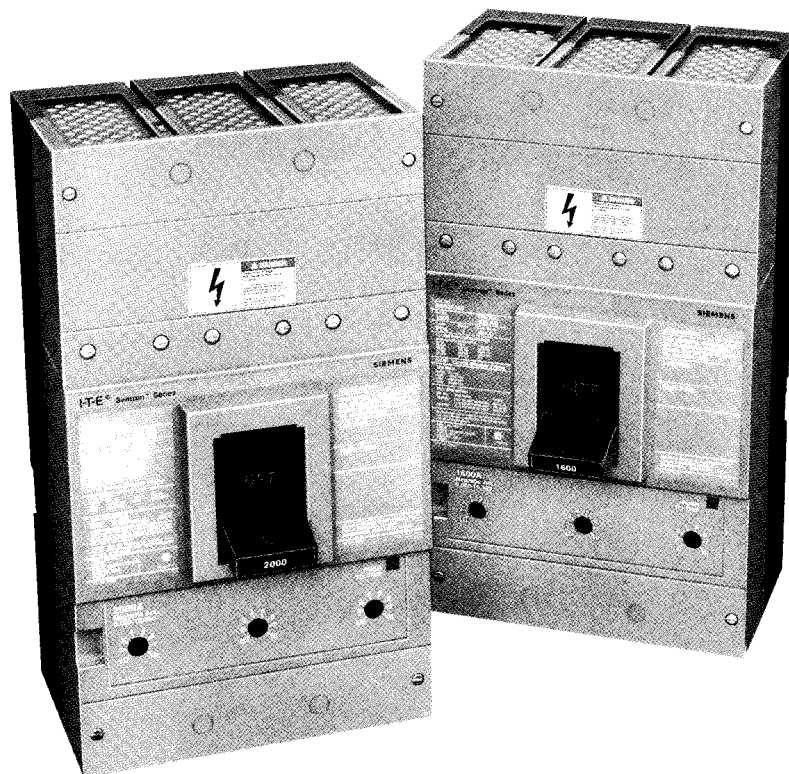
⚠ DANGER

Hazardous voltages are present inside the enclosures or panels in which the circuit breakers are installed. Death, serious injury, and/or equipment damage will result if circuit breakers are improperly applied or precaution is not used.

De-energize all incoming power prior to installation of circuit breakers or associated accessories.

Only qualified personnel should work on or around this equipment.

Position of circuit breaker handles shown in this booklet is for illustration purposes only. Circuit breakers are to be installed in OFF or TRIPPED position only.




PD & RD-Frame Circuit Breakers

3-Pole, 1200-2000 Amperes

Types PD6, RD6, HPD6, HRD6, CPD6, PXD6, RXD6, HPXD6, HRXD6

Table of Contents

Important Notices	2	Accessories:	
		Handle Blocking Device	18
General Information	3-4	Handle Padlocking Device	19
		Shunt Trip, Undervoltage Trip, Auxiliary	
Dimensional Reference Drawings	5	Switch and Bell Alarm Switch Installation	20, 21
		Shunt Trip, Undervoltage Trip, Auxiliary Switch	
Connect-All Mounting Assembly	6-9	and Bell Alarm Switch Electrical and Mechanical	
		Check	22, 23
Pressure Wire Connectors	10, 11	Mechanical Interlock	24-27
		Rotary Handle Operator	28, 29
Trip Unit Assembly	12, 13	Max-Flex™ Flange-Mount Handle Operator	30-34
		TELEMAND® Electric Motor Operator	35-37
Operating Characteristics:		Enclosure	38
Time Current Curves	14, 15	Neutral Assembly	39
Let-Thru Curves	16, 17	Door Latch Mechanism	40, 41
		Ordering Information:	
		Circuit Breaker Catalog Numbers	42, 43
		Internal Accessory Catalog Numbers	44
		Additional Accessory Catalog Numbers	45
		Miscellaneous:	
		UL Listings and File Numbers	45
		Industry Specifications	45

	! DANGER
	<p>Hazardous voltages are present inside the enclosures or panels in which the circuit breakers are installed. Death, serious injury, and/or equipment damage will result if circuit breakers are improperly applied or precaution is not used.</p> <p>De-energize all incoming power prior to installation of circuit breakers or associated accessories.</p> <p>Only qualified personnel should work on or around this equipment.</p>

Circuit breaker indicators shown in this booklet are for illustration purposes only. Circuit breakers are to be installed in "Tripped" & "Open" positions only.

IMPORTANT

The information contained herein is general in nature and not intended for specific application purposes. It does not relieve the user of responsibility to use sound practices in application, installation, operation, and maintenance of the equipment purchased. Siemens reserves the right to make changes in the specifications shown herein or to make improvements at any time without notice or obligations. Should a conflict arise between the general information contained in this publication and the contents of drawings or supplementary material or both, the latter shall take precedence.

NOTE

***Authorized and qualified personnel—**

For the purpose of this manual a qualified person is one who is familiar with the installation, construction or operation of the equipment and the hazards involved. In addition, he has the following qualifications:

- (a) **is trained and authorized** to de-energize, clear, ground, and tag circuits and equipment in accordance with established safety practices.
- (b) **is trained** in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.
- (c) **is trained** in rendering first aid.

SUMMARY

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. The identification of catalog numbers in this bulletin does not assure availability. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local sales office, listed on the back of this instruction guide.

The contents of this instruction manual should not become part of or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens Energy & Automation, Inc. The warranty contained in the contract between the parties is the sole warranty of Siemens Energy & Automation, Inc. Any statements contained herein do not create new warranties or modify the existing warranty.

Information and Instructions

General Information

General

PD and RD-Frame Sentron™ Series Circuit breakers, as shown on page 5, are for use in individual enclosures, switchboards and power and distribution panel boards. They are available as thermal magnetic, with interchangeable trip units (types PD6, RD6-standard interruption level HPD6, HRD6-high interruption level), non interchangeable trip units (types PXD6, RXD6-standard interruption level HPXD6, HRXD6-high interruption and CPD6, current limiting). Molded case switches (PXD6, RXD6).

CPD6 type Sentron™ Series circuit breakers combine thermal magnetic construction for overload protection in conjunction with the PD and RD-Frame's standard "blow-apart" contacts. This arrangement provides for current limiting protection under high fault interrupting conditions as outlined in the National Electric Code®, Article 240-11① and UL 489② standards. CPD6 type circuit breakers are fuseless and therefore eliminate the requirement of locating and replacing blown fuses should a high current fault occur. The common trip feature of the circuit breaker is completely retained so that all poles of the circuit breaker open when caused to trip due to an overload or short circuit.

Pressure wire connectors, suitable for use with aluminum or copper is available for all PD-Frame circuit breakers. Pressure wire connectors, suitable for copper only is available for all RD-Frame circuit breakers. A connect-all mounting block assembly is necessary to properly put all PD and RD-Frame circuit breakers into service. The latter mounting arrangement permits the removal of the circuit breakers from service without having to disconnect terminal connectors or cables. UL listed special features such as a shunt trip, auxiliary and alarm switches and undervoltage trip devices are available for field installation. The installation and removal of these devices is to be accomplished by properly authorized and qualified personnel only. Information concerning these special devices is found on pages 20–23.

Thermal Magnetic

PD6, RD6, PXD6, RXD6, HPD6, HRD6, HPXD6, HRXD6, and CPD6 type circuit breakers provide complete overload and short circuit protection by use of a time delay thermal trip element and an instantaneous magnetic trip device. Nominal instantaneous trip values are externally adjustable with eight trip points as shown below.

Ampere Rating	Nominal Instantaneous Values③			
	Low	2	3	4
1200-2000	5000	5715	6430	7145

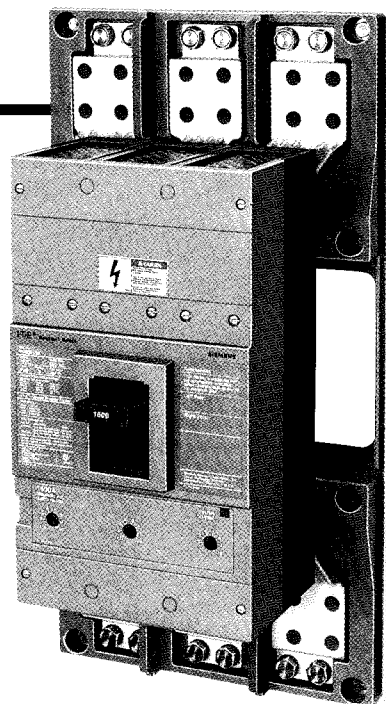
Ampere Rating	Nominal Instantaneous Values③			
	5	6	7	High
1200-2000	7860	8575	9290	10,000

① National Electric Code (240-11)

"A current limiting overcurrent protective device, which, when interrupting currents in its current limiting range, will reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit, if the device were replaced with a solid conductor having comparable impedance."

② Underwriters Laboratories (UL 489, Par. 2.5)

"A circuit breaker that does not employ a fusible element and that when



Circuit breakers are calibrated at the factory, under controlled temperature conditions for applications in a 40°C (104°F) ambient.

The cover on the trip unit is sealed to prevent access to the trip elements. Alterations of the calibration of these elements should not be attempted. Removal of the seals will void the UL listing for that specific trip unit. Catalog numbers for ordering and informational purposes can be found on pages 42 and 43.

Molded Case Switch

A molded case switch is available in the PXD6, CPD6 and RXD6 type circuit breakers. This device contains a non-adjustable instantaneous self-protecting trip function that may open the switch on currents over 10,000 amps. No overload or low fault protection is provided. This protection must be supplied by separate overcurrent devices. (See page 4 for other details.) Catalog ordering information is located on pages 42 and 43.

Interrupting Ratings—Symmetrical RMS Amperes (kA) Based on UL 489 Standards

Interrupting ratings of the PD and RD-Frame circuit breakers are based on circuit and test conditions outlined in UL 489.

Breaker Type	RMS Symmetrical Amperes (kA)				
	UL A.I.R.				
	Volts AC (50/60 Hz)		Volts DC		
	240	480	600	250	500
PD6, PXD6, RD6, RXD6	65	50	25	30(2-P)	25(3-P)
HPD6, HPXD6, HRD6, HRXD6	100	65	50	30(2-P)	50(3-P)
CPD6	200	100	65	30(2-P)	50(3-P)

①CPD6 type circuit breakers are current limiting at 240V ac.

Breaker Type	IEC 947-2 (A.I.R.)					
	50/60 Hz					
	220/440		380/415		500	
	(lcu)	(lcs)	(lcu)	(lcs)	(lcu)	(lcs)
PD6, PXD6, RD6, RXD6	65	33	40	10	30	8
HPD6, HPXD6, HRD6, HRXD6	100	50	65	17	42	11
CPD6	200	100	100	25	65	17

operating within its current limiting range, limits the let-through I^2t of a 1/2 cycle wave of the symmetrical prospective current."

③ Tolerances are established in accordance to UL 489 standards.

Information and Instructions

Operation and Maintenance

Circuit Breaker Operation

With the mechanism latched and the contacts open, the operating handle will be in the OFF position. Moving the handle to the ON position closes the contacts and establishes a circuit through the breaker. Under overload or short circuit conditions sufficient to automatically trip or open the breaker, the operating handle moves to a position between ON and OFF. To relatch the circuit breaker after automatic operation, move the operating handle to the extreme OFF position. The circuit breaker is now ready for reclosing.

The overcenter toggle mechanism is trip free of the operating handle. The circuit breaker, therefore, cannot be held closed by means of the handle should a tripping condition exist. After automatic operation, the handle will assume an intermediate position between ON and OFF, thus displaying a clear indication of tripping.

Molded Case Switch Information:

PXD63S160A and RXD63S200A are suitable for use on a circuit capable of delivering not more than:

65,000A RMS Symm. @ 240 VAC

50,000A RMS Symm. @ 480 VAC

25,000A RMS Symm. @ 600 VAC

30,000A @ 250 VDC

when protected by a fuse or circuit breaker rated 1600A for the PXD63S1600A or 2000A for the RXD63S200A.

Maintenance

Experience has shown that properly applied molded case circuit breakers normally do not require maintenance. However, some industrial users may choose to establish an inspection and maintenance procedure to be carried out on a regular basis. For detailed information, consult applicable NEMA publications or your local Siemens sales office.

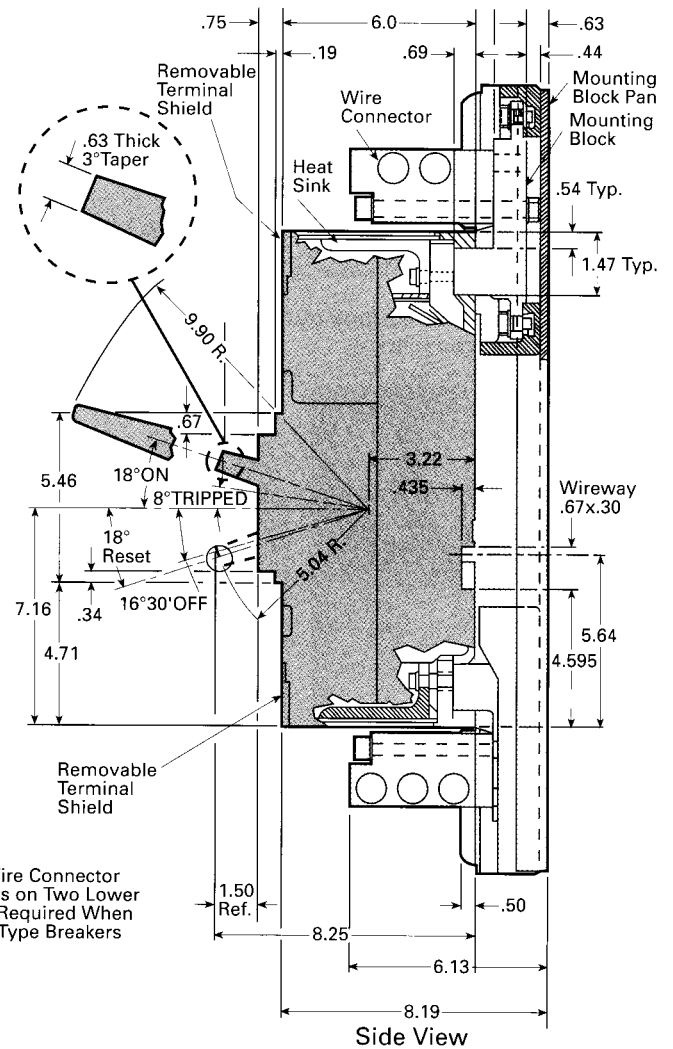
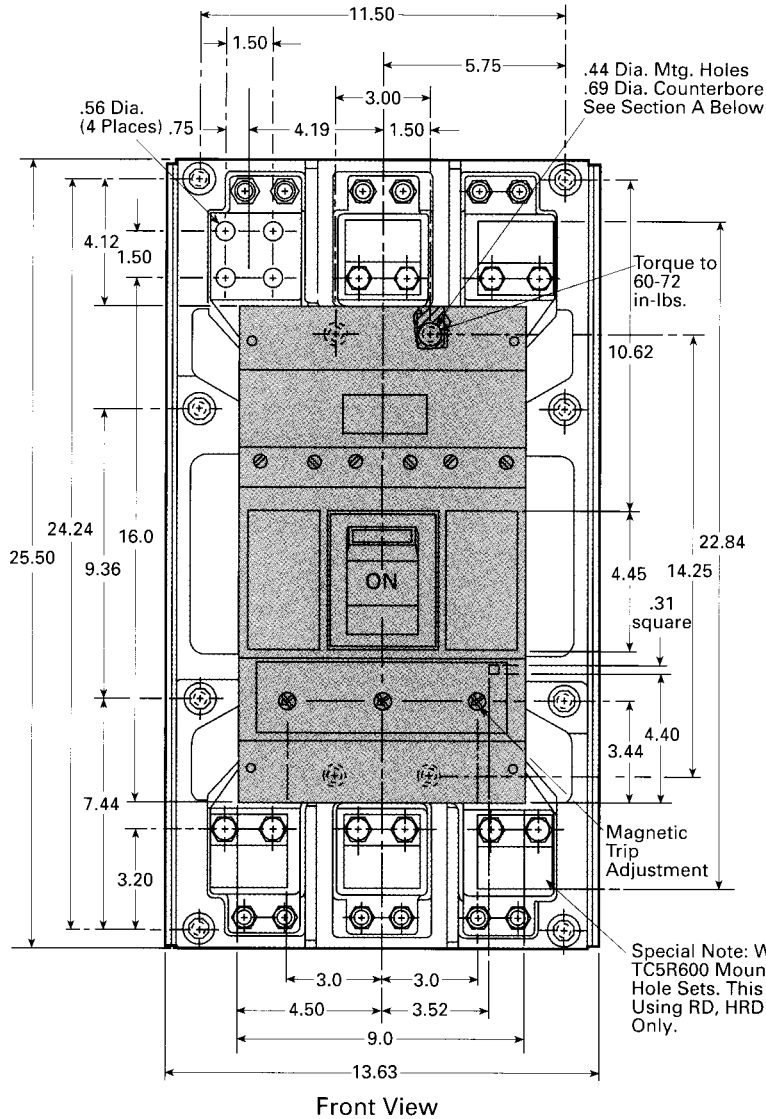
NOTE: Do not spray or allow any petroleum based chemicals, solvents, or paints to contact the molded parts or name plate.

SPECIAL NOTE:

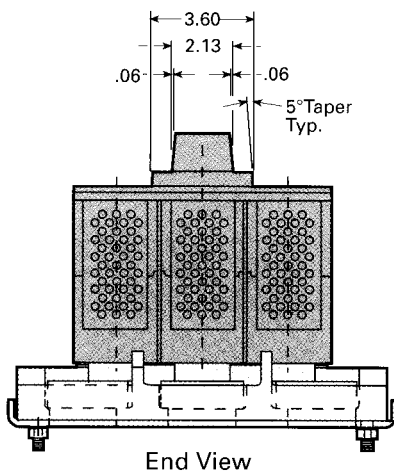
CPD6 circuit breakers are not UL listed as interchangeable trips – DO NOT REMOVE TRIP UNIT and replace with another. Removal of trip unit voids UL listing.

PD and RD-Frame Outline Drawings^①

3-Pole



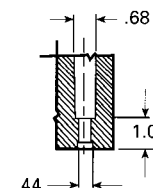
Special Note: Wire Connector TC5R600 Mounts on Two Lower Hole Sets. This Required When Using RD, HRD Type Breakers Only.



Handle Operating Forces

Operation	Lb. wo/Ext.	Lb. w/Ext.
OFF to ON	75	40
ON to OFF	85	46
TRIPPED to RESET	130	70

① All drawing dimensions are shown in inches.



Note: See Wire Connector Outline Drawings on Page 10.

Connect-All Mounting Block (MB9301, MBR9302)



⚠ DANGER

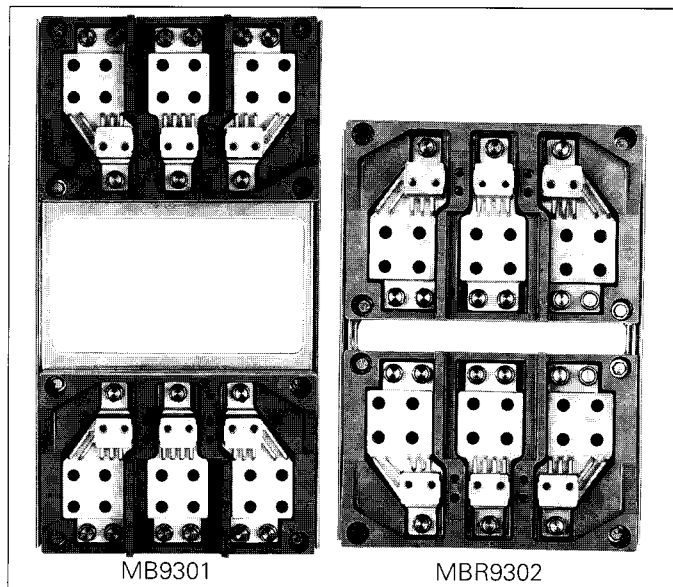
Hazardous Voltage.
Will cause death or severe injury.

Turn power off supplying switchboard or panel before installing.



Safety Instructions

NOTE: These instructions outline the recommended installation procedure.



Mounting of Connect-All Mounting Block Assembly

- Provide suitable mounting supports **(1)** and drill holes as shown in Figure 1. (Recommended use of 1-3/8 x 7/8 x 3/16 steel angle.)
- Provide cutout for breaker escutcheon in front plate **(2)**.

NOTE: Refer to Figure 2 for catalog number MB9301, and Figure 4 for catalog number MBR9302.

- Remove four 3/8 x 1-1/2 hex head bolts **(3)**, nuts and washers (Figures 2 and 4) and re-use to mount assembly to support angles. Tighten mounting bolts and nuts securely.

Installation

The PD and RD frame devices are for use in individual enclosures, panelboards, switchboards, or other approved equipment.

The installation procedure consists of inspecting, attaching required accessories, mounting the device and connecting and torquing the line and load wire connectors.

