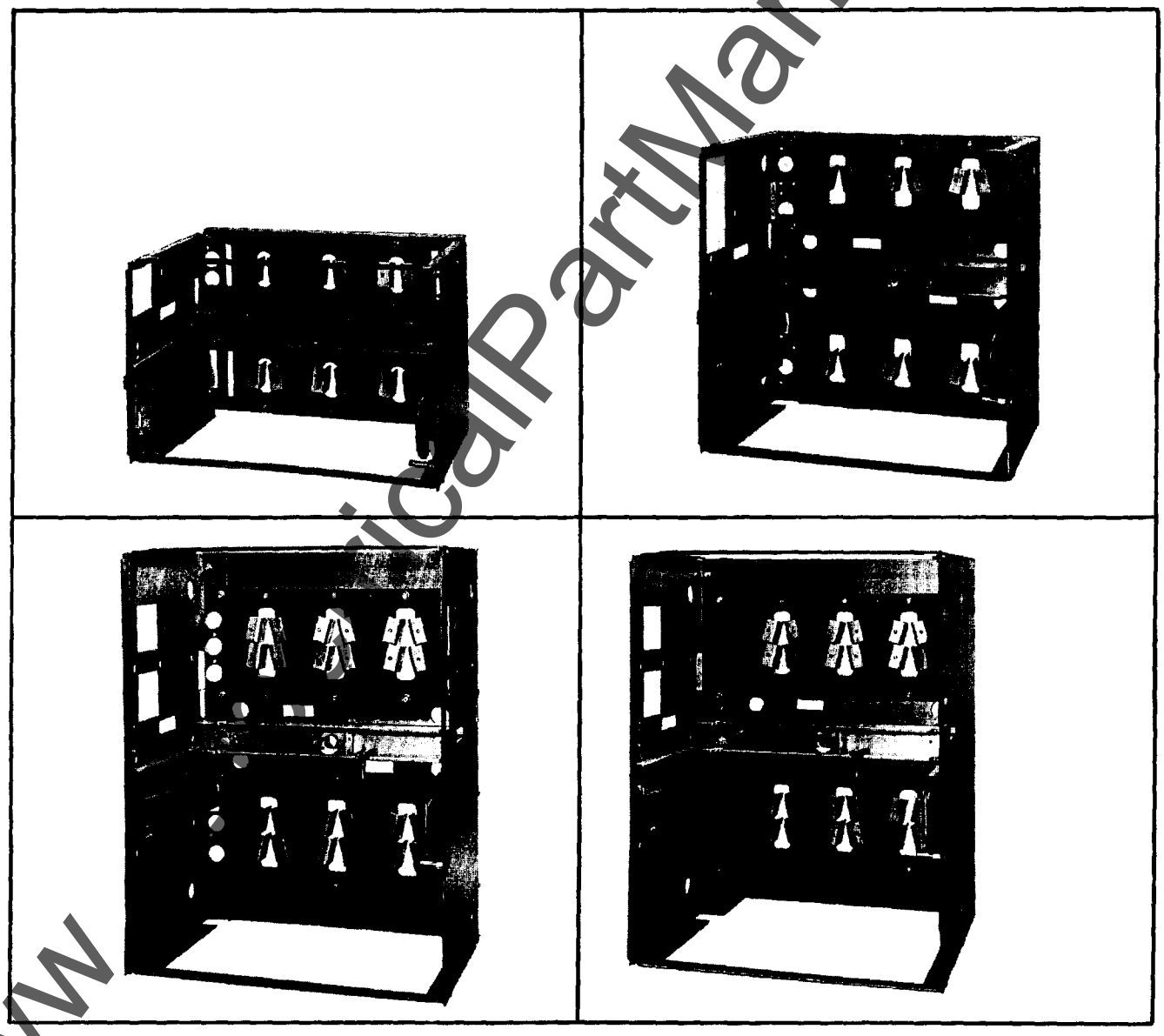
Assembly
Instructions

GEI-48908

POWER BREAK®

Substructure Kits 800–4000A Frames



GENERAL ELECTRIC

POWER BREAK® Substructure Kits

PREASSEMBLY OF SIDE SHEET AND REAR SUB-ASSEMBLY (ALL FRAMES)

Refer to Fig. 1–3. Lubricate surface with grease supplied as shown in Fig. 1. Then, position the rail as shown with the end with the studs extending through the window in the back flange so that the forward stud passes through the entry notch.

Swing the rail flat against the rail guide, and pull the rail toward the front.

Install the lock screw as shown in Fig. 2.

Figure 3 shows the left and right side sheet and rail sub-assemblies completely assembled.

(NOTE: Grease supplied is Mobilgrease #28)

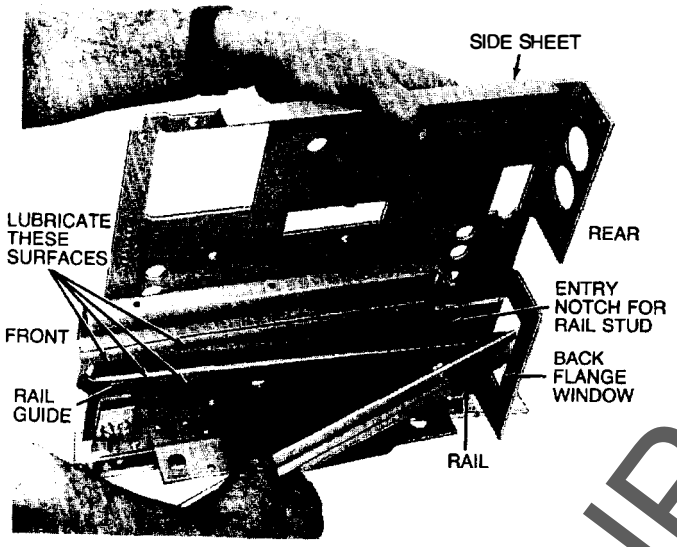


Fig. 1 Assembly of rail to side sheet.

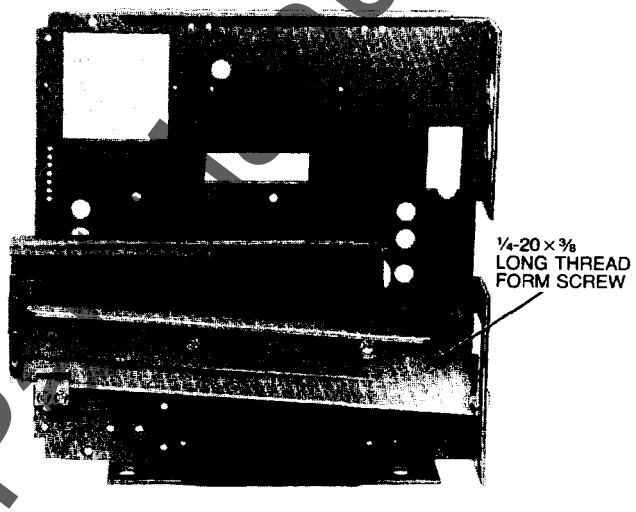


Fig. 2 Assembly of lock screw into rail.

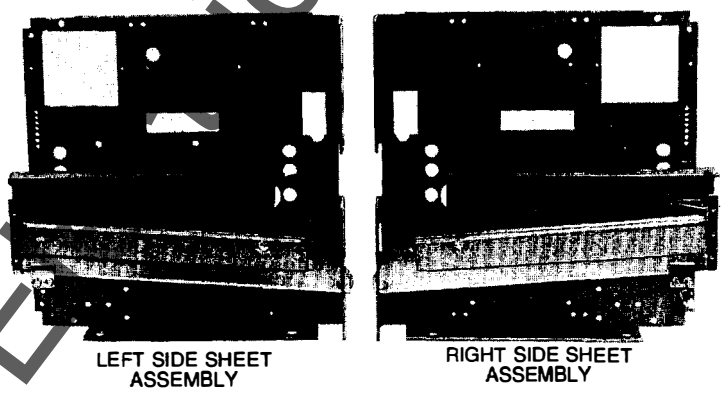


Fig. 3

POWER BREAK® Substructure Kits

800 AMPERE FRAME

(See Figs. 4–9 for parts and complete assembly).

