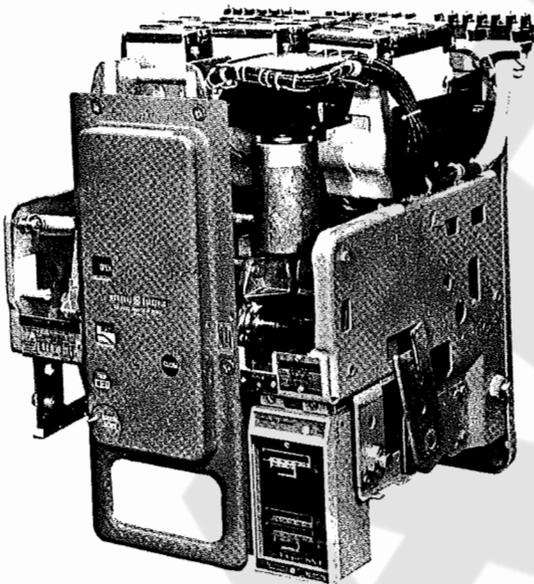


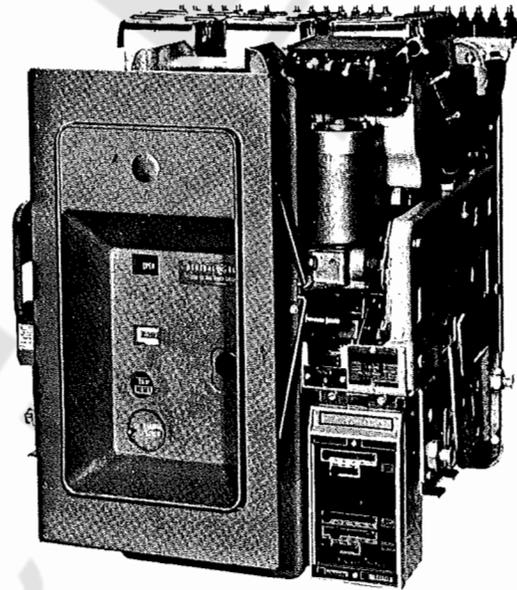


Low Voltage Power Circuit Breakers

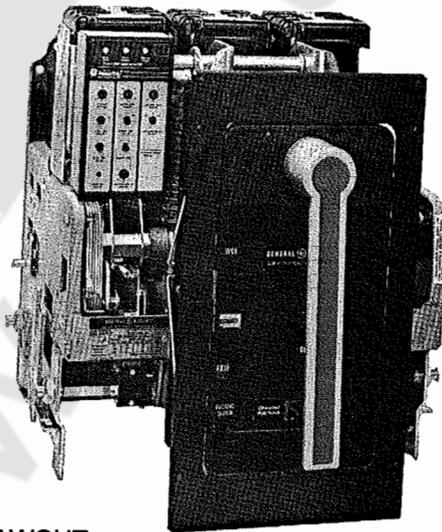
Types AKR-30/50 and AKRT-50



A-TYPE DRAWOUT
Electrically Operated



B-TYPE DRAWOUT
Electrically Operated



D-TYPE DRAWOUT
Manually Operated

INSTALLATION AND OPERATION AKR/AKRU-30, 50 & AKRT-50 FRAME SIZE LOW-VOLTAGE POWER CIRCUIT BREAKERS

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OTHER PUBLICATIONS

The instructions in this publication are general in nature. For more detailed information on troubleshooting, overhauling or replacing parts, refer to the following:

Maintenance Manual	GEK-64459
Renewal Parts	GEF-4527
EC Trip Devices	GEI-86157
ECS/SST Test Set:	
Cat. TAK-TS2	GEK-73300-1
MicroVersa Trip Test Set:	
Cat. TVTS1	GEK-64464
Time Current Curves	GEZ-4431
Obsolete Test Set for ECS/SST	
Cat. TAK-TS1	GEK-64454

INTRODUCTION

These instructions describe the installation and operation of the Low Voltage Power Circuit Breakers tabulated below. They cover a variety of models which may differ in rating, trip device and/or mounting type. Each model has a distinctive designation.

MOUNTING TYPES

As listed in Table 1, the 800 thru 2000A frame AKR breakers are furnished in four different mounting types—drawout A, drawout B, drawout D, and stationary (S). Each of these is described in the text. A breaker's type is indicated on its nameplate; the designation system is explained in Fig. 1.