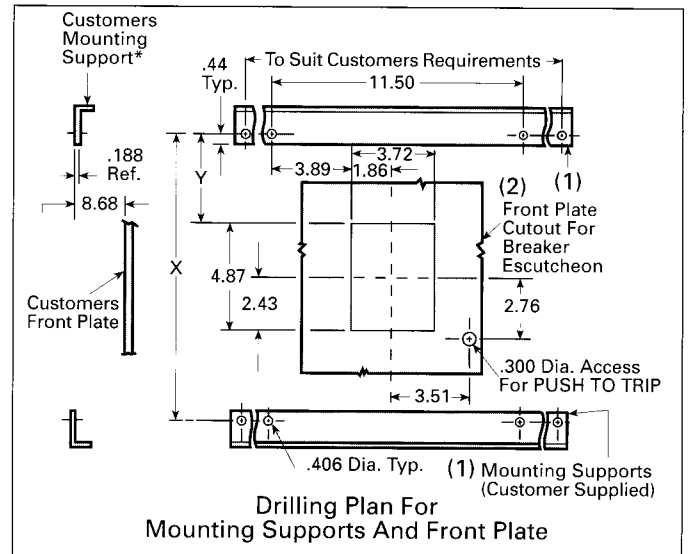


Figure 1

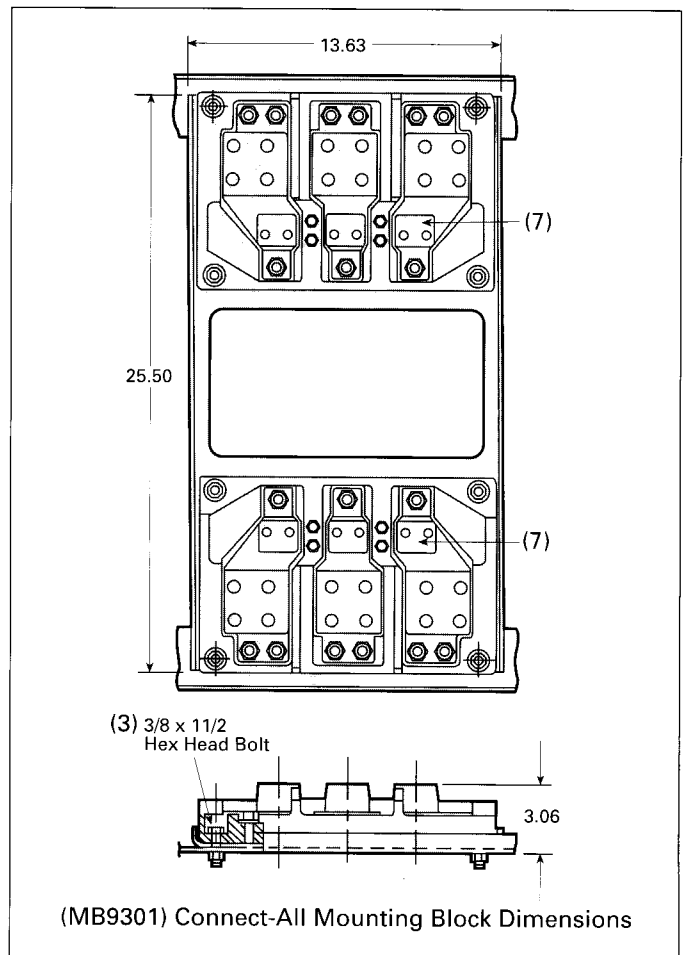
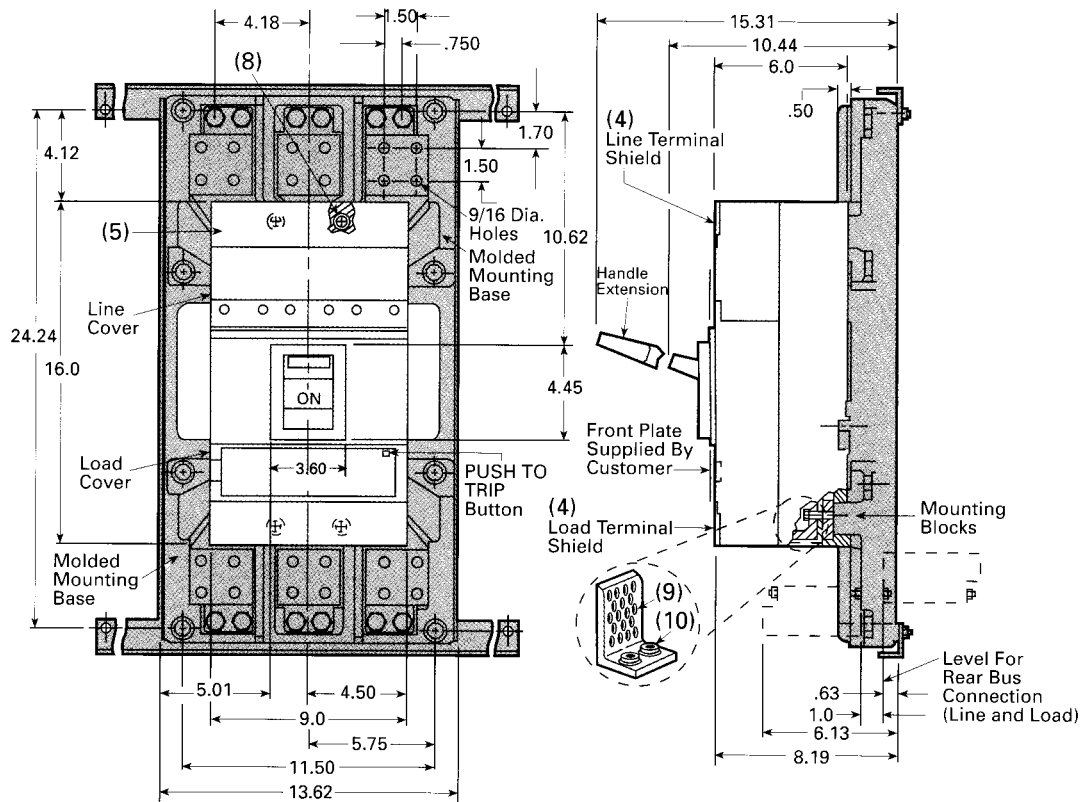


Figure 2

Assembly Instructions



(MB9301) Connect-All Mounting Block and Circuit Breaker Dimensions

Figure 3

Unmounted wire connectors (where required) are available as separate catalog items. See Figure 6 for options on installation.

NOTE: Use TA5P600, TA4P750 or TC5R600 for the PD frame. Use TC5R600 or TA6R600 for the RD frame, see breaker marking (Do not use TA5P600 for RD frame).

NOTE: Molded case switches are supplied as complete devices only.

Circuit Breaker Preparation

- Before mounting breaker onto connect-all mounting block assembly, turn off and lock out all power to prevent incidental or accidental electrical contact during the installation.
- Make sure that the device is suitable for the installation by comparing nameplate ratings with system requirements. Inspect the breaker for completeness and check for any damage before mounting.

NOTE: Trip unit and accessory installation should be complete before the circuit breaker is mounted and connected. (See installation instructions for trip unit and accessories, in this manual, before proceeding.)

- Make sure the device is in the tripped or off position. For circuit breakers, depress the red trip button (see Figures 3 and 5) or turn breaker off.

NOTE: Molded case switches do not have a PUSH TO TRIP button.

Circuit Breaker Manual Operation

Manual operation of the circuit breaker is controlled by the circuit breaker handle and the Push-To-Trip button. The circuit breaker handle has three indicating positions, two of which are molded into the handle to indicate ON and OFF. The third position indicates a TRIP position and is between ON and OFF positions.

A. Circuit Breaker Reset

After tripping, the circuit breaker is reset by moving the circuit breaker handle to the reset position and then moving the handle to the ON position.

NOTE: In the event of a thermal trip, the circuit breaker cannot be reset until the thermal element cools.

Connect-All Mounting Block (MB9301, MBR9302)

B. Push-To-Trip Button

The Push-To-Trip button checks the tripping function and is used to manually exercise the operating mechanism.

Mounting of Breaker Onto Connect-All Assembly

- Remove the load and line terminal shields (4) by loosening the two terminal shield screws (5). Also remove end plates (6). See Figures 3 and 5.
- Place breaker onto protruding connect-all assembly terminals (7), see Figures 2 and 4, and fasten breaker to molded mounting base with four slotted fillister head 3/8-16 x 1-3/4 long screws, washers and lockwashers (8), see Figures 3 and 5. Tighten mounting screws to a torque of 5 to 6 ft-lbs.
- Mount heatsink (9) with two hex head 3/8-16 x 1-3/4 long copper alloy bolts, washers and lock washers (10) per terminal. Tighten these bolts to a torque of 9 to 10 ft-lbs.

SPECIAL NOTE: For PD-Frame Circuit Breakers only 100% rated circuit breakers require the application of heat sinks (consult instructions supplied with mounting hardware).

- Replace all end plates (6), and line and load terminal shields (4). Tighten terminal shield screws securely.
- After mounting the device, line and load terminals and accessory terminals should be connected.

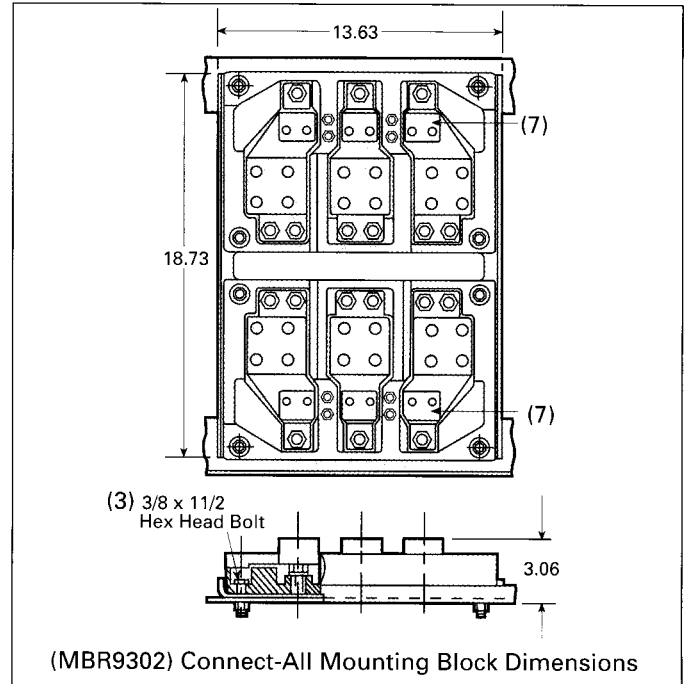


Figure 4

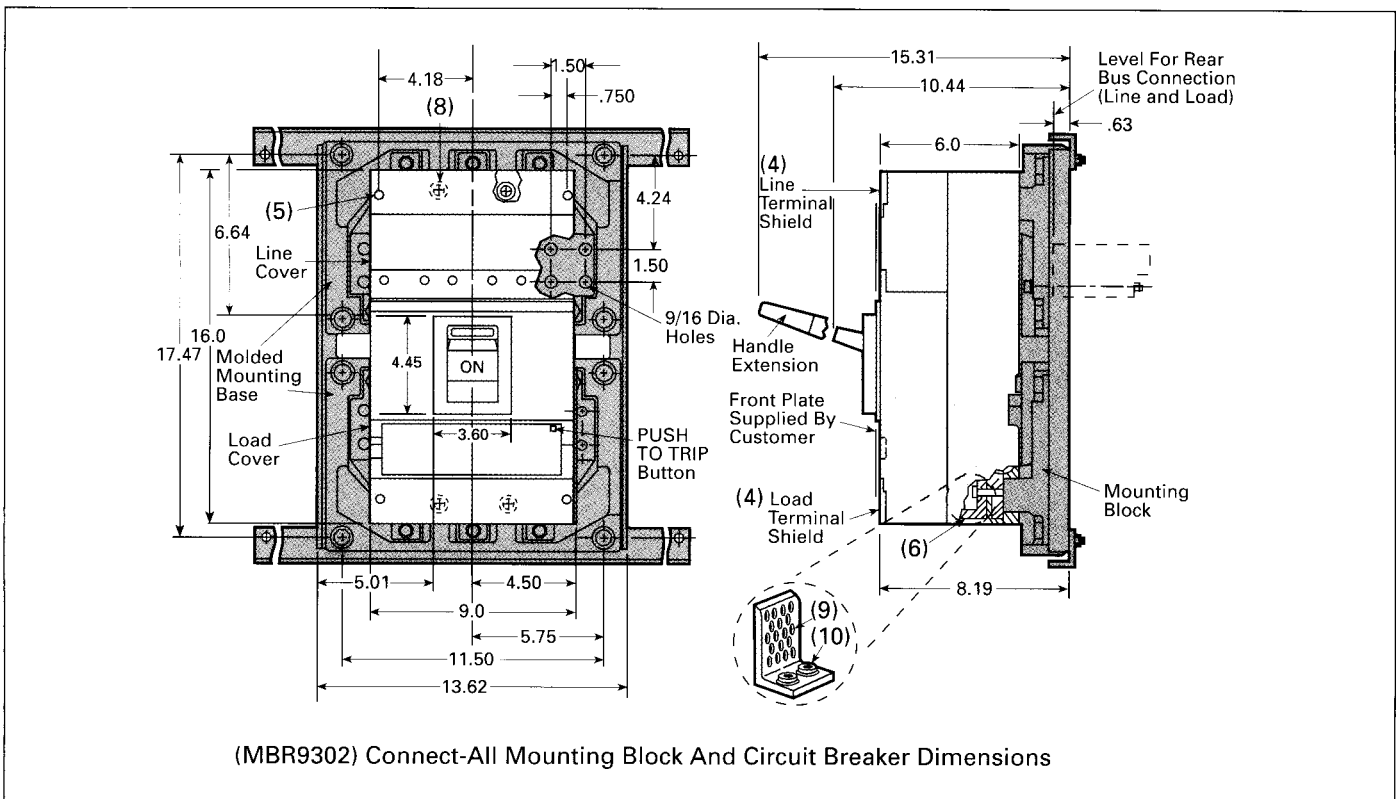


Figure 5

Assembly Instructions

Maintenance

Experience has shown that properly applied molded case circuit breakers normally do not require maintenance. However, some industrial users may choose to establish an inspection and maintenance procedure to be carried out on a regular

basis. For detailed information, consult applicable NEMA publications or your local Siemens sales office.

NOTE: Do not spray or allow any petroleum based chemicals, solvents, or paints to contact the molded parts or nameplates.

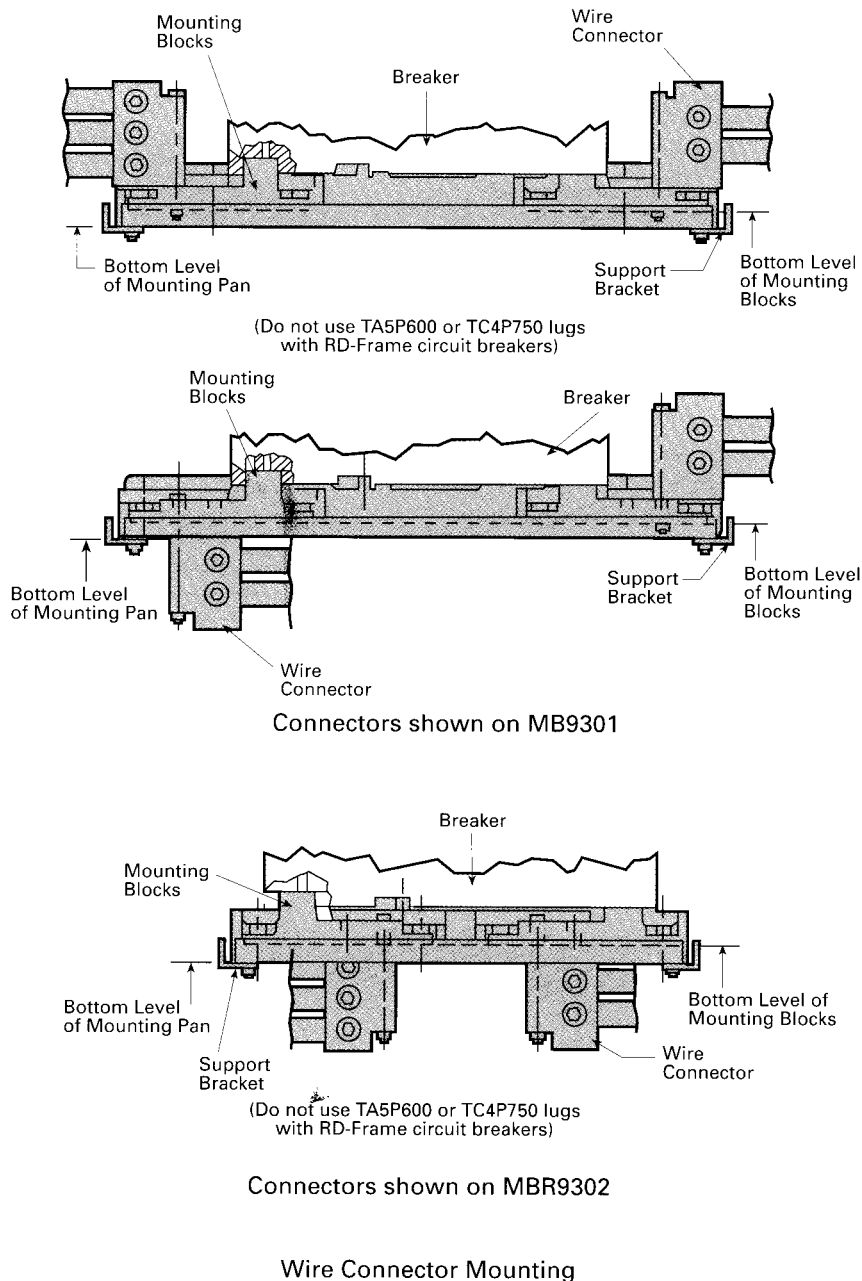



Figure 6

Pressure Wire Connectors



⚠ DANGER

Hazardous Voltage.
Will cause death or severe injury.

Turn power off supplying switchboard or panel before installing.



Safety Instructions

General

NOTE: These instructions outline the recommended installation procedures for TA5P600, TC5R600 and TC4P750.

- A. Turn off and lock out all power supplying this device before installing wire connectors.
- B. Move breaker handle to OFF position, or depress the PUSH TO TRIP button. The breaker must be in the OFF or TRIPPED position before continuing.

NOTE: Steps C and D may be completed in any convenient order.

- C. Attach power cables (1) to wire connectors (3) and tighten the cable set screws (2) as shown in Figure 1. Use Table 1 for the torque value of the cable set screws.
- D. Mount pressure wire connectors (3) to connect-all mounting block assembly (4), either front or rear position, with 6" x 1/2-13 hex head mounting bolts, associated nuts, flatwashers and lockwashers provided (Figure 1). Tighten to a torque value indicated in Table 1.

NOTE: Alternate lug connection options may be found on page 9, Figure 6.

Table 1 – Pressure Wire Connector Torque Values

Catalog Number	Wire Range	Torque Mounting Bolts	Torque Cable Set Screw
TA5P600	(1-5) 300-400 Kcmil Cu/Al	300 in-lbs.	600 in-lbs.
	(1-5) 500-600 Kcmil Cu/Al	300 in-lbs.	780 in-lbs.
TA4P750	(1-4) 600-750 Kcmil Cu	300 in-lbs.	480 in-lbs.
TC5R600	(1-5) 300-600 Kcmil Cu	375 in-lbs.	600 in-lbs.
TA6R600	(1-6) 300-600 Kcmil Cu/Al	375 in-lbs.	600 in-lbs.

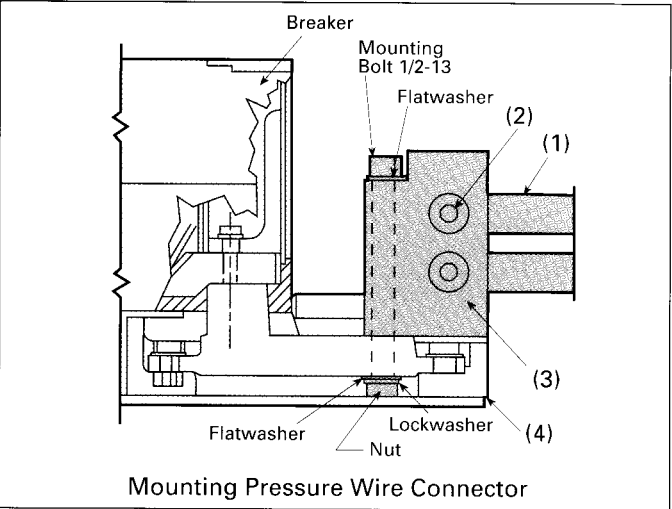


Figure 1

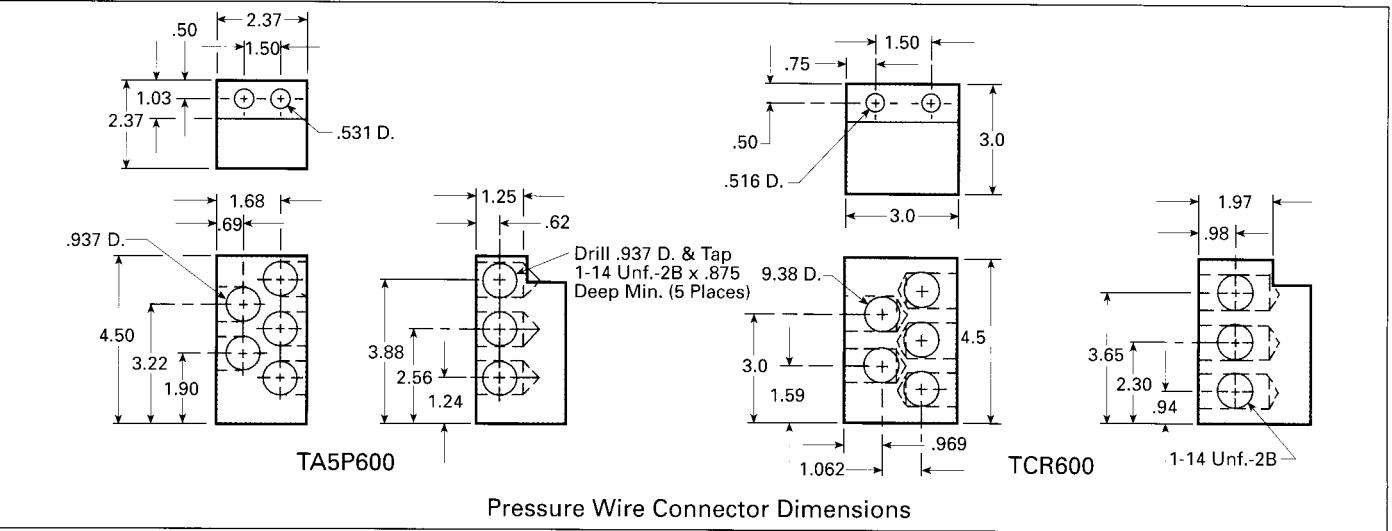
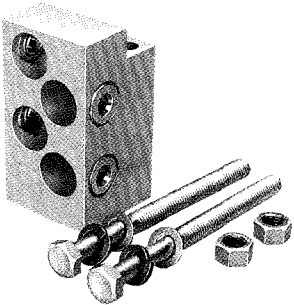
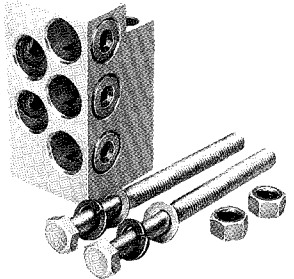
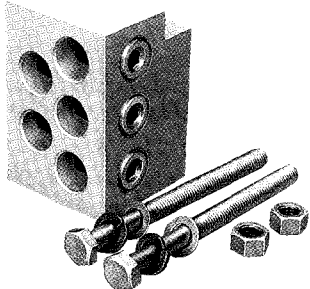
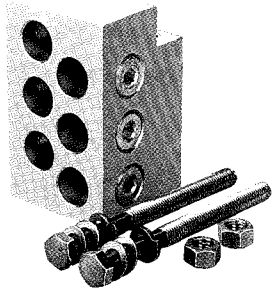


Figure 2

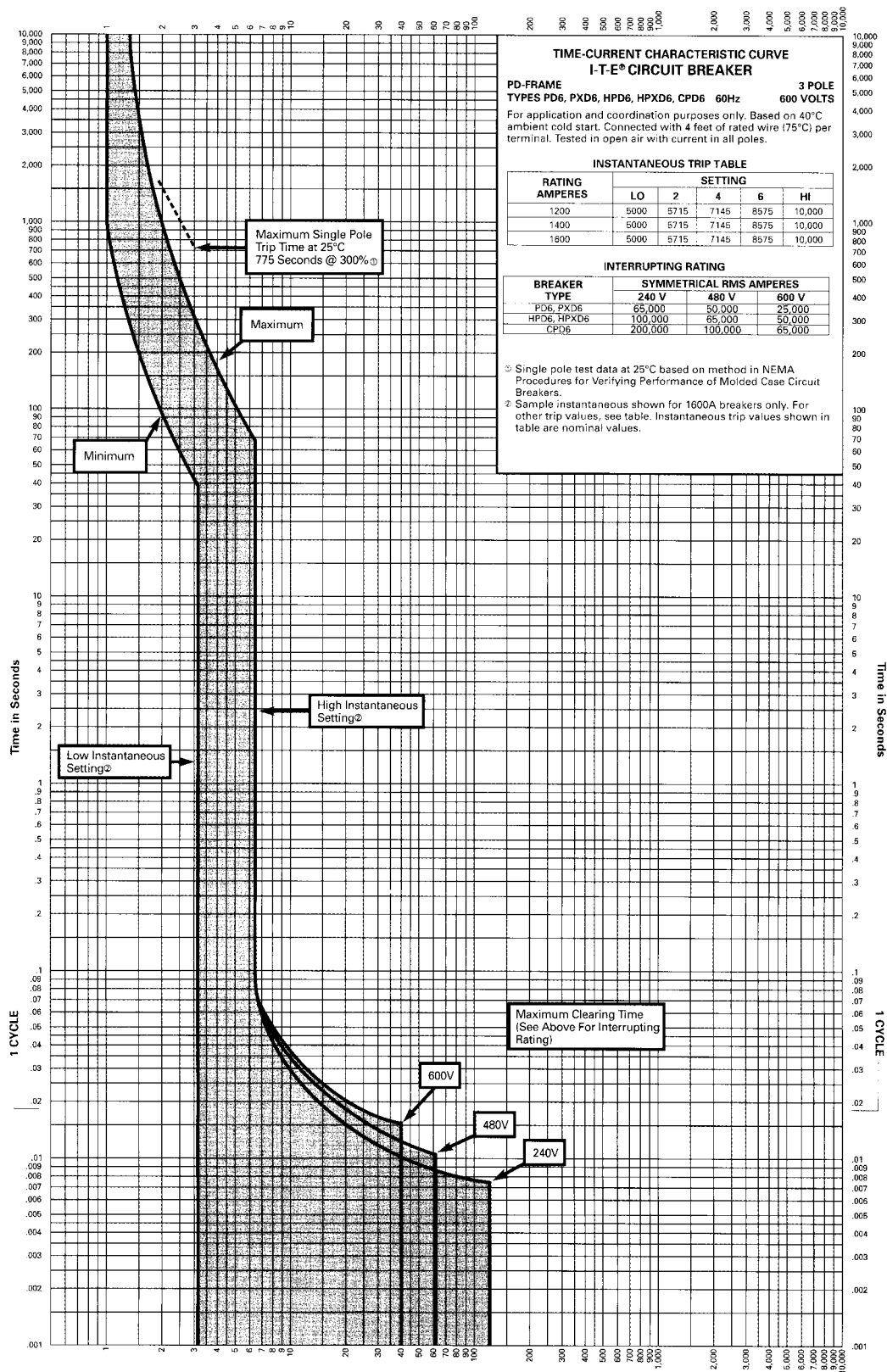
Pressure Wire Connectors

Table 2 – Connector Selection Chart

Connector Catalog Numbers	Circuit Breaker Ampere Rating	Connector Wire Range	Set Screw Torque	For Use With Type(s)
 TA4P750	1200-1600	(1-4) 600-750 Kcmil (Cu/Al)	480 in-lb.	PD6, PXD6, HPD6, HPXD6, CPD6
 TA5P600	1200-1600	(1-5) 300-400 Kcmil (Cu/Al) (1-5) 500-600 Kcmil (Cu/Al)	600 in-lb. 780 in-lb.	PD6, PXD6, HPD6, HPXD6, CPD6
 TC5R600	1600-2000	(1-5) 300-600 Kcmil (Cu Only)	600 in-lb.	PXD6, RXD6, HPXD6, HRXD6, PD6, RD6, HPD6, HRD6, CPD6
 TA6R600	1200-2000	(1-6) 300-600 Kcmil (Cu/Al)	600 in-lb.	PD6, PXD6, HPD6, HPXD6, RD6, RXD6, HRD6, HRXD6, CPD6

