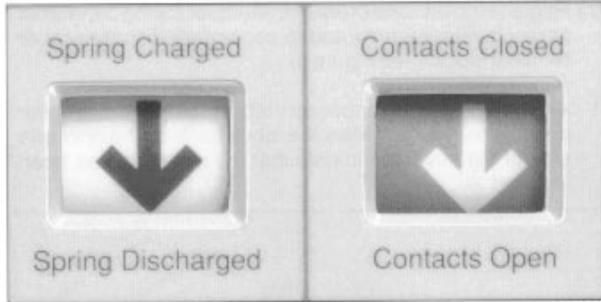
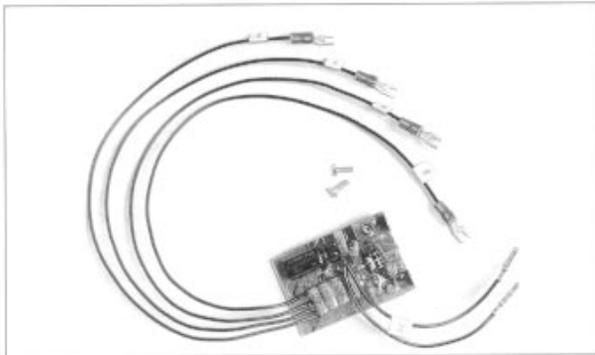


Internal Accessories

Electronic Bell Alarm - Display Module Relay



CAUTION: Do not attempt to install an accessory with the breaker "Closed" or "Charged". Make certain breaker is "Open" and "Discharged" as shown above. Personal injury or mechanical damage may occur. Preliminary installation procedures are outlined on pages 36-37.

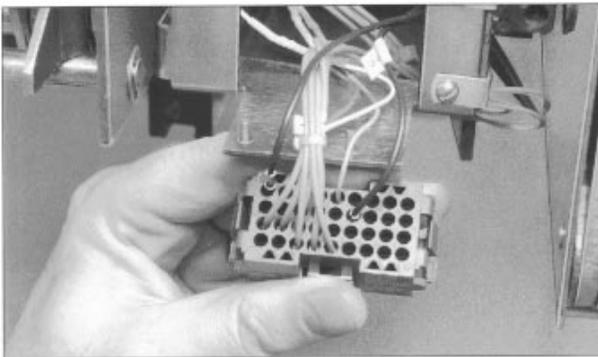


Electronic Bell Alarm Kit

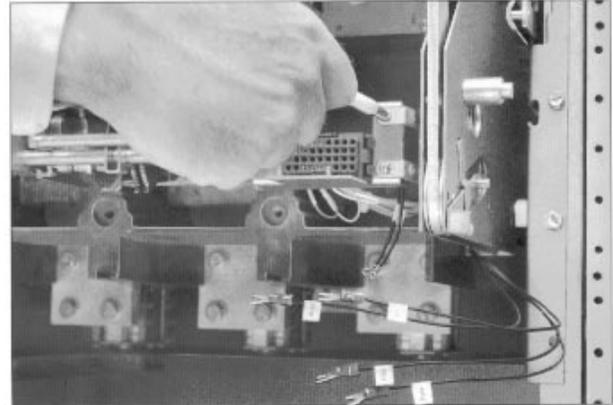
Electronic Bell Alarm or Display Module Relay

The electronic bell alarm module is an internally mounted accessory which interfaces directly with the Electronic Trip Unit. It provides a solid state relay contact for remote Indication of breaker tripping due to overload, short time, short circuit, or ground fault. The bell alarm contact is a latching type and remote reset capability is provided.

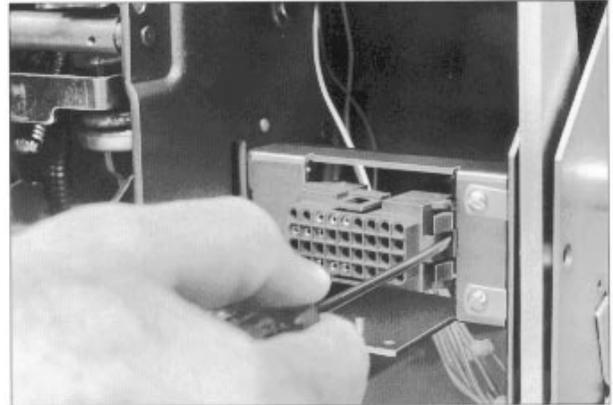
To install the bell alarm, first remove the breaker front cover and trip unit, if previously installed (see page 37).



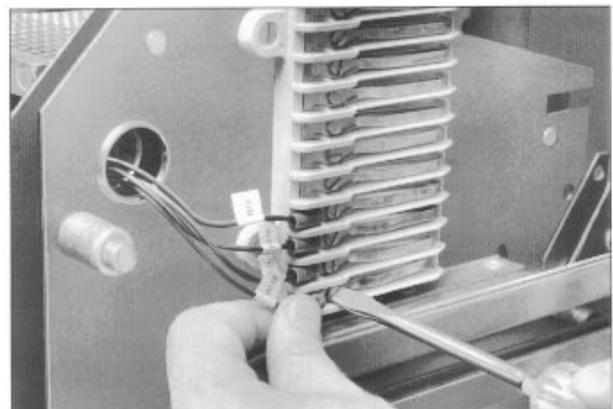
1.) With a small screwdriver, press in tab on right side of 36-pin trip unit connector and release from mounting bracket.



2.) Connect bell alarm lead wires (# 1 and #22) to corresponding numbered holes in pin connector. (Note: If a display module relay is being installed instead of a bell alarm connect lead wires to #4 and #22 holes respectively.)



3.) Align bell alarm mounting holes as shown

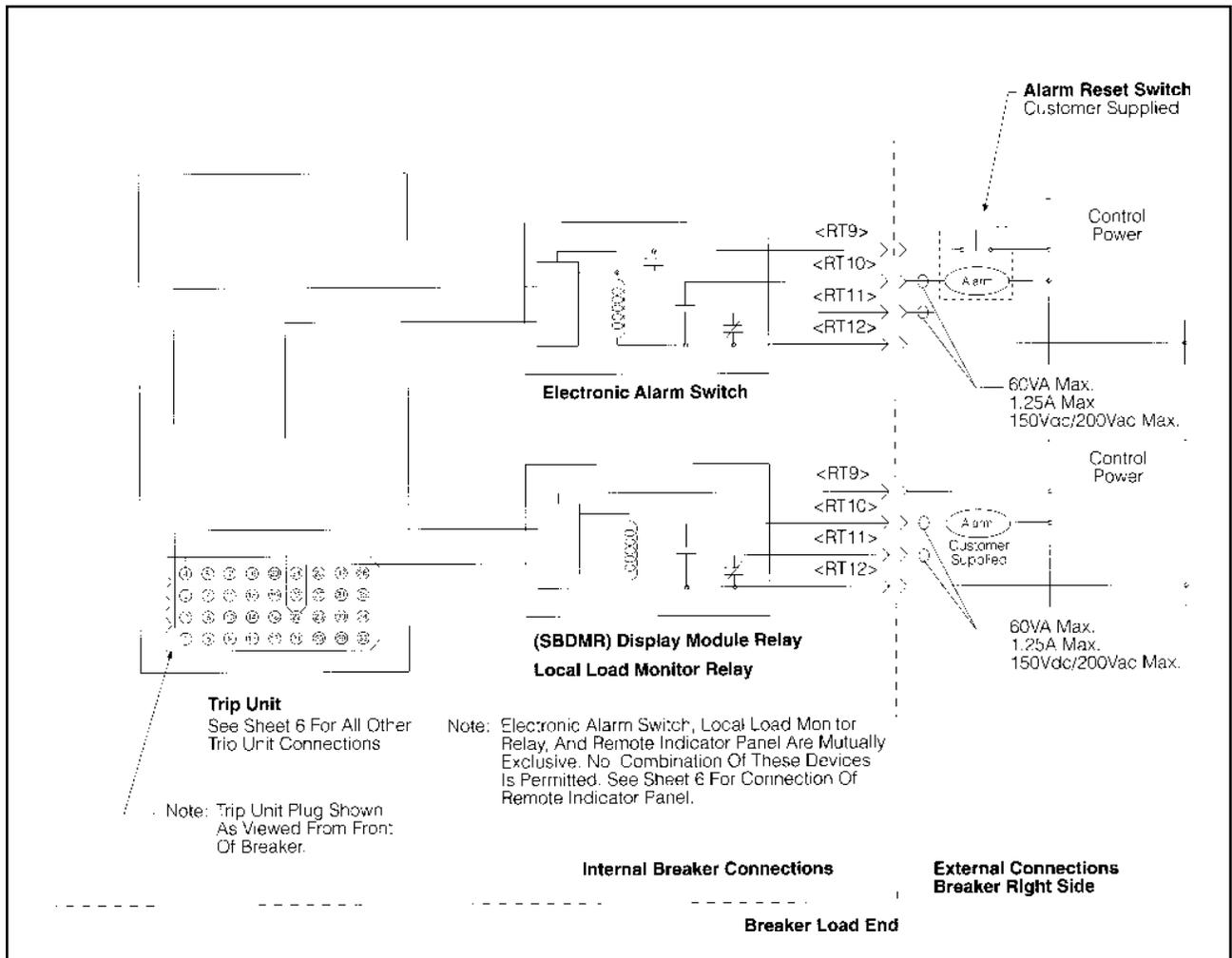


4.) Route bell alarm lead wires RT9 through RT12 through right side of the circuit breaker.

5.) Connect the four lead wires, in numerical sequence, to the bottom four positions of the secondary disconnect or terminal block, with RT12 installed on the bottom position.

Internal Accessories

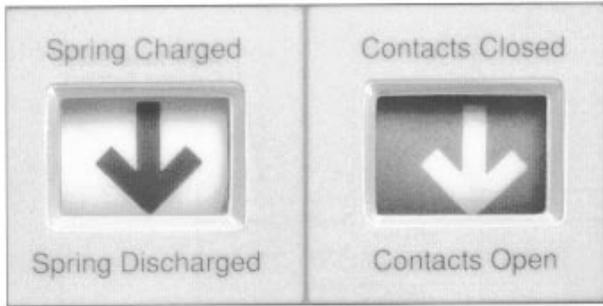
Electronic Bell Alarm



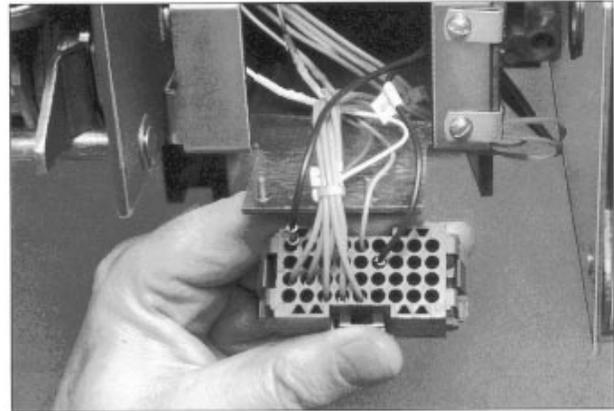
Electronic Bell Alarm or Display Module Relay Schematic Drawing (only 1 device per breaker)

Internal Accessories

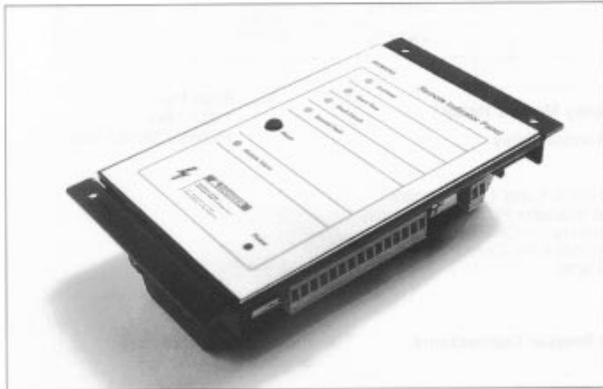
Remote Indicator Panel



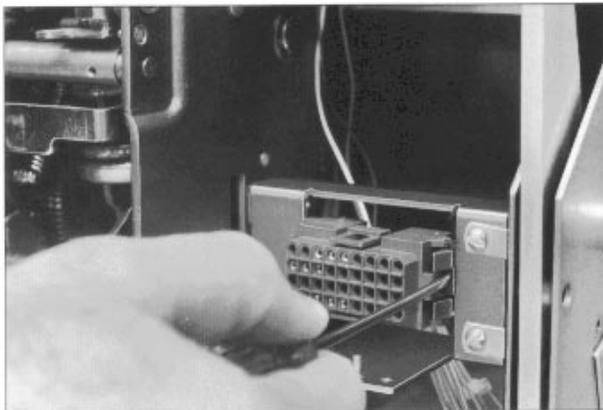
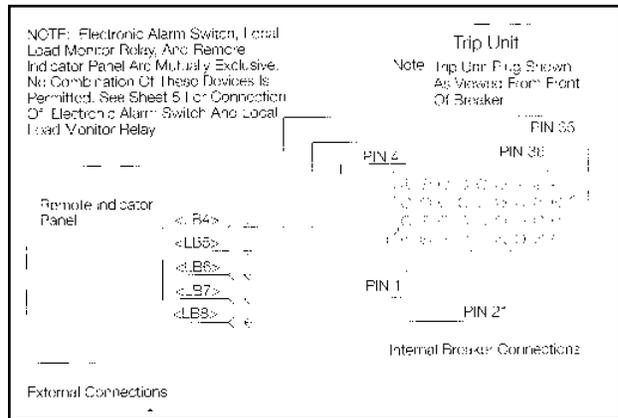
CAUTION: Do not attempt to install an accessory with the breaker "Closed" or "Charged". Make certain breaker is "Open" and "Discharged" as shown above. Personal injury or mechanical damage may occur. Preliminary installation procedures are outlined on pages 36-37.



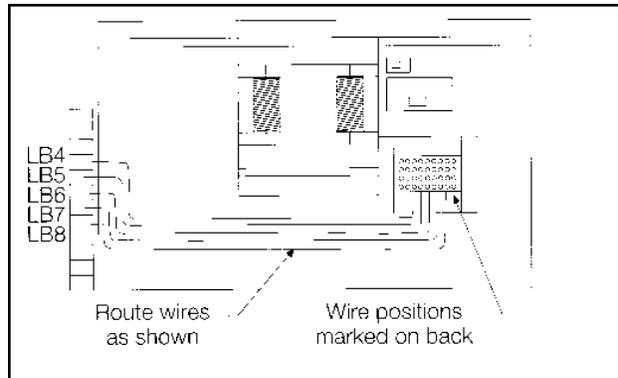
- 2.) Connect the wires provided between the trip unit 36 pin connector and the External Terminal Block



NOTE: To properly use the Siemens Remote Indicator Panel, the SB Circuit Breaker Trip Unit must be removed (See Instructions Pages 36-37) if previously installed.



- 1.) With a small screwdriver, press in tab on right side of 36-pin trip unit connector and release from mounting bracket.



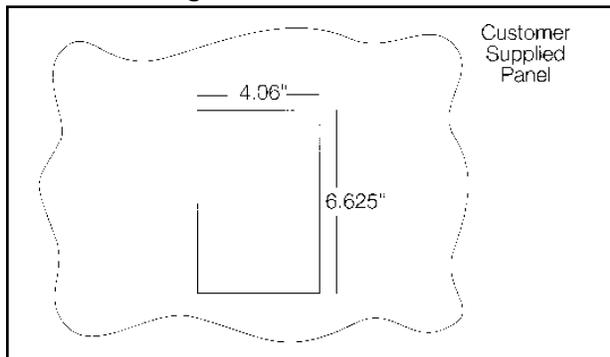
Internal Accessories

Remote Indicator Panel

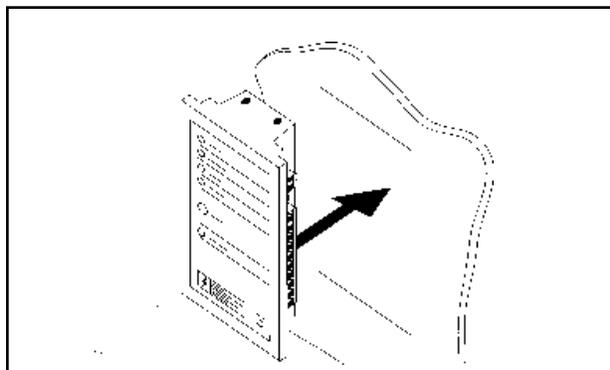
The Remote Indicator Panel can be either panel mounted or wall mounted. The intent is mounting versatility yet keeping all electrical connections within the switch board or panel.

Note: The maximum distance between the breaker and remote indicator Panel allowed is 10 feet.

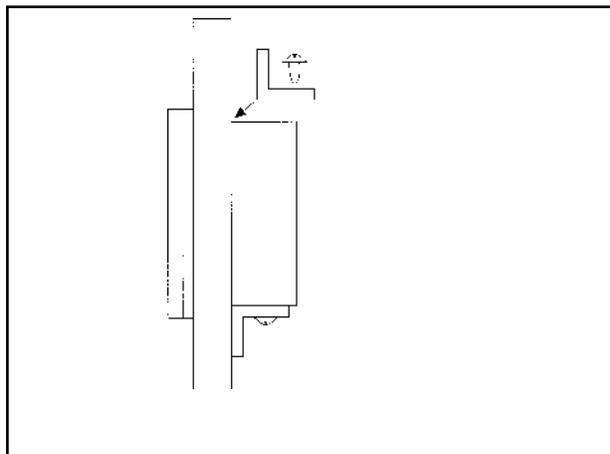
Panel Mounting



1. Cut opening in Panel 4.06" wide and 6.625" high.



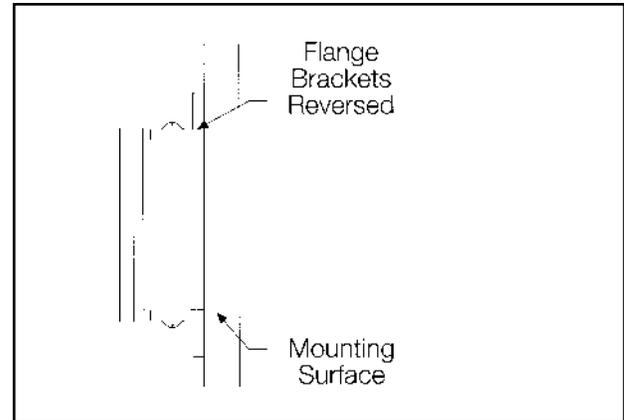
2. Remove both Flange Brackets and insert Remote Indicator Panel into the opening



3. Replace Flange Brackets positioned as shown - slide bracket against panel and tightened screws.

Panel Mounting

This style mounting is intended for surface use inside of the switchboard or panel.



1. Reverse Flange Brackets as illustrated. Set unit on flat surface and tighten screws. Hold unit in location desired. Mark and drill 4 holes for #6 screws. Mount Remote Indicator Panel with (4) #6 Screws (Not Supplied).

Wiring

Note that these terminal blocks are removable for ease of wiring. Pull them straight out to unplug, insert wires and tighten screws then plug them back into circuit board.

Wire Remote Indicator Panel to circuit breaker using terminals on left side marked LB4-LB8. Connect them to the corresponding terminal block positions located on left bottom side of SB breaker. These wires must be 18AWG with a maximum length of 10 feet.

The 5 Relay outputs located on the bottom right terminal block may be wired to your system using 18 AWG wire. The contact ratings of these relays are 60VA-1.25A-1150VDC/200VAC.

Connect supply power to top right terminal block as marked. Use the correct voltage as marked on the nameplate. Make sure the housing is grounded using the #8-32 screw provided.

Internal Accessories

Remote Indicator Panel

Relay Functions

The relay outputs on this device can be used for wiring to remote indicators.

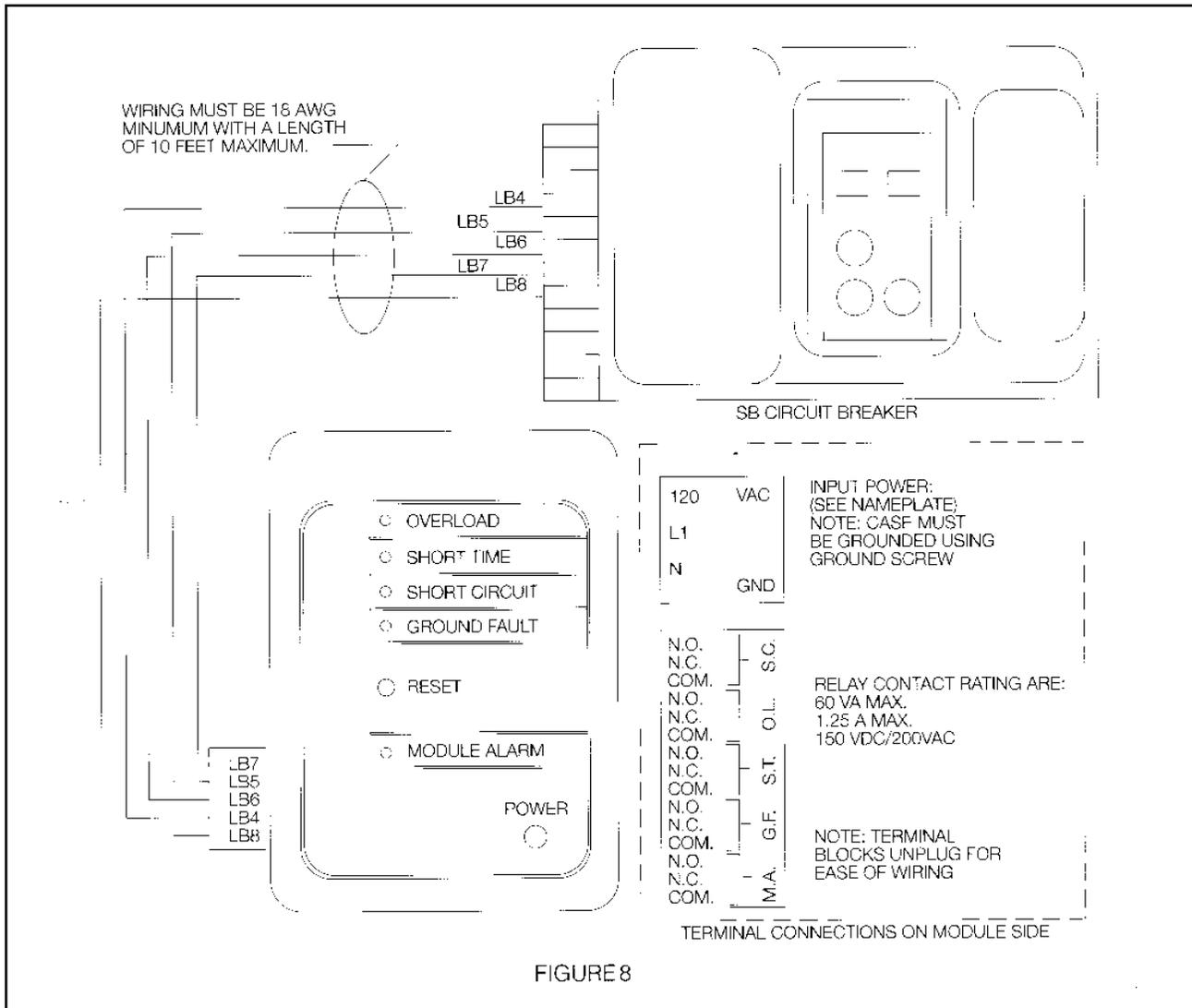
In a trip condition only one of the four relays marked G.F. (Ground Fault), S.T. (Short Time), O.L. (Over Load) or S.C. (Short Circuit) will latch up and stay latched until the Reset button on front of Remote Indicator Panel is pushed. Which relay latches is dependent on the trip condition of the breaker.

