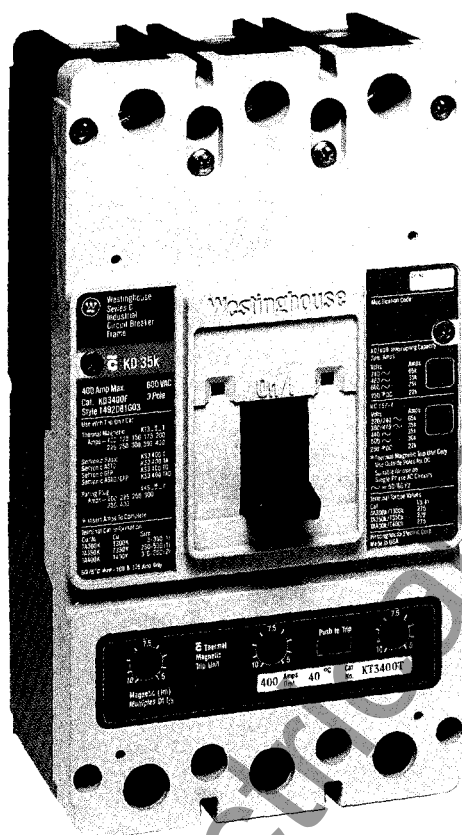
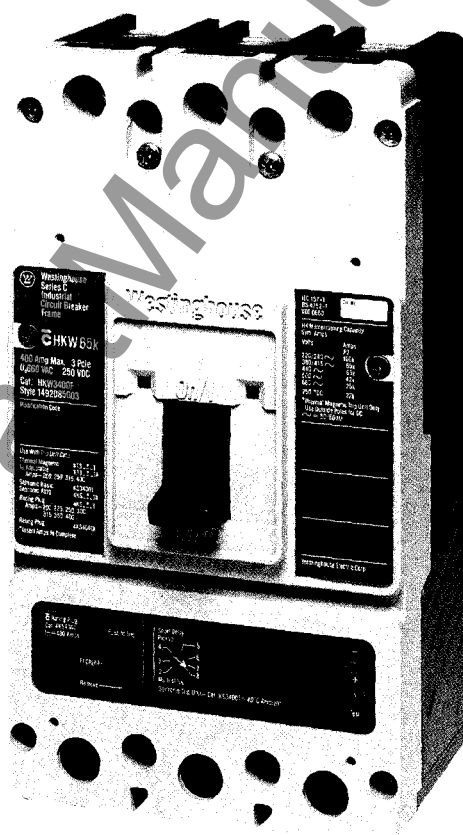




SERIES C[™] K-Frame Molded Case Circuit Breakers



D Model with Thermal Magnetic Trip Unit



W Model with Seltronic[™] Trip Unit

Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction

Series C Circuit Breakers

The new Series C line of molded case circuit breakers represents a significant step forward in circuit protection technology. It incorporates, in frame ratings 150A to 2000A, interrupting capacities as high as 100 kA at 480 Vac (200 kA at 240 Vac) in physical sizes normally associated with standard interrupting rating breakers. Series C circuit breakers, in most frame sizes, are physically and electrically interchangeable with the industrial line of molded case circuit breakers they replace.

There are two branches to the Series C line. The branch covering domestic applications complies with applicable UL, NEMA, and CSA standards, as well as being assigned interrupting ratings under IEC 157-1 or IEC 947-2. The world class branch complies with IEC 947-2. The domestic product line which complies with applicable UL/NEMA/CSA standards is composed of six frame ratings: 150A, 250A, 400A, 600A, 1200A, and 1600A/2000A. The six frame ratings of the IEC branch of the Series C line are 160A, 250A, 400A, 630A, 1250A, and 1600A/2000A and are physically interchangeable with the corresponding UL/NEMA/CSA frames.

Series C circuit breakers in the 150A through 630A frame sizes are available with thermal-magnetic trip units. Electronic trip units can be supplied in the 400A through 2000A frame sizes. The electronic trip units for the 400A, 600A, and 630A frames are field-interchangeable with the thermal-magnetic trip unit in the same frame size.

The 150A and 160A frame sizes of Series C circuit breakers are available in 1-, 2-, 3-, and 4-pole models. The 250A through 1250A frame sizes are available in 2-, 3-, and 4-pole models, and the 1600A and 2000A frame sizes are available in 3- and 4-pole models only.

A complete line of external as well as plug-in internal accessories is available for use with Series C circuit breakers.

Because of unique conductor configuration, the 100 kA (at 480 Vac) interrupting rating model of each Series C frame size is inherently current limiting. These models can, therefore, be used in series tested applications at the 100 kA level to protect specified, lower interrupting rating downstream circuit breakers. This current limiting action is achieved without the use of fuse-type current limiters or extra sets of contacts. The 65 kA (at 480 Vac) interrupting rating model of each Series C circuit breaker provides for simple, fully rated application on the 480 Vac secondary of unit substations up to 2500 kVA.

Series C Literature

A new format has been designed for the Series C circuit breaker literature. The literature is designed to provide each user with the needed information presented in the most usable form. The literature includes:

- Frame Books – provide basic descriptions, application data, technical data, dimensional data, and ordering information for each Series C circuit breaker and associated accessories
- Instruction Leaflets – provide installation, inspection, operation, and adjustment information for Series C circuit breakers and accessories
- Time/Current Curve Packets – provide full-size time/current characteristic curves for each Series C circuit breaker

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Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction

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Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction



Figure 1-1. K-Frame Series C Circuit Breaker with Thermal-Magnetic Trip Unit

1.1. General Information

K-Frame Circuit Breaker

The K-frame Series C circuit breaker using interchangeable thermal-magnetic or electronic trip units (Figure 1-1) is available in two basic models: the D model and the W model. The D model (rated from 100A to 400A) is designed to comply with Underwriters Laboratories, Inc. Standard UL489, Canadian Standards Association Standard C22.2 No. 5, and International Electrotechnical Commission Recommendations IEC 157-1 (P1). The W model (rated from 160A to 400A) complies with International Electrotechnical Commission Recommendations IEC 947-2. Instantaneous (magnetic) only circuit interrupters, molded case switches (circuit interrupters), and mining duty circuit breakers are also available.

For most applications, the K-frame circuit breaker is designed to physically and electrically replace the LB circuit breaker family (DA, JA, KA, HKA, LB, LBB, and HLB circuit breakers). When replacing the LB family, additional consideration must be given where external handle operating accessories are used. Also, the change in the line/load terminal heights may require modified mounting/connection arrangements.

An innovative design of internal components allows applications to be extended to higher interrupting rating levels. In addition, the higher interrupting and current limiting performance capabilities of the K-frame circuit breaker allow it to be applied in situations that previously required physically larger circuit breakers. Each circuit breaker nameplate is color coded to provide easy identification of type and interrupting capacity rating.

Table 1-1. K-Frame Circuit Breaker Interrupting Capacity Ratings

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles①	Interrupting Capacity (Symmetrical Amperes)			
		Volts ac (50/60 Hz)			Volts dc
		240	480	600	
DK	2,3	65,000	.....	.....	10,000
KDB	2,3,4	65,000	35,000	25,000	10,000
KD	2,3,4	65,000	35,000	25,000	10,000
HKD	2,3,4	100,000	65,000	35,000	22,000
KDC	2,3,4	200,000	100,000	50,000	22,000

IEC 157-1 (P1) Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles ①	Interrupting Capacity (Symmetrical Amperes)			
		Volts ac (50/60 Hz)			Volts dc
		240	380	415	
DK	2,3	65,000			10,000
KDB	2,3,4	65,000	40,000	40,000	10,000
KD	2,3,4	65,000	40,000	40,000	10,000
HKD	2,3,4	100,000	65,000	65,000	22,000
KDC	2,3,4	200,000	100,000	100,000	22,000

IEC 947-2 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles ^①	Interrupting Capacity (Symmetrical Amperes)						Volts dc	
		Volts ac (50/60 Hz)						250 @ ⑤	
		380		415		690		250 @ ⑤	
		I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
KW	2,3,4	40,000	(20,000)	40,000	(20,000)	20,000	(10,000)	10,000	(5,000)
HKW	2,3,4	65,000	(33,000)	65,000	(33,000)	25,000	(13,000)	20,000	(10,000)
KWC	2,3,4	100,000	(50,000)	100,000	(50,000)	35,000	(18,000)	20,000	(10,000)

Table 1-2. Standard Trip Unit Types for K-Frame Circuit Breakers

Type of Trip Unit	Magnetic	Thermal	Circuit Breaker Type
Thermal-Magnetic	Adjustable	Fixed	DK, KDB, KD, HKD, KDC
Instantaneous Only	Adjustable	Adjustable	KW, HKW, KWC
High Instantaneous Molded Case Switch	Adjustable	None	HMCP®
	Fixed	None	DK-K, KD-K

Table 1-3. Standard Thermal-Magnetic Trip Unit Ratings

Model D Circuit Breaker		Model W Circuit Breaker	
Continuous Current Rating (A)	Adjustable Magnetic Trip Setting (A)	Adjustable Continuous Current Setting (A)	Adjustable Magnetic Trip Setting (A)
100	500 - 1000	.....	.....
125	625 - 1250	.....	.....
150	750 - 1500	.....	.....
175	875 - 1750	.....	.....
200	1000 - 2000	160 - 200	1000 - 2000
225	1125 - 2250	.....	.....
250	1250 - 2500	200 - 250	1250 - 2500
300	1500 - 3000	.....	.....
350	1750 - 3500	250 - 315	1575 - 3150
400	2000 - 4000	315 - 400	2000 - 4000

Table 1-4. Optional Seltronic (Electronic) Trip Unit Types

Trip Unit Functions		KS Trip Unit Type			
		T	TA	TG	TAG
Long Time ^⑤	Fixed Ampere Rating with Fixed Long Delay	X	X	X	X
	Adjustable Ampere Setting with Fixed Long Delay	X	X	X	X
Short Time	Adjustable Short Time Pick-up with Short Time Delay 1 ^② Ramp	X	..	X	..
	Adjustable Short Time Delay with Adjustable Short Time Pick-up,	..	X	..	X
	or Adjustable Instantaneous Pick-up ^⑥	..	X	..	X
Instantaneous	Fixed Instantaneous (Override) ^⑦	X	X	X	X
Ground Fault	Adjustable Ground Fault Pick-up with Adjustable Ground Fault Time Delay	..	..	X	X

① Protected neutral pole in 4-pole circuit breaker available only with optional Seltronic trip units.

② 2-pole circuit breaker or two poles of 3-pole circuit breaker.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.

④ Refer to Frame Book 29-111.

⑤ See Table 5-5, page 21 for listing of available rating plugs.

⑥ Using trip unit with adjustable short time delay (TA,TAG) instantaneous pick-up is achieved when the lowest time delay setting (I) is selected.

⑦ Override setting fixed at frame withstand rating.

⑧ Time constant is 5 milliseconds minimum at 10 kA and 15 milliseconds minimum at 22 kA.



Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction

The K-frame circuit breaker is available in 2-, 3-, and 4-pole configurations to satisfy application requirements in all types of electrical systems. ① A modular accessory concept permits wide flexibility in accessory installation.

This frame book provides basic information about the circuit breaker, interchangeable trip units, and molded case switch models of the K-frame circuit breaker. Separate publications cover instantaneous-only circuit interrupters (motor circuit protectors) and mining duty circuit breakers.

1-2. K-Frame Circuit Breaker Types

K-Frame circuit breakers are available in several types. Types DK, KDB, KD, HKD, and current limiting KDC are listed in accordance with Underwriters Laboratories, Inc. Standard UL489 and Canadian Standards Association Standard C22.2 No. 5. ② Types KD, HKD, and KDC comply with International Electrotechnical Commission Recommendations IEC 157-1 (P1). Types KW, HKW, and KWC comply with International Electrotechnical Commission Standard IEC 947-2. Table 1-1 gives the interrupting capacity ratings for the different circuit breaker types.

Each circuit breaker rating is achieved by specific design features incorporated into the circuit breaker frame and the type of trip unit selected. K-frame trip units are interchangeable and do not affect the circuit breaker interrupting rating. ③

Fixed Thermal-Adjustable Magnetic and Adjustable Thermal-Adjustable Magnetic Trip Units

K-frame circuit breakers available with either a fixed thermal-adjustable magnetic or an adjustable thermal-adjustable magnetic trip unit provide thermal (inverse time) and magnetic (instantaneous) automatic tripping. Available ratings and adjustments are shown in Tables 1-2 and 1-3. The trip units are also equipped with a manual Push-to-Trip mechanism.

Seltronic™ (Electronic) Trip Unit

The Seltronic trip unit includes current sensing circuits that provide an inverse time delay tripping action for overload conditions and either short delay or instantaneous tripping for protection against short circuit conditions. Low level ground fault protection with an adjustable time delay is supplied when appropriate trip types are selected. (See Table 1-4.) The trip units are also equipped with a manual Push-to-Trip mechanism.

Instantaneous-Only Trip Unit (Motor Circuit Protector)

The instantaneous-only trip unit provides short circuit protection only. The 400A instantaneous-only motor circuit protector is covered in Frame Book 29-111.

Molded Case Switch (Circuit Interrupter)

Molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous-automatic type. Molded case switches are listed in accordance with Underwriters Laboratories, Inc. Standard UL1087. ②

The high instantaneous-automatic molded case switch is equipped with a nonadjustable, instantaneous trip mechanism that protects the switch if it is subjected to a fault current above its withstand rating. The switch does not provide low level fault or inverse time overload protection and must be used with a properly rated overcurrent protective device.

All molded case switches are equipped with an integral trip bar and will accept field installable plug-in accessories. A manual Push-to-Trip mechanism is not provided.

1-3. Advantages

The Series C circuit breaker line represents an entirely new approach to circuit breaker design. The K-frame circuit breaker uses new design features that improve performance and extend application capabilities while allowing physical interchangeability with the existing LB circuit breaker family.

Figure 1-2 highlights advantages of the K-frame circuit breaker over previously available circuit breakers.

a. Performance

The K-frame circuit breaker provides higher interrupting capacities and improved current limiting capabilities compared to previous standard-line circuit breakers. The enhanced performance characteristics extend K-frame circuit breaker use to applications that previously required physically larger circuit breakers.

b. Designs

Thermal-magnetic and electronic trip designs are available. The standard D model circuit breakers have fixed thermal and adjustable magnetic settings to provide application consistency. The W model circuit breakers have adjustable thermal and adjustable magnetic settings to provide application flexibility where local codes and standards permit the use of adjustable thermal circuit breakers.

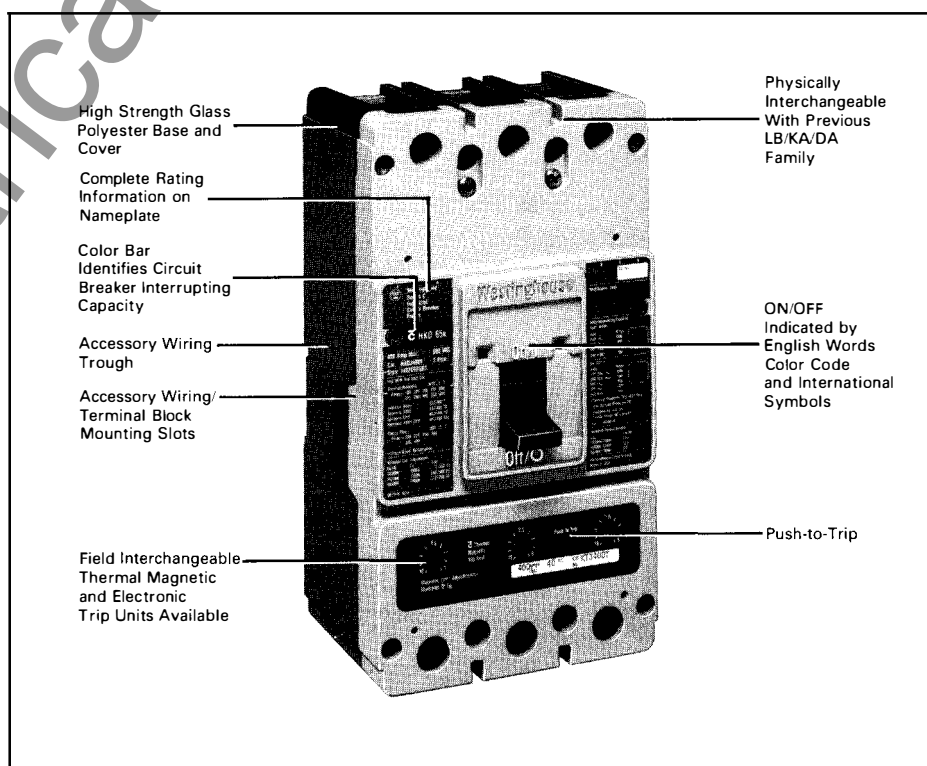


Figure 1-2. K-Frame Circuit Breaker Features

① Two pole circuit breaker supplied in three pole frame.

② Some listings pending; refer to Westinghouse.

③ Types DK and KDB circuit breaker trip units are non-interchangeable.



Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction

c. Construction Details

The 2-, 3-, and 4-pole configurations satisfy application requirements for all types of electrical systems. The 4-pole configuration provides 3-phase, 4-wire neutral line circuit breaking where required by local codes and applications.

The frame size allows a high degree of physical interchangeability with the existing LB circuit breaker family. Note: When replacing existing circuit breakers, assure the correctness of the application by comparing existing equipment ratings and system requirements with K-frame performance characteristics.

Circuit breaker mounting hardware is available in Imperial or metric thread sizes to accommodate user needs.

A Push-to-Trip button located in each trip unit provides a local means of manually exercising the trip mechanism. Molded case switches do not have Push-to-Trip provisions.

High strength glass-polyester base and cover have excellent dielectric qualities and reduce the need for fungus proofing. Cover design reduces the possibility of accidental contact with live terminations.

Operating mechanism design provides increased air gap between stationary and moving contacts when circuit breaker is in tripped position. The increased air gap provides greater arc impedance during contact opening, which allows higher interrupting capacity ratings to be obtained in compact frame sizes.

Variations in contact assembly designs allow different interrupting capacities in one physical frame size.

The one piece molded crossbar assembly has high dielectric qualities and ensures simultaneous operation of all moving contacts.

Positive operating mechanism ensures that the operating handle remains in the ON position when the contacts are closed. Handle operating force is compatible with circuit breakers in the LB family.

d. Internal Accessories

Modular plug-in accessory design simplifies factory installation for improved customer service and facilitates field installation where local codes and standards permit.

The internally mounted accessories include auxiliary switch, alarm (signal)/lockout switch, shunt trip, and undervoltage release mechanism. These accessories are de-

signed to meet most ac and dc rating requirements.

Internal accessory wiring options provide wire routing versatility. The standard wiring configuration is pigtail leads exiting the rear of the base directly behind the accessory. Optional configurations include a terminal block mounted on the same side of the base as the accessory, leads exiting the side of the base where the accessory is mounted, and leads exiting the rear of the base on the side opposite the accessory.

e. External Accessories

Cover design permits field installation of key interlocks, padlockable handle lock hasp, and electrical or manual handle operators without modifying the cover.

A factory-installed cylinder lock can be mounted in the cover providing a simplified system for locking the trip bar in the tripped position.

Plug-in adapters provide convenience for front-removable switchboard construction.

All K-frame models can be operated by Vari-Depth, SM, MC, and AMT handle mechanisms. These are different from existing LB family handle mechanisms.

f. Markings

The Series C circuit breaker line features a new nameplate format which provides easy identification of circuit breaker type, rating, and operating status.

Nameplates are color coded for immediate rating identification. A color-coded bar identifies the type and the interrupting rating (kA) at the most common application voltage. The color codes are as follows:

Grey:	KDB/KD/KW
Black:	HKD/HKW
Red:	KDC/KWC
White:	DK.

Consolidated nameplate design provides complete identification and rating information in an easily readable, understandable format.

Circuit breaker status is clearly indicated by circuit breaker handle position and color-coded flags (red for ON, green for OFF, and white for trip). The on and off positions are identified in English words (ON and OFF) and international symbols (1 and 0).

g. Equipment Literature

A complete line of technical literature produced in several languages provides specification, ordering, application, and

instructional information. This makes the circuit breaker easy to specify, purchase, and apply, saving time and minimizing application errors.

Dimensional data is in Imperial and metric units to satisfy user requirements.

h. Standards Compliance

The Series C circuit breaker is designed to comply with the following standards:

- Australian Standard AS 2184, Moulded Case Circuit Breakers
- British Standards Institution Standard BS 4752: Part 1, Switchgear and Control Gear, Part 1: Circuit Breakers
- Canadian Standards Association Standard C22.2 No. 5, Service Entrance and Branch Circuit Breakers
- International Electrotechnical Commission Recommendations IEC 157-1, IEC 947-2, Low-Voltage Distribution Switchgear, Part 1: Circuit Breakers
- Japanese Industrial Specification 8370, Molded Case Circuit Breakers
- National Electrical Manufacturers Association Standards Publication No. AB1 - 1986, Molded Case Circuit Breakers.
- South African Bureau of Standards Standard SABS 156, Standard Specification for Moulded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Underwriters Laboratories, Inc. Standard UL489, Molded Case Circuit Breakers and Circuit Breaker Enclosures, Including Marine Circuit Breakers
- Union Technique de l'Electricite Standard NF C 63-120, Low Voltage Switchgear and Control Gear Circuit Breaker Requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, Low Voltage Switch Gear and Control Gear, Circuit Breakers.

Compliance with these standards satisfies most local and international codes, assuring user acceptability and simplifying application.

i. Federal Specification Classifications

Circuit breaker types KD, HKD, and KDC equal or exceed W-C-375b requirements for class 23(a).



Series C Molded Case Circuit Breakers, K-Frame

Section 2 – Applications

2-1. Introduction

Application flexibility of the K-frame circuit breaker is enhanced by the higher interrupting ratings and current limiting characteristics designed into the Series C line.

2-2. Typical Applications (See Figure 2-1)

Switchboard Application

The KD/KW, HKD/HKW, and KDC/KWC circuit breakers are used in distribution systems to provide feeder and branch circuit protection.

Panelboard Applications

The K-frame circuit breaker is used in panelboard applications as both a main and a branch circuit protection device.

Busway Plug-In Application

The K-frame circuit breaker can be applied in busway plug-in units to provide feeder or branch circuit protection. Size compatibility between the LB family and the K-frame circuit breaker facilitates replacement. However, when the existing busway plug-in unit is used, handle location and line connector modifications are required.

Individual Enclosure Application

The K-frame circuit breaker can be applied in individual enclosures to meet specific installation requirements.

Machine Tool Control Panel Application

In machine tool applications, K-frame circuit breakers and molded case switches can be applied to meet individual equipment requirements.

Commercial/Non-Residential Applications

In main circuit breaker load centers and as a main disconnect device for gangable group metering applications, the K-frame circuit breaker provides high interrupting capacity and substantially reduced let-through fault currents. The Type DK 240 Vac circuit breaker is suitable for commercial and non-residential service applications.

Special Applications

In mining, motor circuit protection, and other applications, special versions of the K-frame circuit breaker provide safe equipment control and protection. For additional information, see separate frame books or refer to Westinghouse.

For all 3-phase Delta, grounded B-phase applications, reduced interrupting ratings will apply; refer to Westinghouse.

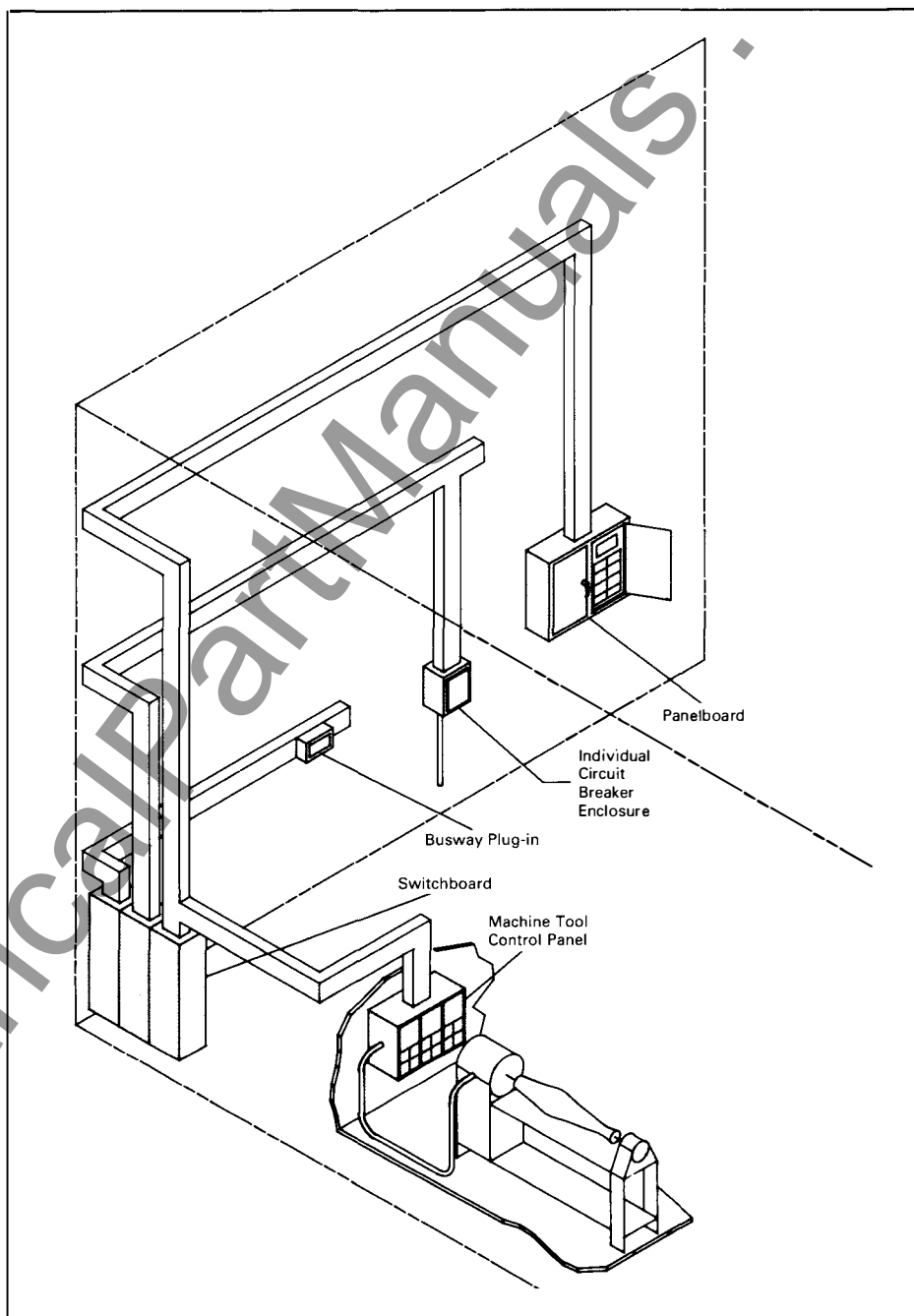


Figure 2-1. K-Frame Circuit Breaker Typical Applications



Series C Molded Case Circuit Breakers, K-Frame

Section 3 – Description

3-1. Physical Description

The K-frame circuit breaker consists of the following components mounted inside a molded glass-polyester case (Figure 3-1):

- Operating mechanism
- Arc extinguishers
- Stationary contact assemblies
- Moving contact assemblies
- Trip unit.

For a generic functional and component description of circuit breaker components other than the trip unit, refer to Frame Book 29-101.

3-2. Trip Unit Description and Operation

General Description

All interchangeable trip units are of the self-contained, factory-sealed type using either thermal-magnetic or electronic sensing elements. All interrupting ratings of the K-frame family of interchangeable trip circuit breakers will accept either a thermal-magnetic or electronic trip unit. The thermal-magnetic type contains a fixed or optional adjustable thermal (bi-metal) element for overload protection and an adjustable magnetic element for short circuit protection. A manual Push-to-Trip button is included for exercising the trip unit.

The Seltronic type (Figure 3-2) contains current sensors, printed circuit boards, and an integral low energy shunt trip. The field installed rating plug determines the continuous ampere rating. A manual Push-to-Trip button which is an integral part of the rating plug, is included for exercising the trip unit. Adjustments and options are available to fine tune the time-current tripping characteristics.

Trip Operation

The trip operation provides contact opening when the trip mechanism is actuated. Depending on the type of trip unit installed, the trip mechanism can be automatically actuated by the thermal trip element, magnetically actuated; or electronically actuated. The trip mechanism can also be actuated by the Push-to-Trip button, the cylinder lock, the shunt trip, or the undervoltage release mechanism accessories. In the electronic type, when the low energy shunt trip operates, the plunger moves a hinged "door" to rotate the trip bar (Figure 3-3). As the trip bar rotates in both the thermal-magnetic and electronic trip units, the latch releases and the handle arm springs pull the cradle against the handle arm and rotate the circuit breaker molded crossbar to open the contacts.

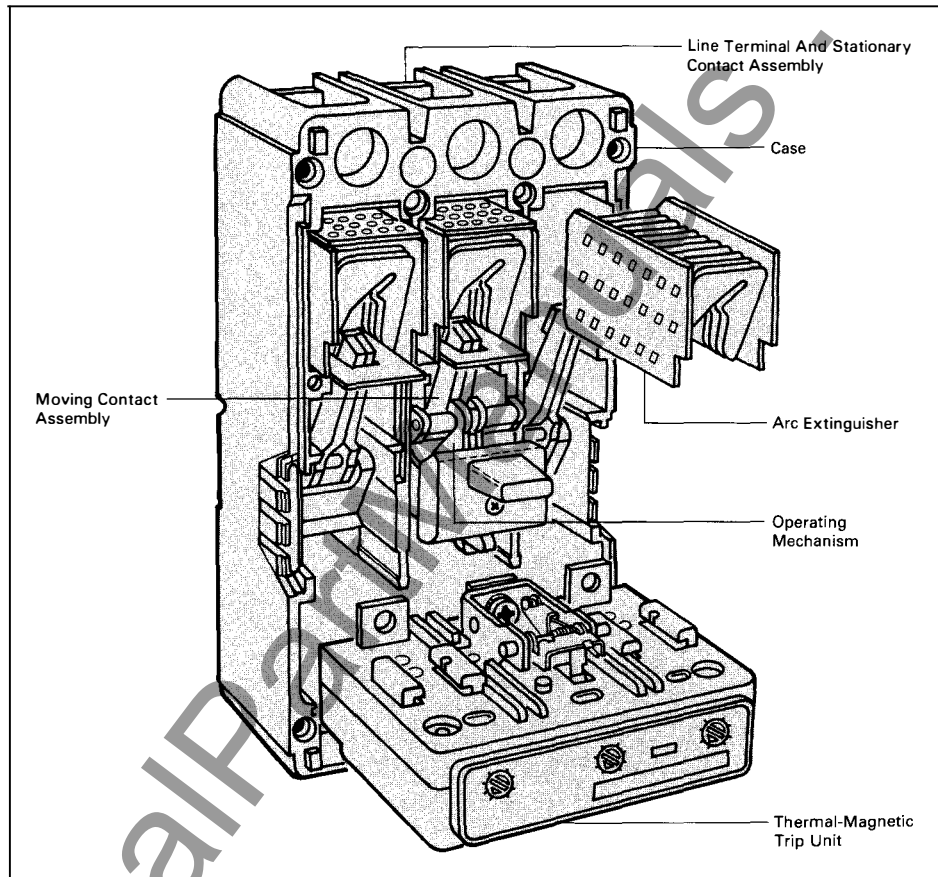


Figure 3-1. K-Frame Circuit Breaker Components

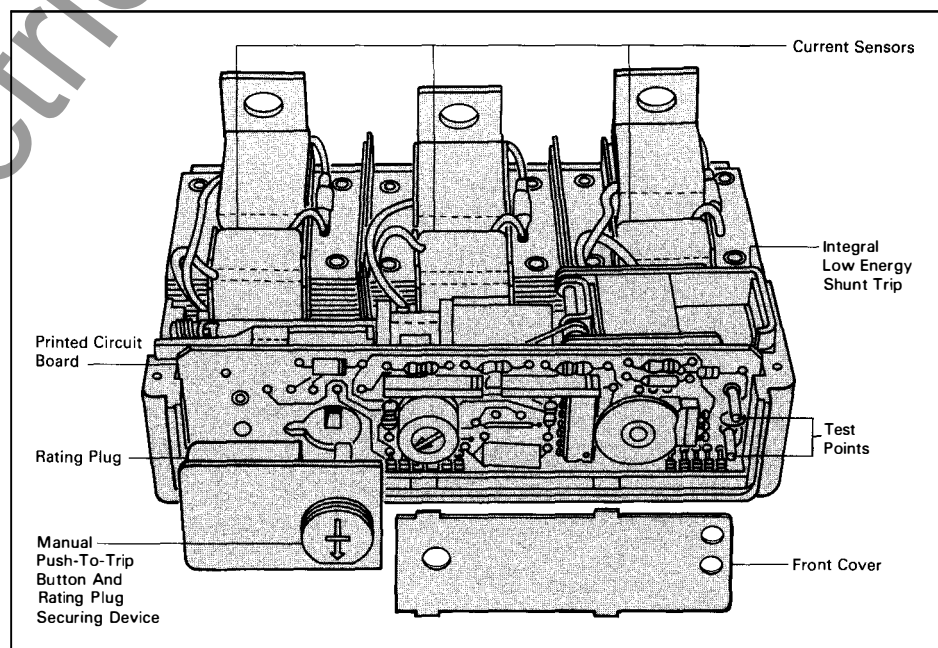


Figure 3-2. Internal View of Seltronic Trip Unit with Rating Plug



Series C Molded Case Circuit Breakers, K-Frame

Section 3 – Description

Electronic Trip Operation

The Seltronic trip unit is supplied in one of the four types (Table 1-4). Trip unit function and rating settings are shown in Table 3-1. The continuous ampere rating is determined by the value of the installed rating plug.