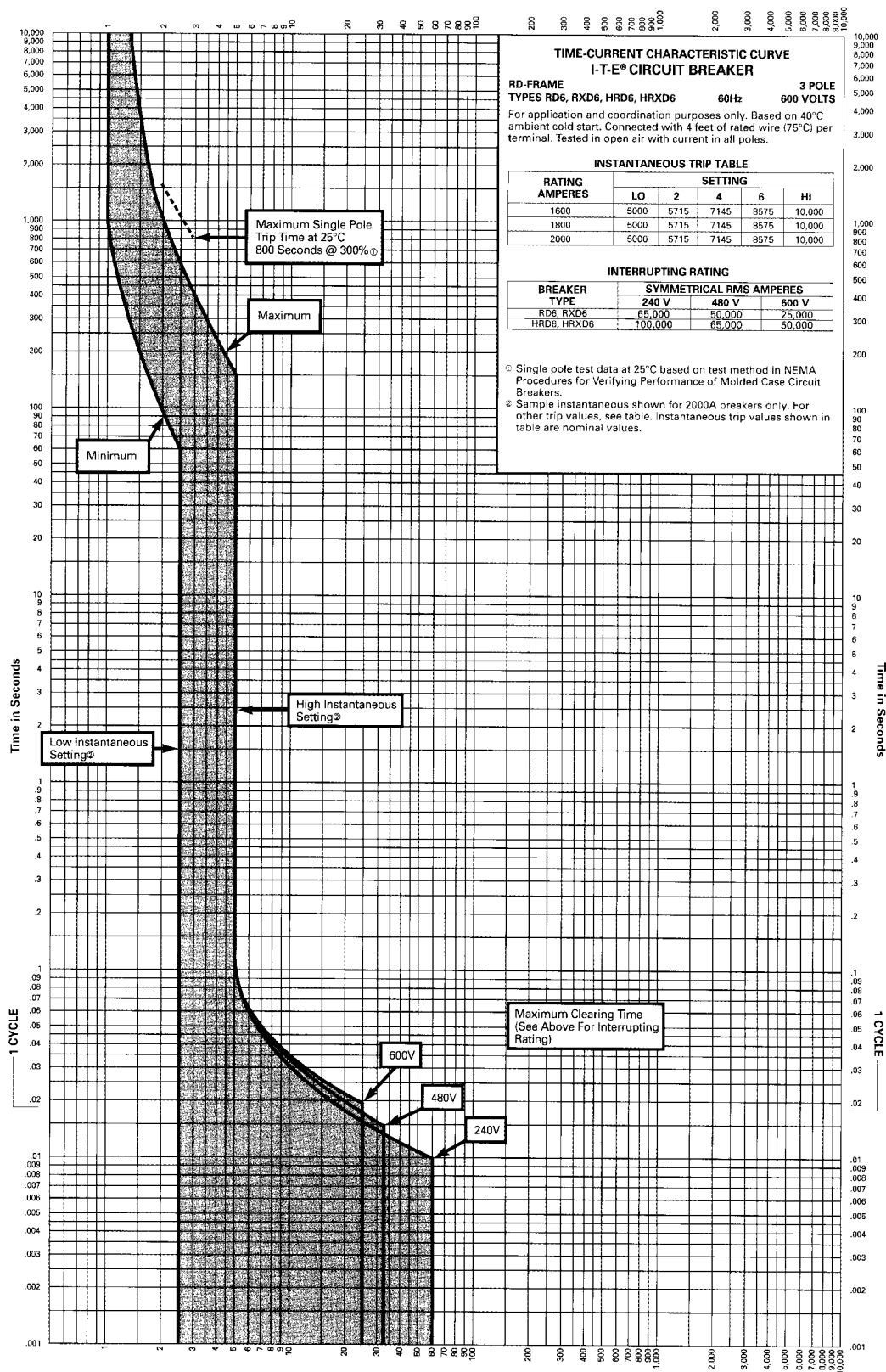
PD-Frame Time Current Curve

Types PD6, HPD6, CPD6, PXD6, HPXD6



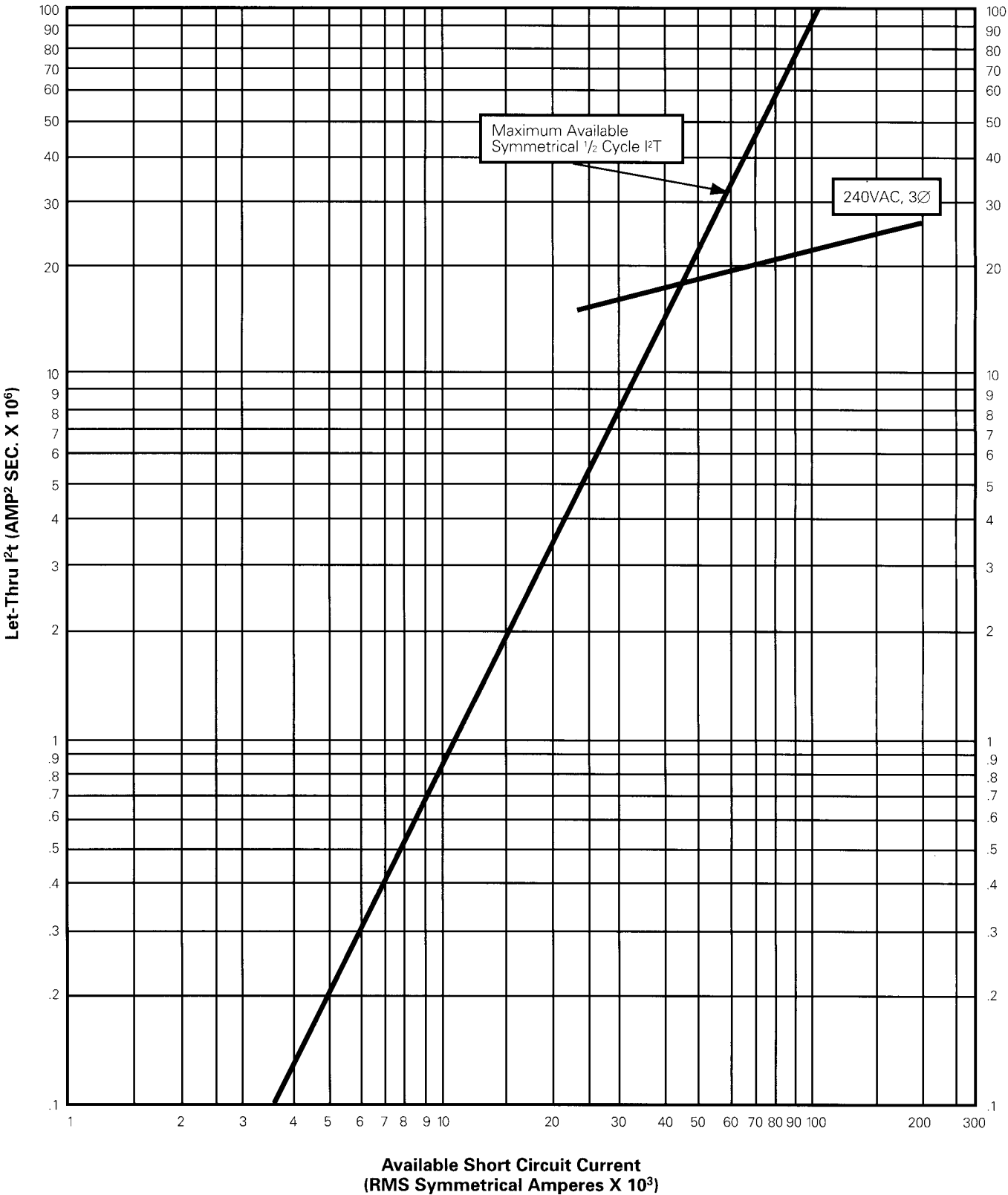
RD-Frame Time Current Curve

Types RD6, HRD6, RXD6, HRXD6



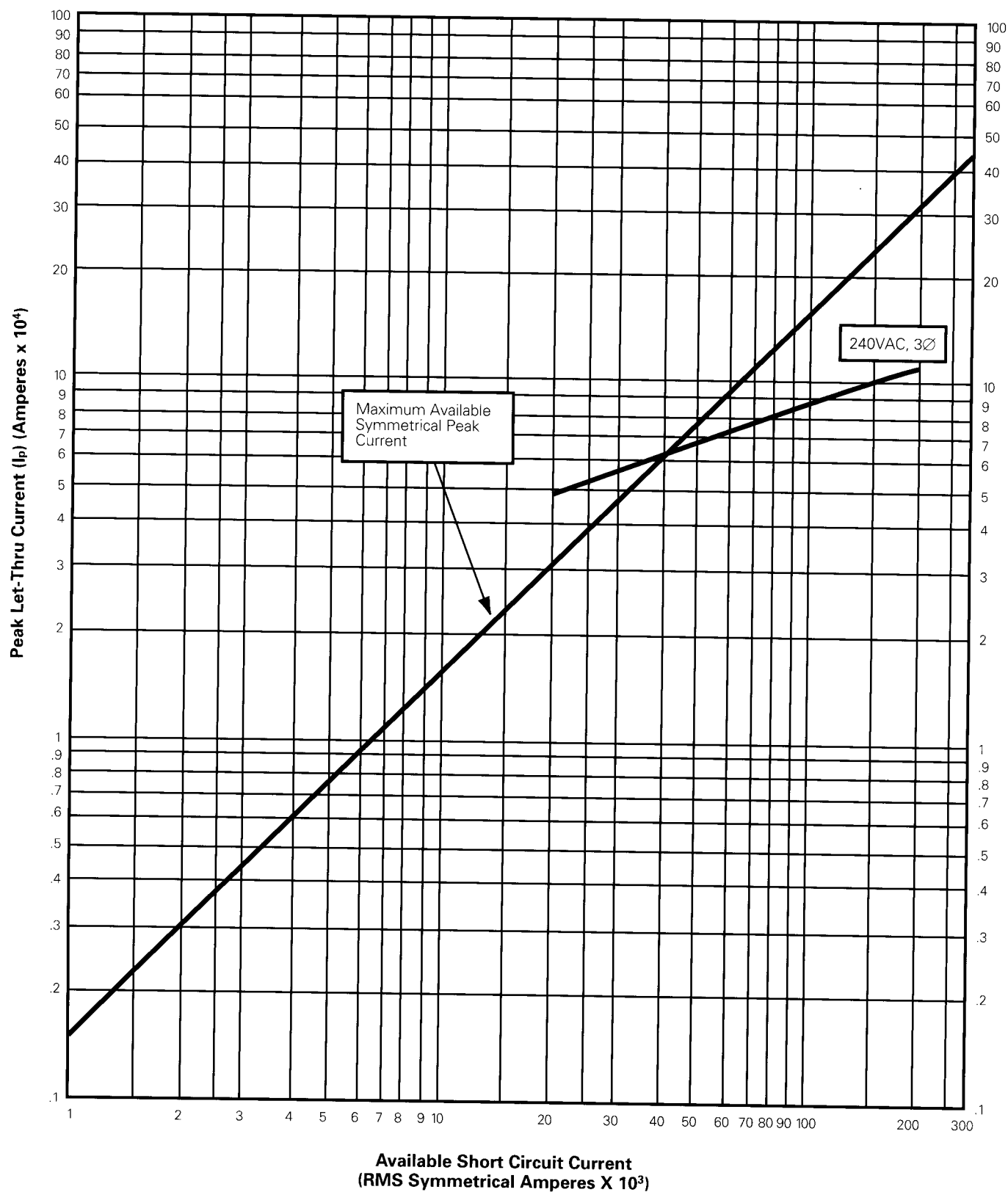
PD-Frame Let-Thru 1²t Curve

Type CPD6

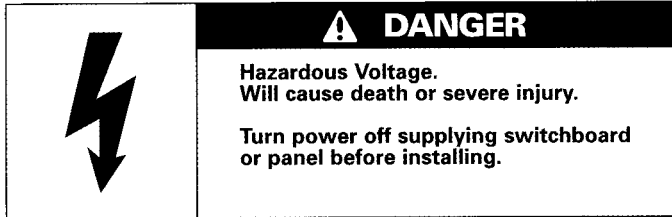


PD-Frame Peak Let-Thru Current (I_p) Curve

Type CPD6



Handle Blocking Device (MN6BL)



Safety Instructions

General

The handle blocking device, MN6BL, is provided to permit blocking the toggle handle of a PD and RD-Frame circuit breaker in the OFF position. The device can be field modified to permit blocking of the handle in the ON position.

Installation of Handle Blocking Device

- Turn power off supplying circuit breaker.
- Turn circuit breaker off.
- Loosen the two screws **(1)** (#10-32 x 3/8") so that the blocking device can be positioned and fully seated over the toggle handle, as shown in Figure 1.

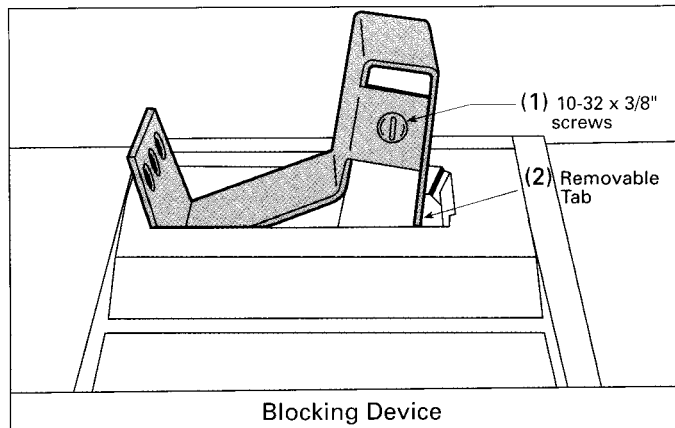


Figure 1

- With a screwdriver, turn the screws so they enter the blind holes molded in each side of the toggle handle. Tighten the two screws evenly so that when they engage the bottom of the blind holes, they project an equal distance of .094" (Figure 2) above the tapped surface. Do not over torque. Maximum torque 2 in-lbs.

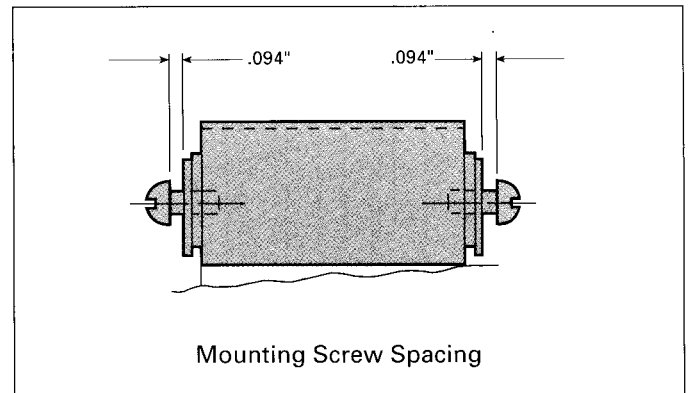


Figure 2

Modification and Use for Blocking the Handle ON

The lip of the blocking device **(2)** (Figure 1) is undercut so that a short section can be removed. To modify the device for blocking a handle ON, snap off this removable tab and discard.

- Turn power off supplying circuit breaker.
- Turn circuit breaker on.
- Follow installation procedures, Steps C and D, of "Installation Handle Blocking Device."

Handle Padlock Device (MN6PLD)



DANGER

Hazardous Voltage.

Will cause death or severe injury.

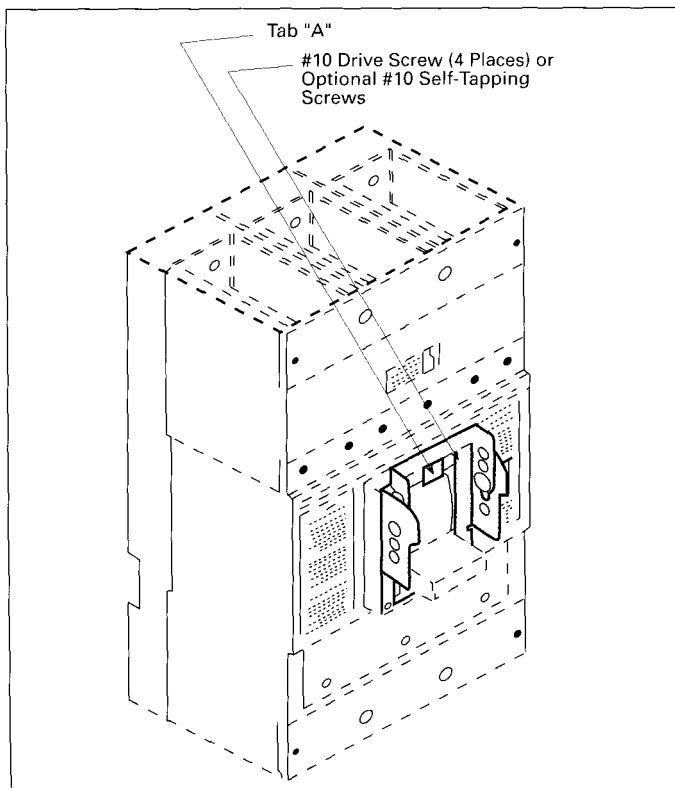
Turn off all power supplying circuit breakers before installing this device.

Replace all covers and shields before power supplying this circuit breaker is turned on.



Safety Instructions

NOTE: This instruction outlines the recommended installation procedure.



Tab "A" Removal

This padlock device can only be used on frames that have pre-drilled screw holes (product produced after July 1, 1995)

General

Prior to installation, if padlock device will be used to lock circuit breaker in the "ON" position, remove Tab "A" by grasping tab with pliers and using an up and down motion to break tab free from bail. Remove sharp edges with file.

1. Turn off all power supplying circuit breaker before installing this device.
2. With breaker in the "OFF" position assemble padlocking device to breaker by positioning over handle as shown in photo. Align mounting holes in padlocking device with holes in breaker escutcheon and insert #10 drive screw (4 places). Using a hammer, firmly tap screws into holes until padlocking device is secured to breaker.

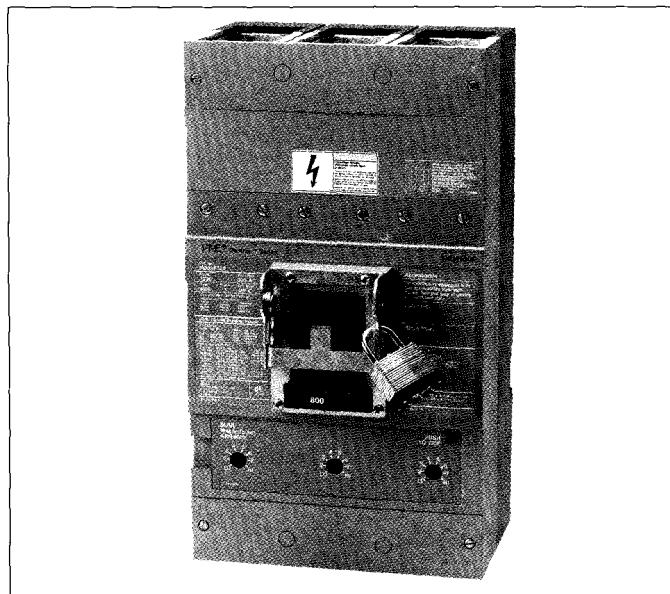
Optional #10 tamper proof self-tapping screws are provided and may be used in place of drive screws. Install using standard flat blade screwdriver and torque to 13-15 in-lbs.

Do not over torque.

3. To padlock device in "OFF" position.
 - a. Move breaker handle to "OFF" position.
 - b. Rotate bail toward handle until .375" dia. holes are aligned.
 - c. Install padlock clasp (recommended .187" dia. minimum through .375" dia. holes.)
4. To padlock device in "ON" position.

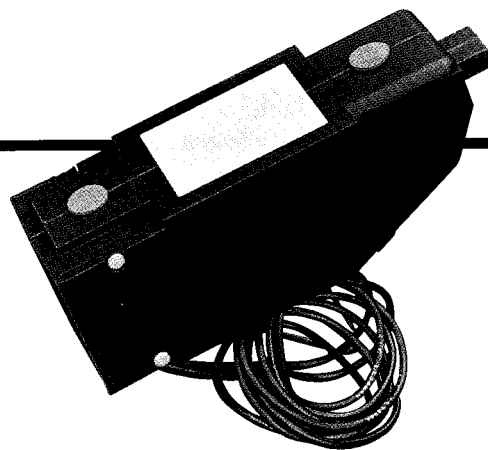
Note: Requires removal of Tab "A" (see Step 1.)

 - a. Move breaker handle to "ON" position.
 - b. Rotate bail over handle until .375" dia. holes are aligned.
 - c. Install padlock hasp (recommended .187" dia. minimum) through .375" dia. holes.



Handle Padlock Device Mounted

Internal Accessories



⚠ DANGER

Hazardous Voltage.
Will cause death or severe injury.

Turn power off supplying switchboard or panel before installing.



Safety Instructions

Circuit Breaker Preparation

- A. Turn power off supplying device before installing kit.
- B. Make sure device is in tripped position. For circuit breakers, depress the red TRIPPED button (1) (Figure 1). On molded case switches, removing the cover will trip the mechanism.