The other relay marked M.A. (Module Alarm) does not latch but pulls in and drops out dependent on the switch setting of the Module located in the Trip Unit. This could be either a Display Module or a Ground Fault Monitor Module. When the current exceeds the switch setting, relay "M.A." pulls in, and it drops out when the current goes below the switch setting.

Ground Fault Sensing and Relaying System

When used with a Ground Fault Monitor Module (Cat. No. SBGFM) the Remote Indicator Panel may be used as a Ground Fault Sensing and Relaying system. For more information see the Ground Fault Monitor Module installation instructions.

Note: If the Module is removed while the circuit breaker is powered up the Module Alarm line will be set to its "ON" state.



External Accessories

Ground Fault Monitor and Display Module

Display Module and Ground Fault Monitor

The Ground Fault Monitor (GFM) is an optional module that allows the user to locally monitor the ground fault current and can be used in trip units with or without the integral ground fault protection function. Trip units with the integral ground fault protection function are identified by a "G" in the catalog number and the presence of ground fault adjustments on the face of the trip unit. If the trip unit is equipped with ground fault protection, the Ground Fault Monitor utilizes the same ground fault sensing method as the electronic trip unit. If the trip unit is not equipped with ground fault protection, then the GFM uses a residual ground fault sensing method. The Ground Fault Monitor works independently from the trip unit's ground fault protection.

Ground Fault Monitor Settings

There are three ground fault pickup levels offered on the Ground Fault Monitor:

"LO" equals 20 percent of the frame rating.

"HI" equals either the frame rating or 1200 amps, whichever is less.

"MED" equals the average of the "LO" and "HI" pickup levels.

The ground fault delays are divided into three fixed time delay bands: 0.1, 0.3, and 0.5 seconds. The "MAX" setting is defined as a 1200 amp pickup and 0.5 second delay.

Display

The Ground Fault Monitor displays the ground fault current in amps. Then the ground fault current reaches a level 12 percent below the selected pickup setting, the amps display will start to flash. Then the ground setting, the display will flash "-OL-" for overload and the alarm line will be set to its "ON" state.

Remote Interface

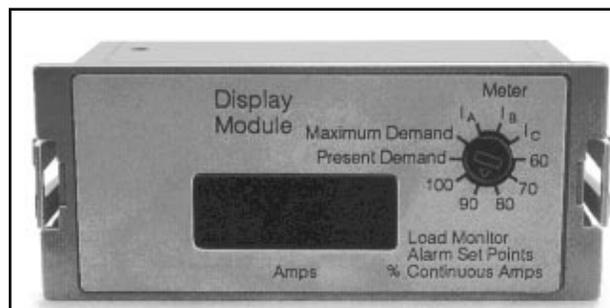
The Ground Fault Monitor can be utilized with a Display Module Relay (mounted inside the breaker) or a Remote Indicator Panel (externally mounted) to provide a set of relay contacts for ground fault alarm. When used in conjunction with either of these devices and a Shunt Trip, the Ground Fault Monitor can be used as Ground Fault Sensing and Relaying Equipment per U. L. 1053. For more information see the Installation Instructions for the Ground Fault Sensing and Relaying System.

Also, note that if the Ground Fault Monitor is removed while the circuit breaker is powered up the alarm line will be set to its "ON" state

NOTE: Option for Ground Fault Detection and Alarm without tripping in accordance with NEC Article 700 Section 700-26 is available. Consult Siemens Sales Office for further information.

Display Module

The Display Module provides features for allowing the user to locally monitor the phase currents. The switch to set and select the display is accessible to the user through a hole in the transparent cover of the trip unit.



Display Module

Maximum Current Demand

This feature provides a display of the maximum current demand since the unit was last reset. The unit is reset by depressing both the phase and ground fault test pushbuttons simultaneously. Phase and ground fault pushbuttons are located on the SB Electronic Trip Unit in the integral testing section.

Present Current Demand

This feature provides a display of the present current demands. The present current demands are calculated averages over thirty (30) minute intervals. The user may display the most recent stored values by setting the switch to the present demand position for the 30-minute interval.

Local Monitor Relay

This feature provides a local alarm display and an output signal for an external alarm when the average of the phase currents exceeds the alarm set point. The display automatically resets itself when the alarm condition ceases. The output alarm signal is a 5-volt DC level. The signal may be used to display an alarm on a remote indication panel or by using an internal Systems Breaker Modular Relay (SBDMR). The alarm set point may be set to 60, 70, 80, 90, or 100 percent of the continuous current setting.

Load Current Meter

This feature provides a local display of the present 3-phase currents. The user may display the current value by setting the switch to the I_A , I_B , or I_C positions.

Before installing the display module, the breaker should be placed in the open position.

The display module is a plug-in unit. To install the module:

1. Remove the trip unit's transparent cover.
2. Remove cover from the display module receptacle.
3. Insert the module into the receptacle.
4. Replace and seal the transparent cover.

External Accessories

Ground Fault Sensing and Relaying

This system will provide Class 1 ground fault protection as described in UL STANDARD 1053. GROUND-FAULT SENSING AND RELAYING EQUIPMENT.

System Components

UL Listed Circuit Breaker Components and Accessory Components

- | | |
|---|--------------------|
| 1. Circuit Breaker | Table 2 |
| 2. Trip Unit- | Table 1 |
| 3. Rating Plug- | Table 3 |
| 4. GF Monitor Module | SBGFM |
| 5. Display Module Relay
or Remote Indicator Panel- | Table 4
SBRI120 |
| 6. Shunt Trip Device- | Table 5 |

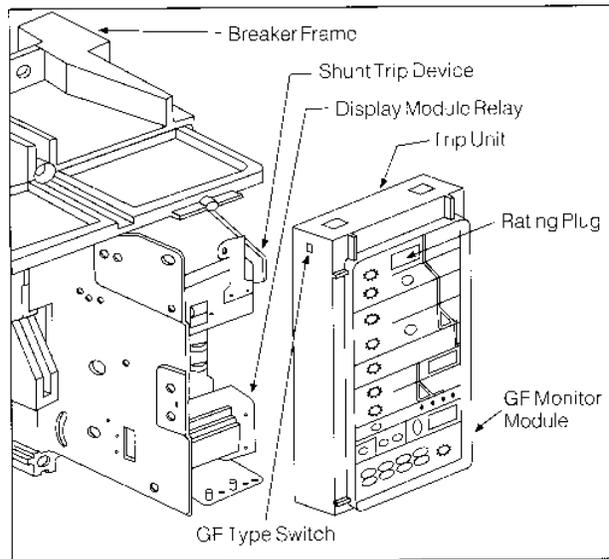
SB04TLI	SB12TLI	SB20TLI	SB32TLI
SB04TLS	SB12TLS	SB20TLS	SB32TLS
SB04TL SI	SB12TL SI	SB20TL SI	SB32TL SI
SB04TLIG	SB12TLIG	SB20TLIG	SB32TLIG
SB04TL SG	SB12TL SG	SB20TL SG	SB32TL SG
SB04TL SIG	SB12TL SIG	SB20TL SIG	SB32TL SIG
SB08TLI	SB16TLI	SB25TLI	SB40TLI
SB08TLS	SB16TLS	SB25TLS	SB40TLS
SB08TL SI	SB16TL SI	SB25TL SI	SB40TL SI
SB08TLIG	SB16TLIG	SB25TLIG	SB40TLIG
SB08TL SG	SB16TL SG	SB25TL SG	SB40TL SG
SB08TL SIG	SB16TL SIG	SB25TL SIG	SB40TL SIG

SBA0804	SBS0804	SBH0804
SBA0808	SBS0808	SBH0808
SBA1212	SBS1212	SBH1212
SBA2016	SBS2016	SBH2016
SBA2020	SBS2020	SBH2020
	SBS4025	
	SBS4032	
	SBS4040	

SBDMR24
SBDMR48
SBDMR120
SBDMR125

04SB200	04SB400	12SB600	16SB800
04SB225	04SB450	12SB700	16SB1000
04SB250	04SB500	12SB800	16SB1200
04SB300	04SB600	12SB1000	16SB1600
04SB350	04SB700	12SB1200	
04SB400	04SB800		
20SB1000	25SB1600	32SB1600	40SB2000
20SB1200	25SB2000	32SB2000	40SB2500
20SB1600	25SB2500	32SB2500	40SB3000
20SB2000		32SB3000	40SB3200

SBST12	SBST120
SBST24	SBST240
SBST48	SBST480
SBST125	



Ground Fault Relaying System

System Operation:

The user must first set the desired ground fault pickup and delay settings on the Ground Fault Monitor Module (Page 63). These settings are independent from the trip unit built-in ground fault settings (if available). When a ground fault above the selected pickup occurs, the breaker will delay based on the module settings and when the proper time has elapsed. Issue a signal to the internal Display Module Relay or External Remote Indicator Panel. The output contacts of the relay can then be used to trigger the Shunt Trip Device, thus tripping the circuit breaker.

Testing:

General Instructions

1. The interconnected system shall be evaluated when initially installed by qualified personnel. It is also recommended that this be done periodically thereafter.
2. The proper location of the sensors around the bus of the circuit to be protected shall be determined. This can be done visually with knowledge of which bus is involved.
3. The grounding points of the system shall be verified to determine that ground paths do not exist that would bypass the sensors.
4. The polarity of the sensor connections must agree with the installation instructions to avoid improper operations.
5. A simulated test is to be done using a low voltage, high current source. This test is not intended to verify that it is properly functioning.
6. The results of this testing should be recorded on the form provided at the end of this document or other appropriate forms and should be available to the inspection authority.
7. These breakers may be set for different modes of operation. Residual or Ground Return, as described in the information on applications, refer to the NEMA standards publication No. PB 2.2 Application Guide for Ground Fault Protective Devices for Equipment.

System Description:

This Ground Fault Relaying system is based on the Type SB insulated case circuit breaker. The breaker must be equipped with an electronic Trip Unit and Rating Plug. The trip unit can be the type with or without the built-in ground fault tripping function. The breaker must also have a GF Monitor Module, a Shunt Trip Device, and either a Display Module Relay or Remote Indicator Panel. For a system completely enclosed within the breaker case, the internally mounted Display Module Relay is used. If remote cause of trip information is required, the Remote Indicator Panel may be used in place of the Display Module Relay.

External Accessories

Ground Fault Sensing and Relaying

Test Operation

GF Type Switch set to RESIDUAL

Outgoing Circuit Method (if trip unit does not provide ground fault protection, this is the method used.)

3 Phase / 3 Wire

Using Figures 2, and 1 or 5, individually test breaker poles A, B, and C, for proper Ground Fault operation.

Each of the circuit breaker's front panel controls should be set to the highest setting. Set the Ground Fault Monitor to the LO pickup on the .1 second delay band. Using a low voltage current source, apply a test current equal to 50% of the rating plug value. The circuit breaker must trip.

3 Phase / 4 Wire

Using Figures 3, and 1 or 5, individually test breaker poles A, B, and C, in conjunction with the proper neutral sensor for Ground Fault operation.

Each of the circuit breaker's front panel controls should be set to the highest setting. Set the Ground Fault Monitor to the LO pickup on the .1 second delay band. Using a low voltage current source, apply a test current equal to 50% of the rating plug value. The circuit breaker must not trip. Reduce the test current to zero.

Using a suitable means, short the X1 wire and the X2 wire connections together on the Neutral Sensor. Reapply a test current equal to 50% of the rating plug value. The circuit breaker must trip. Reduce the test current to zero and remove the shorting means from the Neutral Sensor.

GF Type Switch set to GROUND RETURN

Ground Return Method

3 Phase / 3 Wire or 3 Phase / 4 Wire

Using Figures 4 and 1 or 5, individually test breaker poles A, B, and C, for proper Ground Fault operation.

Each of the circuit breaker's front panel controls should be set to the highest setting. Set the Ground Fault Monitor to the LO pickup on the .1 second delay band. Using a low voltage current source, apply a test current equal to 50% of the rating plug value. The circuit breaker must trip.

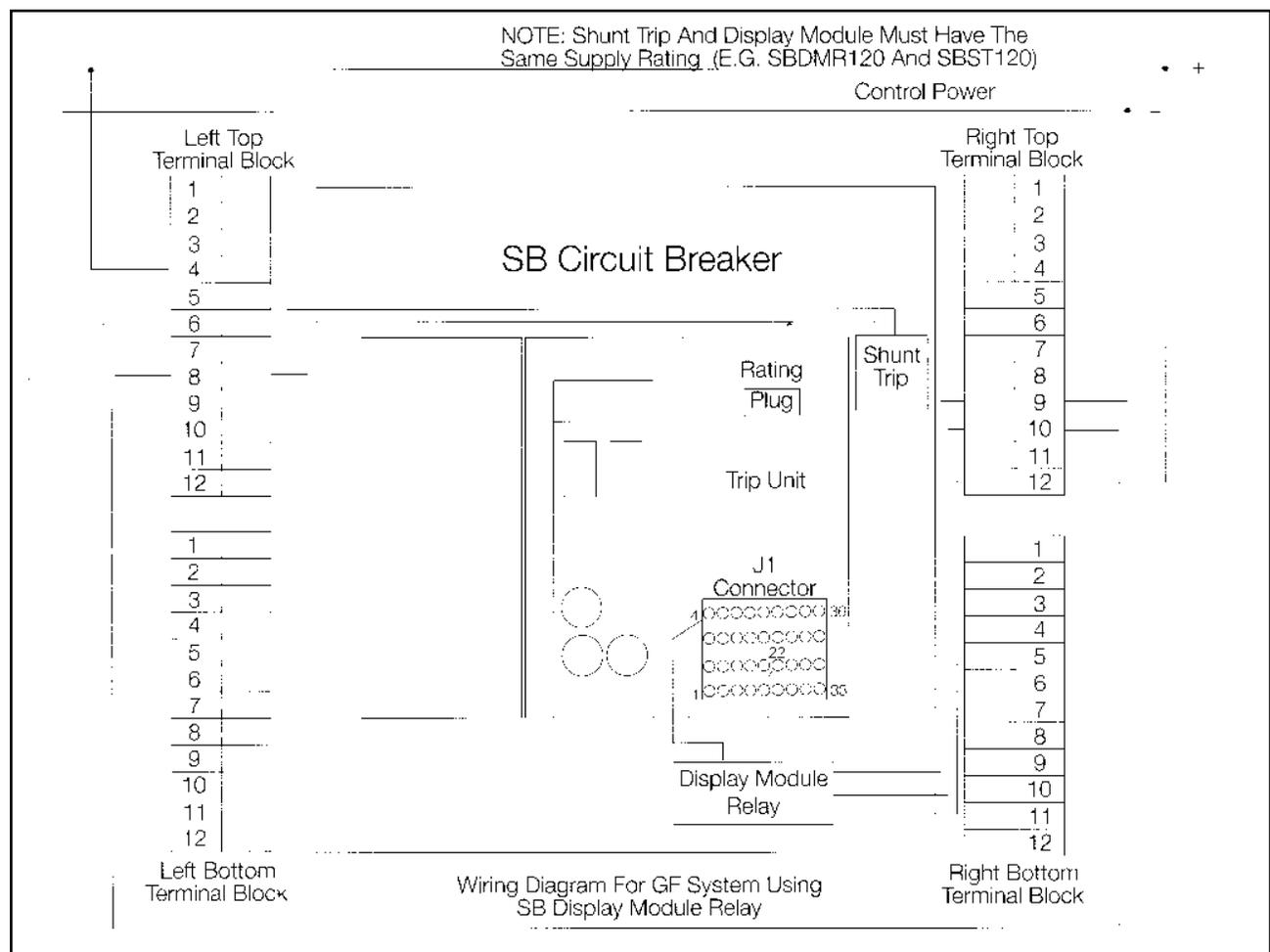


Figure 1.

External Accessories

Ground Fault Sensing and Relaying

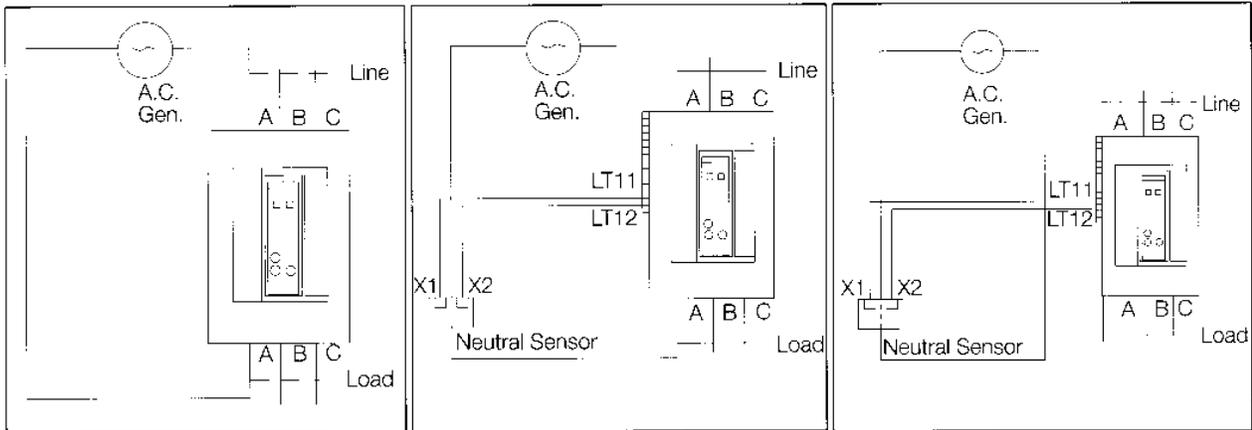


Figure 2

Figure 3

Figure 4

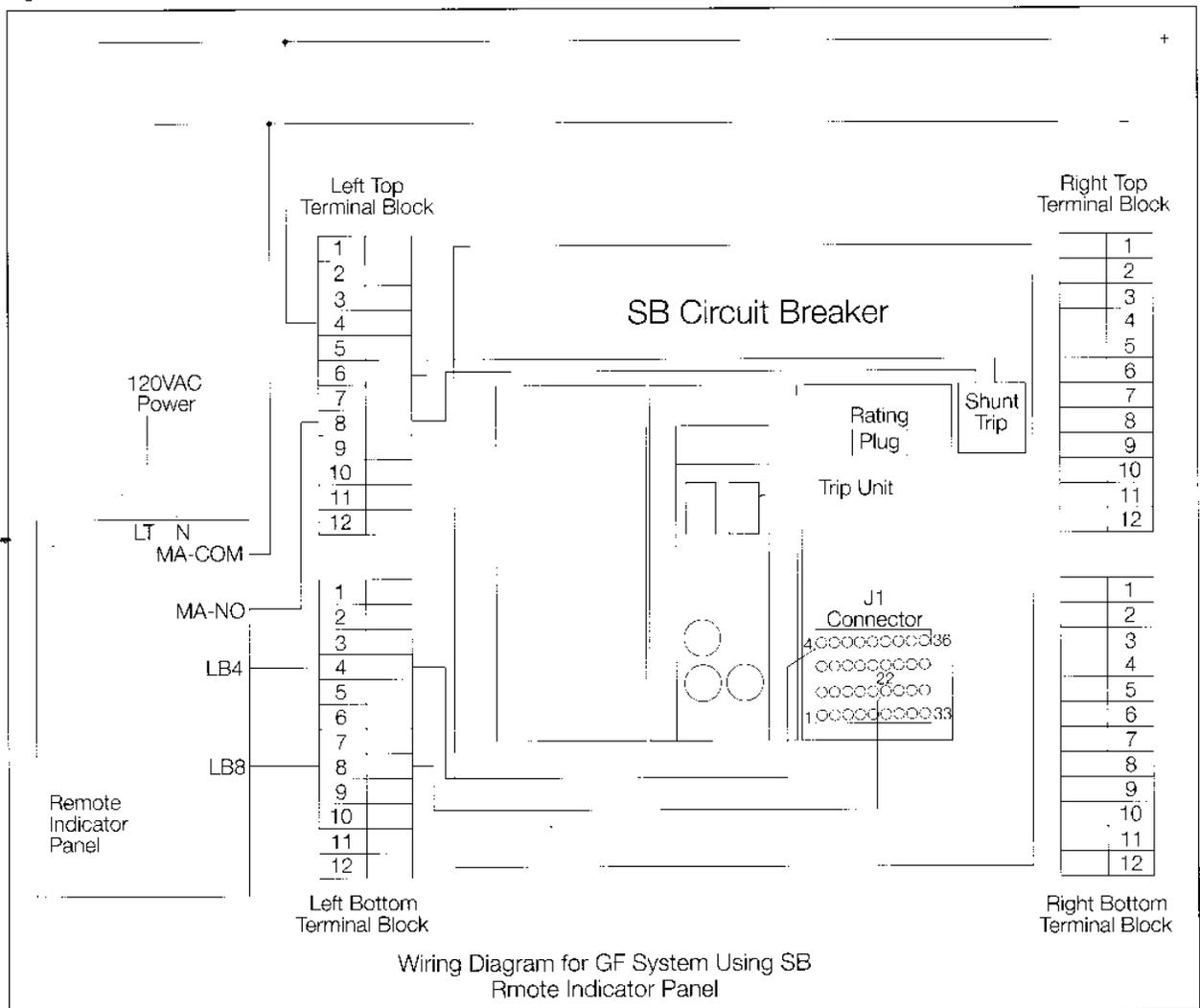


Figure 5.