In open air at 40°C, the trip unit continuously carries a current equal to the rating of the maximum ampere rating plug without exceeding a 50°C rise at the terminals. The trip unit is insensitive to ambient temperatures over a range of -20° to +55°C. However, for ambient temperatures below -5°C, special lubrication may be required for proper mechanical operation of the circuit breaker. The trip unit contains temperature protective circuits that initiate a trip operation for self-protection if the internal ambient temperature at the printed circuit board reaches approximately 90°C.

For ambient conditions above 40°C, derating of the circuit breaker frame should be considered to avoid exceeding a safe terminal temperature operating range. Consult Westinghouse for recommendations.

Overload Trip: The trip unit initiates a trip of the circuit breaker within two hours for an overload of 135 percent, and a trip in less time for higher overloads.

Short Delay/Instantaneous Trip: For short circuit conditions that exceed the short delay or instantaneous pick-up settings, the trip unit initiates a trip after a prescribed delay by the I²t ramp function for trip units with catalog number suffixes T and TG. A flat response time delay action is provided by trip units with catalog number suffixes TA and TAG unless the instantaneous (I) setting is selected.

Ground Fault Protection: When selected, ground fault pick-up and time delay settings allow selective ground fault coordination with other circuit protective devices.

DC Application: Seltronic trip units are suitable for ac application only. For dc applications, a thermal-magnetic trip unit should be used.

Field Testing: Test points (Figure 3-2) are for functional field testing of the trip unit when connected to the test kit (Catalog number STK2). Existing Seltronic test kits are suitable for field testing of Series C circuit breaker Seltronic trip units. Testing information is supplied with each trip unit.

KW, HKW, and KWC Adjustable Thermal and Adjustable Magnetic Mechanism

The thermal and magnetic time-current performance characteristics of KW, HKW, KWC circuit breakers can be altered by rotating the adjustment buttons in the cover of the trip unit to the desired setting marked on the label. The adjustable thermal mechanism has movable elements (one per pole)

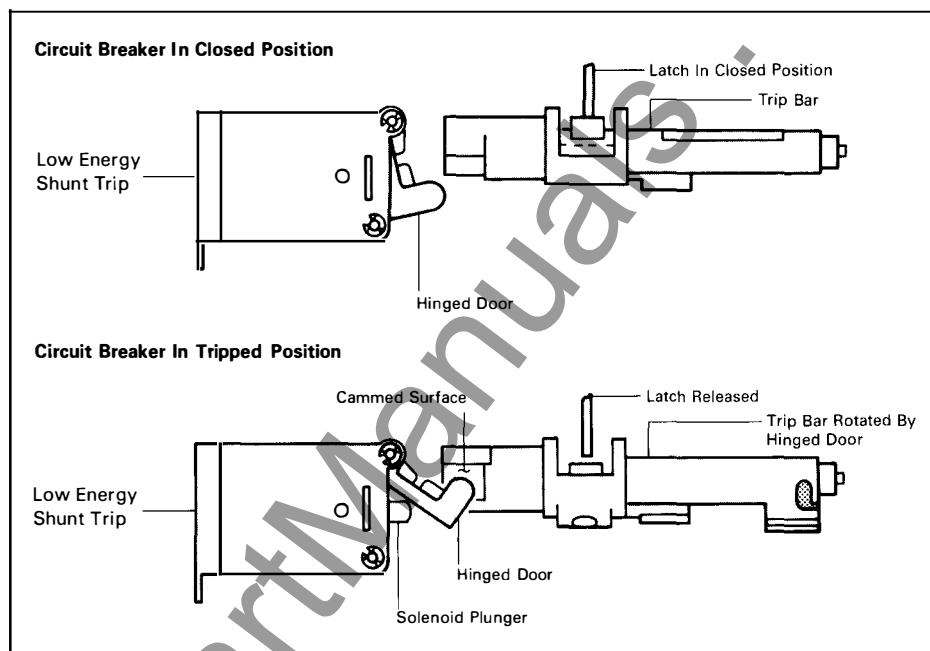


Figure 3-3. Electronic Trip Mechanism Operation

connected by a common adjustment linkage. Each pole element is in the form of an inclined plane and is located between the bi-metal strip and the trip bar. Movement of the inclined plane adjusts the bi-metal-trip bar gap, varying the necessary bi-metal travel required to trip the circuit breaker. The magnetic pick-up setting is adjusted by a linkage that varies the spring tension on the magnet armature.

Push-to-Trip Button

The Push-to-Trip button provides a manual means of tripping the circuit breaker. The thermal-magnetic trip unit has the button located in the trip unit cover. In the Seltronic trip unit, the Push-to-Trip button is incorporated in the rating plug. When the button (Figure 3-4) is pressed, a plunger rotates the trip bar causing the circuit

breaker to trip. Disengaging the rating plug on Seltronic trip units will also trip the circuit breaker.

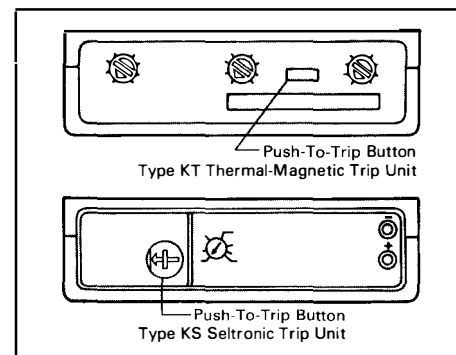


Figure 3-4. Push-to-Trip Button

Table 3-1. Seltronic (Electronic) Trip Unit Trip Function and Rating Settings

Trip Function	Rating/Setting Description	
Ampere Rating Fixed at 100%	Fixed Rating Plugs ^① (I _N)	
Adjustable Long Time Pick-up	Adjustable Rating Plugs ^① (I _N)	
Short Delay Pick-up (Adjustable)	In multiples of installed rating plug amperes (I _N) with marks at 2-3-4-5-6-7-8x	
Short Delay Time (Fixed)	I ² t ramp configuration	
Short Delay Time (Adjustable)	Flat response with time delay settings at 100ms, 200ms, and 300ms	
Instantaneous Pick-up ^②	In multiples of installed rating plug amperes (I _N) with marks at 2-3-4-5-6-7-8x	
Ground Fault Pick-up (Adjustable)	Max. Trip	Available Settings
	400A	80A, 160A, 240A, 320A, 400A
	250A	50A, 100A, 150A, 200A, 250A
	125A	50A, 75A, 100A, 125A
Ground Fault Time Delay	Settings at instantaneous (I) 150ms, 300ms, and 500ms	

^① See Table 5-5, page 21, for available rating plugs.

^② Occurs with short delay time adjustment set at I.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

4-1. General Information

A complete line of accessories is available for use with the Series C circuit breakers and molded case switches. Commonly required internally mounted accessories are plug-in types for use only with the Series C line. LB family internal accessories cannot be used in K-frame Series C circuit breakers.

Although the physical size of the Series C K-frame family of circuit breakers is the same as the DA, JA, KA, HKA, LB, LBB, and HLB family, there are certain differences; therefore in some cases, direct replacement is not possible and new accessories must be ordered.

- Circuit breaker mounting details, panel cutouts, and terminal centerline locations are identical. LB family terminals are not usable with K-frame circuit breakers.

- Handle locations, handle throw, and terminal connection details are different. Therefore, existing handle mechanisms and externally mounted accessories including electrical operator and key interlocks, etc. must be replaced or mounting details modified. Terminal conductor heights are different and will require adapters to fit both the existing panelboard connecting straps and individually mounted plug-in blocks. Existing rear connecting studs will require replacement.

The following paragraphs describe each accessory and provide operation, rating, and specification information. In this section, "circuit breaker" shall also include molded case switch, unless otherwise stated.

4-2. Termination Accessories

Termination accessories of two basic types are available: terminal connection devices, which accommodate typical circuit breaker connection variations; and termination protection devices, which provide terminal isolation.

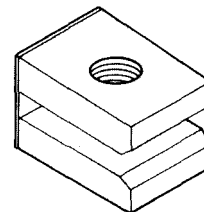
Termination Connection Devices

- Line and Load Terminals
- Keeper Nut (Threaded Adapter)
- Rear Connecting Studs
- Plug-In Adapters
- Panelboard Connecting Straps
- Terminal Adapter

Termination Protection Devices

- Terminal Cover
- Terminal Shield
- Interphase Barriers

Keeper Nut (Threaded Adapter)

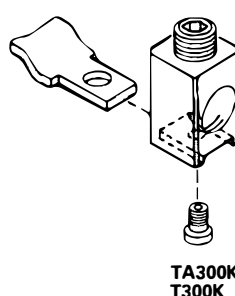
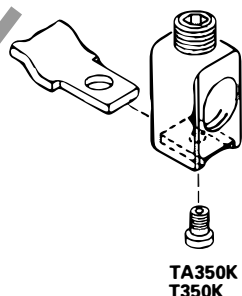
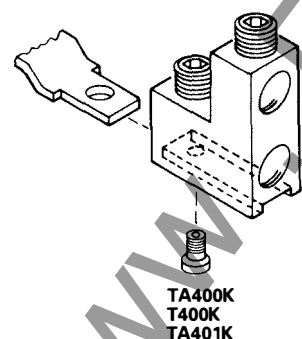


The keeper nut is a two-part copper/steel adapter. The steel portion is threaded and is used to connect bus bar or similar electrical connections requiring a threaded nut application. When used where K-frame circuit breakers are replacing existing LB family circuit breakers, two different spacer thicknesses are available. Use the 0.234 inch thick spacers for line end applications, and the 0.421 inch thick spacer for load end applications, for new applications, select the 0.234 inch adapter for both line and load applications. Hardware not included. (Field installation only)

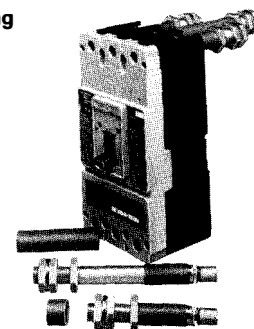
Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories, Inc. Standards UL486A and UL486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165. Unless otherwise specified, K-frame circuit breaker line and load terminals are shipped separately for field installation. The terminals cannot be used on LB family circuit breakers.

The circuit breaker line/load terminal conductor is positioned in the recess in the bottom of the wire connecting terminal. The wire connecting terminal is secured with a $\frac{7}{16}$ inch hollow terminal mounting screw, which can be checked for the correct torque loading or retightened from the front of the circuit breaker before installation of the conductors. (Applies to all styles.)



Rear Connecting Studs



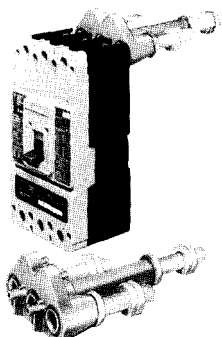
Rear connecting studs are available in several sizes to accommodate specific fixed-mounted circuit breaker applications. The rear connecting studs are rated 400A. See Section 6 for dimensional data. (Field installation only)



Series C Molded Case Circuit Breakers, K-Frame

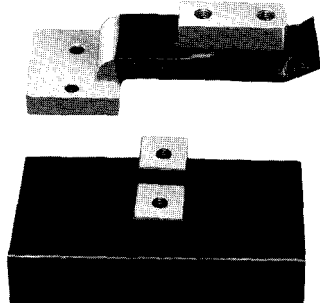
Section 4 – Accessories and Modifications

Plug-In Adapters



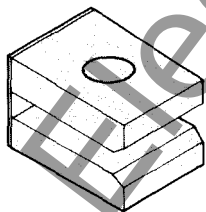
Plug-in adapters simplify installation and front removal of circuit breakers. Individual line and load plug-in adapters are available for rear connection applications on 2-, 3-, and 4-pole circuit breakers. Common mounting plates for line and load end adapters are available. The plug-in adapters are rated 400A. See Section 6 for dimensional data. (Field installation only.)

Panelboard Connecting Straps



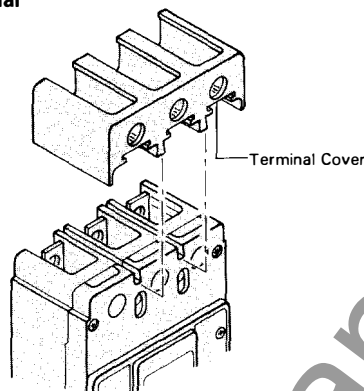
Panelboard connecting straps are used to connect the circuit breaker terminals to the panelboard bus. The panelboard connecting straps are available with 400A rating for outside and center poles. (Field installation only.)

Terminal Adapter



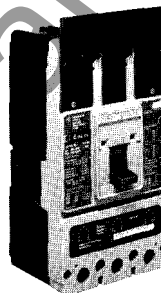
The terminal adapter is used for replacement applications to compensate for the change in height of K-frame circuit breaker terminal connections compared to those of existing LB/DA circuit breaker types. The adapter may be used on either side of the circuit breaker terminal conductor permitting continued use of top or bottom mounted connecting straps where a tapped hole is not required. The terminal adapter is not required if K-frame Series C panelboard connecting straps are used. (Field installation only.)

Terminal Cover



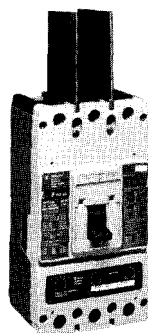
The one-piece terminal cover provides the required electrical clearance between circuit breaker poles when extended terminals are used. Three- and four-pole covers are available. A terminal cover is supplied as standard with T400K and TA400K terminal kits. (Field installation only.)

Terminal Shield



Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening connectors. (Field installation only.)

Interphase Barriers

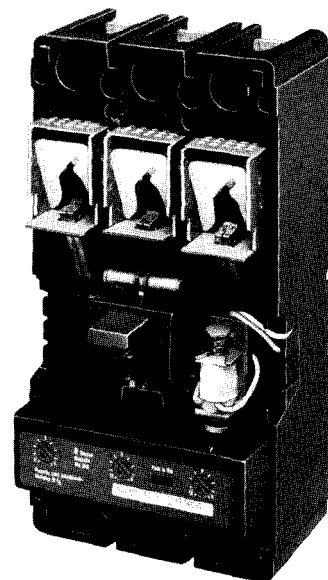


The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. The barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.)

4-3. Internal Accessories

All internal accessories are of the plug-in type and are listed for field installation under UL File E64983.①. Internal accessories for sealed circuit breakers are listed under UL File E7819① for factory installation only. The available plug-in accessories include the following:

- Alarm (Signal)/Lockout Switch
- Auxiliary Switch
- Shunt Trip
- Low Energy Shunt Trip
- Undervoltage Release Mechanism.



Typical Internal Plug-in Accessory Installed in K-frame Circuit Breaker

Different accessory wiring options are available to satisfy most circuit breaker mounting applications. The standard wiring configuration is pigtail leads exiting the rear of the base directly behind the accessory. Optional configurations include a terminal block mounted on the same side of the base as the accessory, leads exiting the side of the base where the accessory is mounted, and leads exiting the rear of the base on the side opposite the accessory. If accessory leads longer than 18 inches are required, side-mounted terminal blocks should be used. To identify allowable accessory installation combinations, see paragraph 4-8. Internally mounted accessories identified in paragraph 4-8 are shown in this section by a graphic symbol in a shaded blue box.

① Some UL listings pending; refer to Westinghouse.

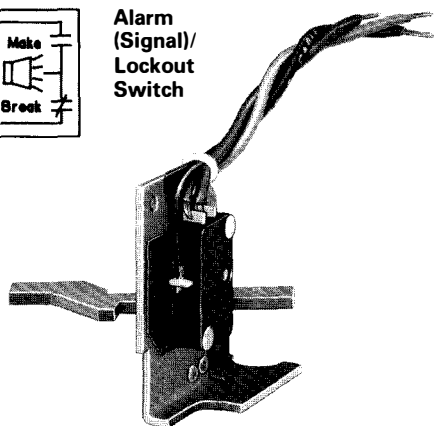


Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications



**Alarm
(Signal)/
Lockout
Switch**



The alarm (signal)/lockout switch monitors circuit breaker trip status and provides remote signaling and interlocking capabilities when the circuit breaker trips. For 2-, 3-, and 4-pole circuit breakers, the alarm (signal)/lockout switch consists of one or two SPDT switches assembled to a plug-in module mounted in retaining slots in the top of the trip unit. The SPDT switch contacts are identified as make and break contacts. When the circuit breaker trips, the make contact closes and the break contact opens. Table 4-1 provides electrical rating data for the alarm (signal)/lockout switch.

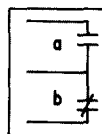
Table 4-1. Alarm (Signal)/Lockout Switch Electrical Rating Data ① ②

Maximum Voltage	Freq.	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	dc	0.5 ③	
250	dc	0.25 ③	

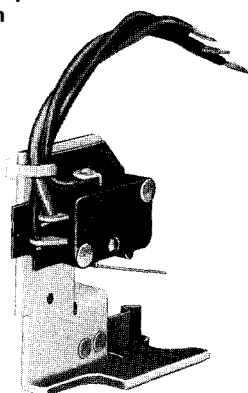
① Endurance – 4000 electrical operations plus 1000 mechanical operations.

② Pigtail wire size – No. 18 AWG (0.82 mm²).

③ Non-inductive load.



**Auxiliary
Switch**



The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded crossbar containing the moving contact arms. The auxiliary switch is used for remote signaling and interlocking purposes, and consists of one or two SPDT switches assembled to a plug-in module mounted in retaining slots in the top of the trip unit. Each SPDT switch has one "a" and one "b" contact. When the circuit breaker contacts are open, the "a" contact is open and the "b" contact is closed. Table 4-2 provides electrical rating data for the auxiliary switch.

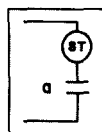
Table 4-2. Auxiliary Switch Electrical Rating Data ① ②

Maximum Voltage	Freq.	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	dc	0.5 ③	
250	dc	0.25 ③	

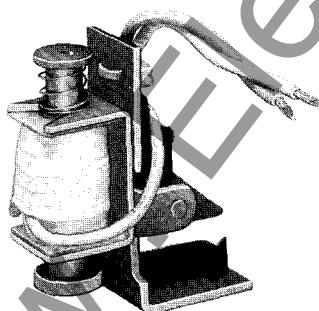
① Endurance – 4000 electrical operations plus 1000 mechanical operations.

② Pigtail wire size – No. 18 AWG (0.82 mm²).

③ Non-inductive load.



**Shunt
Trip**



The shunt trip provides remote controlled tripping of the circuit breaker. The shunt trip consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch assembled to a plug-in module. When required for ground fault protection applications, certain ac rated shunt trips, as noted in Table 4-3, are suitable for operation at 55 percent of rated voltage. Table 4-3 also provides electrical rating data for the shunt trip.

Table 4-3. Shunt Trip Electrical Rating Data

Electrical Operating Ratings ① ② ③					
50/60 Hz			dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	7	45	12	5	35
24		200	24		170
48		830	48		710
60		1280	60		1105
110 ④	43	100	110	34	110
120 ④		120	120		130
127 ④		140	125		140
208 ④		420	220	133	41
220 ④		470	250		54
240 ④		550	...	...	...
380	158	95	...	...	...
400		108	...	...	...
415		120	...	...	...
440		136	...	...	...
480	280	40	...	...	...
525		50	...	...	...
550		50	...	...	...
600		70	...	...	...

① Approximate unlatching time – 6 milliseconds

② Approximate total circuit breaker contact opening time – 18 milliseconds

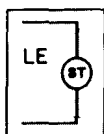
③ Endurance – 4000 electrical operations plus 1000 mechanical operations

④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

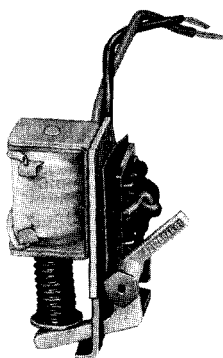


**Low
Energy
Shunt
Trip**

Low energy shunt trip devices are designed to operate from low energy output signals from dedicated current sensors typically applied in ground fault protection schemes. However, with a proper control voltage source, they may be applied in place of conventional trip devices for special applications. Flux paths surrounding permanent magnets used in the shunt trip assembly hold a charged spring poised in readiness to operate the circuit breaker trip mechanism. When a pulse of direct current from

the power source passes through the shunt trip coil, the resultant flux opposes the permanent magnet flux field, which releases the stored energy in the spring to trip the circuit breaker. As the circuit breaker contacts open, the reset arm is actuated by the circuit breaker operating mechanism, resetting the shunt trip. The plug-in module is mounted in retaining slots in the top of the trip unit. Coil is intermittent-rated only. Cut-off provisions required in control circuit.

Undervoltage Release Mechanism



The undervoltage release mechanism monitors a voltage (typically a line voltage) and trips the circuit breaker when the voltage falls to between 70 and 35 percent of the solenoid coil rating. Table 4-4 provides electrical rating data for each operating voltage of the handle reset undervoltage release mechanism.

Table 4-4. Undervoltage Release Mechanism (Handle Reset) Electrical Rating Data

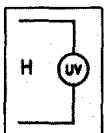
Electrical Operating Ratings^①

50/60 Hz					dc				
Supply Voltage	Dropout Voltage Min.	Max.	Pickup Voltage Max.	VA	Supply Voltage	Dropout Voltage Min.	Max.	Pickup Voltage Max.	VA
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21	33.6	40.8	2.5	48	21	33.6	40.8	2.0
60				3.8	60				3.1
110	44.5	77	93.5	1.8	110	44.5	77	93.5	1.6
120				2.1	120				1.9
127				2.4	125				2.2
208	85	145.6	176.8	2.7	220	87.5	154	187	3.1
220				3.1	250				4.0
240				3.8	...	...	...	...	...
380	168	266	323	3.4	...	...	...	...	...
415				4.0	...	...	...	...	...
440				4.6	...	...	...	...	...
480				5.4	...	...	...	...	...
525	210	367	446	4.5	...	...	...	...	...
550				5.0	...	...	...	...	...
600				5.8	...	...	...	...	...

^① Endurance – 4000 electrical operations plus 1000 mechanical operations

NOTE: Undervoltage release mechanism accessories are not designed for, and should not be used as, circuit interlocks.

There are four different types of undervoltage release mechanisms available: handle, manual, automatic, and electrical reset.



Handle Reset (Standard) The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever assembled to a plug-in module. The tab on the tripping lever resets the undervoltage release mechanism when normal voltage has been restored and the circuit breaker handle is moved to the reset (OFF) position. With no voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

4-4. Handle Operating Accessories

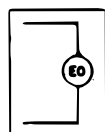
The handle operating accessories provide indirect electrical or manual circuit breaker handle operation. These accessories are field installed only and include:

- Electrical (Solenoid) Operator
- Vari-Depth Handle Mechanism
- Type SM Safety Handle Mechanism

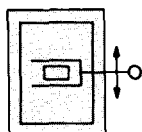
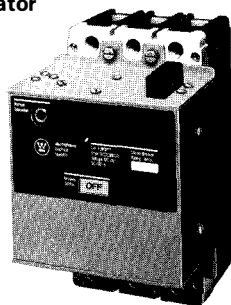
- Type MC Motor Control Handle Mechanism
- Type AMT Vari-Depth/Vari-Width Flange-Mounted Handle Mechanism

To identify allowable accessory installation combinations, see paragraph 4-8. Handle operating accessories identified in paragraph 4-8 are shown in this section by a graphic symbol in a shaded blue box.

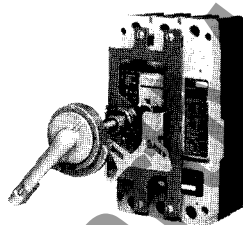
Ordering Information is found in Section 5.



**Electrical
(Solenoid)
Operator**



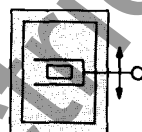
**Vari-Depth
Handle
Mechanism^⑤**



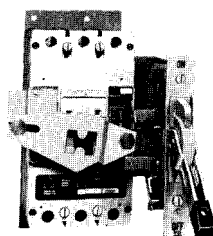
The electrical (solenoid) operator is a double solenoid mechanism that enables local and remote circuit breaker ON, OFF, and reset switching. The electrical operator is mounted on the circuit breaker cover. The electrical operator uses a unique bi-stable latch that allows the device to operate using two solenoids. The accessory provides high speed switching with a maximum operating time of 5 cycles (80 ms), making it suitable for generator synchronizing applications.

The vari-depth handle mechanism provides a means of externally operating a circuit breaker housed in an enclosure and can be applied to enclosures of varying depths. The handle mechanism can be used in NEMA 1, 3R, 4, 7, 9, and 12 enclosure applications, depending on the accessory components selected. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $\frac{5}{16}$ inch (7.94mm).

Means are provided for remote electrical operation and for local manual operation. A special slide-bar locking mechanism provides means for padlocking the operator in the OFF position. (Padlocking does not affect the trip-free operation of the circuit breaker.) The slide-bar will accept one padlock shackle with a maximum diameter of $\frac{1}{4}$ inch (6mm). Table 4-5 provides electrical rating data for the electrical (solenoid) operator.



**Type SM
Safety
Handle
Mechanism^⑤**



**Table 4-5. Electrical (Solenoid) Operator
Electrical Rating Data^{① ② ③}**

Voltage ^④ (V)	Inrush Current (A)	Fuse (A)
24	80	30
120	24	6
240	12	4

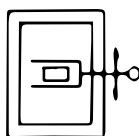
The SM safety handle mechanism provides a means of externally operating a circuit breaker mounted in an enclosure and is designed to reduce the possibility of circuit breaker tampering. The handle mechanism is especially suited for use in automotive and machine tool industries through its conformance to NEMA 12 and J. I. C. requirements. A specially modified handle mechanism for NEMA 4 enclosure applications is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $\frac{3}{8}$ inch (9.52mm).

- The electrical operator design has been endurance tested for 5,000 electrical operations.
- ② Frequency: 50/60 Hz.
- ③ Maximum operating time: 5 cycles (80 ms).
- ④ Tolerance: +10%, -15% of nominal voltage.
- ⑤ Underwriters Laboratories listed under UL File E64983.

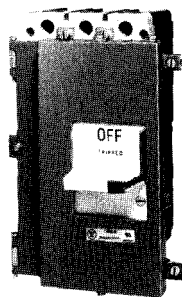


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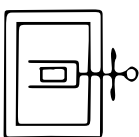
Section 4 – Accessories and Modifications



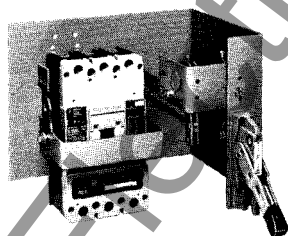
**Type MC
Motor Control
Handle
Mechanism**



The MC motor control handle mechanism is a linear-operating, fixed-depth mechanism designed for through-door mounting in standardized and shallow depth enclosures. The handle mechanism provides positive operation and direct disconnect status indication. It is interlocked with the enclosure door so that the door can be opened only when the handle is set to OFF. (A defeater, supplied with the handle mechanism, can be used to bypass the interlock for maintenance and inspection.) The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $\frac{3}{8}$ inch (7.92mm). UL File E56845.



**Type AMT
Vari-Depth/
Vari-Width
Flange Mounted
Handle Mechanism^②**



The AMT vari-depth/vari-width flange-mounted handle mechanism is an extra heavy-duty mechanism designed for mounting in flange-type enclosures. The handle mechanism is available for mounting above or below the centerline of the circuit breaker handle, is suitable for various enclosure depths, and can also be used in various horizontal position applications. A door interlock prevents the enclosure from being opened with the handle mechanism in the ON position and prevents the handle mechanism from being switched to ON unless the enclosure door is closed. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $\frac{3}{8}$ inch (7.92mm).

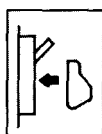
January 1992

4-5. Lock and Interlock Accessories

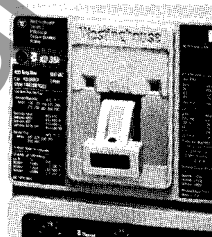
Lock and interlock accessories are used to deter undesired circuit breaker operation and establish interlocked control systems. Lock and interlock accessories include:

- Nonlockable Handle Block
- Padlockable Handle Lock Hasp
- Cylinder Lock
- Key Interlock
- Sliding Bar Interlock
- Walking Beam Interlock.

To identify allowable accessory installation combinations, see paragraph 4-8. Lock and interlock accessories identified in paragraph 4-8 are shown in this section by a graphic symbol in a shaded blue box.



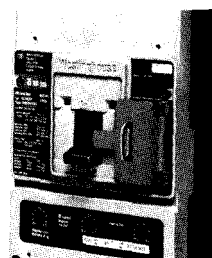
**Nonlockable
Handle
Block**



The nonlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by a setscrew to deter accidental operation of the circuit breaker handle. (Field installation only.)



**Padlockable
Handle
Lock
Hasp^①**

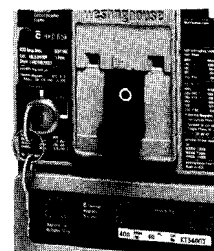


The padlockable handle lock hasp allows the handle to be locked in the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle lock

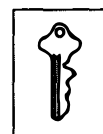
holds the circuit breaker handle in the ON position.) The hasp mounts on the circuit breaker cover within the trimline. The cover is predrilled on both sides of the operating handle so that the hasp can be mounted on either side of the handle. The hasp will accommodate up to three padlocks with $\frac{1}{4}$ inch (6mm) shackles. (Field installation only.)



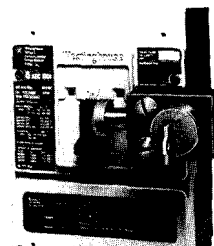
**Cylinder
Lock**



The cylinder lock internally blocks the trip bar in the tripped position to prevent the circuit breaker from being switched to ON. The cylinder lock is factory installed in the circuit breaker cover. Other internally mounted accessories cannot be installed in the same pole as the cylinder lock. (Factory installation only.)



**Key
Interlock
Kit (Lock
not
included)
①**



The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit breakers for a given specific customer installation.

The key interlock assembly consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left- or right-pole position; key interlock mounting hardware; and, a wire seal. Specific mounting kits are required for individual key interlock types. (Field installation only.)

① Underwriters Laboratories listing pending under UL File E7819.

② Underwriters Laboratories listed under UL File E64983.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

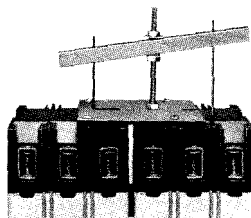


**Sliding
Bar
Interlock**



The sliding bar interlock provides mechanical interlocking between two adjacent 2- or 3-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of the circuit breaker handles and prevents both circuit breakers from being switched to ON at the same time. Sliding bar interlocks are not UL listed. (Field installation only.)

**Walking
Beam
Interlock**



The walking beam interlock provides mechanical interlocking between two adjacent circuit breakers of the same pole configuration. The walking beam interlock mounts on a bracket behind and between the circuit breakers. A plunger on each end of the beam is inserted through an access hole in the backplate and base of each circuit breaker. The walking beam interlock prevents both circuit breakers from being switched to ON at the same time. When a walking beam interlock is installed, the wiring troughs in the back of the circuit breaker case are blocked by the plungers and cannot be used for cross wiring. Factory-modified circuit breakers are required for this application.

4-6. Miscellaneous Accessories

- Base Mounting Hardware
- Earth Leakage Protection Module.

Base Mounting Hardware

Hardware for surface mounting of circuit breakers is supplied only on request. Hardware consists of mounting screws and lockwashers. Order hardware for circuit breaker pole configurations as required.

Seltronic Portable Test Kit

The Seltronic portable test kit provides verification of performance of all ratings of Seltronic trip units installed in Series C circuit breakers while in service under varying load and/or phase imbalance. The test kit operates on 120-Volt, 50/60 Hz power; it includes complete instructions and test times for testing long time, short time/instantaneous operation and optional ground fault operation of the circuit breaker.

4-7. Modifications

Limited modifications to the basic circuit breaker are available to satisfy specific customer requirements. All modifications are completed at the factory. The following modifications are available:

- Special Calibration
- Moisture-Fungus Treatment
- Marine Applications

If additional modifications are required, refer to Westinghouse. The following paragraphs describe the modifications.

Special Calibration

Special non-UL listed calibrations are available for certain ambient temperatures other than 40°C and for frequencies other than 50/60 Hz or dc. Reduced interrupting ratings will apply for 400 Hz applications. Maximum thermal calibration is limited to 300A at 400 Hz.

Moisture- Fungus Treatment

All series C circuit breaker cases are molded from glass-polyester, which does not support the growth of fungus. Only a limited number of internal parts require special treatment.