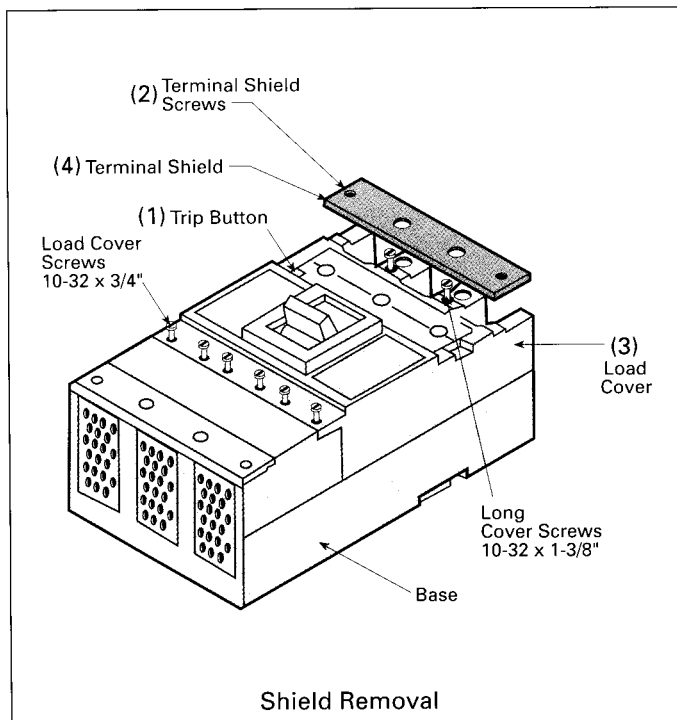


Figure 1

- C. Remove two terminal shield screws (2) on load end cover (3) (Figure 1) and remove terminal shield (4). Remove load end cover. Accessory units can be mounted in either right or left pole of the circuit breaker.
- D. Remove label (6) which covers openings in trip unit (Figure 3).

Accessory Mounting Instructions

- A. Feed leads through opening at bottom of accessory case for right hand or left hand mounting in breaker. Leads should always exit accessory toward outer edge of breaker. Feed accessory leads down and through .670 x .300" elongated opening (7) (Figure 2) to bring leads out bottom of circuit breaker.

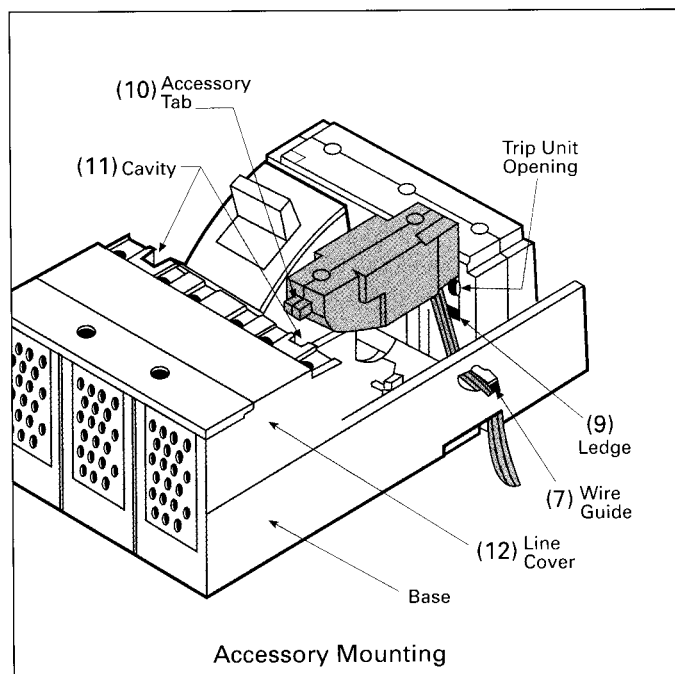


Figure 2

- B. Pull gently and evenly on accessory wire leads (2 to 9 wires) while lowering accessory onto base. Make sure all the slack is removed from leads inside breaker. Accessory is placed in circuit breaker on nosepiece (8) (Figure 3) on bottom side of accessory. Slide accessory down to rest on positioning ledge (9) (Figures 2 and 3) of trip unit.

When accessory is installed correctly, front tab of accessory (10) (Figure 2) will rest in cavity (11) of line cover (12). The inside edge of any accessory should be against the trip unit rib (13) (Figure 3) after installation.

NOTE: Do not attempt to "slide" Bell Alarm into position. Actuator (14) (Figure 3) must be inserted below top edge of center trip unit opening (15) (Figures 2 and 3) as front of accessory is lowered into cavity of line cover.

Internal Accessories

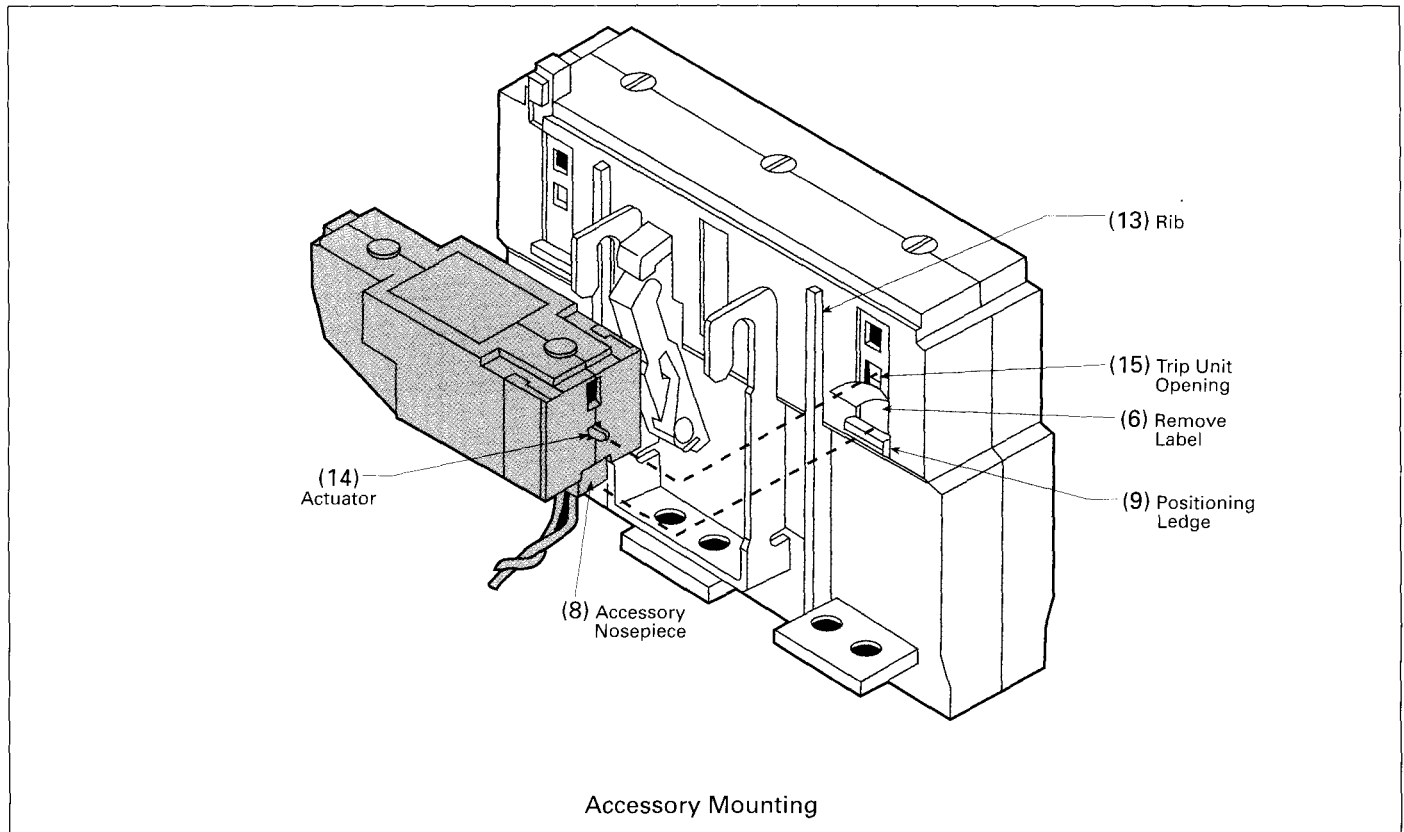


Figure 3

C. Check handle for proper fit on handle arm. Replace load end cover and cover screws. (quantity 8)

Replace All Covers and Shields

A. Add two labels to circuit breaker. Attach internal accessory ID label (16) (Figure 4) to top of circuit breaker on right hand side. Make sure it is located in the proper space on existing label. Attach wiring label (17) on side of circuit breaker cover as shown.

NOTE: This accessory is suitable to use for Ground Fault Protection when combined with Class I Ground Fault Sensing Element equipped with internal clearing switch.

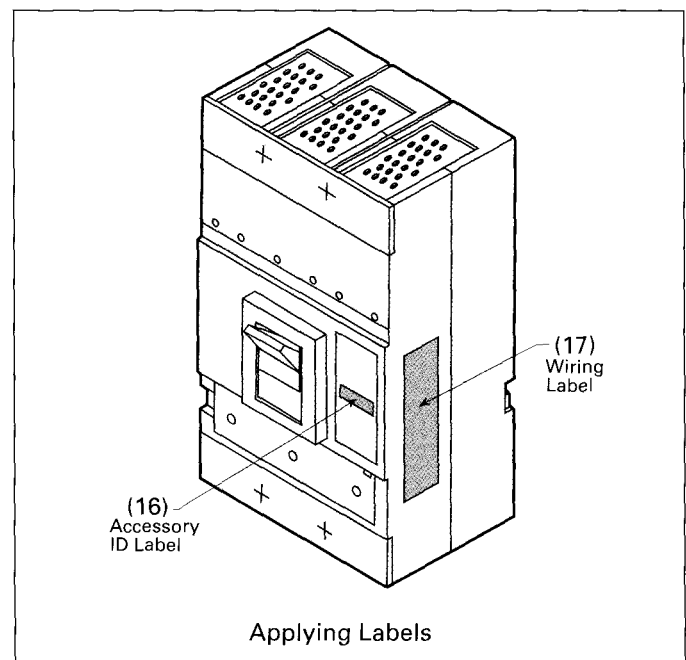


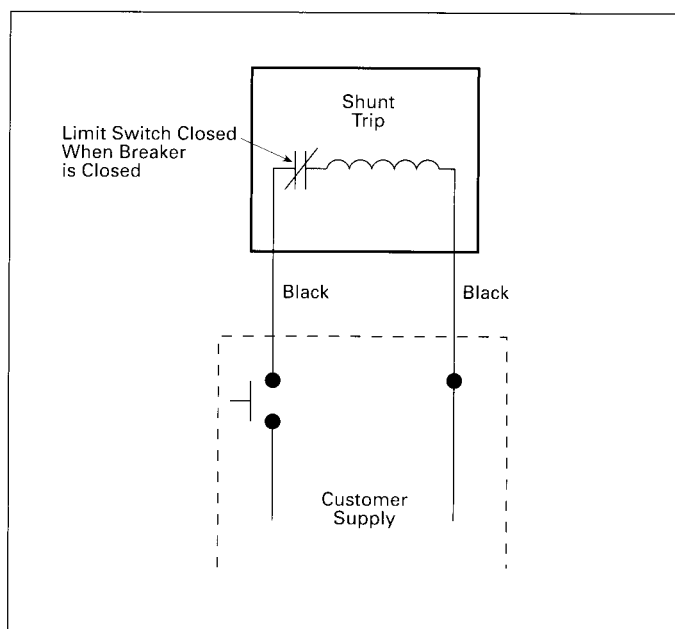
Figure 4

Internal Accessories

Mechanical and Electrical Check

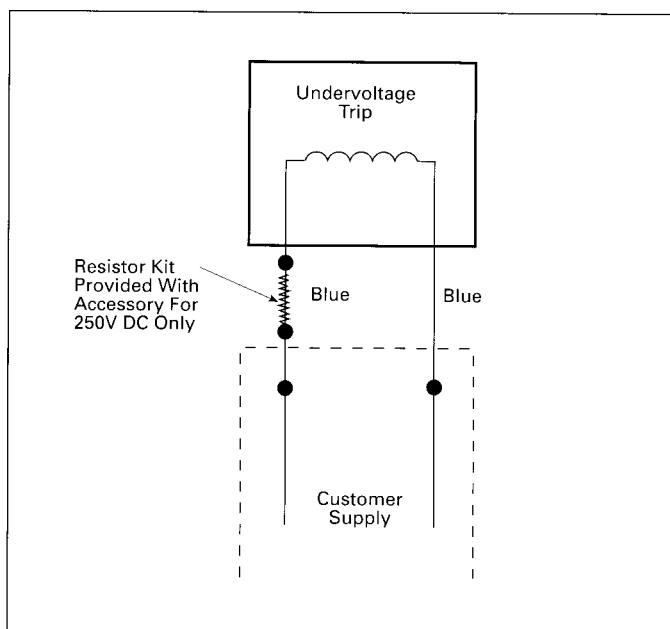
Shunt Trip

- Reset and turn circuit breaker ON.
- Attach test circuit to accessory leads. While the test voltage reaches 55 percent or more of the rated coil voltage, the circuit breaker should trip.
- With breaker TRIPPED or OFF, check to make sure coil circuit has opened.



Undervoltage Trip

- 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.
- Reduce voltage to 35 percent of rated coil voltage. Circuit breaker must trip.



Electrical Data For Trip

Coil Voltage	Inrush Current At Rated Voltage (Amperes)	Catalog Number
60 Cycles AC		
120	0.55	S01MN6
208	0.61	S02MN6
240	0.69	S03MN6
277	0.76	S15MN6
480	0.30	S04MN6
600	0.40	S06MN6
DC		
12	2.55	S16MN6
24	1.70	S07MN6
48	0.60	S09MN6
125	0.57	S11MN6
250	0.89	S13MN6

Electrical Data For Undervoltage (UV) Trip

Coil Voltage	Sealed-In Current At Rated Voltage (Amperes)	Catalog Number
60 Cycles AC		
120	0.09	U01MN6
208	0.05	U02MN6
240	0.04	U03MN6
277	0.04	U15MN6
480	0.02	U04MN6
600	0.02	U06MN6
DC		
24	0.23	U07MN6
48	0.13	U09MN6
125	0.08	U11MN6
250*	0.04	U13MN6

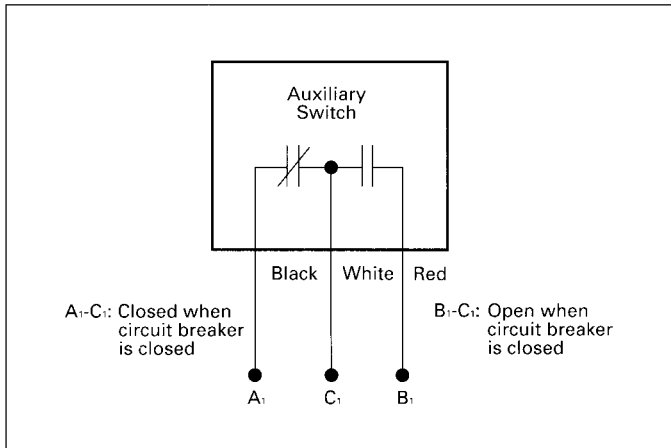
* Requires a 2.5K ohm 25 watt resistor (clarostat cat. no. VP-25-K or equivalent). Resistor is to be mounted in series with coil and mounted in an enclosure by the customer.

Internal Accessories

Mechanical and Electrical Check

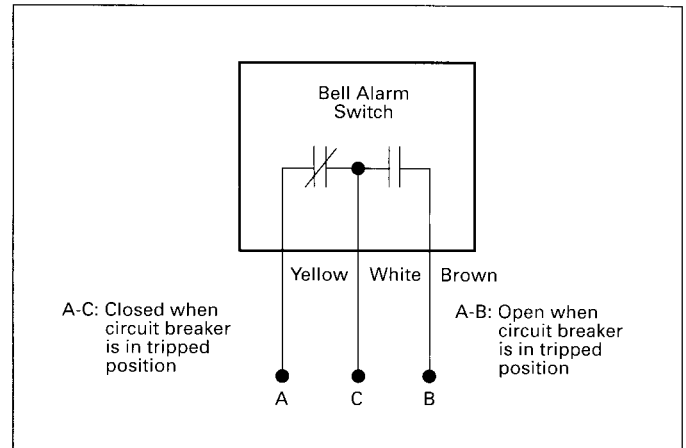
Auxiliary Switch Identification (All With Three Leads)

Wire Markings	Wire Color	Switch Terminals or Contacts
C1 or C2	White	C – Common Terminal
B1 or B2	Red	NC – Normally Closed Contact (Closed when circuit breaker is tripped or off)
A1 or A2	Black	NO – Normally Open Contact (Open when circuit breaker is tripped or off)



Bell Alarm Wire Identification (All With Three Leads)

Wire Markings	Wire Color	Switch Terminals or Contacts
C	White	C – Common Terminal
A	Yellow	NC – Normally Closed Contact (Closed when circuit breaker is tripped or off)
B	Brown	NO – Normally Open Contact (Open when circuit breaker is tripped or off)



Auxiliary and Bell Alarm Switch Kits

Catalog Number	Number of Auxiliary Switches	Ampere Rating of Switch					
		Volts AC			Volts DC		
		120	240	480	125	250	
B00MN64	0	10	10	10	.5	.25	
A01MN64B	1	10	10	10	.5	.25	
A02MN64B	2	10	10	10	.5	.25	
A01MN64	1	10	10	10	.5	.25	
A02MN64	2	10	10	10	.5	.25	


Accessory units that employ a combination will have the same wiring colors or identifiers. A double auxiliary switch combination will use wire markings A₁-A₂, B₁-B₂, C₁-C₂.

Bell Alarm Mechanical and Electrical Check

- Use a buzzer or light indicator attached to switch leads A and C. With device in TRIPPED position, indicator light or buzzer should operate.
- Reset breaker to OFF indicator light or buzzer should turn off.
- Move breaker handle to ON indicator light or buzzer should remain off.

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

Mechanical Interlock (MI5405)



⚠ DANGER

Hazardous Voltage.
Will cause death or severe injury.

Turn off and lock out all power supplying circuit breaker or frame before removing cover(s) or device and while cover(s) are removed.

Replace all covers and shields before power supplying this device is turned on.

⚠ Safety Instructions

NOTE: These instructions outline the recommended installation procedures. Installation of a Mechanical Interlock system prevents use of internal accessories in the left pole of the circuit breakers.

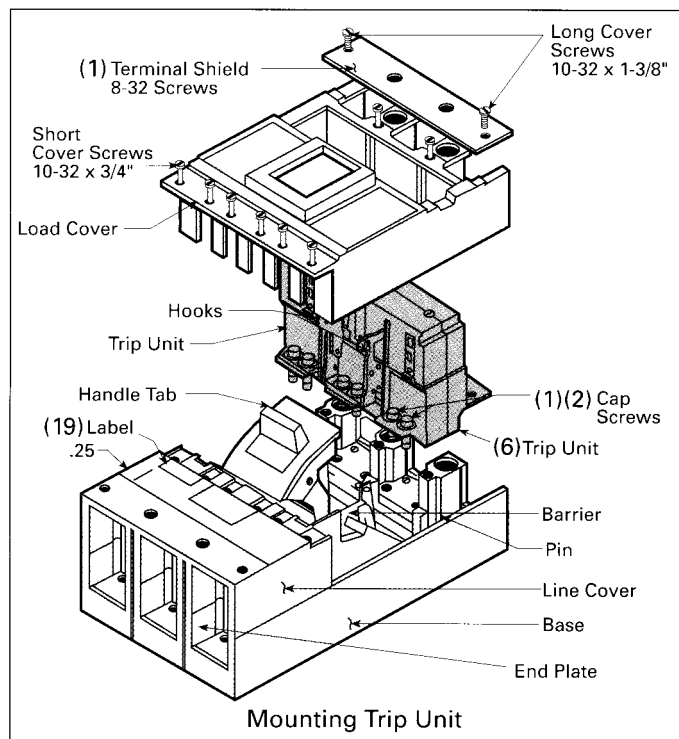


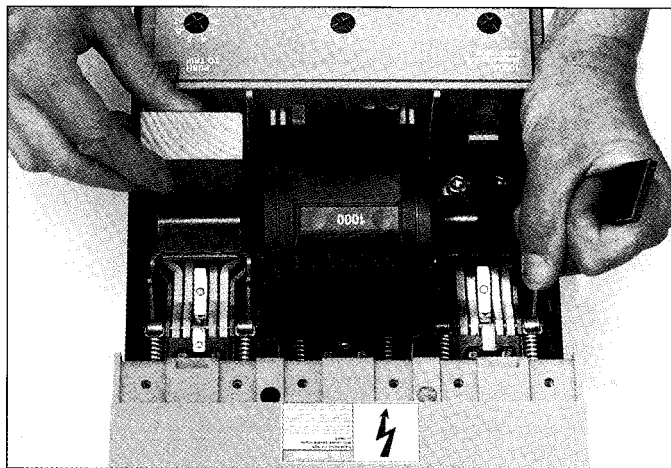
Figure 1

Circuit Breaker Preparation

- A. Turn off and lock out all power supplying circuit breaker or frame before removing cover(s) of device and while cover(s) are removed.
- B. Remove terminal shield from line and load side of breaker frame. Two 8-32 screws each. See Fig. 1.
- C. Remove load cover from breaker frame. Six 10-32 x 3/4"

screws and two 10-32 x 1-3/8" screws. See Fig. 1.

- D. Prior to lowering trip unit into place as shown in Fig. 1 remove on left pole only the two socket head cap screws (Item 1) and the two Belleville spring washers (Item 2) and discard.
- E. Lower trip unit into place as shown in Fig. 1. The two hooks on the trip unit must fit over pins on frame. Handle may be removed to ease assembly.
- F. Secure trip unit to frame. Tighten four 5/16-18 socket head cap screws to 140 in-lbs.
- G. With 9" long tie-bar wrench supplied (see Item 3 in Fig. 5) positioned over tie-bar connector (Item 4) on left pole rotate tie bar in direction of arrow and drop safety wood block (Item 5) with 1 inch dimension between tie-bar connector (Item 4) and trip unit (Item 6) on right pole so Item 6 comes to rest on the two socket head cap screws as shown in Fig. 5. Remove wrench.

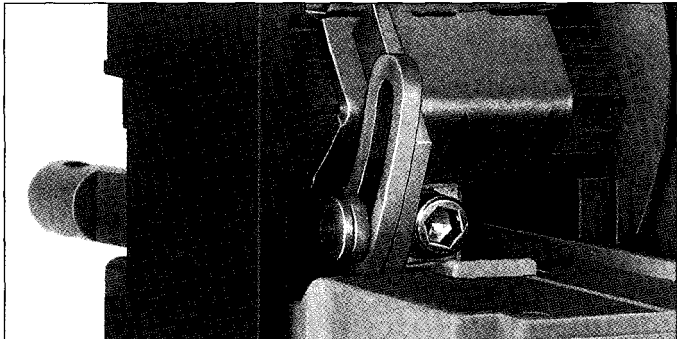


Securing Tie Bar Connector

NOTE: When properly installed, the top of the safety wood block will be flush with the top of the trip unit. IF NOT INSTALLED PER THESE INSTRUCTIONS, PERSONAL INJURY COULD RESULT.

- H. Assemble support-tie bar assembly (see Item 7 in Fig. 5) from top and insert plunger through rectangular opening in base from bottom of base. Tie bar member (Item 8), which is a part of Item 7 must engage tie-bar connector (Item 4). Plunger locator pin (Item 9) of link assembly (also a part of Item 7) must engage hole in plunger (Item 10). Tighten two 5/16-18 socket head cap screws (Item 1) to 140 in-lbs.
- I. Using tie-bar wrench (Item 3), carefully position over tie-bar connector (Item 4), (so as not to damage support-tie bar assembly Item 7) rotate tie bar in direction of arrow and remove wood block (Item 5). With care remove tie-bar wrench.

Installation Instructions



Position of Link Assembly

- J. Replace handle if removed; note tab on front of handle must be toward line end. Replace load cover. The six 10-32 x 3/4" screws must be installed toward the line side of the circuit breaker. The two 10-32 x 1-3/8" screws are installed on the load end. Tighten all load cover screws to 25 in-lbs.

Mounting Preparation

- K. The connect-all mounting block assemblies (Cat. No. MB9301) must be positioned in the Panelboard using the mounting support hole locations shown in Fig. 2. Fig. 2 also shows the location of the desired 27" wide, 23" high panel clearance opening behind the connect-all assemblies.