External Accessories

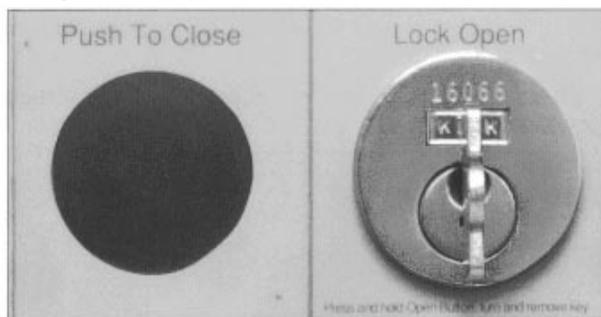
Key Interlock and SB Breaker Padlock Device

Key Interlock on SB Breaker

Key interlocks are often used to control local sequencing of breakers when multiple power sources are available for a common load. When the key is removed, the key interlock holds the open pushbutton switch in the trip position, preventing the breaker from being closed. Therefore, if the same key is required by each breaker in a multiple power source system, no two breakers in the system can be closed at the same time.

To remove the key from the key interlock, press and hold the "open" pushbutton; turn and remove key.

The breaker key interlock is not field installable. It is installed at the factory in the central escutcheon of the front panel, directly above the push-to-open pushbutton switch.

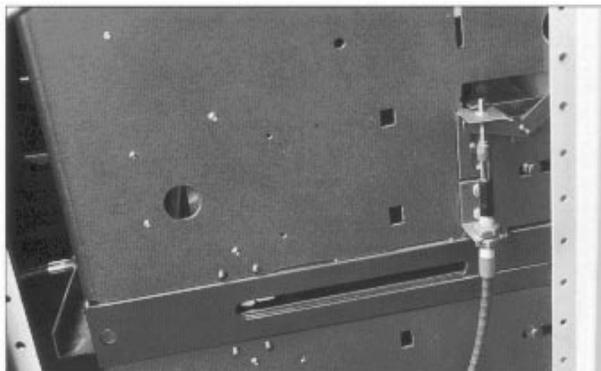


Key is installed in the central escutcheon

Mechanical Interlock

The mechanical interlock device provides the capability to prevent simultaneous closing of two SB breakers. The first breaker to close will keep the other breaker in the open/tripped position. The interlock device is available for fixed mounted breakers installed side-by-side or in the same vertical section. On drawout configured breakers, the interlock device is available for breakers installed in adjacent cubicles, either vertically or horizontally.

The mechanical interlock device is **not** field installable



Mechanical Interlock

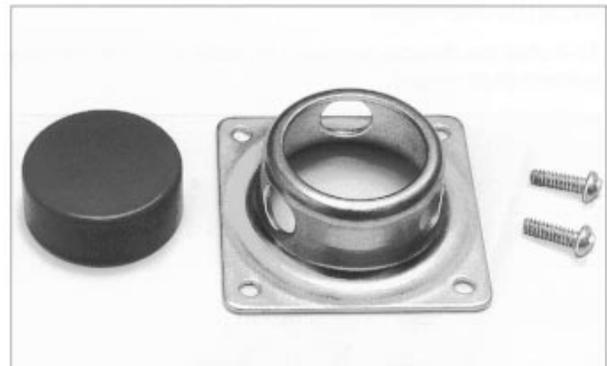
Padlock Device on Breaker

A padlock device on the breaker allows the breaker to be padlocked in the open position, preventing the breaker from being closed. It will accommodate three padlocks.

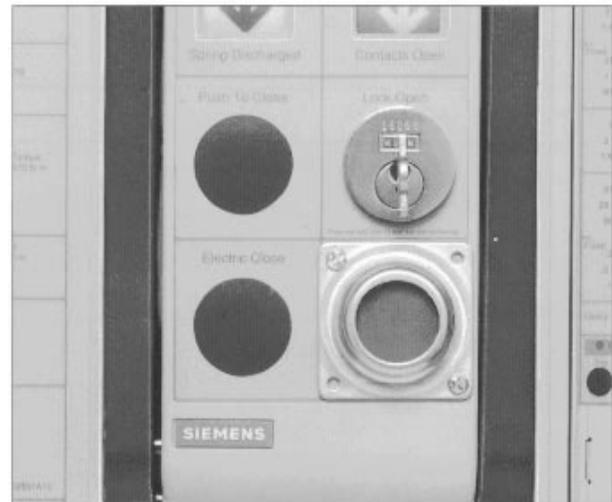
The accessory kit consists of a padlock device and one-way self-tapping screws to prevent its removal. The device is installed over the open pushbutton switch. Blind holes for the self-tapping screws are located above and to the left, and below and to the right of the open push-button switch.

Before starting the installation, the breaker should be in the open position, and the stored energy mechanism should be discharged.

To install the device, secure it in place with the screws as provided.



SB Breaker Padlock Device Kit



The padlock device is installed over the open pushbutton.

External Accessories

Drawout Padlock and Close Blocking Devices

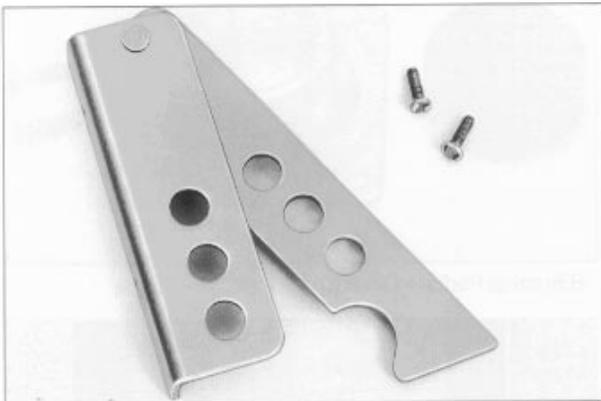
Padlock Device on Drawout Mechanism

A padlock device on the drawout mechanism provides the means to padlock the moveable drawout element in the connected, test, or unlocked position. The padlock device can also lock the interlock lever in the interlocked is engaged position to prevent the breaker from being closed. This is an important feature. When padlocked in the unlocked position, the moveable element can be pulled to the fully withdrawn position. The device will accommodate three padlocks.

The accessory kit consists of a pad lock device and one-way self-tapping screws to prevent its removal. It is installed on the left side of the moveable drawout element, just above the interlock lever.

Before starting the installation, the breaker should be in the open position and the stored energy mechanism should be discharged .

To install the device, secure it in place with the one-way screws as provided.



Drawout padlock device kit

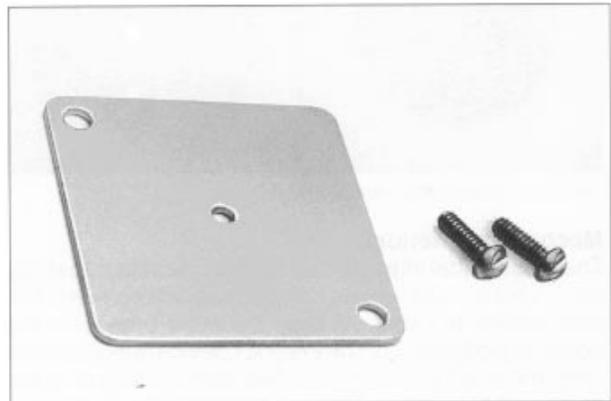
Closing Blocking Device on SB Breaker

A closing blocking device is used to prevent local closing of the breaker under normal operating conditions. The device is a cover that mounts over the push-to-close pushbutton, blocking normal access to this switch. A small hole in the center of the cover provides a means to defeat the blocking device in case of an emergency or for test purposes. A small screw driver or similar object may be inserted through the hole to depress the close pushbutton .

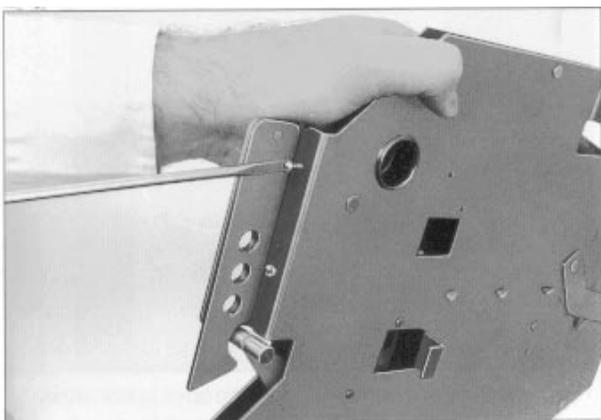
The accessory kit consists of a blocking device and one-way self-tapping screws to prevent its removal. Blind holes for the self-tapping screws are located above and to the left and below and to the right of the close pushbutton switch .

Before starting the installation, the breaker should be in the open position and the stored energy mechanism should be discharged .

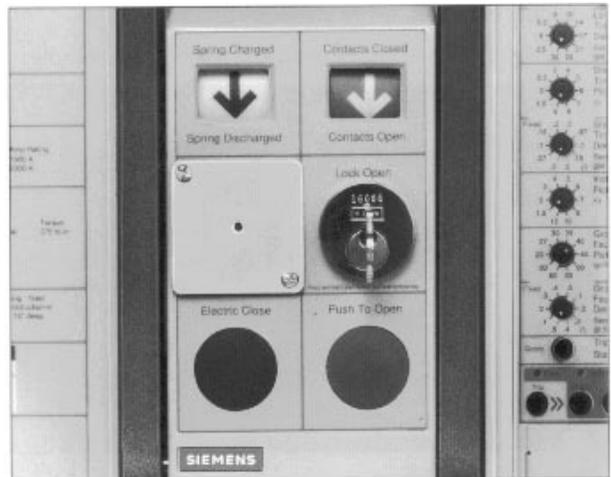
To install the device, secure it in place with the screws provided .



Closing Blocking Device Kit



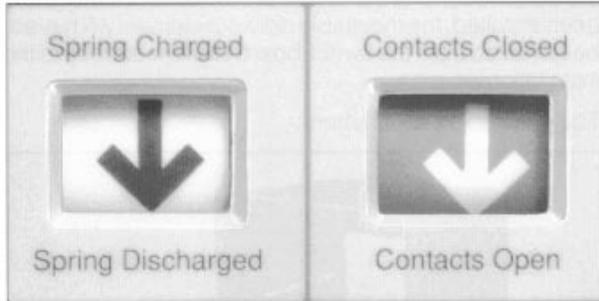
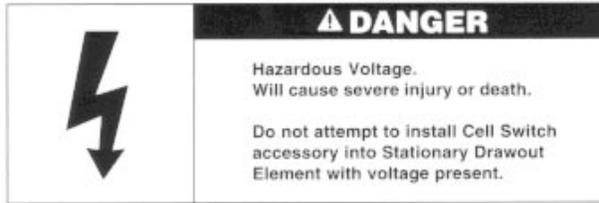
Padlock device is installed above the interlock lever



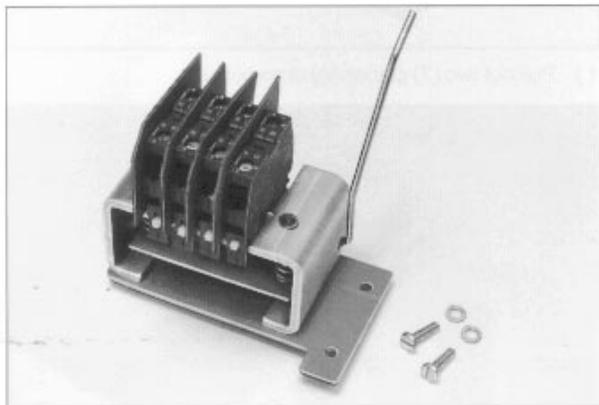
Closing Blocking Device is installed over the close pushbutton switch

External Accessories

Cell Switches



CAUTION: Do not attempt to install an accessory with the breaker "Closed" or "Charged". Make certain breaker is "Open" and "Discharged" as shown above. Personal injury or mechanical damage may occur.



Cell Switch Accessory Kit

Cell Switches on Drawout Mechanism Cell switches are used on drawout SB breakers as signal contacts to indicate when the moveable drawout element is in a position other than the connected position. The position of the moveable drawout element is indicated by the open/closed status of the cell switches as follows:

"A" or "NO" contacts - Open when the moveable drawout element is in the test, unlocked, or withdrawn position.
Closed when the moveable drawout element is in the connected position.

"B" or "NC" contacts - Closed when the moveable drawout element is in the test, unlocked, or withdrawn position.
Open when the moveable draw out element is in the connected position

A maximum of four "A" and "B" cell switches may be installed in a breaker. The switch contact ratings are given in the following table.

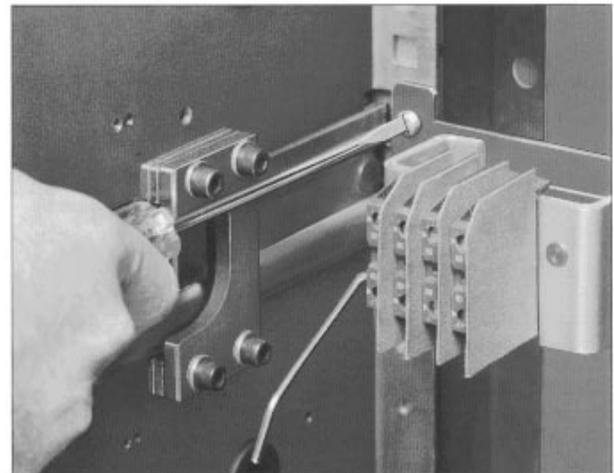
Switch Contact Ratings

Supply Voltage	Ampere Rating
120 VAC	10 Amps
240 VAC	10 Amps
480 VAC	6 Amps
24 VDC	3 Amps
125 VDC	0.6 Amps

The cell switches are installed on the left-rear flange of the stationary drawout element, between the bus supports

The cell switch assembly should be installed prior to the moveable drawout element being installed in the switchboard. If the drawout elements have already been installed, the moveable drawout element will have to be placed in the fully withdrawn position or removed from the switch board to allow access to the installation location.

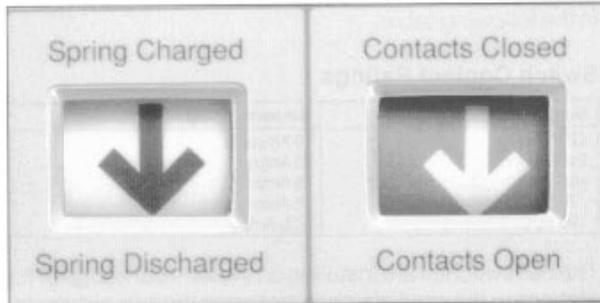
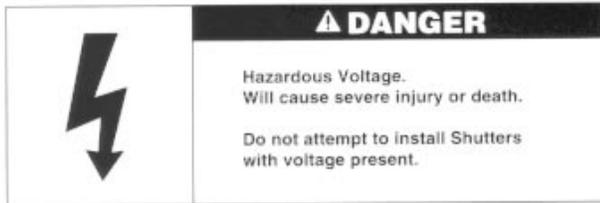
To install the cell switch assembly, attach assembly to the left-rear flange with two (2) 8/32" panhead screws with lock washers in the threaded holes on the flange.



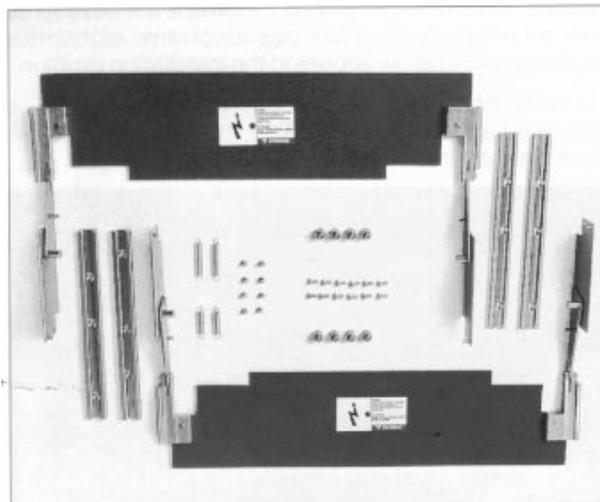
Cell Switches are installed on the left-rear flange of the cradle assembly or drawout element

External Accessories

Drawout Safety Shutters



CAUTION: Siemens recommends Shutter installation prior to placing Stationary Drawout Element into a switchboard or panelboard.



Drawout Safety Shutters Accessory Kit

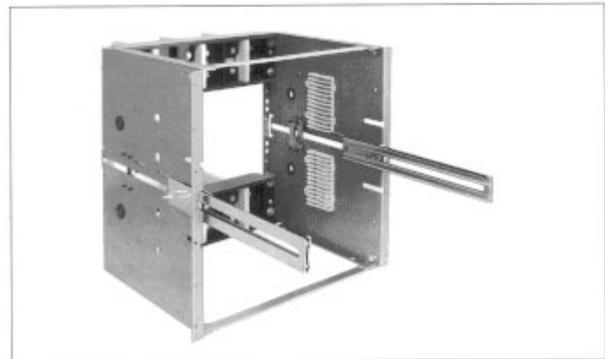
Drawout Safety Shutters

Drawout safety shutters prevent inadvertent contact with the primary stabs. As the moveable drawout element is moved from the unlocked to the withdrawn position, the shutters automatically cover the primary stabs. The shutters automatically retract to expose the stabs, as the moveable drawout element is moved from the withdrawn to the unlocked position.

The drawout safety shutters kit consists of two shutter assemblies and mounting hardware. The shutters are symmetrical so that either shutter can be used to cover the line or load stabs. The shutters are installed on the sides of the stationary drawout.

If practical, the drawout safety shutters should be installed prior to the stationary drawout element being installed in the switchboard. If the drawout elements have already been installed, the moveable drawout element will have to be removed from the switchboard to allow access to the installation location.

To install the safety shutters:



1.) Pull out two (2) stationary drawout rails.



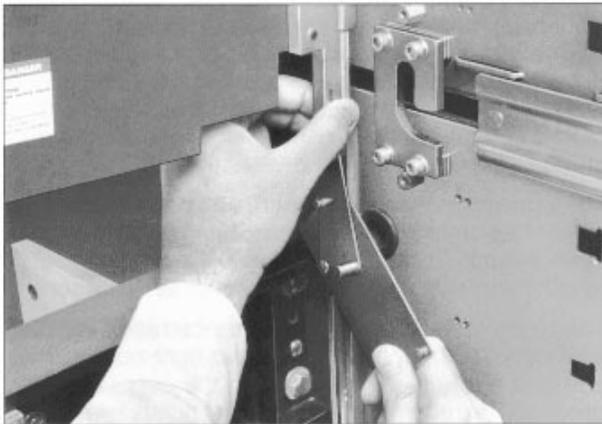
2.) Install eight (8) Shutter Plate pins (4 per side).

External Accessories

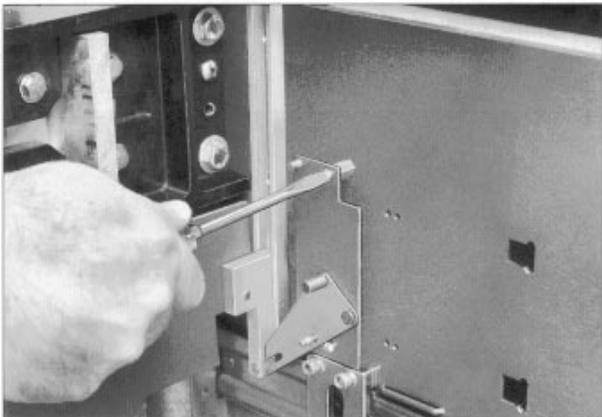
Drawout Safety Shutters



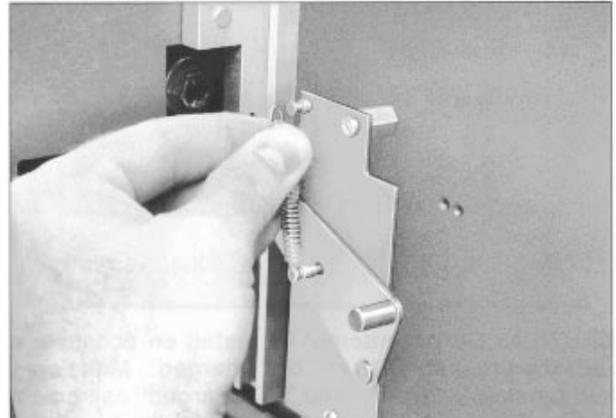
3.) Install four (4) Shutter Rails (2 per each side).



4.) Slide top of shutter slide block into bottom of grooved top shutter rail

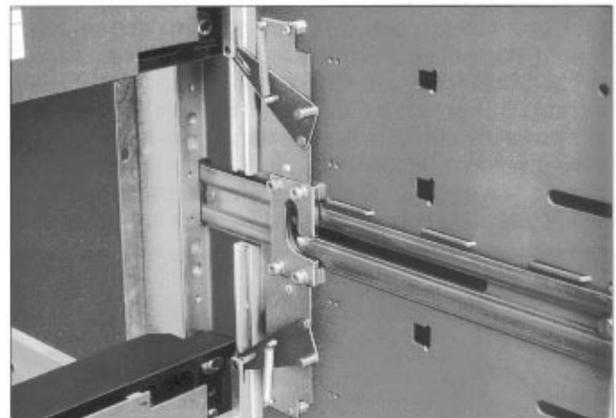


5.) Install top shutter section with #6-32 x 1/4" screws and lock washers, to the sides of the stationary drawout element.