Step 1

Partially drive in all back assembly strap bracket screws, but do not tighten. Fig. 6.

Step 2

Partially drive in all back assembly base screws, but do not tighten. Fig. 6.

Step 3

Lay the back assembly face up on a bench, or work surface, and start (4) 1¾″ long thread form screws through the nut channel, back channel, and into the nut brackets shown in Fig. 7. Next tighten the two diagonally opposite screws located in "A", Fig. 8 or 9, then the two remaining screws.

Step 4

Position the left side sheet assembly, as shown in Fig. 8 or 9, and first drive the (2) 5/8″ long screws into the nut bracket, followed by (4) 5/8″ long screws top and bottom. Repeat for the right side sheet assembly.

Step 5

Tighten all the 5/8″ long thread form screws started on the back assembly in Step 2.

Step 6

Position the insulated top and uninsulated bottom supports, and drive the (4) 3/8″ long thread form screws starting with top right and left, then bottom left and right.

Step 7

Apply the label at position shown in Fig. 8 or 9.

Step 8

Install the rejection system as shown in Fig. 20–21, page 9

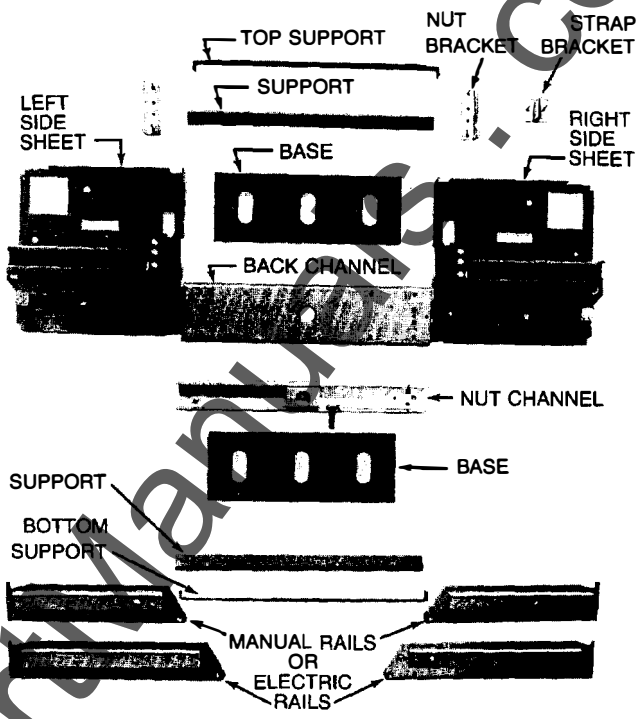


Fig. 4 Parts for 800 ampere frame.

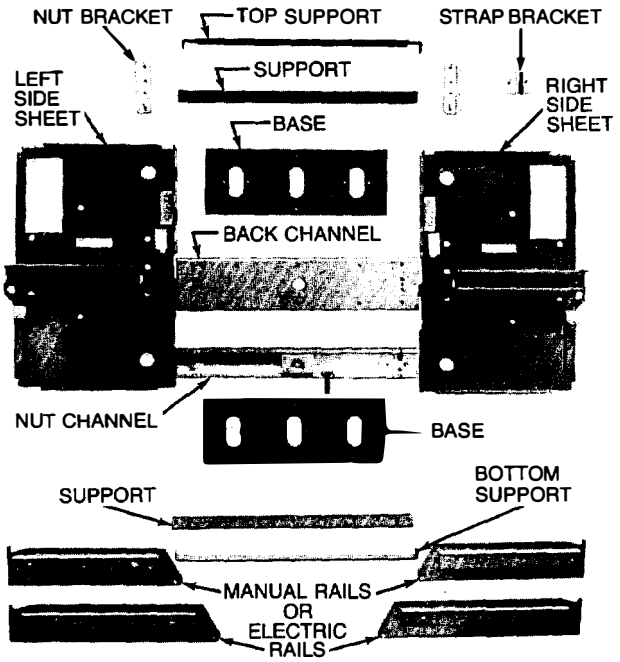


Fig. 5 Parts for 800 ampere "L" frame.

POWER BREAK® Substructure Kits

800 AMPERE FRAME (Cont.)

(See Figs. 4–9 for parts and complete assembly).

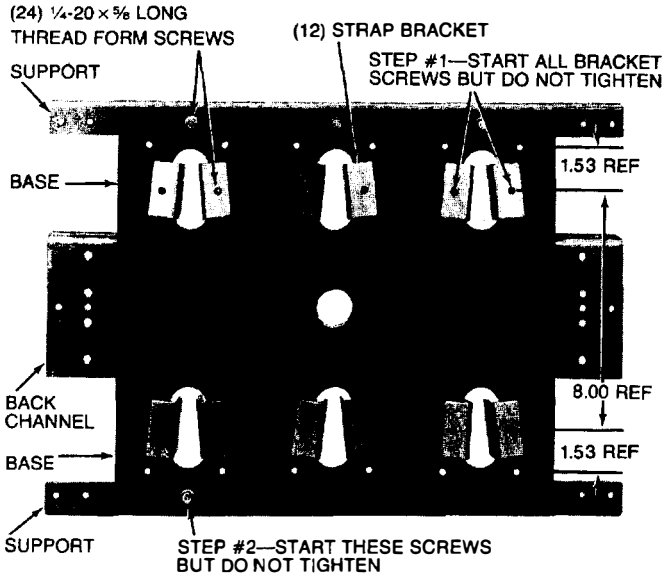


Fig. 6 Front view 800/800 "L" A unit back assembly.

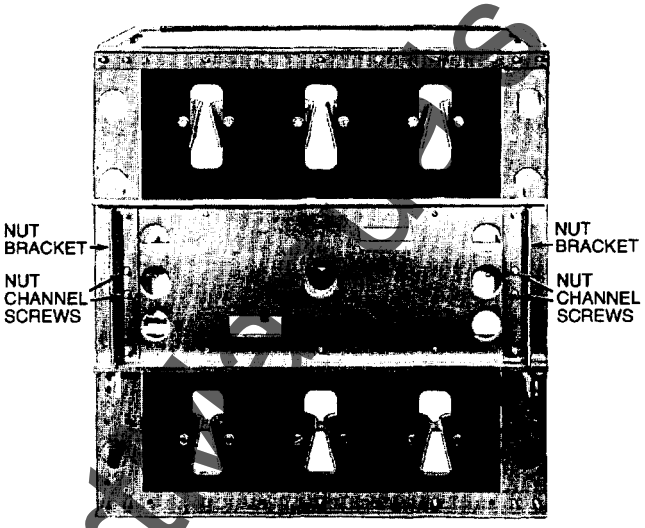


Fig. 7 Back view showing assembly of nut brackets used on 800-3000A units

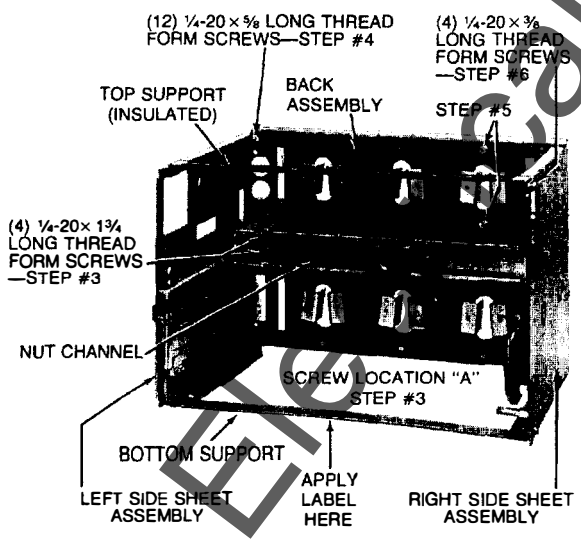


Fig. 8 800A unit front view.

