GEA-9753C

See New List Prices
Effective January 24, 1977

Product Information

Type AK
Low Voltage
Power Circuit Breakers

Introducing-

- **NEW AKR-30**
  800 Ampere Frame
- **NEW AKR-50**
  1600 Ampere Frame
- **NEW AKRT-50**
  2000 Ampere Frame
- **NEW SST™**
  Full Function Solid State Trip with Fault Annunciation
- **NEW ECS™**
  Solid State Trip

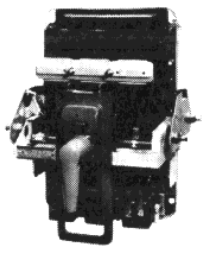
For Price Information
Refer to GEP-1674

GENERAL ELECTRIC

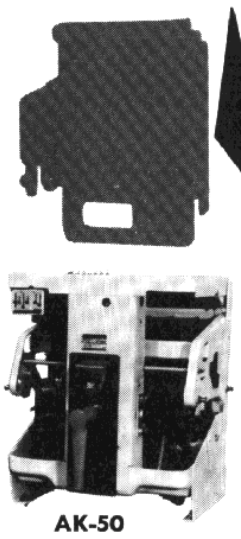
General Electric Type AK Low Voltage Power Circuit Breakers

The Industry Standard for Dependable Power Distribution

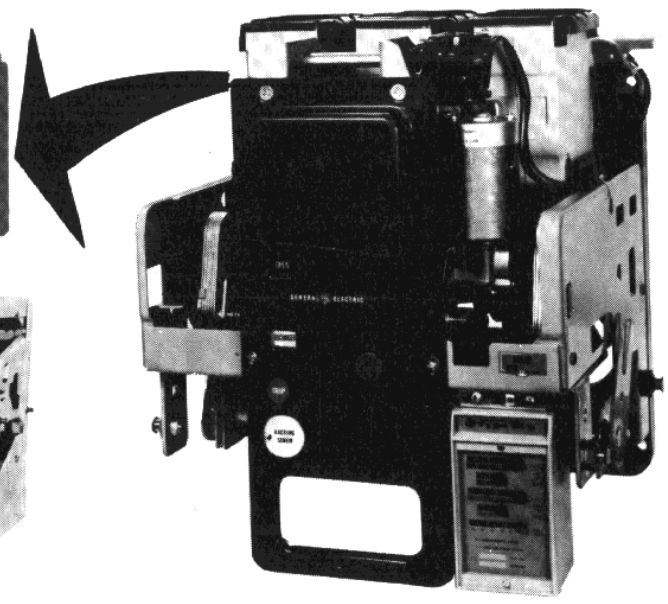
Here are the latest reasons why . . .



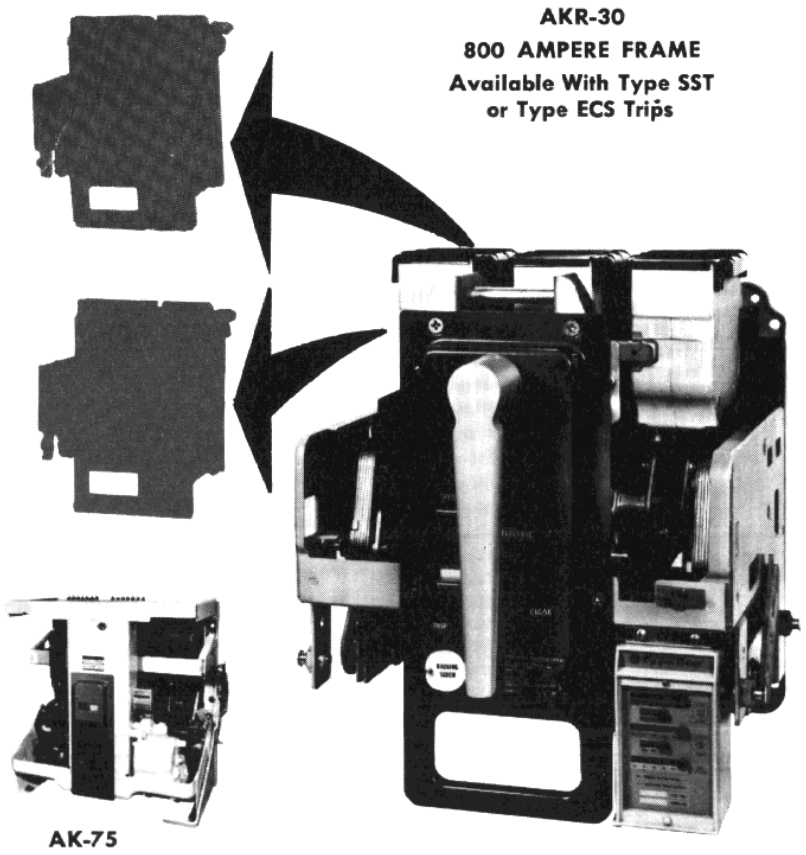
AK-25
600 Ampere



AK-50
1600 Ampere

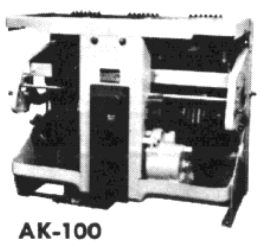


AKR-30
800 AMPERE FRAME
Available With Type SST or Type ECS Trips



AK-75
3000 Ampere

AKR-50, 1600 amp frame
AKRT-50, 2000 amp frame
Available with Type SST or Type ECS Trips



AK-100
4000 Ampere

NEW BREAKER FRAMES

Power Distribution System designers, builders, and owners will benefit from these features of the New AKR30, 800 ampere frame, AKR50, 1600 ampere frame and AKRT 2000 ampere frame breakers:

- **SPACE SAVINGS**—4-high stacking capability in a 90-inch high switchgear section. 22-inch wide section is common to the 800 amp, 1600 amp and 2000 amp frames.

- **INCREASED CAPACITY**—Continuous current rating of AKR-30 is 800 amperes. In addition, breaker short circuit capability and short-time ratings have been increased to match the requirements of modern power systems.

- **THREE SHORT CIRCUIT RATINGS AVAILABLE**—Standard, high capacity "H"-type, and fused . . . offers system designers a choice to meet actual system requirements.

Short Circuit Ratings @ 480V (RMS SYM AMPERES)

TYPE	AKR-30	AKR-50	AKRT-50
Std.	30,000	50,000	50,000
"H"	42,000	65,000	.....
Fused	200,000	200,000	.....

- **SIMPLIFIED MAINTENANCE**—The new AKR-30, AKR-50 and AKRT-50 breakers offer the economy of easy routine maintenance. They are designed for ready access to contacts, and easy removal of arc chutes for maintenance and inspection. In addition, all accessories are designed for easier field installation and changes.

- **INCREASED BREAKER ENDURANCE**—A new, rugged contact structure reduces contact erosion for longer interrupter life, reduced maintenance and heightened reliability.

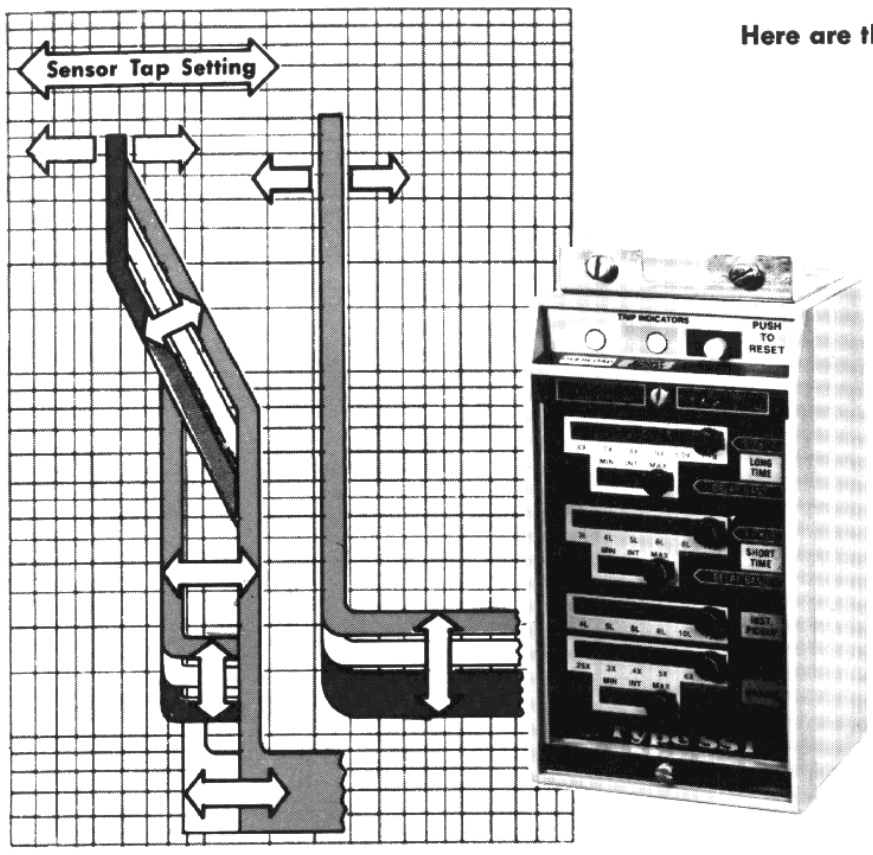
- **EASIER OPERATION**—The spring-closing mechanism of manual breakers can now be charged with a single or multiple stroke of the handle. And positive closing control is ensured through pushbutton action.

- **FIVE-CYCLE CLOSE STANDARD**—Both manual and electrically operated breakers.

- **REMOTE CLOSE OF MANUAL BREAKERS**—The new AKR-30, AKR-50 and AKRT-50 offer this feature for control flexibility.

General Electric Type AK Low Voltage Power Circuit Breakers

The Industry Standard for System Protection Flexibility



TYPE SST—SOLID STATE TRIP

- **ADJ—Long Time.**
  - **—Instantaneous.**
  - **—Short Time (OPT.)**
  - **—Ground Fault (OPT.)**
- **Tapped Current Sensors**
- **Fault Annunciation (OPT.)**

Here are the latest reasons why . . .

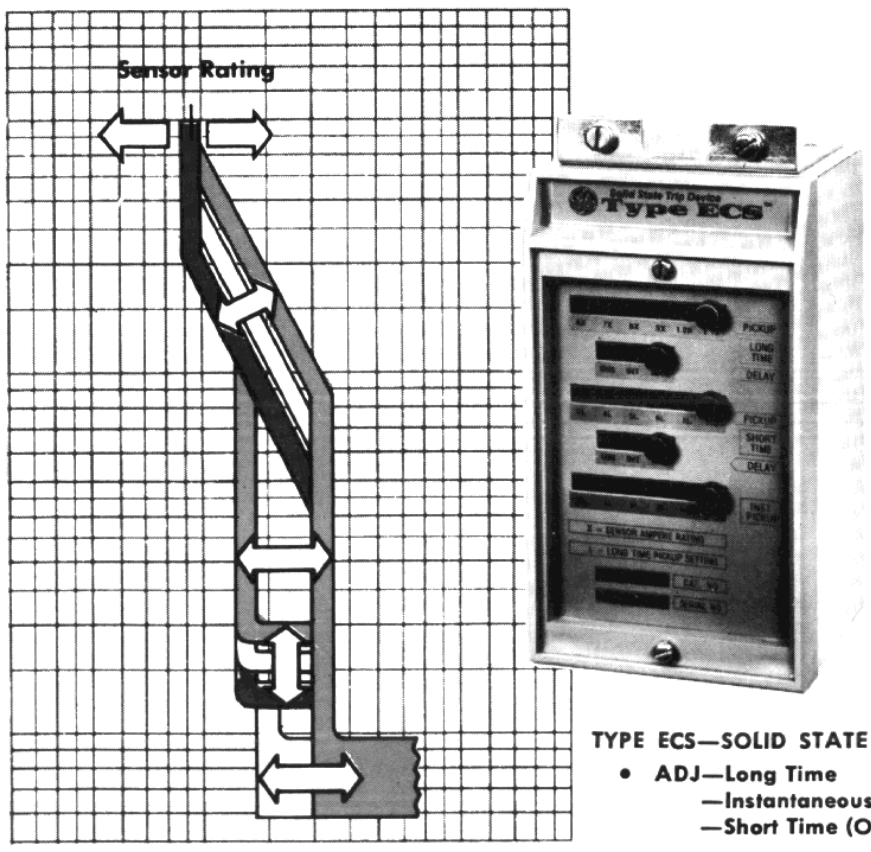
TWO NEW SOLID STATE TRIP DEVICES

To complement the proven reliability of the AK family, two new solid state trips have been developed—Type SST and Type ECS.

Both incorporate precision components conservatively rated to assure reliability and long life. Both are low energy, self-powered trip devices requiring no external control power source.

