

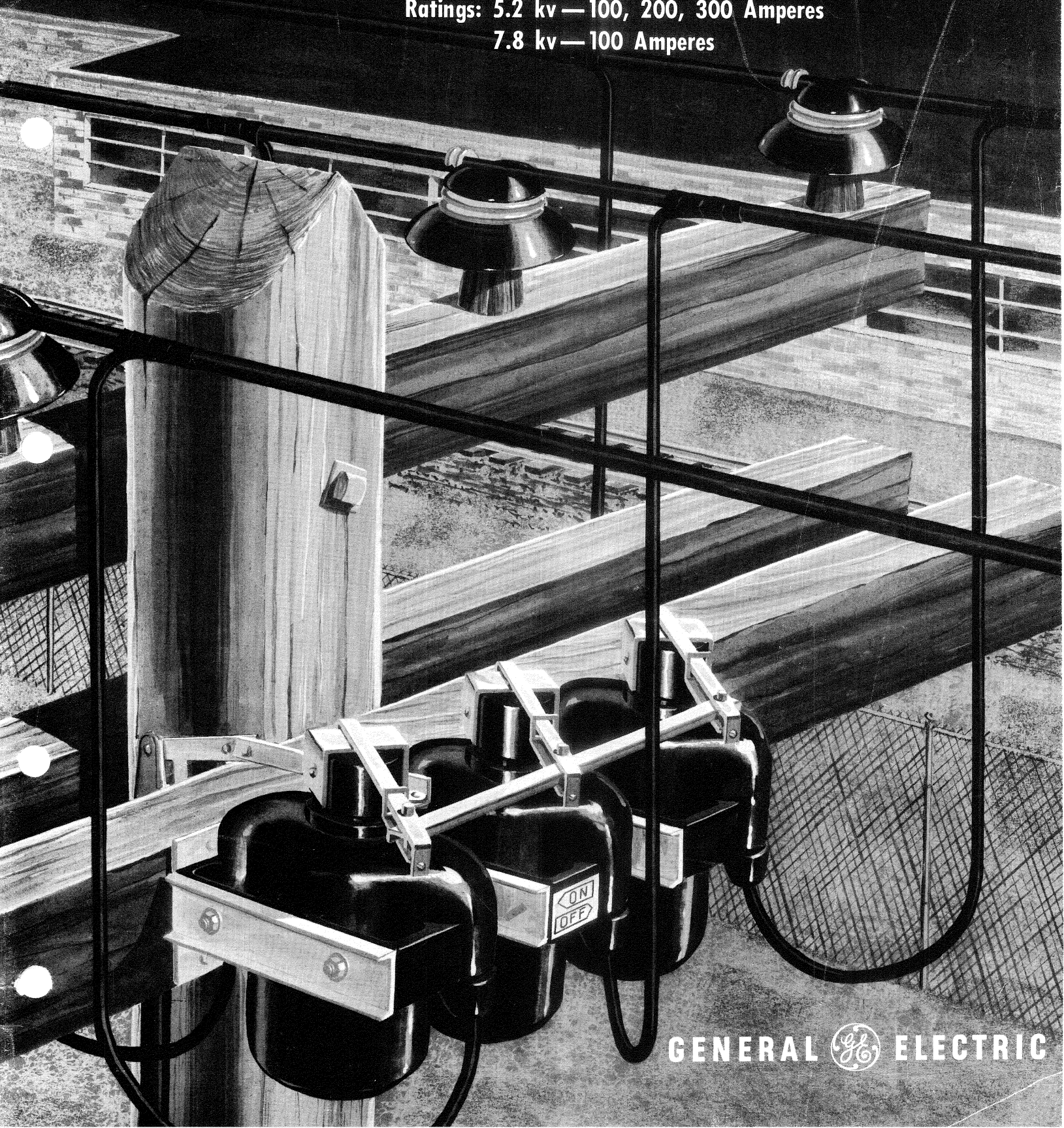
Available for Pole and Subway Installations and for Metal Enclosed Assemblies



OIL-FILLED CUTOUTS

for fusing and switching

Ratings: 5.2 kv — 100, 200, 300 Amperes
7.8 kv — 100 Amperes



GENERAL  ELECTRIC

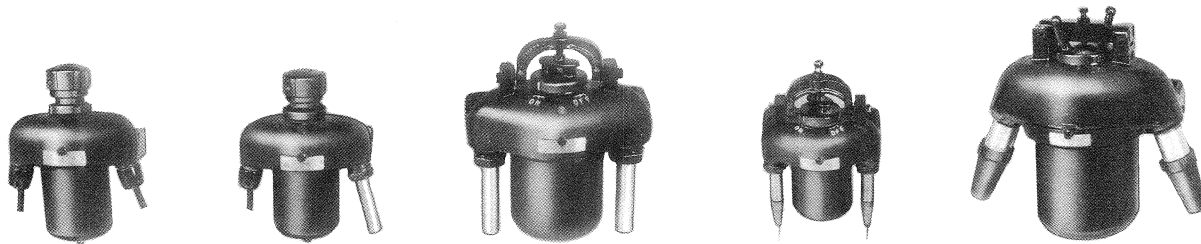


Fig. 1. Complete line of oil-filled cutouts—pole, pothead, and subway types.

General Electric Oil-filled Cutouts provide Positive, Safe Cutout and Switching Operation

G-E Oil-filled Fuse Cutouts provide many outstanding advantages for your system.

High short-circuit interruption capacity. G-E oil-filled cutouts will safely clear fault currents up to 11,000 amperes, depending on cutout rating, when fused with G-E interchangeable fuse links.

Completely metal-enclosed. G-E oil-filled cutouts eject no arc flame during circuit interruption because the fusible element is immersed in oil inside the metal enclosure. No live parts are exposed, and the circuit is broken positively and safely.

Ability to switch load current. G-E oil-filled cutouts provide a safe method of switching load currents without exposed arc flame. Contact design maintains clean, smooth, current-carrying surfaces after years of repeated operations. When used for switching purposes, the cutouts can be fitted with fuse links or simple disconnecting blades (see Table I, page 8).

VERSATILE APPLICATION

G-E oil-filled cutouts are suitable for indoor or outdoor use and are available in pole-, pothead-, or subway-type designs.

This versatile line of cutouts can be installed . . .

- on poles, in building vaults, or in the factory
- in manholes or subway vaults
- in place of potheads when changing from underground to overhead construction when single conductor cables are used.
- in unit substations, load-center units, or mounted as an integral part of apparatus
- in industrial plants with air-, oil-, or Pyranol*-cooled transformers

All G-E oil-filled cutouts are ideally suited for operation where high-current interruption ability is required.

This cutout's quiet, totally-confined operation eliminates the hazard of exposed live electrical parts; it is protected against smoke, corrosive fumes, or salt air. The subway-type oil-filled cutout is especially designed for use where complete submersion may occur, and in semi-hazardous locations where explosive gases or flammable dusts are present.

When fitted with gang-operating switching mechanisms and/or metal-enclosed assemblies, these cutouts can be used to simultaneously switch two, three, or four phases or to throw a load on and off two or more sources of supply.

*Registered trademark of General Electric Co.

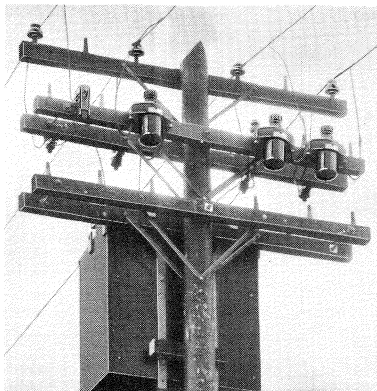


Fig. 2. Installation showing typical application of G-E pole-type oil-filled fuse cutouts mounted on the line in an overhead distribution system.

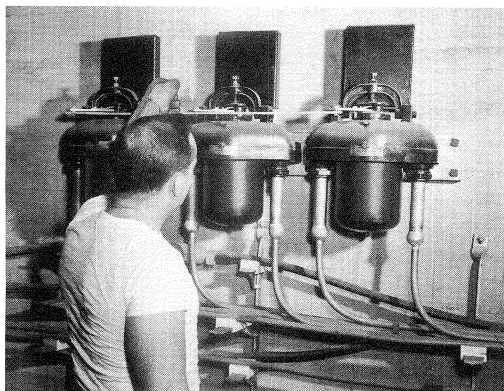


Fig. 3. Gang-operated subway-type oil-filled cutouts in underground vault. Cutouts equipped with expansion chamber providing space for gas to expand and cool.

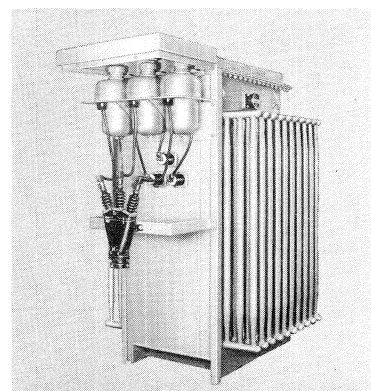


Fig. 4. Metal-enclosed assembly with gang switching mechanism mounted on 3-phase transformer. Assemblies can be mounted separately.

CONTENTS OF THIS PUBLICATION

Advantages of General Electric Oil-filled Cutouts and Accessories are detailed in the following pages of this book:

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Subway-type Cutouts	page 5	Cutouts for Metal-enclosed Assemblies	page 17
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Gang-operated Switching Mechanisms	page 12	Interchangeable Fuse Links	page 24

G-E Oil-filled Cutouts Designed for Complete Protection, Long Service Life



Fig. 5. Pole-type oil-filled cutout

No Oil Leaks

Flexible leads for connection of pole-type cutouts to open wiring are brought out of the cover through wet-process porcelain bushings above the oil level, thus eliminating oil leaks and the possibility of losing oil vital to successful operation.

The steel tank, with insulating liner, is equipped with a removable drain plug at the bottom for easy drainage of insulating oil. An oil-level plug in the cover provides a convenient means of checking the oil level, and a removable plug in the top of the cover permits simple filling. Thus the G-E oil-filled cutout can be drained and refilled without moving or dismantling the equipment.

Positive Contacts

Self-aligning base contacts are flexibly mounted and bear against the fuse contacts with strong spring pressure. A molded-compound insulating support, bolted to the inside of the cast-iron cover, provides a firm foundation for the base contacts. Flexible braided-copper straps connect the contacts to line terminals.

Weatherproof Vents

Pole- and pothead-type cutouts are vented through concealed, weatherproof openings in the fuse-carrier cap to permit the escape of arc gases. It is impossible for water to enter the cutout, even in a driving rain. Wire-screen baffles in the cap hold back any arc flame and/or oil splashed during circuit interruption, but

No Arc Flame

General Electric oil-filled cutouts provide complete safety in either cutout or switching operations because they eject no arc flame. The fuse link and electrical contacts are totally immersed in oil, housed in a sturdy drawn-steel tank threaded into the cast-iron cover. This tank and cover housing is designed to withstand much higher internal pressures than can occur within the cutout's interrupting rating.

No Contact with Live Parts

The removable fuse carrier is made of oil-treated wood with a strong metal cap. The cover opening for the fuse carrier is of minimum size to facilitate adequate sealing against internal pressures and practically eliminates the possibility of contact with live parts, and reduces the likelihood of foreign materials falling into the opened cutout.

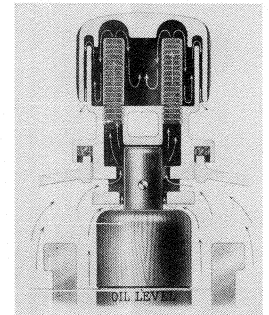


Fig. 6. Cross-section drawing showing venting method of pole- and pothead-type cutouts. Arrows show path of escaping arc gases.

allow gases to escape to the air along the path shown by the arrows in Fig. 6.

Long-life Contacts

Both moving and base contacts have separate current-carrying and arcing surfaces.

The silver-plated current-carrying contact surface wipes into position when the fuse carrier is closed (shown at 1 in Fig. 8). Arcing surfaces on both moving and base contacts are offset below the current-carrying surfaces, so that when the fuse carrier is turned to the open position, current is transferred from the upper surface to the arcing surface before the contact is broken. Thus, all arcing during the opening of load current is confined to the specially designed arcing surfaces (shown at 2 in Fig. 8), keeping the current-carrying surfaces smooth and clean even after years of operation, and keeping the arc at a definite location under the maximum head of oil.

The G-E interchangeable fuse link fits into notch cut in the bottom of the wooden fuse-carrier plug. Large thumb nuts clamp the U-shaped fuse link to the movable contacts.

Simple Installation

G-E oil-filled cutouts are factory assembled. Just connect the leads, fill the cutout with oil, install the fuse link or disconnecting blade, insert the fuse carrier and switch to the on position.

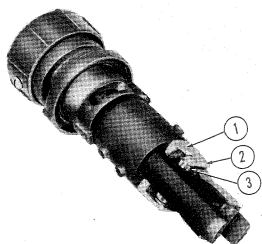


Fig. 7. Fuse carrier removed from the cutout—showing current-carrying contact (1), arcing contact (2), and large thumb nuts for clamping fuse link (3).

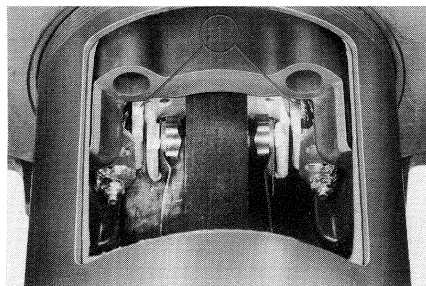


Fig. 8. Close-up view into tank through cut-away section showing function of current-carrying contacts (1) and arcing contacts (2).

Construction Features of G-E Oil-filled Cutouts Provide Reliable Performance on the Line

1. **Fuse Carrier Slot** permits insertion of lever for easy opening.
2. **Locking Lugs** seal fuse carrier in cutouts, except when turned 90° to full open position.
3. **Insulating Compound** seals porcelain bushings. Compound is steeply sloped so any oil splashed when fuse link blows drains quickly back into tank.
4. **Molded-compound Insulating Support**, bolted to inside of cover, provides firm foundation for base contacts.
5. **Self-aligning Base Contact** fits snugly against fuse-carrier contact with strong spring pressure.
6. **Cast-iron Cover and Drawn Steel Tank** threaded-in are designed for safety. This housing will withstand much higher internal pressures than can occur within the cutout's interrupting rating.
7. **Fuse-carrier Contact** is rigidly mounted on wooden fuse-carrier plug.
8. **Flexible Braided-copper Strap** connects base contact to line terminal.
9. **Large Thumb Nut** clamps fuse link to fuse contact.
10. **Interchangeable Fuse Link** fits into notch in fuse-carrier plug.
11. **Insulated Leads** are siphon-proof and enter the cutout above the oil level, through wet-process porcelain bushings.
12. **Insulated Lining** inside steel tank.

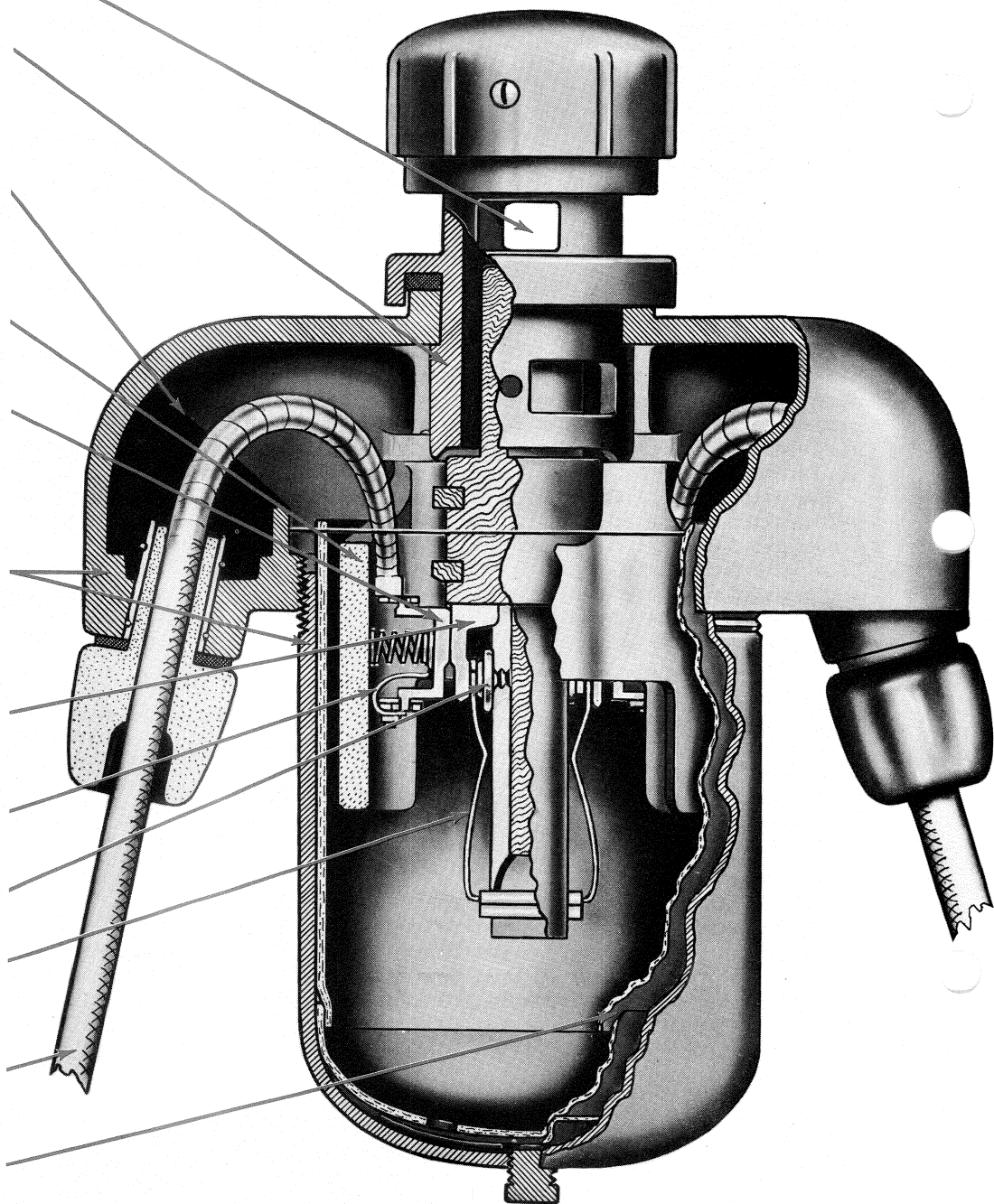


Fig. 9. Sectional drawing of pole-type oil-filled cutout

Pothead-type Cutouts for Joining Overhead and Underground Circuits

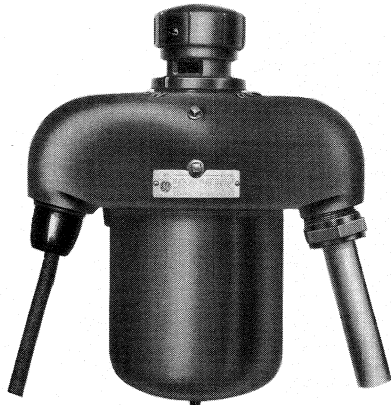


Fig. 10. Pothead-type oil-filled cutout, 5200 volts, 100 and 200 amperes.

