



Spectra RMS™ E and F Frame Molded Case Circuit Breakers

1. INTRODUCTION

Congratulations! You have purchased the world's most technically advanced circuit breaker product. GE's Spectra RMS circuit breaker products represent state of the art integration of digital RMS trip system technology with advanced circuit interrupter design. Properly applied it will give years of troublefree service.

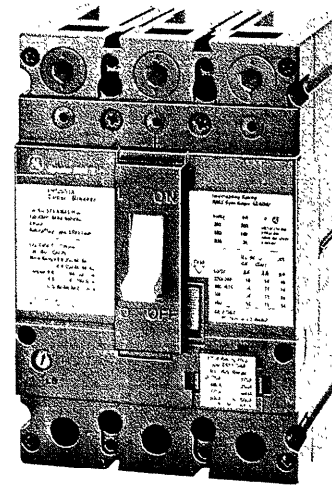
Spectra RMS circuit breakers are designed to provide overload and overcurrent protection to electrical distribution and utilization equipment. All units use the latest in electronic technology to allow flexibility in application and precise control of abnormal circuit conditions.

E-Frame types SED, SEH, SEL, SEP are used with a complete selection of rating plugs to a maximum of 150A depending on the maximum rating of the breaker frame chosen. F-Frame types SFH, SFL, SFP are used with a selection of rating plugs to provide a maximum rating of 250A. All E and F-Frame circuit breakers are listed per Underwriters Laboratories standard UL489, Canadian Standards Association Standard CSA22. 2 NO. 5 and meet the requirements of the International Electrotechnical Commission IEC947-2. MagBreak® instantaneous only breakers meet these same standards and are UL recognized components. The Spectra RMS molded case circuit breaker and MAG BREAK® instantaneous circuit breaker incorporate a unique short time response, in addition to the instantaneous response. This short time pickup occurs at approximately 60% of the adjustable instantaneous pickup and tracks the instantaneous pickup adjustment.

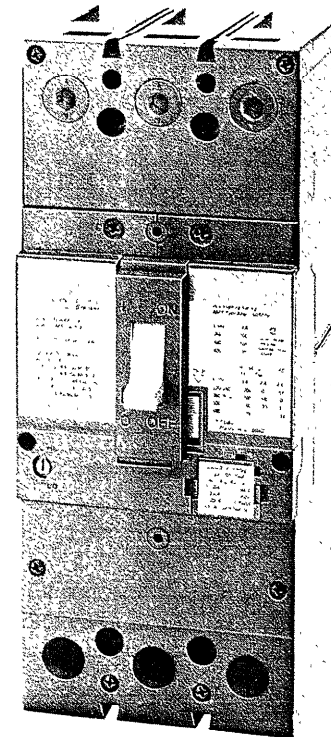
Overloads will be cleared in a fraction of the time it would take the normal long-time function in an older design, long-time/instantaneous breaker. Molded case switches are UL listed per UL1087 and incorporate a fixed, high set instantaneous trip to permit higher withstand levels. For additional application information refer to GE publication GET-7002.

WARNING: Danger of electrical shock or injury. Turn OFF power ahead of equipment before installing this device or removing any other device.

IMPORTANT: Danger d'électrocution. Couper l'alimentation avant d'installer cet appareil ou avant de retirer un autre appareil.



SE, 150A Maximum Frame Size



SF, 250A Frame Size

CAUTION: This product is **NOT** suitable for use in equipment not specifically designed to accept it. Contact equipment manufacturer for possible equipment modifications.

IMPORTANT: Cet appareil ne doit pas être employé dans un équipement non spécialement adapté à cet effet. Contactez le constructeur concernant les possibles modifications à apporter à l'équipement.

2. INSTALLATION

Unpack the breaker or switch and inspect it for any shipping damage. Insure the circuit breaker has the proper ampere, voltage and interrupting ratings for the application. Next, using the instructions supplied with the rating plug, install the plug into the main breaker body. Available rating plugs along with catalog numbers are listed in Table 1. Now install all accessories (Table 2) and terminal lugs (Table 3) using supplied installation instructions. Check all accessories for proper installation, wire routing and operation.