Marine Applications

UL489 listed^① 40°C circuit breakers for marine application on vessels over 65 feet are available. Non-aluminum terminals are required. In addition, other marine specifications may require 50°C ambient calibration.

● UL listed under File E85313.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

4-8. Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker. The following illustrations show the different accessories or combinations that can be used internally and externally with each pole of 2-, 3-, and 4-pole circuit breakers. Each pole in a particular circuit breaker configuration is identified by a column head; each accessory or combination that can be used with that pole is identified by symbols in a box below the column head. Unless otherwise noted, one internal and one external accessory can be selected for each pole.

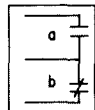
The manual reset undervoltage release mechanism or the cylinder lock will occupy the accessory mounting cavity in the circuit breaker base and also project through the cover. Therefore, if either of these devices is selected, no other internal or external accessory can be applied to that particular pole. In the illustrations, these accessories are identified by repeating the symbol in the internal and cover boxes. **If a cylinder lock is selected, the electrical (solenoid) operator or any external handle mechanism cannot be used.**

Some external accessories will cover more than one pole. In the illustrations when a box containing accessory symbols spans more than one column, any accessory within that box occupies the area of the cover indicated.

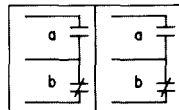
Accessory Legend

The accessory legend shows each symbol used in the accessory combination illustration.

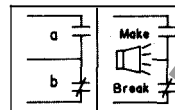
Accessory Symbols Used in Accessory Combination Example (See Page 18)



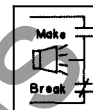
Auxiliary Switch
(1a, 1b)



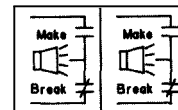
Auxiliary Switch (2a, 2b)



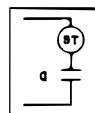
Aux. Switch:
Alarm (Signal)/Lockout
Switch Combination



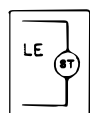
Alarm (Signal)/
Lockout Switch
(Make/Break)



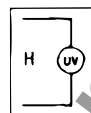
Alarm (Signal)/
Lockout Switch
(2 Make, 2 Break)



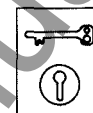
Shunt
Trip



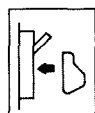
Low Energy
Shunt Trip



Under-Voltage
Release
(Handle Reset)



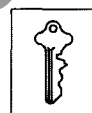
Cylinder
Lock



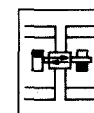
Non-Lockable
Handle Block



Padlockable
Handle Lock Hasp



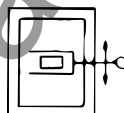
Key
Interlock



Sliding Bar
Interlock



Electrical
(Solenoid)
Operator



Handle
Mechanism



Series C Molded Case Circuit Breakers, K-Frame
 Section 4 – Accessories and Modifications

2-, 3-, and 4-Pole Circuit Breaker Accessory Combinations for use with Type KT Trip Thermal Magnetic Units

	Left Pole	Center Pole	Right Pole (2- or 3-Pole)	Right Pole (4-Pole)	Neutral Pole
Internal			<p>Accessories Same As Left Pole Except Cylinder Lock</p>	<p>Accessories Same As Left Pole Except Cylinder Lock</p>	None
Cover Mounted			<p>Accessories Same As Left Pole Except Cylinder Lock</p>		None

3-, and 4-Pole Circuit Breaker Accessory Combinations for use with Type KS Seltronic Trip Units

	Left Pole	Center Pole	Right Pole (3-Pole)	Right Pole (4-Pole)	Neutral Pole
Internal	<p>Accessories Same As Thermal-Magnetic Trip Unit Above</p>			<p>Accessories Same As Right Pole (3-Pole)</p>	None
Cover Mounted	<p>Accessories Same As Thermal-Magnetic Trip Unit Above</p>			<p>Accessories Same As Right Pole (3-Pole) Except Sliding Bar Interlock</p>	None

① Occupies internal and cover spaces.
 ② Non-padlockable handle block cannot be mounted simultaneously with either key interlock, padlockable handle hasp or sliding interlock.
 ③ Accessories with terminal blocks installed in this pole have special catalog numbers. See Section 5, Accessory Catalog Numbers.
 ④ May be mounted on left or right pole, not both.
 ⑤ 2- and 3-pole circuit breakers only.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

5-1. General Information

When ordering a K-frame circuit breaker or molded case switch, use the catalog numbers given in Tables 5-1 through 5-8. Interrupting ratings can be found in Table 1-1. List any accessories or modifications required together with the applicable catalog number. Handle mechanisms are suitable for use with all K-frame Series C circuit breakers.

List Prices: See Price List 29-020. Discount Symbol CB-2 applies for circuit breakers and accessories. Discount Symbol CB-14 applies for handle mechanisms.

5-2. Ordering Instructions – Circuit Breakers

Factory sealed, non-interchangeable trip circuit breakers may be ordered completely assembled with standard type terminals supplied by referring to Tables 5-1 or 5-2 and specifying the appropriate catalog numbers.

Interchangeable trip circuit breakers may be ordered as a circuit breaker frame and trip unit only by specifying the individual catalog numbers from Tables 5-3, 5-4, 5-5, and 5-6. Terminal connectors can be ordered separately by specifying individual catalog numbers in Table 5-9.

Complete circuit breakers consisting of a frame, trip unit, and standard terminals (Table 5-8) can be ordered by specifying the appropriate catalog numbers from Tables 5-3 and 5-6. Optional Seltronic trip units are listed in Table 5-4. Table 5-5 lists available rating plugs.

5-3. Ordering Instructions – Accessories

When ordering an accessory that is for installation by the customer, use the field installation kit catalog number.

5-4. Ordering Examples

Example No. 1 – Customer Requirements
One UL listed molded case circuit breaker as follows:

1. 3-pole, 600 Vac class, 300A, with 35 kA interrupting capacity at 480 Vac.
2. Fixed thermal, adjustable magnetic trip unit
3. Factory sealed for reverse feed application
4. One 1a/1b auxiliary switch with pigtail leads
5. One 120 Vac, 50/60 Hz shunt trip with pigtail leads
6. Load side terminals for 250-500 mcm aluminum cables, 1 per phase.

Ordering Steps

1. Refer to Tables 1-1 and 5-2. Select catalog number KDB3300. Add suffix W to delete line and load terminals. (This covers items 1, 2, and 3 above.)
2. Refer to auxiliary switch table (page 23). Select catalog number A1X3RB. (This covers item 4 above.) Right-pole mounting with pigtail leads exiting at the rear is considered standard.
3. Refer to shunt trip table (page 24). Select catalog number SNT3LB11. (This covers item 5 above.) Left-pole mounting with pigtail leads exiting at the rear is considered standard.

Note: Accessory mounting arrangements for a specific configuration can be verified by referring to the accessory legend in Section 4.

4. Refer to Table 5-9 terminal (page 22). Select catalog number TA350K. A quantity of 3 is required for this application. (This covers item 6 above.)

5. Enter order by specifying as follows:

Item 1 – Quantity 1 – Circuit breaker, Cat. No. KDB3300, with factory installed auxiliary switch Cat. No. A1X3RB, and shunt trip Cat. No. SNT3LB11.

Item 1A – Quantity 3 – Terminal, Cat. No. TA350K

The circuit breaker will be supplied completely assembled and factory sealed, but with terminals shipped separately for field installation. Note that in the example above, the customer has specified standard Al/Cu terminals for a 300 A circuit breaker. Therefore, the circuit breaker itself could also have been ordered by Cat. No. KDB3300X (see page 20) and Item 1A deleted from the order. The terminals would still be shipped separately.

Example No. 2 – Customer Requirements

One UL listed molded case circuit breaker as follows:

1. 3-pole, 600 Vac class, 400 A, with 65 kA interrupting capacity at 480 Vac.
2. Equipped with 400A Seltronic type electronic trip with independently adjustable short time pick-up and delay, and 200A-400A adjustable rating plug.
3. Standard copper-only terminals, line and load.

Ordering Steps

1. Refer to Tables 1-1 and 5-3. Select circuit breaker frame HKD3400F (This covers item 1 above).

2. Refer to Tables 5-4 and 5-5. Select Seltronic trip unit KS3400TA and rating plugs A4KS400T1 (This covers item 2 above).

3. Refer to Table 5-9. Select terminal kit catalog number 3T400K. A quantity of 6 terminals (2 kits) required for this application (This covers item 3 above).

4. Enter order by specifying as follows
Item 1 – Quantity 1 – Circuit breaker

frame, Cat. No. HKD3400F.

Item 1A – Quantity 1 – Seltronic trip unit Cat. No. KS3400TA.

Item 1B – Quantity 1 – Rating Plug, Cat. No. A4KS400T1.

Item 1C – Quantity 2 – Terminal kit 3T400K.

The circuit breaker will be shipped unassembled as frame, trip unit, rating plug and terminals.

Example No. 3 – Customer Requirements

One 24 Vdc shunt trip with 18-inch pigtail leads for field installation in the left-hand pole of a KW 3-pole circuit breaker.

Order as follows, referring to shunt trip table on page 24.

Quantity 1, shunt trip, Cat. No. SNT3P05K



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

5-5. K-Frame Series C Catalog Numbering System

This information is presented only as an aid to understanding catalog numbers shown in Tables 5-1 through 5-8. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame Catalog Numbers

KD	3	400	F
Circuit Breaker/Frame Type	Number of Poles	Circuit Breaker/Frame Ampere Rating	Suffix
DK	2: 2-Poles	100	C: Copper Terminals
KDB	3: 3-Poles	125	E: 50% Protected Neutral Pole
KD	4: 4-Poles	150	(4-Pole Seltronic Trip Circuit Breaker Only)
HKD		175	F: Frame Only
KDC		200	K: High Magnetic Molded Case Switch
		225	W: Without Terminals
KW		250	X: Load Side Terminals Only
HKW		300	Y: Line Side Terminals Only
KWC		315	
		350	
		400	

Trip Unit Catalog Numbers^①

KT	3	400	T
Trip Unit Type	Number of Poles	Trip Unit/ Rating Plug Ampere Rating	Suffix
KT: Thermal-Magnetic	2	63 ^②	T: Trip Unit
	3	70 ^②	• Thermal-Magnetic
	4	90 ^②	• Fixed Thermal
KS: Seltronic (Electronic)		100	Adjustable Magnetic
		125	• Seltronic
		150	Simultaneously Adjustable
		160	Short Time Pick-up and Time
		175	Delay
		200	TA: Trip Unit
		225	• Thermal-Magnetic:
		250	Adjustable Thermal
		300	Adjustable Magnetic
		315	• Seltronic
		350	Independently Adjustable
		400	Short Time Pick-up and Time
			Delay Adjustments
			TG: Trip Unit (Seltronic Only) with
			Simultaneously Adjustable
			Short Time Pick-up and Time
			Delay and Independently
			Adjustable Ground Fault Pick-
			up and Time Delay
			TAG: Trip Unit (Seltronic Only) with
			Independently Adjustable Short
			Time Pick-up and Time Delay,
			and Ground Fault Pick-up and
			Time Delay Adjustments
			V: 50°C Calibration (Thermal-
			Magnetic Trip Units Only)
			E: 50% Protected Neutral Pole
			(Four-pole trip unit only)

^① Rating plug for Seltronic trip units must be ordered separately. Refer to Table 5-4.

^② Ampere rating available with Seltronic trip unit only.

5-6. Circuit Breakers

Circuit breaker catalog numbers are identified in Tables 5-1, 5-2, 5-3 and 5-6. Optional Seltronic trip units are listed in Table 5-4. Rating plugs are listed in Table 5-5.

Table 5-1. Type DK Circuit Breaker Catalog Numbers

240 Vac Maximum, 250 Vdc Non-Interchangeable Thermal-Magnetic Trip Unit, Factory Sealed

Contin- uous Ampere Rating at 40°C	Line Terminals Only ^③		Line and Load Terminals ^③	
	2-Pole	3-Pole ^④	2-Pole	3-Pole ^④
250	DK2250Y	DK3250Y	DK2250	DK3250
300	DK2300Y	DK3300Y	DK2300	DK3300
350	DK2350Y	DK3350Y	DK2350	DK3350
400	DK2400Y	DK3400Y	DK2400	DK3400

^③ Standard Cu/Al terminals supplied; refer to Table 5-8. Terminals shipped separately, unless otherwise specifically requested.

^④ Use any two poles for dc or single phase ac applications.

Table 5-2. Type KDB Circuit Breaker Catalog Numbers

600 Vac Maximum, 250 Vdc Non-Interchangeable Thermal-Magnetic Trip Unit, Factory Sealed

Continuous Ampere Rating at 40°C	With Line and Load Terminals ^③	
	2-Pole	3-Pole ^④
100	KDB2100	KDB3100
125	KDB2125	KDB3125
150	KDB2150	KDB3150
175	KDB2175	KDB3175
200	KDB2200	KDB3200
225	KDB2225	KDB3225
250	KDB2250	KDB3250
300	KDB2300	KDB3300
350	KDB2350	KDB3350
400	KDB2400	KDB3400



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Table 5-3. Type KD, HKD, and Current Limiting KDC Circuit Breaker Catalog Numbers

Continuous Ampere Rating at 40°C	Trip Unit Only	Circuit Breaker Frame Only		
		Complete Circuit Breaker With Standard Line and Load Terminals② ③		
2-Pole①, 600 Vac Maximum, 250 Vdc With Interchangeable Thermal- Magnetic Trip Units				
		KD2400F	HKD2400F	KDC2400F
100	KT2100T	KD2100	HKD2100	KDC2100
125	KT2125T	KD2125	HKD2125	KDC2125
150	KT2150T	KD2150	HKD2150	KDC2150
175	KT2175T	KD2175	HKD2175	KDC2175
200	KT2200T	KD2200	HKD2200	KDC2200
225	KT2225T	KD2225	HKD2225	KDC2225
250	KT2250T	KD2250	HKD2250	KDC2250
300	KT2300T	KD2300	HKD2300	KDC2300
350	KT2350T	KD2350	HKD2350	KDC2350
400	KT2400T	KD2400	HKD2400	KDC2400
3-Pole④, 600 Vac Maximum, 250 Vdc With Interchangeable Thermal- Magnetic Trip Units				
		KD3400F	HKD3400F	KDC3400F
100	KT3100T	KD3100	HKD3100	KDC3100
125	KT3125T	KD3125	HKD3125	KDC3125
150	KT3150T	KD3150	HKD3150	KDC3150
175	KT3175T	KD3175	HKD3175	KDC3175
200	KT3200T	KD3200	HKD3200	KDC3200
225	KT3225T	KD3225	HKD3225	KDC3225
250	KT3250T	KD3250	HKD3250	KDC3250
300	KT3300T	KD3300	HKD3300	KDC3300
350	KT3350T	KD3350	HKD3350	KDC3350
400	KT3400T	KD3400	HKD3400	KDC3400

Table 5-4. Type KS Seltronic (Electronic) Trip Unit Catalog Numbers (For use with Types KD, HKD, and KDC Circuit Breaker Frames shown in Table 5-3, and with Types KW, HKW, and KWC Circuit Breaker Frames shown in Table 5-6)

Rating plug from Table 5-5 required for each trip unit

Maximum Continuous Ampere Rating at 40°C ^②	Trip Unit Type ^①			
	Adjustable Short Time Pick-up with 1/2t Short Delay Ramp (Standard)	Independently Adjustable Short Time Pick-up and Delay (Optional)	Adjustable Short Time Pick-up with 1/2t Short Delay Ramp and Ground Fault Protection (Optional)	Independently Adjustable Short Time Pick-up and Ground Fault Protection (Optional)
3-Pole				
125	KS3125T	KS3125TA	KS3125TG	KS3125TAG
250	KS3250T	KS3250TA	KS3250TG	KS3250TAG
400	KS3400T	KS3400TA	KS3400TG	KS3400TAG
4-Pole^{⑤ ⑥}				
125	KS4125T	KS4125TA	KS4125TG	KS4125TAG
250	KS4250T	KS4250TA	KS4250TG	KS4250TAG
400	KS4400T	KS4400TA	KS4400TG	KS4400TAG

① 2-pole circuit breaker supplied in 3-pole frame.

② Standard Cu/Al terminals supplied; refer to Table 5-8.

③ Circuit breaker shipped separately as frame, trip unit, and terminals.

④ Use any two protected poles for dc or single phase ac applications.

⑤ Overcurrent protection not available in neutral pole with thermal-magnetic trip unit. Where fourth-pole protection is required, use Seltronic trip units, refer to Table 5-4.

⑥ 3-pole trip unit used with 4-pole circuit breaker. Load end adapter for unprotected neutral pole included with 4-pole frame.

Table 5-5. Interchangeable Rating Plugs for Type KS 3- and 4-Pole Trip Units

Trip Unit Maximum Continuous Ampere Rating at 40°C	Rating Plug Ampere Rating	Rating Plug Catalog Number
125	63 70 90 100 125 Adjustable: 70, 90, 100, 125 63, 80, 100, 125	1KS063T [®] 1KS070T 1KS090T 1KS100T 1KS125T A1KS125T1 A1KS125T2 [®]
250	125 150 160 175 200 225 250 Adjustable: 125, 150, 200, 250 125, 160, 225, 250	2KS125T 2KS150T 2KS160T [®] 2KS175T 2KS200T 2KS225T 2KS250T A2KS250T1 A2KS250T2 [®]
400	200 225 250 300 315 350 400 Adjustable: 200, 250, 300, 400 200, 250, 315, 400 250, 300, 350, 400	4KS200T 4KS225T 4KS250T 4KS300T 4KS315T [®] 4KS350T 4KS400T A4KS400T1 A4KS400T2 [®] A4KS400T3

Table 5-6. Type KW, HKW, and KWC Circuit Breaker Catalog Numbers[®]

Continuous Ampere Rating at 40°C	Thermal Trip Range		Trip Unit Only	Circuit Breaker Frame Only		
				Complete Circuit Breaker With Standard Line and Load Terminals②③		
	Low	High				
2-Pole①, 660 Vac Maximum, 250 Vdc With Interchangeable Trip Unit – Adjustable Thermal, Adjustable Magnetic						
				KW2400F	HKW2400F	KWC2400F
200	160 - 200	KT2200TA	KW2200	HKW2200	KWC2200	
250	200 - 250	KT2250TA	KW2250	HKW2250	KWC2250	
315	250 - 315	KT2315TA	KW2315	HKW2315	KWC2315	
400	315 - 400	KT2400TA	KW2400	HKW2400	KWC2400	
3-Pole, 660 Vac Maximum, 250 Vdc④ With Interchangeable Trip Unit – Adjustable Thermal, Adjustable Magnetic						
				KW3400F	HKW3400F	KWC3400F
200	160 - 200	KT3200TA	KW3200	HKW3200	KWC3200	
250	200 - 250	KT3250TA	KW3250	HKW3250	KWC3250	
315	250 - 315	KT3315TA	KW3315	HKW3315	KWC3315	
400	315 - 400	KT3400TA	KW3400	HKW3400	KWC3400	
4-Pole, 660 Vac Maximum, 250 Vdc④ With Interchangeable Trip Unit – Adjustable Thermal, Adjustable Magnetic						
				KW4400F	HKW4400F	KWC4400F
200	160 - 200	KT3200TA⑤	KW4200	HKW4200	KWC4200	
250	200 - 250	KT3250TA⑤	KW4250	HKW4250	KWC4250	
315	250 - 315	KT3315TA⑤	KW4315	HKW4315	KWC4315	
400	315 - 400	KT3400TA⑤	KW4400	HKW4400	KWC4400	

⑦ Ampere rating is established by rating plug. See Table 5-5.

⑧ Trip unit includes protected neutral pole. Use corresponding 3-pole trip unit if protected neutral pole is not required.

⑨ Fully rated neutral pole protection is standard. For 50% rated protection on neutral pole, add suffix E to 4-pole trip unit catalog number.

⑩ Not UL Listed.

⑪ For AC use only.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

5-7. Molded Case Switches

Molded case switch catalog numbers are identified in Table 5-7.

Table 5-7. Type DK and KD Molded Case Switch Catalog Numbers

Continuous Ampere Rating at 40°C	Catalog Numbers		
	2-Pole ^①	3-Pole	4-Pole ^②
	Complete with Standard Line and Load Terminals (shipped separately)		
400	Type DK – High Instantaneous (K) DK2400K ^③ DK3400K ^③		
400	Type KD – High Instantaneous (K) KD2400K ^④ KD3400K ^④ KD4400K ^④		

For UL listed, series tested molded case switch application data, refer to Westinghouse.

5-8. UL Listed DC Circuit Breakers

These UL Listed DC Molded Case Circuit Breakers are for use in the ungrounded battery supply circuits of UPS systems providing continuous, reliable AC power to computer controlled applications such as financial transactions and telecommunications.

These devices are an excellent alternative to molded case switches and fuses because they are easier to install, and require less maintenance.

- Type HKDDC (400A) are thermal magnetic type devices and have interrupting ratings of 35 kA at 500 VDC nominal with 3 poles in series.

DC Circuit Breaker Ratings

Breaker Type		HKDDC*	
Maximum Ampere Rating		400	
Standard	Voltage	Freq.	kA Interrupting Capacity
UL 489	384⑤	DC	35
	500⑥	DC	35

*8 milliseconds time constant.

Accessories

The HKDDC circuit breaker uses the same accessories used on the Series C K-frame circuit breaker.

Frame and Trip Unit

Catalog Number	Trip Unit	Ampere Rating
Series C K Frame		
HKDDC3400F		400
	KT3100T	100
	KT3125T	125
	KT3150T	150
	KT3175T	175
	KT3200T	200
	KT3225T	225
	KT3250T	250
	KT3300T	300
	KT3350T	350
	KT3400T	400

Terminals

Use standard Cu/Al or optional copper only terminals for Series C K-frame breaker as shown in Table 5-8.

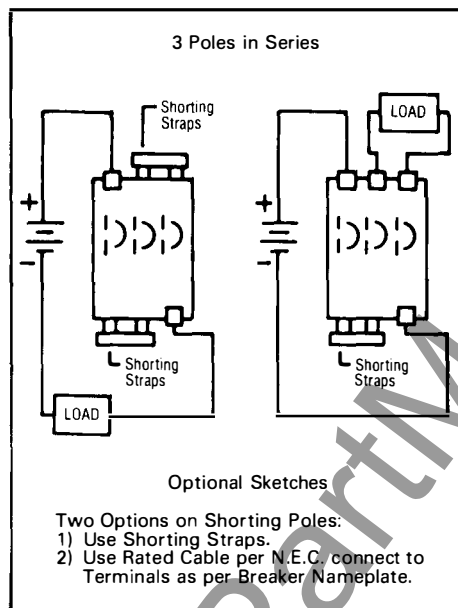


Fig. 1. Series Connection Diagrams.

Order as Follows:

Type HKDDC

1 . . . amp breaker without terminals consisting of:

- 1 - HKDDC3400F frame
- 1 - Trip unit (specify catalog number)
- Accessories as required

Note: Terminals are to be ordered as separate items.

Table 5-8. Line and Load Terminal Catalog Numbers

Max. Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Metric Wire Range mm ²	Catalog Numbers
Standard Cu/Al Pressure Terminals					
225	Aluminum	Cu/Al	3-350/(1)	35-185	TA300K ^⑦
350	Aluminum	Cu/Al	250-500/(1)	120-240	TA350K ^⑦
400	Aluminum	Cu/Al	3/0-250/(2)	95-120	2TA400K – 2 Pole Kit ^⑥ 3TA400K – 3 Pole Kit ^⑥ 4TA400K – 4 Pole Kit ^⑥
Optional Copper and Cu/Al Pressure Type Terminals					
225	Copper	Cu	3-350/(1)	35-185	T300K ^⑦
350	Copper	Cu	250-500/(1)	120-240	T350K ^⑦
400	Copper	Cu	3/0-250/(2)	95-120	2T400K – 2 Pole Kit ^⑥ 3T400K – 3 Pole Kit ^⑥ 4T400K – 4 Pole Kit ^⑥
400	Aluminum	Cu/Al	2/0-250/(2) or 2/0-500/(1)	70-120 or 70-240	2TA401K – 2 Pole Kit ^⑥ 3TA401K – 3 Pole Kit ^⑥ 4TA401K – 4 Pole Kit ^⑥

① Two-pole circuit breaker and molded case switches supplied in 3-pole frames.

② Neutral pole is not protected on 4-pole high instantaneous molded case switches.

③ 240 Vac maximum, 250 Vdc.

④ 600 Vac maximum, 250 Vdc.

5-9. Accessories

Accessory catalog or style numbers are identified in Tables on pages 22 through 28. All mounting hardware is supplied unless otherwise noted.

Termination Accessories

Line and Load Terminals

K-frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. See Table 5-8. Specify if factory installation is required. Note: Terminals TA400K, T400K and TA401K cannot be shipped factory installed on circuit breaker.

Keeper Nut

Keeper nuts (threaded adapters) are used on K-frame circuit breaker terminal conductors to connect bus bar or similar electrical connections requiring a threaded nut application. Keeper nuts, with either Imperial or metric thread sizes, are available in packages of 3.

Thread Type	Thread Size	Line/Load End	Catalog Number Package of 3
Imperial	.375-16	Line Load	KPR3A KPR3B
Metric	M-8	Line Load	KPR3AM KPR3BM

Plug-In Adapter

Plug-in adapters are available for 2-, 3-, and 4-pole circuit breaker configurations. One plug-in adapter is used for each terminal end (line or load); specify quantity when ordering. A one-piece steel mounting plate is available at no charge when ordered with line and load plug-in adapters. (Field installation only.)

Continuous Current Rating (Amperes)	Catalog Numbers		
	2-Pole	3-Pole	4-Pole
400	PAD32	PAD33	PAD34
Mounting Plate	⑥	PMP33	PMP34



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Terminal Adapter

Catalog Number: TAD3 (Pkg. of 3 Adapters)

For replacement applications, the non-threaded terminal adapter compensates for the difference in height between K-frame terminal conductors and existing LB/DA circuit breaker types where existing panel-board connecting straps are used.

Panelboard Connecting Straps

The panelboard connecting straps are available to meet the needs of most standard panelboard applications. Style numbers for mounting brackets for CDP panelboard installations are also included.

Bus Spacing (Inches)	Continuous Current Rating (Amperes)	Pole Connector Type	
		Center	Outside
		Style Number	Style Number
3 1/2	400	4212B78G02	4212B77G01

Mounting Bracket, 2- and 3-Pole

Style Number: 208B264H01

Terminal Cover

The terminal cover is available for line/load terminal areas in 2-, 3-, and 4-pole circuit breakers. Supplied in packages of two.

No. of Poles	Catalog Number (Package of 2)
2, 3	TCK3
4	TCK4

Terminal Shield

The terminal shield is available for line terminal areas in 2-, 3-, and 4-pole circuit breakers and load terminal area in 3-pole circuit breakers. Terminal shields must be ordered in multiples of 10 (for each style number).

Number of Poles	Style Numbers
2, 3	Line
4	314C420G06
	314C420G07
3	Load
	4212B15G01

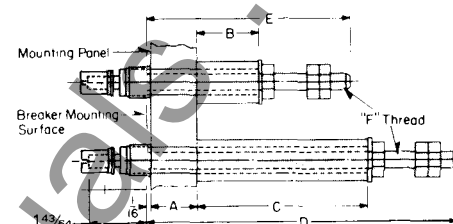
Interphase Barrier

Catalog Number: IPB3 (Pkg. of 2 Barriers)

The interphase barrier is available for extended insulation between circuit breaker poles. Specify quantity when ordering.

Rear Connecting Studs

Each rear connecting stud assembly consists of one stud and one tube. To maintain proper clearances between poles, select alternate long and short stud assemblies for circuit breakers with more than one pole. One assembly is required for line-end and one for load-end of each pole. Each stud style number includes standard tube shown. Connecting studs are only available with English thread sizes.



Stud Length	Stud Style Number	Panel Thickness (Inches) A	Tube Length (Inches)		Standard Tube Style Number	Dimensions (Inches)		
			B	C		D	E	F
400A Short	6642C14G02	3/4 to 1	27/32	....	313C909H17	...	3 2 1/32	3/4-16
400A Short	6642C14G04	1/2 to 3/4	13/32	....	313C909H18	...		
400A Short	6642C14G06	1/4 to 1/2	11 1/32	....	313C909H19	...		
400A Long	6642C14G03	3/4 to 1	....	3 29/32	313C909H20	6 37/64		
400A Long	6642C14G05	1/2 to 3/4	....	4 1/32	313C909H21	...	...	...
400A Long	6642C14G07	1/4 to 1/2	....	4 9/32	313C909H22	...	...	...

Internal Accessories

Alarm (Signal)/Lockout Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Connection Type and Location				Field Installation Kits①	
		18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
		Same Side	Rear ②	Opposite Side			
		Catalog Numbers				Catalog Numbers	
1	Left Right②	A1L3LA A1L3RA	A1L3LB A1L3RB	A1L3LC A1L3RC	A1L3LT A1L3RT③	A1L3LPK A1L3RPK	A1L3LTK A1L3RTK③
2	Left Right②	A2L3LA A2L3RA	A2L3LB A2L3RB	..... .....	A2L3LT A2L3RT③	A2L3LPK A2L3RPK	A2L3LTK A2L3RTK③

Auxiliary Switch

Number of Sets of Contacts (1a and 1b)	Mounting Location (Pole)	Connection Type and Location				Field Installation Kits①	
		18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
		Same Side	Rear ②	Opposite Side			
		Catalog Numbers				Catalog Numbers	
1	Left Right②	A1X3LA A1X3RA	A1X3LB A1X3RB	A1X3LC A1X3RC	A1X3LT A1X3RT③	A1X3PK A1X3PK	A1X3LTK A1X3RTK③
2	Left Right②	A2X3LA A2X3RA	A2X3LB A2X3RB	..... .....	A2X3LT A2X3RT③	A2X3PK A2X3PK	A2X3LTK A2X3RTK③

Auxiliary Switch-Alarm (Signal)/Lockout (ASL) Switch Combination

Each catalog number listed in the following table includes one auxiliary switch and one alarm switch. In an auxiliary switch-ASL switch combination, the auxiliary switch is always mounted on the side of the plug-in module next to the center pole of the circuit breaker.

Number of Sets of Contacts (1a and 1b and 1M and 1B)	Mounting Location (Pole)	Connection Type and Location				Field Installation Kits①	
		18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
		Same Side	Rear ②	Opposite Side			
		Catalog Numbers				Catalog Numbers	
1	Left Right②	AAL3LA AAL3RA	AAL3LB AAL3RB	..... .....	AAL3LT AAL3RT③	AAL3LPK AAL3RPK	AAL3LTK AAL3RTK③

① Listed with Underwriters Laboratories, Inc. for field installation under E64983.

② Standard mounting location – leads exit rear of breaker.

③ For 4-pole circuit breakers, add suffix F to catalog number.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Shunt Trip

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific ac or dc voltages within the voltage range shown. Specific application voltages are shown in Table 4-3. Performance data is shown on applicable circuit breaker accessory nameplates.

Shunt Trip

Voltage Rating
(ac Freq = 50/60 Hz)

Voltage Rating (ac Freq = 50/60 Hz)	Connection Type and Location				Field Installation Kits ^①	
	18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
	Same Side	Rear ^②	Opposite Side			
	Catalog Numbers				Catalog Numbers	
Left Pole Mounting AC/DC Ratings^②						
12-60 Vac or Vdc	SNT3LA05	SNT3LB05	SNT3LC05	SNT3T05	SNT3P05K	SNT3T05K
⑥ 110-240 Vac or 110-125 Vdc	SNT3LA11	SNT3LB11	SNT3LC11	SNT3T11	SNT3P11K	SNT3T11K
380-440 Vac or 220-250 Vdc	SNT3LA14	SNT3LB14	SNT3LC14	SNT3T14	SNT3P14K	SNT3T14K
480-600 Vac	SNT3LA18	SNT3LB18	SNT3LC18	SNT3T18	SNT3P18K	SNT3T18K
Right Pole Mounting AC/DC Ratings^③						
12-60 Vac or Vdc	SNT3RA05	SNT3RB05	SNT3RC05	SNT3T05 ^④	SNT3P05K	SNT3T05K ^④
⑥ 110-240 Vac or 110-125 Vdc	SNT3RA11	SNT3RB11	SNT3RC11	SNT3T11 ^④	SNT3P11K	SNT3T11K ^④
380-440 Vac or 220-250 Vdc	SNT3RA14	SNT3RB14	SNT3RC14	SNT3T14	SNT3P14K	SNT3T14K
480-600 Vac	SNT3RA18	SNT3RB18	SNT3RC18	SNT3T18 ^④	SNT3P18K	SNT3T18K ^④

Low Energy Shunt Trip^⑥

Mounting Positions

Mounting Positions	Connection Type and Location				Field Installation Kits ^①	
	18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
	Same Side	Rear ^②	Opposite Side			
	Catalog Numbers				Catalog Numbers	
Left Pole ^②	LST3LA	LST3LB	LST3LC	LST3LT	LST3LPK	LST3LTK
Right Pole ^③	LST3RA	LST3RB	LST3RC	LST3RT ^④	LST3RPK	LST3RTK ^④

Undervoltage Release Mechanism

Undervoltage Release Mechanism (Handle Reset)

Select handle reset undervoltage release mechanism catalog number for the voltage within the indicated voltage range. Undervoltage release mechanism coils are designed to be applied at specific ac or dc voltages within the voltage range shown. Specific application voltages are shown in Table 4-4. Performance data is shown on applicable circuit breaker accessory nameplates.