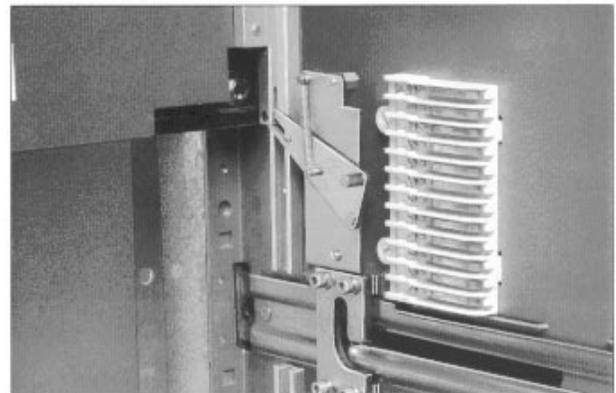


6.) Install shutter springs (zinc silver spring is used for the top shutter, white springs are used for the bottom shutter). Installation of the bottom shutter is similar to the top.

7.) Push down on the top shutter and pull up on the bottom shutter to ensure that they will move freely in the tracks



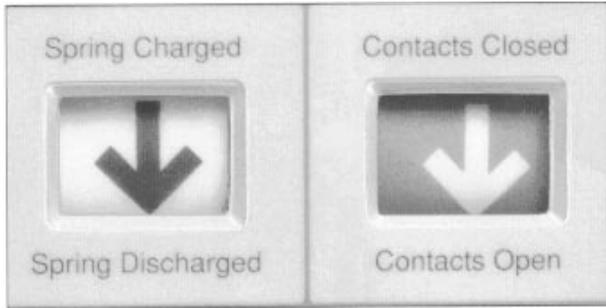
8.) Drawout Safety Shutters shown installed.



9.) Install terminal blocks (see page 57).

External Accessories

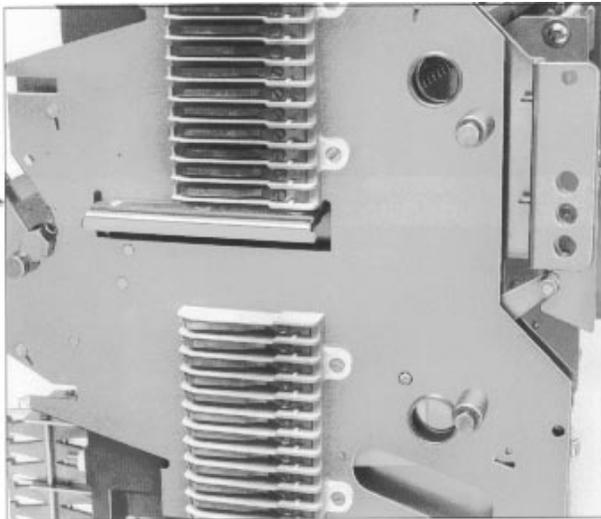
Secondary Disconnects and Control Terminal Blocks



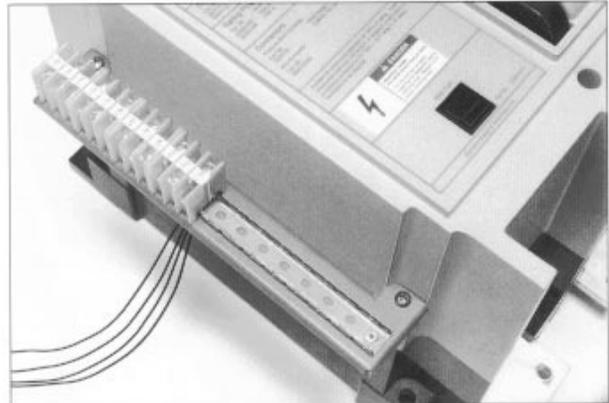
CAUTION: Do not attempt to install an accessory with the breaker "Closed" or "Charged". Make certain breaker is "Open" and "Discharged" as shown above. Personal injury or mechanical damage may occur.

Secondary Disconnects

Secondary wiring connections to remote locations are made to "secondary disconnects" on drawout breakers and to "control terminal blocks" on fixed-mounted breakers. The secondary disconnects and terminal blocks are located along the sides of the breakers, as many as two on each side. They are referenced as left top (LT), left bottom (LB), right top (RT), and right bottom (RB). Left and right are with respect to the user facing the breaker. The terminal points of factory installed internal accessories are identified on page 62. The same terminal point locations should be used when an accessory is installed in the field.



Secondary Disconnects terminal points



Control Terminal Block mounted on fixed-mounted breaker.

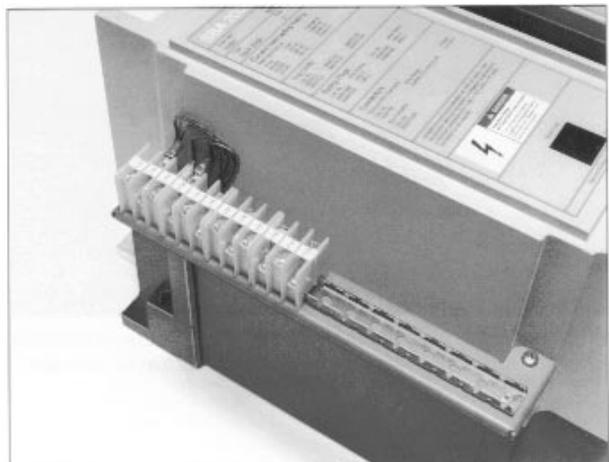
Control Terminal Blocks

Control terminal blocks provide electrical access to the internal accessories and trip unit of a fixed-mounted breaker. A breaker can be equipped with up to four control terminal blocks, each with 12 terminal points. The terminal blocks accept #12 AWG user wiring. They are rated for 600 volts application.

The terminal blocks are designed to be installed along the sides of the breaker. They must be installed with a terminal block mount. To install the terminal block assembly(s), attach them with screws to the breaker as illustrated.

The control terminal blocks are referenced as left-top (LT), left-bottom (LB), right-top (RT), and right-bottom (RB). Left and right are with respect to the user facing the breaker. The recommended terminal points for accessories added in the field are illustrated below.

NOTE: The addition of terminal blocks to a fixed mounted circuit breaker adds 1.5 inches to each side or 3 inches overall.



Wires mounted on terminal block

External Accessories

Pressure Wire Connectors "T" Connectors



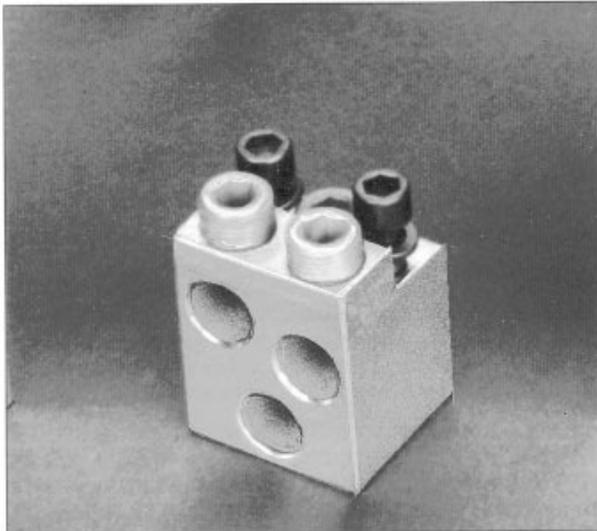
⚠ DANGER

Hazardous Voltage.
Will cause severe injury or death.

Do not attempt to install accessories with voltage present.

Pressure Wire Connectors

Pressure wire connectors are used to connect power cables to the SB breaker.



TA3K500SB Pressure Wire Connector

Pressure Wire Connectors

Frame Size	Amp Rating	Cables per Connector	Connector Wire Range	Catalog Number
800	800	1-3	1/0-500 kcmil Cu/Al	TA3K500S
1200	1200	1-4	250-500 kcmil Cu/Al	TA4N8500
2000	1200	1-4	250-500 kcmil Cu/Al	TA4P8500
2000	1600	1-5	300-600 kcmil Cu/Al	TA5P600S
2000	2000	1-5	250-600 kcmil Cu	TA6R600S

To install the pressure wire connectors:

- 1.) Attach the power cables to the connectors and tighten the set screws. Use the recommended torque supplied with the terminal connector.
- 2.) Mount the connectors to the terminal pads with the mounting bolts. Use torque value supplied with the terminal connector.

"T" Connectors

"T" connectors are used to connect power buses to the SB breakers. The connectors are rotatable to allow for vertical or horizontal bus connections.



"T" connectors with mounting hardware (1 connector and appropriate hardware shipped with each kit).

To install the "T" connectors:

1. Mount the "T" connectors to the terminal pads with the mounting bolts. Use torque value supplied with the "T" connector kit.

External Accessories

Neutral Sensing Transformer

	⚠ DANGER
	<p>Hazardous Voltage. Will cause severe injury or death.</p> <p>Turn off and lock out all power before installing this device.</p> <p>Replace all covers and shields before power supplying this device is restored.</p>

	⚠ CAUTION
	<p>Incorrect neutral sensor transformer could cause nuisance tripping or improper operation of the ground fault function.</p> <p>Use only the above series of neutral sensors.</p> <p>The Ampere Rating of the neutral sensor must match the Maximum Frame rating of the Circuit Breaker.</p>

- 1.) Turn off power feeding this device before starting the installation.
- 2.) Also turn off any line power within the immediate vicinity to prevent the incidental or accidental contact of tools by the installer.

Use transformers with the following breaker frame ratings only

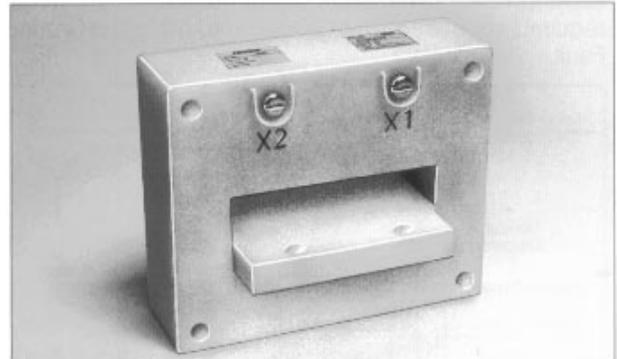
NO4SB	NO8SB	N12SB	N16SB	N20SB
SBA0400	SBA0800	SBA1200	SBA160	SBA2000
SBS0400	SBS0800	SBS1200	SBS1600	SBS2000
SBH0400	SBH0800	SBH1200	SBH1600	SBH2000

Introduction

This neutral sensing transformer is designed to be mounted on a bus bar with maximum dimensions of 3.00" x .75".

Neutral Sensing Transformer

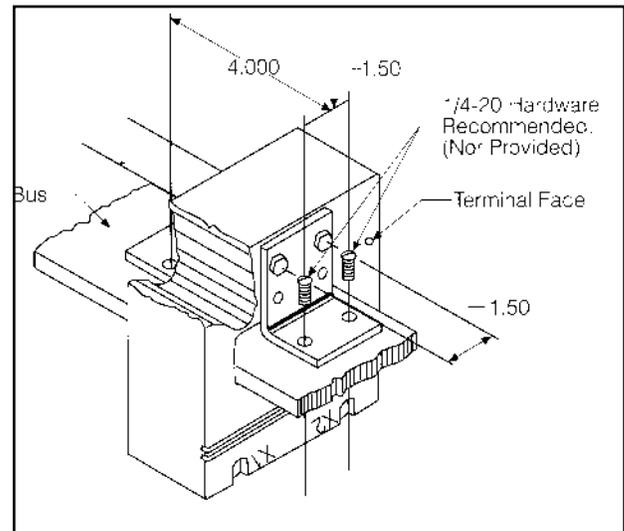
Neutral sensing transformers are used with 4-wire residual ground fault protection and ground source schemes.



Neutral Sensing Transformer

Mounting

Position the neutral sensor as close as possible to the associated circuit breaker and fabricate two .312 diameter holes 1.75 inches apart in bus, as shown below. Mount the neutral sensor to the bus as shown with 1/4-20 hardware (not provided). Torque mounting bolts to 50 in. lbs. **maximum**.



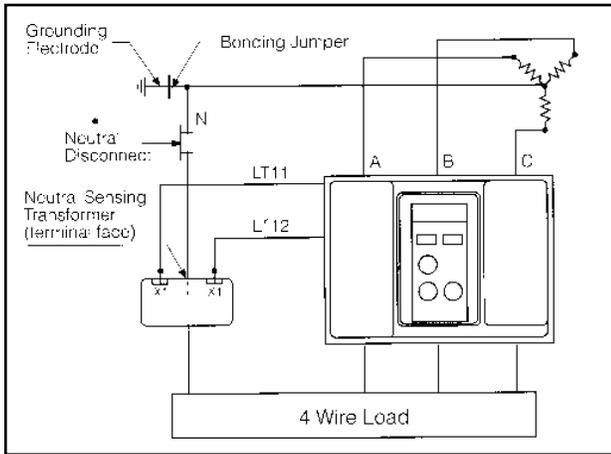
Bus Mounting

External Accessories

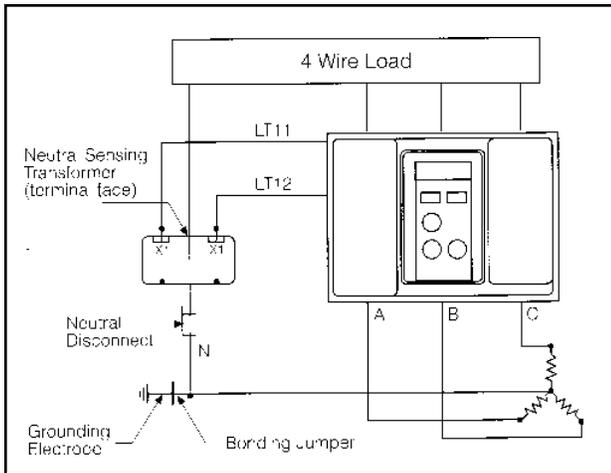
Neutral Sensing Transformer

Important

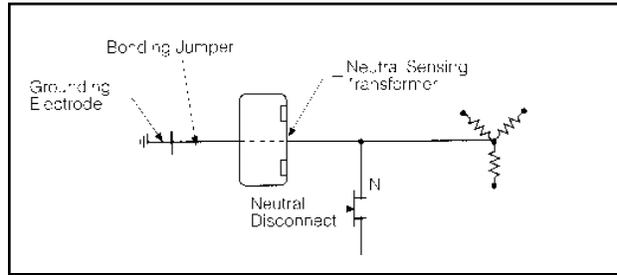
The SB series of electronic trip circuit breakers equipped with ground fault protection may be used in the Residual or Ground Return modes. When used in the Residual mode the orientation of the neutral sensing transformer is important for proper operation. See illustrations below for proper orientation of the neutral sensor for Residual mode Ground Fault. Orientation of the neutral sensor is not required when used in the Ground Return mode of Ground Fault.



Standard Connection



Reverse Connection



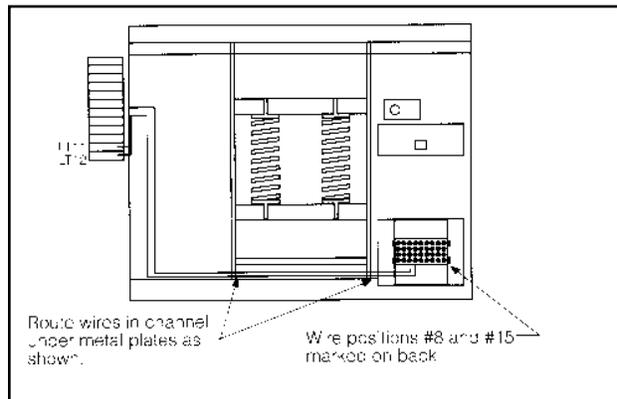
Installation of neutral transformer

Terminal Connections

After properly orienting and mounting the neutral sensing transformer, maintain the correct polarity by connecting terminal LT1 1 on the circuit breaker to terminal X1 on the neutral sensor, and terminal LT12 on circuit breaker to terminal X2 on the neutral sensor.

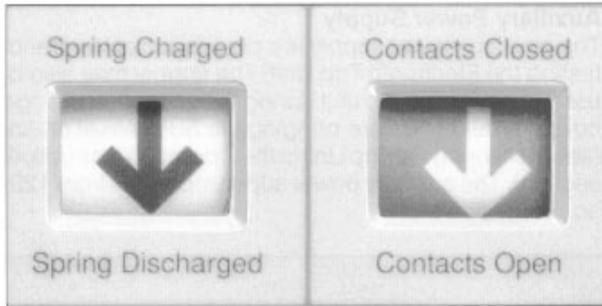
Trip Unit Connections

Check to see if there are wires routed from terminal block positions LT1 1 and LT12 to the inside of circuit breaker. If there are, discard the 2 connection wires supplied with the transformer. If not, these wires will need to be installed. Remove breaker front cover and trip unit (see pages 36-37 of guide). Follow steps 2 and 3 on page 54. With a small screwdriver, press in tab on right side of 36 pin trip unit connector and release it from mounting bracket. Connect the wire marked LT11 from trip unit connector position #8 to terminal block position LT11. Connect wire marked LT12 from connector position #15 to terminal block position LT12. Make sure these connectors are fully seated and locked into connector. Route wires as shown below. Use number 1 8-gauge copper wire (to be supplied by customer) for lead wires. Replace trip unit and front cover taking care not to pinch any wires.



External Accessories

Lifting Device Bracket

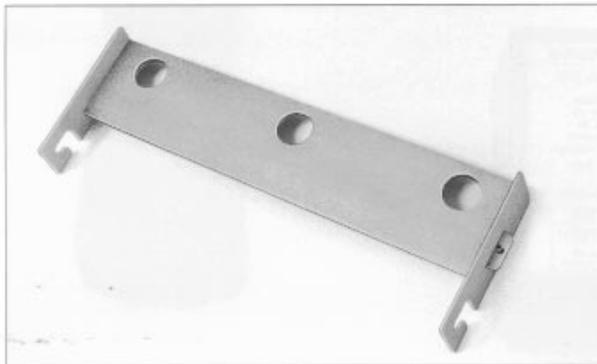


CAUTION: SB breakers and Stationary Drawout Elements are heavy. Personal injury or mechanical damage may occur if care is not used in lifting these pieces of equipment.

Lifting Device Bracket

A lifting device is used in conjunction with a hoist or crane to lift a moveable drawout element. Provisions are provided on the drawout elements to attach a lifting device. The attachment location allows the elements to be balanced as they are being lifted and installed.

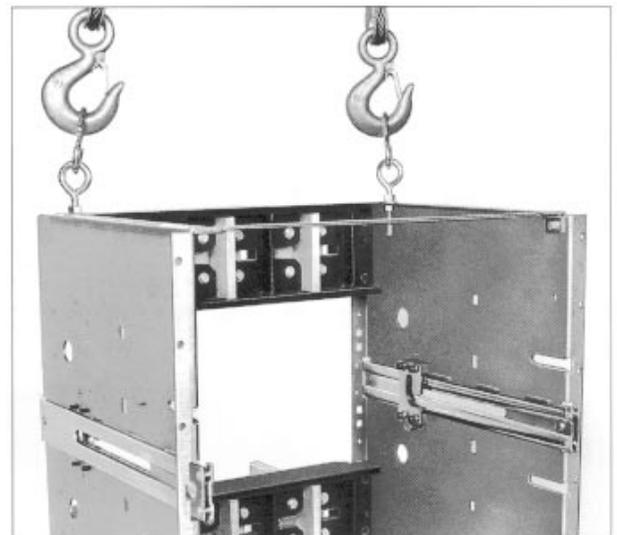
The instructions for attaching the lifting devices are contained in the Installation Instructions section.



Lifting Device Bracket



Connecting point of the lifting device



Lifting the Moveable Drawout Element
(Use only two rear lift holes).

External Accessories

Auxiliary Power Supply



⚠ CAUTION

Trip Free Condition. Misoperation or mechanism damage can occur if improperly tested.

Release power button on APM before closing breaker mechanism.

Auxiliary Power Supply

The auxiliary power supply is a plug-in supply for bench testing the Electronic Trip Unit. The supply may also be used to power the trip unit during the execution of a “go/no-go” type test before bringing the SB breaker on-line (see Monitoring the Trip Unit in the Operating Instructions section). The auxiliary power supply operates from 120V ac source power.



Auxiliary Power Supply

Test Procedures

1. To test trip unit, plug Auxiliary Power Module (APM) into front of trip unit.
2. Hold down Power button on this Auxiliary Power Module and the desired test buttons on the trip unit. Note that only the Power button must be held down for the duration of the test sequence. If Power button is released, test must be restarted.
3. After trip unit test is complete release the Power button on the APM.

External Accessories

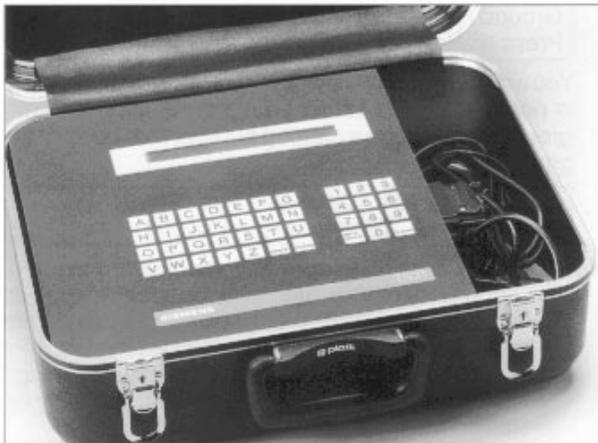
Universal Test Kit (TS-31)

General Information

(detailed instructions supplied with kit)

	<p>⚠ DANGER</p> <p>Hazardous Voltage. Will cause severe injury or death.</p> <p>Turn power off and lock out all power supplying breaker to be tested before removing cover(s) and during testing.</p> <p>Replace all covers and shields before power supplying breaker is turned on.</p>
---	---

⚠ Safety Instructions



TS-31 Procedures

Operating Instructions

- A. Remove electrical loads from circuit breaker.
- B. Plug the TS-31 test set into a grounded 120 VAC receptacle and turn it on. You will be greeted by the identifying turn-on message:

Siemens Energy & Automation, Inc.
TS-31 Test Set. Press any key to continue.

- C. Select the appropriate ribbon cable assembly and connect it between the TS-31 and the circuit breaker, making sure of alignment and polarity. After pressing ENTER, the TS-31 will prompt:

Enter catalog number:

- D. Type in the catalog of the circuit breaker if a JD, LD, MD, ND, PD FRAME. If the unit being tested is a SB ENCASED BREAKER, type in the catalog number of the trip unit (currently on the side of the trip unit proper and the side of the circuit breaker if the unit was factory installed.)