Pothead-type oil-filled cutouts provide a fusible joint between overhead and underground circuits. This unit is internally identical to the pole-type cutout, but is equipped with one flexible lead for connection to open wiring and one separable sleeve-type bushing for connection to lead-sheathed cable. This unit gives oil-filled fuse cutout protection and switching ability plus the conventional pothead connection capability. Either right- or left-hand sleeve bushings are available, and special terminals for rubber-covered cable can be furnished. Ease of making bushing connections is shown on page 6.

G-E Subway-type Oil-filled Cutouts Are Completely Submersible

General Electric subway-type oil-filled cutouts are specially designed for use in subway vaults and man-holes where complete submersion is likely, or in semi-hazardous locations where explosive gases or flammable dusts are present.

Internal construction of the subway-type cutout is similar to the pole-type described on pages 3 and 4. Modifications to permit completely-sealed operation of the cutout are:

1. YOKE AND SCREW CLAMP which seals the fuse carrier against a gasket to provide a pressure-tight joint which can withstand complete submersion. Each subway-type cutout is tested with air pressure of at least 15 pounds per square inch when submerged in water to check reliability of the seal.

2. EXPANSION CHAMBER seals the vent opening at the back of the cover. This chamber provides an air space of proper size into which arc gases can expand and cool.

EASY-TO-CONNECT BUSHINGS

Separable sleeve bushings, for wiping to lead-sheathed cables, are used on subway cutouts rated 5200 volts, 100 and 200 amperes. This permits quick, easy disconnecting of the cutout without cutting the cable, or draining the oil and disassembling the cutout. Detachable entrance terminals for non-leaded rubber-covered cable or aerial cable are available.

Non-detachable wiping sleeves for standard wiped cable joints are used on subway cutouts rated 5200 volts, 300 amperes, and 7800 volts, 100 amperes. These wiping sleeves are suitable for attaching to lead-sheathed or non-leaded rubber cables, or to aerial cable.

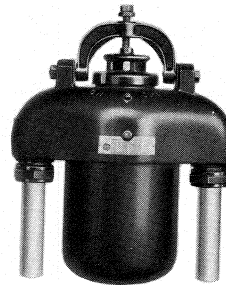


Fig. 11. Subway-type oil-filled cutout, 5200 volts, 100 and 200 amperes, with separable-sleeve bushings for wiping to lead-sheathed cables.

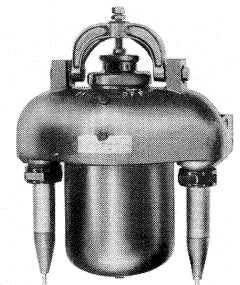


Fig. 12. Subway-type oil-filled cutout, 5200 volts, 100 and 200 amperes, equipped with detachable entrance terminals for non-leaded rubber or aerial cable.

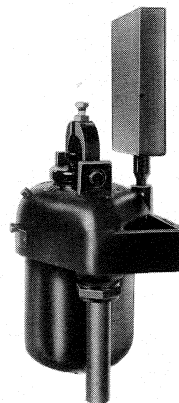


Fig. 13. Subway-type cutout completely sealed with expansion chamber for totally-submerged operation.

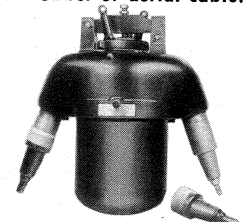


Fig. 14. Subway-type oil-filled cutout, 5200 volts, 300 amperes, and 7800 volts, 100 amperes, with non-detachable wiping sleeves for connection to lead-sheathed or non-leaded rubber cable or aerial cable. Plastic envelopes protect the leads from moisture and mechanical injury during transportation. These protective envelopes should not be removed until the contact is ready to be connected. Photo above shows protective cover on left-hand wiping sleeve, removed from right-hand sleeve.

Subway-type Cutouts Can Be Connected to All Types of Power Cable

Subway-type oil-filled cutouts rated 5200 volts, 100 and 200 amperes, can be equipped with interchangeable separable-sleeve bushings with plug-in contacts for connection to lead-sheathed cable (Figure 15) or with detachable entrance terminals for non-leaded rubber-covered cable or aerial cable (Figure 17).

1. COMPOUND SEAL.

2. MOLDED INSULATING BUSHING permanently fixed in cutout.

3. REMOVABLE INSULATING SLEEVE properly positioned and held in the removable brass swivel sleeve by ring A (see item 10 below).

4. UNION NUT.

5. UNION GASKET.

6. REMOVABLE BRASS SWIVEL SLEEVE for wiping to the lead-sheathed cable.

7. SLEEVE CONTACT permanently attached to the cutout.

8. REMOVABLE PLUG CONTACT sweated to the conductor of the lead-sheathed cable.

9. CABLE INSULATION stripped in accordance with gage packed with each subway-type fuse cutout.

10. RING A.

11. WIPED JOINT.

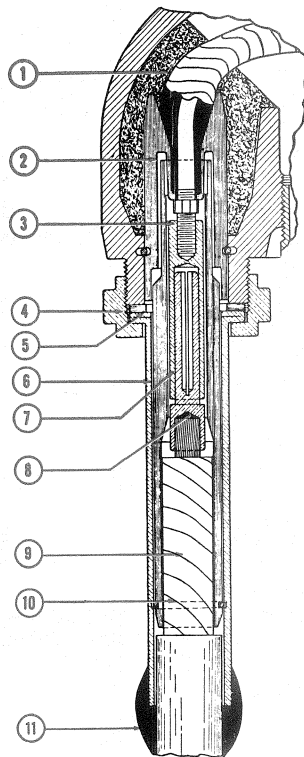


Fig. 15. Cut-away drawing of separable-sleeve bushing of subway-type cutouts—5200 volts, 100 and 200 amperes.

Cutouts using separable sleeve bushings are provided with petrolatum having a suitably high melting point (135 F) for filling the entrance terminals, thus increasing the dielectric strength. Petrolatum is shipped in separate containers.

1. MOLDED INSULATING BUSHING permanently fixed in cutout.

2. UNION NUT.

3. UNION GASKET.

4. REMOVABLE BRASS SWIVEL SLEEVE to which insulating sleeve (bushing) and plug contact are permanently fastened.

5. SLEEVE CONTACT permanently attached to the cutout.

6. REMOVABLE PLUG CONTACT sweated to upper end of projecting stud.

7. PRESSURE-TIGHT JOINT prevents cutout oil and oil vapors from contacting rubber and causing deterioration.

8. INSULATING SLEEVE and bushing (one unit) threaded into swivel sleeve.

9. PROJECTING STUD for splicing to rubber-covered cable. It provides a permanent connection to plug contact and is rigidly held in insulating sleeve.

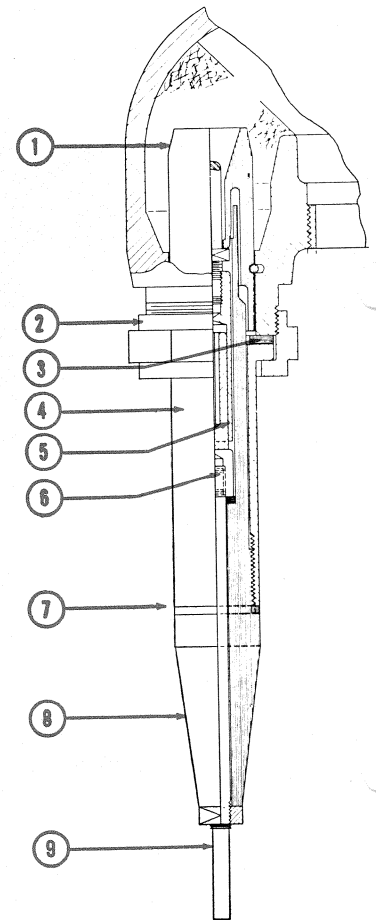
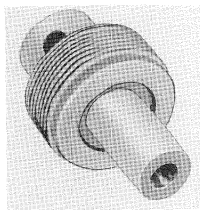


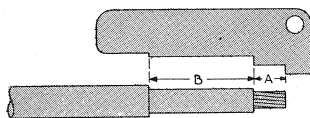
Fig. 17. Cut-away drawing of detachable entrance terminal for attaching rubber-covered cable or aerial cable to subway-type cutouts—5200 volts, 100 and 200 amperes.

SIMPLE CABLE CONNECTION

An assembly fixture, dummy of the bushing parts permanently fastened to the cutout, enables your lineman to hold the brass swivel sleeve and the cable in proper alignment when wiping the joint between them, as shown below. This can be done more easily with the dummy fixture, shown at right, than on the cutout.



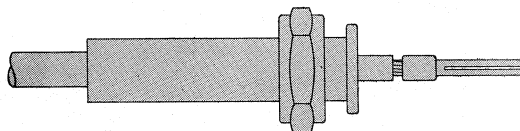
A. PREPARE END OF CABLE, using gage furnished with the cutout.



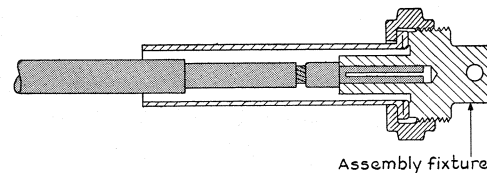
B. SWEAT THE PLUG CONTACT ONTO THE CABLE.



C. SLIDE WIPING SLEEVE AND NUT OVER THE CABLE.



D. PUSH ASSEMBLY FIXTURE OVER PLUG CONTACT AND ATTACH WIPING SLEEVE. (Omitting gasket provides suitable clearances when assembled on cutout.)



E. CENTER THE CABLE IN THE SLEEVE AND WIPE THE JOINT BETWEEN CABLE AND SLEEVE.

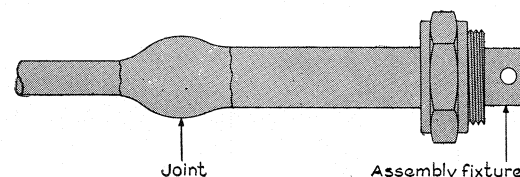


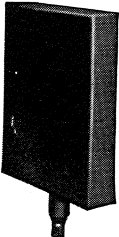
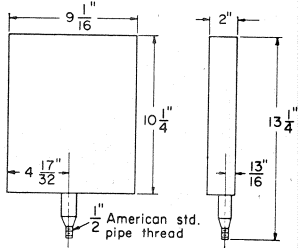
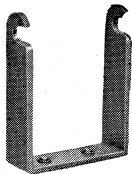
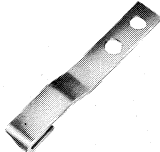


Fig. 16. Diagram showing ease of wiping joint between lead-sheathed cable and separable-sleeve bushing, using dummy assembly fixture.

Data for G-E Oil-filled Cutout Accessories

Description	Cat. No.	List Price	For Use With Cutouts, Cat. No.*	
			Present Design	Superseded Designs
TERMINAL ACCESSORIES FOR SUBWAY-TYPE CUTOUTS				
 <p>Assembly fixture Simplifies connection of cable to separable sleeve-type subway bushings.</p>	248664	Refer to nearest G-E Apparatus Sales Office	9F2F7	246103, 246104, 246107, 4X110, 4X121, 9F2A6, 9F2A7, 9F2C7, 9F2D7, 9F2E7
	248665		9F2F8	246105, 246108, 4X122, 9F2A8, 9F2C8, 9F2D8, 9F2E8
 <p>Entrance terminals for rubber-covered cable.</p>	5278909G2†	Refer to nearest G-E Apparatus Sales Office	9F2F7 9F2F27	246103, 246104, 246107, 4X110, 4X121, 9F2A6, 9F2A7, 9F2C7, 9F2C27, 9F2D7, 9F2D27, 9F2E7, 9F2E27
	5278910G2†		9F2F8 9F2F26	246105, 246108, 4X122, 9F2A8, 9F2C8, 9F2C26, 9F2D8, 9F2D26, 9F2E8, 9F2E26
VENTING ACCESSORY FOR SUBWAY-TYPE CUTOUTS				
 <p>Complete expansion chamber. For use in securing the interrupting capacity shown for subway-type cutouts or where complete submersion of the cutout is likely.</p>	242B588G2	Refer to nearest G-E Apparatus Sales Office	<p>All subway-type cutouts of up-to-date or superseded designs</p> 	
COPPER DISCONNECTING BLADES				
 <p>Amp 150 250 350</p>	<p>For Cutouts of Present Design, or for Cutouts of Superseded Design Having Notched Fuse Carriers</p>		<p>Refer to nearest G-E Apparatus Sales Office</p>	
	9218955G1 9218955G2 9218955G3		9F2(D, E or F)2, -7, -10, -11, -27, -38, 9F2(D or F)5 9F2(D, E or F)3, -8, -12, -13, -26, -39, -50 9F2(D or F)4, -15, -33, -35	
LOCKING BAR				
 <p>Simple hook-on locking bar for padlocking gang-operating mechanisms in open or closed position.</p>	M5278970 PT32	Refer to nearest G-E Apparatus Sales Office	For use on pole-type or metal-enclosed assembly mechanisms.	

* Numbers in the 9F series are model numbers; all others are catalog numbers.

† 9481 Petrolatum for filling these entrance terminals must be ordered separately. For entrance terminal Cat. No. 5278909 G2 order V-9293160 PT21. For entrance terminal Cat. No. 5278910 G2 order V-9293160 PT22.

Load-break and Short-time Ratings

TABLE I

For Present Listed Designs of G-E Oil-filled Cutouts with Fuse Links and Disconnecting Blades*

Cutout Model No.	Volts (Max. Design)	Continuous Current Ratings Rms Amp		Load-break Ratings with Fuse Links (Based on hundreds of "ON-OFF" operations)		Short-time Ratings with Disconnect Blade Amp Rms	
		With Fuse Link	With Disconnect Blade	Circuit-Voltage (Nominal System)	Amp Rms	For One Second	For Five Seconds
9F2E or F 2 9F2E or F 10 9F2E or F 11 9F2E or F 7 9F2E or F 27 9F2E or F 38 §	4500 5200	100 100	150 150	2400 Delta or 2400/4160Y multi-grounded neutral 4160-4800	100 † 50 †	4500	2500
9F2E or F 3 9F2E or F 12 9F2E or F 13 9F2E or F 8 9F2E or F 26 9F2E or F 39 §	4500 5200	200 200	250 250	2400 Delta or 2400/4160Y multi-grounded neutral 4160-4800	200 † 150 †	9000	4000
9F2D or F 4 9F2D or F 15 9F2D or F 33 §	4500 5200	300 300	350 350	2400 Delta or 2400/4160Y multi-grounded neutral 4160-4800	300 † 200 †	9000	5000
9F2D or F 5 9F2D or F 9 9F2D or F 35 §	7800	100	150	7200	50 †	7000	3000

* Load-break ability of cutout with disconnecting blade is equal to the full continuous current rating of the disconnecting blade at 2500 volts delta or 2400/4160Y volts multi-grounded neutral, but at higher voltages is limited to the load-break ratings with fuse links as listed in the table. However, cutouts with disconnecting blades are not recommended for ordinary load switching because of the risk of possible short-circuit condition on the circuit at the time of switching and absence of fuse link in the cutout to interrupt such short-circuit current. Where switching is done with cutouts equipped with blades, it is recommended that the cutout operation be interlocked with the secondary switchgear so that the secondary load is always disconnected first. When operation is interlocked with secondary switchgear, the cutout can be

applied with load current up to the full continuous current rating of the disconnecting blade.
 † Cutouts with fuse links have maximum load-break rating limited to the fuse-link rating. Cutouts with fuse links can be switched closed on short circuits up to their published interrupting rating. However, some contact maintenance may be necessary when closed on short-circuit currents close to the interrupting rating of the cutout.
 ‡ These load-break ratings are limited by the ability of the cutout to withstand hundreds of "ON-OFF" switching operations at the voltage indicated; and these ratings apply to the cutouts when used with either fuse link or disconnecting blade.
 § Model No. of cutouts used on metal-enclosed assemblies, see page 17.