TYPE SST

- **PROVIDES MAXIMUM FLEXIBILITY** and system coordination. Features tapped sensors and adjustable set-point characteristic programming for repetitive tripping accuracy.
- **EXCLUSIVE FAULT ANNUNCIATION**—To annunciate type of fault . . . overload, short circuit, or ground fault. Eliminates guesswork, makes fault locating easier . . . reduces downtime.
- **INTEGRAL GROUND FAULT** protection available . . . eliminates need for external components.



TYPE ECS—SOLID STATE TRIP

- **ADJ—Long Time**
  - **—Instantaneous**
  - **—Short Time (OPT.)**

TYPE ECS

- **PROVIDES RELIABLE FLEXIBILITY** and system coordination. Features adjustable set-point characteristic programming for repetitive tripping accuracy.

Prices and data subject to change without notice

GENERAL ELECTRIC

Type AK Breakers

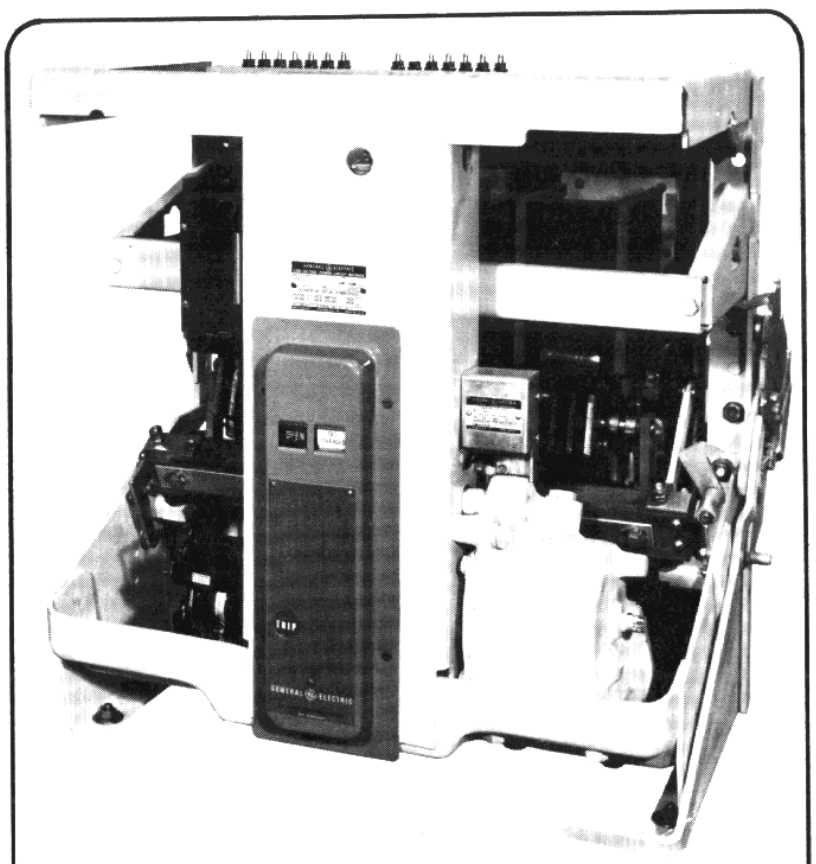
40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

Aug. 2, 1976

DESCRIPTION

The AK type Low-voltage Power Circuit Breakers are built to withstand intense service conditions. Intended for use in industrial, commercial and utility applications, these power breakers may be used as feeders, main breakers, in motor circuits, capacitor switching, resistance welding machines and others.

Six frame sizes are utilized to span the 40 through 4000 ampere ratings. Available with electromechanical or solid-state overcurrent tripping functions as well as a full line of accessories and options.



AK-2-75 Electrically Operated

FEATURES

- Six Frame Sizes Cover 40-4000 Ampere Rating.
- New AKR Frame Sizes For Increased Flexibility.
- Easy Access to Major Components.
- Multi-Contact Design.
- Stored Energy Closing—Manual or Electrical.
- Complete Line of Accessories.
- Short-Circuit Ratings Available Through 200,000 Amperes.
- Metal Frame Construction Provides Rigidity and Endurance.
- Overcurrent Trip Indication Targets With SST*.

DESCRIPTIVE MATERIAL

Order from General Electric Company, Distribution Unit, Hoerle Bldg., Plainville, CT. 06062

Bulletins

Breaker Selection and Application GEA-8733
Power Sensor® Test Set GEK-7301
Installation and Operation Instruction GEK-7302
Power Sensor Testing Instructions GEK-7309
SST/ECS* Test Set Instructions GEK-64454

Maintenance Manuals
- AK-25 ..... GEI-50299
- AKR-30, -50 ..... GEK-7310
- AK-50, -75, -100 ..... GEK-7303

Renewal Parts
- AK-25 ..... GEF-4149
- AKR-30, -50 ..... GEF-4527
- AK-50 ..... GEF-4150
- AK-75 ..... GEF-4395
- AK-100 ..... GEF-4396

Time-current Curves

SST Trip Device GES-6033
SST Trip Device—Ground Fault GES-6034, 6035
ECS Trip Device GES-6032

EC-1 Trip Device
- Long Time-delay, Short Time-delay and Instantaneous GES-6000A

EC-1B Trip Device
- Long Time-delay and Instantaneous, 1BB-3 ..... GES-6003
- Long Time-delay and Instantaneous, 1CC-3 ..... GES-6004
- Long Time-delay, Short Time-delay and Instantaneous GES-6005

EC-2 and EC-2A Trip Device
- Long Time-delay and Instantaneous, 1A-3 ..... GES-6010
- Long Time-delay and Instantaneous, 1B-3 ..... GES-6011
- Long Time-delay and Instantaneous, 1C-3 ..... GES-6012

Power Sensor Overcurrent Trip Device
- Long Time-delay, Short Time-delay and Instantaneous, Types PS-1 and PS-1A GES-6021A①
- Ground Trip, Type PS-1A GES-6031②

①Supersedes GES-6020.

②Refer to GES-6030 for units manufactured prior to May 1973, designated PS-1.

Revised since June 9, 1975 issue. Formerly Section 7691:1.

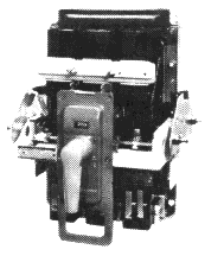
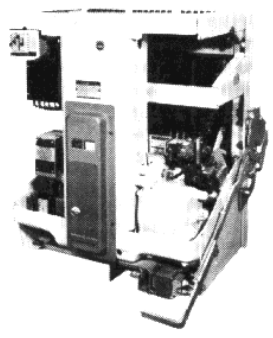
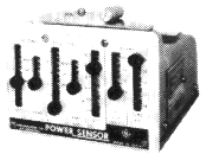
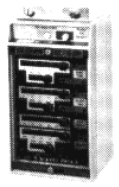
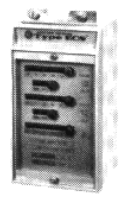
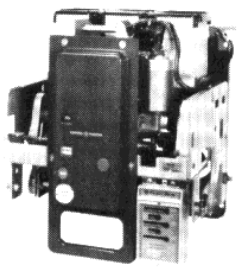
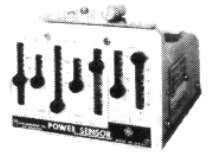
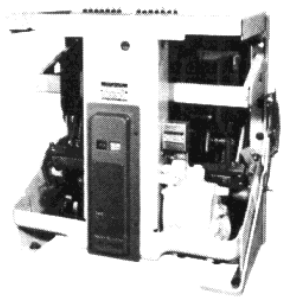
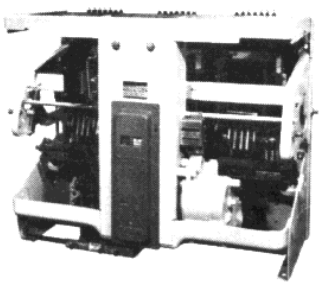
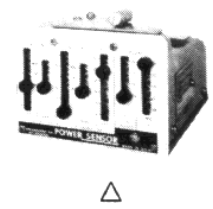
Data subject to change without notice

CIRCUIT PROTECTIVE DEVICES—LOW-VOLTAGE POWER CIRCUIT BREAKERS

Type AK Breakers

Quick Selector

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

BREAKER TYPE	FRAME SIZE (AMPS)	OVERCURRENT TRIP DEVICES AND AMPERE RATINGS			
		SST*	ECS*	POWER SENSOR®	EC
 AK-25 △	600				
 AK-50 △	1600			 △	 △
AKT-50 △	2000				
AKR-30	800				
 AKR-50	1600			 △	
AKRT-50	2000				
 AK-75	3000				
 AK-100	4000			 △	 △

△Breaker frames and/or trip devices are obsolete effective Jan. 1, 1977.

Revised since June 9, 1975 issue. Formerly Section 7691:2.

* Trademark of General Electric Company.

Data subject to change without notice

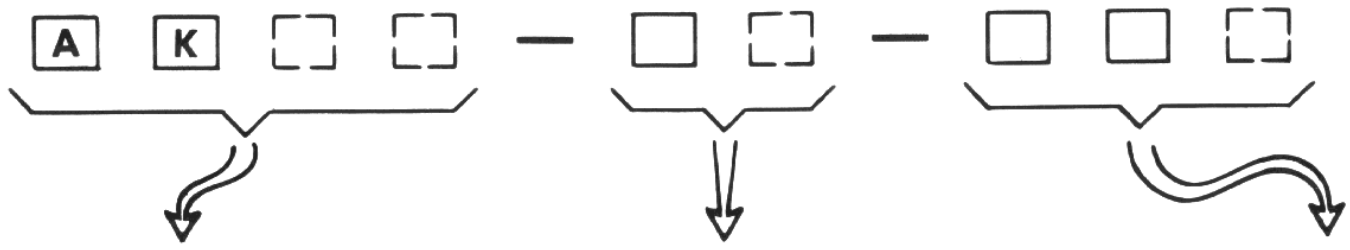
GENERAL ELECTRIC

Type AK Breakers

Glossary of Terms

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

AK BREAKER IDENTIFICATION



GENERAL BREAKER IDENTIFICATION

Code	Definition
AK	Type AK Low Voltage Power C.B.
AKU ①	Integrally Fused Version of AK
AKT	2000A Frame
AKR, AKRT	New Style AK Breakers
AKRU	Integrally Fused Version of AKR

① Available for 600, 800 and 1600A Frames only. 3000A and 4000A Frames are available with fuses mounted in a separate drawout compartment. Refer to company for pricing.

BREAKER MOUNTING AND TRIP IDENTIFICATION

Code	Definition						
	Trip-Type				Mounting		
	EC③	PS②	SST*③	ECS*③	Stationary④	Drawout AKD	Drawout AKD-5
2	✓				✓	✓	
2A	✓						✓
3		✓			✓	✓	
3A		✓					✓
4				✓	✓		
4A				✓		✓⑤	✓
5			✓		✓	✓	
5A			✓			✓⑤	✓

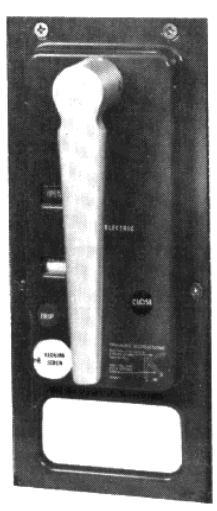
BREAKER FRAME IDENTIFICATION

Code	Definition Frame Rating (Amps)
25	600
30	800
50	1600
50	2000 ⑥
75	3000
100	4000

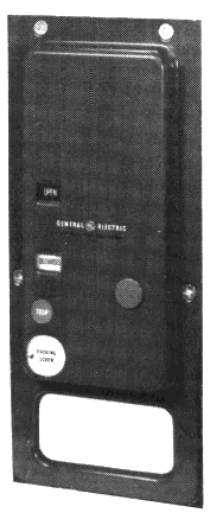
②Not available for Types AKR, AKRU or AKRT.
③Available only for Types AKR, AKRU, AKRT, and AK-75,-100.
④Not available for Types AKU or AKRU.
⑤Available only for Types AKR/AKRU-30, AKR/AKRU-50, and AKRT-50.
⑥Applies to Types AKT and AKRT only.

EXAMPLE: AKT-3A-50 = 2000 AMP frame, AK Type Low Voltage Power Circuit Breaker with Power Sensor® tripping device, AKD-5 drawout construction.

OPERATING MECHANISMS



AKR-50 Escutcheon Manually Operated



AKR-50 Escutcheon Electrically Operated

Two mechanisms are available to open and close AK Breakers-**Manual** for local control or **Electrical** for remote operation.

A **stored energy** function is employed in each type of operating mechanism. This interposes an energy storing means between the operator and the breaker contacts. Advantages include prolonged contact and breaker life, reduced maintenance, constant closing speed independent of operator or voltage level of power source.

Manually operated AK breakers are constructed with front mounted handles and closed by first rotating the handle counter clockwise through approximately 100 degrees. This resets the mechanism and partially stores energy in the closing spring. The handle is then rotated clockwise to complete the charging of the springs and drive the mechanism **over center** to close the contacts. The AK-25 breaker closes with a single stroke, the AK-50, -75, -100 frames require four handle strokes.