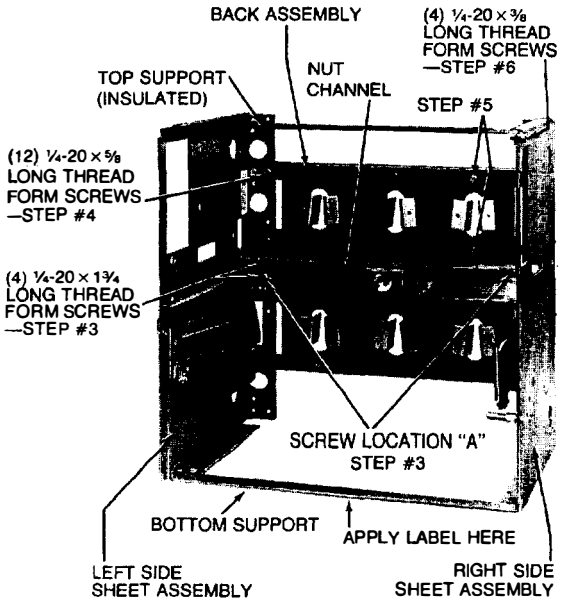


Fig. 9 800A "L" unit front view.

POWER BREAK® Substructure Kits

1600–2000 AMPERE FRAME

(See Figs. 10–12 for parts and complete assembly)

Step 1

Partially drive in all back assembly strap bracket screws, but do not tighten. Fig. 11.

Step 2

Partially drive in all back assembly base screws, but do not tighten. Fig. 11.

Step 3

Lay the back assembly face up on a bench or work surface, and start (4) 1/4–20 × 1¾″ long thread form screws through the nut channel, back channel, and into the nut brackets as shown in Fig. 7. Next tighten the two diagonally opposite screws, location "A", Fig. 12, then, the two remaining screws.

Step 4

Position the left side sheet assembly as shown in Fig. 12 and first drive the (2) 7/8″ long thread form screws into the nut bracket, followed by (4) 5/8″ long thread form screws top and bottom. Repeat for the right side sheet assembly.

Step 5

Tighten all the 5/8″ long thread form screws started on the back assembly in Step 2.

Step 6

Position the insulated top and uninsulated bottom supports and drive the (4) 3/8″ long thread form screws starting with top right and left, then bottom left and right.

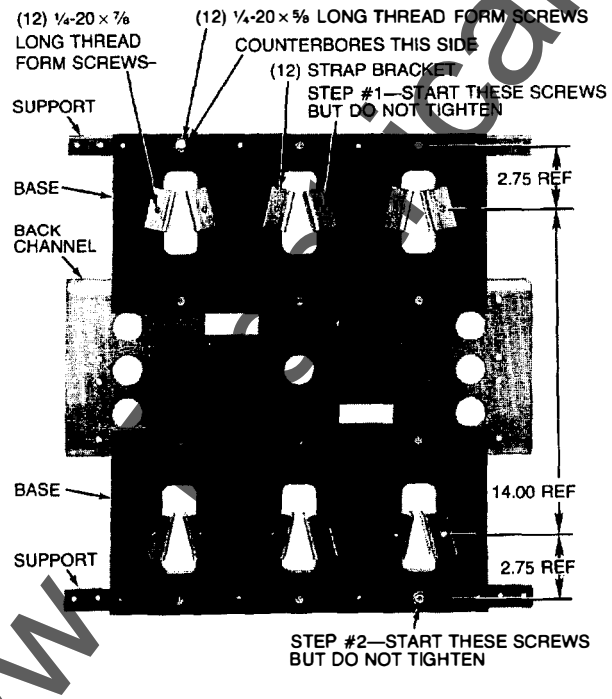


Fig. 11 Front view 1600/2000A unit back assembly

Step 7

Apply the label at position shown in Fig. 12

Step 8

install the rejection system as shown in Fig. 20–21, page 9

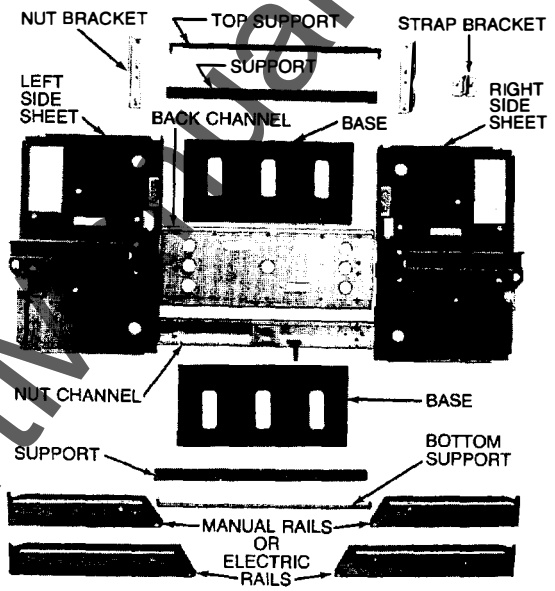


Fig. 10 Parts for 1600/2000A unit.

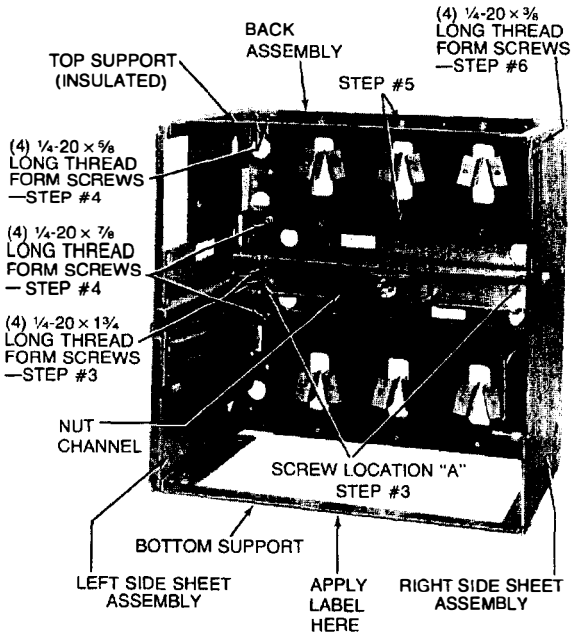


Fig. 12 1600/2000A unit front view.

POWER BREAK® Substructure Kits

2500–3000 AMPERE FRAME

(See Fig. 13–15 for parts and complete assembly.)

Step 1

Partially drive in all back assembly strap bracket screws, but do not tighten. Fig. 14.

Step 2

Partially drive in all back assembly base screws, but do not tighten. Fig. 14.

Step 3

Lay the back assembly face up on a bench or work surface, and start (4) 7/8" long thread form screws through the nut channel, back channel, and into the nut brackets as shown in Fig. 7. Next, tighten the two diagonally opposite screws, location "A", Fig. 15, then the two remaining screws.

Step 4

Position the left side sheet assembly as shown in Fig. 15, and first drive the (2) 7/8" long form thread screws into the nut bracket, followed by (4) 5/8" long thread form screws top and bottom. Repeat for the right side assembly.

Step 5

Tighten all the 5/8" long thread form screws started on the back assembly in Step 2.

Step 6

Position the insulated top and uninsulated bottom supports and drive the (4) 3/8" long thread form screws starting with top right and left, then bottom left and right.