KVA INTERRUPTING RATINGS OF G-E OIL-FILLED CUTOUTS

For Applications to Typical Circuits

The interrupting ratings are the maximum rms symmetrical or asymmetrical current values in amperes which the cutout will interrupt at the rated maximum design voltage. This is the prescribed basis of rating in the AIEE "Revised Report on Standards for fuses above 600 volts" No. 25.

The symmetrical short-circuit current available on a circuit is that obtained by dividing the circuit voltage by the impedance. In determining the asymmetrical short-circuit current available at an intended location, allowance is made for the increase in the rms value of the first loop of current caused by transient d-c offset which is a function of ratio of the reactance to the resistance of the circuit.

As a guide in application, the AIEE has proposed the use of multiplying factors with calculated symmetrical short-circuit currents in order to include the d-c offset. They have proposed for fuses:

- (1) A multiplying factor of 1.2 for circuits 15,000 volts and below, with an X/R ratio of 4 or less, and
- (2) A multiplying factor of 1.6 for all other circuits.

In Table II, columns 8, 9, and 10 give three-phase kva interrupting values. Col. 9 and 10 are included as application guide for convenience in comparing directly with calculated symmetrical values available on the circuit.

Col. 8—Kva values asymmetrical determined by multiplying the cutout maximum current interrupting rating by the line-to-line voltage times 1.73. These values correspond to calculated symmetrical kva where the circuit X/R approaches zero.

Col. 9—Kva values of Col. 8 divided by 1.2. These values correspond to calculated symmetrical kva where X/R is 4 or less. (The equivalent asymmetrical kva value for this offset will be the same as Col. 8).

Col. 10—Kva values of Col. 8 divided by 1.6. These values correspond to the calculated symmetrical kva where X/R is greater than 4. (The equivalent asymmetrical kva value for this offset will be the same as Col. 8.)

On distribution circuits, the X/R ratio will usually not exceed 4, except for a few hundred feet from the substation, and thus the multiplying factor would be 1.2.

On industrial applications at large plants fed by their own generators or substations, overcurrent protective equipment is subjected to more severe circuit conditions because of the concentration of power on short feeders with large conductors. The X/R ratio is likely to be higher than on utility distribution circuits and thus the d-c offset of the asymmetrical current will be greater, necessitating the use of the 1.6 multiplying factor.

Table II, Page 9

Kva interrupting ratings of present listed G-E oil-filled cutouts with interchangeable fuse links. (Model No. 9F18B-series.)

- Form F cutouts (9F2F-), 5200 volts, 100 and 200 amperes.
- Form F cutouts (9F2F-), 5200 volts, 300 amperes, 7800 volts, 100 amperes.

KVA Interrupting Ratings of G-E Oil-filled Cutouts

TABLE II—KVA INTERRUPTING RATINGS OF PRESENT LISTED G-E OIL-FILLED CUTOUTS WITH INTERCHANGEABLE FUSE LINKS (MODEL NO. 9F18B—SERIES)

For Applications to Typical Circuits

Col. 1 Type of Circuit	Col. 2 Circuit Voltage Phase-to-phase (Nominal System)	Col. 3 Voltage Rating of Cutout (Max. Design)	Col. 4 Cutout Model No.			Col. 5 Maximum Current Rating of Cutout Amp	Col. 7 Interrupting Ratings Max RMS Amperes At Max. Design Voltage	Based on Nominal System Voltage			
			Pole Type	Pothead Type	Subway Type			Col. 8 Max 3-phase kva asymmetrical, based on max amp times line-to-line volts times 1.73† (Applies to symmetrical kva only where X/R = 0)	Col. 9 Three-phase symmetrical kva corresponding to current interrupting rating Col. 7 and for circuit voltage in Col. 2‡		Col. 10
									Use as Application Guide		
			For circuits where X/R = 4 or less §		For circuits where X/R is greater than 4¶						
3-phase 3-wire Delta	2400	4500	9F2F2,-E2 (9F2F38,-E38)φ	9F2F10,-E10 (9F2F11,-E11)	9F2F7,-E7 (9F2F27,-E27)	100	6000*	25,000	20,000	15,000	
			9F2F3,-E3 (9F2F39,-E39)φ (9F2E50)	9F2F12,-E12 (9F2F13,-E13)	9F2F8,-E8 (9F2F26,-E26)	200	11,000*	45,700	38,000	28,000	
			9F2F4,-E4 (9F2F39,-E39)φ	.....	9F2F15,-E15	300	11,000	45,700	38,000	28,000
3-phase Y or Delta	4160	4500	9F2F2,-E2 (9F2F38,-E38)φ	9F2F10,-E10 (9F2F11,-E11)	9F2F7,-E7 (9F2F27,-E27)	100	6000*	43,200	36,000	27,000	
			9F2F3,-E3 (9F2F39,-E39)φ (9F2E50)	9F2F12,-E12 (9F2F13,-E13)	9F2F8,-E8 (9F2F26,-E26)	200	11,000*	79,400	66,000	50,000	
			9F2F4,-E4 (9F2F33,-E33)φ	.....	9F2F15,-E15	300	11,000	79,400	66,000	50,000
3-phase 3-wire Delta	4800	5200	9F2F2,-E2 (9F2F38,-E38)φ	9F2F10,-E10 (9F2F11,-E11)	9F2F7,-E7 (9F2F27,-E27)	100	5000*	41,500	34,000	26,000	
			9F2F3,-E3 (9F2F39,-E39)φ (9F2E50)	9F2F12,-E12 (9F2F13,-E13)	9F2F8,-E8 (9F2F26,-E26)	200	10,000*	83,000	69,000	50,000	
			9F2F4,-E4 (9F2F33,-E33)φ	.....	9F2F15,-E15	300	10,000	83,000	69,000	50,000
3-phase 3-wire Delta	7200	7800	9F2F5,-E2 (9F2F35,-E35)φ	.....	9F2F9,-E9	100	3750	46,700	38,900	29,200

* The strength of the internal parts which limit the interrupting rating is stronger in these cutouts than in earlier designs. For safety to the operator the housing of all designs is much stronger than is indicated by these ratings.

† Since oil-filled cutouts are more sensitive to current than voltage, the kva interrupting ability is not constant. Thus if the voltage of the circuit is lower or higher than in Column 2, there will be a corresponding decrease or increase of the kva corresponding to the maximum current interrupting rating.

‡ These values correspond to the maximum asymmetrical kva based on the maximum current interrupting rating of the cutout. In applying cutouts based on calculated maximum symmetri-

cal kva available on the circuit, symmetrical values should be lower than those in Col. 8 to a degree dependent on circuit X-R ratio—see Col. 9 and 10.

§ Generally applicable for installations remote from generating or supply substations, such as utility distribution circuits. These kva values are rounded out to even thousands.

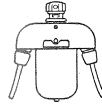
¶ Generally applicable for installations close to generating stations or supply substations, including industrial plants with own generation or step-down substations. These kva values are rounded out to even thousands.

φ Model No. of cutout used on metal-enclosed assemblies, see page 10.

Data and Dimensions of G-E Oil-filled Cutouts

Cutout Ratings with Interchangeable Fuse Links			Model No. †	List Price Each Incl Oil and Boxing	Wt in Lb				10-C Oil Req'd in Quarts ‡	Max Cable AWG for Subway Entrance Terminals	Dimensions in Inches							
Volts (Max. Design)φ	Amp	Interrupting Cap. Rms Amp at 60 Cycles			Ship.		Net				Fig. (Page 11)	A Height	B Width	C Depth	D	E	F	G
					Cut-out	Oil	Cut-out	Oil										

POLE TYPE



With Flexible Cable Leads

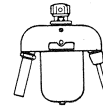
4500	100	6000	9F2F2	Refer to Apparatus Sales Office	62	9	40	5	3	....	18	16	12 3/4	7 1/16	3 1/16	7 3/4	8 7/16	1/2
5200	100	5000			9F2F3	113	21	70	13	8	18	19 1/8	16 1/4	10 1/4	5	9	9 1/2	5/8
4500	200	11000	9F2F4		205	31	160	22	14	....	18	24 1/4	22 1/2	12 11/16	6 1/4	12 3/4	12 5/16	3/4
5200	200	10000			9F2F5	200	31	155	22	14	18	24 1/4	22 1/2	12 11/16	6 1/4	12 3/4	12 5/16	3/4
4500	300	11000																
5200	300	10000																
7800	100	3750																

POTHEAD TYPE

§



Model No. 9F2F10 and 9F2F12 have right-hand subway sleeve bushing



Model No. 9F2F11 and 9F2F13 have left-hand subway sleeve bushing

4500	100	6000	9F2F10	Refer to Apparatus Sales Office	64	9	40	5	3	0	19	16	13 1/8	7 1/16	3 1/16	7 3/4	8 7/16	1/2	
5200	100	5000			9F2F11	116	21	70	13	8	0000	19	19 1/8	17 3/8	10 1/4	5	9	9 1/2	5/8
4500	200	11000	9F2F12																
5200	200	10000			9F2F13														
4500	300	11000																	
5200	300	10000																	

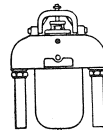
CUTOUTS FOR METAL ENCLOSED ASSEMBLIES — (See Fig. 43, page 17)

4500	100	6000	9F2F38	Refer to Apparatus Sales Office	44	9	41	8 1/2	3 1/2	....	23	16 3/8	12 3/8	8 3/8		6 1/4	7 3/4	..
5200	100	5000			9F2F39	82	27	77	18	9	24	20	16	10 3/8		8 1/4	9 3/8
4500	200	11000	9F2F33		195	36	130	28	14	....	25	24 1/4	19 1/4	12 3/8		10 3/8	11 1/2	..
5200	200	10000			9F2F35	195	36	130	28	14	25	24 1/4	19 1/4	12 3/8		10 3/8	11 1/2
4500	300	11000																
5200	300	10000																
7800	100	3750																

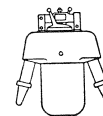
Subway type cutouts require expansion chamber Cat. No. 242B588G2 listed on page 11 to secure the interrupting capacities shown for these model number cutouts. When cutouts are used with the vent opening sealed, or with no expansion chamber the interrupting capacity is reduced 50 percent.

SUBWAY TYPE

§



Model No. 9F2F7 and 9F2F8 have separable sleeve-type bushings



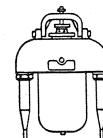
Model No. 9F2F15 and 9F2F9 have nondetachable wiping sleeves

4500	100	6000	9F2F7	Refer to Apparatus Sales Office	70	9	46	5	3	0	20	18 3/4	11 7/8	8 7/8	4 3/4	6 3/4	9 1/8	1/2
5200	100	5000			9F2F8	127	21	85	13	8	0000	20	20 7/8	16	11 1/16	5 13/16	8 1/4	10 3/4	5/8
4500	200	11000	9F2F15		200	26	155	22	14	....	21	24 1/4	22 3/4	12 11/16	6 1/4	12 3/4	12 1/8	3/4
5200	200	10000			9F2F9	200	26	155	22	14	21	24 1/4	22 1/2	12 11/16	6 1/4	12 3/4	12 1/8	3/4
4500	300	11000																
5200	300	10000																
7800	100	3750																

SUBWAY TYPE

§

With Entrance Terminals For Rubber-covered Cable



Entrance terminals for rubber-covered cable can be obtained separately for installation on standard subway-type cutouts. Model No. 9F2F7 and 9F2F8

4500	100	6000	9F2F27	Refer to Apparatus Sales Office	70	9	46	5	3	....	22	18 3/4	11 7/8	8 7/8	4 3/4	6 3/4	9 1/8	1/2	
5200	100	5000			9F2F26	128	21	86	13	8	....	22	20 7/8	16	11 1/16	5 13/16	8 1/4	10 3/4	5/8
4500	200	11000																	
5200	200	10000																	
4500	300	11000																	
5200	300	10000																	

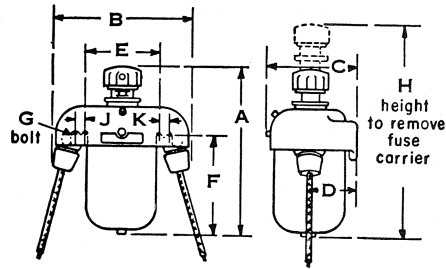
† Cutouts with Model Numbers in the 9F2D and 9F2E series have a notch in the lower end of the wood carrier plug to accommodate the interchangeable fuse links. These cutouts will also accommodate the superseded design of plain- and reactive-type fuse links.

‡ 10-C oil is supplied for one filling. Either G-E No. 10-C or No. 21 may be used for replacement.

§ All pothead-type and subway-type oil-filled cutouts, Model No. 9F2F7, 9F2F8, 9F2F26 and 9F2F27 are provided with petrolatum for filling the entrance terminals. Petrolatum is shipped in separate container.

φ Maximum design voltages are maximum tolerable zone voltages for nominal system voltages listed in the heading.

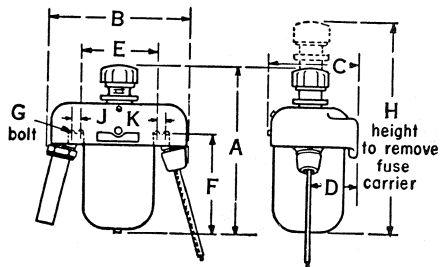
Dimensions of G-E Oil-filled Cutouts



DIMENSIONS IN INCHES

Model No.	H	J	K
9F2F2	25 3/16	1/8	1/8
9F2F3	29 3/8	None	1
9F2F4	37 1/16	None	None
9F2F5	37 1/16	None	None

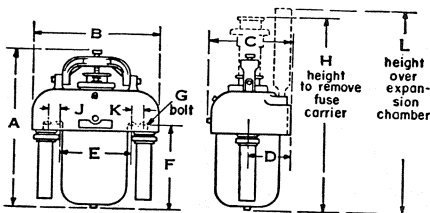
Fig. 18. Pole-type cutout



DIMENSIONS IN INCHES

Model No.	H	J	K
9F2F10	25 3/16	1/8	1/8
9F2F11	25 3/16	1/8	1/8
9F2F12	29 3/8	none	1
9F2F13	29 3/8	none	1

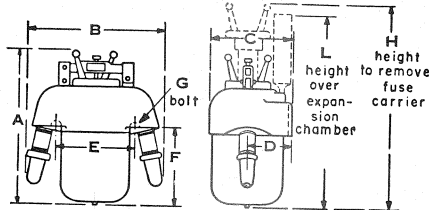
Fig. 19. Pothead-type cutout



DIMENSIONS IN INCHES

Model No.	H	J	K	L
9F2F7	23 15/16	3/4	3/4	24 11/16
9F2F8	27 11/16	None	1 1/4	27 3/16

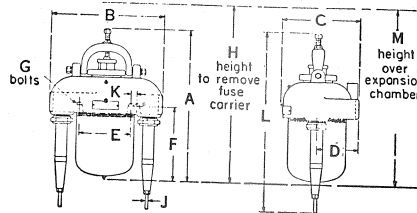
Fig. 20. Subway-type cutout with separable sleeve bushings



DIMENSIONS IN INCHES

Model No.	H	L
9F2F9	36 1/2	33 3/4
9F2F15	36 1/2	33 3/4

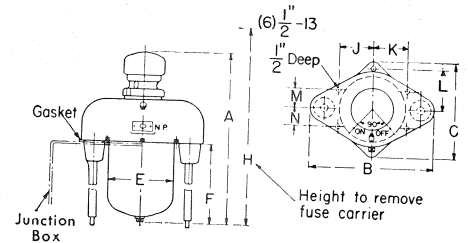
Fig. 21. Subway-type cutout with nondetachable wiping sleeves



DIMENSIONS IN INCHES

Model No.	H	J	K	L	M
9F2F27	23 15/16	1/4	3/4	21 1/4	24 11/16
9F2F26	27 11/16	1 1/4	1 1/4	22 1/4	27 3/16

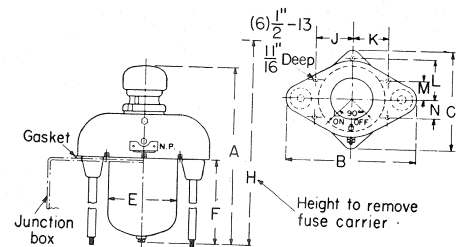
Fig. 22. Subway-type cutout with entrance terminals for rubber-covered cable



DIMENSIONS IN INCHES

Model No.	H	J	K	L	M	N
9F2F38	26 3/16	3 3/16	3 3/16	3 13/16	1 3/4	1 3/4

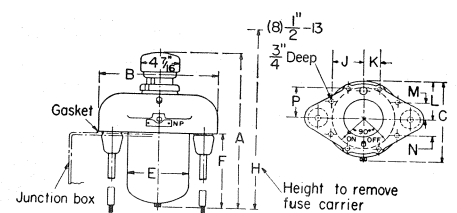
Fig. 23. Cutout for metal enclosed assembly Model 9F2F38



DIMENSIONS IN INCHES

Model No.	H	J	K	L	M	N
9F2F39	30 1/8	3 13/16	3 13/16	4 13/16	2 3/4	2 3/4

Fig. 24. Cutout for metal enclosed assembly Model 9F2F39



DIMENSIONS IN INCHES

Model No.	H	J	K	L	M	N	P
9F2F33	37 3/16	5 3/8	2 3/8	5 15/16	1 1/2	1 1/2	5 3/16
9F2F35	37 3/16	5 3/8	2 3/8	5 15/16	1 1/2	1 1/2	5 3/16

Fig. 25. Cutout for metal enclosed assembly Models 9F2F33 and 9F2F35

Gang-Switching Mechanisms Allow Single and Three-Phase Switching Capability with G-E Oil-filled Cutouts

Safe switching of either single- or three-phase load current is available by linking two or three oil-filled cutouts with a gang-operated switching mechanism. Use of these cutouts for switching provides maximum operator safety because the circuit break is confined under oil, with the additional line protection of a fuse link. A disconnect blade can be substituted for the fuse link, if desired.