In AKR breakers, the closing springs are charged by any number of strokes from one to four, depending on the angle through which the handle is rotated. After the springs are charged, the breaker is closed via a separate CLOSE button on the escutcheon.

Breakers are opened by a trip button located on the escutcheon.

Electrically operated breakers utilize solenoids (AK-25) or motors (AK-50, -75, -100, AKR) for remote closing and a trip solenoid for remote opening. The breaker may be opened locally by depressing the trip button mounted on the breaker escutcheon. An optional local close button is available and will be supplied when ordered. A manual closing device is available for maintenance purposes.

A **quick-close** option is available for electrically operated breakers. When specified, the breaker will be constructed to provide 5-cycle closing. This function is standard on electrically operated AK-25 and AKR breakers. A **Remote Quick-Close** option (Solenoid operated) is also available for manually operated AKR breakers.

Revised since June 9, 1975 issue. Formerly Section 7691:3.

* Trademark of General Electric Company.

Data subject to change without notice

CIRCUIT PROTECTIVE DEVICES—LOW-VOLTAGE POWER CIRCUIT BREAKERS

Type AK Breakers

Glossary of Terms

40-4000 Amperes Three-phase 600 Volts Ac, 250 Volts Dc

ENCLOSURES AND MOUNTINGS

AK-Type breakers may be applied as individual units or as an integral part of a load center or switchgear line-up. Mounting types are either stationary or drawout.

General Purpose Enclosure, NEMA 1

For indoor use. AK-25, -50, AKR-30, -50 breakers are supplied in steel housings suitable for wall mounting. AK-75, -100 breakers are supplied in floor mounted enclosures. Construction is AKD-5 type.

Stationary Mounting

Breaker only. Suitable for use in dead-front switchboard or other applications requiring stationary mounted breakers.

Drawout Units

Complete one-high **drawout unit** consists of a drawout-type breaker plus appropriate housing ("**Box**"). A "**Box Less Door**" option is available for AKD only. All boxes can be stacked to form standard 90-in.-high enclosure sections. Drawout units are available in two types of construction: AKD and AKD-5. Each varies in appearance and drawout design, as follows:

AKD Type—Open Door Drawout

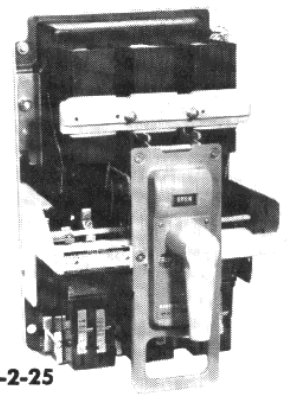
Box Door must be opened to remove ("rack") the breaker.

The drawout mechanism construction varies with breaker type. AK-25 and AKR breakers have guides which ride a track in the compartment. These tracks are welded to the compartment for AK-25 and telescope out for AKR. Boxes for AK-50,-75,-100 breakers have a drawout tray at the bottom of each on which the breaker rides.

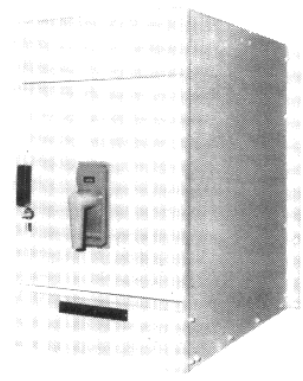
Type AK breakers have an integrally mounted **racking handle.** This handle rotates two racking cams mounted on the housing for AK-25 and on the breaker for AK-50,-75,-100. The racking cams control the breaker position by engaging racking pins mounted on the AK-25 breaker frame or on the housing for AK-50,-75,-100.

The drawout mechanism construction for AKR breakers is the same for AKD or AKD-5. The type AKD box door must, however, be opened to rack the breaker. See "AKD-5 type—closed door drawout" below for additional information.

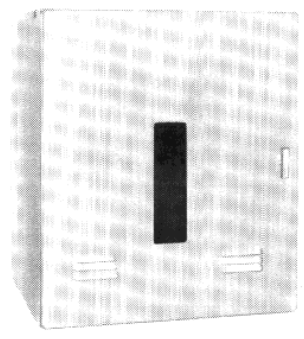
AKD drawouts for type AK breakers feature four-position operation. In the **connected** position the **primary** (main current carrying) and **secondary** (control circuits) contacts are fully engaged. This position is mechanically interlocked so that the breaker must be tripped before it can be racked in or out. The **TEST** position, identified by a mechanical stop, permits complete breaker operation without energizing the primary circuit. In this position the primary contacts are separated and secondary contacts remain engaged. The **disconnected** position is also identified by a mechanical stop and assures that all primary and secondary disconnects are disengaged. The final position, **fully withdrawn,** allows the breaker to be removed from its compartment.

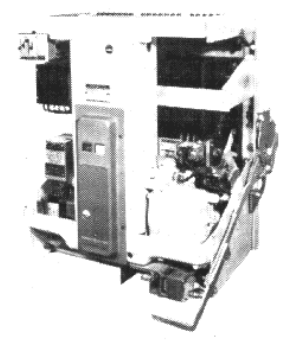


AK-2-25 Stationary Breaker

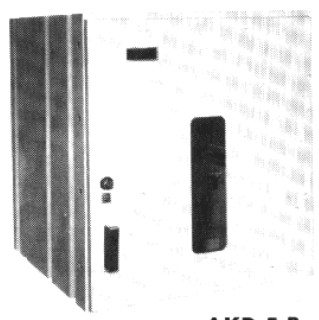


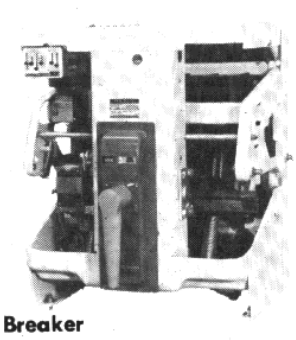
AKD-5 Type NEMA 1 General Purpose Enclosure





AKD Box and Breaker





AKD-5 Box and Breaker

AKD-5 Type—Closed Door Drawout

Breaker may be racked from the CONNECT to the TEST to the DISCONNECT positions with the box door closed.

The AKD-5 drawout mechanism is operated externally by a removable handle which engages the rackout mechanism. This mechanism, accessible through an opening in the door, is mounted in the box for AK breakers and on the breaker frame for AKR breakers. The breaker rides on telescoping rails and is supported by two knobs located on either side of its frame.

AKD-5 drawouts feature four-position operation. In the **connected** position, primary and secondary contacts are fully engaged. The breaker must be tripped before it can be racked in or out of this position. When in the **test** position, the primary contacts are disconnected but secondary contacts remain engaged. This allows complete breaker operation without energizing the primary circuit. In the **disconnected** position neither the primary nor the secondary contacts are made. Each of these drawout positions is clearly identified by a rotary indicator which is visible through an opening in the door. The **fully withdrawn** position places the breaker completely out of its compartment, ready for removal.

New information.

Type AK Breakers

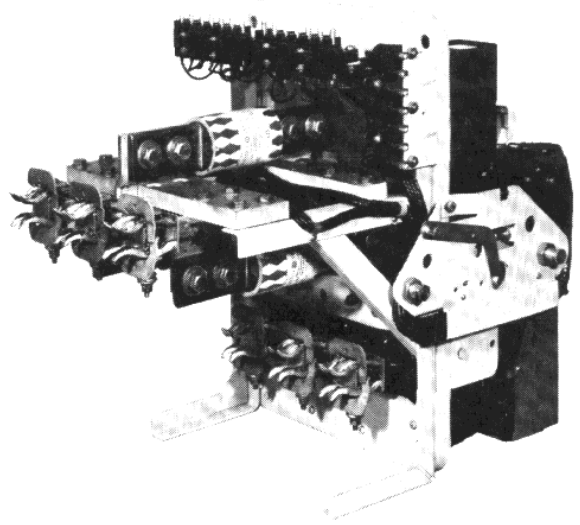
Glossary of Terms

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

FUSED BREAKERS

Fused Low Voltage Power Circuit Breakers provide protection for systems with available fault current to 200,000 amperes RMS symmetrical. Current limiting fuses are provided as an integral part of fused drawout breakers in the 600, 800 and 1600 ampere frame sizes. The 3000 and 4000 ampere frames are available with coordinated fuses separately mounted in a drawout fuse carriage.

An **open fuse lockout** function is provided as an integral part of all fused power circuit breakers. This device prevents single phasing conditions from occurring by monitoring the fuses. Should any fuse blow, this direct-acting device trips the breaker, opening all three poles simultaneously. An indicator pinpoints the blown fuse. The breaker remains locked out until the fuse is replaced and device reset.



AKU-25 (AKD-5 Type) Integrally Fused Breaker

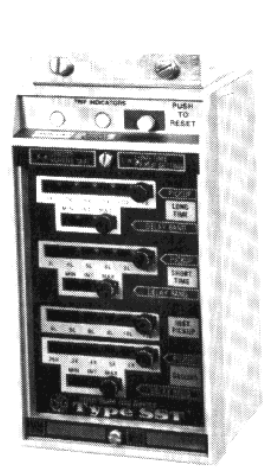
OVERCURRENT TRIP DEVICES

Overcurrent trip devices are available in electro-mechanical **(EC)** or solid-state **(SST*, ECS*, Power Sensor®)** construction. Each may be ordered with various combinations of **long-time, short-time** and **instantaneous** tripping characteristics. In addition, S S T and Power Sensor offer optional integral **ground-fault** protection.

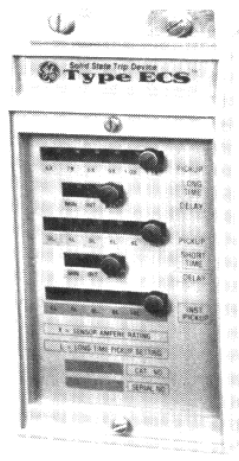
All trip functions incorporate current sensing apparatus in each pole of the breaker. E C trip characteristics are adjustable on a per-pole basis. The solid state devices employ a protection programmer unit which sets the current detection level of all poles with a single knob adjustment. S S T and Power Sensor units provide additional flexibility by extending this adjustment range via taps on the sensor CT's.

TARGET INDICATORS—Optional

Target indicators are available on S S T to indicate the breaker tripping mode—overload, short circuit or ground fault. Each target is an electrically operated plunger which pops out when the breaker trips on overcurrent or ground faults. They are located across the top of the programmer unit face plate and are mechanically reset.



S S T
Solid State
Programmer



E C S
Solid State
Programmer

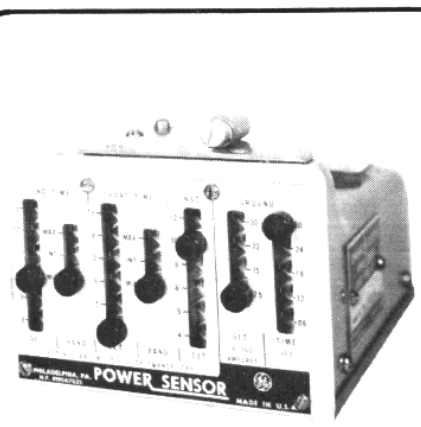
GROUND FAULT PROTECTION

A ground fault is an unintentional grounding of a phase conductor. This condition may result in arcing or non-arcing current levels less than that required to activate the conventional overcurrent detection device. Several options are available to protect against this hazardous condition:

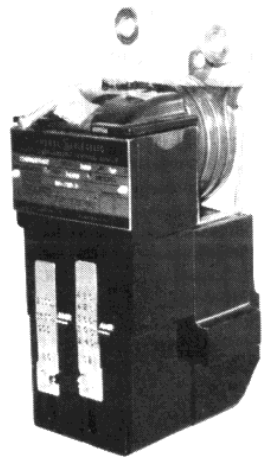
POWER SENSOR—Provides ground fault protection as an integral part of the breaker. Supplied with adjustable pick up and time delay.

S S T —Provides all features available in Power Sensor plus the ground fault target indicator as an added option.

GROUND BREAK*—A component system for separate mounting.



Power Sensor
Solid State
Programmer



E C
Overcurrent
Trip Device

* Trademark of General Electric Company.

New information.

Data subject to change without notice

CIRCUIT PROTECTIVE DEVICES—LOW-VOLTAGE POWER CIRCUIT BREAKERS

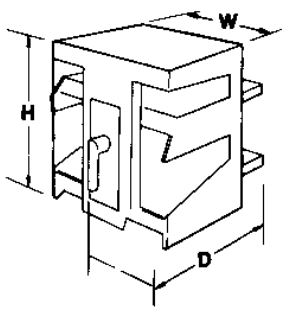
Type AK Breakers

Dimensions

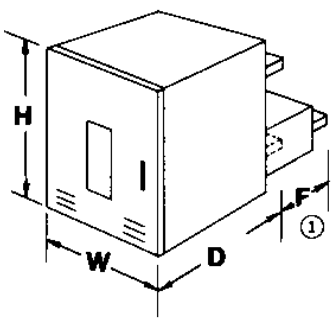
40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

These over-all breaker dimensions are approximate and should beused for estimating purposes only. Refer to appropriate outline drawings for detailed information.