After entering the catalog number information, press the ENTER key. The TS-31 will respond with:

Searching Catalog . . .
Searching Family/Series . . .

If an invalid catalog number has been entered, the TS-31 will respond with:

XXX . . . NOT found.
Press any key to continue.

and you will be asked to enter another catalog number.

- E. If valid catalog number has been entered, the TS-31 will prompt for the breaker settings. The TS-31 will respond with:

Enter Continuous Current Setting in %

If the unit being tested is a SB ENCASED BREAKER trip unit set the continuous setting to 100% (this equals the value of the rating plug which is referred to as I_r .)

Enter Long Time Delay in Seconds:

Enter Instantaneous Pickup Setting:

For breakers with short time functions you may be asked one of the following:

Enter Short Time Pickup:

Select Short Time Delay 1 -Fixed 2- I_r t:

Enter Short Time Delay in Seconds:

For breakers with ground fault you will be asked:

Select Ground Fault Type: 1 - Residual
2 - Gnd. Return 3 - Unsure:

Enter Ground Fault Pickup Setting in %:

Enter Ground Fault Delay: 1 -Fixed 2- I_r t:

Enter Ground Fault Delay in Seconds

In each case, enter your breaker's switch settings. For example if your breaker is set for 70%, type 70 and then press ENTER. Entry of erroneous data in the above steps will result in false tests and results.

- F. After entering the breaker switch settings, you must select the test you wish to have performed:

Enter test: L - Long S - Short I - Inst.
G - Gnd. Fault C - CT Cont.?

- "L" - Long time or overload test.
- "S" - Short time test.
- "I" - Instantaneous test.
- "G" - Ground fault test.
- "C" Current transformer continuity test.

- G. If you press ENTER, you will be prompted for the phase to be tested: The TS-31 will display:

Enter Phase to Test:

External Accessories

Universal Test Kit (TS-31)

Enter one of the following letters:

"A"—Phase A or Left Pole

"B"—Phase B or Center Pole

"C"—Phase C or Right Pole

- H. The TS-31 will report the type of test you selected and give you a chance to abort the test. For example, if "1" was pressed above. The TS-31 will display:

Instantaneous Test
Press ENTER to Continue or A to Abort.

If you pressed the letter "A" to abort. you will be asked to enter again

Change: 1 - Test 2 - Catalog 3 - Settings:

- I. Press Enter again to start the test. Press any other key to STOP the test. Once a test has been started, the TS-31 will respond with:

Trip test. Press Any Key to Abort.
Time Remaining: xx.xxx Sec.

Be careful at this time. Any keypress will abort the test.

- J. The test may take anywhere from a fraction of a second to minutes to complete, depending on which procedure was run. If the test passes, the display will show the following, depending on whether the breaker tripped or not.

Test Passed. xxx.xx seconds
Press any key to continue.

If the breaker tripped during the test, RESET the circuit breaker before continuing.

- K. The TS-31 will prompt for the next instructions. The display will show:

Change: 1 - Test 2 - Catalog 3 - Settings

Enter one of the following numbers:

"1" - select a new test

"2" - enter a new catalog number

"3" - enter a new switch setting

If you enter "1" you will be sent to step F. Choosing a "2" will send the program back to step E. Entering "3" which sends you back to step E, will be slightly different the second time through. On the second line after the prompt for the setting, a number or text in brackets will appear. This will indicate the last setting you entered. If you DON'T wish to change a setting, just press ENTER. If you DO wish to change a setting, type in the new setting and press ENTER.

- L. If you pressed "C" when asked. You will first be prompted by:

Current Transformer Test
Press ENTER to Continue or A to abort.

and then for the phase to test. A message will then appear stating the test results. For example:

CT Resistance Test. Phase X PASSED.
Press any key to continue.

- M. There are additional ERROR messages which may appear on the display during this operation which were not covered previously:

Test Not Running—Check Test Cable.
Press enter to continue.

The test set has sensed that current is not flowing properly in the breaker under test and that there is either an open or short circuit between the TS-31 and the breaker trip unit

Ground Fault is NOT available on a SJD69300.
Press any key to continue.

You will get this error message if you enter a choice that is not available, such as entering "G" in step F for ground fault test on a catalog number that does have ground fault.

Inconclusive Test, Check Settings.
Press any key to continue or A to abort

- Note:** This warning will appear if you attempt to run a short time test with the instantaneous pickup set equal to or below the short time pickup. It would also appear if you tried to run a long time test with short time pickup set to 2. This is only a warning: the test can still be run. However, passing or failing the test may not be conclusive.

XX is NOT a Valid Setting.
Press any key to continue.

- Note:** This message will appear if you enter a setting value that does not exist. For example a SMD69700ANGT has continuous current settings of 20, 30, 40, 50, 60, 70, 80, 90, 100 percent. If you were to enter any other value than those listed, the above message will appear.

Test Exceeds Capability of TS-31.
Press any key to continue.

- Note:** This message is not likely to occur. If it does, it means that a test requires more current to run than the TS-31 can produce.

Unit Too Hot, Please Wait.

- Note:** Running many successive high-current long time tests may over-heat the test set. It will protect itself from damage by preventing further tests until it has had a chance to cool down. The display will indicate when testing can resume.

External Accessories

Dead Front Shield

Note: Accessory installation should be completed before the breaker is racked into the "Connected" position. If the breaker is in the "Connected" position, rack the breaker out to the "Unlocked" position. Turn off and lock out all power supplying the switchboard before installing any accessories.

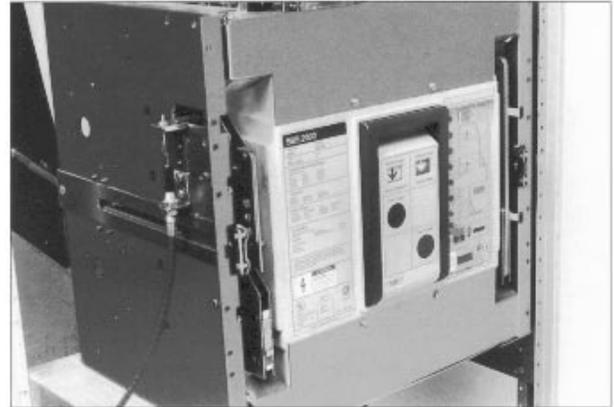
1. Tighten rubber inserts until they are flush against spacer and the spacers flush against the dead front shield (See Figure 1).
2. Place the dead front shield on the front of the breaker while guiding the rubber inserts into the holes located in the breaker cover (See Figure 1).
3. Secure the dead front shield by tightening the two (2) screws provided.

Note: Approximately ten (10) complete rotations of the screws will secure the dead front shield.



Figure 1.

4. Check the dead front shield to insure that it is properly secured. Tighten screws more if the dead front shield feels loose
5. The dead front shield assembly consists of two (2) identical shields one for the top of the breaker and one for the bottom. Repeat steps 1 through 4 for installation of the second shield.

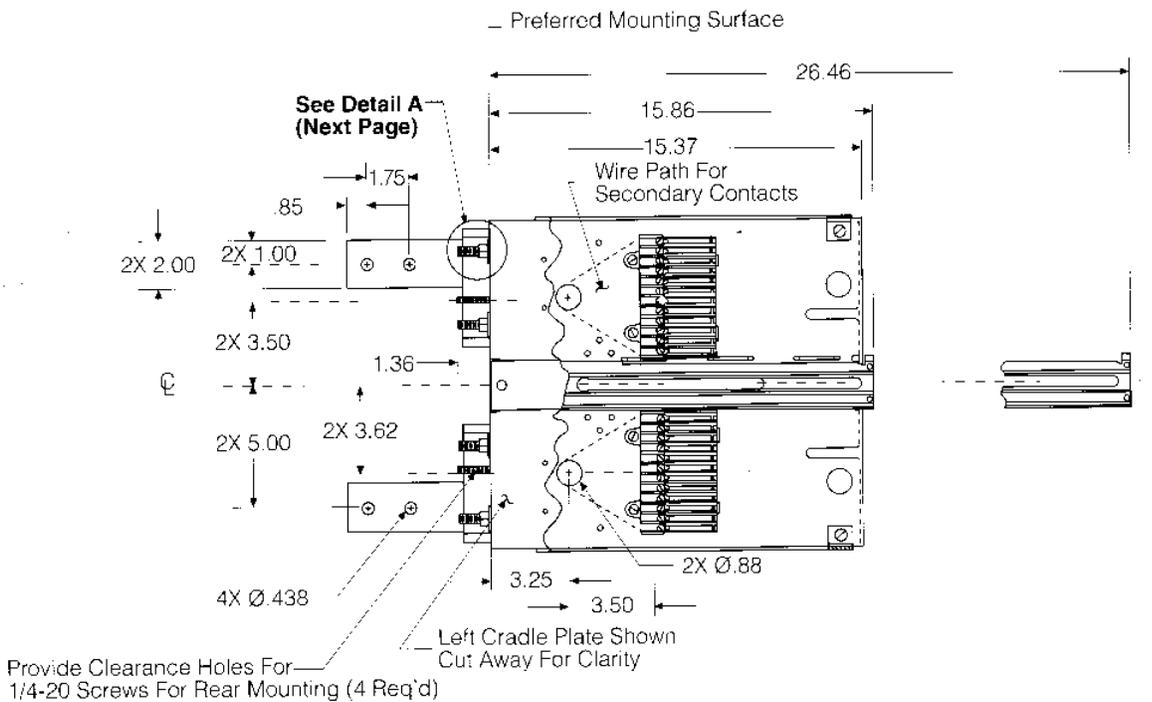
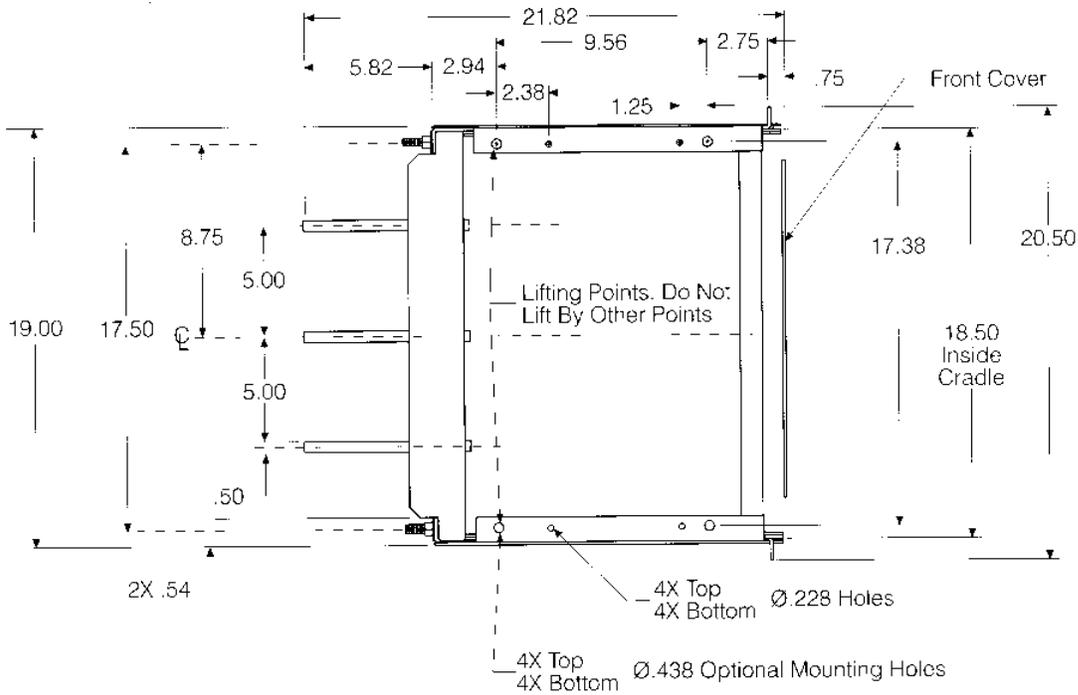


Dead Front Shields Installed

Outline Dimension Drawing

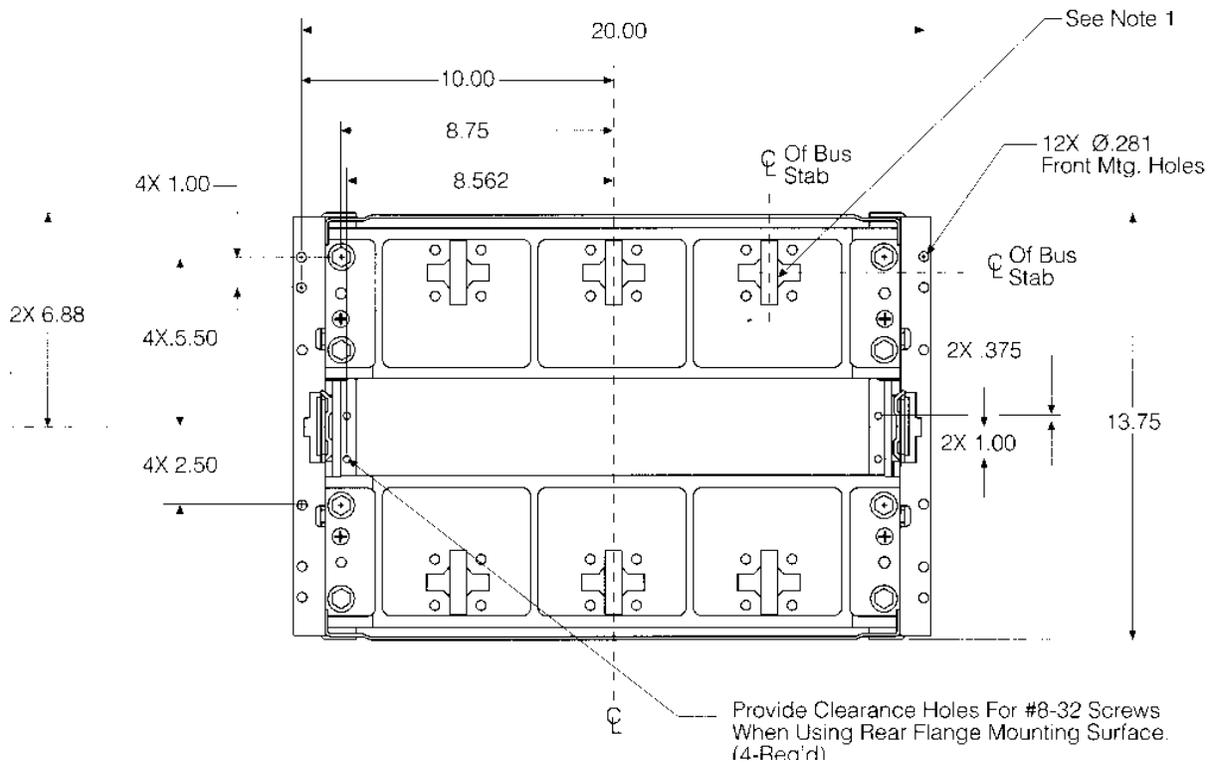
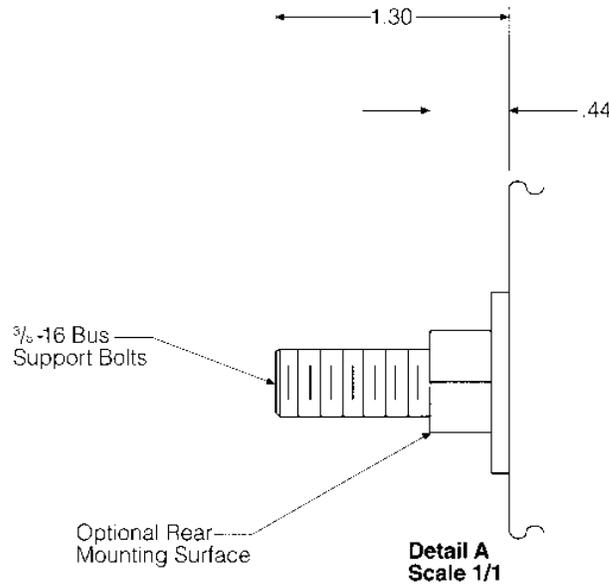
800A Stationary Drawout Element

1200A Stationary Drawout Element



Outline Dimension Drawing

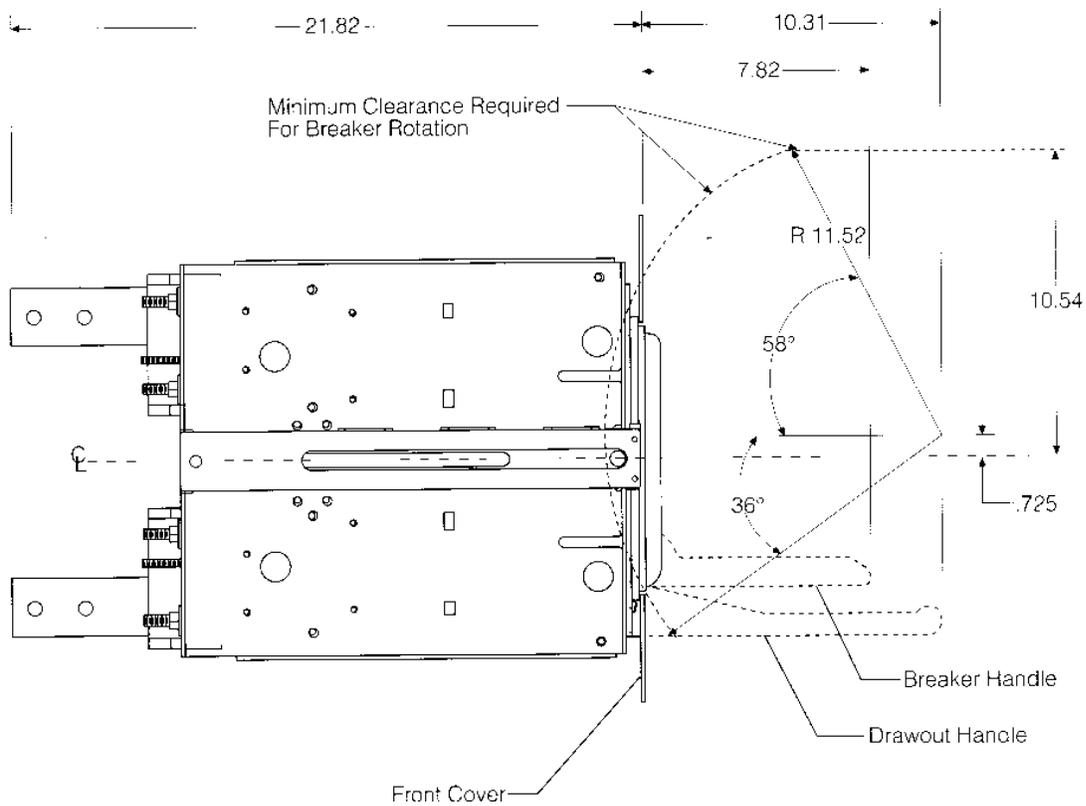
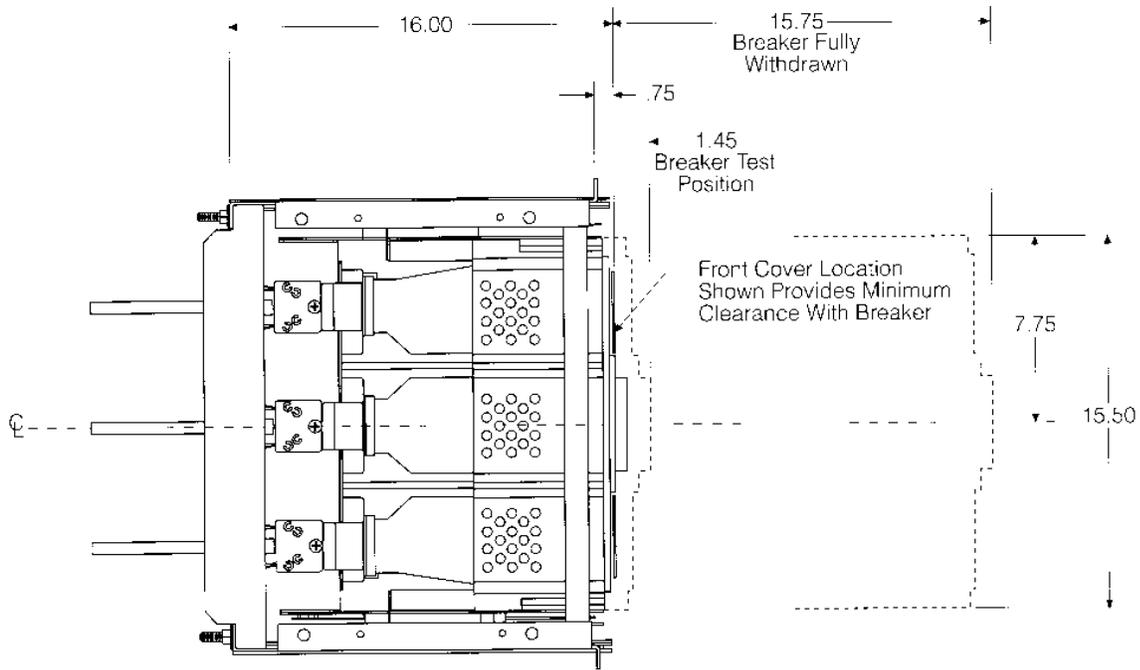
800A Stationary Drawout Element
1200A Stationary Drawout Element