EASE OF SWITCHING WITH POLE OR POTHEAD CUTOUT

The construction of pole- and pothead-type cutouts permits instantaneous switching at any time.

Each fuse carrier can be removed separately for fuse replacement when the cutout is in the open position, without disturbing the rest of the cutouts. The switching mechanism

does not have to be disassembled, thus eliminating the possibility of lost parts.

SUBWAY CUTOUTS EASILY RELEASED FOR SWITCHING

Subway-type cutouts can be released for switching simply by loosening the single clamping screw in the top of each cutout yoke. Fuse carriers can be individually removed when the subway-type cutout is in the open position by removing the complete operating arm.

Mounting rack and mechanism for gang-operation is available in two types:

1. For pole- or pothead-type oil-filled cutouts (Fig. 26)
2. For subway-type oil-filled cutouts (Figs. 27 and 28)

MECHANISM FOR POLE- OR POTHEAD-TYPE CUTOUTS

(See Page 13)

1. **STEEL LEVER ARMS** are easily fastened to metal fuse-carrier caps using the same two screws which hold the hood to the metal caps.

2. **OPERATING HANDLE** and its lever arm can be located on whichever cutout is most convenient for operation. The mechanism can be pad-locked open or closed by additional locking bar or kirk key interlock.

3. **SLIDING BAR**, on which the lever arms are pivoted, forms a common connection which causes all cutouts to operate simultaneously.

4. **LOCKING STRAP** holds lever arm in place over pivot on sliding bar. Fuse carrier is unlocked by lifting strap and sliding it toward the fuse carrier.

5. **STEEL RACK** provides for convenient mounting on wall, pole, or framework. Racks are protected against corrosion by the same durable baked-on paint finish which is applied to cutouts. Gang-operating mechanisms are hot-dip galvanized.

6. **STAINLESS STEEL NAMEPLATE** indicates "on" or "off" position.

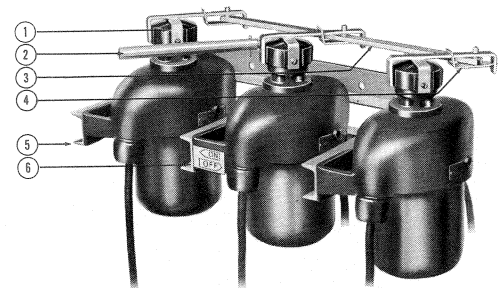


Fig. 26. Gang-operating mechanism for pole-type oil-filled cutouts arranged for three-phase switching operation. A similar assembly for single-phase operation holds two cutouts.

MECHANISM FOR SUBMERSIBLE SUBWAY-TYPE CUTOUTS

(See Page 14)

5200 volts, 100 or 200 amperes

1. **ROCKER CATCH** positively locks lever arms to fuse-carrier plugs.

2. **LEVER ARMS**, attached to common horizontal bar with a convenient operating handle, ensure simultaneous opening and closing of all cutouts.

3. **STEEL CHANNEL RACK** provides for convenient mounting on wall or framework. The operating mechanism is hot-dip galvanized for protection against corrosion.

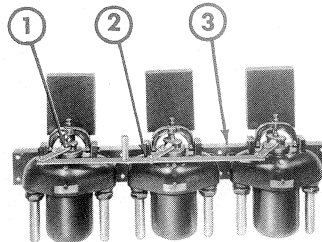


Fig. 27. Subway-type cutouts (5200 volts, 100 and 200 amperes) assembled for three-phase gang operation. Submersible expansion chambers mounted on cutouts. Racks similar to those shown in Figure 26 are available for use where wall space is limited.

5200 volts, 300 amperes and 7800 volts, 100 amperes

1. **LEVER ARMS**, attached to a common horizontal shaft, ensure simultaneous opening and closing of all cutouts.

2. **ENGAGE STRAP** is dropped over the horns of the fuse carriers. A pivot pin on each lever arm drops into the hole in the engaging strap.

3. **OPERATING HANDLE** is welded to horizontal shaft, gives ample leverage for easy operation.

4. **STEEL RACK** provides for convenient mounting on wall or framework. Rack is constructed of welded structural steel, hot-dip galvanized for protection against corrosion. Cutouts are compactly mounted, conserving installation space.

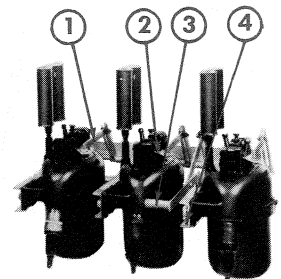


Fig. 28. Subway-type cutouts (5200 volts, 300 amperes and 7800 volts, 100 amperes) assembled for three-phase gang operation. Submersible expansion chambers mounted on cutouts.

POLE-BASE SWITCHING MECHANISM ALLOWS GROUND OPERATION OF POLE-TOP CUTOUTS
(See Pages 15 and 16)

Pole-top installations of gang-operated G-E oil-filled cutouts can be operated from the ground with a special pole-base switching mechanism. This application is ideally suited for primary control of sports lighting or fused sectionalizing of lines.

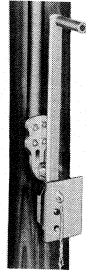


Fig. 29. Hand-operating lever for pole-base switching mechanism. Switch can be padlocked.

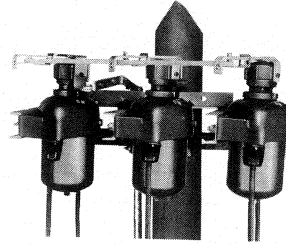


Fig. 30. Pole-top installation of gang-operated oil-filled cutouts for pole-base switching.

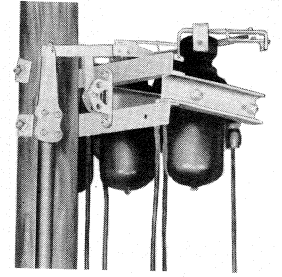


Fig. 31. Upper connection of pole-base switching mechanism to oil-filled cutouts.

Data and Dimensions of G-E Operating Mechanisms

SINGLE- AND THREE-PHASE MECHANISMS FOR POLE-TYPE CUTOUTS

For Mounting Cutouts		Cat. No. Rack and Mechanism	List Price Each	Approx. Wt in Lb		APPROXIMATE DIMENSIONS IN INCHES (Including Cutouts)																
Model No. Cutout	Rating Volts | Amp			Ship.	Net	For over-all height (above bottom of cutout) required to remove fuse carrier, see dimension Q.																
						Fig.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	
SINGLE-PHASE—2 UNITS																						
9F2F2 9F2F10 9F2F11	5200 | 100	79X787	Refer to nearest G-E Apparatus Sales Office	50	40	32	17	25 3/8	23	15 3/4	11 1/16	5 1/2	4 1/16	7 1/4	1 3/16	5 3/8	20 1/16	1 3/8	11	8 1/16	25 13/16	
9F2F3 9F2F12 9F2F13	5200 | 200			79X788	60	50	32	20 1/8	27 1/16	26 1/4	17 3/8	13 1/4	7 3/8	6	9	1 1/16	6 7/8	24 13/16	1 3/4	13	11 3/8	29 3/8
9F2F4 9F2F5	5200 | 300 7800 | 100			79X808	75	65	32	25 1/4	30 13/16	31 1/4	20 1/8	15 3/4	9 7/8	7 7/8	10	1 1/16	6 7/8	29 13/16	2	15	16 3/8	37 13/16
THREE-PHASE—3 UNITS																						
9F2F2 9F2F10 9F2F11	5200 | 100	79X789	Refer to nearest G-E Apparatus Sales Office	50	40	33	17	31 1/16	23	23 3/8	16 1/16	9 1/4	4 1/16	7 1/4	1 3/16	5 3/8	.....	1 3/8	11	8 1/16	25 13/16	
9F2F3 9F2F12 9F2F13	5200 | 200			79X790	60	50	33	20 1/8	37 13/16	26 1/4	28	19 3/4	11 1/2	6	9	1 1/16	6 7/8	.....	1 3/4	13	11 3/8	29 3/8
9F2F4 9F2F5	5200 | 300 7800 | 100			79X809	75	65	33	25 1/4	44 11/16	31 1/4	32 1/4	23 1/4	14 1/4	7 7/8	10	1 1/16	6 7/8	.....	2	15	16 3/8	37 13/16

Locking Bar or kirk key interlock is available for use with above mechanisms.

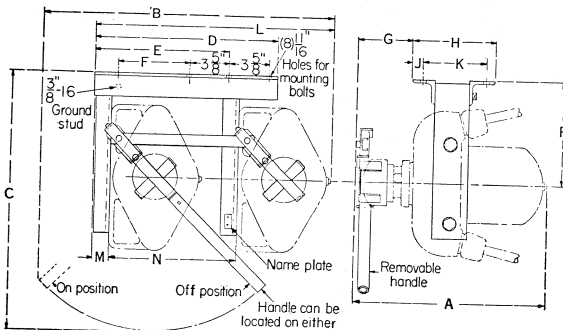


Fig. 32

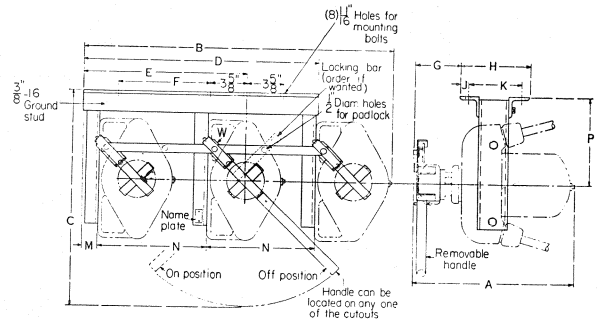


Fig. 33

Operating Mechanisms for Use on Metal Enclosed Assemblies Only (Pole-or pothead-type cutouts)

For Cutout Model No.	Ratings		Cat. No. of Mechanism	List Price Each	Approx. Wt in Lb	
	Volts	Amps			Ship.	Net
SINGLE PHASE—2 UNITS						
9F2F38	5200	100	3989598G19	Refer to nearest G-E Apparatus Sales Office	6 1/4	5 1/2
9F2F39	5200	200	3989598G20		6 1/2	5 3/4
9F2F33	5200	300	3989598G109		9 1/2	9
9F2F35	7800	100	3989598G109		9 1/2	9
THREE PHASE—3 UNITS						
9F2F38	5200	100	3989598G101	Refer to nearest G-E Apparatus Sales Office	8 1/4	7 3/4
9F2F39	5200	200	3989598G102		9 1/8	8 5/8
9F2F33	5200	300	3989598G110		9 3/4	9 1/4
9F2F35	7800	100	3989598G110		9 3/4	9 1/4

Locking Bar or kirk key interlock is available for use with above mechanisms.

Data and Dimensions of G-E Operating Mechanisms

SINGLE- AND THREE-PHASE MECHANISMS FOR SUBWAY-TYPE CUTOUTS

For Mounting Cutouts			Cat. No. Rack and Mechanism	List Price Each	APPROXIMATE DIMENSIONS IN INCHES (Including Cutouts)																
Model No. Cutout	Rating				Approx Wt in Lb	For over-all height (above bottom of cutout) required to remove fuse carrier, see dimension Q.															
	Volts	Amp				Ship.	Net	Fig.	A	C	D	E	F	H	J	K	L	M	N	P	Q†	S	T	V

THREE-PHASE—3 UNITS *

9F2F7 9F2F27‡	5200	100	119C328G2	Refer to nearest G-E Apparatus Sales Office	65	35	34	45 $\frac{3}{8}$	11	14 $\frac{7}{8}$	13 $\frac{7}{8}$	14 $\frac{7}{8}$	1	8 $\frac{1}{16}$	13 $\frac{3}{8}$	13 $\frac{3}{8}$	12 $\frac{3}{8}$	7 $\frac{3}{8}$	18 $\frac{3}{4}$	23 $\frac{1}{16}$	1	2	6 $\frac{1}{2}$
9F2F8 9F2F26‡	5200	200			119C328G1	105	65	34	58	13 $\frac{1}{2}$	19	18	19	1	11	18	18	14 $\frac{1}{2}$	7 $\frac{3}{8}$	20 $\frac{3}{8}$	27 $\frac{1}{16}$	1	4	7$\frac{7}{8}$

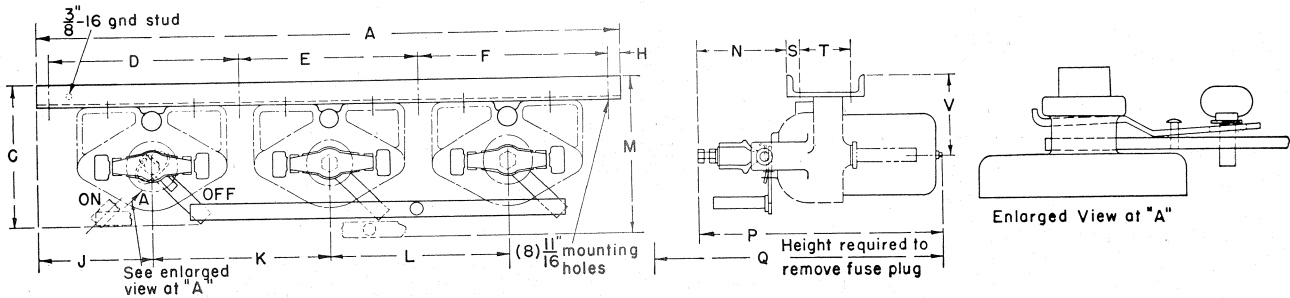


Fig. 34

For Mounting Cutouts			Cat. No. Rack and Mechanism	Approx Wt in Lb	APPROXIMATE DIMENSIONS IN INCHES (Including Cutouts)																	
Model No. Cutout	Rating				Ship.	Net	For over-all height (above bottom of cutout) required to remove fuse carrier, see dimension Q.															
	Volts	Amp					Fig.	A	B	C	D	F	G	H	J	K	M	N	P	Q†		

THREE-PHASE—3 UNITS *

9F2F15 9F2F9	5200 7800	300 100	79X7	237	122	35	31 $\frac{1}{4}$	44 $\frac{3}{4}$	31 $\frac{3}{8}$	39 $\frac{3}{4}$	14 $\frac{1}{4}$	14 $\frac{1}{8}$	10	1 $\frac{1}{8}$	6 $\frac{7}{8}$	2	15	16 $\frac{3}{8}$	36 $\frac{1}{16}$
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* Similar racks and mechanisms can be purchased in single-phase (2-unit) assemblies.

† Provides sufficient height to remove the fuse carrier and to allow for expansion chamber vents.

△ For prices refer to nearest G-E Apparatus Sales Office.

‡ For subway-type cutouts with separable-sleeve bushings for nonleaded rubber cable, add 2 $\frac{1}{2}$ inches to dimensions A and Q for Cat. No. 9F2F27, 100-amp cutouts, and 1 $\frac{3}{8}$ inches for Cat. No. 9F2F26, 200-amp cutouts.

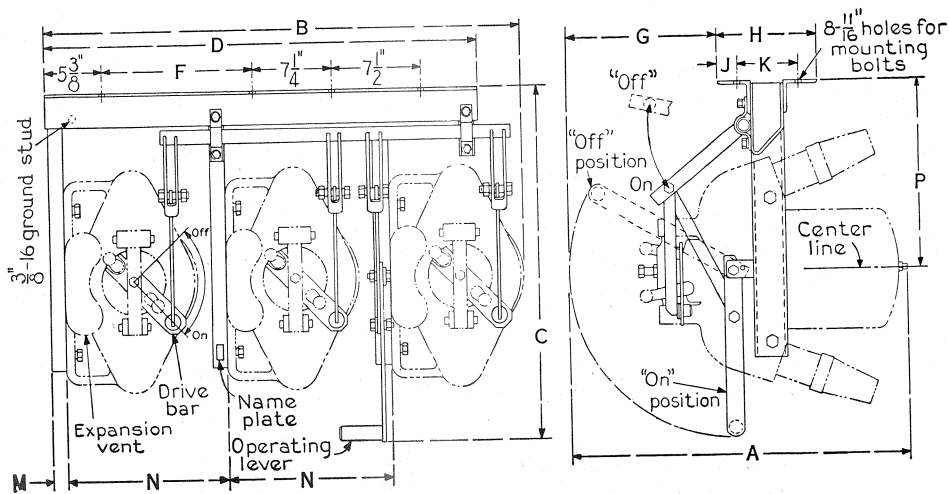


Fig. 35

Data and Dimensions of G-E Operating Mechanisms

SINGLE- AND THREE-PHASE POLE BASE SWITCHING MECHANISMS

For Use With Rack and Mechanism for Mounting Cutouts Rated				Specify Pole Base Switching Mechanism Cat. No. †	List Price Each	Approx Wt in Lbs		Fig.	Number of Cutouts
Cat. No.	Model No.	Volts	Amp			Ship.	Net		
79X789	9F2F2	5200	100	9F20A1	Refer to nearest G-E Ap- paratus Sales Office	42	32½	36	3
79X787	9F2F2	5200	100	9F20A11		47	37	39	2
79X790	9F2F3	5200	200	9F20A2		42	37	37	3
79X788	9F2F3	5200	200	9F20A21		47	32½	37	2
79X809	9F2F4	5200	300	9F20A3		45	35	39	3
79X808	9F2F4	5200	300	9F20A31		50	40	38	2
								40	2

†1-inch pipe (length depending on installation) is required to couple hand-operating lever and pole-top mechanism, and should be furnished by purchaser.