TABLE 1 E and F Frame Rating Plugs.

| Rating Plug Type | E7A | E30A | E60A | E100A | E150A | F250A |
|------------------|-----|-----------|-----------|-------------|-------------|-------------|
| Breaker Amps | 7 | 30 | 60 | 100 | 150 | 250 |
| Rating Plug Amps | 3 | SRPE7A3 | | | | |
| | 7 | SRPE7A7 | | | | |
| | 15 | SRPE30A15 | | | | |
| | 20 | SRPE30A20 | | | | |
| | 25 | SRPE30A25 | | | | |
| | 30 | SRPE30A30 | | | | |
| | 40 | | SRPE60A40 | | | |
| | 50 | | SRPE60A50 | | | |
| | 60 | | SRPE60A60 | | | |
| | 70 | | | SRPE100A70 | | SRPF250A70 |
| | 80 | | | SRPE100A80 | | |
| | 90 | | | SRPE100A90 | | SRPF250A90 |
| | 100 | | | SRPE100A100 | | SRPF250A100 |
| | 110 | | | | SRPE150A110 | SRPF250A110 |
| | 125 | | | | SRPE150A125 | SRPF250A125 |
| | 150 | | | | SRPE150A150 | SRPF250A150 |
| | 175 | | | | | SRPF250A175 |
| | 200 | | | | | SRPF250A200 |
| | 225 | | | | | SRPF250A225 |
| | 250 | | | | | SRPF250A250 |

Depending on the type of installation it may be necessary to mechanically mount the breaker with two or four screws. Use Fig. 1 for E-Frame or Fig. 2 for F-Frame. Drill and tap all mounting holes and make any necessary front panel escutcheon cut outs.

600 volt applications using types SFL or SFP three-pole circuit breakers, with greater than 18KA IC requirements, will require a customer-supplied insulator with dimensions shown in Fig. 3. This insulator is to be made from an appropriate insulating material and installed between the back of the breaker and the enclosure.

600V applications using types SEH, SEL, or SEP circuit breakers, with greater than 10KA IC requirements, will require customer supplied insulators as shown in Figure 4. These insulators are to be made from an appropriate insulating material and installed between the back of the breaker and the enclosure and between the front of the breaker and the enclosure.

Using the circuit breaker mounting hardware described in Table 6, mount the breaker and insulator, if required. Next remove the three terminal covers located on the line side of the breaker. Using an allen wrench, ($\frac{5}{16}$ " for F-frame and $\frac{7}{32}$ " for E-frame), rotate the covers counterclockwise and pull out. After referring to Table 3 for proper strip lengths and terminal torques, connect all cables to the circuit breaker making sure that the stripped end of each lead is fully seated in the lug.