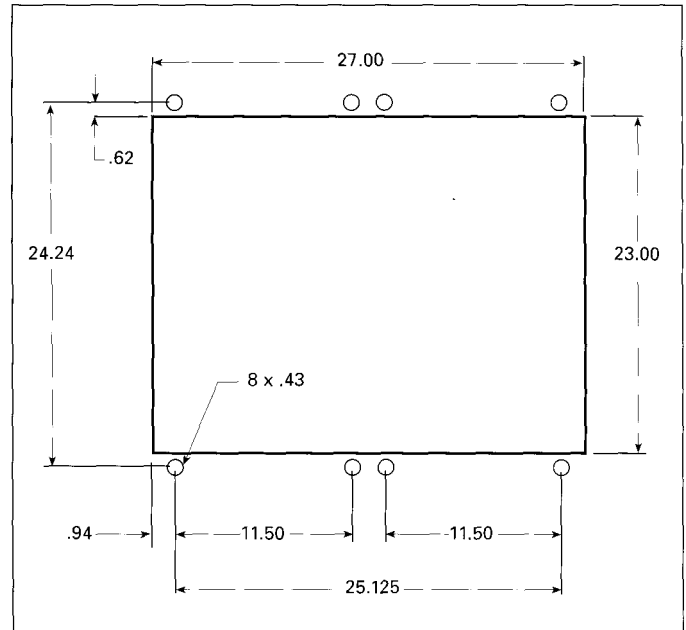


Figure 2

- L. Mount the two Cat. No. MB9301 connect-all mounting block assemblies in accordance with the MB9301 Installation Instructions (Pc. No. 73632). Reference Fig. 3. Use a straight edge to confirm that the connect-all assemblies are aligned in the vertical plane. Adjust if necessary.

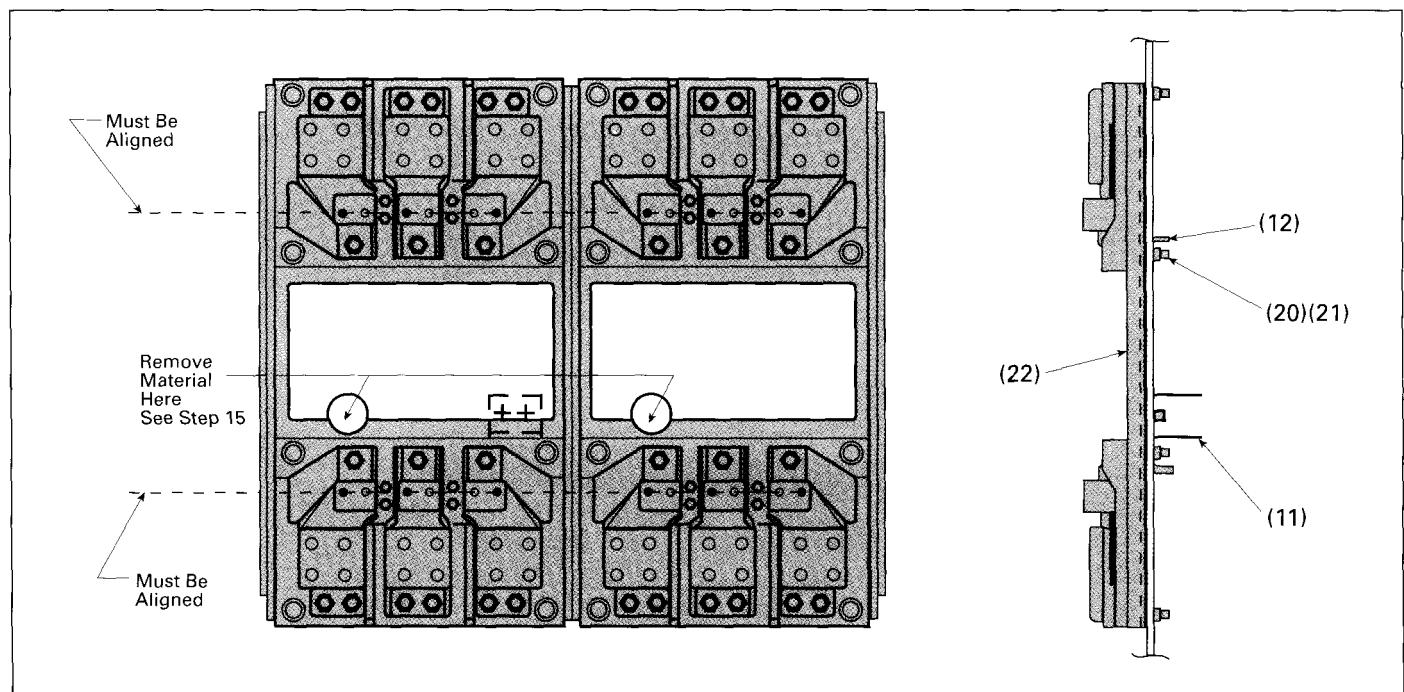


Figure 3

Installation Instructions

- M. Reference Fig. 4. Attach the bracket (Item 11) to the mechanical interlock mounting pan (Item 12) using the 10-32 flat head screws, (Item 13), lockwashers (Item 14) and nuts (Item 15) supplied. Torque to 32 lb-in. Temporarily install the rocker arm (Item 16) in the bracket to make certain that the plunger (Item 10) openings in the ends of the rocker arm align with the one inch diameter holes in the mounting pan. Adjust if necessary. Remove the rocker arm after alignment is confirmed.
- N. Reference Fig. 3. The mechanical interlock pan (Item 12) must be attached to the connect-all assemblies in the position shown to provide a mounting surface for the interlock and to insure dimensional stability between the two interlocked circuit breakers. Install the interlock pan after removal of the eight 3/8" hex. head nuts and washers, (Items 20, 21). Reuse the nuts, flat washers and lockwashers to secure the pan. Torque to 230 lb-in.
- O. Reference Fig. 3. Material must be removed from both of the connect-all aluminum frames (Item 22) to provide clearance for the interlock plungers. Using the 1" diameter holes in the mechanical interlock mounting pan as template guidelines, file or rout the connect-all frames to obtain a complete 1" diameter clearance hole.
- P. Position the circuit breakers on the connect-all assemblies by carefully guiding the protruding plungers through the 1" diameter holes in the interlock mounting pan. Secure the circuit breakers to the connect-all assembly, following the Circuit Breaker Installation Instructions, (Piece No. 73643). All end plates must be installed.
- Q. Reference Fig. 4. Assemble the rocker arm, (Item 16), to the bracket, (Item 11). The plungers, (Item 10), will pass through the holes in the rocker arm.

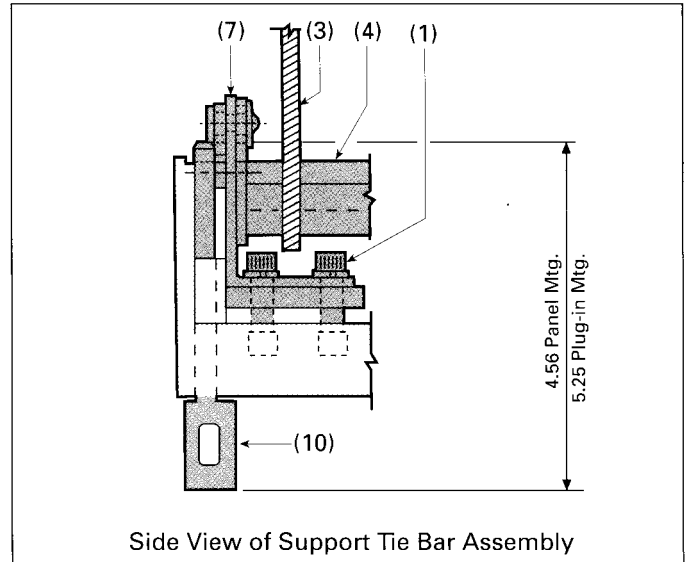


Figure 5

NOTE: Heads of all rocker arm pins (Item 17) must be on upper side of assembly and cotter pins (Item 18) on lower side. Insert cotter pin into hole in (Item 18) and spread ends.

- R. Attach both plungers (Item 10) to rocker arm with rocker arm pins (Item 17).
- S. Affix labels (Item 19) to front of both circuit breakers as shown in Fig. 1.

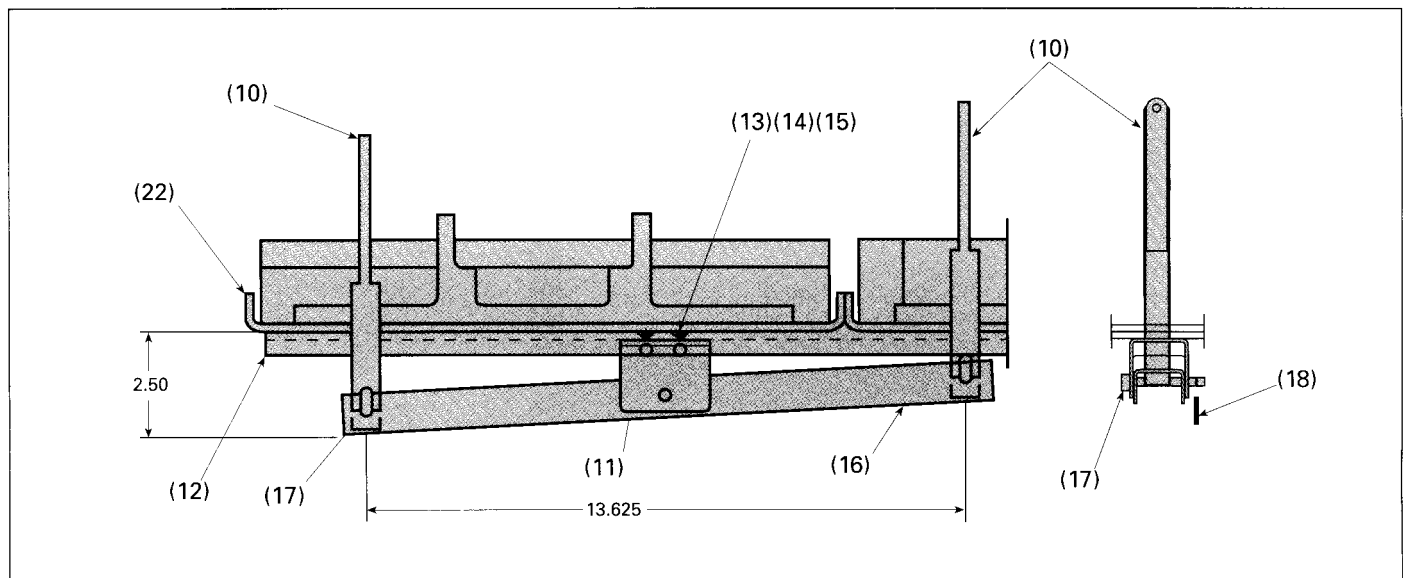


Figure 4

Installation Instructions

Check Operation

- T. With both circuit breakers in "OFF" position, interlock must move freely.
- U. With one circuit breaker "ON" the other circuit breaker must not close.

Covered under U.S. Patent No. 4,902,859

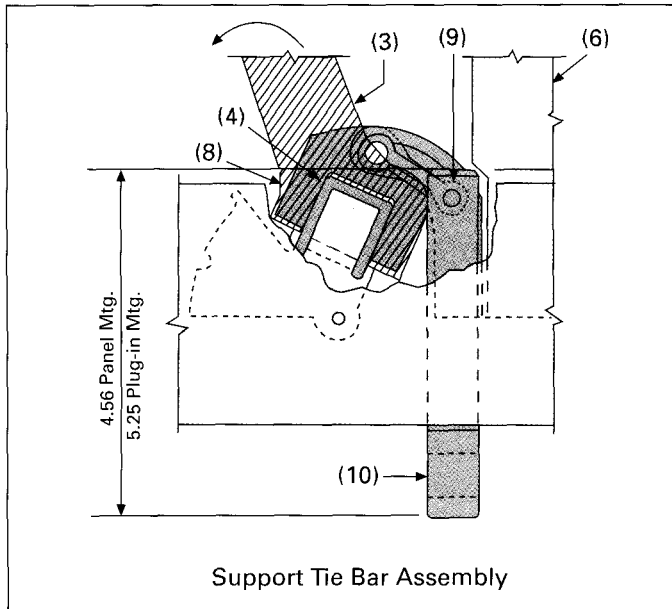


Figure 6

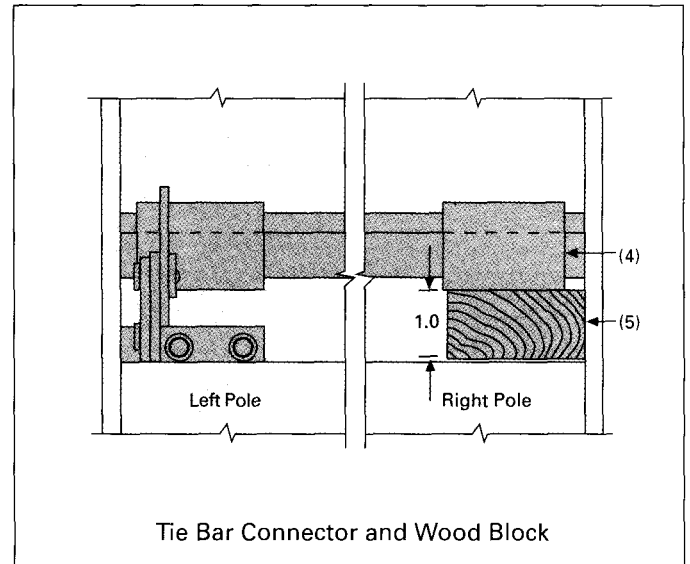
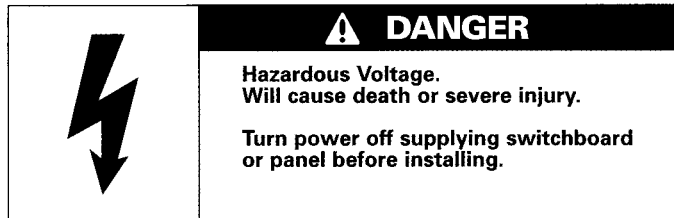


Figure 7

Rotary Handle Operator

Types 1, 3, 3R, 4, 4x



Safety Instructions

Standard Depth (RHONSD)
Variable Depth (RHONVD)

General

When properly installed, the rotary handle operator provides single point latching of the enclosure door. For maximum protection against unauthorized entry into the enclosure additional latching means should be provided. The handle can be padlocked in the OFF position with up to three 5/16" padlocks. The breaker operator can also be padlocked in the OFF position.

Drilling of Enclosure

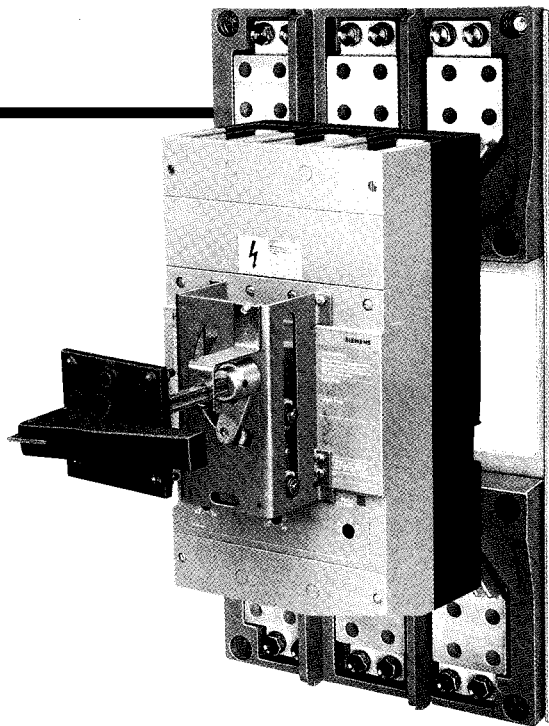
- Turn off and lock out all power supplying the circuit breaker before installing.
- Catalog number RHONSSD standard depth shaft is used when "K" dimension in Figure 2 is 11". Catalog number RHONSVD variable depth shaft is used if "K" dimension is between 11 and 20.66". Cut shaft to length "L" as shown in Figure 2.
- Place circuit breaker on connect-all mounting block assembly. Drill mounting holes on mounting surface (see page 6, Figure 1) and handle mounting holes in enclosure door (Figure 1).

Installation of Breaker and Breaker Operator

- Loosen four breaker terminal shield screws, remove both terminal shields (4) from the line and load side of the circuit breaker and mount the circuit breaker to the mounting block using four 3/8-16" mounting screws, washers and nuts (5) provided in hardware kit. Tighten mounting hardware securely (Figure 2).

NOTE: See pages 6–9 for mounting block installation.

- Replace the breaker terminal shields on the load and line side of the circuit breaker and secure with four breaker terminal shield screws. Tighten to 12 in-lbs.
- Remove the second screw (6) from each side of the circuit breaker cover (located above the circuit breaker handle) (Figure 4).
- Position the breaker operator (7) on the circuit breaker and attach at the top using the two #10-32 x 1.00 pan head screws (8) and lock washers. Torque these screws to 25



in-lbs. Attach the breaker operator at the bottom using the four #10-14 x .500 phillips head thread forming screws (9). Torque to 20 in-lbs. maximum (Figure 4).

NOTE: The mounting holes are under the labels.

Installation of Shaft

- If applicable, cut variable length shaft to length required $L=K-8.38$.
- Insert the shaft (10) into the square hole (11) in the crank (12) of the breaker operator and tighten the two 1/4-20 x .375 set screws (13) to 70 in-lbs.

NOTE: Groove in shaft fits over ridge along side of hole. (Figure 4).

Installation of Handle

- Attach the handle (14) and gasket (15) to the enclosure door with the four square neck bolts (16), lock washers and nuts supplied. Tighten nuts to 75 in-lbs. (Figure 3).

Check Operation

- Place handle into OFF position. Close the enclosure door. Confirm that handle interlocks with the guide cone (17) (Figure 4) of the shaft to hold the door closed in all handle positions except OPEN/RESET. Check proper operation of the circuit breaker ON/OFF and RESET.

To open the enclosure door when the breaker is in the ON position, rotate the screw slot on the handle plate (19) counter-clockwise. This procedure will defeat the interlock (Figure 3).

Padlocking

- To lock handle in the OFF position, pull the lockplate (20) (Figure 3) from the end of handle into the grooves on the handle plate located at the interlock defeater screw and attach padlock(s) through slot of lockplate.
- The breaker operator can be padlocked by inserting padlock through the lower slots (Figure 5).

Installation Diagrams

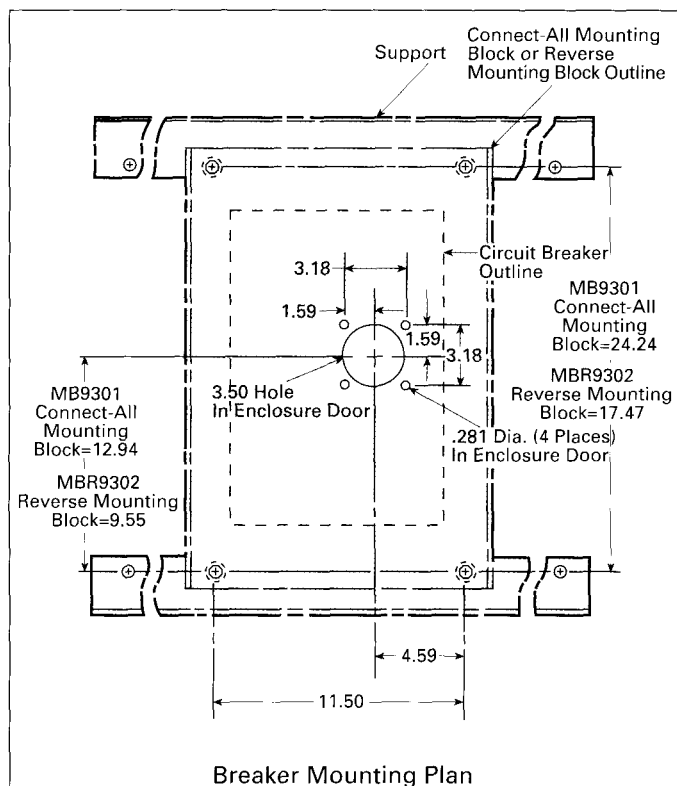


Figure 1

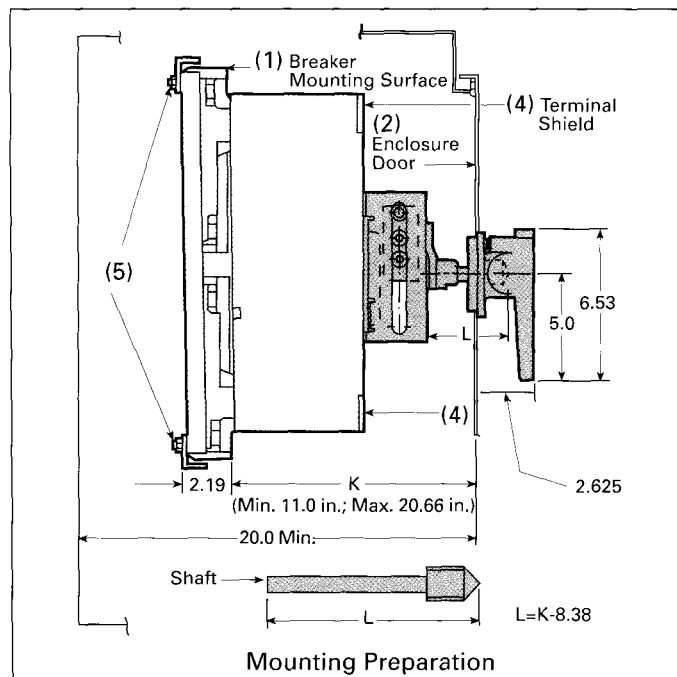


Figure 2

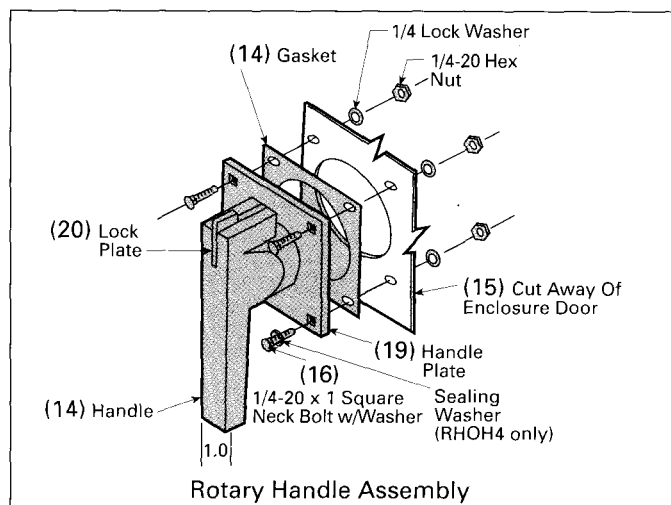


Figure 3

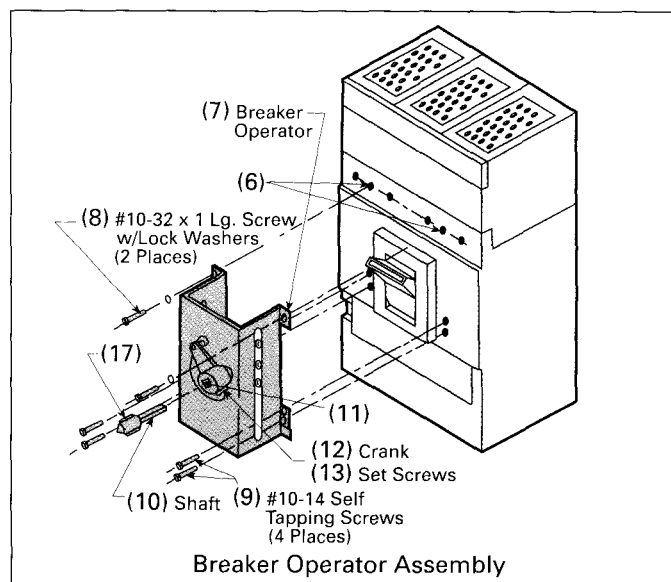


Figure 4

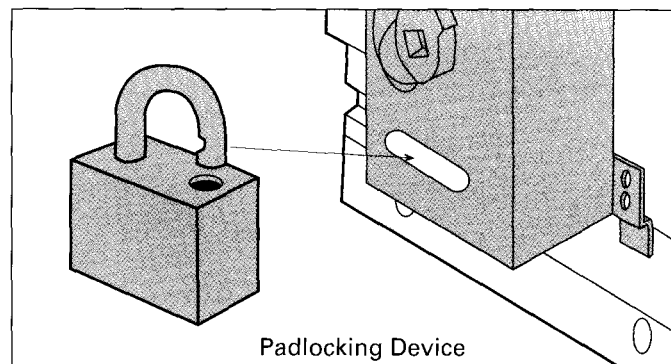


Figure 5

Max-Flex™ Flange-Mount Handle Operator

Types 1, 3, 3R, 4, 4x, 12



DANGER

Hazardous Voltage.
Will cause death or severe injury.