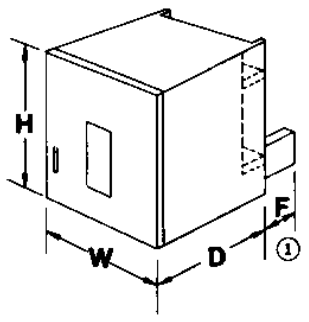
STATIONARY BREAKER



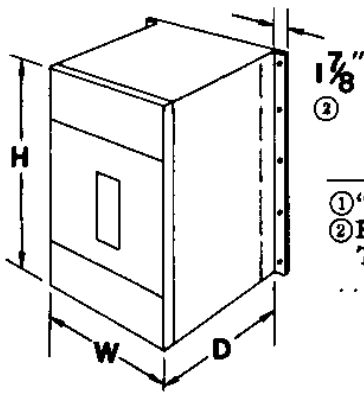
AKD TYPE DRAWOUT BOX



AKD-5 TYPE DRAWOUT BOX



GENERAL PURPOSE ENCLOSURE AKD-5 TYPE



Breaker Type		Dimensions in Inches F①	H	W	D	Outline Drawing Number: With EC Trip	With Power Sensor® Trip	With SST* Trip	With ECS* Trip
AK-25	Manual	. . .	20¼	13	15 1/16	695C116	121C7570	. . . . .	. . . .
	Electrical				12 9/16				
AKR-30	Manual	. . . .	20⅛	17	24 3/16	.. ...	.. . . .	139C4300	
	Electrical				21 5/16			139C4301	
AK-50	Manual	. . . . .	27	22	22⅜	845C281	121C7553	. . . .	. . . . .
	Electrical				19 9/16	238C123	121C7555		
AKR-50	Manual	. . . . .	20¼	17	24 1/16	.. . . .	139C4320	139C4320	
	Electrical				21 5/16	. . . . .	139C4321	139C4321	
AKT-50	Manual	. . . .	27	22	22⅜	0102C3650	152C2733	. . . . .	. . . . .
	Electrical				19 9/16	0102C3651	152C2734	. . . . .	. . . . .
AKRT	Manual	. . . . .	20¼	17	24 1/16	.. . . .	.. . . .	Consult Factory	
	Electrical				21 5/16				
AK-75	Manual	. . . .	27	25	28⅞	845C283	121C7583	. . . .	. . . . .
	Electrical				26 1/16	269C0225	121C7557	. . . . .	. . . . .
AK-100	Manual	. . . . .	27	33	28⅞	845C289	121C7585	. . . .	. . . . .
	Electrical				26 1/16	269C227	121C7559		
AK-25		. . . . .	22⅜	20	17½	0245C0725		. . . . .	. . . . .
AKU-25		10 3/16							
AKR-30		. . . . .	29⅞	26	31¼	. . . . .	. . . . .	0245C0734	
AKRU-30		. . . . .				. . . . .	. . . . .		
AK-50		. . . . .	29⅞	26	27½	0245C0726		. . . . .	. . . . .
AKU-50		14 9/16							
AKR-50		. . . . .	29⅞	26	31¼	. . . . .	0245C0733		
AKRU-50									
AKT-50		. . . . .	29⅞	26	27½	0245C0727	0245C0731	. . . . .	. . . . .
AKRT-50		. . . . .	29⅞	26	31¼	. . . . .	. . . . .	Consult Factory	
AK-75		. . . . .	29⅞	30	30¾	0245C0728		. . . . .	. . . . .
AK-100		. . . .	44¾	38	30¾	0245C0729		. . . . .	. . . . .
AK-25		. . . . .	22½	20	31¼	0149C9091		. . . . .	. . . . .
AKU-25									
AKR-30		. . . . .	22½	22	31¼	. . . . .	. . . . .	0149C6759	
AKRU-30		2⅞				. . . . .	. . . . .		
AK-50		. . . . .	29⅞	27	31¼	0149C9091		. . . . .	. . . . .
AKU-50									
AKR-50		. . . . .	22½	22	31¼	. . . . .	0149C6754	0149C6754	
AKRU-50		2⅞							
AKT-50		. . . . .	29⅞	27	31¼	0149C9091	0149C9093	. . . . .	. . . . .
AKRT-50		. . . . .	22½	22	31¼	. . . . .	. . . . .	Consult Factory	
AK-75		. . . . .	29⅞	30	31¼	0149C9092		. . . .	. . . . .
AK-100		. . . . .	29⅞	38	31¼				
AK-25		. . . . .	36	20½	30½	0134C3050		. . . . .	. . . . .
AKR-30		. . . . .	40⅜	22½	34	. . . . .	. . . . .	0149C6761	
AK-50		. . . . .	48	27½	30½	0134C3051		. . . . .	. . . . .
AKR-50		. . . . .	40⅜	22½	34	. . . . .	245C764	245C764	
AK-75		. . . . .	64	30½	48	0134C3052		. . . . .	. . . . .
AK-100		. . . . .	64	38½	48				

①"F" Dimension applies to Fused Drawout Boxes only as shown.
②Flanges for wall mounting are supplied on AK-25, AKR-30, AK-50, AKR-50, AKT-50 and AKRT-50 Type devices.
. . . . Dots indicate not available.

* Trademark of General Electric Company.

Revised since June 9, 1975 Issue. Formerly Section 7691:5.

Data subject to change without notice

GENERAL ELECTRIC

Type AK Breakers

Selection Data

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

NOTE: For complete details on breaker application such as motor applications, fused breakers, overcurrent trip details, etc., refer to Bulletin GEA-8733, Selection and Application of Low-voltage Power Circuit Breakers.

TABLE 1—Standard Breaker Ratings

AC Voltage Rating 60 Hertz	Breaker Type	Maximum Breaker Frame Rating in Amperes	Short-time Rating in Symmetrical Amperes	Short Circuit Rating in Rms Symmetrical Amperes	
				With Instantaneous Trips	Without Instantaneous Trips
600	AK-25	600	22,000	22,000	22,000
	AKR-30	800	30,000	30,000	30,000
	AK-50, AKR-50	1600	42,000	42,000	42,000
	AKT-50, AKRT-50	2000	42,000	42,000	42,000
	AK-75	3000	65,000	65,000	65,000
	AK-100	4000	85,000	85,000	85,000
480	AK-25	600	22,000	30,000	22,000
	AKR-30	800	30,000	30,000	30,000
	AK-50, AKR-50	1600	50,000	50,000	50,000
	AKT-50, AKRT-50	2000	50,000	50,000	50,000
	AK-75	3000	65,000	65,000	65,000
	AK-100	4000	85,000	85,000	85,000
240	AK-25	600	22,000	42,000	22,000
	AKR-30	800	30,000	42,000	30,000
	AK-50, AKR-50	1600	50,000	65,000	50,000
	AKT-50, AKRT-50	2000	50,000	65,000	50,000
	AK-75	3000	65,000	85,000	65,000
	AK-100	4000	85,000	130,000	85,000

TABLE 2—Breakers With Extended Short Circuit Ratings

AC Voltage Rating 60 Hz	Breaker Type	Max. Breaker Frame Rating in Amperes	Short-Time Rating in RMS Symmetrical Amperes	Short Circuit Rating in RMS Symmetrical Amperes	
				With Instantaneous Trips	Without Instantaneous Trips
600	AKR-30H	800	42,000	42,000	42,000
	AKR-50H	1600	50,000	50,000	50,000
	AK-50H	1600	65,000	65,000	65,000
480	AKR-30H	800	42,000	42,000	42,000
	AKR-50H	1600	65,000	65,000	65,000
	AK-50H	1600	65,000	65,000	65,000
240	AKR-30H	800	42,000	50,000	42,000
	AKR-50H	1600	65,000	65,000	65,000
	AK-50H	1600	65,000	85,000	65,000

TABLE 3—Minimum EC Trip Coil Ratings

AC Voltage Rating 60 Hertz	Breaker Type	Minimum Overcurrent EC Trip Coil Rating in Amperes			
		With Instantaneous Characteristic	With 2C or 2CC Short-time Characteristic ①	With 2B or 2BB Short-time Characteristic ①	With 2A or 2AA Short-time Characteristic ①
600	AK-25	40	175	200	250
	AK-50	200	350	400	500
	AKT-50	200	350	400	500
	AK-75	2000	2000	2000	2000
	AK-100	2000	2000	2000	2000
480	AK-25	100	175	200	250
	AK-50	400	350	400	500
	AKT-50	400	350	400	500
	AK-75	2000	2000	2000	2000
	AK-100	2000	2000	2000	2000
240	AK-25	150	175	200	250
	AK-50	600	350	400	500
	AKT-50	600	350	400	500
	AK-75	2000	2000	2000	2000
	AK-100	2000	2000	2000	2000

TABLE 4—Fused Breaker Ratings

Breaker Type	Frame Size Amperes	Maximum A-C Voltage	② CLF Fuse Rating Amperes		Interrupting Rating Amperes RMS Symmetrical
			Min.	Max.	
AKU-25	600	600	300	1200	200,000
AKRU-30	800	600	300	1600	200,000
AKRU-50	1600	600	450	2500	200,000
AKU-50	1600	600	450	2000	200,000
AK-75	3000	600	2000 ②	3000 ②	200,000
AK-100	4000	600	2000 ②	4000 ②	200,000

TABLE 5—250 Volt Dc Ratings

For EC Type Tripping Function Only

Breaker Type	Maximum Continuous Amperes	Short-circuit Amperes
AK-25	600	25,000
AK-50	2000	50,000
AK-75	4000	75,000
AK-100	6000	100,000

TABLE 6—Overcurrent Trip Device Ratings

Breaker Type	Ratings in Amperes			
	EC Trip Coils ④	Power Sensor®	SST*	ECS*
AK-25	40, 50, 70, 90, 100, 125, 150, 175, 200, 225, 250, 300, 350, 400, 500, 600	45, 70, 90, 125, 175, 200, 225, 300 400, 500, 600	Not Avail.	
AKR-30	Not Avail.		(100, 150, 225, 300,) or (300, 400, 600, 800)	100, 150, 225, 300, 400, 600, 800
AKR-50	Not Avail.	Not Avail.	(300, 400, 600, 800,) or (600, 800, 1200, 1600)	300, 400, 600, 800, 1200, 1600
AK-50	200, 225, 250, 300, 350, 400, 500, 600, 800, 1000, 1200, 1600	200, 300, 400, 500, 600, 800, 1200, 1600	Not Avail.	
AKT-50	2000	800, 1200, 1600, 2000		
AKRT-50	Not Avail.		(800, 1200, 1600, 2000,)	800, 1200, 1600, 2000
AK-75	2000, 2500, 3000	1500, 2000, 2500, 3000	(1500, 2000, 2500, 3000)	1500, 2000, 2500, 3000
AK-100	2000, 2500, 3000, 4000	2000, 2500, 3000, 4000	(2000, 2500, 3000, 4000)	2000, 2500, 3000, 4000

④ Observe minimum overcurrent trip ratings set in Table 3.

① Refer to time-current curves GES-6000 and GES-6005 or Bulletin GEA-8733.

② The maximum fuse rating is the largest fuse which tests show will result in proper performance of the breaker and fuse in combination under short circuit conditions. Only GE type CLF fuses should be used for proper coordination.

③ Fuses are separately mounted on drawout carriage.

Revised since June 9, 1975 issue. Formerly Section 7691:6. * Trademark of General Electric Company. *Data subject to change without notice*

Type AK Breakers

Ordering Information

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

HOW TO ORDER

For complete details on breaker application, refer to GEA-9753 for appropriate bulletin and time-current curve publication numbers. General selection information is referenced within these handbook pages.

To assure prompt shipment and avoid unnecessary delays, orders for Low Voltage Power Circuit Breakers must include the following information:

A. Quantity—Specify for each breaker on order.

B. Type—Include complete nomenclature (i.e., AK-3A-50, AK-2-25, etc.).

C. Number of poles.

D. Voltage Rating—If a-c, specify frequency.

E. Breaker Ampere Rating.

F. Method of Operation—Manual or electrical. If electrical, specify voltage and, if a-c, frequency of closing and tripping sources.

NOTE: If 5-cycle, quick-close feature is desired on electrically operated Ak-50, -T50, -75, and -100 frames, it must be specified on the order.

G. Type of Enclosure or Mounting—(i.e., general-purpose, individual drawout unit or stationary mounted breaker).

H. Type of Overcurrent Trip Device—

1. SST*—Specify:
   - **a) Trip ampere rating (CT tap range)**
   - **b) Trip function combination:**
     - Long time
     - Short time (optional)
     - Instantaneous
     - Ground fault (optional)—Specify 3 or 4 wire.