Outline Dimension Drawing

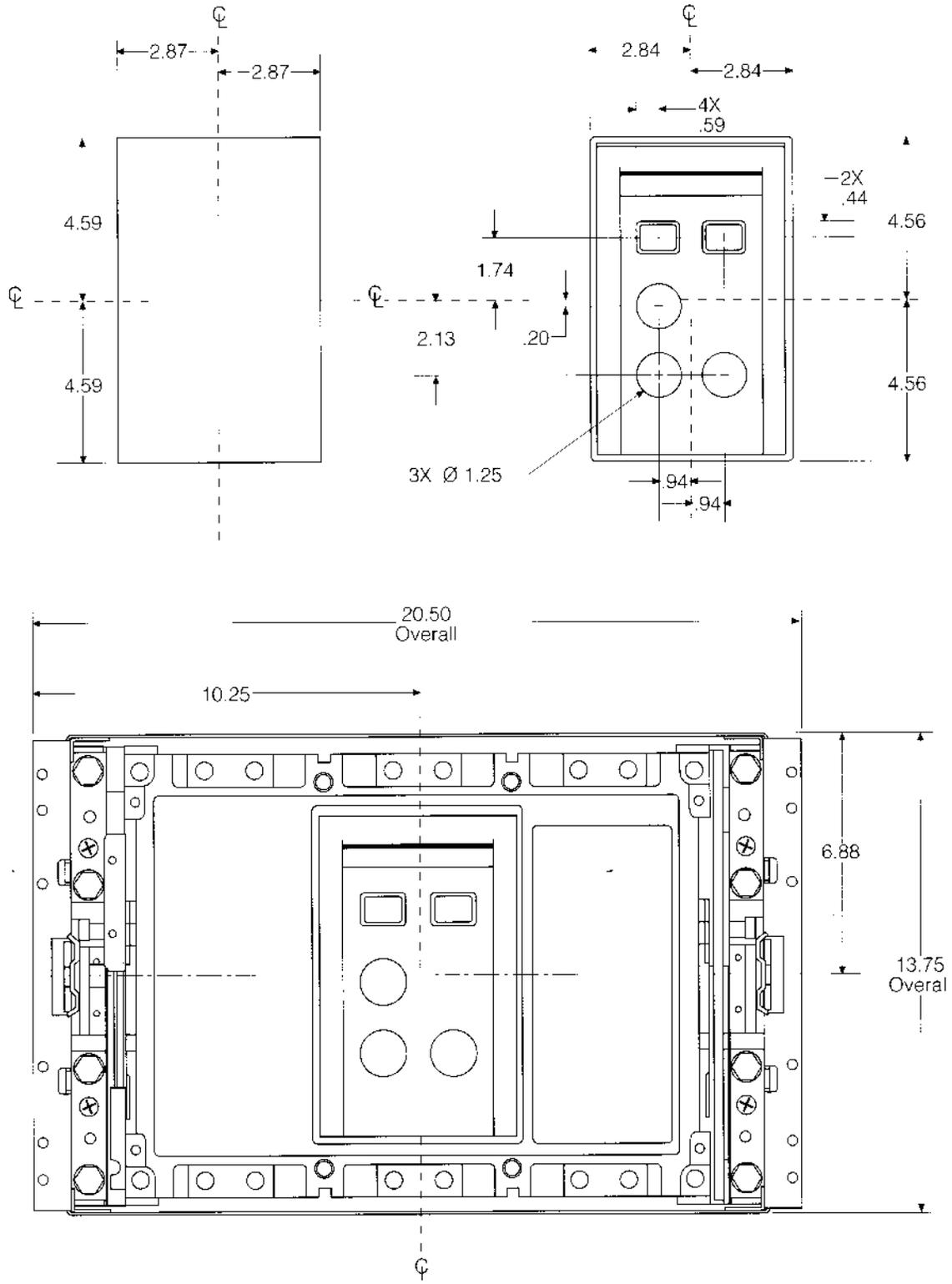
800A Moveable Drawout Element

1200A Moveable Drawout Element



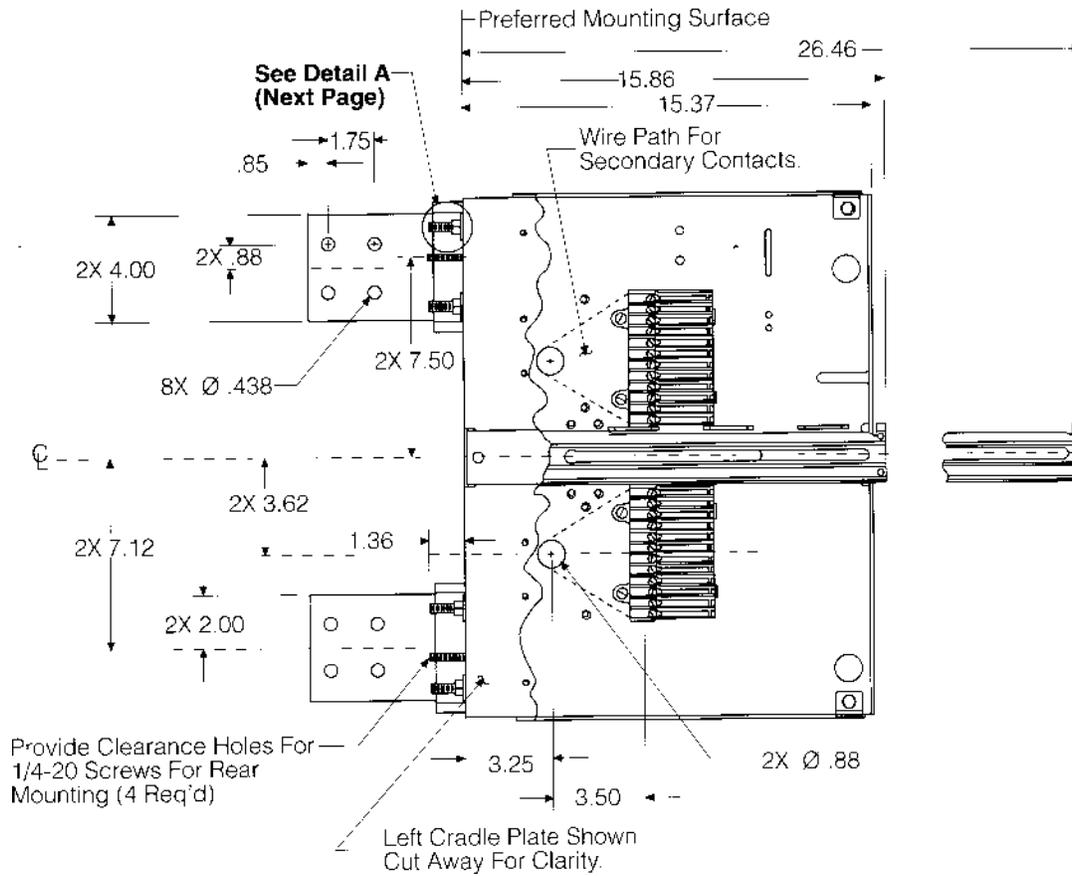
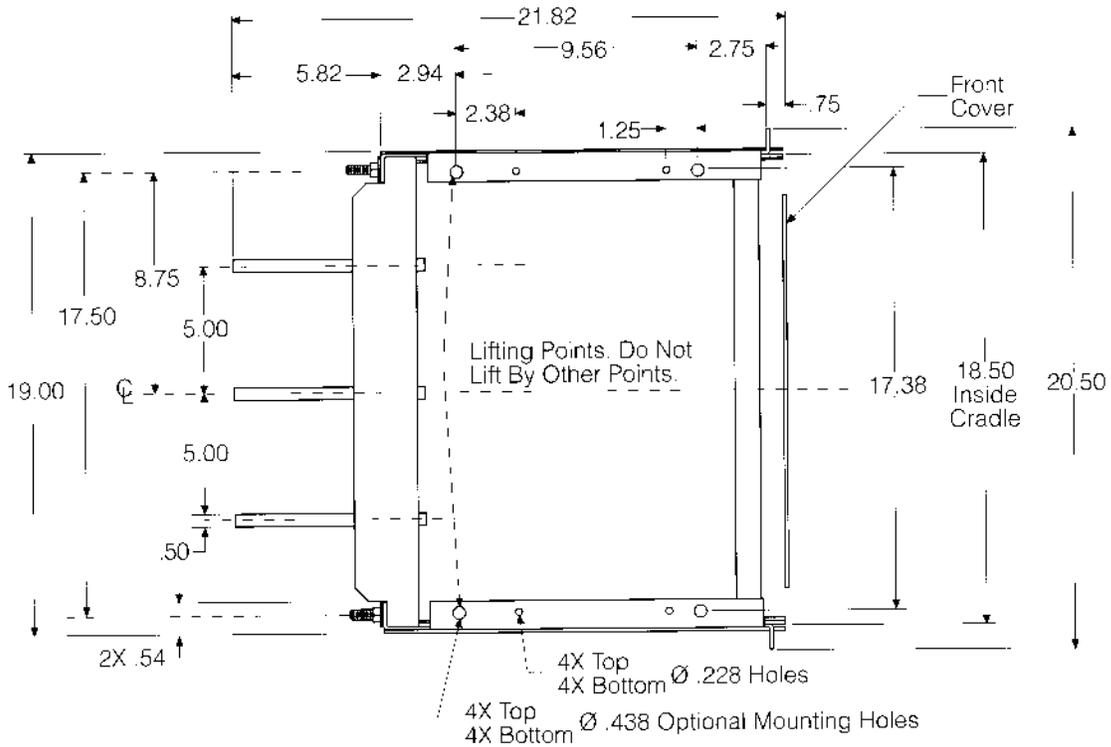
Outline Dimension Drawing

800A Moveable Drawout Element
1200A Moveable Drawout Element



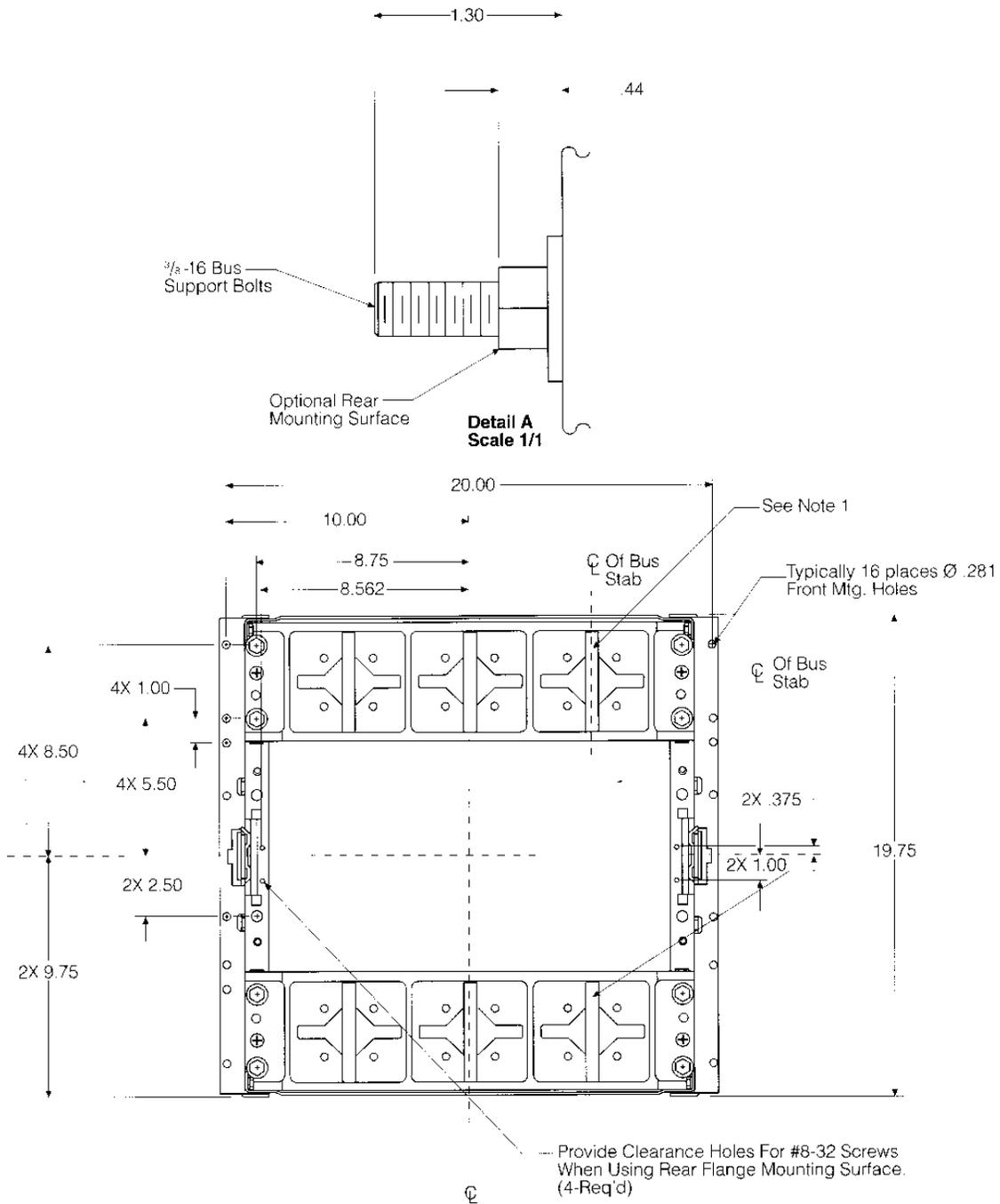
Outline Dimension Drawing

2000A Stationary Drawout Element



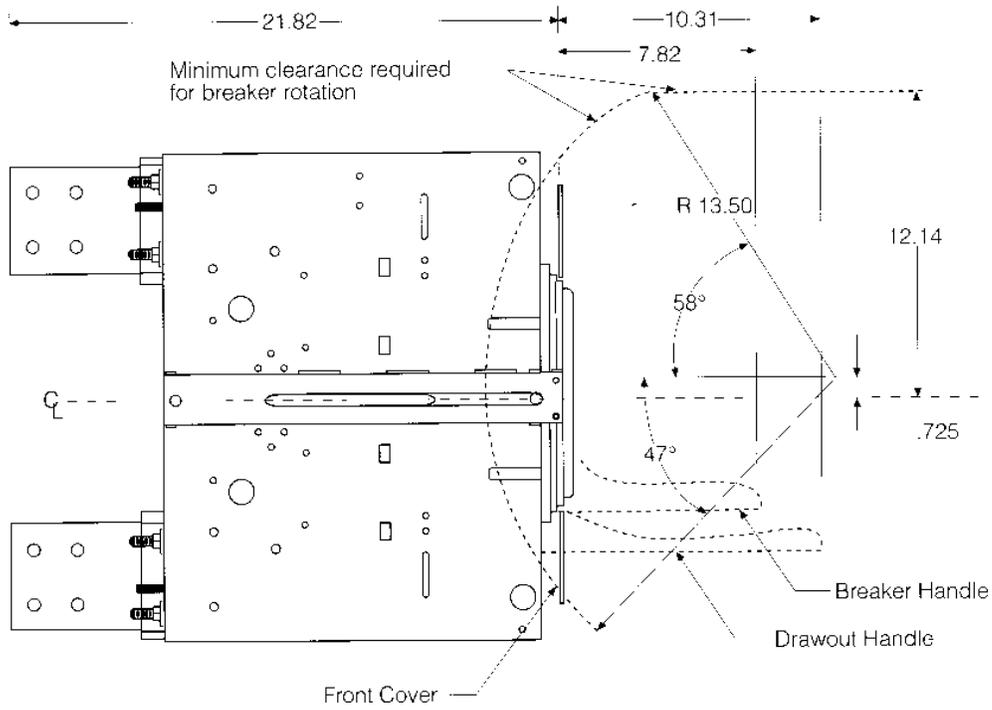
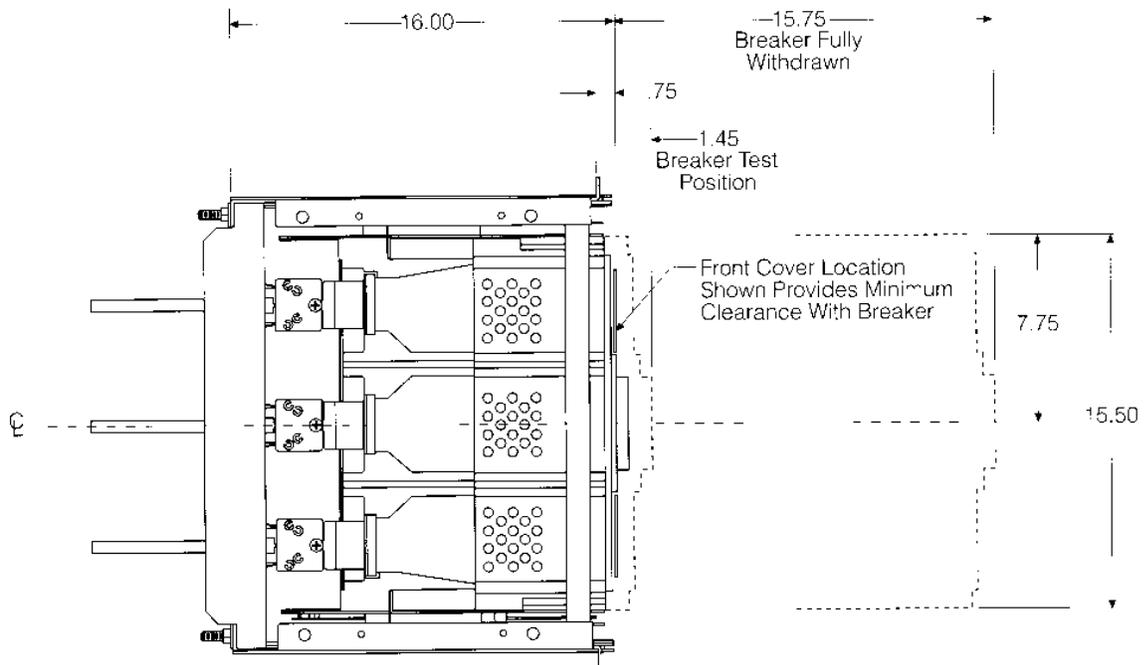
Outline Dimension Drawing