Turn power off supplying device before installing.



Safety Instructions

General Information

The I-T-E Max-Flex™ Flange-Mount Handle Operator is a flexible cable control device used for the remote switching of a circuit breaker within an enclosure. The flexible cable is connected directly to the breaker at one end and to a pre-assembled switch handle operator at the other end. The remote operator handle, located on the enclosure flange, is used to perform mechanical open/close switching operations. This is accomplished through the flexible control cable.

Function

The advanced design concept of the Max-Flex Flange-Mount Handle Operator provides for greater flexibility when locating a circuit breaker within an enclosure. The circuit breaker can be mounted almost anywhere, at any angle and on almost

any convenient surface. The same flexibility applies when locating the switch handle operator on the flange section of the enclosure.

Application

The Max-Flex Operator is designed to work with I-T-E circuit breakers having current ratings through 2000 amperes. The Max-Flex unit meets all the industrial criteria such as UL and Automotive Industry Standards.

Design

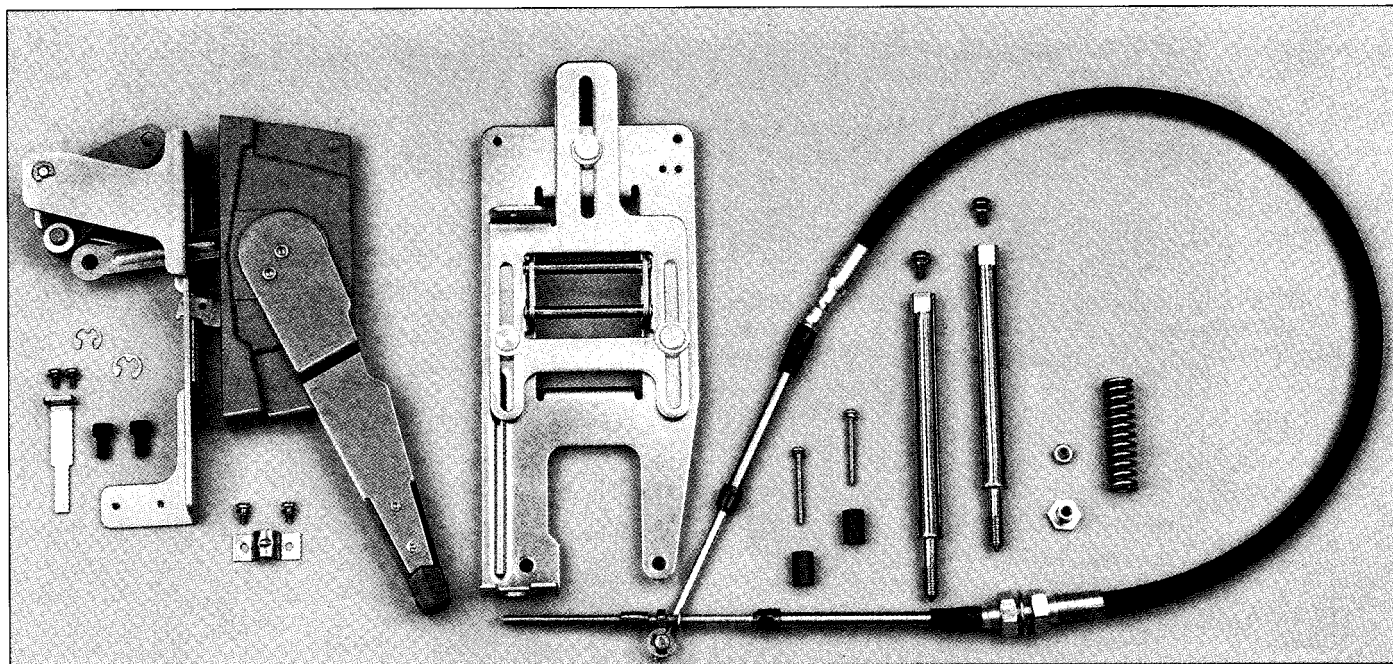
The new Max-Flex Handle Operator provides maximum flexibility in design and assembly of electrical equipment.

The cable design is flexible and rugged. The flexible cable comes in standard 4 or 5 foot lengths. However, specific lengths can be special ordered up to 20 feet.

Operation

When properly installed, the Max-Flex Handle Operator is used to perform remote switching operations from outside of the enclosure. Switching is accomplished by pushing the Max-Flex Handle Operator up for ON and down for OFF. The mechanical advantage gained with this device simplifies switching operations when compared with local switching at the breaker.

Interlocking provisions are included and described below. All switching functions are standard according to accepted practices.



Unassembled Max-Flex™ Flange-Mount Handle Operator

Assembly Instructions

PD and RD-Frame Application

A complete kit consists of handle, cable and breaker operator. The handle can be mounted on either right hand or left hand flange type enclosures. It can be locked in the OFF position with up to three padlocks. A two piece door catch is provided for applications where no interlocking door latch mechanism is provided. The breaker operator mounts to the circuit breaker and can be padlocked in the OFF position. The flexible cable connects the handle to the breaker operator. The handle operator can be used with ITE door latch mechanisms DKR2, DKR3, DKL2, and DKL3.

Mounting

- Turn off and lock out supply power before installing the device.
- Determine mounting location for the handle and circuit breaker. (See Figure 1 and Tables 1 and 2.)

Table 1 – Maximum E Dimensions^①

Enclosure Depth	FHONCO48	FHONCO60
10	16	30
12	15.5	29.5
16	15	29.5
18	15.5	29.5
20	16	29
24	15.5	28.5
30	10	26
36	–	23

^①Maximum E Dimension only if F=7.62

Table 2 – F Dimensions

Enclosure Depth	48" Cable		60" Cable	
	Up	Down	Up	Down
10	8	21.5	17.5	31.5
12	7.5	21	18	32.5
16	6.5	21	19	32
18	6	20.5	18.5	32
20	6	20	16.5	31.5
24	4	19	14	31
30	-1.5	15.5	11	28.5
36	–	–	6.5	23.5

Table 2 shows the maximum horizontal distance that the breaker can be located from the handle. Table 3 shows the maximum vertical distance the breaker can be located from the handle. Figure 2 shows the mounting range of the circuit breaker within the enclosure.

NOTE: Minimum Bend Radius for the Cable is 3-1/2".

- Drill the mounting holes for the handle and circuit breaker and remove all burrs.

Handle Installation

- Push rubber gasket (1) into the groove of the handle assembly (2) (Figure 3).
- The handle and the interlock mechanism (3) are supplied pre-assembled from the factory (Figure 3).

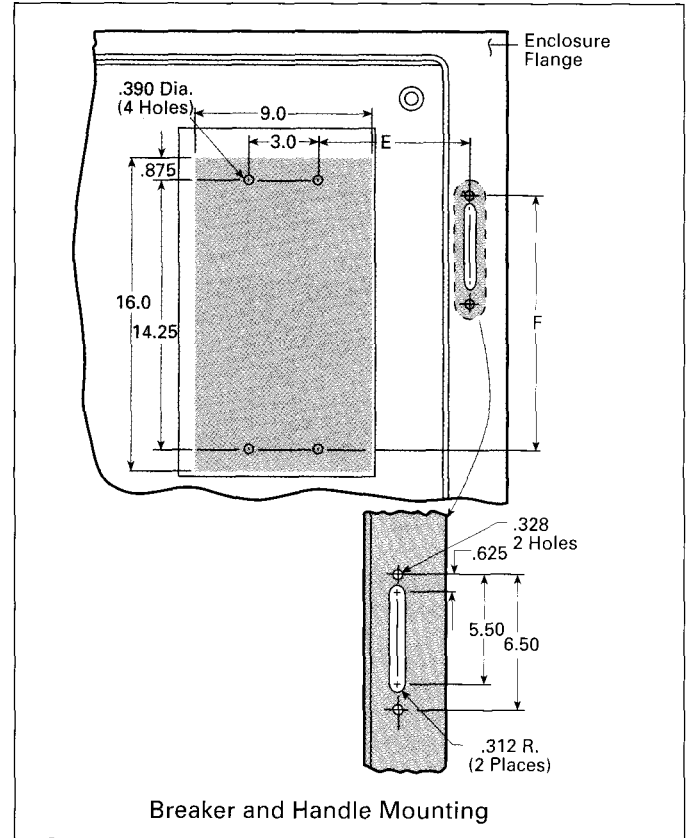


Figure 1

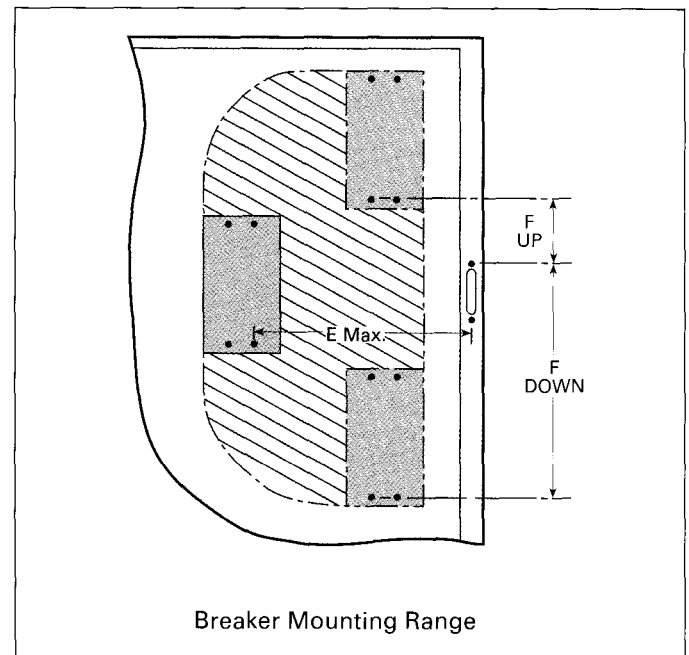


Figure 2

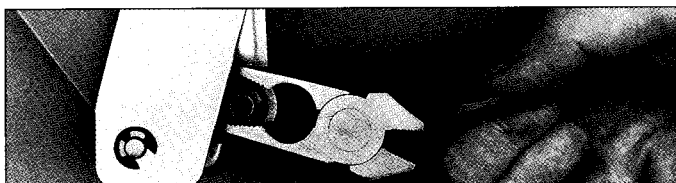
Max-Flex™ Flange-Mount Handle Operator

Types 1, 3, 3R, 4, 4x, 12

NOTE: For ease of assembly, move the operating handle to the ON position (toward top of enclosure).

C. Mount the frame (4) and handle assembly to the enclosure flange (5) using two 5/16-18 x 3/4" button head cap screws and lockwashers. Tighten cap screws from within enclosure (Figure 3).

D. Place the plastic washer and connecting link onto the bellcrank pin (7). Secure the connection with the E-ring retainer supplied (8) (Figure 3).



Secure E-Ring Connection

E. Attach the interlock level extension (9) to the interlock level using two #8-32 x 3/8" screws and #8 lockwashers. Screws mount through the threaded lever extension into the lever. Tighten to 25 in-lbs. (Figure 3).

Operating Note:

When the enclosure door is open, the operating handle cannot be moved from the OFF to ON position without deliberately defeating the interlock mechanism. In the OFF position, the interlock can be defeated by pushing the interlock level extension downward while moving the handle to the ON position. With the enclosure door open and the handle in the ON position, the interlock can be defeated by turning the defeater screw (10) (Figure 3) on the operating handle. When the enclosure door is closed, the door latch mechanism automatically defeats the interlock.

F. If no door catch is provided with the enclosure, attach the door catch bracket and adjustable door catch to the enclosure door.

Door Catch Adjustment

- Close the enclosure door and move the handle into the ON position. If the handle cannot be moved from the ON position, adjust the door catch downward in its slot and repeat procedure.
- Turn handle ON and attempt to open door. The interlock should hold the door closed. If the door can be opened, readjust the door catch upward in its slot. Repeat Steps A and B to insure the door cannot be opened when the handle is in the ON position. Figure 4 shows the location of the handle and door catch when mounted in the enclosure.

Mounting Breaker and Breaker Operator

- The circuit breaker is attached to the mounting block at the top using two 3/8-16 x 1 1/4 mounting screws and at the bottom using two special 3/8-16 x 7-1/2 mounting screws (11). The breaker operator is attached to the circuit breaker using 10-32 x 1-5/8 screws (13) at the top and 1/4-20 x 1/2 screws (12) at the bottom (Figure 5).

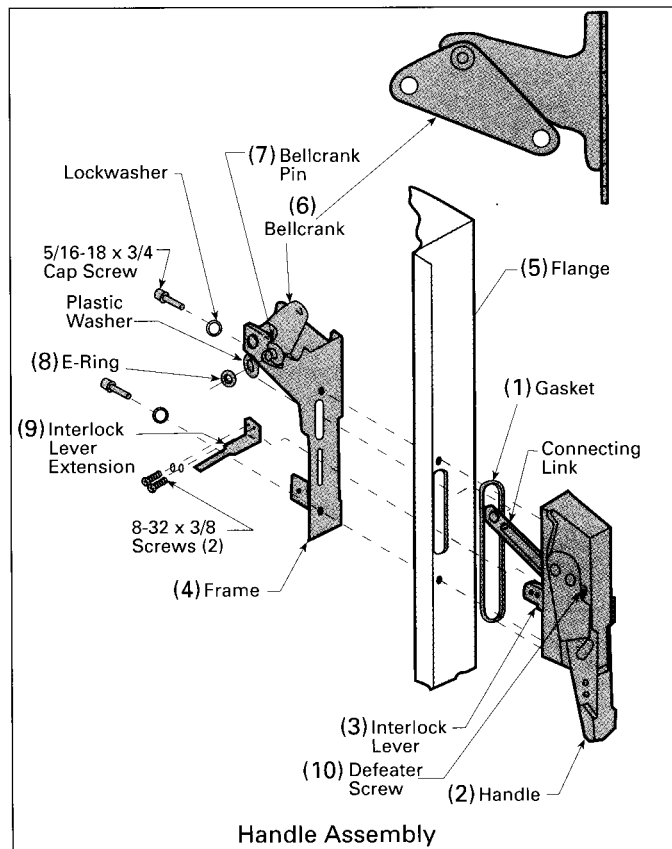


Figure 3

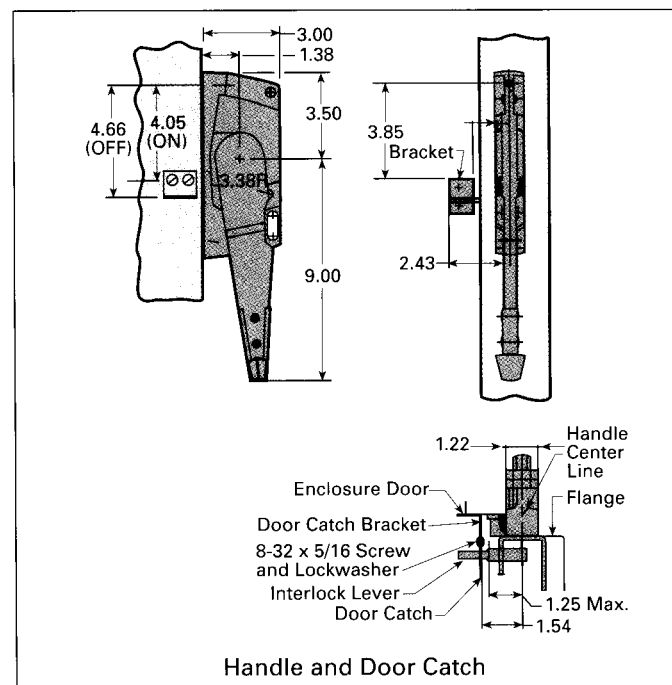


Figure 4

Assembly Instructions

- B. Remove the lower terminal shield (14) from the circuit breaker and punch or drill out the two .56" diameter knockouts.
- C. Cut slots in terminal shield as shown in Figure 5, to allow access to terminal lugs after installation of breaker operator.
- D. Mount circuit breaker to the mounting block using the four breaker mounting screws as shown in Figure 5.

Caution: Replace the terminal shield.

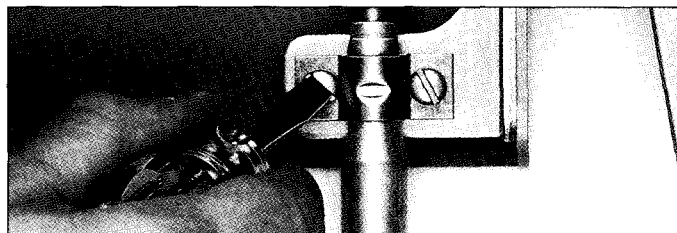
NOTE: See pages 6–9 for mounting block installation.

- E. Remove the second screw from each end of the six cover mounting screws (located above the circuit breaker handle) and the breaker operator using two 1/4-20 x 1/2" screws and lockwashers in lower holes and two spacers and #10-32 x 1-5/8" screws and lockwashers in upper holes (Figure 5).

Cable Installation

- A. To attach the operating cable (15) to the frame assembly, move the operating handle to the OFF position, and attach the cable swivel (16) to the outer hole in the bellcrank. Secure the connection with an E-ring. (Figure 6)
- B. Secure the cable to the frame assembly with cable retainer clip (17) using #10-32 x 3/8" screws and lockwashers. Tighten to 75 in-lb.

NOTE: Detent in cable retainer (17) must align with groove (18) in metal fitting of cable (Figure 6).



Tighten Detent Screws

- C. Prior to attaching output end of cable to handle frame, **confirm that supply power to the circuit breaker has been turned off.**
- D. Move circuit breaker handle to the ON position.
- E. Slide the threaded cable rod (19) through the hole in the sliding plate tab (20) of the circuit breaker operating mechanism (Figures 5 and 6).
- F. Move the operating handle to its maximum ON position.
- G. Place the cable mounting threads (21) into the slot on the fixed plate tab (22) so that the two mounting nuts (23) are on both sides of the tab. Adjust the two mounting nuts so that the #10 flatwasher on the cable rod just touches the sliding plate tab. Tighten the mounting nuts to secure the cable (Figures 5 and 6).
- H. Continue holding the operating handle in the ON position and place the spring (24) over the end of the rod. Screw on the spring adjuster (25) and tighten until it begins to compress the spring. **DO NOT OVERTIGHTEN THE SPRING ADJUSTMENT NUT.**

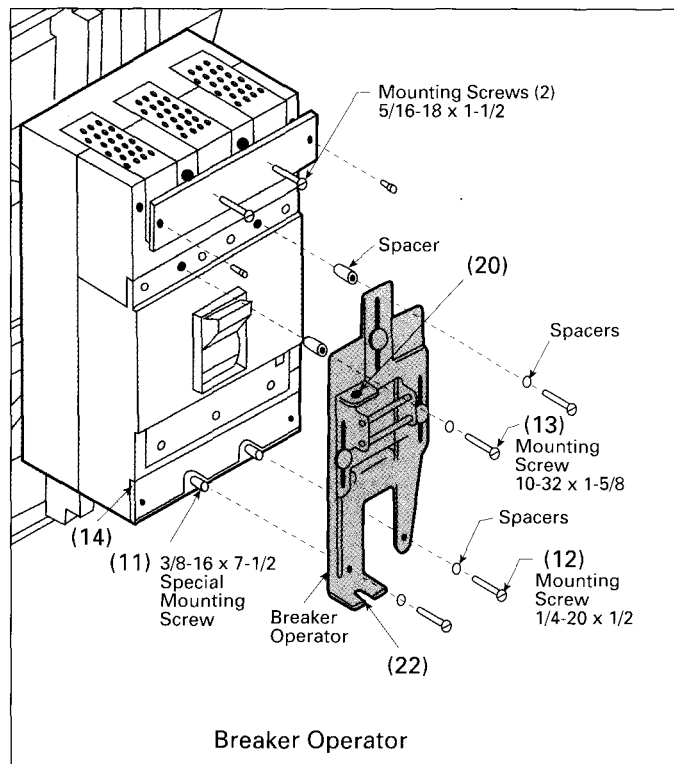


Figure 5

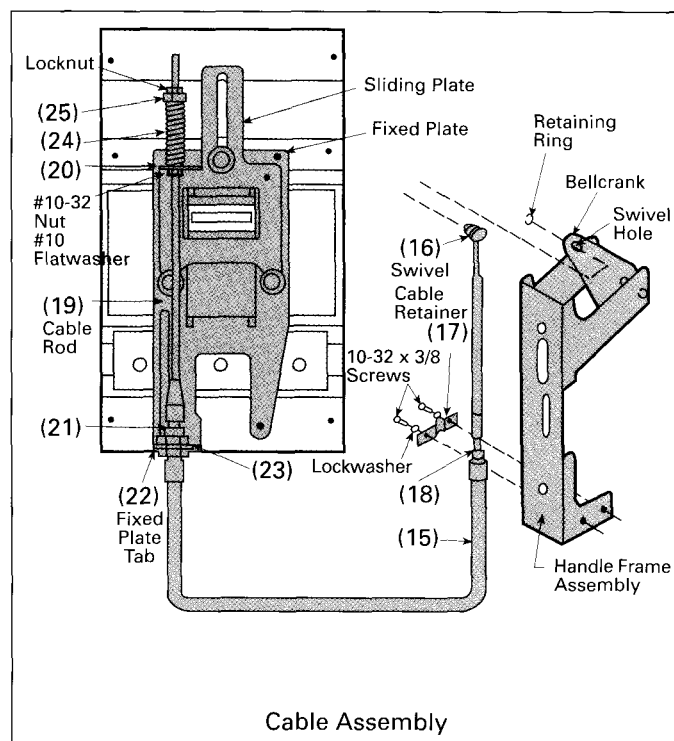


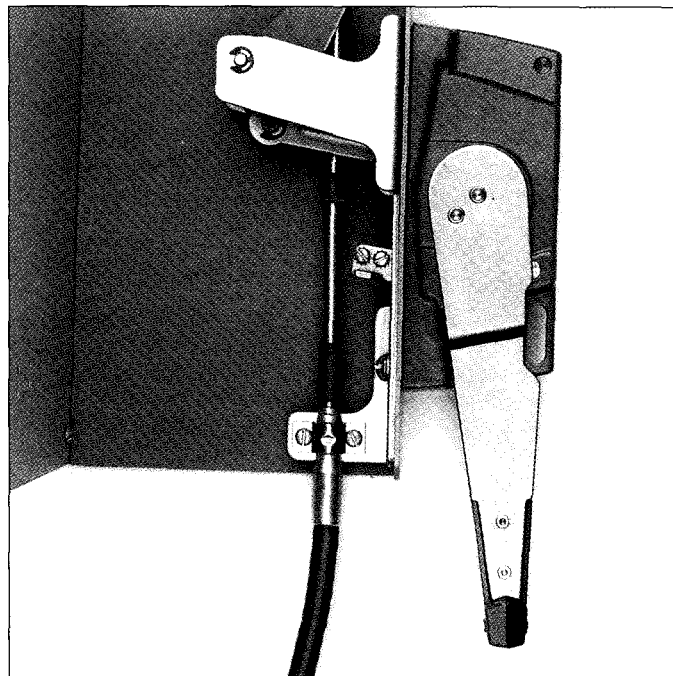
Figure 6

Max-Flex™ Flange-Mount Handle Operator

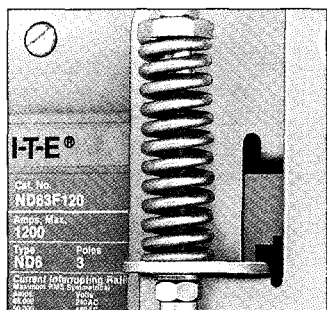
Types 1, 3, 3R, 4, 4x, 12

Cable Adjustment

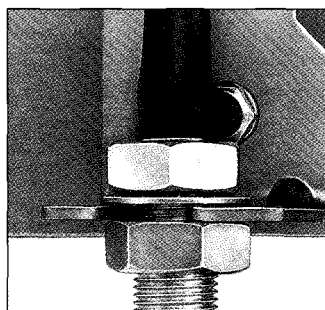
- A. Check that the circuit breaker turns OFF and ON by moving the operating handle up for ON and down for OFF. If the breaker does not switch ON, loosen the cable mounting nuts at the fixed plate tab. Hold the operating handle in the maximum ON position and adjust the mounting nuts to move the cable toward the top of the breaker. Retighten the mounting nuts to secure.
- B. Trip the circuit breaker by pushing the PUSH TO TRIP button.
- C. Check that the circuit breaker resets by moving the operating handle from ON to OFF and back to ON. If the breaker resets, tighten the spring adjuster one additional turn. Attach lockwashers and 1/4-28 nut to the end of the cable rod and tighten to 32 in-lbs.
- D. If the circuit breaker does not reset, tighten the spring adjusters one turn and repeat Steps B and C. Continue this procedure until the breaker resets then tighten the adjusters one additional turn and secure with lockwashers and nut.