Voltage Rating
(ac Freq = 50/60 Hz)

Voltage Rating (ac Freq = 50/60 Hz)	Connection Type and Location				Field Installation Kits①	
	18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
	Same Side	Rear ②	Opposite Side			
	Catalog Numbers						Catalog Numbers
Left Pole Mounting② AC Ratings						
12 Vac	UVH3LA02	UVH3LB02	UVH3LC02	UVH3LT02	UVH3LP02K	UVH3LT02K
24 Vac	UVH3LA03	UVH3LB03	UVH3LC03	UVH3LT03	UVH3LP03K	UVH3LT03K
48-60 Vac	UVH3LA05	UVH3LB05	UVH3LC05	UVH3LT05	UVH3LP05K	UVH3LT05K
110-127 Vac	UVH3LA08	UVH3LB08	UVH3LC08	UVH3LT08	UVH3LP08K	UVH3LT08K
208-240 Vac	UVH3LA11	UVH3LB11	UVH3LC11	UVH3LT11	UVH3LP11K	UVH3LT11K
380-480 Vac	UVH3LA15	UVH3LB15	UVH3LC15	UVH3LT15	UVH3LP15K	UVH3LT15K
525-600 Vac	UVH3LA18	UVH3LB18	UVH3LC18	UVH3LT18	UVH3LP18K	UVH3LT18K
Right Pole Mounting③④ AC Ratings						
12 Vac	UVH3RA02	UVH3RB02	UVH3RC02	UVH3RT02	UVH3RP02K	UVH3RT02K
24 Vac	UVH3RA03	UVH3RB03	UVH3RC03	UVH3RT03	UVH3RP03K	UVH3RT03K
48-60 Vac	UVH3RA05	UVH3RB05	UVH3RC05	UVH3RT05	UVH3RP05K	UVH3RT05K
110-127 Vac	UVH3RA08	UVH3RB08	UVH3RC08	UVH3RT08	UVH3RP08K	UVH3RT08K
208-240 Vac	UVH3RA11	UVH3RB11	UVH3RC11	UVH3RT11	UVH3RP11K	UVH3RT11K
380-480 Vac	UVH3RA15	UVH3RB15	UVH3RC15	UVH3RT15	UVH3RP15K	UVH3RT15K
525-600 Vac	UVH3RA18	UVH3RB18	UVH3RC18	UVH3RT18	UVH3RP18K	UVH3RT18K
Left Pole Mounting② DC Ratings						
12 Vdc	UVH3LA20	UVH3LB20	UVH3LC20	UVH3LT20	UVH3LP20K	UVH3LT20K
24 Vdc	UVH3LA21	UVH3LB21	UVH3LC21	UVH3LT21	UVH3LP21K	UVH3LT21K
48-60 Vdc	UVH3LA23	UVH3LB23	UVH3LC23	UVH3LT23	UVH3LP23K	UVH3LT23K
110-125 Vdc	UVH3LA26	UVH3LB26	UVH3LC26	UVH3LT26	UVH3LP26K	UVH3LT26K
220-250 Vdc	UVH3LA28	UVH3LB28	UVH3LC28	UVH3LT28	UVH3LP28K	UVH3LT28K
Right Pole Mounting③④ DC Ratings						
12 Vdc	UVH3RA20	UVH3RB20	UVH3RC20	UVH3RT20	UVH3RP20K	UVH3RT20K
24 Vdc	UVH3RA21	UVH3RB21	UVH3RC21	UVH3RT21	UVH3RP21K	UVH3RT21K
48-60 Vdc	UVH3RA23	UVH3RB23	UVH3RC23	UVH3RT23	UVH3RP23K	UVH3RT23K
110-125 Vdc	UVH3RA26	UVH3RB26	UVH3RC26	UVH3RT26	UVH3RP26K	UVH3RT26K
220-250 Vac	UVH3RA28	UVH3RB28	UVH3RC28	UVH3RT28	UVH3RP28K	UVH3RT28K

① Listed with Underwriters Laboratories, Inc. for field installation under E64983.

② Standard mounting location – leads exit rear of breaker.

③ For use with KT (thermal-magnetic) trip units only.

④ For 4-pole circuit breakers, add suffix F to catalog number.

⑤ Suitable for use with Class 1 ground fault sensing element.

⑥ Cutoff provisions required in control circuit.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Handle Operating Accessories

Electrical (Solenoid) Operator^①

Operating Voltage	Frequency	Catalog Numbers
		Terminal Block
24 120 240	50/60 Hz	EOP3T03 EOP3T07 EOP3T11
24 120 240	DC	EOP3T03DC EOP3T07DC EOP3T11DC

Type MC Motor Control Handle Mechanism

For use with NEMA 1 Enclosure Catalog Number: SMCU400KD

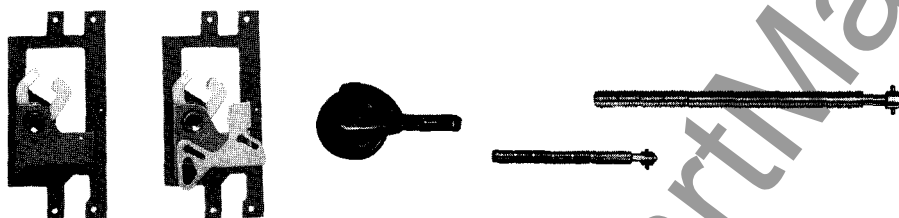
For use with NEMA 12 Enclosure Catalog Number: CMCU400KD

Type SM Safety Handle Mechanism

Right-Hand Mounting Enclosure Cover Hinged on Left. Catalog Number: SM400KR

Left-Hand Mounting Enclosure Cover Hinged on Right. Catalog Number: SM400KL

Vari-Depth Handle Mechanism^②



Mechanisms ^{③ ④}		Handle	Shaft			
Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	NEMA 1, 3R, 12 (With Hardware)	Standard		Long	
Style Number	Style Number	Style Number	Style Number	Panel Depth	Style Number	Panel Depth
5092A62G01	5092A62G02	504C323G03	47A4446G36	5 ⁷ / ₈ -11 ¹ / ₈	47A4446G37	11 ¹ / ₈ -14 ⁷ / ₈

Accessories for Vari-Depth Handle Mechanisms

Special Handles: Meet NEMA 4 requirements. These handles are similar to standard handles, except they include an internal neoprene gasket. Due to gasketing effect between handle and housing, handle will not indicate a tripped position when used with circuit breakers.

Standard Finish
Style Number: 504C323G01

Handle Kits: These kits are for use with NEMA 4, 7, and 9 cast enclosures. The kits include a special operating handle, mounting bolts, and an adapter bushing. (The bushing may be purchased separately.) Kits may be used with standard mechanisms and shafts as required.

NEMA 4 and 9 Kit
Style Number: 314C794G10

NEMA 7 Kit
Style Number: 314C794G09

Adapter Bushing Only
Style Number: 314C794G04

^① UL listed for field installation under E64983.

^② When circuit breaker is used with plug-in adapter kit, order mounting hardware Style No. 673B125G14. If rear connected studs are used, refer to Westinghouse.

^③ Includes hardware.

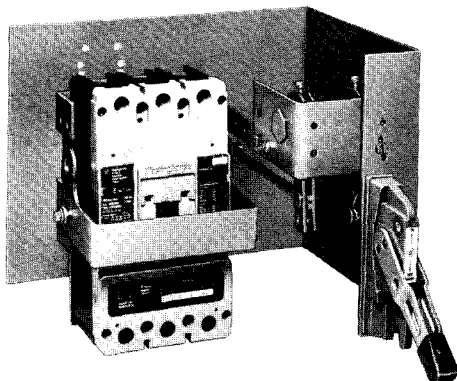
● Outline and drilling plan reference: Drawing 653D270.



Series C Molded Case Circuit Breakers, K-Frame

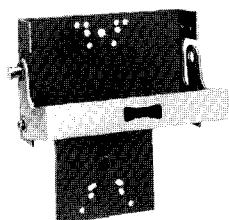
Section 5 – Selection and Ordering Information

Type AMT Vari-Depth/ Vari-Width Flange-Mounted Handle Mechanism

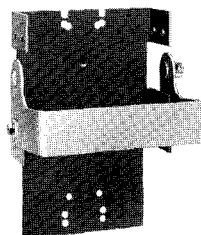


Assembled Type AMT for Below Handle Mounting (Breaker Not Included)

Type AMT Component Parts Backplate and Yoke Assembly

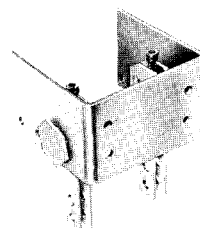


Below Handle Mtg.



Above Handle Mtg.

Flange Mounted Pivot Mechanism



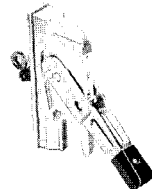
Below Handle Mtg.



Above Handle Mtg.



Rod Brace Assembly



Operating Handle

Ordering Information

1. Order a complete mechanism using Complete Assembly catalog number. Mechanism will be shipped as individual components shown above and listed in table.
2. Order spacer kits or door hardware adapter as required.
3. Individual component parts may be ordered by catalog number.

Accessories for Type AMT Mechanisms

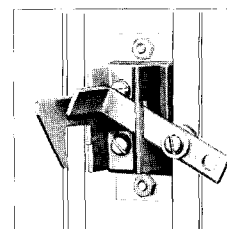
Spacer Kit to Vary Width

Catalog Number: AMTSK1

This spacer kit is for up to 1-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Hardware is not supplied because of dimensional variations. Use standard 1/4-inch x 20 bolts.

Door Hardware Kit

Cat. No. AMTDHA



This adapter kit is for use with door hardware kits DH1R, DH2R, or DH3R for type SM handle mechanisms to permit the use and interlocking of right hand installation of the type AMT handle mechanism (Below-the-Handle or Above-the-Handle type).

Operating Rod and Brace Assemblies.

Enclosure Depth Dimensions in Inches for Operating Rod and Brace Assembly

Short Rod		Long Rod	
Cat. No.	AMTRB1	Cat. No.	AMTRB2
Min.②	Max.	Min.	Max.
6 1/2	14	12 1/2	18

Catalog Numbers

Complete Assembly	Consists of and Shipped as Component Parts Listed Below			
	Backplate and Yoke Assembly	Operating rod and Brace Assembly①	Flange Mounted Pivot Mechanism Assembly ①	External Operating Handle
Above Handle Mounting With Short Rod and Brace AMTKDASV	AMTKD	AMTRB1	AMTPM	AMTOP
Above the Handle Mounting with Long Rod and Brace AMTKDALV	AMTKD	AMTRB2	AMTPM	AMTOP
Below the Handle Mounting with Short Rod and Brace AMTKDBSV	AMTKD-B	AMTRB1	AMTPM-B	AMTOP
Below the Handle Mounting with Long Rod and Brace AMTKDBLV	AMTKD-B	AMTRB2	AMTPM-B	AMTOP

① Width spacer kit not included.

② Width spacer kits cannot be used with short rod at minimum enclosure depth.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Lock and Interlock Accessories

Nonlockable Handle Block

Catalog Number: LKD3

One per circuit breaker

Padlockable Handle Lock Hasp^①

Catalog Number: PLK3

The padlockable handle lock hasp can be mounted on either side of the operating handle. One per circuit breaker; field installation only.

Cylinder Lock

Catalog Number: CLK3L

The cylinder lock is factory installed in the left pole only of the circuit breaker cover. Internal accessories cannot be installed in the same pole as the cylinder lock.

Key Interlock Mounting Kit^①

Key interlock mounting kits are for field installation only. Select mounting kit catalog numbers to match type of lock used. Key interlocks are supplied by customer.

Lock Manufacturer	Lock Type	Bolt Projection in Withdrawn Position	Kit Cat. No.
Superior	B-4003-1	3/8 inch	KYK3
Kirk	F	3/8 inch	
Square D	SF	None	
Federal Pioneer	VF	3/8 inch	
Castell	K or QK	3/8 inch	

Sliding Bar Interlock

Catalog Number: SBK3

The sliding bar interlock is available for mounting between two adjacent 2- or 3-pole circuit breakers with circuit breaker center-line spacing at 5 3/4 inches, and enclosure front panel thickness of 1/8 or 3/16 inches. (For field installation only.)

Walking Beam Interlock

Catalog Number: WBL3

The walking beam interlock is available for mounting between two adjacent circuit breakers spaced 1/4 inch apart and having the same pole configuration. The two circuit breakers must be factory modified to accept the walking beam interlock assembly (suitable for use with either 2- and 3-pole circuit breakers). With properly modified circuit breakers, the walking beam interlock is suitable for field installation under UL File E64983. Order circuit breakers of the type and rating required, modified for field installation of the walking beam interlock.

^① UL listed for field installation under E64983.

Miscellaneous Accessories

Base Mounting Hardware

Base mounting hardware is supplied at no charge when ordered with a circuit breaker. When ordering separately, refer to price list.

Imperial Thread

Number of Poles	Description	Type of Mounting	Style Number
2-, 3-, and 4-pole	0.250-20 x 1.5 inch Pan-Head Steel Screws and Lockwashers	Individual	4218B80G04

Metric Thread

Number of Poles	Description	Type of Mounting	Style Number
2-, 3-, and 4-pole	M6 – 0.7 x 38mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G14

Handle Extension

Catalog Number: HEX3

Seltronic Portable Test Kit

Catalog Number: STK2

For verification of performance of Seltronic trip units while in service.

Modifications

Special Calibration

For special thermal, magnetic, or frequency calibration, order by description.

Moisture-Fungus Treatment

Order by description; refer to price list.

Marine Applications

When Listing Mark for marine applications under UL489 is required, specify requirement when ordering. Non-aluminum terminals must be used. Refer to price list.







Series C Molded Case Circuit Breakers, K-Frame
Section 5 – Selection and Ordering Information

Door Hardware

Door hardware listed in this section may be used with Types SM and AMT handle mechanisms.

Three choices of door hardware and an auxiliary handle are offered to provide the best latching scheme for individual needs. The door hardware is designed with a provision for padlocking, and a coin-proof slot that requires the use of a tool to open the door.

Select desired hardware below. Additional latches can be ordered from accessories section if desired.

Hardware Item	Description and Catalog Numbers
	With sliding latches for smaller panels up to approx. 30" high. Catalog Numbers Right Hand: DH1R Left Hand: DH1L
	With 2 roller latches for intermediate panels up to approx. 40" high. Catalog Numbers Right Hand: DH2R Left Hand: DH2L
	With 3 roller latches for larger panels, approx. 40" and higher. Catalog Numbers Right Hand: DH3R Left Hand: DH3L
	Auxiliary handle for larger panels Catalog Numbers Right Hand: DH4R Left Hand: DH4L

Note:
Right hand enclosure cover hinged on left,
Left hand enclosure cover hinged on right.

Accessories

Dress Nameplates: Required to meet automotive specifications. Mounts from inside enclosure and covers operating mechanism mounting bolts; makes mechanism non-removable when enclosure door is closed.

Style Number: 373D260G05



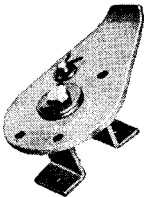
Electrical Interlock Kit:

Provides 1 N. C. and 1 N. O. contacts (SPDT switch) for use with auxiliary circuits. Mounts to end of mechanism housing as shown.

Style Number: 622B747G01



Auxiliary Latch Kits: Provide an additional latch for use with applications where two point latching may not be adequate.



Sliding Latch



Rolling Latch

For Door Hardware Using Sliding Latches
Right or Left Hand Mtg.: Style No. 656D669G01

For Door Hardware Using Roller Latches
Right Hand Mtg.: Style No. 370D801G04
Left Hand Mtg.: Style No. 370D802G04

Door Operated Interlock Defeater Kit for Type SM Mechanisms

Required when door hardware is not used, operates as door closes. Additional method of securing door such as screw latch, also required (supplied by box manufacturer).

Style Number: 623B214G02



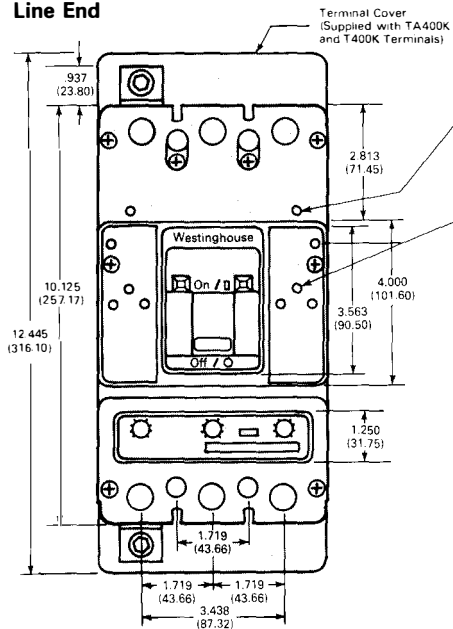
Series C Molded Case Circuit Breakers, K-Frame

Section 6 – Dimensional Data

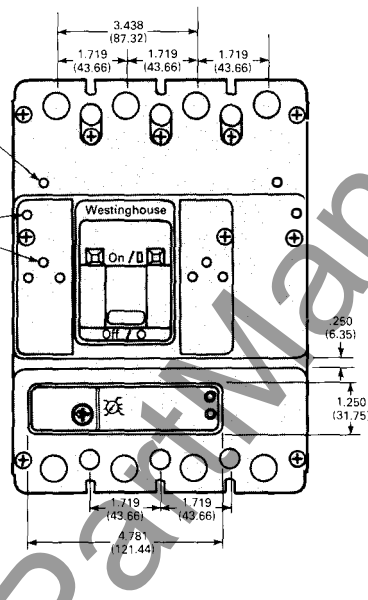
Dimensions in Inches and (Millimeters)

Not to be used for construction purposes unless approved.

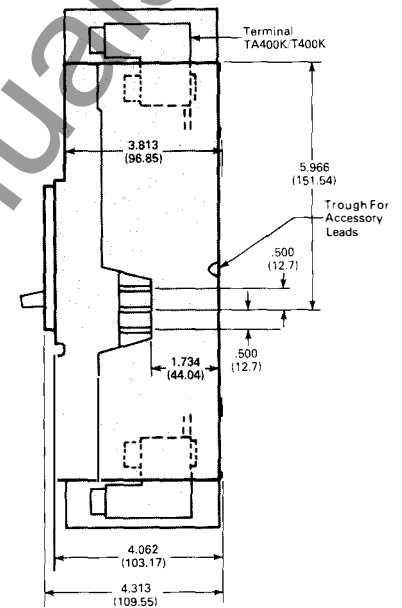
Three Pole Breaker
Line End



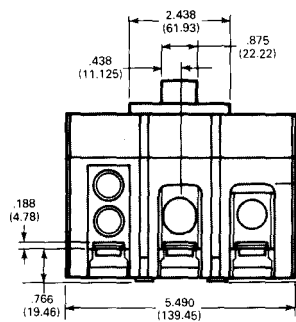
Four Pole Breaker
Line End



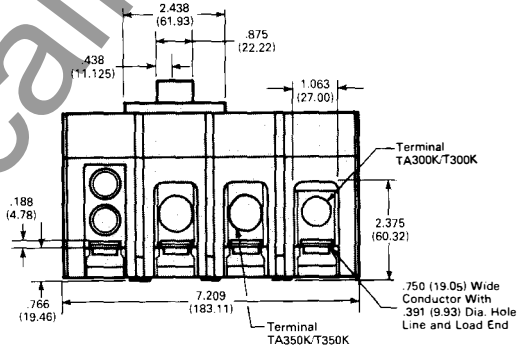
Side View



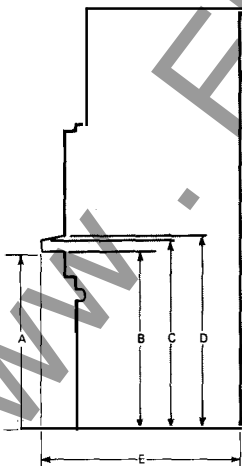
Line/Load End



Line/Load End



Circuit Breaker Handle Travel Distances and Handle Force



Circuit Breaker Status	Dimension					Handle Force ^①
	A	B	C	D	E	
On	5.39 (136.90)	5.26 (133.60)	5.69 (144.53)	5.64 (143.26)	4.77 (121.16)	30 Pounds (13.61 Kilograms)
Tripped	4.69 (119.13)	4.65 (118.11)	5.00 (127.00)	5.04 (128.02)	4.90 (124.46)	—
Off	4.18 (106.17)	4.22 (107.18)	4.49 (114.05)	4.62 (117.35)	4.95 (125.73)	25 Pounds (11.34 Kilograms)
Reset	4.06 (103.12)	4.12 (104.65)	4.37 (111.00)	4.51 (114.55)	4.95 (125.73)	35 Pounds (15.87 Kilograms)

① All handle forces measured approximately 0.125 (3.17) from top of handle.

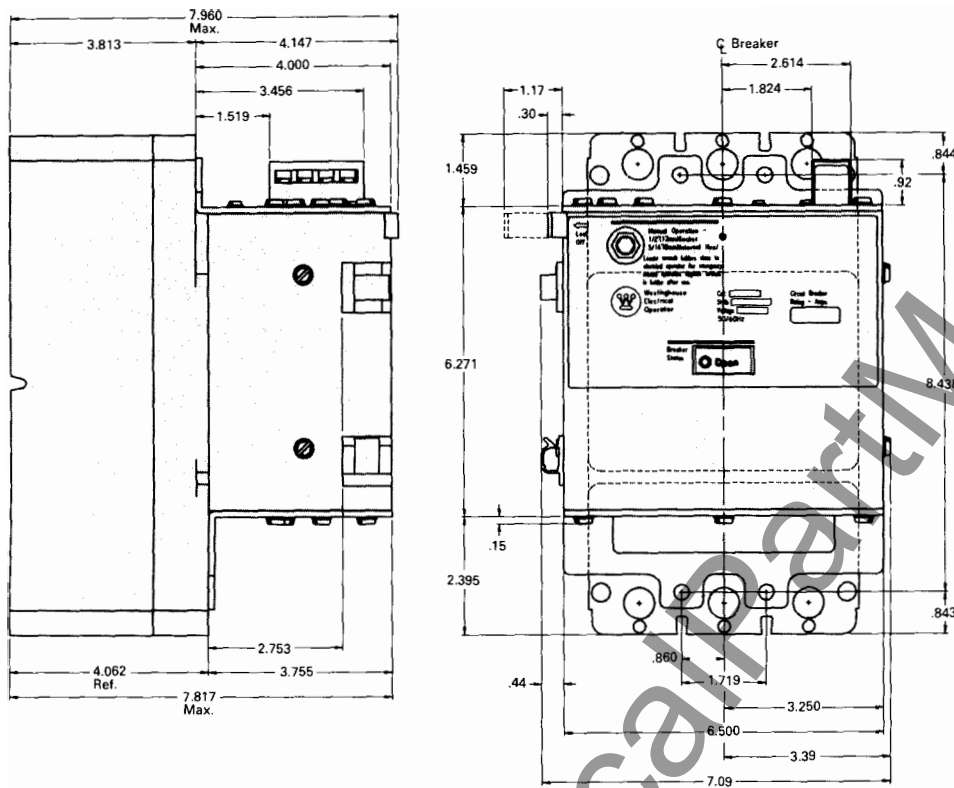
Series C Molded Case Circuit Breakers, K-Frame

Section 6 – Dimensional Data

Dimensions in Inches and (Millimeters)

Not to be used for construction purposes unless approved.

Electrical (Solenoid) Operator





Series C Molded Case Circuit Breakers, K-Frame

Section 7 – Guide Specifications

Typical Specifications For Series C Molded Case Circuit Breakers

Electrical circuits shall be protected by Series C Molded Case Circuit Breakers as manufactured by Westinghouse Electric Corporation.

Each pole of the 2- and 3-pole circuit breakers shall provide complete circuit overcurrent protection by having inverse time and instantaneous tripping characteristics and, where applicable, be current limiting.

The circuit breakers shall be operated by a toggle type handle and shall have an independent a quick-make, quick-break, over-center switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuit currents. Tripping due to overload or short circuits shall be clearly indicated by the position of the handle. The ON and OFF positions shall be clearly marked on the cover of the circuit breaker along with the international symbols I for ON and 0 for OFF on the handle providing positive indication of the circuit breaker contact position. Additionally, a color-coded indication of the circuit breaker contact position shall be provided: red for ON, green for OFF, and white for tripped. An easily accessible Push-to-Trip button for mechanically exercising the trip unit shall be provided on the cover of each circuit breaker. All poles of a multi-pole circuit breaker shall be so constructed as to ensure simultaneous open, close, and trip operations.

Circuit breakers shall be completely enclosed in a high strength glass-polyester case.

Non-interchangeable trip circuit breakers shall be factory sealed; interchangeable trip circuit breakers shall have the trip unit sealed to prevent tampering. Ampere ratings shall be clearly visible from the front of the circuit breaker. Contacts shall be non-welding silver alloy. Arc extinction must be accomplished by means of DE-ION® arc chutes, consisting of metal grids mounted in an insulating support.

The minimum interrupting ratings of the circuit breakers shall be at least equal to the available short circuit current at the line terminals. Where applicable, circuit breakers

shall be UL listed for series tested application.

Circuit breakers in 150A and 250A frame sizes shall be equipped with thermal-magnetic trip units. Circuit breakers in 400A, 600A, and 630A frame sizes shall be designed to accept either thermal-magnetic or electronic interchangeable trip units. Circuit breakers in 800A, 1200A, 1250A, 1600A and 2000A frame sizes shall be equipped with electronic trip units. The electronic trip units shall be insensitive to changes in ambient temperature within the normal operating temperature range of the circuit breaker.

Circuit breakers shall be listed with Underwriters Laboratories, Inc. under standard UL489, CSA standard C22.2 No. 5.1, conform to the applicable requirements of NEMA Standards Publication AB1-1986, meet the appropriate classifications of Federal Specifications W-C-375b, and/or comply with the requirements of International Electrotechnical Commission Standard IEC 947-2, or IEC 157-1.

Circuit breaker ratings and modifications shall be indicated on the drawings.

Molded case circuit breakers shall be of the inverse time and instantaneous trip type as provided by thermal-magnetic or electronic trip elements with either standard interrupting, high interrupting, or current limiting characteristics as shown in Section 1 of this frame book. These circuit breakers shall be listed per UL489.

Molded case circuit interrupters (motor circuit protectors) shall be of the instantaneous (magnetic) only type, providing instantaneous short circuit protection by means of a front-adjustable trip unit. Instantaneous-only circuit interrupters shall be component recognized per UL489.

Molded case switches shall be of the same construction as the related listed circuit breaker and equipped with a factory sealed, nonadjustable, high instantaneous-only short circuit protection.

Molded case switches shall have no overload or low-level fault protection provided and shall be marked with a maximum with-

stand rating denoting the type and level of upstream overcurrent protection required. Molded case switches shall be listed per UL1087.

Internally mounted accessories including alarm (signal)/lockout switches, auxiliary switches, shunt trips, and undervoltage release mechanisms shall be of the plug-in type and shall be listed for field installation in circuit breakers which are not factory sealed.

Electrical operators for circuit breakers of the 400A frame size and below shall be of the solenoid type with maximum 5-cycle closing characteristics. Electrical operators for circuit breaker frame sizes 600A through 2000A shall be of the motor driven type. All electrical operators shall be cover mounted. All electrical operators shall be listed for field installation per UL489.

Electrical characteristics of accessories shall be as indicated on the drawings.

Circuit breakers in the 150A frame size shall be supplied in 1-, 2-, 3-, and 4-pole models, as specified on the drawings. Circuit breakers in frame sizes 250A through 1200A shall be supplied in 2-, 3-, or 4-pole models, while the 1600A and 2000A circuit breakers are available in 3- and 4-pole models, as specified on the drawings.

Accessory wiring shall be brought out through the side or rear of the circuit breaker, or be connected to a terminal block mounted on the side of the circuit breaker, as specified. The ability to route accessory wiring to the opposite side of the circuit breaker through a trough in the base shall be provided.

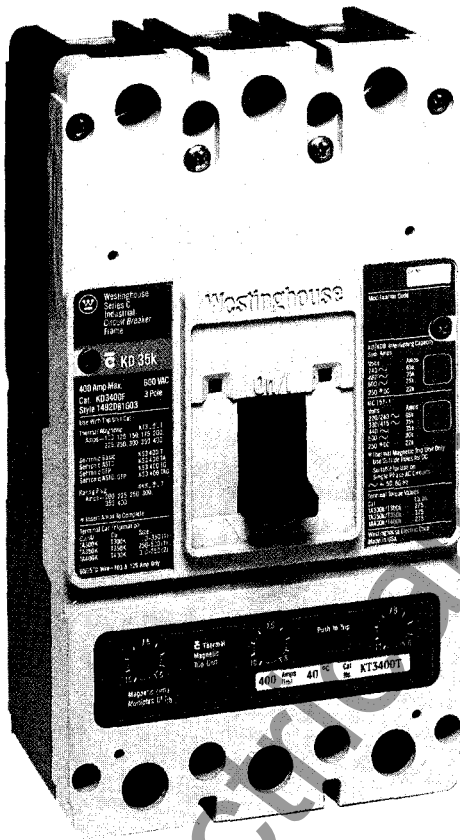
Note: For 1600 and 2000 ampere frames, accessory wiring is available on right side only. No wiring trough is provided.

Circuit breakers shall be provided with uniformly designed nameplates to clearly indicate the type, rating, listing/recognition/certification marks, accessory details, and other information defined in UL489.

All terminals shall comply with UL486A and B and CSA C22.2 No. 65M. Torque markings shall be provided per UL489.



SERIES C[™] K-Frame Molded Case Circuit Breakers



D Model with Thermal Magnetic Trip Unit



W Model with Seltronic™ Trip Unit

Rec'd
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Series C Molded Case Circuit Breakers, K-Frame Section 1 – Introduction

Series C Circuit Breakers

The new Series C line of molded case circuit breakers represents a significant step forward in circuit protection technology. It incorporates, in frame ratings 150A to 1600A, interrupting capacities as high as 100 kA at 480 Vac (200 kA at 240 Vac) in physical sizes normally associated with standard interrupting capacity breakers. Series C circuit breakers, in most frame sizes, are physically and electrically interchangeable with the industrial line of molded case circuit breakers they replace.

There are two branches to the Series C line. One complies with applicable UL, NEMA, and CSA standards, as well as, being assigned P1 interrupting ratings under IEC 157-1. The second complies with IEC 157-1 and is assigned both P1 and P2 interrupting ratings.

The branch which complies with applicable UL/NEMA/CSA standards is composed of six frame ratings: 150A, 250A, 400A, 600A, 1200A, and 1600A. The six frame ratings of the IEC branch of the Series C line are 160A, 250A, 400A, 630A, 1250A, and 1600A and are physically interchangeable with the corresponding UL/NEMA/CSA frames.

Series C circuit breakers in the 150A through 630A frame sizes are available with thermal-magnetic trip units. Electronic trip units can be supplied in the 250A through 1600A frame sizes. The electronic trip units for the 250A, 400A, 600A, and 630A frames are field-interchangeable with the thermal-magnetic trip unit in the same frame size.

The 150A and 160A frame sizes of the Series C are available in 1-, 2-, 3-, and 4-pole models, while the remainder of the line is available in 2-, 3-, and 4-pole models.

A complete line of external as well as plug-in internal accessories is available for use with Series C circuit breakers.

Because of its unique stationary conductor configuration, the 100 kA (at 480 Vac) interrupting capacity model of each Series C frame size is inherently current limiting. These models can, therefore, be used in series tested applications to protect specified, lower interrupting capacity downstream circuit breakers. This current limiting action is achieved without the use of fuse-type current limiters or extra sets of contacts. The 65 kA (at 480 Vac) interrupting capacity model of each Series C circuit breaker provides for simple, fully rated application on the 480 Vac secondary of unit substations up to 2500 kVA.

Series C Literature

A new format has been designed for the Series C circuit breaker literature. The literature is designed to provide each user with the needed information presented in the most usable form. The literature includes:

- Frame Books – provide basic descriptions, technical data, dimensional data, and ordering information for each Series C circuit breaker and associated accessories
- Instruction Leaflets – provide installation, inspection, operation, and adjustment information for Series C circuit breakers and accessories
- Technical Application Guide – provides basic definitions and standards, code requirements, and technical application information for Series C circuit breakers
- Time/Current Curves Packets – provide full-size time/current characteristic curves for each Series C circuit breaker
- Maintenance and Troubleshooting Guide – provides maintenance procedures and troubleshooting information for Series C circuit breakers and accessories.

Note: This catalog is published solely for *information* purposes and should not be considered all inclusive. If further information is required, Westinghouse Electric Corporation should be consulted.