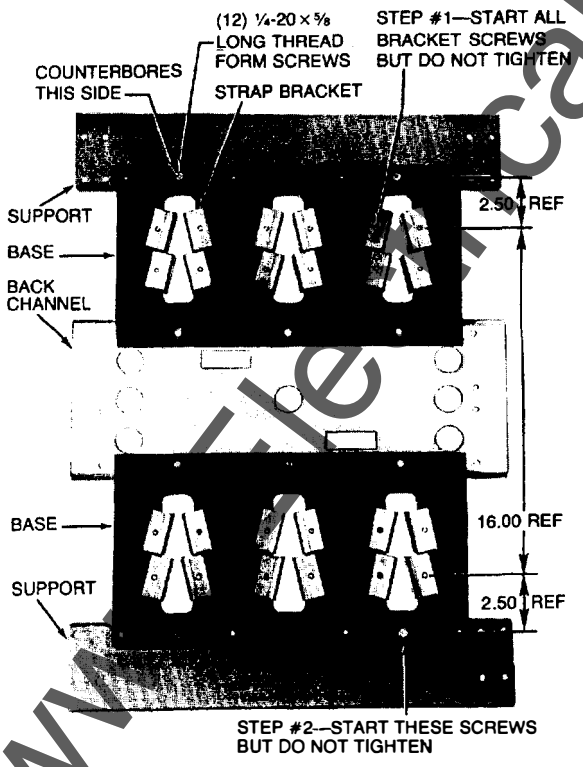


Fig. 14 Front view 2500/3000A unit back assembly.

Step 7

Apply the label at position shown in Fig. 15.

Step 8

Install the rejection system as shown in Fig. 20–21 page 9

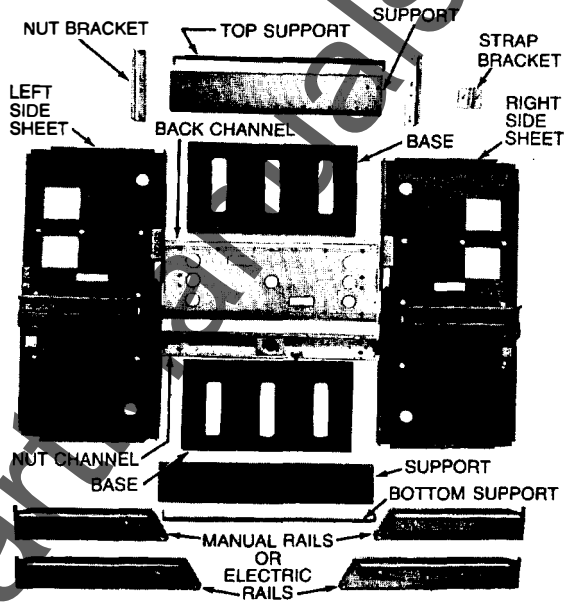


Fig. 13 Parts for 2500/3000A units.

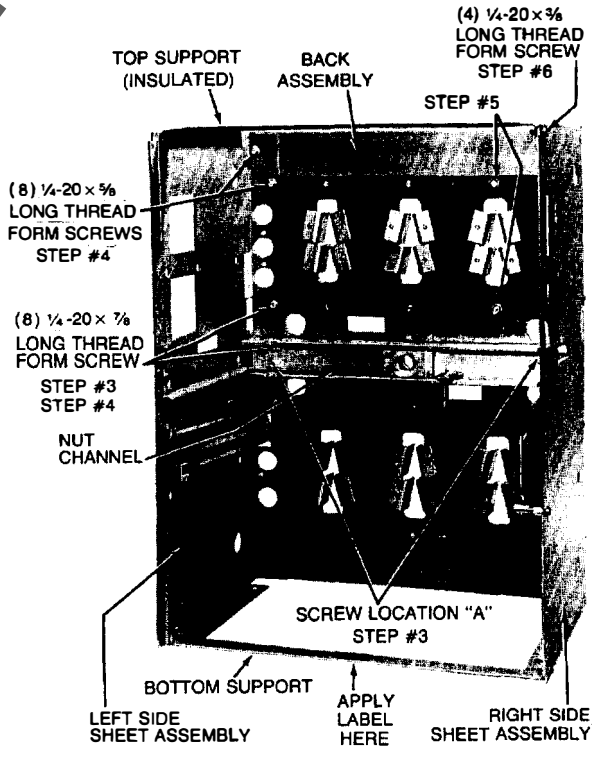


Fig. 15 2500/3000A unit front view.

POWER BREAK® Substructure Kits

4000 AMPERE FRAME

(See Figs. 16–19 for parts and complete assembly)

Step 1

Partially drive in all back assembly strap bracket screws, but do not tighten. Fig. 14.

Step 2

Partially drive in all back assembly base screws, but do not tighten. Fig. 14.

Step 3

Nest the spacer channels together in pairs. Make sure the larger screw holes are in the outer flanges with the slots toward center. Lay them down on a bench or work surface parallel to each other, and far enough apart so the back assembly will drop on, and the holes will line up. Refer to Fig. 18. Note that the outside corners of the spacer channel sets nearest the back assembly must have the outside bent flange exposed, not the edge of the steel. Position the back assembly face down on top of the spacer channel pairs: Fig. 17. Line up the holes and first drive the (4) 7/8" long thread form screws through the back channel into the inner flange of the spacer channels. Next, drive the (8) 5/8" long thread form screws top and bottom at positions shown.

Turn the entire assembly over so the back assembly is face up. Fig. 19. Position the nut channel, as shown, and start the (4) 7/8" long thread form screws through the nut channel and into the inner flanges of the post channels. Next, tighten the two diagonally opposite screws, location "A", Fig. 19, then the two remaining screws.

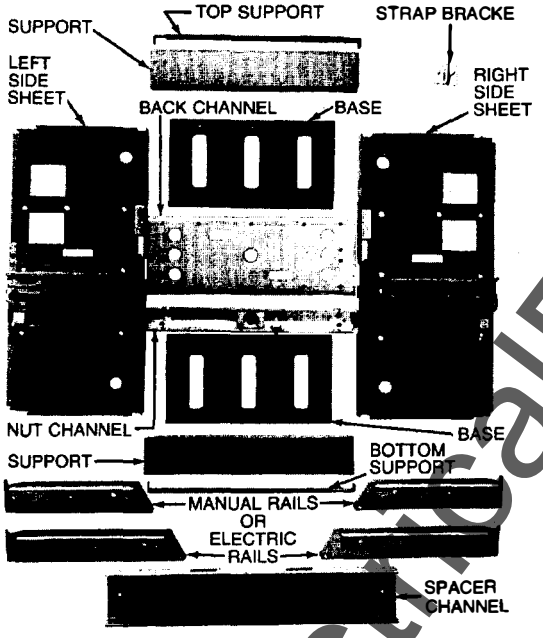


Fig. 16 Parts for 4000A unit.

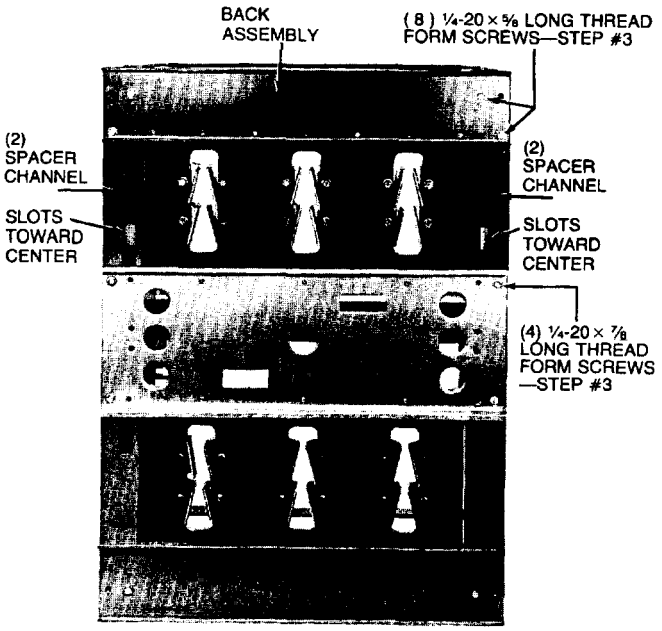


Fig. 17 4000A unit back view

POWER BREAK® Substructure Kits

4000 AMPERE FRAME (Cont.)

(See Figs. 16–19 for parts and complete assembly)

Step 4

Position the left side sheet assembly as shown in Fig. 19, and drive (6) 5/8″ long thread form screws starting nearest the nut channel. Repeat for the right side sheet assembly.