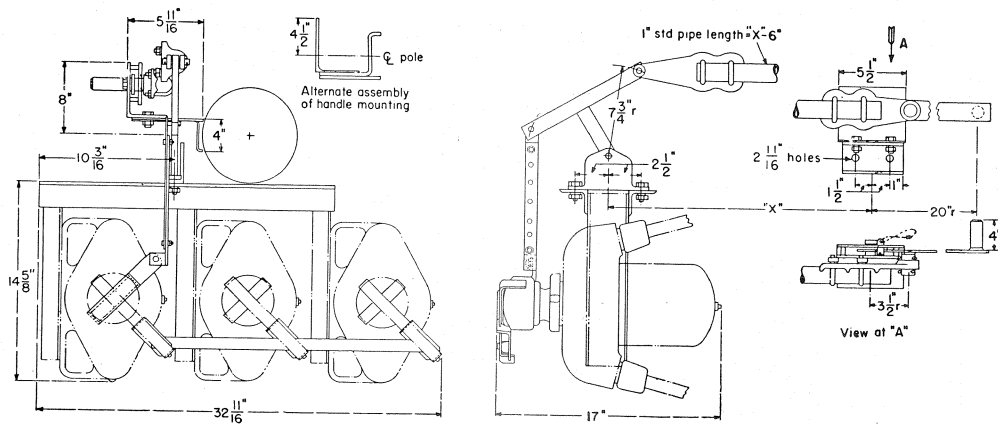


Fig. 36

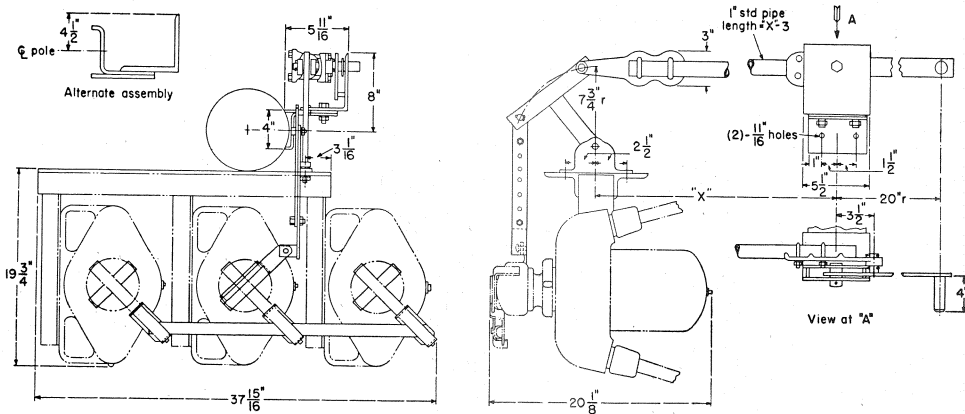


Fig. 37

Data and Dimensions of G-E Operating Mechanisms

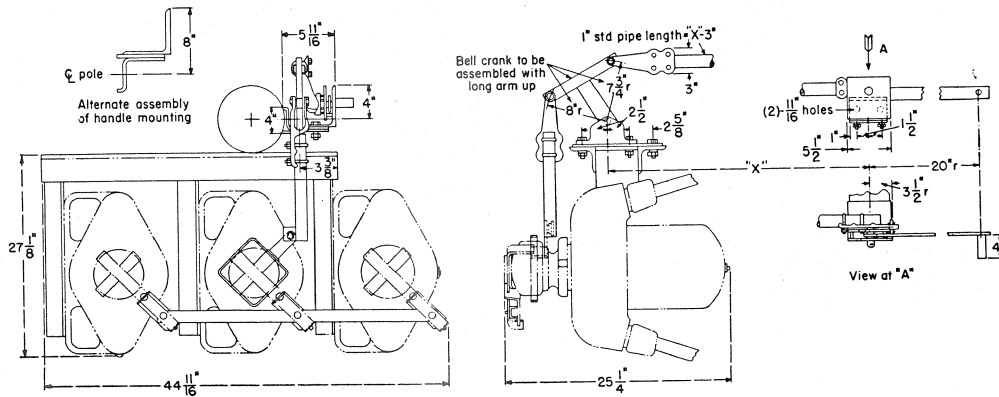


Fig. 38

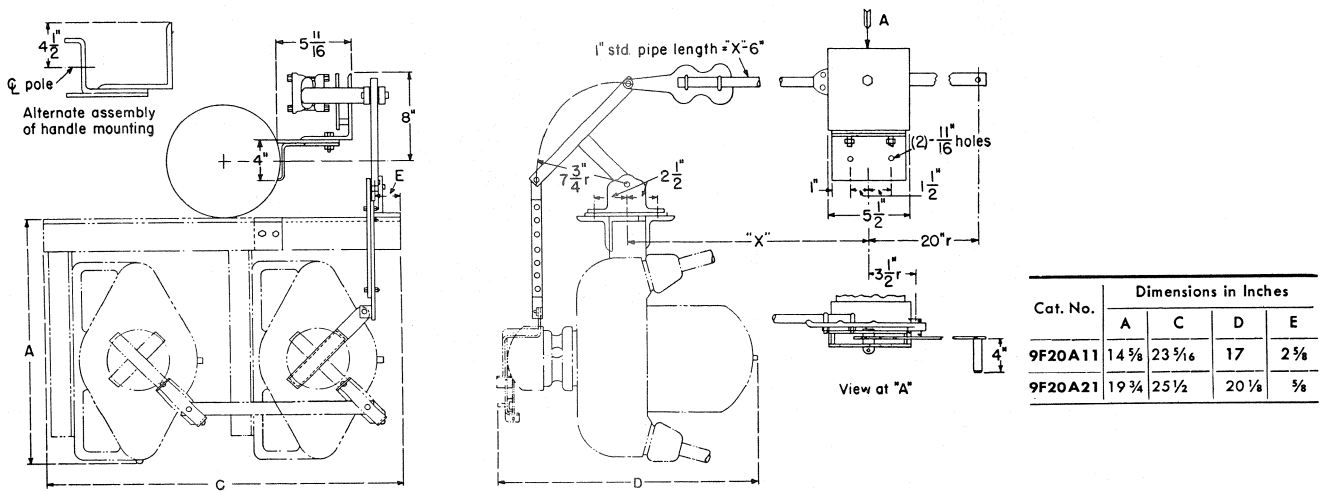


Fig. 39

Cat. No.	Dimensions in Inches			
	A	C	D	E
9F20A11	14 3/8	23 3/16	17	2 3/8
9F20A21	19 3/8	25 1/2	20 1/8	3/8

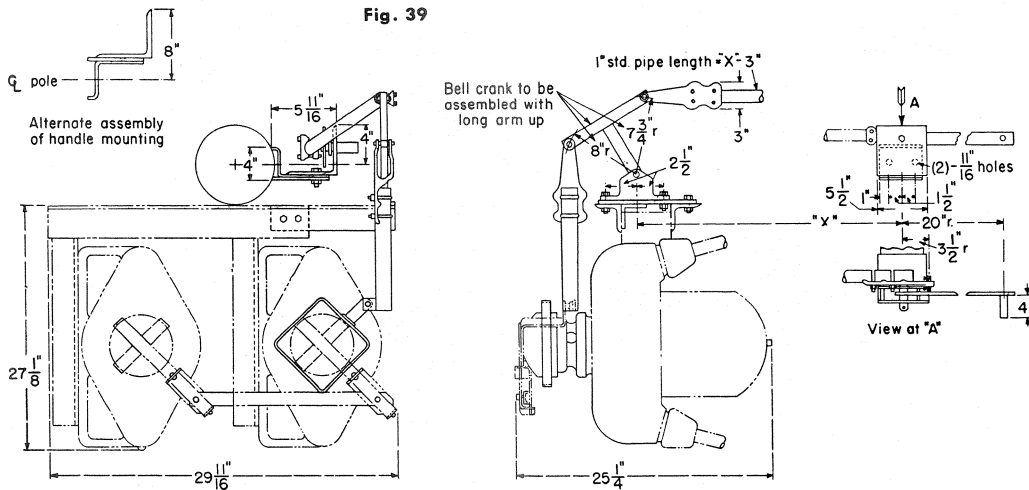


Fig. 40

Metal-enclosed Assemblies of Oil-filled Fuse Cutouts Provide Protection and Switching for Industrial Circuits

General Electric metal-enclosed assemblies of oil-filled cutouts are particularly suited for applications such as industrial plants (either indoors or outdoors) to provide economical short-circuit protection and switching for:

- Feeder and branch circuits
- Individual transformers or banks

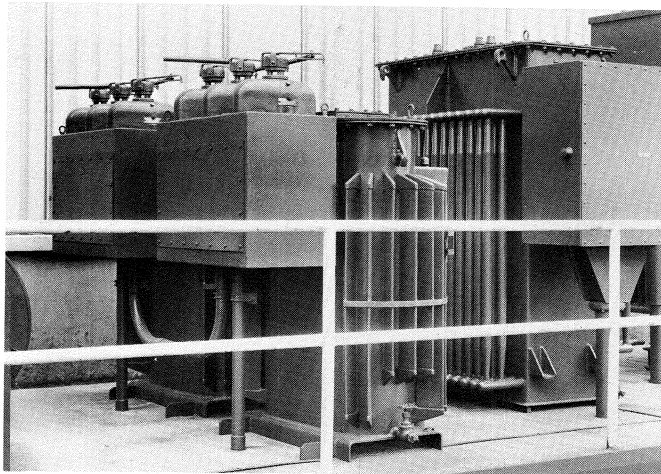


Fig. 41. Installation of two three-phase metal-enclosed assemblies of oil-filled cutouts serving as high-voltage switches and over-current protective devices. Cutouts are internally identical to pole-type units.

Motors and control apparatus

Electric-heating and other types of equipment

The metal-enclosed unit is factory-assembled, with flexible insulated cable leads ready for connection to circuit wiring or to pothead terminals. Assemblies are available for single- or three-phase applications, and can be mounted on walls or directly on apparatus.

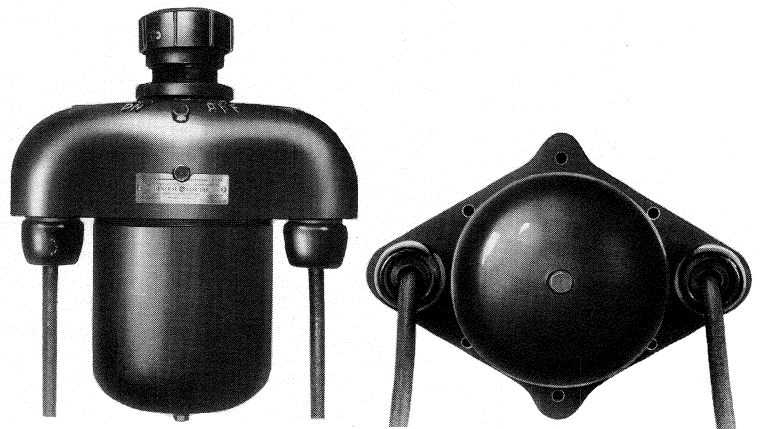


Fig. 43. G-E oil-filled cutout designed for use in metal-enclosed assemblies. Right-hand view shows machined surface of cover casting with six bolt holes for attaching to connection box.

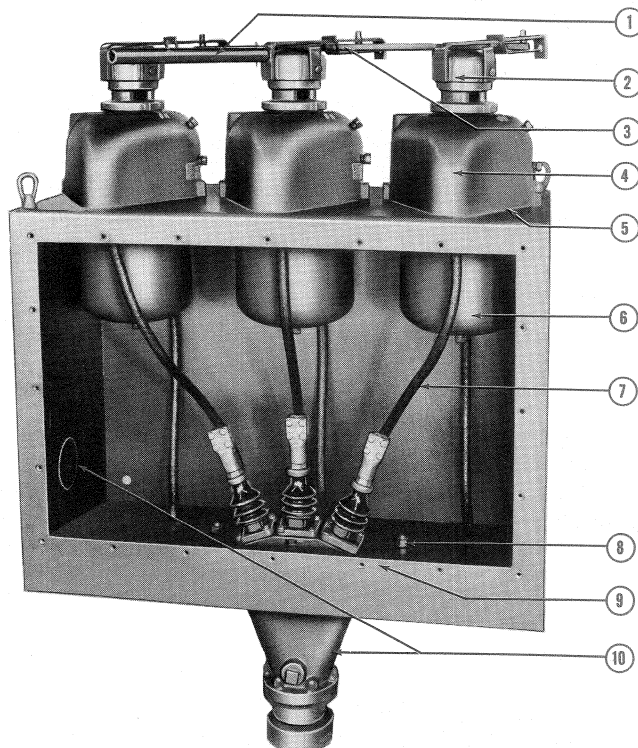


Fig. 42. Metal-enclosed oil-filled cutout assembly with connection-box cover removed to show cutout connections to cable pothead. Assemblies can be designed for wall-, platform-, or for direct-mounting on apparatus.

1. **OPERATING HANDLE** for gang switch can be used on any one of the three fuse carriers.

2. **SCREENED VENTS** in carrier permit escape of gas without ejection of flame or oil. Fuse or blade carriers are easily removable individually.

3. **SWITCH ARM** can be removed from pin without disturbing connecting rod or other switch parts.

4. **STURDY CAST COVER** of oil-filled cutout.

5. **BOLTED JOINT** between cutout and connection box is dust-tight and weather-tight.

6. **DRAWN-STEEL TANK** of oil fuse cutout.

7. **FLEXIBLE CABLE LEADS** provide easy means of connection to incoming cables, pothead terminals, etc. Leads are brought out of individual cutout covers above the oil level.

8. **BOLTS** clamp the pothead to the connection box.

9. **BOLTED AND GASKETED FLANGE JOINT** of connection-box cover is dust-tight and weather-tight.

10. **KNOCKOUT OR POTHEAD OPENINGS** are shown on outline drawings, pages 18-23. The pothead is an accessory to metal-enclosed assembly.

Data and Dimensions of G-E Metal-enclosed Assemblies

SINGLE-PHASE ASSEMBLY (with knockouts)

Assembly complete with gang-operated cutouts (two) mounted on a sheet-metal connecting box with removable front cover and with (1) knockout provided in right and left side, also (2) knockouts in

bottom of connecting box.

Connecting boxes including knockouts are weather-tight. Holes provided in connecting box for wall mounting.

Rating of Oil-filled Cutouts			Knockouts Provided in Connecting Box			Model Number of Assembly	List Price Each†	Approx. Wt. in Lb.				No. 10C Oil Supplied Qt Per Cutout	Model No. of Cutout Included In Assembly § #
Volts (Max. Design)	Amp	Interrupting Capacity RMS Amp†† at 60 Cycles	In Right Side*	In Left Side*	In Bottom*			Ship.		Net			
								Assembly	Oil	Assembly	Oil		
4500 5200	100	6000 5000	(1) 2" IPS	(1) 2" IPS	(2) 2" IPS	9F2K1	Refer to nearest G-E Apparatus Sales Office	202	18	153	16	3½	9F2F38
4500 5200	200	11000 10000	(1) 3" IPS	(1) 3" IPS	(2) 3" IPS	9F2K2		303	42	255	37	9	9F2F39
4500 5200	300	11000 10000	(1) 3" IPS	(1) 3" IPS	(2) 3" IPS	9F2K3		545	60	455	53	14	9F2F33
7800	100	3750	(1) 3" IPS	(1) 3" IPS	(2) 3" IPS	9F2K4		545	60	455	53	14	9F2F35

* IPS stands for iron pipe size. A reducing coupling can be employed to adapt knockouts for smaller size conduit.

† Assortments of different model numbers may not be combined to secure quantity discount. Does not include fuse links or disconnect blades.

Fuse links or disconnecting blades must be ordered separately, see pages 24 and 7.

No. 10C oil is supplied for filling cutouts.

‡ For information on KVA interrupting ratings of these cutouts see page 8.

π Based on the use of interchangeable fuse links in listed cutouts.

§ Length of leads, from bushings of these cutouts are 21, 23, 30 and 30 inches respectively, which is long enough for all ordinary connections.

These assemblies can also be furnished with similar cutouts having separable entrance terminals (see Fig. 15 and 17, page 6) for lead- or rubber-covered cables. They can also be furnished with subway-type cutouts with expansion chambers.