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Series C Molded Case Circuit Breakers, K-Frame

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Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction



Figure 1-1. K-Frame Series C Circuit Breaker with Thermal-Magnetic Trip Unit

1-1. General Information

K-Frame Circuit Breaker

The K-frame Series C circuit breaker using interchangeable thermal-magnetic or electronic trip units (Figure 1-1) is available in two basic models: the D model and the W model. The D model (rated from 100A to 400A) is designed to comply with Underwriters Laboratories, Inc. Standard UL489, Canadian Standards Association Standard C22.2 No. 5, and International Electrotechnical Commission Recommendations IEC 157-1 (P1). The W model (rated from 160A to 400A) complies with International Electrotechnical Commission Recommendations IEC 157-1 (P1 and P2). Instantaneous (magnetic) only circuit interrupters, molded case switches (circuit interrupters), and mining duty circuit breakers are also available.

For most applications, the K-frame circuit breaker is designed to physically and electrically replace the LB circuit breaker family (DA, JA, KA, HKA, LB, LBB, and HLB circuit breakers). When replacing the LB family, additional consideration must be given where external handle operating accessories are used. Also, the change in the line/load terminal heights may require modified mounting/connection arrangements.

An innovative design of internal components allows applications to be extended to higher interrupting rating levels. In addition, the higher interrupting and current limiting performance capabilities of the K-frame circuit breaker allow it to be applied in situations that previously required physically larger circuit breakers. Each circuit breaker nameplate is color coded to provide easy identification of type and interrupting capacity rating.

Table 1-1. K-Frame Circuit Breaker Interrupting Capacity Ratings

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles①	Interrupting Capacity (Symmetrical Amperes)			
		Volts ac (50/60 Hz)			Volts dc
		240	480	600	
					250②③
DK	2,3	65,000	.....	.....	10,000
KDB	2,3,4	65,000	35,000	25,000	10,000
KD	2,3,4	65,000	35,000	25,000	10,000
HKD	2,3,4	100,000	65,000	35,000	22,000
KDC	2,3,4	200,000	100,000	50,000	22,000

IEC 157-1 Interrupting Capacity Ratings (P1)^④

Circuit Breaker Type	Number of Poles①	Interrupting Capacity (Symmetrical Amperes)					
		Volts ac (50/60 Hz)					Volts dc
		220/240	380/415	440	500	660	
KD	2,3,4	65,000	35,000	35,000	30,000	.....	10,000
HKD	2,3,4	100,000	65,000	65,000	42,000	.....	22,000
KDC	2,3,4	200,000	100,000	100,000	65,000	.....	22,000
KW	2,3,4	65,000	35,000	35,000	30,000	20,000	10,000
HKW	2,3,4	100,000	65,000	65,000	42,000	25,000	22,000
KWC	2,3,4	200,000	100,000	100,000	65,000	35,000	22,000

Table 1-2. Standard Trip Unit Types for K-Frame Circuit Breakers

Type of Trip Unit	Magnetic	Thermal	Circuit Breaker Type
Thermal-Magnetic	Adjustable	Fixed	DK, KDB, KD, HKD, KDC
Instantaneous Only	Adjustable	Adjustable	KW, HKW, KWC
High Instantaneous Molded Case Switch	Adjustable	None	HMCP ^⑥
	Fixed	None	DK-K, KD-K, HKD-K, KDC-K

Table 1-3. Standard Thermal-Magnetic Trip Unit Ratings

Model D Circuit Breaker		Model W Circuit Breaker	
Continuous Current Rating (A)	Adjustable Magnetic Trip Setting (A)	Adjustable Continuous Current Setting (A)	Adjustable Magnetic Trip Setting (A)
100	500 - 1000	.....	.....
125	625 - 1250	.....	.....
150	750 - 1500	.....	.....
175	875 - 1750		
200	1000 - 2000	160 - 200	1000 - 2000
225	1125 - 2250		
250	1250 - 2500	200 - 250	1250 - 2500
300	1500 - 3000	250 - 315	1575 - 3150
350	1750 - 3500	315 - 400	2000 - 4000
400	2000 - 4000		

Table 1-4. Optional Seltronic (Electronic) Trip Unit Types

Trip Unit Functions		KS Trip Unit Type			
		T	TA	TG	TAG
Long Time ^⑥	Fixed Ampere Rating with Fixed Long Delay	X	X	X	X
	Adjustable Ampere Setting with Fixed Long Delay	X	X	X	X
Short Time	Adjustable Short Time Pick-up with Short Time Delay I ² t Ramp	X	..	X	..
	Adjustable Short Time Delay with Adjustable Short Time Pick-up,	..	X	..	X
	or Adjustable Instantaneous Pick-up ^⑦	..	X	..	X
Instantaneous	Fixed Instantaneous (Override) ^⑧	X	X	X	X
Ground Fault	Adjustable Ground Fault Pick-up with Adjustable Ground Fault Time Delay	..	..	X	X

① Protected neutral pole in 4-pole circuit breaker available only with optional Seltronic trip units.

② 2-pole circuit breaker or two poles of 3-pole circuit breaker.

③ L/R = 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.

④ Interrupting ratings are subject to final test verification. Refer to Westinghouse for P2 ratings.

⑤ Refer to Frame Book 29-111

⑥ See Table 5-5, page 21 for listing of available rating plugs.

⑦ Using trip unit with adjustable short time delay (TA,TAG) instantaneous pick-up is achieved when the lowest time delay setting (I) is selected.

⑧ Override setting fixed at frame withstand rating.



Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction

The K-frame circuit breaker is available in 2-, 3-, and 4-pole configurations to satisfy application requirements in all types of electrical systems.^① A modular accessory concept permits wide flexibility in accessory installation.

This frame book provides basic information about the circuit breaker, interchangeable trip units, and molded case switch models of the K-frame circuit breaker. Separate publications cover instantaneous-only circuit interrupters (motor circuit protectors) and mining duty circuit breakers.

1-2. K-Frame Circuit Breaker Types

K-Frame circuit breakers are available in several types. Types DK, KDB, KD, HKD, and KDC are listed in accordance with Underwriters Laboratories, Inc. Standard UL489 and Canadian Standards Association Standard C22.2 No. 5.^② Types KD, HKD, and KDC comply with International Electrotechnical Commission Recommendations IEC 157-1 (P1). Types KW, HKW, and KWC comply with International Electrotechnical Commission Standard IEC 157-1 (P1 and P2). Table 1-1 gives the interrupting capacity ratings for the different circuit breaker types.

Each circuit breaker rating is achieved by specific design features incorporated into the circuit breaker frame and the type of trip unit selected. K-frame trip units are interchangeable and do not affect the circuit breaker interrupting rating.^③

Fixed Thermal-Adjustable Magnetic and Adjustable Thermal-Adjustable Magnetic Trip Units

K-frame circuit breakers available with either a fixed thermal-adjustable magnetic or an adjustable thermal-adjustable magnetic trip unit provide thermal (inverse time) and magnetic (instantaneous) automatic tripping. Available ratings and adjustments are shown in Tables 1-2 and 1-3. The trip units are also equipped with a manual Push-to-Trip mechanism.

Seltronic[™] (Electronic) Trip Unit

The Seltronic trip unit includes current sensing circuits that provide an inverse time delay tripping action for overload conditions and either short delay or instantaneous tripping for protection against short circuit conditions. Low level ground fault protection with an adjustable time delay is supplied when appropriate trip types are selected. (See Table 1-4.) The trip units are also equipped with a manual Push-to-Trip mechanism.

Instantaneous-Only Trip Unit (Motor Circuit Protector)

The instantaneous-only trip unit provides short circuit protection only. The 400A instantaneous-only motor circuit protector is covered in Frame Book 29-111.

Molded Case Switch (Circuit Interrupter)

Molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous-automatic type. Molded case switches are listed in accordance with Underwriters Laboratories, Inc. Standard UL1087.^②

The high instantaneous-automatic molded case switch is equipped with a nonadjustable, instantaneous trip mechanism that protects the switch if it is subjected to a fault current above its withstand rating. The switch does not provide low level fault or inverse time overload protection and must be used with a properly rated overcurrent protective device.

All molded case switches are equipped with an integral trip bar and will accept field installable plug-in accessories. A manual Push-to-Trip mechanism is not provided.

1-3. Advantages

The Series C circuit breaker line represents an entirely new approach to circuit breaker design. The K-frame circuit breaker uses new design features that improve performance and extend application capabilities while allowing physical interchangeability with the existing LB circuit breaker family.

Figure 1-2 highlights advantages of the K-frame circuit breaker over previously available circuit breakers.

a. Performance

The K-frame circuit breaker provides higher interrupting capacities and improved current limiting capabilities compared to previous standard-line circuit breakers. The enhanced performance characteristics extend K-frame circuit breaker use to applications that previously required physically larger circuit breakers.

b. Designs

Thermal-magnetic and electronic trip designs are available. The standard D model circuit breakers have fixed thermal and adjustable magnetic settings to provide application consistency. The W model circuit breakers have adjustable thermal and adjustable magnetic settings to provide application flexibility where local codes and standards permit the use of adjustable thermal circuit breakers.

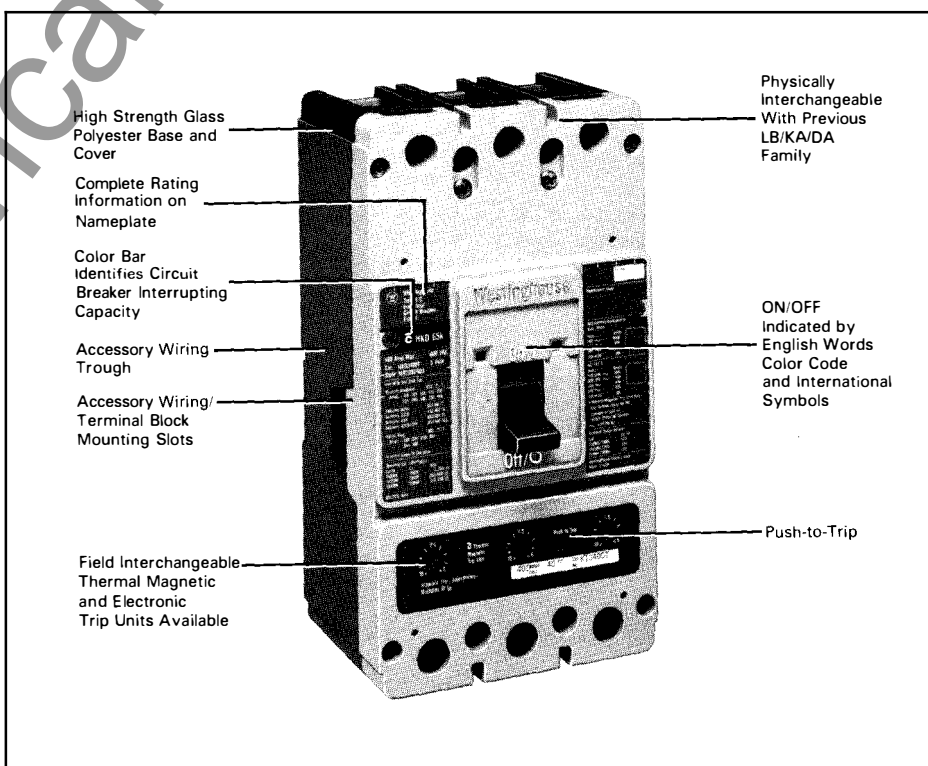


Figure 1-2. K-Frame Circuit Breaker Features

^① Two pole circuit breaker supplied in three pole frame.

^② Some listings pending; refer to Westinghouse.

^③ Types DK and KDB circuit breaker trip units are non-interchangeable.

Series C Molded Case Circuit Breakers, K-Frame

Section 1 – Introduction

c. Construction Details

The 2-, 3-, and 4-pole configurations satisfy application requirements for all types of electrical systems. The 4-pole configuration provides 3-phase, 4-wire neutral line circuit breaking where required by local codes and applications.

The frame size allows a high degree of physical interchangeability with the existing LB circuit breaker family. Note: When replacing existing circuit breakers, assure the correctness of the application by comparing existing equipment ratings and system requirements with K-frame performance characteristics.

Circuit breaker mounting hardware is available in Imperial or metric thread sizes to accommodate user needs.

A Push-to-Trip button located in each trip unit provides a local means of manually exercising the trip mechanism. Molded case switches do not have Push-to-Trip provisions.

High strength glass-polyester base and cover have excellent dielectric qualities and reduce the need for fungus proofing. Cover design reduces the possibility of accidental contact with live terminations.

Operating mechanism design provides increased air gap between stationary and moving contacts when circuit breaker is in tripped position. The increased air gap provides greater arc impedance during contact opening, which allows higher interrupting capacity ratings to be obtained in compact frame sizes.

Variations in contact assembly designs allow different interrupting capacities in one physical frame size.

The one piece molded crossbar assembly has high dielectric qualities and ensures simultaneous operation of all moving contacts.

Positive operating mechanism ensures that the operating handle remains in the ON position when the contacts are closed. Handle operating force is compatible with circuit breakers in the LB family.

d. Internal Accessories

Modular plug-in accessory design simplifies factory installation for improved customer service and facilitates field installation where local codes and standards permit.

The internally mounted accessories include auxiliary switch, alarm (signal)/lockout switch, shunt trip, and undervoltage release mechanism. These accessories are de-

signed to meet most ac and dc rating requirements.

Internal accessory wiring options provide wire routing versatility. The standard wiring configuration is pigtail leads exiting the rear of the base directly behind the accessory. Optional configurations include a terminal block mounted on the same side of the base as the accessory, leads exiting the side of the base where the accessory is mounted, and leads exiting the rear of the base on the side opposite the accessory.

e. External Accessories

Cover design permits field installation of key interlocks, padlockable handle lock hasp, and electrical or manual handle operators without modifying the cover.

A factory-installed cylinder lock can be mounted in the cover providing a simplified system for locking the trip bar in the tripped position.

Plug-in adapters provide convenience for front-removable switchboard construction.

All K-frame models can be operated by Vari-Depth, SM, MC, and AMT handle mechanisms. These are different from existing LB family handle mechanisms. A new rotary handle mechanism is also available.

f. Markings

The Series C circuit breaker line features a new nameplate format which provides easy identification of circuit breaker type, rating, and operating status.

Nameplates are color coded for immediate rating identification. A color-coded bar identifies the type and the interrupting rating (kA) at the most common application voltage. The color codes are as follows:

Grey:	KDB/KD/KW
Black:	HKD/HKW
Red:	KDC/KWC
White:	DK.

Consolidated nameplate design provides complete identification and rating information in an easily readable, understandable format.

Circuit breaker status is clearly indicated by circuit breaker handle position and color-coded flags (red for ON, green for OFF, and white for trip). The on and off positions are identified in English words (ON and OFF) and international symbols (1 and 0).

g. Equipment Literature

A complete line of technical literature produced in several languages provides specification, ordering, application, and

instructional information. This makes the circuit breaker easy to specify, purchase, and apply, saving time and minimizing application errors.

Dimensional data is in Imperial and metric units to satisfy user requirements.

h. Standards Compliance

The Series C circuit breaker is designed to comply with the following standards:

- Australian Standard AS 2184, Moulded Case Circuit Breakers
- British Standards Institution Standard BS 4752: Part 1, Switchgear and Control Gear, Part 1: Circuit Breakers
- Canadian Standards Association Standard C22.2 No. 5, Service Entrance and Branch Circuit Breakers
- International Electrotechnical Commission Recommendations IEC 157-1 (P1 and P2), Low-Voltage Distribution Switchgear, Part 1: Circuit Breakers
- Japanese Industrial Specification 8370, Molded Case Circuit Breakers
- National Electrical Manufacturers Association Standards Publication No. AB1 - 1975, Molded Case Circuit Breakers.
- South African Bureau of Standards Standard SABS 156, Standard Specification for Moulded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Underwriters Laboratories, Inc. Standard UL489, Molded Case Circuit Breakers and Circuit Breaker Enclosures, Including Marine Circuit Breakers
- Union Technique de l'Electricite Standard NF C 63-120, Low Voltage Switchgear and Control Gear Circuit Breaker Requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, Low Voltage Switch Gear and Control Gear, Circuit Breakers.

Compliance with these standards satisfies most local and international codes, assuring user acceptability and simplifying application.

i. Federal Specification Classifications

Circuit breaker types KD, HKD, and KDC equal or exceed W-C-375b requirements for class 23(a).



Series C Molded Case Circuit Breakers, K-Frame

Section 2 – Applications

2-1. Introduction

Application flexibility of the K-frame circuit breaker is enhanced by the higher interrupting ratings and current limiting characteristics designed into the Series C line.

2-2. Typical Applications (See Figure 2-1)

Switchboard Application

The KD/KW, HKD/HKW, and KDC/KWC circuit breakers are used in distribution systems to provide feeder and branch circuit protection.

Panelboard Applications

The K-frame circuit breaker is used in panelboard applications as both a main and a branch circuit protection device.

Busway Plug-In Application

The K-frame circuit breaker can be applied in busway plug-in units to provide feeder or branch circuit protection. Size compatibility between the LB family and the K-frame circuit breaker facilitates replacement. However, when the existing busway plug-in unit is used, handle location and line connector modifications are required.

Individual Enclosure Application

The K-frame circuit breaker can be applied in individual enclosures to meet specific installation requirements.

Machine Tool Control Panel Application

In machine tool applications, K-frame circuit breakers and molded case switches can be applied to meet individual equipment requirements.

Commercial/Non-Residential Applications

In main circuit breaker load centers and as a main disconnect device for gangable group metering applications, the K-frame circuit breaker provides high interrupting capacity and substantially reduced let-through fault currents. The Type DK 240 Vac circuit breaker is suitable for commercial and non-residential service applications.

Special Applications

In mining, motor circuit protection, and other applications, special versions of the K-frame circuit breaker provide safe equipment control and protection. For additional information, see separate frame books or refer to Westinghouse.

For all 3-phase Delta, grounded B-phase applications, reduced interrupting ratings will apply; refer to Westinghouse.

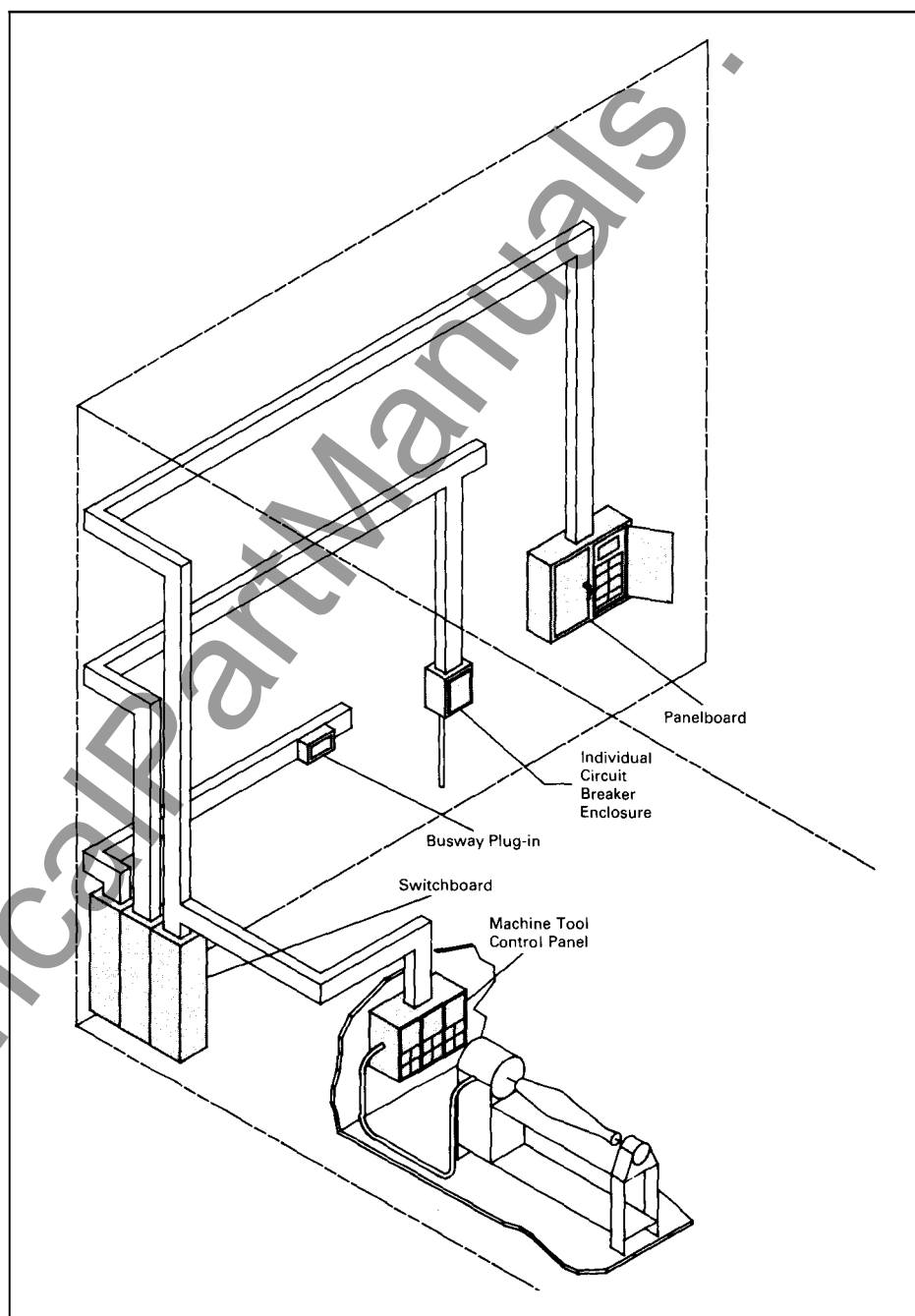


Figure 2-1. K-Frame Circuit Breaker Typical Applications



Series C Molded Case Circuit Breakers, K-Frame

Section 3 – Description

3-1. Physical Description

The K-frame circuit breaker consists of the following components mounted inside a molded glass-polyester case (Figure 3-1):

- Operating mechanism
- Arc extinguishers
- Stationary contact assemblies
- Moving contact assemblies
- Trip unit.

For a generic functional and component description of circuit breaker components other than the trip unit, refer to Frame Book 29-101.

3-2. Trip Unit Description and Operation

General Description

All interchangeable trip units are of the self-contained, factory-sealed type using either thermal-magnetic or electronic sensing elements. All interrupting ratings of the K-frame family of interchangeable trip circuit breakers will accept either a thermal-magnetic or electronic trip unit. The thermal-magnetic type contains a fixed or optional adjustable thermal (bi-metal) element for overload protection and an adjustable magnetic element for short circuit protection. A manual Push-to-Trip button is included for exercising the trip unit.

The Seltronic type (Figure 3-2) contains current sensors, printed circuit boards, and an integral low energy shunt trip. The field installed rating plug determines the continuous ampere rating. A manual Push-to-Trip button which is an integral part of the rating plug, is included for exercising the trip unit. Adjustments and options are available to fine tune the time-current tripping characteristics.

Trip Operation

The trip operation provides contact opening when the trip mechanism is actuated. Depending on the type of trip unit installed, the trip mechanism can be automatically actuated by the thermal trip element, magnetically actuated; or electronically actuated. The trip mechanism can also be actuated by the Push-to-Trip button, the cylinder lock, the shunt trip, or the undervoltage release mechanism accessories. In the electronic type, when the low energy shunt trip operates, the plunger moves a hinged "door" to rotate the trip bar (Figure 3-3). As the trip bar rotates in both the thermal-magnetic and electronic trip units, the latch releases and the handle arm springs pull the cradle against the handle arm and rotate the circuit breaker molded crossbar to open the contacts.

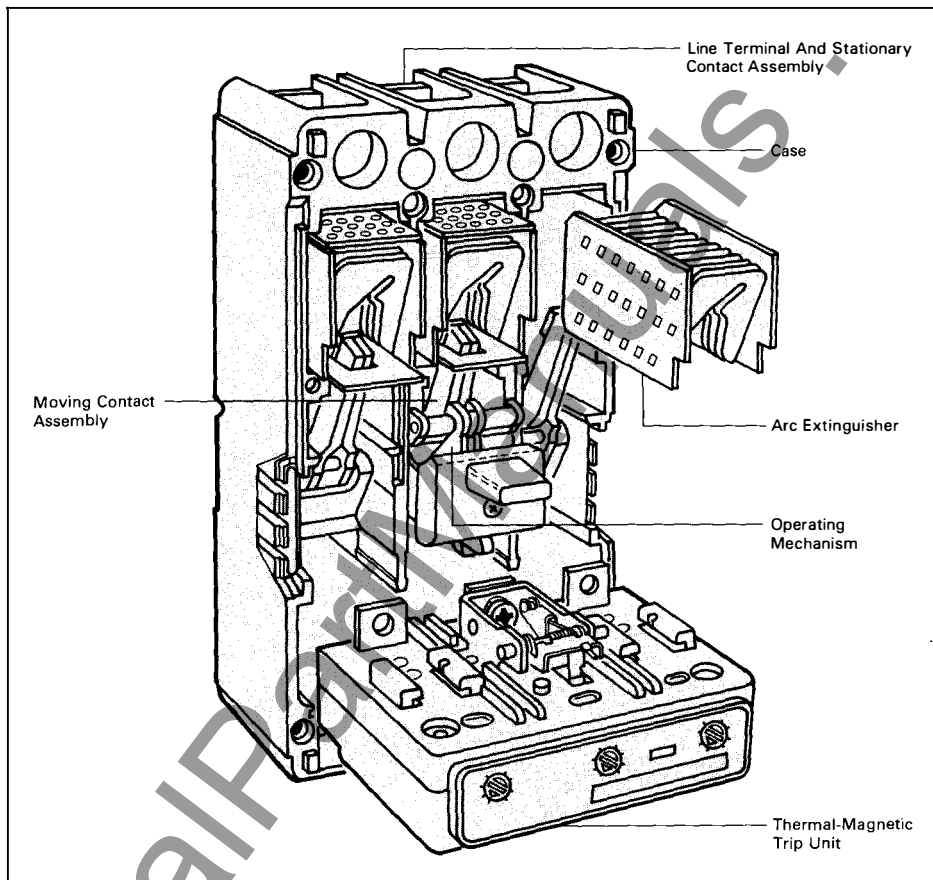


Figure 3-1. K-Frame Circuit Breaker Components

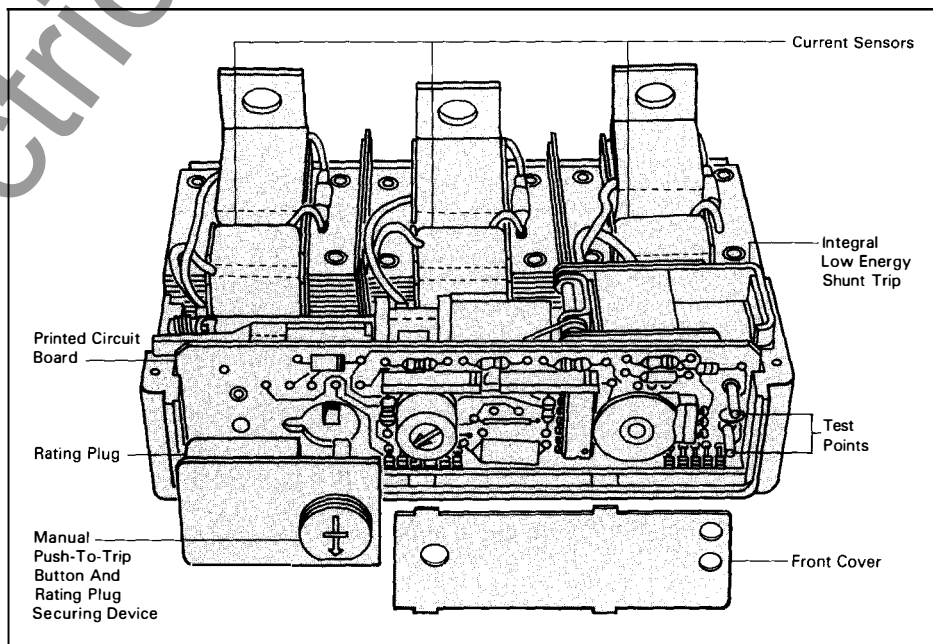


Figure 3-2. Internal View of Seltronic Trip Unit with Rating Plug



Series C Molded Case Circuit Breakers, K-Frame

Section 3 – Description

Electronic Trip Operation

The Seltronic trip unit is supplied in one of the four types (Table 1-4). Trip unit function and rating settings are shown in Table 3-1. The continuous ampere rating is determined by the value of the installed rating plug.

In open air at 40°C, the trip unit continuously carries a current equal to the rating of the maximum ampere rating plug without exceeding a 50°C rise at the terminals. The trip unit is insensitive to ambient temperatures over a range of -20° to +55°C. However, for ambient temperatures below -5°C, special lubrication may be required for proper mechanical operation of the circuit breaker. The trip unit contains temperature protective circuits that initiate a trip operation for self-protection if the internal ambient temperature at the printed circuit board reaches approximately 90°C.

For ambient conditions above 40°C, derating of the circuit breaker frame should be considered to avoid exceeding a safe terminal temperature operating range. Consult Westinghouse for recommendations.

Overload Trip: The trip unit initiates a trip of the circuit breaker within two hours for an overload of 135 percent, and a trip in less time for higher overloads.

Short Delay/Instantaneous Trip: For short circuit conditions that exceed the short delay or instantaneous pick-up settings, the trip unit initiates a trip after a prescribed delay by the I²t ramp function for trip units with catalog number suffixes T and TG. A flat response time delay action is provided by trip units with catalog number suffixes TA and TAG unless the instantaneous (I) setting is selected.

Ground Fault Protection: When selected, ground fault pick-up and time delay settings allow selective ground fault coordination with other circuit protective devices.

DC Application: Seltronic trip units are suitable for ac application only. For dc applications, a thermal-magnetic trip unit should be used.

Field Testing: Test points (Figure 3-2) are for functional field testing of the trip unit when connected to the test kit (Catalog number STK1). Existing Seltronic test kits are suitable for field testing of Series C circuit breaker Seltronic trip units. Testing information is supplied with each trip unit.

KW, HKW, and KWC Adjustable Thermal and Adjustable Magnetic Mechanism

The thermal and magnetic time-current performance characteristics of KW, HKW, KWC circuit breakers can be altered by rotating the adjustment buttons in the cover of the trip unit to the desired setting marked on the label. The adjustable thermal mechanism has movable elements (one per pole)

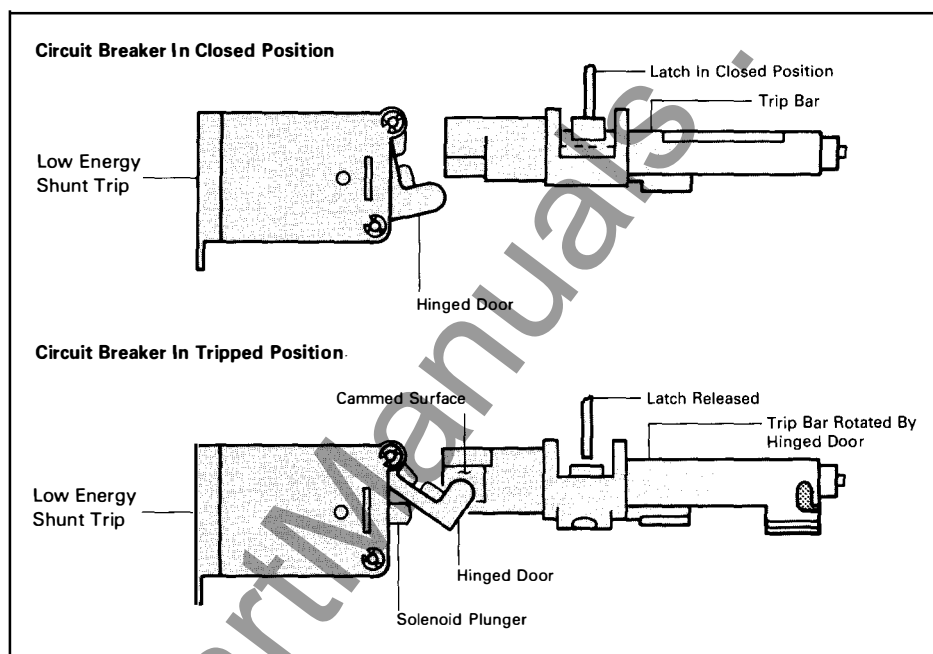


Figure 3-3. Electronic Trip Mechanism Operation

connected by a common adjustment linkage. Each pole element is in the form of an inclined plane and is located between the bi-metal strip and the trip bar. Movement of the inclined plane adjusts the bi-metal-trip bar gap, varying the necessary bi-metal travel required to trip the circuit breaker. The magnetic pick-up setting is adjusted by a linkage that varies the spring tension on the magnet armature.

Push-to-Trip Button

The Push-to-Trip button provides a manual means of tripping the circuit breaker. The thermal-magnetic trip unit has the button located in the trip unit cover. In the Seltronic trip unit, the Push-to-Trip button is incorporated in the rating plug. When the button (Figure 3-4) is pressed, a plunger rotates the trip bar causing the circuit

breaker to trip. Disengaging the rating plug on Seltronic trip units will also trip the circuit breaker.