Step 5

Tighten all the 5/8″ long thread form screws started on the back assembly in Step 2.

Step 6

Position the insulated top and uninsulated bottom supports and drive the (4) 3/8″ long thread form screws starting with top right and left, then bottom left and right.

Step 7

Apply the label as shown in Fig. 19.

Step 8

Install the rejection system as shown in Figs. 20–21, page 9.

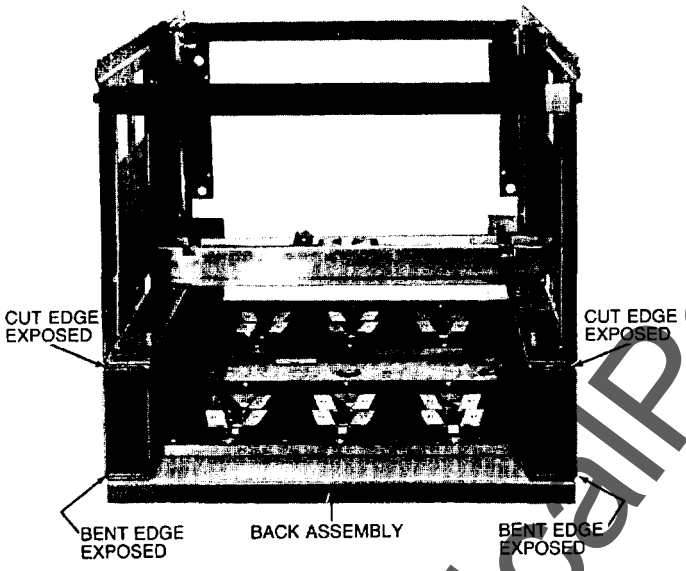


Fig. 18 4000A unit top view

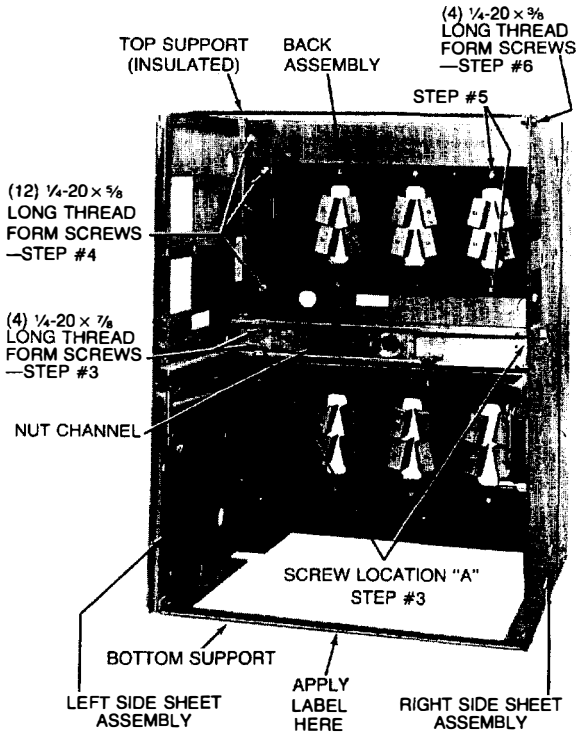


Fig. 19 4000A unit front view.

POWER BREAK® Substructure Kits
REJECTION SYSTEM

Rejection brackets are supplied in order to prevent installation of an improperly rated circuit breaker. They must be installed on the left side sheet to interact with a rejector blade supplied on the breaker unit. A typical left side sheet with rejector bracket mounting holes identified is shown in Fig. 20. The rejection brackets are shown attached in Fig. 21, using the one-way thread form screws provided. Depending on the Kit Cat. No., sufficient quantity of two sizes of rejector brackets (small or large) are supplied. The small size is shown.

To install the rejector brackets, position and fasten them at the locations shown in Fig. 20 and Table 1, pg. 10. Table 1 indicates by unit catalog number the size and location of rejectors to be assembled. The large rejector is always positioned with the longer side down.

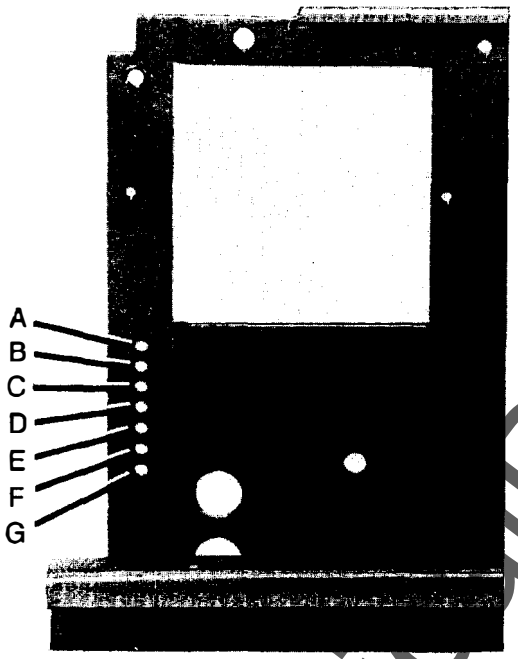


Fig. 20

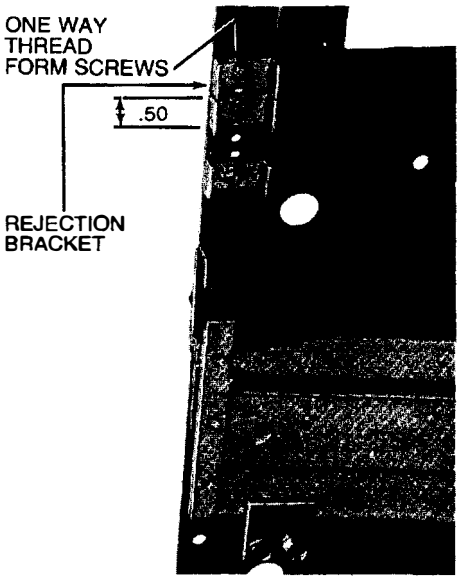
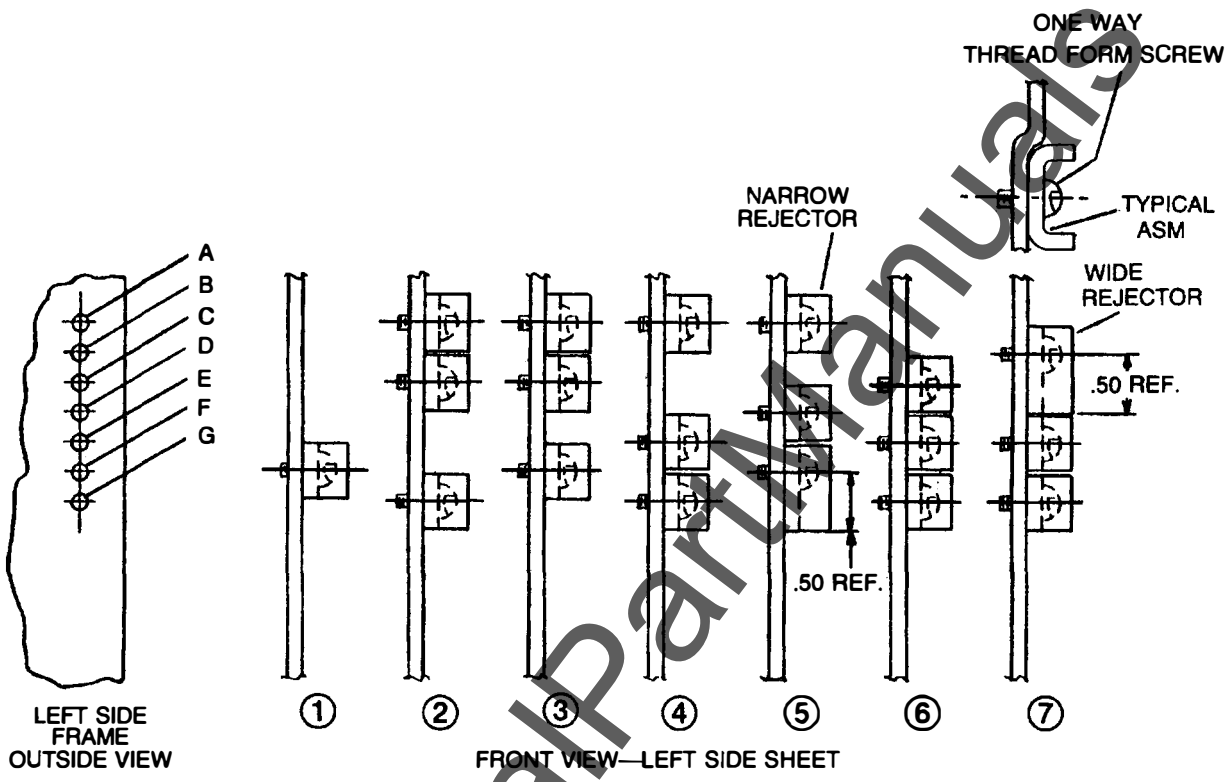