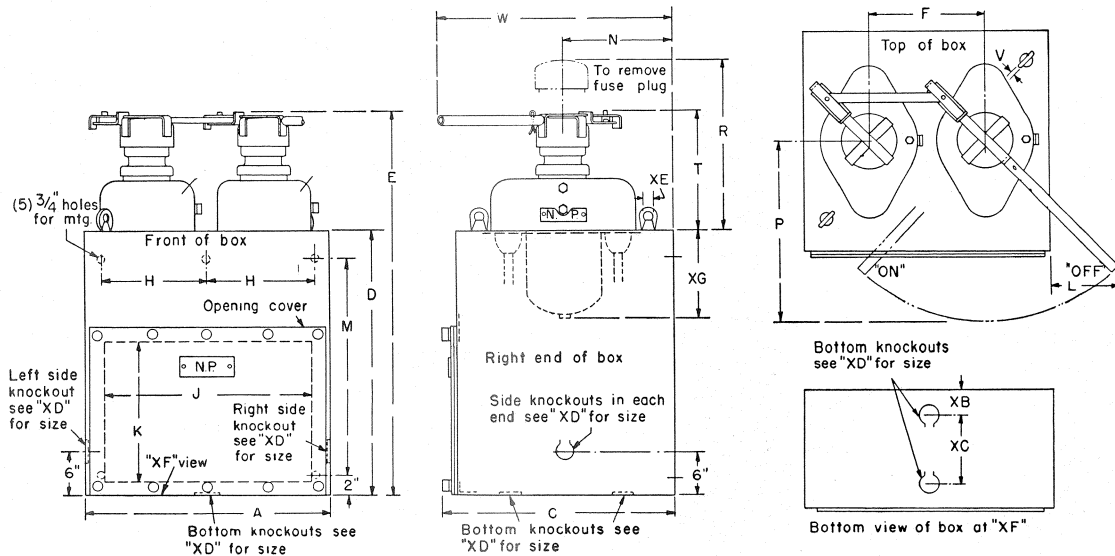


Fig. 44

Model Number	APPROXIMATE DIMENSIONS IN INCHES																				
	A	C	D	E	F	H	J	K	L	M	N	P	R	T	V	W	XB	XC	XD	XE	XG
9F2K1	19½	15¾	19	29	9½	8	15¼	14¾	6¼	14	7¾	14¾	19¾	10	¼	18¾	3	9¼	2	¾	7¾
9F2K2	23½	18¾	21	32½	11½	10	19¼	14¾	6	16	8¾	14¾	23	11½	¼	21¼	2¾	12	3	¾	9¾
9F2K3	27	25¾	24	37¾	13	11½	22¾	17¾	5	19	12½	14¾	26¼	13¾	¾	24¾	4¾	15¼	3	1½	11½
9F2K4	27	25¾	24	37¾	13	11½	22¾	17¾	5	19	12½	14¾	26¼	13¾	¾	24¾	4¾	15¼	3	1½	11½

¶ (IPS) Iron pipe size.

Data and Dimensions of G-E Metal-enclosed Assemblies

THREE-PHASE ASSEMBLY (with knockouts)

Assembly complete with gang-operated cutouts (three) mounted on a sheet-metal connecting box with removable front cover and with (1) knockout provided in right and left side, also (2) knockouts in

bottom of connecting box.

Connecting box including knockouts is weather-tight. Holes provided in connecting box for wall mounting.

Rating of Oil-filled Cutouts			Knockouts Provided in Connecting Box			Model Number of Assembly	List Price Each†	Approx. Wt. in Lb.				No. 10C Oil Supplied Qt Per Cutout	Model No. of Cutout Included In Assembly § #
Volts (Max. Design)	Amp	Interrupting Capacity RMS Amp ¶ at 60 Cycles	In Right Side*	In Left Side*	In Bottom*			Ship.		Net			
								Assembly	Oil	Assembly	Oil		
4500 5200	100 100	6000 5000	(1) 2" IPS	(1) 2" IPS	(2) 2" IPS	9F2K5	Refer to nearest G-E Apparatus Sales Office	234	27	220	24	3½	9F2F38
4500 5200	200 200	11000 10000	(1) 3" IPS	(1) 3" IPS	(2) 3" IPS	9F2K6		394	60	364	53	9	9F2F39
4500 5200	300 300	11000 10000	(1) 3" IPS	(1) 3" IPS	(2) 3" IPS	9F2K7		725	93	650	82	14	9F2F33
7800	100	3750	(1) 3" IPS	(1) 3" IPS	(2) 3" IPS	9F2K8		725	93	650	82	14	9F2F35

* IPS stands for iron pipe size. A reducing coupling can be employed to adapt knockouts for smaller size conduit.

† Assortments of different model numbers may not be combined to secure quantity discount. Does not include fuse links or disconnect blades.

Fuse links or disconnecting blades must be ordered separately, see pages 24 and 7.

No. 10C oil is supplied for filling cutouts.

‡ For information on KVA interrupting ratings of these cutouts see page 8.

¶ Based on the use of interchangeable fuse links in listed cutouts.

§ Length of leads, from bushings of these cutouts are 21, 23, 30 and 30 inches respectively, which is long enough for all ordinary connections.

These assemblies can also be furnished with similar cutouts having separable entrance terminals (see Fig. 15 and 17, page 6) for lead- or rubber-covered cables. They can also be furnished with subway-type cutouts with expansion chambers.

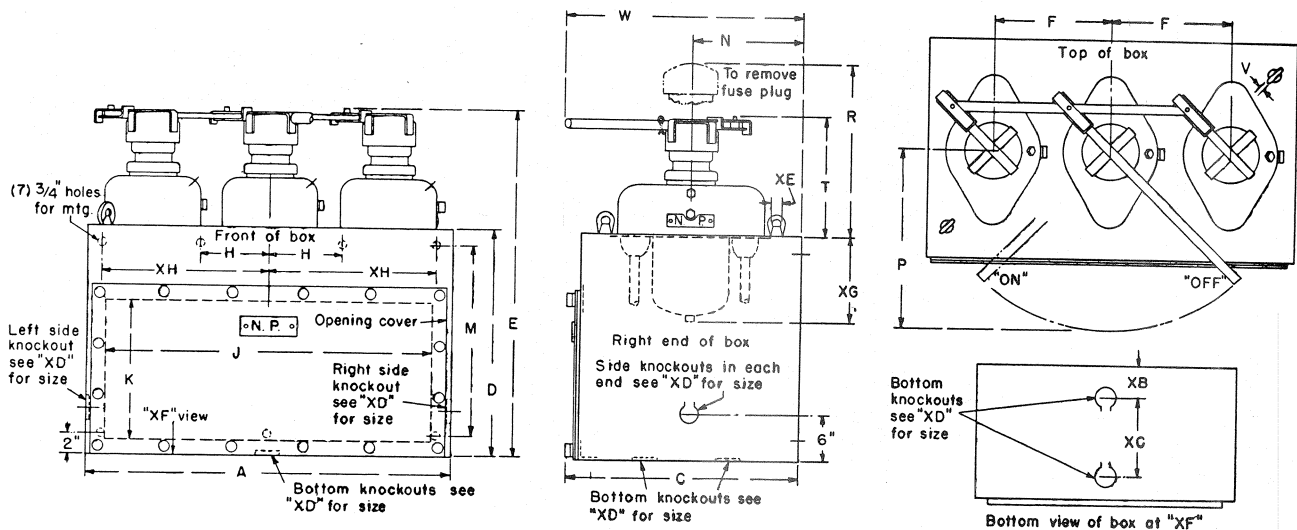


Fig. 45

Model Number	APPROXIMATE DIMENSIONS IN INCHES																				
	A	C	D	E	F	H	J	K	M	N	P	R	T	V	W	XB	XC	XD	XE	XG	XH
9F2K5	29	15 7/8	19	29	9 1/2	4 3/4	24 3/4	14 3/4	14	7 3/8	14 7/16	19 3/8	10	1/4	18 3/8	3	9 1/4	2	7/8	7 3/8	12 3/4
9F2K6	35	18 3/8	21	32 1/2	11 1/2	5 3/4	30 3/4	14 3/4	16	8 7/8	14 5/8	23	11 1/2	1/4	21 1/4	2 3/8	12	3	7/8	9 3/16	15 3/4
9F2K7	40	25 5/8	24	37 3/8	13	8	35 3/4	17 3/4	19	12 1/2	14 3/8	26 15/16	13 3/8	3/8	24 3/8	4 7/8	15 1/4	3	1 1/8	11 1/2	18
9F2K8	40	25 5/8	24	37 3/8	13	8	35 3/4	17 3/4	19	12 1/2	14 3/8	26 15/16	13 3/8	3/8	24 3/8	4 7/8	15 1/4	3	1 1/8	11 1/2	18

¶ (IPS) Iron pipe size.

Data and Dimensions of G-E Metal-enclosed Assemblies

THREE-PHASE ASSEMBLY (with knockout and pothead openings)

Assembly complete with gang-operated cutouts (three) mounted on a sheet-metal connecting box with removable front cover and with (1) knockout provided in right and left side, also (1) knockout plus (1) pothead opening in bottom of connecting

box to accommodate a G&W pothead shown below. Holes provided in connecting box for wall mounting. Connecting box including knockouts is weather-tight.

Rating of Oil-filled Cutouts			Knockouts and Pothead Opening Provided in Connection Box				Model Number of Assembly	List Price Each †	Approx. Wt. in Lb				No. 10C Oil Supplied Qt per Cutout	Model No. of Cutout Included In Assembly §
Volts (Max. Design)	Amp	Interrupting Capacity RMS Amp At 60 Cycles ‡	In Right Side*	In Left Side*	In Bottom*	See Note Applying ϕ			Ship.		Net			
									Assembly	Oil	Assembly	Oil		
4500 5200	100 100	6000 5000	(1) 2" IPS	(1) 2" IPS	(1) 2" IPS (1) FB-1	A	9F2K9	234	27	220	24	3½	9F2F38	
4500 5200	200 200	11000 10000	(1) 3" IPS	(1) 3" IPS	(1) 3" IPS (1) FB-1	B	9F2K10	394	60	364	53	9	9F2F39	
4500 5200	300 300	11000 10000	(1) 3" IPS	(1) 3" IPS	(1) 3" IPS (1) HB-1	C	9F2K11	725	93	650	82	14	9F2F33	
7800	100	3750	(1) 3" IPS	(1) 3" IPS	(1) 3" IPS (1) FHB-1	D	9F2K12	725	93	650	82	14	9F2F35	

* IPS stands for iron pipe size. A reducing coupling can be employed to adapt knockouts for smaller size conduit.

ϕ The pothead openings provided will accommodate the following G and W Potheads:

- A—G&W Potheads, Cat. Nos. ATRA-3403B, ATRA-3404-BK, ATRA-3404BU, ESR-3403B, with FB-1 mounting plate.
- B—G&W Potheads, Cat. Nos. ATRA-3424B, ATRA-3424-BK, ATRA-3424BU, ESR-3424B with FB-1 mounting plate.
- C—G&W Potheads, Cat. Nos. ATRA-3454B, ATRA-3454-BK, ATRA-3454BU, ESR-3554B with HB-1 mounting plate.
- D—G&W Potheads, Cat. Nos. ATRA-3504B, ATRA-3504-BK, ATRA-3504BU, with FHB-1 mounting plate.

† Assortments of different model numbers may not be combined to secure quantity discount.

Does not include pothead, fuse links or disconnect blades.

If pothead is to be furnished with metal-enclosed assembly, full information as to pothead, cable data and type of entrance should be specified.

Fuse links or disconnecting blades must be ordered separately, see pages 24 and 7.

No. 10C oil is supplied for filling cutouts.

‡ For information on KVA interrupting ratings of these cutouts see page 8.

‡ Based on the use of interchangeable fuse links in listed cutouts.

§ Length of leads, from bushings of these cutouts are 21, 23, 30 and 30 inches respectively, which is long enough for all ordinary connections to potheads or cable entrance terminals.

These assemblies can also be furnished with similar cutouts having separable entrance terminals (see Fig. 15 and 17, page 6) for lead- or rubber-covered cables. They can also be furnished with subway-type cutouts with expansion chambers.

APPROXIMATE DIMENSIONS IN INCHES

Model Number	A	C	D	E	F	H	J	K	M	N	P	R	T	V	W	XD	XE	XG	XH	Pothead Opening								No. of Bolts	Bolt Size
																				XJ	XK	XL	XM	XN	XP	XT			
9FK2K9	29	15¾	24	34	9½	4¾	24¾	17¾	19	7¾	14 7/16	19¾	10	¼	18¾	2	¾	7¾	12¾	12½	3	6	4	Omit	0	7	6	½	
9F2K10	35	18¾	26	37½	11½	5¾	30¾	19¾	21	8¾	14¾	23	11½	¼	21¼	3	¾	9¾	15¾	12½	3	6	4	Omit	0	7	6	½	
9F2K11	40	25¾	31	44¾	13	8	35¾	22¾	26	12½	14¾	26 15/16	13¾	¾	24¾	3	1½	11½	18	18½	4¾	5¾	4	—	5	5	12	½	
9F2K12	40	25¾	31	44¾	13	8	35¾	22¾	26	12½	14¾	26 15/16	13¾	¾	24¾	3	1½	11½	18	18½	4¾	5¾	4	—	5	5	12	½	

¶ IPS Iron pipe size.

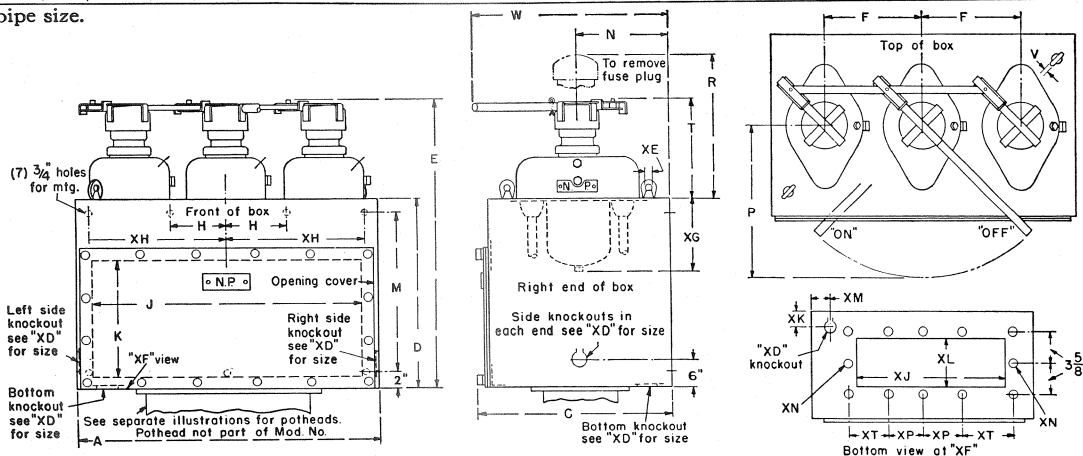


Fig. 46

Data and Dimensions of G-E Metal-enclosed Assemblies

THREE-PHASE ASSEMBLY (with knockout and pothead openings)

Assembly complete with gang-operated cutouts (three) mounted on a sheet-metal connecting box with removable front cover with (1) knockout provided in right and left side and with (2) pothead openings in bottom of connecting box to accommodate G and W potheads shown below. Connecting box is weathertight. Holes provided in connecting box for wall mounting.

Rating of Oil-filled Cutouts			Knockouts and Pothead Openings Provided in Connection Box				Model Number of Assembly	List Price Each†	Approx. Wt. in Lb				No. 10C Oil Supplied Qt per Cutout	Model No. of Cutout Included In Assembly§
Volts (Max. Design)	Amp	Interrupting Capacity RMS Amp At 60 Cycles‡	In Right Side	In Left Side	In Bottom	See Note Applying φ			Ship.		Net			
									Assembly	Oil	Assembly	Oil		
4500 5200	100 100	6000 5000	(1) 2" IPS	(1) 2" IPS	(2) FB-1	A	9F2K13	Refer to nearest G-E Apparatus Sales Office	234	27	220	24	3½	9F2F38
4500 5200	200 200	11000 10000	(1) 3" IPS	(1) 3" IPS	(2) FB-1	B	9F2K14		394	60	364	53	9	9F2F39
4500 5200	300 300	11000 10000	(1) 3" IPS	(1) 3" IPS	(2) HB-1	C	9F2K15		725	93	650	82	14	9F2F33
7800	100	3750	(1) 3" IPS	(1) 3" IPS	(2) FHB-1	D	9F2K16		725	93	650	82	14	9F2F35

† Assortments of different model numbers may not be combined to secure quantity discount.
Does not include potheads, fuse links or disconnect blades.
If pothead is to be furnished with metal-enclosed assembly, full information as to pothead, cable data and type of entrance should be specified.
Fuse links or disconnecting blades must be ordered separately, see pages 24 and 7.
No. 10C oil is supplied for filling cutouts.

‡ For information on KVA interrupting ratings of these cutouts see page 8.

π Based on the use of interchangeable fuse links in listed cutouts.

§ Length of leads, from bushings of these cutouts are 21, 23, 30 and 30 inches respectively, which is long enough for all ordinary connections to potheads.

φ The pothead openings provided will accommodate the following G and W Potheads:

A—G&W Potheads, Cat. Nos. ATRA-3403B, ATRA-3404-BK, ATRA-3404BU, ESR-3403B with FB-1 mounting plate.

B—G&W Potheads, Cat. Nos. ATRA-3424-B, ATRA-3424-BK, ATRA-3424BU, ESR-3424B with FB-1 mounting plate.

C—G&W Potheads, Cat. Nos. ATRA-3454B, ATRA-3454-BK, ATRA-3454BU, ESR-3554B with HB-1 mounting plate.

D—G&W Potheads, Cat. Nos. ATRA-3504B, ATRA-3504-BK, ATRA-3504BU, with FHB-1 mounting plate.

These assemblies can also be furnished with similar cutouts having separable entrance terminals (see Fig. 15 and 17, page 6) for lead- or rubber-covered cables. They can also be furnished with subway-type cutouts with expansion chambers.

Model Number	APPROXIMATE DIMENSIONS IN INCHES																			Pothead Opening								
	A	C	D	E	F	H	J	K	M	N	P	R	T	V	W	XD	XE	XG	XH	XJ	XL	XN	XP	XT	XV	XW	Bolts	Bolt Size
9F2K13	29	18¾	24	34	9½	4¾	24¾	17¾	19	7¾	14¾	19¾	10	¼	18¾	2	¾	7¾	12¾	12½	6	Omit	0	7	9¼	4½	6	½
9F2K14	35	18¾	26	37½	11½	5¾	30¾	19¾	21	8¾	14¾	23	11½	¼	21¼	3	¾	9¼	15¾	12½	6	Omit	0	7	9¼	4½	6	½
9F2K15	40	25¾	31	44¾	13	8	35¾	24¾	26	12½	14¾	26½	13¾	¾	24¾	3	1½	11½	18	18½	5¾	—	5	5	9½	7¾	12	½
9F2K16	40	25¾	31	44¾	13	8	35¾	24¾	26	12½	14¾	26½	13¾	¾	24¾	3	1½	11½	18	18½	5¾	—	5	5	9½	7¾	12	½

¶ Per pothead.