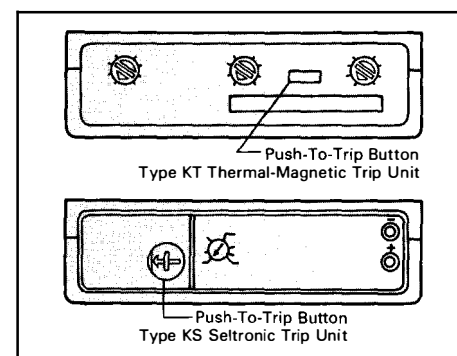


Figure 3-4. Push-to-Trip Button

Table 3-1. Seltronic (Electronic) Trip Unit Trip Function and Rating Settings

Trip Function	Rating/Setting Description	
Ampere Rating Fixed at 100%	Fixed Rating Plugs ^① (I _N)	
Adjustable Long Time Pick-up	Adjustable Rating Plugs ^① (I _N)	
Short Delay Pick-up (Adjustable)	In multiples of installed rating plug amperes (I _N) with marks at 2-3-4-5-6-7-8x	
Short Delay Time (Fixed)	I ² t ramp configuration	
Short Delay Time (Adjustable)	Flat response with time delay settings at 100ms, 200ms, and 300ms	
Instantaneous Pick-up ^②	In multiples of installed rating plug amperes (I _N) with marks at 2-3-4-5-6-7-8x	
Ground Fault Pick-up (Adjustable)	Max. Trip	Available Settings
	400A	80A, 160A, 240A, 320A, 400A
	250A	50A, 100A, 150A, 200A, 250A
	125A	50A, 75A, 100A, 125A
Ground Fault Time Delay	Settings at instantaneous (I) 150ms, 300ms, and 500ms	

① See Table 5-5, page 21, for available rating plugs.
② Occurs with short delay time adjustment set at I.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

4-1. General Information

A complete line of accessories is available for use with the Series C circuit breakers and molded case switches. Commonly required internally mounted accessories are plug-in types for use only with the Series C line. LB family internal accessories cannot be used in K-frame Series C circuit breakers.

Although the physical size of the Series C K-frame family of circuit breakers is the same as the DA, JA, KA, HKA, LB, LBB, and HLB family, there are certain differences; therefore in some cases, direct replacement is not possible and new accessories must be ordered.

- Circuit breaker mounting details, panel cutouts, and terminal centerline locations are identical. LB family terminals are not usable with K-frame circuit breakers.

- Handle locations, handle throw, and terminal connection details are different. Therefore, existing handle mechanisms and externally mounted accessories including electrical operator and key interlocks, etc. must be replaced or mounting details modified. Terminal conductor heights are different and will require adapters to fit both the existing panelboard connecting straps and individually mounted plug-in blocks. Existing rear connecting studs will require replacement.

The following paragraphs describe each accessory and provide operation, rating, and specification information. In this section, "circuit breaker" shall also include molded case switch, unless otherwise stated.

4-2. Termination Accessories

Termination accessories of two basic types are available: terminal connection devices, which accommodate typical circuit breaker connection variations; and termination protection devices, which provide terminal isolation.

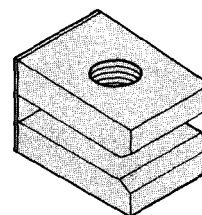
Termination Connection Devices

- Line and Load Terminals
- Keeper Nut (Threaded Adapter)
- Rear Connecting Studs
- Plug-In Adapters
- Panelboard Connecting Straps
- Terminal Adapter

Termination Protection Devices

- Terminal Cover
- Terminal Shield
- Interphase Barriers

Keeper Nut (Threaded Adapter)

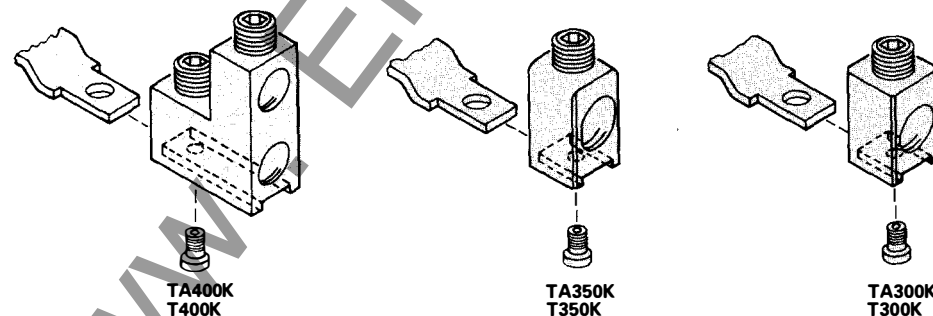


The keeper nut is a two-part copper/steel adapter. The steel portion is threaded and is used to connect bus bar or similar electrical connections requiring a threaded nut application. When used where K-frame circuit breakers are replacing existing LB family circuit breakers, two different spacer thicknesses are available. Use the 0.234 inch thick spacers for line end applications, and the 0.421 inch thick spacer for load end applications, for new applications, select the 0.234 inch adapter for both line and load applications. (Field installation only)

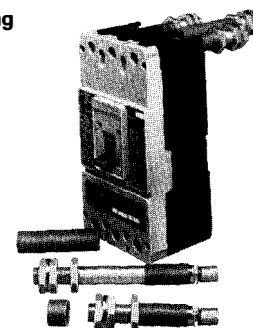
Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories, Inc. Standards UL486A and UL486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165. Unless otherwise specified, K-frame circuit breaker line and load terminals are shipped separately for field installation. The terminals cannot be used on LB family circuit breakers.

The circuit breaker line/load terminal conductor is positioned in the recess in the bottom of the wire connecting terminal. The wire connecting terminal is secured with a $\frac{7}{16}$ inch hollow terminal mounting screw, which can be checked for the correct torque loading or retightened from the front of the circuit breaker before installation of the conductors. (Applies to all styles.)



Rear Connecting Studs



Rear connecting studs are available in several sizes to accommodate specific fixed-mounted circuit breaker applications. The rear connecting studs are rated 400A. See Section 6 for dimensional data. (Field installation only)

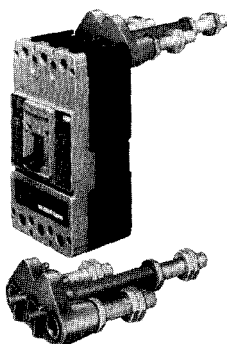


12/29/86 - not
current product
(see Pg. 30 for correct version)

Series C Molded Case Circuit Breakers, K-Frame

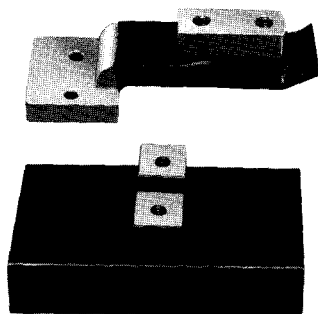
Section 4 - Accessories and Modifications

Plug-In Adapters



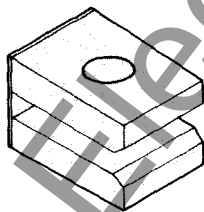
Plug-in adapters simplify installation and front removal of circuit breakers. Individual line and load plug-in adapters are available for rear connection applications on 2-, 3-, and 4-pole circuit breakers. Common mounting plates for line and load end adapters are available. The plug-in adapters are rated 400A. See Section 6 for dimensional data. (Field installation only.)

Panelboard Connecting Straps



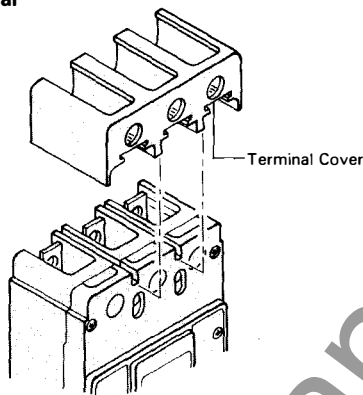
Panelboard connecting straps are used to connect the circuit breaker terminals to the panelboard bus. The panelboard connecting straps are available with 400A rating for outside and center poles. (Field installation only.)

Terminal Adapter



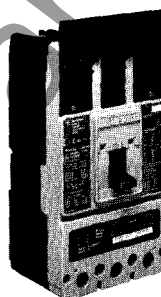
The terminal adapter is used for replacement applications to compensate for the change in height of K-frame circuit breaker terminal connections compared to those of existing LB/DA circuit breaker types. The adapter may be used on either side of the circuit breaker terminal conductor permitting continued use of top or bottom mounted connecting straps where a tapped hole is not required. The terminal adapter is not required if K-frame Series C panelboard connecting straps are used. (Field installation only.)

Terminal Cover



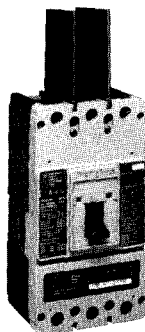
The one-piece terminal cover provides the required electrical clearance between circuit breaker poles when extended terminals are used. Three-and-four pole covers are available. A terminal cover is supplied as standard with T400K and TA400K terminal kits. (Field installation only.)

Terminal Shield



Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening connectors. (Field installation only.)

Interphase Barriers

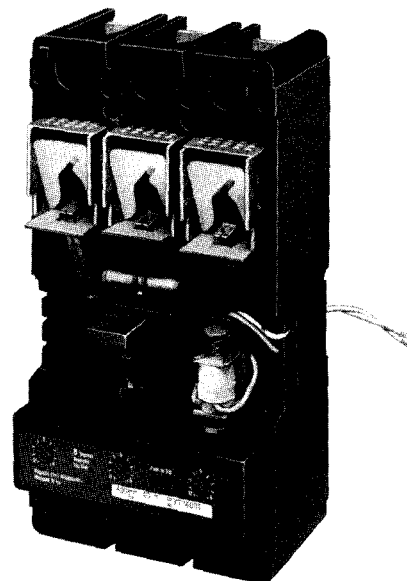


The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. The barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.)

4-3. Internal Accessories

All internal accessories are of the plug-in type and are listed for field installation under UL File E64983.①. Internal accessories for sealed circuit breakers are listed under UL File E7819① for factory installation only. The available plug-in accessories include the following:

- Alarm (Signal)/Lockout Switch
- Auxiliary Switch
- Shunt Trip
- Low Energy Shunt Trip
- Undervoltage Release Mechanism.



Typical Internal Plug-in Accessory Installed in K-frame Circuit Breaker

Different accessory wiring options are available to satisfy most circuit breaker mounting applications. The standard wiring configuration is pigtail leads exiting the rear of the base directly behind the accessory. Optional configurations include a terminal block mounted on the same side of the base as the accessory, leads exiting the side of the base where the accessory is mounted, and leads exiting the rear of the base on the side opposite the accessory. If accessory leads longer than 18 inches are required, side-mounted terminal blocks should be used. To identify allowable accessory installation combinations, see paragraph 4-8. Internally mounted accessories identified in paragraph 4-8 are shown in this section by a graphic symbol in a shaded blue box.

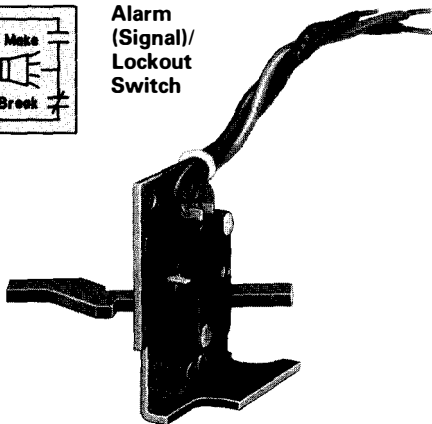
① Some UL listings pending; refer to Westinghouse.

Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications



**Alarm
(Signal)/
Lockout
Switch**



The alarm (signal)/lockout switch monitors circuit breaker trip status and provides remote signaling and interlocking capabilities when the circuit breaker trips. For 2-, 3-, and 4-pole circuit breakers, the alarm (signal)/lockout switch consists of one or two SPDT switches assembled to a plug-in module mounted in retaining slots in the top of the trip unit. The SPDT switch contacts are identified as make and break contacts. When the circuit breaker trips, the make contact closes and the break contact opens. Table 4-1 provides electrical rating data for the alarm (signal)/lockout switch.

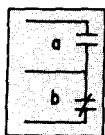
Table 4-1. Alarm (Signal)/Lockout Switch Electrical Rating Data ① ②

Maximum Voltage	Freq.	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	dc	0.5③	
250	dc	0.25③	

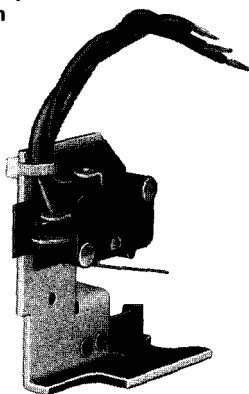
① Endurance – 4000 electrical operations plus 1000 mechanical operations.

② Pigtail wire size – No. 18 AWG (0.82 mm²).

③ Non-inductive load.



**Auxiliary
Switch**



The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded crossbar containing the moving contact arms. The auxiliary switch is used for remote signaling and interlocking purposes, and consists of one or two SPDT switches assembled to a plug-in module mounted in retaining slots in the top of the trip unit. Each SPDT switch has one "a" and one "b" contact. When the circuit breaker contacts are open, the "a" contact is open and the "b" contact is closed. Table 4-2 provides electrical rating data for the auxiliary switch.

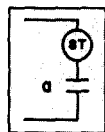
Table 4-2. Auxiliary Switch Electrical Rating Data ① ②

Maximum Voltage	Freq.	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	dc	0.5③	
250	dc	0.25③	

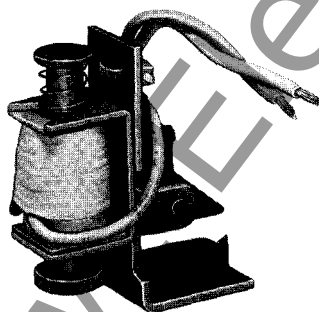
① Endurance – 4000 electrical operations plus 1000 mechanical operations.

② Pigtail wire size – No. 18 AWG (0.82 mm²).

③ Non-inductive load.



**Shunt
Trip**



The shunt trip provides remote controlled tripping of the circuit breaker. The shunt trip consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch assembled to a plug-in module. When required for ground fault protection applications, certain ac rated shunt trips, as noted in Table 4-3, are suitable for operation at 55 percent of rated voltage. Table 4-3 also provides electrical rating data for the shunt trip.

Notes:

- ① Approximate unlatching time – 6 milliseconds
- ② Approximate total circuit breaker contact opening time – 18 milliseconds
- ③ Endurance – 4000 electrical operations plus 1000 mechanical operations
- ④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.

Table 4-3. Shunt Trip Electrical Rating Data

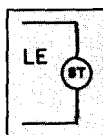
Electrical Operating Ratings① ② ③

50/60 Hz			dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
9	6	80	...	..	....
12	7	45	12	5	35
24		200	24		170
48		830	48		710
60		1280	60		1105
110④	43	100	110	34	110
120④		120	120		130
127④		140	125		140
208④		420	220	133	41
220④		470	250		54
240④		550	...	..	....
380	158	95	...	..	....
400		108	...	..	....
415		120	...	..	....
440		136	...	..	....
480	280	40	...	..	....
525		50	...	..	....
550		50	...	..	....
600		70	...	..	....



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

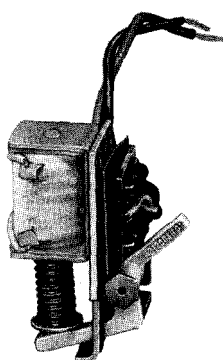


**Low
Energy
Shunt
Trip**

Low energy shunt trip devices are designed to operate from low energy output signals from dedicated current sensors typically applied in ground fault protection schemes. However, with a proper control voltage source, they may be applied in place of conventional trip devices for special applications. Flux paths surrounding permanent magnets used in the shunt trip assembly hold a charged spring poised in readiness to operate the circuit breaker trip mechanism. When a pulse of direct current from

the power source passes through the shunt trip coil, the resultant flux opposes the permanent magnet flux field, which releases the stored energy in the spring to trip the circuit breaker. As the circuit breaker contacts open, the reset arm is actuated by the circuit breaker operating mechanism, resetting the shunt trip. The plug-in module is mounted in retaining slots in the top of the trip unit. Coil is intermittent-rated only. Cut-off provisions required in control circuit.

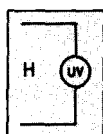
**Undervoltage
Release
Mechanism**



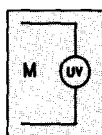
The undervoltage release mechanism monitors a voltage (typically a line voltage) and trips the circuit breaker when the voltage falls to between 70 and 35 percent of the solenoid coil rating. Table 4-4 provides electrical rating data for each operating voltage of the handle reset undervoltage release mechanism.

NOTE: Undervoltage release mechanism accessories are not designed for, and should not be used as, circuit interlocks.

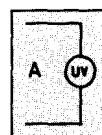
There are four different types of undervoltage release mechanisms available: handle, manual, automatic, and electrical reset.



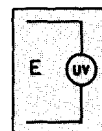
Handle Reset (Standard) The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever assembled to a plug-in module. The tab on the tripping lever resets the undervoltage release mechanism when normal voltage has been restored and the circuit breaker handle is moved to the reset (OFF) position. With no voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.



Manual Reset (Optional) The accessory consists of two metal cores held together by the flux of a surrounding coil. As voltage drops in the coil, the lower core drops pivoting a lever, which presses against the trip bar, and at the same time extends a plunger through the circuit breaker cover as an indication of an undervoltage trip. When normal voltage is restored, the plunger projecting through the circuit breaker cover must be depressed to reset the undervoltage release mechanism. This accessory can be factory installed only.



Automatic Reset (Optional) This accessory is similar to the manual reset model, but has no reset plunger. The tripping lever has an extension that rests on the molded crossbar. When the circuit breaker trips and travel of the molded crossbar is almost complete, the tripping lever extension pushes the tripping lever up and resets the undervoltage release mechanism.



Electrical Reset (Optional) The accessory will reset when the rated voltage is restored to the UVR coil after a circuit breaker trip operation. If the rated voltage is not restored, the circuit breaker contacts will not touch when a closing operation is attempted.

Table 4-4. Undervoltage Release Mechanism (Handle Reset) Electrical Rating Data

Electrical Operating Ratings^{①②}

50/60 Hz					dc				
Supply Voltage	Dropout Voltage Min.	Dropout Voltage Max.	Pickup Voltage Max.	VA	Supply Voltage	Dropout Voltage Min.	Dropout Voltage Max.	Pickup Voltage Max.	VA
9	3.2	8.4	7.7	1.9	...	...	...	...	...
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21	33.6	40.8	2.5	48	21	33.6	40.8	2.0
60				3.8	60				3.1
110	44.5	77	93.5	1.8	110	44.5	77	93.5	1.6
120				2.1	120				1.9
127				2.4	125				2.2
208	85	145.6	176.8	2.7	220	87.5	154	187	3.1
220				3.1	250				4.0
240				3.8	...	...	...	...	...
380	168	266	323	3.4	...	...	...	...	...
415				4.0	...	...	...	...	...
440				4.6	...	...	...	...	...
480				5.4	...	...	...	...	...
525	210	367	446	4.5	...	...	...	...	...
550				5.0	...	...	...	...	...
600				5.8	...	...	...	...	...

Notes:

- ① Endurance – 4000 electrical operations plus 1000 mechanical operations
- ② For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Westinghouse.

Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

4-4. Handle Operating Accessories

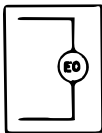
The handle operating accessories provide indirect electrical or manual circuit breaker handle operation. These accessories are field installed only and include:

- Electrical (Solenoid) Operator
- Rotary Handle
- Vari-Depth Handle Mechanism
- Type SM Safety Handle Mechanism

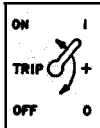
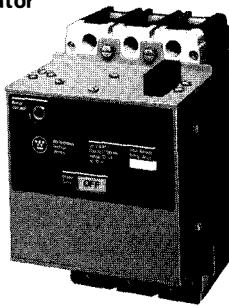
- Type MC Motor Control Handle Mechanism
- Type AMT Vari-Depth/Vari-Width Flange-Mounted Handle Mechanism

To identify allowable accessory installation combinations, see paragraph 4-8. Handle operating accessories identified in paragraph 4-8 are shown in this section by a graphic symbol in a shaded blue box.

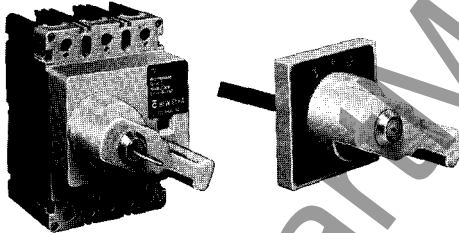
Ordering Information is found in Section 5.



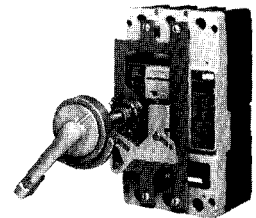
Electrical (Solenoid) Operator



Rotary Handle Mechanism[®]



Vari-Depth Handle Mechanism[®]



The electrical (solenoid) operator is a double solenoid mechanism that enables local and remote circuit breaker ON, OFF, and reset switching. The electrical operator is mounted on the circuit breaker cover. The electrical operator uses a unique bi-stable latch that allows the device to operate using two solenoids. The accessory provides high speed switching with a maximum operating time of 5 cycles (80 ms), making it suitable for generator synchronizing applications.

Means are provided for remote electrical operation and for local manual operation. A special slide-bar locking mechanism provides means for padlocking the operator in the OFF position. (Padlocking does not affect the trip-free operation of the circuit breaker.) The slide-bar will accept one padlock shackle with a maximum diameter of 1/4 inch (6mm). Table 4-5 provides electrical rating data for the electrical (solenoid) operator.

Table 4-5. Electrical (Solenoid) Operator Electrical Rating Data^{① ② ③}

Voltage ^④ (V)	Inrush Current (A)	Fuse (A)
24	80	30
120	24	6
240	12	4

^① The electrical operator design has been endurance tested for 5,000 electrical operations.

^② Frequency: 50/60 Hz or dc.

^③ Maximum operating time: 5 cycles (80 ms).

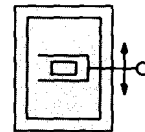
^④ Tolerance: + 10%, - 15% of nominal voltage.

^⑤ Underwriters Laboratories listing pending under UL File E64983.

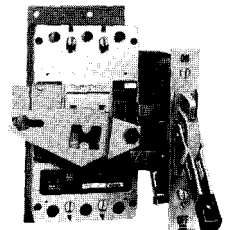
The rotary handle mechanism mechanically transfers the rotating operation of the rotary handle to the in-line toggle operation of the circuit breaker handle. A window in the handle mechanism case indicates circuit breaker status: ON, I on a red background; TRIP, + on a white background; OFF, O on a green background. The handle mechanism is mounted on the circuit breaker cover within the trimline and will take up to three padlock shackles, each with a maximum diameter of 1/4 inch (6mm). A cylinder lock can be installed in the handle. The handle is designed to be locked in the OFF position; one knockout tab which is provided in the handle mounting boss must be removed to lock the handle in the ON position. Trip-free operation permits the circuit breaker to trip if the handle is locked in the ON position. For this condition, the handle will continue to indicate ON.

The handle is removable. A 10-inch (250mm) shaft extension is available to use with the handle mechanism when the circuit breaker is mounted behind a fixed or hinged front cover. Provision is made for mounting an early-make/early-break auxiliary switch on the handle mechanism for use with undervoltage release mechanisms. Styles with red handles and yellow background labels are available for use on main disconnect devices where required by local codes.

The vari-depth handle mechanism provides a means of externally operating a circuit breaker housed in an enclosure and can be applied to enclosures of varying depths. The handle mechanism can be used in NEMA 1, 3R, 4, 7, 9, and 12 enclosure applications, depending on the accessory components selected. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of 3/16 inch (7.94mm).



Type SM Safety Handle Mechanism[®]

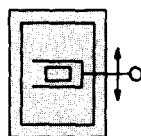


The SM safety handle mechanism provides a means of externally operating a circuit breaker mounted in an enclosure and is designed to reduce the possibility of circuit breaker tampering. The handle mechanism is especially suited for use in automotive and machine tool industries through its conformance to NEMA 12 and J. I. C. requirements. A specially modified handle mechanism for NEMA 4 enclosure applications is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of 3/16 inch (9.52mm).

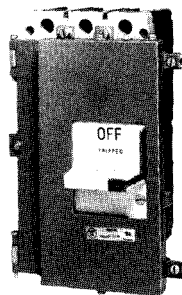


Series C Molded Case Circuit Breakers, K-Frame

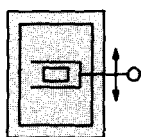
Section 4 – Accessories and Modifications



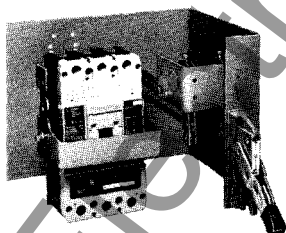
**Type MC
Motor Control
Handle
Mechanism**



The MC motor control handle mechanism is a linear-operating, fixed-depth mechanism designed for through-door mounting in standardized and shallow depth enclosures. The handle mechanism provides positive operation and direct disconnect status indication. It is interlocked with the enclosure door so that the door can be opened only when the handle is set to OFF. (A defeater, supplied with the handle mechanism, can be used to bypass the interlock for maintenance and inspection.) The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $\frac{3}{8}$ inch (7.92mm). UL File E56845.



**Type AMT
Vari-Depth/
Vari-Width
Flange Mounted
Handle Mechanism^①**



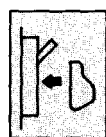
The AMT vari-depth/vari-width flange-mounted handle mechanism is an extra heavy-duty mechanism designed for mounting in flange-type enclosures. The handle mechanism is available for mounting above or below the centerline of the circuit breaker handle, is suitable for various enclosure depths, and can also be used in various horizontal position applications. A door interlock prevents the enclosure from being opened with the handle mechanism in the ON position and prevents the handle mechanism from being switched to ON unless the enclosure door is closed. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $\frac{3}{8}$ inch (7.92mm).

4-5. Lock and Interlock Accessories

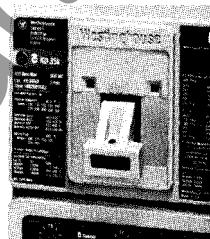
Lock and interlock accessories are used to deter undesired circuit breaker operation and establish interlocked control systems. Lock and interlock accessories include:

- Nonlockable Handle Block
- Padlockable Handle Lock Hasp
- Cylinder Lock
- Key Interlock
- Sliding Bar Interlock
- Walking Beam Interlock.

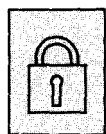
To identify allowable accessory installation combinations, see paragraph 4-8. Lock and interlock accessories identified in paragraph 4-8 are shown in this section by a graphic symbol in a shaded blue box.



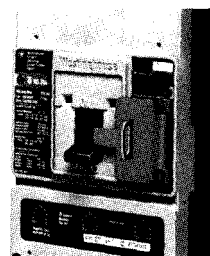
**Nonlockable
Handle
Block**



The nonlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by a setscrew to deter accidental operation of the circuit breaker handle. (Field installation only.)



**Padlockable
Handle
Lock
Hasp^①**

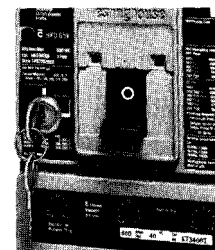


The padlockable handle lock hasp allows the handle to be locked in the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle lock

holds the circuit breaker handle in the ON position.) The hasp mounts on the circuit breaker cover within the trimline. The cover is predrilled on both sides of the operating handle so that the hasp can be mounted on either side of the handle. The hasp will accommodate up to three padlocks with $\frac{1}{4}$ inch (6mm) shackles. (Field installation only.)



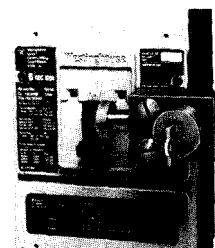
**Cylinder
Lock**



The cylinder lock internally blocks the trip bar in the tripped position to prevent the circuit breaker from being switched to ON. The cylinder lock is factory installed in the circuit breaker cover. Other internally mounted accessories cannot be installed in the same pole as the cylinder lock. (Factory installation only.)



**Key
Interlock
Kit (Lock
not
included)
^①**



The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit breakers for a given specific customer installation.

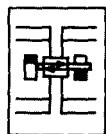
The key interlock assembly consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left- or right-pole position; key interlock mounting hardware; and, a wire seal. Specific mounting kits are required for individual key interlock types. (Field installation only.)

^① Underwriters Laboratories listing pending under UL File E64983.

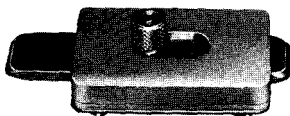


Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

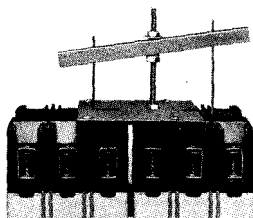


**Sliding
Bar
Interlock**



The sliding bar interlock provides mechanical interlocking between two adjacent 2- or 3-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of the circuit breaker handles and prevents both circuit breakers from being switched to ON at the same time. Sliding bar interlocks are not UL listed. (Field installation only.)

**Walking
Beam
Interlock**



The walking beam interlock provides mechanical interlocking between two adjacent circuit breakers of the same pole configuration. The walking beam interlock mounts on a bracket behind and between the circuit breakers. A plunger on each end of the beam is inserted through an access hole in the backplate and base of each circuit breaker. The walking beam interlock prevents both circuit breakers from being switched to ON at the same time. When a walking beam interlock is installed, the wiring troughs in the back of the circuit breaker case are blocked by the plungers and cannot be used for cross wiring. Factory-modified circuit breakers are required for this application.

4-6. Miscellaneous Accessories

- Base Mounting Hardware
- Earth Leakage Protection Module.

Base Mounting Hardware

Hardware for surface mounting of circuit breakers is supplied only on request. Hardware consists of mounting screws and lockwashers. Order hardware for circuit breaker pole configurations as required.

Earth Leakage Protection Module

The earth leakage protection module is an add-on accessory designed to protect personnel and equipment from low level earth leakage (ground fault) conditions. It consists of a current sensing element and an amplifier circuit that trips the associated circuit breaker by signaling a shunt trip or under-voltage release mechanism. (No external power to operate the shunt trip is needed.) Refer to Westinghouse for further information.

Seltronic Portable Test Kit

The Seltronic portable test kit provides verification of performance of all ratings of Seltronic trip units installed in Series C circuit breakers while in service under varying load and/or phase imbalance. The test kit operates on 120-Volt, 50/60 Hz power; it includes complete instructions and test times for testing long time, short time/instantaneous operation and optional ground fault operation of the circuit breaker.

4-7. Modifications

Limited modifications to the basic circuit breaker are available to satisfy specific customer requirements. All modifications are completed at the factory. The following modifications are available:

- Special Calibration
- Moisture-Fungus Treatment
- Marine Applications

If additional modifications are required, refer to Westinghouse. The following paragraphs describe the modifications.

Special Calibration

Special non-UL listed calibrations are available for certain ambient temperatures other than 40°C and for frequencies other than 50/60 Hz or dc. Reduced interrupting ratings will apply for 400 Hz applications. Maximum thermal calibration is limited to 300A at 400 Hz.

Moisture- Fungus Treatment

All series C circuit breaker cases are molded from glass-polyester, which does not support the growth of fungus. Only a limited number of internal parts require special treatment.

Marine Applications

UL489 listed^① 40°C circuit breakers for marine application on vessels over 65 feet are available. Non-aluminum terminals are required.

^① UL listing pending; refer to Westinghouse.



Series C Molded Case Circuit Breakers, K-Frame

Section 4 – Accessories and Modifications

4-8. Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker. The following illustrations show the different accessories or combinations that can be used internally and externally with each pole of 2-, 3-, and 4-pole circuit breakers. Each pole in a particular circuit breaker configuration is identified by a column head; each accessory or combination that can be used with that pole is identified by symbols in a box below the column head. Unless otherwise noted, one internal and one external accessory can be selected for each pole.

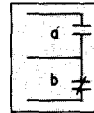
The manual reset undervoltage release mechanism or the cylinder lock will occupy the accessory mounting cavity in the circuit breaker base and also project through the cover. Therefore, if either of these devices is selected, no other internal or external accessory can be applied to that particular pole. In the illustrations, these accessories are identified by repeating the symbol in the internal and cover boxes. If a manual reset undervoltage release mechanism or cylinder lock is selected, the electrical (solenoid) operator or any external handle mechanism cannot be used.

Some external accessories will cover more than one pole. In the illustrations when a box containing accessory symbols spans more than one column, any accessory within that box occupies the area of the cover indicated.

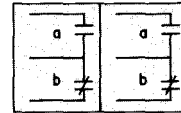
Accessory Legend

The accessory legend shows each symbol used in the accessory combination illustration.