Side View of Handle Assembly



Spring Adjustment



Cable Adjustment

TELEMAND® Electric Motor Operator



⚠ DANGER

Hazardous Voltage.
Will cause death or severe injury.

Turn power off supplying switchboard or panel before installing.



Safety Instructions

General

The motor operated mechanism is designed to open, close and reset a circuit breaker or switch by remote control. The customer must supply the circuit breaker or switch, normally ON and OFF push buttons, external wiring, a control power source, and all control logic. Consult the wiring diagram (Figure 3, page 33) for a typical control connection.

The motor operator is hinged for opening to the left or right dependent on catalog number designation. The "L" suffix means the motor operator is hinged to the left. A motor operator hinged to the right uses no suffix.

NOTE: For automatic reset operation a separate auxiliary contact must be provided by the customer. See page 32 for more details.

Operator Selection

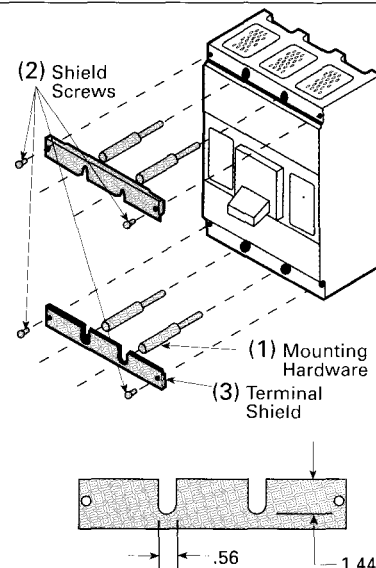
Motor Operator	Frame	For Use With: I-T-E Circuit Breakers and Switch Types
MOMN6120 MOMN6120L MOMN6240 MOMN6240L	PD, RD	PXD6, PD6, HPD6, HPXD6, CPD6, SPD6, SHPD6, SCPD6, RXD6, RD6, HRD6, HRXD6

Installation

- Turn off and lock out all power supplying circuit breaker and motor operator before installing or servicing.
- Attach the circuit breaker to the connect-all mounting block using the mounting hardware (1) supplied with the motor operator (Figure 1).

NOTE: See pages 6–9 for mounting block installation.

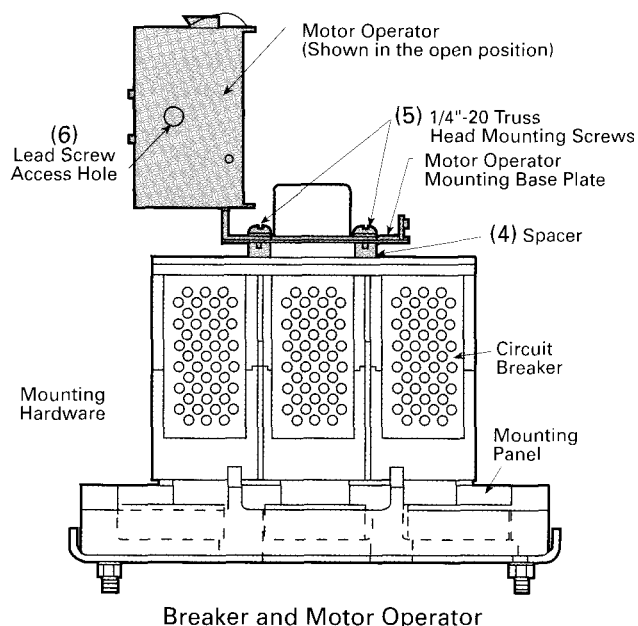
- Remove the four shield screws (2) and two lug shields (3) (Figure 1).
- Cut out the two 0.563" x 1.44" long knockouts and replace the shields.
- Open the motor operator cover and attach the motor operator to the circuit breaker using the spacers (4) and screws (5) provided (Figure 2).



Removal of Terminal Shields

Figure 1

Left Hand Version Shown



Breaker and Motor Operator

Figure 2

TELEMAND® Electric Motor Operator

- F. With the circuit breaker handle in the OFF position, align the motor operator mechanism rollers (indicator to be in OFF position) and the circuit breaker handle by rotating the lead screw (6) with a screwdriver. The lead screw access hole is at the bottom of the motor operator (Figure 2).
- G. Close and latch the mechanism cover.
- H. Complete the desired control connections and electrically test the motor operator system before reenergizing the breaker power terminals in accordance with the electrical operation.

Electrical Characteristics

Catalog Numbers	Volts AC	Amperes
MOMN6120 MOMN6120L	120	22.7 Amperes In Rush 13.9 Amperes In Running
MOMN6240 MOMN6240L	240	7.2 Amperes In Rush 6.1 Amperes In Running

Electrical Operation

With the breaker and the operating mechanism in the OFF position, press the ON button to energize the motor. The action will close the breaker. When the breaker handle reaches the ON position, the motor circuit is disconnected by an internal limit switch.

With the breaker and the operating mechanism in the ON position, press the OFF button to energize the motor. The action will open the breaker. When the breaker handle reaches the OFF position, the motor circuit is disconnected by an internal limit switch.

When the circuit breaker trips automatically, there is no external indication that the breaker has tripped unless a separate Bell Alarm accessory (contact Siemens for appropriate catalog number) is provided to energize a customer furnished warning device. After the circuit breaker trips automatically, it is necessary to press the OFF button to move the breaker handle to the reset position.

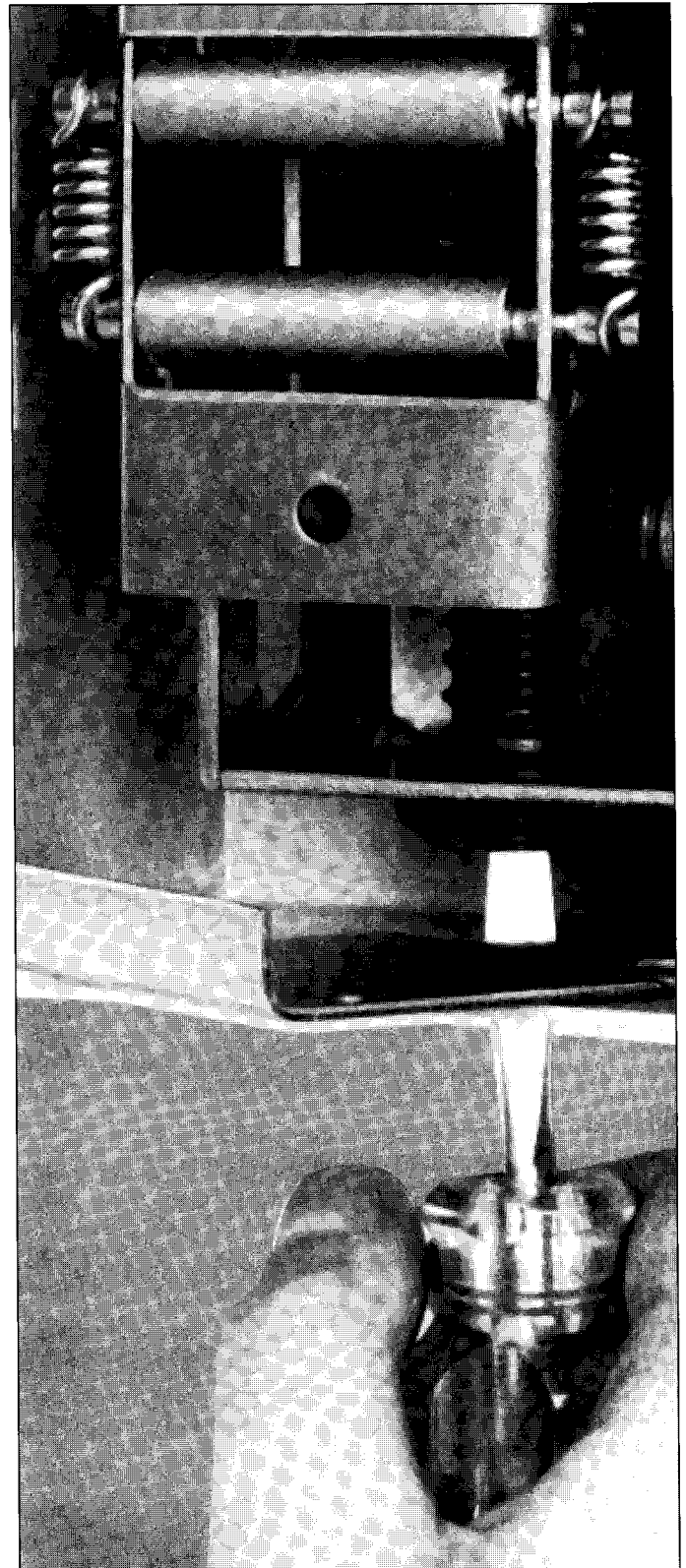
Automatic Reset

For automatic reset, an auxiliary switch (contact Siemens for appropriate catalog number) is used to return the breaker to the OFF/RESET position after it has been tripped. This auxiliary switch is mounted inside the breaker and wired in parallel with the OFF button. When the breaker trips, the auxiliary switch closes, energizing the motor circuit which moves the breaker to the OFF/RESET position.

After the motor operated mechanism has reset the breaker, the motor operator internal limit switch opens the circuit. To provide automatic reset, the ON push button must be a single pole, double throw device and it must be wired per Figure 3.

Manual Operation

Operate the two cover latches and swing the hinged motor operator cover away from the breaker to expose the breaker handle. To return to electrical operation, follow the installation instructions on page 35 deleting Steps B and C. After operation checks are complete, restore to normal operation.



Align Rollers and Handle

Installation Diagrams

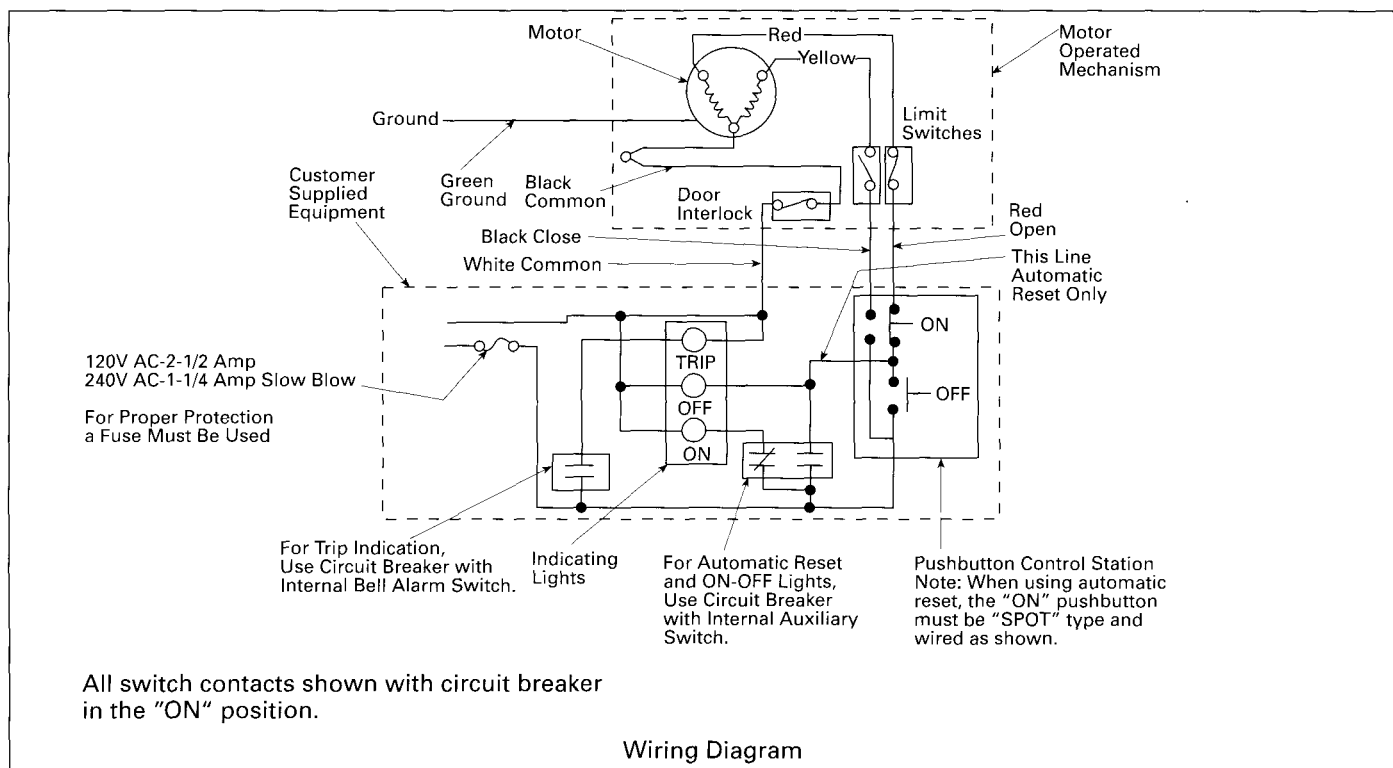


Figure 3

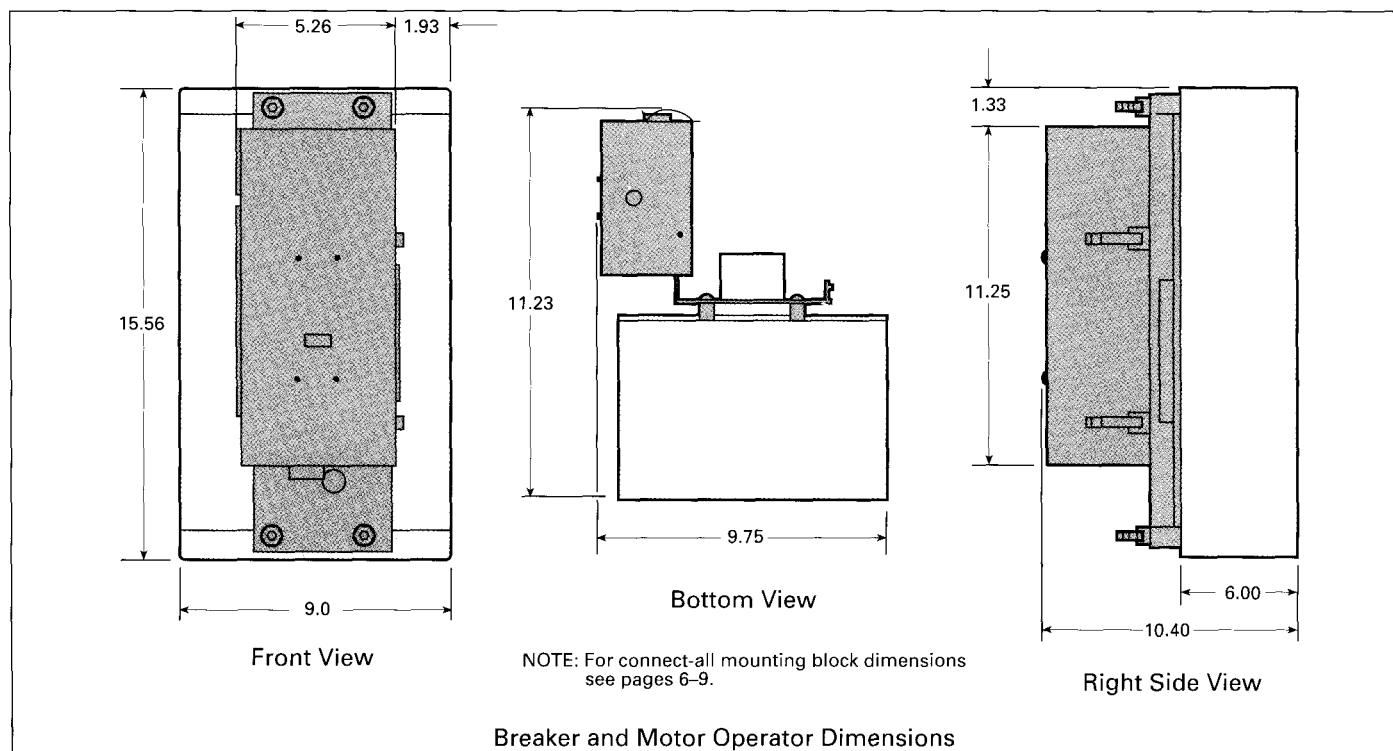
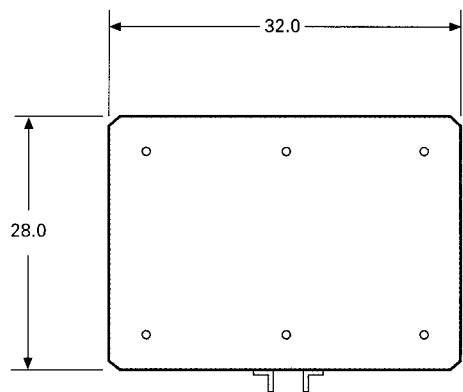


Figure 4

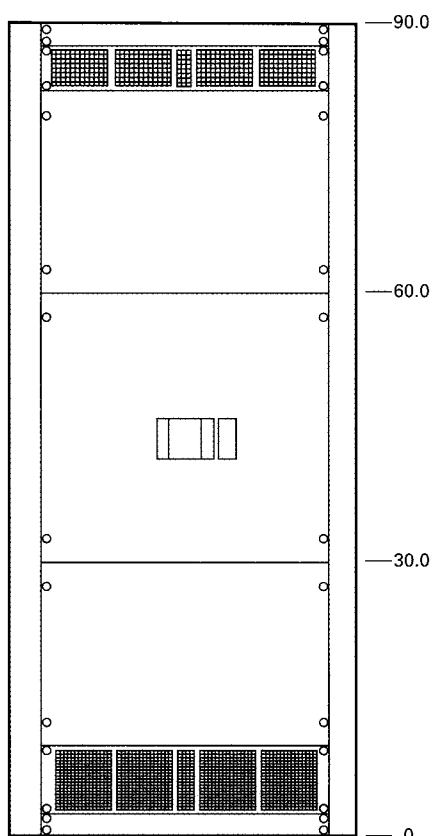
Enclosures

Type 1 – PRD6N1

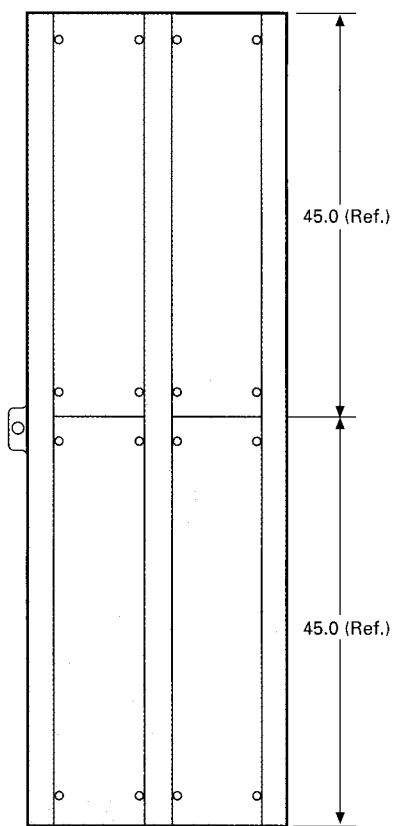
General purpose indoor, sheet-steel enclosure for use in normal atmosphere, listed as service-entrance equipment.



Top View

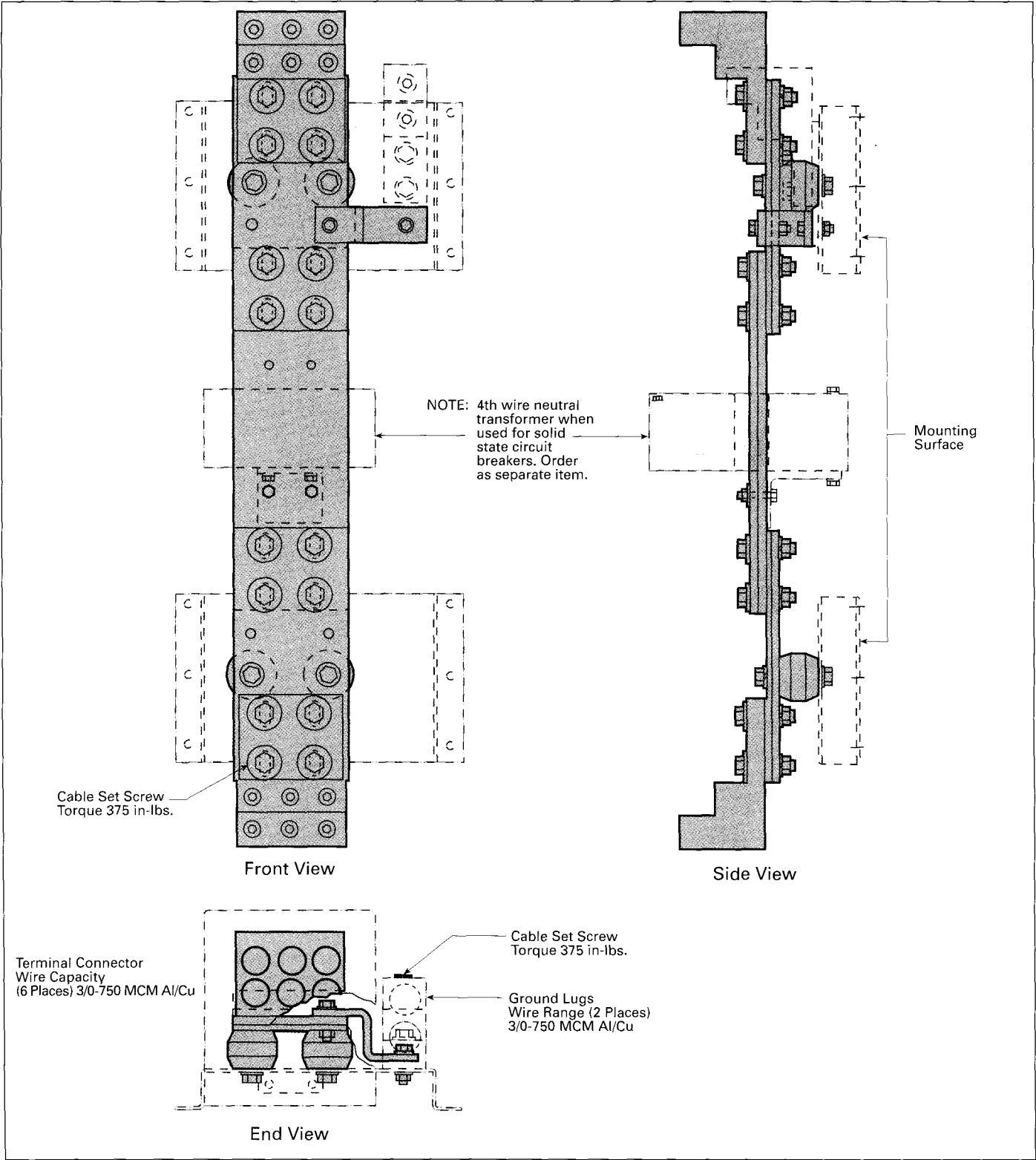


Front View



Side View

Neutral Assembly (N-2000)



Door Latch Mechanism (DKR2, DKR3, DKL2, DKL3)^①



DANGER

Hazardous Voltage.
Will cause death or severe injury.