2000A Stationary Drawout Element



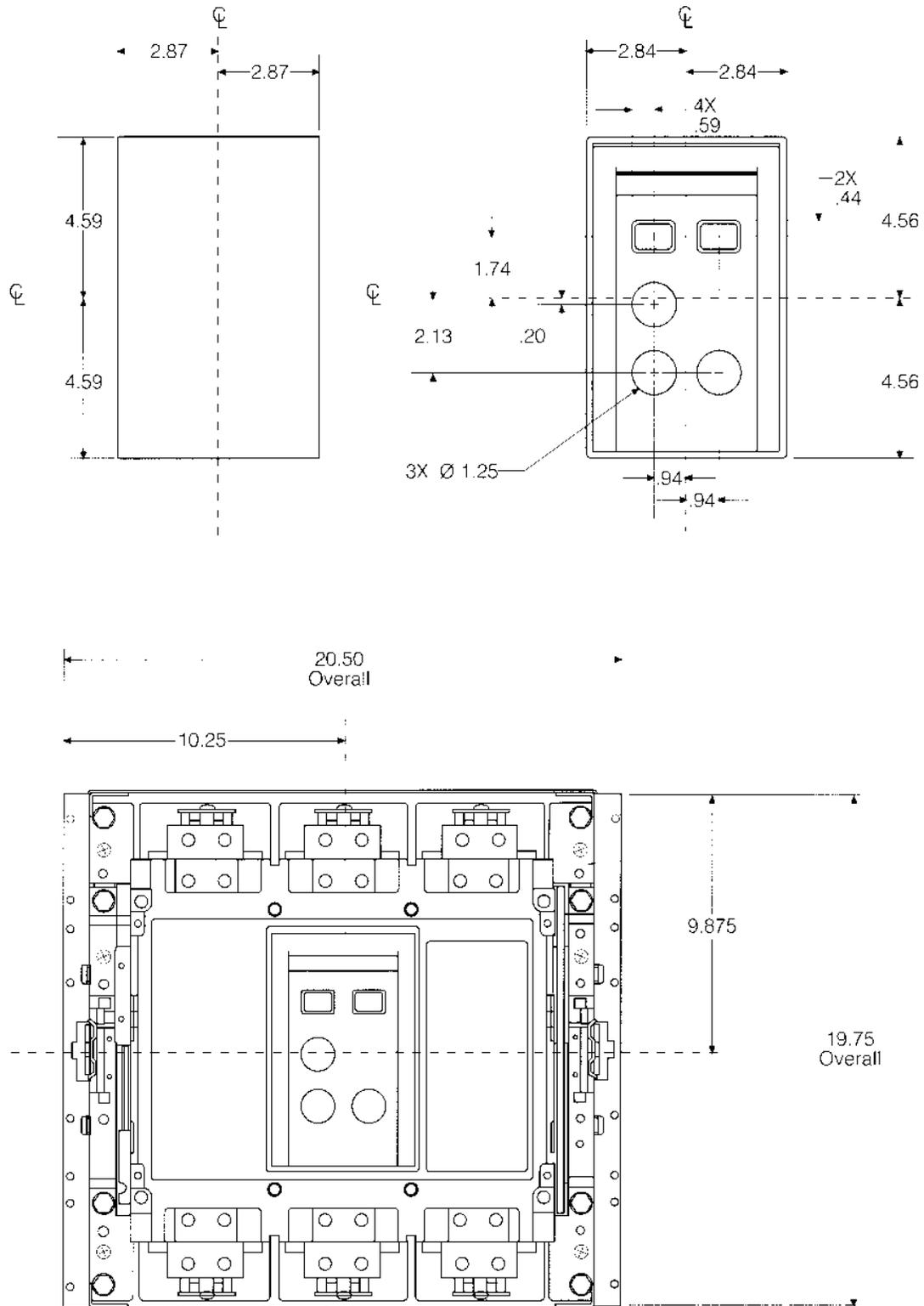
Outline Dimension Drawing

2000A Moveable Drawout Element



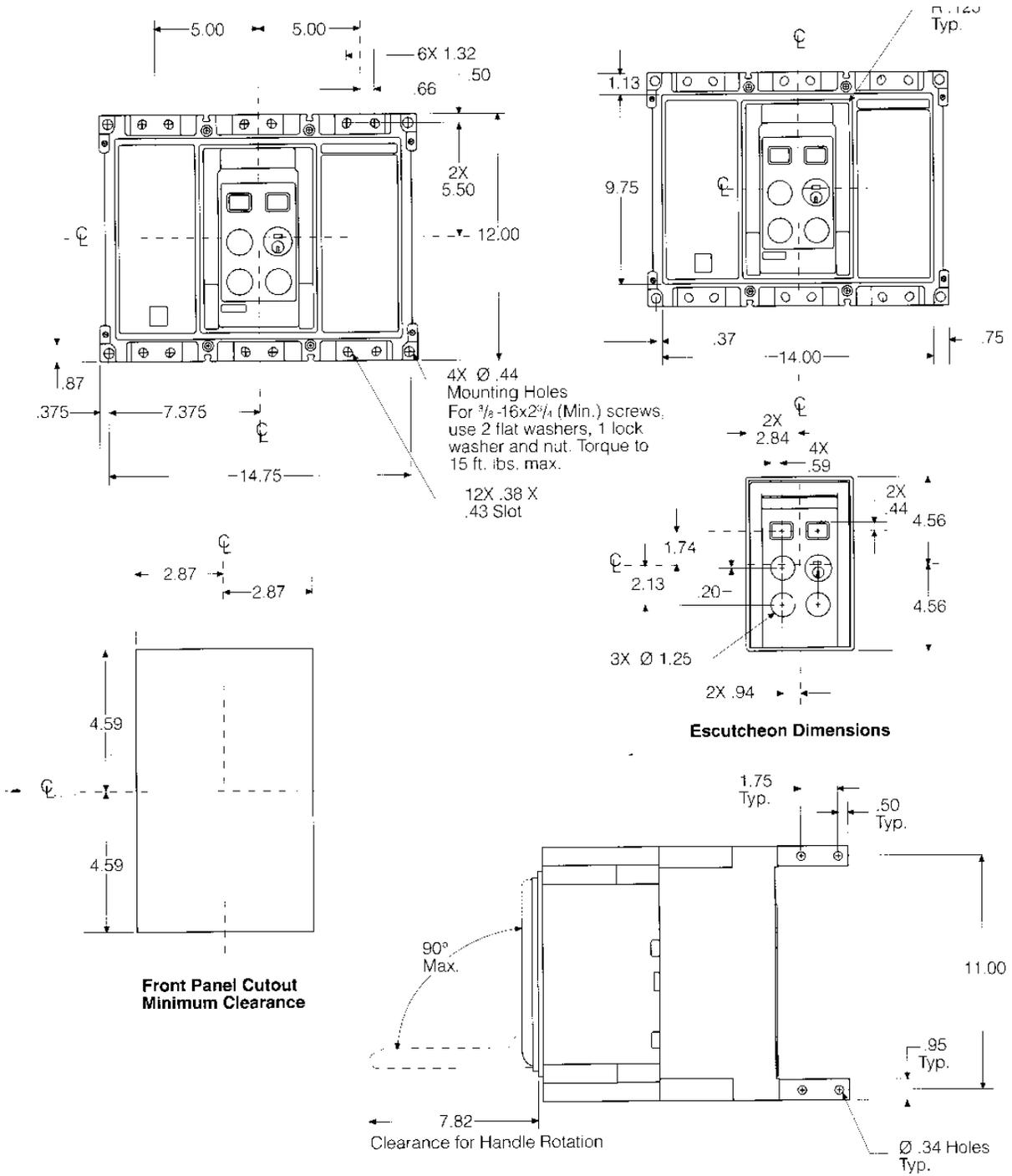
Outline Dimension Drawing

2000A Moveable Drawout Element



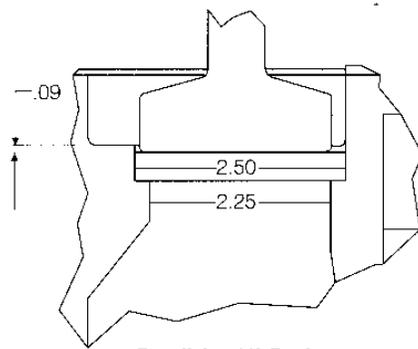
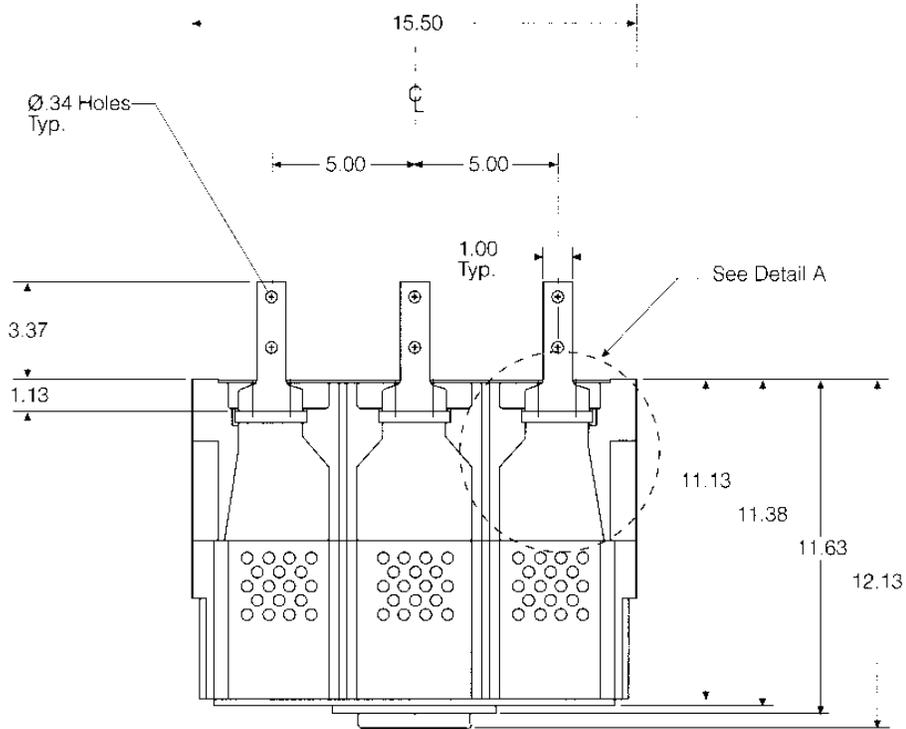
Outline Dimension Drawing

800A Fixed Mounted
1200A Fixed Mounted



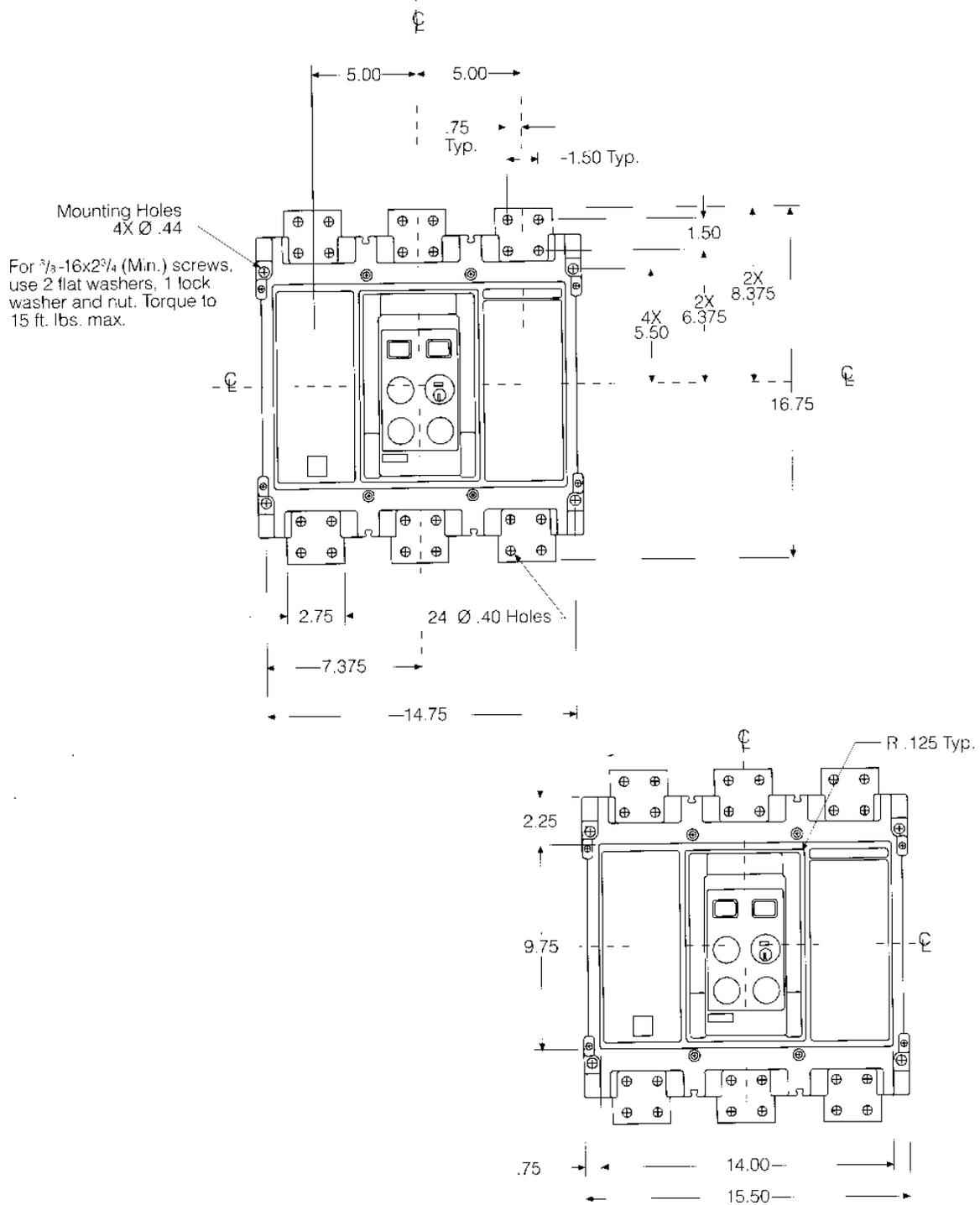
Outline Dimension Drawing

800A Fixed Mounted
1200A Fixed Mounted



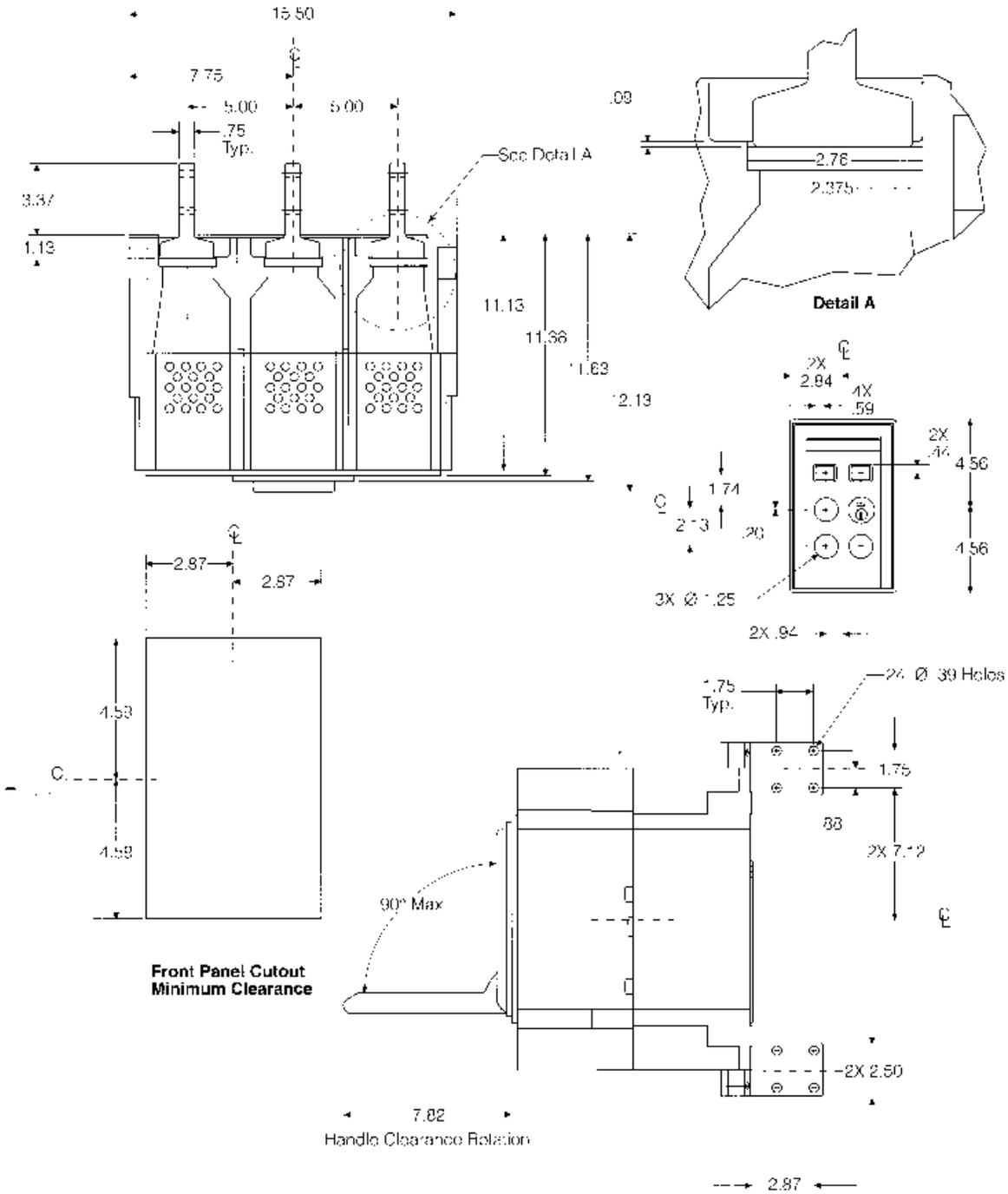
Outline Dimension Drawing

2000A Fixed Mounted



Outline Dimension Drawing

2000A Fixed Mounted



Ordering Information

Encased Systems Circuit Breakers and Electronic Trip Units

Type SB Encased Systems Breaker Frames Alternate Interrupting Rating (To 85 A.I.R. (kA))

Breaker Type		Fixed Mounted Catalog Number	Drawout Breaker with Moveable Mechanism		Stationary Drawout Mechanism	
Ampere Rating	Frame Size		Vertical Bus Catalog Number	Horizontal Bus Catalog Number	Vertical Bus Catalog Number	Horizontal Bus Catalog Number
400	800	SBA0804F	SBA0804DV	SBA0804DH	SBA08DFV	SBA08DFH
800	800	SBA0808F	SBA0808DV	SBA0808DH	SBA08DFV	SBA08DFH
1200	1200	SBA1212F	SBA1212DV	SBA1212DH	SBA12DFV	SBA12DFH
1600	2000	SBA2016F	SBA2016DV	SBA2016DH	SBA20DFV	SBA20DFH
2000	2000	SBA2020F	SBA2020DV	SBA2020DH	SBA20DFV	SBA20DFH

Type SB Encased Systems Breaker Frames Standard Interrupting Rating (To 100 A.I.R. (kA))

Breaker Type		Fixed Mounted Catalog Number	Drawout Breaker with Moveable Mechanism		Stationary Drawout Mechanism	
Ampere Rating	Frame Size		Vertical Bus Catalog Number	Horizontal Bus Catalog Number	Vertical Bus Catalog Number	Horizontal Bus Catalog Number
400	800	SBS0804F	SBS0804DV	SBS0804DH	SBS08DFV	SBS08DFH
800	800	SBS0808F	SBS0808DV	SBS0808DH	SBS08DFV	SBS08DFH
1200	1200	SBS1212F	SBS1212DV	SBS1212DH	SBS12DFV	SBS12DFH
1600	2000	SBS2016F	SBS2016DV	SBS2016DH	SBS20DFV	SBS20DFH
2000	2000	SBS2020F	SBS2020DV	SBS2020DH	SBS20DFV	SBS20DFH

Type SB Encased Systems Breaker Frames High Interrupting Rating (To 200 A.I.R. (kA))

Breaker Type		Fixed Mounted Catalog Number	Drawout Breaker with Moveable Mechanism		Stationary Drawout Mechanism	
Ampere Rating	Frame Size		Vertical Bus Catalog Number	Horizontal Bus Catalog Number	Vertical Bus Catalog Number	Horizontal Bus Catalog Number
400	800	SBH0804F	SBH0804DV	SBH0804DH	SBH08DFV	SBH08DFH
800	800	SBH0808F	SBH0808DV	SBH0808DH	SBH08DFV	SBH08DFH
1200	1200	SBH1212F	SBH1212DV	SBH1212DH	SBH12DFV	SBH12DFH
1600	2000	SBH2016F	SBH2016DV	SBH2016DH	SBH20DFV	SBH20DFH
2000	2000	SBH2020F	SBH2020DV	SBH2020DH	SBH20DFV	SBH20DFH

Electronic Trip Unit, 800A Frame

Catalog Number	Frame Ampere Rating	Continuous Current Setting	Long Time Delay	Instantaneous Pickup	Short Time Pickup/Delay	Ground Fault Pickup/Delay
SB04TLI	400	x	x	x		
SB04TLS	400	x	x		x	
SB04TLSI	400	x	x	x	x	
SB04TLIG	400	x	x	x		x
SB04TLSG	400	x	x		x	x
SB04TLSIG	400	x	x	x	x	x
SB04TMLI	400			x		
SB08TLI	800	x	x	x		
SB08TLS	800	x	x		x	
SB08TLSI	800	x	x	x	x	
SB08TLIG	800	x	x	x		x
SB08TLSG	800	x	x		x	x
SB08TLSIG	800	x	x	x	x	x
SB08TMLI	800			x		

Electronic Trip Unit 1200A Frame

Catalog Number	Frame Ampere Rating	Continuous Current Setting	Long Time Delay	Instantaneous Pickup	Short Time Pickup/Delay	Ground Fault Pickup/Delay
SB12TLI	1200	x	x	x		
SB12TLS	1200	x	x		x	
SB12TLSI	1200	x	x	x	x	
SB12TLIG	1200	x	x	x		x
SB12TLSG	1200	x	x		x	x
SB12TLSIG	1200	x	x	x	x	x
SB12TMLI	1200			x		

Ordering Information

Encased Systems Circuit Breakers and Electronic Trip Units (Continued)

Electronic Trip Unit, 2000A Frame

Catalog Number	Frame Ampere Rating	Continuous Current Setting	Long Time Delay	Instantaneous Pickup	Short Time Pickup/Delay	Ground Fault Pickup/Delay
SB16TL SB16TLS SB16TLSI	1600 1600 1600	x x x	x x x	x x	 x x	
SB16TLIG SB16TLISG SB16TLSIG SB16TMLI	1600 1600 1600 1600	x x x x	x x x x	x x x	 x x x	x x x
SB20TL SB20TLS SB20TLSI	2000 2000 2000	x x x	x x x	x x	 x x	
SB20TLIG SB20TLISG SB20TLSIG SB20TMLI	2000 2000 2000 2000	x x x x	x x x x	x x x	 x x x	x x x

Rating Plugs

Rating Plugs, 400 Ampere Frame Rating

Catalog Number	Plug Rating
04SB200	200
04SB225	225
04SB250	250
04SB300	300
04SB350	350
04SB400	400

Rating Plugs, 800 Ampere Frame Rating

Catalog Number	Plug Rating
08SB400	400
08SB450	450
08SB500	500
08SB600	600
08SB700	700
08SB800	800

Rating Plugs, 1200 Ampere Frame Rating

Catalog Number	Plug Rating
12SB600	600
12SB700	700
12SB800	800
12SB1000	1000
12SB1200	1200

Rating Plugs, 1600 Ampere Frame Rating

Catalog Number	Plug Rating
16SB800	800
16SB1000	1000
16SB1200	1200
16SB1600	1600

Rating Plugs, 2000 Ampere Frame Rating

Catalog Number	Plug Rating
20SB1000	1000
20SB1200	1200
20SB1600	1600
20SB2000	2000

Ordering Information

Internal Accessories/External Accessories

Electric Motor Operator

Accessory	Catalog Number
120VAC	SBEO120
24VDC	SBEO24
48VDC	SBEO48
125VDC For Fix Mount Only	SBEO125
125VDC For Drawout Only	SBEO125D

Electric Operator With Close Coil Interlock

Accessory	Catalog Number
120VAC	SBEO120CCX
24VDC	SBEO24CCX
48VDC	SBEO48CCX

Dead Front Shield

Frame Size	Accessory
800A, 1200A	SB08DF
2000A	SB20DF

Remote Closing Solenoid

Accessory	Catalog Number
120VAC	SBRCS120
24VDC	SBRCS24
48VDC	SBRCS48
125VDC	SBRCS125

Shunt Trip

Accessory	Catalog Number
120VAC	SBST120
240VAC	SBST240
480VAC	SBST480
12VDC	SBST12
24VDC	SBST24
48VDC	SBST48
125VDC	SBST125

Undervoltage Release

Accessory	Catalog Number
120VAC	SBUV120
240VAC	SBUV240
480VAC	SBUV480
12VDC	SBUV12
24VDC	SBUV24
48VDC	SBUV48
125VDC	SBUV125

Auxiliary Switches

Accessory	Catalog Number
1A & 1B	SBAS2
2A & 2B	SBAS4
3A & 3B	SBAS6
4A & 4B	SBAS8
5A & 5B	SBAS10
6A & 6B	SBAS12

Electronic Bell Alarm

Accessory	Catalog Number	Voltage
Bell Alarm	SBBA24 SBBA48 SBBA125 SBBA120	24V dc 48V dc 125V dc 120V dc

Display Module Relay

Accessory	Catalog Number	Voltage
Display Module Relay	SBDMR24 SBDMR48 SBDMR125 SBDMR120	24V dc 48V dc 125V dc 120V dc

Time Delay Undervoltage

Accessory	Catalog Number
Time Delay Undervoltage	Consult Siemens

Drawout Safety Shutters

Accessory	Catalog Number
800A Envelope	SBSS08
1200A Envelope	
2000A Envelope	SBSS20

Sliding Secondary Disconnects

Accessory	Catalog Number
Sliding Secondary Disconnects	SBSDLT, SBSDLB, SBSDRT, SBSDRB

The catalog number for the secondary disconnects include one each 12-point A and B block.

Control Terminal Blocks

Accessory	Catalog Number
Control Terminal Blocks Terminal Block Mount	SBTBLT, SBTBLB, SBTBRT, SBTBRB, SBTBM

The catalog number for the control terminal block consists of one 12-point fixed terminal strip.