Fig. 21 Assembly of rejection brackets

POWER BREAK® Substructure Kits

REJECTION SYSTEM (Cont.)



FOR MANUAL OR ELECTRICALLY OPERATED BREAKERS								
KIT CATALOG NUMBER	CODE S = SMALL REJECTOR L = LARGE REJECTOR REJECTOR POSITION HOLES							ASSEMBLY FIGURE
	A	B	C	D	E	F	G	
TDOK08	NONE							
TDOK08L	S		S				S	2
TDOK16	S				S		S	4
TDOK20			S		S		S	6
TDOK25	S				S		S	4
TDOK30			S		S		S	6
TDOK40	S		S				S	2
THDOK08						S		1
THDOK08L	S		S			S		3
THDOK16	S			S		L		5
THDOK20		L			S		S	7
THDOK25	S			S		L		5
THDOK30		L			S		S	7
THDOK40	S		S			S		3

Table 1

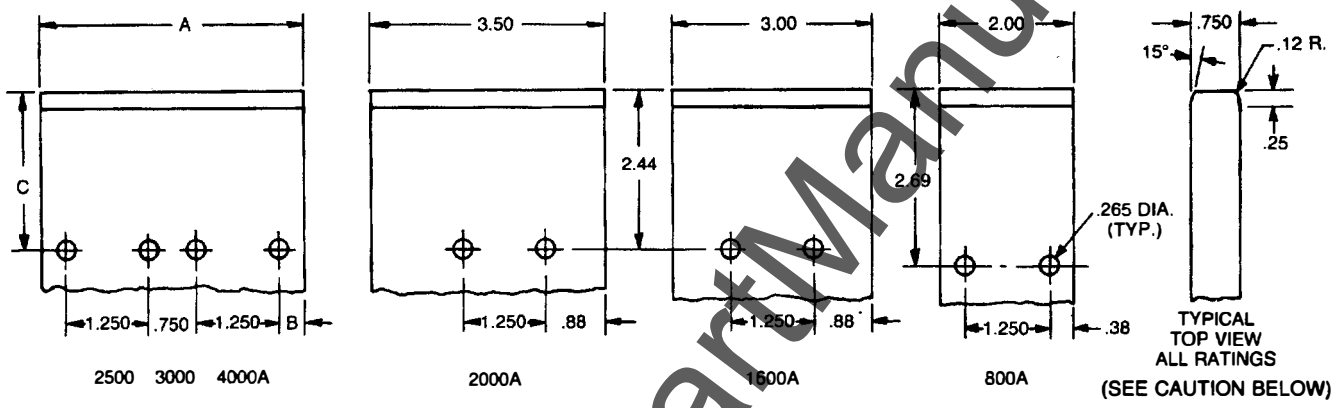
POWER BREAK® Substructure Kits
PRIMARY STAB DATA

Copper primary stabs are not supplied with Power Break substructure kits. Refer to Fig. 22 for required shapes and mounting holes for Power Break breaker frame sizes. Mounting hardware is supplied with the substructure kit. Fig. 23 shows a partial primary stab section with mounting hardware installed through the customer disconnect and the mounting brackets.

Position the completed substructure in the equipment compartment and position the copper primary stabs between the loose mounting brackets. Finger tighten the bolts, nuts and lockwashers.

Tighten the thread forming screws previously installed, then tighten the bolts.

Lubricate the stab surfaces as indicated in Fig. 23, using the grease supplied.



RATING	A	B	C
2500A 3000A	4.00	.38	2.44
4000A	5.00	.88	2.63

ALL CONDUCTORS MUST BE .0002 INCH SILVER ELECTROPLATED

CAUTION—SHAPE OF STAB LEAD-IN IS CRITICAL FOR PROPER OPERATION

Fig. 22 Required copper primary stab configuration

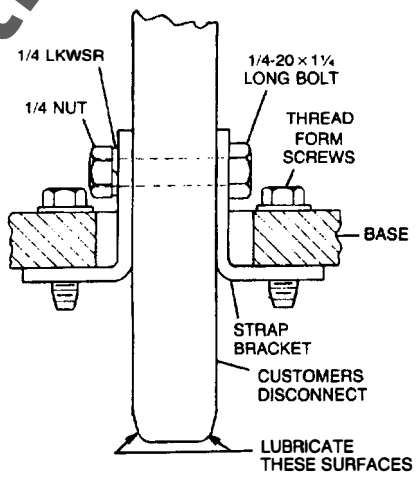


Fig. 23 Typical assembly of customers disconnect to strap brackets

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 General Electric Company.

For further information
call or write your local
General Electric
Sales Office or . . .

Construction Equipment
Business Operations
41 Woodford Avenue
Plainville, CT 06062 U.S.A.

Outside the U.S. and Canada write International Trading Operations.
570 Lexington, Avenue, New York, NY 10022 U.S.A.

GENERAL ELECTRIC

GEI-48908 4/84 PSB

INSTRUCTIONS
POWER-BREAK™
2000 thru 4000 Ampere Frame

LIFTING

Breaker does not rest directly on bottom of container. All constructions have bottom clearance. Side of container may be stripped down to provide easy access to breaker.

CAUTION — *Under no circumstances should breaker be lifted solely by the handle.*

RIGHT

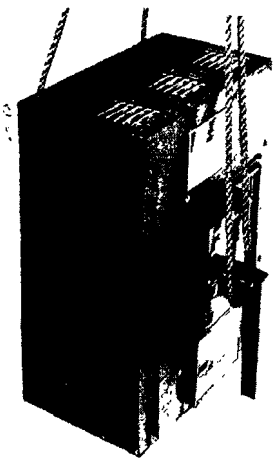


Figure 1

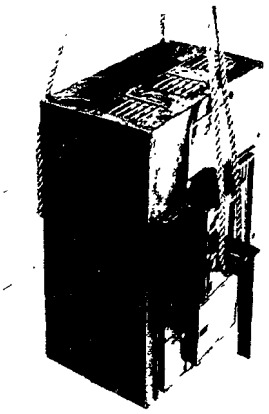
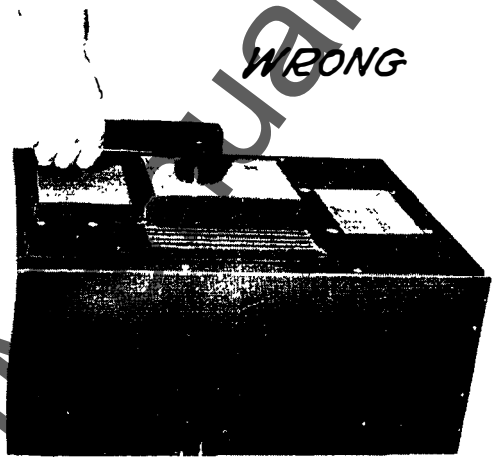


Figure 2

WRONG



BACK-CONNECTED

Sling lifting rope under handle and back studs, Figure 1.