TABLE 1—BREAKER DESIGNATIONS

FRAME SIZE (Amperes)		DRAWOUT MOUNTING			STATIONARY MOUNTING (CODE S)	NOTES
250V.Dc	600V.Ac 50/60 Hz.	AKD-6 Switchgear (CODE A)	Substructure (1) (CODE B)	Substructure AKD-8 Switchgear (CODE D)		
800	800	AKR-(*)A-30 AKR-(*)A-30H	AKR-(*)B-30 AKR-(*)B-30H AKR-(*)B-30L	AKR-(*)D-30 AKR-(*)D-30H AKR-(*)D-30L	AKR-(*)S-30 AKR-(*)S-30H AKR-(*)S-30L	(2)
2000	1600	AKR-(*)A-50 AKR-(*)A-50H	AKR-(*)B-50 AKR-(*)B-50H	AKR-(*)D-50 AKR-(*)D-50H	AKR-(*)S-50 AKR-(*)S-50H	(2)
—	2000	AKRT-(*)A-50 AKRT-(*)A-50H	AKRT-(*)B-50 AKRT-(*)B-50H	AKRT-(*)D-50 AKRT-(*)D-50H	AKRT-(*)S-50 AKRT-(*)S-50H	(2)
—	800	AKRU-(*)A-30	AKRU-(*)B-30	AKRU-(*)D-30		(3)
—	1600	AKRU-(*)A-50	AKRU-(*)B-50	AKRU-(*)D-50		(3)
Special Dc Breakers For Field Switching						
800 2000	— —	— —	AKR-NB-30F AKR-NB-50F	AKR-ND-30F AKR-ND-50F	AKR-NS-30F AKR-NS-50F	

- (1) All substructures and AKD-8 breakers employ a deep escutcheon.
- (2) The "H" suffix denotes extended short circuit ratings.
- (3) Integrally fused models.
- (*) This digit identifies the trip device:
 - 2 = EC-1 or EC-2A. Dc only.
 - 4 = ECS
 - 5 = SST 50/60 Hertz only
 - 6 = Micro Versa Trip 50/60 Hertz Only
 - N = Non-automatic. In addition, all non-automatic 250V.Dc breaker types carry the suffix letter D after the frame number, e.g., AKR-NB-50D.

Example: AKR-5B-50 identifies a drawout, substructure-mounted breaker equipped with the SST trip device. The EC trip devices are electro-mechanical. ECS, SST and Micro-Versa Trip units are Solid State.

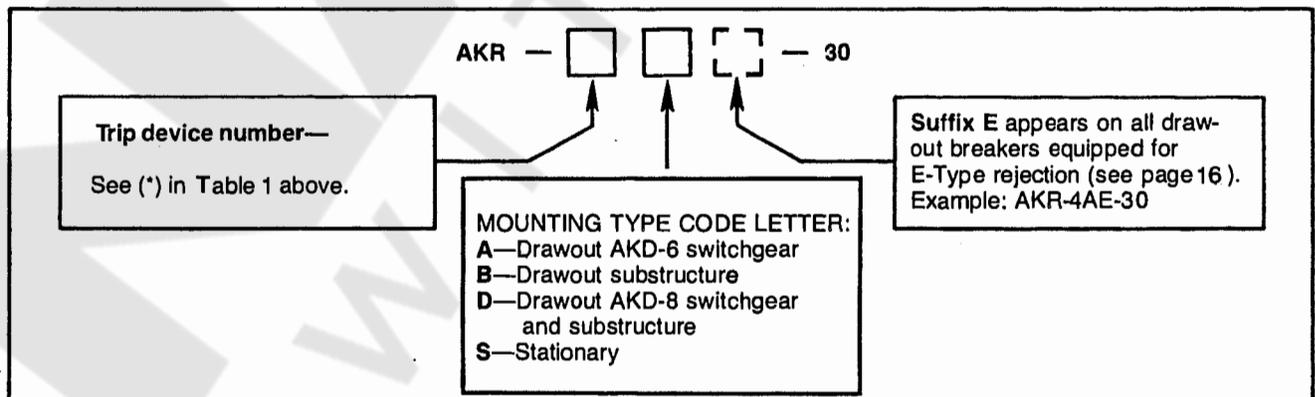


Fig. 1. AKR breaker type designation

RECEIVING, HANDLING AND STORAGE

Before installing or operating these circuit breakers, carefully read these instructions.