     Note: All adjustments on protection programmer are factory set at minimum positions.
   - **c) Target indicators (optional):**
     For units with ground fault—3 targets (overload, short circuit, ground)
     For units without ground fault—2 targets (overload, short circuit)
2. ECS*—Specify:
   - **a) Trip ampere rating (Sensor rating)**
   - **b) Trip function combination:**
     Long time
     Short time (optional)
     Instantaneous

     Note: All adjustments on protection programmer are factory set at minimum positions.
3. POWER SENSOR®—Specify:
   - **a) Trip ampere rating (CT tap range)**
   - **b) Trip function combination:**
     - Long time
     - Short time (optional)—specify pickup range (2-5X or 4-10X)
     - Instantaneous
     - Ground fault (optional)—specify 3 or 4 wire; for AK-25, specify ground pickup range (100–400 A. or 300–1200 A.)

     Note: All adjustments on solid state unit are factory set at minimum positions.
4. EC (Electromechanical)—Specify:
   - **a) Quantity per breaker**
   - **b) Trip ampere rating**
   - **c) Type:**
     (1) *Dual magnetic* (long time and instantaneous)—Unless otherwise specified, characteristics will be supplied as follows: For AK-25 and -50, long-time characteristic 1B and an instantaneous setting of 12X: for AK-75 and -100, long-time characteristic 1CC and an instantaneous setting of 12X.
     (2) *Instantaneous-magnetic* (instantaneous only)—Specify pickup setting.
     (3) *Selective* (long time & short time) (optional)—Specify time bands and settings.

I. Accessories—Specify those required per breaker (i.e., shunt trip, bell alarm, etc.). Specify ratings as required.

J. Terminal Facilities—

1. For breakers in General Purpose Enclosures specify size and number of cables per stud.

2. For AK-75 and -100 stationary breakers, specify whether studs are to be horizontal or vertical. Unless otherwise specified, the breakers will be supplied with upper studs horizontal and lower studs vertical.

BASIC PRICES

The basic prices include the following standard functions:

Manually Operated Breakers

Stored-energy manual closing mechanism.
Trip-free breaker, mounted on a metal base, with:
Revolving pistol-grip operating handle.
Overcurrent trip function as specified.
Arc quenchers.
Push-button mechanical trip (breaker mounted).
Position indicator.
Provision for up to three padlocks (for locking breaker in the trip-free position).
Bolted-type terminal connectors (general-purpose enclosures only)
Selected enclosure (except breakers for stationary mounting.)

Electrically Operated

Same as manually operated breaker, except that the pistol-grip operating handle is omitted, plus:
Solenoid stored-energy operating mechanism for 600 A frame size.
Motor-operated stored-energy operating mechanism for all other frame sizes.
Closing relay.
Shunt-trip device.
Four-circuit auxiliary switch.
Momentary-contact closing switch (optional).
Maintenance closing handle.

SPECIAL PURPOSE BREAKERS

Refer to factory for pricing and application information relative to special purpose breakers not listed here. These include:

Welding Breaker—these breakers are designed to comply with the harsh duty requirements of resistance welding machines.

Breakers with Extended Short Circuit Ratings—offer increased short circuit capability without fuses.

Type AK Breakers With ECS™ Trips

100-4000 Amperes **Three-phase** **600 Volts Ac**

Aug. 2, 1976

GENERAL

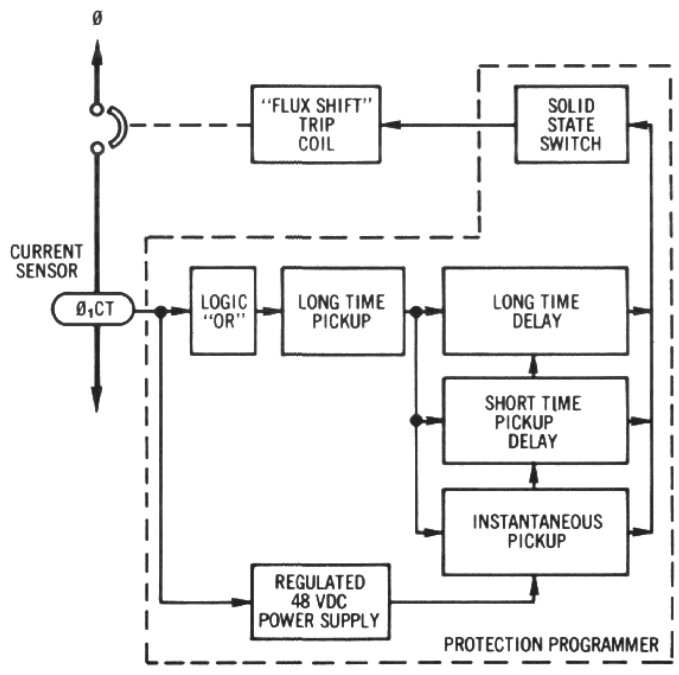
ECS is a three-phase overcurrent trip device for types AK and AKR breakers. It is constructed as an integral part of the breaker and utilizes the following components:

CURRENT SENSORS—Factory mounted in each pole and used to monitor current for the protection programmer's logic and power supply circuitry.

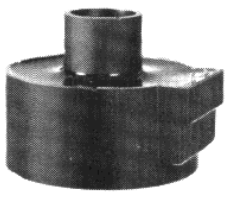
PROTECTION PROGRAMMER—Solid state logic control center. Utilizes signals from current sensors for analysis as well as power. Also incorporates a set-point programmer for field adjustment of overcurrent trip functions. All settings are protected against tampering by a transparent cover.

A portable test set with input of 110 volts A-c is available for field testing.

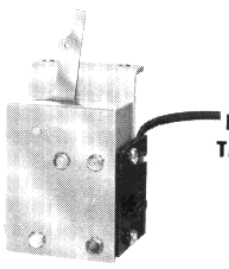
FLUX-SHIFT TRIP DEVICE—Low energy positive action tripping device, sealed to protect against entrance of contaminants. Automatically powered and controlled by the protection programmer.



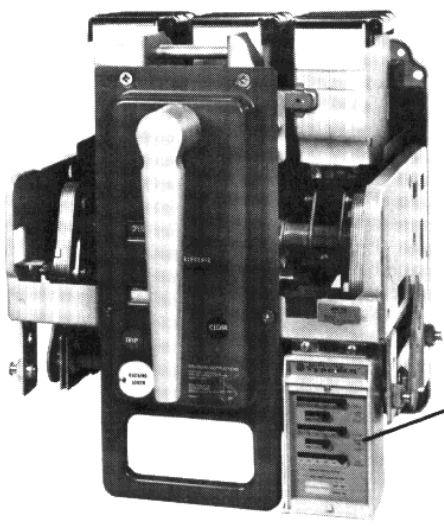
ECS Block Diagram



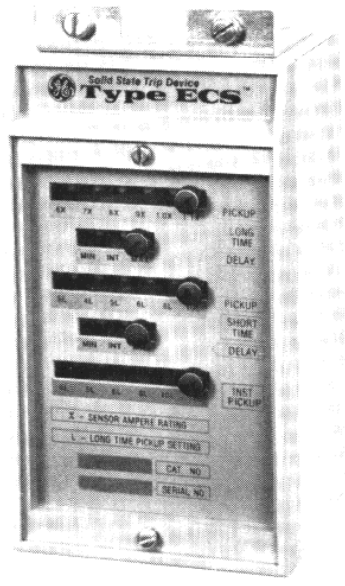
Current Sensor



Flux Shift Trip Device



AKR-4A-50



ECS Protection Programmer

TRIP CHARACTERISTICS

Breaker Type	Frame Size (Amperes)	X = Trip Rating in Amperes = Sensor Rating (Sensor Ampere Rating)	ECS PROGRAMMER ADJUSTMENT RANGE (Set Points)				
			Long Time		Short Time		Instantaneous Pickup ② (Multiple of L)
			Pickup (=L) ① (Multiple of X)	Time Delay Band ③ (Seconds)	Pickup ② (Multiple of L)	Time Delay Band ④ (Seconds)	
AKR-30	800	100, 150, 225, 300, 400, 600, 800	(.6, .7, .8, .9, 1.0, 1.1)X	Maximum 22 Intermed. 10 Minimum 4	(3, 4, 5, 6, 8, 10)L	Maximum 0.35 Intermed. 0.21 Minimum 0.095	(4, 5, 6, 8, 10, 12)L
AKR-50	1600	300, 400, 600, 800, 1200, 1600					
AKRT-50	2000	800, 1200, 1600, 2000					
AK-75	3000	1200, 1600, 2000, 3000					
AK-100	4000	1600, 2000, 3000, 4000					

①Pickup tolerance is ±9%
②Pickup tolerance is ±10%
③Time delay shown at 600% of long time pickup setting (6L), at lower limit of band.
④Time delay shown at lower limit of band.

New information.

Data subject to change without notice

With ECS Trips

Type AK Breakers With SST™ Trips

100-4000 Amperes **Three-phase** **600 Volts Ac**

Aug. 2, 1976

GENERAL

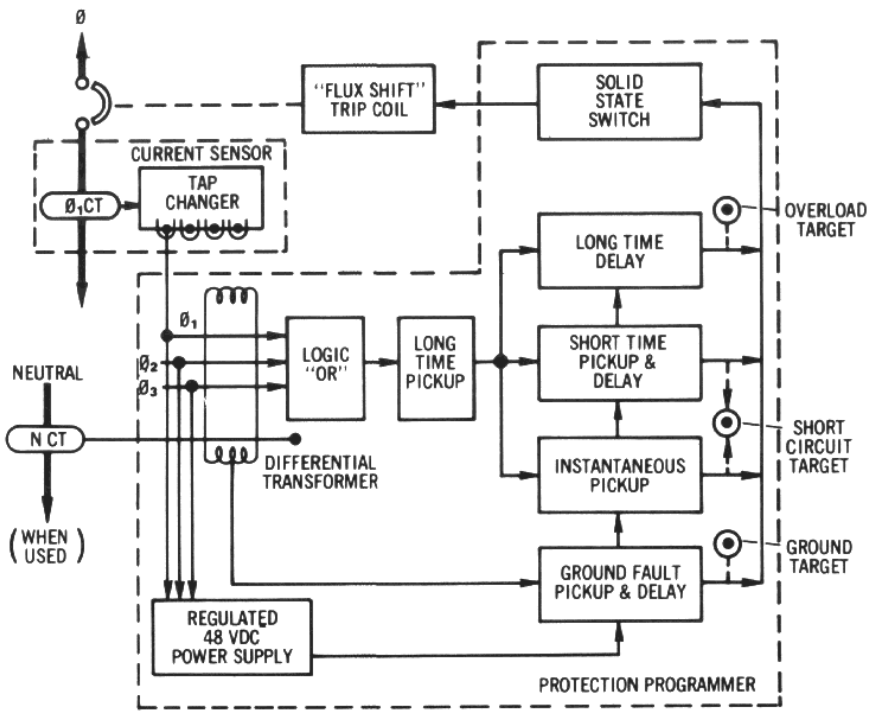
SST is a family of trip devices developed for types AK and AKR breakers. It incorporates the newest technological advancements in overcurrent protection for the ultimate in reliability, long life and flexibility.

Operation is fully automatic and no external logic or control power inputs are required. SST is an integral part of the breaker and consists of three major parts:

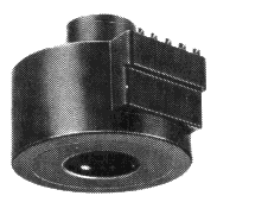
TAPPED CURRENT SENSORS—Factory mounted in each pole. Monitors current for the protection programmer's logic and power supply circuitry.

PROTECTION PROGRAMMER—Self powering solid state logic center. Incorporates set-point programming ability for seven functions as well as TARGETS for mechanical fault trip indication.

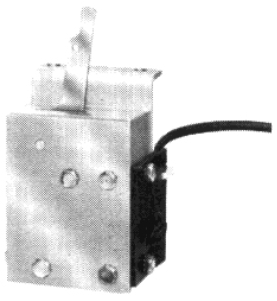
FLUX-SHIFT TRIP DEVICE—Low energy positive action tripping device. Automatically powered and controlled by the protection programmer.