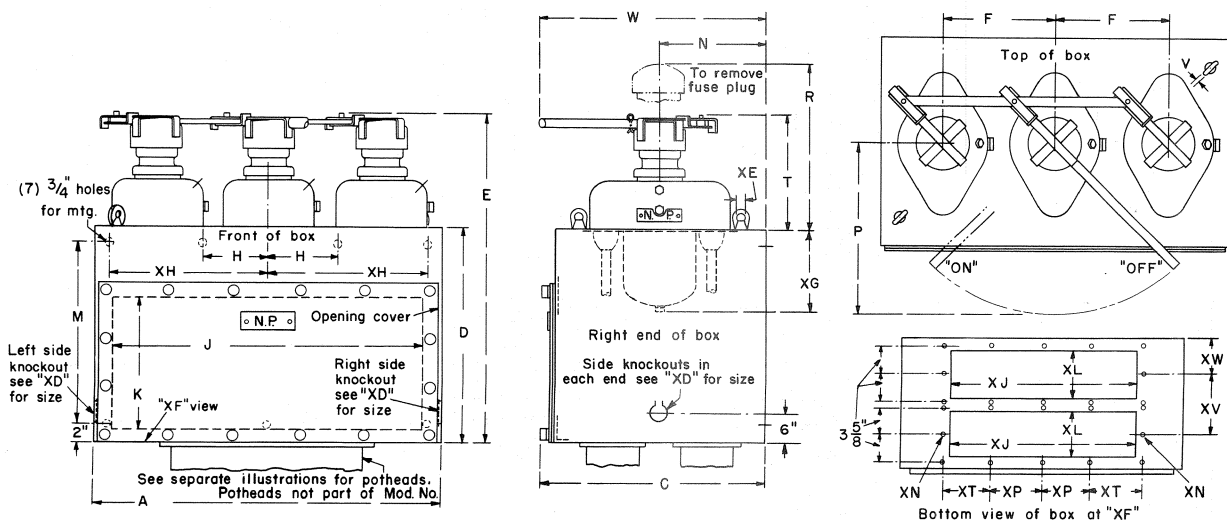


Fig. 47

Data and Dimensions of G-E Metal-enclosed Assemblies

SINGLE-PHASE ASSEMBLY WITH POTHEAD-TYPE CUTOUTS (with knockouts)

Assembly complete with gang-operated, pothead-type, cutouts (two) mounted on a sheet-metal connecting box with removable front cover and with (1) knockout provided in right and left side, also (2) knockouts in bottom of connecting box. The cutouts have one separable-sleeve bushing with plug-

in contacts for connection to lead-covered cable and one flexible cable lead.

Connecting boxes including knockouts are weathertight. Holes provided in connecting box for wall mounting.

Rating of Oil-filled Cutouts			Number of Phases	Number of Cutouts	Knockouts Provided in Connecting Box			Model Number of Assembly	List Price Each†	Approx. Wt. in Lb.				No. 10C Oil Supplied Ql per Cutout	Model No. of Cutout Included in Assembly § #
Volts (Max. Design)	Amp	Interrupting Capacity RMS Amp I _π at 60 Cycles			In Right Side*	In Left Side*	In Bottom*			Ship.		Net			
			Assembly	Oil				Assembly	Oil						
4500 5200	100 100	6000 5000	1	2	(1) 2" IPS (1) 2" IPS (2) 2" IPS	9F2K18	Refer to nearest G-E Apparatus Sales Office	202	18	153	16	3½	9F2F64		
4500 5200	200 200	11000 10000	1	2	(1) 3" IPS (1) 3" IPS (2) 3" IPS	9F2K19		303	42	255	37	9	9F2F88		

* IPS stands for iron pipe size. A reducing coupling can be employed to adapt knockouts for smaller size conduit.

† Assortments of different model numbers may not be combined to secure quantity discount.

Does not include fuse links or disconnect blades.

Fuse links or disconnecting blades must be ordered separately, see pages 24 and 7.

No. 10C oil is supplied for filling cutouts.

‡ For information on KVA interrupting ratings of these cutouts see page 8.

π Based on the use of interchangeable fuse links in listed cutouts.

§ Lengths of flexible lead from bushings of these cutouts are 21 and 23 inches respectively, which is long enough for all ordinary connections.

These assemblies can also be furnished with similar cutouts having separable entrance terminals (see Fig. 15 and 17, page 6) for lead- or rubber-covered cables. They can also be furnished with subway-type cutouts with expansion chambers.

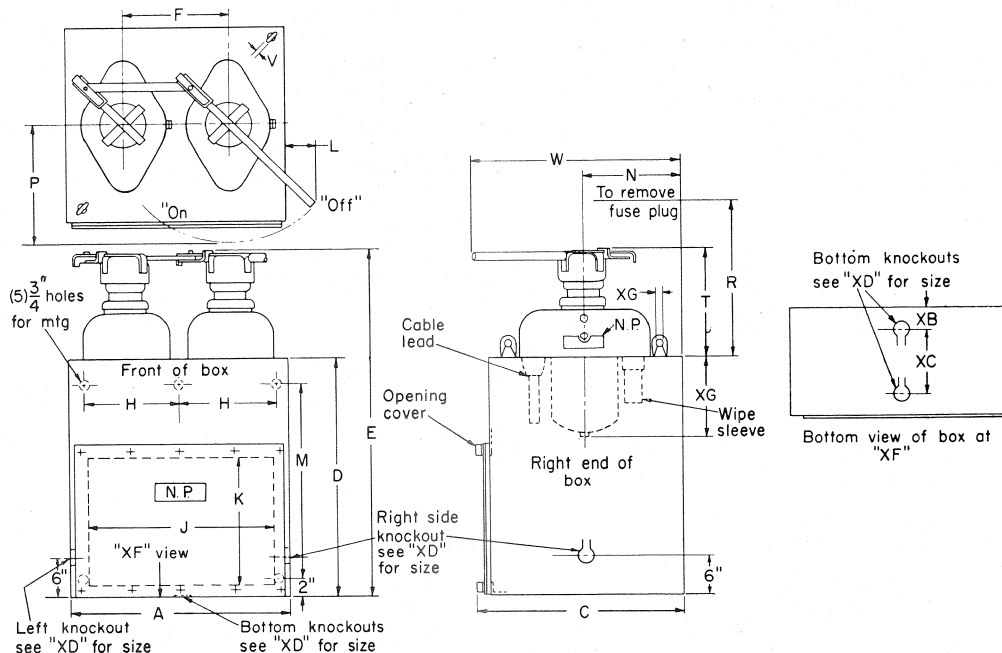


Fig. 48

Model Number	APPROXIMATE DIMENSIONS IN INCHES																				
	A	C	D	E	F	H	J	K	L	M	N	P	R	T	V	W	XB	XC	XD	XE	XG
9F2K18	19½	15¾	19	29	9½	8	15¼	14¾	6¼	14	7¾	14⅞	19¾	10	¼	18¾	3	9¼	2	¾	7¾
9F2K19	23½	18¾	21	32½	11½	10	19¼	14¾	6	16	8¾	14¾	23	11½	¼	21¼	2¾	12	3	¾	9¾

¶ (IPS) Iron pipe size.

Data and Dimensions of G-E Metal-enclosed Assemblies

THREE-PHASE ASSEMBLY WITH POTHEAD-TYPE CUTOUTS (with knockouts)

Assembly complete with gang-operated, pothead-type, cutouts (three) mounted on a sheet-metal connecting box with removable front cover and with (1) knockout provided in right and left side, also (2) knockouts in bottom of connecting box. The cutouts have one separable-sleeve bushing with plug-in

contacts for connection to lead-covered cable and one flexible cable lead.

Connecting boxes including knockouts are weathertight. Holes provided in connecting box for wall mounting.

Rating of Oil-filled Cutouts			Number of Phases	Number of Cutouts	Knockouts Provided in Connecting Box			Model Number of Assembly	List Price Each†	Approx. Wt. in Lb				No. 10C Oil Supplied Qt per Cutout	Model No. of Cutout Included in Assembly #
Volts (Max. Design)	Amp	Interrupting Capacity RMS Amp \pm π at 60 Cycles			In Right Side*	In Left Side*	In Bottom*			Ship.		Net			
			Assembly	Oil				Assembly	Oil						
4500 5200	100 100	6000 5000	3	3	(1) 2" IPS	(1) 2" IPS	(2) 2" IPS	9F2K20	Refer to nearest G-E Apparatus Sales Office	234	27	220	24	3½	9F2F64
4500 5200	200 200	11000 10000			(1) 3" IPS	(1) 3" IPS	(2) 3" IPS			9F2K21	394	60	364			53	9	9F2F88

* IPS stands for iron pipe size. A reducing coupling can be employed to adapt knockouts for smaller size conduit.

† Assortments of different model numbers may not be combined to secure quantity discount.

Does not include fuse links or disconnect blades.

Fuse links or disconnecting blades must be ordered separately, see pages 24 and 7.

No. 10C oil is supplied for filling cutouts.

‡ For information on KVA interrupting ratings of these cutouts see page 8.

π Based on the use of interchangeable fuse links in listed cutouts.

§ Lengths of flexible lead from bushings of these cutouts are 21 and 23 inches respectively, which is long enough for all ordinary connections.

These assemblies can also be furnished with similar cutouts having separable entrance terminals (see Fig. 15 and 17, page 6) for lead- or rubber-covered cables. They can also be furnished with subway-type cutouts with expansion chambers.

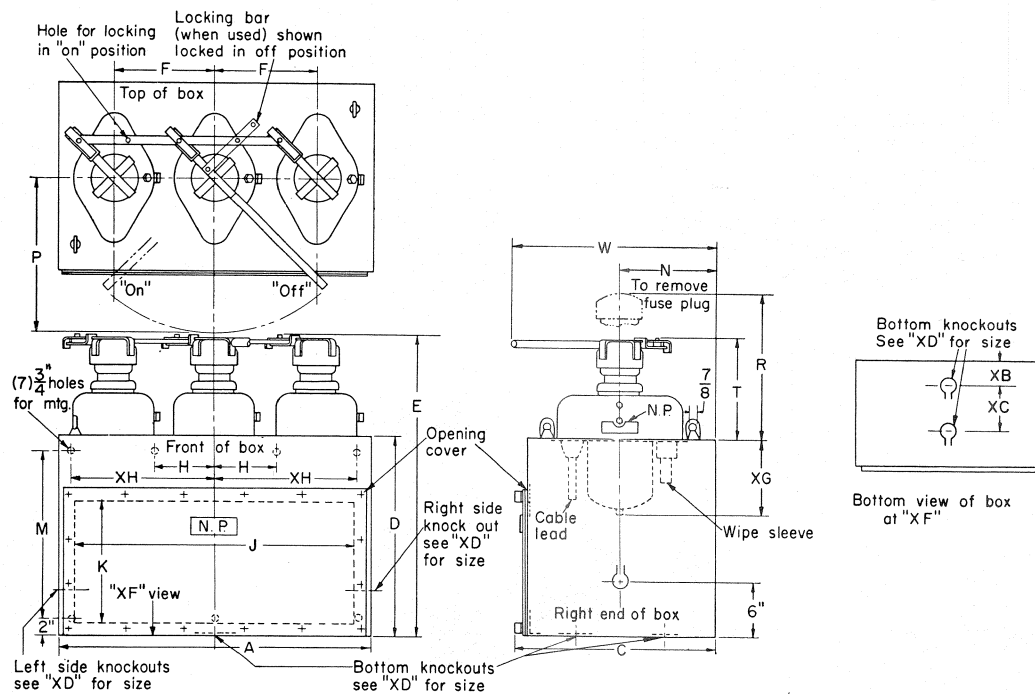


Fig. 49

Model Number	APPROXIMATE DIMENSIONS IN INCHES																				
	A	C	D	E	F	H	J	K	M	N	P	R	T	V	W	XB	XC	XD	XE	XG	XH
9F2K20	29	15¾	19	29	9½	4¾	24¾	14¾	14	7¾	14½	19¾	10	¼	18¾	3	9¼	2	¾	7¾	12¾
9F2K21	35	18¾	21	32½	11½	5¾	30¾	14¾	16	8¾	14¾	23	11½	¼	21¼	2¾	12	3	¾	9¾	15¾

¶ (IPS) Iron pipe size.

Interchangeable Fuse Links for G-E Oil-filled Cutouts Provide Low-cost, Dependable Line Protection

General Electric interchangeable fuse links for oil-filled cutouts carry 100 percent rated current continuously, and will melt in 300 seconds (5 minutes) at 133 to 200 percent of their rating.

These fuse links are designed for use in all present and earlier G-E oil-filled cutouts except the 50-amp, 2500-volt cutout. All oil-filled cutouts of the 9F2D, E, and F series have notched fuse-carrier plugs to accommodate the links. Interchangeable fuse links also can be used in all superseded designs of G-E cutouts in the 9F2C series and earlier (except 50-ampere 2500-volt cutouts) by simply cutting a notch in the lower end of the wooden fuse-carrier plug as shown in Fig. 52.

Interchangeable fuse links offer these advantages when used in G-E oil-filled cutouts:

1. Lower cost: As much as 40 percent saving as compared to superseded plain-type links, and considerably greater saving as compared to the reactive-type links.
2. Smaller stocks and greater assurance of proper rating being available. Only one line of ratings universally applicable to 100-, 200-, or 300-ampere cutouts.
3. Accuracy of time-current characteristics equal to that of G-E expulsion-type fuse links.
4. Interrupting rating is as high as superseded reactive-type links when used in earlier cutout designs, and even higher in present designs.
5. Higher continuous current ratings of present listed cutouts at 5200 volts because of improved low-current interrupting ability.

Interchangeable fuse links are made in three sizes, corresponding with the three cutout ratings—100, 200, and 300 amperes. Any fuse link from 5 to 100 amperes fits the 100-, 200-, and 300-ampere cutouts; fuse links from 125 to 200 amperes are designed to fit only the 200- and 300-ampere cutouts; and the 250- and 300-ampere fuse links will fit only the 300-ampere cutout.

U-shaped interchangeable fuse links consist of laminated metal terminal strips and a low-melting fusible element. A strain wire keeps tension from the fusible alloy. The insulated strain wire carries no current until the fusible element melts, after which it is melted by the ensuing arc. The fusible section is housed in a specially formed expulsion tube of insulating material.

The vertical terminal strips are shorter than those of superseded plain and reactive-type links, so that the element nests in the notch in the lower end of the fuse carrier (see Fig. 51). These shortened links, when used in cutouts of ratings for which they are designed, provide adequate clearance during insertion of the fuse carrier into the cutout so that no insulation is necessary on the vertical terminal strips. This allows freer movement in clearing fault currents.

When the fusible element melts, the combined effect of rapid separation, expulsion, and the cooling effect of the insulating oil quickly extinguishes low- as well as high-current arcs. This rapid separation is accomplished by the outward magnetic forces of the loop formed by the U-shaped link, the spring action of the terminal strips, and the expulsion of arc gases. Oil quickly fills and insulates the gap between the terminal strips.

The addition of expulsion action to interchangeable fuse links makes them equal the high-current interrupting ability of superseded reactive-type links. This expulsion action also provides low-current interrupting ability superior to that of either the superseded plain or reactive types.

This superiority at low currents, along with other improvements, permits present-listed cutouts to be rated at 5200 volts when using 100-, 200-, and 300-ampere links, whereas, with plain or reactive links, the cutouts could only be rated 50 and 100 amperes respectively at 5200 volts.

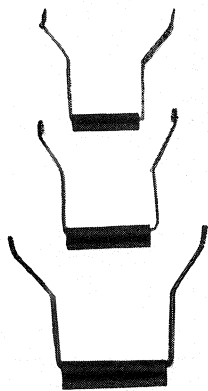


Fig. 50. Group of interchangeable links, in three standard sizes, for ratings 5- to 100-amp (top), 125- to 200-amp (center), and 250- and 300-amp (bottom).

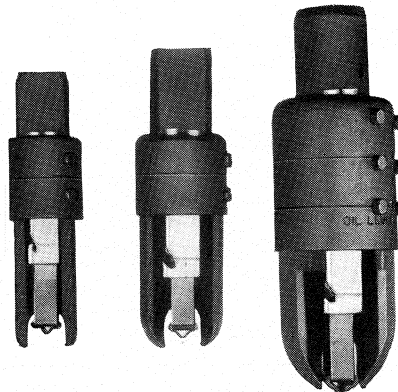


Fig. 51. Fuse-carrier plugs with interchangeable fuse link installed—100-amp, 5200 volts (left), 200-amp, 5200 volts (center), and 300-amp, 5200 volts or 100-amp, 7800 volts (right).