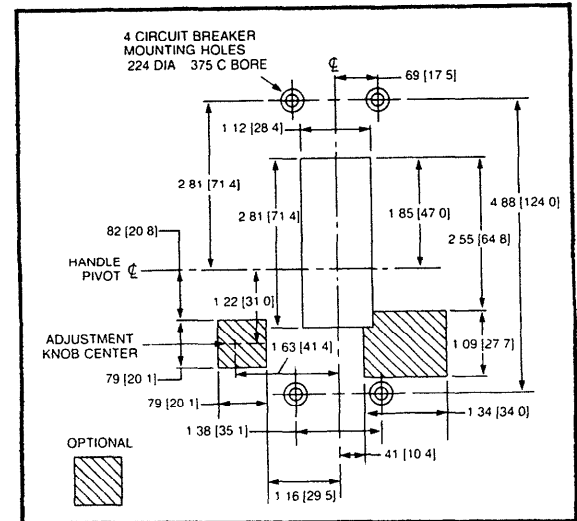


Figure 1. E Frame

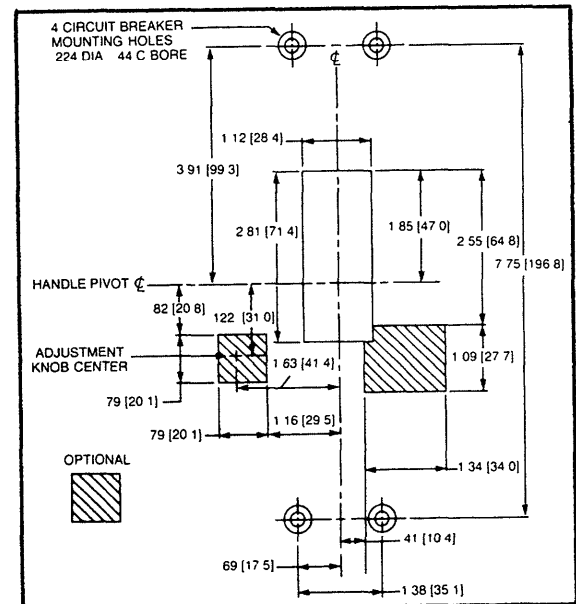


Figure 2. F Frame

TABLE 2 AVAILABLE ACCESSORIES

| Internal Accessory Installation | Lead Exit | | Maximum Number of Accessories |
|---------------------------------|-----------|------------|---|
| | Left Side | Right Side | |
| Auxiliary Switches | | ✓ | 1) Bell Alarm 2) Aux. Switch 3) Either a Shunt Trip or Undervoltage Release |
| Shunt Trip | ✓ | | |
| Bell Alarm Switch | ✓ | | |
| Undervoltage Release | ✓ | | ① Side and rear channels allow leads to exit either side |

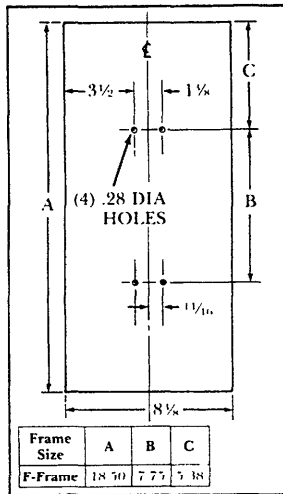


Figure 3.

TABLE 3 TERMINAL LUGS.

| | Catalog Number | Wire Range | Wire Type | Torque Specification | Strip Length |
|---------|----------------|-------------|-----------|----------------------|--------------|
| E Frame | TCAL-18 | #12-#10 | CU-AL | 35 in. lb. | .56-.70 |
| | | #8-#3 | | 100 in. lb. | |
| | | #2-3/0 | | 150 in. lb. | |
| F Frame | TCAL-29 | #8-#4 | CU-AL | 150 in. lb. | .75-.90 |
| | | #3-#1 | | 200 in. lb. | |
| | | 1/0-350 MCM | | 275 in. lb. | |

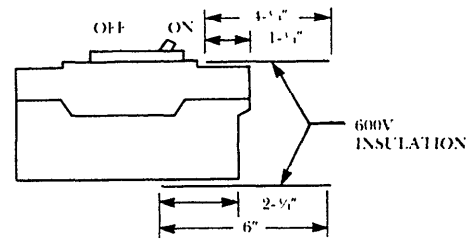
NOTE: When using aluminum wire, use a joint compound recommended by the wire manufacturer.

IMPORTANT: Dans les cas d'emploi de cable aluminium, utilisez le lubrifiant recommandé par le fabricant. Check to make sure all terminals are torqued to the proper value. Reinstall the terminal covers by seating each cover into a terminal access hole and rotate clockwise until the arrows point toward an end of the breaker. A positive stop will be felt when the cover is properly locked in place.

WARNING: It is important that the terminal covers be installed correctly to insure proper circuit breaker operation.

IMPORTANT: Il es important de verifier que tout couvercle ou cache de protection est correctement installé afin d'assurer le bon fonctionnement de l'appareil.

600V APPLICATIONS WITH AN AVAILABLE CURRENT GREATER THAN 10KA REQUIRE INSULATION AS SHOWN



INSULATION MUST EXTEND 1" BEYOND WIDTH OF BREAKER EACH SIDE

Figure 4.

3. ADJUSTMENT

To set the instantaneous trip points a red rotary switch is provided. Each set point provides a different instantaneous trip value which is calculated as a multiple of the installed rating plug. The multipliers for each switch position are given in table 4. In addition, each rating plug is marked with all the nominal values.

TABLE 4.

| Instantaneous Trip Setting Multiples of Rating Plug Amps (×) | | | | | | | |
|---|------------------------|------|------|------|------|-------|-------|
| Rating Plug Amps | E Frame Switch Setting | | | | | | High |
| | Low | . | . | . | . | . | |
| 3-7 | 3.5× | 4.2× | 5.0× | 6.2× | 8.0× | 10.2× | 12.6× |
| 15-150 | 2.9× | 3.7× | 4.7× | 5.9× | 7.7× | 9.9× | 12.5× |

| Instantaneous Trip Setting Multiples of Rating Plug Amps (×) | | | | | | | |
|---|------------------------|------|------|------|------|-------|------|
| Rating Plug Amps | F Frame Switch Setting | | | | | | High |
| | Low | . | . | . | . | . | |
| 70-250 | 3.0× | 3.8× | 4.8× | 6.0× | 7.8× | 10.0× | |

4. OPERATION

The circuit breaker position is indicated by ON/OFF markings, universal I/O symbols and an indicator window which shows red for ON, yellow for TRIP, and green for OFF. The corresponding 3 handle positions are shown in Fig. 5. To close the breaker from the off position simply move the handle to the ON position. To close the breaker from the trip position first move the handle fully to the OFF (reset) position then to the ON position.