SST Block Diagram

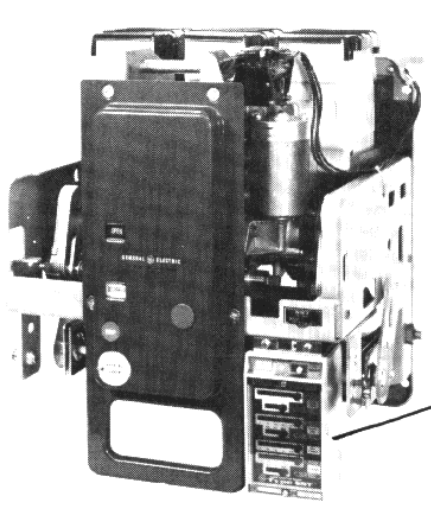


Tapped Current Sensor

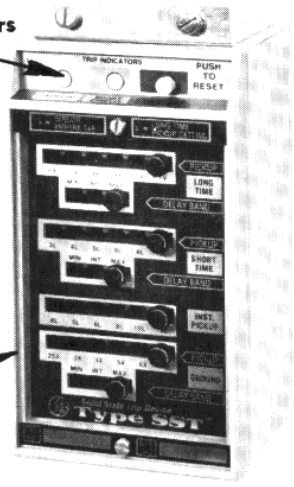


Flux Shift Trip Device

Fault Target Annunciators



AKR-5A-50 Electrically Operated



SST Protection Programmer

TRIP CHARACTERISTICS

Breaker Type	Frame Size (Amperes)	X = Trip Rating In Amperes = Sensor Tap (Sensor Ampere Taps)	SST PROGRAMMER ADJUSTMENT RANGE (Set Points) Long Time: Pickup ① (Multiple of X)	Long Time: Time Delay Band ④ (Seconds)	Short Time: Pickup ② (Multiple of L)	Short Time: Time Delay Band ⑤ (Seconds)	Instantaneous Pickup ② (Multiple of L)	GROUND FAULT: Pickup ③ (Multiple of X)	GROUND FAULT: Time Delay Band ⑤ (Seconds)
AKR-30	800	100, 150, 225, 300 ...or... 300, 400, 600, 800	(.6, .7, .8, .9, 1.0, 1.1)X	Maximum 22	(3, 4, 5, 6, 8, 10)L	Maximum 0.35	(4, 5, 6, 8, 10, 12)L	(.4, .5, .6, .8, 1.0, 1.2)X	Maximum 0.30
AKR-50	1600	300, 400, 600, 800 ...or... 600, 800, 1200, 1600		Intermed. 10		Intermed. 0.21		(.25, .3, .4, .5, .6, .7)X	Intermed. 0.165
AKRT-50	2000	800, 1200, 1600, 2000						Consult Factory	
AK-75	3000	1200, 1600, 2000, 3000						(.20, .22, .25, 30, .35k .4)X	
AK-100	4000	1600, 2000, 3000, 4000		Minimum 4		Minimum 0.095		(.18, .20, .22, .25, .27, .30)X	Minimum 0.065

①Pickup tolerance is ±9%
②Pickup tolerance is ±10%
③Pickup tolerance is ±10% (not to exceed 1200 A)
④Time delay shown at 600% of long time pickup setting (6L), at lower limit of band.
⑤Time delay shown at lower limit of band.

New information.

Data subject to change without notice

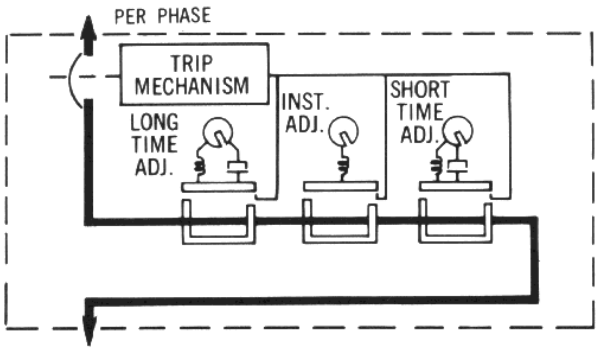
With SST Trips

Type AK Breakers With EC Trips

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

GENERAL

Type EC overcurrent trip devices are magnetically operated, using a series coil or single conductor and an associated magnetic structure to provide tripping force. Three basic characteristics—long time delay, short time delay, and instantaneous—can be used in various combinations for a wide variety of applications.



AK BREAKER WITH EC TRIP

LONG TIME DELAY is accomplished with a positive-displacement oil piston. Sealing of the assembly eliminates variations caused by atmospheric contamination, and silicone oil keeps variations in time delay due to changes in ambient temperature to a minimum.

SHORT TIME DELAY is accomplished with a rugged mechanical escapement.

INSTANTANEOUS TRIPPING is obtained when a tension spring yields to the force exerted on the magnetic armature at short circuit current levels, permitting the armature to move independently of the time delay piston.

AK breakers with EC trips are suitable for use on AC or DC system voltages, and are available in ratings of 45 through 4000 amperes. One EC trip device is mounted in each breaker pole and contains functional adjustments, overcurrent detection and tripping hardware.

EC trip devices are available as type EC-2A (standard for frames through 2000A), EC-1 (optional for frames through 2000A) and EC-1B (standard for frames 3000–4000A). These characteristics are described in the following tables.

EC-2A FULLY ADJUSTABLE TRIP for all applications where the combination of long time delay and instantaneous, or instantaneous alone is required.

Available Characteristics	Range of Pickup Adjustment② (Tolerance ± 10%)	Time Delay (Lower Limit of Band at 600% of Pickup Setting)	Factory Setting
Long time	80–160% calibrated at 80, 100, 120, 140 and 160% of coil rating.	(1A) Maximum-adj. 15 to 38 sec. (1B) Intermediate-adj. 7.5 to 18 sec. (1C) Minimum-adj. 3.3 to 8.2 sec.	100% 1B—15 sec.
Instantaneous	6–12X coil rating 4–9X coil rating 9–15X coil rating 80–250% coil rating①	Select one range 6 to 12X furnished unless otherwise specified	12X 9X 12X 100%

EC-1 SELECTIVE TRIPS combine long time and short time elements for intentional delay up to interrupting rating of the breaker. For special applications, instantaneous may be added.

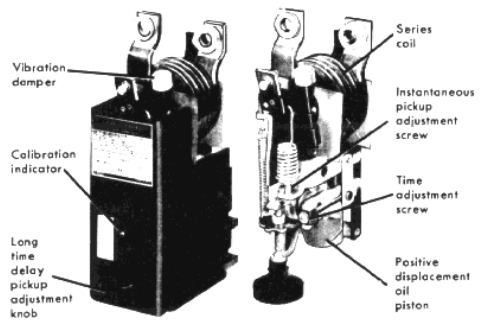
Available Characteristics	Range of Pickup Adjustment② (Tolerance ± 10%)	Time Delay (Lower Limit of Band)	Factory Setting
Long time	80–160%	(1A) Max. 30 sec. at 6 x pickup (1B) Inter. 15 sec. at 6 x pickup (1C) Min. 5 sec. at 6 x pickup	Must be specified
Short time	2–5 x coil rating 3–7 x coil rating 4–10 x coil rating	(2A) Max. 14 cycles at 2½ x pickup (2B) Inter. 9 cycles at 2½ x pickup (2C) Min. 4 cycles at 2½ x pickup	
Instantaneous	Non-adjustable	High Set	

EC-1B FULLY ADJUSTABLE TRIP for all applications where combinations of long time delay, and instantaneous, or instantaneous alone is required—short time delay also available.

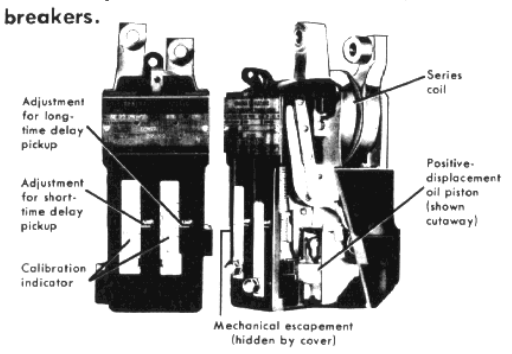
Available Characteristics	Range of Pickup Adjustment② (Tolerance ± 15%)	Time Delay (Lower Limit of Band)	Factory Setting
Long time	80-160% calibrated at 80, 100, 120, 140 and 160% of coil rating.	(1BB) Max. 4.5 sec. @ 6 x pickup (1CC) Min. 2 sec. @ 6 x pickup	100%—1BB
Short time	Three ranges available select one 2, 3.5, 5X 3, 5, 7X 4, 7, 10X	(2AA) Max. 12 cycles @ 2½ x pickup (2BB) Inter. 8 cycles @ 2½ x pickup (2CC) Min. 4 cycles @ 2½ x pickup	Must be specified
Instantaneous	Three ranges available select one 6–12X coil rating 4–9X coil rating 9–15X coil rating	Select one range— 6 to 12X furnished unless otherwise specified	12X 9X 15X

①Not available with long time delay

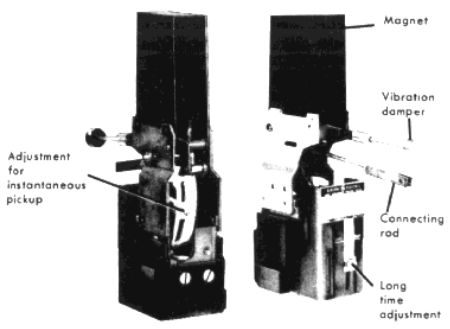
②Trip devices may be set above the 100% point for coordination purposes but such settings do not increase the breaker's continuous current rating.



Type EC-2A Magnetic Overcurrent Tripping Device Series trip for 600 and 2000 amp frame size breakers.



Type EC-1 Magnetic Overcurrent Tripping Device Series Trip for 600 and 2000 amp frame size breakers.



Type EC-1B Magnetic Overcurrent Tripping Device Trips for 3000 and 4000 amp frame size breakers.

New information.

Data subject to change without notice

Type AK Breakers With Power Sensor®

45-4000 Amperes **Three-phase** **600 Volts Ac**

Aug. 2, 1976

GENERAL

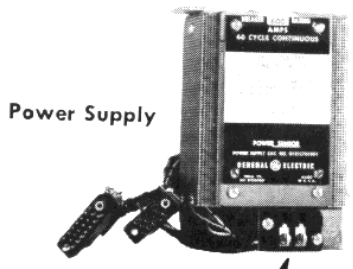
Power Sensor is a three-phase overcurrent trip device for type AK breakers. Four basic parts mounted on the circuit breaker comprise the complete trip device.

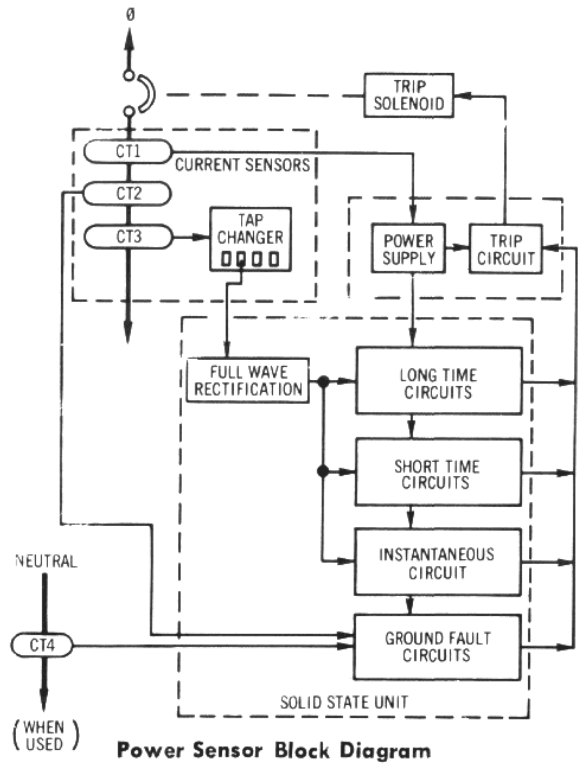
Current sensors—Mounted on each pole. Serves as current monitor for solid state unit as well as power source for power supply. Taps are made available for a variety of current ranges.

Power supply—Provides tripping energy and comparison basis for overcurrent detection.

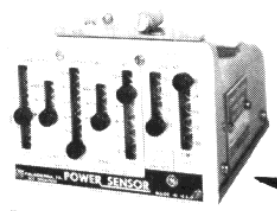
Solid State Unit—Central logic location contains discrete settings for current, time delay and ground fault settings.

Tripping solenoid—Used to trip the breaker.