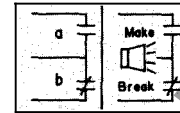
Accessory Symbols Used in Accessory Combination Example (See Page 18)



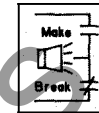
Auxiliary Switch
(1a, 1b)



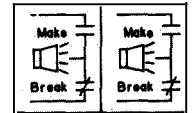
Auxiliary Switch (2a, 2b)



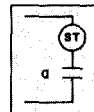
Aux. Switch/
Alarm (Signal)/Lockout
Switch Combination



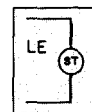
Alarm (Signal)/
Lockout Switch
(Make/Break)



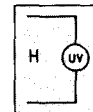
Alarm (Signal)/
Lockout Switch
(2 Make, 2 Break)



Shunt
Trip



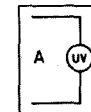
Low Energy
Shunt Trip



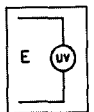
Under-Voltage
Release
(Handle Reset)



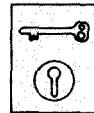
Undervoltage
Release
(Manual Reset)



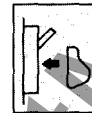
Undervoltage
Release
(Auto. Reset)



Undervoltage
Release
(Electrical Reset)



Cylinder
Lock



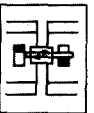
Non-Lockable
Handle Block



Padlockable
Handle Lock Hasp



Key
Interlock



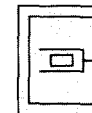
Sliding Bar
Interlock



Electrical
(Solenoid)
Operator



Rotary Handle
Mechanism



Handle
Mechanism



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Section 4 – Accessories and Modifications

2-, 3-, and 4-Pole Circuit Breaker Accessory Combinations for use with Type KT Trip Thermal Magnetic Units

	Left Pole	Center Pole	Right Pole (2- or 3-Pole)	Right Pole (4-Pole)	Neutral Pole
Internal			<p>Accessories Same As Left Pole Except Cylinder Lock</p>	<p>Accessories Same As Left Pole Except Cylinder Lock ③</p>	None
Cover Mounted			<p>Accessories Same As Left Pole Except Cylinder Lock</p>		None

2-, 3-, and 4-Pole Circuit Breaker Accessory Combinations for use with Type KS Seltronic Trip Units

	Left Pole	Center Pole	Right Pole (2- or 3-Pole)	Right Pole (4-Pole)	Neutral Pole
Internal	Accessories Same As Thermal-Magnetic Trip Unit Above			Accessories Same As Right Pole (2- or 3-Pole) ③	None
Cover Mounted	Accessories Same As Thermal-Magnetic Trip Unit Above			Accessories Same As Right Pole (2- or 3-Pole) Except Sliding Bar Interlock	None

- ① Occupies internal and cover spaces.
- ② Non-padlockable handle block cannot be mounted simultaneously with either key interlock, padlockable handle hasp or sliding interlock.
- ③ Accessories with terminal blocks installed in this pole have special catalog numbers. See Section 5, Accessory Catalog Numbers.
- ④ May be mounted on left or right pole, not both.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

5-1. General Information

When ordering a K-frame circuit breaker or molded case switch, use the catalog numbers given in Tables 5-1 through 5-8. Interrupting ratings can be found in Table 1-1. List any accessories or modifications required together with the applicable catalog number. Handle mechanisms are suitable for use with all K-frame Series C circuit breakers. REFER TO WESTINGHOUSE FOR AVAILABILITY OF ALL CIRCUIT BREAKERS, MOLDED CASE SWITCHES, ACCESSORIES, AND MODIFICATIONS.

List Prices: See Price List 29-020. Discount Symbol CB-2 applies for circuit breakers and accessories. Discount Symbol CB-14 applies for handle mechanisms.

5-2. Ordering Instructions – Circuit Breakers

Factory sealed, non-interchangeable trip circuit breakers may be ordered completely assembled with standard type terminals supplied by referring to Tables 5-1 or 5-2 and specifying the appropriate catalog numbers.

Interchangeable trip circuit breakers may be ordered as a circuit breaker frame and trip unit only by specifying the individual catalog numbers from Tables 5-3, 5-4, 5-5, and 5-6. Terminal connectors can be ordered separately by specifying individual catalog numbers in Table 5-9.

Complete circuit breakers consisting of a frame, trip unit, and standard terminals (Table 5-9) can be ordered by specifying the appropriate catalog numbers from Tables 5-3 and 5-6. Optional Seltronic trip units are listed in Table 5-4. Table 5-5 lists available rating plugs.

5-3. Ordering Instructions – Accessories

When ordering an accessory that is for installation by the customer, use the field installation kit catalog number.

5-4. Ordering Examples

Example No. 1 – Customer Requirements
One UL listed molded case circuit breaker as follows:

1. 3-pole, 600 Vac class, 300A, with 35 kA interrupting capacity at 480 Vac.
2. Fixed thermal, adjustable magnetic trip unit
3. Factory sealed for reverse feed application
4. One 1a/1b auxiliary switch with pigtail leads
5. One 120 Vac, 50/60 Hz shunt trip with pigtail leads
6. Load side terminals for 250-500 mcm aluminum cables, 1 per phase.

Ordering Steps

1. Refer to Tables 1-1 and 5-2. Select catalog number KDB3300. Add suffix W to delete line and load terminals. (This covers items 1, 2, and 3 above.)
2. Refer to auxiliary switch table (page 23). Select catalog number A1X3RB. (This covers item 4 above.) Right-pole mounting with pigtail leads exiting at the rear is considered standard.
3. Refer to shunt trip table (page 24). Select catalog number SNT3LB11. (This covers item 5 above.) Left-pole mounting with pigtail leads exiting at the rear is considered standard.

Note: Accessory mounting arrangements for a specific configuration can be verified by referring to the accessory legend in Section 4.

4. Refer to Table 5-9 terminal (page 22). Select catalog number TA350K. A quantity of 3 is required for this application. (This covers item 6 above.)

5. Enter order by specifying as follows:

Item 1 – Quantity 1 – Circuit breaker, Cat. No. KDB3300, with factory installed auxiliary switch Cat. No. A1X3RB, and shunt trip Cat. No. SNT3LB11.

Item 1A – Quantity 3 – Terminal, Cat. No. TA350K

The circuit breaker will be supplied completely assembled and factory sealed, but with terminals shipped separately for field installation. Note that in the example above, the customer has specified standard Al/Cu terminals for a 300 A circuit breaker. Therefore, the circuit breaker itself could also have been ordered by Cat. No. KDB3300X (see page 20) and Item 1A deleted from the order. The terminals would still be shipped separately.

Example No. 2 – Customer Requirements
One UL listed molded case circuit breaker as follows:

1. 3-pole, 600 Vac class, 400 A, with 65 kA interrupting capacity at 480 Vac.
2. Equipped with 400A Seltronic type electronic trip with independently adjustable short time pick-up and delay, and 200A-400A adjustable rating plug.
3. Standard copper-only terminals, line and load.

Ordering Steps

1. Refer to Tables 1-1 and 5-3. Select circuit breaker frame HKD3400F (This covers item 1 above).

2. Refer to Tables 5-4 and 5-5. Select Seltronic trip unit KS3400TA and rating plugs A4KS400T1 (This covers item 2 above).

3. Refer to Table 5-9. Select terminal kit catalog number 3T400K. A quantity of 6 terminals (2 kits) required for this application (This covers item 3 above).

4. Enter order by specifying as follows
Item 1 – Quantity 1 – Circuit breaker frame, Cat. No. HKD3400F.

Item 1A – Quantity 1 – Seltronic trip unit Cat. No. KS3400TA.

Item 1B – Quantity 1 – Rating Plug, Cat. No. A4KS400T1.

Item 1C – Quantity 2 – Terminal kit 3T400K.

The circuit breaker will be shipped unassembled as frame, trip unit, rating plug and terminals.

Example No. 3 – Customer Requirements
One 24 Vdc shunt trip with 18-inch pigtail leads for field installation in the left-hand pole of a KW 3-pole circuit breaker.

Order as follows, referring to shunt trip table on page 24.

Quantity 1, shunt trip, Cat. No. SNT3P05K

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5-5. K-Frame Series C Catalog Numbering System

This information is presented only as an aid to understanding catalog numbers shown in Tables 5-1 through 5-8. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame Catalog Numbers

KD	3	400	F
Circuit Breaker/Frame Type	Number of Poles	Circuit Breaker/Frame Ampere Rating	Suffix
DK	2: 2-Poles	100	C: Copper Terminals
KDB	3: 3-Poles	125	E: 50% Protected Neutral Pole
KD	4: 4-Poles	150	(4-Pole Seltronic Trip Circuit Breaker Only)
HKD		175	F: Frame Only
KDC		200	K: High Magnetic Molded Case Switch
		225	W: Without Terminals
KW		250	X: Load Side Terminals Only
HKW		300	Y: Line Side Terminals Only
KWC		315	
		350	
		400	

Trip Unit Catalog Numbers^①

KT	3	400	T
Trip Unit Type	Number of Poles	Trip Unit/ Rating Plug Ampere Rating	Suffix
KT: Thermal-Magnetic	2	63 ^②	T: Trip Unit
	3	70 ^②	• Thermal-Magnetic
	4	90 ^②	Fixed Thermal
KS: Seltronic (Electronic)		100	Adjustable Magnetic
		125	• Seltronic
		150	Simultaneously Adjustable
		160	Short Time Pick-up and Time Delay
		175	Trip Unit
		200	TA: • Thermal-Magnetic:
		225	Adjustable Thermal
		250	Adjustable Magnetic
		300	• Seltronic
		315	Independently Adjustable
		350	Short Time Pick-up and Time Delay Adjustments
		400	TG: Trip Unit (Seltronic Only) with
			Simultaneously Adjustable
			Short Time Pick-up and Time Delay and Independently
			Adjustable Ground Fault Pick-up and Time Delay
			TAG: Trip Unit (Seltronic Only) with
			Independently Adjustable Short
			Time Pick-up and Time Delay, and Ground Fault Pick-up and
			Time Delay Adjustments
			V: 50°C Calibration (Thermal-Magnetic Trip Units Only)
			E: 50% Protected Neutral Pole (Four-pole trip unit only)

① Rating plug for Seltronic trip units must be ordered separately. Refer to Table 5-4.
② Ampere rating available with Seltronic trip unit only.

5-6. Circuit Breakers

Circuit breaker catalog numbers are identified in Tables 5-1, 5-2, 5-3 and 5-6. Optional Seltronic trip units are listed in Table 5-4. Rating plugs are listed in Table 5-5.

Table 5-1. Type DK Circuit Breaker Catalog Numbers

240 Vac Maximum, 250 Vdc Non-Interchangeable Thermal-Magnetic Trip Unit, Factory Sealed

Continuous Ampere Rating at 40°C	Line Terminals Only ^③		Line and Load Terminals ^③	
	2-Pole	3-Pole ^④	2-Pole	3-Pole ^④
250	DK2250Y	DK3250Y	DK2250	DK3250
300	DK2300Y	DK3300Y	DK2300	DK3300
350	DK2350Y	DK3350Y	DK2350	DK3350
400	DK2400Y	DK3400Y	DK2400	DK3400

③ Standard Cu/Al terminals supplied; refer to Table 5-9. Terminals shipped separately, unless otherwise specifically requested.
④ Use any two poles for dc or single phase ac applications.

Table 5-2. Type KDB Circuit Breaker Catalog Numbers

600 Vac Maximum, 250 Vdc Non-Interchangeable Thermal-Magnetic Trip Unit, Factory Sealed

Continuous Ampere Rating at 40°C	With Line and Load Terminals ^③	
	2-Pole	3-Pole ^④
100	KDB2100	KDB3100
125	KDB2125	KDB3125
150	KDB2150	KDB3150
175	KDB2175	KDB3175
200	KDB2200	KDB3200
225	KDB2225	KDB3225
250	KDB2250	KDB3250
300	KDB2300	KDB3300
350	KDB2350	KDB3350
400	KDB2400	KDB3400



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Table 5-3. Type KD, HKD, and KDC Circuit Breaker Catalog Numbers

Continuous Ampere Rating at 40°C	Trip Unit Only	Circuit Breaker Frame Only		
		Complete Circuit Breaker With Standard Line and Load Terminals②③		
2-Pole①, 600 Vac Maximum, 250 Vdc With Interchangeable Thermal- Magnetic Trip Units				
		KD2400F	HKD2400F	KDC2400F
100	KT2100T	KD2100	HKD2100	KDC2100
125	KT2125T	KD2125	HKD2125	KDC2125
150	KT2150T	KD2150	HKD2150	KDC2150
175	KT2175T	KD2175	HKD2175	KDC2175
200	KT2200T	KD2200	HKD2200	KDC2200
225	KT2225T	KD2225	HKD2225	KDC2225
250	KT2250T	KD2250	HKD2250	KDC2250
300	KT2300T	KD2300	HKD2300	KDC2300
350	KT2350T	KD2350	HKD2350	KDC2350
400	KT2400T	KD2400	HKD2400	KDC2400

3-Pole^④, 600 Vac Maximum, 250 Vdc With Interchangeable Thermal-Magnetic Trip Units

		KD3400F	HKD3400F	KDC3400F
100	KT3100T	KD3100	HKD3100	KDC3100
125	KT3125T	KD3125	HKD3125	KDC3125
150	KT3150T	KD3150	HKD3150	KDC3150
175	KT3175T	KD3175	HKD3175	KDC3175
200	KT3200T	KD3200	HKD3200	KDC3200
225	KT3225T	KD3225	HKD3225	KDC3225
250	KT3250T	KD3250	HKD3250	KDC3250
300	KT3300T	KD3300	HKD3300	KDC3300
350	KT3350T	KD3350	HKD3350	KDC3350
400	KT3400T	KD3400	HKD3400	KDC3400

4-Pole^{⑤⑥}, 600 Vac Maximum, 250 Vdc With Interchangeable Thermal-Magnetic Trip Units

		KD4400F	HKD4400F	KDC4400F
100	KT3100T	KD4100	HKD4100	KDC4100
125	KT3125T	KD4125	HKD4125	KDC4125
150	KT3150T	KD4150	HKD4150	KDC4150
175	KT3175T	KD4175	HKD4175	KDC4175
200	KT3200T	KD4200	HKD4200	KDC4200
225	KT3225T	KD4225	HKD4225	KDC4225
250	KT3250T	KD4250	HKD4250	KDC4250
300	KT3300T	KD4300	HKD4300	KDC4300
350	KT3350T	KD4350	HKD4350	KDC4350
400	KT3400T	KD4400	HKD4400	KDC4400

- ① 2-pole circuit breaker supplied in 3-pole frame.
② Standard Cu/Al terminals supplied; refer to Table 5-9.
③ Circuit breaker shipped separately as frame, trip unit, and terminals.
④ Use any two protected poles for dc or single phase ac applications.
⑤ Overcurrent protection not available in neutral pole with thermal-magnetic trip unit. Where fourth-pole protection is required, use Seltronic trip units, refer to Table 5-4.
⑥ 3-pole trip unit used with 4-pole circuit breaker. Load end adapter for unprotected neutral pole included with 4-pole frame.

Table 5-4. Type KS Seltronic (Electronic) Trip Unit Catalog Numbers (For use with Types KD, HKD, and KDC Circuit Breaker Frames shown in Table 5-3, and with Types KW, HKW, and KWC Circuit Breaker Frames shown in Table 5-6)
Rating plug from Table 5-5 required for each trip unit

Maximum Continuous Ampere Rating at 40°C ^⑦	Trip Unit Type			
	Adjustable Short Time Pick-up with 1/2 Short Delay Ramp (Standard)	Independently Adjustable Short Time Pick-up and Delay (Optional)	Adjustable Short Time Pick-up with 1/2 Short Delay Ramp and Ground Fault Protection (Optional)	Independently Adjustable Short Time Delay and Ground Fault Protection (Optional)
2- and 3-Pole				
125	KS3125T	KS3125TA	KS3125TG	KS3125TAG
250	KS3250T	KS3250TA	KS3250TG	KS3250TAG
400	KS3400T	KS3400TA	KS3400TG	KS3400TAG
4-Pole^{⑧⑨}				
125	KS4125T	KS4125TA	KS4125TG	KS4125TAG
250	KS4250T	KS4250TA	KS4250TG	KS4250TAG
400	KS4400T	KS4400TA	KS4400TG	KS4400TAG

Table 5-5. Interchangeable Rating Plugs for Type KS 2-, 3-, and 4-Pole Trip Units

Trip Unit Maximum Continuous Ampere Rating at 40°C	Rating Plug Ampere Rating	Rating Plug Catalog Number
125	63	1KS063T ^⑩
	70	1KS070T
	90	1KS090T
	100	1KS100T
	125	1KS125T
	Adjustable: 70, 90, 100, 125	A1KS125T1
	63, 80, 100, 125	A1KS125T2 ^⑩
	125	2KS125T
	150	2KS150T
	160	2KS160T ^⑩
250	175	2KS175T
	200	2KS200T
	225	2KS225T
	250	2KS250T
	Adjustable: 125, 150, 200, 250	A2KS250T1
	125, 160, 225, 250	A2KS250T2 ^⑩
	200	4KS200T
	225	4KS225T
	250	4KS250T
	300	4KS300T
400	315	4KS315T ^⑩
	350	4KS350T
	400	4KS400T
	Adjustable: 200, 250, 300, 400	A4KS400T1
	200, 250, 315, 400	A4KS400T2 ^⑩

⑦ Ampere rating is established by rating plug. See Table 5-5.

⑧ Trip unit includes protected neutral pole. Use corresponding 3-pole trip unit if protected neutral pole is not required.

⑨ Fully rated neutral pole protection is standard. For 50% rated protection on neutral pole, add suffix E to 4-pole trip unit catalog number.

⑩ Not UL Listed.

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Table 5-6. Type KW, HKW, and KWC Circuit Breaker
Catalog Numbers^①

Continuous Ampere Rating at 40°C	Thermal Trip Range		Trip Unit Only	Circuit Breaker Frame Only		
				Complete Circuit Breaker With Standard Line and Load Terminals⑤⑥		
	Low	High				
2-Pole②, 660 Vac Maximum, 250 Vdc With Interchangeable Trip Unit – Adjustable Thermal, Adjustable Magnetic						
				KW2400F	HKW2400F	KWC2400F
200	160 - 200	KT2200TA	KW2200	HKW2200	KWC2200	
250	200 - 250	KT2250TA	KW2250	HKW2250	KWC2250	
315	250 - 315	KT2315TA	KW2315	HKW2315	KWC2315	
400	315 - 400	KT2400TA	KW2400	HKW2400	KWC2400	
3-Pole, 660 Vac Maximum, 250 Vdc③ With Interchangeable Trip Unit – Adjustable Thermal, Adjustable Magnetic						
			KW3400F	HKW3400F	KWC3400F	
200	160 - 200	KT3200TA	KW3200	HKW3200	KWC3200	
250	200 - 250	KT3250TA	KW3250	HKW3250	KWC3250	
315	250 - 315	KT3315TA	KW3315	HKW3315	KWC3315	
400	315 - 400	KT3400TA	KW3400	HKW3400	KWC3400	
4-Pole, 660 Vac Maximum, 250 Vdc③ With Interchangeable Trip Unit – Adjustable Thermal, Adjustable Magnetic						
			KW4400F	HKW4400F	KWC4400F	
200	160 - 200	KT3200TA④	KW4200	HKW4200	KWC4200	
250	200 - 250	KT3250TA④	KW4250	HKW4250	KWC4250	
315	250 - 315	KT3315TA④	KW4315	HKW4315	KWC4315	
400	315 - 400	KT3400TA④	KW4400	HKW4400	KWC4400	

5-7. Molded Case Switches

Molded case switch catalog numbers are identified in Tables 5-6, 5-7, and

Table 5-7. Type KD, HKD, KDC Molded
Case Switch Catalog Numbers

600 Vac Maximum, 250 Vdc

Continuous Ampere Rating at 40°C	Catalog Numbers		
	2-Pole ^②	3-Pole	4-Pole ^③
Complete with Standard Line and Load Terminals (shipped separately)			
400	Type DK – High Instantaneous (K) DK2400K ^⑫ DK3400K ^⑫		
400	Type KD – High Instantaneous (K) KD2400K KD3400K KD4400K		
400	Type HKD – High Instantaneous (K) HKD2400K HKD3400K HKD4400K		
400	Type KDC – High Instantaneous (K) KDC2400K KDC3400K KDC4400K		

5-8. For UL listed, series tested molded case switch application data, refer to Westinghouse.

Table 5-8. Type KW, HKW, KWC Molded
Case Switch Catalog Numbers^⑥

660 Vac Maximum, 250 Vdc

Continuous Ampere Rating at 40°C	Catalog Numbers		
	2-Pole ^②	3-Pole	4-Pole ^③
Complete with Standard Line and Load Terminals (shipped separately)			

400	Type KW – High Instantaneous (K) KW2400K KW3400K KW4400K		
400	Type HKW – High Instantaneous (K) HKW2400K HKW3400K HKW4400K		
400	Type KWC – High Instantaneous (K) KWC2400K KWC3400K KWC4400K		

Table 5-9. Line and Load Terminal Catalog Numbers

Max. Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Metric Wire Range mm ²	Catalog Numbers
Cu/Al Pressure Terminals					
225	Aluminum	Cu/Al	3-350/(1)	35-150	TA300K ^⑦
350	Aluminum	Cu/Al	250-500/(1)	150-240	TA350K ^⑦
400	Aluminum	Cu/Al	3/0-250/(2)	70-120	2TA400K – 2 Pole Kit ^⑧ 3TA400K – 3 Pole Kit ^⑧ 4TA400K – 4 Pole Kit ^⑧
Optional Copper Pressure Type Terminals					
225	Copper	Cu	3-350/(1)	35-150	T300K ^⑦
350	Copper	Cu	250-500/(1)	150-240	T350K ^⑦
400	Copper	Cu	3/0-250/(2)	70-120	2T400K – 2 Pole Kit ^⑧ 3T400K – 3 Pole Kit ^⑧ 4T400K – 4 Pole Kit ^⑧

① W model circuit breakers not UL listed.

② Two-pole circuit breaker and molded case switches supplied in 3-pole frames.

③ Use any two protected poles for dc or single phase ac applications.

④ Overcurrent protection not available in neutral pole with thermal-magnetic trip unit. Where neutral pole protec-

tion is required, use Seltronic trip units. Refer to Table 5-4.

⑤ Neutral pole is not protected on 4-pole high instantaneous molded case switches.

⑥ W model molded case switches not UL listed.

⑦ Use 3-pole mounting plate for 2-pole circuit breaker.

⑧ Standard Cu/Al terminals supplied. Refer to Table 5-9.

5-8. Accessories

Accessory catalog or style numbers are identified in Tables on pages 22 through 28. All mounting hardware is supplied unless otherwise noted.

Termination Accessories

Line and Load Terminals

K-frame circuit breakers use Cu/Al terminals as standard. When optional copper terminals are required, order by catalog number. See Table 5-9. Specify if factory installation is required. Note: Terminals TA400K and T400K cannot be shipped factory installed on circuit breaker.

Keeper Nut

Keeper nuts (threaded adapters) are used on K-frame circuit breaker terminal conductors to connect bus bar or similar electrical connections requiring a threaded nut application. Keeper nuts, with either Imperial or metric thread sizes, are available in packages of 3.

Thread Type	Thread Size	Line/ Load End	Catalog Number Package of 3
Imperial	.375-16	Line Load	KPR3A KPR3B
Metric	M-8	Line Load	KPR3AM KPR3BM

Plug-In Adapter

Plug-in adapters are available for 2-, 3-, and 4-pole circuit breaker configurations. One plug-in adapter is used for each terminal end (line or load); specify quantity when ordering. A one-piece steel mounting plate is available at no charge when ordered with line and load plug-in adapters. (Field installation only.)

Continuous Current Rating (Amperes)	Catalog Numbers		
	2-Pole	3-Pole	4-Pole
400	PAD32	PAD33	PAD34
Mounting Plate	⑦	PMP33	PMP34

⑤ Circuit breaker shipped separately as frame, trip unit and terminals.

⑥ Individually packed.

⑦ TA400K and T400K terminal kits contain one terminal for each pole and one terminal cover.

⑧ 240 Vac maximum, 250 Vdc.



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Terminal Adapter

Catalog Number: TAD3

For replacement applications, the non-threaded terminal adapter compensates for the difference in height between K-frame terminal conductors and existing LB/DA circuit breaker types where existing panel-board connecting straps are used.

Panelboard Connecting Straps

The panelboard connecting straps are available to meet the needs of most standard panelboard applications. Style numbers for mounting brackets for CDP panelboard installations are also included.

Bus Spacing (Inches)	Continuous Current Rating (Amperes)	Pole Connector Type	
		Center	Outside
		Style Number	Style Number
3 1/2	400	4212B78G02	4212B78G01

Mounting Bracket, 2- and 3-Pole

Style Number: 208B264H01

Terminal Cover

The terminal cover is available for line/load terminal areas in 2-, 3-, and 4-pole circuit breakers. Supplied in packages of two.

No. of Poles	Catalog Number
2, 3	TCK3
4	TCK4

Terminal Shield

The terminal shield is available for line terminal areas in 2-, 3-, and 4-pole circuit breakers. Terminal shields must be ordered in multiples of 10 (for each style number).

Number of Poles	Style Numbers
2, 3	314C420G06
4	314C420G07

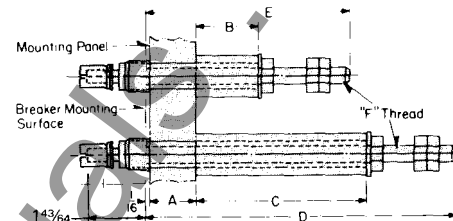
Interphase Barrier

Catalog Number: IPB3 (Pkg. of 2 Barriers)

The interphase barrier is available for extended insulation between circuit breaker poles. Specify quantity when ordering.

Rear Connecting Studs

Each rear connecting stud assembly consists of one stud and one tube. To maintain proper clearances between poles, select alternate long and short stud assemblies for circuit breakers with more than one pole. One assembly is required for line-end and one for load-end of each pole. Each stud style number includes standard tube shown. Connecting studs are only available with English thread sizes.



Stud Length	Stud Style Number	Panel Thickness (Inches) A	Tube Length (Inches)			Standard Tube Style Number	Dimensions (Inches)		
			B	C	D		D	E	F
400A Short	6642C14G02	3/4 to 1	2 1/32	...	...	313C909H17	...	...	...
400A Short	6642C14G04	1/2 to 3/4	1 3/32	...	...	313C909H18	...	3 2 1/2	...
400A Short	6642C14G06	1/4 to 1/2	1 1/32	...	...	313C909H19	...	...	...
400A Long	6642C14G03	3/4 to 1	...	3 29/32	...	313C909H20	...	...	3/4-16
400A Long	6642C14G05	1/2 to 3/4	...	4 1/2	...	313C909H21	6 37/64	...	...
400A Long	6642C14G07	1/4 to 1/2	...	4 3/32	...	313C909H22	...	...	...

Internal Accessories

Alarm (Signal)/Lockout Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Connection Type and Location				Field Installation Kits①	
		18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
		Same Side	Rear ②	Opposite Side			
		Catalog Numbers				Catalog Numbers	
1	Left Right②	A1L3LA A1L3RA	A1L3LB A1L3RB	A1L3LC A1L3RC	A1L3LT A1L3RT③	A1L3LPK A1L3RPK	A1L3LTK A1L3RTK③
2	Left Right②	A2L3LA A2L3RA	A2L3LB A2L3RB	..... .....	A2L3LT A2L3RT③	A2L3LPK A2L3RPK	A2L3LTK A2L3RTK③

Auxiliary Switch

Number of Sets of Contacts (1a and 1b)	Mounting Location (Pole)	Connection Type and Location				Field Installation Kits①	
		18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
		Same Side	Rear ②	Opposite Side			
Catalog Numbers					Catalog Numbers		
1	Left Right②	A1X3LA A1X3RA	A1X3LB A1X3RB	A1X3LC A1X3RC	A1X3LT A1X3RT③	A1X3PK A1X3PK	A1X3LTK A1X3RTK③
2	Left Right②	A2X3LA A2X3RA	A2X3LB A2X3RB	..... .....	A2X3LT A2X3RT③	A2X3PK A2X3PK	A2X3LTK A2X3RTK③

Auxiliary Switch-Alarm (Signal)/Lockout (ASL) Switch Combination

Each catalog number listed in the following table includes one auxiliary switch and one alarm switch. In an auxiliary switch-ASL switch combination, the auxiliary switch is always mounted on the side of the plug-in module next to the center pole of the circuit breaker.

Number of Sets of Contacts (1a and 1b and 1M and 1B)	Mounting Location (Pole)	Connection Type and Location				Field Installation Kits①	
		18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
		Same Side	Rear ②	Opposite Side			
		Catalog Numbers						Catalog Numbers
1	Left Right②	AAL3LA AAL3RA	AAL3LB AAL3RB	..... .....	AAL3LT AAL3RT③	AAL3LPK AAL3RPK	AAL3LTK AAL3RTK③

^① Listed with Underwriters Laboratories, Inc. for field installation under E64983.^② Standard mounting location – leads exit rear of breaker.^③ For 4-pole circuit breakers, add suffix F to catalog number.



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Shunt Trip

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific ac or dc voltages within the voltage range shown. Specific application voltages are shown in Table 4-3. Performance data is shown on applicable circuit breaker accessory nameplates.

Shunt Trip

Voltage Rating
(ac Freq = 50/60 Hz)

Voltage Rating (ac Freq = 50/60 Hz)	Connection Type and Location				Field Installation Kits①		
	18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block	
	Same Side	Rear ②	Opposite Side				
	Catalog Numbers				Catalog Numbers		
Left Pole Mounting AC/DC Ratings②							
9 Vac	SNT3LA01	SNT3LB01	SNT3LC01	SNT3T01	SNT3P01K	SNT3T01K	
12-60 Vac or Vdc	SNT3LA05	SNT3LB05	SNT3LC05	SNT3T05	SNT3P05K	SNT3T05K	
⑥ 110-240 Vac or 110-125 Vdc	SNT3LA11	SNT3LB11	SNT3LC11	SNT3T11	SNT3P11K	SNT3T11K	
380-440 Vac or 220-250 Vdc	SNT3LA14	SNT3LB14	SNT3LC14	SNT3T14	SNT3P14K	SNT3T14K	
480-600 Vac	SNT3LA18	SNT3LB18	SNT3LC18	SNT3T18	SNT3P18K	SNT3T18K	
Right Pole Mounting AC/DC Ratings③							
9 Vac	SNT3RA01	SNT3RB01	SNT3RC01	SNT3T01④	SNT3P01K	SNT3T01K④	
12-60 Vac or Vdc	SNT3RA05	SNT3RB05	SNT3RC05	SNT3T05④	SNT3P05K	SNT3T05K④	
⑥ 110-240 Vac or 110-125 Vdc	SNT3RA11	SNT3RB11	SNT3RC11	SNT3T11④	SNT3P11K	SNT3T11K④	
380-440 Vac or 220-250 Vdc	SNT3RA14	SNT3RB14	SNT3RC14	SNT3T14	SNT3P14K	SNT3T14K	
480-600 Vac or	SNT3RA18	SNT3RB18	SNT3RC18	SNT3T18④	SNT3P18K	SNT3T18K④	

Low Energy Shunt Trip^⑥

Mounting Positions

Mounting Positions	Connection Type and Location				Field Installation Kits①	
	18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
	Same Side	Rear ②	Opposite Side			
	Catalog Numbers				Catalog Numbers	
Left Pole②	LST3LA	LST3LB	LST3LC	LST3LT	LST3LPK	LST3LTK
Right Pole③	LST3RA	LST3RB	LST3RC	LST3RT④	LST3RPK	LST3RTK④

Undervoltage Release Mechanism (Handle Reset)

Select handle reset undervoltage release mechanism catalog number for the voltage within the indicated voltage range. Undervoltage release mechanism coils are designed to be applied at specific ac or dc voltages within the voltage range shown. Specific application voltages are shown in Table 4-4. Performance data is shown on applicable circuit breaker accessory nameplates.