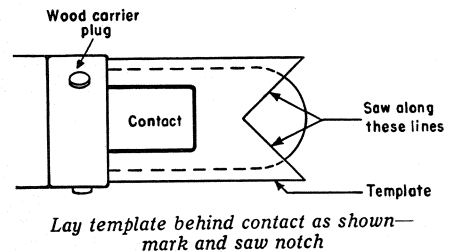
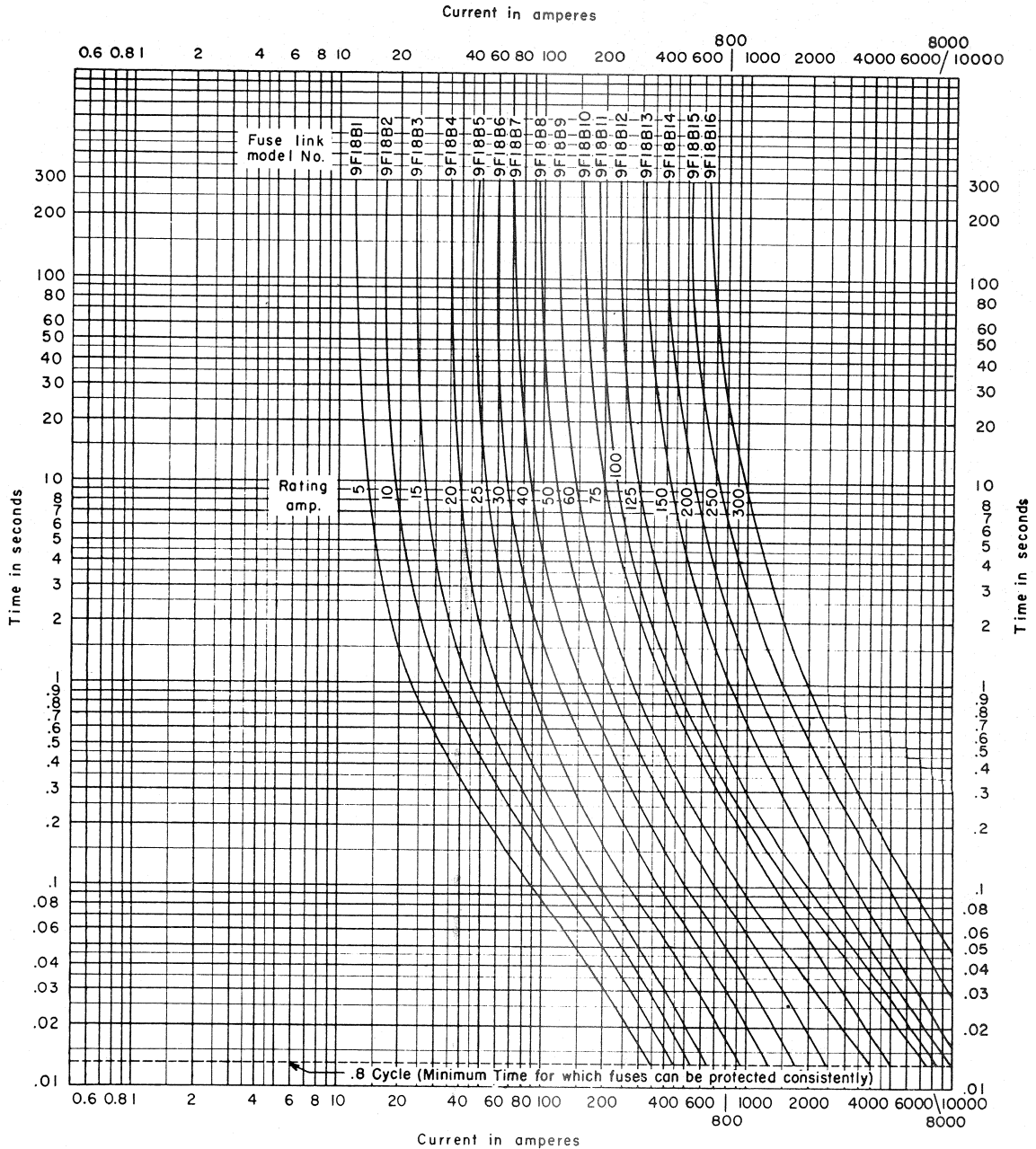


Fig. 52. Method of notching fuse-carrier plugs of earlier oil-filled cutouts to accommodate interchangeable fuse links. Notching template is furnished in each carton of fuse links.

Time-current Characteristic Curve for G-E Fuse Links

TOTAL CLEARING TIME-CURRENT CHARACTERISTICS



TOTAL CLEARING TIME-CURRENT CHARACTERISTIC CURVES

For G. E. 9F18B Fuse Links. In G. E. Oil Fuse Cutouts rated 100, 200, 300 amp with notched carriers

BASIS FOR DATA Standards Dated

1. Tests made at 2500 Volts a-c at 0-20% p-f, Starting at 25C with no initial load

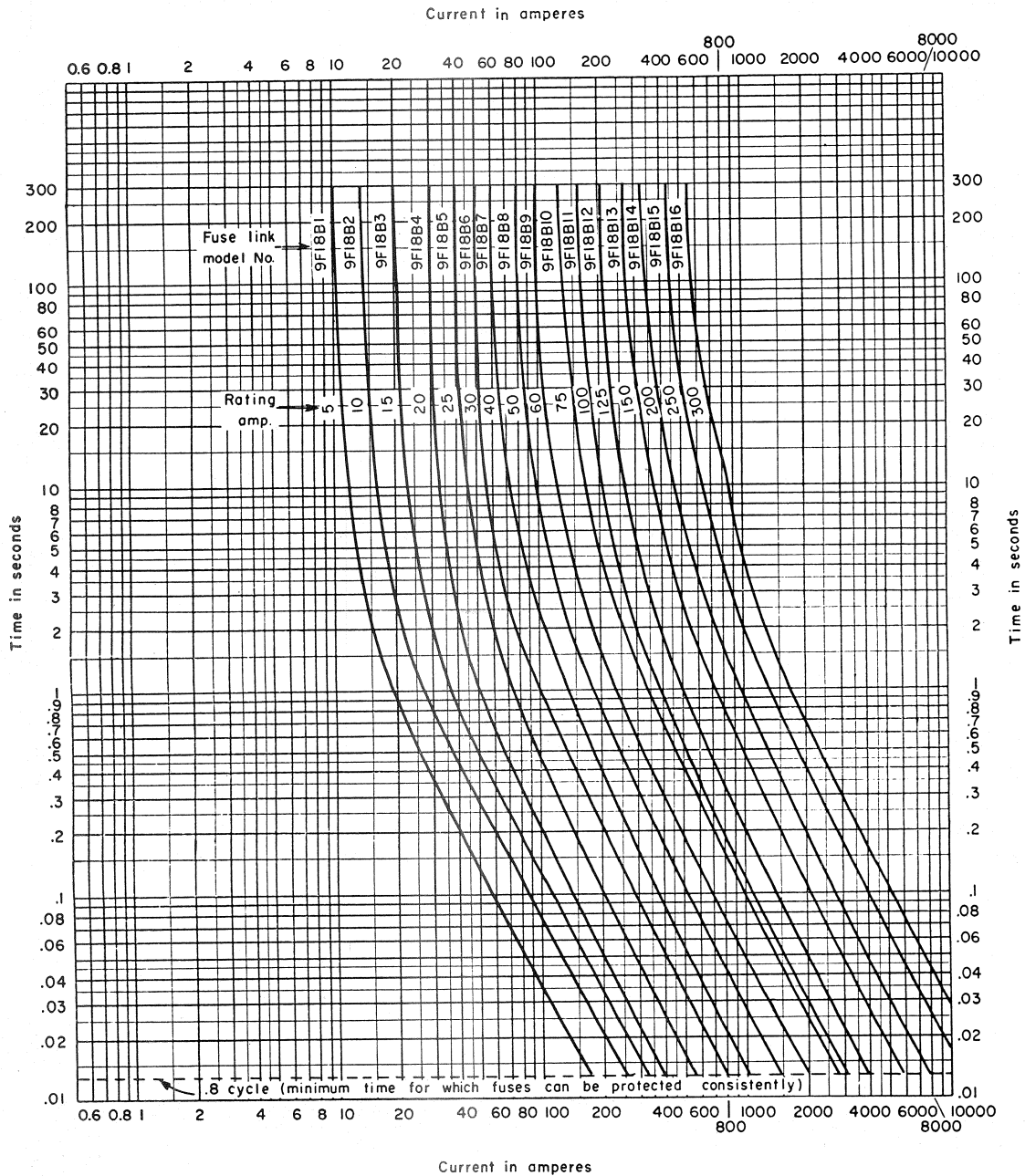
2. Curves are plotted to Maximum Test points so variations should be Minus

General Electric Company, Pittsfield Works, Cutout Engrg. Section

1. These curves are based on tests at 2500, 5000, and 7500 volts.
2. Fuse links carrying load will blow faster as load current increases.
3. The time given by these curves is the total time for the fuse to clear the circuit (both melting and arcing time), and is based on tests in a cutout with full reactive load.
4. Fuse-link ratings are based on carrying their rating continuously and melting at 150 per cent rating within five minutes. Comparisons should not be made with time-current curves for other fuse links unless correction is made for any difference in starting temperature, time basis, or method of rating.

Time-current Characteristic Curve for G-E Fuse Links

MELTING TIME-CURRENT CHARACTERISTICS



Melting..... TIME-CURRENT CHARACTERISTIC CURVES
 For G.E. 9F18B..... Fuse Links. In G.E. oil fuse cutouts rated 100, 200, 300 amps with notched carriers
 BASIS FOR DATA Standards..... Dated.....
 1. Tests made at less than 110..... Volts a.c. at..... p.f., Starting at 25C with no initial load.....
 2. Curves are plotted to..... Test points so variations should be PLUS.....

1. The time given by these curves is that required to melt the fusible section, including both the fuse wire and the strain wire. No arcing time is included.

2. The fuse links will carry 100 per cent rating continuously without any conducting parts of the cutout to exceed a safe temperature rise.

3. Comparisons should not be made with time-current curves for other fuse links unless correction is made for any difference in starting temperature, time basis, or method of rating.

4. When using these curves for co-ordination, use 75 per cent of time shown, to factor operating variables.

Co-ordination Chart for G-E Fuse Links

CO-ORDINATION CHART I

Oil Fuse Links Protecting Oil Fuse Links
With G-E Fuse Links 9F18B1 to 9F18B16 Inclusive When Used in G-E Oil-filled Cutouts and Connected in Series.

Ratings in Amperes of Protecting Fuse Links 9F18B Oil Fuse Links	9F18B INTERCHANGEABLE OIL FUSE LINKS															
	RATING IN AMPERES OF PROTECTED OIL FUSE LINKS															
	5	10	15	20	25	30	40	50	60	75	100	125	150	200	250	300
5	25	125	290	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
10	30	115	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
15	48	220	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
20	110	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
25	54	550	1250	1700	2400	2600	3400	4900	6600	9700	10000
30	110	900	1700	2400	2600	3400	4900	6600	9700	10000
40	145	1200	2400	2600	3400	4900	6600	9700	10000
50	100	1800	2600	3400	4900	6600	9700	10000
60	450	800	2200	4900	6600	9700	10000
75	650	4000	6600	9700	10000
100	400	2000	4600	9700	10000
125	1150	3200	9700	10000
150	320	7200	10000
200	1800	10000
250	1000	10000
300

CO-ORDINATION CHART II

Interchangeable Cable-type Fuse Links Protecting Oil Fuse Links

Protective Characteristics of G-E Interchangeable Cable-type Fuse Links, 100% Basis, N-rated, Model No. 9F1C16 to 9F1C32 Inclusive, 9F1C88-89 and 9F1C106, and Co-ordinating Fuse Links Model No. 9F1C80, 9F1C81, 9F1C82, and 9F1C83, When Used in G-E 50-, 100-, or 200-ampere Expulsion Fuse Cutouts and Connected in Series with G-E Oil Fuse Links 9F18B1 to 9F18B16 Inclusive When Used in G-E Oil-filled Cutouts.

Ratings in Amperes of Protecting Universal Cable-type Fuse Links	9F18B INTERCHANGEABLE OIL FUSE LINKS															
	RATING IN AMPERES OF PROTECTED OIL FUSE LINKS															
	5	10	15	20	25	30	40	50	60	75	100	125	150	200	250	300

Maximum Short-Circuit RMS amperes to which fuse link will be protected applies only up to interrupting rating of cutout used.

1	146	220	208	340	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
2	146	220	280	340	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
3	68	220	280	340	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
5	14	105	250	340	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
8	....	16	130	270	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
10	....	....	50	170	480	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
15	....	....	....	56	330	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
20	....	....	....	33	215	680	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
25	....	....	....	....	43	470	880	1250	1700	2400	2600	3400	4900	6600	9700	10000
30	....	....	....	....	....	50	700	1250	1700	2400	2600	3400	4900	6600	9700	10000
40	....	....	....	....	....	....	....	1150	1700	2400	2600	3400	4900	6600	9700	10000
45	....	....	....	....	....	....	....	400	1700	2400	2600	3400	4900	6600	9700	10000
50	....	....	....	....	....	....	....	....	800	2400	2600	3400	4900	6600	9700	10000
51*	....	....	....	....	....	....	....	....	....	2400	1900	3400	4900	6600	9700	10000
75	....	....	....	....	....	....	....	....	....	1000	1500	3400	4900	6600	9700	10000
85	....	....	....	....	....	....	....	....	....	....	....	2100	4900	6600	9700	10000
95	....	....	....	....	....	....	....	....	....	....	....	500	4900	6600	9700	10000
52*	....	....	....	....	....	....	....	....	....	....	....	....	2900	6400	9700	10000
100	....	....	....	....	....	....	....	....	....	....	....	....	2200	6600	9700	10000
125	....	....	....	....	....	....	....	....	....	....	....	....	....	6600	9700	10000
101*	....	....	....	....	....	....	....	....	....	....	....	....	....	650	5800	10000
150	....	....	....	....	....	....	....	....	....	....	....	....	....	....	720	3700
102*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
200	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Explanatory Notes:

To insure maximum protection, the ratio of the ratings of fuse links in series should be as large as possible. The current values in this chart include a 25 percent tolerance to cover manufacturing and operating variables. This is done by plotting time-current characteristic curves for the protected fuse links at 75 per cent of their melting time, and superimposing on them the total clearing time-current characteristic curves (plotted from actual tests at rated voltage) for the protecting fuse links. The current given in the above chart is that at which the two curves approach within 1/2 cycle. If the curves do not approach within 1/2 cycle, the current is that at which the 75% melting time-current curve crosses 0.8 of a cycle (the minimum time in which

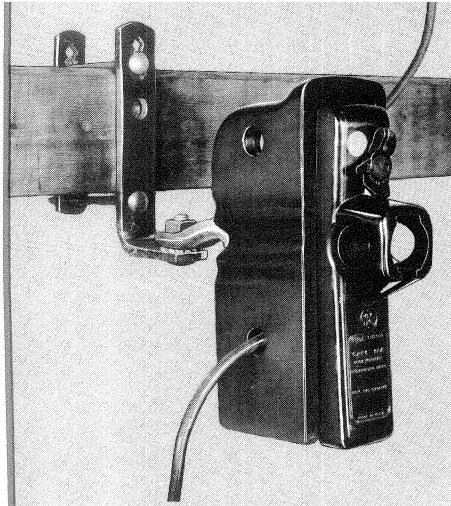
any fuse link will blow consistently).

* The 51- and 52-amp fuse links are co-ordinating fuse links having time-current characteristics similar to those of 75- and 100-ampere N-rated fuse links. The 101- and 102-amp fuse links have characteristics similar to those of fuse links that would be rated 150- and 200-amp. They will carry their rating continuously but will not blow at 230 percent of their rating within five minutes and are, therefore, not N-rated according to NEMA standards. The 51- and 52-amp links are for use in 50-amp fuse cutouts, and the 101- and 102-amp fuse links are for use in 100-amp fuse cutouts. They should be used only up to the interrupting capacity of these cutouts.

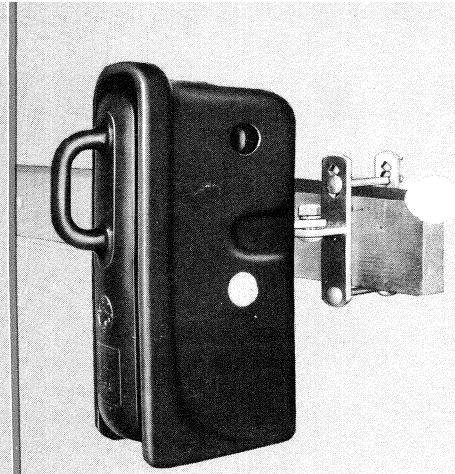
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of distribution
fuse cutouts
and fuse links

For information about the application of G-E cutouts and fuse links to your system, write or phone your nearest General Electric Apparatus Sales Office or G-E Apparatus Agent; or write to General Electric Company, Schenectady 5, New York, for any of these publications:



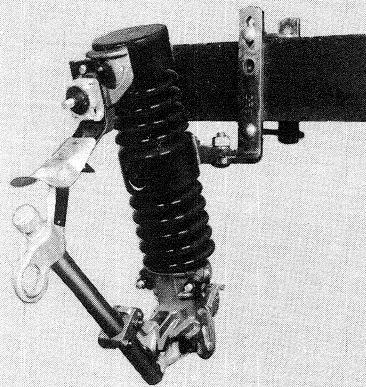
**Enclosed Fuse Cutouts
Bulletin GEA-6208**



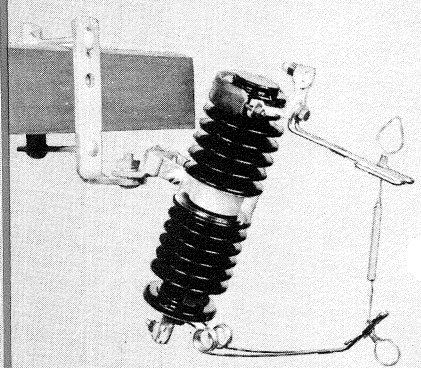
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Bulletin GEA-6243**



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EEI-NEMA Fuse Links—Bulletin GEA-6264**



**Open Drop-Out Fuse Cutouts
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**Flip-Open Fuse Cutouts
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