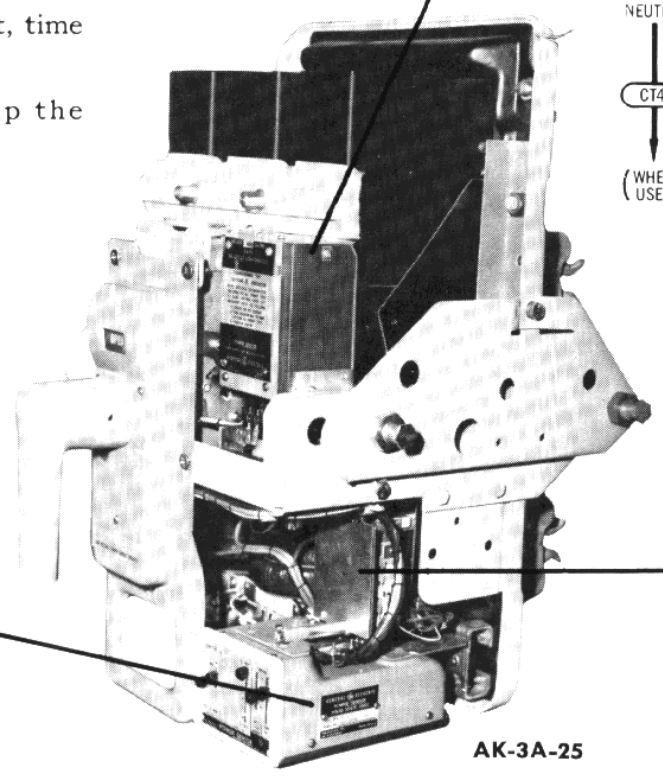




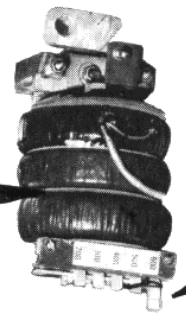
Power Sensor Block Diagram



Power Sensor Unit



AK-3A-25



C. T. Taps

Current Sensors

TRIP CHARACTERISTICS

Breaker Type	Frame Size (Amperes)	X = Trip Rating In Amperes = Sensor Tap (Sensor Ampere Taps)	POWER SENSOR SOLID STATE UNIT ADJUSTMENT RANGE (Set Points)						
			Long Time		Short Time		Instantaneous Pickup ① (Multiple of X)	GROUND FAULT	
			Pickup ① (Multiple of X)	Time Delay Band ③ (Seconds)	Pickup ① (Multiple of X)	Time Delay Band ④ (Cycles)		Pickup ② (Amperes)	Time Delay Band ④ (Seconds)
AK-25	600	45, 75, 90, 125, 175, 225 ... or ... 200, 300, 400, 500, 600	(.8, .9, 1.0, 1.1, 1.2, 1.3)X	Maximum 30	(2, 2.5, 3, 3.5, 4, 5)X ... or ... (4, 5, 6, 7, 8, 10)X	Maximum 21	(4, 5, 6, 8, 10, 12) X	100, 200, 300, 400 ... or ... 300, 600, 900, 1200	.06, .12, .18, .24, .30
AK-50	1600	200, 300, 400, 500, 600 ... or ... 600, 800, 1200, 1600						300, 600, 900, 1200	
AKT-50	2000	800, 1200, 1600, 2000		Intermed. 15		Intermed. 9.6			
AK-75	3000	1500, 2000, 2500, 3000		Minimum 5		Minimum 4.2		750, 1500, 2250, 3000	
AK-100	4000	2000, 2500, 3000, 4000							

①Pickup tolerance = ± 10%
②Pickup tolerance = +0, −20%
③Time delay shown at 6× at lower limit of band.
④Time delay shown at lower limit of band.

New information.

Data subject to change without notice

Type AK Breakers

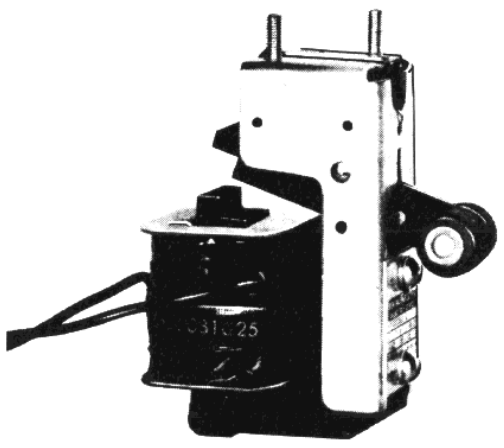
Accessories

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

Shunt Trip

Offers remote electrical tripping of breaker. Usually controlled by a switch or pushbutton, it may also be used in conjunction with protective relays for automatic tripping.

The shunt trip coil is rated for intermittent duty. When ordered factory installed it is supplied with a cutoff switch which automatically removes control power following a breaker trip.



Shunt Trip Device

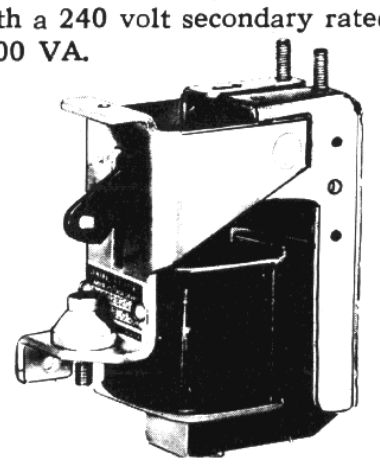
CONTROL VOLTAGE	SHUNT TRIP		
	OPERATING RANGE	AMPERES	
		INRUSH	SUSTAINED
48 VDC	28-60 VDC	4.5	4.5
125 VDC	70-140 VDC	1.9	1.9
250 VDC	140-280 VDC	1.0	1.0
120 VAC	95-127 VAC	12.3	10.8
208 VAC	175-225 VAC	3.2	2.6
240 VAC	190-254 VAC	3.9	3.4
480 VAC	380-508 VAC	3.4	3.1
575 VAC	475-625 VAC	2.8	2.5

Undervoltage Trip (U. V.)

Protects against harmful drops in line voltage by automatically tripping the breaker. This device is set to pickup at approximately 85% of bus voltage and drop out between 30% and 60%.

The UV device is also available with an optional static time-delay unit. This offers a field adjustable 1 to 5 second delay between undervoltage fault and breaker trip to prevent potential nuisance tripping due to momentary loss of voltage.

The time-delay unit is mounted external to the breaker. It is rated 125 or 250 V. DC or 208/240 VAC, 50 or 60 Hz. For any other AC power source voltage use a control power transformer with a 240 volt secondary rated at least 100 VA.



Undervoltage Device

CONTROL VOLTAGE	U. V. COIL AMPERES	
	INRUSH	SUSTAINED
VOLTS Dc		
48	.20	.20
125	0.07	0.07
250	0.04	0.04
VAC 60 Hz		
120	.66	.24
208	0.51	0.17
240	0.37	0.12
480	0.23	.08
VAC 50 Hz		
120	0.75	0.25
208	0.30	0.10
240	0.34	0.11
480	0.20	0.07

Auxiliary Switch

Used for remote indication of breaker main contact position. Available in groupings of four contacts (two stages) or ten contacts (five stages). Each stage is composed of one "A"-Type (N.O.) contact and one "B"-Type (N.C.) contact. All contacts feature rugged double break construction.

Main CB Contacts	AUXILIARY SWITCH POSITION	
	"A" Contact	"B" Contact
Open or Tripped	Open	Closed
Closed	Closed	Open

CONTROL VOLTAGE	AUXILIARY SWITCH INTERRUPTING RATINGS (AMPERES)	
	NON-INDUCTIVE	INDUCTIVE
125-VDC	11①	6.3①
250 VDC	2	1.8
115 VAC	75①	50①
240 VAC	50①	25①
480 VAC	25①	12①

①Limited to 20A continuous rating of switch on all breakers and to 5A continuous rating of #16 wire on drawout breakers.

Reverse Current Device

Designed to trip the breaker if direction of current flow is reversed. Used with D-c breakers.

Neutral Connector

Available for use in general-purpose enclosure. Provides termination provision for system neutral.

Selective Trip (Type EC-1)

Applied to circuit breakers in series so that only the breaker nearest the overcurrent fault opens. Allows for added system coordination.

Key Interlock Provision

Prevents operation of a remote function unless the breaker has been tripped. Provision is made to accept a lock assembly furnished by purchaser. GEE or Kirk.

Operations Counter

A 5-digit, non-resettable counter actuated by the breaker cam shaft. Mounts on breaker frame.

PRICES: . . . See Handbook Section 7605 or GEP-1674

Revised since June 9, 1975 issue. Formerly Section 7691:10.

Data subject to change without notice

CIRCUIT PROTECTIVE DEVICES—LOW-VOLTAGE POWER CIRCUIT BREAKERS

Type AK Breakers

Accessories

40-4000 Amperes **Three-phase** **600 Volts Ac, 250 Volts Dc**

Bell Alarm With Lockout

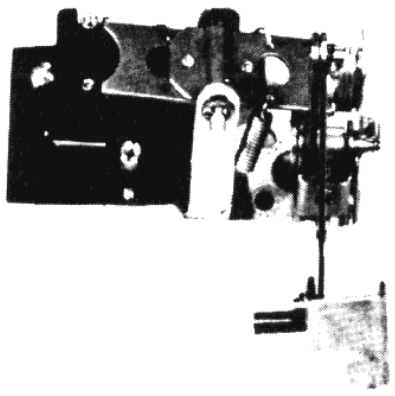
The bell alarm operates one "A"-type and/or one "B"-type contact; two "As" or two "Bs". It is activated when the breaker is tripped by any means other than the manual trip button or the shunt trip device.

The contacts may be used for remote indication of an automatic trip.

The lockout feature is available to mechanically lock the breaker at "open" when the device is activated. "Reset" is accomplished through operation of manual trip button or shunt trip device.

The bell alarm is available without the lockout feature when so specified.

CONTROL VOLTAGE	BELL ALARM CONTACT RATINGS (AMPERES)	
	INRUSH	CONTINUOUS
125 VDC	2.5	2.5
250 VDC	0.9	0.9
115 VAC	30	10
230 VAC	15	5
460 VAC	7	3



Bell Alarm Device with Lockout

Operating Currents

Breaker Type	CLOSING MECHANISM OPERATING CURRENTS (AMPERES)											
	120-Volt, 60 Hz (Operating Range 104–127 VAC)			240-Volt, 60 Hz (Operating Range 208–254 VAC)			125-Volt, Dc (Operating Range 100–140 VDC)			250-Volt, Dc (Operating Range 200–280 VDC)		
	Inrush Current	Sustained Current	Recommended Fuse Size	Inrush Current	Sustained Current	Recommended Fuse Size	Inrush Current	Sustained Current	Recommended Fuse Size	Inrush Current	Sustained Current	Recommended Fuse Size
AK-25	153	78	30	68	28	15	44	44	10	24	24	6
AKR-30, -50	22	5	6	12	3	6	27	5	6	12	3	6
AK-50, T-50	9	4	6	4	2.6	6	30	4	6	15	2	6
AK-75	9	4	6	4	2.6	6	30	4	6	15	2	6
AK-100	9	4	10	4	3.2	10	30	5	10	15	2.5	10

Electric Lockout

The electric lockout device provides a means of electrically interlocking breakers so that two cannot be closed at the same time. This electro-mechanical device consists of a coil whose winding must be energized to close the breaker. Once the breaker is closed, loss of voltage will not trip the breaker. A bypass interlock is provided for initial start-up. Refer to the undervoltage release for ratings and coil characteristics.

Auxiliary switches for cross-interlocking breakers must be ordered separately.

Remote Close For Manual Type AKR Breakers

Provides a means to close manually operated type AKR breakers from a remote location. May be controlled by a switch or pushbotton and features five-cycle closing. Breaker must be charged locally. Standard Ratings are 120 VAC, 60 HZ (2.3 amps inrush) and 240 VAC, 60 HZ (1.15 amps inrush). Other ratings available.

PRICES: . . . See Handbook Section 7605 or GEP-1674

New information.

Ground Break System

Ground-fault Protective Products for Resistance or Solid-ground Ac Electrical Systems

DESCRIPTION

The GROUND BREAK system of solid-state ground-fault signaling relays, sensors and monitor panels provides a new dimension in power-system protection. These components can be combined to operate at lower magnitudes of ground-fault current and shorter time delays than conventional overcurrent protective devices. The built in memory function integrates intermittent faults with time providing protection against low-level arcing faults. The components which comprise a complete system are:

Current Sensor—Solid- or split-core construction for easy installation, includes an integral test winding for checkout of the complete system. A large variety of window sizes are available.

Solid-state Relay—Used in conjunction with devices having an electric trip, or shunt trip, this relay will sense ground currents and cause the interruptor to open when these currents reach a preselected value for a preselected length of time. Optional zone selective interlocking is available for a fully coordinated system. This type of relay initiates an instantaneous trip when a fault occurs in its own zone. In addition it will block upstream zone selective relays for a pre-set delay time to allow the down stream breaker to clear the fault.

Monitor Panel—Provides a ground-fault indicator, control power indicator and TEST and RESET buttons. The control circuitry offers the ability to test the complete GROUND BREAK system with or without tripping the interruptor.

FEATURES

- Instantaneous zone-selective trip for optimum system coordination and protection.
- Heavy-duty design permits direct operation of electric trip and alarm devices without external relays.
- Dependable operation — solid-state relay, cast insulated sensor.
- Two N/O contacts, one of which is electrically isolated from the electronic device.
- Output contact rating 5 amps cont., 30 amps inrush, up to 240 volts ac or 125 volts dc.
- Adjustable pickup and delay time.
- Split-core sensors easily adapt to new or existing equipment.
- Memory function for system protection against intermittent arcing faults.

HOW TO ORDER

Specify appropriate relay, sensor and monitor panel catalog number from Table below. For additional application information refer to GET-2964.