Undervoltage Release Mechanism

Voltage Rating
(ac Freq = 50/60 Hz)

Voltage Rating (ac Freq = 50/60 Hz)	Connection Type and Location				Field Installation Kits ^①	
	18-inch Pigtail Leads			Terminal Block Same Side	Pigtail Leads	Terminal Block
	Same Side	Rear ②	Opposite Side			
	Catalog Numbers					Catalog Numbers
Left Pole Mounting^② AC Ratings						
9 Vac	UVH3LA01	UVH3LB01	UVH3LC01	UVH3LT01	UVH3LP01K	UVH3LT01K
12 Vac	UVH3LA02	UVH3LB02	UVH3LC02	UVH3LT02	UVH3LP02K	UVH3LT02K
24 Vac	UVH3LA03	UVH3LB03	UVH3LC03	UVH3LT03	UVH3LP03K	UVH3LT03K
48-60 Vac	UVH3LA05	UVH3LB05	UVH3LC05	UVH3LT05	UVH3LP05K	UVH3LT05K
110-127 Vac	UVH3LA08	UVH3LB08	UVH3LC08	UVH3LT08	UVH3LP08K	UVH3LT08K
208-240 Vac	UVH3LA11	UVH3LB11	UVH3LC11	UVH3LT11	UVH3LP11K	UVH3LT11K
380-480 Vac	UVH3LA15	UVH3LB15	UVH3LC15	UVH3LT15	UVH3LP15K	UVH3LT15K
525-600 Vac	UVH3LA18	UVH3LB18	UVH3LC18	UVH3LT18	UVH3LP18K	UVH3LT18K
Right Pole Mounting^{③④} AC Ratings						
9 Vac	UVH3RA01	UVH3RB01	UVH3RC01	UVH3RT01	UVH3RP01K	UVH3RT01K
12 Vac	UVH3RA02	UVH3RB02	UVH3RC02	UVH3RT02	UVH3RP02K	UVH3RT02K
24 Vac	UVH3RA03	UVH3RB03	UVH3RC03	UVH3RT03	UVH3RP03K	UVH3RT03K
48-60 Vac	UVH3RA05	UVH3RB05	UVH3RC05	UVH3RT05	UVH3RP05K	UVH3RT05K
110-127 Vac	UVH3RA08	UVH3RB08	UVH3RC08	UVH3RT08	UVH3RP08K	UVH3RT08K
208-240 Vac	UVH3RA11	UVH3RB11	UVH3RC11	UVH3RT11	UVH3RP11K	UVH3RT11K
380-480 Vac	UVH3RA15	UVH3RB15	UVH3RC15	UVH3RT15	UVH3RP15K	UVH3RT15K
525-600 Vac	UVH3RA18	UVH3RB18	UVH3RC18	UVH3RT18	UVH3RP18K	UVH3RT18K
Left Pole Mounting^② DC Ratings						
12 Vdc	UVH3LA20	UVH3LB20	UVH3LC20	UVH3LT20	UVH3LP20K	UVH3LT20K
24 Vdc	UVH3LA21	UVH3LB21	UVH3LC21	UVH3LT21	UVH3LP21K	UVH3LT21K
48-60 Vdc	UVH3LA23	UVH3LB23	UVH3LC23	UVH3LT23	UVH3LP23K	UVH3LT23K
110-125 Vdc	UVH3LA26	UVH3LB26	UVH3LC26	UVH3LT26	UVH3LP26K	UVH3LT26K
220-250 Vdc	UVH3LA28	UVH3LB28	UVH3LC28	UVH3LT28	UVH3LP28K	UVH3LT28K
Right Pole Mounting^{③④} DC Ratings						
12 Vdc	UVH3RA20	UVH3RB20	UVH3RC20	UVH3RT20	UVH3RP20K	UVH3RT20K
24 Vdc	UVH3RA21	UVH3RB21	UVH3RC21	UVH3RT21	UVH3RP21K	UVH3RT21K
48-60 Vdc	UVH3RA23	UVH3RB23	UVH3RC23	UVH3RT23	UVH3RP23K	UVH3RT23K
110-125 Vdc	UVH3RA26	UVH3RB26	UVH3RC26	UVH3RT26	UVH3RP26K	UVH3RT26K
220-250 Vac	UVH3RA28	UVH3RB28	UVH3RC28	UVH3RT28	UVH3RP28K	UVH3RT28K

① Listed with Underwriters Laboratories, Inc. for field installation under E64983.

② Standard mounting location – leads exit rear of breaker.

③ For use with KT (thermal-magnetic) trip units only.

④ For 4-pole circuit breakers, add suffix F to catalog number.

⑤ Suitable for use with Class 1 ground fault sensing element.

⑥ Cutoff provisions required in control circuit.



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Handle Operating Accessories

Electrical (Solenoid) Operator^①

Operating Voltage	Frequency	Catalog Numbers
		Terminal Block
24	50/60 Hz or DC	EOP3T03
120		EOP3T07
240		EOP3T11

Rotary Handle Mechanism^①

Description	Catalog Number
Rotary Handle Mechanism Standard Grey Handle:	RHM3G
Rotary Handle Mechanism Optional Red Handle with Yellow Label:	RHM3R
Early-Make Electrical Interlock Kit (2a-2b):	RHM3EK
Cylinder Lock Kit:	RHM3CLK
Standard Grey Remote Mounted Handle Extension Shaft Kit:	RHM3ESK
Optional Red Remote Mounted Handle Extension Shaft Kit:	RHM3ERK

Type MC Motor Control Handle Mechanism

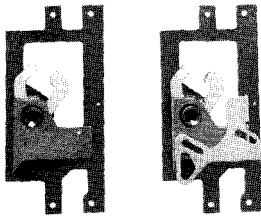
For use with NEMA 1 Enclosure Catalog Number: SMCU400KD
For use with NEMA 12 Enclosure Catalog Number: CMCU400KD

Type SM Safety Handle Mechanism

Right-Hand Mounting Enclosure Cover Hinged on Left. Catalog Number: SM400KR

Left-Hand Mounting Enclosure Cover Hinged on Right. Catalog Number: SM400KL

Vari-Depth Handle Mechanism^②



Mechanisms^{③ ④}

Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	Handle NEMA 1, 3R, 12 (With Hardware)	Shaft			
			Standard		Long	
Style Number	Style Number	Style Number	Style Number	Panel Depth	Style Number	Panel Depth
5092A62G01	5092A62G02	47A4446G21	47A4446G16	5 7/8-11 1/8	47A4446G15	11 1/8-14 7/8

Accessories for Vari-Depth Handle Mechanisms

Special Handles: Meet NEMA 4 requirements. These handles are similar to standard handles, except they include an internal neoprene gasket. Due to gasketing effect between handle and housing, handle will not indicate a tripped position when used with circuit breakers.

Standard Finish
Style Number: 504C323G01

Handle Kits: These kits are for use with NEMA 4, 7, and 9 cast enclosures. The kits include a special operating handle, mounting bolts, and an adapter bushing. (The bushing may be purchased separately.) Kits may be used with standard mechanisms and shafts as required.

NEMA 4 and 9 Kit
Style Number: 314C794G10

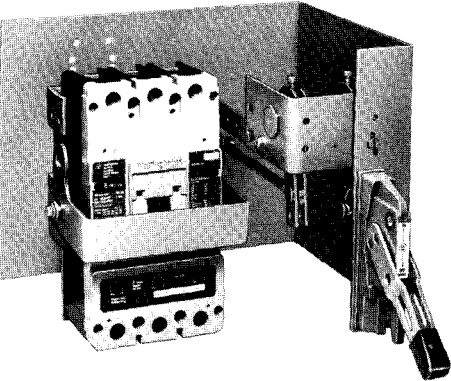
NEMA 7 Kit
Style Number: 314C794G09

Adapter Bushing Only
Style Number: 314C794G04

^① UL listed for field installation under E64983.
^② When circuit breaker is used with plug-in adapter kit, order mounting hardware Style No. 673B125G14. If rear connected studs are used, refer to Westinghouse.
^③ Includes hardware.
^④ Outline and drilling plan reference: Drawing 653D270.

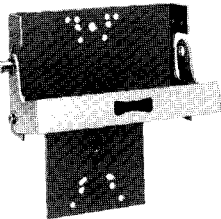
Series C Molded Case Circuit Breakers, K-Frame
Section 5 – Selection and Ordering Information

Type AMT Vari-Depth/ Vari-Width Flange-Mounted Handle Mechanism

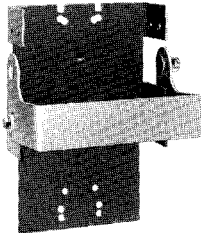


Assembled Type AMT for Below Handle Mounting (Breaker Not Included)

Type AMT Component Parts
Backplate and Yoke Assembly

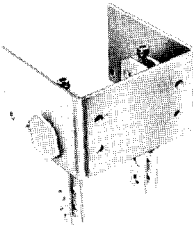


Below Handle Mtg.

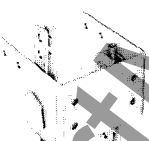


Above Handle Mtg.

Flange Mounted Pivot Mechanism



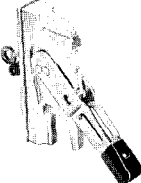
Below Handle Mtg.



Above Handle Mtg.



Rod Brace Assembly



Operating Handle

Catalog Numbers

Complete Assembly	Consists of and Shipped as Component Parts Listed Below			
	Backplate and Yoke Assembly	Operating rod and Brace Assembly ^①	Flange Mounted Pivot Mechanism Assembly ^①	External Operating Handle
Above Handle Mounting With Short Rod and Brace AMTKDASV	AMTKD	AMTRB1	AMTPM	AMTOP
Above the Handle Mounting with Long Rod and Brace AMTKDALV	AMTKD	AMTRB2	AMTPM	AMTOP
Below the Handle Mounting with Short Rod and Brace AMTKDBSV	AMTKD-B	AMTRB1	AMTPM-B	AMTOP
Below the Handle Mounting with Long Rod and Brace AMTKDBLV	AMTKD-B	AMTRB2	AMTPM-B	AMTOP

① Width spacer kit not included.
② Width spacer kits cannot be used with short rod at minimum enclosure depth.

Ordering Information

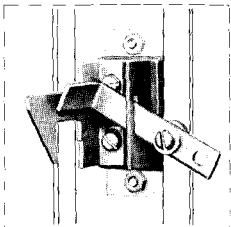
1. Order a complete mechanism using Complete Assembly catalog number. Mechanism will be shipped as individual components shown above and listed in table.
2. Order spacer kits or door hardware adapter as required.
3. Individual component parts may be ordered by catalog number.

Accessories for Type AMT Mechanisms

Spacer Kit to Vary Width

Catalog Number: AMTSK1
This spacer kit is for up to 1-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Hardware is not supplied because of dimensional variations. Use standard 1/4-inch x 20 bolts.

Door Hardware Kit
Cat. No. AMTDHA



This adapter kit is for use with door hardware kits DH1R, DH2R, or DH3R for type SM handle mechanisms to permit the use and interlocking of right hand installation of the type AMT handle mechanism (Below-the-Handle or Above-the-Handle type).

Operating Rod and Brace Assemblies.

Enclosure Depth Dimensions in Inches for Operating Rod and Brace Assembly

Short Rod		Long Rod	
Cat. No.	AMTRB1	Cat. No.	AMTRB2
Min. ②	Max.	Min.	Max.
6 1/2	14	12 1/2	18



Series C Molded Case Circuit Breakers, K-Frame

Section 5 – Selection and Ordering Information

Lock and Interlock Accessories

Nonlockable Handle Block

Catalog Number: LKD3

One per circuit breaker

Padlockable Handle Lock Hasp^①

Catalog Number: PLK3

The padlockable handle lock hasp can be mounted on either side of the operating handle. One per circuit breaker; field installation only.

Cylinder Lock

Catalog Number: CLK3L

The cylinder lock is factory installed in the left pole only of the circuit breaker cover. Internal accessories cannot be installed in the same pole as the cylinder lock.

Key Interlock Mounting Kit^①

Key interlock mounting kits are for field installation only. Select mounting kit catalog numbers to match type of lock used. Key interlocks are supplied by customer.

Lock Manufacturer	Lock Type	Bolt Projection in Withdrawn Position	Kit Cat. No.
Superior	B-4003-1	3/8 inch	KYK3
Kirk	F	3/8 inch	
Square D	SF	None	
Federal Pioneer	VF	3/8 inch	
Castell	K or QK	3/8 inch	

Sliding Bar Interlock

Catalog Number: SBK3

The sliding bar interlock is available for mounting between two adjacent 3-pole circuit breakers with circuit breaker centerline spacing at 5½ inches. (For field installation only.)

Walking Beam Interlock

Catalog Number: WBL3

The walking beam interlock is available for mounting between two adjacent circuit breakers spaced ¼ inch apart and having the same pole configuration. The two circuit breakers must be factory modified to accept the walking beam interlock assembly (suitable for use with either 2- and 3-pole circuit breakers). With properly modified circuit breakers, the walking beam interlock is suitable for field installation under UL File E64983. Order circuit breakers of the type and rating required, modified for field installation of the walking beam interlock.

^① UL listed for field installation under E64983.

Miscellaneous Accessories

Base Mounting Hardware

Base mounting hardware is supplied at no charge when ordered with a circuit breaker. When ordering separately, refer to price list.

Imperial Thread

Number of Poles	Description	Type of Mounting	Style Number
2-, 3-, and 4-pole	0.250-20 x 1.5 inch Pan-Head Steel Screws and Lockwashers	Individual	4218B80G04

Metric Thread

Number of Poles	Description	Type of Mounting	Style Number
2-, 3-, and 4-pole	M6 – 0.7 x 38mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G14

Earth Leakage Protection Module

Refer to Westinghouse for ratings and availability.

Seltronic Portable Test Kit

Catalog Number: STK1

For verification of performance of Seltronic trip units while in service.

Modifications

Special Calibration

For special thermal, magnetic, or frequency calibration, order by description; refer to price list.

Moisture-Fungus Treatment

Order by description; refer to price list.

Marine Applications

When Listing Mark for marine applications under UL489 is required, specify requirement when ordering. Non-aluminum terminals must be used. Refer to price list.





Series C Molded Case Circuit Breakers, K-Frame
Section 5 – Selection and Ordering Information

Door Hardware

Door hardware listed in this section may be used with Types SM and AMT handle mechanisms.

Three choices of door hardware and an auxiliary handle are offered to provide the best latching scheme for individual needs. The door hardware is designed with a provision for padlocking, and a coin-proof slot that requires the use of a tool to open the door.

Select desired hardware below. Additional latches can be ordered from accessories section if desired.

Hardware Item	Description and Catalog Numbers
	With sliding latches for smaller panels up to approx. 30" high. Catalog Numbers Right Hand: DH1R Left Hand: DH1L
	With 2 roller latches for intermediate panels up to approx. 40" high. Catalog Numbers Right Hand: DH2R Left Hand: DH2L
	With 3 roller latches for larger panels, approx. 40" and higher. Catalog Numbers Right Hand: DH3R Left Hand: DH3L
	Auxiliary handle for larger panels Catalog Numbers Right Hand: DH4R Left Hand: DH4L

Note:
Right hand enclosure cover hinged on left,
Left hand enclosure cover hinged on right.

Accessories

Dress Nameplates: Required to meet automotive specifications. Mounts from inside enclosure and covers operating mechanism mounting bolts; makes mechanism non-removable when enclosure door is closed.

Style Number: 373D260G05

Electrical Interlock Kit:

Provides 1 N. C. and 1 N. O. contacts (SPDT switch) for use with auxiliary circuits. Mounts to end of mechanism housing as shown.

Style Number: 622B747G01

Auxiliary Latch Kits: Provide an additional latch for use with applications where two point latching may not be adequate.



Sliding Latch



Rolling Latch

For Door Hardware Using Sliding Latches
Right or Left Hand Mtg.: Style No. 656D669G01

For Door Hardware Using Roller Latches
Right Hand Mtg.: Style No. 370D801G04

Left Hand Mtg.: Style No. 370D802G04

Remote Mounting Kit:

Enables the operating mechanism to be mounted remotely on a vertical centerline from the circuit breaker or disconnect switch.

Style Number: 505C367G01



Door Operated Interlock Defeater Kit for Type SM Mechanisms

Required when door hardware is not used, operates as door closes. Additional method of securing door such as screw latch, also required (supplied by box manufacturer).

Style Number: 623B214G02





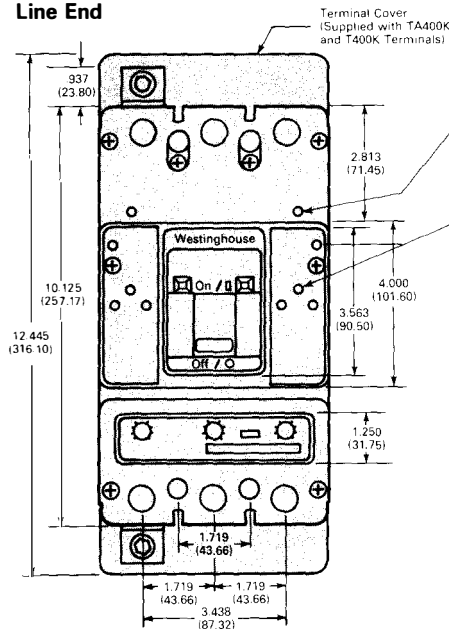
Series C Molded Case Circuit Breakers, K-Frame

Section 6 – Dimensional Data

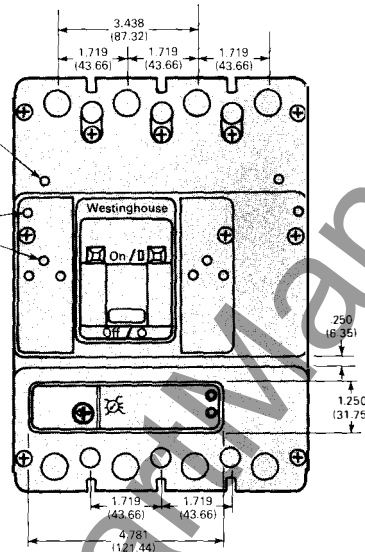
Dimensions in Inches and (Millimeters)

Not to be used for construction purposes unless approved.

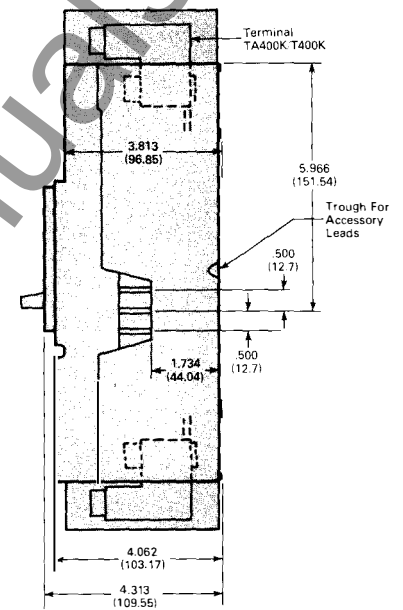
Three Pole Breaker
Line End



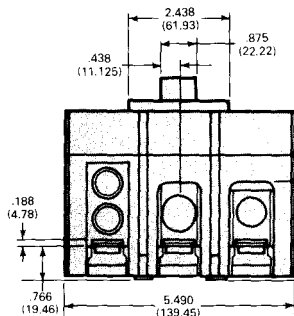
Four Pole Breaker
Line End



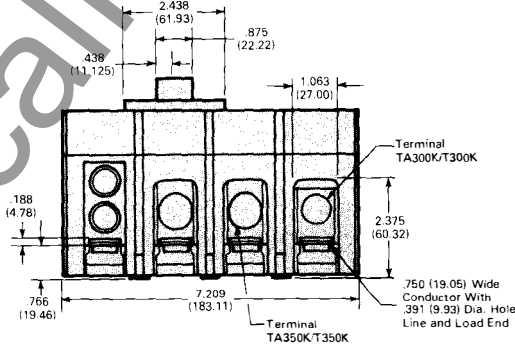
Side View



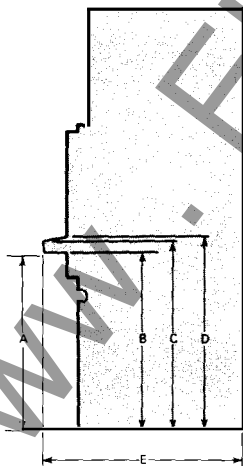
Line/Load End



Line/Load End



Circuit Breaker Handle Travel Distances and Handle Force



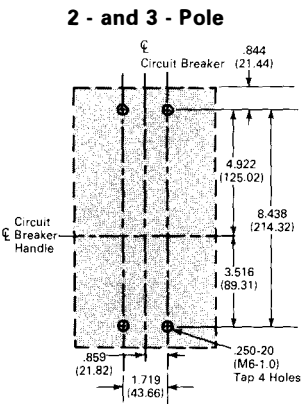
Circuit Breaker Status	Dimension					Handle Force①
	A	B	C	D	E	
On	5.39 (136.90)	5.26 (133.60)	5.69 (144.53)	5.64 (143.26)	4.77 (121.16)	30 Pounds (13.61 Kilograms)
Tripped	4.69 (119.13)	4.65 (118.11)	5.00 (127.00)	5.04 (128.02)	4.90 (124.46)	—
Off	4.18 (106.17)	4.22 (107.18)	4.49 (114.05)	4.62 (117.35)	4.95 (125.73)	25 Pounds (11.34 Kilograms)
Reset	4.06 (103.12)	4.12 (104.65)	4.37 (111.00)	4.51 (114.55)	4.95 (125.73)	35 Pounds (15.87 Kilograms)

① All handle forces measured approximately 0.125 (3.17) from top of handle.

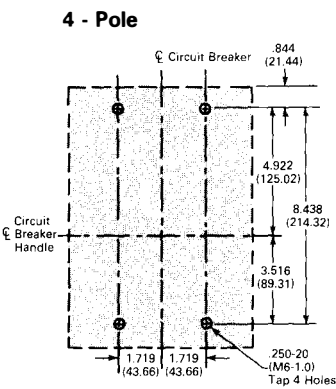


Series C Molded Case Circuit Breakers, K-Frame
Section 6 – Dimensional Data

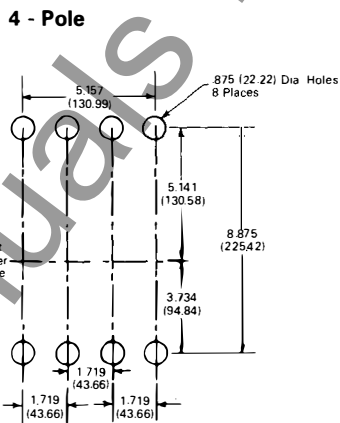
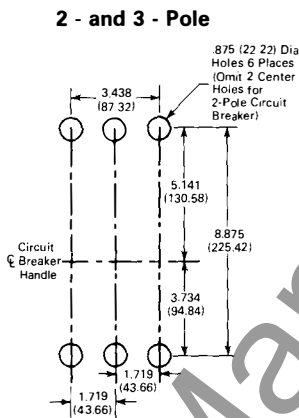
Front Connected Drilling Plan
Line End



4 - Pole

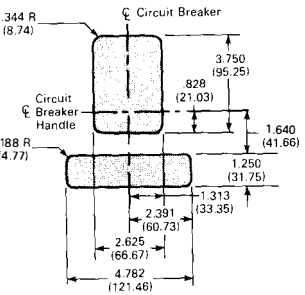


Rear Connected Drilling Plan

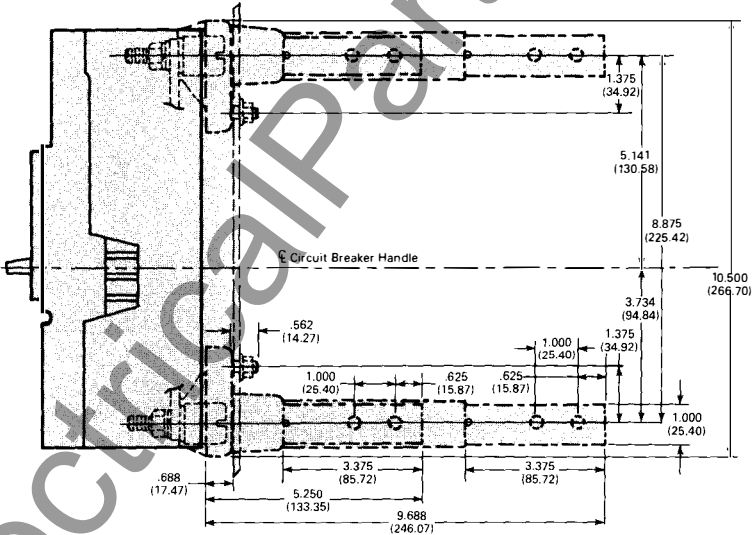


Load End

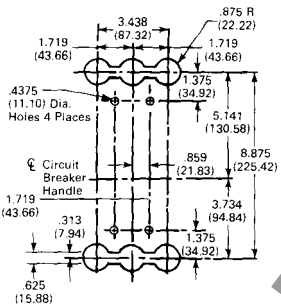
Front Cover Cutout



Plug-in Adapter



Plug-in Block Drilling Plan (3-Pole)



K-Frame Circuit Breaker Weights

- 2-pole Frame: 7.5lb (3.40 Kg)
- 3-pole Frame: 8.5lb (3.85 Kg)
- 4-pole Frame: 11.0lb (5.00 Kg)
- 2-pole KT Trip Unit: 1.5lb (0.68 Kg)
- 3-pole KT Trip Unit: 1.5lb (0.68 Kg)
- 2-pole KS Trip Unit: 2.5lb (1.13 Kg)
- 3-pole KS Trip Unit: 2.5lb (1.13 Kg)
- 4-pole KS Trip Unit: 3.0lb (1.36 Kg)

Terminal Weights

Cat. Numbers	Cu	Al
TA300K/T300K	0.28lb (0.127 Kg)	0.1lb (0.045 Kg)
TA350K/T350K	0.27lb (0.122 Kg)	0.1lb (0.045 Kg)
TA400K/T400K	0.69lb (0.312 Kg)	0.25lb (0.113 Kg)



Series C Molded Case Circuit Breakers, K-Frame

Section 7 – Guide Specifications

Typical Specifications For Series C Molded Case Circuit Breakers

Electrical circuits shall be protected by Series C Molded Case Circuit Breakers as manufactured by Westinghouse Electric Corporation.

Each pole of the 2- and 3-pole circuit breakers shall provide complete circuit overcurrent protection by having inverse time and instantaneous tripping characteristics and, where applicable, be current limiting.

The circuit breakers shall be operated by a toggle type handle and shall have a quick-make, quick-break, over-center switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuit currents. Tripping due to overload or short circuits shall be clearly indicated by the position of the handle. The ON and OFF positions shall be clearly marked on the cover of the circuit breaker along with the international symbols 1 for ON and 0 for OFF on the handle providing positive indication of the circuit breaker contact position. Additionally, a color-coded indication of the circuit breaker contact position shall be provided: red for ON, green for OFF, and white for tripped. An easily accessible Push-to-Trip button for mechanically exercising the trip unit shall be provided on the cover of each circuit breaker. All poles of a multi-pole circuit breaker shall be so constructed as to ensure simultaneous open, close, and trip operations.

Circuit breakers shall be completely enclosed in a high strength glass-polyester case. Non-interchangeable trip circuit breakers shall be factory sealed; interchangeable trip circuit breakers shall have the trip unit sealed to prevent tampering. Ampere ratings shall be clearly visible from the front of the circuit breaker. Contacts shall be non-welding silver alloy. Arc extinction shall be accomplished by means of DE-ION® arc chutes, consisting of metal grids mounted in an insulating support.

The minimum interrupting ratings of the circuit breakers shall be at least equal to the available short circuit current at the line ter-

minals. Where applicable, circuit breakers shall be UL listed for series tested application.

Circuit breakers in the 150A frame size shall be supplied in 1-, 2-, 3-, and 4-pole models, as specified on the drawings. Circuit breakers in frame sizes 250A through 1600A shall be supplied in 2-, 3-, or 4-pole models, as specified on the drawings.

Circuit breakers in frame sizes 100A through 600A shall be equipped with thermal-magnetic trip units. Circuit breakers in 800A and through 1600A frame sizes shall be equipped with electronic trip units that are insensitive to changes in ambient temperature within the normal operating temperature range of the circuit breaker. The 250A, 400A, 600A, and 630A frame sizes shall be designed to accept either thermal-magnetic or electronic interchangeable trip units.

Circuit breakers shall be listed with Underwriters Laboratories, Inc. under standard UL489, conform to the applicable requirements of NEMA Standards Publication AB1-1975, meet the appropriate classifications of Federal Specifications W-C-375b, and/or comply with the requirements of International Electrotechnical Commission Standard IEC 157-1.

Circuit breaker ratings and modifications shall be indicated on the drawings.

Molded case circuit breakers shall be of the inverse time and instantaneous trip type as provided by thermal-magnetic or electronic trip elements with either standard interrupting, high interrupting, or current limiting characteristics as shown in Section 1 of this frame book. These circuit breakers shall be listed per UL489.

Molded case circuit interrupters (motor circuit protectors) shall be of the instantaneous (magnetic) only type, providing instantaneous short circuit protection by means of a front-adjustable trip unit. Instantaneous-only circuit interrupters shall be component recognized per UL489.

Molded case switches shall be of the same construction as the related listed circuit

breaker and equipped with a factory sealed, nonadjustable, high instantaneous-only short circuit protection. ♦

Molded case switches shall have no overload or low-level fault protection provided and shall be marked with a maximum withstand rating denoting the type and level of upstream protection required. Molded case switches shall be listed per UL1087.

Electrical characteristics of accessories shall be as indicated on the drawings.

Internally mounted accessories including alarm (signal)/lockout switches, auxiliary switches, shunt trips, and undervoltage release mechanisms shall be of the plug-in type and shall be listed for field installation in circuit breakers which are not factory sealed.

Accessory wiring shall be brought out through the side or rear of the circuit breaker, or be connected to a terminal block mounted on the side of the circuit breaker, as specified. The ability to route accessory wiring to the opposite side of the circuit breaker through a trough in the base shall be provided.

Electrical operators for circuit breakers of the 400A frame size and below shall be of the solenoid type with maximum 5-cycle closing characteristics. Electrical operators for circuit breaker frame sizes 600A through 1600A shall be of the motor driven type with an optional 2-step stored energy mechanism providing minimum 5-cycle closing. All electrical operators shall be cover mounted. All electrical operators shall be listed for field installation per UL489.

Circuit breakers shall be provided with uniformly designed nameplates to clearly indicate the type, rating, listing/recognition/certification marks, accessory details, and other information defined in UL489.

All terminals shall comply with UL486A or UL486B Standards and CSA Standard C22.2 No. 65 or Bulletin 1165. Torque markings shall be provided.



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Distribution and Control Business Unit
Components Division
Beaver, Pennsylvania U.S.A. 15009

September, 1986



August 1, 1988
New Information
Mailed to: E, D, C/29-100A

Series C® K-Frame Molded Case Circuit Breakers

UL Listed DC Circuit Breakers

These new UL Listed DC Molded Case Circuit Breakers are for use in the ungrounded battery supply circuits of UPS systems providing continuous, reliable AC power to computer controlled applications such as financial transactions and telecommunications.

These devices are an excellent alternative to molded case switches and fuses because they are easier to install, and require less maintenance.

- Type HKDDC (400A) are thermal magnetic type devices and have interrupting ratings of 35 kA at 500 VDC nominal with 3 poles in series.

DC Circuit Breaker Ratings

Breaker Type HKDDC*
Maximum Ampere Rating 400

Standard	Voltage	Freq.	kA	Interrupting Capacity
UL 489	384①	DC	35	
	500①	DC	35	

*8 milliseconds time constant.

① 3 Poles in series

Accessories

The HKDDC circuit breaker uses the same accessories used on the Series C K-frame circuit breaker.

Frame and Trip Unit

Catalog Number	Trip Unit	Ampere Rating
Series C K Frame		
HKDDC3400F		400
	KT3100T	100
	KT3125T	125
	KT3150T	150
	KT3175T	175
	KT3200T	200
	KT3225T	225
	KT3250T	250
	KT3300T	300
	KT3350T	350
	KT3400T	400

Terminals

Use standard Cu/Al or optional copper only terminals for Series C K-frame breaker as shown in Frame Book 29-103.

Shorting Straps For Series Connecting Poles (Package of 2)

Breaker Frame	Catalog Number
HKDDC	SS400

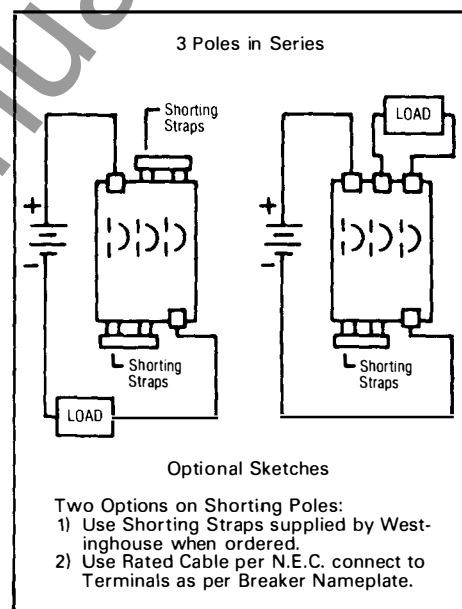


Fig. 1. Series Connection Diagrams.

Order as Follows:

Type HKDDC

1 amp breaker without terminals consisting of:

1 - HKDDC3400F frame

1 - Trip unit (specify catalog number)

Accessories as required

Note: Shorting straps and/or terminals are to be ordered as separate items.

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Distribution and Control
Business Unit
Components Division
Beaver, PA 15009

Supplement to Frame Book
29-103

Page .01

December 29, 1986
New Information
Mailed to: E, D,C/29-100A

Series C Circuit Breakers,
K-Frame

Please refer to Frame Book 29-103, dated September, 1986 and make the following corrections:

Page 11, Plug-in Adapters

Photo shown is not current product; refer to Dimensions, page 30, for correct version of product.

Page 22, Table 5-9. Line and Load Terminal Catalog Numbers

Add footnote (13) to "Max. Breaker Amps" and "Catalog Number" headings in table. Footnote (13) reads "Cu/Al terminals listed are supplied as standard on complete circuit breakers up to max. breaker amps indicated."

For example, a KDB3200 circuit breaker would be supplied with 6-TA300K terminals. A KDB3250 circuit breaker would be supplied with 6-TA350K as standard.

Page 23, Terminal Adapter

Catalog No. TAD3 is for package of 3 adapters.

Page 23, Panelboard Connecting Straps

Change style number of outside pole connector from 4212B78G01 to 4212B77G01.

Page 23, Terminal Cover

Catalog number for 2,3 pole cover should read TCK3

These corrections will be included in the next printing of the Frame Book.

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