Turn power off supplying switchboard or panel before installing.



Safety Instructions

General Information

These door latch mechanisms are for use in standard or custom built enclosures. The door latch post assemblies and the door catch are supplied with the kits. *Users must supply their own 1/4" x 1/2" steel latch bar.* Enclosures with an overall height less than 40" require the two-point door latch mechanism. When the overall height is greater than 40", the three-point latch mechanism is used.

The door latch mechanism can be used with or without the type FHOHN Flange Mount Handle Operator. These instructions apply when the door latch mechanism is mounted adjacent to and interlocks with the FHOHN Handle Operator. The door handle can be padlocked to prevent unauthorized entry into the enclosure. Drawings in these installation instructions are oriented for right-hand flange installation. Left-hand flange installation drawings are mirror images of the right-hand versions. For left-hand flange installation, substitute "clock-wise" for "counterclockwise" and vice versa, whenever those words appear.

Installation of the Door Latch Mechanism

- A. Drill mounting holes in the enclosure door observing the minimum dimensions shown in Figure 2. See FHOHN Handle Operator instructions for flange drilling pattern.

NOTE: D and E dimensions are determined by the height of the enclosure.

Refer to Figure 1 for the following steps:

- B. Place gasket (1) on handle plate (2) and attach handle plate to enclosure door with two thin wall hex nuts (3). Tighten the nuts to 100 in-lbs.
- C. Insert lockout screw (4) and handle (5) through holes in the handle plate.
- D. Install latch bar post assembly (6) (screw, sealing washer, flat washer, and special hex nut (7), if used.)
- E. Attach top (8), bottom (9) and latch plate rollers (10) to latch bar with retaining pins and E-rings.

NOTE: Two-point latch does not have bottom roller.

- F. Fasten the top and bottom rollers to the enclosure door with locking type flange nuts. Tighten the nuts, then loosen them 1/8 turn to allow movement of the roller assemblies.
- G. Place bottom spring (11) over the bottom thin wall hex nut inside the enclosure door.

- H. Turn the handle 1/4 turn clockwise (looking from inside the enclosure door) and attach the latch plate roller to the handle shaft, while inserting the bent leg of the spring into the hole in the latch plate. Fasten with a locking-type flange nut. Tighten the nut, then loosen 1/8 turn to allow movement of the roller assemblies (Figure 1).

NOTE: Straight leg of spring must rest against pin (12) on handle plate. See inset on Figure 1.

- I. Place top spring (13) over top thin wall hex nut. Attach lockout plate (14) to lockout screw using locking type flange nut. Tighten flange nut. Insert bent leg of spring into hole in lockout plate as shown in Figure 1 detail.
- J. Attach the interlock defeater lever (15) to the latch bar (16) with two #10 lockwashers and #10-24 screws.

NOTE: The position of lever depends on enclosure depth (Figure 3).

- K. Weld or rivet the door catch (17) to the enclosure door. User must supply the mounting hardware.
- L. Attach the door latch label to the door handle on the enclosure door.

Adjusting the Mechanism

If using in conjunction with the FHOHN or FHOHN4 Handle Operator, perform the following steps:

- A. With the door in the open (unlatched) position, close the door, but do not turn the door handle. The lockout plate should latch the door partially closed.
- B. Turn the handle clockwise to stop. This will engage the rollers against the enclosure flange, securing the door fully closed.
- C. Check that the circuit breaker can be turned ON. If the breaker will not turn ON, adjust the interlock defeater lever downward to engage the lever on the handle operator.
- D. To open the door, insert a screwdriver into the handle screw and turn the screw and handle counterclockwise. The door will only open partially if the operating handle is in the ON position. If the door fully opens with the handle in the ON position, adjust the interlock defeater lever upward and repeat Steps C and D.

NOTE: To open the door when the handle is in the ON position, turn the latch defeater screw located on the side of the operating handle.

Dimensions (In Inches)

C	1.922	Q	2.594
H	9.375	R	1.875
I	.50	S	1.625
J	2.688	T	.250
K	1.859	U	.688
L	1.797	V	.281 Dia.
M	.391 Dia.	W	.703 Dia.
N	2.297	X	2.484
P	.719	Y	.219 Dia.

① The last letter and number designate right- or left-hand, 2 or 3 point latches.

Installation Diagrams

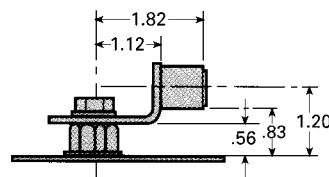
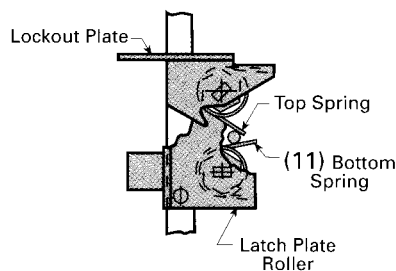
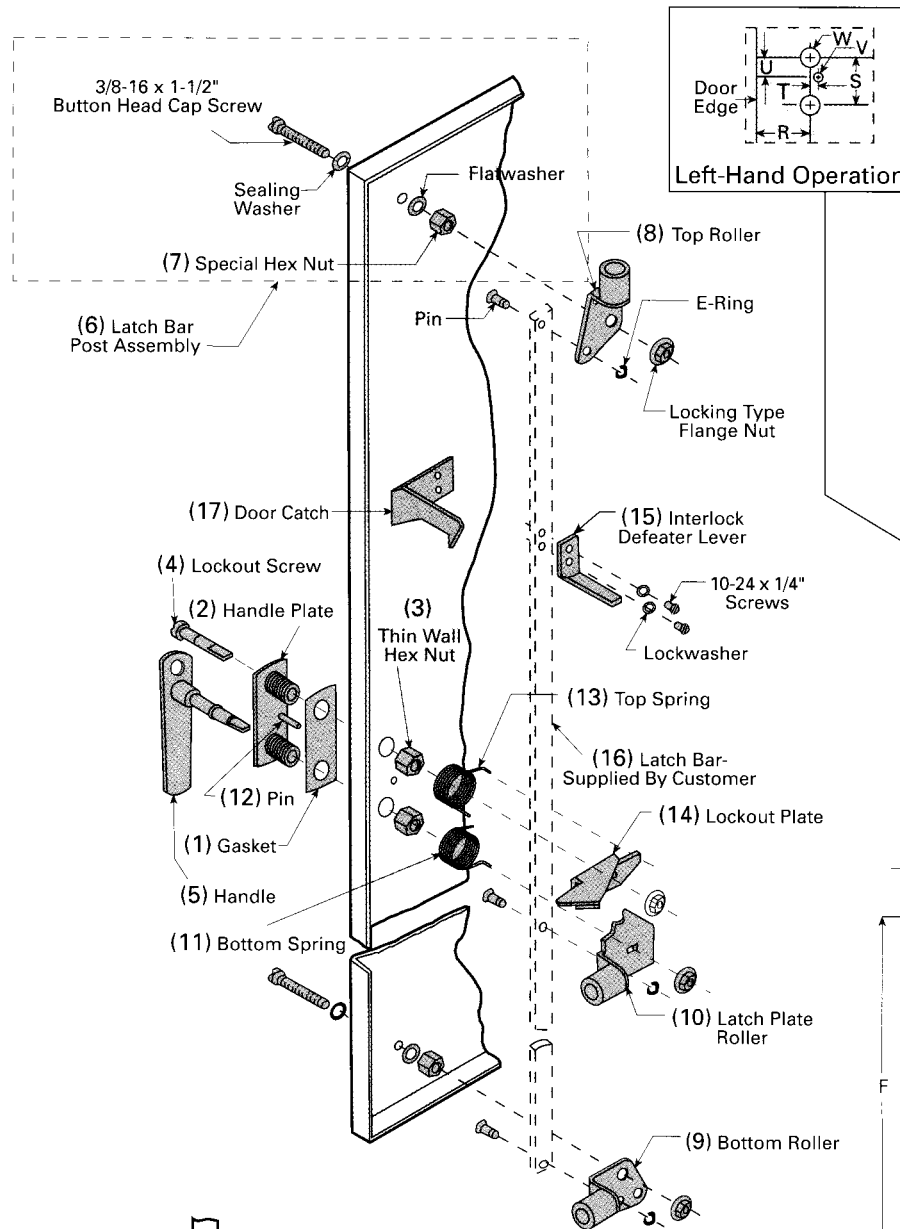


Figure 1

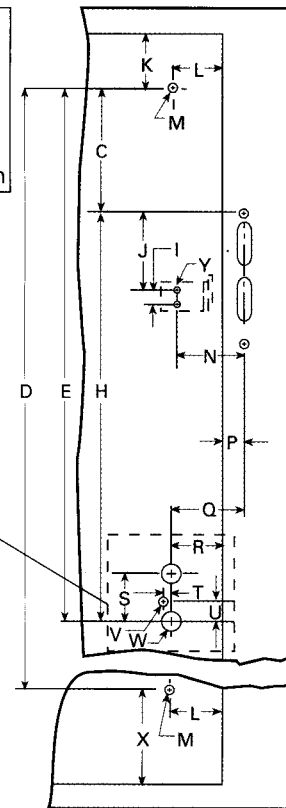


Figure 2

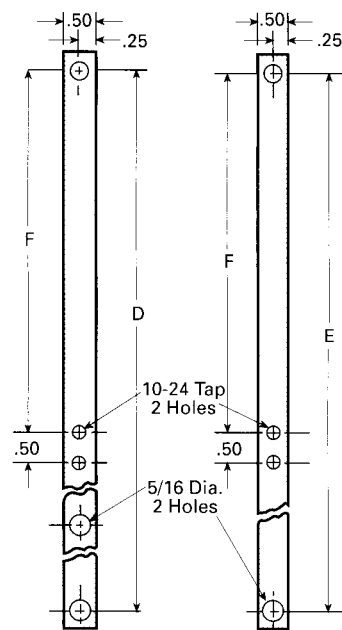


Figure 3

Ordering Information

Circuit Breaker Catalog Numbers

PD6 Interchangeable Trip (Unassembled) 3 Pole

Ampere Rating	Instantaneous Trip Range		Complete Breaker Unenclosed Catalog Number	Frame Only Catalog Number	Trip Unit Only Catalog Number	UL Interrupting Ratings (kA) (RMS) Symmetrical Amperes				
	Min.	Max.				240Vac	480Vac	600Vac	250Vdc	500Vdc
1200	5000	10000	PD63B120	PD63F160	PD63T120	65	50	25	30	25
1400	5000	10000	PD63B140	PD63F160	PD63T140	65	50	25	30	25
1600	5000	10000	PD63B160	PD63F160	PD63T160	65	50	25	30	25
SHIPPING:			61.5 lb.	55 lb.	6.5 lb.					

HPD6 Interchangeable Trip (Unassembled) 3 Pole

1200	5000	10000	HPD63B120	HD63F160	PD63T120	100	65	50	30	50
1400	5000	10000	HPD63B140	HD63F160	PD63T140	100	65	50	30	50
1600	5000	10000	HPD63B160	HD63F160	PD63T160	100	65	50	30	50
SHIPPING:			61.5 lb.	55 lb.	6.5 lb.					

CPD6 Non-Interchangeable Trip^① (Assembled) 3 Pole

1200	5000	10000	CPD63B120	NON-INTERCHANGEABLE TRIP	200	100	65	30	50
1400	5000	10000	CPD63B140		200	100	65	30	50
1600	5000	10000	CPD63B160		200	100	65	30	50
SHIPPING:			61.5 lb.						

PXD6 Non-Interchangeable Trip^① (Assembled) 3 Pole

1200	5000	10000	PXD63B120	NON-INTERCHANGEABLE TRIP		65	50	25	30	25
1400	5000	10000	PXD63B140			65	50	25	30	25
1600	5000	10000	PXD63B160			65	50	25	30	25
1600	Molded Case Switch		PXD63S160A	N/A	N/A	65	50	25	30	25
SHIPPING:			61.5 lb.							

HPXD6 Non-Interchangeable Trip^① (Assembled) 3 Pole

1200	5000	10000	HPXD63B120	NON-INTERCHANGEABLE TRIP	100	65	50	30	50
1400	5000	10000	HPXD63B140		100	65	50	30	50
1600	5000	10000	HPXD63B160		100	65	50	30	50
SHIPPING:			61.5 lb.						

① All non-interchangeable trip unit circuit breakers are established with UL for reverse connection applications.

Note: For 50°C application replace letter "B" in catalog number with the letter "M" for ordering purposes. If trip unit only is required, replace letter "T" with the letter "W" for ordering purposes. Place the letter "H" as a suffix letter to the complete catalog number for a 100% rated circuit breaker, (i.e.: HPXD63B160H). Circuit breaker is a non-interchangeable trip unit device.

Note: Unassembled circuit breakers are shipped as separate items – frame, trip, connect-all assembly and terminal connectors.

Assembled breakers consist of frame and trip unit factory assembled. Connect-all assembly and terminal connectors must be ordered separately.

Ordering Information

Circuit Breaker Catalog Numbers

RD6 Interchangeable Trip (Unassembled) 3 Pole

Ampere Rating	Instantaneous Trip Range		Complete Breaker Unenclosed Catalog Number	Frame Only Catalog Number	Trip Unit Only Catalog Number	UL Interrupting Ratings (kA) (RMS) Symmetrical Amperes				
	Min.	Max.				240Vac	480Vac	600Vac	250Vdc	500Vdc
1600	5000	10000	RD63B160	RD63F200	RD63T160	65	50	25	30	25
1800	5000	10000	RD63B180	RD63F200	RD63T180	65	50	25	30	25
2000	5000	10000	RD63B200	RD63F200	RD63T200	65	50	25	30	25
SHIPPING:			61.5 lb.	55 lb.	6.5 lb.					

HRD6 Interchangeable Trip (Unassembled) 3 Pole

1600	5000	10000	HRD63B160	HRD63F200	RD63T160	100	65	50	30	50
1800	5000	10000	HRD63B180	HRD63F200	RD63T180	100	65	50	30	50
2000	5000	10000	HRD63B200	HRD63F200	RD63T200	100	65	50	30	50
SHIPPING:			61.5 lb.	55 lb.	6.5 lb.					

RXD6 Non-Interchangeable Trip^① (Assembled) 3 Pole

1600	5000	10000	RXD63B160	NON-INTERCHANGEABLE TRIP		65	50	25	30	25
1800	5000	10000	RXD63B180			65	50	25	30	25
2000	5000	10000	RXD63B200			65	50	25	30	25
2000	Molded Case Switch		RXD63S200A	N/A	N/A	65	50	25	30	25
SHIPPING:			61.5 lb.							

HRXD6 Non-Interchangeable Trip^① (Assembled) 3 Pole

1600	5000	10000	HRXD63B160	NON-INTERCHANGEABLE TRIP	100	65	50	30	50
1800	5000	10000	HRXD63B180		100	65	50	30	50
2000	5000	10000	HRXD63B200		100	65	50	30	50
SHIPPING:			61.5 lb.						

① All non-interchangeable trip unit circuit breakers are established with UL for reverse connection applications.

Note: For 50°C application replace letter "B" in catalog number with the letter "M" for ordering purposes. If trip unit only is required, replace letter "T" with the letter "W" for ordering purposes. RD-Frame is not available as a 100% rated device.

Ordering Information

Internal Accessory Combinations

Shunt Trip

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch
AC	DC	Catalog Number	Catalog Number
120		S01MN6	S01MN64A
208		S02MN6	S02MN64A
240		S03MN6	S03MN64A
277		S15MN6	S15MN64A
480		S04MN6	S04MN64A
600		S05MN6	N/A
	12	S16MN6	S16MN64A
	24	S07MN6	S07MN64A
	48	S09MN6	S09MN64A
	125	S11MN6	S11MN64A
	250	S13MN6	S13MN64A

Undervoltage Trip

Control Voltage		1 Undervoltage Trip	1 Undervoltage Trip and 1 Auxiliary Switch	1 Undervoltage Trip and 2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number
120		U01MN6	U01MN64A	U01MN64AA
208		U02MN6	U02MN64A	U02MN64AA
240		U03MN6	U03MN64A	U03MN64AA
277		U15MN6	U15MN64A	U15MN64AA
480		U04MN6	U04MN64A	U04MN64AA
600		U06MN6	N/A	N/A
	24	U07MN6	U07MN64A	U07MN64AA
	48	U09MN6	U09MN64A	U09MN64AA
	125	U11MN6	U11MN64A	U14MN64AA
	250	U13MN6	U13MN64A	U13MN64AA

Auxiliary Switch

Control Voltage		1 Auxiliary Switch	2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number
120		A01MN64	A02MN64
208		A01MN64	A02MN64
240		A01MN64	A02MN64
277		A01MN64	A02MN64
480		A01MN64	A02MN64
	24	A01MN64	A02MN64
	48	A01MN64	A02MN64
	125	A01MN64	A02MN64
	250	A01MN64	A02MN64

Alarm Switch

Control Voltage		1 Alarm Switch	1 Alarm Switch and 1 Auxiliary Switch	1 Alarm Switch and 2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number
120		B0MN64	A01MN64B	A02MN64B
208		B0MN64	A01MN64B	A02MN64B
240		B0MN64	A01MN64B	A02MN64B
277		B0MN64	A01MN64B	A02MN64B
480		B0MN64	A01MN64B	A02MN64B
	24	B0MN64	A01MN64B	A02MN64B
	48	B0MN64	A01MN64B	A02MN64B
	125	B0MN64	A01MN64B	A02MN64B
	250	B0MN64	A01MN64B	A02MN64B

Note: Accessory modules can mount in either left hand or right hand poles of all PD and RD-Frame circuit breakers.

Ordering Information, UL Listings and File Numbers

Item	Catalog No.
Extension Handle	EX9
Mounting Screw Kit	MSPR6
Pressure Wire Connector Kits	
(1-5) 300-400 MCM Cu/Al	TA5P600
(1-5) 500-600 MCM Cu/Al	TA5P600
(1-4) 750 MCM Cu Only	TC4P750
(1-5) 300-600 MCM Cu Only	TC5R600
Handle Blocking Device	MN6BL
Padlocking Device	MN6HPL
Connect-All Mounting Blocks	
Standard	MB9301
Reverse	MNR9302
Handle Operators	
Rotary – Standard Depth	
Complete Mechanism	RHONSD
Handle Only ^①	RHOH
Breaker Operation	RHONBO
Standard Length Shaft	RHONSSD
Rotary – Variable Depth	
Complete Mechanism	RHONVD
Handle Only ^①	RHOH
Breaker Operator	RHONBO
Standard Length Shaft	RHONSVD
Max/Flex™ Flange Mounted	
Complete Mechanism	FHONO48
Handle Only ^②	FHOHN
Breaker Operator	FHONBO
Cable Operator ^③	FHONCO48
Motor Operator	
120Vac (Hinged to the right)	MOMN6120
120Vac (Hinged to the left)	MOMN6120L
240Vac (Hinged to the right)	MOMN6240
240Vac (Hinged to the left)	MOMN6240L
Enclosures	
Type 1	MND61
Neutral Assembly	N-2000
Door Latch Mechanism	
Left Side	DKL2, DKL3
Right Side	DKR2, DKR3
Time Current Curves	
PD6, PXD6, HPD6, HPXD6, CPD6	TD-7110
RD6, RXD6, HRD6, HRXD6	TD-7111
Let-Thru Curves	
CPD6	
Peak Current (I _p)	TD-7110-A
I ² t	TD-7110-B
Mechanical Interlock	MI5405

① For 4x application, use RHOH4 handle in place of RHOH.

② For 4x application, use FHOH4 handle in place of FHOHN.

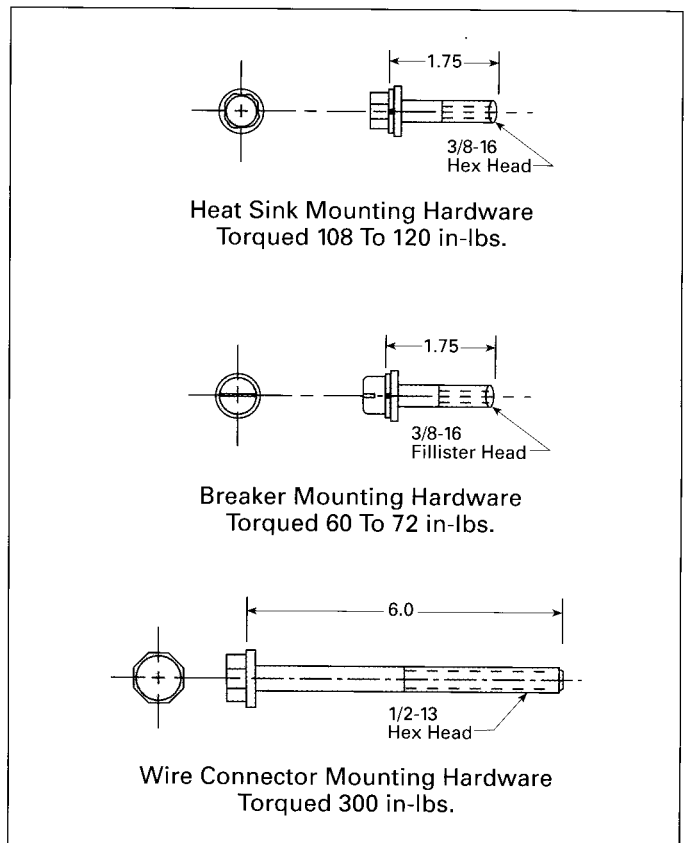
③ Optional cable length of 60" available, order FHONCO60.

National Fire Protection Assoc. (National Electric Code®).

Federal Specification C-375B/GEN.

Underwriters Laboratories, Inc. (UL 489).

Canadian Standards Association (C22.2 No.5).



I-E Item	UL-489 File Number	CSA Report Number
Breakers	E10848	LR13077
Terminal Connectors	E23615 (SP)	—
Add-On Internal		
Accessories	E69455	LR13077
Shunt Trip		
Undervoltage Trip		
Aux. Switch		
Bell Alarm Switch		
Molded Case Switch	E68312	LR42022
Enclosures	E10848	—
Motor Operators	E102933	—

Shipping Weight

Frame (only)	55 lbs.
Trip (only)	6.5 lbs.
Breaker (Assembled)	61.5 lbs.
Connect-All	48 lbs.

Siemens Energy & Automation, Inc.
Power Distribution & Controls Division
3333 Old Milton Parkway
Alpharetta, GA 30005

For Nearest Sales Office
1-800-964-4114 or 800-241-4453
[www.sea.siemens.com/
sales/salesoffices.html](http://www.sea.siemens.com/sales/salesoffices.html)

For Product Information
www.sea.siemens.com/power/