Fig. 1. Monitor panel

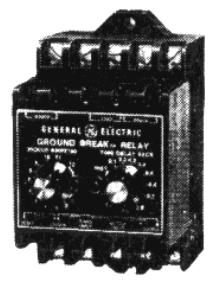


Fig. 2. Solid-state relay

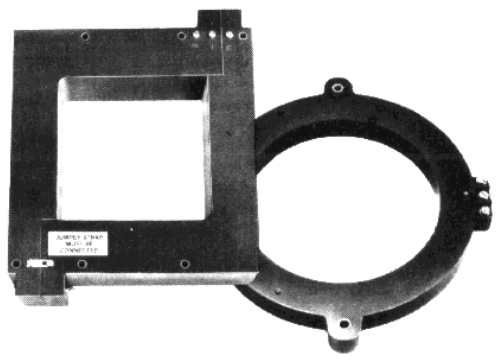


Fig. 3. Current sensors

GROUND BREAK COMPONENTS

Control Voltage	Adjustable Trip Range Amperes LO	HI	Solid-state Relays Standard Cat. No.	Zone Selective Cat. No.	Monitor Panels ① With GF Indicator Light Cat. No.	With Mechanical Target GF Indicator Cat. No.	Current Sensors Window Diameter (Inches)	Cat. No.	Construction	Test Winding
120 VAC 125 VDC 48 VDC 36 VDC 24 VDC	2 2 2 2 2	12 12 12 12 12	TGMR1 TGMR1 TGMR1B TGMR1C TGMR1D	....	TGSMP TGSMPA TGSMPB TGSMPC TGSMPD	TGSMA	2½ 5 8	TGM0002 TGM0005 TGM0008	Round- Solid Core	Yes
120 VDC 125 VDC 48 VDC 32 VDC 24 VDC	5 5 5 5 5	60 60 60 60 60	TGSR06 TGSR06 TGSR06B TGSR06C TGSR06D	TGSR06Z TGSR06Z TGSR06BZ TGSR06CZ TGSR06DZ	TGSMP TGSMPA TGSMPB TGSMPC TGSMPD	TGSMA	2½ 5 8 4 x 8 4 x 18 4 x 24 4 x 32	TGS0002 TGS0005 TGS0008 TGS0408 TGS0418 TGS0424 TGS0432	Round- Solid Core	Yes •
120 VAC 125 VDC 48 VDC 32 VDC 24 VDC	100 100 100 100 100	1200 1200 1200 1200 1200	TGSR12 TGSR12 TGSR12B TGSR12C TGSR12D	TGSR12Z TGSR12Z TGSR12BZ TGSR12CZ TGSR12DZ	TGSMP TGSMPA TGSMPB TGSMPC TGSMPD	TGSMA	8 x 8 8 x 10 8 x 18 8 x 24 8 x 32 8 x 38 11 x 13	TGS0808 TGS0810 TGS0818 TGS0824 TGS0832 TGS0838 TGS1113	Rectangular- Split Core	Yes

①Monitor panel requires 120 volts ac for test system function.

PRICES: . . . See Handbook Section 7605 or GEP-1664

New page. Formerly Section 7644:21.

Data subject to change without notice

CIRCUIT PROTECTIVE DEVICES—GROUND BREAK® COMPONENTS

Ground Break System

Ground-fault Protective Products for Resistance or Solid-ground Ac Electrical Systems

OUTLINES (All dimensions are in inches)

Relay and Monitor Panel

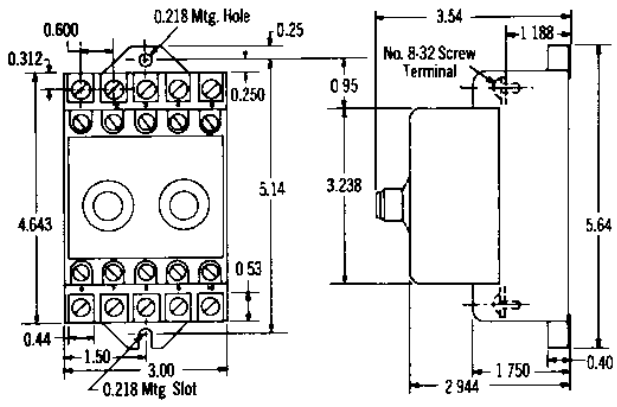


Fig. 1. Relay

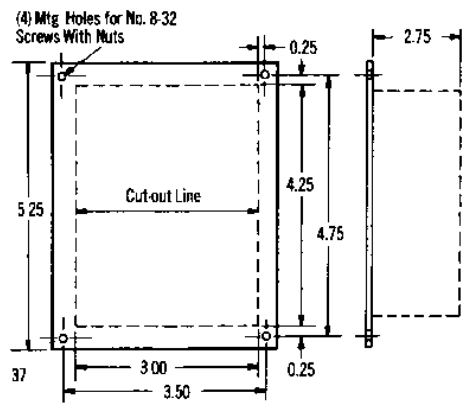


Fig. 2. Monitor panel (flush-mounted)

Round and Rectangular Sensors

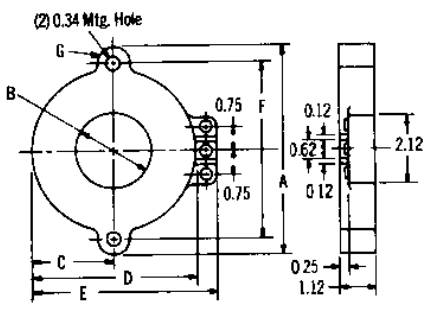


Fig. 3. Round sensor

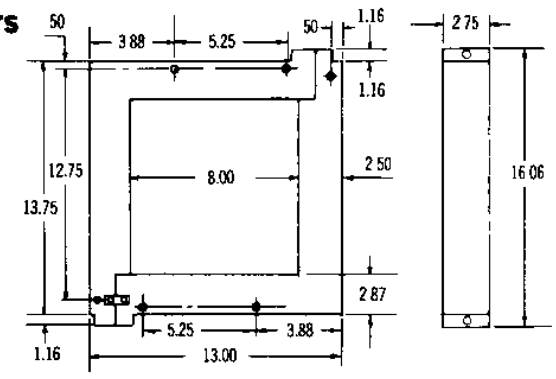


Fig. 4. Cat. No. TGS0808

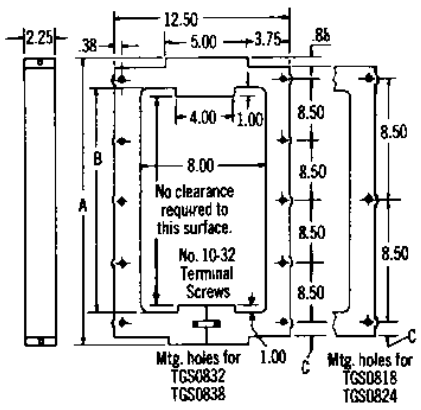


Fig. 5. Rectangular sensor

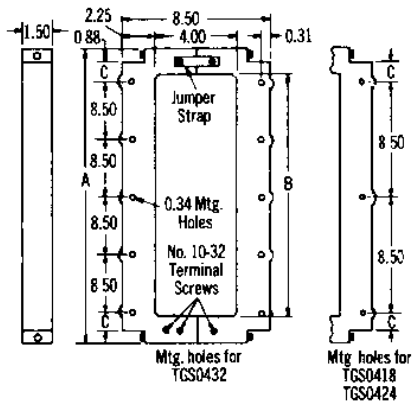


Fig. 6. Rectangular sensor

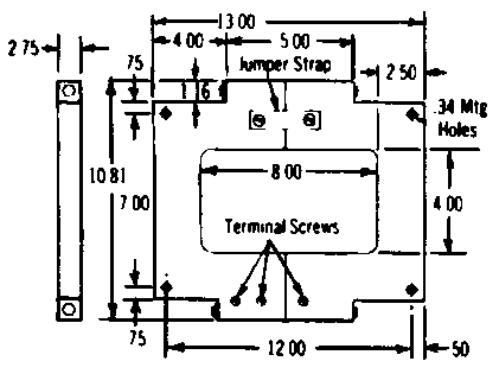


Fig. 7. Cat. No. TGS0408

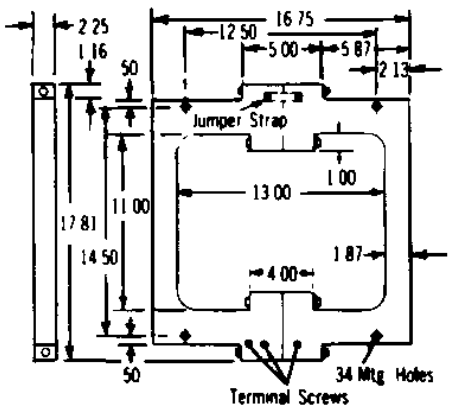


Fig. 8. Cat. No. TGS1113

DIMENSIONS (In inches)①

Round Sensors (Fig. 3)

Cat. No.	A	B	C	D	E	F	G
TGM0002 TGS0002	6.62	2.50	2.56	5.12	5.75	5.62	0.50
TGM0005 TGS0005	9.50	5.00	3.94	7.88	8.50	8.50	0.50
TGM0008 TGS0008	12.75	8.00	5.44	10.88	11.50	11.50	0.62

Rectangular Sensors (Figs. 4, 5, 6, 7, and 8)

Cat. No.	No. of Mtg. Holes	A	B	C	Fig. No.
TGS0408	4	.....	.....	....	7
TGS0418	6	23.00	18.00	2.12	6
TGS0424	6	29.00	24.00	5.12	6
TGS0432	10	37.00	32.00	0.62	6
TGS0808	4	.....	.....	....	4
TGS0818	6	23.00	18.00	2.12	5
TGS0824	6	29.00	24.00	5.12	5
TGS0832	10	37.00	32.00	0.62	5
TGS0838	10	43.00	38.00	3.62	6
TGS1113	4	.....	.....	....	8

①Clearance of 1 inch must be maintained between all conductors and inside surfaces of the sensors, except as noted in Figs. 5 and 8. Clearance reduced to ½ inch for TGS005, TGM005 and to zero for TGS002 and TGM002.

General Electric's Premium Protection Package

MOLDED CASE CIRCUIT BREAKERS

Q-Line Molded Case Circuit Breakers	GEA-8481
Application and Selection Molded Case Circuit Breakers	GET-2779
Insulated Case Circuit Breakers with VersaTrip®	GET-6202
Mag-Break® Motor Circuit Protectors	GEA-7498
Tri-Break® Integrally Fused Circuit Breakers	GEA-7477
Mine Duty Circuit Breakers	GET-6207
Circuit Breakers for Fire Pump Controllers	GEA-9745
Verifier™ "Twist-to-Trip"	GED-4596
Testing and Maintenance of Molded Case Circuit Breakers	GET-2963

INSULATED CASE CIRCUIT BREAKERS

Power-Break™ Insulated Case Circuit Breakers	GEA-9752
Power-Break™ Insulated Case Circuit Breakers with VersaTrip®	GET-9732

LOW VOLTAGE POWER CIRCUIT BREAKERS

Type AK Low Voltage Power Circuit Breakers, Product Bulletin	GEA-9753
Type AK Low Voltage Power Circuit Breakers, Price Bulletin	GEP-1674
Application and Selection for Type AK Low Voltage Power Circuit Breakers	GEA-8733
Type AK Renewal Parts Prices	GEP-1675
Power Sensor® Test Set	GEK-7301
Power Sensor® Testing Instructions	GEK-7309
SST/ECS Test Set	GEK-64454
Type AK Breaker Installation and Operation Instructions	GEK-7302
Maintenance Manuals	
AK-25	GEI-50299
AK-50, -75, -100	GEK-7303
AKR-30, -50	GEK-7310
Renewal Parts Bulletins	
Renewal Parts Price Bulletins	GEP-1675
AK-25	GEF-4149
AK-50	GEF-4150
AK-75	GEF-4395
AK-100	GEF-4396
AKR-30, -50	GEF-4527

GROUND FAULT PROTECTIVE PRODUCTS

Family Protection — A Consumer Guide to GFCI's	GED-4609
CB3® Ground Fault Circuit Breakers	GEA-9739
GTR™ Ground Trip Receptacles	GEA-9746
Ground-Break™ Systems	GET-2964

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Spec-Setter™ Safety Switches	GEA-6756
Mill Duty Safety Switches	GEA-9747

DISCONNECT SWITCHES

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Type HPC High Pressure Contact Switches	GEA-9742

PANELBOARD COMPONENTS

Fusible Panelboard Units	GEA-7490

CIRCUIT BREAKER LOAD CENTERS

PowerMark+® Circuit Breaker Load Centers — thru 400 amp	GEA-7484
PowerMark+® Circuit Breaker Load Centers — 600 amp	GEA-9748
Load Center Renewal Parts	GEF 4453
PowerMark+® Riser Panels	
Series Type	GIZ-2362-17D
Parallel Type	GEA-7494

For further information, contact your local General Electric Sales Office, or write
Marketing Communications,
Circuit Protective Devices Department, 41 Woodford Ave., Plainville, CT. 06062.

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