Upon receipt of a circuit breaker, immediately examine for any damage or loss sustained in shipment. If injury, loss or rough handling is evident, file a damage claim at once with the transportation company and notify the nearest General Electric Sales Office.

Unpack the circuit breaker as soon as possible after it has been received. Exercise care in unpacking to avoid damage to

the breaker parts. Be sure that no loose parts are missing or left in the packaging material. Blow out any dirt or loose particles of packaging material remaining on or in the breaker.

If the circuit breaker is not to be placed in service at once, store it in a clean, dry location in an upright position. Support it to prevent bending of the studs or damage to any of the breaker parts. Do not cover the breaker with packing or other material which absorbs moisture that may cause corrosion of breaker parts. A covering of kraft or other non-absorbent paper will prevent dust from settling on the breaker.

INSTALLATION

NOTE: Before installing in a Nuclear Class 1E application, determine that this product is intended for such use by checking the procurement records.

LOCATION

In choosing a location for the installation of these breakers there are two factors to be considered. The first is the location's environmental impact on the breaker. Much better performance and longer life can be expected if the area is clean, dry, dust-free and well ventilated. The second is convenience for operation and maintenance. The breaker should be easily accessible to the operator and there should be sufficient space available for maintenance work.

STATIONARY BREAKERS

These breakers are designed for mounting in a switchboard or enclosure designed and constructed by others. Mounting consists of bolting the breaker frame to a supporting structure within the switchboard or enclosure, connecting the power buses or cables, and making any necessary control connections. The front cover of the breaker enclosure may be a hinged door or a plate bolted to the panel, including a cut-out opening through which the front escutcheon of the breaker can protrude.

The surface on which the breaker is mounted must be flat to avoid internal distortion of the breaker. The supporting structure must be rigid enough to avoid any possibility of the breaker studs supporting the weight of the breaker. Minimum cutout dimensions as given by the appropriate outline drawing must be maintained to provide adequate electrical clearance. Connecting bus and cables must be rigidly supported to prevent undue stress on the breaker terminals.

The outline drawings in Table 2 provide basic dimensional information for designing the panel or enclosure mounting.

TABLE 2

Stationary Breaker Type	Trip Unit	Outline	
		Manually Operated	Electrically Operated
AKR-()S-30/30H	Non-Auto	139C4300	139C4301
	w/Trip Unit	139C5073	139C5074
AKR-()S-30L	ALL	139C5075	139C5076
AKR-()S-50/50H	ALL	139C5075	139C5076
AKRT-()S-50/50H			

DRAWOUT BREAKERS

GENERAL

Drawout breakers are manufactured in three different styles identified by mounting code letters A, B and D. Code A breakers are employed in AKD-6 switchgear and feature closed-door drawout operation. Code B breakers provide an alternate closed-door drawout arrangement with the stationary element furnished as a preassembled "substructure". Code D breakers are employed in AKD-8 or substructure type gear and feature closed door drawout. The construction and operation of each of these drawout styles is covered under respective headings in the following text.

As a general rule, breakers of the same drawout type, voltage rating and ampere frame size are physically interchangeable. However, to be electrically interchangeable with respect to secondary and control circuits, they must have duplicate wiring. The degree of interchangeability and the mechanisms for controlling it are discussed separately on page (14).

Note: The three drawout types are mutually noninterchangeable; before insertion is attempted, verify that the breaker model matches its intended compartment.

CODE A (AKD-6 SWITCHGEAR) (Fig. 2)

This type drawout breaker is supported by two protruding pins on each side of its frame; these engage slots in telescoping slide rails (tracks) mounted to each sidewall of the breaker compartment. The door of the compartment is hung on a telescoping inner housing also attached to the movable tracks. These elements are arranged so that the door moves in unison with the breaker between the CONNECTED and DISCONNECTED positions, allowing the breaker to be racked without opening the door. This feature is referred to as "closed-door drawout".

The in and out movement of the breaker between the CONNECTED-TEST-DISCONNECTED positions is performed by a breaker-mounted apparatus called the drawout or "racking" mechanism. It comprises a transversely-mounted, jackscrew-driven crankshaft with a slotted crank arm at each end. As the crankshaft is rotated, each crank arm fulcrums about a fixed pin in the compartment to move the breaker in or out.