Pressure Wire Connectors

Accessory	Catalog Number
800A Envelope - 800 Amp	TA3K500SB
1200A Envelope - 1200 Amp	TA4N8500SB
2000A Envelope - 1200 Amp	TA4P8500SB
2000A Envelope - 1600 Amp	TA5P600SB
2000A Envelope - 2000 Amp	TA6R600SB

"T" Connectors

Accessory	Catalog Number
800A Envelope	SB12TCON
1200A Envelope	
2000A Envelope	SB20TCON

Lifting Device Bracket

Accessory	Catalog Number
Drawout Circuit Breaker	SBLD

Neutral Current Transformers

Accessory	Catalog Number
400 Amps Frame Rating	N04SB
800 Amps Frame Rating	N08SB
1200 Amps Frame Rating	N12SB
1600 Amps Frame Rating	N16SB
2000 Amps Frame Rating	N20SB

Ordering Information

External Accessories

Key Interlocks

Accessory	Catalog Number
Installed on Breaker	KISB, SISB
Provision only Circuit Breaker Drawout	KIPOF SKIPOD, 20KIPOD

Padlock Devices

Accessory	Catalog Number
Installed on Breaker Installed on Drawout	SBPLB SBPLD

Breaker Closing Blocking Device

Accessory	Catalog Number
Breaker Closing Blocking Device	SBBD

Capacitor Trip

Accessory	Catalog Number
Capacitor Trip	Consult Siemens

Cell Switches

Accessory	Catalog Number
1A & 1B 2A & 2B 3A & 3B 4A & 4B	CEL1 CEL2 CEL3 CEL4

Mechanical Interlock

Accessory	Catalog Number
800A, 1200A Envelope Fixed Circuit Breaker Drawout Circuit Breaker	SBMIF08 SBMID08
2000A Envelope Fixed Circuit Breaker Drawout Circuit Breaker	SBMIF20 SBMID20

Remote Indication Panel

Accessory	Catalog Number
Remote Indication Relay Panel	SBRIP

Display Module

Accessory	Catalog Number
Display Module	SBDM

Ground Fault Display Module

Accessory	Catalog Number
Ground Fault Display Module	SBGFM

Auxiliary Power Source For Electronic Trip Unit

Accessory	Catalog Number
Auxiliary Power Source	SBAPM

Universal Trip Unit Test Kit

Accessory	Catalog Number
Test Kit	TS31

UL Listings and File Numbers

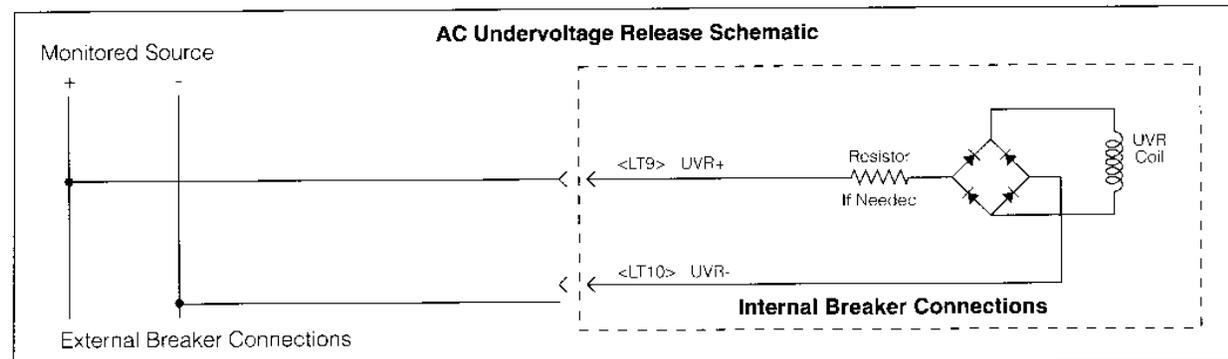
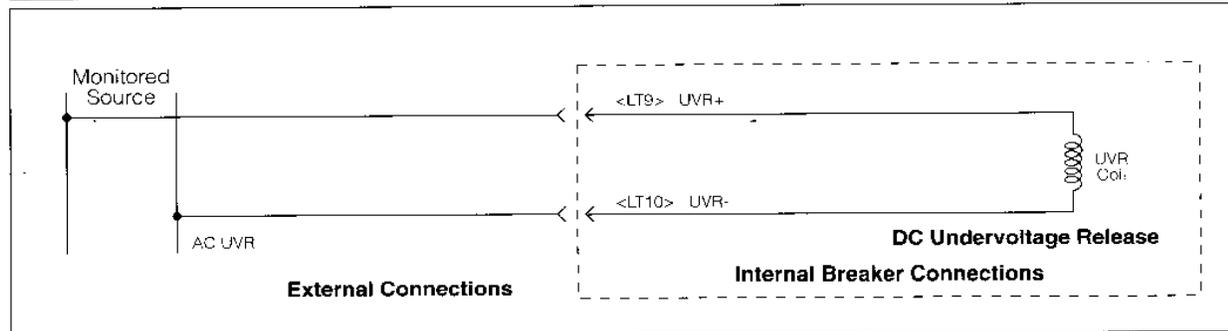
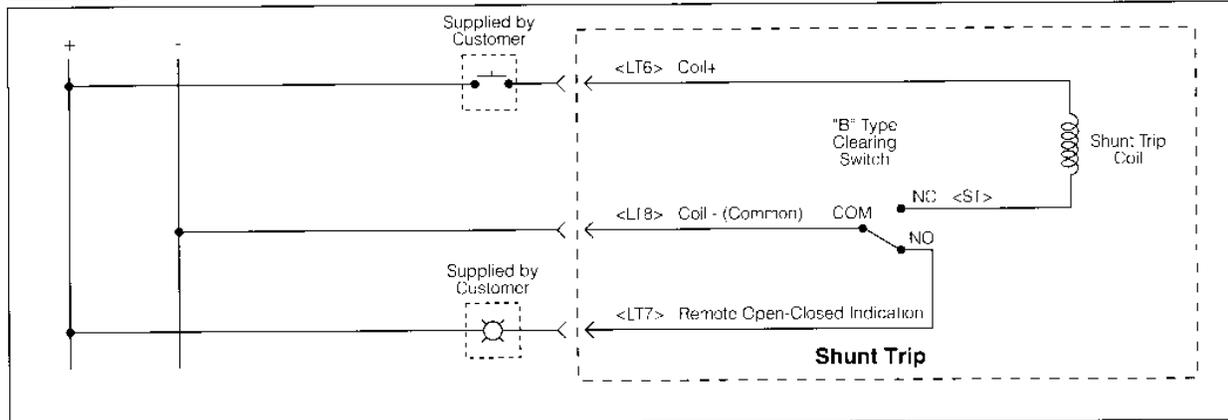
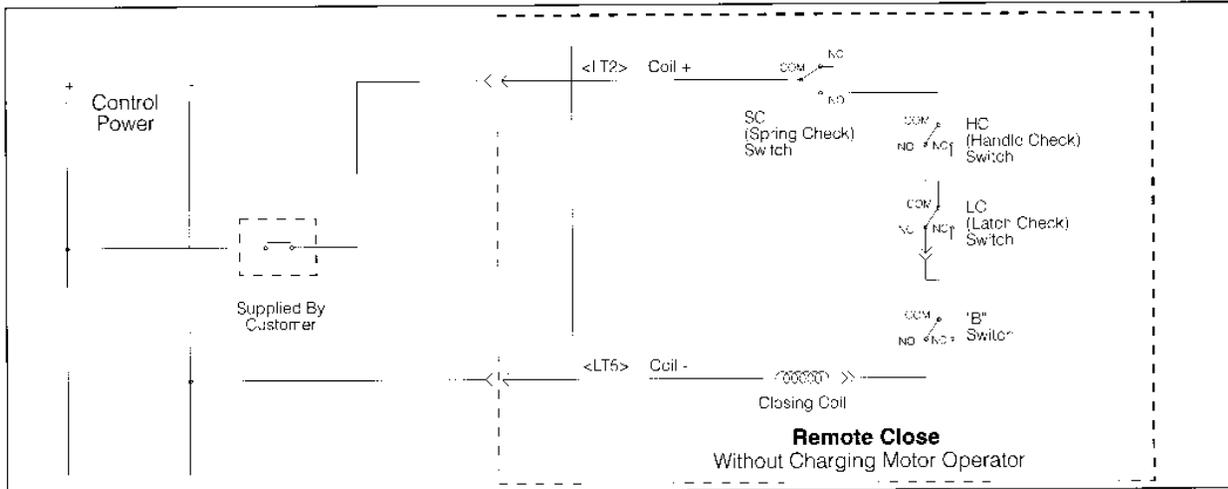
UL Listing	File Number
Trip Unit Breaker Draw Assembly Accessories CSA Guides	E9896 E9896 E135453 E57501 LR57039

Time Current Curves

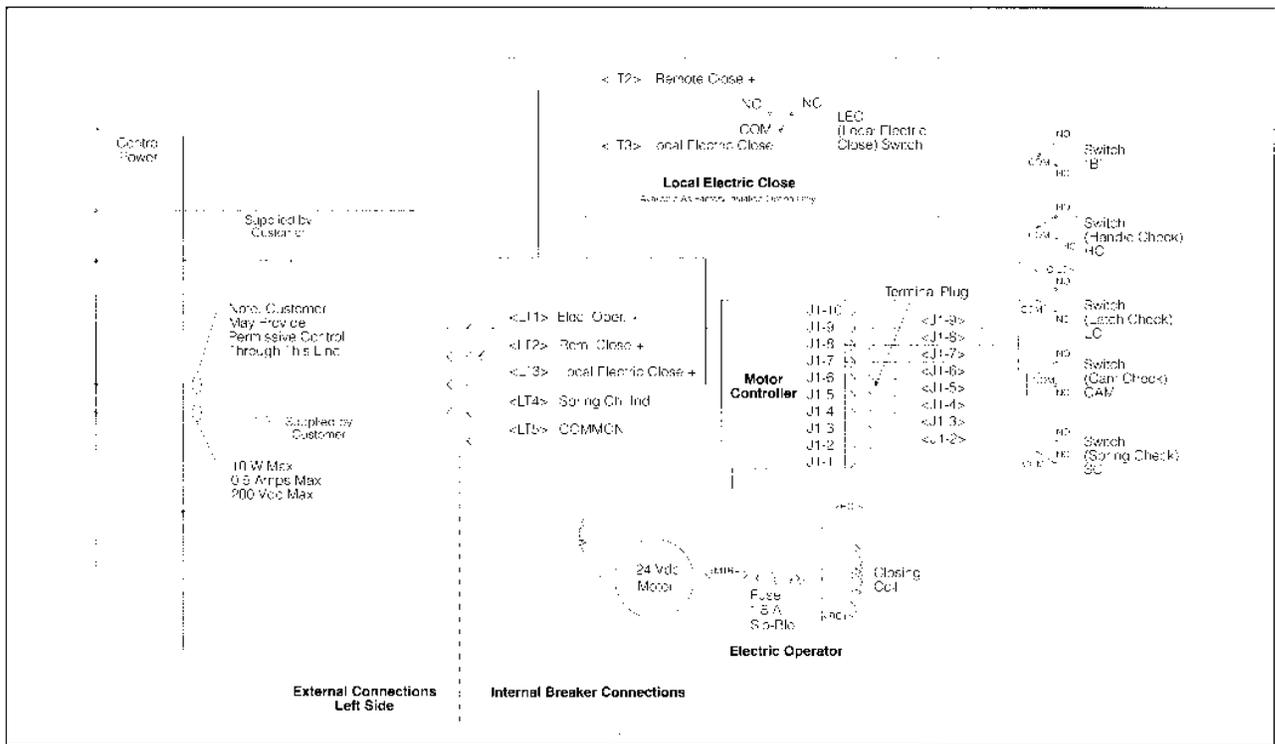
Description	Catalog Number
Time Current Curves	TD7210

Electric Operator Troubleshooting Guide

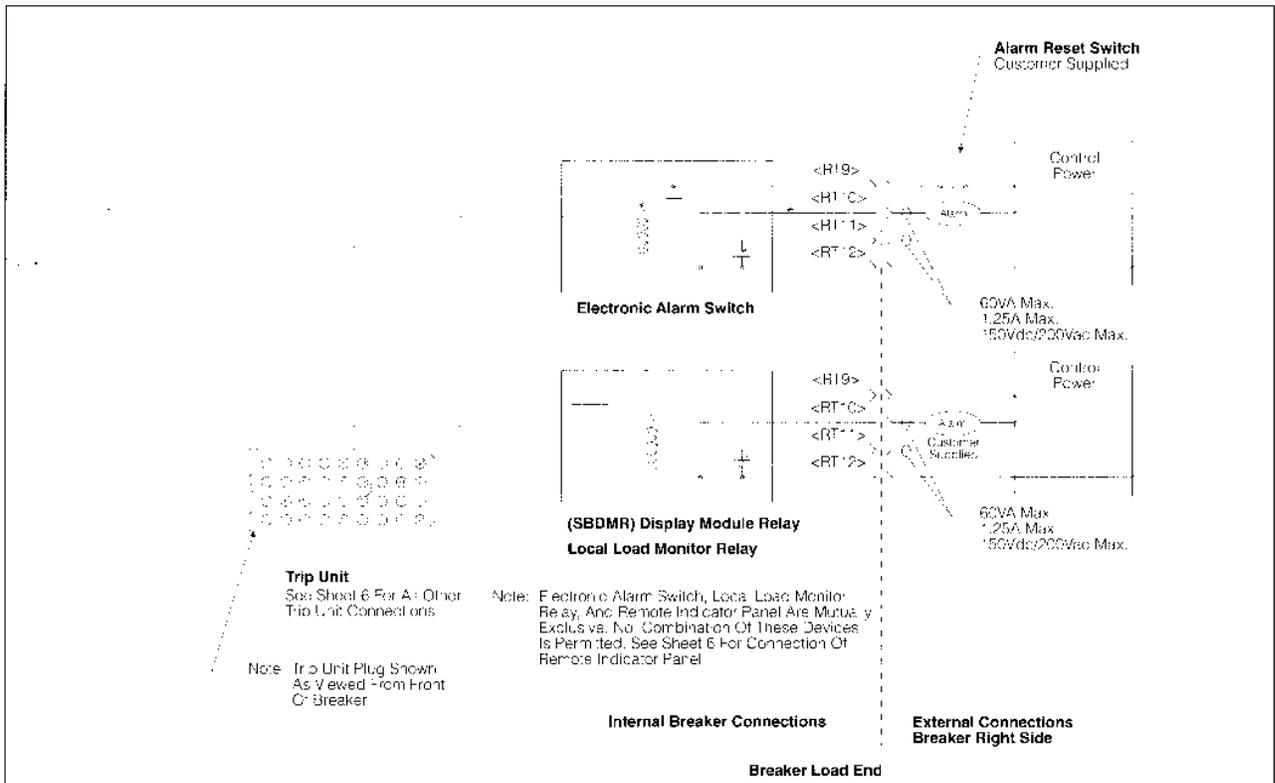
Symptom	Solutions
Motor does not run.	<ol style="list-style-type: none"> 1. Check for springs already charged by checking spring charge indicator. 2. Check for rated voltage at LT1 and LT5. 3. Check motor fuse - requires 1.8A Slo-Blo fuse. 4. Check all wiring connections. 5. If the lamp connected to LT4 is blinking slowly (one second on, two seconds off) remove power from LT1 and LT5 then re-apply power
Motor runs for 20 seconds, does not charge springs, lamp on LT4 blinks slowly (one second on, two seconds off).	<ol style="list-style-type: none"> 1. Remove power from LT1 and LT5, manually charge breaker. Reapply power to LT1 and LT5 motor should run for less than 10 seconds and shut off. Lamp on LT4 should remain on.
Breaker will not close electrically.	<ol style="list-style-type: none"> 1. Check to see if springs are charged by checking charged indicator flag. 2. Check for power on LT1 and LT5. 3. Check for power on LT2. If power is on LT2, remove and reapply. 4. Check to see if breaker is locked in open position by either padlocking device, kirk key, or drawout interlock. 5. Check all wiring connections.
Lamp on LT4 blinks slowly (one second on, two seconds off).	<ol style="list-style-type: none"> 1. Remove power from LT1 and LT5, manually charge breaker springs. Reapply power to LT1 and LT5. Lamp on LT4 should remain on.



Electrical Diagrams

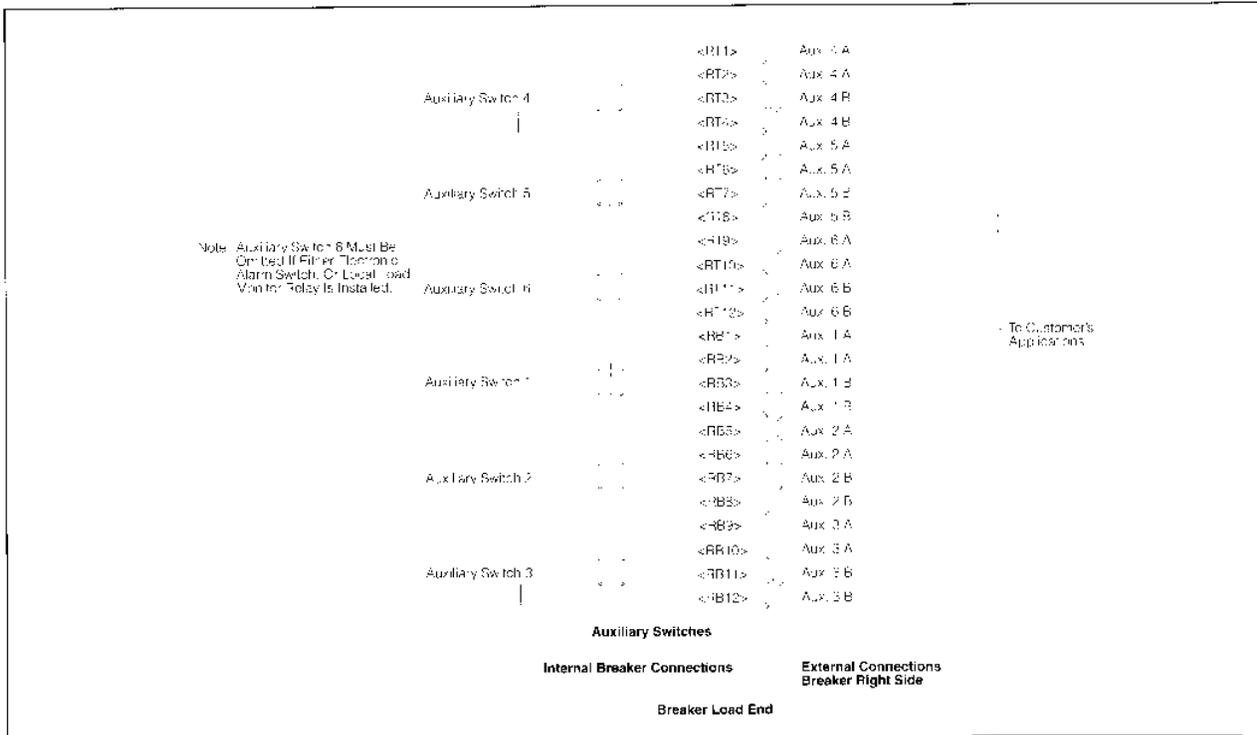


Motor Operator Wiring Diagram

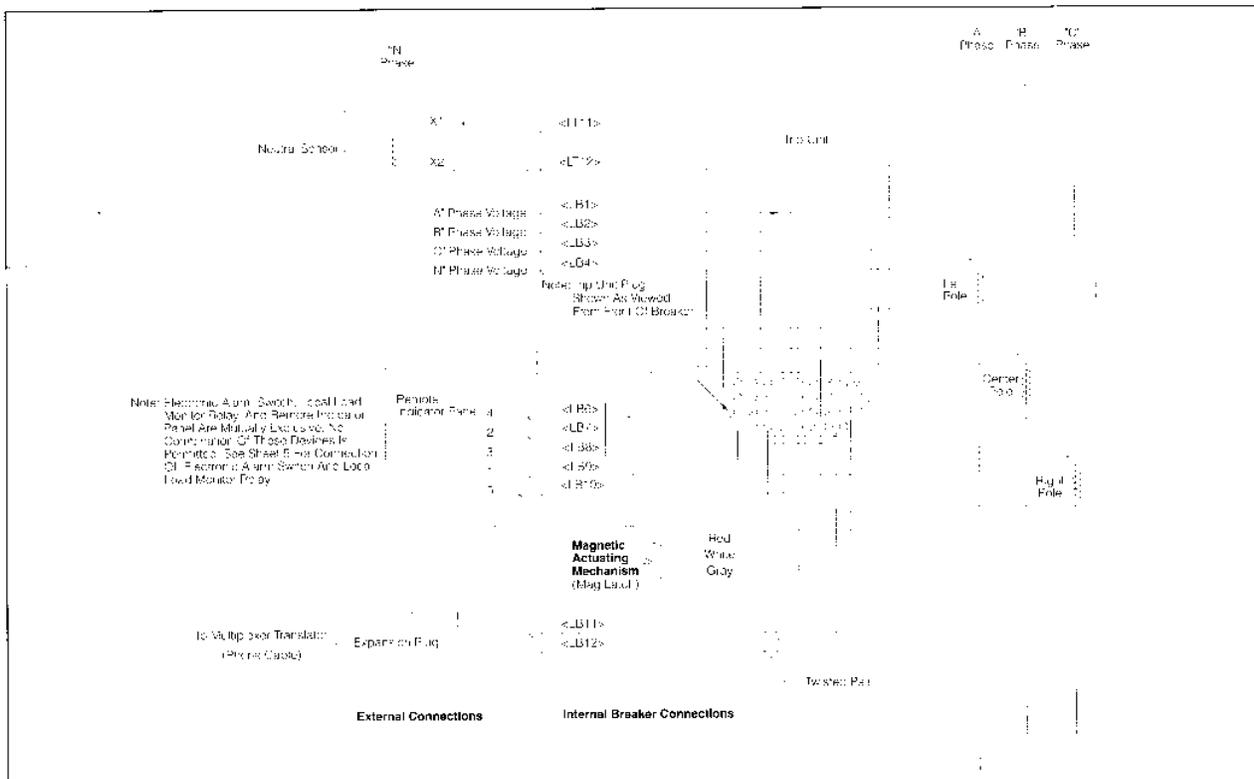


Bell Alarm/Display Module Relay

Electrical Diagrams



Auxiliary Switch



Neutral Transformer/EP/Remote Indicator Panel

Siemens Energy & Automation, Inc.
Distribution & Controls Division
3333 State Bridge Rd.
Alpharetta, GA 30202