FRONT CONNECTED

Sling lifting rope under handle and lifting cleats, Figure 2.

WEIGHT TABLE

Device		Lbs.
2000 A	Manual	150
2000 A	Electrical	190
2500 A	Manual	160
2500 A	Electrical	200
3000 A	Manual	210
3000 A	Electrical	250
4000 A	Manual	320
4000 A	Electrical	360

MOUNTING

Front or Back-Mounting screws should be tightened to 200-250 in. lbs. torque.

FRONT-MOUNTING—Figure 3

For Front-Connected Breakers, use (4) 5/8" bolts through clearance holes in aluminum mounting straps.

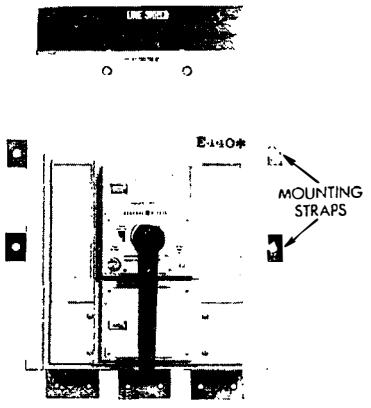


Figure 3

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 General Electric Company.

GENERAL ELECTRIC

CIRCUIT PROTECTIVE DEVICES DEPT. • PLAINVILLE, CONN. 06062

BACK-MOUNTING—Figure 4

For Back-Connected Breakers, use the (6) ⅜-16 by ⅝" deep inserts in back of breaker.

ELECTRICAL CONNECTIONS

It is recommended that (4) ⅜" diameter bolts be used per terminal, torqued to 250 in. lbs.

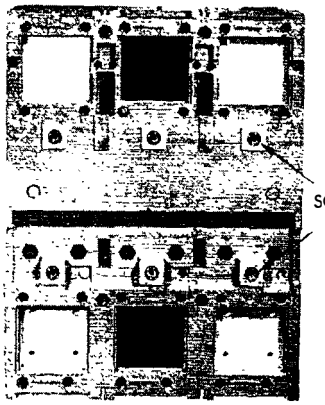


Figure 4

OPERATION

Rotate handle 3 times to close breaker. Push "OFF" button to open main contacts.

TRIP SETTINGS

STATIC TRIP—Figure 5

1. Loosen captive thumb-screw holding clear plastic window in place and remove window.
2. Change trip-settings by removing black thumb-screw from stud, sliding to desired position, replacing and tightening.
3. Replace window.

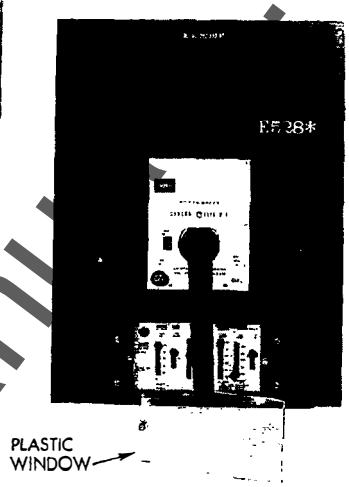


Figure 5

DUAL-MAGNETIC—Figure 6

1. Loosen (4) #10-32 captive screws holding escutcheon in place and lift off.
2. Change trip settings by rotating plastic buttons with a screwdriver.
3. Replace escutcheon.

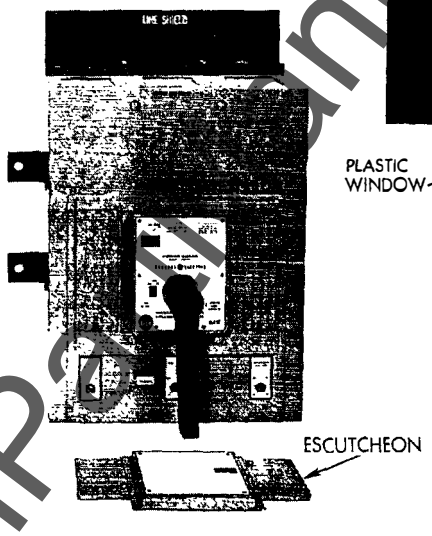


Figure 6

Circuit Breaker Accessory Lead Color Code

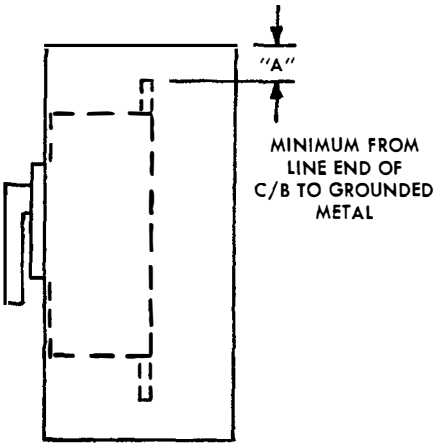
ACCESSORY	LEAD COLOR		
Shunt Trip	Black		
Undervoltage Release	Blue		
Auxiliary Switch	White—Common Red—Normally OPEN Green—Normally CLOSED		
Bell Alarm	Yellow—Common Purple—Normally OPEN Brown—Normally CLOSED		
3-Coil Shunt Trip (3-Phase)	Fuse		
	Line End	Load End	Phase
	Red	Green	A
	Blue	White	B
	Yellow	Black	C
3-Coil Shunt Trip (Single Phase)	Red	Green	A
	White	Blue	B
Manual Closing Interlock	Orange		

ENCLOSURES

VOLUME AND VENTILATION

DATA	2000A	2500A
Min. Volume Cubic Inches	8,372	8,372
Min. Ventilation Top and Bottom	30 sq. in.	30 sq. in.
"A" Min. Line End to Grounded Metal	8¼ in.	8¼ in.

Ventilating openings can be in alternate locations but must provide equivalent ventilating area.



1. Using an industry accepted solvent, remove any foreign material from the line and load strap surfaces and the corresponding surfaces of connecting bus or terminal studs (when supplied). Ensure that the mating surfaces are smooth and free from burrs or nicks.
2. Place bus or terminal studs in desired position and align mounting holes.
3. Insert and fasten securely all hex-head bolts and washers per Table 2 below.

TABLE 2

BOLT TORQUES

Breaker Frame	Terminal Stud		Bus Connection	
	Bolt Size (DIA)	Torque (In-Lb)	Bolt Size (DIA)	Torque (In-Lb)
600	—	—	(1) 1/2 in.	300
1200-1600	—	—	(2) 1/2 in.	300
2000-3000*	(4) 3/8-16	200	(4) 3/8 in.	200
4000	(6) 1/2-13	300	(4) 1/2 in.	300

**3000A Back-connected Terminal studs are factory brazed to breaker.*

Neutral Current Transformers (CT)

All Solid-State breakers containing integral ground-fault protection are supplied with terminals for neutral CT connection when required. When used, the neutral CT is wired as shown in Fig. 7. If not used, *DO NOT* short terminal board points. Leave as supplied from factory.

CAUTION: Observe all polarity markings on CT and breaker.

NOTE: Neutral CT can only be used with solid-state breaker of same ampere rating.