CAUTION: Automatic tripping of the circuit breaker, MAG BREAK breaker, or molded case switch may indicate a system problem. Identify and correct any problem before turning the device on again.

IMPORTANT: Le declenchement automatique de disjoncteur, MAG BREAK ou interrupteur peut indiquer un probleme de circuit. Identifiez et corrigez le probleme avant de refermer l'appareil.

A slide-to-trip lever, which can be operated by a small screwdriver, is provided for convenience of testing the mechanical trip operation of the breaker.

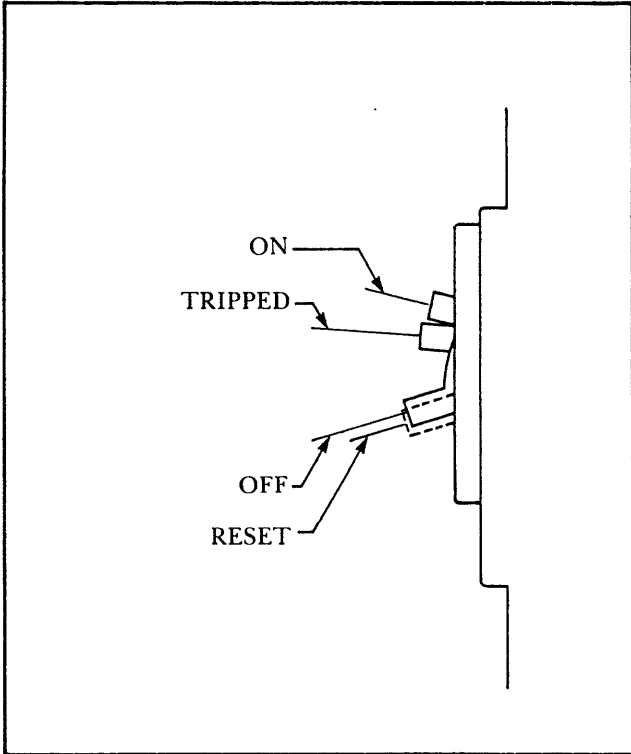


Figure 5.

5. MAINTENANCE

Generally there is no maintenance required but it is recommended that the following operations be performed annually:

WARNING: Danger of electrical shock or injury. Turn off power ahead of equipment before attempting to service.

IMPORTANT: Danger d'electrocution. Couper l'alimentation avant d'effectuer toute action d'entretien.

1. Turn off power to the equipment being serviced.
2. Clean the surfaces of the breaker and surrounding area of any dirt, soot or other debris.

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. 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 GE Company.

3. Inspect the breaker for any signs of damage.
4. Operate the slide-to-trip lever and toggle handle several times to exercise the mechanism and test the mechanical operation of the breaker.
5. If any sign of damage is found, or the mechanism is found to have sluggish or sticky operation, replace the circuit breaker.

The circuit breaker is a sealed unit which contains no user serviceable parts. Opening the breaker will void any and all warranties.

EXTERNAL ACCESSORIES

Mounting screw kits
 Plug in Bases
 Back Connected Studs
 Handle locks
 Pad Lock kits
 External Handle Operators
 Motor Operators

Catalog numbers and other ordering information for internal and external accessories, may be obtained from your authorized GE distributor.

TABLE 5

Breaker mounting-screw kits are available as follows:

| Description | Breaker Type | Mounting-screw Kit Cat. No. | Kit Description |
|--|--------------|-----------------------------|--|
| For use on mounting plate with tapped holes | SE150 | SEMSK1 | (4) 10-32 × 2 7/8 screws and lockwashers |
| | | optional SEMSK3 | (4) 8-32 × 2 7/8 screws and lockwashers |
| | SF250 | SFMSK1 | (4) 10-32 × 3 1/4 screws and lockwashers |
| For use on mounting plate with clearance holes | SE150 | SEMSK2 | (4) 10-32 × 3 screws, nuts and lockwashers |
| | | optional SEMSK4 | (4) 8-32 × 3 screws, nuts and lockwashers |
| | SF250 | SFMSK2 | (4) 10-32 × 4 screws, nuts, lockwashers |



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