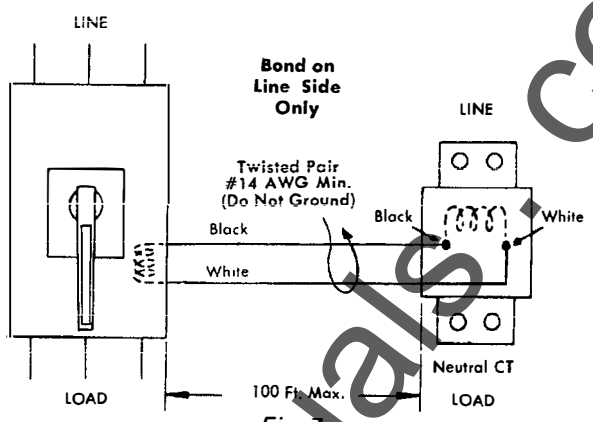


Fig. 7

TRIP SETTINGS Fig. 8 and 8A

Versatrip or Selectrip™

1. Remove clear-plastic protective window.
2. Change trip settings by removing black thumbscrew, sliding to desired position, replacing and tightening.
3. Reinstall plastic window.

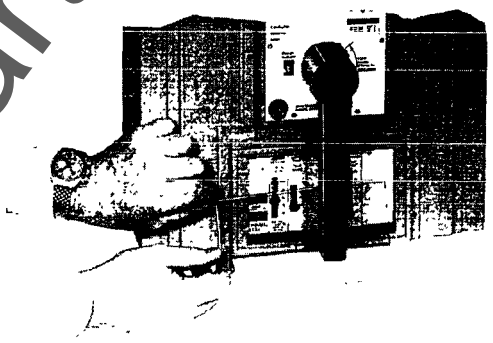


Fig. 8

Magnetrip™

1. Remove protective escutcheon plate.
2. Change trip setting by rotating plastic buttons with a screwdriver.
3. Reinstall escutcheon plate.

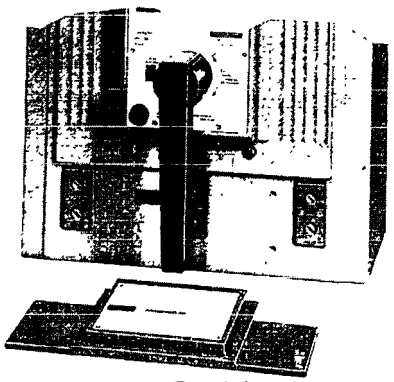


Fig. 8A

POWER-BREAK CIRCUIT BREAKERS

600-4000A FRAMES, THREE-POLE, 600 VAC, 250 VDC *

***DC Rating Applies to breakers with MagneTrip™ only**

INTRODUCTION

Power-Break circuit breakers control and protect low-voltage (up to 600 volts) power circuits by safely switching loads, and automatically clearing circuits when abnormal conditions occur. Some of the more common conditions are short circuits, sustained overloads, and ground faults.

The proper use, care, and maintenance of these breakers is a prime safety consideration for the protection of personnel, as well as a means of minimizing equipment damage.

RECEIVING AND HANDLING

Each breaker is carefully inspected and packed before shipment. Immediately upon receipt, the circuit breaker should be inspected for any damage sustained in transit. If damage or rough handling is evident, a damage claim should be filed immediately with the carrier and the nearest General Electric Sales Office should be notified.

Proper care should be exercised during unpacking and installation of the breaker to prevent damage from careless or rough handling, or from exposure to moisture or dirt.

LIFTING

CAUTION: Under no circumstances should a breaker be lifted by the operating handle alone.

Table 1 lists the weights of Power-Break circuit breakers for indicated frames and types.

The methods of lifting the circuit breakers are:

- 600-1600A Frames
  Lift as shown in Fig. 1.
- 2000-3000A Frames
  Secure lifting ropes under handle and back studs for back-connected breakers, or handle and lifting cleats for front-connected breakers (see Fig. 2).
- 4000A Frames
  Secure lifting hooks to frame, as shown in Fig. 3.

TABLE 1
POWER-BREAK CIRCUIT BREAKER WEIGHTS

Frame Rating	Type	Weight (Lb)
600A	Manual	50
600A	Electrical	64
1600A	Manual	76
1600A	Electrical	90
2000A	Manual	150
2000A	Electrical	190
2500A	Manual	160
2500A	Electrical	200
3000A	Manual	210
3000A	Electrical	250
4000A	Manual	320
4000A	Electrical	360

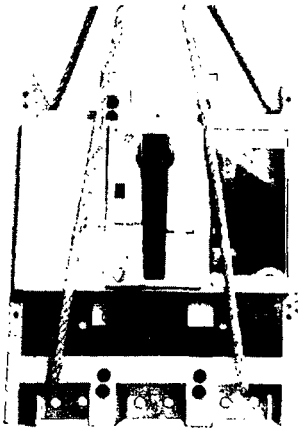


Fig. 1

STORAGE

It is recommended that a breaker be placed in service immediately in its permanent location. However, if it must be stored for an indefinite period it should be carefully protected against condensation, preferably by storage in a warm dry room. Circuit breakers for outdoor equipment should be stored in that equipment only when power is available and heaters are in operation to prevent condensation. The breaker should be

MAINTENANCE

WARNING: Before beginning any maintenance work, the breaker must be disconnected from all voltage sources, both power and control, and must be in the off (open) position.

NOTE: UL listing is voided when the circuit breaker is modified in any way. The UL label must be destroyed.

Circuit breakers should be maintained through the implementation of a systematic maintenance program. A periodic inspection routine is recommended. The frequency of inspection should depend on the environmental conditions of each breaker. All circuit breakers should be inspected at least annually. If it is operated frequently, or installed in an area of high humidity, dusty, or dirty atmosphere, the frequency of maintenance inspections should be increased. Under extreme adverse conditions, monthly inspections are recommended.

The maintenance inspection should begin with an overall visual check.

If dirt, grease, or any other foreign material is found on or in the breaker, it should be thoroughly and carefully cleaned. Do not use solvents on insulating material.

A rotating program providing for a periodic withdrawal from service of each breaker in turn for inspection and maintenance, is an excellent means of establishing a high level of service reliability. In such cases, one or more spare circuit breakers and all accessories should be available during the maintenance inspection to replace any breaker that may be removed for repairs.

NOTE: When ordering spare parts, always enclose the complete information from the nameplate, including the circuit breaker's serial number.

LUBRICATION

Moderate lubrication is all that is required for most circuit breakers. Mechanical bearing points and sliding surfaces should be lubricated at the regular inspection periods with a thin film of molybdenum disulfide (Molykote G), or Mobil grease No. 28. It is recommended that kerosene be used to remove hardened grease and dirt from the latch and bearing surfaces. All excess lubricant should be removed to avoid any accumulation of dirt or dust.

CAUTION: Under no circumstances should lubricant be applied to contact areas.

ACCESSORIES

The control leads of internally mounted accessories exit in pigtail form from the side of the breaker for the 600A through 1600A frames, or from the back of the breaker for the 2000A through 4000A frames. These leads are terminated at the secondary disconnect points for drawout breakers, or at optional terminal blocks when specified for stationary breakers. All leads are color coded as shown in Table 3.

TABLE 3

CIRCUIT BREAKER ACCESSORY LEAD COLOR CODE

Accessory	Lead Color*	Leads per Accessory
Shunt Trip	Black	2
Under-voltage Release	Blue	2
Auxiliary Switch	White — COMMON Red — OPEN †Brown/White—CLOSED	3 Per Switch
Bell Alarm	Yellow — COMMON Purple — OPEN Brown — CLOSED	3
Blown Fuse Trip (3-Coil Shunt Trip)	**Line End** / **Load End** / **Phase** Red / †Brown/White / A Blue / White / B Yellow / Black / C	6

**Switch contacts are shown with the breaker in an overcurrent tripped position.*

†*Formerly Green.*

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